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July 13, 2015

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

Re: Chlorobenzene Process Area (CPA) Groundwater Monitoring Program
2nd Quarter 2015 Data Report
Solutia Inc., W. G. Krummrich Plant, Sauget, IL

Dear Ms. Bury:

Enclosed please find the 2nd Quarter 2015 Data Report for the Chlorobenzene Process Area (CPA) Groundwater Monitoring Program at Solutia Inc.'s W. G. Krummrich Plant, Sauget, IL. The next semiannual monitoring will be conducted 4th quarter 2015.

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

Sincerely,

Gerald M. Rinaldi
Manager, Remediation Services

Enclosure

cc: Distribution List

DISTRIBUTION LIST

Chlorobenzene Process Area (CPA) Groundwater Monitoring Program
2nd Quarter 2015 Data Report
Solutia Inc., W. G. Krummrich Plant, Sauget, IL

USEPA

Stephanie Linebaugh
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Solutia

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

XDD

Scott Crawford 22 Marin Way, Unit #3, Stratham, NH 03885

GROUNDWATER MONITORING REPORT

CHLOROBENZENE PROCESS AREA
GROUNDWATER MONITORING 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

July 2015 **140-3345**

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Golder Associates

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1.0 INTRODUCTION

Golder Associates Inc. (Golder) is pleased to submit this report summarizing the 2nd Quarter 2015 (2Q15) Chlorobenzene Process Area (CPA) 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, IL as shown on Figure 1.

The 2Q15 sampling event was performed in general accordance with the Revised Long-Term Monitoring Program (LTMP) Work Plan (Work Plan) (Solutia 2009). Work conducted during the CPA Groundwater Monitoring Program is designed to evaluate the effectiveness of remediation activities near the CPA at the Site.

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

Sampling for the CPA program occurs in the 2nd and 4th quarter. Sampling of monitoring wells included in the CPA program began in the 4th quarter 2011 (4Q11). Monitoring wells are located in the Shallow Hydrogeologic Unit (SHU), Middle Hydrogeologic Unit (MHU) and Deep Hydrogeologic Unit (DHU). The locations of the monitoring wells are shown on Figure 2 and the sample locations are included on the table below.

Area	Location Relative To Area	Sample Identification
Former Chlorobenzene Process Area	Upgradient	CPA-A-SHU
		CPA-A-MHU
		CPA-A-DHU
	Downgradient	CPA-B-SHU
		CPA-B-MHU
		CPA-B-DHU
		CPA-C-SHU
		CPA-C-MHU
		CPA-C-DHU
		CPA-D-SHU
		CPA-D-MHU
		CPA-D-DHU

Monitoring wells in the CPA program are sampled for the following volatile organic compound (VOC) analytes: benzene; chlorobenzene; 1,2-dichlorobenzene; 1,3-dichlorobenzene; and 1,4-dichlorobenzene. The following MNA parameters are sampled quarterly to evaluate active natural attenuation occurring at the Site:

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

Microbial Insights BioTrap® samplers for Phospholipid Fatty Acid (PLFA) analysis and Stable Isotope Probes (SIPs) baited with chlorobenzene are deployed as part of the CPA program to demonstrate the occurrence of biodegradation occurring at the Site.

2.0 FIELD ACTIVITIES

Golder conducted 2Q15 sampling events between May 11 and May 12, 2015. Activities were performed in general accordance with the Work Plan.

2.1 Water Level Measurement

Prior to sampling during the 2Q15 event, Golder performed a synoptic round of water level measurements at 77 monitoring wells and piezometers on April 30 and May 1, 2015. The following monitoring well and piezometer series are included in the CPA program:

- BSA-series
- CPA-series
- GM-series
- K-series
- PS-MW-series
- PMA-series
- PM-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 2Q15 sampling event, NAPL was not detected in monitoring wells or piezometers. Total depths are measured during the 1st quarter of each year. The 2Q15 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 2Q15 CPA 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 meter. Samples were collected after field parameters were stabilized within the ranges below for three (3) consecutive measurements:

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

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

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

- VOCs – United States Environmental Protection Agency (USEPA) SW-846 Method 8260B
- MNA parameters – alkalinity and carbon dioxide (USEPA Method 310.1), chloride (USEPA Method 352.5), total and dissolved iron and total and dissolved manganese (USEPA SW-846 Method 6010C), methane, ethane and ethylene (RSK-175), nitrate (USEPA Method 353.2), sulfate (USEPA Method 375.4), and total and dissolved organic carbon (USEPA Method 415.1)

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

2.3 Quality Assurance and Sample Handling

Two (2) analytical duplicates (AD), two (2) equipment blanks (EB) and one (1) matrix spike/matrix spike duplicate (MS/MSD) pair were collected during the 2Q15 CPA sampling event. Laboratory provided trip blanks were included in each cooler containing samples for VOC analysis, for a total of four (4) trip blanks. 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 "CPA-#-#HU-MMYY-QAC" where:

- **"CPA"** denotes "Chlorobenzene Process Area" and **"#-#HU"** denotes monitoring well location and hydrogeologic unit
- **"MMYY"** denotes month and year of sampling quarter, e.g.: May (2nd quarter), 2015 (0515)
- **"QA/QC"** denotes QA/QC sample
  - **AD** – Analytical Duplicate
  - **EB** – Equipment Blank
  - **MS or MSD** – Matrix Spike or Matrix Spike Duplicate

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

Bio-Trap® samplers were used for PLFA analysis. The samplers can also be baited with a specially synthesized form of the contaminant (i.e., chlorobenzene) in order to measure the degradation of a specific contaminant. This method is known as Stable Isotope Probing (SIP). Bio-Trap® samplers and SIPs are passive sampling tools that collect microbes across the samplers membrane that are, after time, analyzed. SIP and PLFA results are evaluated to provide biodegradation potential information in the DHU.

SIPs, provided by Microbial Insights, Inc. in Rockford, Tennessee, were deployed on April 1, 2015 in each of the four (4) DHU monitoring wells. SIPs were weighted and fastened to a stainless steel cable. The cable was secured to the well cap and the SIP was lowered into the well and placed in the middle of the well screen.

On April 30, 2015, Bio-Trap® samplers using the SIP method were collected from the wells. The samplers were placed in laboratory provided bags, labeled with appropriate well identification, placed in a cooler with ice, properly sealed and shipped overnight to the Microbial Insights, Inc. facility in Rockford, Tennessee for analysis.

2.5 Decontamination and Investigation Derived Waste

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

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

3.0 QUALITY ASSURANCE

Sample results were provided by TestAmerica in electronic formats and reviewed for quality and completeness by Golder in accordance with the Work Plan. Sample results are included in Appendix D. Results were submitted in two (2) sample delivery groups (SDGs) as follows:

Sample Delivery Group (SDG)	Sample Identification
KPS145	CPA-A-DHU-0515
	CPA-A-MHU-0515
	CPA-A-SHU-0515
	CPA-B-DHU-0515
	CPA-B-MHU-0515
	CPA-B-MHU-0515-EB
	CPA-B-SHU-0515
	2Q15 CPA Trip Blank #1
KPS146	CPA-C-DHU-0515
	CPA-C-DHU-0515-AD
	CPA-C-MHU-0515
	CPA-C-MHU-0515-EB
	CPA-C-SHU-0515
	CPA-D-DHU-0515
	CPA-D-DHU-0515-AD
	CPA-D-MHU-0515
	CPA-D-SHU-0515
	2Q15 CPA Trip Blank #2

Golder completed validation of the analytical data following the general guidelines in Section 4.4 Data Review and Validation of the Work Plan. The Work Plan specifies that the most recent versions 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

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-10-011, January 2010

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

4.0 OBSERVATIONS

Groundwater analytical data for VOCs (benzene and chlorobenzenes) and MNA parameters are presented in Table 2 and 3, respectively. Figures 4, 5 and 6 show the 2Q15 concentrations of benzene and total chlorobenzene in the SHU, MHU and DHU, respectively. Results are discussed below.

4.1 Benzene

Benzene was detected in ten (10) of the twelve (12) monitoring wells at concentrations ranging from 11 µg/L (CPA-A-SHU) to 190,000 µg/L (CPA-B-MHU).

- Shallow Hydrogeologic Unit: Benzene was detected in three (3) out of four (4) wells in the SHU with concentrations ranging from 11 µg/L (CPA-A-SHU) to 6,400 µg/L (CPA-D-SHU).
- Middle Hydrogeologic Unit: Benzene was detected in four (4) out of four (4) wells in the MHU with concentrations ranging from 440 µg/L (CPA-A-MHU) to 190,000 µg/L (CPA-B-MHU).
- Deep Hydrogeologic Unit: Benzene was detected in three (3) out of four (4) wells in the DHU with concentrations ranging from 85 µg/L (CPA-A-DHU) to 5,900 µg/L (CPA-C-DHU and AD).

4.2 Chlorobenzene (Total)

Total chlorobenzene (i.e., sum of chlorobenzene, 1,2-dichlorobenzne, 1,3-dichlorobenzne, and 1,4-dichlorobenzne) was detected in twelve (12) of the twelve (12) wells at concentrations ranging from 105.1 µg/L (CPH-A-MHU) to 213,000 µg/L (CPA-C-MHU). Total chlorobenzene results are summarized below.

- Shallow Hydrogeologic Unit: Total chlorobenzene was detected in four (4) out of four (4) wells in the SHU with concentrations ranging from 1,268 µg/L (CPA-A-SHU) to 150,000 µg/L (CPA-D-SHU).
- Middle Hydrogeologic Unit: Total chlorobenzene was detected in four (4) out of four (4) wells in the MHU with concentrations ranging from 105.1 µg/L (CPA-A-MHU) to 213,000 µg/L (CPA-C-MHU).
- Deep Hydrogeologic Unit: Total chlorobenzene was detected in four (4) out of four (4) wells in the DHU with concentrations ranging from 990 µg/L (CPA-A-DHU) to 112,000 µg/L (CPA-B-DHU).

4.3 Monitored Natural Attenuation

MNA parameter data for this quarter are presented in Table 3. Laboratory results for PLFA and SIP analysis are included in Appendix E. The SIP study (Appendix E) states the following, “Incorporation of

^{13}C [carbon-13] into the biomass in all four wells conclusively demonstrated that chlorobenzene biodegradation occurred under existing site conditions".

5.0 CLOSING

Golder appreciates the opportunity to assist Solutia Inc. with the Chlorobenzene Process Area Groundwater Monitoring Program sampling events. Please contact the undersigned if you need additional information.

Sincerely,

GOLDER ASSOCIATES INC.

Lori A. Bindner
Geological Engineer

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

Mark R. Sandfort, R.G., P.E.
Principal, Program Leader

6.0 REFERENCES

Solutia Inc., 2009. Revised Long Term Monitoring Program Work Plan, Solutia Inc., W.G. Krummrich Facility, Sauget, Illinois, May 2009.

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

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

FIGURES

FORMER CHLOROBENZENE PROCESS AREA

STERLING STEEL

SITE H

SITE L

SITE M

DEAD CREEK

SITE I

SITE G

CERRO COPPER

CONTAINMENT CELL

W.G. KRUMMRICH FACILITY

AFTON CHEMICAL

MONSANTO AVENUE

QUEENY AVE

ROUTE 3

MIDWEST RUBBER

BIG RIVER ZINC

ROUTE 3

CENTER ETHANOL COMPANY, LLC.

LOT F

SITE O

SITE P

AMEREN

PCHEM POTW

AMERICAN BOTTOMS POTW

CLAYTON CHEMICAL

SITE S

VEOLIA INCINERATION

IDOT DEWATERING WELL SYSTEM

KINDER MORGAN

SITE R

SITE Q

BARRIER WALL

GROUNDWATER PUMPING WELLS

MISSISSIPPI RIVER

LEGEND

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

0 500 1000
SCALE FEET

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

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-05-27
PREPARED	LAB
DESIGN	LAB
REVIEW	AWD
APPROVED	MNH

PROJECT
CHLOROBENZENE PROCESS AREA
2ND QUARTER 2015 DATA REPORT

TITLE
SITE LOCATION MAP

PROJECT No.	PHASE	Rev.	FIGURE
140-3345	0024	0	1

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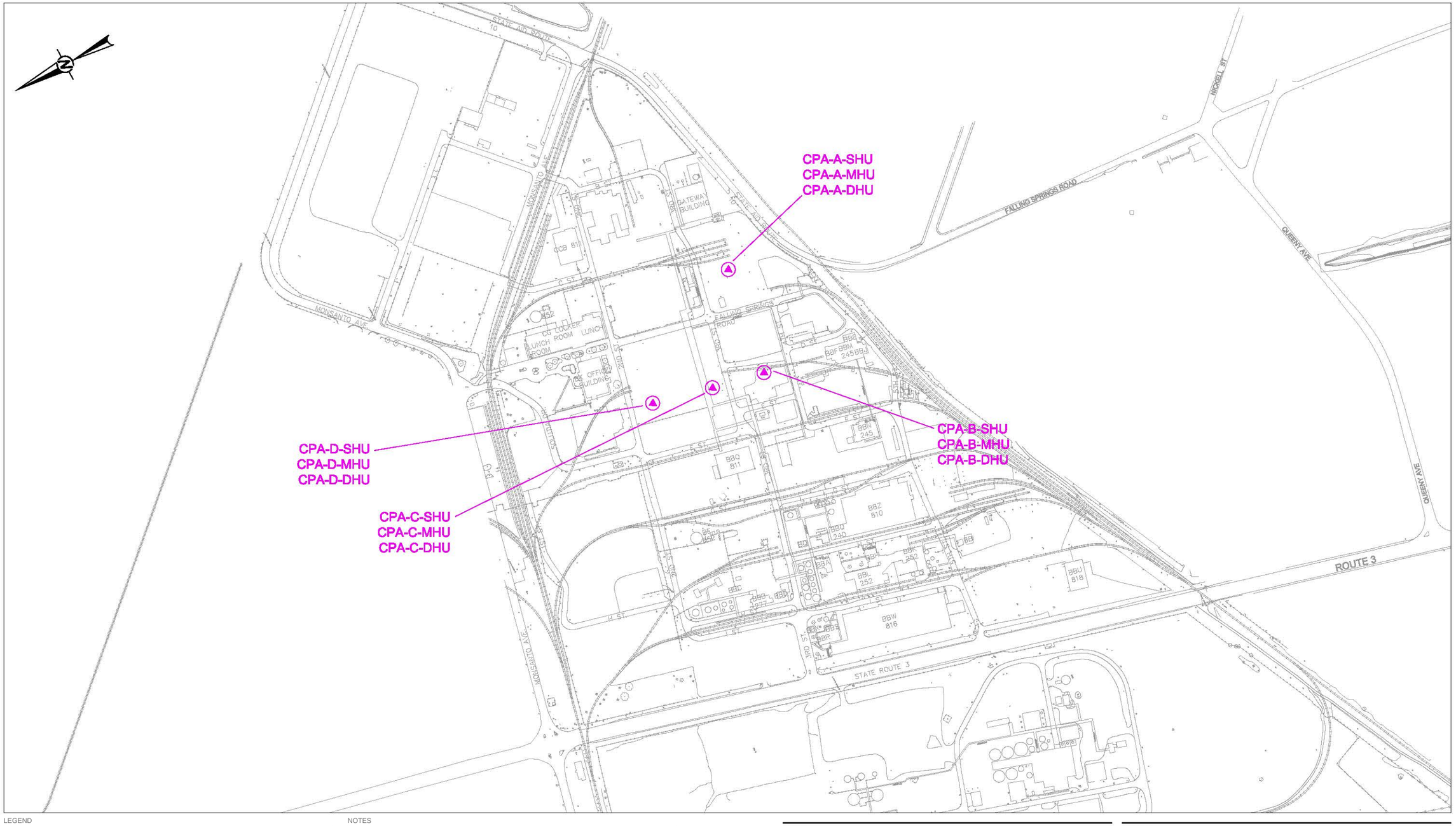

LEGEND

CPA MONITORING WELL LOCATIONS

NOTES

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

0 200 400
SCALE FEET

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

CONSULTANT

Golder Associates

YYYY-MM-DD	2015-05-27
PREPARED	LAB
DESIGN	LAB
REVIEW	AWD
APPROVED	MNH

PROJECT
CHLOROBENZENE PROCESS AREA
2ND QUARTER 2015 DATA REPORT

TITLE
CPA GROUNDWATER MONITORING PROGRAM WELL LOCATIONS

PROJECT No.	PHASE:	Rev.	FIGURE:
140-3345	0024	0	2

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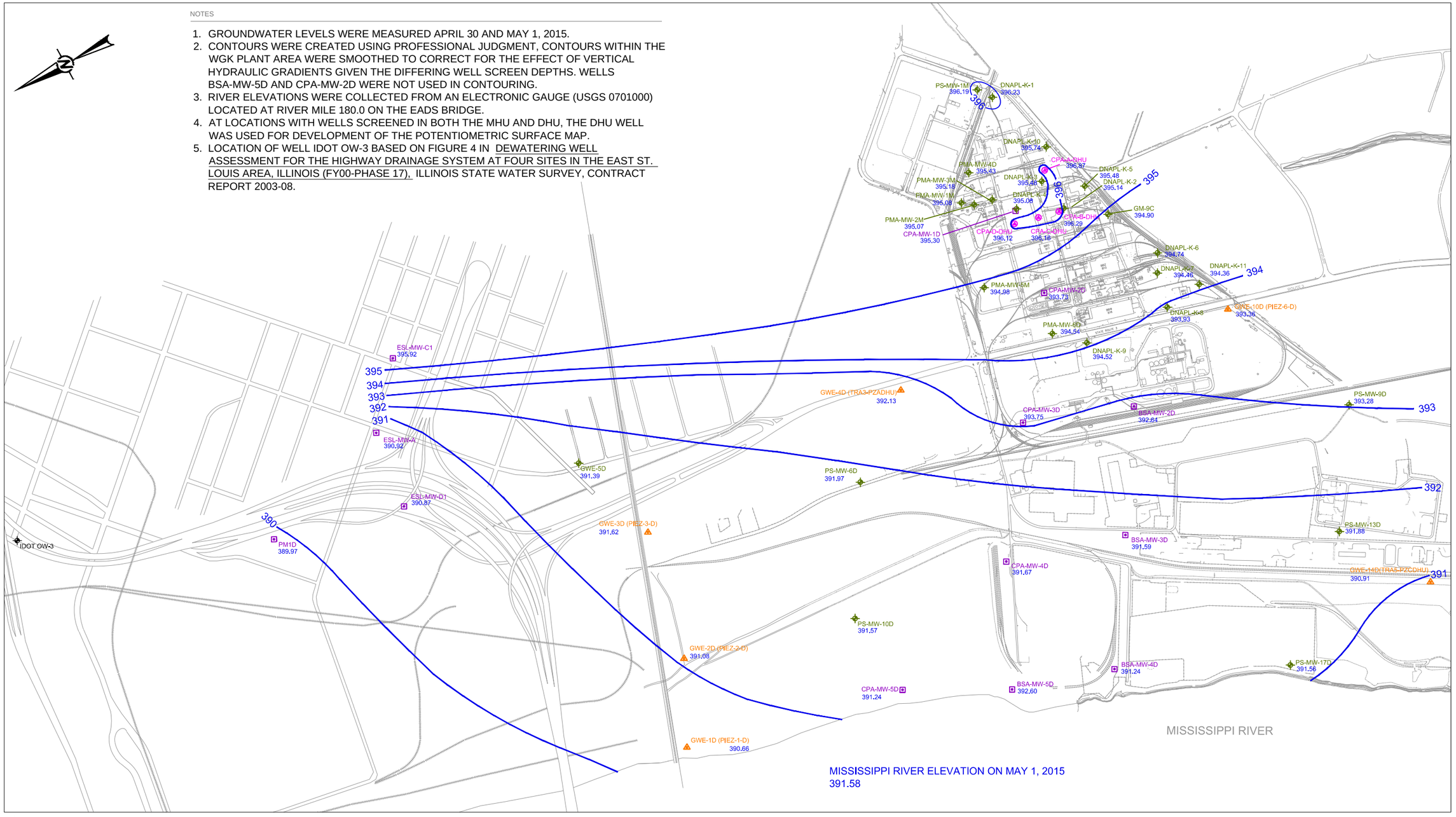
NOTES

1. GROUNDWATER LEVELS WERE MEASURED APRIL 30 AND MAY 1, 2015.
2. CONTOURS WERE CREATED USING PROFESSIONAL JUDGMENT, CONTOURS WITHIN THE WGK PLANT AREA WERE SMOOTHED TO CORRECT FOR THE EFFECT OF VERTICAL HYDRAULIC GRADIENTS GIVEN THE DIFFERING WELL SCREEN DEPTHS. WELLS BSA-MW-5D AND CPA-MW-2D WERE 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. 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.



LEGEND

- LONG-TERM MONITORING WELL USED FOR GROUNDWATER CONTOURING
- OTHER MONITORING WELL USED FOR GROUNDWATER CONTOURING
- PIEZOMETER CLUSTER USED FOR GROUNDWATER CONTOURING
- CPA MONITORING WELL LOCATION
- IDOT GROUNDWATER WELL
- 390 GROUNDWATER ELEVATION CONTOUR (FT NAVD)

0 500 1000
SCALE FEET

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

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-05-27
PREPARED	LAB
DESIGN	LAB
REVIEW	AWD
APPROVED	MNH

PROJECT
CHLOROBENZENE PROCESS AREA
2ND QUARTER 2015 DATA REPORT

TITLE
POTENTIOMETRIC SURFACE MAP
MIDDLE/DEEP HYDROGEOLOGIC UNIT

PROJECT No.	PHASE	Rev.	FIGURE:
140-3345	0024	0	3

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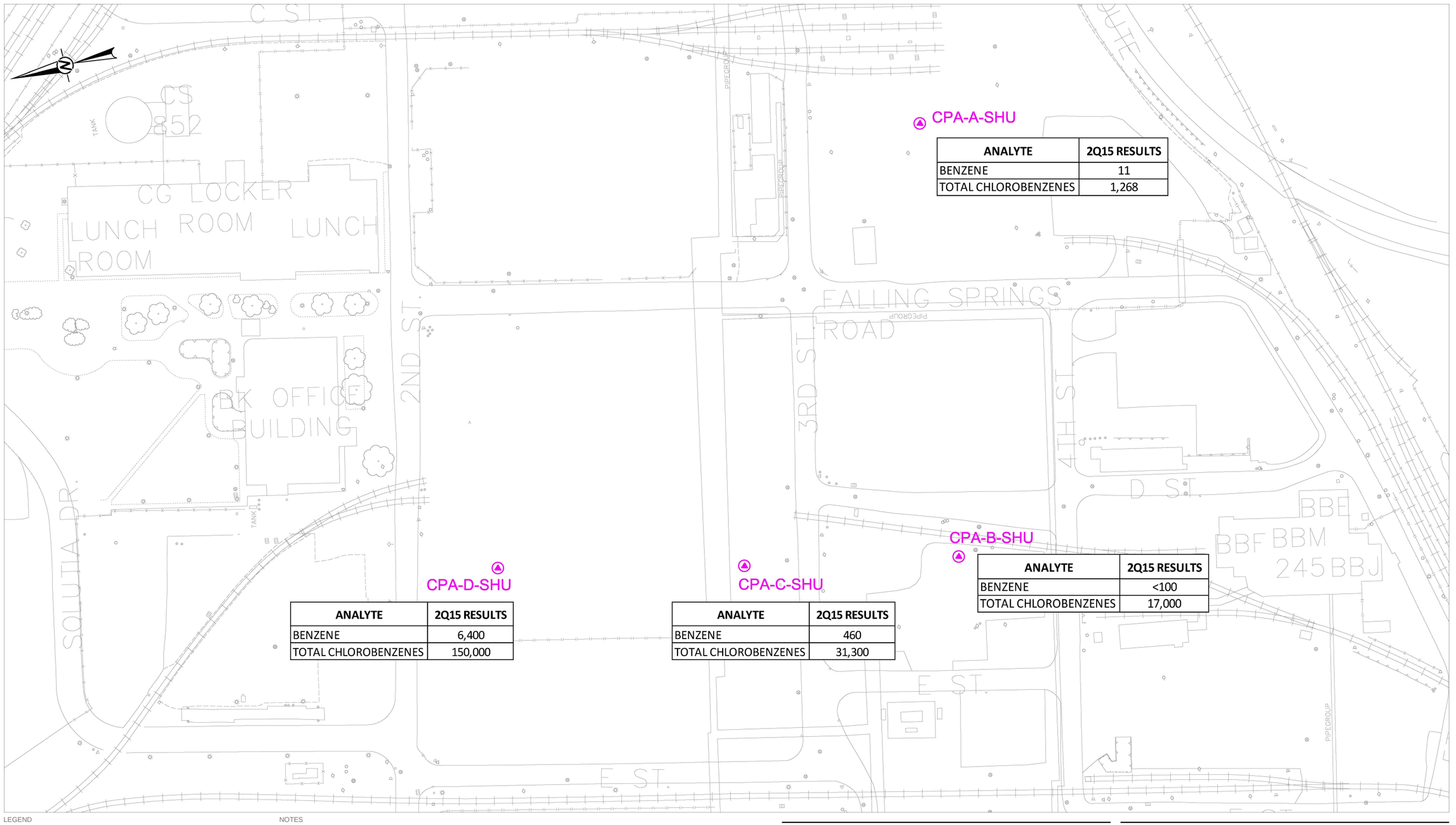

ANALYTE	2Q15 RESULTS
BENZENE	11
TOTAL CHLOROBENZENES	1,268

ANALYTE	2Q15 RESULTS
BENZENE	<100
TOTAL CHLOROBENZENES	17,000

ANALYTE	2Q15 RESULTS
BENZENE	460
TOTAL CHLOROBENZENES	31,300

ANALYTE	2Q15 RESULTS
BENZENE	6,400
TOTAL CHLOROBENZENES	150,000

LEGEND

CPA MONITORING WELL LOCATION

NOTES

1. TOTAL CHLOROBENZENES RESULTS INCLUDE THE SUM OF CHLOROBENZENE, 1,2-DICHLOROBENZENE, 1,3-DICHLOROBENZENE, AND 1,4-DICHLOROBENZENE.
2. RESULTS SHOWN ARE IN µg/L.

0 50 100
SCALE FEET

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

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-07-01
PREPARED	LAB
DESIGN	LAB
REVIEW	AWD
APPROVED	MNH

PROJECT
CHLOROBENZENE PROCESS AREA
2ND QUARTER 2015 DATA REPORT

TITLE
BENZENE AND TOTAL CHLOROBENZENES RESULTS SHALLOW HYDROGEOLOGIC UNIT

PROJECT No.	PHASE:	Rev.	FIGURE:
140-3345	0024	0	4

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

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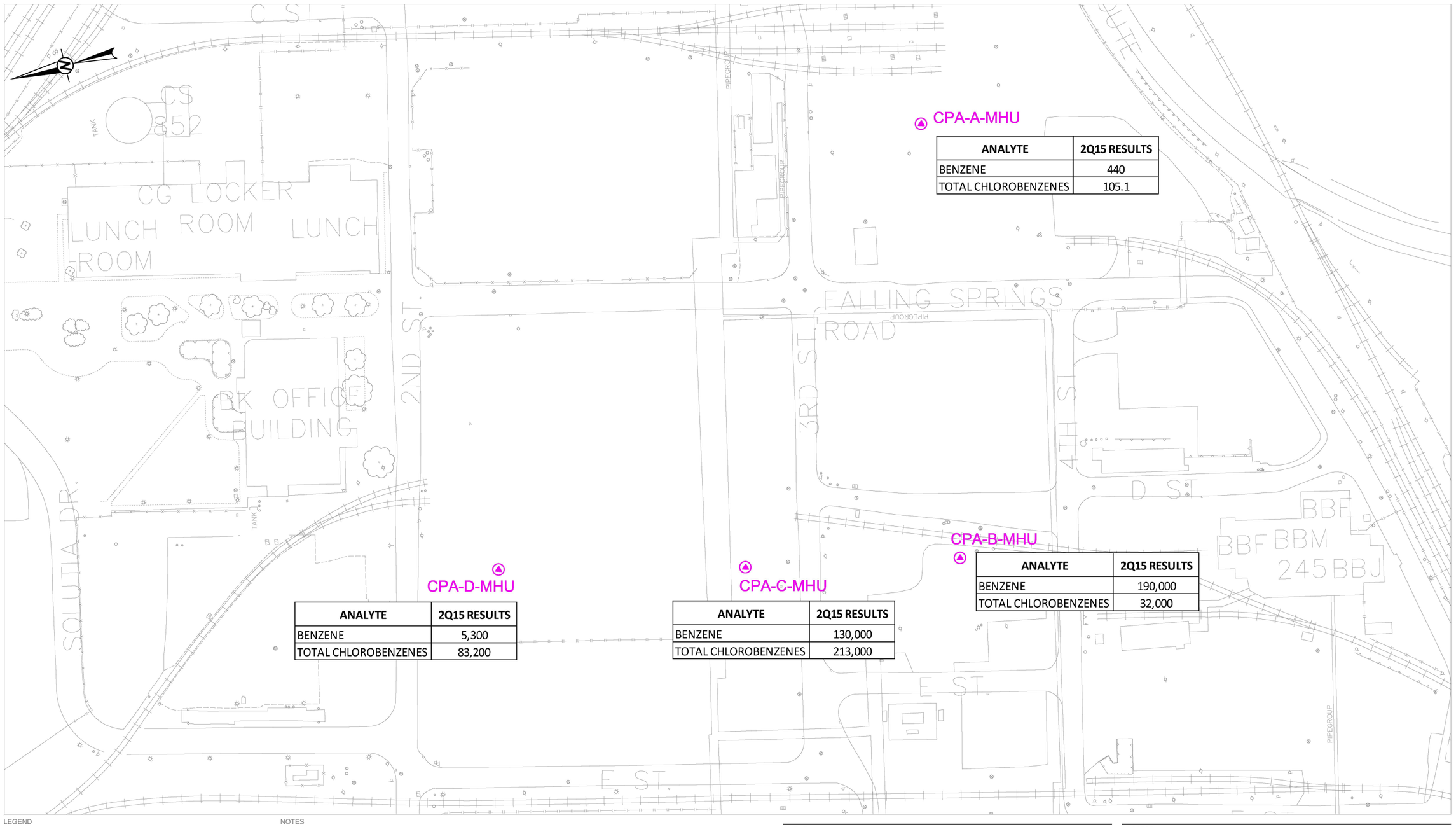

CPA-A-MHU

ANALYTE	2Q15 RESULTS
BENZENE	440
TOTAL CHLOROBENZENES	105.1

CPA-B-MHU

ANALYTE	2Q15 RESULTS
BENZENE	190,000
TOTAL CHLOROBENZENES	32,000

CPA-C-MHU

ANALYTE	2Q15 RESULTS
BENZENE	130,000
TOTAL CHLOROBENZENES	213,000

CPA-D-MHU

ANALYTE	2Q15 RESULTS
BENZENE	5,300
TOTAL CHLOROBENZENES	83,200

LEGEND

CPA MONITORING WELL LOCATION

NOTES

1. TOTAL CHLOROBENZENES RESULTS INCLUDE THE SUM OF CHLOROBENZENE, 1,2-DICHLOROBENZENE, 1,3-DICHLOROBENZENE, AND 1,4-DICHLOROBENZENE.
2. RESULTS SHOWN ARE IN µg/L.

0 50 100
SCALE FEET

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

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-05-27
PREPARED	LAB
DESIGN	LAB
REVIEW	AWD
APPROVED	MNH

PROJECT
CHLOROBENZENE PROCESS AREA
2ND QUARTER 2015 DATA REPORT

TITLE
BENZENE AND TOTAL CHLOROBENZENES RESULTS MIDDLE HYDROGEOLOGIC UNIT

PROJECT No.	PHASE	Rev.	FIGURE
140-3345	0024	0	5

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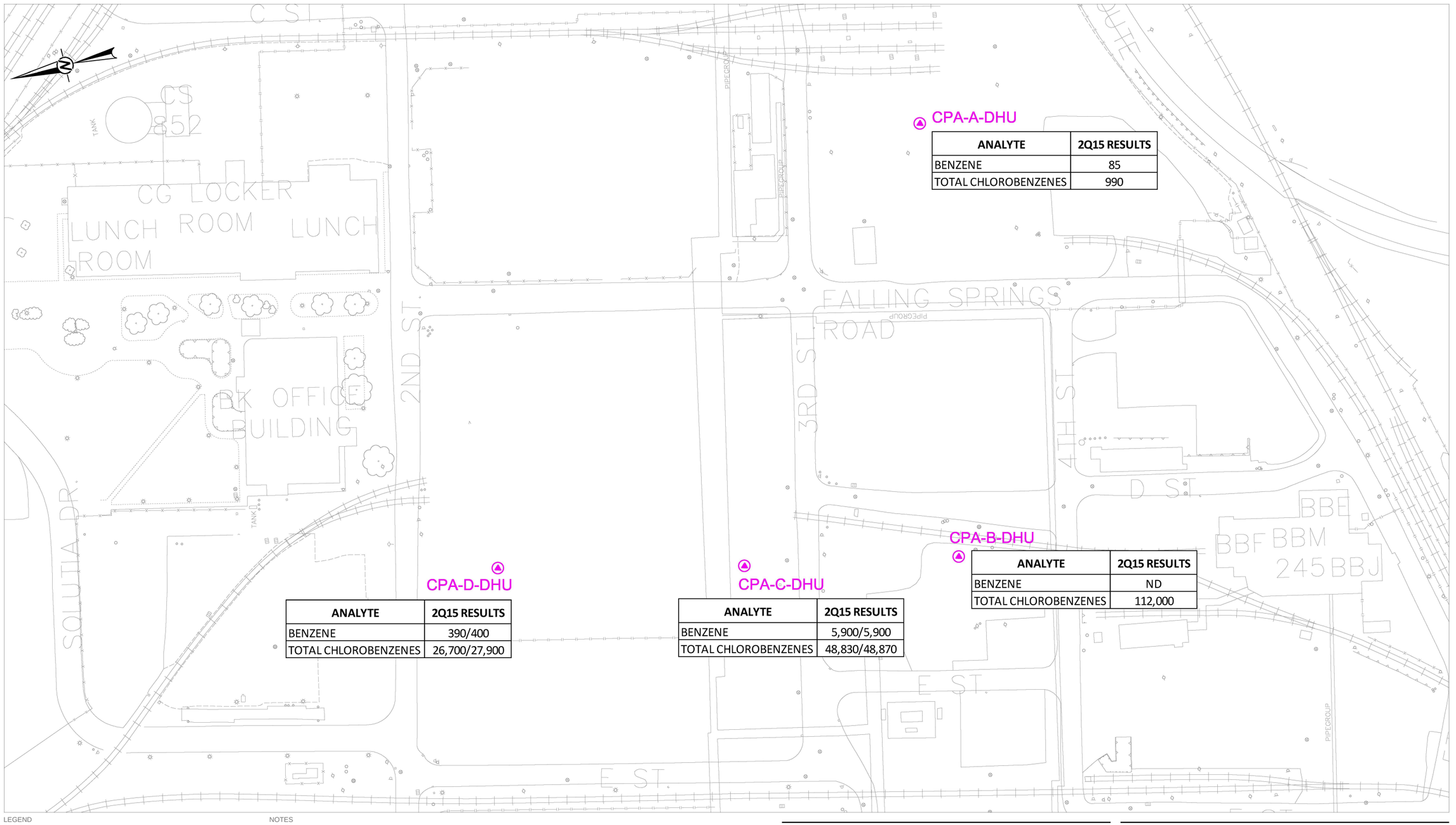

CPA-A-DHU

ANALYTE	2Q15 RESULTS
BENZENE	85
TOTAL CHLOROBENZENES	990

CPA-B-DHU

ANALYTE	2Q15 RESULTS
BENZENE	ND
TOTAL CHLOROBENZENES	112,000

CPA-C-DHU

ANALYTE	2Q15 RESULTS
BENZENE	5,900/5,900
TOTAL CHLOROBENZENES	48,830/48,870

CPA-D-DHU

ANALYTE	2Q15 RESULTS
BENZENE	390/400
TOTAL CHLOROBENZENES	26,700/27,900

LEGEND

CPA MONITORING WELL LOCATION

NOTES

1. TOTAL CHLOROBENZENES RESULTS INCLUDE THE SUM OF CHLOROBENZENE, 1,2-DICHLOROBENZENE, 1,3-DICHLOROBENZENE, AND 1,4-DICHLOROBENZENE.
2. RESULTS SHOWN ARE IN µg/L.
3. MULTIPLE SAMPLE RESULTS INDICATE DUPLICATE SAMPLES.

