

**GROUNDWATER QUALITY ASSESSMENT**  
223 E. 14<sup>TH</sup> STREET  
SAN LEANDRO, CALIFORNIA

Prepared for

**Valentin Reynoso and Martha Vallejo**  
201 E. 14th Street  
San Leandro, California 94577

by

**Aquifer Sciences, Inc.**  
3680-A Mt. Diablo Blvd.  
Lafayette, California 94549

February 12, 2016

February 12, 2016  
216615

Valentin Reynoso and Martha Vallejo  
201 E. 14<sup>th</sup> Street  
San Leandro, CA 94577

Subject: Groundwater Quality Assessment  
223 E. 14<sup>th</sup> Street, San Leandro, California

Dear Mr. Reynoso and Ms. Vallejo:

Aquifer Sciences is pleased to present this report containing the results of the groundwater quality assessment conducted for the property located at 223 E. 14<sup>th</sup> Street in San Leandro, California. We appreciate the opportunity to be of service. If you have any questions regarding this report, please call us.

Respectfully yours,



Justin K. Evans  
Senior Staff Hydrogeologist



Rebecca A. Sterbentz, PG, CHG  
President



Enclosure

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GROUNDWATER QUALITY ASSESSMENT  
223 E. 14<sup>th</sup> Street, San Leandro, California  
February 2016

## 1.0 INTRODUCTION

This report presents the results of the groundwater quality assessment conducted for the site (the “Site”) located at 223 E. 14<sup>th</sup> Street, San Leandro, California (Figure 1). The objective of this assessment was to collect and analyze groundwater samples from the existing four monitoring wells to evaluate groundwater quality at the Site. Groundwater sampling and analysis were performed in accordance with our work plan dated January 25, 2016.

## 2.0 SITE DESCRIPTION

The Site consists of 0.22 acre of land and is located at 223 E. 14<sup>th</sup> Street in San Leandro, California (Figures 1 and 2). Two one-story buildings are currently situated on the Site. The area surrounding the buildings includes landscaping and an asphalt-paved parking lot. During sample collection, the Site was occupied by San Gaspar Restaurant (201 E. 14<sup>th</sup> Street) and Sunshine Cleaners (223 E. 14<sup>th</sup> Street). The property is currently zoned as a mixed-use development including multi-story residential, commercial retail, and service-oriented use. The area surrounding the Site includes a dental office (Select Dental) to the north, and multi-story residences and apartments to the east, south, and west.

## 3.0 ENVIRONMENTAL HISTORY OF THE SITE

The Site has housed a drycleaning operation for approximately 40 years. Prior to 1993, a sewer line leading to the drycleaner building broke and was repaired. In December 1993, a subsurface environmental investigation was performed by ACC Environmental Consultants to evaluate whether chemicals used in drycleaning operations had contaminated the Site. Soil samples collected in the vicinity of the sewer line break indicated detectable levels of tetrachloroethene (PCE) and trichloroethene (TCE) to a depth of 10 feet in four borings. PCE was detected up to 4.2 mg/kg at a depth of 10 feet. TCE was detected up to 0.37 mg/kg at a depth 10 feet. In 1999, Earth Engineers installed four monitoring wells at the Site. Monitoring well construction details or groundwater sampling results were not found in the public records.

## 4.0 GROUNDWATER SAMPLING AND ANALYSIS

On February 1, 2016, groundwater samples were collected from four monitoring wells (MW-1 through MW-4) at the Site, as shown on Figure 2. The monitoring wells included one deep well (MW-4) drilled to a depth of approximately 50 feet and three shallow wells (MW-1, MW-2, and MW-3) drilled to a depth of approximately 35 feet. Prior to sampling, the depth to groundwater was measured in each well to the nearest 0.01 foot, using an electrical water level recorder. Depth to groundwater was measured between 23.15 and 23.85 feet below the tops of the well casings. Well descriptions, purging and sampling methods, and water quality

parameters (pH, temperature, specific conductance, salinity, and turbidity) were measured and recorded in the groundwater sampling logs. Copies of the groundwater sampling logs are included in Appendix A.

Samples were collected in clean bottles supplied by the analytical laboratory. The bottles were sealed, labeled, stored on ice in a cooler at 4° Celsius, and transported under chain-of-custody protocol within 24 hours of collection to McCampbell Analytical, a state certified analytical laboratory, located in Pittsburg, California.

All four groundwater samples were analyzed for volatile organic compounds (VOCs) and fuel oxygenates by EPA Method 8260B.

## 5.0 ANALYTICAL DATA EVALUATION

The results of laboratory analysis performed on the groundwater samples collected in February 2016 are presented in Table 1. A copy of the laboratory analytical report and chain-of-custody documentation are included in Appendix B.

The analytical data were compared to regulatory standards to evaluate the groundwater quality. The currently applicable regulatory guidelines are given by the Regional Water Quality Control Board (RWQCB) and consist of the Tier 1 environmental screening levels (ESLs) for groundwater (Summary Table A). The data was also compared to Table E-1 Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion.

Table 1 summarizes the analytical data for VOCs in the groundwater samples. PCE was detected in the samples from wells MW-1, MW-2, MW-3, and MW-4 at concentrations of 54, 0.62, 0.69, and 1.0  $\mu\text{g/L}$ , respectively. The ESL for PCE is 5  $\mu\text{g/L}$ . Chloroform was also detected in the samples from wells MW-2 and MW-3 at concentrations of 3.0 and 4.7  $\mu\text{g/L}$ , respectively. The ESL for chloroform is 80  $\mu\text{g/L}$ . No other VOCs were detected in any of the groundwater samples.

## 6.0 SUMMARY AND CONCLUSIONS

In February 2016, Aquifer Sciences performed a groundwater quality assessment for the Site located at 223 E. 14<sup>th</sup> Street in San Leandro, California. The main objective of this assessment was to collect and analyze groundwater samples from the existing four monitoring wells to evaluate groundwater quality at the Site.

Groundwater samples were collected from four monitoring wells at the Site. Based on the results of the assessment, the following conclusions can be made:

- Groundwater beneath the Site was measured at depths between 23.15 to 23.85 feet below the tops of the well casings. The depth to groundwater in the deep well was similar to the shallow wells.
- The groundwater samples were analyzed for VOCs. PCE was detected above the ESL in the sample from well MW-1 at a concentration of 54  $\mu\text{g/L}$ . PCE was detected in the

samples from wells MW-2, MW-3, and MW-4 at concentrations ranging from 0.62 to 1.0  $\mu\text{g/L}$ .

- Chloroform was detected in the samples from wells MW-2 and MW-3 at concentrations of 3.0 and 4.7  $\mu\text{g/L}$ , respectively. The detections of chloroform may originate from a leaking water supply line. Chloroform is often present in drinking water as a residual effect of the chlorination process.
- No other VOCs were detected above the laboratory reporting limits.
- The presence of PCE in the deep well (MW-4) indicates that there may be communication between the first and second water-bearing zones.



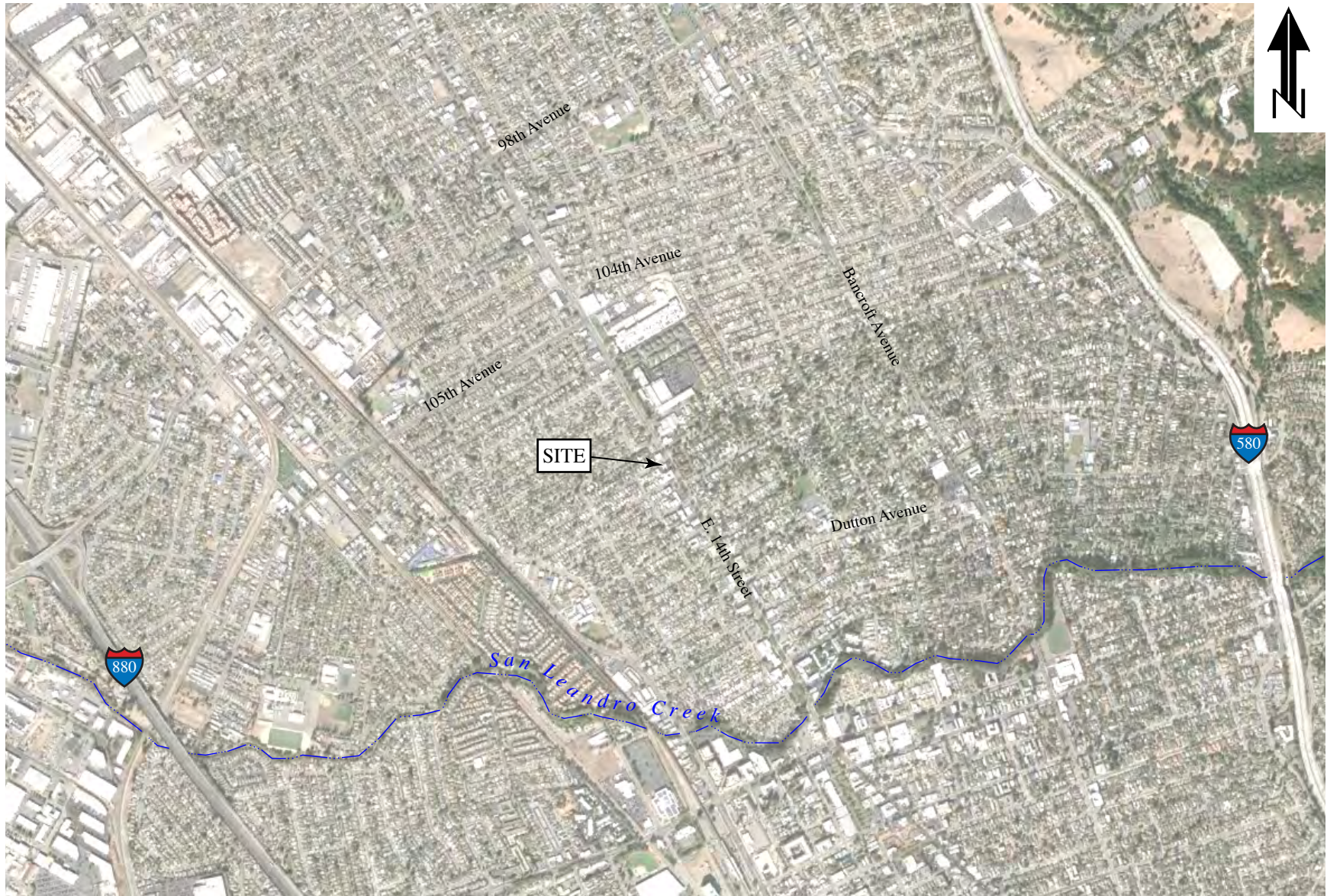


Figure 1. VICINTIY MAP  
223 E. 14th Street, San Leandro, California

0 2,000 feet  
scale





Figure 2. MAP SHOWING SAMPLING LOCATIONS  
223 E. 14th Street, San Leandro, California



Table 1. ANALYTICAL DATA FOR GROUNDWATER – VOCs  
223 E. 14th Street, San Leandro, California

Sampling Location	Sampling Date	PCE (µg/L)	Chloroform (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	TCE (µg/L)	Vinyl Chloride (µg/L)	Other VOCs (µg/L)
MW-1	2/1/16	<b>54</b>	ND	ND	ND	ND	ND	ND
MW-2	2/1/16	0.62	3.0	ND	ND	ND	ND	ND
MW-3	2/1/16	0.69	4.7	ND	ND	ND	ND	ND
MW-4	2/1/16	1.0	ND	ND	ND	ND	ND	ND
Reporting Limit		0.5 - 1.2	0.5 - 1.2	0.5 - 1.2	0.5 - 1.2	0.5 - 1.2	0.5 - 1.2	0.5 - 25
ESL Table A - Residential		5.0	80	6.0	10	5.0	0.5	varies
ESL Table E-1 - Residential		63	170	3,100	14,000	130	1.8	varies

µg/L = micrograms per liter (parts per billion or ppb)

ND = not detected

NE = none established

DCE = dichloroethene

PCE = tetrachloroethene

TCE = trichloroethene

VOCs = volatile organic compounds

ESL Table A - Residential = Summary Table A. Environmental Screening Levels, San Francisco Regional Water Quality Control Board, December 2013

ESL Table E-1 - Residential = Table E-1. Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion, San Francisco Regional Water Quality Control Board, December 2013

Bold font indicates a concentration exceeding the ESL Summary Table A.

APPENDIX A

GROUNDWATER SAMPLING LOGS

## WATER SAMPLING/WELL DEVELOPMENT LOG

Project Name 210615 - Sunshine Cleaners Project No. 26615 Date 2/1/16  
 Address 223 E. 14<sup>th</sup> Street, San Leandro, California Field Personnel JE  
 Weather Conditions clear, cool Well No. MW-1 Sample I.D. MW-1

### WELL DESCRIPTION

Casing Diameter: 2" 4" 6" 3/4" Casing Type: PVC Stainless Steel \_\_\_\_\_  
 Vol. Multiplier: 0.17 0.66 1.5  
 Well Security/Other Observations \_\_\_\_\_

Well Depth (ft.) <u>34.85</u>	Measurement Point (MP) <u>TOC</u>	Total Discharge (gal.) <u>5.0</u>
Depth to Water (ft.)	Elevation of MP and Datum (ft.) _____	Casing Volumes Removed <u>20</u>
Start <u>23.85</u>	End <u>23.85</u>	Estimated Flow (gpm) _____
Water Column (ft.) <u>11.00</u>	Water Elevation (ft.) _____	Method Used for Estimate _____
Casing Volume (gal.) <u>0.25</u>	Product Thickness (ft.) _____	

### EQUIPMENT AND QUALITY ASSURANCE

Method Used to Measure Water Level: Solinst Mini-Solinst Oil/Water Interface \_\_\_\_\_

Purging Method: Grundfos Pump PVC Bailer Disposable Bailer peristaltic pump

Pump Lines: NA New Cleaned Dedicated Rope: NA New \_\_\_\_\_

Method of Cleaning Pump/Bailer: NA Alconox Soln./Tap Rinse/DI Rinse \_\_\_\_\_

Sampling Method: Grundfos Pump Teflon Bailer Disposable Bailer peristaltic pump

Pump Lines: NA New Cleaned Dedicated Rope: NA New \_\_\_\_\_

Method of Cleaning Pump/Bailer: NA Alconox Soln./Tap Rinse/DI Rinse \_\_\_\_\_

pH meter YSI 63 Spec. Cond. Meter YSI 63 Turbidimeter HI 98703  
 Calibration: 4 2 10 1.423 µmhos/cm 0.02 NTU 10 NTU  
 Other \_\_\_\_\_

### WATER QUALITY PARAMETERS

Time	Cumul. Disch. (gal.)	Temp. (°C)	pH	Spec. Conduct. (µmhos/cm)	Color	Odor	Remarks	(ppt) salinity
1355	2.0	19.6	6.74	336	clr	none		0.2
1405	3.0	18.9	6.54	327	clr	none		0.2
1425	5.0	18.7	6.56	372	clr	none		0.2

Sample Time 1430 Turbidity 8.02 NTU Duplicate Rinsate Blank Field Blank I.D. \_\_\_\_\_

Method of Disposal of Purge Water: Drums Treatment System sanitary sewer

Containers and Laboratory Analyses 3x VOAs HCl - VOCs

## WATER SAMPLING/WELL DEVELOPMENT LOG

Project Name Sunshine Cleaners Project No. 216615 Date 2/1/16  
 Address 223 E. 14<sup>th</sup> Street, San Leandro, California Field Personnel JE  
 Weather Conditions clear, cool, windy Well No. MW-2 Sample I.D. MW-2

### WELL DESCRIPTION

Casing Diameter: 2" 4" 6" 3/4" Casing Type: PVC Stainless Steel \_\_\_\_\_  
 Vol. Multiplier: 0.17 0.66 1.5  
 Well Security/Other Observations \_\_\_\_\_

Well Depth (ft.) <u>33.40</u>	Measurement Point (MP) <u>TOC</u>	Total Discharge (gal.) <u>5.0</u>
Depth to Water (ft.)	Elevation of MP and Datum (ft.) <u>—</u>	Casing Volumes Removed <u>21.7</u>
Start <u>23.22</u>	End <u>—</u>	Estimated Flow (gpm) <u>—</u>
Water Column (ft.) <u>10.18</u>	Water Elevation (ft.) <u>—</u>	Method Used for Estimate <u>—</u>
Casing Volume (gal.) <u>0.23</u>	Product Thickness (ft.) <u>—</u>	