0 50 100
SCALE FEET

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

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-05-27
PREPARED	LAB
DESIGN	LAB
REVIEW	AWD
APPROVED	MNH

PROJECT
CHLOROBENZENE PROCESS AREA
2ND QUARTER 2015 DATA REPORT

TITLE
BENZENE AND TOTAL CHLOROBENZENES RESULTS
DEEP HYDROGEOLOGIC UNIT

PROJECT No.	PHASE	Rev.	FIGURE
140-3345	0024	0	6

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
2Q15 CPA Groundwater Monitoring Program
Solutia Inc., W.G. Krummrich Facility
Sauget, Illinois

Well Identification	Monitoring Well Construction Data						2Q15 - April 30 and May 1, 2015			
	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										
CPA-A-SHU	413.97	416.35	28.00	33.00	385.97	380.97	19.26	NP	35.35	397.09
CPA-B-SHU	409.16	408.84	21.00	25.40	388.16	383.76	11.38	NP	25.06	397.46
CPA-C-SHU	408.86	408.46	21.00	25.80	387.86	383.06	11.62	NP	25.31	396.84
CPA-D-SHU	409.73	412.38	21.00	25.40	388.73	384.33	15.48	NP	28.04	396.90
MHU 380-350 ft NAVD 88										
CPA-A-MHU	413.98	416.25	58.00	62.20	355.98	351.78	19.15	NP	65.30	397.10
CPA-B-MHU	409.13	408.76	51.00	55.50	358.13	353.63	12.33	NP	55.10	396.43
CPA-C-MHU	408.90	408.57	51.00	55.50	357.90	353.40	12.38	NP	54.61	396.19
CPA-D-MHU	409.72	412.32	51.00	55.80	358.72	353.92	16.12	NP	58.37	396.20
DHU 350 ft NAVD 88 - Bedrock										
CPA-A-DHU	413.95	416.24	108.00	113.30	305.95	300.65	19.37	NP	115.23	396.87
CPA-B-DHU	409.12	408.68	101.00	106.50	308.12	302.62	12.39	NP	105.57	396.29
CPA-C-DHU	408.92	408.57	101.00	106.00	307.92	302.92	12.41	NP	105.57	396.16
CPA-D-DHU	409.63	412.20	101.00	105.90	308.63	303.73	16.08	NP	108.31	396.12

Notes
ft - feet
bgs - below ground surface
btoc - below top of casing
NP - no product observed
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: LAB 5/22/2015
Checked By: EPW 5/27/2015
Reviewed By: AWD 7/6/2015

Table 2
Groundwater Analytical Results
2Q15 CPA Groundwater Monitoring Program
Solutia Inc., W.G. Krummrich Facility
Sauget, Illinois

Sample Identification	Sample Date	VOCs (µg/L)				
		Benzene	Chlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene
SHU						
CPA-A-SHU-0515	5/11/2015	**11 D**	**1,000 D**	**18 D**	<10	**250 D**
CPA-B-SHU-0515	5/11/2015	<100	**17,000 D**	<100	<100	<100
CPA-C-SHU-0515	5/12/2015	**460 D**	**8,400 D**	**13,000 D**	**1,400 D**	**8,500 D**
CPA-D-SHU-0515	5/12/2015	**6,400 D**	**150,000 D**	<1,000	<1,000	<1,000
MHU						
CPA-A-MHU-0515	5/11/2015	**440 D**	**100 D**	<5.0	<5.0	**5.1 D**
CPA-B-MHU-0515	5/11/2015	**190,000 D**	**32,000 D**	<1,000	<1,000	<1,000
CPA-C-MHU-0515	5/12/2015	**130,000 D**	**180,000 D**	**15,000 D**	<2,000	**18,000 D**
CPA-D-MHU-0515	5/12/2015	**5,300 D**	**47,000 D**	**21,000 D**	**1,200 D**	**14,000 D**
DHU						
CPA-A-DHU-0515	5/11/2015	**85 D**	**260 D**	**300 D**	**40 D**	**390 D**
CPA-B-DHU-0515	5/11/2015	<1,000	**44,000 D**	**24,000 D**	<1,000	**44,000 D**
CPA-C-DHU-0515	5/12/2015	**5,900 D**	**22,000 D**	**10,000 D**	**830 D**	**16,000 D**
CPA-C-DHU-0515-AD	5/12/2015	**5,900 D**	**23,000 D**	**10,000 D**	**870 D**	**15,000 D**
CPA-D-DHU-0515	5/12/2015	**390 D**	**21,000 D**	**2,800 D**	**400 D**	**2,500 D**
CPA-D-DHU-0515-AD	5/12/2015	**400 D**	**22,000 D**	**2,900 D**	**400 D**	**2,600 D**

Notes
µg/L - micrograms per liter
< - result is non-detect, less than the reporting limit
D - compound analyzed at a dilution
AD - analytical duplicate
Bold - indicates concentration greater than reporting limit

Prepared By: LAB 5/28/2015
Checked By: JRS 7/2/2015
Reviewed By: AWD 7/6/2015

Table 3
Monitored Natural Attenuation Results
2Q15 CPA Groundwater Monitoring Program
Solutia Inc., W.G. Krummrich Facility
Sauget, Illinois

Sample Identification	Sample Date	Monitored Natural Attenuation Parameters																
		Alkalinity (mg/L)	Carbon Dioxide (mg/L)	Chloride (mg/L)	Dissolved Oxygen (mg/L)	Ethane (ug/L)	Ethylene (ug/L)	Ferrous Iron (mg/L)	Iron (mg/L)	Iron, Dissolved (mg/L)	Manganese (mg/L)	Manganese, Dissolved (mg/L)	Methane (ug/L)	Nitrogen, Nitrate (mg/L)	Sulfate as SO4 (mg/L)	Total Organic Carbon (mg/L)	Dissolved Organic Carbon (mg/L)	ORP (mV)
SHU																		
CPA-A-SHU-0515	5/11/2015	440	34	120 D	0.30	5.9	<1.0	-	13	-	2.3	-	2,900	0.072	260 D	8.4	-	-47.52
CPA-A-SHU-F(0.2)-0515	5/11/2015	-	-	-	-	-	-	>3.30	-	14	-	2.3	-	-	-	-	4.9	-
CPA-B-SHU-0515	5/11/2015	500	110	97 D	0.12	<1.1	<1.0	-	28	-	3.4	-	44	<0.050	290 D	3.8	-	-31.61
CPA-B-SHU-F(0.2)-0515	5/11/2015	-	-	-	-	-	-	>3.30	-	26	-	3.3	-	-	-	-	3.1	-
CPA-C-SHU-0515	5/12/2015	600	190	220 D	0.05	<1.1	<1.0	-	0.39	-	10	-	93	0.29 D	1,100 D	250 D	-	87.94
CPA-C-SHU-F(0.2)-0515	5/12/2015	-	-	-	-	-	-	0.00	-	0.13	-	10	-	-	-	-	240 D	-
CPA-D-SHU-0515	5/12/2015	<5.0	<5.0	320 D	0.18	<1.1	<1.0	-	39	-	3.5	-	49	19 D	1,700 D	220 D	-	206.30
CPA-D-SHU-F(0.2)-0515	5/12/2015	-	-	-	-	-	-	>3.30	-	40	-	3.6	-	-	-	-	110 D	-
MHU																		
CPA-A-MHU-0515	5/11/2015	710	34	79 D	0.10	12	<1.0	-	2.1	-	1.1	-	14,000	<0.050	<25	7.4	-	-129.08
CPA-A-MHU-F(0.2)-0515	5/11/2015	-	-	-	-	-	-	1.55	-	2.1	-	1.1	-	-	-	-	7.8	-
CPA-B-MHU-0515	5/11/2015	400	100	270 D	0.08	160	<1.0	-	34	-	1.9	-	25,000	<0.050	<5.0	24 D	-	-61.64
CPA-B-MHU-F(0.2)-0515	5/11/2015	-	-	-	-	-	-	>3.30	-	33	-	1.9	-	-	-	-	22 D	-
CPA-C-MHU-0515	5/12/2015	330	120	670 D	0.07	13	19	-	110	-	4.6	-	7,900	<0.050	570 D	48 D	-	-76.45
CPA-C-MHU-F(0.2)-0515	5/12/2015	-	-	-	-	-	-	>3.30	-	100	-	4.6	-	-	-	-	42 D	-
CPA-D-MHU-0515	5/12/2015	680	31	220 D	0.05	14	<1.0	-	0.44	-	1.2	-	11,000	<0.050	160 D	77 D	-	-3.62
CPA-D-MHU-F(0.2)-0515	5/12/2015	-	-	-	-	-	-	0.00	-	0.21	-	1.2	-	-	-	-	70 D	-
DHU																		
CPA-A-DHU-0515	5/11/2015	530	20	59 D	0.12	5.3	<1.0	-	5.8	-	0.43	-	5,100	<0.050	98 D	4.5	-	-138.94
CPA-A-DHU-F(0.2)-0515	5/11/2015	-	-	-	-	-	-	>3.30	-	6.0	-	0.43	-	-	-	-	5.0	-
CPA-B-DHU-0515	5/11/2015	480	24	64 D	0.13	<1.1	<1.0	-	10	-	0.65	-	120	<0.050	100 D	7.7	-	-87.35
CPA-B-DHU-F(0.2)-0515	5/11/2015	-	-	-	-	-	-	>3.30	-	9.5	-	0.56	-	-	-	-	7.4	-
CPA-C-DHU-0515	5/12/2015	540	22	59 D	0.06	2.2	<1.0	-	4.8	-	0.65	-	190	<0.050 J	59 D	37 D	-	-67.35
CPA-C-DHU-F(0.2)-0515	5/12/2015	-	-	-	-	-	-	3.10	-	2.6	-	0.63	-	-	-	-	36 D	-
CPA-D-DHU-0515	5/12/2015	570	21	66 D	0.13	7.0	<1.0	-	0.36	-	0.39	-	380	<0.050	42 D	50 D	-	3.85
CPA-D-DHU-F(0.2)-0515	5/12/2015	-	-	-	-	-	-	0.00	-	0.12	-	0.39	-	-	-	-	37 D	-

Notes

Dissolved Oxygen and Oxidation Reduction Potential values represent the final field measurements prior to sampling (In-Situ - SmartTrol™)
Ferrous Iron was field measured using a 0.2 µm field filtered sample (Hach DR-890 Colorimeter
F(0.2) - sample was field filtered using a 0.2 µm filter during sample collectior
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
< - result is non-detect, less than the reporting limit
"-" - not analyzed
D - compound analyzed at a dilution
J - result is an estimated value

Prepared By: LAB 5/28/2015
Checked By: EPW 5/29/2015
Reviewed By: AWD 7/6/2015

APPENDIX A
GROUNDWATER PURGING AND SAMPLING FORMS

In-Situ Inc.

SmartTroll
5/11/2015

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	118.68 ft
		Pump Placement from TOC	112.58 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-A-DHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	852 mL
Well Total Depth	115.23 ft	Calculated Sample Rate	170 sec
Depth to Top of Screen	109.93 ft	Sample Rate	170 sec
Screen Length	5.30 ft	Stabilized Drawdown	0 ft
Depth to Water	19.33		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	9:24:04	16.32	7.09	1407.71	49.80	0.18	-140.77
	9:26:54	16.26	7.07	1403.26	32.20	0.16	-141.76
	9:29:44	16.27	7.06	1396.51	20.40	0.14	-141.45
	9:32:34	16.27	7.07	1387.36	12.20	0.13	-140.25
	9:35:25	16.29	7.06	1383.66	8.89	0.12	-138.94
Variance in Last 3 Readings		0.01	-0.01	-6.75	-11.80	-0.02	0.31
		0.00	0.01	-9.15	-8.20	-0.01	1.2
		0.02	-0.01	-3.70	-3.31	-0.01	1.31

Notes:

In-Situ Inc.

SmartTroll
5/11/2015

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	68.60 ft
		Pump Placement from TOC	63.20 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-A-MHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	572 mL
Well Total Depth	65.30 ft	Calculated Sample Rate	114 sec
Depth to Top of Screen	61.10 ft	Sample Rate	114 sec
Screen Length	4.2 ft	Stabilized Drawdown	0.03 ft
Depth to Water	19.21 ft		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	10:09:18	16.72	7.09	1542.28	24.70	0.16	-126.47
	10:11:12	16.70	7.09	1529.69	20.10	0.13	-127.08
	10:13:06	16.73	7.08	1539.63	14.30	0.12	-127.39
	10:15:00	16.71	7.08	1534.30	10.20	0.11	-128.09
	10:16:54	16.73	7.09	1529.63	7.27	0.10	-129.08
Variance in Last 3 Readings		0.03	-0.01	9.94	-5.80	-0.01	-0.31
		-0.02	0.00	-5.33	-4.10	-0.01	-0.7
		0.02	0.01	-4.67	-2.93	-0.01	-0.99

Notes:

In-Situ Inc.

SmartTroll 5/11/2015

Low-Flow System **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	40.50 ft
		Pump Placement from TOC	32.85 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-A-SHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	416 mL
Well Total Depth	35.35 ft	Calculated Sample Rate	83 sec
Depth to Top of Screen	30.35 ft	Sample Rate	83 sec
Screen Length	5 ft	Stabilized Drawdown	0.14 ft
Depth to Water	19.40 ft		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	11:23:38	17.57	6.85	1523.61	45.20	0.35	-41.02
	11:25:01	17.57	6.84	1560.90	39.40	0.32	-42.96
	11:26:24	17.54	6.84	1594.97	31.00	0.32	-44.37
	11:27:47	17.57	6.83	1615.17	28.50	0.31	-46.02
	11:29:10	17.57	6.83	1637.92	29.10	0.30	-47.52
Variance in Last 3 Readings		-0.03	0.00	34.07	-8.40	0.00	-1.41
		0.03	-0.01	20.20	-2.50	-0.01	-1.65
		0.00	0.00	22.75	0.60	-0.01	-1.50

Notes:

In-Situ Inc.

SmartTroll
5/11/2015

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	111.00 ft
		Pump Placement from TOC	102.82 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-B-DHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	809 mL
Well Total Depth	105.57 ft	Calculated Sample Rate	161 sec
Depth to Top of Screen	100.07 ft	Sample Rate	161 sec
Screen Length	5.5 ft	Stabilized Drawdown	0.04 ft
Depth to Water	12.31 ft		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	12:35:30	17.36	7.08	1316.32	41.80	0.23	-84.72
	12:38:11	17.42	7.07	1315.32	42.30	0.19	-86.02
	12:40:52	17.42	7.07	1314.04	33.90	0.16	-86.69
	12:43:33	17.38	7.07	1313.30	32.40	0.15	-86.98
	12:46:14	17.40	7.06	1313.07	29.20	0.13	-87.35
Variance in Last 3 Readings		0.00	0.00	-1.28	-8.40	-0.03	-0.67
		-0.04	0.00	-0.74	-1.50	-0.01	-0.29
		0.02	-0.01	-0.23	-3.20	-0.02	-0.37

Notes:

In-Situ Inc.

SmartTroll 5/11/2015

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	61.25 ft
		Pump Placement from TOC	52.85 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-B-MHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	531 mL
Well Total Depth	55.10 ft	Calculated Sample Rate	106 sec
Depth to Top of Screen	50.60 ft	Sample Rate	106 sec
Screen Length	4.5 ft	Stabilized Drawdown	0.53
Depth to Water	12.19		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	14:23:23	18.74	6.42	1622.74	35.30	0.10	-55.63
	14:25:09	18.36	6.38	1639.21	30.60	0.11	-56.21
	14:26:55	18.30	6.36	1659.21	19.60	0.09	-58.43
	14:28:41	18.25	6.36	1671.48	14.70	0.08	-60.26
	14:30:27	18.41	6.35	1688.14	12.50	0.08	-61.64
Variance in Last 3 Readings		-0.06	-0.02	20.00	-11.00	-0.02	-2.22
		-0.05	0.00	12.27	-4.90	-0.01	-1.83
		0.16	-0.01	16.66	-2.20	0.00	-1.38

Notes:

In-Situ Inc.

SmartTroll
5/11/2015

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	21.20 ft
		Pump Placement from TOC	22.86 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-B-SHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	308 mL
Well Total Depth	25.06 ft	Calculated Sample Rate	61 sec
Depth to Top of Screen	20.66 ft	Sample Rate	61 sec
Screen Length	4.4 ft	Stabilized Drawdown	1.31 ft
Depth to Water	11.39 ft		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	13:49:18	18.16	6.61	1772.24	65.40	0.15	-29.40
	13:50:19	18.12	6.59	1776.61	56.00	0.14	-30.12
	13:51:20	18.13	6.57	1782.56	43.80	0.13	-30.68
	13:52:21	18.16	6.56	1789.40	37.50	0.13	-31.29
	13:53:22	18.25	6.55	1787.89	32.90	0.12	-31.61
Variance in Last 3 Readings		0.01	-0.02	5.95	-12.20	-0.01	-0.56
		0.03	-0.01	6.84	-6.30	0.00	-0.61
		0.09	-0.01	-1.51	-4.60	-0.01	-0.32

Notes:

In-Situ Inc.

SmartTroll 5/12/2015

Low-Flow System **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	107.5 ft
		Pump Placement from TOC	103.07 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-C-DHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	789 mL
Well Total Depth	105.57 ft	Calculated Sample Rate	157 sec
Depth to Top of Screen	100.57 ft	Sample Rate	157 sec
Screen Length	5 ft	Stabilized Drawdown	0.02 ft
Depth to Water	12.44 ft		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	9:42:16	17.51	7.06	1319.83	111.00	0.09	-67.43
	9:44:53	17.54	7.06	1317.46	84.90	0.08	-67.52
	9:47:30	17.54	7.07	1320.12	67.10	0.08	-67.56
	9:52:44	17.53	7.06	1319.66	47.40	0.07	-67.42
	9:55:21	17.58	7.07	1317.18	45.30	0.06	-67.35
Variance in Last 3 Readings		0.00	0.01	2.66	-17.80	0.00	-0.04
		-0.01	-0.01	-0.46	-19.70	-0.01	0.14
		0.05	0.01	-2.48	-2.10	-0.01	0.07

Notes:

In-Situ Inc.

SmartTroll 5/12/2015

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	61.5 ft
		Pump Placement from TOC	52.36 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-C-MHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	533 mL
Well Total Depth	54.61 ft	Calculated Sample Rate	106 sec
Depth to Top of Screen	50.11 ft	Sample Rate	106 sec
Screen Length	4.5 ft	Stabilized Drawdown	1.02 ft
Depth to Water	12.11 ft		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	10:34:41	18.21	6.27	3053.79	19.40	0.09	-78.97
	10:36:27	18.17	6.26	3118.88	12.80	0.09	-78.34
	10:38:13	18.16	6.25	3187.80	8.40	0.08	-77.59
	10:39:59	18.22	6.25	3237.35	5.54	0.07	-76.79
	10:41:45	18.29	6.25	3270.14	3.99	0.07	-76.45
Variance in Last 3 Readings		-0.01	-0.01	68.92	-4.40	-0.01	0.75
		0.06	0.00	49.55	-2.86	-0.01	0.80
		0.07	0.00	32.79	-1.55	0.00	0.34

Notes:

In-Situ Inc.

SmartTroll
5/12/2015

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	33.50 ft
		Pump Placement from TOC	22.91 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-C-SHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	377 mL
Well Total Depth	25.31 ft	Calculated Sample Rate	75 sec
Depth to Top of Screen	20.51 ft	Sample Rate	75 sec
Screen Length	4.80 ft	Stabilized Drawdown	0.31 ft
Depth to Water	11.67 ft		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	11:19:35	19.67	6.39	3141.87	70.20	0.10	86.89
	11:20:50	18.69	6.34	3223.19	65.30	0.08	88.00
	11:22:05	18.33	6.32	3251.68	48.30	0.07	88.56
	11:23:20	18.25	6.31	3257.66	33.60	0.06	88.25
	11:24:35	18.20	6.30	3258.94	22.40	0.05	87.94
Variance in Last 3 Readings		-0.36	-0.02	28.49	-17.00	-0.01	0.56
		-0.08	-0.01	5.98	-14.70	-0.01	-0.31
		-0.05	-0.01	1.28	-11.20	-0.01	-0.31

Notes:

In-Situ Inc.

SmartTroll 5/12/2015

Low-Flow System **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	111.50 ft
		Pump Placement from TOC	105.86 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-D-DHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	812 mL
Well Total Depth	108.31 ft	Calculated Sample Rate	162 sec
Depth to Top of Screen	103.41 ft	Sample Rate	162 sec
Screen Length	4.90 ft	Stabilized Drawdown	0.12 ft
Depth to Water	16.08 ft		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	12:37:49	17.36	7.29	1364.39	8.24	0.19	5.42
	12:40:31	17.44	7.29	1360.76	9.00	0.17	4.61
	12:43:13	17.57	7.27	1358.86	9.62	0.15	4.00
	12:45:55	17.59	7.26	1359.45	9.54	0.14	3.96
	12:48:40	17.63	7.26	1356.07	9.33	0.13	3.85
Variance in Last 3 Readings		0.13	-0.02	-1.90	0.62	-0.02	-0.61
		0.02	-0.01	0.59	-0.08	-0.01	-0.04
		0.04	0.00	-3.38	-0.21	-0.01	-0.11

Notes:

In-Situ Inc.

SmartTroll
5/12/2015

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	60.00 ft
		Pump Placement from TOC	55.97 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-D-MHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	525mL
Well Total Depth	58.37 ft	Calculated Sample Rate	104 sec
Depth to Top of Screen	53.57 ft	Sample Rate	104 sec
Screen Length	4.8 ft	Stabilized Drawdown	0.02 ft
Depth to Water	16.17 ft		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	13:32:56	17.71	7.11	2093.15	27.70	0.07	-1.95
	13:34:40	17.74	7.11	2105.35	20.90	0.06	-2.31
	13:36:24	17.74	7.09	2105.48	16.60	0.06	-2.80
	13:38:08	17.80	7.08	2117.72	14.70	0.05	-3.40
	13:39:52	17.67	7.08	2124.77	11.60	0.05	-3.62
Variance in Last 3 Readings		0.00	-0.02	0.13	-4.30	0.00	-0.49
		0.06	-0.01	12.24	-1.90	-0.01	-0.60
		-0.13	0.00	7.05	-3.10	0.00	-0.22

Notes:

In-Situ Inc.

SmartTroll 5/12/2015

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	LAB	Pump Model/Type	SS Monsoon
Company Name	Golder Associates	Tubing Type	LDPE
Project Name	W.G. Krummrich	Tubing Diameter	0.19 in
Site Name	CPA	Tubing Length	31.00 ft
		Pump Placement from TOC	25.84 ft

Well Information:		**Pumping Information:**	
Well Id	CPA-D-SHU	Final Pumping Rate	300 mL/min
Well Diameter	2 in	System Volume	363 mL
Well Total Depth	28.04 ft	Calculated Sample Rate	72 sec
Depth to Top of Screen	23.64 ft	Sample Rate	72 sec
Screen Length	4.4 ft	Stabilized Drawdown	0.01 ft
Depth to Water	16.10 ft		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-0.1 +/-3%	+/-1 +/-10%	+/-0.2 +/-10%	+/-20
Last 5 Readings	14:11:47	17.39	4.29	3688.69	62.70	0.14	210.15
	14:13:00	17.36	4.27	3690.40	58.70	0.14	209.34
	14:14:12	17.35	4.26	3704.12	47.40	0.15	207.89
	14:15:24	17.24	4.25	3730.53	43.90	0.16	206.98
	14:16:36	17.22	4.24	3730.83	36.90	0.18	206.30
Variance in Last 3 Readings		-0.01	-0.01	13.72	-11.30	0.01	-1.45
		-0.11	-0.01	26.41	-3.50	0.01	-0.91
		-0.02	-0.01	0.30	-7.00	0.02	-0.68

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

Regulatory Program: ☐ DW ☐ NPDES ☑ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Amanda Derhake	Site Contact: Lori Bindner	Date: 5/11/15	COC No:
Golder Associates Inc.	Tel/Fax: 636-724-9191	Lab Contact: Michele Kersey	Carrier: FedEx	1 of 2 COCs
820 South Main Street	Analysis Turnaround Time			Sampler:
St Charles, MO 63301	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(636) 724-9191 Phone	TAT if different from Below Standard			Walk-in Client:
(636) 724-9323 FAX	☐ 2 weeks			Lab Sampling:
Project Name: 2Q15 CPA GW Sampling - 1403345	☐ 1 week			Job / SDG No..
Site: Solutia WG Krummrich Facility	☐ 2 days			
P O # 42447936	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Dissolved Gases by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
CPA-A-DHU-0515	5/11/15	0935	G	W	13	N		2	1	1	1	3	2	3			#2 Coolers
CPA-A-DHU-F(0.2)-0515		1			4	Y									1	3	
CPA-A-MHU-0515		1015			13	N		2	1	1	1	3	2	3			
CPA-A-MHU-F(0.2)-0515					4	Y									1	3	
CPA-A-MHU-0515-MS					2	N		2									
CPA-A-MHU-0515-MSD		1			2	N		2									
CPA-A-SHU-0515		1100			13	N		2	1	1	1	3	2	3			
CPA-A-SHU-F(0.2)-0515		1			4	Y									1	3	
CPA-B-DHU-0515		1245			13	N		2	1	1	1	3	2	3			
CPA-B-DHU-F(0.2)-0515		1			4	Y									1	3	
CPA-B-MHU-0515		1430			13	N		2	1	1	1	3	2	3			
CPA-B-MHU-~~0515~~F(0.2)-0515		1			4	Y									1	3	
CPA-B-MHU-0515-EB		1500			2	N		2									
								2	4	1	1	2	3	1	3	4	3

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

680-112441 Chain of Custody

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
VOC headspace upon sampling. Yes/No

3.2/3.6
0.8 1.2

680-112441

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: 337181/337182		Cooler Temp. (°C): Obs'd: _____ Corr'd _____		Therm ID No.: _____
Relinquished by:	Company: Golder	Date/Time: 5/11/15/1700	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time: 5/12/15 0932

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

5/27/2015

TestAmerica Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912.354 7858 fax

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☑ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Amanda Derhake	Site Contact: Lori Bindner	Date: 5/11/15	COC No:
Golder Associates Inc.	Tel/Fax: 636-724-9191	Lab Contact: Michele Kersey	Carrier: FedEx	2 of 2 COCs
820 South Main Street	Analysis Turnaround Time			Sampler:
St. Charles, MO 63301	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(636) 724-9191 Phone	TAT if different from Below Standard			Walk-in Client:
(636) 724-9323 FAX	☑ 2 weeks			Lab Sampling:
Project Name: 2Q15 CPA GW Sampling - 1403345	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			Job / SDG No :
P O # 42447936	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 326.2/Sulfate by 375.4	Dissolved Gases by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
CPA-B-SHU-0515	5/11/15	1354	G	W	13	N		2	1	1	1	3	2	3			*2 coolers
CPA-B-SHU-F(0.2)-0515	1	1	1	1	4	F									1	3	
2015 CPA Trip Blank #1	—	—	—		2	N		2									

Preservation Used: 1= Ice, 2= HCL; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____ | 2 | 4 | 1 | 1 | 2 | 3,1 | 3 | 4 | 3 |

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
VOC headspace upon sampling: Yes (No)

3.2/3.6
0.8/1.2

680-11244-1

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: 337181/337182	Cooler Temp (°C): Obs'd: _____ Corr'd _____	Therm ID No.: _____

Relinquished by	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Golder	5/11/15 1700			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Company:	Date/Time: 5/12/15 0932

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

TestAmerica Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912 354.7858 fax

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☑ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Amanda Derhake	Site Contact: Lori Bindner	Date:	COC No
Golder Associates Inc.	Tel/Fax: 636-724-9191	Lab Contact: Michele Kersey	Carrier: FedEx	1 of 2 COCs
820 South Main Street	Analysis Turnaround Time			Sampler:
St. Charles, MO 63301	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(636) 724-9191 Phone	TAT if different from Below Standard			Walk-in Client:
(636) 724-9323 FAX	☑ 2 weeks			Lab Sampling:
Project Name: 2Q15 CPA GW Sampling - 1403345	☐ 1 week			Job / SDG No.:
Site: Solutia WG Krummrich Facility	☐ 2 days			
P O # 42447936	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Dissolved Gases by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes.
CPA-C-DHU-0515	5/12/15	0955	G	W	13	N		2	1	1	1	3	2	3			* 2 coolers
CPA-C-DHU-F(0.2)-0515	"	"	"	"	4	Y									1	3	
CPA-C-DHU-0515-AD	"	"	"	"	2	N		2									
CPA-C-MHU-0515	"	1041	"	"	13	N		2	1	1	1	3	2	3			
CPA-C-MHU-F(0.2)-0515	"	"	"	"	4	Y									1	3	
CPA-C-SHU-0515	"	1125	"	"	13	N		2	1	1	1	3	2	3			
CPA-C-SHU-F(0.2)-0515	"	"	"	"	4	N									1	3	
CPA-C-MHU-0515-EB	"	1105	"	"	2	Y		2									
CPA-D-DHU-0515	"	1245	"	"	13	N		2	1	1	1	3	2	3			
CPA-D-DHU-F(0.2)-0515	"	"	"	"	4	Y									1	3	
CPA-D-DHU-0515-AD	"	"	"	"	2	N		2									
CPA-D-MHU-0515	"	1340	"	"	13	N		2	1	1	1	3	2	3			
CPA-D-MHU-F(0.2)-0515	"	"	"	"	4	Y									1	3	
Preservation Used: 1= Ice, 2=HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other								2	4	1	1	2	3,1	3	4	3	

680-112468 Chain of Custody

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed i

☐ Return to Client ☑ Disposal by Lab ☐ Archive for_____ Months

Special Instructions/QC Requirements & Comments:
VOC headspace upon sampling: Yes (No)

3.0 at 24 at
4.2 / 4.6 at

680-112468

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: 337185 / 337184 | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company:	Date/Time:	Received by	Company:	Date/Time:
[signature]	Golder	5/12/15			
Relinquished by	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Company: TA	Date/Time: 5/13/15 09:18

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

5/27/2015

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: ☐ DW ☐ NPDES ☑ RCRA ☐ Other:

Client Contact	Project Manager: Amanda Derhake	Site Contact: Lori Bindner	Date:	COC No.
Golder Associates Inc	Tel/Fax: 636-724-9191	Lab Contact: Michele Kersey	Carrier: FedEx	2 of 2 COCs
820 South Main Street	Analysis Turnaround Time			Sampler:
St. Charles, MO 63301	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(636) 724-9191 Phone	TAT if different from Below Standard			Walk-in Client:
(636) 724-9323 FAX	☑ 2 weeks			Lab Sampling:
Project Name: 2Q15 CPA GW Sampling - 1403345	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			Job / SDG No.:
P O # 42447936	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Dissolved Gases by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
CPA-D-SHU-0515	5/12/15	1416	G	W	13	N		3	1	1	1	3	2	3			*2 Coolers
CPA-D-SHU-F(0.2)-0515	⊥	⊥	⊥	⊥	4	Y									1	3	
2Q15 CPA Trip Blank #2	—	—	—		2	N		2									
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3; 5= NaOH, 6= Other								2	4	1	1	2	3,1	3	4	3	

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:
VOC headspace upon sampling: Yes/No

3.0 / 3.4°C
4.2 / 4.6°C

68L- 112468

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: 337185 / 337184 | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Relinquished by:	Company:	Date/Time	Received by:	Company:	Date/Time:
[signature]	Golder	5/12/15			
Relinquished by:	Company:	Date/Time:	Received by:	Company	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Company TA	Date/Time: 5/13/15 09:18

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

APPENDIX C
QUALITY ASSURANCE REPORT

QUALITY ASSURANCE REPORT

CHLOROBENZENE PROCESS AREA GROUNDWATER MONITORING PROGRAM SOLUTIA INC. W.G. KRUMMRICH FACILITY SAUGET, ILLINOIS

Prepared For: Solutia Inc.
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Submitted By: Golder Associates Inc.
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St. Charles, MO 63301 USA

July 2015 **140-3345**

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Golder Associates

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1.0 INTRODUCTION

Golder Associates Inc. (Golder) completed a review of analytical data for the groundwater samples collected on May 11 and May 12, 2015 at the Solutia Inc. (Solutia) W.G. Krummrich (WGK) facility (Site) in Sauget, Illinois. Golder collected a total of twenty (20) samples from groundwater monitoring wells as part of the 2nd Quarter 2015 (2Q15) Chlorobenzene Process Area (CPA) Groundwater Monitoring Program. Twelve (12) groundwater samples, two (2) trip blanks, two (2) equipment blanks (EB), two (2) analytical duplicates (AD), and one (1) matrix spike/matrix spike duplicate (MS/MSD) pair were prepared. Groundwater monitoring locations were on 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) methods, standard methods and USEPA SW-846 test methods. Samples submitted to TestAmerica were analyzed for volatile organic compounds (VOCs), total and dissolved metals, dissolved gases, and general chemistry parameters. The analytical results were placed into two (2) sample delivery groups (SDGs) and described in the table below:

Sample Delivery Group (SDG)	Sample Identification
KPS145	CPA-A-DHU-0515
	CPA-A-MHU-0515
	CPA-A-SHU-0515
	CPA-B-DHU-0515
	CPA-B-MHU-0515
	CPA-B-MHU-0515-EB
	CPA-B-SHU-0515
	2Q15 CPA Trip Blank #1
KPS146	CPA-C-DHU-0515
	CPA-C-DHU-0515-AD
	CPA-C-MHU-0515
	CPA-C-MHU-0515-EB
	CPA-C-SHU-0515
	CPA-D-DHU-0515
	CPA-D-DHU-0515-AD
	CPA-D-MHU-0515
	CPA-D-SHU-0515
	2Q15 CPA Trip Blank #2

The samples were collected and analyzed in general accordance with the Revised Long-Term Monitoring Program (LTMP) Work Plan (Work Plan) (Solutia 2009). Groundwater samples were analyzed for VOCs, total and dissolved metals, dissolved gases, and general chemistry parameters. The general chemistry parameters were chloride, nitrate, sulfate, total organic carbon (TOC), alkalinity, carbon dioxide, and dissolved organic carbon (DOC). The two (2) trip blanks, two (2) EBs, two (2) ADs, and one (1) MS/MSD

pair were submitted and analyzed for VOCs only. The following analytical methods used are from USEPA document SW-846, Test Methods for Evaluating Solid Waste, Revision 6 contained in Final Update III August 2002 and listed below:

- VOCs were analyzed using Method 8260B Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
- Total and Dissolved Iron and Manganese were analyzed by Method 6010C Inductively Coupled Plasma-Atomic Emission Spectrometry

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

- Dissolved Gases analyzed by Method RSK-175
- Alkalinity and Free Carbon Dioxide analyzed by USEPA Method 310.1 by Titration
- Chloride analyzed by USEPA Method 325.2 by Automated Colorimetry
- Nitrogen, Nitrate analyzed by USEPA Method 353.2 by Automated Colorimetry
- Sulfate analyzed by USEPA Method 375.4 by Spectrophotometer
- Total and Dissolved Organic Carbon analyzed by USEPA Method 415.1

Golder completed validation of the analytical data following the general guidelines in Section 4.4 Data Review and Validation of the Work Plan. The Work Plan specifies that the most recent versions 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
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-10-011, January 2010

These documents are hereafter referred to as the "functional guidelines". If there was a conflict between the functional guidelines and the quality control criteria specified in the analytical method, the method-specific criteria were used. The 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
- H – Sample was prepared or analyzed beyond the specified holding time
- F1 – MS/MSD Recovery exceeds the control limits

Golder data qualifiers are defined below:

- UJ – The analyte was not detected at or above the MDL; the detection limit is estimated
- D – The analyte was analyzed at a dilution

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

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

2.0 VOLATILE ORGANIC COMPOUNDS

Samples were collected from twelve (12) groundwater monitoring locations and analyzed for VOCs. Analytical duplicate samples were collected from two (2) sampling locations, CPA-C-DHU-AD and CPA-D-DHU-AD. Two (2) EBs and two (2) trip blanks were also prepared and shipped for laboratory analysis. The samples were submitted to TestAmerica, were placed into two (2) data packages or SDGs (KPS145 and KPS146), and were prepared and analyzed using SW-846 Method 8260B. Samples were validated in general accordance with the functional guidelines. Results of the validation are summarized below.