### EQUIPMENT AND QUALITY ASSURANCE

Method Used to Measure Water Level: Solinst Mini-Solinst Oil/Water Interface \_\_\_\_\_

Purging Method: Grundfos Pump PVC Bailer Disposable Bailer peristaltic pump

Pump Lines: NA New Cleaned Dedicated Rope: NA New \_\_\_\_\_

Method of Cleaning Pump/Bailer: NA Alconox Soln./Tap Rinse/DI Rinse \_\_\_\_\_

Sampling Method: Grundfos Pump Teflon Bailer Disposable Bailer peristaltic pump

Pump Lines: NA New Cleaned Dedicated Rope: NA New \_\_\_\_\_

Method of Cleaning Pump/Bailer: NA Alconox Soln./Tap Rinse/DI Rinse \_\_\_\_\_

pH meter YSI 63 Spec. Cond. Meter YSI 63 Turbidimeter HI 98703  
 Calibration: 4 0 0 1413 µmhos/cm 0.02 NTU 10 NTU  
 Other \_\_\_\_\_

### WATER QUALITY PARAMETERS

Time	Cumul. Disch. (gal.)	Temp. (°C)	pH	Spec. Conduct. (µmhos/cm)	Color	Odor	Remarks	(ppt) Salinity
1445	2.0	19.7	6.85	383	cr	none		0.2
1455	3.0	19.1	6.68	382	cr	none		0.2
1510	5.0	18.6	6.68	382	cr	none		0.2

Sample Time 1515 Turbidity 23.5 NTU Duplicate Rinsate Blank Field Blank I.D. \_\_\_\_\_

Method of Disposal of Purge Water: Drums Treatment System Sanitary sewer  
 Containers and Laboratory Analyses 3x VOCs HCl / VOCs



## WATER SAMPLING/WELL DEVELOPMENT LOG

Project Name 216615-Sunshine Cleaness Project No. 216615 Date 2/1/16  
 Address 223 E. 14<sup>th</sup> Street, San Leandro, California Field Personnel JE  
 Weather Conditions clear, wind ~56°F Well No. MW-3 Sample I.D. MW-3

### WELL DESCRIPTION

Casing Diameter: 2" 4" 6" \_\_\_\_\_ Casing Type: PVC Stainless Steel \_\_\_\_\_  
 Vol. Multiplier: 0.17 0.66 1.5 \_\_\_\_\_  
 Well Security/Other Observations cap damaged / slight petroleum/chemical odor when first opened

Well Depth (ft.) <u>34.2</u>	Measurement Point (MP) <u>TBC</u>	Total Discharge (gal.) <u>25.0</u>
Depth to Water (ft.)	Elevation of MP and Datum (ft.) _____	Casing Volumes Removed <u>~3.0</u>
Start <u>23.15</u>	End <u>23.15</u>	Estimated Flow (gpm) _____
Water Column (ft.) <u>11.05</u>	Water Elevation (ft.) _____	Method Used for Estimate _____
Casing Volume (gal.) <u>7.3</u>	Product Thickness (ft.) _____	_____

### EQUIPMENT AND QUALITY ASSURANCE

Method Used to Measure Water Level: Solinst Mini-Solinst Oil/Water Interface \_\_\_\_\_  
 Purging Method: Grundfos Pump PVC Bailer Disposable Bailer \_\_\_\_\_  
 Pump Lines: NA New Cleaned Dedicated Rope: NA New \_\_\_\_\_  
 Method of Cleaning Pump/Bailer: NA Alconox Soln./Tap Rinse/DI Rinse \_\_\_\_\_

Sampling Method: Grundfos Pump Teflon Bailer Disposable Bailer \_\_\_\_\_  
 Pump Lines: NA New Cleaned Dedicated Rope: NA New \_\_\_\_\_  
 Method of Cleaning Pump/Bailer: NA Alconox Soln./Tap Rinse/DI Rinse \_\_\_\_\_

pH meter YSI 63 Spec. Cond. Meter YSI 63 Turbidimeter H1 98703  
 Calibration: 4 7 0 412 µmhos/cm 0.02 NTU 10 NTU  
 Other \_\_\_\_\_

### WATER QUALITY PARAMETERS

Time	Cumul. Disch. (gal.)	Temp. (°C)	pH	Spec. Conduct. (µmhos/cm)	Color	Odor	Remarks	(PPT) Solubility
<u>1025</u>	<u>10.0</u>	<u>17.1</u>	<u>6.47</u>	<u>279</u>	<u>grey</u>	<u>none</u>	<u>dirty sand in water</u>	<u>0.2</u>
<u>1055</u>	<u>20.0</u>	<u>15.9</u>	<u>6.88</u>	<u>315</u>	<u>l.brown</u>	<u>none</u>		<u>0.2</u>
<u>1115</u>	<u>25.0</u>	<u>15.4</u>	<u>6.94</u>	<u>328</u>	<u>l.brown</u>	<u>none</u>		<u>0.2</u>

Sample Time 1120 Turbidity 88 NTU Duplicate Rinsate Blank Field Blank I.D. \_\_\_\_\_

Method of Disposal of Purge Water: Drums Treatment System sanitary sewer  
 Containers and Laboratory Analyses 3x WAs HCL

## WATER SAMPLING/WELL DEVELOPMENT LOG

Project Name Sunshine Cleaners Project No. 42615 Date 2/1/16  
 Address 223 E. 14th Street, San Leandro, California Field Personnel JE  
 Weather Conditions clear, cool Well No. MW-4 Sample I.D. MW-4

### WELL DESCRIPTION

Casing Diameter: 2" 4" 6" 3/4" Casing Type: PVC Stainless Steel \_\_\_\_\_  
 Vol. Multiplier: 0.17 0.66 1.5  
 Well Security/Other Observations removed water from conductor casing

Well Depth (ft.) 50.35 Measurement Point (MP) TOC Total Discharge (gal.) 1.0  
 Depth to Water (ft.) Elevation of MP and Datum (ft.) \_\_\_\_\_ Casing Volumes Removed ~1.6  
 Start 23.30 End \_\_\_\_\_ Estimated Flow (gpm) \_\_\_\_\_  
 Water Column (ft.) 27.05 Water Elevation (ft.) \_\_\_\_\_ Method Used for Estimate \_\_\_\_\_  
 Casing Volume (gal.) 0.62 Product Thickness (ft.) \_\_\_\_\_

### EQUIPMENT AND QUALITY ASSURANCE

Method Used to Measure Water Level: Solinst Mini-Solinst Oil/Water Interface \_\_\_\_\_

Purging Method: Grundfos Pump PVC Bailer Disposable Bailer stainless steel bailer  
 Pump Lines: NA New Cleaned Dedicated Rope: NA New  
 Method of Cleaning Pump/Bailer: NA Alconox Soln./Tap Rinse/DI Rinse

Sampling Method: Grundfos Pump Teflon Bailer Disposable Bailer stainless steel bailer  
 Pump Lines: NA New Cleaned Dedicated Rope: NA New  
 Method of Cleaning Pump/Bailer: NA Alconox Soln./Tap Rinse/DI Rinse

pH meter YSI 63 Spec. Cond. Meter YSI 63 Turbidimeter H1 98703  
 Calibration: 4 7 10 1413 µmhos/cm 0.02 NTU 10 NTU  
 Other \_\_\_\_\_

### WATER QUALITY PARAMETERS

Time	Cumul. Disch. (gal.)	Temp. (°C)	pH	Spec. Conduct. (µmhos/cm)	Color	Odor	Remarks	(ppt)
1300	1.0	17.4	7.43	502	16 brown	none		5.1 mg/L 0.3

Sample Time 1300 Turbidity \_\_\_\_\_ NTU Duplicate Rinsate Blank Field Blank I.D. \_\_\_\_\_

Method of Disposal of Purge Water: Drums Treatment System sanitary sewer  
 Containers and Laboratory Analyses 3x VOA / VOCs

APPENDIX B

LABORATORY REPORT

AND

CHAIN-OF-CUSTODY DOCUMENTATION



# McC Campbell Analytical, Inc.

"When Quality Counts"

## Analytical Report

**WorkOrder:** 1602099

**Report Created for:** Aquifer Sciences, Inc.

3680-A Mt. Diablo Blvd  
Lafayette, CA 94549

**Project Contact:** Justin Evans

**Project P.O.:**

**Project Name:** 216615

**Project Received:** 02/02/2016

Analytical Report reviewed & approved for release on 02/09/2016 by:

Angela Rydelius,  
Laboratory Manager

*The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.*







## Glossary of Terms & Qualifier Definitions

**Client:** Aquifer Sciences, Inc.  
**Project:** 216615  
**WorkOrder:** 1602099

### Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)



## Analytical Report

**Client:** Aquifer Sciences, Inc.  
**Date Received:** 2/2/16 19:23  
**Date Prepared:** 2/8/16-2/9/16  
**Project:** 216615

**WorkOrder:** 1602099  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L

### Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1	1602099-001A	Water	02/01/2016 14:30	GC16	116418
Analytes	Result	RL	DF	Date Analyzed	
Acetone	ND	25	2.5	02/09/2016 11:25	
tert-Amyl methyl ether (TAME)	ND	1.2	2.5	02/09/2016 11:25	
Benzene	ND	1.2	2.5	02/09/2016 11:25	
Bromobenzene	ND	1.2	2.5	02/09/2016 11:25	
Bromochloromethane	ND	1.2	2.5	02/09/2016 11:25	
Bromodichloromethane	ND	1.2	2.5	02/09/2016 11:25	
Bromoform	ND	1.2	2.5	02/09/2016 11:25	
Bromomethane	ND	1.2	2.5	02/09/2016 11:25	
2-Butanone (MEK)	ND	5.0	2.5	02/09/2016 11:25	
t-Butyl alcohol (TBA)	ND	5.0	2.5	02/09/2016 11:25	
n-Butyl benzene	ND	1.2	2.5	02/09/2016 11:25	
sec-Butyl benzene	ND	1.2	2.5	02/09/2016 11:25	
tert-Butyl benzene	ND	1.2	2.5	02/09/2016 11:25	
Carbon Disulfide	ND	1.2	2.5	02/09/2016 11:25	
Carbon Tetrachloride	ND	1.2	2.5	02/09/2016 11:25	
Chlorobenzene	ND	1.2	2.5	02/09/2016 11:25	
Chloroethane	ND	1.2	2.5	02/09/2016 11:25	
Chloroform	ND	1.2	2.5	02/09/2016 11:25	
Chloromethane	ND	1.2	2.5	02/09/2016 11:25	
2-Chlorotoluene	ND	1.2	2.5	02/09/2016 11:25	
4-Chlorotoluene	ND	1.2	2.5	02/09/2016 11:25	
Dibromochloromethane	ND	1.2	2.5	02/09/2016 11:25	
1,2-Dibromo-3-chloropropane	ND	0.50	2.5	02/09/2016 11:25	
1,2-Dibromoethane (EDB)	ND	1.2	2.5	02/09/2016 11:25	
Dibromomethane	ND	1.2	2.5	02/09/2016 11:25	
1,2-Dichlorobenzene	ND	1.2	2.5	02/09/2016 11:25	
1,3-Dichlorobenzene	ND	1.2	2.5	02/09/2016 11:25	
1,4-Dichlorobenzene	ND	1.2	2.5	02/09/2016 11:25	
Dichlorodifluoromethane	ND	1.2	2.5	02/09/2016 11:25	
1,1-Dichloroethane	ND	1.2	2.5	02/09/2016 11:25	
1,2-Dichloroethane (1,2-DCA)	ND	1.2	2.5	02/09/2016 11:25	
1,1-Dichloroethene	ND	1.2	2.5	02/09/2016 11:25	
cis-1,2-Dichloroethene	ND	1.2	2.5	02/09/2016 11:25	
trans-1,2-Dichloroethene	ND	1.2	2.5	02/09/2016 11:25	
1,2-Dichloropropane	ND	1.2	2.5	02/09/2016 11:25	
1,3-Dichloropropane	ND	1.2	2.5	02/09/2016 11:25	
2,2-Dichloropropane	ND	1.2	2.5	02/09/2016 11:25	

(Cont.)



## Analytical Report

**Client:** Aquifer Sciences, Inc.  
**Date Received:** 2/2/16 19:23  
**Date Prepared:** 2/8/16-2/9/16  
**Project:** 216615

**WorkOrder:** 1602099  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L

### Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1	1602099-001A	Water	02/01/2016 14:30	GC16	116418
Analytes	Result	RL	DF	Date Analyzed	
1,1-Dichloropropene	ND	1.2	2.5	02/09/2016 11:25	
cis-1,3-Dichloropropene	ND	1.2	2.5	02/09/2016 11:25	
trans-1,3-Dichloropropene	ND	1.2	2.5	02/09/2016 11:25	
Diisopropyl ether (DIPE)	ND	1.2	2.5	02/09/2016 11:25	
Ethylbenzene	ND	1.2	2.5	02/09/2016 11:25	
Ethyl tert-butyl ether (ETBE)	ND	1.2	2.5	02/09/2016 11:25	
Freon 113	ND	1.2	2.5	02/09/2016 11:25	
Hexachlorobutadiene	ND	1.2	2.5	02/09/2016 11:25	
Hexachloroethane	ND	1.2	2.5	02/09/2016 11:25	
2-Hexanone	ND	1.2	2.5	02/09/2016 11:25	
Isopropylbenzene	ND	1.2	2.5	02/09/2016 11:25	
4-Isopropyl toluene	ND	1.2	2.5	02/09/2016 11:25	
Methyl-t-butyl ether (MTBE)	ND	1.2	2.5	02/09/2016 11:25	
Methylene chloride	ND	1.2	2.5	02/09/2016 11:25	
4-Methyl-2-pentanone (MIBK)	ND	1.2	2.5	02/09/2016 11:25	
Naphthalene	ND	1.2	2.5	02/09/2016 11:25	
n-Propyl benzene	ND	1.2	2.5	02/09/2016 11:25	
Styrene	ND	1.2	2.5	02/09/2016 11:25	
1,1,1,2-Tetrachloroethane	ND	1.2	2.5	02/09/2016 11:25	
1,1,2,2-Tetrachloroethane	ND	1.2	2.5	02/09/2016 11:25	
Tetrachloroethene	54	1.2	2.5	02/09/2016 11:25	
Toluene	ND	1.2	2.5	02/09/2016 11:25	
1,2,3-Trichlorobenzene	ND	1.2	2.5	02/09/2016 11:25	
1,2,4-Trichlorobenzene	ND	1.2	2.5	02/09/2016 11:25	
1,1,1-Trichloroethane	ND	1.2	2.5	02/09/2016 11:25	
1,1,2-Trichloroethane	ND	1.2	2.5	02/09/2016 11:25	
Trichloroethene	ND	1.2	2.5	02/09/2016 11:25	
Trichlorofluoromethane	ND	1.2	2.5	02/09/2016 11:25	
1,2,3-Trichloropropane	ND	1.2	2.5	02/09/2016 11:25	
1,2,4-Trimethylbenzene	ND	1.2	2.5	02/09/2016 11:25	
1,3,5-Trimethylbenzene	ND	1.2	2.5	02/09/2016 11:25	
Vinyl Chloride	ND	1.2	2.5	02/09/2016 11:25	
Xylenes, Total	ND	1.2	2.5	02/09/2016 11:25	

(Cont.)