2.1 Receipt Condition and Sample Holding Times

The SDG Case Narrative, chain-of-custody, login sample receipt checklist, and analysis dates were reviewed to verify analytical method holding times and proper preservation upon sampling. A summary of affected SDGs is provided below.

KPS145 – Some samples were received at temperatures below the 4°C+/-2°C. The samples were otherwise received in good condition and data qualification was not required.

2.2 Blanks

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

Two (2) laboratory prepared trip blanks, one (1) for each cooler containing sample bottles for VOC analysis, were shipped and analyzed for VOCs during the 2Q15 event to evaluate whether cross contamination occurred during sample shipment. Results for the trip blanks were non-detect.

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.

Two (2) EBs were collected during the 2Q15 event to assess the effectiveness of the decontamination procedure. Detections were noted in the following EBs:

- CPA-B-MHU-0515-EB (SDG KPS145): benzene at 71 µg/L, chlorobenzene at 45 µg/L, 1,2-dichlorobenzene at 9.4 µg/L, and 1,4-dichlorobenzne at 17 µg/L
- CPA-C-MHU-0515-EB (SDK KPS146): benzene at 27 µg/L, chlorobenzene at 140 µg/L, 1,2-dichlorobenzene at 41 µg/L, 1,3-dichlorobenzene at 2.7 µg/L, and 1,4-dichlorobenzene at 47 µg/L

The samples associated with the above EBs, CPA-B-MHU-0515 and CPA-C-MHU-0515, were not qualified based on the 5Xs concentration criteria.

2.3 Surrogate Spike Recoveries

Samples to be analyzed for VOCs were spiked with surrogate compounds, 4-bromofluorobenzene, dibromofluoromethane, 1,2-dichloroethane, and toluene-d8, prior to analysis, to evaluate overall laboratory performance. Surrogate recoveries were within control limits.

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 2Q15 event associated with sample CPA-A-MHU-0515. MS/MSD accuracy and precision data met criteria.

2.6 Analytical Duplicates

One (1) AD is collected for every ten (10) field samples to determine the overall precision of field and laboratory methods. Two (2) ADs were collected during the 2Q15 event associated with samples CPA-C-DHU-0515 and CPA-D-DHU-0515. The relative percent difference (RPD) between the samples and the associated ADs did not exceed 25%; therefore, data qualification was not required.

2.7 Internal Standard Responses

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

2.8 Results Reported From Dilutions

VOC samples in both SDGs required dilutions due to high levels of target analytes. Reporting limits were adjusted to reflect the dilution. Result qualifications are shown in Section 4.0.

3.0 INORGANICS AND GENERAL CHEMISTRY

Samples were collected from twelve (12) groundwater monitoring locations and analyzed for inorganics and general chemistry. The samples were submitted to TestAmerica, were placed into two data packages or SDGs (KPS145 and KPS146), and were prepared and analyzed using the following methods:

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

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

3.1 Receipt Condition and Sample Holding Times

The SDG Case Narrative, chain-of-custody, login sample receipt checklist, and analysis dates were reviewed to verify analytical method holding times and proper preservation upon sampling. A summary of affected SDGs is provided below.

KPS145 – Some samples were received at temperatures below the 4°C+/-2°C. The samples were otherwise received in good condition and data qualification was not required.

KPS146 – Samples were received in good condition; however, sample CPA-C-DHU-0515 was analyzed outside the analytical holding time due to analyst error. Result qualifications are shown in Section 4.0.

3.2 Blanks

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

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

3.3 Laboratory Control Sample Recoveries

A LCS is analyzed on each laboratory system used to analyze samples to evaluate the analytical method accuracy and laboratory performance. LCS recoveries were within acceptance criteria.

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

MS/MSD samples are analyzed to determine long term precision and accuracy of the analytical method on various matrices. Although MS/MSD analysis was not required for inorganic and general chemistry per the Work Plan, the laboratory spiked several groundwater samples for various analytes. Some MS/MSD data for these samples was outside acceptance criteria. Since MS/MSD data alone cannot be used to evaluate the precision and accuracy of data, data qualification was not required for associated samples.

3.5 Results Reported From Dilutions

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

4.0 SUMMARY

Golder validated the data collected during the 2Q15 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	Benzene, Chlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Chloride, Nitrate, Sulfate, TOC, and DOC	D	CPA-A-DHU, CPA-A-MHU, CPA-A-SHU, CPA-B-DHU, CPA-B-MHU, CPA-B-SHU CPA-C-DHU, CPA-C-DHU-AD, CPA-C-MHU, CPA-C-SHU, CPA-D-DHU, CPA-D-DHU-AD, CPA-D-MHU, and CPA-D-SHU
Compounds analyzed outside hold time	Nitrate	J	CPA-C-DHU

5.0 REFERENCES

Solutia Inc., 2009. Revised Long Term Monitoring Program Work Plan, Solutia Inc., W.G. Krummrich Facility, Sauget, Illinois, May 2009.

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

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

APPENDIX D
GROUNDWATER ANALYTICAL RESULTS
(INCLUDING DATA VALIDATION REPORTS)

Level IV Data Validation Summary
Solutia Inc., W.G. Krummrich, Sauget, Illinois
2Q15 CPA Monitoring Program

Company Name: Golder Associates
Project Name: WGK-2Q15 CPA
Reviewer: L. Bindner
Laboratory: TestAmerica
SDG#: KPS145
Matrix: Water

Project Manager: A. Derhake
Project Number: 140-3345
Sample Date: May 2015

Analytical Method: VOC (8260B), Dissolved Gases (RSK-175), Metals (6010C), Alkalinity (310.1), Chloride (325.2), Nitrogen, Nitrate-Nitrite (353.2), Sulfate (375.4), TOC (415.1), and DOC (415.1)

Sample Names: CPA-A-DHU-0515, CPA-A-DHU-F(0.2)-0515, CPA-A-MHU-0515, CPA-A-MHU-F(0.2)-0515, CPA-A-SHU-0515, CPA-A-SHU-F(0.2)-0515, CPA-B-DHU-0515, CPA-B-DHU-F(0.2)- 0515, CPA-B-MHU-0515, CPA-B-MHU-F(0.2)-0515, CPA-B-MHU-0515-EB, CPA-B-SHU-0515, CPA-B-SHU-F(0.2)-0515, and 2Q15 CPA Trip Blank #1

Field Information	YES	NO	NA
a) Sampling dates noted?	☒	☐	☐
b) Does the laboratory narrative indicate deficiencies?	☒	☐	☐

Comments:

VOC: Samples CPA-A-DHU-0515, CPA-A-MHU-0515, CPA-A-SHU-0515, CPA-B-DHU-0515, CPA-B-MHU-0515, and CPA-B-SHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly. Benzene recovery was outside criteria low for the MS and MSD of sample CPA-A-MHU in batch 384583.

Dissolved Gases: The continuing calibration verification associated with batch 382919 recovered above the upper control limit for ethylene and methane. The samples associated with this CCV were non-detects for the affected analytes or have not been reported; therefore, the data have been reported.

Metals: No deficiencies noted.

Alkalinity: No deficiencies noted.

Chloride: Samples CPA-A-DHU-0515, CPA-A-MHU-0515, CPA-A-SHU-0515, CPA-B-DHU-0515, CPA-B-MHU-0515, and CPA-B-SHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly.

Nitrate-Nitrite as Nitrogen: No deficiencies noted.

Sulfate: Samples CPA-A-DHU-0515, CPA-A-MHU-0515, CPA-A-SHU-0515, CPA-B-DHU-0515, and CPA-B-SHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly.

TOC: Sample CPA-B-MHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly.

DOC: Sample CPA-B-MHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly.

Chain-of-Custody (COC)	YES	NO	NA
a) Was the COC signed by both field and laboratory personnel?	☒	☐	☐
b) Were samples received in good condition?	☒	☐	☐

Comments: Some samples were received at 1.2°C, outside the 4°C +/- 2°C criteria.

General	YES	NO	NA
a) Were hold times met for sample analysis?	☒	☐	☐
b) Were the correct preservatives used?	☒	☐	☐
c) Was the correct method used?	☒	☐	☐
d) Any sample dilutions noted?	☒	☐	☐

Comments: Detections in diluted analysis were qualified.

GC/MS Instrument Performance Check (IPC) and Internal Standards (IS)	YES	NO	NA
a) IPC analyzed at the appropriate frequency and met the appropriate standards?	☒	☐	☐
b) Does BFB meet the ion abundance criteria?	☒	☐	☐
c) Internal Standard retention times and areas met appropriate criteria?	☒	☐	☐

Comments: None

Calibrations	YES	NO	NA
a) Initial calibration analyzed at the appropriate frequency and met the appropriate standards?	☒	☐	☐
b) Continuing calibrations analyzed at the appropriate frequency and met the appropriate standards?	☒	☐	☐
c) Initial calibration verifications and blanks analyzed at the appropriate frequency and met the appropriate standards?	☒	☐	☐
d) Continuing calibration verifications and blanks analyzed at the appropriate frequency and met the appropriate standards?	☐	☒	☐

Comments: Ethylene and methane recovered above upper control limit for the CCV. The associated sample results were non-detect therefore qualification was not required.

Blanks	YES	NO	NA
a) Were blanks (trip, equipment, method) performed at required frequency?	☒	☐	☐
b) Were analytes detected in any blanks?	☐	☒	☐

Comments: Equipment blank CPA-B-MHU-0515-EB was submitted with SDG KPS145. Benzene, chlorobenzene, 1,2-dichlorobenzene, and 1,4-dichlorobenzene were detected in the EB. Qualification was not required based on 5Xs rule.

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: MS/MSD for CPA-A-MHU-0515 recovered low for benzene in batch 384583. Data was not qualified based on MS/MSD data alone.

Laboratory Control Sample (LCS)	YES	NO	NA
a) LCS analyzed at the appropriate frequency and met appropriate standards?	☒	☐	☐

Comments: None

Surrogate (System Monitoring) Compounds	YES	NO	NA
a) Surrogate compounds analyzed at the appropriate frequency and met appropriate standards?	☒	☐	☐

Comments: None

Duplicates	**YES**	**NO**	**NA**
a) Were field duplicates collected?	☐	☒	☐
b) Was field duplicate precision criteria met?	☐	☐	☒

Comments: Duplicate samples were not submitted with SDG KPS145.

Additional Comments: None

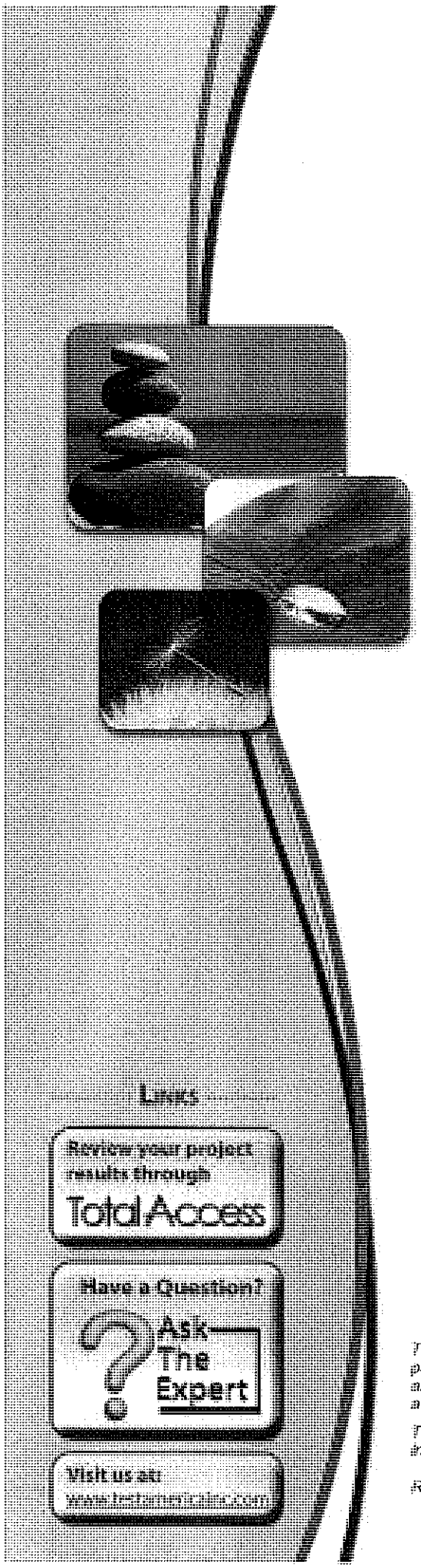
Qualifications:

Quality Control Issue	Compound(s)	Qualifier	Samples Affected
Compounds analyzed at a dilution	Benzene, Chlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Chloride, Sulfate, TOC, and DOC	D	CPA-A-DHU, CPA-A-MHU, CPA-A-SHU, CPA-B-DHU, CPA-B-MHU, and CPA-B-SHU

SDG KPS145

Sample Results from:

CPA-A-DHU
CPA-A-MHU
CPA-A-SHU
CPA-B-DHU
CPA-B-MHU
CPA-B-SHU



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: 680-112441-1
TestAmerica Sample Delivery Group: KPS145
Client Project/Site: 2Q15- CPA GW Sampling-1403345

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

Attn: Mr. Jerry Rinaldi

Authorized for release by:
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The 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.

LAB 7/6/15

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LAB 7/6/15

Job ID: 680-112441-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE
Client: Solutia Inc.
Project: 2Q15- CPA GW Sampling-1403345
Report Number: 680-112441-1

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

RECEIPT
The samples were received on 5/12/2015 9:32 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.2° C and 3.6° C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples CPA-A-DHU-0515 (680-112441-1), CPA-A-MHU-0515 (680-112441-3), CPA-A-SHU-0515 (680-112441-5), CPA-B-DHU-0515 (680-112441-7), CPA-B-MHU-0515 (680-112441-9), CPA-B-MHU-0515-EB (680-112441-11), CPA-B-SHU-0515 (680-112441-12) and 2Q15 CPA Trip Blank #1 (680-112441-14) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/19/2015 and 05/20/2015.

Benzene recovery is outside criteria low for the MS and MSD of sample CPA-A-MHU-0515 (680-112441-3) in batch 680-384583. Refer to the QC report for details.

Samples CPA-A-DHU-0515 (680-112441-1)[5X], CPA-A-MHU-0515 (680-112441-3)[5X], CPA-A-SHU-0515 (680-112441-5)[10X], CPA-B-DHU-0515 (680-112441-7)[1000X], CPA-B-MHU-0515 (680-112441-9)[1000X], CPA-B-MHU-0515 (680-112441-9)[2000X] and CPA-B-SHU-0515 (680-112441-12)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

DISSOLVED GASES
Samples CPA-A-DHU-0515 (680-112441-1), CPA-A-MHU-0515 (680-112441-3), CPA-A-SHU-0515 (680-112441-5), CPA-B-DHU-0515 (680-112441-7), CPA-B-MHU-0515 (680-112441-9) and CPA-B-SHU-0515 (680-112441-12) were analyzed for dissolved gases in accordance with RSK-175. The samples were analyzed on 05/13/2015 and 05/18/2015.

Method(s) RSK-175: The continuing calibration verification (CCV) associated with batch 382919 recovered above the upper control limit for ethylene and methane. The samples associated with this CCV were non-detects for the affected analytes or are not being reprorted; therefore, the data have been reported.

Method(s) RSK-175: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with Batches 382919 and 383561.

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

METALS (ICP)
Samples CPA-A-DHU-F(0.2)-0515 (680-112441-2), CPA-A-MHU-F(0.2)-0515 (680-112441-4), CPA-A-SHU-F(0.2)-0515 (680-112441-6), CPA-B-DHU-F(0.2)-0515 (680-112441-8), CPA-B-MHU-F(0.2)-0515 (680-112441-10) and CPA-B-SHU-F(0.2)-0515 (680-112441-13) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/14/2015 and analyzed on 05/16/2015.

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

Job ID: 680-112441-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

METALS (ICP)
Samples CPA-A-DHU-0515 (680-112441-1), CPA-A-MHU-0515 (680-112441-3), CPA-A-SHU-0515 (680-112441-5), CPA-B-DHU-0515 (680-112441-7), CPA-B-MHU-0515 (680-112441-9) and CPA-B-SHU-0515 (680-112441-12) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/14/2015 and analyzed on 05/16/2015.

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

ALKALINITY
Samples CPA-A-DHU-0515 (680-112441-1), CPA-A-MHU-0515 (680-112441-3), CPA-A-SHU-0515 (680-112441-5), CPA-B-DHU-0515 (680-112441-7), CPA-B-MHU-0515 (680-112441-9) and CPA-B-SHU-0515 (680-112441-12) were analyzed for alkalinity in accordance with EPA Method 310.1. The samples were analyzed on 05/13/2015.

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

CHLORIDE
Samples CPA-A-DHU-0515 (680-112441-1), CPA-A-MHU-0515 (680-112441-3), CPA-A-SHU-0515 (680-112441-5), CPA-B-DHU-0515 (680-112441-7), CPA-B-MHU-0515 (680-112441-9) and CPA-B-SHU-0515 (680-112441-12) were analyzed for Chloride in accordance with EPA Method 325.2. The samples were analyzed on 05/19/2015.

Samples CPA-A-DHU-0515 (680-112441-1)[2X], CPA-A-MHU-0515 (680-112441-3)[2X], CPA-A-SHU-0515 (680-112441-5)[5X], CPA-B-DHU-0515 (680-112441-7)[2X], CPA-B-MHU-0515 (680-112441-9)[10X] and CPA-B-SHU-0515 (680-112441-12)[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.

NITRATE-NITRITE AS NITROGEN
Samples CPA-A-DHU-0515 (680-112441-1), CPA-A-MHU-0515 (680-112441-3), CPA-A-SHU-0515 (680-112441-5), CPA-B-DHU-0515 (680-112441-7), CPA-B-MHU-0515 (680-112441-9) and CPA-B-SHU-0515 (680-112441-12) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 05/12/2015.

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

SULFATE
Samples CPA-A-DHU-0515 (680-112441-1), CPA-A-MHU-0515 (680-112441-3), CPA-A-SHU-0515 (680-112441-5), CPA-B-DHU-0515 (680-112441-7), CPA-B-MHU-0515 (680-112441-9) and CPA-B-SHU-0515 (680-112441-12) were analyzed for sulfate in accordance with EPA Method 375.4. The samples were analyzed on 05/18/2015.

Samples CPA-A-DHU-0515 (680-112441-1)[5X], CPA-A-MHU-0515 (680-112441-3)[5X], CPA-A-SHU-0515 (680-112441-5)[10X], CPA-B-DHU-0515 (680-112441-7)[5X] and CPA-B-SHU-0515 (680-112441-12)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

TOTAL ORGANIC CARBON
Samples CPA-A-DHU-0515 (680-112441-1), CPA-A-MHU-0515 (680-112441-3), CPA-A-SHU-0515 (680-112441-5), CPA-B-DHU-0515 (680-112441-7), CPA-B-MHU-0515 (680-112441-9) and CPA-B-SHU-0515 (680-112441-12) were analyzed for total organic carbon in accordance with EPA Method 415.1. The samples were analyzed on 05/18/2015 and 05/19/2015.

Method(s) 415.1: The following sample was diluted to bring the concentrations of the target analyte within the calibration range in TOC batch 191876: CPA-B-MHU-0515 (680-112441-9). Elevated reporting limits (RLs) are provided.

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

DISSOLVED ORGANIC CARBON (DOC)
Samples CPA-A-DHU-F(0.2)-0515 (680-112441-2), CPA-A-MHU-F(0.2)-0515 (680-112441-4), CPA-A-SHU-F(0.2)-0515 (680-112441-6),

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Job ID: 680-112441-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

CPA-B-DHU-F(0.2)-0515 (680-112441-8), CPA-B-MHU-F(0.2)-0515 (680-112441-10) and CPA-B-SHU-F(0.2)-0515 (680-112441-13) were analyzed for Dissolved Organic Carbon (DOC) in accordance with EPA Method 415.1. The samples were analyzed on 05/18/2015 and 05/19/2015.

Method(s) 415.1: The following sample was diluted to bring the concentrations of the target analyte within the calibration range in DOC batch 191878: CPA-B-MHU-F(0.2)-0515 (680-112441-10). Elevated reporting limits (RLs) are provided.

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

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Sample Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-112441-1	CPA-A-DHU-0515	Water	05/11/15 09:35	05/12/15 09:32
680-112441-2	CPA-A-DHU-F(0.2)-0515	Water	05/11/15 09:35	05/12/15 09:32
680-112441-3	CPA-A-MHU-0515	Water	05/11/15 10:15	05/12/15 09:32
680-112441-4	CPA-A-MHU-F(0.2)-0515	Water	05/11/15 10:15	05/12/15 09:32
680-112441-5	CPA-A-SHU-0515	Water	05/11/15 11:00	05/12/15 09:32
680-112441-6	CPA-A-SHU-F(0.2)-0515	Water	05/11/15 11:00	05/12/15 09:32
680-112441-7	CPA-B-DHU-0515	Water	05/11/15 12:45	05/12/15 09:32
680-112441-8	CPA-B-DHU-F(0.2)-0515	Water	05/11/15 12:45	05/12/15 09:32
680-112441-9	CPA-B-MHU-0515	Water	05/11/15 14:30	05/12/15 09:32
680-112441-10	CPA-B-MHU-F(0.2)-0515	Water	05/11/15 14:30	05/12/15 09:32
680-112441-11	CPA-B-MHU-0515-EB	Water	05/11/15 15:00	05/12/15 09:32
680-112441-12	CPA-B-SHU-0515	Water	05/11/15 13:54	05/12/15 09:32
680-112441-13	CPA-B-SHU-F(0.2)-0515	Water	05/11/15 13:54	05/12/15 09:32
680-112441-14	2Q15 CPA Trip Blank #1	Water	05/11/15 00:00	05/12/15 09:32

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Method Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAV
RSK-175	Dissolved Gases (GC)	RSK	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
310.1	Alkalinity	MCAWW	TAL SAV
325.2	Chloride	MCAWW	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
375.4	Sulfate	MCAWW	TAL SAV
415.1	TOC	MCAWW	TAL SL
415.1	DOC	MCAWW	TAL SL

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
F1	MS and/or MSD Recovery is outside acceptance limits.

GC VOA

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

Metals

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

General Chemistry

Qualifier	Qualifier Description
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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Detection Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Client Sample ID: CPA-A-DHU-0515 — Lab Sample ID: 680-112441-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	85		5.0		ug/L	5		8260B	Total/NA
Chlorobenzene	260		5.0		ug/L	5		8260B	Total/NA
1,2-Dichlorobenzene	300		5.0		ug/L	5		8260B	Total/NA
1,3-Dichlorobenzene	40		5.0		ug/L	5		8260B	Total/NA
1,4-Dichlorobenzene	390		5.0		ug/L	5		8260B	Total/NA
Ethane	5.3		1.1		ug/L	1		RSK-175	Total/NA
Methane (TCD)	5100		390		ug/L	1		RSK-175	Total/NA
Iron	5.8		0.050		mg/L	1		6010C	Total Recoverable
Manganese	0.43		0.010		mg/L	1		6010C	Total Recoverable
Chloride	59		2.0		mg/L	2		325.2	Total/NA
Sulfate	98		25		mg/L	5		375.4	Total/NA
Total Organic Carbon	4.5		1.0		mg/L	1		415.1	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	530		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	20		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-A-DHU-F(0.2)-0515 — Lab Sample ID: 680-112441-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	6.0		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	0.43		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon	5.0		1.0		mg/L	1		415.1	Dissolved

Client Sample ID: CPA-A-MHU-0515 — Lab Sample ID: 680-112441-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	440		5.0		ug/L	5		8260B	Total/NA
Chlorobenzene	100		5.0		ug/L	5		8260B	Total/NA
1,4-Dichlorobenzene	5.1		5.0		ug/L	5		8260B	Total/NA
Ethane	12		1.1		ug/L	1		RSK-175	Total/NA
Methane (TCD)	14000		390		ug/L	1		RSK-175	Total/NA
Iron	2.1		0.050		mg/L	1		6010C	Total Recoverable
Manganese	1.1		0.010		mg/L	1		6010C	Total Recoverable
Chloride	79		2.0		mg/L	2		325.2	Total/NA
Total Organic Carbon	7.4		1.0		mg/L	1		415.1	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	710		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	34		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-A-MHU-F(0.2)-0515 — Lab Sample ID: 680-112441-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	2.1		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	1.1		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon	7.8		1.0		mg/L	1		415.1	Dissolved

This Detection Summary does not include radiochemical test results.

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Detection Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Client Sample ID: CPA-A-SHU-0515 — Lab Sample ID: 680-112441-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	11		10		ug/L	10		8260B	Total/NA
Chlorobenzene	1000		10		ug/L	10		8260B	Total/NA
1,2-Dichlorobenzene	18		10		ug/L	10		8260B	Total/NA
1,4-Dichlorobenzene	250		10		ug/L	10		8260B	Total/NA
Ethane	5.9		1.1		ug/L	1		RSK-175	Total/NA
Methane (TCD)	2900		390		ug/L	1		RSK-175	Total/NA
Iron	13		0.050		mg/L	1		6010C	Total Recoverable
Manganese	2.3		0.010		mg/L	1		6010C	Total Recoverable
Chloride	120		5.0		mg/L	5		325.2	Total/NA
Nitrate as N	0.072		0.050		mg/L	1		353.2	Total/NA
Sulfate	260		50		mg/L	10		375.4	Total/NA
Total Organic Carbon	8.4		1.0		mg/L	1		415.1	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	440		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	34		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-A-SHU-F(0.2)-0515 — Lab Sample ID: 680-112441-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	14		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	2.3		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon	4.9		1.0		mg/L	1		415.1	Dissolved

Client Sample ID: CPA-B-DHU-0515 — Lab Sample ID: 680-112441-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chlorobenzene	44000		1000		ug/L	1000		8260B	Total/NA
1,2-Dichlorobenzene	24000		1000		ug/L	1000		8260B	Total/NA
1,4-Dichlorobenzene	44000		1000		ug/L	1000		8260B	Total/NA
Methane	120		0.58		ug/L	1		RSK-175	Total/NA
Iron	10		0.050		mg/L	1		6010C	Total Recoverable
Manganese	0.65		0.010		mg/L	1		6010C	Total Recoverable
Chloride	64		2.0		mg/L	2		325.2	Total/NA
Sulfate	100		25		mg/L	5		375.4	Total/NA
Total Organic Carbon	7.7		1.0		mg/L	1		415.1	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	480		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	24		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-B-DHU-F(0.2)-0515 — Lab Sample ID: 680-112441-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	9.5		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	0.56		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon	7.4		1.0		mg/L	1		415.1	Dissolved

This Detection Summary does not include radiochemical test results.

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Detection Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Client Sample ID: CPA-B-MHU-0515 — Lab Sample ID: 680-112441-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chlorobenzene	32000		1000		ug/L	1000		8260B	Total/NA
Benzene - DL	190000		2000		ug/L	2000		8260B	Total/NA
Ethane	160		1.1		ug/L	1		RSK-175	Total/NA
Methane (TCD)	25000		390		ug/L	1		RSK-175	Total/NA
Iron	34		0.050		mg/L	1		6010C	Total Recoverable
Manganese	1.9		0.010		mg/L	1		6010C	Total Recoverable
Chloride	270		10		mg/L	10		325.2	Total/NA
Total Organic Carbon - RADL	24		2.0		mg/L	2		415.1	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	400		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	100		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-B-MHU-F(0.2)-0515 — Lab Sample ID: 680-112441-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	33		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	1.9		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon - RADL	22		2.0		mg/L	2		415.1	Dissolved

Client Sample ID: CPA-B-MHU-0515-EB — Lab Sample ID: 680-112441-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	71		1.0		ug/L	1		8260B	Total/NA
Chlorobenzene	45		1.0		ug/L	1		8260B	Total/NA
1,2-Dichlorobenzene	9.4		1.0		ug/L	1		8260B	Total/NA
1,4-Dichlorobenzene	17		1.0		ug/L	1		8260B	Total/NA

Client Sample ID: CPA-B-SHU-0515 — Lab Sample ID: 680-112441-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chlorobenzene	17000		100		ug/L	100		8260B	Total/NA
Methane	44		0.58		ug/L	1		RSK-175	Total/NA
Iron	28		0.050		mg/L	1		6010C	Total Recoverable
Manganese	3.4		0.010		mg/L	1		6010C	Total Recoverable
Chloride	97		2.0		mg/L	2		325.2	Total/NA
Sulfate	290		50		mg/L	10		375.4	Total/NA
Total Organic Carbon	3.8		1.0		mg/L	1		415.1	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	500		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	110		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-B-SHU-F(0.2)-0515 — Lab Sample ID: 680-112441-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	26		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	3.3		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon	3.1		1.0		mg/L	1		415.1	Dissolved

This Detection Summary does not include radiochemical test results.

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Detection Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Client Sample ID: 2Q15 CPA Trip Blank #1 **Lab Sample ID: 680-112441-14**

No Detections.

This Detection Summary does not include radiochemical test results.