# Analytical Report

**Client:** Aquifer Sciences, Inc.

**WorkOrder:** 1602099

**Date Received:** 2/2/16 19:23

**Extraction Method:** SW5030B

**Date Prepared:** 2/8/16-2/9/16

**Analytical Method:** SW8260B

**Project:** 216615

**Unit:** µg/L

## Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1	1602099-001A	Water	02/01/2016 14:30	GC16	116418

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	105	70-130		02/09/2016 11:25
Toluene-d8	97	70-130		02/09/2016 11:25
4-BFB	104	70-130		02/09/2016 11:25

**Analyst(s):** KF





## Analytical Report

**Client:** Aquifer Sciences, Inc.  
**Date Received:** 2/2/16 19:23  
**Date Prepared:** 2/8/16-2/9/16  
**Project:** 216615

**WorkOrder:** 1602099  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L

### Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2	1602099-002A	Water	02/01/2016 15:15	GC28	116418
Analytes	Result	RL	DF	Date Analyzed	
Acetone	ND	10	1	02/08/2016 11:10	
tert-Amyl methyl ether (TAME)	ND	0.50	1	02/08/2016 11:10	
Benzene	ND	0.50	1	02/08/2016 11:10	
Bromobenzene	ND	0.50	1	02/08/2016 11:10	
Bromochloromethane	ND	0.50	1	02/08/2016 11:10	
Bromodichloromethane	ND	0.50	1	02/08/2016 11:10	
Bromoform	ND	0.50	1	02/08/2016 11:10	
Bromomethane	ND	0.50	1	02/08/2016 11:10	
2-Butanone (MEK)	ND	2.0	1	02/08/2016 11:10	
t-Butyl alcohol (TBA)	ND	2.0	1	02/08/2016 11:10	
n-Butyl benzene	ND	0.50	1	02/08/2016 11:10	
sec-Butyl benzene	ND	0.50	1	02/08/2016 11:10	
tert-Butyl benzene	ND	0.50	1	02/08/2016 11:10	
Carbon Disulfide	ND	0.50	1	02/08/2016 11:10	
Carbon Tetrachloride	ND	0.50	1	02/08/2016 11:10	
Chlorobenzene	ND	0.50	1	02/08/2016 11:10	
Chloroethane	ND	0.50	1	02/08/2016 11:10	
Chloroform	<b>3.0</b>	0.50	1	02/08/2016 11:10	
Chloromethane	ND	0.50	1	02/08/2016 11:10	
2-Chlorotoluene	ND	0.50	1	02/08/2016 11:10	
4-Chlorotoluene	ND	0.50	1	02/08/2016 11:10	
Dibromochloromethane	ND	0.50	1	02/08/2016 11:10	
1,2-Dibromo-3-chloropropane	ND	0.20	1	02/08/2016 11:10	
1,2-Dibromoethane (EDB)	ND	0.50	1	02/08/2016 11:10	
Dibromomethane	ND	0.50	1	02/08/2016 11:10	
1,2-Dichlorobenzene	ND	0.50	1	02/08/2016 11:10	
1,3-Dichlorobenzene	ND	0.50	1	02/08/2016 11:10	
1,4-Dichlorobenzene	ND	0.50	1	02/08/2016 11:10	
Dichlorodifluoromethane	ND	0.50	1	02/08/2016 11:10	
1,1-Dichloroethane	ND	0.50	1	02/08/2016 11:10	
1,2-Dichloroethane (1,2-DCA)	ND	0.50	1	02/08/2016 11:10	
1,1-Dichloroethene	ND	0.50	1	02/08/2016 11:10	
cis-1,2-Dichloroethene	ND	0.50	1	02/08/2016 11:10	
trans-1,2-Dichloroethene	ND	0.50	1	02/08/2016 11:10	
1,2-Dichloropropane	ND	0.50	1	02/08/2016 11:10	
1,3-Dichloropropane	ND	0.50	1	02/08/2016 11:10	
2,2-Dichloropropane	ND	0.50	1	02/08/2016 11:10	

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## Analytical Report

**Client:** Aquifer Sciences, Inc.  
**Date Received:** 2/2/16 19:23  
**Date Prepared:** 2/8/16-2/9/16  
**Project:** 216615

**WorkOrder:** 1602099  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L

### Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2	1602099-002A	Water	02/01/2016 15:15	GC28	116418
Analytes	Result	RL	DF	Date Analyzed	
1,1-Dichloropropene	ND	0.50	1	02/08/2016 11:10	
cis-1,3-Dichloropropene	ND	0.50	1	02/08/2016 11:10	
trans-1,3-Dichloropropene	ND	0.50	1	02/08/2016 11:10	
Diisopropyl ether (DIPE)	ND	0.50	1	02/08/2016 11:10	
Ethylbenzene	ND	0.50	1	02/08/2016 11:10	
Ethyl tert-butyl ether (ETBE)	ND	0.50	1	02/08/2016 11:10	
Freon 113	ND	0.50	1	02/08/2016 11:10	
Hexachlorobutadiene	ND	0.50	1	02/08/2016 11:10	
Hexachloroethane	ND	0.50	1	02/08/2016 11:10	
2-Hexanone	ND	0.50	1	02/08/2016 11:10	
Isopropylbenzene	ND	0.50	1	02/08/2016 11:10	
4-Isopropyl toluene	ND	0.50	1	02/08/2016 11:10	
Methyl-t-butyl ether (MTBE)	ND	0.50	1	02/08/2016 11:10	
Methylene chloride	ND	0.50	1	02/08/2016 11:10	
4-Methyl-2-pentanone (MIBK)	ND	0.50	1	02/08/2016 11:10	
Naphthalene	ND	0.50	1	02/08/2016 11:10	
n-Propyl benzene	ND	0.50	1	02/08/2016 11:10	
Styrene	ND	0.50	1	02/08/2016 11:10	
1,1,1,2-Tetrachloroethane	ND	0.50	1	02/08/2016 11:10	
1,1,2,2-Tetrachloroethane	ND	0.50	1	02/08/2016 11:10	
Tetrachloroethene	<b>0.62</b>	0.50	1	02/08/2016 11:10	
Toluene	ND	0.50	1	02/08/2016 11:10	
1,2,3-Trichlorobenzene	ND	0.50	1	02/08/2016 11:10	
1,2,4-Trichlorobenzene	ND	0.50	1	02/08/2016 11:10	
1,1,1-Trichloroethane	ND	0.50	1	02/08/2016 11:10	
1,1,2-Trichloroethane	ND	0.50	1	02/08/2016 11:10	
Trichloroethene	ND	0.50	1	02/08/2016 11:10	
Trichlorofluoromethane	ND	0.50	1	02/08/2016 11:10	
1,2,3-Trichloropropane	ND	0.50	1	02/08/2016 11:10	
1,2,4-Trimethylbenzene	ND	0.50	1	02/08/2016 11:10	
1,3,5-Trimethylbenzene	ND	0.50	1	02/08/2016 11:10	
Vinyl Chloride	ND	0.50	1	02/08/2016 11:10	
Xylenes, Total	ND	0.50	1	02/08/2016 11:10	

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# Analytical Report

**Client:** Aquifer Sciences, Inc.

**WorkOrder:** 1602099

**Date Received:** 2/2/16 19:23

**Extraction Method:** SW5030B

**Date Prepared:** 2/8/16-2/9/16

**Analytical Method:** SW8260B

**Project:** 216615

**Unit:** µg/L

## Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2	1602099-002A	Water	02/01/2016 15:15	GC28	116418

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	109	70-130		02/08/2016 11:10
Toluene-d8	96	70-130		02/08/2016 11:10
4-BFB	77	70-130		02/08/2016 11:10

**Analyst(s):** AK



## Analytical Report

**Client:** Aquifer Sciences, Inc.  
**Date Received:** 2/2/16 19:23  
**Date Prepared:** 2/8/16-2/9/16  
**Project:** 216615