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Client Sample ID: CPA-A-DHU-0515

Date Collected: 05/11/15 09:35
Date Received: 05/12/15 09:32

Lab Sample ID: 680-112441-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	85	D	5.0		ug/L			05/19/15 16:29	5
Chlorobenzene	260	D	5.0		ug/L			05/19/15 16:29	5
1,2-Dichlorobenzene	300	D	5.0		ug/L			05/19/15 16:29	5
1,3-Dichlorobenzene	40	D	5.0		ug/L			05/19/15 16:29	5
1,4-Dichlorobenzene	390	D	5.0		ug/L			05/19/15 16:29	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*90*		*70 - 130*		*05/19/15 16:29*	*5*
1,2-Dichloroethane-d4 (Surr)	*116*		*70 - 130*		*05/19/15 16:29*	*5*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*05/19/15 16:29*	*5*
4-Bromofluorobenzene (Surr)	*110*		*70 - 130*		*05/19/15 16:29*	*5*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	5.3		1.1		ug/L			05/13/15 16:32	1
Ethylene	1.0	U	1.0		ug/L			05/13/15 16:32	1
Methane (TCD)	5100		390		ug/L			05/13/15 16:32	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	5.8		0.050		mg/L		05/14/15 14:51	05/16/15 16:07	1
Manganese	0.43		0.010		mg/L		05/14/15 14:51	05/16/15 16:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	59	D	2.0		mg/L			05/19/15 09:52	2
Nitrate as N	0.050	U	0.050		mg/L			05/12/15 15:52	1
Sulfate	98	D	25		mg/L			05/18/15 09:37	5
Total Organic Carbon	4.5		1.0		mg/L			05/18/15 19:46	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	530		5.0		mg/L			05/13/15 19:01	1
Carbon Dioxide, Free	20		5.0		mg/L			05/13/15 19:01	1

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Client Sample ID: CPA-A-DHU-F(0.2)-0515

Date Collected: 05/11/15 09:35
Date Received: 05/12/15 09:32

Lab Sample ID: 680-112441-2

Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	6.0		0.050		mg/L		05/14/15 14:51	05/16/15 16:39	1
Manganese, Dissolved	0.43		0.010		mg/L		05/14/15 14:51	05/16/15 16:39	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	5.0		1.0		mg/L			05/18/15 22:44	1

LAB 7/6/15

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Client Sample ID: CPA-A-MHU-0515
Date Collected: 05/11/15 10:15
Date Received: 05/12/15 09:32

Lab Sample ID: 680-112441-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	440	D	5.0		ug/L			05/19/15 16:50	5
Chlorobenzene	100	D	5.0		ug/L			05/19/15 16:50	5
1,2-Dichlorobenzene	5.0	U	5.0		ug/L			05/19/15 16:50	5
1,3-Dichlorobenzene	5.0	U	5.0		ug/L			05/19/15 16:50	5
1,4-Dichlorobenzene	5.1	D	5.0		ug/L			05/19/15 16:50	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*90*		*70 - 130*		*05/19/15 16:50*	*5*
1,2-Dichloroethane-d4 (Surr)	*120*		*70 - 130*		*05/19/15 16:50*	*5*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*05/19/15 16:50*	*5*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*		*05/19/15 16:50*	*5*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	12		1.1		ug/L			05/13/15 16:45	1
Ethylene	1.0	U	1.0		ug/L			05/13/15 16:45	1
Methane (TCD)	14000		390		ug/L			05/13/15 16:45	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	2.1		0.050		mg/L		05/14/15 14:51	05/16/15 16:44	1
Manganese	1.1		0.010		mg/L		05/14/15 14:51	05/16/15 16:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	79	D	2.0		mg/L			05/19/15 09:52	2
Nitrate as N	0.050	U	0.050		mg/L			05/12/15 16:01	1
Sulfate	25	U	25		mg/L			05/18/15 10:23	5
Total Organic Carbon	7.4		1.0		mg/L			05/18/15 19:50	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	710		5.0		mg/L			05/13/15 18:51	1
Carbon Dioxide, Free	34		5.0		mg/L			05/13/15 18:51	1

LAB 7/6/15

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Client Sample ID: CPA-A-MHU-F(0.2)-0515
Date Collected: 05/11/15 10:15
Date Received: 05/12/15 09:32

Lab Sample ID: 680-112441-4
Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	2.1		0.050		mg/L		05/14/15 14:51	05/16/15 16:48	1
Manganese, Dissolved	1.1		0.010		mg/L		05/14/15 14:51	05/16/15 16:48	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	7.8		1.0		mg/L			05/18/15 22:49	1

LAB 7/6/15

Client Sample ID: CPA-A-SHU-0515

Lab Sample ID: 680-112441-5

Date Collected: 05/11/15 11:00
Matrix: Water
Date Received: 05/12/15 09:32

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	11	D	10		ug/L			05/19/15 17:11	10
Chlorobenzene	1000	D	10		ug/L			05/19/15 17:11	10
1,2-Dichlorobenzene	18	D	10		ug/L			05/19/15 17:11	10
1,3-Dichlorobenzene	10	U	10		ug/L			05/19/15 17:11	10
1,4-Dichlorobenzene	250	D	10		ug/L			05/19/15 17:11	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*05/19/15 17:11*	*10*
1,2-Dichloroethane-d4 (Surr)	*113*		*70 - 130*		*05/19/15 17:11*	*10*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*05/19/15 17:11*	*10*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*		*05/19/15 17:11*	*10*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	5.9		1.1		ug/L			05/13/15 16:58	1
Ethylene	1.0	U	1.0		ug/L			05/13/15 16:58	1
Methane (TCD)	2900		390		ug/L			05/13/15 16:58	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	13		0.050		mg/L		05/14/15 14:51	05/16/15 16:53	1
Manganese	2.3		0.010		mg/L		05/14/15 14:51	05/16/15 16:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	120	D	5.0		mg/L			05/19/15 10:15	5
Nitrate as N	0.072		0.050		mg/L			05/12/15 15:54	1
Sulfate	260	D	50		mg/L			05/18/15 10:21	10
Total Organic Carbon	8.4		1.0		mg/L			05/18/15 19:55	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	440		5.0		mg/L			05/13/15 18:30	1
Carbon Dioxide, Free	34		5.0		mg/L			05/13/15 18:30	1

LAB 7/6/15

Client Sample ID: CPA-A-SHU-F(0.2)-0515

Lab Sample ID: 680-112441-6

Date Collected: 05/11/15 11:00
Matrix: Water
Date Received: 05/12/15 09:32

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	14		0.050		mg/L		05/14/15 14:51	05/16/15 16:57	1
Manganese, Dissolved	2.3		0.010		mg/L		05/14/15 14:51	05/16/15 16:57	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	4.9		1.0		mg/L			05/18/15 22:54	1

LAB 7/6/15

Client Sample ID: CPA-B-DHU-0515

Lab Sample ID: 680-112441-7

Date Collected: 05/11/15 12:45
Matrix: Water
Date Received: 05/12/15 09:32

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1000	U	1000		ug/L			05/19/15 17:33	1000
Chlorobenzene	**44000**	D	1000		ug/L			05/19/15 17:33	1000
1,2-Dichlorobenzene	**24000**	D	1000		ug/L			05/19/15 17:33	1000
1,3-Dichlorobenzene	1000	U	1000		ug/L			05/19/15 17:33	1000
1,4-Dichlorobenzene	**44000**	D	1000		ug/L			05/19/15 17:33	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*93*		*70 - 130*		*05/19/15 17:33*	*1000*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 130*		*05/19/15 17:33*	*1000*
Dibromofluoromethane (Surr)	*95*		*70 - 130*		*05/19/15 17:33*	*1000*
4-Bromofluorobenzene (Surr)	*116*		*70 - 130*		*05/19/15 17:33*	*1000*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			05/18/15 12:44	1
Ethylene	1.0	U	1.0		ug/L			05/18/15 12:44	1
Methane	**120**		0.58		ug/L			05/18/15 12:44	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**10**		0.050		mg/L		05/14/15 14:51	05/16/15 17:02	1
Manganese	**0.65**		0.010		mg/L		05/14/15 14:51	05/16/15 17:02	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**64**	D	2.0		mg/L			05/19/15 09:52	2
Nitrate as N	0.050	U	0.050		mg/L			05/12/15 15:55	1
Sulfate	**100**	D	25		mg/L			05/18/15 10:06	5
Total Organic Carbon	**7.7**		1.0		mg/L			05/18/15 20:00	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**480**		5.0		mg/L			05/13/15 18:40	1
Carbon Dioxide, Free	**24**		5.0		mg/L			05/13/15 18:40	1

UAB 7/6/15

Client Sample ID: CPA-B-DHU-F(0.2)-0515

Date Collected: 05/11/15 12:45
Date Received: 05/12/15 09:32

Lab Sample ID: 680-112441-8

Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	9.5		0.050		mg/L		05/14/15 14:51	05/16/15 17:07	1
Manganese, Dissolved	0.56		0.010		mg/L		05/14/15 14:51	05/16/15 17:07	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	7.4		1.0		mg/L			05/18/15 22:58	1

LAB 7/6/15

Client Sample ID: CPA-B-MHU-0515

Date Collected: 05/11/15 14:30
Date Received: 05/12/15 09:32

Lab Sample ID: 680-112441-9

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	32000	D	1000		ug/L			05/19/15 17:54	1000
1,2-Dichlorobenzene	1000	U	1000		ug/L			05/19/15 17:54	1000
1,3-Dichlorobenzene	1000	U	1000		ug/L			05/19/15 17:54	1000
1,4-Dichlorobenzene	1000	U	1000		ug/L			05/19/15 17:54	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*05/19/15 17:54*	*1000*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 130*		*05/19/15 17:54*	*1000*
Dibromofluoromethane (Surr)	*93*		*70 - 130*		*05/19/15 17:54*	*1000*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*		*05/19/15 17:54*	*1000*

Method: 8260B - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	190000	D	2000		ug/L			05/20/15 13:12	2000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*05/20/15 13:12*	*2000*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 130*		*05/20/15 13:12*	*2000*
Dibromofluoromethane (Surr)	*95*		*70 - 130*		*05/20/15 13:12*	*2000*
4-Bromofluorobenzene (Surr)	*115*		*70 - 130*		*05/20/15 13:12*	*2000*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	160		1.1		ug/L			05/13/15 17:23	1
Ethylene	1.0	U	1.0		ug/L			05/13/15 17:23	1
Methane (TCD)	25000		390		ug/L			05/13/15 17:23	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	34		0.050		mg/L		05/14/15 14:51	05/16/15 17:20	1
Manganese	1.9		0.010		mg/L		05/14/15 14:51	05/16/15 17:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	270	D	10		mg/L			05/19/15 10:21	10
Nitrate as N	0.050	U	0.050		mg/L			05/12/15 15:58	1
Sulfate	5.0	U	5.0		mg/L			05/18/15 09:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	400		5.0		mg/L			05/13/15 18:22	1
Carbon Dioxide, Free	100		5.0		mg/L			05/13/15 18:22	1

General Chemistry - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	24	D	2.0		mg/L			05/19/15 12:09	2

LAB 7/6/15

Client Sample Results

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Client Sample ID: CPA-B-MHU-F(0.2)-0515

Date Collected: 05/11/15 14:30
Date Received: 05/12/15 09:32

Lab Sample ID: 680-112441-10

Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	33		0.050		mg/L		05/14/15 14:51	05/16/15 17:25	1
Manganese, Dissolved	1.9		0.010		mg/L		05/14/15 14:51	05/16/15 17:25	1

General Chemistry - Dissolved - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	22	D	2.0		mg/L			05/19/15 13:28	2

LAB 7/6/15

Client Sample ID: CPA-B-MHU-0515-EB

Lab Sample ID: 680-112441-11

Date Collected: 05/11/15 15:00
Matrix: Water
Date Received: 05/12/15 09:32

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	71		1.0		ug/L			05/19/15 15:47	1
Chlorobenzene	45		1.0		ug/L			05/19/15 15:47	1
1,2-Dichlorobenzene	9.4		1.0		ug/L			05/19/15 15:47	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			05/19/15 15:47	1
1,4-Dichlorobenzene	17		1.0		ug/L			05/19/15 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*87*		*70 - 130*		*05/19/15 15:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 130*		*05/19/15 15:47*	*1*
Dibromofluoromethane (Surr)	*94*		*70 - 130*		*05/19/15 15:47*	*1*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*		*05/19/15 15:47*	*1*

LAB 7/6/15

Client Sample ID: CPA-B-SHU-0515

Lab Sample ID: 680-112441-12

Date Collected: 05/11/15 13:54
Matrix: Water
Date Received: 05/12/15 09:32

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	100	U	100		ug/L			05/19/15 18:15	100
Chlorobenzene	17000	D	100		ug/L			05/19/15 18:15	100
1,2-Dichlorobenzene	100	U	100		ug/L			05/19/15 18:15	100
1,3-Dichlorobenzene	100	U	100		ug/L			05/19/15 18:15	100
1,4-Dichlorobenzene	100	U	100		ug/L			05/19/15 18:15	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*92*		*70 - 130*		*05/19/15 18:15*	*100*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*05/19/15 18:15*	*100*
Dibromofluoromethane (Surr)	*95*		*70 - 130*		*05/19/15 18:15*	*100*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*		*05/19/15 18:15*	*100*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			05/18/15 12:57	1
Ethylene	1.0	U	1.0		ug/L			05/18/15 12:57	1
Methane	44		0.58		ug/L			05/18/15 12:57	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	28		0.050		mg/L		05/14/15 14:51	05/16/15 17:30	1
Manganese	3.4		0.010		mg/L		05/14/15 14:51	05/16/15 17:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	97	D	2.0		mg/L			05/19/15 09:55	2
Nitrate as N	0.050	U	0.050		mg/L			05/12/15 16:00	1
Sulfate	290	D	50		mg/L			05/18/15 10:21	10
Total Organic Carbon	3.8		1.0		mg/L			05/18/15 20:09	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	500		5.0		mg/L			05/13/15 18:12	1
Carbon Dioxide, Free	110		5.0		mg/L			05/13/15 18:12	1

LAB 7/6/15

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Client Sample ID: CPA-B-SHU-F(0.2)-0515
Date Collected: 05/11/15 13:54
Date Received: 05/12/15 09:32

Lab Sample ID: 680-112441-13
Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	26		0.050		mg/L		05/14/15 14:51	05/16/15 17:34	1
Manganese, Dissolved	3.3		0.010		mg/L		05/14/15 14:51	05/16/15 17:34	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	3.1		1.0		mg/L			05/18/15 23:30	1

LAB 7/6/15

Client Sample ID: 2Q15 CPA Trip Blank #1

Date Collected: 05/11/15 00:00
Date Received: 05/12/15 09:32

Lab Sample ID: 680-112441-14

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			05/19/15 15:26	1
Chlorobenzene	1.0	U	1.0		ug/L			05/19/15 15:26	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			05/19/15 15:26	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			05/19/15 15:26	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			05/19/15 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*83*		*70 - 130*		*05/19/15 15:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 130*		*05/19/15 15:26*	*1*
Dibromofluoromethane (Surr)	*94*		*70 - 130*		*05/19/15 15:26*	*1*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*		*05/19/15 15:26*	*1*

LAB 7/6/15

Surrogate Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	TOL (70-130)	12DCE (70-130)	DBFM (70-130)	BFB (70-130)
680-112441-1	CPA-A-DHU-0515	90	116	102	110
680-112441-3	CPA-A-MHU-0515	90	120	103	114
680-112441-3 MS	CPA-A-MHU-0515	101	120	112	93
680-112441-3 MSD	CPA-A-MHU-0515	101	118	111	96
680-112441-5	CPA-A-SHU-0515	95	113	102	114
680-112441-7	CPA-B-DHU-0515	93	102	95	116
680-112441-9	CPA-B-MHU-0515	95	109	93	113
680-112441-9 - DL	CPA-B-MHU-0515	97	107	95	115
680-112441-11	CPA-B-MHU-0515-EB	87	103	94	104
680-112441-12	CPA-B-SHU-0515	92	101	95	109
680-112441-14	2Q15 CPA Trip Blank #1	83	98	94	113
LCS 680-383721/4	Lab Control Sample	98	111	102	109
LCS 680-383915/4	Lab Control Sample	97	98	94	107
LCS 680-384583/4	Lab Control Sample	103	117	113	96
LCSD 680-383721/5	Lab Control Sample Dup	102	112	103	110
LCSD 680-383915/5	Lab Control Sample Dup	103	108	101	113
LCSD 680-384583/5	Lab Control Sample Dup	101	117	112	94
MB 680-383721/9	Method Blank	103	99	92	107
MB 680-383915/9	Method Blank	100	94	88	107
MB 680-384583/9	Method Blank	103	115	110	92

Surrogate Legend

TOL = Toluene-d8 (Surr)
12DCE = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane (Surr)
BFB = 4-Bromofluorobenzene (Surr)

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Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-383721/9
Matrix: Water
Analysis Batch: 383721

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			05/19/15 10:44	1
Chlorobenzene	1.0	U	1.0		ug/L			05/19/15 10:44	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			05/19/15 10:44	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			05/19/15 10:44	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			05/19/15 10:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*70 - 130*		*05/19/15 10:44*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*		*05/19/15 10:44*	*1*
Dibromofluoromethane (Surr)	*92*		*70 - 130*		*05/19/15 10:44*	*1*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*		*05/19/15 10:44*	*1*

Lab Sample ID: LCS 680-383721/4
Matrix: Water
Analysis Batch: 383721

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	52.6		ug/L		105	73 - 131
Chlorobenzene	50.0	46.7		ug/L		93	80 - 120
1,2-Dichlorobenzene	50.0	52.8		ug/L		106	80 - 120
1,3-Dichlorobenzene	50.0	50.0		ug/L		100	80 - 120
1,4-Dichlorobenzene	50.0	49.5		ug/L		99	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*

Lab Sample ID: LCSD 680-383721/5
Matrix: Water
Analysis Batch: 383721

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	53.1		ug/L		106	73 - 131	1	30
Chlorobenzene	50.0	48.2		ug/L		96	80 - 120	3	20
1,2-Dichlorobenzene	50.0	53.9		ug/L		108	80 - 120	2	20
1,3-Dichlorobenzene	50.0	51.6		ug/L		103	80 - 120	3	20
1,4-Dichlorobenzene	50.0	51.3		ug/L		103	80 - 120	4	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*70 - 130*
4-Bromofluorobenzene (Surr)	*110*		*70 - 130*

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Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-383915/9
Matrix: Water
Analysis Batch: 383915

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			05/20/15 10:21	1
Chlorobenzene	1.0	U	1.0		ug/L			05/20/15 10:21	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			05/20/15 10:21	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			05/20/15 10:21	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			05/20/15 10:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*05/20/15 10:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 130*		*05/20/15 10:21*	*1*
Dibromofluoromethane (Surr)	*88*		*70 - 130*		*05/20/15 10:21*	*1*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*		*05/20/15 10:21*	*1*

Lab Sample ID: LCS 680-383915/4
Matrix: Water
Analysis Batch: 383915

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	49.9		ug/L		100	73 - 131
Chlorobenzene	50.0	44.6		ug/L		89	80 - 120
1,2-Dichlorobenzene	50.0	48.4		ug/L		97	80 - 120
1,3-Dichlorobenzene	50.0	48.1		ug/L		96	80 - 120
1,4-Dichlorobenzene	50.0	46.7		ug/L		93	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 130*
Dibromofluoromethane (Surr)	*94*		*70 - 130*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*

Lab Sample ID: LCSD 680-383915/5
Matrix: Water
Analysis Batch: 383915

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	54.0		ug/L		108	73 - 131	8	30
Chlorobenzene	50.0	48.2		ug/L		96	80 - 120	8	20
1,2-Dichlorobenzene	50.0	51.6		ug/L		103	80 - 120	6	20
1,3-Dichlorobenzene	50.0	51.1		ug/L		102	80 - 120	6	20
1,4-Dichlorobenzene	50.0	50.4		ug/L		101	80 - 120	8	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 130*
Dibromofluoromethane (Surr)	*101*		*70 - 130*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*

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Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-384583/9
Matrix: Water
Analysis Batch: 384583

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			05/25/15 12:19	1
Chlorobenzene	1.0	U	1.0		ug/L			05/25/15 12:19	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			05/25/15 12:19	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			05/25/15 12:19	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			05/25/15 12:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*70 - 130*		*05/25/15 12:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*115*		*70 - 130*		*05/25/15 12:19*	*1*
Dibromofluoromethane (Surr)	*110*		*70 - 130*		*05/25/15 12:19*	*1*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*05/25/15 12:19*	*1*

Lab Sample ID: LCS 680-384583/4
Matrix: Water
Analysis Batch: 384583

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	47.4		ug/L		95	73 - 131
Chlorobenzene	50.0	52.4		ug/L		105	80 - 120
1,2-Dichlorobenzene	50.0	51.2		ug/L		102	80 - 120
1,3-Dichlorobenzene	50.0	51.3		ug/L		103	80 - 120
1,4-Dichlorobenzene	50.0	50.2		ug/L		100	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*117*		*70 - 130*
Dibromofluoromethane (Surr)	*113*		*70 - 130*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*

Lab Sample ID: LCSD 680-384583/5
Matrix: Water
Analysis Batch: 384583

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	47.2		ug/L		94	73 - 131	0	30
Chlorobenzene	50.0	51.5		ug/L		103	80 - 120	2	20
1,2-Dichlorobenzene	50.0	51.1		ug/L		102	80 - 120	0	20
1,3-Dichlorobenzene	50.0	50.5		ug/L		101	80 - 120	2	20
1,4-Dichlorobenzene	50.0	49.4		ug/L		99	80 - 120	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*117*		*70 - 130*
Dibromofluoromethane (Surr)	*112*		*70 - 130*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*

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Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 680-112441-3 MS
Matrix: Water
Analysis Batch: 384583

Client Sample ID: CPA-A-MHU-0515
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	440		250	562	F1	ug/L		49	73 - 131
Chlorobenzene	100		250	357		ug/L		103	80 - 120
1,2-Dichlorobenzene	5.0	U	250	253		ug/L		100	80 - 120
1,3-Dichlorobenzene	5.0	U	250	251		ug/L		100	80 - 120
1,4-Dichlorobenzene	5.1		250	253		ug/L		99	80 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*120*		*70 - 130*
Dibromofluoromethane (Surr)	*112*		*70 - 130*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*

Lab Sample ID: 680-112441-3 MSD
Matrix: Water
Analysis Batch: 384583

Client Sample ID: CPA-A-MHU-0515
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	440		250	566	F1	ug/L		50	73 - 131	1	30
Chlorobenzene	100		250	356		ug/L		102	80 - 120	0	20
1,2-Dichlorobenzene	5.0	U	250	257		ug/L		102	80 - 120	1	20
1,3-Dichlorobenzene	5.0	U	250	257		ug/L		103	80 - 120	2	20
1,4-Dichlorobenzene	5.1		250	256		ug/L		100	80 - 120	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*118*		*70 - 130*
Dibromofluoromethane (Surr)	*111*		*70 - 130*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 680-382919/7
Matrix: Water
Analysis Batch: 382919

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			05/13/15 15:57	1
Ethylene	1.0	U	1.0		ug/L			05/13/15 15:57	1
Methane	0.58	U	0.58		ug/L			05/13/15 15:57	1
Methane (TCD)	390	U	390		ug/L			05/13/15 15:57	1

Lab Sample ID: LCS 680-382919/2
Matrix: Water
Analysis Batch: 382919

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane (TCD)	1920	2090		ug/L		109	75 - 125

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

Lab Sample ID: LCS 680-382919/5
Matrix: Water
Analysis Batch: 382919

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	288	322		ug/L		112	75 - 125
Ethylene	269	298		ug/L		111	75 - 125
Methane	154	176		ug/L		115	75 - 125

Lab Sample ID: LCSD 680-382919/29
Matrix: Water
Analysis Batch: 382919

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	288	304		ug/L		105	75 - 125	6	30
Ethylene	269	274		ug/L		102	75 - 125	8	30
Methane	154	168		ug/L		109	75 - 125	5	30

Lab Sample ID: LCSD 680-382919/3
Matrix: Water
Analysis Batch: 382919

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane (TCD)	1920	2290		ug/L		119	75 - 125	9	30

Lab Sample ID: MB 680-383561/7
Matrix: Water
Analysis Batch: 383561

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			05/18/15 11:48	1
Ethylene	1.0	U	1.0		ug/L			05/18/15 11:48	1
Methane	0.58	U	0.58		ug/L			05/18/15 11:48	1

Lab Sample ID: LCS 680-383561/5
Matrix: Water
Analysis Batch: 383561

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	288	315		ug/L		109	75 - 125
Ethylene	269	292		ug/L		109	75 - 125
Methane	154	170		ug/L		110	75 - 125

Lab Sample ID: LCSD 680-383561/6
Matrix: Water
Analysis Batch: 383561

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	288	334		ug/L		116	75 - 125	6	30
Ethylene	269	317		ug/L		118	75 - 125	8	30
Methane	154	182		ug/L		119	75 - 125	7	30

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Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-383161/1-A
Matrix: Water
Analysis Batch: 383553

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 383161

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.050	U	0.050		mg/L		05/14/15 14:51	05/16/15 15:58	1
Iron, Dissolved	0.050	U	0.050		mg/L		05/14/15 14:51	05/16/15 15:58	1
Manganese	0.010	U	0.010		mg/L		05/14/15 14:51	05/16/15 15:58	1
Manganese, Dissolved	0.010	U	0.010		mg/L		05/14/15 14:51	05/16/15 15:58	1

Lab Sample ID: LCS 680-383161/2-A
Matrix: Water
Analysis Batch: 383553

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 383161

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5.00	5.19		mg/L		104	80 - 120
Iron, Dissolved	5.00	5.19		mg/L		104	80 - 120
Manganese	0.500	0.537		mg/L		107	80 - 120
Manganese, Dissolved	0.500	0.537		mg/L		107	80 - 120

Lab Sample ID: 680-112441-1 MS
Matrix: Water
Analysis Batch: 383553

Client Sample ID: CPA-A-DHU-0515
Prep Type: Total Recoverable
Prep Batch: 383161

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5.8		5.00	10.9		mg/L		101	75 - 125
Iron, Dissolved	5.8		5.00	10.9		mg/L		101	75 - 125
Manganese	0.43		0.500	0.956		mg/L		105	75 - 125
Manganese, Dissolved	0.43		0.500	0.956		mg/L		105	75 - 125

Lab Sample ID: 680-112441-1 MSD
Matrix: Water
Analysis Batch: 383553

Client Sample ID: CPA-A-DHU-0515
Prep Type: Total Recoverable
Prep Batch: 383161

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	5.8		5.00	10.7		mg/L		98	75 - 125	1	20
Iron, Dissolved	5.8		5.00	10.7		mg/L		98	75 - 125	1	20
Manganese	0.43		0.500	0.944		mg/L		103	75 - 125	1	20
Manganese, Dissolved	0.43		0.500	0.944		mg/L		103	75 - 125	1	20

Method: 310.1 - Alkalinity

Lab Sample ID: MB 680-383000/5
Matrix: Water
Analysis Batch: 383000

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0		mg/L			05/13/15 17:48	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			05/13/15 17:48	1

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Method: 310.1 - Alkalinity (Continued)

Lab Sample ID: LCS 680-383000/6
Matrix: Water
Analysis Batch: 383000

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	250	250		mg/L		100	80 - 120

Lab Sample ID: LCSD 680-383000/27
Matrix: Water
Analysis Batch: 383000

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity	250	252		mg/L		101	80 - 120	1	30

Lab Sample ID: 680-112441-1 DU
Matrix: Water
Analysis Batch: 383000

Client Sample ID: CPA-A-DHU-0515
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	530		520		mg/L		2	30
Carbon Dioxide, Free	20		18.3		mg/L		10	30

Method: 325.2 - Chloride

Lab Sample ID: MB 680-383863/27
Matrix: Water
Analysis Batch: 383863

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.0	U	1.0		mg/L			05/19/15 10:06	1

Lab Sample ID: LCS 680-383863/7
Matrix: Water
Analysis Batch: 383863

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	26.2		mg/L		105	85 - 115

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-382750/13
Matrix: Water
Analysis Batch: 382750

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.050	U	0.050		mg/L			05/12/15 15:44	1

Lab Sample ID: LCS 680-382750/16
Matrix: Water
Analysis Batch: 382750

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.500	0.551		mg/L		110	75 - 125
Nitrate Nitrite as N	1.00	1.05		mg/L		105	90 - 110

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

Lab Sample ID: LCS 680-382750/16
Matrix: Water
Analysis Batch: 382750

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite as N	0.500	0.502		mg/L		100	90 - 110

Method: 375.4 - Sulfate

Lab Sample ID: MB 680-383632/20
Matrix: Water
Analysis Batch: 383632

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	5.0	U	5.0		mg/L			05/18/15 09:37	1

Lab Sample ID: LCS 680-383632/1
Matrix: Water
Analysis Batch: 383632

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	20.0	19.9		mg/L		99	75 - 125

Lab Sample ID: 680-112441-J-3 MS
Matrix: Water
Analysis Batch: 383632

Client Sample ID: 680-112441-J-3 MS
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	25	U	20.0	25	U	mg/L		77	75 - 125

Lab Sample ID: 680-112441-J-3 MSD
Matrix: Water
Analysis Batch: 383632

Client Sample ID: 680-112441-J-3 MSD
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	25	U	20.0	25	U	mg/L		78	75 - 125	1	30

Lab Sample ID: 680-112441-7 DU
Matrix: Water
Analysis Batch: 383632

Client Sample ID: CPA-B-DHU-0515
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	100		101		mg/L		0.8	30

Method: 415.1 - DOC

Lab Sample ID: MB 160-191877/33
Matrix: Water
Analysis Batch: 191877

Client Sample ID: Method Blank
Prep Type: Dissolved

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	1.0	U	1.0		mg/L			05/18/15 21:21	1

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Method: 415.1 - DOC (Continued)

Lab Sample ID: LCS 160-191877/34
Matrix: Water
Analysis Batch: 191877

Client Sample ID: Lab Control Sample
Prep Type: Dissolved

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	10.0	9.75		mg/L		98	90 - 110

Lab Sample ID: MB 160-191878/4
Matrix: Water
Analysis Batch: 191878

Client Sample ID: Method Blank
Prep Type: Dissolved

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	1.0	U	1.0		mg/L			05/19/15 11:39	1

Lab Sample ID: LCS 160-191878/5
Matrix: Water
Analysis Batch: 191878

Client Sample ID: Lab Control Sample
Prep Type: Dissolved

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	10.0	9.15		mg/L		92	90 - 110

Method: 415.1 - TOC

Lab Sample ID: MB 160-191875/4
Matrix: Water
Analysis Batch: 191875

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.0	U	1.0		mg/L			05/18/15 18:36	1

Lab Sample ID: LCS 160-191875/5
Matrix: Water
Analysis Batch: 191875

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.40		mg/L		94	90 - 110

Lab Sample ID: MB 160-191876/4
Matrix: Water
Analysis Batch: 191876

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.0	U	1.0		mg/L			05/19/15 11:39	1

Lab Sample ID: LCS 160-191876/5
Matrix: Water
Analysis Batch: 191876

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.15		mg/L		92	90 - 110

LAB 7/6/15

GC/MS VOA

Analysis Batch: 383721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-1	CPA-A-DHU-0515	Total/NA	Water	8260B	
680-112441-3	CPA-A-MHU-0515	Total/NA	Water	8260B	
680-112441-5	CPA-A-SHU-0515	Total/NA	Water	8260B	
680-112441-7	CPA-B-DHU-0515	Total/NA	Water	8260B	
680-112441-9	CPA-B-MHU-0515	Total/NA	Water	8260B	
680-112441-11	CPA-B-MHU-0515-EB	Total/NA	Water	8260B	
680-112441-12	CPA-B-SHU-0515	Total/NA	Water	8260B	
680-112441-14	2Q15 CPA Trip Blank #1	Total/NA	Water	8260B	
LCS 680-383721/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-383721/5	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-383721/9	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 383915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-9 - DL	CPA-B-MHU-0515	Total/NA	Water	8260B	
LCS 680-383915/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-383915/5	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-383915/9	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 384583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-3 MS	CPA-A-MHU-0515	Total/NA	Water	8260B	
680-112441-3 MSD	CPA-A-MHU-0515	Total/NA	Water	8260B	
LCS 680-384583/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-384583/5	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-384583/9	Method Blank	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 382919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-1	CPA-A-DHU-0515	Total/NA	Water	RSK-175	
680-112441-3	CPA-A-MHU-0515	Total/NA	Water	RSK-175	
680-112441-5	CPA-A-SHU-0515	Total/NA	Water	RSK-175	
680-112441-9	CPA-B-MHU-0515	Total/NA	Water	RSK-175	
LCS 680-382919/2	Lab Control Sample	Total/NA	Water	RSK-175	
LCS 680-382919/5	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-382919/29	Lab Control Sample Dup	Total/NA	Water	RSK-175	
LCSD 680-382919/3	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 680-382919/7	Method Blank	Total/NA	Water	RSK-175	

Analysis Batch: 383561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-7	CPA-B-DHU-0515	Total/NA	Water	RSK-175	
680-112441-12	CPA-B-SHU-0515	Total/NA	Water	RSK-175	
LCS 680-383561/5	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-383561/6	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 680-383561/7	Method Blank	Total/NA	Water	RSK-175	

LAB 7/6/15

Metals

Prep Batch: 383161

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-1	CPA-A-DHU-0515	Total Recoverable	Water	3005A	
680-112441-1 MS	CPA-A-DHU-0515	Total Recoverable	Water	3005A	
680-112441-1 MSD	CPA-A-DHU-0515	Total Recoverable	Water	3005A	
680-112441-2	CPA-A-DHU-F(0.2)-0515	Dissolved	Water	3005A	
680-112441-3	CPA-A-MHU-0515	Total Recoverable	Water	3005A	
680-112441-4	CPA-A-MHU-F(0.2)-0515	Dissolved	Water	3005A	
680-112441-5	CPA-A-SHU-0515	Total Recoverable	Water	3005A	
680-112441-6	CPA-A-SHU-F(0.2)-0515	Dissolved	Water	3005A	
680-112441-7	CPA-B-DHU-0515	Total Recoverable	Water	3005A	
680-112441-8	CPA-B-DHU-F(0.2)-0515	Dissolved	Water	3005A	
680-112441-9	CPA-B-MHU-0515	Total Recoverable	Water	3005A	
680-112441-10	CPA-B-MHU-F(0.2)-0515	Dissolved	Water	3005A	
680-112441-12	CPA-B-SHU-0515	Total Recoverable	Water	3005A	
680-112441-13	CPA-B-SHU-F(0.2)-0515	Dissolved	Water	3005A	
LCS 680-383161/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 680-383161/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 383553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-1	CPA-A-DHU-0515	Total Recoverable	Water	6010C	383161
680-112441-1 MS	CPA-A-DHU-0515	Total Recoverable	Water	6010C	383161
680-112441-1 MSD	CPA-A-DHU-0515	Total Recoverable	Water	6010C	383161
680-112441-2	CPA-A-DHU-F(0.2)-0515	Dissolved	Water	6010C	383161
680-112441-3	CPA-A-MHU-0515	Total Recoverable	Water	6010C	383161
680-112441-4	CPA-A-MHU-F(0.2)-0515	Dissolved	Water	6010C	383161
680-112441-5	CPA-A-SHU-0515	Total Recoverable	Water	6010C	383161
680-112441-6	CPA-A-SHU-F(0.2)-0515	Dissolved	Water	6010C	383161
680-112441-7	CPA-B-DHU-0515	Total Recoverable	Water	6010C	383161
680-112441-8	CPA-B-DHU-F(0.2)-0515	Dissolved	Water	6010C	383161
680-112441-9	CPA-B-MHU-0515	Total Recoverable	Water	6010C	383161
680-112441-10	CPA-B-MHU-F(0.2)-0515	Dissolved	Water	6010C	383161
680-112441-12	CPA-B-SHU-0515	Total Recoverable	Water	6010C	383161
680-112441-13	CPA-B-SHU-F(0.2)-0515	Dissolved	Water	6010C	383161
LCS 680-383161/2-A	Lab Control Sample	Total Recoverable	Water	6010C	383161
MB 680-383161/1-A	Method Blank	Total Recoverable	Water	6010C	383161

General Chemistry

Analysis Batch: 191875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-1	CPA-A-DHU-0515	Total/NA	Water	415.1	
680-112441-3	CPA-A-MHU-0515	Total/NA	Water	415.1	
680-112441-5	CPA-A-SHU-0515	Total/NA	Water	415.1	
680-112441-7	CPA-B-DHU-0515	Total/NA	Water	415.1	
680-112441-12	CPA-B-SHU-0515	Total/NA	Water	415.1	
LCS 160-191875/5	Lab Control Sample	Total/NA	Water	415.1	
MB 160-191875/4	Method Blank	Total/NA	Water	415.1	

UAB 7/6/15

General Chemistry (Continued)

Analysis Batch: 191876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-9 - RADL	CPA-B-MHU-0515	Total/NA	Water	415.1	
LCS 160-191876/5	Lab Control Sample	Total/NA	Water	415.1	
MB 160-191876/4	Method Blank	Total/NA	Water	415.1	

Analysis Batch: 191877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-2	CPA-A-DHU-F(0.2)-0515	Dissolved	Water	415.1	
680-112441-4	CPA-A-MHU-F(0.2)-0515	Dissolved	Water	415.1	
680-112441-6	CPA-A-SHU-F(0.2)-0515	Dissolved	Water	415.1	
680-112441-8	CPA-B-DHU-F(0.2)-0515	Dissolved	Water	415.1	
680-112441-13	CPA-B-SHU-F(0.2)-0515	Dissolved	Water	415.1	
LCS 160-191877/34	Lab Control Sample	Dissolved	Water	415.1	
MB 160-191877/33	Method Blank	Dissolved	Water	415.1	

Analysis Batch: 191878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-10 - RADL	CPA-B-MHU-F(0.2)-0515	Dissolved	Water	415.1	
LCS 160-191878/5	Lab Control Sample	Dissolved	Water	415.1	
MB 160-191878/4	Method Blank	Dissolved	Water	415.1	

Analysis Batch: 382750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-1	CPA-A-DHU-0515	Total/NA	Water	353.2	
680-112441-3	CPA-A-MHU-0515	Total/NA	Water	353.2	
680-112441-5	CPA-A-SHU-0515	Total/NA	Water	353.2	
680-112441-7	CPA-B-DHU-0515	Total/NA	Water	353.2	
680-112441-9	CPA-B-MHU-0515	Total/NA	Water	353.2	
680-112441-12	CPA-B-SHU-0515	Total/NA	Water	353.2	
LCS 680-382750/16	Lab Control Sample	Total/NA	Water	353.2	
MB 680-382750/13	Method Blank	Total/NA	Water	353.2	

Analysis Batch: 383000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-1	CPA-A-DHU-0515	Total/NA	Water	310.1	
680-112441-1 DU	CPA-A-DHU-0515	Total/NA	Water	310.1	
680-112441-3	CPA-A-MHU-0515	Total/NA	Water	310.1	
680-112441-5	CPA-A-SHU-0515	Total/NA	Water	310.1	
680-112441-7	CPA-B-DHU-0515	Total/NA	Water	310.1	
680-112441-9	CPA-B-MHU-0515	Total/NA	Water	310.1	
680-112441-12	CPA-B-SHU-0515	Total/NA	Water	310.1	
LCS 680-383000/6	Lab Control Sample	Total/NA	Water	310.1	
LCSD 680-383000/27	Lab Control Sample Dup	Total/NA	Water	310.1	
MB 680-383000/5	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 383632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-1	CPA-A-DHU-0515	Total/NA	Water	375.4	
680-112441-3	CPA-A-MHU-0515	Total/NA	Water	375.4	
680-112441-5	CPA-A-SHU-0515	Total/NA	Water	375.4	
680-112441-7	CPA-B-DHU-0515	Total/NA	Water	375.4	
680-112441-7 DU	CPA-B-DHU-0515	Total/NA	Water	375.4	

LAB 7/6/15

General Chemistry (Continued)

Analysis Batch: 383632 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-9	CPA-B-MHU-0515	Total/NA	Water	375.4	
680-112441-12	CPA-B-SHU-0515	Total/NA	Water	375.4	
680-112441-J-3 MS	680-112441-J-3 MS	Total/NA	Water	375.4	
680-112441-J-3 MSD	680-112441-J-3 MSD	Total/NA	Water	375.4	
LCS 680-383632/1	Lab Control Sample	Total/NA	Water	375.4	
MB 680-383632/20	Method Blank	Total/NA	Water	375.4	

Analysis Batch: 383863

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112441-1	CPA-A-DHU-0515	Total/NA	Water	325.2	
680-112441-3	CPA-A-MHU-0515	Total/NA	Water	325.2	
680-112441-5	CPA-A-SHU-0515	Total/NA	Water	325.2	
680-112441-7	CPA-B-DHU-0515	Total/NA	Water	325.2	
680-112441-9	CPA-B-MHU-0515	Total/NA	Water	325.2	
680-112441-12	CPA-B-SHU-0515	Total/NA	Water	325.2	
LCS 680-383863/7	Lab Control Sample	Total/NA	Water	325.2	
MB 680-383863/27	Method Blank	Total/NA	Water	325.2	

LAB 7/6/15

Lab Chronicle

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Client Sample ID: CPA-A-DHU-0515

Lab Sample ID: 680-112441-1
Date Collected: 05/11/15 09:35
Matrix: Water
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	383721	05/19/15 16:29	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	382919	05/13/15 16:32	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 16:07	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 19:01	DAM	TAL SAV
Total/NA	Analysis	325.2		2	383863	05/19/15 09:52	JME	TAL SAV
Total/NA	Analysis	353.2		1	382750	05/12/15 15:52	GRX	TAL SAV
Total/NA	Analysis	375.4		5	383632	05/18/15 09:37	JME	TAL SAV
Total/NA	Analysis	415.1		1	191875	05/18/15 19:46	JCB	TAL SL

Client Sample ID: CPA-A-DHU-F(0.2)-0515

Lab Sample ID: 680-112441-2
Date Collected: 05/11/15 09:35
Matrix: Water
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 16:39	BCB	TAL SAV
Dissolved	Analysis	415.1		1	191877	05/18/15 22:44	JCB	TAL SL

Client Sample ID: CPA-A-MHU-0515

Lab Sample ID: 680-112441-3
Date Collected: 05/11/15 10:15
Matrix: Water
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	383721	05/19/15 16:50	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	382919	05/13/15 16:45	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 16:44	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 18:51	DAM	TAL SAV
Total/NA	Analysis	325.2		2	383863	05/19/15 09:52	JME	TAL SAV
Total/NA	Analysis	353.2		1	382750	05/12/15 16:01	GRX	TAL SAV
Total/NA	Analysis	375.4		5	383632	05/18/15 10:23	JME	TAL SAV
Total/NA	Analysis	415.1		1	191875	05/18/15 19:50	JCB	TAL SL

Client Sample ID: CPA-A-MHU-F(0.2)-0515

Lab Sample ID: 680-112441-4
Date Collected: 05/11/15 10:15
Matrix: Water
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 16:48	BCB	TAL SAV

LAB 7/6/15

Client Sample ID: CPA-A-MHU-F(0.2)-0515

Lab Sample ID: 680-112441-4
Matrix: Water
Date Collected: 05/11/15 10:15
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	415.1		1	191877	05/18/15 22:49	JCB	TAL SL

Client Sample ID: CPA-A-SHU-0515

Lab Sample ID: 680-112441-5
Matrix: Water
Date Collected: 05/11/15 11:00
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	383721	05/19/15 17:11	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	382919	05/13/15 16:58	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 16:53	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 18:30	DAM	TAL SAV
Total/NA	Analysis	325.2		5	383863	05/19/15 10:15	JME	TAL SAV
Total/NA	Analysis	353.2		1	382750	05/12/15 15:54	GRX	TAL SAV
Total/NA	Analysis	375.4		10	383632	05/18/15 10:21	JME	TAL SAV
Total/NA	Analysis	415.1		1	191875	05/18/15 19:55	JCB	TAL SL

Client Sample ID: CPA-A-SHU-F(0.2)-0515

Lab Sample ID: 680-112441-6
Matrix: Water
Date Collected: 05/11/15 11:00
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 16:57	BCB	TAL SAV
Dissolved	Analysis	415.1		1	191877	05/18/15 22:54	JCB	TAL SL

Client Sample ID: CPA-B-DHU-0515

Lab Sample ID: 680-112441-7
Matrix: Water
Date Collected: 05/11/15 12:45
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1000	383721	05/19/15 17:33	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	383561	05/18/15 12:44	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 17:02	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 18:40	DAM	TAL SAV
Total/NA	Analysis	325.2		2	383863	05/19/15 09:52	JME	TAL SAV
Total/NA	Analysis	353.2		1	382750	05/12/15 15:55	GRX	TAL SAV
Total/NA	Analysis	375.4		5	383632	05/18/15 10:06	JME	TAL SAV
Total/NA	Analysis	415.1		1	191875	05/18/15 20:00	JCB	TAL SL

ZAB 7/6/15

Client Sample ID: CPA-B-DHU-F(0.2)-0515

Lab Sample ID: 680-112441-8

Date Collected: 05/11/15 12:45
Matrix: Water
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 17:07	BCB	TAL SAV
Dissolved	Analysis	415.1		1	191877	05/18/15 22:58	JCB	TAL SL

Client Sample ID: CPA-B-MHU-0515

Lab Sample ID: 680-112441-9

Date Collected: 05/11/15 14:30
Matrix: Water
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1000	383721	05/19/15 17:54	JD1	TAL SAV
Total/NA	Analysis	8260B	DL	2000	383915	05/20/15 13:12	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	382919	05/13/15 17:23	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 17:20	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 18:22	DAM	TAL SAV
Total/NA	Analysis	325.2		10	383863	05/19/15 10:21	JME	TAL SAV
Total/NA	Analysis	353.2		1	382750	05/12/15 15:58	GRX	TAL SAV
Total/NA	Analysis	375.4		1	383632	05/18/15 09:14	JME	TAL SAV
Total/NA	Analysis	415.1	RADL	2	191876	05/19/15 12:09	JCB	TAL SL

Client Sample ID: CPA-B-MHU-F(0.2)-0515

Lab Sample ID: 680-112441-10

Date Collected: 05/11/15 14:30
Matrix: Water
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 17:25	BCB	TAL SAV
Dissolved	Analysis	415.1	RADL	2	191878	05/19/15 13:28	JCB	TAL SL

Client Sample ID: CPA-B-MHU-0515-EB

Lab Sample ID: 680-112441-11

Date Collected: 05/11/15 15:00
Matrix: Water
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	383721	05/19/15 15:47	JD1	TAL SAV

Client Sample ID: CPA-B-SHU-0515

Lab Sample ID: 680-112441-12

Date Collected: 05/11/15 13:54
Matrix: Water
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		100	383721	05/19/15 18:15	JD1	TAL SAV

LAB 7/6/15

Lab Chronicle

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Client Sample ID: CPA-B-SHU-0515

Lab Sample ID: 680-112441-12
Matrix: Water
Date Collected: 05/11/15 13:54
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	383561	05/18/15 12:57	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 17:30	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 18:12	DAM	TAL SAV
Total/NA	Analysis	325.2		2	383863	05/19/15 09:55	JME	TAL SAV
Total/NA	Analysis	353.2		1	382750	05/12/15 16:00	GRX	TAL SAV
Total/NA	Analysis	375.4		10	383632	05/18/15 10:21	JME	TAL SAV
Total/NA	Analysis	415.1		1	191875	05/18/15 20:09	JCB	TAL SL

Client Sample ID: CPA-B-SHU-F(0.2)-0515

Lab Sample ID: 680-112441-13
Matrix: Water
Date Collected: 05/11/15 13:54
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 17:34	BCB	TAL SAV
Dissolved	Analysis	415.1		1	191877	05/18/15 23:30	JCB	TAL SL

Client Sample ID: 2Q15 CPA Trip Blank #1

Lab Sample ID: 680-112441-14
Matrix: Water
Date Collected: 05/11/15 00:00
Date Received: 05/12/15 09:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	383721	05/19/15 15:26	JD1	TAL SAV

Laboratory References:

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

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

LAB 7/6/15

TestAmerica Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912.354.7858 fax

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☑ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Amanda Derhake	Site Contact: Lori Bindner	Date: 5/11/15	COC No:
Golder Associates Inc.	Tel/Fax: 636-724-9191	Lab Contact: Michele Kersey	Carrier: FedEx	1 of 2 COCs
820 South Main Street	Analysis Turnaround Time			Sampler:
St Charles, MO 63301	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(636) 724-9191 Phone	TAT if different from Below Standard			Walk-in Client:
(636) 724-9325 FAX	☐ 2 weeks			Lab Sampling:
Project Name: 2Q15 CPA GW Sampling - 1403345	☐ 1 week			Job / SDG No.:
Site: Solutia WG Krummrich Facility	☐ 2 days			
P O # 42447936	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Dissolved Gases by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
CPA-A-DHU-0515	5/11/15	0935	G	W	13	N		2	1	1	1	3	2	3			2 Coolers
CPA-A-DHU-F(0.2)-0515					4	Y									1	3	
CPA-A-MHU-0515		1015			13	N		2	1	1	1	3	2	3			
CPA-A-MHU-F(0.2)-0515					4	Y									1	3	
CPA-A-MHU-0515-MS					2	N		2									
CPA-A-MHU-0515-MSD					2	N		2									
CPA-A-SHU-0515		1100			13	N		2	1	1	1	3	2	3			
CPA-A-SHU-F(0.2)-0515					4	Y									1	3	
CPA-B-DHU-0515		1245			13	N		2	1	1	1	3	2	3			
CPA-B-DHU-F(0.2)-0515					4	Y									1	3	
CPA-B-MHU-0515		1430			13	N		2	1	1	1	3	2	3			
CPA-B-MHU-~~0515~~F(0.2)-0515					4	Y									1	3	
CPA-B-MHU-0515-EB		1500			2	N		2									

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

680-112441 Chain of Custody

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
VOC headspace upon sampling. Yes/No

3.2/3.6
0.8 1.2

680-112441

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: 337181/337182	Cooler Temp. (°C): Obs'd: _____ Corr'd _____	Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Jen Bindner	Golder	5/11/15 1700			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				TA	5/12/15 0932

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

5/27/2015
LAB 7/6/15

TestAmerica Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912.354 7858 fax

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☑ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Amanda Derhake	Site Contact: Lori Bindner	Date: 5/11/15	COC No:
Golder Associates Inc.	Tel/Fax: 636-724-9191	Lab Contact: Michele Kersey	Carrier: FedEx	2 of 2 COCs
820 South Main Street	Analysis Turnaround Time			Sampler:
St. Charles, MO 63301	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(636) 724-9191 Phone	TAT if different from Below Standard			Walk-in Client:
(636) 724-9323 FAX	☑ 2 weeks			Lab Sampling:
Project Name: 2Q15 CPA GW Sampling - 1403345	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			Job / SDG No :
P O # 42447936	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Dissolved Gases by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
CPA-B-SHU-0515	5/11/15	1354	G	W	13	N		2	1	1	1	3	2	3			*2 coolers
CPA-B-SHU-F(0.2)-0515	1	1	1	1	4	F									1	3	
2Q15 CPA Trip Blank #1	—	—	—		2	N		2									

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

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
VOC headspace upon sampling: Yes (No)

3.2/3.6
0.8/1.2

680-11244-1

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: 337181 / 337182	Cooler Temp (°C): Obs'd: _____ Corr'd _____	Therm ID No.: _____

Relinquished by	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Golder	5/11/15 1700			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Company:	Date/Time: 5/12/15 09:32

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

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5/27/2015

Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-112441-1
SDG Number: KPS145

Login Number: 112441
List Number: 1
Creator: Kicklighter, Marilyn D

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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

LAB 7/6/15

Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-112441-1
SDG Number: KPS145

Login Number: 112441
List Number: 2
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis
List Creation: 05/13/15 02:59 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	1.5
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?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

LAB 7/6/15

Certification Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-17
A2LA	ISO/IEC 17025		399.01	02-28-17
Alabama	State Program	4	41450	06-30-15
Arkansas DEQ	State Program	6	88-0692	01-31-16
California	State Program	9	2939	07-31-15
Colorado	State Program	8	N/A	12-31-15
Connecticut	State Program	1	PH-0161	03-31-17
Florida	NELAP	4	E87052	06-30-15
GA Dept. of Agriculture	State Program	4	N/A	06-12-17
Georgia	State Program	4	N/A	06-30-15
Georgia	State Program	4	803	06-30-15
Guam	State Program	9	14-004r	04-16-15 *
Hawaii	State Program	9	N/A	06-30-15
Illinois	NELAP	5	200022	11-30-15
Indiana	State Program	5	N/A	06-30-15
Iowa	State Program	7	353	07-01-15
Kentucky (DW)	State Program	4	90084	12-31-15
Kentucky (UST)	State Program	4	18	06-30-15
Kentucky (WW)	State Program	4	90084	12-31-15
Louisiana	NELAP	6	30690	06-30-15
Louisiana (DW)	NELAP	6	LA150014	12-31-15
Maine	State Program	1	GA00006	09-24-16
Maryland	State Program	3	250	12-31-15
Massachusetts	State Program	1	M-GA006	06-30-15
Michigan	State Program	5	9925	06-30-15
Mississippi	State Program	4	N/A	06-30-15
Montana	State Program	8	CERT0081	12-31-15
Nebraska	State Program	7	TestAmerica-Savannah	06-30-15
New Jersey	NELAP	2	GA769	06-30-15
New Mexico	State Program	6	N/A	06-30-15
New York	NELAP	2	10842	03-31-16
North Carolina (DW)	State Program	4	13701	07-31-15
North Carolina (WW/SW)	State Program	4	269	12-31-15
Oklahoma	State Program	6	9984	08-31-15
Pennsylvania	NELAP	3	68-00474	06-30-15
Puerto Rico	State Program	2	GA00006	12-31-15
South Carolina	State Program	4	98001	06-30-15
Tennessee	State Program	4	TN02961	06-30-15
Texas	NELAP	6	T104704185-14-7	11-30-15
USDA	Federal		SAV 3-04	06-11-17
Virginia	NELAP	3	460161	06-14-15
Washington	State Program	10	C805	06-10-15
West Virginia (DW)	State Program	3	9950C	12-31-15
West Virginia DEP	State Program	3	094	06-30-15
Wisconsin	State Program	5	999819810	08-31-15
Wyoming	State Program	8	8TMS-L	06-30-15

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

* Certification renewal pending - certification considered valid.

LAB 7/6/15

Certification Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112441-1
SDG: KPS145

Laboratory: TestAmerica St. Louis (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-15 *
California	NELAP	9	2886	03-31-16
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-15 *
Illinois	NELAP	5	200023	11-30-15
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	10-31-15
Kentucky (DW)	State Program	4	90125	12-31-15
L-A-B	DoD ELAP		L2305	01-10-16
Louisiana	NELAP	6	04080	06-30-15 *
Louisiana (DW)	NELAP	6	LA150017	12-31-16
Maryland	State Program	3	310	09-30-15
Missouri	State Program	7	780	06-30-15 *
Nevada	State Program	9	MO000542013-1	07-31-15 *
New Jersey	NELAP	2	MO002	06-30-15 *
New Mexico	State Program	6		06-30-10 *
New York	NELAP	2	11616	03-31-16
North Dakota	State Program	8	R207	06-30-15 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-15
Pennsylvania	NELAP	3	68-00540	02-28-16
South Carolina	State Program	4	85002001	06-30-15 *
Texas	NELAP	6	T104704193-13-6	07-31-15 *
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542013-5	07-31-15
Virginia	NELAP	3	460230	06-14-15 *
Washington	State Program	10	C592	08-30-15
West Virginia DEP	State Program	3	381	08-31-15

* Certification renewal pending - certification considered valid.

LAB 7/6/15

Level IV Data Validation Summary
Solutia Inc., W.G. Krummrich, Sauget, Illinois
2Q15 CPA Monitoring Program

Company Name: Golder Associates
Project Name: WGK-2Q15 CPA
Reviewer: L. Bindner
Laboratory: TestAmerica
SDG#: KPS146
Matrix: Water

Project Manager: A. Derhake
Project Number: 140-3345
Sample Date: May 2015

Analytical Method: VOC (8260B), Dissolved Gases (RSK-175), Metals (6010C), Alkalinity (310.1), Chloride (325.2), Nitrogen, Nitrate-Nitrite (353.2), Sulfate (375.4), TOC (415.1), and DOC (415.1)

Sample Names: CPA-C-DHU-0515, CPA-C-DHU-F(0.2)-0515, CPA-C-MHU-0515, CPA-C-MHU-F(0.2)-0515, CPA-C-SHU-0515, CPA-C-SHU-F(0.2)-0515, CPA-D-DHU-0515, CPA-D-DHU-F(0.2)-0515, CPA-D-MHU-0515, CPA-D-MHU-F(0.2)-0515, CPA-D-SHU-0515, CPA-D-SHU-F(0.2)-0515, 2Q15 CPA Trip Blank #2

Field Information	**YES**	**NO**	**NA**
a) Sampling dates noted?	☒	☐	☐
b) Does the laboratory narrative indicate deficiencies?	☒	☐	☐

Comments:

VOC: Samples CPA-C-DHU-0515, CPA-C-DHU-0515-AD, CPA-C-MHU-0515, CPA-C-SHU-0515, CPA-D-DHU-0515, CPA-D-DHU-0515-AD ,CPA-D-MHU-0515, and CPA-D-SHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly. Insufficient volume to perform MS/MSD associated with batch 383401.

Dissolved Gases: Insufficient sample volume was available to perform MS/MSD for batch 384163 and batch 383901.

Metals: No deficiencies noted.

Alkalinity: No deficiencies noted.

Chloride: Samples CPA-C-DHU-0515, CPA-C-MHU-0515, CPA-C-SHU-0515, CPA-D-DHU-0515, CPA-D-MHU-0515, and CPA-D-SHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly.

Nitrate-Nitrite as Nitrogen: Sample CPA-C-SHU-0515 and CPA-D-SHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly. CPA-C-DHU-0515 was analyzed outside analytical holding time due to analyst error.

Sulfate: Samples CPA-C-DHU-0515, CPA-C-MHU-0515, CPA-C-SHU-0515, CPA-D-DHU-0515, CPA-D-MHU-0515, and CPA-D-SHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly.

TOC: Samples CPA-C-DHU-0515, CPA-C-MHU-0515, CPA-C-SHU-0515, CPA-D-DHU-0515, CPA-D-MHU-0515 and CPA-D-SHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly.

DOC: Sample CPA-C-DHU-0515, CPA-C-MHU-0515, CPA-C-SHU-0515, CPA-D-DHU-0515, CPA-D-MHU-0515 and CPA-D-SHU-0515 required dilution prior to analysis, reporting limits were adjusted accordingly.

Chain-of-Custody (COC)	**YES**	**NO**	**NA**
a) Was the COC signed by both field and laboratory personnel?	☒	☐	☐
b) Were samples received in good condition?	☒	☐	☐

Comments: None

General	YES	NO	NA
a) Were hold times met for sample analysis?	☐	☒	☐
b) Were the correct preservatives used?	☒	☐	☐
c) Was the correct method used?	☒	☐	☐
d) Any sample dilutions noted?	☒	☐	☐

Comments: Sample CPA-C-DHU-0515 was analyzed outside analytical holding time due to analyst error. Detections in diluted analysis were qualified.

GC/MS Instrument Performance Check (IPC) and Internal Standards (IS)	YES	NO	NA
a) IPC analyzed at the appropriate frequency and met the appropriate standards?	☒	☐	☐
b) Does BFB meet the ion abundance criteria?	☒	☐	☐
c) Internal Standard retention times and areas met appropriate criteria?	☒	☐	☐

Comments: None

Calibrations	YES	NO	NA
a) Initial calibration analyzed at the appropriate frequency and met the appropriate standards?	☒	☐	☐
b) Continuing calibrations analyzed at the appropriate frequency and met the appropriate standards?	☒	☐	☐
c) Initial calibration verifications and blanks analyzed at the appropriate frequency and met the appropriate standards?	☒	☐	☐
d) Continuing calibration verifications and blanks analyzed at the appropriate frequency and met the appropriate standards?	☐	☒	☐

Comments: None

Blanks	YES	NO	NA
a) Were blanks (trip, equipment, method) performed at required frequency?	☒	☐	☐
b) Were analytes detected in any blanks?	☒	☐	☐

Comments: Equipment blank CPA-C-MHU-0515-EB was submitted with SDG KPS146. Benzene, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene were detected in the EB. Qualification was not required based on 5Xs rule

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: None

Additional Comments: None

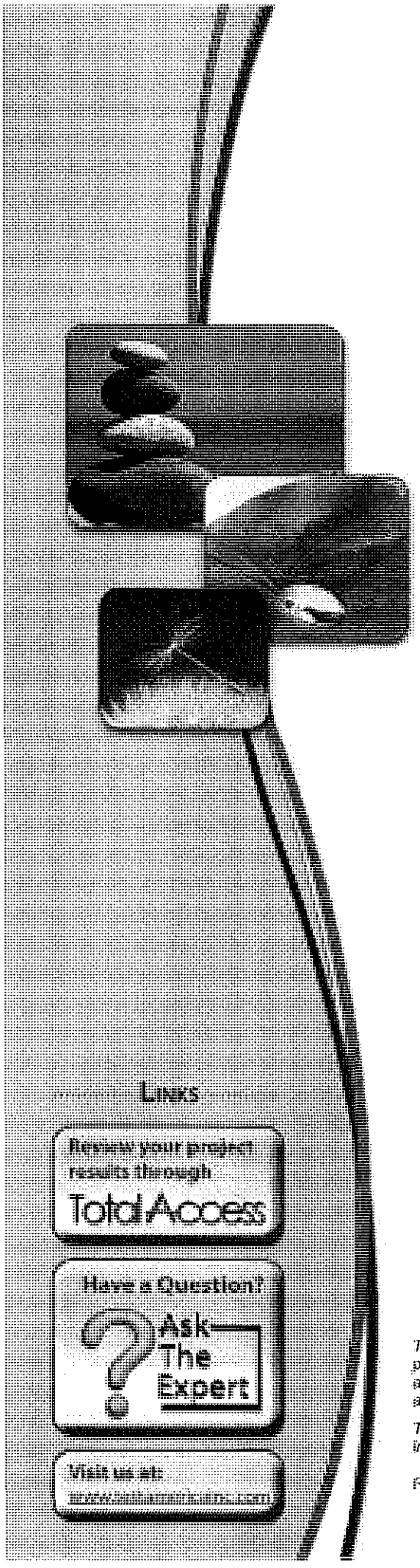
Qualifications:

Quality Control Issue	Compound(s)	Qualifier	Samples Affected
Compounds analyzed at a dilution	Benzene, Chlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Chloride, Nitrate, Sulfate, TOC, and DOC	D	CPA-C-DHU, CPA-C-DHU-AD, CPA-C-MHU, CPA-C-SHU, CPA-D-DHU, CPA-D-DHU-AD, CPA-D-MHU, and CPA-D-SHU
Compounds analyzed outside hold time	Nitrate	J	CPA-C-DHU

SDG KPS146

Sample Results from:

CPA-C-DHU
CPA-C-MHU
CPA-C-SHU
CPA-D-DHU
CPA-D-MHU
CPA-D-SHU



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: 680-112468-1
TestAmerica Sample Delivery Group: KPS146
Client Project/Site: 2Q15- CPA GW Sampling-1403345

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

Attn: Mr. Jerry Rinaldi

Lisa Harvey

Authorized for release by:
5/27/2015 4:22:27 PM
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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.

LAB 7/6/15

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LAB 7/6/15

Job ID: 680-112468-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE
Client: Solutia Inc.
Project: 2Q15- CPA GW Sampling-1403345
Report Number: 680-112468-1

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

RECEIPT

The samples were received on 5/13/2015 9:18 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.4° C and 4.6° C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples CPA-C-DHU-0515 (680-112468-1), CPA-C-DHU-0515-AD (680-112468-3), CPA-C-MHU-0515 (680-112468-4), CPA-C-SHU-0515 (680-112468-6), CPA-C-MHU-0515-EB (680-112468-8), CPA-D-DHU-0515 (680-112468-9), CPA-D-DHU-0515-AD (680-112468-11), CPA-D-MHU-0515 (680-112468-12), CPA-D-SHU-0515 (680-112468-14) and 2Q15 CPA Trip Blank #2 (680-112468-16) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/16/2015.

Method(s) 8260B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 383401.

Samples CPA-C-DHU-0515 (680-112468-1)[200X], CPA-C-DHU-0515-AD (680-112468-3)[200X], CPA-C-MHU-0515 (680-112468-4) [2000X], CPA-C-SHU-0515 (680-112468-6)[100X], CPA-D-DHU-0515 (680-112468-9)[200X], CPA-D-DHU-0515-AD (680-112468-11) [200X], CPA-D-MHU-0515 (680-112468-12)[500X] and CPA-D-SHU-0515 (680-112468-14)[1000X] 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.

DISSOLVED GASES

Samples CPA-C-DHU-0515 (680-112468-1), CPA-C-MHU-0515 (680-112468-4), CPA-C-SHU-0515 (680-112468-6), CPA-D-DHU-0515 (680-112468-9), CPA-D-MHU-0515 (680-112468-12) and CPA-D-SHU-0515 (680-112468-14) were analyzed for dissolved gases in accordance with RSK-175. The samples were analyzed on 05/19/2015 and 05/21/2015.

Method(s) RSK-175: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 680-384163.

Method(s) RSK-175: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 680-383901.

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

METALS (ICP)

Samples CPA-C-DHU-F(0.2)-0515 (680-112468-2), CPA-C-MHU-F(0.2)-0515 (680-112468-5), CPA-C-SHU-F(0.2)-0515 (680-112468-7), CPA-D-DHU-F(0.2)-0515 (680-112468-10), CPA-D-MHU-F(0.2)-0515 (680-112468-13) and CPA-D-SHU-F(0.2)-0515 (680-112468-15) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/14/2015 and analyzed on 05/16/2015.

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

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Job ID: 680-112468-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

METALS (ICP)
Samples CPA-C-DHU-0515 (680-112468-1), CPA-C-MHU-0515 (680-112468-4), CPA-C-SHU-0515 (680-112468-6), CPA-D-DHU-0515 (680-112468-9), CPA-D-MHU-0515 (680-112468-12) and CPA-D-SHU-0515 (680-112468-14) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 05/14/2015 and analyzed on 05/16/2015.

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

ALKALINITY
Samples CPA-C-DHU-0515 (680-112468-1), CPA-C-MHU-0515 (680-112468-4), CPA-C-SHU-0515 (680-112468-6), CPA-D-DHU-0515 (680-112468-9), CPA-D-MHU-0515 (680-112468-12) and CPA-D-SHU-0515 (680-112468-14) were analyzed for alkalinity in accordance with EPA Method 310.1. The samples were analyzed on 05/13/2015.

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

CHLORIDE
Samples CPA-C-DHU-0515 (680-112468-1), CPA-C-MHU-0515 (680-112468-4), CPA-C-SHU-0515 (680-112468-6), CPA-D-DHU-0515 (680-112468-9), CPA-D-MHU-0515 (680-112468-12) and CPA-D-SHU-0515 (680-112468-14) were analyzed for Chloride in accordance with EPA Method 325.2. The samples were analyzed on 05/19/2015.

Samples CPA-C-DHU-0515 (680-112468-1)[2X], CPA-C-MHU-0515 (680-112468-4)[20X], CPA-C-SHU-0515 (680-112468-6)[5X], CPA-D-DHU-0515 (680-112468-9)[2X], CPA-D-MHU-0515 (680-112468-12)[5X] and CPA-D-SHU-0515 (680-112468-14)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

NITRATE-NITRITE AS NITROGEN
Samples CPA-C-DHU-0515 (680-112468-1), CPA-C-MHU-0515 (680-112468-4), CPA-C-SHU-0515 (680-112468-6), CPA-D-DHU-0515 (680-112468-9), CPA-D-MHU-0515 (680-112468-12) and CPA-D-SHU-0515 (680-112468-14) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 05/13/2015 and 05/14/2015.

Method(s) 353.2: The following sample was analyzed outside of analytical holding time due to analyst error: CPA-C-DHU-0515 (680-112468-1).

Samples CPA-C-SHU-0515 (680-112468-6)[5X] and CPA-D-SHU-0515 (680-112468-14)[25X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

SULFATE
Samples CPA-C-DHU-0515 (680-112468-1), CPA-C-MHU-0515 (680-112468-4), CPA-C-SHU-0515 (680-112468-6), CPA-D-DHU-0515 (680-112468-9), CPA-D-MHU-0515 (680-112468-12) and CPA-D-SHU-0515 (680-112468-14) were analyzed for sulfate in accordance with EPA Method 375.4. The samples were analyzed on 05/18/2015.

Samples CPA-C-DHU-0515 (680-112468-1)[2X], CPA-C-MHU-0515 (680-112468-4)[20X], CPA-C-SHU-0515 (680-112468-6)[50X], CPA-D-DHU-0515 (680-112468-9)[2X], CPA-D-MHU-0515 (680-112468-12)[5X] and CPA-D-SHU-0515 (680-112468-14)[50X] 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.

TOTAL ORGANIC CARBON
Samples CPA-C-DHU-0515 (680-112468-1), CPA-C-MHU-0515 (680-112468-4), CPA-C-SHU-0515 (680-112468-6), CPA-D-DHU-0515 (680-112468-9), CPA-D-MHU-0515 (680-112468-12) and CPA-D-SHU-0515 (680-112468-14) were analyzed for total organic carbon in accordance with EPA Method 415.1. The samples were analyzed on 05/19/2015.

LAB 7/6/15

Job ID: 680-112468-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

Samples CPA-C-DHU-0515 (680-112468-1)[5X], CPA-C-MHU-0515 (680-112468-4)[5X], CPA-C-SHU-0515 (680-112468-6)[20X], CPA-D-DHU-0515 (680-112468-9)[5X], CPA-D-MHU-0515 (680-112468-12)[10X] and CPA-D-SHU-0515 (680-112468-14)[20X] 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.

DISSOLVED ORGANIC CARBON (DOC)

Samples CPA-C-DHU-F(0.2)-0515 (680-112468-2), CPA-C-MHU-F(0.2)-0515 (680-112468-5), CPA-C-SHU-F(0.2)-0515 (680-112468-7), CPA-D-DHU-F(0.2)-0515 (680-112468-10), CPA-D-MHU-F(0.2)-0515 (680-112468-13) and CPA-D-SHU-F(0.2)-0515 (680-112468-15) were analyzed for Dissolved Organic Carbon (DOC) in accordance with EPA Method 415.1. The samples were analyzed on 05/19/2015.

Samples CPA-C-DHU-F(0.2)-0515 (680-112468-2)[5X], CPA-C-MHU-F(0.2)-0515 (680-112468-5)[5X], CPA-C-SHU-F(0.2)-0515 (680-112468-7)[20X], CPA-D-DHU-F(0.2)-0515 (680-112468-10)[5X], CPA-D-MHU-F(0.2)-0515 (680-112468-13)[10X] and CPA-D-SHU-F(0.2)-0515 (680-112468-15)[20X] 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.

LAB 7/6/15

Sample Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-112468-1	CPA-C-DHU-0515	Water	05/12/15 09:55	05/13/15 09:18
680-112468-2	CPA-C-DHU-F(0.2)-0515	Water	05/12/15 09:55	05/13/15 09:18
680-112468-3	CPA-C-DHU-0515-AD	Water	05/12/15 09:55	05/13/15 09:18
680-112468-4	CPA-C-MHU-0515	Water	05/12/15 10:41	05/13/15 09:18
680-112468-5	CPA-C-MHU-F(0.2)-0515	Water	05/12/15 10:41	05/13/15 09:18
680-112468-6	CPA-C-SHU-0515	Water	05/12/15 11:25	05/13/15 09:18
680-112468-7	CPA-C-SHU-F(0.2)-0515	Water	05/12/15 11:25	05/13/15 09:18
680-112468-8	CPA-C-MHU-0515-EB	Water	05/12/15 11:05	05/13/15 09:18
680-112468-9	CPA-D-DHU-0515	Water	05/12/15 12:45	05/13/15 09:18
680-112468-10	CPA-D-DHU-F(0.2)-0515	Water	05/12/15 12:45	05/13/15 09:18
680-112468-11	CPA-D-DHU-0515-AD	Water	05/12/15 12:45	05/13/15 09:18
680-112468-12	CPA-D-MHU-0515	Water	05/12/15 13:40	05/13/15 09:18
680-112468-13	CPA-D-MHU-F(0.2)-0515	Water	05/12/15 13:40	05/13/15 09:18
680-112468-14	CPA-D-SHU-0515	Water	05/12/15 14:16	05/13/15 09:18
680-112468-15	CPA-D-SHU-F(0.2)-0515	Water	05/12/15 14:16	05/13/15 09:18
680-112468-16	2Q15 CPA Trip Blank #2	Water	05/12/15 00:00	05/13/15 09:18

LAB 7/6/15

Method Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAV
RSK-175	Dissolved Gases (GC)	RSK	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
310.1	Alkalinity	MCAWW	TAL SAV
325.2	Chloride	MCAWW	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL SAV
375.4	Sulfate	MCAWW	TAL SAV
415.1	TOC	MCAWW	TAL SL
415.1	DOC	MCAWW	TAL SL

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

LAB 7/6/15

Qualifiers

GC/MS VOA

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

GC VOA

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

Metals

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

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	Those 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)

LAB 7/6/15

Detection Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Client Sample ID: CPA-C-DHU-0515 — Lab Sample ID: 680-112468-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	5900		200		ug/L	200		8260B	Total/NA
Chlorobenzene	22000		200		ug/L	200		8260B	Total/NA
1,2-Dichlorobenzene	10000		200		ug/L	200		8260B	Total/NA
1,3-Dichlorobenzene	830		200		ug/L	200		8260B	Total/NA
1,4-Dichlorobenzene	16000		200		ug/L	200		8260B	Total/NA
Ethane	2.2		1.1		ug/L	1		RSK-175	Total/NA
Methane	190		0.58		ug/L	1		RSK-175	Total/NA
Iron	4.8		0.050		mg/L	1		6010C	Total Recoverable
Manganese	0.65		0.010		mg/L	1		6010C	Total Recoverable
Chloride	59		2.0		mg/L	2		325.2	Total/NA
Sulfate	59		10		mg/L	2		375.4	Total/NA
Total Organic Carbon - RADL	37		5.0		mg/L	5		415.1	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	540		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	22		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-C-DHU-F(0.2)-0515 — Lab Sample ID: 680-112468-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	2.6		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	0.63		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon - RADL	36		5.0		mg/L	5		415.1	Dissolved

Client Sample ID: CPA-C-DHU-0515-AD — Lab Sample ID: 680-112468-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	5900		200		ug/L	200		8260B	Total/NA
Chlorobenzene	23000		200		ug/L	200		8260B	Total/NA
1,2-Dichlorobenzene	10000		200		ug/L	200		8260B	Total/NA
1,3-Dichlorobenzene	870		200		ug/L	200		8260B	Total/NA
1,4-Dichlorobenzene	15000		200		ug/L	200		8260B	Total/NA

Client Sample ID: CPA-C-MHU-0515 — Lab Sample ID: 680-112468-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	130000		2000		ug/L	2000		8260B	Total/NA
Chlorobenzene	180000		2000		ug/L	2000		8260B	Total/NA
1,2-Dichlorobenzene	15000		2000		ug/L	2000		8260B	Total/NA
1,4-Dichlorobenzene	18000		2000		ug/L	2000		8260B	Total/NA
Ethane	13		1.1		ug/L	1		RSK-175	Total/NA
Ethylene	19		1.0		ug/L	1		RSK-175	Total/NA
Methane (TCD)	7900		390		ug/L	1		RSK-175	Total/NA
Iron	110		0.050		mg/L	1		6010C	Total Recoverable
Manganese	4.6		0.010		mg/L	1		6010C	Total Recoverable
Chloride	670		20		mg/L	20		325.2	Total/NA
Sulfate	570		100		mg/L	20		375.4	Total/NA
Total Organic Carbon - RADL	48		5.0		mg/L	5		415.1	Total/NA

This Detection Summary does not include radiochemical test results.