**WorkOrder:** 1602099  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L

### Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-3	1602099-003A	Water	02/01/2016 11:20	GC10	116418
Analytes	Result	RL	DF	Date Analyzed	
Acetone	ND	10	1	02/09/2016 11:58	
tert-Amyl methyl ether (TAME)	ND	0.50	1	02/09/2016 11:58	
Benzene	ND	0.50	1	02/09/2016 11:58	
Bromobenzene	ND	0.50	1	02/09/2016 11:58	
Bromochloromethane	ND	0.50	1	02/09/2016 11:58	
Bromodichloromethane	ND	0.50	1	02/09/2016 11:58	
Bromoform	ND	0.50	1	02/09/2016 11:58	
Bromomethane	ND	0.50	1	02/09/2016 11:58	
2-Butanone (MEK)	ND	2.0	1	02/09/2016 11:58	
t-Butyl alcohol (TBA)	ND	2.0	1	02/09/2016 11:58	
n-Butyl benzene	ND	0.50	1	02/09/2016 11:58	
sec-Butyl benzene	ND	0.50	1	02/09/2016 11:58	
tert-Butyl benzene	ND	0.50	1	02/09/2016 11:58	
Carbon Disulfide	ND	0.50	1	02/09/2016 11:58	
Carbon Tetrachloride	ND	0.50	1	02/09/2016 11:58	
Chlorobenzene	ND	0.50	1	02/09/2016 11:58	
Chloroethane	ND	0.50	1	02/09/2016 11:58	
Chloroform	4.7	0.50	1	02/09/2016 11:58	
Chloromethane	ND	0.50	1	02/09/2016 11:58	
2-Chlorotoluene	ND	0.50	1	02/09/2016 11:58	
4-Chlorotoluene	ND	0.50	1	02/09/2016 11:58	
Dibromochloromethane	ND	0.50	1	02/09/2016 11:58	
1,2-Dibromo-3-chloropropane	ND	0.20	1	02/09/2016 11:58	
1,2-Dibromoethane (EDB)	ND	0.50	1	02/09/2016 11:58	
Dibromomethane	ND	0.50	1	02/09/2016 11:58	
1,2-Dichlorobenzene	ND	0.50	1	02/09/2016 11:58	
1,3-Dichlorobenzene	ND	0.50	1	02/09/2016 11:58	
1,4-Dichlorobenzene	ND	0.50	1	02/09/2016 11:58	
Dichlorodifluoromethane	ND	0.50	1	02/09/2016 11:58	
1,1-Dichloroethane	ND	0.50	1	02/09/2016 11:58	
1,2-Dichloroethane (1,2-DCA)	ND	0.50	1	02/09/2016 11:58	
1,1-Dichloroethene	ND	0.50	1	02/09/2016 11:58	
cis-1,2-Dichloroethene	ND	0.50	1	02/09/2016 11:58	
trans-1,2-Dichloroethene	ND	0.50	1	02/09/2016 11:58	
1,2-Dichloropropane	ND	0.50	1	02/09/2016 11:58	
1,3-Dichloropropane	ND	0.50	1	02/09/2016 11:58	
2,2-Dichloropropane	ND	0.50	1	02/09/2016 11:58	

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## Analytical Report

**Client:** Aquifer Sciences, Inc.  
**Date Received:** 2/2/16 19:23  
**Date Prepared:** 2/8/16-2/9/16  
**Project:** 216615

**WorkOrder:** 1602099  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L

### Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-3	1602099-003A	Water	02/01/2016 11:20	GC10	116418
Analytes	Result	RL	DF	Date Analyzed	
1,1-Dichloropropene	ND	0.50	1	02/09/2016 11:58	
cis-1,3-Dichloropropene	ND	0.50	1	02/09/2016 11:58	
trans-1,3-Dichloropropene	ND	0.50	1	02/09/2016 11:58	
Diisopropyl ether (DIPE)	ND	0.50	1	02/09/2016 11:58	
Ethylbenzene	ND	0.50	1	02/09/2016 11:58	
Ethyl tert-butyl ether (ETBE)	ND	0.50	1	02/09/2016 11:58	
Freon 113	ND	0.50	1	02/09/2016 11:58	
Hexachlorobutadiene	ND	0.50	1	02/09/2016 11:58	
Hexachloroethane	ND	0.50	1	02/09/2016 11:58	
2-Hexanone	ND	0.50	1	02/09/2016 11:58	
Isopropylbenzene	ND	0.50	1	02/09/2016 11:58	
4-Isopropyl toluene	ND	0.50	1	02/09/2016 11:58	
Methyl-t-butyl ether (MTBE)	ND	0.50	1	02/09/2016 11:58	
Methylene chloride	ND	0.50	1	02/09/2016 11:58	
4-Methyl-2-pentanone (MIBK)	ND	0.50	1	02/09/2016 11:58	
Naphthalene	ND	0.50	1	02/09/2016 11:58	
n-Propyl benzene	ND	0.50	1	02/09/2016 11:58	
Styrene	ND	0.50	1	02/09/2016 11:58	
1,1,1,2-Tetrachloroethane	ND	0.50	1	02/09/2016 11:58	
1,1,2,2-Tetrachloroethane	ND	0.50	1	02/09/2016 11:58	
Tetrachloroethene	<b>0.69</b>	0.50	1	02/09/2016 11:58	
Toluene	ND	0.50	1	02/09/2016 11:58	
1,2,3-Trichlorobenzene	ND	0.50	1	02/09/2016 11:58	
1,2,4-Trichlorobenzene	ND	0.50	1	02/09/2016 11:58	
1,1,1-Trichloroethane	ND	0.50	1	02/09/2016 11:58	
1,1,2-Trichloroethane	ND	0.50	1	02/09/2016 11:58	
Trichloroethene	ND	0.50	1	02/09/2016 11:58	
Trichlorofluoromethane	ND	0.50	1	02/09/2016 11:58	
1,2,3-Trichloropropane	ND	0.50	1	02/09/2016 11:58	
1,2,4-Trimethylbenzene	ND	0.50	1	02/09/2016 11:58	
1,3,5-Trimethylbenzene	ND	0.50	1	02/09/2016 11:58	
Vinyl Chloride	ND	0.50	1	02/09/2016 11:58	
Xylenes, Total	ND	0.50	1	02/09/2016 11:58	

(Cont.)



## Analytical Report

**Client:** Aquifer Sciences, Inc.  
**Date Received:** 2/2/16 19:23  
**Date Prepared:** 2/8/16-2/9/16  
**Project:** 216615

**WorkOrder:** 1602099  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L

### Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-3	1602099-003A	Water	02/01/2016 11:20	GC10	116418

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	114	70-130		02/09/2016 11:58
Toluene-d8	114	70-130		02/09/2016 11:58
4-BFB	88	70-130		02/09/2016 11:58

**Analyst(s):** KF



## Analytical Report

**Client:** Aquifer Sciences, Inc.  
**Date Received:** 2/2/16 19:23  
**Date Prepared:** 2/8/16-2/9/16  
**Project:** 216615

**WorkOrder:** 1602099  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L

### Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-4	1602099-004A	Water	02/01/2016 13:00	GC16	116418
Analytes	Result	RL	DF	Date Analyzed	
Acetone	ND	10	1	02/09/2016 12:05	
tert-Amyl methyl ether (TAME)	ND	0.50	1	02/09/2016 12:05	
Benzene	ND	0.50	1	02/09/2016 12:05	
Bromobenzene	ND	0.50	1	02/09/2016 12:05	
Bromochloromethane	ND	0.50	1	02/09/2016 12:05	
Bromodichloromethane	ND	0.50	1	02/09/2016 12:05	
Bromoform	ND	0.50	1	02/09/2016 12:05	
Bromomethane	ND	0.50	1	02/09/2016 12:05	
2-Butanone (MEK)	ND	2.0	1	02/09/2016 12:05	
t-Butyl alcohol (TBA)	ND	2.0	1	02/09/2016 12:05	
n-Butyl benzene	ND	0.50	1	02/09/2016 12:05	
sec-Butyl benzene	ND	0.50	1	02/09/2016 12:05	
tert-Butyl benzene	ND	0.50	1	02/09/2016 12:05	
Carbon Disulfide	ND	0.50	1	02/09/2016 12:05	
Carbon Tetrachloride	ND	0.50	1	02/09/2016 12:05	
Chlorobenzene	ND	0.50	1	02/09/2016 12:05	
Chloroethane	ND	0.50	1	02/09/2016 12:05	
Chloroform	ND	0.50	1	02/09/2016 12:05	
Chloromethane	ND	0.50	1	02/09/2016 12:05	
2-Chlorotoluene	ND	0.50	1	02/09/2016 12:05	
4-Chlorotoluene	ND	0.50	1	02/09/2016 12:05	
Dibromochloromethane	ND	0.50	1	02/09/2016 12:05	
1,2-Dibromo-3-chloropropane	ND	0.20	1	02/09/2016 12:05	
1,2-Dibromoethane (EDB)	ND	0.50	1	02/09/2016 12:05	
Dibromomethane	ND	0.50	1	02/09/2016 12:05	
1,2-Dichlorobenzene	ND	0.50	1	02/09/2016 12:05	
1,3-Dichlorobenzene	ND	0.50	1	02/09/2016 12:05	
1,4-Dichlorobenzene	ND	0.50	1	02/09/2016 12:05	
Dichlorodifluoromethane	ND	0.50	1	02/09/2016 12:05	
1,1-Dichloroethane	ND	0.50	1	02/09/2016 12:05	
1,2-Dichloroethane (1,2-DCA)	ND	0.50	1	02/09/2016 12:05	
1,1-Dichloroethene	ND	0.50	1	02/09/2016 12:05	
cis-1,2-Dichloroethene	ND	0.50	1	02/09/2016 12:05	
trans-1,2-Dichloroethene	ND	0.50	1	02/09/2016 12:05	
1,2-Dichloropropane	ND	0.50	1	02/09/2016 12:05	
1,3-Dichloropropane	ND	0.50	1	02/09/2016 12:05	
2,2-Dichloropropane	ND	0.50	1	02/09/2016 12:05	