LAB 7/6/15

Detection Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Client Sample ID: CPA-C-MHU-0515 (Continued) — Lab Sample ID: 680-112468-4

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	330		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	120		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-C-MHU-F(0.2)-0515 — Lab Sample ID: 680-112468-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	100		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	4.6		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon - RADL	42		5.0		mg/L	5		415.1	Dissolved

Client Sample ID: CPA-C-SHU-0515 — Lab Sample ID: 680-112468-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	460		100		ug/L	100		8260B	Total/NA
Chlorobenzene	8400		100		ug/L	100		8260B	Total/NA
1,2-Dichlorobenzene	13000		100		ug/L	100		8260B	Total/NA
1,3-Dichlorobenzene	1400		100		ug/L	100		8260B	Total/NA
1,4-Dichlorobenzene	8500		100		ug/L	100		8260B	Total/NA
Methane	93		0.58		ug/L	1		RSK-175	Total/NA
Iron	0.39		0.050		mg/L	1		6010C	Total Recoverable
Manganese	10		0.010		mg/L	1		6010C	Total Recoverable
Chloride	220		5.0		mg/L	5		325.2	Total/NA
Nitrate as N	0.29		0.25		mg/L	5		353.2	Total/NA
Sulfate	1100		250		mg/L	50		375.4	Total/NA
Total Organic Carbon - RADL	250		20		mg/L	20		415.1	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	600		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	190		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-C-SHU-F(0.2)-0515 — Lab Sample ID: 680-112468-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	0.13		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	10		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon - RADL	240		20		mg/L	20		415.1	Dissolved

Client Sample ID: CPA-C-MHU-0515-EB — Lab Sample ID: 680-112468-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	27		1.0		ug/L	1		8260B	Total/NA
Chlorobenzene	140		1.0		ug/L	1		8260B	Total/NA
1,2-Dichlorobenzene	41		1.0		ug/L	1		8260B	Total/NA
1,3-Dichlorobenzene	2.7		1.0		ug/L	1		8260B	Total/NA
1,4-Dichlorobenzene	47		1.0		ug/L	1		8260B	Total/NA

Client Sample ID: CPA-D-DHU-0515 — Lab Sample ID: 680-112468-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	390		200		ug/L	200		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

LAB 7/6/15

Client Sample ID: CPA-D-DHU-0515 (Continued) — Lab Sample ID: 680-112468-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chlorobenzene	21000		200		ug/L	200		8260B	Total/NA
1,2-Dichlorobenzene	2800		200		ug/L	200		8260B	Total/NA
1,3-Dichlorobenzene	400		200		ug/L	200		8260B	Total/NA
1,4-Dichlorobenzene	2500		200		ug/L	200		8260B	Total/NA
Ethane	7.0		1.1		ug/L	1		RSK-175	Total/NA
Methane	380		0.58		ug/L	1		RSK-175	Total/NA
Iron	0.36		0.050		mg/L	1		6010C	Total Recoverable
Manganese	0.39		0.010		mg/L	1		6010C	Total Recoverable
Chloride	66		2.0		mg/L	2		325.2	Total/NA
Sulfate	42		10		mg/L	2		375.4	Total/NA
Total Organic Carbon - RADL	50		5.0		mg/L	5		415.1	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	570		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	21		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-D-DHU-F(0.2)-0515 — Lab Sample ID: 680-112468-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	0.12		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	0.39		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon - RADL	37		5.0		mg/L	5		415.1	Dissolved

Client Sample ID: CPA-D-DHU-0515-AD — Lab Sample ID: 680-112468-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	400		200		ug/L	200		8260B	Total/NA
Chlorobenzene	22000		200		ug/L	200		8260B	Total/NA
1,2-Dichlorobenzene	2900		200		ug/L	200		8260B	Total/NA
1,3-Dichlorobenzene	400		200		ug/L	200		8260B	Total/NA
1,4-Dichlorobenzene	2600		200		ug/L	200		8260B	Total/NA

Client Sample ID: CPA-D-MHU-0515 — Lab Sample ID: 680-112468-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	5300		500		ug/L	500		8260B	Total/NA
Chlorobenzene	47000		500		ug/L	500		8260B	Total/NA
1,2-Dichlorobenzene	21000		500		ug/L	500		8260B	Total/NA
1,3-Dichlorobenzene	1200		500		ug/L	500		8260B	Total/NA
1,4-Dichlorobenzene	14000		500		ug/L	500		8260B	Total/NA
Ethane	14		1.1		ug/L	1		RSK-175	Total/NA
Methane (TCD)	11000		390		ug/L	1		RSK-175	Total/NA
Iron	0.44		0.050		mg/L	1		6010C	Total Recoverable
Manganese	1.2		0.010		mg/L	1		6010C	Total Recoverable
Chloride	220		5.0		mg/L	5		325.2	Total/NA
Sulfate	160		25		mg/L	5		375.4	Total/NA
Total Organic Carbon - RADL	77		10		mg/L	10		415.1	Total/NA

This Detection Summary does not include radiochemical test results.

LAB 7/6/15

Detection Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Client Sample ID: CPA-D-MHU-0515 (Continued) — Lab Sample ID: 680-112468-12

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	680		5.0		mg/L	1		310.1	Total/NA
Carbon Dioxide, Free	31		5.0		mg/L	1		310.1	Total/NA

Client Sample ID: CPA-D-MHU-F(0.2)-0515 — Lab Sample ID: 680-112468-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	0.21		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	1.2		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon - RADL	70		10		mg/L	10		415.1	Dissolved

Client Sample ID: CPA-D-SHU-0515 — Lab Sample ID: 680-112468-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	6400		1000		ug/L	1000		8260B	Total/NA
Chlorobenzene	150000		1000		ug/L	1000		8260B	Total/NA
Methane	49		0.58		ug/L	1		RSK-175	Total/NA
Iron	39		0.050		mg/L	1		6010C	Total Recoverable
Manganese	3.5		0.010		mg/L	1		6010C	Total Recoverable
Chloride	320		10		mg/L	10		325.2	Total/NA
Nitrate as N	19		1.3		mg/L	25		353.2	Total/NA
Sulfate	1700		250		mg/L	50		375.4	Total/NA
Total Organic Carbon - RADL	220		20		mg/L	20		415.1	Total/NA

Client Sample ID: CPA-D-SHU-F(0.2)-0515 — Lab Sample ID: 680-112468-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron, Dissolved	40		0.050		mg/L	1		6010C	Dissolved
Manganese, Dissolved	3.6		0.010		mg/L	1		6010C	Dissolved
Dissolved Organic Carbon - RADL	110		20		mg/L	20		415.1	Dissolved

Client Sample ID: 2Q15 CPA Trip Blank #2 — Lab Sample ID: 680-112468-16

No Detections.

This Detection Summary does not include radiochemical test results.

LAB 7/6/15

Client Sample ID: CPA-C-DHU-0515

Date Collected: 05/12/15 09:55
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	5900	D	200		ug/L			05/16/15 15:48	200
Chlorobenzene	22000	D	200		ug/L			05/16/15 15:48	200
1,2-Dichlorobenzene	10000	D	200		ug/L			05/16/15 15:48	200
1,3-Dichlorobenzene	830	D	200		ug/L			05/16/15 15:48	200
1,4-Dichlorobenzene	16000	D	200		ug/L			05/16/15 15:48	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*92*		*70 - 130*		*05/16/15 15:48*	*200*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 130*		*05/16/15 15:48*	*200*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*05/16/15 15:48*	*200*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*		*05/16/15 15:48*	*200*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	2.2		1.1		ug/L			05/21/15 13:25	1
Ethylene	1.0	U	1.0		ug/L			05/21/15 13:25	1
Methane	190		0.58		ug/L			05/21/15 13:25	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	4.8		0.050		mg/L		05/14/15 14:51	05/16/15 17:39	1
Manganese	0.65		0.010		mg/L		05/14/15 14:51	05/16/15 17:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	59	D	2.0		mg/L			05/19/15 10:03	2
Nitrate as N	0.050	U H J	0.050		mg/L			05/14/15 14:35	1
Sulfate	59	D	10		mg/L			05/18/15 09:29	2

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	540		5.0		mg/L			05/13/15 19:35	1
Carbon Dioxide, Free	22		5.0		mg/L			05/13/15 19:35	1

General Chemistry - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	37	D	5.0		mg/L			05/19/15 12:15	5

LAB 7/6/15

Client Sample ID: CPA-C-DHU-F(0.2)-0515

Date Collected: 05/12/15 09:55
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-2

Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	2.6		0.050		mg/L		05/14/15 14:51	05/16/15 17:43	1
Manganese, Dissolved	0.63		0.010		mg/L		05/14/15 14:51	05/16/15 17:43	1

General Chemistry - Dissolved - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	36	D	5.0		mg/L			05/19/15 13:33	5

LAB 7/6/15

Client Sample ID: CPA-C-DHU-0515-AD

Lab Sample ID: 680-112468-3

Date Collected: 05/12/15 09:55
Matrix: Water
Date Received: 05/13/15 09:18

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	5900	D	200		ug/L			05/16/15 16:09	200
Chlorobenzene	23000	D	200		ug/L			05/16/15 16:09	200
1,2-Dichlorobenzene	10000	D	200		ug/L			05/16/15 16:09	200
1,3-Dichlorobenzene	870	D	200		ug/L			05/16/15 16:09	200
1,4-Dichlorobenzene	15000	D	200		ug/L			05/16/15 16:09	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*85*		*70 - 130*		*05/16/15 16:09*	*200*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 130*		*05/16/15 16:09*	*200*
Dibromofluoromethane (Surr)	*90*		*70 - 130*		*05/16/15 16:09*	*200*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*		*05/16/15 16:09*	*200*

LAB 7/6/15

Client Sample ID: CPA-C-MHU-0515

Date Collected: 05/12/15 10:41
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-4

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**130000**	D	2000		ug/L			05/16/15 16:30	2000
Chlorobenzene	**180000**	D	2000		ug/L			05/16/15 16:30	2000
1,2-Dichlorobenzene	**15000**	D	2000		ug/L			05/16/15 16:30	2000
1,3-Dichlorobenzene	2000	U	2000		ug/L			05/16/15 16:30	2000
1,4-Dichlorobenzene	**18000**	D	2000		ug/L			05/16/15 16:30	2000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*83*		*70 - 130*		*05/16/15 16:30*	*2000*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 130*		*05/16/15 16:30*	*2000*
Dibromofluoromethane (Surr)	*95*		*70 - 130*		*05/16/15 16:30*	*2000*
4-Bromofluorobenzene (Surr)	*119*		*70 - 130*		*05/16/15 16:30*	*2000*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	**13**		1.1		ug/L			05/21/15 13:37	1
Ethylene	**19**		1.0		ug/L			05/21/15 13:37	1
Methane (TCD)	**7900**		390		ug/L			05/19/15 20:50	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**110**		0.050		mg/L		05/14/15 14:51	05/16/15 17:48	1
Manganese	**4.6**		0.010		mg/L		05/14/15 14:51	05/16/15 17:48	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**670**	D	20		mg/L			05/19/15 10:21	20
Nitrate as N	0.050	U	0.050		mg/L			05/13/15 16:49	1
Sulfate	**570**	D	100		mg/L			05/18/15 10:41	20

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**330**		5.0		mg/L			05/13/15 20:28	1
Carbon Dioxide, Free	**120**		5.0		mg/L			05/13/15 20:28	1

General Chemistry - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	**48**	D	5.0		mg/L			05/19/15 12:20	5

LAB 7/6/15

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Client Sample ID: CPA-C-MHU-F(0.2)-0515
Date Collected: 05/12/15 10:41
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-5
Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	100		0.050		mg/L		05/14/15 14:51	05/16/15 17:52	1
Manganese, Dissolved	4.6		0.010		mg/L		05/14/15 14:51	05/16/15 17:52	1

General Chemistry - Dissolved - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	42	D	5.0		mg/L			05/19/15 13:38	5

LAB 7/6/15

Client Sample ID: CPA-C-SHU-0515

Date Collected: 05/12/15 11:25
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	460	D	100		ug/L			05/16/15 16:51	100
Chlorobenzene	8400	D	100		ug/L			05/16/15 16:51	100
1,2-Dichlorobenzene	13000	D	100		ug/L			05/16/15 16:51	100
1,3-Dichlorobenzene	1400	D	100		ug/L			05/16/15 16:51	100
1,4-Dichlorobenzene	8500	D	100		ug/L			05/16/15 16:51	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*89*		*70 - 130*		*05/16/15 16:51*	*100*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 130*		*05/16/15 16:51*	*100*
Dibromofluoromethane (Surr)	*93*		*70 - 130*		*05/16/15 16:51*	*100*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*		*05/16/15 16:51*	*100*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			05/21/15 13:50	1
Ethylene	1.0	U	1.0		ug/L			05/21/15 13:50	1
Methane	93		0.58		ug/L			05/21/15 13:50	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.39		0.050		mg/L		05/14/15 14:51	05/16/15 17:57	1
Manganese	10		0.010		mg/L		05/14/15 14:51	05/16/15 17:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	220	D	5.0		mg/L			05/19/15 10:06	5
Nitrate as N	0.29	D	0.25		mg/L			05/13/15 16:50	5
Sulfate	1100	D	250		mg/L			05/18/15 10:38	50

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	600		5.0		mg/L			05/13/15 20:09	1
Carbon Dioxide, Free	190		5.0		mg/L			05/13/15 20:09	1

General Chemistry - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	250	D	20		mg/L			05/19/15 12:25	20

LAB 7/6/15

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Client Sample ID: CPA-C-SHU-F(0.2)-0515
Date Collected: 05/12/15 11:25
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-7
Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	0.13		0.050		mg/L		05/14/15 14:51	05/16/15 18:02	1
Manganese, Dissolved	10		0.010		mg/L		05/14/15 14:51	05/16/15 18:02	1

General Chemistry - Dissolved - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	240	D	20		mg/L			05/19/15 13:43	20

LAB 7/6/15

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Client Sample ID: CPA-C-MHU-0515-EB
Date Collected: 05/12/15 11:05
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	27		1.0		ug/L			05/16/15 13:20	1
Chlorobenzene	140		1.0		ug/L			05/16/15 13:20	1
1,2-Dichlorobenzene	41		1.0		ug/L			05/16/15 13:20	1
1,3-Dichlorobenzene	2.7		1.0		ug/L			05/16/15 13:20	1
1,4-Dichlorobenzene	47		1.0		ug/L			05/16/15 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*05/16/15 13:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*05/16/15 13:20*	*1*
Dibromofluoromethane (Surr)	*92*		*70 - 130*		*05/16/15 13:20*	*1*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*		*05/16/15 13:20*	*1*

LAB 7/6/15

Client Sample ID: CPA-D-DHU-0515

Date Collected: 05/12/15 12:45
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-9

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	390	D	200		ug/L			05/16/15 17:12	200
Chlorobenzene	21000	D	200		ug/L			05/16/15 17:12	200
1,2-Dichlorobenzene	2800	D	200		ug/L			05/16/15 17:12	200
1,3-Dichlorobenzene	400	D	200		ug/L			05/16/15 17:12	200
1,4-Dichlorobenzene	2500	D	200		ug/L			05/16/15 17:12	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*89*		*70 - 130*		*05/16/15 17:12*	*200*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 130*		*05/16/15 17:12*	*200*
Dibromofluoromethane (Surr)	*95*		*70 - 130*		*05/16/15 17:12*	*200*
4-Bromofluorobenzene (Surr)	*117*		*70 - 130*		*05/16/15 17:12*	*200*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	7.0		1.1		ug/L			05/21/15 14:03	1
Ethylene	1.0	U	1.0		ug/L			05/21/15 14:03	1
Methane	380		0.58		ug/L			05/21/15 14:03	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.36		0.050		mg/L		05/14/15 14:51	05/16/15 18:15	1
Manganese	0.39		0.010		mg/L		05/14/15 14:51	05/16/15 18:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	66	D	2.0		mg/L			05/19/15 10:13	2
Nitrate as N	0.050	U	0.050		mg/L			05/13/15 16:52	1
Sulfate	42	D	10		mg/L			05/18/15 09:41	2

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	570		5.0		mg/L			05/13/15 19:53	1
Carbon Dioxide, Free	21		5.0		mg/L			05/13/15 19:53	1

General Chemistry - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	50	D	5.0		mg/L			05/19/15 12:30	5

LAB 7/6/15

Client Sample ID: CPA-D-DHU-F(0.2)-0515
Date Collected: 05/12/15 12:45
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-10
Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	0.12		0.050		mg/L		05/14/15 14:51	05/16/15 18:20	1
Manganese, Dissolved	0.39		0.010		mg/L		05/14/15 14:51	05/16/15 18:20	1

General Chemistry - Dissolved - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	37	▷	5.0		mg/L			05/19/15 13:48	5

LAB 7/6/15

Client Sample ID: CPA-D-DHU-0515-AD

Lab Sample ID: 680-112468-11

Date Collected: 05/12/15 12:45
Matrix: Water
Date Received: 05/13/15 09:18

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	400	D	200		ug/L			05/16/15 17:34	200
Chlorobenzene	22000	D	200		ug/L			05/16/15 17:34	200
1,2-Dichlorobenzene	2900	D	200		ug/L			05/16/15 17:34	200
1,3-Dichlorobenzene	400	D	200		ug/L			05/16/15 17:34	200
1,4-Dichlorobenzene	2600	D	200		ug/L			05/16/15 17:34	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*87*		*70 - 130*		*05/16/15 17:34*	*200*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*05/16/15 17:34*	*200*
Dibromofluoromethane (Surr)	*94*		*70 - 130*		*05/16/15 17:34*	*200*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*		*05/16/15 17:34*	*200*

LAB 7/6/15

Client Sample ID: CPA-D-MHU-0515

Date Collected: 05/12/15 13:40
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-12

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	5300	D	500		ug/L			05/16/15 17:55	500
Chlorobenzene	47000	D	500		ug/L			05/16/15 17:55	500
1,2-Dichlorobenzene	21000	D	500		ug/L			05/16/15 17:55	500
1,3-Dichlorobenzene	1200	D	500		ug/L			05/16/15 17:55	500
1,4-Dichlorobenzene	14000	D	500		ug/L			05/16/15 17:55	500

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*88*		*70 - 130*		*05/16/15 17:55*	*500*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*05/16/15 17:55*	*500*
Dibromofluoromethane (Surr)	*94*		*70 - 130*		*05/16/15 17:55*	*500*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*		*05/16/15 17:55*	*500*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	14		1.1		ug/L			05/21/15 14:16	1
Ethylene	1.0	U	1.0		ug/L			05/21/15 14:16	1
Methane (TCD)	11000		390		ug/L			05/19/15 21:29	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.44		0.050		mg/L		05/14/15 15:14	05/16/15 10:56	1
Manganese	1.2		0.010		mg/L		05/14/15 15:14	05/16/15 10:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	220	D	5.0		mg/L			05/19/15 10:13	5
Nitrate as N	0.050	U	0.050		mg/L			05/13/15 16:53	1
Sulfate	160	D	25		mg/L			05/18/15 09:43	5

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	680		5.0		mg/L			05/13/15 20:21	1
Carbon Dioxide, Free	31		5.0		mg/L			05/13/15 20:21	1

General Chemistry - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	77	D	10		mg/L			05/19/15 12:59	10

LAB 7/6/15

Client Sample ID: CPA-D-MHU-F(0.2)-0515

Date Collected: 05/12/15 13:40
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-13

Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	0.21		0.050		mg/L		05/14/15 15:14	05/16/15 11:19	1
Manganese, Dissolved	1.2		0.010		mg/L		05/14/15 15:14	05/16/15 11:19	1

General Chemistry - Dissolved - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	70	D	10		mg/L			05/19/15 14:17	10

LAB 7/6/15

Client Sample ID: CPA-D-SHU-0515

Date Collected: 05/12/15 14:16
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-14

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	6400	D	1000		ug/L			05/16/15 18:16	1000
Chlorobenzene	150000	D	1000		ug/L			05/16/15 18:16	1000
1,2-Dichlorobenzene	1000	U	1000		ug/L			05/16/15 18:16	1000
1,3-Dichlorobenzene	1000	U	1000		ug/L			05/16/15 18:16	1000
1,4-Dichlorobenzene	1000	U	1000		ug/L			05/16/15 18:16	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*05/16/15 18:16*	*1000*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*05/16/15 18:16*	*1000*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*05/16/15 18:16*	*1000*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*		*05/16/15 18:16*	*1000*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			05/21/15 14:29	1
Ethylene	1.0	U	1.0		ug/L			05/21/15 14:29	1
Methane	49		0.58		ug/L			05/21/15 14:29	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	39		0.050		mg/L		05/14/15 15:14	05/16/15 11:24	1
Manganese	3.5		0.010		mg/L		05/14/15 15:14	05/16/15 11:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	320	D	10		mg/L			05/19/15 10:28	10
Nitrate as N	19	D	1.3		mg/L			05/13/15 17:02	25
Sulfate	1700	D	250		mg/L			05/18/15 11:09	50

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0		mg/L			05/13/15 19:18	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			05/13/15 19:18	1

General Chemistry - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	220	D	20		mg/L			05/19/15 13:04	20

LAB 7/6/15

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Client Sample ID: CPA-D-SHU-F(0.2)-0515
Date Collected: 05/12/15 14:16
Date Received: 05/13/15 09:18

Lab Sample ID: 680-112468-15
Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron, Dissolved	40		0.050		mg/L		05/14/15 15:14	05/16/15 11:28	1
Manganese, Dissolved	3.6		0.010		mg/L		05/14/15 15:14	05/16/15 11:28	1

General Chemistry - Dissolved - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	110	D	20		mg/L			05/19/15 14:22	20

LAB 7/6/15

Client Sample ID: 2Q15 CPA Trip Blank #2

Lab Sample ID: 680-112468-16

Date Collected: 05/12/15 00:00
Matrix: Water
Date Received: 05/13/15 09:18

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			05/16/15 12:59	1
Chlorobenzene	1.0	U	1.0		ug/L			05/16/15 12:59	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			05/16/15 12:59	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			05/16/15 12:59	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			05/16/15 12:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*05/16/15 12:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*05/16/15 12:59*	*1*
Dibromofluoromethane (Surr)	*92*		*70 - 130*		*05/16/15 12:59*	*1*
4-Bromofluorobenzene (Surr)	*106*		*70 - 130*		*05/16/15 12:59*	*1*

LAB 7/6/15

Surrogate Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	TOL (70-130)	12DCE (70-130)	DBFM (70-130)	BFB (70-130)
680-112468-1	CPA-C-DHU-0515	92	110	96	109
680-112468-3	CPA-C-DHU-0515-AD	85	111	90	114
680-112468-4	CPA-C-MHU-0515	83	109	95	119
680-112468-6	CPA-C-SHU-0515	89	106	93	109
680-112468-8	CPA-C-MHU-0515-EB	94	101	92	113
680-112468-9	CPA-D-DHU-0515	89	103	95	117
680-112468-11	CPA-D-DHU-0515-AD	87	104	94	108
680-112468-12	CPA-D-MHU-0515	88	105	94	111
680-112468-14	CPA-D-SHU-0515	94	105	96	109
680-112468-16	2Q15 CPA Trip Blank #2	94	101	92	106
LCS 680-383401/4	Lab Control Sample	95	101	96	105
LCSD 680-383401/5	Lab Control Sample Dup	100	105	98	103
MB 680-383401/8	Method Blank	100	99	92	113

Surrogate Legend

TOL = Toluene-d8 (Surr)
12DCE = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane (Surr)
BFB = 4-Bromofluorobenzene (Surr)

LAB 7/6/15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-383401/8
Matrix: Water
Analysis Batch: 383401

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	1.0		ug/L			05/16/15 11:34	1
Chlorobenzene	1.0	U	1.0		ug/L			05/16/15 11:34	1
1,2-Dichlorobenzene	1.0	U	1.0		ug/L			05/16/15 11:34	1
1,3-Dichlorobenzene	1.0	U	1.0		ug/L			05/16/15 11:34	1
1,4-Dichlorobenzene	1.0	U	1.0		ug/L			05/16/15 11:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*05/16/15 11:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*		*05/16/15 11:34*	*1*
Dibromofluoromethane (Surr)	*92*		*70 - 130*		*05/16/15 11:34*	*1*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*		*05/16/15 11:34*	*1*

Lab Sample ID: LCS 680-383401/4
Matrix: Water
Analysis Batch: 383401

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	52.4		ug/L		105	73 - 131
Chlorobenzene	50.0	47.1		ug/L		94	80 - 120
1,2-Dichlorobenzene	50.0	51.1		ug/L		102	80 - 120
1,3-Dichlorobenzene	50.0	49.5		ug/L		99	80 - 120
1,4-Dichlorobenzene	50.0	49.6		ug/L		99	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*95*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*
Dibromofluoromethane (Surr)	*96*		*70 - 130*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*

Lab Sample ID: LCSD 680-383401/5
Matrix: Water
Analysis Batch: 383401

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	50.0	51.9		ug/L		104	73 - 131	1	30
Chlorobenzene	50.0	47.0		ug/L		94	80 - 120	0	20
1,2-Dichlorobenzene	50.0	51.0		ug/L		102	80 - 120	0	20
1,3-Dichlorobenzene	50.0	48.7		ug/L		97	80 - 120	1	20
1,4-Dichlorobenzene	50.0	48.6		ug/L		97	80 - 120	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*
Dibromofluoromethane (Surr)	*98*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*

LAB 7/6/15

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 680-383901/5
Matrix: Water
Analysis Batch: 383901

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane (TCD)	390	U	390		ug/L			05/19/15 19:26	1

Lab Sample ID: LCS 680-383901/30
Matrix: Water
Analysis Batch: 383901

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane (TCD)	1920	2180		ug/L		113	75 - 125

Lab Sample ID: LCSD 680-383901/31
Matrix: Water
Analysis Batch: 383901

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane (TCD)	1920	2010		ug/L		104	75 - 125	8	30

Lab Sample ID: MB 680-384163/4
Matrix: Water
Analysis Batch: 384163

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	1.1	U	1.1		ug/L			05/21/15 10:23	1
Ethylene	1.0	U	1.0		ug/L			05/21/15 10:23	1
Methane	0.58	U	0.58		ug/L			05/21/15 10:23	1

Lab Sample ID: LCS 680-384163/5
Matrix: Water
Analysis Batch: 384163

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	288	281		ug/L		97	75 - 125
Ethylene	269	262		ug/L		97	75 - 125
Methane	154	151		ug/L		98	75 - 125

Lab Sample ID: LCSD 680-384163/7
Matrix: Water
Analysis Batch: 384163

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	288	322		ug/L		112	75 - 125	14	30
Ethylene	269	305		ug/L		113	75 - 125	15	30
Methane	154	174		ug/L		113	75 - 125	14	30

LAB 7/6/15

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-383161/1-A
Matrix: Water
Analysis Batch: 383553

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 383161

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.050	U	0.050		mg/L		05/14/15 14:51	05/16/15 15:58	1
Iron, Dissolved	0.050	U	0.050		mg/L		05/14/15 14:51	05/16/15 15:58	1
Manganese	0.010	U	0.010		mg/L		05/14/15 14:51	05/16/15 15:58	1
Manganese, Dissolved	0.010	U	0.010		mg/L		05/14/15 14:51	05/16/15 15:58	1

Lab Sample ID: LCS 680-383161/2-A
Matrix: Water
Analysis Batch: 383553

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 383161

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5.00	5.19		mg/L		104	80 - 120
Iron, Dissolved	5.00	5.19		mg/L		104	80 - 120
Manganese	0.500	0.537		mg/L		107	80 - 120
Manganese, Dissolved	0.500	0.537		mg/L		107	80 - 120

Lab Sample ID: MB 680-383170/1-A
Matrix: Water
Analysis Batch: 383553

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 383170

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.050	U	0.050		mg/L		05/14/15 15:14	05/16/15 10:38	1
Iron, Dissolved	0.050	U	0.050		mg/L		05/14/15 15:14	05/16/15 10:38	1
Manganese	0.010	U	0.010		mg/L		05/14/15 15:14	05/16/15 10:38	1
Manganese, Dissolved	0.010	U	0.010		mg/L		05/14/15 15:14	05/16/15 10:38	1

Lab Sample ID: LCS 680-383170/2-A
Matrix: Water
Analysis Batch: 383553

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 383170

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5.00	5.15		mg/L		103	80 - 120
Iron, Dissolved	5.00	5.15		mg/L		103	80 - 120
Manganese	0.500	0.532		mg/L		106	80 - 120
Manganese, Dissolved	0.500	0.532		mg/L		106	80 - 120

Lab Sample ID: 680-112468-12 MS
Matrix: Water
Analysis Batch: 383553

Client Sample ID: CPA-D-MHU-0515
Prep Type: Total Recoverable
Prep Batch: 383170

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	0.44		5.00	5.56		mg/L		103	75 - 125
Iron, Dissolved	0.44		5.00	5.56		mg/L		103	75 - 125
Manganese	1.2		0.500	1.72		mg/L		96	75 - 125
Manganese, Dissolved	1.2		0.500	1.72		mg/L		96	75 - 125

LAB 7/6/15

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

Lab Sample ID: 680-112468-12 MSD
Matrix: Water
Analysis Batch: 383553

Client Sample ID: CPA-D-MHU-0515
Prep Type: Total Recoverable
Prep Batch: 383170

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	0.44		5.00	5.58		mg/L		103	75 - 125	0	20
Iron, Dissolved	0.44		5.00	5.58		mg/L		103	75 - 125	0	20
Manganese	1.2		0.500	1.69		mg/L		91	75 - 125	1	20
Manganese, Dissolved	1.2		0.500	1.69		mg/L		91	75 - 125	1	20

Method: 310.1 - Alkalinity

Lab Sample ID: MB 680-383000/5
Matrix: Water
Analysis Batch: 383000

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0		mg/L			05/13/15 17:48	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			05/13/15 17:48	1

Lab Sample ID: LCS 680-383000/6
Matrix: Water
Analysis Batch: 383000

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	250	250		mg/L		100	80 - 120

Lab Sample ID: LCSD 680-383000/27
Matrix: Water
Analysis Batch: 383000

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity	250	252		mg/L		101	80 - 120	1	30

Lab Sample ID: 680-112468-4 DU
Matrix: Water
Analysis Batch: 383000

Client Sample ID: CPA-C-MHU-0515
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	330		338		mg/L		4	30
Carbon Dioxide, Free	120		124		mg/L		7	30

Lab Sample ID: MB 680-383018/5
Matrix: Water
Analysis Batch: 383018

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	5.0	U	5.0		mg/L			05/14/15 05:45	1
Carbon Dioxide, Free	5.0	U	5.0		mg/L			05/14/15 05:45	1

LAB 7/6/15

Method: 310.1 - Alkalinity (Continued)

Lab Sample ID: LCS 680-383018/6
Matrix: Water
Analysis Batch: 383018

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	250	252		mg/L		101	80 - 120

Lab Sample ID: LCSD 680-383018/23
Matrix: Water
Analysis Batch: 383018

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity	250	261		mg/L		105	80 - 120	4	30

Lab Sample ID: 680-112468-14 DU
Matrix: Water
Analysis Batch: 383018

Client Sample ID: CPA-D-SHU-0515
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	5.0	U	5.0	U	mg/L		NC	30
Carbon Dioxide, Free	5.0	U	5.0	U	mg/L		NC	30

Method: 325.2 - Chloride

Lab Sample ID: MB 680-383863/27
Matrix: Water
Analysis Batch: 383863

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.0	U	1.0		mg/L			05/19/15 10:06	1

Lab Sample ID: LCS 680-383863/7
Matrix: Water
Analysis Batch: 383863

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	26.2		mg/L		105	85 - 115

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 680-382963/13
Matrix: Water
Analysis Batch: 382963

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.050	U	0.050		mg/L			05/13/15 16:32	1

Lab Sample ID: LCS 680-382963/16
Matrix: Water
Analysis Batch: 382963

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

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

LAB 7/6/15

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

Lab Sample ID: LCS 680-382963/16
Matrix: Water
Analysis Batch: 382963

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite as N	0.500	0.509		mg/L		102	90 - 110

Lab Sample ID: MB 680-383175/13
Matrix: Water
Analysis Batch: 383175

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.050	U	0.050		mg/L			05/14/15 14:24	1

Lab Sample ID: LCS 680-383175/16
Matrix: Water
Analysis Batch: 383175

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.500	0.540		mg/L		108	75 - 125
Nitrate Nitrite as N	1.00	1.06		mg/L		106	90 - 110
Nitrite as N	0.500	0.515		mg/L		103	90 - 110

Method: 375.4 - Sulfate

Lab Sample ID: MB 680-383632/20
Matrix: Water
Analysis Batch: 383632

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	5.0	U	5.0		mg/L			05/18/15 09:37	1

Lab Sample ID: LCS 680-383632/1
Matrix: Water
Analysis Batch: 383632

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	20.0	19.9		mg/L		99	75 - 125

Method: 415.1 - DOC

Lab Sample ID: MB 160-191878/4
Matrix: Water
Analysis Batch: 191878

Client Sample ID: Method Blank
Prep Type: Dissolved

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	1.0	U	1.0		mg/L			05/19/15 11:39	1

Lab Sample ID: LCS 160-191878/5
Matrix: Water
Analysis Batch: 191878

Client Sample ID: Lab Control Sample
Prep Type: Dissolved

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Organic Carbon	10.0	9.15		mg/L		92	90 - 110

LAB 7/6/15

Method: 415.1 - TOC

Lab Sample ID: MB 160-191876/4
Matrix: Water
Analysis Batch: 191876

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.0	U	1.0		mg/L			05/19/15 11:39	1

Lab Sample ID: LCS 160-191876/5
Matrix: Water
Analysis Batch: 191876

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.15		mg/L		92	90 - 110

LAB 7/6/15

GC/MS VOA

Analysis Batch: 383401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-1	CPA-C-DHU-0515	Total/NA	Water	8260B	
680-112468-3	CPA-C-DHU-0515-AD	Total/NA	Water	8260B	
680-112468-4	CPA-C-MHU-0515	Total/NA	Water	8260B	
680-112468-6	CPA-C-SHU-0515	Total/NA	Water	8260B	
680-112468-8	CPA-C-MHU-0515-EB	Total/NA	Water	8260B	
680-112468-9	CPA-D-DHU-0515	Total/NA	Water	8260B	
680-112468-11	CPA-D-DHU-0515-AD	Total/NA	Water	8260B	
680-112468-12	CPA-D-MHU-0515	Total/NA	Water	8260B	
680-112468-14	CPA-D-SHU-0515	Total/NA	Water	8260B	
680-112468-16	2Q15 CPA Trip Blank #2	Total/NA	Water	8260B	
LCS 680-383401/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-383401/5	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-383401/8	Method Blank	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 383901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-4	CPA-C-MHU-0515	Total/NA	Water	RSK-175	
680-112468-12	CPA-D-MHU-0515	Total/NA	Water	RSK-175	
LCS 680-383901/30	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-383901/31	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 680-383901/5	Method Blank	Total/NA	Water	RSK-175	

Analysis Batch: 384163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-1	CPA-C-DHU-0515	Total/NA	Water	RSK-175	
680-112468-4	CPA-C-MHU-0515	Total/NA	Water	RSK-175	
680-112468-6	CPA-C-SHU-0515	Total/NA	Water	RSK-175	
680-112468-9	CPA-D-DHU-0515	Total/NA	Water	RSK-175	
680-112468-12	CPA-D-MHU-0515	Total/NA	Water	RSK-175	
680-112468-14	CPA-D-SHU-0515	Total/NA	Water	RSK-175	
LCS 680-384163/5	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-384163/7	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 680-384163/4	Method Blank	Total/NA	Water	RSK-175	

Metals

Prep Batch: 383161

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-1	CPA-C-DHU-0515	Total Recoverable	Water	3005A	
680-112468-2	CPA-C-DHU-F(0.2)-0515	Dissolved	Water	3005A	
680-112468-4	CPA-C-MHU-0515	Total Recoverable	Water	3005A	
680-112468-5	CPA-C-MHU-F(0.2)-0515	Dissolved	Water	3005A	
680-112468-6	CPA-C-SHU-0515	Total Recoverable	Water	3005A	
680-112468-7	CPA-C-SHU-F(0.2)-0515	Dissolved	Water	3005A	
680-112468-9	CPA-D-DHU-0515	Total Recoverable	Water	3005A	
680-112468-10	CPA-D-DHU-F(0.2)-0515	Dissolved	Water	3005A	
LCS 680-383161/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 680-383161/1-A	Method Blank	Total Recoverable	Water	3005A	

LAB 7/6/15

Metals (Continued)

Prep Batch: 383170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-12	CPA-D-MHU-0515	Total Recoverable	Water	3005A	
680-112468-12 MS	CPA-D-MHU-0515	Total Recoverable	Water	3005A	
680-112468-12 MSD	CPA-D-MHU-0515	Total Recoverable	Water	3005A	
680-112468-13	CPA-D-MHU-F(0.2)-0515	Dissolved	Water	3005A	
680-112468-14	CPA-D-SHU-0515	Total Recoverable	Water	3005A	
680-112468-15	CPA-D-SHU-F(0.2)-0515	Dissolved	Water	3005A	
LCS 680-383170/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 680-383170/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 383553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-1	CPA-C-DHU-0515	Total Recoverable	Water	6010C	383161
680-112468-2	CPA-C-DHU-F(0.2)-0515	Dissolved	Water	6010C	383161
680-112468-4	CPA-C-MHU-0515	Total Recoverable	Water	6010C	383161
680-112468-5	CPA-C-MHU-F(0.2)-0515	Dissolved	Water	6010C	383161
680-112468-6	CPA-C-SHU-0515	Total Recoverable	Water	6010C	383161
680-112468-7	CPA-C-SHU-F(0.2)-0515	Dissolved	Water	6010C	383161
680-112468-9	CPA-D-DHU-0515	Total Recoverable	Water	6010C	383161
680-112468-10	CPA-D-DHU-F(0.2)-0515	Dissolved	Water	6010C	383161
680-112468-12	CPA-D-MHU-0515	Total Recoverable	Water	6010C	383170
680-112468-12 MS	CPA-D-MHU-0515	Total Recoverable	Water	6010C	383170
680-112468-12 MSD	CPA-D-MHU-0515	Total Recoverable	Water	6010C	383170
680-112468-13	CPA-D-MHU-F(0.2)-0515	Dissolved	Water	6010C	383170
680-112468-14	CPA-D-SHU-0515	Total Recoverable	Water	6010C	383170
680-112468-15	CPA-D-SHU-F(0.2)-0515	Dissolved	Water	6010C	383170
LCS 680-383161/2-A	Lab Control Sample	Total Recoverable	Water	6010C	383161
LCS 680-383170/2-A	Lab Control Sample	Total Recoverable	Water	6010C	383170
MB 680-383161/1-A	Method Blank	Total Recoverable	Water	6010C	383161
MB 680-383170/1-A	Method Blank	Total Recoverable	Water	6010C	383170

General Chemistry

Analysis Batch: 191876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-1 - RADL	CPA-C-DHU-0515	Total/NA	Water	415.1	
680-112468-4 - RADL	CPA-C-MHU-0515	Total/NA	Water	415.1	
680-112468-6 - RADL	CPA-C-SHU-0515	Total/NA	Water	415.1	
680-112468-9 - RADL	CPA-D-DHU-0515	Total/NA	Water	415.1	
680-112468-12 - RADL	CPA-D-MHU-0515	Total/NA	Water	415.1	
680-112468-14 - RADL	CPA-D-SHU-0515	Total/NA	Water	415.1	
LCS 160-191876/5	Lab Control Sample	Total/NA	Water	415.1	
MB 160-191876/4	Method Blank	Total/NA	Water	415.1	

Analysis Batch: 191878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-2 - RADL	CPA-C-DHU-F(0.2)-0515	Dissolved	Water	415.1	
680-112468-5 - RADL	CPA-C-MHU-F(0.2)-0515	Dissolved	Water	415.1	
680-112468-7 - RADL	CPA-C-SHU-F(0.2)-0515	Dissolved	Water	415.1	
680-112468-10 - RADL	CPA-D-DHU-F(0.2)-0515	Dissolved	Water	415.1	
680-112468-13 - RADL	CPA-D-MHU-F(0.2)-0515	Dissolved	Water	415.1	

LAB 7/6/15

General Chemistry (Continued)

Analysis Batch: 191878 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-15 - RADL	CPA-D-SHU-F(0.2)-0515	Dissolved	Water	415.1	
LCS 160-191878/5	Lab Control Sample	Dissolved	Water	415.1	
MB 160-191878/4	Method Blank	Dissolved	Water	415.1	

Analysis Batch: 382963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-4	CPA-C-MHU-0515	Total/NA	Water	353.2	
680-112468-6	CPA-C-SHU-0515	Total/NA	Water	353.2	
680-112468-9	CPA-D-DHU-0515	Total/NA	Water	353.2	
680-112468-12	CPA-D-MHU-0515	Total/NA	Water	353.2	
680-112468-14	CPA-D-SHU-0515	Total/NA	Water	353.2	
LCS 680-382963/16	Lab Control Sample	Total/NA	Water	353.2	
MB 680-382963/13	Method Blank	Total/NA	Water	353.2	

Analysis Batch: 383000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-1	CPA-C-DHU-0515	Total/NA	Water	310.1	
680-112468-4	CPA-C-MHU-0515	Total/NA	Water	310.1	
680-112468-4 DU	CPA-C-MHU-0515	Total/NA	Water	310.1	
680-112468-6	CPA-C-SHU-0515	Total/NA	Water	310.1	
680-112468-9	CPA-D-DHU-0515	Total/NA	Water	310.1	
680-112468-12	CPA-D-MHU-0515	Total/NA	Water	310.1	
680-112468-14	CPA-D-SHU-0515	Total/NA	Water	310.1	
LCS 680-383000/6	Lab Control Sample	Total/NA	Water	310.1	
LCSD 680-383000/27	Lab Control Sample Dup	Total/NA	Water	310.1	
MB 680-383000/5	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 383018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-14 DU	CPA-D-SHU-0515	Total/NA	Water	310.1	
LCS 680-383018/6	Lab Control Sample	Total/NA	Water	310.1	
LCSD 680-383018/23	Lab Control Sample Dup	Total/NA	Water	310.1	
MB 680-383018/5	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 383175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-1	CPA-C-DHU-0515	Total/NA	Water	353.2	
LCS 680-383175/16	Lab Control Sample	Total/NA	Water	353.2	
MB 680-383175/13	Method Blank	Total/NA	Water	353.2	

Analysis Batch: 383632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-1	CPA-C-DHU-0515	Total/NA	Water	375.4	
680-112468-4	CPA-C-MHU-0515	Total/NA	Water	375.4	
680-112468-6	CPA-C-SHU-0515	Total/NA	Water	375.4	
680-112468-9	CPA-D-DHU-0515	Total/NA	Water	375.4	
680-112468-12	CPA-D-MHU-0515	Total/NA	Water	375.4	
680-112468-14	CPA-D-SHU-0515	Total/NA	Water	375.4	
LCS 680-383632/1	Lab Control Sample	Total/NA	Water	375.4	
MB 680-383632/20	Method Blank	Total/NA	Water	375.4	

LAB 7/6/15

General Chemistry (Continued)

Analysis Batch: 383863

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-112468-1	CPA-C-DHU-0515	Total/NA	Water	325.2	
680-112468-4	CPA-C-MHU-0515	Total/NA	Water	325.2	
680-112468-6	CPA-C-SHU-0515	Total/NA	Water	325.2	
680-112468-9	CPA-D-DHU-0515	Total/NA	Water	325.2	
680-112468-12	CPA-D-MHU-0515	Total/NA	Water	325.2	
680-112468-14	CPA-D-SHU-0515	Total/NA	Water	325.2	
LCS 680-383863/7	Lab Control Sample	Total/NA	Water	325.2	
MB 680-383863/27	Method Blank	Total/NA	Water	325.2	

LAB 7/6/15

Client Sample ID: CPA-C-DHU-0515

Lab Sample ID: 680-112468-1

Date Collected: 05/12/15 09:55
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	383401	05/16/15 15:48	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	384163	05/21/15 13:25	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 17:39	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 19:35	DAM	TAL SAV
Total/NA	Analysis	325.2		2	383863	05/19/15 10:03	JME	TAL SAV
Total/NA	Analysis	353.2		1	383175	05/14/15 14:35	GRX	TAL SAV
Total/NA	Analysis	375.4		2	383632	05/18/15 09:29	JME	TAL SAV
Total/NA	Analysis	415.1	RADL	5	191876	05/19/15 12:15	JCB	TAL SL

Client Sample ID: CPA-C-DHU-F(0.2)-0515

Lab Sample ID: 680-112468-2

Date Collected: 05/12/15 09:55
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 17:43	BCB	TAL SAV
Dissolved	Analysis	415.1	RADL	5	191878	05/19/15 13:33	JCB	TAL SL

Client Sample ID: CPA-C-DHU-0515-AD

Lab Sample ID: 680-112468-3

Date Collected: 05/12/15 09:55
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	383401	05/16/15 16:09	JD1	TAL SAV

Client Sample ID: CPA-C-MHU-0515

Lab Sample ID: 680-112468-4

Date Collected: 05/12/15 10:41
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2000	383401	05/16/15 16:30	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	383901	05/19/15 20:50	AJMC	TAL SAV
Total/NA	Analysis	RSK-175		1	384163	05/21/15 13:37	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 17:48	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 20:28	DAM	TAL SAV
Total/NA	Analysis	325.2		20	383863	05/19/15 10:21	JME	TAL SAV
Total/NA	Analysis	353.2		1	382963	05/13/15 16:49	GRX	TAL SAV
Total/NA	Analysis	375.4		20	383632	05/18/15 10:41	JME	TAL SAV
Total/NA	Analysis	415.1	RADL	5	191876	05/19/15 12:20	JCB	TAL SL

LAB 7/6/15

Client Sample ID: CPA-C-MHU-F(0.2)-0515

Lab Sample ID: 680-112468-5

Date Collected: 05/12/15 10:41
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 17:52	BCB	TAL SAV
Dissolved	Analysis	415.1	RADL	5	191878	05/19/15 13:38	JCB	TAL SL

Client Sample ID: CPA-C-SHU-0515

Lab Sample ID: 680-112468-6

Date Collected: 05/12/15 11:25
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		100	383401	05/16/15 16:51	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	384163	05/21/15 13:50	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 17:57	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 20:09	DAM	TAL SAV
Total/NA	Analysis	325.2		5	383863	05/19/15 10:06	JME	TAL SAV
Total/NA	Analysis	353.2		5	382963	05/13/15 16:50	GRX	TAL SAV
Total/NA	Analysis	375.4		50	383632	05/18/15 10:38	JME	TAL SAV
Total/NA	Analysis	415.1	RADL	20	191876	05/19/15 12:25	JCB	TAL SL

Client Sample ID: CPA-C-SHU-F(0.2)-0515

Lab Sample ID: 680-112468-7

Date Collected: 05/12/15 11:25
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 18:02	BCB	TAL SAV
Dissolved	Analysis	415.1	RADL	20	191878	05/19/15 13:43	JCB	TAL SL

Client Sample ID: CPA-C-MHU-0515-EB

Lab Sample ID: 680-112468-8

Date Collected: 05/12/15 11:05
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	383401	05/16/15 13:20	JD1	TAL SAV

Client Sample ID: CPA-D-DHU-0515

Lab Sample ID: 680-112468-9

Date Collected: 05/12/15 12:45
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	383401	05/16/15 17:12	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	384163	05/21/15 14:03	AJMC	TAL SAV

LAB 7/6/15

Client Sample ID: CPA-D-DHU-0515

Lab Sample ID: 680-112468-9

Date Collected: 05/12/15 12:45
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 18:15	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 19:53	DAM	TAL SAV
Total/NA	Analysis	325.2		2	383863	05/19/15 10:13	JME	TAL SAV
Total/NA	Analysis	353.2		1	382963	05/13/15 16:52	GRX	TAL SAV
Total/NA	Analysis	375.4		2	383632	05/18/15 09:41	JME	TAL SAV
Total/NA	Analysis	415.1	RADL	5	191876	05/19/15 12:30	JCB	TAL SL

Client Sample ID: CPA-D-DHU-F(0.2)-0515

Lab Sample ID: 680-112468-10

Date Collected: 05/12/15 12:45
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383161	05/14/15 14:51	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 18:20	BCB	TAL SAV
Dissolved	Analysis	415.1	RADL	5	191878	05/19/15 13:48	JCB	TAL SL

Client Sample ID: CPA-D-DHU-0515-AD

Lab Sample ID: 680-112468-11

Date Collected: 05/12/15 12:45
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	383401	05/16/15 17:34	JD1	TAL SAV

Client Sample ID: CPA-D-MHU-0515

Lab Sample ID: 680-112468-12

Date Collected: 05/12/15 13:40
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		500	383401	05/16/15 17:55	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	383901	05/19/15 21:29	AJMC	TAL SAV
Total/NA	Analysis	RSK-175		1	384163	05/21/15 14:16	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383170	05/14/15 15:14	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 10:56	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 20:21	DAM	TAL SAV
Total/NA	Analysis	325.2		5	383863	05/19/15 10:13	JME	TAL SAV
Total/NA	Analysis	353.2		1	382963	05/13/15 16:53	GRX	TAL SAV
Total/NA	Analysis	375.4		5	383632	05/18/15 09:43	JME	TAL SAV
Total/NA	Analysis	415.1	RADL	10	191876	05/19/15 12:59	JCB	TAL SL

LAB 7/6/15

Lab Chronicle

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Client Sample ID: CPA-D-MHU-F(0.2)-0515

Lab Sample ID: 680-112468-13
Date Collected: 05/12/15 13:40
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383170	05/14/15 15:14	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 11:19	BCB	TAL SAV
Dissolved	Analysis	415.1	RADL	10	191878	05/19/15 14:17	JCB	TAL SL

Client Sample ID: CPA-D-SHU-0515

Lab Sample ID: 680-112468-14
Date Collected: 05/12/15 14:16
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1000	383401	05/16/15 18:16	JD1	TAL SAV
Total/NA	Analysis	RSK-175		1	384163	05/21/15 14:29	AJMC	TAL SAV
Total Recoverable	Prep	3005A			383170	05/14/15 15:14	BJB	TAL SAV
Total Recoverable	Analysis	6010C		1	383553	05/16/15 11:24	BCB	TAL SAV
Total/NA	Analysis	310.1		1	383000	05/13/15 19:18	DAM	TAL SAV
Total/NA	Analysis	325.2		10	383863	05/19/15 10:28	JME	TAL SAV
Total/NA	Analysis	353.2		25	382963	05/13/15 17:02	GRX	TAL SAV
Total/NA	Analysis	375.4		50	383632	05/18/15 11:09	JME	TAL SAV
Total/NA	Analysis	415.1	RADL	20	191876	05/19/15 13:04	JCB	TAL SL

Client Sample ID: CPA-D-SHU-F(0.2)-0515

Lab Sample ID: 680-112468-15
Date Collected: 05/12/15 14:16
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			383170	05/14/15 15:14	BJB	TAL SAV
Dissolved	Analysis	6010C		1	383553	05/16/15 11:28	BCB	TAL SAV
Dissolved	Analysis	415.1	RADL	20	191878	05/19/15 14:22	JCB	TAL SL

Client Sample ID: 2Q15 CPA Trip Blank #2

Lab Sample ID: 680-112468-16
Date Collected: 05/12/15 00:00
Matrix: Water
Date Received: 05/13/15 09:18

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	383401	05/16/15 12:59	JD1	TAL SAV

Laboratory References:

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

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

LAB 7/6/15

TestAmerica Savannah
5102 LaRoche Avenue

Savannah, GA 31404
phone 912 354.7858 fax

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☑ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Amanda Derhake	Site Contact: Lori Bindner	Date:	COC No
Golder Associates Inc.	Tel/Fax: 636-724-9191	Lab Contact: Michele Kersey	Carrier: FedEx	1 of 2 COCs
820 South Main Street	Analysis Turnaround Time			Sampler:
St. Charles, MO 63301	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(636) 724-9191 Phone	TAT if different from Below Standard			Walk-in Client:
(636) 724-9323 FAX	☑ 2 weeks			Lab Sampling:
Project Name: 2Q15 CPA GW Sampling - 1403345	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			Job / SDG No.:
P O # 42447936	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Dissolved Gases by RSK 176	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 416.1	Sample Specific Notes.
CPA-C-DHU-0515	5/12/15	0955	G	W	13	N		2	1	1	1	3	2	3			* 2 coolers
CPA-C-DHU-F(0.2)-0515		1			4	Y									1	3	
CPA-C-DHU-0515-AD		1			2	N		2									
CPA-C-MHU-0515		1041			13	N		2	1	1	1	3	2	3			
CPA-C-MHU-F(0.2)-0515		1			4	Y									1	3	
CPA-C-SHU-0515		1125			13	N		2	1	1	1	3	2	3			
CPA-C-SHU-F(0.2)-0515		1			4	N									1	3	
CPA-C-MHU-0515-EB		1105			2	Y		2									
CPA-D-DHU-0515		1245			13	N		2	1	1	1	3	2	3			
CPA-D-DHU-F(0.2)-0515		1			4	Y									1	3	
CPA-D-DHU-0515-AD		1			2	N		2									
CPA-D-MHU-0515		1340			13	N		2	1	1	1	3	2	3			
CPA-D-MHU-F(0.2)-0515	1	1	1	1	4	Y									1	3	

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

680-112468 Chain of Custody

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed i

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
VOC headspace upon sampling: Yes (No)

3.0 w/ 24 at
4.2 / 4.6 at

680-112468

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: 337185 / 337184	Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____		
Relinquished by:	Company: Golder	Date/Time: 5/12/15	Received by	Company: Date/Time:
Relinquished by	Company:	Date/Time:	Received by:	Company: Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: TA Date/Time: 5/13/15 09:18

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

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5/27/2015

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: ☐ DW ☐ NPDES ☑ RCRA ☐ Other:

Client Contact	Project Manager: Amanda Derhake	Site Contact: Lori Bindner	Date:	COC No.
Golder Associates Inc	Tel/Fax: 636-724-9191	Lab Contact: Michele Kersey	Carrier: FedEx	2 of 2 COCs
820 South Main Street	Analysis Turnaround Time			Sampler:
St. Charles, MO 63301	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(636) 724-9191 Phone	TAT if different from Below Standard			Walk-in Client:
(636) 724-9323 FAX	☑ 2 weeks			Lab Sampling:
Project Name: 2Q15 CPA GW Sampling - 1403345	☐ 1 week			
Site: Solutia WG Krummrich Facility	☐ 2 days			Job / SDG No.:
P O # 42447936	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	VOCs by 8260	Total Fe/Mn by 6010B	Alk/CO2 by 310.1	Chloride by 325.2/Sulfate by 375.4	Dissolved Gases by RSK 175	Nitrate by 353.2	TOC by 415.1	Dissolved Fe/Mn by 6010B	DOC by 415.1	Sample Specific Notes:
CPA-D-SHU-0515	5/12/15	1416	G	W	13	N		3	1	1	1	3	2	3			*2 Coolers
CPA-D-SHU-F(0.2)-0515	⊥	⊥	⊥	⊥	4	Y									1	3	
2Q15 CPA Trip Blank #2	—	—	—	—	2	N		2									
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other								2	1	1	1	2	3,1	3	4	3	

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☑ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:
VOC headspace upon sampling: Yes/No

3.0 / 3.4 / 4.2 / 4.6 °C

680-112468

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: 337185 / 337184 | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Relinquished by:	Company:	Date/Time	Received by:	Company:	Date/Time:
[signature]	Golder	5/12/15			
Relinquished by:	Company:	Date/Time:	Received by:	Company	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Company TA	Date/Time: 5/13/15 09:18

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

5/27/2015

LAB 7/6/15

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Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-112468-1
SDG Number: KPS146

Login Number: 112468
List Number: 1
Creator: Kicklighter, Marilyn D

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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

LAB 7/6/15

Login Sample Receipt Checklist

Client: Solutia Inc.

Job Number: 680-112468-1
SDG Number: KPS146

Login Number: 112468
List Number: 2
Creator: Daniels, Brian J

List Source: TestAmerica St. Louis
List Creation: 05/14/15 01:50 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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	2.1
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?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

LAB 7/6/15

Certification Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-17
A2LA	ISO/IEC 17025		399.01	02-28-17
Alabama	State Program	4	41450	06-30-15
Arkansas DEQ	State Program	6	88-0692	01-31-16
California	State Program	9	2939	07-31-15
Colorado	State Program	8	N/A	12-31-15
Connecticut	State Program	1	PH-0161	03-31-17
Florida	NELAP	4	E87052	06-30-15
GA Dept. of Agriculture	State Program	4	N/A	06-12-17
Georgia	State Program	4	N/A	06-30-15
Georgia	State Program	4	803	06-30-15
Guam	State Program	9	14-004r	04-16-15 *
Hawaii	State Program	9	N/A	06-30-15
Illinois	NELAP	5	200022	11-30-15
Indiana	State Program	5	N/A	06-30-15
Iowa	State Program	7	353	07-01-15
Kentucky (DW)	State Program	4	90084	12-31-15
Kentucky (UST)	State Program	4	18	06-30-15
Kentucky (WW)	State Program	4	90084	12-31-15
Louisiana	NELAP	6	30690	06-30-15
Louisiana (DW)	NELAP	6	LA150014	12-31-15
Maine	State Program	1	GA00006	09-24-16
Maryland	State Program	3	250	12-31-15
Massachusetts	State Program	1	M-GA006	06-30-15
Michigan	State Program	5	9925	06-30-15
Mississippi	State Program	4	N/A	06-30-15
Montana	State Program	8	CERT0081	12-31-15
Nebraska	State Program	7	TestAmerica-Savannah	06-30-15
New Jersey	NELAP	2	GA769	06-30-15
New Mexico	State Program	6	N/A	06-30-15
New York	NELAP	2	10842	03-31-16
North Carolina (DW)	State Program	4	13701	07-31-15
North Carolina (WW/SW)	State Program	4	269	12-31-15
Oklahoma	State Program	6	9984	08-31-15
Pennsylvania	NELAP	3	68-00474	06-30-15
Puerto Rico	State Program	2	GA00006	12-31-15
South Carolina	State Program	4	98001	06-30-15
Tennessee	State Program	4	TN02961	06-30-15
Texas	NELAP	6	T104704185-14-7	11-30-15
USDA	Federal		SAV 3-04	06-11-17
Virginia	NELAP	3	460161	06-14-15
Washington	State Program	10	C805	06-10-15
West Virginia (DW)	State Program	3	9950C	12-31-15
West Virginia DEP	State Program	3	094	06-30-15
Wisconsin	State Program	5	999819810	08-31-15
Wyoming	State Program	8	8TMS-L	06-30-15

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

* Certification renewal pending - certification considered valid.

LAB 7/6/15

Certification Summary

Client: Solutia Inc.
Project/Site: 2Q15- CPA GW Sampling-1403345

TestAmerica Job ID: 680-112468-1
SDG: KPS146

Laboratory: TestAmerica St. Louis (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-15 *
California	NELAP	9	2886	03-31-16
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-15 *
Illinois	NELAP	5	200023	11-30-15
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	10-31-15
Kentucky (DW)	State Program	4	90125	12-31-15
L-A-B	DoD ELAP		L2305	01-10-16
Louisiana	NELAP	6	04080	06-30-15 *
Louisiana (DW)	NELAP	6	LA150017	12-31-16
Maryland	State Program	3	310	09-30-15
Missouri	State Program	7	780	06-30-15 *
Nevada	State Program	9	MO000542013-1	07-31-15 *
New Jersey	NELAP	2	MO002	06-30-15 *
New Mexico	State Program	6		06-30-10 *
New York	NELAP	2	11616	03-31-16
North Dakota	State Program	8	R207	06-30-15 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-15
Pennsylvania	NELAP	3	68-00540	02-28-16
South Carolina	State Program	4	85002001	06-30-15 *
Texas	NELAP	6	T104704193-13-6	07-31-15 *
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542013-5	07-31-15
Virginia	NELAP	3	460230	06-14-15 *
Washington	State Program	10	C592	08-30-15
West Virginia DEP	State Program	3	381	08-31-15

* Certification renewal pending - certification considered valid.

LAB 7/6/15

APPENDIX E
MICROBIAL INSIGHTS DATA PACKAGE

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Client: Lori Bindner
Golder Associates Inc.
820 S. Main Street
Suite 100
St. Charles, MO 63301

Phone:

Fax:

Identifier: 009ME **Date Rec:** 05/01/2015 **Report Date:** 05/27/2015

Client Project #: 1403345 **Client Project Name:** WG Krummrich - CPA

Purchase Order #:

Analysis Requested: PLFA, Stable Isotope Probing

Reviewed By:

Kate Clark

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MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
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PLFA

Client: **Golder Associates Inc.**
Project: WG Krummrich - CPA

MI Project Number: **009ME**
Date Received: 05/01/2015

Sample Information

Sample Name:	**CPA-A-DHU-0515**	**CPA-B-DHU-0515**	**CPA-C-DHU-0515**	**CPA-D-DHU-0515**
Sample Date:	04/30/2015	04/30/2015	04/30/2015	04/30/2015
Sample Matrix:	Adv. Bio-Trap	Adv. Bio-Trap	Adv. Bio-Trap	Adv. Bio-Trap
Analyst:	BJ	BJ	BJ	BJ

Biomass Concentrations

Total Biomass (cells/bead)	**2.60E+04**	**1.40E+05**	**5.97E+04**	**1.38E+06**

Community Structure (% total PLFA)

Firmicutes (TerBrSats)	**28.49**	**50.50**	**24.80**	**41.37**
Proteobacteria (Monos)	**39.60**	**33.13**	**44.40**	**51.98**
Anaerobic metal reducers (BrMonos)	**0.00**	**0.00**	**0.00**	**0.00**
SRB/Actinomycetes (MidBrSats)	**0.00**	**0.00**	**0.00**	**0.72**
General (Nsats)	**28.37**	**15.35**	**29.36**	**4.77**
Eukaryotes (polyenoics)	**3.54**	**1.03**	**1.44**	**1.15**

Physiological Status (Proteobacteria only)

Slowed Growth	**0.44**	**0.67**	**1.18**	**1.48**
Decreased Permeability	**0.00**	**0.00**	**0.26**	**0.17**

Legend:
NA = Not Analyzed NS = Not Sampled

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PLFA

Client: **Golder Associates Inc.**
Project: WG Krummrich - CPA

MI Project Number: **009ME**
Date Received: 05/01/2015

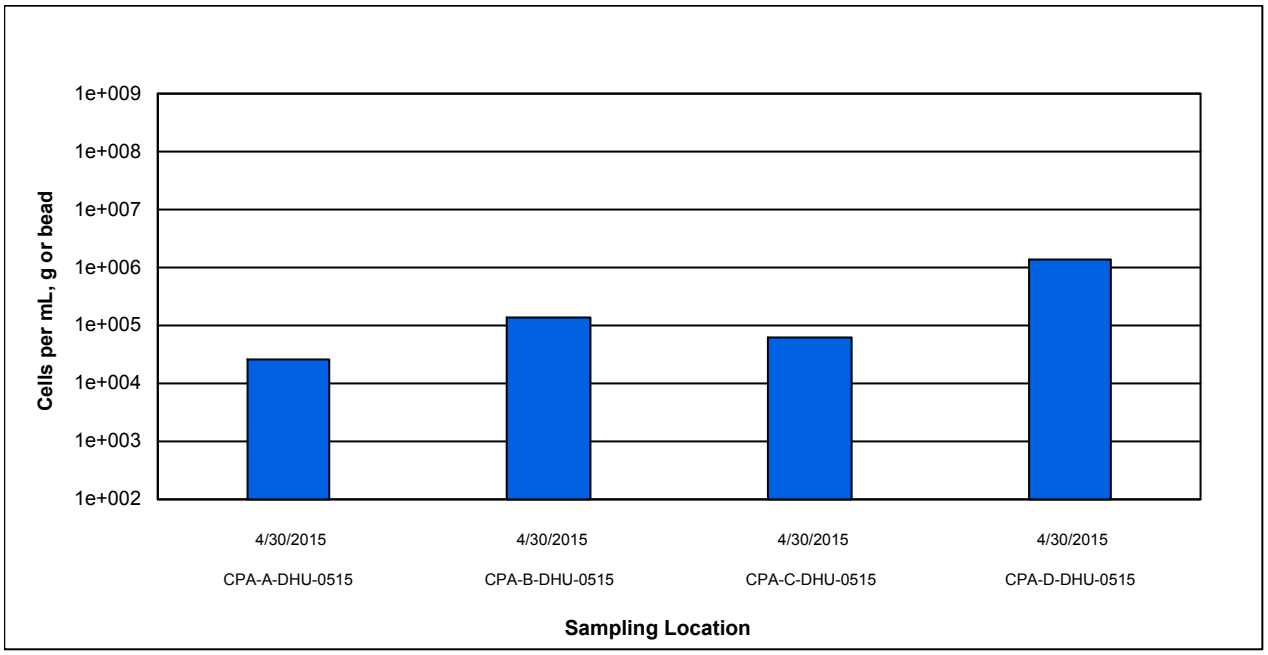

Figure 1. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass

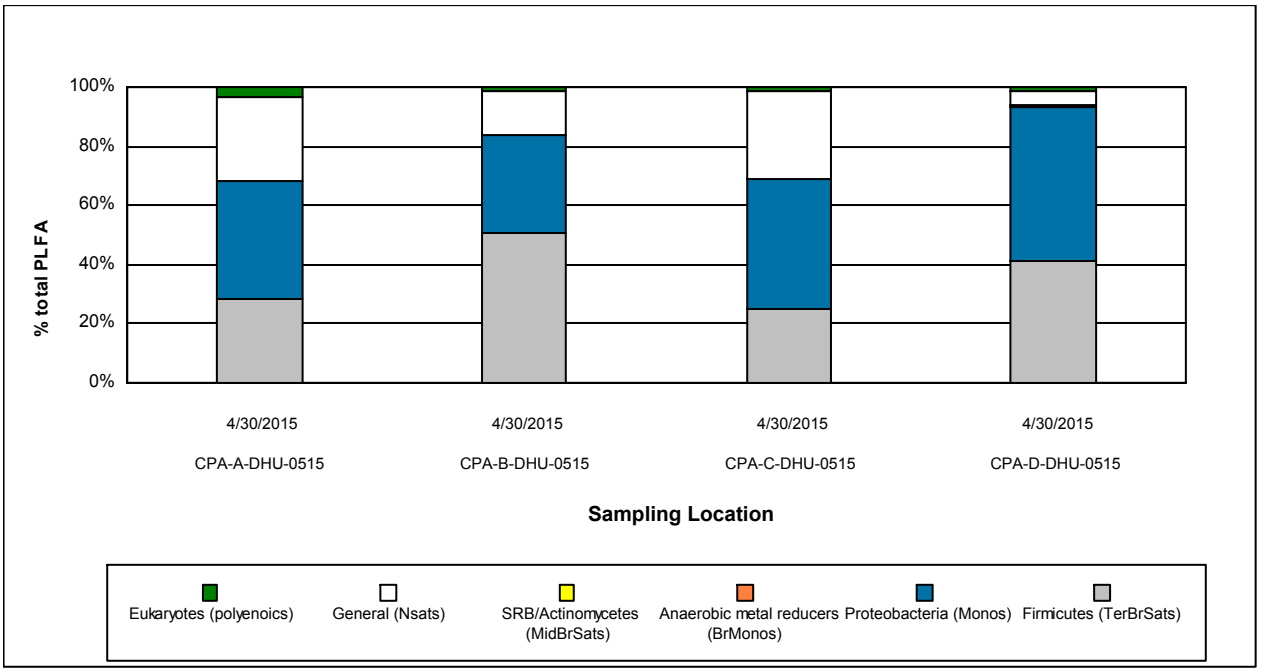

Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis.

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Identifier: 009ME **Date Rec:** 05/01/2015 **Report Date:** 05/27/2015

Client Project #: 1403345 **Client Project Name:** WG Krummrich - CPA

Purchase Order #:

Comments: Please note that the total biomass for sample CPA-A-DHU-0515 fell between the detection limit and the reporting limit for PLFA analysis.

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Phospholipid Fatty Acid Analysis

Interpretation Guidelines

Phospholipids fatty acids (PLFA) are a main component of the membrane (essentially the "skin") of microbes and provide a powerful tool for assessing microbial responses to changes in their environment. This type of analysis provides direct information for assessing and monitoring sites where bioremediation processes, including natural attenuation, are of interest. Analysis of the types and amount of PLFA provides a broad based understanding of the entire microbial community with information obtained in three key areas viable biomass, community structure and metabolic activity.

What is the detection limit for PLFA?

Our limit of detection for PLFA analysis is ~150 picomoles of total PLFA and our limit of quantification is ~500 picomoles of total PLFA. Samples which contain PLFA amounts at or below 150 pmol cannot be used to determine biomass, likewise samples with PLFA content below ~500 pmol are generally considered to contain too few fatty acids to discuss community composition.

How should I interpret the PLFA results?

Interpreting the results obtained from PLFA analysis can be somewhat difficult, so this document was designed to provide a technical guideline. For convenience, this guideline has been divided into the three key areas.

Viable Biomass

PLFA analysis is one of the most reliable and accurate methods available for the determination of viable microbial biomass. Phospholipids break down rapidly upon cell death (21, 23), so biomass calculations based on PLFA content do not contain 'fossil' lipids of dead cells.

How is biomass measured?

Viable biomass is determined from the total amount of PLFA detected in a given sample. Since, phospholipids are an essential part of intact cell membranes they provide an accurate measure of viable cells.

How is biomass calculated?

Biomass levels are reported as cells per gram, mL or bead, and are calculated using a conversion factor of 20,000 cells/pmole of PLFA. This conversation factor is based upon cells grown in laboratory media, and varies somewhat with the type of organism and environmental conditions.

What does the concentration of biomass mean?

The overall abundance of microbes within a given sample is often used as an indicator of the potential for bioremediation to occur, but understanding the levels of biomass within each sample can be cumbersome. The following are benchmarks that can be used to understand whether the biomass levels are low, moderate or high.

Low	Moderate	High
10^3 to 10^4 cells	10^5 to 10^6 cells	10^7 to 10^8 cells

How do I know if a change in biomass is significant?

One of the primary functions of using PLFA analysis at contaminated sites is to evaluate how a community responds following a given treatment, but how does one know if the changes observed between two events are significant? As a general rule, biomass levels which increase or decrease by at least an order of magnitude are considered to be significant. However, changes in biomass levels of less than an order of magnitude may still show a trend. It is important to remember that many factors can affect microbial growth, so factors other than the treatment could be influencing the changes observed between sampling events. Some of the factors to consider are: temperature, moisture, pH, etc. The following illustration depicts three types of changes that occurred over time and the conclusions that could be drawn.

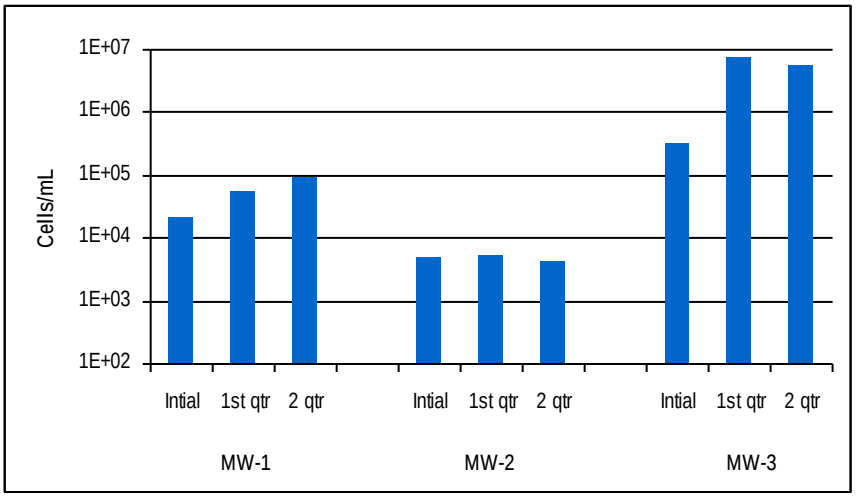

Figure 1. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass (associated with higher organisms).

Conclusions from graph above:

- MW-1 showed a trend of biomass levels increasing steadily over time, although cell concentrations were ~10^4 cells/mL at each sampling event.
- MW-2 showed no notable trends or significant changes in biomass concentrations.
- MW-3 showed a significant increase in biomass levels between the initial and 1st quarter sampling events (from ~10^5 to ~10^6 cells/mL).

Community Structure:

The PLFA in a sample can be separated into particular types, and the resulting PLFA "profile" reflects the proportions of the categories of organisms present in the sample. Because groups of bacteria differ in their metabolic capabilities, determining which bacterial groups are present and their relative distributions within the community can provide information on what metabolic processes are occurring at that location. This in turn can also provide information on the subsurface conditions (i.e oxidation/reduction status, etc.). Table 1 describes the six major structural groups used and their potential relevance to site specific projects.

Table 1. Description of PLFA structural groups.

PLFA Structural Group	General classification	Potential Relevance to Bioremediation Studies
Monoenoic (Monos)	Abundant in Proteobacteria (Gram negative bacteria), typically fast growing, utilize many carbon sources, and adapt quickly to a variety of environments.	Proteobacteria is one of the largest groups of bacteria and represents a wide variety of both aerobes and anaerobes. The majority of Hydrocarbon utilizing bacteria fall within the Proteobacteria
Terminally Branched Saturated (TerBrSats)	Characteristic of Firmicutes (Low G+C Gram-positive bacteria), and also found in Bacteriodes, and some Gram-negative bacteria (especially anaerobes).	Firmicutes are indicative of presence of anaerobic fermenting bacteria (mainly *Clostridia/Bacteriodes*-like), which produce the H_2 necessary for reductive dechlorination
Branched Monoenoic (BrMonos)	Found in the cell membranes of micro-aerophiles and anaerobes, such as sulfate- or iron-reducing bacteria	In contaminated environments high proportions are often associated with anaerobic sulfate and iron reducing bacteria
Mid-Chain Branched Saturated (MidBrSats)	Common in sulfate reducing bacteria and also Actinobacteria (High G+C Gram-positive bacteria).	In contaminated environments high proportions are often associated with anaerobic sulfate and iron reducing bacteria
Normal Saturated (Nsats)	Found in all organisms.	High proportions often indicate less diverse populations.
Polyenoic	Found in eukaryotes such as fungi, protozoa, algae, higher plants, and animals.	Eukaryotic scavengers will often rise up and prey on contaminant utilizing bacteria

Following are answers to some of the common questions about community composition and some detailed descriptions of some typical shifts which can be observed between sampling events.

How is the community structure data presented?

Community structure data is presented as percentage (%) of the total amount of PLFA. In order to relate the complex mixture of PLFA to the organisms present, the ratio of a specific PLFA group is determined (detailed in Table 1 above), and this corresponds to the proportion of the related bacterial classification within the overall community structure. Because normal saturated PLFA are found in both prokaryotes (bacteria) and eukaryotes (fungi, protozoa, diatoms etc), their distribution provides little insight into the types of microbes that are present at a sampling location. However, high proportions of normal saturates are often associated with less diverse microbial populations.

How can community structure data be used to manage my site?

It is important to understand that microbial communities are often a mixture of different types of bacteria (e.g. aerobes, sulfate reducers, methanogens, etc) with the abundance of each group behaving like a seesaw, i.e. as the population of one group increases, another is likely decreasing, mostly due to competition for available resources. The PLFA profile of a sample provides a "fingerprint" of the microbial community, showing relative proportions of the specific bacterial types at the time of sampling. This is a great tool for detecting shifts within the community over time and also to evaluate similarities/differences between sampling locations. It is important to note that PLFA analysis of community structure is analyzing the microbes directly, not just secondary breakdown products. So this provides evidence of how the entire microbial community is responding to the treatment.

How do I recognize community shifts and what they mean?

Shifts in the community structure are indications of changing conditions and their effect on the microbial community, and, by extension on the metabolic processes occurring at the sampling location. Some of the more commonly seen shifts within the community are illustrated and discussed below:

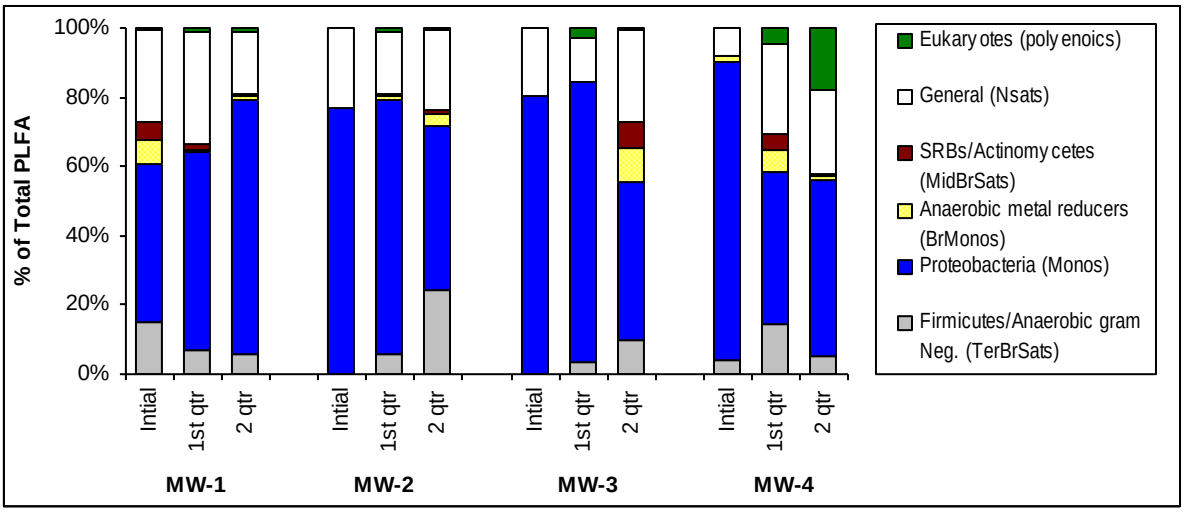

Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis. See Table 1 for detailed descriptions of structural groups.

- **Increased Proteobacteria**

Proportions of Proteobacteria are of interest because it is one of the largest groups of bacteria and represents a wide variety of both aerobe and anaerobes. The majority of hydrocarbons (including benzene and naphthalene) are metabolized by some member of Proteobacteria, mainly due to their ability to grow opportunistically, quickly taking advantage of available food (i.e. hydrocarbons), and adapting quickly to changes in the environment. The detection of increased proportions of Proteobacteria coupled with increased biomass suggests that the Proteobacteria are consuming something. In situations where it is important to determine the extent to which the Proteobacteria are utilizing anaerobic or aerobic pathways, it is possible to measure relative proportions of specific biomarkers that are associated with anaerobic or aerobic pathways thus separating the Proteobacteria into different groups, based on pathways used. Sample MW-1 from Figure 2 depicts a shift in community structure where the proportion of Proteobacteria has increased over time.

- **Increased Firmicutes/Anaerobic Gram negative bacteria**

Increased proportions of Firmicutes/Anaerobic Gram negative bacteria generally indicate that conditions are becoming more reductive (i.e. more anaerobic). Proportions of Firmicutes are of particular interest in sites contaminated with chlorinated hydrocarbons because Firmicutes include anaerobic fermenting bacteria (mainly *Clostridia/Bacteriodes*-like), which produce the H_2 necessary for reductive dechlorination.

Enhanced bioremediation of chlorinated solvents often employs the injection of fermentable substrates which, when utilized by fermenting bacteria, results in the release of H_2. Engineered shifts in the microbial community can be shown by observing increased proportions Firmicutes following an injection of fermentable substrate. Through long-term monitoring of the community structure it is possible to know when re-injection may be necessary or desirable. Sample MW-2 from Figure 2 depicts a shift in community structure where the proportion of Firmicutes has increased over time.

- **Increased anaerobic metal reducing bacteria (BrMonos) and SRB/Actinomycetes (MidBrSats)**

An increase in the proportions of metal and sulfate reducing bacterial groups, especially when combined with shifts in the other bacterial groups, can provide information helpful to monitoring bioremediation. Generally, an increase in metal and sulfate reducers points to more reduced (anaerobic) conditions at the sampled location. This is especially true if there is an increase in Firmicutes at the same time. Large increases in either metal and sulfate reducers, particularly if accompanied by a decrease in Firmicutes, may suggest that conditions are becoming increasingly reduced. In this situation the metal and sulfate reducers may be out-competing dechlorinators for available H_2, thereby limiting the potential for reductive dechlorination at that location. Sample MW-3 from Figure 2 depicts a shift in community structure where the proportion of metal reducing bacteria has increased over time.

- **Increased Eukaryotes**

Eukaryotes include organisms such as fungi, protozoa, and diatoms. At a contaminated location, an increase in eukaryotes, particularly if seen with a decrease in the contaminant utilizing bacteria, suggests that eukaryotic scavengers are preying upon what had been an abundance of bacteria which were consuming the contaminant. Sample MW-4 from Figure 2 depicts a shift in community structure where the proportion of eukaryotes has increased over time.

Physiological status of Proteobacteria

The membrane of a microbe adapts to the changing conditions of its environment, and these changes are reflected in the PLFA. Toxic compounds or environmental conditions may disrupt the membrane and some bacteria respond by making *trans* fatty acids instead of the usual *cis* fatty acids (7) in order to strengthen the cell membrane, making it less permeable. Many Proteobacteria respond to lack of available substrate or to highly toxic conditions by making cyclopropyl (7) or mid-chain branched fatty acids (20) which point to less energy expenditure and a slowed growth rate. The physiological status ratios for Decreased Permeability (trans/cis ratio) and for Slowed Growth (cy/cis ratio) are based on dividing the amount of the fatty acid induced by environmental conditions by the amount of its biosynthetic precursor.

What does slowed growth or decreased permeability mean?

Ratios for slowed growth and for decreased permeability of the cell membrane provide information on the “health” of the Gram negative community, that is, how this population is responding to the conditions present in the environment. It should be noted that one must be cautious when interpreting these measures from only one sampling event. The most effective way to use the physiological status indicators is in long term monitoring and comparing how these ratios increase/decrease over time.

A marked increase in either of these ratios suggests a change in environment which is less favorable to the Gram negative Proteobacteria population. The ratio for slowed growth is a relative measure, and does not directly correspond to log or stationary phases of growth, but is useful as a comparison of growth rates among sampling locations and also over time. An increase in this ratio (i.e. slower growth rate) suggests a change in conditions which is not as supportive of rapid, “healthy” growth of the Gram negative population, often due to reduced available substrate (food). A larger ratio for decreased permeability suggests that the environment has become more toxic to the Gram negative population, requiring energy expenditure to produce *trans* fatty acids in order to make the membrane more rigid.

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SITE LOGIC Report

Stable Isotope Probing (SIP) Study

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MI Identifier: 009ME

Report Date: May 27, 2015

Project: WG Krummrich – CPA, 1403345

Comments:

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Executive Summary

A Stable Isotope Probing (SIP) study was performed to determine whether biodegradation of chlorobenzene is occurring under existing site conditions. Bio-Trap® samplers baited with ^{13}C labeled benzene and ^{13}C labeled chlorobenzene were deployed in monitoring wells CPA-A-DHU-0515, CPA-B-DHU-0515, CPA-C-DHU-0515, and CPA-D-DHU-0515. Following a 30-day deployment period, the Bio-Traps were recovered to quantify ^{13}C incorporation into biomass and dissolved inorganic carbon (DIC). A complete summary of the SIP results is provided in Table 1 and Figures 1 through 6.

Stable Isotope Probing (SIP)

- Incorporation of ^{13}C into the biomass in all four wells conclusively demonstrated that chlorobenzene biodegradation occurred under existing site conditions.
- The average PLFA $\delta^{13}C$ value of well CPA-C-DHU-0515 was 151‰, indicating a moderate incorporation of ^{13}C-labeled chlorobenzene into microbial biomass. Average PLFA $\delta^{13}C$ values in wells CPA-A-DHU-0515, CPA-B-DHU-0515, and CPA-D-DHU-0515 fell within the lower range.
- The average DIC $\delta^{13}C$ values in all four wells were near background levels and indicated little to no chlorobenzene was mineralized during the deployment period.
- Total PLFA biomass concentrations in CPA-B-DHU-0515 and CPA-D-DHU-0515 were within the moderate range at (10^5 to 10^6 cells/bead) while the total PLFA biomass in CPA-A-DHU-0515 and CPA-C-DHU-0515 fell within the lower range (10^4 cells/bead). The biomass in CPA-A-DHU-0515 was between the detection limit and the reporting limit for this analysis.
- The PLFA community structures were similar between the four samples and were primarily composed of monoenoics, firmicutes, and normal saturates. Indicators of eukaryotes were also present.

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Overview of Approach

Stable Isotope Probing (SIP)

Stable isotope probing (SIP) is an innovative method to track the environmental fate of a "labeled" contaminant of concern to unambiguously demonstrate biodegradation. Two stable carbon isotopes exist in nature – carbon 12 (^{12}C) which accounts for 99% of carbon and carbon 13 (^{13}C) which is considerably less abundant (~1%). With the SIP method, the Bio-Trap® sampler is baited with a specially synthesized form of the contaminant containing ^{13}C labeled carbon. Since ^{13}C is rare, the labeled compound can be readily differentiated from the contaminants present at the site. Following deployment, the Bio-Trap® is recovered and three approaches are used to conclusively demonstrate biodegradation of the contaminant of concern.

- The loss of the labeled compound provides an estimate of the degradation rate (% loss of ^{13}C).
- Quantification of ^{13}C enriched phospholipid fatty acids (PLFA) indicates incorporation into microbial biomass.
- Quantification of ^{13}C enriched dissolved inorganic carbon (DIC) indicates contaminant mineralization.

Phospholipid Fatty Acids (PLFA)

PLFA are a primary component of the membrane of all living cells including bacteria. PLFA decomposes rapidly upon cell death (1, 2), so the total amount of PLFA present in a sample is indicative of the viable biomass. When combined with stable isotope probing (SIP), incorporation of ^{13}C into PLFA is a conclusive indicator of biodegradation.

Some organisms produce "signature" types of PLFA allowing quantification of important microbial functional groups (e.g. iron reducers, sulfate reducers, or fermenters). The relative proportions of the groups of PLFA provide a "fingerprint" of the microbial community. In addition, *Proteobacteria* modify specific PLFA during periods of slow growth or in response to environmental stress providing an index of their health and metabolic activity.

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Results

Table 1. Summary of the results obtained from the Bio-Trap® Units. Interpretation guidelines and definitions are found later in the document.

Sample Name	CPA-A-DHU-0515	CPA-B-DHU-0515	CPA-C-DHU-0515	CPA-D-DHU-0515
^{13}C Contaminant Loss				
^{13}C Chlorobenzene Pre-deployment (µg/bead)	85 ± 10	126 ± 7	132 ± 11	132 ± 11
^{13}C Chlorobenzene Post-deployment (µg/bead)	67 ± 6	112 ± 11	94 ± 8	115 ± 27
Biomass & ^{13}C Incorporation				
Total Biomass (Cells/bead)	2.60E+04 (J)	1.40E+05	5.97E+04	1.38E+06
^{13}C Enriched Biomass (Cells/bead)	2.83E+01	5.19E+01	1.67E+02	7.61E+03
Average PLFA Del (‰)	11	2	151	67
Maximum PLFA Del (‰)	11	2	415	119
^{13}C Mineralization				
DIC Del (‰)	-3	-6	-6	-3
% 13C	1.10	1.10	1.10	1.10
Community Structure (% total PLFA)				
Firmicutes (TerBrSats)	28.49	50.50	24.80	41.37
Proteobacteria (Monos)	39.60	33.13	44.40	51.98
Anaerobic metal reducers (BrMonos)	0.00	0.00	0.00	0.00
Actinomycetes (MidBrSats)	0.00	0.00	0.00	0.72
General (Nsats)	28.37	15.35	29.36	4.77
Eukaryotes (Polyenoics)	3.54	1.03	1.44	1.15
Physiological Status (Proteobacteria only)				
Slowed Growth	0.44	0.67	1.18	1.48
Decreased Permeability	0.00	0.00	0.26	0.17

Legend: J = Estimated value between detection limit and reporting limit

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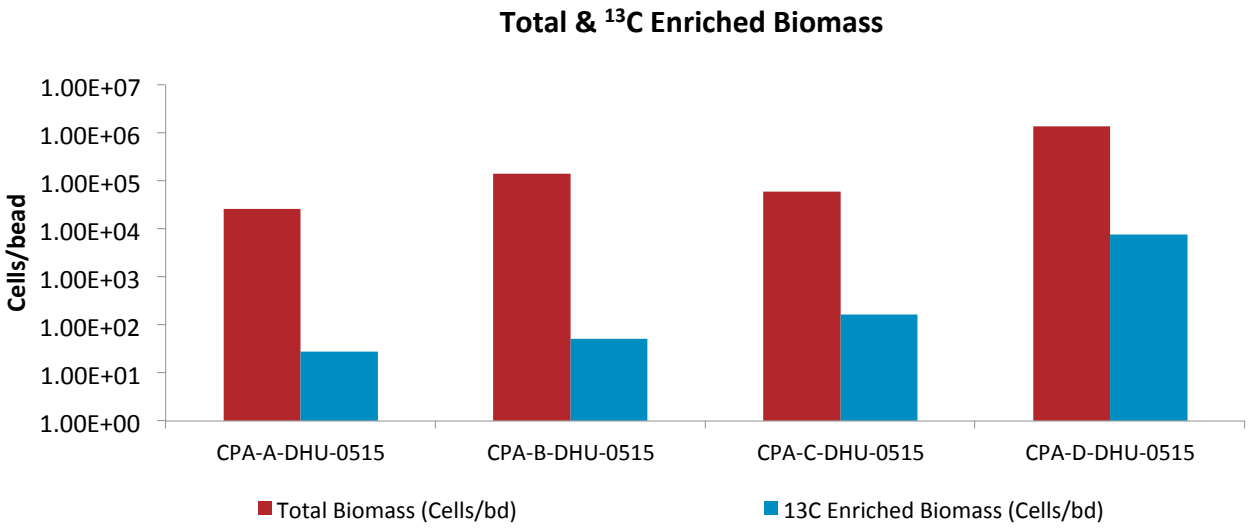

Figure 1. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass (associated with higher organisms).

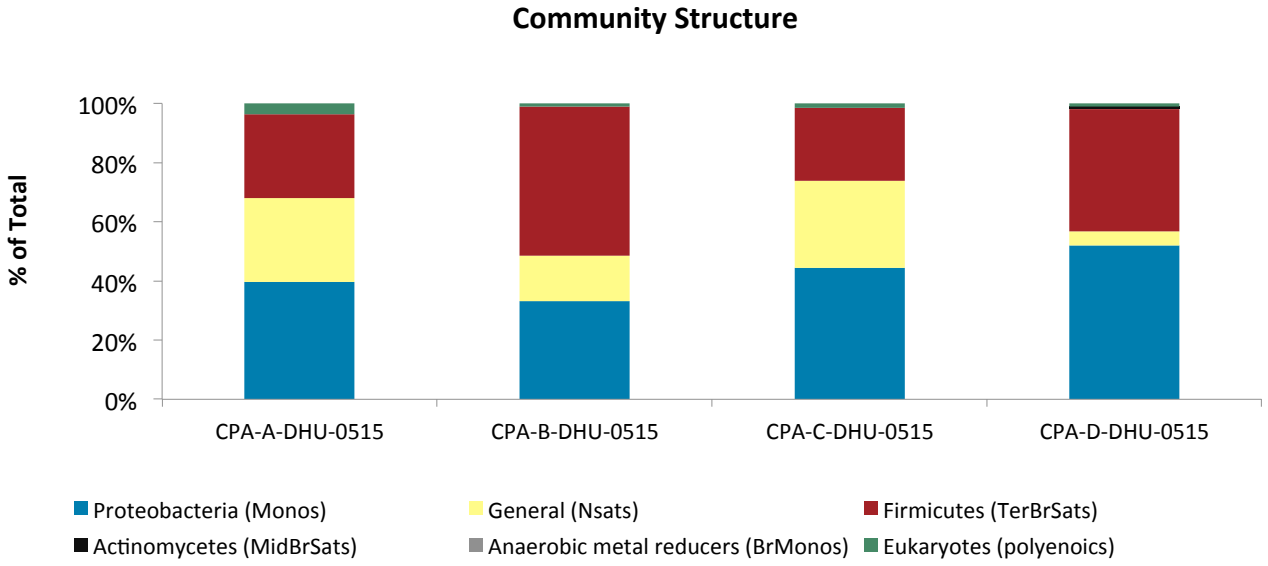

Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis. See the table in the interpretation section for detailed descriptions of the structural groups.

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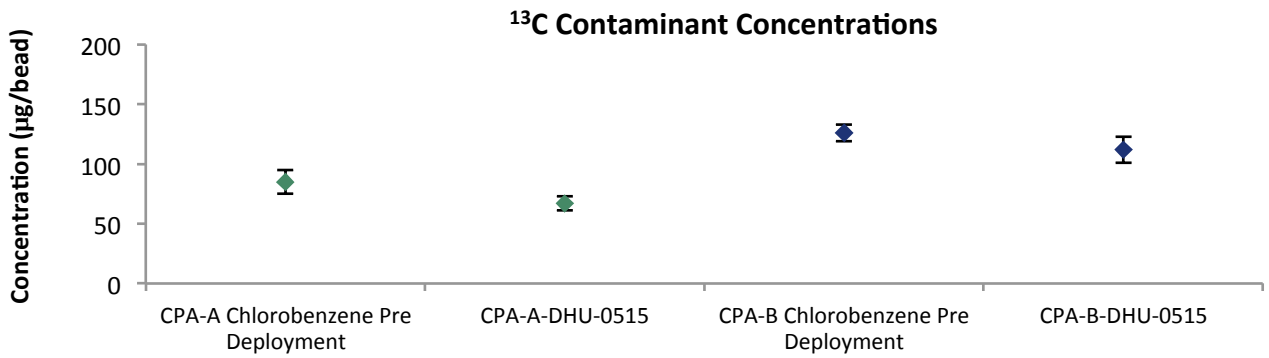

Figure 3. Comparison of Pre-deployment concentrations loaded on Bio-Sep beads to the concentrations detected after incubation.

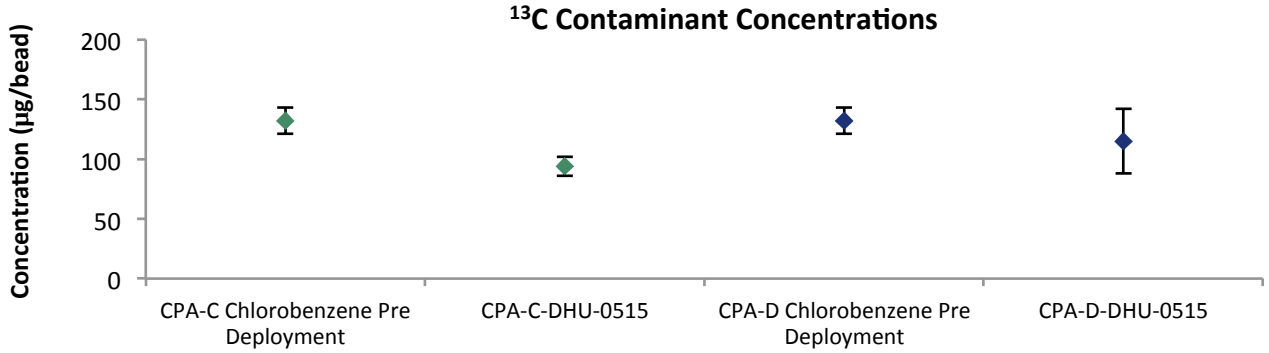

Figure 4. Comparison of Pre-deployment concentrations loaded on Bio-Sep beads to the concentrations detected after incubation.

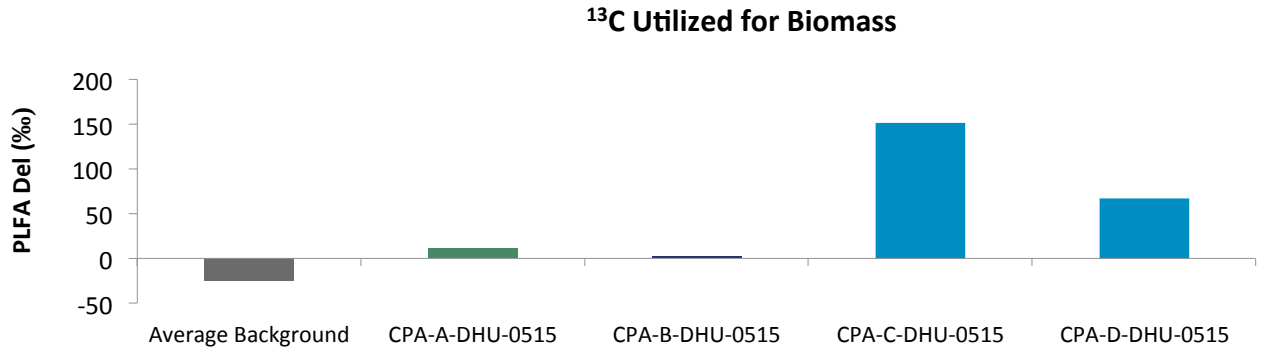

Figure 5. Comparison of the average Del value obtained from PLFA biomarkers from each Bio-Trap® unit to the average background Del observed in samples not exposed to ^{13}C enriched compounds.

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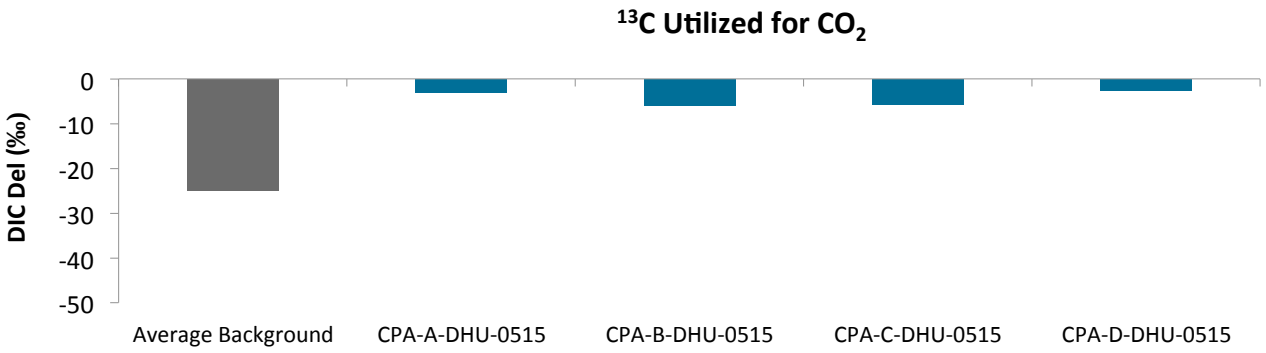

Figure 6. Comparison of the Del value obtained from DIC from each Bio-Trap® unit to the average background Del observed in samples not exposed to ^{13}C enriched compounds.

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Interpretation

Interpretation of the results of the SIP Bio-Trap® study must be performed with due consideration of site conditions, site activities, and the desired treatment mechanism. The following discussion describes interpretation of results in general terms and is meant to serve as a guide.

Contaminant Concentration: Bio-Traps® are baited with a ^{13}C labeled contaminant of concern and a pre-deployment concentration is determined prior to shipping. Following deployment, Bio-Traps® are recovered for analysis including measurement of the concentration of the ^{13}C labeled contaminant remaining. Pre- and post-deployment concentrations are used to calculate percent loss.

Biomass Concentrations: PLFA analysis is one of the most reliable and accurate methods available for the determination of viable (live) biomass. Phospholipids break down rapidly upon cell death, so biomass calculations based on PLFA content do not include "fossil" lipids from dead cells. Total biomass (cells/bead) is calculated from total PLFA using a conversion factor of 20,000 cells/pmole of PLFA. When making comparisons between wells, treatments, or over time, differences of one order of magnitude or more are considered significant.

Total Biomass		
Low	**Moderate**	**High**
10^3 to 10^4 cells	10^5 to 10^6 cells	10^7 to 10^8 cells

For SIP studies, the ^{13}C enriched PLFA is also determined to conclusively demonstrate contaminant biodegradation and quantify incorporation into biomass as a result of the ^{13}C being used for cellular growth. The % ^{13}C incorporation (^{13}C enriched biomass/total biomass) is also provided in the data summary table, but the value must be interpreted carefully especially when comparing wells or treatments. Typically, biodegradation of a contaminant of concern is performed by a small subset of the total microbial community. For Bio-Traps® with large total biomass, the % ^{13}C incorporation value could be low despite significant ^{13}C labeled biomass and loss of the compound. The % ^{13}C incorporation should be viewed in light of total biomass, percent loss, and dissolved inorganic carbon (DIC) results.

^{13}C enrichment data is often reported as a del value. The del value is the difference between the isotopic ratio ($^{13}C/^{12}C$) of the sample (R_x) and a standard (R_{std}) normalized to the isotopic ratio of the standard (R_{std}) and multiplied by 1,000 (units are parts per thousand, denoted ‰).

R_{std} is the naturally occurring isotopic ratio and is approximately 0.011180 (roughly 1% of naturally occurring carbon is ^{13}C). The isotopic ratio, R_x, of PLFA is typically less than the R_{std} under natural conditions, resulting in a del value between -20 and -30‰. For a SIP Bio-Trap® study, biodegradation and incorporation of the ^{13}C labeled compound into PLFA results in a larger $^{13}C/^{12}C$ ratio (R_x) and thus del values greater than under natural conditions. Typical PLFA del values are provided below.

PLFA Del (‰)		
Low	**Moderate**	**High**
0 to 100	100 to 1,000	>1,000

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Dissolved Inorganic Carbon (DIC): Often, bacteria can utilize the ^{13}C labeled compound as both a carbon and energy source. The ^{13}C portion used as a carbon source for growth can be incorporated into PLFA as discussed above, while the ^{13}C used for energy is oxidized to $^{13}CO_2$ (mineralized).

^{13}C enriched CO_2 data is often reported as a del value as described above for PLFA. Under natural conditions, the R_x of CO_2 is approximately the same as R_{std} (0.01118 or about 1.1% ^{13}C). For an SIP Bio-Trap® study, mineralization of the ^{13}C labeled contaminant of concern would lead to a greater value of R_x (increased $^{13}CO_2$ production) and thus a positive del value. As with PLFA, del values between 0 and 100‰ are considered low, values between 100 and 1,000‰ are considered moderate, and values greater than 1,000‰ are considered high. Thus DIC $\%^{13}C$ are considered low if the value is less than 1.23%, moderate if between 1.23 and 2.24%, and high if greater than 2.24%.

Dissolved Inorganic Carbon (DIC) Del and $\%^{13}C$		
Low	**Moderate**	**High**
0 to 100	100 to 1,000	>1,000
1.11 to 1.23%	1.23 to 2.24%	>2.24%

Community Structure (% total PLFA): Community structure data is presented as a percentage of PLFA structural groups normalized to the total PLFA biomass. The relative proportions of the PLFA structural groups provide a "fingerprint" of the types of microbial groups (e.g. anaerobes, sulfate reducers, etc.) present and therefore offer insight into the dominant metabolic processes occurring at the sample location. Thorough interpretation of the PLFA structural groups depends in part on an understanding of site conditions and the desired microbial biodegradation pathways. For example, an increase in mid chain branched saturated PLFA (MidBrSats), indicative of sulfate reducing bacteria (SRB) and *Actinomycetes*, may be desirable at a site where anaerobic BTEX biodegradation is the treatment mechanism, but would not be desirable for a corrective action promoting aerobic BTEX or MTBE biodegradation. The following table provides a brief summary of each PLFA structural group and its potential relevance to bioremediation.

Table 2. Description of PLFA structural groups.

PLFA Structural Group	General classification	Potential Relevance to Bioremediation Studies
Monoenoic (Monos)	Abundant in Proteobacteria (Gram negative bacteria), typically fast growing, utilize many carbon sources, and adapt quickly to a variety of environments.	Proteobacteria is one of the largest groups of bacteria and represents a wide variety of both aerobes and anaerobes. The majority of Hydrocarbon utilizing bacteria fall within the Proteobacteria
Terminally Branched Saturated (TerBrSats)	Characteristic of Firmicutes (Low G+C Gram-positive bacteria), and also found in Bacteriodes, and some Gram-negative bacteria (especially anaerobes).	Firmicutes are indicative of presence of anaerobic fermenting bacteria (mainly *Clostridia/Bacteriodes*-like), which produce the H_2 necessary for reductive dechlorination
Branched Monoenoic (BrMonos)	Found in the cell membranes of micro-aerophiles and anaerobes, such as sulfate- or iron-reducing bacteria	In contaminated environments high proportions are often associated with anaerobic sulfate and iron reducing bacteria
Mid-Chain Branched Saturated (MidBrSats)	Common in sulfate reducing bacteria and also Actinobacteria (High G+C Gram-positive bacteria).	In contaminated environments high proportions are often associated with anaerobic sulfate and iron reducing bacteria
Normal Saturated (Nsats)	Found in all organisms.	High proportions often indicate less diverse populations.
Polyenoic	Found in higher plants, and animals.	Eukaryotic scavengers will often prey on contaminant utilizing bacteria.

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Physiological Status (*Proteobacteria*): Some *Proteobacteria* modify specific PLFA as a strategy to adapt to stressful environmental conditions (3, 4). For example, *cis* monounsaturated fatty acids may be modified to cyclopropyl fatty acids during periods of slowed growth or modified to *trans* monounsaturated fatty acids to decrease membrane permeability in response to environmental stress. The ratio of product to substrate fatty acid thus provides an index of their health and metabolic activity. In general, status ratios greater than 0.25 indicate a response to unfavorable environmental conditions.

Glossary

Del: A Del value is the difference between the isotopic ratio ($^{13}C/^{12}C$) of the sample (R_x) and a standard (R_{std}) normalized to the isotopic ratio of the standard (R_{std}) and multiplied by 1,000 (units are parts per thousand denoted ‰).

$$Del = (R_x - R_{std})/R_{std} \times 1000$$

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