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## Analytical Report

**Client:** Aquifer Sciences, Inc.  
**Date Received:** 2/2/16 19:23  
**Date Prepared:** 2/8/16-2/9/16  
**Project:** 216615

**WorkOrder:** 1602099  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L

### Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-4	1602099-004A	Water	02/01/2016 13:00	GC16	116418
Analytes	Result	RL	DF	Date Analyzed	
1,1-Dichloropropene	ND	0.50	1	02/09/2016 12:05	
cis-1,3-Dichloropropene	ND	0.50	1	02/09/2016 12:05	
trans-1,3-Dichloropropene	ND	0.50	1	02/09/2016 12:05	
Diisopropyl ether (DIPE)	ND	0.50	1	02/09/2016 12:05	
Ethylbenzene	ND	0.50	1	02/09/2016 12:05	
Ethyl tert-butyl ether (ETBE)	ND	0.50	1	02/09/2016 12:05	
Freon 113	ND	0.50	1	02/09/2016 12:05	
Hexachlorobutadiene	ND	0.50	1	02/09/2016 12:05	
Hexachloroethane	ND	0.50	1	02/09/2016 12:05	
2-Hexanone	ND	0.50	1	02/09/2016 12:05	
Isopropylbenzene	ND	0.50	1	02/09/2016 12:05	
4-Isopropyl toluene	ND	0.50	1	02/09/2016 12:05	
Methyl-t-butyl ether (MTBE)	ND	0.50	1	02/09/2016 12:05	
Methylene chloride	ND	0.50	1	02/09/2016 12:05	
4-Methyl-2-pentanone (MIBK)	ND	0.50	1	02/09/2016 12:05	
Naphthalene	ND	0.50	1	02/09/2016 12:05	
n-Propyl benzene	ND	0.50	1	02/09/2016 12:05	
Styrene	ND	0.50	1	02/09/2016 12:05	
1,1,1,2-Tetrachloroethane	ND	0.50	1	02/09/2016 12:05	
1,1,2,2-Tetrachloroethane	ND	0.50	1	02/09/2016 12:05	
Tetrachloroethene	1.0	0.50	1	02/09/2016 12:05	
Toluene	ND	0.50	1	02/09/2016 12:05	
1,2,3-Trichlorobenzene	ND	0.50	1	02/09/2016 12:05	
1,2,4-Trichlorobenzene	ND	0.50	1	02/09/2016 12:05	
1,1,1-Trichloroethane	ND	0.50	1	02/09/2016 12:05	
1,1,2-Trichloroethane	ND	0.50	1	02/09/2016 12:05	
Trichloroethene	ND	0.50	1	02/09/2016 12:05	
Trichlorofluoromethane	ND	0.50	1	02/09/2016 12:05	
1,2,3-Trichloropropane	ND	0.50	1	02/09/2016 12:05	
1,2,4-Trimethylbenzene	ND	0.50	1	02/09/2016 12:05	
1,3,5-Trimethylbenzene	ND	0.50	1	02/09/2016 12:05	
Vinyl Chloride	ND	0.50	1	02/09/2016 12:05	
Xylenes, Total	ND	0.50	1	02/09/2016 12:05	

(Cont.)



# Analytical Report

**Client:** Aquifer Sciences, Inc.

**WorkOrder:** 1602099

**Date Received:** 2/2/16 19:23

**Extraction Method:** SW5030B

**Date Prepared:** 2/8/16-2/9/16

**Analytical Method:** SW8260B

**Project:** 216615

**Unit:** µg/L

## Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-4	1602099-004A	Water	02/01/2016 13:00	GC16	116418

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	107	70-130		02/09/2016 12:05
Toluene-d8	98	70-130		02/09/2016 12:05
4-BFB	98	70-130		02/09/2016 12:05

**Analyst(s):** KF





## Quality Control Report

**Client:** Aquifer Sciences, Inc.  
**Date Prepared:** 2/8/16  
**Date Analyzed:** 2/8/16  
**Instrument:** GC28  
**Matrix:** Water  
**Project:** 216615

**WorkOrder:** 1602099  
**BatchID:** 116418  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L  
**Sample ID:** MB/LCS-116418  
 1602099-002AMS/MSD

### QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	-	10	-	-	-	-
tert-Amyl methyl ether (TAME)	ND	11.2	0.50	10	-	112	54-140
Benzene	ND	11.0	0.50	10	-	110	47-158
Bromobenzene	ND	-	0.50	-	-	-	-
Bromochloromethane	ND	-	0.50	-	-	-	-
Bromodichloromethane	ND	-	0.50	-	-	-	-
Bromoform	ND	-	0.50	-	-	-	-
Bromomethane	ND	-	0.50	-	-	-	-
2-Butanone (MEK)	ND	-	2.0	-	-	-	-
t-Butyl alcohol (TBA)	ND	48.6	2.0	40	-	122	42-140
n-Butyl benzene	ND	-	0.50	-	-	-	-
sec-Butyl benzene	ND	-	0.50	-	-	-	-
tert-Butyl benzene	ND	-	0.50	-	-	-	-
Carbon Disulfide	ND	-	0.50	-	-	-	-
Carbon Tetrachloride	ND	-	0.50	-	-	-	-
Chlorobenzene	ND	11.4	0.50	10	-	114	43-157
Chloroethane	ND	-	0.50	-	-	-	-
Chloroform	ND	-	0.50	-	-	-	-
Chloromethane	ND	-	0.50	-	-	-	-
2-Chlorotoluene	ND	-	0.50	-	-	-	-
4-Chlorotoluene	ND	-	0.50	-	-	-	-
Dibromochloromethane	ND	-	0.50	-	-	-	-
1,2-Dibromo-3-chloropropane	ND	-	0.20	-	-	-	-
1,2-Dibromoethane (EDB)	ND	11.4	0.50	10	-	114	44-155
Dibromomethane	ND	-	0.50	-	-	-	-
1,2-Dichlorobenzene	ND	-	0.50	-	-	-	-
1,3-Dichlorobenzene	ND	-	0.50	-	-	-	-
1,4-Dichlorobenzene	ND	-	0.50	-	-	-	-
Dichlorodifluoromethane	ND	-	0.50	-	-	-	-
1,1-Dichloroethane	ND	-	0.50	-	-	-	-
1,2-Dichloroethane (1,2-DCA)	ND	11.0	0.50	10	-	110	66-125
1,1-Dichloroethene	ND	12.1	0.50	10	-	121	47-149
cis-1,2-Dichloroethene	ND	-	0.50	-	-	-	-
trans-1,2-Dichloroethene	ND	-	0.50	-	-	-	-
1,2-Dichloropropane	ND	-	0.50	-	-	-	-
1,3-Dichloropropane	ND	-	0.50	-	-	-	-
2,2-Dichloropropane	ND	-	0.50	-	-	-	-

(Cont.)



## Quality Control Report

**Client:** Aquifer Sciences, Inc.  
**Date Prepared:** 2/8/16  
**Date Analyzed:** 2/8/16  
**Instrument:** GC28  
**Matrix:** Water  
**Project:** 216615

**WorkOrder:** 1602099  
**BatchID:** 116418  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L  
**Sample ID:** MB/LCS-116418  
 1602099-002AMS/MSD

### QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
1,1-Dichloropropene	ND	-	0.50	-	-	-	-
cis-1,3-Dichloropropene	ND	-	0.50	-	-	-	-
trans-1,3-Dichloropropene	ND	-	0.50	-	-	-	-
Diisopropyl ether (DIPE)	ND	11.4	0.50	10	-	114	57-136
Ethylbenzene	ND	-	0.50	-	-	-	-
Ethyl tert-butyl ether (ETBE)	ND	10.9	0.50	10	-	109	55-137
Freon 113	ND	-	0.50	-	-	-	-
Hexachlorobutadiene	ND	-	0.50	-	-	-	-
Hexachloroethane	ND	-	0.50	-	-	-	-
2-Hexanone	ND	-	0.50	-	-	-	-
Isopropylbenzene	ND	-	0.50	-	-	-	-
4-Isopropyl toluene	ND	-	0.50	-	-	-	-
Methyl-t-butyl ether (MTBE)	ND	11.5	0.50	10	-	115	53-139
Methylene chloride	ND	-	0.50	-	-	-	-
4-Methyl-2-pentanone (MIBK)	ND	-	0.50	-	-	-	-
Naphthalene	ND	-	0.50	-	-	-	-
n-Propyl benzene	ND	-	0.50	-	-	-	-
Styrene	ND	-	0.50	-	-	-	-
1,1,1,2-Tetrachloroethane	ND	-	0.50	-	-	-	-
1,1,2,2-Tetrachloroethane	ND	-	0.50	-	-	-	-
Tetrachloroethene	ND	-	0.50	-	-	-	-
Toluene	ND	9.80	0.50	10	-	98	52-137
1,2,3-Trichlorobenzene	ND	-	0.50	-	-	-	-
1,2,4-Trichlorobenzene	ND	-	0.50	-	-	-	-
1,1,1-Trichloroethane	ND	-	0.50	-	-	-	-
1,1,2-Trichloroethane	ND	-	0.50	-	-	-	-
Trichloroethene	ND	11.6	0.50	10	-	115	43-157
Trichlorofluoromethane	ND	-	0.50	-	-	-	-
1,2,3-Trichloropropane	ND	-	0.50	-	-	-	-
1,2,4-Trimethylbenzene	ND	-	0.50	-	-	-	-
1,3,5-Trimethylbenzene	ND	-	0.50	-	-	-	-
Vinyl Chloride	ND	-	0.50	-	-	-	-
Xylenes, Total	ND	-	0.50	-	-	-	-

(Cont.)



## Quality Control Report

**Client:** Aquifer Sciences, Inc.  
**Date Prepared:** 2/8/16  
**Date Analyzed:** 2/8/16  
**Instrument:** GC28  
**Matrix:** Water  
**Project:** 216615

**WorkOrder:** 1602099  
**BatchID:** 116418  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** µg/L  
**Sample ID:** MB/LCS-116418  
 1602099-002AMS/MSD

### QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
<b>Surrogate Recovery</b>							
Dibromofluoromethane	26.8	27.4		25	107	110	70-130
Toluene-d8	24.7	24.5		25	99	98	70-130
4-BFB	2.03	2.09		2.5	81	84	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
tert-Amyl methyl ether (TAME)	11.2	10.9	10	ND	112	109	69-139	2.98	20
Benzene	10.3	10.0	10	ND	103	100	69-141	2.84	20
t-Butyl alcohol (TBA)	51.8	47.4	40	ND	130	118	41-152	8.99	20
Chlorobenzene	10.8	10.8	10	ND	108	108	77-120	0	20
1,2-Dibromoethane (EDB)	11.6	11.5	10	ND	116	115	76-135	1.33	20
1,2-Dichloroethane (1,2-DCA)	10.6	10.3	10	ND	106	103	73-139	2.67	20
1,1-Dichloroethene	11.1	10.2	10	ND	111	102	59-140	8.28	20
Diisopropyl ether (DIPE)	10.8	10.6	10	ND	108	106	72-140	2.23	20
Ethyl tert-butyl ether (ETBE)	10.6	10.3	10	ND	106	103	71-140	2.79	20
Methyl-t-butyl ether (MTBE)	11.6	11.2	10	ND	117	112	73-139	3.62	20
Toluene	9.24	9.20	10	ND	92	92	71-128	0	20
Trichloroethene	10.9	10.7	10	ND	109	107	64-132	1.47	20
<b>Surrogate Recovery</b>									
Dibromofluoromethane	27.3	27.3	25		109	109	70-130	0	20
Toluene-d8	24.4	24.4	25		98	98	70-130	0	20
4-BFB	2.14	2.09	2.5		85	84	70-130	2.15	20



1534 Willow Pass Rd  
 Pittsburg, CA 94565-1701  
 (925) 252-9262

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 1602099

ClientCode: ASI

WaterTrax   
  WriteOn   
  EDF   
  Excel   
  EQUIS   
  Email   
  HardCopy   
  ThirdParty   
  J-flag

**Report to:**

Justin Evans  
 Aquifer Sciences, Inc.  
 3680-A Mt. Diablo Blvd  
 Lafayette, CA 94549  
 (925) 283-9098    FAX: 925-283-9133

Email: jevans@aquifer.com; ras@aquifer.com  
 cc/3rd Party:  
 PO:  
 ProjectNo: 216615

**Bill to:**

Accounts Payable  
 Aquifer Sciences, Inc.  
 3680-A Mt. Diablo Blvd  
 Lafayette, CA 94549

**Requested TAT: 5 days;**

*Date Received:* 02/02/2016

*Date Logged:* 02/02/2016

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1602099-001	MW-1	Water	2/1/2016 14:30	<input type="checkbox"/>	A												
1602099-002	MW-2	Water	2/1/2016 15:15	<input type="checkbox"/>	A												
1602099-003	MW-3	Water	2/1/2016 11:20	<input type="checkbox"/>	A												
1602099-004	MW-4	Water	2/1/2016 13:00	<input type="checkbox"/>	A												

**Test Legend:**

1	8260B_W	2		3		4	
5		6		7		8	
9		10		11		12	

**Prepared by: Briana Cutino**

**Comments:**

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).  
 Hazardous samples will be returned to client or disposed of at client expense.



## WORK ORDER SUMMARY

**Client Name:** AQUIFER SCIENCES, INC.

**QC Level:** LEVEL 2

**Work Order:** 1602099

**Project:** 216615

**Client Contact:** Justin Evans

**Date Logged:** 2/2/2016

**Comments:**

**Contact's Email:** jevans@aquifer.com; ras@aquifer.com

WaterTrax     WriteOn     EDF     Excel     Fax     Email     HardCopy     ThirdParty     J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1602099-001A	MW-1	Water	SW8260B (VOCs)	3	VOA w/ HCl	<input type="checkbox"/>	2/1/2016 14:30	5 days	Trace	<input type="checkbox"/>	
1602099-002A	MW-2	Water	SW8260B (VOCs)	3	VOA w/ HCl	<input type="checkbox"/>	2/1/2016 15:15	5 days	Trace	<input type="checkbox"/>	
1602099-003A	MW-3	Water	SW8260B (VOCs)	3	VOA w/ HCl	<input type="checkbox"/>	2/1/2016 11:20	5 days	Present	<input type="checkbox"/>	
1602099-004A	MW-4	Water	SW8260B (VOCs)	3	VOA w/ HCl	<input type="checkbox"/>	2/1/2016 13:00	5 days	Present	<input type="checkbox"/>	

**NOTES:** - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).  
 - MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.





### Sample Receipt Checklist

Client Name: **Aquifer Sciences, Inc.**  
 Project Name: **216615**  
 WorkOrder №: **1602099** Matrix: Water  
 Carrier: Bernie Cummins (MAI Courier)

Date and Time Received: **2/2/2016 16:10**  
 Date Logged: **2/2/2016**  
 Received by: **Jena Alfaro**  
 Logged by: **Briana Cutino**

**Chain of Custody (COC) Information**

Chain of custody present? Yes  No   
 Chain of custody signed when relinquished and received? Yes  No   
 Chain of custody agrees with sample labels? Yes  No   
 Sample IDs noted by Client on COC? Yes  No   
 Date and Time of collection noted by Client on COC? Yes  No   
 Sampler's name noted on COC? Yes  No

**Sample Receipt Information**

Custody seals intact on shipping container/cooler? Yes  No  NA   
 Shipping container/cooler in good condition? Yes  No   
 Samples in proper containers/bottles? Yes  No   
 Sample containers intact? Yes  No   
 Sufficient sample volume for indicated test? Yes  No

**Sample Preservation and Hold Time (HT) Information**

All samples received within holding time? Yes  No   
 Sample/Temp Blank temperature Temp: 1.2°C NA   
 Water - VOA vials have zero headspace / no bubbles? Yes  No  NA   
 Sample labels checked for correct preservation? Yes  No   
 pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)? Yes  No  NA   
 Samples Received on Ice? Yes  No   
 (Ice Type: WET ICE )

**UCMR3 Samples:**

Total Chlorine tested and acceptable upon receipt for EPA 522? Yes  No  NA   
 Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539? Yes  No  NA

\* NOTE: If the "No" box is checked, see comments below.

Comments: