

The order of this data package is as follows:

1. Chain-of-Custody/Lab Request
2. Copies of field COCs
3. Validation Report
4. Laboratory analysis

Comments:

[illegible]

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAWA-17-142856

WORK ORDER:

|                                 | AS<br>PLANNED                     | AS COLLECTED |                      | AS<br>PLANNED | AS COLLECTED  |
|---------------------------------|-----------------------------------|--------------|----------------------|---------------|---------------|
| Date Collected<br>(MM/DD/YYYY): | 09/07/2017                        | OK           | FIELD MATRIX:        | WS            | OK            |
| TIME COLLECTED<br>(HH:MM):      | 1031                              |              | MEDIA:               | UA            |               |
| PRS ID:                         | OK                                |              | SAMPLE TECH<br>CODE: | PP            |               |
| LOCATION ID:                    | Between E252<br>and Water at Beta |              | FIELD PREP:          | F             |               |
| LOCATION TYPE:                  | OK                                |              | FIELD QC TYPE:       | REG           |               |
| TOP DEPTH:                      |                                   |              | SAMPLE USAGE:        | INV           |               |
| BOTTOM DEPTH:                   |                                   |              | EXCAVATED:           |               | YES / NO / NA |

| PRIORITY | ORDER                        | CONTAINER             | # | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|------------------------------|-----------------------|---|--------------|---------------|----------------------|
| MA       | WSP-All Metals               | 1 LITER POLY          | 1 | HNO3 ICE     | Y             | MA                   |
|          | WSP-<br>GENINORG+PerChlorate | 1 LITER POLY          | 1 | ICE          |               |                      |
|          | WSP-<br>NH3+NO3/NO2+PO4      | 500 ML AMBER<br>GLASS | 1 | H2SO4        |               |                      |

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time \_\_\_\_\_ HH:MM Dissolved Oxygen \_\_\_\_\_ Flow (in gpm) \_\_\_\_\_  
Oxidation-Reduction Potential \_\_\_\_\_ pH \_\_\_\_\_ Specific Conductance \_\_\_\_\_  
Temperature \_\_\_\_\_ Turbidity \_\_\_\_\_

COLLECTED BY (PRINT): K. Tow

|  |                                   |                                 |  |                                  |                             |
|--|-----------------------------------|---------------------------------|--|----------------------------------|-----------------------------|
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Katrina Tow<br><i>[Signature]</i> | Date/Time<br>09/07/2017<br>1215 | RECEIVED BY<br>(Printed Name)<br>(Signature) | M. Montoya<br><i>[Signature]</i> | Date/Time<br>9/7/17<br>1215 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) |                                   | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature) |                                  | Date/Time                   |

Report Date: 08/24/2017



**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAWA-17-142891

WORK ORDER:

|                                 | AS<br>PLANNED                     | AS COLLECTED |                      | AS<br>PLANNED | AS COLLECTED                                   |
|---------------------------------|-----------------------------------|--------------|----------------------|---------------|--|
| Date Collected<br>(MM/DD/YYYY): | 09/07/2017                        | OK           | FIELD MATRIX:        | WS            | OK   |
| TIME COLLECTED<br>(HH:MM):      | 1031                              |              | MEDIA:               | UA            |  |
| PRS ID:                         | OK                                |              | SAMPLE TECH<br>CODE: | PP            |  |
| LOCATION ID:                    | Between E252<br>and Water at Beta |              | FIELD PREP:          | UF            |  |
| LOCATION TYPE:                  | OK                                |              | FIELD QC TYPE:       | REG           |  |
| TOP DEPTH:                      |                                   |              | SAMPLE USAGE:        | INV           |  |
| BOTTOM DEPTH:                   |                                   |              | EXCAVATED:           |               | YES / <input checked="" type="radio"/> NO / NA |

| PRIORITY | ORDER                 | CONTAINER                | # | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|-----------------------|--------------------------|---|--------------|---------------|----------------------|
| NA       | WSP-8260B-VOA         | 40 ML SEPTUM AMBER GLASS | 2 | HCL          | Y             | NA                   |
|          | WSP-8330B-NMED HEXMOD | 1 LITER AMBER GLASS      | 3 | ICE          |               |                      |
|          | WSP-All Metals        | 1 LITER POLY             | 1 | HNO3 ICE     |               |                      |
|          | WSP-CN(T)             | 250 ML POLY              | 1 | NAOH         |               |                      |
|          | WSP-TKN+TOC           | 500 ML AMBER GLASS       | 1 | H2SO4        |               |                      |

SAMPLE COMMENTS: HE SPOT test completed: Results Negative

LOCATION COMMENTS: NA

## FIELD PARAMETERS:

|                               |      |       |                  |      |                      |       |
|-------------------------------|------|-------|------------------|------|----------------------|-------|
| Sample Time                   | 1031 | HH:MM | Dissolved Oxygen | 7.68 | Flow (in gpm)        | 13.46 |
| Oxidation-Reduction Potential | NC   |       | pH               | 8.22 | Specific Conductance | 198.2 |
| Temperature                   | 18.7 |       | Turbidity        | 0.9  |                      |       |

COLLECTED BY (PRINT): K. TOW

|  |                                   |                                 |  |                               |                             |
|--|-----------------------------------|---------------------------------|--|-------------------------------|-----------------------------|
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Katrina Tow<br><i>[Signature]</i> | Date/Time<br>09/07/2017<br>1215 | RECEIVED BY<br>(Printed Name)<br>(Signature) | M. M...<br><i>[Signature]</i> | Date/Time<br>9/7/17<br>1445 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) |                                   | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature) |                               | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAWA-17-143010

WORK ORDER:

|                                 | AS<br>PLANNED                     | AS COLLECTED |                      | AS<br>PLANNED | AS COLLECTED         |
|---------------------------------|-----------------------------------|--------------|----------------------|---------------|----------------------|
| Date Collected<br>(MM/DD/YYYY): | 09/07/2017                        | OK           | FIELD MATRIX:        | WS            | OK                   |
| TIME COLLECTED<br>(HH:MM):      | 1031                              |              | MEDIA:               | UA            |                      |
| PRS ID:                         | OK                                |              | SAMPLE TECH<br>CODE: | DC            |                      |
| LOCATION ID:                    | Between E252<br>and Water at Beta |              | FIELD PREP:          | UF            |                      |
| LOCATION TYPE:                  | OK                                |              | FIELD QC TYPE:       | FTB           |                      |
| TOP DEPTH:                      |                                   |              | SAMPLE USAGE:        | QC            |                      |
| BOTTOM DEPTH:                   |                                   |              | EXCAVATED:           |               | YES / <u>NO</u> / NA |

| PRIORITY | ORDER             | CONTAINER                   | #           | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|-------------------|-----------------------------|-------------|--------------|---------------|----------------------|
| NA       | WSP-8260B-<br>VOA | 40 ML SEPTUM<br>AMBER GLASS | 1<br>9/7/17 | HCL          | Y             | NA                   |

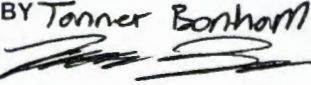
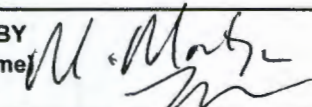
SAMPLE COMMENTS: custody sent broken: Approved by SMO personal to use.

LOCATION COMMENTS: NA

## FIELD PARAMETERS:

|                                  |       |       |                  |            |                         |       |
|----------------------------------|-------|-------|------------------|------------|-------------------------|-------|
| Sample Time                      | _____ | HH:MM | Dissolved Oxygen | _____      | Flow (in gpm)           | _____ |
| Oxidation-Reduction<br>Potential | _____ |       | pH               | 09/07/2017 | Specific<br>Conductance | _____ |
| Temperature                      | _____ |       | Turbidity        | _____      |                         | _____ |

COLLECTED BY (PRINT): T. Bonham

|  |  |                                 |  |   |                                 |
|--|--|---------------------------------|--|---|---------------------------------|
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) | Tanner Bonham<br> | Date/Time<br>09/07/2017<br>1215 | RECEIVED BY<br>(Printed Name)<br>(Signature) | U. Mark<br> | Date/Time<br>09/07/2017<br>1215 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature) |  | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature) |   | Date/Time                       |

Report Date: 08/24/2017



coc: 2017-2729

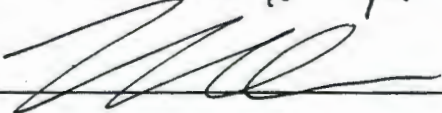
| TEST - Field Screen   |   | YES | NO | NA |
|---|---|-----|----|----|
| The sample has field screening measurements of alpha activity and beta activity.  |   |     | X  |    |
| Activity (dpm/100cm <sup>2</sup> )  | Sampled Location  |     |    |    |
| Alpha detectable and < 20,000   | TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, TA-48, or TA-49 |     |    | X  |
| Alpha > 125 and < 20,000  | other locations   |     |    |    |
| Beta > 1,500 and < 100,000  | any location  |     |    |    |
| Alpha activity ≥ 20,000 dpm/100cm <sup>2</sup> and beta activity ≥ 100,000 dpm/100cm <sup>2</sup> and ≥ 0.5 mR/hr on the external surface of the package.   |   |     |    |    |
| The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , based on field screening measurements of alpha and beta activity. |   |     |    |    |

| TEST - Location  |   | YES | NO | NA |
|--|---|-----|----|----|
| Prior analytical measurements of radioactive isotopes are available.   |   |     | X  |    |
| Activity (pCi/g)   | Sampled Location  |     |    |    |
| <ul style="list-style-type: none"> <li>Am-241 &gt; 27 and &lt; 27,000</li> <li>Cs-137 &gt; 270 and &lt; 270,000</li> <li>Pu-238 &gt; 27 and &lt; 27,000</li> <li>Pu-239/240 &gt; 27 and &lt; 27,000</li> <li>Th-228 &gt; 27 and &lt; 27,000</li> <li>U-238 &gt; 270 and &lt; 270,000</li> <li>H-3 &gt; 27,000,000 and &lt; 27,000,000,000</li> </ul> | The sampling location is within TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, Sediment/Soil from Effluent Canyon, Mortandad Canyon from Effluent Canyon to the Soil Contamination Area near the sediment traps, Bayo Canyon at TA-10, TA-15, TA-35, TA-36, TA-39, TA-48 or TA-49. |     |    | X  |
| <ul style="list-style-type: none"> <li>Am-241, Pu-238, Pu-239/240, or Th-228 ≥ 27,000</li> <li>U-238 ≥ 270,000</li> <li>H-3 ≥ 27,000,000,000</li> </ul>  |   |     |    | X  |
| The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , based on prior analytical measurements of radioactive isotopes.  |   |     |    | X  |

| TEST - AK  |  | YES | NO | NA |
|--|--|-----|----|----|
| The shippers documented knowledge of the sample positively identifies appropriate labeling.  |  |     |    | X  |
| The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , and the sample is submitted to ARS or RP for hazard classification analysis. |  |     |    | X  |

| HOLD SAMPLES FOR ANALYSIS  |
|--|
| The sampling location within TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, Sediment/Soil from Effluent Canyon, Mortandad Canyon from Effluent Canyon to the Soil Contamination Area near the sediment traps, Bayo Canyon at TA-10, TA-35, TA-15, TA-36, TA-39, TA-48 or TA-49 <b>AND</b> does not have usable field screening measurements of alpha and beta activity available <b>AND</b> the sampling location or related sampling location(s) do not have prior reliable analytical measurements of radioactive isotopes available <b>AND</b> knowledge of the sample is not acceptable to identify appropriate labeling. |

These samples do not meet the criteria for classification in any hazard class according to regulation OSHA 29 CFR 1910.1200. The sample(s) contained in this shipment have been assigned a tentative proper DOT shipping name, hazard class, identification number, and packing group, based on the shipper's knowledge of the sample:

| Hazard Assessment Completed By:   | Date/Time           |
|---|---------------------|
| (Printed Name) <u>Melissa Montoya</u>   | <u>9/11/17 3:00</u> |
| (Signature)  |                     |

## DATA VALIDATION REPORT

Chain Of Custody No. 2017-2729

### 1. Distribution Of Samples In EDD.

| SDG    | Analytical Method | Regular Samples | Field Duplicates | Trip Blanks | Field Blanks | Equipment Blanks |
|--------|-------------------|-----------------|------------------|-------------|--------------|------------------|
| 432570 | EPA:120.1         | 1               |                  |             |              |                  |
| 432570 | EPA:150.1         | 1               |                  |             |              |                  |
| 432570 | EPA:160.1         | 1               |                  |             |              |                  |
| 432570 | EPA:170.0         | 2               |                  | 1           |              |                  |
| 432570 | EPA:245.2         | 2               |                  |             |              |                  |
| 432570 | EPA:300.0         | 1               |                  |             |              |                  |
| 432570 | EPA:310.1         | 1               |                  |             |              |                  |
| 432570 | EPA:335.4         | 1               |                  |             |              |                  |
| 432570 | EPA:350.1         | 1               |                  |             |              |                  |
| 432570 | EPA:351.2         | 1               |                  |             |              |                  |
| 432570 | EPA:353.2         | 1               |                  |             |              |                  |
| 432570 | EPA:365.4         | 1               |                  |             |              |                  |
| 432570 | SM:A2340B         | 2               |                  |             |              |                  |
| 432570 | SW-846:6010C      | 2               |                  |             |              |                  |
| 432570 | SW-846:6020       | 2               |                  |             |              |                  |
| 432570 | SW-846:6850       | 1               |                  |             |              |                  |
| 432570 | SW-846:8260B      | 1               |                  | 1           |              |                  |
| 432570 | SW-846:8330B      | 1               |                  |             |              |                  |
| 432570 | SW-846:9060       | 1               |                  |             |              |                  |

| SDG    | Analytical Method | Analysis Lot ID | Prep Lot ID | Regular Samples | Field Duplicates | Trip Blanks | Field Blanks | Equipment Blanks | Method Blanks | Matrix Spikes | Matrix Spike Dups | Analytical Spikes | Post-Digestion Spikes | Lab Control Samples | Lab Control Sample Dups | Blank Spike | Blank Spike Dups | Lab Duplicates | Storage Blanks | Preparation Blanks | Reagent Blanks |
|--------|-------------------|-----------------|-------------|-----------------|------------------|-------------|--------------|------------------|---------------|---------------|-------------------|-------------------|-----------------------|---------------------|-------------------------|-------------|------------------|----------------|----------------|--------------------|----------------|
| 432570 | EPA:120.1         | 1703142         | 1703142     | 1               |                  |             |              |                  |               |               |                   |                   |                       | 1                   |                         |             |                  | 1              |                |                    |                |
| 432570 | EPA:150.1         | 1701903         | 1701903     | 1               |                  |             |              |                  |               |               |                   |                   |                       | 1                   |                         |             |                  | 2              |                |                    |                |
| 432570 | EPA:160.1         | 1700092         | 1700092     | 1               |                  |             |              |                  | 1             |               |                   |                   |                       | 1                   |                         |             |                  | 1              |                |                    |                |
| 432570 | EPA:170.0         | NA              | NA          | 2               |                  | 1           |              |                  |               |               |                   |                   |                       |                     |                         |             |                  |                |                |                    |                |
| 432570 | EPA:245.2         | 1702200         | 1702198     | 2               |                  |             |              |                  | 1             | 1             |                   |                   |                       | 1                   |                         |             |                  | 1              |                |                    |                |

## DATA VALIDATION REPORT

| SDG    | Analytical Method | Analysis Lot ID | Prep Lot ID | Regular Samples | Field Duplicates | Trip Blanks | Field Blanks | Equipment Blanks | Method Blanks | Matrix Spikes | Matrix Spike Dups | Analytical Spikes | Post-Digestion Spikes | Lab Control Samples | Lab Control Sample Dups | Blank Spike | Blank Spike Dups | Lab Duplicates | Storage Blanks | Preparation Blanks | Reagent Blanks |
|--------|-------------------|-----------------|-------------|-----------------|------------------|-------------|--------------|------------------|---------------|---------------|-------------------|-------------------|-----------------------|---------------------|-------------------------|-------------|------------------|----------------|----------------|--------------------|----------------|
| 432570 | EPA:300.0         | 1700336         | 1700336     | 1               |                  |             |              |                  | 1             |               |                   |                   |                       | 1                   |                         |             | 1                |                |                |                    |                |
| 432570 | EPA:310.1         | 1701895         | 1701895     | 1               |                  |             |              |                  |               | 1             |                   |                   |                       | 1                   |                         |             | 1                |                |                |                    |                |
| 432570 | EPA:335.4         | 1700209         | 1700208     | 1               |                  |             |              |                  | 1             | 1             | 1                 |                   |                       | 1                   |                         |             | 1                |                |                |                    |                |
| 432570 | EPA:350.1         | 1700465         | 1700464     | 1               |                  |             |              |                  | 1             | 1             |                   |                   |                       | 1                   |                         |             | 1                |                |                |                    |                |
| 432570 | EPA:351.2         | 1700469         | 1700468     | 1               |                  |             |              |                  | 1             | 1             |                   |                   |                       | 1                   |                         |             | 1                |                |                |                    |                |
| 432570 | EPA:353.2         | 1700478         | 1700478     | 1               |                  |             |              |                  | 1             |               |                   |                   |                       | 1                   |                         |             | 1                |                |                |                    |                |
| 432570 | EPA:365.4         | 1700471         | 1700470     | 1               |                  |             |              |                  | 1             | 1             |                   |                   |                       | 1                   |                         |             | 1                |                |                |                    |                |
| 432570 | SM:A2340B         | 1705736         | 1705736     | 2               |                  |             |              |                  |               |               |                   |                   |                       |                     |                         |             |                  |                |                |                    |                |
| 432570 | SW-846:6010C      | 1700104         | 1700103     | 2               |                  |             |              |                  | 1             | 1             |                   |                   |                       | 1                   |                         |             | 1                |                |                |                    |                |
| 432570 | SW-846:6020       | 1700115         | 1700114     | 2               |                  |             |              |                  | 1             | 1             |                   |                   |                       | 1                   |                         |             | 1                |                |                |                    |                |
| 432570 | SW-846:6850       | 1702207         | 1702204     | 1               |                  |             |              |                  | 1             | 1             | 1                 |                   |                       | 1                   |                         |             |                  |                |                |                    |                |
| 432570 | SW-846:8260B      | 1701572         | 1701572     | 1               |                  | 1           |              |                  | 2             |               |                   |                   |                       | 4                   |                         |             |                  |                |                |                    |                |
| 432570 | SW-846:8330B      | 1700506         | 1700504     | 1               |                  |             |              |                  | 1             | 1             | 1                 |                   |                       | 1                   |                         |             |                  |                |                |                    |                |
| 432570 | SW-846:9060       | 1701620         | 1701620     | 1               |                  |             |              |                  | 1             |               |                   |                   |                       | 1                   |                         |             | 1                |                |                |                    |                |

### 2. Distribution Of Analytes In EDD.

| Analytical Method | Analytical Method Category | Field Sample ID | Lab Sample ID | Sample Purpose | Target Analytes | Surrogates | Spiked Compounds | TICS |
|-------------------|----------------------------|-----------------|---------------|----------------|-----------------|------------|------------------|------|
| EPA:120.1         | GENERAL CHEMISTRY          | CAWA-17-142856  | 432570001     | REG            | 1               | 0          | 0                | 0    |
| EPA:120.1         | GENERAL CHEMISTRY          | CAWA-17-142886  | 1203881179    | DUP            | 1               | 0          | 0                | 0    |
| EPA:120.1         | GENERAL CHEMISTRY          | LCS             | 1203881177    | LCS            | 0               | 0          | 1                | 0    |
| EPA:150.1         | GENERAL CHEMISTRY          | CAWA-17-142856  | 1203878364    | DUP            | 1               | 0          | 0                | 0    |
| EPA:150.1         | GENERAL CHEMISTRY          | CAWA-17-142856  | 432570001     | REG            | 1               | 0          | 0                | 0    |
| EPA:150.1         | GENERAL CHEMISTRY          | CAWA-17-142879  | 1203878365    | DUP            | 1               | 0          | 0                | 0    |
| EPA:150.1         | GENERAL CHEMISTRY          | LCS             | 1203878363    | LCS            | 0               | 0          | 1                | 0    |
| EPA:160.1         | GENERAL CHEMISTRY          | CAPA-17-142952  | 1203873723    | DUP            | 1               | 0          | 0                | 0    |
| EPA:160.1         | GENERAL CHEMISTRY          | CAWA-17-142856  | 432570001     | REG            | 1               | 0          | 0                | 0    |
| EPA:160.1         | GENERAL CHEMISTRY          | LCS             | 1203873722    | LCS            | 0               | 0          | 1                | 0    |
| EPA:160.1         | GENERAL CHEMISTRY          | MB              | 1203873721    | MB             | 1               | 0          | 0                | 0    |
| EPA:170.0         | VOC                        | CAWA-17-142856  | 432570001     | REG            | 1               | 0          | 0                | 0    |
| EPA:170.0         | VOC                        | CAWA-17-142891  | 432570002     | REG            | 1               | 0          | 0                | 0    |
| EPA:170.0         | VOC                        | CAWA-17-143010  | 432570003     | FTB            | 1               | 0          | 0                | 0    |



## DATA VALIDATION REPORT

| Analytical Method | Analytical Method Category | Field Sample ID  | Lab Sample ID | Sample Purpose | Target Analytes | Surrogates | Spiked Compounds | TICS |
|-------------------|----------------------------|------------------|---------------|----------------|-----------------|------------|------------------|------|
| EPA:245.2         | INORGANIC                  | CAWA-17-142856   | 432570001     | REG            | 1               | 0          | 0                | 0    |
| EPA:245.2         | INORGANIC                  | CAWA-17-142891   | 432570002     | REG            | 1               | 0          | 0                | 0    |
| EPA:245.2         | INORGANIC                  | LCS              | 1203878929    | LCS            | 0               | 0          | 1                | 0    |
| EPA:245.2         | INORGANIC                  | MB               | 1203878928    | MB             | 1               | 0          | 0                | 0    |
| EPA:245.2         | INORGANIC                  | WT_SIP-17-135650 | 1203878930    | DUP            | 1               | 0          | 0                | 0    |
| EPA:245.2         | INORGANIC                  | WT_SIP-17-135650 | 1203878931    | MS             | 0               | 0          | 1                | 0    |
| EPA:300.0         | GENERAL CHEMISTRY          | CAWA-17-142856   | 432570001     | REG            | 4               | 0          | 0                | 0    |
| EPA:300.0         | GENERAL CHEMISTRY          | CAWA-17-142886   | 1203874286    | DUP            | 4               | 0          | 0                | 0    |
| EPA:300.0         | GENERAL CHEMISTRY          | LCS              | 1203874285    | LCS            | 0               | 0          | 4                | 0    |
| EPA:300.0         | GENERAL CHEMISTRY          | MB               | 1203874284    | MB             | 4               | 0          | 0                | 0    |
| EPA:310.1         | GENERAL CHEMISTRY          | CAWA-17-142856   | 1203878343    | DUP            | 2               | 0          | 0                | 0    |
| EPA:310.1         | GENERAL CHEMISTRY          | CAWA-17-142856   | 1203878345    | MS             | 0               | 0          | 1                | 0    |
| EPA:310.1         | GENERAL CHEMISTRY          | CAWA-17-142856   | 432570001     | REG            | 2               | 0          | 0                | 0    |
| EPA:310.1         | GENERAL CHEMISTRY          | LCS              | 1203878342    | LCS            | 0               | 0          | 1                | 0    |
| EPA:335.4         | GENERAL CHEMISTRY          | CAWA-17-142891   | 1203874001    | DUP            | 1               | 0          | 0                | 0    |
| EPA:335.4         | GENERAL CHEMISTRY          | CAWA-17-142891   | 1203874002    | MS             | 0               | 0          | 1                | 0    |
| EPA:335.4         | GENERAL CHEMISTRY          | CAWA-17-142891   | 1203874805    | MSD            | 0               | 0          | 1                | 0    |
| EPA:335.4         | GENERAL CHEMISTRY          | CAWA-17-142891   | 432570002     | REG            | 1               | 0          | 0                | 0    |
| EPA:335.4         | GENERAL CHEMISTRY          | LCS              | 1203874000    | LCS            | 0               | 0          | 1                | 0    |
| EPA:335.4         | GENERAL CHEMISTRY          | MB               | 1203873999    | MB             | 1               | 0          | 0                | 0    |
| EPA:350.1         | GENERAL CHEMISTRY          | CAWA-17-142856   | 1203874557    | DUP            | 1               | 0          | 0                | 0    |
| EPA:350.1         | GENERAL CHEMISTRY          | CAWA-17-142856   | 1203874558    | MS             | 0               | 0          | 1                | 0    |
| EPA:350.1         | GENERAL CHEMISTRY          | CAWA-17-142856   | 432570001     | REG            | 1               | 0          | 0                | 0    |
| EPA:350.1         | GENERAL CHEMISTRY          | LCS              | 1203874556    | LCS            | 0               | 0          | 1                | 0    |
| EPA:350.1         | GENERAL CHEMISTRY          | MB               | 1203874555    | MB             | 1               | 0          | 0                | 0    |
| EPA:351.2         | GENERAL CHEMISTRY          | CAWA-17-142891   | 1203874561    | DUP            | 1               | 0          | 0                | 0    |
| EPA:351.2         | GENERAL CHEMISTRY          | CAWA-17-142891   | 1203874563    | MS             | 0               | 0          | 1                | 0    |
| EPA:351.2         | GENERAL CHEMISTRY          | CAWA-17-142891   | 432570002     | REG            | 1               | 0          | 0                | 0    |
| EPA:351.2         | GENERAL CHEMISTRY          | LCS              | 1203874560    | LCS            | 0               | 0          | 1                | 0    |
| EPA:351.2         | GENERAL CHEMISTRY          | MB               | 1203874559    | MB             | 1               | 0          | 0                | 0    |
| EPA:353.2         | GENERAL CHEMISTRY          | CAWA-17-142856   | 1203874590    | DUP            | 1               | 0          | 0                | 0    |
| EPA:353.2         | GENERAL CHEMISTRY          | CAWA-17-142856   | 432570001     | REG            | 1               | 0          | 0                | 0    |
| EPA:353.2         | GENERAL CHEMISTRY          | LCS              | 1203874586    | LCS            | 0               | 0          | 1                | 0    |
| EPA:353.2         | GENERAL CHEMISTRY          | MB               | 1203874585    | MB             | 1               | 0          | 0                | 0    |
| EPA:365.4         | GENERAL CHEMISTRY          | CAWA-17-142856   | 1203874567    | DUP            | 1               | 0          | 0                | 0    |
| EPA:365.4         | GENERAL CHEMISTRY          | CAWA-17-142856   | 1203874570    | MS             | 0               | 0          | 1                | 0    |
| EPA:365.4         | GENERAL CHEMISTRY          | CAWA-17-142856   | 432570001     | REG            | 1               | 0          | 0                | 0    |
| EPA:365.4         | GENERAL CHEMISTRY          | LCS              | 1203874566    | LCS            | 0               | 0          | 1                | 0    |
| EPA:365.4         | GENERAL CHEMISTRY          | MB               | 1203874565    | MB             | 1               | 0          | 0                | 0    |
| SM:A2340B         | INORGANIC                  | CAWA-17-142856   | 432570001     | REG            | 1               | 0          | 0                | 0    |

## DATA VALIDATION REPORT

| Analytical Method | Analytical Method Category | Field Sample ID | Lab Sample ID | Sample Purpose | Target Analytes | Surrogates | Spiked Compounds | TICS |
|-------------------|----------------------------|-----------------|---------------|----------------|-----------------|------------|------------------|------|
| SM:A2340B         | INORGANIC                  | CAWA-17-142891  | 432570002     | REG            | 1               | 0          | 0                | 0    |
| SW-846:6010C      | INORGANIC                  | CAWA-17-142856  | 1203873773    | DUP            | 17              | 0          | 0                | 0    |
| SW-846:6010C      | INORGANIC                  | CAWA-17-142856  | 1203873774    | MS             | 0               | 0          | 17               | 0    |
| SW-846:6010C      | INORGANIC                  | CAWA-17-142856  | 432570001     | REG            | 17              | 0          | 0                | 0    |
| SW-846:6010C      | INORGANIC                  | CAWA-17-142891  | 432570002     | REG            | 16              | 0          | 0                | 0    |
| SW-846:6010C      | INORGANIC                  | LCS             | 1203873772    | LCS            | 0               | 0          | 17               | 0    |
| SW-846:6010C      | INORGANIC                  | MB              | 1203873771    | MB             | 17              | 0          | 0                | 0    |
| SW-846:6020       | INORGANIC                  | CAWA-17-142856  | 1203873790    | DUP            | 11              | 0          | 0                | 0    |
| SW-846:6020       | INORGANIC                  | CAWA-17-142856  | 1203873791    | MS             | 0               | 0          | 11               | 0    |
| SW-846:6020       | INORGANIC                  | CAWA-17-142856  | 432570001     | REG            | 11              | 0          | 0                | 0    |
| SW-846:6020       | INORGANIC                  | CAWA-17-142891  | 432570002     | REG            | 11              | 0          | 0                | 0    |
| SW-846:6020       | INORGANIC                  | LCS             | 1203873789    | LCS            | 0               | 0          | 11               | 0    |
| SW-846:6020       | INORGANIC                  | MB              | 1203873788    | MB             | 11              | 0          | 0                | 0    |
| SW-846:6850       | LCMS/MS PERCHLORATE        | CAWA-17-142856  | 1203878945    | MS             | 0               | 0          | 1                | 0    |
| SW-846:6850       | LCMS/MS PERCHLORATE        | CAWA-17-142856  | 1203878946    | MSD            | 0               | 0          | 1                | 0    |
| SW-846:6850       | LCMS/MS PERCHLORATE        | CAWA-17-142856  | 432570001     | REG            | 1               | 0          | 0                | 0    |
| SW-846:6850       | LCMS/MS PERCHLORATE        | LCS             | 1203878944    | LCS            | 0               | 0          | 1                | 0    |
| SW-846:6850       | LCMS/MS PERCHLORATE        | MB              | 1203878943    | MB             | 1               | 0          | 0                | 0    |
| SW-846:8260B      | VOC                        | CAWA-17-142891  | 432570002     | REG            | 80              | 3          | 0                | 0    |
| SW-846:8260B      | VOC                        | CAWA-17-143010  | 432570003     | FTB            | 80              | 3          | 0                | 0    |
| SW-846:8260B      | VOC                        | LCS             | 1203877742    | LCS            | 0               | 3          | 70               | 0    |
| SW-846:8260B      | VOC                        | LCS             | 1203877743    | LCS            | 0               | 3          | 10               | 0    |
| SW-846:8260B      | VOC                        | LCS             | 1203878617    | LCS            | 0               | 3          | 70               | 0    |
| SW-846:8260B      | VOC                        | LCS             | 1203878618    | LCS            | 0               | 3          | 10               | 0    |
| SW-846:8260B      | VOC                        | MB              | 1203877741    | MB             | 80              | 3          | 0                | 0    |
| SW-846:8260B      | VOC                        | MB              | 1203878616    | MB             | 80              | 3          | 0                | 0    |
| SW-846:8330B      | LCMS/MS HIGH               | CAWA-17-142891  | 432570002     | REG            | 20              | 1          | 0                | 0    |
| SW-846:8330B      | LCMS/MS HIGH               | CAWA-17-142901  | 1203874662    | MS             | 0               | 1          | 20               | 0    |
| SW-846:8330B      | LCMS/MS HIGH               | CAWA-17-142901  | 1203874663    | MSD            | 0               | 1          | 20               | 0    |
| SW-846:8330B      | LCMS/MS HIGH               | LCS             | 1203874661    | LCS            | 0               | 1          | 20               | 0    |
| SW-846:8330B      | LCMS/MS HIGH               | MB              | 1203874660    | MB             | 20              | 1          | 0                | 0    |
| SW-846:9060       | GENERAL CHEMISTRY          | CAWA-17-142891  | 1203877659    | DUP            | 1               | 0          | 0                | 0    |
| SW-846:9060       | GENERAL CHEMISTRY          | CAWA-17-142891  | 432570002     | REG            | 1               | 0          | 0                | 0    |
| SW-846:9060       | GENERAL CHEMISTRY          | LCS             | 1203877658    | LCS            | 0               | 0          | 1                | 0    |
| SW-846:9060       | GENERAL CHEMISTRY          | MB              | 1203877657    | MB             | 1               | 0          | 0                | 0    |

3. Are any analytes missing?

No.

## DATA VALIDATION REPORT

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

|                |                  |              |                   |        |                | Blank Lab Result | Lab Qualifier | Blank Lab Units | Blank Lab Detection Limit |
|----------------|------------------|--------------|-------------------|--------|----------------|------------------|---------------|-----------------|---------------------------|
| Blank FS ID    | Blank Lab Sample | Blank Type   | Analytical Method | Sample | Parameter Name |                  |               |                 |                           |
| MB             | 1203873771       | METHOD BLANK | SW-846:6010C      | W      | Potassium      | 91.5             | J             | ug/L            | 150                       |
| MB             | 1203873771       | METHOD BLANK | SW-846:6010C      | W      | Sodium         | 143              | J             | ug/L            | 300                       |
| CAWA-17-143010 | 432570003        | TRIP BLANK   | EPA:170.0         | W      | Temperature    | 3                |               | Deg C           |                           |

No.

6. Any surrogate recoveries outside the control limits?

No.

7. Any MS/MSD recoveries or RPDs outside the control limits?

No.

8. Any LCS/LCSD or BS/BSD recoveries or RPDs outside the control limits?

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.



## DATA VALIDATION REPORT

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

None.

### Reason Code

### Description

J\_LAB

The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL

NQ

The analytical laboratory did not qualify the analyte as not detected and/or any other standard qualify. The analyte is detected in the sample.

U\_LAB

The analytical laboratory qualified the analyte as not detected.

14. Usable Result Count.

| Field Sample ID | Location ID            | Sample Purpose | Analytical Method | No. Unuseable Records | Total Records |
|-----------------|------------------------|----------------|-------------------|-----------------------|---------------|
| CAWA-17-142856  | Between E252 and Water | REG            | EPA:120.1         | 0                     | 1             |
| CAWA-17-142856  | Between E252 and Water | REG            | EPA:150.1         | 0                     | 1             |
| CAWA-17-142856  | Between E252 and Water | REG            | EPA:160.1         | 0                     | 1             |
| CAWA-17-142856  | Between E252 and Water | REG            | EPA:170.0         | 0                     | 1             |
| CAWA-17-142856  | Between E252 and Water | REG            | EPA:245.2         | 0                     | 1             |
| CAWA-17-142856  | Between E252 and Water | REG            | EPA:300.0         | 0                     | 4             |
| CAWA-17-142856  | Between E252 and Water | REG            | EPA:310.1         | 0                     | 2             |
| CAWA-17-142856  | Between E252 and Water | REG            | EPA:350.1         | 0                     | 1             |
| CAWA-17-142856  | Between E252 and Water | REG            | EPA:353.2         | 0                     | 1             |
| CAWA-17-142856  | Between E252 and Water | REG            | EPA:365.4         | 0                     | 1             |
| CAWA-17-142856  | Between E252 and Water | REG            | SM:A2340B         | 0                     | 1             |
| CAWA-17-142856  | Between E252 and Water | REG            | SW-846:6010C      | 0                     | 17            |
| CAWA-17-142856  | Between E252 and Water | REG            | SW-846:6020       | 0                     | 11            |

## DATA VALIDATION REPORT

| Field Sample ID | Location ID            | Sample Purpose | Analytical Method | No. Unuseable Records | Total Records |
|-----------------|------------------------|----------------|-------------------|-----------------------|---------------|
| CAWA-17-142856  | Between E252 and Water | REG            | SW-846:6850       | 0                     | 1             |
| CAWA-17-142891  | Between E252 and Water | REG            | EPA:170.0         | 0                     | 1             |
| CAWA-17-142891  | Between E252 and Water | REG            | EPA:245.2         | 0                     | 1             |
| CAWA-17-142891  | Between E252 and Water | REG            | EPA:335.4         | 0                     | 1             |
| CAWA-17-142891  | Between E252 and Water | REG            | EPA:351.2         | 0                     | 1             |
| CAWA-17-142891  | Between E252 and Water | REG            | SM:A2340B         | 0                     | 1             |
| CAWA-17-142891  | Between E252 and Water | REG            | SW-846:6010C      | 0                     | 16            |
| CAWA-17-142891  | Between E252 and Water | REG            | SW-846:6020       | 0                     | 11            |
| CAWA-17-142891  | Between E252 and Water | REG            | SW-846:8260B      | 0                     | 80            |
| CAWA-17-142891  | Between E252 and Water | REG            | SW-846:8330B      | 0                     | 20            |
| CAWA-17-142891  | Between E252 and Water | REG            | SW-846:9060       | 0                     | 1             |
| CAWA-17-143010  | Between E252 and Water | FTB            | EPA:170.0         | 0                     | 1             |
| CAWA-17-143010  | Between E252 and Water | FTB            | SW-846:8260B      | 0                     | 80            |

September 25, 2017

[gel.com](http://gel.com)

Ms. Nita Patel  
Los Alamos National Laboratory  
TA-00, SM1237, Rm104C  
Los Alamos, New Mexico 87545

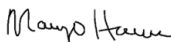
Re: LANL- WQH Water Samples  
Work Order: 432570  
SDG: 2017-2729

Dear Ms. Patel:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on September 13, 2017, and analyzed for Explosives by LCMSMS, GC/MS Volatile, General Chemistry, Metals and Perchlorates by LCMSMS. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4485.

Sincerely,

  
Margo Herron for  
Valerie Davis  
Project Manager

Chain of Custody: 2017-2729  
Enclosures





**ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)**  
**LANL- WQH Water Samples**  
**Work Order #: 432570**  
**SDG: 2017-2729**

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# Case Narrative

**Case Narrative for  
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)  
LANL- WQH Water Samples  
Workorder #: 432570  
SDG # : 2017-2729**

**September 25, 2017**

**Laboratory Identification:**

GEL Laboratories LLC  
2040 Savage Road  
Charleston, South Carolina 29407  
(843) 556-8171

**Summary**

**Sample receipt** The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on September 13, 2017 for analysis. The samples were delivered with proper chain of custody documentation and signatures. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. Shipping container temperatures were checked, documented, and within specifications. Shipping container temperature was within specification (0 - 6C). There are no additional comments concerning sample receipt.

**Sample Identification** The laboratory received the following samples:

| <b><u>Laboratory ID</u></b> | <b><u>Client ID</u></b> |
|-----------------------------|-------------------------|
| 432570001                   | CAWA-17-142856          |
| 432570002                   | CAWA-17-142891          |
| 432570003                   | CAWA-17-143010          |

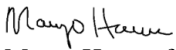
**Case Narrative**

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

**Data Package**

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Explosives by LCMSMS, GC/MS Volatile, General Chemistry, Metals and Perchlorates by LCMSMS.

I certify that this data report is in compliance with the terms and conditions of the subcontract and task order, both technically and for completeness, for other than the conditions detailed in the attached case narrative.

  
Margo Herron for  
Valerie Davis  
Project Manager






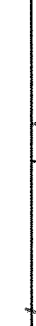
**List of current GEL Certifications as of 25 September 2017**

| <b>State</b>             | <b>Certification</b>         |
|--------------------------|------------------------------|
| Alaska                   | UST-0110                     |
| Arkansas                 | 88-0651                      |
| CLIA                     | 42D0904046                   |
| California               | 2940                         |
| Colorado                 | SC00012                      |
| Connecticut              | PH-0169                      |
| Delaware                 | SC00012                      |
| DoD ELAP/ ISO17025 A2LA  | 2567.01                      |
| Florida NELAP            | E87156                       |
| Foreign Soils Permit     | P330-15-00283, P330-15-00253 |
| Georgia                  | SC00012                      |
| Georgia SDWA             | 967                          |
| Hawaii                   | SC00012                      |
| Idaho Chemistry          | SC00012                      |
| Idaho Radiochemistry     | SC00012                      |
| Illinois NELAP           | 200029                       |
| Indiana                  | C-SC-01                      |
| Kansas NELAP             | E-10332                      |
| Kentucky SDWA            | 90129                        |
| Kentucky Wastewater      | 90129                        |
| Louisiana NELAP          | 03046 (AI33904)              |
| Louisiana SDWA           | LA170010                     |
| Maryland                 | 270                          |
| Massachusetts            | M-SC012                      |
| Michigan                 | 9976                         |
| Mississippi              | SC00012                      |
| Nebraska                 | NE-OS-26-13                  |
| Nevada                   | SC000122018-1                |
| New Hampshire NELAP      | 205415                       |
| New Jersey NELAP         | SC002                        |
| New Mexico               | SC00012                      |
| New York NELAP           | 11501                        |
| North Carolina           | 233                          |
| North Carolina SDWA      | 45709                        |
| North Dakota             | R-158                        |
| Oklahoma                 | 9904                         |
| Pennsylvania NELAP       | 68-00485                     |
| Puerto Rico              | SC00012                      |
| S.Carolina Radchem       | 10120002                     |
| South Carolina Chemistry | 10120001                     |
| Tennessee                | TN 02934                     |
| Texas NELAP              | T104704235-17-12             |
| Utah NELAP               | SC000122017-23               |
| Vermont                  | VT87156                      |
| Virginia NELAP           | 460202                       |
| Washington               | C780                         |
| West Virginia            | 997404                       |



# **Chain of Custody and Supporting Documentation**

[illegible]

| Special Instructions: |   |                                    |                           |              |   |                                |                           |  |  |
|-----------------------|---|------------------------------------|---------------------------|--------------|---|--------------------------------|---------------------------|--|--|
| Relinquished by:      |  | Print Name: <u>Melissa Montoya</u> | Date/Time: <u>9/13/17</u> | Received by: |  | Print Name: <u>Zee Webster</u> | Date/Time: <u>9/13/17</u> |  |  |
| Relinquished by:      |  | Print Name:                        | Date/Time:                | Received by: |  | Print Name:                    | Date/Time:                |  |  |
| Relinquished by:      |  | Print Name:                        | Date/Time:                | Received by: |  | Print Name:                    | Date/Time:                |  |  |

COC: 2017-2729

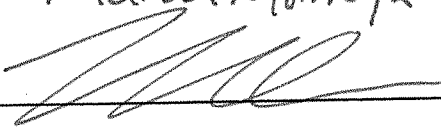
| TEST - Field Screen   |   | YES | NO | NA |
|---|---|-----|----|----|
| The sample has field screening measurements of alpha activity and beta activity.  |   |     | X  |    |
| Activity (dpm/100cm <sup>2</sup> )  | Sampled Location  |     |    |    |
| Alpha detectable and < 20,000   | TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, TA-48, or TA-49 |     |    | X  |
| Alpha > 125 and < 20,000  | other locations   |     |    |    |
| Beta > 1,500 and < 100,000  | any location  |     |    |    |
| Alpha activity $\geq$ 20,000 dpm/100cm <sup>2</sup> and beta activity $\geq$ 100,000 dpm/100cm <sup>2</sup> and $\geq$ 0.5 mR/hr on the external surface of the package.  |   |     |    |    |
| The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , based on field screening measurements of alpha and beta activity. |   |     |    |    |

| TEST - Location  |   | YES | NO | NA |
|--|---|-----|----|----|
| Prior analytical measurements of radioactive isotopes are available.   |   |     | X  |    |
| Activity (pCi/g)   | Sampled Location  |     |    |    |
| <ul style="list-style-type: none"> <li>Am-241 &gt; 27 and &lt; 27,000</li> <li>Cs-137 &gt; 270 and &lt; 270,000</li> <li>Pu-238 &gt; 27 and &lt; 27,000</li> <li>Pu-239/240 &gt; 27 and &lt; 27,000</li> <li>Th-228 &gt; 27 and &lt; 27,000</li> <li>U-238 &gt; 270 and &lt; 270,000</li> <li>H-3 &gt; 27,000,000 and &lt; 27,000,000,000</li> </ul> | The sampling location is within TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, Sediment/Soil from Effluent Canyon, Mortandad Canyon from Effluent Canyon to the Soil Contamination Area near the sediment traps, Bayo Canyon at TA-10, TA-15, TA-35, TA-36, TA-39, TA-48 or TA-49. |     |    | X  |
| <ul style="list-style-type: none"> <li>Am-241, Pu-238, Pu-239/240, or Th-228 <math>\geq</math> 27,000</li> <li>U-238 <math>\geq</math> 270,000</li> <li>H-3 <math>\geq</math> 27,000,000,000</li> </ul>  |   |     |    | X  |
| The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , based on prior analytical measurements of radioactive isotopes.  |   |     |    | X  |

| TEST - AK  |  | YES | NO | NA |
|--|--|-----|----|----|
| The shippers documented knowledge of the sample positively identifies appropriate labeling.  |  |     |    | X  |
| The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , and the sample is submitted to ARS or RP for hazard classification analysis. |  |     |    | X  |

| HOLD SAMPLES FOR ANALYSIS  |
|--|
| The sampling location within TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, Sediment/Soil from Effluent Canyon, Mortandad Canyon from Effluent Canyon to the Soil Contamination Area near the sediment traps, Bayo Canyon at TA-10, TA-35, TA-15, TA-36, TA-39, TA-48 or TA-49 <b>AND</b> does not have usable field screening measurements of alpha and beta activity available <b>AND</b> the sampling location or related sampling location(s) do not have prior reliable analytical measurements of radioactive isotopes available <b>AND</b> knowledge of the sample is not acceptable to identify appropriate labeling. |

These samples do not meet the criteria for classification in any hazard class according to regulation OSHA 29 CFR 1910.1200. The sample(s) contained in this shipment have been assigned a tentative proper DOT shipping name, hazard class, identification number, and packing group, based on the shipper's knowledge of the sample:

| Hazard Assessment Completed By:   | Date/Time           |
|---|---------------------|
| (Printed Name) <u>Melissa Montoya</u>   | <u>9/11/17 3:00</u> |
| (Signature)  |                     |

ORIGIN ID:SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

TO **VALERIE DAVIS**  
**GENERAL ENGINEER**  
**2040 SAVAGE RD**

**CHARLESTON SC 29407**

(843) 666-8171

REF: 21PD0ASRGW04BAGWE0

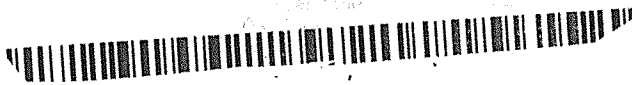


1 of 2  
TRK# 5908 1782 7122  
0201  
## MASTER ##

**X7 RBWA**

29407  
SC-US CHS

WED - 13 SEP 10:30A  
PRIORITY OVERNIGHT



ORIGIN ID:SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03

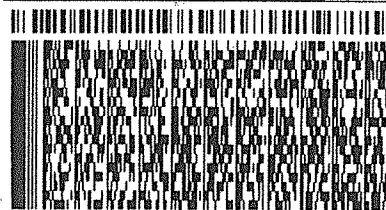
LOS ALAMOS, NM 87545  
UNITED STATES US

TO **VALERIE DAVIS**  
**GENERAL ENGINEERING LAB**  
**2040 SAVAGE RD**

**CHARLESTON SC 29407**

(843) 666-8171

REF: 21PD0ASRAE20DF6X00



TRK# 5908 1782 7144  
0201

**X7 RBWA**

29407  
SC-US CHS

WED - 13 SEP 10:30A  
PRIORITY OVERNIGHT



ORIGIN ID:SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03

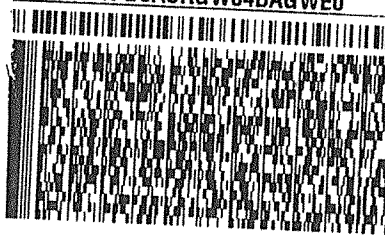
LOS ALAMOS, NM 87545  
UNITED STATES US

TO **VALERIE DAVIS**  
**GENERAL ENGINEERING LAB**  
**2040 SAVAGE RD**

**CHARLESTON SC 29407**

(843) 666-8171

REF: 21PD0ASRGW04BAGWE0



2 of 2  
MPS# 5908 1782 7133  
0263  
Mstr# 5908 1782 7122

**X7 RBWA**

294  
SC-US CHS

WED - 13 SEP 10:30A  
PRIORITY OVERNIGHT





**SAMPLE RECEIPT & REVIEW FORM**

|   |  |   |  |
|---|--|---|--|
| Client: <u>ESTIL</u>  |  | SDG/AR/COC/Work Order: <u>432570</u>  |  |
| Received By: <u>ZKW</u>   |  | Date Received: <u>9/13/17</u>   |  |
| Carrier and Tracking Number   |  | Circle Applicable:<br><input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other<br><u>5908 1782 7133-4°C</u><br><u>5908 1782 7144-3°C</u><br><u>5908 1782 7122-5°C</u> |  |
|   |  | Suspected Hazard Information    Yes    No<br>*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.   |  |
|   |  | Shipped as a DOT Hazardous? <input checked="" type="checkbox"/> <input type="checkbox"/> Hazard Class Shipped:    UN#:  |  |
|   |  | COC/Samples marked or classified as radioactive? <input checked="" type="checkbox"/> <input type="checkbox"/> Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> <u>CPM</u> / mR/Hr<br>Classified as: Rad 1    Rad 2    Rad 3  |  |
| Is package, COC, and/or Samples marked HAZ? <input checked="" type="checkbox"/> <input type="checkbox"/> If yes, select Hazards below, and contact the GEL Safety Group.<br>PCB's    Flammable    Foreign Soil    RCRA    Asbestos    Beryllium    Other: |  |   |  |

| Sample Receipt Criteria   | Yes                                 | NA | No                                  | Comments/Qualifiers (Required for Non-Conforming Items)   |
|---|-------------------------------------|----|-------------------------------------|---|
| 1 Shipping containers received intact and sealed?                 | <input checked="" type="checkbox"/> |    |                                     | Circle Applicable:    Seals broken    Damaged container    Leaking container    Other (describe)  |
| 2 Chain of custody documents included with shipment?              | <input checked="" type="checkbox"/> |    |                                     |   |
| 3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*     | <input checked="" type="checkbox"/> |    |                                     | Preservation Method: Wet Ice <input checked="" type="checkbox"/> Ice Packs    Dry ice    None    Other:<br>*all temperatures are recorded in Celsius <span style="float:right">TEMP: <u>See Above</u></span>  |
| 4 Daily check performed and passed on IR temperature gun?         | <input checked="" type="checkbox"/> |    |                                     | Temperature Device Serial #: <u>IR3-16</u><br>Secondary Temperature Device Serial # (If Applicable):  |
| 5 Sample containers intact and sealed?                            | <input checked="" type="checkbox"/> |    |                                     | Circle Applicable:    Seals broken    Damaged container    Leaking container    Other (describe)  |
| 6 Samples requiring chemical preservation at proper pH?           | <input checked="" type="checkbox"/> |    |                                     | Sample ID's and Containers Affected:<br>If Preservation added, Lot#:  |
| 7 Do any samples require Volatile Analysis?                       | <input checked="" type="checkbox"/> |    |                                     | If Yes, Are Encores or Soil Kits present? Yes ___ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer)<br>Do VOA vials contain acid preservation? Yes ___ No <input checked="" type="checkbox"/> N/A ___ (If unknown, select No)<br>VOA vials free of headspace? Yes <input checked="" type="checkbox"/> No ___ N/A ___<br>Sample ID's and containers affected: |
| 8 Samples received within holding time?                           | <input checked="" type="checkbox"/> |    |                                     | ID's and tests affected:  |
| 9 Sample ID's on COC match ID's on bottles?                       | <input checked="" type="checkbox"/> |    |                                     | Sample ID's and containers affected:  |
| 10 Date & time on COC match date & time on bottles?               |                                     |    | <input checked="" type="checkbox"/> | Sample ID's affected:<br><u>No collect date/time on -142901 or -143028</u>  |
| 11 Number of containers received match number indicated on COC?   |                                     |    | <input checked="" type="checkbox"/> | Sample ID's affected:<br><u>We only rec'd one cont. for -143842</u>   |
| 12 Are sample containers identifiable as GEL provided?            |                                     |    | <input checked="" type="checkbox"/> |   |
| 13 COC form is properly signed in relinquished/received sections? | <input checked="" type="checkbox"/> |    |                                     |   |

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials ZKW Date 9/13/17 Page 1 of 1

# **Data Review Qualifier Flag Definition Sheet**

## Data Review Qualifier Definitions

| Qualifier | Explanation |
|-----------|-------------|
|-----------|-------------|

|     |   |
|-----|---|
| *   | A quality control analyte recovery is outside of specified acceptance criteria  |
| **  | Analyte is a surrogate compound   |
| <   | Result is less than value reported  |
| >   | Result is greater than value reported   |
| ^   | RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL  |
| A   | The TIC is a suspected aldol-condensation product   |
| B   | Target analyte was detected in the associated blank   |
| B   | Metals-Either presence of analyte detected in the associated blank, or<br>MDL/IDL < sample value < PQL  |
| BD  | Results are either below the MDC or tracer recovery is low  |
| C   | Analyte has been confirmed by GC/MS analysis  |
| D   | Results are reported from a diluted aliquot of the sample   |
| d   | 5-day BOD-The 2:1 depletion requirement was not met for this sample   |
| E   | Organics-Concentration of the target analyte exceeds the instrument calibration range   |
| E   | Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria   |
| H   | Analytical holding time was exceeded  |
| h   | Preparation or preservation holding time was exceeded   |
| J   | Value is estimated  |
| N   | Metals-The Matrix spike sample recovery is not within specified control limits  |
| N   | Organics-Presumptive evidence based on mass spectral library search to make a tentative<br>identification of the analyte (TIC). Quantitation is based on nearest internal standard<br>response factor |
| N/A | Spike recovery limits do not apply. Sample concentration exceeds spike concentration<br>by 4X or more   |
| ND  | Analyte concentration is not detected above the reporting limit   |
| UI  | Gamma Spectroscopy-Uncertain identification   |
| X   | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  |
| Y   | QC Samples were not spiked with this compound   |
| Z   | Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.  |

P Organics-The concentrations between the primary and confirmation columns/detectors is >40% difference.  
For HPLC, the difference is >70%.

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

# **Volatile Analysis**

# Case Narrative



**GC/MS Volatile  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-2729  
Work Order #: 432570**

**Method/Analysis Information**

**Procedure:** Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

Analytical Method: SW-846:8260B

Analytical Batch  
Number: 1701572

**Sample Analysis**

The following client and quality control samples were analyzed to complete this SDG using the methods referenced in the Analysis Information section:

| <b>Sample ID</b> | <b>Client ID</b>                                     |
|------------------|--|
| 432570002        | CAWA-17-142891                                       |
| 432570003        | CAWA-17-143010                                       |
| 1203877503       | 432587002(CAWA-17-142901) Post Spike (PS)            |
| 1203877504       | 432587002(CAWA-17-142901) Post Spike (PS)            |
| 1203877505       | 432587002(CAWA-17-142901) Post Spike Duplicate (PSD) |
| 1203877506       | 432587002(CAWA-17-142901) Post Spike Duplicate (PSD) |
| 1203877741       | Method Blank (MB)                                    |
| 1203877742       | Laboratory Control Sample (LCS)                      |
| 1203877743       | Laboratory Control Sample (LCS)                      |
| 1203878616       | Method Blank (MB)                                    |
| 1203878617       | Laboratory Control Sample (LCS)                      |
| 1203878618       | Laboratory Control Sample (LCS)                      |

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

The data results reported met all SOP and method criteria, unless otherwise discussed below.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV# 26.

**Calibration Information**

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the Calibration History report located in the Standard Data section of the data package. The surrogate compounds were calibrated using a minimum five-point calibration curve. The surrogates were added by the auto sampler at a concentration of 50 ug/L or 20 ug/L for low level analyses. GEL Laboratories LLC will not have surrogate recoveries reported for Dibromofluoromethane. This is due to increased regulations for this analyte and an

industry shortage.

#### **Initial Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

#### **Continuing Calibration Verification Requirements**

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

#### **Quality Control (QC) Information**

##### **Blank (MB) Statement**

The blanks analyzed with this SDG met the acceptance criteria.

##### **Surrogate Recoveries**

Surrogate recoveries in all client and quality control samples were within the acceptance limits.

##### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

##### **QC Sample Designation**

Sample 432587002 (CAWA-17-142901) was designated for spike analysis.

##### **Matrix Spike/Matrix Spike Duplicate Recovery Statement**

The matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within the required acceptance limits.

##### **Relative Percent Difference (RPD) Statement**

The RPDs between the matrix spike pair met the acceptance limits.

##### **Internal Standard (ISTD) Acceptance**

The internal standard responses in all client and quality control samples met the required acceptance criteria.

#### **Technical Information**

##### **Holding Time Specifications**

All samples in this SDG met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration.

##### **Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

##### **Sample Dilutions/Methanol Dilutions**

The samples in this SDG did not require dilutions.

##### **Sample Re-extraction/Re-analysis**

Re-analyses were not required for samples in this SDG.

#### **Miscellaneous Information**

##### **Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

##### **TIC Comment**

Tentatively identified compounds (TIC) may be requested for samples in this delivery group/work order. Please

note that non-requested calibrated analytes detected in a client sample may be reported on the Form 1/Certificate of Analysis as TICs. TIC data, if requested, were included on the Sample Data Summary (Form 1) and included with the sample raw data.

#### **Additional Comments**

Additional comments were not required for this SDG.

#### **Residual Chlorine**

Residual Chlorine was not detected in any of the samples in this SDG.

#### **Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the reviewer name associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

#### **System Configuration**

The Volatile-GC/MS analysis was performed on the following instrument configuration:

The Volatile-GC/MS analysis was performed on the following instrument configuration:

| <b>Instrument ID</b> | <b>Instrument</b>   | <b>System Configuration</b> | <b>Column ID</b> | <b>Column Description</b> | <b>P &amp; T Trap</b> |
|----------------------|---|-----------------------------|------------------|---------------------------|-----------------------|
| VOAA.I               | Agilent 7890/5975 GC/MS w/ OI Eclipse/Archon Autosampler      | HP7890A/HP5975C             | DB-624           | J&W, 60m x 0.25mm x 1.4um | Trap 10               |
| VOA4.I               | Hewlett Packard 6890/5973 GC/MS w/ OI 4560/Archon Autosampler | HP6890/HP5973               | DB-624           | J&W, 60m x 0.25mm x 1.4um | Trap 10               |

#### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Qualifier Definition Report for

ARSL004 ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)

Client SDG: 2017-2729 GEL Work Order: 432570

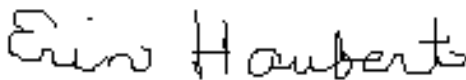
#### The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

#### Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Erin Haubert

Date: 10 OCT 2017

Title: Data Validator

# **Sample Data Summary**

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 432570002

Date Collected: 09/07/2017 10:31

Date Received: 09/13/2017 09:20

Matrix: W

Client ID: CAWA-17-142891

Batch ID: 1701572

Run Date: 09/18/2017 18:28

Prep Date: 09/18/2017 18:28

Data File: 091817V4\4A120.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane | U         | 0.500  | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     | J         | 1.63   | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                | U         | 8.00   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |



**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 432570002

Date Collected: 09/07/2017 10:31

Date Received: 09/13/2017 09:20

Matrix: W

Client ID: CAWA-17-142891

Batch ID: 1701572

Run Date: 09/18/2017 18:28

Prep Date: 09/18/2017 18:28

Data File: 091817V4\4A120.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        | U         | 1.00   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  | U         | 2.00   | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               | U         | 0.300  | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile  
Certificate of Analysis  
Sample Summary**

**SDG Number:** 2017-2729  
**Lab Sample ID:** 432570002  
  
**Client ID:** CAWA-17-142891  
**Batch ID:** 1701572  
**Run Date:** 09/18/2017 18:28  
**Prep Date:** 09/18/2017 18:28  
**Data File:** 091817V4\4A120.D

**Date Collected:** 09/07/2017 10:31  
**Date Received:** 09/13/2017 09:20  
**Client:** ARSL004  
**Method:** SW-846:8260B  
**Inst:** VOA4.I  
**Analyst:** VXY1  
  
**Column:** DB-624

**Matrix:** W  
  
**Project:** ESHL00114  
**SOP Ref:** GL-OA-E-038  
**Dilution:** 1  
**Purge Vol:** 5 mL

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 49.5   | 50.0    | ug/L 99   | (71%-134%)        |
| Bromofluorobenzene        | 48.4   | 50.0    | ug/L 97   | (70%-131%)        |
| Toluene-d8                | 47.2   | 50.0    | ug/L 94   | (74%-124%)        |

**Tentatively Identified Compound Summary**

| CAS No. | Tentatively Identified Compound (TIC) | RT     | Estimated | Units | Fit | Qual |
|---------|---------------------------------------|--------|-----------|-------|-----|------|
|         | unknown siloxane                      | 14.491 | 11.2      | ug/L  | 0   | J    |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 432570003

Date Collected: 09/07/2017 10:31

Date Received: 09/13/2017 09:20

Matrix: W

Client ID: CAWA-17-143010

Batch ID: 1701572

Run Date: 09/18/2017 18:57

Prep Date: 09/18/2017 18:57

Data File: 091817V4\4A121.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane | U         | 0.500  | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     | U         | 1.50   | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                | U         | 8.00   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 432570003

Date Collected: 09/07/2017 10:31

Date Received: 09/13/2017 09:20

Matrix: W

Client ID: CAWA-17-143010

Batch ID: 1701572

Run Date: 09/18/2017 18:57

Prep Date: 09/18/2017 18:57

Data File: 091817V4\4A121.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        | U         | 1.00   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  | U         | 2.00   | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               | U         | 0.300  | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 432570003

Date Collected: 09/07/2017 10:31

Date Received: 09/13/2017 09:20

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAWA-17-143010

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1701572

Inst: VOA4.I

Dilution: 1

Run Date: 09/18/2017 18:57

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 09/18/2017 18:57

Column: DB-624

Data File: 091817V4\4A121.D

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 46.9   | 50.0    | ug/L 94   | (71%-134%)        |
| Bromofluorobenzene        | 47.1   | 50.0    | ug/L 94   | (70%-131%)        |
| Toluene-d8                | 46.3   | 50.0    | ug/L 93   | (74%-124%)        |

**Tentatively Identified Compound Summary**

| CAS No. | Tentatively Identified Compound (TIC) | RT     | Estimated | Units | Fit | Qual |
|---------|---------------------------------------|--------|-----------|-------|-----|------|
|         | unknown siloxane                      | 12.107 | 9.55      | ug/L  | 0   | J    |
|         | unknown siloxane                      | 14.491 | 17.4      | ug/L  | 0   | J    |

# **Quality Control Summary**

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**Volatile**  
**Surrogate Recovery Report**

Page 1 of 1

**SDG Number: 2017-2729****Matrix Type: LIQUID**

---

| Sample ID  | Client ID             | DCED4<br>%REC | TOL<br>%REC | BFB<br>%REC |
|------------|-----------------------|---------------|-------------|-------------|
| 1203877742 | LCS for batch 1701572 | 95            | 95          | 95          |
| 1203877743 | LCS for batch 1701572 | 92            | 96          | 96          |
| 1203877741 | MB for batch 1701572  | 91            | 95          | 97          |
| 432570002  | CAWA-17-142891        | 99            | 94          | 97          |
| 432570003  | CAWA-17-143010        | 94            | 93          | 94          |
| 1203878617 | LCS for batch 1701572 | 108           | 99          | 96          |
| 1203878618 | LCS for batch 1701572 | 105           | 103         | 98          |
| 1203878616 | MB for batch 1701572  | 110           | 104         | 101         |
| 1203877503 | CAWA-17-142901PS      | 107           | 100         | 97          |
| 1203877505 | CAWA-17-142901PSD     | 110           | 103         | 98          |
| 1203877504 | CAWA-17-142901PS      | 108           | 105         | 100         |
| 1203877506 | CAWA-17-142901PSD     | 106           | 101         | 97          |

**Surrogate****Acceptance Limits**

|       |                         |            |
|-------|-------------------------|------------|
| DCED4 | = 1,2-Dichloroethane-d4 | (71%-134%) |
| TOL   | = Toluene-d8            | (74%-124%) |
| BFB   | = Bromofluorobenzene    | (70%-131%) |

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted



Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-2729

Sample Type: Post Spike

Client ID: CAWA-17-142901PS

Matrix: W

Lab Sample ID 1203877503

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No      | Parmname                      | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|-------------|-------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 179601-23-1 | PS m,p-Xylenes                | 100                  | 0.00 U               | 104                 | 104           | 59-132               |
| 75-05-8     | PS Acetonitrile               | 1250                 | 0.00 U               | 1300                | 104           | 56-131               |
| 67-64-1     | PS Acetone                    | 250                  | 0.00 U               | 157                 | 63            | 25-155               |
| 74-88-4     | PS Iodomethane                | 250                  | 0.00 U               | 263                 | 105           | 66-133               |
| 75-15-0     | PS Carbon disulfide           | 250                  | 0.00 U               | 277                 | 111           | 61-141               |
| 108-05-4    | PS Vinyl acetate              | 250                  | 0.00 U               | 275                 | 110           | 48-133               |
| 78-93-3     | PS 2-Butanone                 | 250                  | 0.00 U               | 202                 | 81            | 25-143               |
| 108-10-1    | PS 4-Methyl-2-pentanone       | 250                  | 0.00 U               | 261                 | 104           | 61-127               |
| 591-78-6    | PS 2-Hexanone                 | 250                  | 0.00 U               | 231                 | 92            | 33-138               |
| 75-71-8     | PS Dichlorodifluoromethane    | 50.0                 | 0.00 U               | 33.2                | 66            | 33-164               |
| 74-87-3     | PS Chloromethane              | 50.0                 | 0.00 U               | 44.8                | 90            | 53-139               |
| 75-01-4     | PS Vinyl chloride             | 50.0                 | 0.00 U               | 51.8                | 104           | 58-140               |
| 74-83-9     | PS Bromomethane               | 50.0                 | 0.00 U               | 42.9                | 86            | 59-146               |
| 75-00-3     | PS Chloroethane               | 50.0                 | 0.00 U               | 50.2                | 100           | 65-129               |
| 75-69-4     | PS Trichlorofluoromethane     | 50.0                 | 0.00 U               | 52.2                | 104           | 65-141               |
| 60-29-7     | PS Ethyl ether                | 50.0                 | 0.00 U               | 53.5                | 107           | 69-127               |
| 75-35-4     | PS 1,1-Dichloroethylene       | 50.0                 | 0.00 U               | 55.3                | 111           | 59-130               |
| 75-09-2     | PS Methylene chloride         | 50.0                 | 0.00 U               | 52.9                | 106           | 62-123               |
| 1634-04-4   | PS tert-Butyl methyl ether    | 50.0                 | 0.00 U               | 58.5                | 117           | 69-132               |
| 156-60-5    | PS trans-1,2-Dichloroethylene | 50.0                 | 0.00 U               | 57.1                | 114           | 65-127               |
| 75-34-3     | PS 1,1-Dichloroethane         | 50.0                 | 0.00 U               | 56.4                | 113           | 67-127               |
| 156-59-2    | PS cis-1,2-Dichloroethylene   | 50.0                 | 0.00 U               | 54.6                | 109           | 69-127               |

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-2729

Sample Type: Post Spike

Client ID: CAWA-17-142901PS

Matrix: W

Lab Sample ID 1203877503

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No     | Parmname                       | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|------------|--------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 594-20-7   | PS 2,2-Dichloropropane         | 50.0                 | 0.00 U               | 63.2                | 126           | 66-137               |
| 74-97-5    | PS Bromochloromethane          | 50.0                 | 0.00 U               | 53.2                | 106           | 71-130               |
| 67-66-3    | PS Chloroform                  | 50.0                 | 0.00 U               | 53.9                | 108           | 71-129               |
| 71-55-6    | PS 1,1,1-Trichloroethane       | 50.0                 | 0.00 U               | 54.8                | 110           | 69-139               |
| 563-58-6   | PS 1,1-Dichloropropene         | 50.0                 | 0.00 U               | 52.6                | 105           | 67-130               |
| 56-23-5    | PS Carbon tetrachloride        | 50.0                 | 0.00 U               | 57.4                | 115           | 66-143               |
| 107-06-2   | PS 1,2-Dichloroethane          | 50.0                 | 0.00 U               | 55.1                | 110           | 69-130               |
| 71-43-2    | PS Benzene                     | 50.0                 | 0.00 U               | 52.7                | 105           | 66-125               |
| 79-01-6    | PS Trichloroethylene           | 50.0                 | 0.00 U               | 54.3                | 109           | 65-131               |
| 78-87-5    | PS 1,2-Dichloropropane         | 50.0                 | 0.00 U               | 54.8                | 110           | 67-127               |
| 74-95-3    | PS Dibromomethane              | 50.0                 | 0.00 U               | 53.9                | 108           | 72-129               |
| 75-27-4    | PS Bromodichloromethane        | 50.0                 | 0.00 U               | 57.8                | 116           | 70-138               |
| 10061-01-5 | PS cis-1,3-Dichloropropylene   | 50.0                 | 0.00 U               | 58.3                | 117           | 70-134               |
| 108-88-3   | PS Toluene                     | 50.0                 | 0.00 U               | 51.4                | 103           | 60-126               |
| 10061-02-6 | PS trans-1,3-Dichloropropylene | 50.0                 | 0.00 U               | 59.8                | 120           | 69-135               |
| 79-00-5    | PS 1,1,2-Trichloroethane       | 50.0                 | 0.00 U               | 52.6                | 105           | 66-125               |
| 142-28-9   | PS 1,3-Dichloropropane         | 50.0                 | 0.00 U               | 51.9                | 104           | 67-124               |
| 127-18-4   | PS Tetrachloroethylene         | 50.0                 | 0.00 U               | 50.9                | 102           | 60-130               |
| 124-48-1   | PS Dibromochloromethane        | 50.0                 | 0.00 U               | 49.7                | 99            | 68-143               |
| 106-93-4   | PS 1,2-Dibromoethane           | 50.0                 | 0.00 U               | 54.3                | 109           | 71-127               |
| 108-90-7   | PS Chlorobenzene               | 50.0                 | 0.00 U               | 51.1                | 102           | 64-124               |
| 100-41-4   | PS Ethylbenzene                | 50.0                 | 0.00 U               | 51.6                | 103           | 61-130               |

Volatile  
Quality Control Summary  
Spike Recovery Report

SDG Number: 2017-2729

Sample Type: Post Spike

Client ID: CAWA-17-142901PS

Matrix: W

Lab Sample ID 1203877503

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                       | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|----------|--------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 95-47-6  | PS o-Xylene                    | 50.0                 | 0.00 U               | 51.4                | 103           | 62-131               |
| 100-42-5 | PS Styrene                     | 50.0                 | 0.00 U               | 52.5                | 105           | 59-135               |
| 75-25-2  | PS Bromoform                   | 50.0                 | 0.00 U               | 61.2                | 122           | 64-138               |
| 98-82-8  | PS Isopropylbenzene            | 50.0                 | 0.00 U               | 51.4                | 103           | 55-133               |
| 79-34-5  | PS 1,1,2,2-Tetrachloroethane   | 50.0                 | 0.00 U               | 53.0                | 106           | 62-129               |
| 96-18-4  | PS 1,2,3-Trichloropropane      | 50.0                 | 0.00 U               | 52.0                | 104           | 70-124               |
| 108-86-1 | PS Bromobenzene                | 50.0                 | 0.00 U               | 51.5                | 103           | 62-124               |
| 103-65-1 | PS n-Propylbenzene             | 50.0                 | 0.00 U               | 52.0                | 104           | 50-133               |
| 108-67-8 | PS 1,3,5-Trimethylbenzene      | 50.0                 | 0.00 U               | 52.7                | 105           | 53-135               |
| 95-49-8  | PS 2-Chlorotoluene             | 50.0                 | 0.00 U               | 51.8                | 104           | 56-128               |
| 106-43-4 | PS 4-Chlorotoluene             | 50.0                 | 0.00 U               | 51.5                | 103           | 53-130               |
| 98-06-6  | PS tert-Butylbenzene           | 50.0                 | 0.00 U               | 51.3                | 103           | 55-135               |
| 95-63-6  | PS 1,2,4-Trimethylbenzene      | 50.0                 | 0.00 U               | 52.7                | 105           | 53-132               |
| 135-98-8 | PS sec-Butylbenzene            | 50.0                 | 0.00 U               | 52.7                | 105           | 50-138               |
| 99-87-6  | PS 4-Isopropyltoluene          | 50.0                 | 0.00 U               | 53.3                | 107           | 49-138               |
| 541-73-1 | PS 1,3-Dichlorobenzene         | 50.0                 | 0.00 U               | 51.4                | 103           | 56-126               |
| 106-46-7 | PS 1,4-Dichlorobenzene         | 50.0                 | 0.00 U               | 51.6                | 103           | 55-125               |
| 104-51-8 | PS n-Butylbenzene              | 50.0                 | 0.00 U               | 53.8                | 108           | 43-142               |
| 96-12-8  | PS 1,2-Dibromo-3-chloropropane | 50.0                 | 0.00 U               | 57.9                | 116           | 62-141               |
| 87-68-3  | PS Hexachlorobutadiene         | 50.0                 | 0.00 U               | 51.7                | 103           | 40-147               |
| 91-20-3  | PS Naphthalene                 | 50.0                 | 0.00 U               | 50.8                | 102           | 62-134               |
| 87-61-6  | PS 1,2,3-Trichlorobenzene      | 50.0                 | 0.00 U               | 51.5                | 103           | 52-135               |

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 4 of 8

SDG Number: 2017-2729

Sample Type: Post Spike

Client ID: CAWA-17-142901PS

Matrix: W

Lab Sample ID 1203877503

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                     | Amount<br>Added<br>ug/L | Sample<br>Conc.<br>ug/L | Spike<br>Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|----------|------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|
| 120-82-1 | PS 1,2,4-Trichlorobenzene    | 50.0                    | 0.00 U                  | 52.4                   | 105           | 50-133               |
| 630-20-6 | PS 1,1,1,2-Tetrachloroethane | 50.0                    | 0.00 U                  | 57.6                   | 115           | 71-133               |
| 95-50-1  | PS 1,2-Dichlorobenzene       | 50.0                    | 0.00 U                  | 50.8                   | 102           | 60-125               |
| 71-36-3  | PS n-Butyl alcohol           | 5000                    | 0.00 U                  | 5220                   | 104           | 60-140               |

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-2729

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-142901PSD

Matrix: W

Lab Sample ID 1203877505

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:43

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No      | Parmname                       | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance Limits | RPD<br>% | Acceptance Limits |
|-------------|--------------------------------|----------------------|----------------------|---------------------|---------------|-------------------|----------|-------------------|
| 179601-23-1 | PSD m,p-Xylenes                | 100                  | 0.00 U               | 105                 | 105           | 59-132            | 1        | 0-20              |
| 75-05-8     | PSD Acetonitrile               | 1250                 | 0.00 U               | 1350                | 108           | 56-131            | 4        | 0-20              |
| 67-64-1     | PSD Acetone                    | 250                  | 0.00 U               | 163                 | 65            | 25-155            | 4        | 0-20              |
| 74-88-4     | PSD Iodomethane                | 250                  | 0.00 U               | 268                 | 107           | 66-133            | 2        | 0-20              |
| 75-15-0     | PSD Carbon disulfide           | 250                  | 0.00 U               | 285                 | 114           | 61-141            | 3        | 0-20              |
| 108-05-4    | PSD Vinyl acetate              | 250                  | 0.00 U               | 273                 | 109           | 48-133            | 1        | 0-20              |
| 78-93-3     | PSD 2-Butanone                 | 250                  | 0.00 U               | 210                 | 84            | 25-143            | 4        | 0-20              |
| 108-10-1    | PSD 4-Methyl-2-pentanone       | 250                  | 0.00 U               | 270                 | 108           | 61-127            | 4        | 0-20              |
| 591-78-6    | PSD 2-Hexanone                 | 250                  | 0.00 U               | 238                 | 95            | 33-138            | 3        | 0-20              |
| 75-71-8     | PSD Dichlorodifluoromethane    | 50.0                 | 0.00 U               | 32.9                | 66            | 33-164            | 1        | 0-20              |
| 74-87-3     | PSD Chloromethane              | 50.0                 | 0.00 U               | 47.0                | 94            | 53-139            | 5        | 0-20              |
| 75-01-4     | PSD Vinyl chloride             | 50.0                 | 0.00 U               | 51.2                | 102           | 58-140            | 1        | 0-20              |
| 74-83-9     | PSD Bromomethane               | 50.0                 | 0.00 U               | 42.1                | 84            | 59-146            | 2        | 0-20              |
| 75-00-3     | PSD Chloroethane               | 50.0                 | 0.00 U               | 50.1                | 100           | 65-129            | 0        | 0-20              |
| 75-69-4     | PSD Trichlorofluoromethane     | 50.0                 | 0.00 U               | 52.2                | 104           | 65-141            | 0        | 0-20              |
| 60-29-7     | PSD Ethyl ether                | 50.0                 | 0.00 U               | 52.7                | 105           | 69-127            | 2        | 0-20              |
| 75-35-4     | PSD 1,1-Dichloroethylene       | 50.0                 | 0.00 U               | 56.4                | 113           | 59-130            | 2        | 0-20              |
| 75-09-2     | PSD Methylene chloride         | 50.0                 | 0.00 U               | 53.6                | 107           | 62-123            | 1        | 0-20              |
| 1634-04-4   | PSD tert-Butyl methyl ether    | 50.0                 | 0.00 U               | 59.0                | 118           | 69-132            | 1        | 0-20              |
| 156-60-5    | PSD trans-1,2-Dichloroethylene | 50.0                 | 0.00 U               | 58.1                | 116           | 65-127            | 2        | 0-20              |
| 75-34-3     | PSD 1,1-Dichloroethane         | 50.0                 | 0.00 U               | 57.0                | 114           | 67-127            | 1        | 0-20              |
| 156-59-2    | PSD cis-1,2-Dichloroethylene   | 50.0                 | 0.00 U               | 54.8                | 110           | 69-127            | 0        | 0-20              |

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-2729

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-142901PSD

Matrix: W

Lab Sample ID 1203877505

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:43

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No     | Parmname                        | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance Limits | RPD<br>% | Acceptance Limits |
|------------|---------------------------------|----------------------|----------------------|---------------------|---------------|-------------------|----------|-------------------|
| 594-20-7   | PSD 2,2-Dichloropropane         | 50.0                 | 0.00 U               | 64.5                | 129           | 66-137            | 2        | 0-20              |
| 74-97-5    | PSD Bromochloromethane          | 50.0                 | 0.00 U               | 53.3                | 107           | 71-130            | 0        | 0-20              |
| 67-66-3    | PSD Chloroform                  | 50.0                 | 0.00 U               | 54.3                | 109           | 71-129            | 1        | 0-20              |
| 71-55-6    | PSD 1,1,1-Trichloroethane       | 50.0                 | 0.00 U               | 56.3                | 113           | 69-139            | 3        | 0-20              |
| 563-58-6   | PSD 1,1-Dichloropropene         | 50.0                 | 0.00 U               | 53.6                | 107           | 67-130            | 2        | 0-20              |
| 56-23-5    | PSD Carbon tetrachloride        | 50.0                 | 0.00 U               | 59.2                | 118           | 66-143            | 3        | 0-20              |
| 107-06-2   | PSD 1,2-Dichloroethane          | 50.0                 | 0.00 U               | 55.0                | 110           | 69-130            | 0        | 0-20              |
| 71-43-2    | PSD Benzene                     | 50.0                 | 0.00 U               | 53.3                | 107           | 66-125            | 1        | 0-20              |
| 79-01-6    | PSD Trichloroethylene           | 50.0                 | 0.00 U               | 55.4                | 111           | 65-131            | 2        | 0-20              |
| 78-87-5    | PSD 1,2-Dichloropropane         | 50.0                 | 0.00 U               | 54.9                | 110           | 67-127            | 0        | 0-20              |
| 74-95-3    | PSD Dibromomethane              | 50.0                 | 0.00 U               | 54.4                | 109           | 72-129            | 1        | 0-20              |
| 75-27-4    | PSD Bromodichloromethane        | 50.0                 | 0.00 U               | 58.0                | 116           | 70-138            | 0        | 0-20              |
| 10061-01-5 | PSD cis-1,3-Dichloropropylene   | 50.0                 | 0.00 U               | 58.1                | 116           | 70-134            | 0        | 0-20              |
| 108-88-3   | PSD Toluene                     | 50.0                 | 0.00 U               | 52.2                | 104           | 60-126            | 2        | 0-20              |
| 10061-02-6 | PSD trans-1,3-Dichloropropylene | 50.0                 | 0.00 U               | 59.7                | 119           | 69-135            | 0        | 0-20              |
| 79-00-5    | PSD 1,1,2-Trichloroethane       | 50.0                 | 0.00 U               | 52.7                | 105           | 66-125            | 0        | 0-20              |
| 142-28-9   | PSD 1,3-Dichloropropane         | 50.0                 | 0.00 U               | 51.9                | 104           | 67-124            | 0        | 0-20              |
| 127-18-4   | PSD Tetrachloroethylene         | 50.0                 | 0.00 U               | 52.1                | 104           | 60-130            | 2        | 0-20              |
| 124-48-1   | PSD Dibromochloromethane        | 50.0                 | 0.00 U               | 49.8                | 100           | 68-143            | 0        | 0-20              |
| 106-93-4   | PSD 1,2-Dibromoethane           | 50.0                 | 0.00 U               | 54.9                | 110           | 71-127            | 1        | 0-20              |
| 108-90-7   | PSD Chlorobenzene               | 50.0                 | 0.00 U               | 51.7                | 103           | 64-124            | 1        | 0-20              |
| 100-41-4   | PSD Ethylbenzene                | 50.0                 | 0.00 U               | 52.4                | 105           | 61-130            | 2        | 0-20              |

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-2729

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-142901PSD

Matrix: W

Lab Sample ID 1203877505

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:43

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                        | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance Limits | RPD<br>% | Acceptance Limits |
|----------|---------------------------------|----------------------|----------------------|---------------------|---------------|-------------------|----------|-------------------|
| 95-47-6  | PSD o-Xylene                    | 50.0                 | 0.00 U               | 52.1                | 104           | 62-131            | 1        | 0-20              |
| 100-42-5 | PSD Styrene                     | 50.0                 | 0.00 U               | 52.6                | 105           | 59-135            | 0        | 0-20              |
| 75-25-2  | PSD Bromoform                   | 50.0                 | 0.00 U               | 61.5                | 123           | 64-138            | 0        | 0-20              |
| 98-82-8  | PSD Isopropylbenzene            | 50.0                 | 0.00 U               | 51.9                | 104           | 55-133            | 1        | 0-20              |
| 79-34-5  | PSD 1,1,2,2-Tetrachloroethane   | 50.0                 | 0.00 U               | 53.8                | 108           | 62-129            | 2        | 0-20              |
| 96-18-4  | PSD 1,2,3-Trichloropropane      | 50.0                 | 0.00 U               | 52.8                | 106           | 70-124            | 1        | 0-20              |
| 108-86-1 | PSD Bromobenzene                | 50.0                 | 0.00 U               | 51.0                | 102           | 62-124            | 1        | 0-20              |
| 103-65-1 | PSD n-Propylbenzene             | 50.0                 | 0.00 U               | 52.3                | 105           | 50-133            | 1        | 0-20              |
| 108-67-8 | PSD 1,3,5-Trimethylbenzene      | 50.0                 | 0.00 U               | 53.1                | 106           | 53-135            | 1        | 0-20              |
| 95-49-8  | PSD 2-Chlorotoluene             | 50.0                 | 0.00 U               | 51.8                | 104           | 56-128            | 0        | 0-20              |
| 106-43-4 | PSD 4-Chlorotoluene             | 50.0                 | 0.00 U               | 51.5                | 103           | 53-130            | 0        | 0-20              |
| 98-06-6  | PSD tert-Butylbenzene           | 50.0                 | 0.00 U               | 51.8                | 104           | 55-135            | 1        | 0-20              |
| 95-63-6  | PSD 1,2,4-Trimethylbenzene      | 50.0                 | 0.00 U               | 52.9                | 106           | 53-132            | 0        | 0-20              |
| 135-98-8 | PSD sec-Butylbenzene            | 50.0                 | 0.00 U               | 53.3                | 107           | 50-138            | 1        | 0-20              |
| 99-87-6  | PSD 4-Isopropyltoluene          | 50.0                 | 0.00 U               | 53.6                | 107           | 49-138            | 1        | 0-20              |
| 541-73-1 | PSD 1,3-Dichlorobenzene         | 50.0                 | 0.00 U               | 51.6                | 103           | 56-126            | 0        | 0-20              |
| 106-46-7 | PSD 1,4-Dichlorobenzene         | 50.0                 | 0.00 U               | 51.8                | 104           | 55-125            | 0        | 0-20              |
| 104-51-8 | PSD n-Butylbenzene              | 50.0                 | 0.00 U               | 54.3                | 109           | 43-142            | 1        | 0-20              |
| 96-12-8  | PSD 1,2-Dibromo-3-chloropropane | 50.0                 | 0.00 U               | 60.2                | 120           | 62-141            | 4        | 0-20              |
| 87-68-3  | PSD Hexachlorobutadiene         | 50.0                 | 0.00 U               | 52.5                | 105           | 40-147            | 2        | 0-20              |
| 91-20-3  | PSD Naphthalene                 | 50.0                 | 0.00 U               | 52.5                | 105           | 62-134            | 3        | 0-20              |
| 87-61-6  | PSD 1,2,3-Trichlorobenzene      | 50.0                 | 0.00 U               | 51.9                | 104           | 52-135            | 1        | 0-20              |

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-2729

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-142901PSD

Matrix: W

Lab Sample ID 1203877505

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:43

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                      | Amount<br>Added<br>ug/L | Sample<br>Conc.<br>ug/L | Spike<br>Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits | RPD<br>% | Acceptance<br>Limits |
|----------|-------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|----------|----------------------|
| 120-82-1 | PSD 1,2,4-Trichlorobenzene    | 50.0                    | 0.00 U                  | 52.9                   | 106           | 50-133               | 1        | 0-20                 |
| 630-20-6 | PSD 1,1,1,2-Tetrachloroethane | 50.0                    | 0.00 U                  | 58.4                   | 117           | 71-133               | 1        | 0-20                 |
| 95-50-1  | PSD 1,2-Dichlorobenzene       | 50.0                    | 0.00 U                  | 50.8                   | 102           | 60-125               | 0        | 0-20                 |
| 71-36-3  | PSD n-Butyl alcohol           | 5000                    | 0.00 U                  | 5500                   | 110           | 60-140               | 5        | 0-20                 |



## Volatile

Page 1 of 2

Quality Control Summary  
Spike Recovery Report

SDG Number: 2017-2729

Sample Type: Post Spike

Client ID: CAWA-17-142901PS

Matrix: W

Lab Sample ID 1203877504

Instrument: VOAA.I

Analysis Date: 09/19/2017 17:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                    | Amount<br>Added<br>ug/L | Sample<br>Conc.<br>ug/L | Spike<br>Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|----------|-----------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|
| 107-02-8 | PS Acrolein                 | 250                     | 0.00 U                  | 296                    | 119           | 49-141               |
| 76-13-1  | PS Trichlorotrifluoroethane | 250                     | 0.00 U                  | 264                    | 106           | 57-149               |
| 107-05-1 | PS Allyl chloride           | 250                     | 0.00 U                  | 251                    | 100           | 54-128               |
| 107-13-1 | PS Acrylonitrile            | 250                     | 0.00 U                  | 238                    | 95            | 59-129               |
| 107-12-0 | PS Propionitrile            | 250                     | 0.00 U                  | 229                    | 92            | 58-131               |
| 126-98-7 | PS Methacrylonitrile        | 250                     | 0.00 U                  | 238                    | 95            | 59-134               |
| 80-62-6  | PS Methyl methacrylate      | 250                     | 0.00 U                  | 241                    | 97            | 62-135               |
| 97-63-2  | PS Ethyl methacrylate       | 250                     | 0.00 U                  | 244                    | 97            | 60-136               |
| 78-83-1  | PS Isobutyl alcohol         | 2500                    | 0.00 U                  | 2610                   | 105           | 60-143               |
| 126-99-8 | PS 2-Chloro-1,3-butadiene   | 50.0                    | 0.00 U                  | 45.9                   | 92            | 63-146               |

Volatile

Page 2 of 2

### Quality Control Summary Spike Recovery Report

SDG Number: 2017-2729

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-142901PSD

Matrix: W

Lab Sample ID 1203877506

Instrument: VOAA.I

Analysis Date: 09/19/2017 17:31

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                     | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance Limits | RPD<br>% | Acceptance Limits |
|----------|------------------------------|----------------------|----------------------|---------------------|---------------|-------------------|----------|-------------------|
| 107-02-8 | PSD Acrolein                 | 250                  | 0.00 U               | 307                 | 123           | 49-141            | 3        | 0-20              |
| 76-13-1  | PSD Trichlorotrifluoroethane | 250                  | 0.00 U               | 266                 | 106           | 57-149            | 0        | 0-20              |
| 107-05-1 | PSD Allyl chloride           | 250                  | 0.00 U               | 259                 | 104           | 54-128            | 3        | 0-20              |
| 107-13-1 | PSD Acrylonitrile            | 250                  | 0.00 U               | 258                 | 103           | 59-129            | 8        | 0-20              |
| 107-12-0 | PSD Propionitrile            | 250                  | 0.00 U               | 248                 | 99            | 58-131            | 8        | 0-20              |
| 126-98-7 | PSD Methacrylonitrile        | 250                  | 0.00 U               | 255                 | 102           | 59-134            | 7        | 0-20              |
| 80-62-6  | PSD Methyl methacrylate      | 250                  | 0.00 U               | 260                 | 104           | 62-135            | 7        | 0-20              |
| 97-63-2  | PSD Ethyl methacrylate       | 250                  | 0.00 U               | 256                 | 102           | 60-136            | 5        | 0-20              |
| 78-83-1  | PSD Isobutyl alcohol         | 2500                 | 0.00 U               | 2860                | 114           | 60-143            | 9        | 0-20              |
| 126-99-8 | PSD 2-Chloro-1,3-butadiene   | 50.0                 | 0.00 U               | 47.0                | 94            | 63-146            | 2        | 0-20              |

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-2729

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203877742

Instrument: VOA4.I

Analysis Date: 09/18/2017 11:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No      | Parmname                       | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|-------------|--------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 179601-23-1 | LCS m,p-Xylenes                | 100                  | 0.0                  | 93.8                | 94            | 71-127               |
| 75-05-8     | LCS Acetonitrile               | 1250                 | 0.0                  | 1330                | 106           | 61-125               |
| 67-64-1     | LCS Acetone                    | 250                  | 0.0                  | 241                 | 96            | 48-157               |
| 74-88-4     | LCS Iodomethane                | 250                  | 0.0                  | 246                 | 98            | 72-128               |
| 75-15-0     | LCS Carbon disulfide           | 250                  | 0.0                  | 244                 | 98            | 69-138               |
| 108-05-4    | LCS Vinyl acetate              | 250                  | 0.0                  | 255                 | 102           | 67-125               |
| 78-93-3     | LCS 2-Butanone                 | 250                  | 0.0                  | 247                 | 99            | 55-138               |
| 108-10-1    | LCS 4-Methyl-2-pentanone       | 250                  | 0.0                  | 252                 | 101           | 66-124               |
| 591-78-6    | LCS 2-Hexanone                 | 250                  | 0.0                  | 237                 | 95            | 56-140               |
| 75-71-8     | LCS Dichlorodifluoromethane    | 50.0                 | 0.0                  | 47.8                | 96            | 40-160               |
| 74-87-3     | LCS Chloromethane              | 50.0                 | 0.0                  | 47.0                | 94            | 58-135               |
| 75-01-4     | LCS Vinyl chloride             | 50.0                 | 0.0                  | 46.0                | 92            | 65-137               |
| 74-83-9     | LCS Bromomethane               | 50.0                 | 0.0                  | 46.6                | 93            | 63-137               |
| 75-00-3     | LCS Chloroethane               | 50.0                 | 0.0                  | 46.1                | 92            | 69-129               |
| 75-69-4     | LCS Trichlorofluoromethane     | 50.0                 | 0.0                  | 47.3                | 95            | 69-138               |
| 60-29-7     | LCS Ethyl ether                | 50.0                 | 0.0                  | 51.7                | 103           | 72-125               |
| 75-35-4     | LCS 1,1-Dichloroethylene       | 50.0                 | 0.0                  | 50.0                | 100           | 66-126               |
| 75-09-2     | LCS Methylene chloride         | 50.0                 | 0.0                  | 48.9                | 98            | 68-119               |
| 1634-04-4   | LCS tert-Butyl methyl ether    | 50.0                 | 0.0                  | 51.4                | 103           | 76-128               |
| 156-60-5    | LCS trans-1,2-Dichloroethylene | 50.0                 | 0.0                  | 50.7                | 101           | 71-124               |
| 75-34-3     | LCS 1,1-Dichloroethane         | 50.0                 | 0.0                  | 49.6                | 99            | 73-123               |
| 156-59-2    | LCS cis-1,2-Dichloroethylene   | 50.0                 | 0.0                  | 50.7                | 101           | 75-123               |

Volatile  
Quality Control Summary  
Spike Recovery Report

SDG Number: 2017-2729

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203877742

Instrument: VOA4.I

Analysis Date: 09/18/2017 11:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No     | Parmname                        | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|------------|---------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 594-20-7   | LCS 2,2-Dichloropropane         | 50.0                 | 0.0                  | 47.4                | 95            | 72-138               |
| 74-97-5    | LCS Bromochloromethane          | 50.0                 | 0.0                  | 52.6                | 105           | 76-125               |
| 67-66-3    | LCS Chloroform                  | 50.0                 | 0.0                  | 50.1                | 100           | 76-123               |
| 71-55-6    | LCS 1,1,1-Trichloroethane       | 50.0                 | 0.0                  | 48.8                | 98            | 74-136               |
| 563-58-6   | LCS 1,1-Dichloropropene         | 50.0                 | 0.0                  | 47.5                | 95            | 72-129               |
| 56-23-5    | LCS Carbon tetrachloride        | 50.0                 | 0.0                  | 49.3                | 99            | 72-140               |
| 107-06-2   | LCS 1,2-Dichloroethane          | 50.0                 | 0.0                  | 51.3                | 103           | 74-122               |
| 71-43-2    | LCS Benzene                     | 50.0                 | 0.0                  | 48.3                | 97            | 72-121               |
| 79-01-6    | LCS Trichloroethylene           | 50.0                 | 0.0                  | 49.6                | 99            | 74-125               |
| 78-87-5    | LCS 1,2-Dichloropropane         | 50.0                 | 0.0                  | 49.3                | 99            | 73-121               |
| 74-95-3    | LCS Dibromomethane              | 50.0                 | 0.0                  | 51.9                | 104           | 78-123               |
| 75-27-4    | LCS Bromodichloromethane        | 50.0                 | 0.0                  | 52.3                | 105           | 77-131               |
| 10061-01-5 | LCS cis-1,3-Dichloropropylene   | 50.0                 | 0.0                  | 50.8                | 102           | 78-131               |
| 108-88-3   | LCS Toluene                     | 50.0                 | 0.0                  | 47.4                | 95            | 71-121               |
| 10061-02-6 | LCS trans-1,3-Dichloropropylene | 50.0                 | 0.0                  | 51.9                | 104           | 78-131               |
| 79-00-5    | LCS 1,1,2-Trichloroethane       | 50.0                 | 0.0                  | 52.5                | 105           | 74-118               |
| 142-28-9   | LCS 1,3-Dichloropropane         | 50.0                 | 0.0                  | 48.9                | 98            | 74-118               |
| 127-18-4   | LCS Tetrachloroethylene         | 50.0                 | 0.0                  | 47.4                | 95            | 69-129               |
| 124-48-1   | LCS Dibromochloromethane        | 50.0                 | 0.0                  | 53.9                | 108           | 76-137               |
| 106-93-4   | LCS 1,2-Dibromoethane           | 50.0                 | 0.0                  | 54.6                | 109           | 78-122               |
| 108-90-7   | LCS Chlorobenzene               | 50.0                 | 0.0                  | 48.1                | 96            | 74-120               |
| 100-41-4   | LCS Ethylbenzene                | 50.0                 | 0.0                  | 47.0                | 94            | 73-125               |

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-2729

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203877742

Instrument: VOA4.I

Analysis Date: 09/18/2017 11:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                        | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance Limits |
|----------|---------------------------------|----------------------|----------------------|---------------------|---------------|-------------------|
| 95-47-6  | LCS o-Xylene                    | 50.0                 | 0.0                  | 46.5                | 93            | 74-126            |
| 100-42-5 | LCS Styrene                     | 50.0                 | 0.0                  | 48.9                | 98            | 72-130            |
| 75-25-2  | LCS Bromoform                   | 50.0                 | 0.0                  | 53.7                | 107           | 72-136            |
| 98-82-8  | LCS Isopropylbenzene            | 50.0                 | 0.0                  | 45.6                | 91            | 70-130            |
| 79-34-5  | LCS 1,1,2,2-Tetrachloroethane   | 50.0                 | 0.0                  | 51.5                | 103           | 70-126            |
| 96-18-4  | LCS 1,2,3-Trichloropropane      | 50.0                 | 0.0                  | 52.2                | 104           | 74-122            |
| 108-86-1 | LCS Bromobenzene                | 50.0                 | 0.0                  | 48.5                | 97            | 74-120            |
| 103-65-1 | LCS n-Propylbenzene             | 50.0                 | 0.0                  | 44.7                | 89            | 67-128            |
| 108-67-8 | LCS 1,3,5-Trimethylbenzene      | 50.0                 | 0.0                  | 46.7                | 93            | 70-129            |
| 95-49-8  | LCS 2-Chlorotoluene             | 50.0                 | 0.0                  | 46.6                | 93            | 71-124            |
| 106-43-4 | LCS 4-Chlorotoluene             | 50.0                 | 0.0                  | 45.9                | 92            | 69-125            |
| 98-06-6  | LCS tert-Butylbenzene           | 50.0                 | 0.0                  | 48.9                | 98            | 72-130            |
| 95-63-6  | LCS 1,2,4-Trimethylbenzene      | 50.0                 | 0.0                  | 46.7                | 93            | 70-126            |
| 135-98-8 | LCS sec-Butylbenzene            | 50.0                 | 0.0                  | 46.9                | 94            | 70-131            |
| 99-87-6  | LCS 4-Isopropyltoluene          | 50.0                 | 0.0                  | 47.0                | 94            | 71-131            |
| 541-73-1 | LCS 1,3-Dichlorobenzene         | 50.0                 | 0.0                  | 48.0                | 96            | 72-121            |
| 106-46-7 | LCS 1,4-Dichlorobenzene         | 50.0                 | 0.0                  | 46.5                | 93            | 71-120            |
| 104-51-8 | LCS n-Butylbenzene              | 50.0                 | 0.0                  | 46.4                | 93            | 68-134            |
| 96-12-8  | LCS 1,2-Dibromo-3-chloropropane | 50.0                 | 0.0                  | 56.4                | 113           | 68-141            |
| 87-68-3  | LCS Hexachlorobutadiene         | 50.0                 | 0.0                  | 49.8                | 100           | 72-136            |
| 91-20-3  | LCS Naphthalene                 | 50.0                 | 0.0                  | 57.3                | 115           | 72-132            |
| 87-61-6  | LCS 1,2,3-Trichlorobenzene      | 50.0                 | 0.0                  | 54.1                | 108           | 70-130            |

Volatile

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**Quality Control Summary  
Spike Recovery Report**

SDG Number: 2017-2729

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203877742

Instrument: VOA4.I

Analysis Date: 09/18/2017 11:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                      | Amount<br>Added<br>ug/L | Sample<br>Conc.<br>ug/L | Spike<br>Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|----------|-------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|
| 120-82-1 | LCS 1,2,4-Trichlorobenzene    | 50.0                    | 0.0                     | 51.4                   | 103           | 71-129               |
| 630-20-6 | LCS 1,1,1,2-Tetrachloroethane | 50.0                    | 0.0                     | 50.7                   | 101           | 79-127               |
| 95-50-1  | LCS 1,2-Dichlorobenzene       | 50.0                    | 0.0                     | 48.0                   | 96            | 74-120               |
| 71-36-3  | LCS n-Butyl alcohol           | 5000                    | 0.0                     | 6020                   | 120           | 63-138               |

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-2729

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203877743

Instrument: VOA4.I

Analysis Date: 09/18/2017 13:05

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                     | Amount<br>Added<br>ug/L | Sample<br>Conc.<br>ug/L | Spike<br>Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|----------|------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|
| 107-02-8 | LCS Acrolein                 | 250                     | 0.0                     | 271                    | 108           | 60-140               |
| 76-13-1  | LCS Trichlorotrifluoroethane | 250                     | 0.0                     | 255                    | 102           | 61-148               |
| 107-05-1 | LCS Allyl chloride           | 250                     | 0.0                     | 239                    | 96            | 59-125               |
| 107-13-1 | LCS Acrylonitrile            | 250                     | 0.0                     | 255                    | 102           | 65-122               |
| 107-12-0 | LCS Propionitrile            | 250                     | 0.0                     | 248                    | 99            | 64-124               |
| 126-98-7 | LCS Methacrylonitrile        | 250                     | 0.0                     | 251                    | 100           | 64-126               |
| 80-62-6  | LCS Methyl methacrylate      | 250                     | 0.0                     | 252                    | 101           | 69-127               |
| 97-63-2  | LCS Ethyl methacrylate       | 250                     | 0.0                     | 243                    | 97            | 66-130               |
| 78-83-1  | LCS Isobutyl alcohol         | 2500                    | 0.0                     | 2420                   | 97            | 65-135               |
| 126-99-8 | LCS 2-Chloro-1,3-butadiene   | 50.0                    | 0.0                     | 43.4                   | 87            | 66-147               |

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-2729

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203878617

Instrument: VOAA.I

Analysis Date: 09/19/2017 14:44

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No      | Parmname                       | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|-------------|--------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 179601-23-1 | LCS m,p-Xylenes                | 100                  | 0.0                  | 106                 | 106           | 71-127               |
| 75-05-8     | LCS Acetonitrile               | 1250                 | 0.0                  | 1370                | 110           | 61-125               |
| 67-64-1     | LCS Acetone                    | 250                  | 0.0                  | 355                 | 142           | 48-157               |
| 74-88-4     | LCS Iodomethane                | 250                  | 0.0                  | 273                 | 109           | 72-128               |
| 75-15-0     | LCS Carbon disulfide           | 250                  | 0.0                  | 291                 | 116           | 69-138               |
| 108-05-4    | LCS Vinyl acetate              | 250                  | 0.0                  | 276                 | 111           | 67-125               |
| 78-93-3     | LCS 2-Butanone                 | 250                  | 0.0                  | 312                 | 125           | 55-138               |
| 108-10-1    | LCS 4-Methyl-2-pentanone       | 250                  | 0.0                  | 276                 | 110           | 66-124               |
| 591-78-6    | LCS 2-Hexanone                 | 250                  | 0.0                  | 333                 | 133           | 56-140               |
| 75-71-8     | LCS Dichlorodifluoromethane    | 50.0                 | 0.0                  | 31.9                | 64            | 40-160               |
| 74-87-3     | LCS Chloromethane              | 50.0                 | 0.0                  | 48.0                | 96            | 58-135               |
| 75-01-4     | LCS Vinyl chloride             | 50.0                 | 0.0                  | 51.4                | 103           | 65-137               |
| 74-83-9     | LCS Bromomethane               | 50.0                 | 0.0                  | 40.7                | 81            | 63-137               |
| 75-00-3     | LCS Chloroethane               | 50.0                 | 0.0                  | 51.0                | 102           | 69-129               |
| 75-69-4     | LCS Trichlorofluoromethane     | 50.0                 | 0.0                  | 52.0                | 104           | 69-138               |
| 60-29-7     | LCS Ethyl ether                | 50.0                 | 0.0                  | 53.1                | 106           | 72-125               |
| 75-35-4     | LCS 1,1-Dichloroethylene       | 50.0                 | 0.0                  | 58.3                | 117           | 66-126               |
| 75-09-2     | LCS Methylene chloride         | 50.0                 | 0.0                  | 54.9                | 110           | 68-119               |
| 1634-04-4   | LCS tert-Butyl methyl ether    | 50.0                 | 0.0                  | 60.6                | 121           | 76-128               |
| 156-60-5    | LCS trans-1,2-Dichloroethylene | 50.0                 | 0.0                  | 58.9                | 118           | 71-124               |
| 75-34-3     | LCS 1,1-Dichloroethane         | 50.0                 | 0.0                  | 57.9                | 116           | 73-123               |
| 156-59-2    | LCS cis-1,2-Dichloroethylene   | 50.0                 | 0.0                  | 55.4                | 111           | 75-123               |



Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-2729

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203878617

Instrument: VOAA.I

Analysis Date: 09/19/2017 14:44

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No     | Parmname                        | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|------------|---------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 594-20-7   | LCS 2,2-Dichloropropane         | 50.0                 | 0.0                  | 65.8                | 132           | 72-138               |
| 74-97-5    | LCS Bromochloromethane          | 50.0                 | 0.0                  | 53.7                | 107           | 76-125               |
| 67-66-3    | LCS Chloroform                  | 50.0                 | 0.0                  | 55.1                | 110           | 76-123               |
| 71-55-6    | LCS 1,1,1-Trichloroethane       | 50.0                 | 0.0                  | 57.7                | 115           | 74-136               |
| 563-58-6   | LCS 1,1-Dichloropropene         | 50.0                 | 0.0                  | 54.5                | 109           | 72-129               |
| 56-23-5    | LCS Carbon tetrachloride        | 50.0                 | 0.0                  | 60.3                | 121           | 72-140               |
| 107-06-2   | LCS 1,2-Dichloroethane          | 50.0                 | 0.0                  | 55.4                | 111           | 74-122               |
| 71-43-2    | LCS Benzene                     | 50.0                 | 0.0                  | 54.0                | 108           | 72-121               |
| 79-01-6    | LCS Trichloroethylene           | 50.0                 | 0.0                  | 56.0                | 112           | 74-125               |
| 78-87-5    | LCS 1,2-Dichloropropane         | 50.0                 | 0.0                  | 55.6                | 111           | 73-121               |
| 74-95-3    | LCS Dibromomethane              | 50.0                 | 0.0                  | 54.7                | 109           | 78-123               |
| 75-27-4    | LCS Bromodichloromethane        | 50.0                 | 0.0                  | 58.7                | 117           | 77-131               |
| 10061-01-5 | LCS cis-1,3-Dichloropropylene   | 50.0                 | 0.0                  | 58.8                | 118           | 78-131               |
| 108-88-3   | LCS Toluene                     | 50.0                 | 0.0                  | 52.1                | 104           | 71-121               |
| 10061-02-6 | LCS trans-1,3-Dichloropropylene | 50.0                 | 0.0                  | 60.3                | 121           | 78-131               |
| 79-00-5    | LCS 1,1,2-Trichloroethane       | 50.0                 | 0.0                  | 53.1                | 106           | 74-118               |
| 142-28-9   | LCS 1,3-Dichloropropane         | 50.0                 | 0.0                  | 52.0                | 104           | 74-118               |
| 127-18-4   | LCS Tetrachloroethylene         | 50.0                 | 0.0                  | 52.0                | 104           | 69-129               |
| 124-48-1   | LCS Dibromochloromethane        | 50.0                 | 0.0                  | 50.3                | 101           | 76-137               |
| 106-93-4   | LCS 1,2-Dibromoethane           | 50.0                 | 0.0                  | 54.9                | 110           | 78-122               |
| 108-90-7   | LCS Chlorobenzene               | 50.0                 | 0.0                  | 51.7                | 103           | 74-120               |
| 100-41-4   | LCS Ethylbenzene                | 50.0                 | 0.0                  | 52.7                | 105           | 73-125               |

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-2729

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203878617

Instrument: VOAA.I

Analysis Date: 09/19/2017 14:44

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                        | Amount Added<br>ug/L | Sample Conc.<br>ug/L | Spike Conc.<br>ug/L | Recovery<br>% | Acceptance Limits |
|----------|---------------------------------|----------------------|----------------------|---------------------|---------------|-------------------|
| 95-47-6  | LCS o-Xylene                    | 50.0                 | 0.0                  | 52.4                | 105           | 74-126            |
| 100-42-5 | LCS Styrene                     | 50.0                 | 0.0                  | 54.3                | 109           | 72-130            |
| 75-25-2  | LCS Bromoform                   | 50.0                 | 0.0                  | 61.1                | 122           | 72-136            |
| 98-82-8  | LCS Isopropylbenzene            | 50.0                 | 0.0                  | 51.6                | 103           | 70-130            |
| 79-34-5  | LCS 1,1,2,2-Tetrachloroethane   | 50.0                 | 0.0                  | 53.1                | 106           | 70-126            |
| 96-18-4  | LCS 1,2,3-Trichloropropane      | 50.0                 | 0.0                  | 52.3                | 105           | 74-122            |
| 108-86-1 | LCS Bromobenzene                | 50.0                 | 0.0                  | 50.8                | 102           | 74-120            |
| 103-65-1 | LCS n-Propylbenzene             | 50.0                 | 0.0                  | 52.2                | 104           | 67-128            |
| 108-67-8 | LCS 1,3,5-Trimethylbenzene      | 50.0                 | 0.0                  | 53.0                | 106           | 70-129            |
| 95-49-8  | LCS 2-Chlorotoluene             | 50.0                 | 0.0                  | 51.7                | 103           | 71-124            |
| 106-43-4 | LCS 4-Chlorotoluene             | 50.0                 | 0.0                  | 51.4                | 103           | 69-125            |
| 98-06-6  | LCS tert-Butylbenzene           | 50.0                 | 0.0                  | 51.3                | 103           | 72-130            |
| 95-63-6  | LCS 1,2,4-Trimethylbenzene      | 50.0                 | 0.0                  | 52.9                | 106           | 70-126            |
| 135-98-8 | LCS sec-Butylbenzene            | 50.0                 | 0.0                  | 53.0                | 106           | 70-131            |
| 99-87-6  | LCS 4-Isopropyltoluene          | 50.0                 | 0.0                  | 53.5                | 107           | 71-131            |
| 541-73-1 | LCS 1,3-Dichlorobenzene         | 50.0                 | 0.0                  | 51.1                | 102           | 72-121            |
| 106-46-7 | LCS 1,4-Dichlorobenzene         | 50.0                 | 0.0                  | 51.3                | 103           | 71-120            |
| 104-51-8 | LCS n-Butylbenzene              | 50.0                 | 0.0                  | 54.0                | 108           | 68-134            |
| 96-12-8  | LCS 1,2-Dibromo-3-chloropropane | 50.0                 | 0.0                  | 59.5                | 119           | 68-141            |
| 87-68-3  | LCS Hexachlorobutadiene         | 50.0                 | 0.0                  | 50.9                | 102           | 72-136            |
| 91-20-3  | LCS Naphthalene                 | 50.0                 | 0.0                  | 51.1                | 102           | 72-132            |
| 87-61-6  | LCS 1,2,3-Trichlorobenzene      | 50.0                 | 0.0                  | 50.8                | 102           | 70-130            |

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-2729

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203878617

Instrument: VOAA.I

Analysis Date: 09/19/2017 14:44

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                      | Amount<br>Added<br>ug/L | Sample<br>Conc.<br>ug/L | Spike<br>Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|----------|-------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|
| 120-82-1 | LCS 1,2,4-Trichlorobenzene    | 50.0                    | 0.0                     | 51.9                   | 104           | 71-129               |
| 630-20-6 | LCS 1,1,1,2-Tetrachloroethane | 50.0                    | 0.0                     | 58.8                   | 118           | 79-127               |
| 95-50-1  | LCS 1,2-Dichlorobenzene       | 50.0                    | 0.0                     | 50.3                   | 101           | 74-120               |
| 71-36-3  | LCS n-Butyl alcohol           | 5000                    | 0.0                     | 5560                   | 111           | 63-138               |

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-2729

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203878618

Instrument: VOAA.I

Analysis Date: 09/19/2017 15:32

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

| CAS No   | Parmname                     | Amount<br>Added<br>ug/L | Sample<br>Conc.<br>ug/L | Spike<br>Conc.<br>ug/L | Recovery<br>% | Acceptance<br>Limits |
|----------|------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|
| 107-02-8 | LCS Acrolein                 | 250                     | 0.0                     | 307                    | 123           | 60-140               |
| 76-13-1  | LCS Trichlorotrifluoroethane | 250                     | 0.0                     | 289                    | 116           | 61-148               |
| 107-05-1 | LCS Allyl chloride           | 250                     | 0.0                     | 270                    | 108           | 59-125               |
| 107-13-1 | LCS Acrylonitrile            | 250                     | 0.0                     | 255                    | 102           | 65-122               |
| 107-12-0 | LCS Propionitrile            | 250                     | 0.0                     | 244                    | 98            | 64-124               |
| 126-98-7 | LCS Methacrylonitrile        | 250                     | 0.0                     | 255                    | 102           | 64-126               |
| 80-62-6  | LCS Methyl methacrylate      | 250                     | 0.0                     | 259                    | 103           | 69-127               |
| 97-63-2  | LCS Ethyl methacrylate       | 250                     | 0.0                     | 261                    | 105           | 66-130               |
| 78-83-1  | LCS Isobutyl alcohol         | 2500                    | 0.0                     | 2790                   | 112           | 65-135               |
| 126-99-8 | LCS 2-Chloro-1,3-butadiene   | 50.0                    | 0.0                     | 49.6                   | 99            | 66-147               |

**Method Blank Summary**

|                       |                             |                       |                         |                   |                           |
|-----------------------|-----------------------------|-----------------------|-------------------------|-------------------|---------------------------|
| <b>SDG Number:</b>    | <b>2017-2729</b>            | <b>Client:</b>        | <b>ARSL004</b>          | <b>Matrix:</b>    | <b>WATER</b>              |
| <b>Client ID:</b>     | <b>MB for batch 1701572</b> | <b>Instrument ID:</b> | <b>VOA4.I</b>           | <b>Data File:</b> | <b>091817V4\4A110BA.D</b> |
| <b>Lab Sample ID:</b> | <b>1203877741</b>           | <b>Prep Date:</b>     | <b>09/18/2017 13:34</b> | <b>Analyzed:</b>  | <b>09/18/17 13:34</b>     |
| <b>Column:</b>        | <b>DB-624</b>               |                       |                         |                   |                           |

**This method blank applies to the following samples and quality control samples:**

| <b>Client Sample ID</b>         | <b>Lab Sample ID</b> | <b>File ID</b>            | <b>Date Analyzed</b> | <b>Time Analyzed</b> |
|---------------------------------|----------------------|---------------------------|----------------------|----------------------|
| <b>01 LCS for batch 1701572</b> | <b>1203877742</b>    | <b>091817V4\4A106LA.D</b> | <b>09/18/17</b>      | <b>1137</b>          |
| <b>02 LCS for batch 1701572</b> | <b>1203877743</b>    | <b>091817V4\4A109LA.D</b> | <b>09/18/17</b>      | <b>1305</b>          |
| <b>03 CAWA-17-142891</b>        | <b>432570002</b>     | <b>091817V4\4A120.D</b>   | <b>09/18/17</b>      | <b>1828</b>          |
| <b>04 CAWA-17-143010</b>        | <b>432570003</b>     | <b>091817V4\4A121.D</b>   | <b>09/18/17</b>      | <b>1857</b>          |

## Method Blank Summary

Page 1 of 1

|                |                      |                |                  |            |                |
|----------------|----------------------|----------------|------------------|------------|----------------|
| SDG Number:    | 2017-2729            | Client:        | ARSL004          | Matrix:    | WATER          |
| Client ID:     | MB for batch 1701572 | Instrument ID: | VOAA.I           | Data File: | 091917\AA206.D |
| Lab Sample ID: | 1203878616           | Prep Date:     | 09/19/2017 15:56 | Analyzed:  | 09/19/17 15:56 |
| Column:        | DB-624               |                |                  |            |                |

This method blank applies to the following samples and quality control samples:

| Client Sample ID         | Lab Sample ID | File ID         | Date Analyzed | Time Analyzed |
|--------------------------|---------------|-----------------|---------------|---------------|
| 06 LCS for batch 1701572 | 1203878617    | 091917\AA203L.D | 09/19/17      | 1444          |
| 07 LCS for batch 1701572 | 1203878618    | 091917\AA205.D  | 09/19/17      | 1532          |
| 08 CAWA-17-142901PS      | 1203877503    | 091917\AA207.D  | 09/19/17      | 1620          |
| 09 CAWA-17-142901PSD     | 1203877505    | 091917\AA208.D  | 09/19/17      | 1643          |
| 10 CAWA-17-142901PS      | 1203877504    | 091917\AA209.D  | 09/19/17      | 1707          |
| 11 CAWA-17-142901PSD     | 1203877506    | 091917\AA210.D  | 09/19/17      | 1731          |

# Quality Control Data

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

|  |   |                             |
|--|---|-----------------------------|
| <b>SDG Number:</b> 2017-2729               | <b>Date Collected:</b> 09/08/2017 13:32 | <b>Matrix:</b> W            |
| <b>Lab Sample ID:</b> 1203877503           | <b>Date Received:</b> 09/13/2017 09:20  |                             |
| <b>Client Sample:</b> QC for batch 1701572 | <b>Client:</b> ARSL004                  | <b>Project:</b> QC          |
| <b>Client ID:</b> CAWA-17-142901PS         | <b>Method:</b> SW-846:8260B             | <b>SOP Ref:</b> GL-OA-E-038 |
| <b>Batch ID:</b> 1701572                   | <b>Inst:</b> VOAA.I                     | <b>Dilution:</b> 1          |
| <b>Run Date:</b> 09/19/2017 16:20          | <b>Analyst:</b> VXY1                    | <b>Purge Vol:</b> 5 mL      |
| <b>Prep Date:</b> 09/19/2017 16:20         |   |                             |
| <b>Data File:</b> 091917\AA207.D           | <b>Column:</b> DB-624                   |                             |

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   |           | 57.6   | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       |           | 54.8   | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   |           | 53.0   | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       |           | 52.6   | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          |           | 56.4   | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        |           | 55.3   | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         |           | 52.6   | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      |           | 51.5   | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      |           | 52.0   | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      |           | 52.4   | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      |           | 52.7   | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane |           | 57.9   | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           |           | 54.3   | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         |           | 50.8   | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          |           | 55.1   | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         |           | 54.8   | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      |           | 52.7   | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         |           | 51.4   | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         |           | 51.9   | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         |           | 51.6   | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         |           | 63.2   | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  |           | 202    | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             |           | 51.8   | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  |           | 231    | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             |           | 51.5   | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          |           | 53.3   | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        |           | 261    | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     |           | 157    | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                |           | 1300   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     |           | 52.7   | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                |           | 51.5   | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          |           | 53.2   | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        |           | 57.8   | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   |           | 61.2   | ug/L  | 0.300   | 1.00    |



**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

|  |   |                             |
|--|---|-----------------------------|
| <b>SDG Number:</b> 2017-2729               | <b>Date Collected:</b> 09/08/2017 13:32 | <b>Matrix:</b> W            |
| <b>Lab Sample ID:</b> 1203877503           | <b>Date Received:</b> 09/13/2017 09:20  |                             |
| <b>Client Sample:</b> QC for batch 1701572 | <b>Client:</b> ARSL004                  | <b>Project:</b> QC          |
| <b>Client ID:</b> CAWA-17-142901PS         | <b>Method:</b> SW-846:8260B             | <b>SOP Ref:</b> GL-OA-E-038 |
| <b>Batch ID:</b> 1701572                   | <b>Inst:</b> VOAA.I                     | <b>Dilution:</b> 1          |
| <b>Run Date:</b> 09/19/2017 16:20          | <b>Analyst:</b> VXY1                    | <b>Purge Vol:</b> 5 mL      |
| <b>Prep Date:</b> 09/19/2017 16:20         |   |                             |
| <b>Data File:</b> 091917\AA207.D           | <b>Column:</b> DB-624                   |                             |

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              |           | 42.9   | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          |           | 277    | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      |           | 57.4   | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             |           | 51.1   | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              |           | 50.2   | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                |           | 53.9   | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             |           | 44.8   | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      |           | 49.7   | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            |           | 53.9   | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   |           | 33.2   | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               |           | 53.5   | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              |           | 51.6   | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       |           | 51.7   | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               |           | 263    | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          |           | 51.4   | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        |           | 52.9   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               |           | 50.8   | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   |           | 52.5   | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       |           | 50.9   | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   |           | 51.4   | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         |           | 54.3   | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    |           | 52.2   | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  | U         | 2.00   | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             |           | 275    | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            |           | 51.8   | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  |           | 54.6   | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene |           | 58.3   | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               |           | 104    | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           |           | 5220   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            |           | 53.8   | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           |           | 52.0   | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  |           | 51.4   | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          |           | 52.7   | ug/L  | 0.300   | 1.00    |

**Volatile  
Certificate of Analysis  
Sample Summary**

|                       |                             |                        |                         |                   |                    |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| <b>SDG Number:</b>    | <b>2017-2729</b>            | <b>Date Collected:</b> | <b>09/08/2017 13:32</b> | <b>Matrix:</b>    | <b>W</b>           |
| <b>Lab Sample ID:</b> | <b>1203877503</b>           | <b>Date Received:</b>  | <b>09/13/2017 09:20</b> |                   |                    |
| <b>Client Sample:</b> | <b>QC for batch 1701572</b> | <b>Client:</b>         | <b>ARSL004</b>          | <b>Project:</b>   | <b>QC</b>          |
| <b>Client ID:</b>     | <b>CAWA-17-142901PS</b>     | <b>Method:</b>         | <b>SW-846:8260B</b>     | <b>SOP Ref:</b>   | <b>GL-OA-E-038</b> |
| <b>Batch ID:</b>      | <b>1701572</b>              | <b>Inst:</b>           | <b>VOAA.I</b>           | <b>Dilution:</b>  | <b>1</b>           |
| <b>Run Date:</b>      | <b>09/19/2017 16:20</b>     | <b>Analyst:</b>        | <b>VXY1</b>             | <b>Purge Vol:</b> | <b>5 mL</b>        |
| <b>Prep Date:</b>     | <b>09/19/2017 16:20</b>     |                        |                         |                   |                    |
| <b>Data File:</b>     | <b>091917\AA207.D</b>       | <b>Column:</b>         | <b>DB-624</b>           |                   |                    |

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     |           | 58.5   | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           |           | 51.3   | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  |           | 57.1   | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene |           | 59.8   | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 53.6   | 50.0    | 107       | (71%-134%)        |
| Bromofluorobenzene        | 48.5   | 50.0    | 97        | (70%-131%)        |
| Toluene-d8                | 50.2   | 50.0    | 100       | (74%-124%)        |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

|                       |                             |                        |                         |                   |                    |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| <b>SDG Number:</b>    | <b>2017-2729</b>            | <b>Date Collected:</b> | <b>09/08/2017 13:32</b> | <b>Matrix:</b>    | <b>W</b>           |
| <b>Lab Sample ID:</b> | <b>1203877504</b>           | <b>Date Received:</b>  | <b>09/13/2017 09:20</b> |                   |                    |
| <b>Client Sample:</b> | <b>QC for batch 1701572</b> | <b>Client:</b>         | <b>ARSL004</b>          | <b>Project:</b>   | <b>QC</b>          |
| <b>Client ID:</b>     | <b>CAWA-17-142901PS</b>     | <b>Method:</b>         | <b>SW-846:8260B</b>     | <b>SOP Ref:</b>   | <b>GL-OA-E-038</b> |
| <b>Batch ID:</b>      | <b>1701572</b>              | <b>Inst:</b>           | <b>VOAA.I</b>           | <b>Dilution:</b>  | <b>1</b>           |
| <b>Run Date:</b>      | <b>09/19/2017 17:07</b>     | <b>Analyst:</b>        | <b>VXY1</b>             | <b>Purge Vol:</b> | <b>5 mL</b>        |
| <b>Prep Date:</b>     | <b>09/19/2017 17:07</b>     |                        |                         |                   |                    |
| <b>Data File:</b>     | <b>091917\AA209.D</b>       | <b>Column:</b>         | <b>DB-624</b>           |                   |                    |

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane | U         | 0.500  | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      |           | 45.9   | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     | U         | 1.50   | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                | U         | 8.00   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    |           | 296    | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               |           | 238    | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              |           | 251    | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

|  |   |                             |
|--|---|-----------------------------|
| <b>SDG Number:</b> 2017-2729               | <b>Date Collected:</b> 09/08/2017 13:32 | <b>Matrix:</b> W            |
| <b>Lab Sample ID:</b> 1203877504           | <b>Date Received:</b> 09/13/2017 09:20  |                             |
| <b>Client Sample:</b> QC for batch 1701572 | <b>Client:</b> ARSL004                  | <b>Project:</b> QC          |
| <b>Client ID:</b> CAWA-17-142901PS         | <b>Method:</b> SW-846:8260B             | <b>SOP Ref:</b> GL-OA-E-038 |
| <b>Batch ID:</b> 1701572                   | <b>Inst:</b> VOAA.I                     | <b>Dilution:</b> 1          |
| <b>Run Date:</b> 09/19/2017 17:07          | <b>Analyst:</b> VXY1                    | <b>Purge Vol:</b> 5 mL      |
| <b>Prep Date:</b> 09/19/2017 17:07         |   |                             |
| <b>Data File:</b> 091917\AA209.D           | <b>Column:</b> DB-624                   |                             |

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        |           | 244    | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          |           | 2610   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         |           | 238    | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       |           | 241    | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        | U         | 1.00   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             |           | 229    | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  |           | 264    | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               | U         | 0.300  | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile  
Certificate of Analysis  
Sample Summary**

|  |   |                             |
|--|---|-----------------------------|
| <b>SDG Number:</b> 2017-2729               | <b>Date Collected:</b> 09/08/2017 13:32 | <b>Matrix:</b> W            |
| <b>Lab Sample ID:</b> 1203877504           | <b>Date Received:</b> 09/13/2017 09:20  |                             |
| <b>Client Sample:</b> QC for batch 1701572 | <b>Client:</b> ARSL004                  | <b>Project:</b> QC          |
| <b>Client ID:</b> CAWA-17-142901PS         | <b>Method:</b> SW-846:8260B             | <b>SOP Ref:</b> GL-OA-E-038 |
| <b>Batch ID:</b> 1701572                   | <b>Inst:</b> VOAA.I                     | <b>Dilution:</b> 1          |
| <b>Run Date:</b> 09/19/2017 17:07          | <b>Analyst:</b> VXY1                    | <b>Purge Vol:</b> 5 mL      |
| <b>Prep Date:</b> 09/19/2017 17:07         |   |                             |
| <b>Data File:</b> 091917\AA209.D           | <b>Column:</b> DB-624                   |                             |

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 54.1   | 50.0    | ug/L 108  | (71%-134%)        |
| Bromofluorobenzene        | 50.1   | 50.0    | ug/L 100  | (70%-131%)        |
| Toluene-d8                | 52.5   | 50.0    | ug/L 105  | (74%-124%)        |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

|  |   |                             |
|--|---|-----------------------------|
| <b>SDG Number:</b> 2017-2729               | <b>Date Collected:</b> 09/08/2017 13:32 | <b>Matrix:</b> W            |
| <b>Lab Sample ID:</b> 1203877505           | <b>Date Received:</b> 09/13/2017 09:20  |                             |
| <b>Client Sample:</b> QC for batch 1701572 | <b>Client:</b> ARSL004                  | <b>Project:</b> QC          |
| <b>Client ID:</b> CAWA-17-142901PSD        | <b>Method:</b> SW-846:8260B             | <b>SOP Ref:</b> GL-OA-E-038 |
| <b>Batch ID:</b> 1701572                   | <b>Inst:</b> VOAA.I                     | <b>Dilution:</b> 1          |
| <b>Run Date:</b> 09/19/2017 16:43          | <b>Analyst:</b> VXY1                    | <b>Purge Vol:</b> 5 mL      |
| <b>Prep Date:</b> 09/19/2017 16:43         |   |                             |
| <b>Data File:</b> 091917\AA208.D           | <b>Column:</b> DB-624                   |                             |

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   |           | 58.4   | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       |           | 56.3   | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   |           | 53.8   | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       |           | 52.7   | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          |           | 57.0   | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        |           | 56.4   | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         |           | 53.6   | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      |           | 51.9   | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      |           | 52.8   | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      |           | 52.9   | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      |           | 52.9   | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane |           | 60.2   | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           |           | 54.9   | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         |           | 50.8   | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          |           | 55.0   | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         |           | 54.9   | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      |           | 53.1   | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         |           | 51.6   | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         |           | 51.9   | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         |           | 51.8   | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         |           | 64.5   | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  |           | 210    | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             |           | 51.8   | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  |           | 238    | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             |           | 51.5   | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          |           | 53.6   | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        |           | 270    | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     |           | 163    | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                |           | 1350   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     |           | 53.3   | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                |           | 51.0   | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          |           | 53.3   | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        |           | 58.0   | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   |           | 61.5   | ug/L  | 0.300   | 1.00    |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

|                       |                             |                        |                         |                   |                    |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| <b>SDG Number:</b>    | <b>2017-2729</b>            | <b>Date Collected:</b> | <b>09/08/2017 13:32</b> | <b>Matrix:</b>    | <b>W</b>           |
| <b>Lab Sample ID:</b> | <b>1203877505</b>           | <b>Date Received:</b>  | <b>09/13/2017 09:20</b> |                   |                    |
| <b>Client Sample:</b> | <b>QC for batch 1701572</b> | <b>Client:</b>         | <b>ARSL004</b>          | <b>Project:</b>   | <b>QC</b>          |
| <b>Client ID:</b>     | <b>CAWA-17-142901PSD</b>    | <b>Method:</b>         | <b>SW-846:8260B</b>     | <b>SOP Ref:</b>   | <b>GL-OA-E-038</b> |
| <b>Batch ID:</b>      | <b>1701572</b>              | <b>Inst:</b>           | <b>VOAA.I</b>           | <b>Dilution:</b>  | <b>1</b>           |
| <b>Run Date:</b>      | <b>09/19/2017 16:43</b>     | <b>Analyst:</b>        | <b>VXY1</b>             | <b>Purge Vol:</b> | <b>5 mL</b>        |
| <b>Prep Date:</b>     | <b>09/19/2017 16:43</b>     |                        |                         |                   |                    |
| <b>Data File:</b>     | <b>091917\AA208.D</b>       | <b>Column:</b>         | <b>DB-624</b>           |                   |                    |

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              |           | 42.1   | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          |           | 285    | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      |           | 59.2   | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             |           | 51.7   | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              |           | 50.1   | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                |           | 54.3   | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             |           | 47.0   | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      |           | 49.8   | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            |           | 54.4   | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   |           | 32.9   | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               |           | 52.7   | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              |           | 52.4   | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       |           | 52.5   | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               |           | 268    | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          |           | 51.9   | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        |           | 53.6   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               |           | 52.5   | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   |           | 52.6   | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       |           | 52.1   | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   |           | 52.2   | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         |           | 55.4   | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    |           | 52.2   | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  | U         | 2.00   | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             |           | 273    | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            |           | 51.2   | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  |           | 54.8   | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene |           | 58.1   | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               |           | 105    | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           |           | 5500   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            |           | 54.3   | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           |           | 52.3   | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  |           | 52.1   | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          |           | 53.3   | ug/L  | 0.300   | 1.00    |

**Volatile  
Certificate of Analysis  
Sample Summary**

|                       |                             |                        |                         |                   |                    |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| <b>SDG Number:</b>    | <b>2017-2729</b>            | <b>Date Collected:</b> | <b>09/08/2017 13:32</b> | <b>Matrix:</b>    | <b>W</b>           |
| <b>Lab Sample ID:</b> | <b>1203877505</b>           | <b>Date Received:</b>  | <b>09/13/2017 09:20</b> |                   |                    |
| <b>Client Sample:</b> | <b>QC for batch 1701572</b> | <b>Client:</b>         | <b>ARSL004</b>          | <b>Project:</b>   | <b>QC</b>          |
| <b>Client ID:</b>     | <b>CAWA-17-142901PSD</b>    | <b>Method:</b>         | <b>SW-846:8260B</b>     | <b>SOP Ref:</b>   | <b>GL-OA-E-038</b> |
| <b>Batch ID:</b>      | <b>1701572</b>              | <b>Inst:</b>           | <b>VOAA.I</b>           | <b>Dilution:</b>  | <b>1</b>           |
| <b>Run Date:</b>      | <b>09/19/2017 16:43</b>     | <b>Analyst:</b>        | <b>VXY1</b>             | <b>Purge Vol:</b> | <b>5 mL</b>        |
| <b>Prep Date:</b>     | <b>09/19/2017 16:43</b>     |                        |                         |                   |                    |
| <b>Data File:</b>     | <b>091917\AA208.D</b>       | <b>Column:</b>         | <b>DB-624</b>           |                   |                    |

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     |           | 59.0   | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           |           | 51.8   | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  |           | 58.1   | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene |           | 59.7   | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 54.8   | 50.0    | 110       | (71%-134%)        |
| Bromofluorobenzene        | 49.0   | 50.0    | 98        | (70%-131%)        |
| Toluene-d8                | 51.4   | 50.0    | 103       | (74%-124%)        |



**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

|  |   |                             |
|--|---|-----------------------------|
| <b>SDG Number:</b> 2017-2729               | <b>Date Collected:</b> 09/08/2017 13:32 | <b>Matrix:</b> W            |
| <b>Lab Sample ID:</b> 1203877506           | <b>Date Received:</b> 09/13/2017 09:20  |                             |
| <b>Client Sample:</b> QC for batch 1701572 | <b>Client:</b> ARSL004                  | <b>Project:</b> QC          |
| <b>Client ID:</b> CAWA-17-142901PSD        | <b>Method:</b> SW-846:8260B             | <b>SOP Ref:</b> GL-OA-E-038 |
| <b>Batch ID:</b> 1701572                   | <b>Inst:</b> VOAA.I                     | <b>Dilution:</b> 1          |
| <b>Run Date:</b> 09/19/2017 17:31          | <b>Analyst:</b> VXY1                    | <b>Purge Vol:</b> 5 mL      |
| <b>Prep Date:</b> 09/19/2017 17:31         |   |                             |
| <b>Data File:</b> 091917\AA210.D           | <b>Column:</b> DB-624                   |                             |

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane | U         | 0.500  | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      |           | 47.0   | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     | U         | 1.50   | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                | U         | 8.00   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    |           | 307    | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               |           | 258    | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              |           | 259    | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

|  |   |                             |
|--|---|-----------------------------|
| <b>SDG Number:</b> 2017-2729               | <b>Date Collected:</b> 09/08/2017 13:32 | <b>Matrix:</b> W            |
| <b>Lab Sample ID:</b> 1203877506           | <b>Date Received:</b> 09/13/2017 09:20  |                             |
| <b>Client Sample:</b> QC for batch 1701572 | <b>Client:</b> ARSL004                  | <b>Project:</b> QC          |
| <b>Client ID:</b> CAWA-17-142901PSD        | <b>Method:</b> SW-846:8260B             | <b>SOP Ref:</b> GL-OA-E-038 |
| <b>Batch ID:</b> 1701572                   | <b>Inst:</b> VOAA.I                     | <b>Dilution:</b> 1          |
| <b>Run Date:</b> 09/19/2017 17:31          | <b>Analyst:</b> VXY1                    | <b>Purge Vol:</b> 5 mL      |
| <b>Prep Date:</b> 09/19/2017 17:31         |   |                             |
| <b>Data File:</b> 091917\AA210.D           | <b>Column:</b> DB-624                   |                             |

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        |           | 256    | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          |           | 2860   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         |           | 255    | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       |           | 260    | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        | U         | 1.00   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             |           | 248    | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  |           | 266    | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               | U         | 0.300  | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile  
Certificate of Analysis  
Sample Summary**

|  |   |                             |
|--|---|-----------------------------|
| <b>SDG Number:</b> 2017-2729               | <b>Date Collected:</b> 09/08/2017 13:32 | <b>Matrix:</b> W            |
| <b>Lab Sample ID:</b> 1203877506           | <b>Date Received:</b> 09/13/2017 09:20  |                             |
| <b>Client Sample:</b> QC for batch 1701572 | <b>Client:</b> ARSL004                  | <b>Project:</b> QC          |
| <b>Client ID:</b> CAWA-17-142901PSD        | <b>Method:</b> SW-846:8260B             | <b>SOP Ref:</b> GL-OA-E-038 |
| <b>Batch ID:</b> 1701572                   | <b>Inst:</b> VOAA.I                     | <b>Dilution:</b> 1          |
| <b>Run Date:</b> 09/19/2017 17:31          | <b>Analyst:</b> VXY1                    | <b>Purge Vol:</b> 5 mL      |
| <b>Prep Date:</b> 09/19/2017 17:31         |   |                             |
| <b>Data File:</b> 091917\AA210.D           | <b>Column:</b> DB-624                   |                             |

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 52.9   | 50.0    | 106       | (71%-134%)        |
| Bromofluorobenzene        | 48.7   | 50.0    | 97        | (70%-131%)        |
| Toluene-d8                | 50.7   | 50.0    | 101       | (74%-124%)        |

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 1203877741

Client Sample: QC for batch 1701572

Client ID: MB for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 13:34

Prep Date: 09/18/2017 13:34

Data File: 091817V4\4A110BA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane | U         | 0.500  | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     | U         | 1.50   | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                | U         | 8.00   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 1203877741

Client Sample: QC for batch 1701572

Client ID: MB for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 13:34

Prep Date: 09/18/2017 13:34

Data File: 091817V4\4A110BA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        | U         | 1.00   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  | U         | 2.00   | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               | U         | 0.300  | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |

Volatile  
Certificate of Analysis  
Sample Summary

Page 3 of 3

SDG Number: 2017-2729

Lab Sample ID: 1203877741

Client Sample: QC for batch 1701572

Client ID: MB for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 13:34

Prep Date: 09/18/2017 13:34

Data File: 091817V4\4A110BA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 45.3   | 50.0    | ug/L 91   | (71%-134%)        |
| Bromofluorobenzene        | 48.5   | 50.0    | ug/L 97   | (70%-131%)        |
| Toluene-d8                | 47.4   | 50.0    | ug/L 95   | (74%-124%)        |

## Tentatively Identified Compound Summary

| CAS No.                                   | Tentatively Identified Compound (TIC) | RT | Estimated | Units | Fit | Qual |
|---|---------------------------------------|----|-----------|-------|-----|------|
| No Tentatively Identified Compounds Found |                                       |    |           | ug/L  |     |      |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-2729

Matrix: WATER

Lab Sample ID: 1203877742

Client Sample: QC for batch 1701572

Client: ARSL004

Project: QC

Client ID: LCS for batch 1701572

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1701572

Inst: VOA4.I

Dilution: 1

Run Date: 09/18/2017 11:37

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 09/18/2017 11:37

Data File: 091817V4\4A106LA.D

Column: DB-624

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   |           | 50.7   | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       |           | 48.8   | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   |           | 51.5   | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       |           | 52.5   | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          |           | 49.6   | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        |           | 50.0   | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         |           | 47.5   | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      |           | 54.1   | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      |           | 52.2   | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      |           | 51.4   | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      |           | 46.7   | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane |           | 56.4   | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           |           | 54.6   | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         |           | 48.0   | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          |           | 51.3   | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         |           | 49.3   | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      |           | 46.7   | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         |           | 48.0   | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         |           | 48.9   | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         |           | 46.5   | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         |           | 47.4   | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  |           | 247    | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             |           | 46.6   | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  |           | 237    | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             |           | 45.9   | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          |           | 47.0   | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        |           | 252    | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     |           | 241    | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                |           | 1330   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     |           | 48.3   | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                |           | 48.5   | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          |           | 52.6   | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        |           | 52.3   | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   |           | 53.7   | ug/L  | 0.300   | 1.00    |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 1203877742

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 11:37

Prep Date: 09/18/2017 11:37

Data File: 091817V4\4A106LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              |           | 46.6   | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          |           | 244    | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      |           | 49.3   | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             |           | 48.1   | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              |           | 46.1   | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                |           | 50.1   | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             |           | 47.0   | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      |           | 53.9   | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            |           | 51.9   | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   |           | 47.8   | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               |           | 51.7   | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              |           | 47.0   | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       |           | 49.8   | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               |           | 246    | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          |           | 45.6   | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        |           | 48.9   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               |           | 57.3   | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   |           | 48.9   | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       |           | 47.4   | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   |           | 47.4   | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         |           | 49.6   | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    |           | 47.3   | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  | U         | 2.00   | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             |           | 255    | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            |           | 46.0   | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  |           | 50.7   | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene |           | 50.8   | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               |           | 93.8   | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           |           | 6020   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            |           | 46.4   | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           |           | 44.7   | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  |           | 46.5   | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          |           | 46.9   | ug/L  | 0.300   | 1.00    |



**Volatile  
Certificate of Analysis  
Sample Summary**

|                       |                       |                 |              |
|-----------------------|-----------------------|-----------------|--------------|
| <b>SDG Number:</b>    | 2017-2729             | <b>Matrix:</b>  | WATER        |
| <b>Lab Sample ID:</b> | 1203877742            |                 |              |
| <b>Client Sample:</b> | QC for batch 1701572  | <b>Client:</b>  | ARSL004      |
| <b>Client ID:</b>     | LCS for batch 1701572 | <b>Method:</b>  | SW-846:8260B |
| <b>Batch ID:</b>      | 1701572               | <b>Inst:</b>    | VOA4.I       |
| <b>Run Date:</b>      | 09/18/2017 11:37      | <b>Analyst:</b> | VXY1         |
| <b>Prep Date:</b>     | 09/18/2017 11:37      |                 |              |
| <b>Data File:</b>     | 091817V4\4A106LA.D    | <b>Column:</b>  | DB-624       |

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     |           | 51.4   | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           |           | 48.9   | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  |           | 50.7   | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene |           | 51.9   | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 47.7   | 50.0    | 95        | (71%-134%)        |
| Bromofluorobenzene        | 47.6   | 50.0    | 95        | (70%-131%)        |
| Toluene-d8                | 47.3   | 50.0    | 95        | (74%-124%)        |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-2729

Matrix: WATER

Lab Sample ID: 1203877743

Client Sample: QC for batch 1701572

Client: ARSL004

Project: QC

Client ID: LCS for batch 1701572

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1701572

Inst: VOA4.I

Dilution: 1

Run Date: 09/18/2017 13:05

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 09/18/2017 13:05

Data File: 091817V4\4A109LA.D

Column: DB-624

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane | U         | 0.500  | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      |           | 43.4   | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     | U         | 1.50   | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                | U         | 8.00   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    |           | 271    | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               |           | 255    | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              |           | 239    | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-2729

Matrix: WATER

Lab Sample ID: 1203877743

Client Sample: QC for batch 1701572

Client: ARSL004

Project: QC

Client ID: LCS for batch 1701572

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1701572

Inst: VOA4.I

Dilution: 1

Run Date: 09/18/2017 13:05

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 09/18/2017 13:05

Data File: 091817V4\4A109LA.D

Column: DB-624

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        |           | 243    | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          |           | 2420   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         |           | 251    | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       |           | 252    | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        | U         | 1.00   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             |           | 248    | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  |           | 255    | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               | U         | 0.300  | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |

Volatile  
Certificate of Analysis  
Sample Summary

Page 3 of 3

SDG Number: 2017-2729

Lab Sample ID: 1203877743

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 13:05

Prep Date: 09/18/2017 13:05

Data File: 091817V4\4A109LA.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal |      | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 45.9   | 50.0    | ug/L | 92        | (71%-134%)        |
| Bromofluorobenzene        | 47.8   | 50.0    | ug/L | 96        | (70%-131%)        |
| Toluene-d8                | 47.9   | 50.0    | ug/L | 96        | (74%-124%)        |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 1203878616

Client Sample: QC for batch 1701572

Client ID: MB for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 15:56

Prep Date: 09/19/2017 15:56

Data File: 091917\AA206.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane | U         | 0.500  | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     | U         | 1.50   | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                | U         | 8.00   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 1203878616

Client Sample: QC for batch 1701572

Client ID: MB for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 15:56

Prep Date: 09/19/2017 15:56

Data File: 091917\AA206.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        | U         | 1.00   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  | U         | 2.00   | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               | U         | 0.300  | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |

Volatile  
Certificate of Analysis  
Sample Summary

Page 3 of 3

|                |                      |          |              |
|----------------|----------------------|----------|--------------|
| SDG Number:    | 2017-2729            | Matrix:  | WATER        |
| Lab Sample ID: | 1203878616           |          |              |
| Client Sample: | QC for batch 1701572 | Client:  | ARSL004      |
| Client ID:     | MB for batch 1701572 | Method:  | SW-846:8260B |
| Batch ID:      | 1701572              | Inst:    | VOAA.I       |
| Run Date:      | 09/19/2017 15:56     | Analyst: | VXY1         |
| Prep Date:     | 09/19/2017 15:56     |          |              |
| Data File:     | 091917\AA206.D       | Column:  | DB-624       |

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 54.8   | 50.0    | ug/L 110  | (71%-134%)        |
| Bromofluorobenzene        | 50.3   | 50.0    | ug/L 101  | (70%-131%)        |
| Toluene-d8                | 52.1   | 50.0    | ug/L 104  | (74%-124%)        |

## Tentatively Identified Compound Summary

| CAS No. | Tentatively Identified Compound (TIC) | RT    | Estimated | Units | Fit | Qual |
|---------|---------------------------------------|-------|-----------|-------|-----|------|
|         | unknown                               | 3.423 | 5.62      | ug/L  | 0   | J    |
|         | unknown                               | 3.493 | 5.77      | ug/L  | 0   | J    |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 1203878617

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 14:44

Prep Date: 09/19/2017 14:44

Data File: 091917\AA203L.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   |           | 58.8   | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       |           | 57.7   | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   |           | 53.1   | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       |           | 53.1   | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          |           | 57.9   | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        |           | 58.3   | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         |           | 54.5   | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      |           | 50.8   | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      |           | 52.3   | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      |           | 51.9   | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      |           | 52.9   | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane |           | 59.5   | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           |           | 54.9   | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         |           | 50.3   | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          |           | 55.4   | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         |           | 55.6   | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      |           | 53.0   | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         |           | 51.1   | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         |           | 52.0   | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         |           | 51.3   | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         |           | 65.8   | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  |           | 312    | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             |           | 51.7   | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  |           | 333    | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             |           | 51.4   | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          |           | 53.5   | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        |           | 276    | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     |           | 355    | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                |           | 1370   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     |           | 54.0   | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                |           | 50.8   | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          |           | 53.7   | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        |           | 58.7   | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   |           | 61.1   | ug/L  | 0.300   | 1.00    |



**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 1203878617

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 14:44

Prep Date: 09/19/2017 14:44

Data File: 091917\AA203L.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              |           | 40.7   | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          |           | 291    | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      |           | 60.3   | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             |           | 51.7   | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              |           | 51.0   | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                |           | 55.1   | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             |           | 48.0   | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      |           | 50.3   | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            |           | 54.7   | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   |           | 31.9   | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               |           | 53.1   | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              |           | 52.7   | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       |           | 50.9   | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               |           | 273    | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          |           | 51.6   | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        |           | 54.9   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               |           | 51.1   | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   |           | 54.3   | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       |           | 52.0   | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   |           | 52.1   | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         |           | 56.0   | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    |           | 52.0   | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  | U         | 2.00   | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             |           | 276    | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            |           | 51.4   | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  |           | 55.4   | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene |           | 58.8   | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               |           | 106    | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           |           | 5560   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            |           | 54.0   | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           |           | 52.2   | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  |           | 52.4   | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          |           | 53.0   | ug/L  | 0.300   | 1.00    |

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-2729

Lab Sample ID: 1203878617

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 14:44

Prep Date: 09/19/2017 14:44

Data File: 091917\AA203L.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     |           | 60.6   | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           |           | 51.3   | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  |           | 58.9   | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene |           | 60.3   | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 53.9   | 50.0    | ug/L 108  | (71%-134%)        |
| Bromofluorobenzene        | 47.9   | 50.0    | ug/L 96   | (70%-131%)        |
| Toluene-d8                | 49.7   | 50.0    | ug/L 99   | (74%-124%)        |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

Page 1 of 3

SDG Number: 2017-2729

Lab Sample ID: 1203878618

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 15:32

Prep Date: 09/19/2017 15:32

Data File: 091917\AA205.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| CAS No.  | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 71-55-6  | 1,1,1-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-34-5  | 1,1,2,2-Tetrachloroethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-00-5  | 1,1,2-Trichloroethane       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-34-3  | 1,1-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-35-4  | 1,1-Dichloroethylene        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 563-58-6 | 1,1-Dichloropropene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-61-6  | 1,2,3-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-18-4  | 1,2,3-Trichloropropane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 120-82-1 | 1,2,4-Trichlorobenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-63-6  | 1,2,4-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 96-12-8  | 1,2-Dibromo-3-chloropropane | U         | 0.500  | ug/L  | 0.500   | 1.00    |
| 106-93-4 | 1,2-Dibromoethane           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-50-1  | 1,2-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-06-2 | 1,2-Dichloroethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-87-5  | 1,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-67-8 | 1,3,5-Trimethylbenzene      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 541-73-1 | 1,3-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 142-28-9 | 1,3-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 106-46-7 | 1,4-Dichlorobenzene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 594-20-7 | 2,2-Dichloropropane         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 78-93-3  | 2-Butanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 126-99-8 | 2-Chloro-1,3-butadiene      |           | 49.6   | ug/L  | 0.300   | 1.00    |
| 95-49-8  | 2-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 591-78-6 | 2-Hexanone                  | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 106-43-4 | 4-Chlorotoluene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 99-87-6  | 4-Isopropyltoluene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-10-1 | 4-Methyl-2-pentanone        | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 67-64-1  | Acetone                     | U         | 1.50   | ug/L  | 1.50    | 10.0    |
| 75-05-8  | Acetonitrile                | U         | 8.00   | ug/L  | 8.00    | 25.0    |
| 107-02-8 | Acrolein                    |           | 307    | ug/L  | 1.50    | 5.00    |
| 107-13-1 | Acrylonitrile               |           | 255    | ug/L  | 1.50    | 5.00    |
| 107-05-1 | Allyl chloride              |           | 270    | ug/L  | 1.50    | 5.00    |
| 71-43-2  | Benzene                     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-86-1 | Bromobenzene                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-97-5  | Bromochloromethane          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-27-4  | Bromodichloromethane        | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-25-2  | Bromoform                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-2729

Matrix: WATER

Lab Sample ID: 1203878618

Client Sample: QC for batch 1701572

Client: ARSL004

Project: QC

Client ID: LCS for batch 1701572

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1701572

Inst: VOAA.I

Dilution: 1

Run Date: 09/19/2017 15:32

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 09/19/2017 15:32

Data File: 091917\AA205.D

Column: DB-624

| CAS No.     | Parmname                  | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9     | Bromomethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-15-0     | Carbon disulfide          | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 56-23-5     | Carbon tetrachloride      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-90-7    | Chlorobenzene             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-00-3     | Chloroethane              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 67-66-3     | Chloroform                | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-87-3     | Chloromethane             | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 124-48-1    | Dibromochloromethane      | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-95-3     | Dibromomethane            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-71-8     | Dichlorodifluoromethane   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 60-29-7     | Ethyl ether               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 97-63-2     | Ethyl methacrylate        |           | 261    | ug/L  | 1.50    | 5.00    |
| 100-41-4    | Ethylbenzene              | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 87-68-3     | Hexachlorobutadiene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 74-88-4     | Iodomethane               | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 78-83-1     | Isobutyl alcohol          |           | 2790   | ug/L  | 15.0    | 50.0    |
| 98-82-8     | Isopropylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 126-98-7    | Methacrylonitrile         |           | 255    | ug/L  | 1.50    | 5.00    |
| 80-62-6     | Methyl methacrylate       |           | 259    | ug/L  | 1.50    | 5.00    |
| 75-09-2     | Methylene chloride        | U         | 1.00   | ug/L  | 1.00    | 10.0    |
| 91-20-3     | Naphthalene               | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 107-12-0    | Propionitrile             |           | 244    | ug/L  | 1.50    | 5.00    |
| 100-42-5    | Styrene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 127-18-4    | Tetrachloroethylene       | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 108-88-3    | Toluene                   | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 79-01-6     | Trichloroethylene         | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 75-69-4     | Trichlorofluoromethane    | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 76-13-1     | Trichlorotrifluoroethane  |           | 289    | ug/L  | 2.00    | 5.00    |
| 108-05-4    | Vinyl acetate             | U         | 1.50   | ug/L  | 1.50    | 5.00    |
| 75-01-4     | Vinyl chloride            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-59-2    | cis-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-01-5  | cis-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 179601-23-1 | m,p-Xylenes               | U         | 0.300  | ug/L  | 0.300   | 2.00    |
| 71-36-3     | n-Butyl alcohol           | U         | 15.0   | ug/L  | 15.0    | 50.0    |
| 104-51-8    | n-Butylbenzene            | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 103-65-1    | n-Propylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 95-47-6     | o-Xylene                  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 135-98-8    | sec-Butylbenzene          | U         | 0.300  | ug/L  | 0.300   | 1.00    |

**Volatile  
Certificate of Analysis  
Sample Summary**

|  |                             |                             |
|--|-----------------------------|-----------------------------|
| <b>SDG Number:</b> 2017-2729               |                             | <b>Matrix:</b> WATER        |
| <b>Lab Sample ID:</b> 1203878618           |                             |                             |
| <b>Client Sample:</b> QC for batch 1701572 | <b>Client:</b> ARSL004      | <b>Project:</b> QC          |
| <b>Client ID:</b> LCS for batch 1701572    | <b>Method:</b> SW-846:8260B | <b>SOP Ref:</b> GL-OA-E-038 |
| <b>Batch ID:</b> 1701572                   | <b>Inst:</b> VOAA.I         | <b>Dilution:</b> 1          |
| <b>Run Date:</b> 09/19/2017 15:32          | <b>Analyst:</b> VXY1        | <b>Purge Vol:</b> 5 mL      |
| <b>Prep Date:</b> 09/19/2017 15:32         |                             |                             |
| <b>Data File:</b> 091917\AA205.D           | <b>Column:</b> DB-624       |                             |

| CAS No.    | Parmname                    | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4  | tert-Butyl methyl ether     | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 98-06-6    | tert-Butylbenzene           | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 156-60-5   | trans-1,2-Dichloroethylene  | U         | 0.300  | ug/L  | 0.300   | 1.00    |
| 10061-02-6 | trans-1,3-Dichloropropylene | U         | 0.300  | ug/L  | 0.300   | 1.00    |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4     | 52.6   | 50.0    | ug/L 105  | (71%-134%)        |
| Bromofluorobenzene        | 49.2   | 50.0    | ug/L 98   | (70%-131%)        |
| Toluene-d8                | 51.4   | 50.0    | ug/L 103  | (74%-124%)        |

# **Perchlorates by LCMSMS Analysis**

# Case Narrative

**Perchlorates by LCMSMS  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-2729  
Work Order #: 432570**

**Method/Analysis Information**

**Procedure:** **Definitive Low Level Perchlorate Analysis Utilizing Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS) by EPA Method 6850 Modified (6850M)**

Analytical Method: SW-846:6850

Prep Method: SW-846:6850

Analytical Batch Number: 1702207

Prep Batch Number: 1702204

**Sample Analysis**

| <b>Sample ID</b> | <b>Client ID</b>                                       |
|------------------|--|
| 432570001        | 432570001 (CAWA-17-142856)                             |
| 1203878947       | Interference Check Sample (ICS)                        |
| 1203878943       | Method Blank (MB)                                      |
| 1203878944       | Laboratory Control Sample (LCS)                        |
| 1203878945       | 432570001(CAWA-17-142856) Matrix Spike (MS)            |
| 1203878946       | 432570001(CAWA-17-142856) Matrix Spike Duplicate (MSD) |

The samples in this SDG were analyzed on an "as received" basis.

**Preparation/Analytical Method Verification**

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-067 REV# 14.

**Calibration Information**

**Initial Calibration**

All initial calibration requirements have been met for this SDG. Due to software constraints, all Initial



Calibration Blanks must be designated as IPB001.

#### **ICV Requirements**

All associated initial calibration verification standard(s) (ICV) met the acceptance criteria.

#### **CCB Requirements**

All continuing calibration blanks (CCB) bracketing the analyses associated with this batch were within acceptance criteria.

#### **CCV Requirements**

All continuing calibration checks (CCV) requirements were met by all bracketing CCV standards.

#### **Low Level Standard (CRI) Requirements**

All low level calibration verification (CRI) requirements were met by all bracketing CRI standards.

#### **Quality Control (QC) Information**

##### **Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

##### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

##### **Interference Check Sample (ICS)**

The ICS spike recoveries met the acceptance criteria.

##### **QC Sample Designation**

Client sample 432570001 (CAWA-17-142856) was chosen for matrix spike and matrix spike duplicate analysis.

##### **Matrix Spike (MS) Recovery Statement**

The MS recoveries were within the established acceptance limits.

##### **MS/MSD Relative Percent Difference (RPD) Statement**

The RPDs between the MS and MSD met the acceptance limits.

##### **Internal Standard Area Acceptance**

The internal standard areas were within the required acceptance criteria for all samples and QC.

##### **Retention Time**

During the analysis of Perchlorate by LC/MS/MS, retention time shifts are commonly observed. These retention time shifts, which are caused by fouling of the column by the sample matrices, are problematic when the retention time is used as one of the criterion for confirmation. To overcome this problem, a known amount of O(18) labeled Perchlorate was added to each sample as a retention time standard. The presence of Perchlorate was confirmed by the relative retention time (RRT) of the Perchlorate peak and the O(18) standard. A RRT window of 0.98 to 1.02, as required by DOD QSM 5.0, has been used. In addition to the isotopic ratio, the presence of Perchlorate in the samples associated with this data package have been confirmed using the relative retention criteria stated above, not the absolute retention time.

#### **Technical Information**

##### **Holding Time Specifications**

All samples in this SDG in this analytical batch met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-extraction/Re-analysis**

Re-extractions or re-analyses were not required in this SDG.

**Miscellaneous Information****Manual Integrations**

Manual integrations were not required for any data file associated with this SDG.

**Method Comments**

The samples in this SDG were not originally analyzed using EPA Method 314.0.

**Additional Comments**

The Perchlorate Isotope Ratio on the Form I may differ slightly from the ratio on the corresponding raw data due to rounding rules and/or significant figures or due to software limitations when there are manual integrations, dilutions or other factors. The ratio value of the Form I is the correct value. The retention time marker, Perchlorate-O (18), is added to all samples, instrument blanks, and standards prior to injection. It is used to verify the retention time of Perchlorate and Perchlorate-101 and to insure an accurate injection occurred. Due to various anions affecting the recovery of Perchlorate-O (18) and not Perchlorate and Perchlorate-101, the calibration curves of Perchlorate and Perchlorate-101 are internally corrected for using Perchlorate-O (18).

**Perchlorate Isotope Ratio**

The Perchlorate isotope ratio met acceptance criteria for all samples and QC samples. Please see the isotope ratio criteria in the Miscellaneous Section.

**System Configuration**

The laboratory utilizes a Waters LC 2795 liquid chromatography instrument for Perchlorate analysis. It is coupled with a Micromass Quattro Ultima Mass Spectrometer/Mass Spectrometer. It is designated as LCMSMS #2. It is fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis. The laboratory may also utilize an Agilent 1100 liquid chromatography instrument for Perchlorate analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/Mass Spectrometer, designated as LCMSMS #3 or LCMSMS #4. It is also fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Chromatographic Columns**

The LC-MS/MS Perchlorate analysis was performed on a Quatro Ultima LC/MS/MS.

Chromatographic separation of Perchlorate is accomplished through analysis on the following anion column:

Dionex: IonPac AG-16 2 x 50 mm.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Qualifier Definition Report for

ARSL004 ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)

Client SDG: 2017-2729 GEL Work Order: 432570

#### The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

#### Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Michael Penny

Date: 25 SEP 2017

Title: Group Leader

# **Sample Data Summary**

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1702204Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-142856Date Received: 13-SEP-17GEL Job No (SDG): 2017-2729GEL Sample ID: 432570001Date Filtered: 20-SEP-17Injection Volume (uL): 20%Solids:     

| CAS No.    | Analyte^                  | MDL | RL | Conc* | Units | Q | Dilution Factor | Date Analyzed   | GEL File ID |
|------------|---------------------------|-----|----|-------|-------|---|-----------------|-----------------|-------------|
| 14797-73-0 | Perchlorate               | .05 | .2 | 0.050 | ug/L  | U | 1               | 20-SEP-17 19:12 | per0920016a |
|            | Perchlorate Isotope Ratio |     |    |       |       |   | 1               | 20-SEP-17 19:12 | per0920016a |
| 14797-73-0 | Perchlorate-101           | .05 | .2 | 0.050 | ug/L  | U | 1               | 20-SEP-17 19:12 | per0920016a |
|            | Perchlorate-O(18)         |     |    | 0.521 | ug/L  |   | 1               | 20-SEP-17 19:12 | per0920016a |

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

\*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

# **Quality Control Summary**

**Perchlorate Laboratory Control Sample**

**Lab Name:** General Engineering Laboratories

**Lab Code:** GEL

**GEL Job No. (SDG):** 2017-2729

**Extract Batch Code:** 1702204

**Date Filtered:** 20-SEP-17

**Matrix:** WATER

**Sample ID:** 1203878944

| Analyte^                  | True  | Found | Units | %Rec | Q | Control Limits |
|---------------------------|-------|-------|-------|------|---|----------------|
| Perchlorate               | 0.200 | .202  | ug/L  | 101  |   | 85 - 115       |
| Perchlorate Isotope Ratio |       | 2.75  |       |      |   | -              |
| Perchlorate-101           | 0.200 | .209  | ug/L  | 104  |   | 85 - 115       |
| Perchlorate-O(18)         |       | .523  | ug/L  |      |   | -              |

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.



### Perchlorate Spike/Spike Duplicate Summary

**Lab Name:** General Engineering Laboratories

**Lab Code:** GEL

**GEL Job No (SDG):** 2017-2729

**Extract Batch Code:** 1702204

**Date Extracted:** 20-SEP-17

**GEL MS/PS ID:** 1203878945

**Client ID:** CAWA-17-142856

**GEL MSD/PSD ID:** 1203878946

**QC Type:** MS

| Compound^                 | Spike Added | Sample Conc | Units | MS Conc | MS Rec # | MSD Conc | MSD Rec # | RPD # | RPD Limit | Recovery Limit |
|---------------------------|-------------|-------------|-------|---------|----------|----------|-----------|-------|-----------|----------------|
| Perchlorate               | 0.200       | 0.0173      | ug/L  | 0.215   | 99       | .222     | 103       | 4     | 30        | 75 - 125       |
| Perchlorate Isotope Ratio | 0           | 3.26        |       | 2.81    |          | 3.02     |           | 7     |           | -              |
| Perchlorate-101           | 0.200       | 0.0151      | ug/L  | 0.217   | 101      | .209     | 97        | 4     | 30        | 75 - 125       |
| Perchlorate-O(18)         | 0           | 0.521       | ug/L  | 0.516   |          | .522     |           | 1     |           | -              |

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

# Quality Control Data

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1702204Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 20-SEP-17GEL Job No (SDG): 2017-2729GEL Sample ID: 1203878943Date Filtered: 20-SEP-17Injection Volume (uL): 20%Solids:     

| CAS No.    | Analyte^                  | MDL | RL | Conc* | Units | Q | Dilution Factor | Date Analyzed   | GEL File ID |
|------------|---------------------------|-----|----|-------|-------|---|-----------------|-----------------|-------------|
| 14797-73-0 | Perchlorate               | .05 | .2 | 0.050 | ug/L  | U | 1               | 20-SEP-17 18:39 | per0920013a |
|            | Perchlorate Isotope Ratio |     |    |       |       |   | 1               | 20-SEP-17 18:39 | per0920013a |
| 14797-73-0 | Perchlorate-101           | .05 | .2 | 0.050 | ug/L  | U | 1               | 20-SEP-17 18:39 | per0920013a |
|            | Perchlorate-O(18)         |     |    | 0.553 | ug/L  |   | 1               | 20-SEP-17 18:39 | per0920013a |

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

\*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1702204Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 20-SEP-17GEL Job No (SDG): 2017-2729GEL Sample ID: 1203878944Date Filtered: 20-SEP-17Injection Volume (uL): 20%Solids:     

| CAS No.    | Analyte^                  | MDL | RL | Conc* | Units | Q | Dilution Factor | Date Analyzed   | GEL File ID |
|------------|---------------------------|-----|----|-------|-------|---|-----------------|-----------------|-------------|
| 14797-73-0 | Perchlorate               | .05 | .2 | 0.202 | ug/L  |   | 1               | 20-SEP-17 18:50 | per0920014a |
|            | Perchlorate Isotope Ratio |     |    | 2.75  |       |   | 1               | 20-SEP-17 18:50 | per0920014a |
| 14797-73-0 | Perchlorate-101           | .05 | .2 | 0.209 | ug/L  |   | 1               | 20-SEP-17 18:50 | per0920014a |
|            | Perchlorate-O(18)         |     |    | 0.523 | ug/L  |   | 1               | 20-SEP-17 18:50 | per0920014a |

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

\*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1702204Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2017-2729GEL Sample ID: 1203878947Date Filtered: 20-SEP-17Injection Volume (uL): 20

%Solids:

| CAS No.    | Analyte^                  | MDL | RL | Conc* | Units | Q | Dilution Factor | Date Analyzed   | GEL File ID |
|------------|---------------------------|-----|----|-------|-------|---|-----------------|-----------------|-------------|
| 14797-73-0 | Perchlorate               | .05 | .2 | 0.224 | ug/L  |   | 1               | 20-SEP-17 19:01 | per0920015a |
|            | Perchlorate Isotope Ratio |     |    | 2.65  |       |   | 1               | 20-SEP-17 19:01 | per0920015a |
| 14797-73-0 | Perchlorate-101           | .05 | .2 | 0.240 | ug/L  |   | 1               | 20-SEP-17 19:01 | per0920015a |
|            | Perchlorate-O(18)         |     |    | 0.522 | ug/L  |   | 1               | 20-SEP-17 19:01 | per0920015a |

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

\*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1702204Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-142856MSDate Received: 13-SEP-17GEL Job No (SDG): 2017-2729GEL Sample ID: 1203878945Date Filtered: 20-SEP-17Injection Volume (uL): 20%Solids:     

| CAS No.    | Analyte^                  | MDL | RL | Conc* | Units | Q | Dilution Factor | Date Analyzed   | GEL File ID |
|------------|---------------------------|-----|----|-------|-------|---|-----------------|-----------------|-------------|
| 14797-73-0 | Perchlorate               | .05 | .2 | 0.215 | ug/L  |   | 1               | 20-SEP-17 19:22 | per0920017a |
|            | Perchlorate Isotope Ratio |     |    | 2.81  |       |   | 1               | 20-SEP-17 19:22 | per0920017a |
| 14797-73-0 | Perchlorate-101           | .05 | .2 | 0.217 | ug/L  |   | 1               | 20-SEP-17 19:22 | per0920017a |
|            | Perchlorate-O(18)         |     |    | 0.516 | ug/L  |   | 1               | 20-SEP-17 19:22 | per0920017a |

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

\*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1702204Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-142856MSDDate Received: 13-SEP-17GEL Job No (SDG): 2017-2729GEL Sample ID: 1203878946Date Filtered: 20-SEP-17Injection Volume (uL): 20%Solids:     

| CAS No.    | Analyte^                  | MDL | RL | Conc* | Units | Q | Dilution Factor | Date Analyzed   | GEL File ID |
|------------|---------------------------|-----|----|-------|-------|---|-----------------|-----------------|-------------|
| 14797-73-0 | Perchlorate               | .05 | .2 | 0.222 | ug/L  |   | 1               | 20-SEP-17 19:33 | per0920018a |
|            | Perchlorate Isotope Ratio |     |    | 3.02  |       |   | 1               | 20-SEP-17 19:33 | per0920018a |
| 14797-73-0 | Perchlorate-101           | .05 | .2 | 0.209 | ug/L  |   | 1               | 20-SEP-17 19:33 | per0920018a |
|            | Perchlorate-O(18)         |     |    | 0.522 | ug/L  |   | 1               | 20-SEP-17 19:33 | per0920018a |

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

\*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

# **Explosives by LCMSMS Analysis**



# Case Narrative

**Explosives by LCMSMS  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-2729  
Work Order #: 432570**

**Method/Analysis Information**

**Procedure:** The Processing, Extraction, and Analysis of Nitroaromatics, Nitroamines, and Nitrate Esters by SW-846 8330B

Analytical Method: SW846 3535A/8330B

Prep Method: SW846 3535A

Analytical Batch Number: 1700506

Prep Batch Number: 1700504

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 3535A/8330B:

| <b>Sample ID</b> | <b>Client ID</b>                                       |
|------------------|--|
| 432570002        | CAWA-17-142891   |
| 1203874660       | Method Blank (MB)                                      |
| 1203874661       | Laboratory Control Sample (LCS)                        |
| 1203874662       | 432587002(CAWA-17-142901) Matrix Spike (MS)            |
| 1203874663       | 432587002(CAWA-17-142901) Matrix Spike Duplicate (MSD) |

**Preparation/Analytical Method Verification**

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-068 REV# 7.

**Calibration Information**

**Initial Calibration**

All initial calibration requirements for this analysis have been met for this SDG.

**Calibration Verification Standard Requirements**

All continuing calibration verification standards (CCV) have not met requirements of 80-120% for in this SDG. Please refer to Form 7 of the data package for a list of recoveries. A LLOQ level standard was analyzed following the biased low CCV with all target analytes meeting acceptance limits. Since the target analyte was not detected in the associated samples, the data are reported.

**Calibration Blank Requirements**

All initial and continuing calibration blanks (ICB and CCB) bracketing the analyses associated with this batch

for this analysis were within acceptance criteria. Due to software limitations, the CCBs and/or the ICBs may have a concentration for target analytes in the Found column. These values should be zero.

#### **CRI Requirements**

All low level calibration verification (CRI) requirements for this analysis were met by all bracketing CRI standards.

#### **Quality Control (QC) Information**

##### **Method Blank (MB) Statement**

The MB analyzed with this SDG for this analysis met the acceptance criteria.

##### **Surrogate Recoveries**

All the surrogate recoveries were within the established acceptance criteria in this SDG in this analytical batch for this analysis.

##### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries were within the established acceptance limits.

##### **QC Sample Designation**

Client sample 432587002 (CAWA-17-142901) was chosen for matrix spike and matrix spike duplicate analysis.

##### **Matrix Spike (MS) Recovery Statement**

The MS and/or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. Because the recoveries were biased high and target analytes were not detected in the associated samples, the data were reported.

| Sample                         | Analyte | Value           |
|--------------------------------|---------|-----------------|
| 1203874662 (CAWA-17-142901MS)  | TATB    | 178* (38%-149%) |
| 1203874663 (CAWA-17-142901MSD) | TATB    | 164* (38%-149%) |

##### **MS/MSD Relative Percent Difference (RPD) Statement**

The RPDs between the MS and MSD met the acceptance limits for this analysis.

##### **Internal Standard (ISTD) Acceptance**

The internal standard responses were within the required acceptance criteria for all samples and QC in this SDG.

#### **Technical Information**

##### **Holding Time Specifications**

All samples in this SDG in this analytical batch met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

##### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

##### **Sample Dilutions**

In accordance with GEL SOP GL-OA-056, all sample and QC extracts are diluted 1:1 v/v with LC reagent grade Water. The samples in this SDG in this analytical batch for this analysis did not require any additional dilutions.

**Sample Re-extraction/Re-analysis**

Re-extractions or re-analyses were not required in this SDG in this analytical batch for this analysis.

**Miscellaneous Information****Manual Integrations**

Manual integrations were not required for any data file associated with this SDG.

**Additional Comments**

Due to software limitations, all initial calibration blanks must be designated as XIB001 in order for the forms to be correct. Due to software limitations, file extensions such as DL, RE, etc. may not appear on the generated forms and/or raw data. Relative Retention Time (RRT) is used by the laboratory to establish peak identity. The RRT of each target analyte is calculated using the retention time of the corresponding internal standard. The RRT of each analyte in a sample must be within 0.1 of the analyte's calculated RRT in the ICV.

**System Configuration**

The laboratory utilizes an Agilent 1100 liquid chromatography instrument for either Primary or Secondary analyte analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/ Mass Spectrometer, designated as either LC/MS/MS #3 or LC/MS/MS #4. The laboratory also utilizes a Shimadzu Nexera XC liquid chromatography instrument for Primary and/or Secondary analyte analysis. It is coupled with an Applied Biosystems 5500 Mass Spectrometer/ Mass Spectrometer, designated as LC/MS/MS #5. All are fitted with an APCI (Atmospheric Pressure Chemical Ionization) probe that is operated in the negative ionization mode for both the Primary and Secondary analyte analysis.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Chromatographic Columns**

The LC-MS/MS Explosives analysis was performed on a ABSciex 5500 Qtrap LC/MS/MS.

The detection of the Primary and Secondary Nitroaromatic and Nitramine analytes is accomplished through analysis on the following reversed phase column:

Phenomenex: Ultracarb 5u ODS (20), 250 x 4.60 mm ID.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Qualifier Definition Report for

ARSL004 ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)

Client SDG: 2017-2729 GEL Work Order: 432570

#### The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

#### Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Michael Penny

Date: 26 SEP 2017

Title: Group Leader

# **Sample Data Summary**

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142891

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Matrix: WATER

GEL Sample ID: 432570002

Sample Amount 930 mL

Date Received: 13-SEP-17

Moisture: .

Extraction Batch ID: 1700504

Extraction Type Sol Exchange

Date Extracted: 14-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913045.wiff

Date Analyzed: 14-SEP-17 19:46

Dilution Factor: 2

Concentration Units: ug/L

| Cas No.           | Compound                          | Concentration* | Q | MDL    | PQL   |
|-------------------|-----------------------------------|----------------|---|--------|-------|
| 118-96-7          | 2,4,6-Trinitrotoluene             | .086           | U | 0.086  | 0.269 |
| <i>118-96-7</i>   | <i>2,4,6-Trinitrotoluene</i>      |                |   |        |       |
| 121-14-2          | 2,4-Dinitrotoluene                | .086           | U | 0.086  | 0.269 |
| <i>121-14-2</i>   | <i>2,4-Dinitrotoluene</i>         |                |   |        |       |
| 121-82-4          | RDX                               | .086           | U | 0.086  | 0.269 |
| <i>121-82-4</i>   | <i>RDX</i>                        |                |   |        |       |
| 19406-51-0        | 4-Amino-2,6-dinitrotoluene        | .086           | U | 0.086  | 0.269 |
| <i>19406-51-0</i> | <i>4-Amino-2,6-dinitrotoluene</i> |                |   |        |       |
| 2691-41-0         | HMX                               | .086           | U | 0.086  | 0.269 |
| <i>2691-41-0</i>  | <i>HMX</i>                        |                |   |        |       |
| 35572-78-2        | 2-Amino-4,6-dinitrotoluene        | .086           | U | 0.086  | 0.269 |
| <i>35572-78-2</i> | <i>2-Amino-4,6-dinitrotoluene</i> |                |   |        |       |
| 479-45-8          | Tetryl                            | .086           | U | 0.086  | 0.538 |
| <i>479-45-8</i>   | <i>Tetryl</i>                     |                |   |        |       |
| 606-20-2          | 2,6-Dinitrotoluene                | .086           | U | 0.086  | 0.269 |
| <i>606-20-2</i>   | <i>2,6-Dinitrotoluene</i>         |                |   |        |       |
| 98-95-3           | Nitrobenzene                      | .086           | U | 0.086  | 0.269 |
| <i>98-95-3</i>    | <i>Nitrobenzene</i>               |                |   |        |       |
| 99-08-1           | m-Nitrotoluene                    | .086           | U | 0.086  | 0.269 |
| <i>99-08-1</i>    | <i>m-Nitrotoluene</i>             |                |   |        |       |
| 99-35-4           | 1,3,5-Trinitrobenzene             | .086           | U | 0.086  | 0.269 |
| <i>99-35-4</i>    | <i>1,3,5-Trinitrobenzene</i>      |                |   |        |       |
| 99-65-0           | m-Dinitrobenzene                  | .086           | U | 0.086  | 0.269 |
| <i>99-65-0</i>    | <i>m-Dinitrobenzene</i>           |                |   |        |       |
| 88-72-2           | o-Nitrotoluene                    | .0882          | U | 0.0882 | 0.269 |
| <i>88-72-2</i>    | <i>o-Nitrotoluene</i>             |                |   |        |       |

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142891

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Matrix: WATER

GEL Sample ID: 432570002

Sample Amount 930 mL

Date Received: 13-SEP-17

Moisture: .

Extraction Batch ID: 1700504

Extraction Type Sol Exchange

Date Extracted: 14-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

| Cas No.           | Compound                          | Concentration* | Q | MDL   | PQL   |
|-------------------|-----------------------------------|----------------|---|-------|-------|
| 78-11-5           | PETN                              | .108           | U | 0.108 | 0.538 |
| <i>78-11-5</i>    | <i>PETN</i>                       |                |   |       |       |
| 99-99-0           | p-Nitrotoluene                    | .161           | U | 0.161 | 0.538 |
| <i>99-99-0</i>    | <i>p-Nitrotoluene</i>             |                |   |       |       |
| 3058-38-6         | TATB                              | .323           | U | 0.323 | 1.08  |
| <i>3058-38-6</i>  | <i>TATB</i>                       |                |   |       |       |
| 618-87-1          | 3,5-Dinitroaniline                | .323           | U | 0.323 | 1.08  |
| <i>618-87-1</i>   | <i>3,5-Dinitroaniline</i>         |                |   |       |       |
| 78-30-8           | tris(o-cresyl) phosphate          | .323           | U | 0.323 | 1.08  |
| <i>78-30-8</i>    | <i>tris(o-cresyl) phosphate</i>   |                |   |       |       |
| 59229-75-3        | 2,6-Diamino-4-nitrotoluene        | .538           | U | 0.538 | 2.69  |
| <i>59229-75-3</i> | <i>2,6-Diamino-4-nitrotoluene</i> |                |   |       |       |
| 6629-29-4         | 2,4-Diamino-6-nitrotoluene        | .538           | U | 0.538 | 2.69  |
| <i>6629-29-4</i>  | <i>2,4-Diamino-6-nitrotoluene</i> |                |   |       |       |



# **Quality Control Summary**

**High Explosives Surrogate Recovery Summary****Lab Name:** GEL Laboratories LLC**GEL Job No (SDG):** 2017-2729**Lab Code:** GEL**HPLC Column:** Ultracarb Phenomenex 5u ODS (20)

| <b>Lab Sample ID</b> | <b>Client Sample ID</b> | <b>DNT</b> | <b>QC Limits</b> | <b>Flg</b> |
|----------------------|-------------------------|------------|------------------|------------|
| 432570002            | CAWA-17-142891          | 88         | 55 - 115         |            |
| 1203874660           | MB for batch 1700504    | 100        | 55 - 115         |            |
| 1203874661           | LCS for batch 1700504   | 80         | 55 - 115         |            |
| 1203874662           | CAWA-17-142901MS        | 91         | 55 - 115         |            |
| 1203874663           | CAWA-17-142901MSD       | 91         | 55 - 115         |            |

DNT = 3,4-Dinitrotoluene

**3B**  
**High Explosives LCS/LCS Duplicate Summary**

**Lab Name:** GEL Laboratories LLC

**Client ID:** LCS

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-2729

**Extract Batch Code:** 1700504

**Date Extracted:** 14-SEP-17

**GEL LCS ID:** 1203874661

**GEL LCSDUP ID:**

**Analysis Date/Time:** 14-SEP-17 19:10

**DUP Analysis Date/Time:**

**Reporting Units:** ug/L

**QC Type:** LCS/LCSD

| Compound                   | Spike Added | LCS Conc | LCS Rec # | LCSD Conc | LCSD Rec # | RPD # | RPD | Recovery Limits |
|----------------------------|-------------|----------|-----------|-----------|------------|-------|-----|-----------------|
| 4-Amino-2,6-dinitrotoluene | 5           | 4.27     | 85        |           |            |       |     | 74 - 116        |
| HMX                        | 5           | 4.26     | 85        |           |            |       |     | 58 - 113        |
| Nitrobenzene               | 5           | 3.98     | 80        |           |            |       |     | 64 - 115        |
| PETN                       | 5           | 4.42     | 88        |           |            |       |     | 57 - 126        |
| RDX                        | 5           | 4.62     | 92        |           |            |       |     | 64 - 117        |
| TATB                       | 1.25        | 1.56     | 124       |           |            |       |     | 47 - 135        |
| Tetryl                     | 5           | 4.36     | 87        |           |            |       |     | 55 - 122        |
| m-Dinitrobenzene           | 5           | 4.43     | 89        |           |            |       |     | 74 - 117        |
| m-Nitrotoluene             | 5           | 4.25     | 85        |           |            |       |     | 66 - 114        |
| o-Nitrotoluene             | 5           | 4.1      | 82        |           |            |       |     | 64 - 115        |
| p-Nitrotoluene             | 5           | 4.53     | 91        |           |            |       |     | 66 - 127        |
| tris(o-cresyl) phosphate   | 5           | 2.97     | 59        |           |            |       |     | 43 - 104        |
| 1,3,5-Trinitrobenzene      | 5           | 4.29     | 86        |           |            |       |     | 70 - 110        |
| 2,4,6-Trinitrotoluene      | 5           | 4.38     | 88        |           |            |       |     | 69 - 113        |
| 2,4-Diamino-6-nitrotoluene | 5           | 4.27     | 85        |           |            |       |     | 50 - 121        |
| 2,4-Dinitrotoluene         | 5           | 4.21     | 84        |           |            |       |     | 71 - 110        |
| 2,6-Diamino-4-nitrotoluene | 5           | 4.51     | 90        |           |            |       |     | 53 - 127        |
| 2,6-Dinitrotoluene         | 5           | 4.18     | 84        |           |            |       |     | 72 - 105        |
| 2-Amino-4,6-dinitrotoluene | 5           | 4.11     | 82        |           |            |       |     | 70 - 112        |
| 3,5-Dinitroaniline         | 5           | 4.41     | 88        |           |            |       |     | 70 - 121        |

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

3  
High Explosives MS/MSD Summary

Lab Name: GEL Laboratories LLC

Client ID: CAWA-17-142901

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Extract Batch Code: 1700504

Date Extracted: 14-SEP-17

GEL Spike ID: 1203874662

GEL SpikeDup ID: 1203874663

Analysis Date/Time: 14-SEP-17 20:57

MSD Analysis Date/Time: 14-SEP-17 21:32

Reporting Units: ug/L

QC Type: MS/MSD

| Compound                   | Spike Added | Sample Conc | MS Conc | MS Rec # | MSD Conc | MSD Rec # | RPD # | RPD Limit | Rec Limits |
|----------------------------|-------------|-------------|---------|----------|----------|-----------|-------|-----------|------------|
| TATB                       | 1.32979     | 0           | 2.37    | 178 *    | 2.23     | 164 *     | 6     | 30        | 38 - 149   |
| Tetryl                     | 5.31915     | 0           | 4.78    | 90       | 4.47     | 82        | 7     | 30        | 50 - 126   |
| m-Dinitrobenzene           | 5.31915     | 0           | 5.22    | 98       | 4.98     | 92        | 5     | 30        | 74 - 117   |
| m-Nitrotoluene             | 5.31915     | 0           | 4.62    | 87       | 4.21     | 77        | 9     | 30        | 59 - 120   |
| o-Nitrotoluene             | 5.31915     | 0           | 4.51    | 85       | 5.03     | 93        | 11    | 30        | 56 - 119   |
| p-Nitrotoluene             | 5.31915     | 0           | 4.63    | 87       | 4.88     | 90        | 5     | 30        | 61 - 129   |
| tris(o-cresyl) phosphate   | 5.31915     | 0           | 2.8     | 53       | 3.12     | 57        | 11    | 30        | 38 - 105   |
| 1,3,5-Trinitrobenzene      | 5.31915     | 0           | 5.17    | 97       | 4.82     | 89        | 7     | 30        | 67 - 111   |
| 2,4,6-Trinitrotoluene      | 5.31915     | 0           | 4.58    | 86       | 4.85     | 89        | 6     | 30        | 66 - 112   |
| 2,4-Diamino-6-nitrotoluene | 5.31915     | 0           | 4.6     | 86       | 4.3      | 79        | 7     | 30        | 50 - 121   |
| 2,4-Dinitrotoluene         | 5.31915     | 0           | 4.78    | 90       | 4.77     | 88        | 0     | 30        | 69 - 113   |
| 2,6-Diamino-4-nitrotoluene | 5.31915     | 0           | 4.71    | 89       | 4.49     | 83        | 5     | 30        | 53 - 127   |
| 2,6-Dinitrotoluene         | 5.31915     | 0           | 4.73    | 89       | 4.9      | 90        | 4     | 30        | 70 - 106   |
| 2-Amino-4,6-dinitrotoluene | 5.31915     | 0           | 4.78    | 90       | 5.02     | 92        | 5     | 30        | 67 - 115   |
| 3,5-Dinitroaniline         | 5.31915     | 0           | 4.75    | 89       | 4.99     | 92        | 5     | 30        | 70 - 121   |
| 4-Amino-2,6-dinitrotoluene | 5.31915     | 0           | 4.81    | 91       | 4.89     | 90        | 2     | 30        | 65 - 120   |
| HMX                        | 5.31915     | 0           | 4.85    | 91       | 5        | 92        | 3     | 30        | 44 - 128   |
| Nitrobenzene               | 5.31915     | 0           | 3.76    | 71       | 4.48     | 82        | 17    | 30        | 62 - 116   |
| PETN                       | 5.31915     | 0           | 5.05    | 95       | 4.87     | 90        | 4     | 30        | 51 - 131   |
| RDX                        | 5.31915     | 0           | 5.15    | 97       | 5.43     | 100       | 5     | 30        | 57 - 125   |

#Column to be used to flag recovery and RPD values with an asterisk

# Quality Control Data

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1700504

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Matrix: WATER

GEL Sample ID: 1203874660

Sample Amount 1000 mL

Date Received: 13-SEP-17

Moisture: .

Extraction Batch ID: 1700504

Extraction Type Sol Exchange

Date Extracted: 14-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913043.wiff

Date Analyzed: 14-SEP-17 18:35

Dilution Factor: 2

Concentration Units: ug/L

| Cas No.           | Compound                          | Concentration* | Q | MDL   | PQL   |
|-------------------|-----------------------------------|----------------|---|-------|-------|
| 118-96-7          | 2,4,6-Trinitrotoluene             | .08            | U | 0.080 | 0.250 |
| <i>118-96-7</i>   | <i>2,4,6-Trinitrotoluene</i>      |                |   |       |       |
| 121-14-2          | 2,4-Dinitrotoluene                | .08            | U | 0.080 | 0.250 |
| <i>121-14-2</i>   | <i>2,4-Dinitrotoluene</i>         |                |   |       |       |
| 121-82-4          | RDX                               | .08            | U | 0.080 | 0.250 |
| <i>121-82-4</i>   | <i>RDX</i>                        |                |   |       |       |
| 19406-51-0        | 4-Amino-2,6-dinitrotoluene        | .08            | U | 0.080 | 0.250 |
| <i>19406-51-0</i> | <i>4-Amino-2,6-dinitrotoluene</i> |                |   |       |       |
| 2691-41-0         | HMX                               | .08            | U | 0.080 | 0.250 |
| <i>2691-41-0</i>  | <i>HMX</i>                        |                |   |       |       |
| 35572-78-2        | 2-Amino-4,6-dinitrotoluene        | .08            | U | 0.080 | 0.250 |
| <i>35572-78-2</i> | <i>2-Amino-4,6-dinitrotoluene</i> |                |   |       |       |
| 479-45-8          | Tetryl                            | .08            | U | 0.080 | 0.500 |
| <i>479-45-8</i>   | <i>Tetryl</i>                     |                |   |       |       |
| 606-20-2          | 2,6-Dinitrotoluene                | .08            | U | 0.080 | 0.250 |
| <i>606-20-2</i>   | <i>2,6-Dinitrotoluene</i>         |                |   |       |       |
| 98-95-3           | Nitrobenzene                      | .08            | U | 0.080 | 0.250 |
| <i>98-95-3</i>    | <i>Nitrobenzene</i>               |                |   |       |       |
| 99-08-1           | m-Nitrotoluene                    | .08            | U | 0.080 | 0.250 |
| <i>99-08-1</i>    | <i>m-Nitrotoluene</i>             |                |   |       |       |
| 99-35-4           | 1,3,5-Trinitrobenzene             | .08            | U | 0.080 | 0.250 |
| <i>99-35-4</i>    | <i>1,3,5-Trinitrobenzene</i>      |                |   |       |       |
| 99-65-0           | m-Dinitrobenzene                  | .08            | U | 0.080 | 0.250 |
| <i>99-65-0</i>    | <i>m-Dinitrobenzene</i>           |                |   |       |       |
| 88-72-2           | o-Nitrotoluene                    | .082           | U | 0.082 | 0.250 |
| <i>88-72-2</i>    | <i>o-Nitrotoluene</i>             |                |   |       |       |

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1700504

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Matrix: WATER

GEL Sample ID: 1203874660

Sample Amount 1000 mL

Date Received: 13-SEP-17

Moisture: .

Extraction Batch ID: 1700504

Extraction Type Sol Exchange

Date Extracted: 14-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

| Cas No.           | Compound                          | Concentration* | Q | MDL   | PQL   |
|-------------------|-----------------------------------|----------------|---|-------|-------|
| 78-11-5           | PETN                              | .1             | U | 0.100 | 0.500 |
| <i>78-11-5</i>    | <i>PETN</i>                       |                |   |       |       |
| 99-99-0           | p-Nitrotoluene                    | .15            | U | 0.150 | 0.500 |
| <i>99-99-0</i>    | <i>p-Nitrotoluene</i>             |                |   |       |       |
| 3058-38-6         | TATB                              | .3             | U | 0.300 | 1.00  |
| <i>3058-38-6</i>  | <i>TATB</i>                       |                |   |       |       |
| 618-87-1          | 3,5-Dinitroaniline                | .3             | U | 0.300 | 1.00  |
| <i>618-87-1</i>   | <i>3,5-Dinitroaniline</i>         |                |   |       |       |
| 78-30-8           | tris(o-cresyl) phosphate          | .3             | U | 0.300 | 1.00  |
| <i>78-30-8</i>    | <i>tris(o-cresyl) phosphate</i>   |                |   |       |       |
| 59229-75-3        | 2,6-Diamino-4-nitrotoluene        | .5             | U | 0.500 | 2.50  |
| <i>59229-75-3</i> | <i>2,6-Diamino-4-nitrotoluene</i> |                |   |       |       |
| 6629-29-4         | 2,4-Diamino-6-nitrotoluene        | .5             | U | 0.500 | 2.50  |
| <i>6629-29-4</i>  | <i>2,4-Diamino-6-nitrotoluene</i> |                |   |       |       |

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1700504

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Matrix: WATER

GEL Sample ID: 1203874661

Sample Amount 1000 mL

Date Received: 13-SEP-17

Moisture: .

Extraction Batch ID: 1700504

Extraction Type Sol Exchange

Date Extracted: 14-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913044.wiff

Date Analyzed: 14-SEP-17 19:10

Dilution Factor: 2

Concentration Units: ug/L

| Cas No.    | Compound                   | Concentration* | Q | MDL   | PQL   |
|------------|----------------------------|----------------|---|-------|-------|
| 3058-38-6  | TATB                       | 1.56           |   | 0.300 | 1.00  |
| 3058-38-6  | TATB                       |                |   |       |       |
| 78-30-8    | tris(o-cresyl) phosphate   | 2.97           |   | 0.300 | 1.00  |
| 78-30-8    | tris(o-cresyl) phosphate   |                |   |       |       |
| 98-95-3    | Nitrobenzene               | 3.98           |   | 0.080 | 0.250 |
| 98-95-3    | Nitrobenzene               |                |   |       |       |
| 88-72-2    | o-Nitrotoluene             | 4.1            |   | 0.082 | 0.250 |
| 88-72-2    | o-Nitrotoluene             |                |   |       |       |
| 35572-78-2 | 2-Amino-4,6-dinitrotoluene | 4.11           |   | 0.080 | 0.250 |
| 35572-78-2 | 2-Amino-4,6-dinitrotoluene |                |   |       |       |
| 606-20-2   | 2,6-Dinitrotoluene         | 4.18           |   | 0.080 | 0.250 |
| 606-20-2   | 2,6-Dinitrotoluene         |                |   |       |       |
| 121-14-2   | 2,4-Dinitrotoluene         | 4.21           |   | 0.080 | 0.250 |
| 121-14-2   | 2,4-Dinitrotoluene         |                |   |       |       |
| 99-08-1    | m-Nitrotoluene             | 4.25           |   | 0.080 | 0.250 |
| 99-08-1    | m-Nitrotoluene             |                |   |       |       |
| 2691-41-0  | HMX                        | 4.26           |   | 0.080 | 0.250 |
| 2691-41-0  | HMX                        |                |   |       |       |
| 19406-51-0 | 4-Amino-2,6-dinitrotoluene | 4.27           |   | 0.080 | 0.250 |
| 19406-51-0 | 4-Amino-2,6-dinitrotoluene |                |   |       |       |
| 6629-29-4  | 2,4-Diamino-6-nitrotoluene | 4.27           |   | 0.500 | 2.50  |
| 6629-29-4  | 2,4-Diamino-6-nitrotoluene |                |   |       |       |
| 99-35-4    | 1,3,5-Trinitrobenzene      | 4.29           |   | 0.080 | 0.250 |
| 99-35-4    | 1,3,5-Trinitrobenzene      |                |   |       |       |
| 479-45-8   | Tetryl                     | 4.36           |   | 0.080 | 0.500 |
| 479-45-8   | Tetryl                     |                |   |       |       |



1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1700504

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Matrix: WATER

GEL Sample ID: 1203874661

Sample Amount 1000 mL

Date Received: 13-SEP-17

Moisture: .

Extraction Batch ID: 1700504

Extraction Type Sol Exchange

Date Extracted: 14-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

| Cas No.           | Compound                          | Concentration* | Q | MDL   | PQL   |
|-------------------|-----------------------------------|----------------|---|-------|-------|
| 118-96-7          | 2,4,6-Trinitrotoluene             | 4.38           |   | 0.080 | 0.250 |
| <i>118-96-7</i>   | <i>2,4,6-Trinitrotoluene</i>      |                |   |       |       |
| 618-87-1          | 3,5-Dinitroaniline                | 4.41           |   | 0.300 | 1.00  |
| <i>618-87-1</i>   | <i>3,5-Dinitroaniline</i>         |                |   |       |       |
| 78-11-5           | PETN                              | 4.42           |   | 0.100 | 0.500 |
| <i>78-11-5</i>    | <i>PETN</i>                       |                |   |       |       |
| 99-65-0           | m-Dinitrobenzene                  | 4.43           |   | 0.080 | 0.250 |
| <i>99-65-0</i>    | <i>m-Dinitrobenzene</i>           |                |   |       |       |
| 59229-75-3        | 2,6-Diamino-4-nitrotoluene        | 4.51           |   | 0.500 | 2.50  |
| <i>59229-75-3</i> | <i>2,6-Diamino-4-nitrotoluene</i> |                |   |       |       |
| 99-99-0           | p-Nitrotoluene                    | 4.53           |   | 0.150 | 0.500 |
| <i>99-99-0</i>    | <i>p-Nitrotoluene</i>             |                |   |       |       |
| 121-82-4          | RDX                               | 4.62           |   | 0.080 | 0.250 |
| <i>121-82-4</i>   | <i>RDX</i>                        |                |   |       |       |

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142901(432587002MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Matrix: WATER

GEL Sample ID: 1203874662

Sample Amount 940 mL

Date Received: 13-SEP-17

Moisture: .

Extraction Batch ID: 1700504

Extraction Type Sol Exchange

Date Extracted: 14-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913047.wiff

Date Analyzed: 14-SEP-17 20:57

Dilution Factor: 2

Concentration Units: ug/L

| Cas No.           | Compound                          | Concentration* | Q | MDL    | PQL   |
|-------------------|-----------------------------------|----------------|---|--------|-------|
| 3058-38-6         | TATB                              | 2.37           |   | 0.319  | 1.06  |
| <i>3058-38-6</i>  | <i>TATB</i>                       |                |   |        |       |
| 78-30-8           | tris(o-cresyl) phosphate          | 2.8            |   | 0.319  | 1.06  |
| <i>78-30-8</i>    | <i>tris(o-cresyl) phosphate</i>   |                |   |        |       |
| 98-95-3           | Nitrobenzene                      | 3.76           |   | 0.0851 | 0.266 |
| <i>98-95-3</i>    | <i>Nitrobenzene</i>               |                |   |        |       |
| 88-72-2           | o-Nitrotoluene                    | 4.51           |   | 0.0872 | 0.266 |
| <i>88-72-2</i>    | <i>o-Nitrotoluene</i>             |                |   |        |       |
| 118-96-7          | 2,4,6-Trinitrotoluene             | 4.58           |   | 0.0851 | 0.266 |
| <i>118-96-7</i>   | <i>2,4,6-Trinitrotoluene</i>      |                |   |        |       |
| 6629-29-4         | 2,4-Diamino-6-nitrotoluene        | 4.6            |   | 0.532  | 2.66  |
| <i>6629-29-4</i>  | <i>2,4-Diamino-6-nitrotoluene</i> |                |   |        |       |
| 99-08-1           | m-Nitrotoluene                    | 4.62           |   | 0.0851 | 0.266 |
| <i>99-08-1</i>    | <i>m-Nitrotoluene</i>             |                |   |        |       |
| 99-99-0           | p-Nitrotoluene                    | 4.63           |   | 0.160  | 0.532 |
| <i>99-99-0</i>    | <i>p-Nitrotoluene</i>             |                |   |        |       |
| 59229-75-3        | 2,6-Diamino-4-nitrotoluene        | 4.71           |   | 0.532  | 2.66  |
| <i>59229-75-3</i> | <i>2,6-Diamino-4-nitrotoluene</i> |                |   |        |       |
| 606-20-2          | 2,6-Dinitrotoluene                | 4.73           |   | 0.0851 | 0.266 |
| <i>606-20-2</i>   | <i>2,6-Dinitrotoluene</i>         |                |   |        |       |
| 618-87-1          | 3,5-Dinitroaniline                | 4.75           |   | 0.319  | 1.06  |
| <i>618-87-1</i>   | <i>3,5-Dinitroaniline</i>         |                |   |        |       |
| 121-14-2          | 2,4-Dinitrotoluene                | 4.78           |   | 0.0851 | 0.266 |
| <i>121-14-2</i>   | <i>2,4-Dinitrotoluene</i>         |                |   |        |       |
| 35572-78-2        | 2-Amino-4,6-dinitrotoluene        | 4.78           |   | 0.0851 | 0.266 |
| <i>35572-78-2</i> | <i>2-Amino-4,6-dinitrotoluene</i> |                |   |        |       |

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142901(432587002MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Matrix: WATER

GEL Sample ID: 1203874662

Sample Amount 940 mL

Date Received: 13-SEP-17

Moisture: .

Extraction Batch ID: 1700504

Extraction Type Sol Exchange

Date Extracted: 14-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

| Cas No.           | Compound                          | Concentration* | Q | MDL    | PQL   |
|-------------------|-----------------------------------|----------------|---|--------|-------|
| 479-45-8          | Tetryl                            | 4.78           |   | 0.0851 | 0.532 |
| <i>479-45-8</i>   | <i>Tetryl</i>                     |                |   |        |       |
| 19406-51-0        | 4-Amino-2,6-dinitrotoluene        | 4.81           |   | 0.0851 | 0.266 |
| <i>19406-51-0</i> | <i>4-Amino-2,6-dinitrotoluene</i> |                |   |        |       |
| 2691-41-0         | HMX                               | 4.85           |   | 0.0851 | 0.266 |
| <i>2691-41-0</i>  | <i>HMX</i>                        |                |   |        |       |
| 78-11-5           | PETN                              | 5.05           |   | 0.106  | 0.532 |
| <i>78-11-5</i>    | <i>PETN</i>                       |                |   |        |       |
| 121-82-4          | RDX                               | 5.15           |   | 0.0851 | 0.266 |
| <i>121-82-4</i>   | <i>RDX</i>                        |                |   |        |       |
| 99-35-4           | 1,3,5-Trinitrobenzene             | 5.17           |   | 0.0851 | 0.266 |
| <i>99-35-4</i>    | <i>1,3,5-Trinitrobenzene</i>      |                |   |        |       |
| 99-65-0           | m-Dinitrobenzene                  | 5.22           |   | 0.0851 | 0.266 |
| <i>99-65-0</i>    | <i>m-Dinitrobenzene</i>           |                |   |        |       |

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142901(432587002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Matrix: WATER

GEL Sample ID: 1203874663

Sample Amount 920 mL

Date Received: 13-SEP-17

Moisture: .

Extraction Batch ID: 1700504

Extraction Type Sol Exchange

Date Extracted: 14-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913048.wiff

Date Analyzed: 14-SEP-17 21:32

Dilution Factor: 2

Concentration Units: ug/L

| Cas No.           | Compound                          | Concentration* | Q | MDL   | PQL   |
|-------------------|-----------------------------------|----------------|---|-------|-------|
| 3058-38-6         | TATB                              | 2.23           |   | 0.326 | 1.09  |
| <i>3058-38-6</i>  | <i>TATB</i>                       |                |   |       |       |
| 78-30-8           | tris(o-cresyl) phosphate          | 3.12           |   | 0.326 | 1.09  |
| <i>78-30-8</i>    | <i>tris(o-cresyl) phosphate</i>   |                |   |       |       |
| 99-08-1           | m-Nitrotoluene                    | 4.21           |   | 0.087 | 0.272 |
| <i>99-08-1</i>    | <i>m-Nitrotoluene</i>             |                |   |       |       |
| 6629-29-4         | 2,4-Diamino-6-nitrotoluene        | 4.3            |   | 0.543 | 2.72  |
| <i>6629-29-4</i>  | <i>2,4-Diamino-6-nitrotoluene</i> |                |   |       |       |
| 479-45-8          | Tetryl                            | 4.47           |   | 0.087 | 0.543 |
| <i>479-45-8</i>   | <i>Tetryl</i>                     |                |   |       |       |
| 98-95-3           | Nitrobenzene                      | 4.48           |   | 0.087 | 0.272 |
| <i>98-95-3</i>    | <i>Nitrobenzene</i>               |                |   |       |       |
| 59229-75-3        | 2,6-Diamino-4-nitrotoluene        | 4.49           |   | 0.543 | 2.72  |
| <i>59229-75-3</i> | <i>2,6-Diamino-4-nitrotoluene</i> |                |   |       |       |
| 121-14-2          | 2,4-Dinitrotoluene                | 4.77           |   | 0.087 | 0.272 |
| <i>121-14-2</i>   | <i>2,4-Dinitrotoluene</i>         |                |   |       |       |
| 99-35-4           | 1,3,5-Trinitrobenzene             | 4.82           |   | 0.087 | 0.272 |
| <i>99-35-4</i>    | <i>1,3,5-Trinitrobenzene</i>      |                |   |       |       |
| 118-96-7          | 2,4,6-Trinitrotoluene             | 4.85           |   | 0.087 | 0.272 |
| <i>118-96-7</i>   | <i>2,4,6-Trinitrotoluene</i>      |                |   |       |       |
| 78-11-5           | PETN                              | 4.87           |   | 0.109 | 0.543 |
| <i>78-11-5</i>    | <i>PETN</i>                       |                |   |       |       |
| 99-99-0           | p-Nitrotoluene                    | 4.88           |   | 0.163 | 0.543 |
| <i>99-99-0</i>    | <i>p-Nitrotoluene</i>             |                |   |       |       |
| 19406-51-0        | 4-Amino-2,6-dinitrotoluene        | 4.89           |   | 0.087 | 0.272 |
| <i>19406-51-0</i> | <i>4-Amino-2,6-dinitrotoluene</i> |                |   |       |       |

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142901(432587002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-2729

Matrix: WATER

GEL Sample ID: 1203874663

Sample Amount 920 mL

Date Received: 13-SEP-17

Moisture: .

Extraction Batch ID: 1700504

Extraction Type Sol Exchange

Date Extracted: 14-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

| Cas No.    | Compound                   | Concentration* | Q | MDL    | PQL   |
|------------|----------------------------|----------------|---|--------|-------|
| 606-20-2   | 2,6-Dinitrotoluene         | 4.9            |   | 0.087  | 0.272 |
| 606-20-2   | 2,6-Dinitrotoluene         |                |   |        |       |
| 99-65-0    | m-Dinitrobenzene           | 4.98           |   | 0.087  | 0.272 |
| 99-65-0    | m-Dinitrobenzene           |                |   |        |       |
| 618-87-1   | 3,5-Dinitroaniline         | 4.99           |   | 0.326  | 1.09  |
| 618-87-1   | 3,5-Dinitroaniline         |                |   |        |       |
| 2691-41-0  | HMX                        | 5              |   | 0.087  | 0.272 |
| 2691-41-0  | HMX                        |                |   |        |       |
| 35572-78-2 | 2-Amino-4,6-dinitrotoluene | 5.02           |   | 0.087  | 0.272 |
| 35572-78-2 | 2-Amino-4,6-dinitrotoluene |                |   |        |       |
| 88-72-2    | o-Nitrotoluene             | 5.03           |   | 0.0891 | 0.272 |
| 88-72-2    | o-Nitrotoluene             |                |   |        |       |
| 121-82-4   | RDX                        | 5.43           |   | 0.087  | 0.272 |
| 121-82-4   | RDX                        |                |   |        |       |

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-2729Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 13-SEP-17 11:08GEL Data File: EXP0913001.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-2729Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 13-SEP-17 11:44GEL Data File: EXP0913002.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 13-SEP-17 16:27

GEL Data File: EXP0913010.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |



4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 13-SEP-17 18:49

GEL Data File: EXP0913014.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 14-SEP-17 00:44

GEL Data File: EXP0913024.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 14-SEP-17 01:55

GEL Data File: EXP0913026.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 14-SEP-17 09:43

GEL Data File: EXP0913028.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 14-SEP-17 10:18

GEL Data File: EXP0913029.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 14-SEP-17 11:29

GEL Data File: EXP0913031.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 14-SEP-17 13:16

GEL Data File: EXP0913034.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK10

Analysis Date: 14-SEP-17 16:13

GEL Data File: EXP0913039.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |



4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK11

Analysis Date: 14-SEP-17 17:24

GEL Data File: EXP0913041.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK12

Analysis Date: 14-SEP-17 23:19

GEL Data File: EXP0913051.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MXN                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2729

Lab Code: GEL

Lab Sample ID: XIBLK13

Analysis Date: 15-SEP-17 00:30

GEL Data File: EXP0913053.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

| Compound                   | True | Found (ug/L) |
|----------------------------|------|--------------|
| 3,4-Dinitrotoluene         | 0    | 0            |
| tris(o-cresyl) phosphate   | 0    | 0            |
| TATB                       | 0    | 0            |
| 3,5-Dinitroaniline         | 0    | 0            |
| 2,4-Diamino-6-nitrotoluene | 0    | 0            |
| 2,6-Diamino-4-nitrotoluene | 0    | 0            |
| DNX                        | 0    | 0            |
| MNX                        | 0    | 0            |
| TNX                        | 0    | 0            |
| 1,3,5-Trinitrobenzene      | 0    | 0            |
| 2,4,6-Trinitrotoluene      | 0    | 0            |
| 2,4-Dinitrotoluene         | 0    | 0            |
| 2,6-Dinitrotoluene         | 0    | 0            |
| 2-Amino-4,6-dinitrotoluene | 0    | 0            |
| 4-Amino-2,6-dinitrotoluene | 0    | 0            |
| HMX                        | 0    | 0            |
| Nitrobenzene               | 0    | 0            |
| PETN                       | 0    | 0            |
| RDX                        | 0    | 0            |
| Tetryl                     | 0    | 0            |
| m-Dinitrobenzene           | 0    | 0            |
| m-Nitrotoluene             | 0    | 0            |
| o-Nitrotoluene             | 0    | 0            |
| p-Nitrotoluene             | 0    | 0            |

# Metals Analysis

# Case Narrative

**Metals**  
**Technical Case Narrative**  
**ARS International, LLC (ARSL)**  
**SDG #: 2017-2729**  
**Work Order #: 432570**

| <b>Sample ID</b> | <b>Client ID</b>                                  |
|------------------|---|
| 432570001        | CAWA-17-142856                                    |
| 432570002        | CAWA-17-142891                                    |
| 1203873771       | Method Blank (MB) <b>ICP</b>                      |
| 1203873772       | Laboratory Control Sample (LCS)                   |
| 1203873775       | 432570001(CAWA-17-142856L) Serial Dilution (SD)   |
| 1203873773       | 432570001(CAWA-17-142856D) Sample Duplicate (DUP) |
| 1203873774       | 432570001(CAWA-17-142856S) Matrix Spike (MS)      |
| 1203873788       | Method Blank (MB) <b>ICP-MS</b>                   |
| 1203873789       | Laboratory Control Sample (LCS)                   |
| 1203873792       | 432570001(CAWA-17-142856L) Serial Dilution (SD)   |
| 1203873790       | 432570001(CAWA-17-142856D) Sample Duplicate (DUP) |
| 1203873791       | 432570001(CAWA-17-142856S) Matrix Spike (MS)      |
| 1203878928       | Method Blank (MB) <b>CVAA</b>                     |
| 1203878929       | Laboratory Control Sample (LCS)                   |
| 1203878932       | 432507001(NonSDGL) Serial Dilution (SD)           |
| 1203878930       | 432507001(NonSDGD) Sample Duplicate (DUP)         |
| 1203878931       | 432507001(NonSDGS) Matrix Spike (MS)              |

**Sample Analysis**

Samples 432570001 and 002 in this SDG were analyzed for metals and mercury on an "as received" basis.

**Method/Analysis Information**

|                                       |  |
|---------------------------------------|--|
| <b>Analytical Batch:</b>              | 1700104, 1700115, 1702200 and 1705736  |
| <b>Prep Batch :</b>                   | 1700103, 1700114 and 1702198   |
| <b>Standard Operating Procedures:</b> | GL-MA-E-013 REV# 29, GL-MA-E-006 REV# 13, GL-MA-E-014 REV# 31, GL-MA-E-010 REV# 35 and GL-GC-E-107 REV# 10 |
| <b>Analytical Method:</b>             | SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.2 1974 and SM:A2340B   |
| <b>Prep Method :</b>                  | SW846 3005A and EPA 245.1/245.2 Prep   |

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**System Configuration**

The Hardness as CaCO<sub>3</sub> is calculated from Calcium and Magnesium results.

The Metals analysis-ICP was performed on a PE 7300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

The Metals analysis-Mercury was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-100) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 253.7 nm.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 300X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 350X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

### **Calibration Information**

#### **Instrument Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

#### **CRDL/PQL Requirements**

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium and sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 432570001 (CAWA-17-142856) and 432570002 (CAWA-17-142891)-ICP.

#### **ICSA/ICSAB Statement**

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria. For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

#### **Continuing Calibration Blanks (CCB) Requirements**

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

#### **Continuing Calibration Verification (CCV) Requirements**

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

### **Quality Control (QC) Information**

#### **Method Blank (MB) Statement**

The MBs analyzed with this SDG met the acceptance criteria.

#### **Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

#### **Quality Control (QC) Sample Statement**

The following samples were selected as the quality control (QC) samples for this SDG: 432570001 (CAWA-17-142856)-ICP and ICP-MS and 432507001 (NonSDG)-CVAA.

**Matrix Spike (MS/MSD) Recovery Statement**

The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. The relative percent differences (RPD) between the sample and its duplicate (DUP) were within acceptable limits for all applicable analytes.

**Serial Dilution % Difference Statement**

All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

**Technical Information****Holding Time Specifications**

GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Preparation Information**

The samples in this SDG were not diluted and were prepared according to the cited SOP.

**Miscellaneous Information****Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Additional Comments**

Total Hardness by Calculation is determined using the results of Total Calcium (Ca) and Total Magnesium (Mg) determined by ICP or ICP-MS.

$$\text{Hardness} = 2.497 (\text{Ca}) + 4.118 (\text{Mg})$$

Please refer to the Total Ca and Total Mg data to validate results appearing on the Hardness Summary sheet. Both results are in the Inorganic/metals section of the package. There is no Batch QC for calculated results, and thus no QC Summary for the Hardness by Calculation Batch. The MDLs and PQLs are calculated using the higher of the two calculated values of Ca or Mg.



**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

## **GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### **Qualifier Definition Report for**

ARSL004 ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)

Client SDG: 2017-2729 GEL Work Order: 432570

#### **The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

#### **Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

**Signature:**



**Name: Nik-Cole Elmore**

**Date: 09 OCT 2017**

**Title: Data Validator**

# **Sample Data Summary**

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-2729**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432570001**BASIS:** As Received**DATE COLLECTED** 07-SEP-17**CLIENT ID:** CAWA-17-142856**LEVEL:** Low**DATE RECEIVED** 13-SEP-17**MATRIX:** W**%SOLIDS:** 0

| CAS       | Analyte | Result | Units | Qual | MDL   | PQL | CRDL | DF | M* | Analyst | Run Date       | Analytical Run | Analytical Batch |
|-----------|---------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7439-97-6 | Mercury | 0.067  | ug/L  | U    | 0.067 | 0.2 | 0.2  | 1  | AV | MTM1    | 09/21/17 10:41 | 092117W1-11    | 1702200          |

**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

SDG No: 2017-2729

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 432570001

BASIS: As Received

DATE COLLECTED 07-SEP-17

CLIENT ID: CAWA-17-142856

LEVEL: Low

DATE RECEIVED 13-SEP-17

MATRIX: W

%SOLIDS: 0

| CAS       | Analyte    | Result | Units | Qual | MDL   | PQL | CRDL | DF | M* | Analyst | Run Date       | Analytical Run | Analytical Batch |
|-----------|------------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum   | 68     | ug/L  | U    | 68    | 200 | 200  | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-36-0 | Antimony   | 1      | ug/L  | U    | 1     | 3   | 3    | 1  | MS | PRB     | 10/05/17 15:44 | 171005-10      | 1700115          |
| 7440-38-2 | Arsenic    | 2      | ug/L  | U    | 2     | 5   | 5    | 1  | MS | BAJ     | 10/05/17 12:53 | 171005-2       | 1700115          |
| 7440-39-3 | Barium     | 78.3   | ug/L  |      | 1     | 5   | 5    | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-41-7 | Beryllium  | 1      | ug/L  | U    | 1     | 5   | 5    | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-42-8 | Boron      | 15     | ug/L  | U    | 15    | 50  | 50   | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-43-9 | Cadmium    | 0.30   | ug/L  | U    | 0.3   | 1   | 1    | 1  | MS | BAJ     | 10/05/17 12:53 | 171005-2       | 1700115          |
| 7440-70-2 | Calcium    | 17800  | ug/L  |      | 50    | 200 | 200  | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-47-3 | Chromium   | 3      | ug/L  | U    | 3     | 10  | 10   | 1  | MS | BAJ     | 10/05/17 12:53 | 171005-2       | 1700115          |
| 7440-48-4 | Cobalt     | 1      | ug/L  | U    | 1     | 5   | 5    | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-50-8 | Copper     | 3      | ug/L  | U    | 3     | 10  | 10   | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7439-89-6 | Iron       | 37.9   | ug/L  | J    | 30    | 100 | 100  | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7439-92-1 | Lead       | 0.50   | ug/L  | U    | 0.5   | 2   | 2    | 1  | MS | BAJ     | 10/05/17 12:53 | 171005-2       | 1700115          |
| 7439-95-4 | Magnesium  | 4960   | ug/L  |      | 110   | 300 | 300  | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7439-96-5 | Manganese  | 11     | ug/L  |      | 2     | 10  | 10   | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7439-98-7 | Molybdenum | 0.852  | ug/L  |      | 0.2   | 0.5 | 0.5  | 1  | MS | BAJ     | 10/06/17 08:40 | 171005-9       | 1700115          |
| 7440-02-0 | Nickel     | 0.60   | ug/L  | U    | 0.6   | 2   | 2    | 1  | MS | BAJ     | 10/05/17 12:53 | 171005-2       | 1700115          |
| 7440-09-7 | Potassium  | 4410   | ug/L  |      | 50    | 150 | 150  | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7782-49-2 | Selenium   | 2      | ug/L  | U    | 2     | 5   | 5    | 1  | MS | BAJ     | 10/05/17 12:53 | 171005-2       | 1700115          |
| 7631-86-9 | Silica     | 44700  | ug/L  |      | 53    | 213 | 213  | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-22-4 | Silver     | 0.30   | ug/L  | U    | 0.3   | 1   | 1    | 1  | MS | BAJ     | 10/05/17 12:53 | 171005-2       | 1700115          |
| 7440-23-5 | Sodium     | 13700  | ug/L  |      | 100   | 300 | 300  | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-24-6 | Strontium  | 116    | ug/L  |      | 1     | 5   | 5    | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-28-0 | Thallium   | 0.60   | ug/L  | U    | 0.6   | 2   | 2    | 1  | MS | BAJ     | 10/05/17 12:53 | 171005-2       | 1700115          |
| 7440-31-5 | Tin        | 2.5    | ug/L  | U    | 2.5   | 10  | 10   | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-61-1 | Uranium    | 0.067  | ug/L  | U    | 0.067 | 0.2 | 0.2  | 1  | MS | BAJ     | 10/06/17 08:40 | 171005-9       | 1700115          |
| 7440-62-2 | Vanadium   | 2.69   | ug/L  | J    | 1     | 5   | 5    | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |
| 7440-66-6 | Zinc       | 3.3    | ug/L  | U    | 3.3   | 10  | 10   | 1  | P  | JWJ     | 09/21/17 17:04 | 092117-1       | 1700104          |

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-2729**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 432570001**BASIS:** As Received**DATE COLLECTED** 07-SEP-17**CLIENT ID:** CAWA-17-142856**LEVEL:** Low**DATE RECEIVED** 13-SEP-17**MATRIX:** W**%SOLIDS:** 0

| CAS | Analyte           | Result | Units | Qual | MDL   | PQL  | CRDL | DF | M* | Analyst | Run Date       | Analytical Run | Analytical Batch |
|-----|-------------------|--------|-------|------|-------|------|------|----|----|---------|----------------|----------------|------------------|
|     | Hardness as CaCO3 | 64.8   | mg/L  |      | 0.453 | 1.24 | 1.24 | 1  |    | TXT1    | 10/02/17 14:46 |                | 1705736          |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method          | Initial wt./vol. | Units | Final wt./vol. | Units | Date     | Analyst |
|------------------|------------|----------------------|------------------|-------|----------------|-------|----------|---------|
| 1700104          | 1700103    | SW846 3005A          | 50               | mL    | 50             | mL    | 09/13/17 | JXM8    |
| 1700115          | 1700114    | SW846 3005A          | 50               | mL    | 50             | mL    | 09/13/17 | JXM8    |
| 1702200          | 1702198    | EPA 245.1/245.2 Prep | 20               | mL    | 20             | mL    | 09/20/17 | AXS5    |

**\*Analytical Methods:**

**P** SW846 3005A/6010C  
**MS** SW846 3005A/6020A  
**AV** EPA 245.2 1974

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-2729**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432570002**BASIS:** As Received**DATE COLLECTED** 07-SEP-17**CLIENT ID:** CAWA-17-142891**LEVEL:** Low**DATE RECEIVED** 13-SEP-17**MATRIX:** W**%SOLIDS:** 0

| CAS       | Analyte | Result | Units | Qual | MDL   | PQL | CRDL | DF | M* | Analyst | Run Date       | Analytical Run | Analytical Batch |
|-----------|---------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7439-97-6 | Mercury | 0.067  | ug/L  | U    | 0.067 | 0.2 | 0.2  | 1  | AV | MTM1    | 09/21/17 10:43 | 092117W1-11    | 1702200          |

**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

SDG No: 2017-2729

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 432570002

BASIS: As Received

DATE COLLECTED 07-SEP-17

CLIENT ID: CAWA-17-142891

LEVEL: Low

DATE RECEIVED 13-SEP-17

MATRIX: W

%SOLIDS: 0

| CAS       | Analyte    | Result | Units | Qual | MDL   | PQL | CRDL | DF | M* | Analyst | Run Date       | Analytical Run | Analytical Batch |
|-----------|------------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum   | 68     | ug/L  | U    | 68    | 200 | 200  | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7440-36-0 | Antimony   | 1      | ug/L  | U    | 1     | 3   | 3    | 1  | MS | PRB     | 10/05/17 15:54 | 171005-10      | 1700115          |
| 7440-38-2 | Arsenic    | 2      | ug/L  | U    | 2     | 5   | 5    | 1  | MS | BAJ     | 10/05/17 13:06 | 171005-2       | 1700115          |
| 7440-39-3 | Barium     | 76.3   | ug/L  |      | 1     | 5   | 5    | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7440-41-7 | Beryllium  | 1      | ug/L  | U    | 1     | 5   | 5    | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7440-42-8 | Boron      | 15     | ug/L  | U    | 15    | 50  | 50   | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7440-43-9 | Cadmium    | 0.30   | ug/L  | U    | 0.3   | 1   | 1    | 1  | MS | BAJ     | 10/05/17 13:06 | 171005-2       | 1700115          |
| 7440-70-2 | Calcium    | 17500  | ug/L  |      | 50    | 200 | 200  | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7440-47-3 | Chromium   | 3      | ug/L  | U    | 3     | 10  | 10   | 1  | MS | BAJ     | 10/05/17 13:06 | 171005-2       | 1700115          |
| 7440-48-4 | Cobalt     | 1      | ug/L  | U    | 1     | 5   | 5    | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7440-50-8 | Copper     | 3      | ug/L  | U    | 3     | 10  | 10   | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7439-89-6 | Iron       | 71.5   | ug/L  | J    | 30    | 100 | 100  | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7439-92-1 | Lead       | 0.50   | ug/L  | U    | 0.5   | 2   | 2    | 1  | MS | BAJ     | 10/05/17 13:06 | 171005-2       | 1700115          |
| 7439-95-4 | Magnesium  | 4840   | ug/L  |      | 110   | 300 | 300  | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7439-96-5 | Manganese  | 13.5   | ug/L  |      | 2     | 10  | 10   | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7439-98-7 | Molybdenum | 0.886  | ug/L  |      | 0.2   | 0.5 | 0.5  | 1  | MS | BAJ     | 10/06/17 08:46 | 171005-9       | 1700115          |
| 7440-02-0 | Nickel     | 0.60   | ug/L  | U    | 0.6   | 2   | 2    | 1  | MS | BAJ     | 10/05/17 13:06 | 171005-2       | 1700115          |
| 7440-09-7 | Potassium  | 4270   | ug/L  |      | 50    | 150 | 150  | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7782-49-2 | Selenium   | 2      | ug/L  | U    | 2     | 5   | 5    | 1  | MS | BAJ     | 10/05/17 13:06 | 171005-2       | 1700115          |
| 7440-22-4 | Silver     | 0.30   | ug/L  | U    | 0.3   | 1   | 1    | 1  | MS | BAJ     | 10/05/17 13:06 | 171005-2       | 1700115          |
| 7440-23-5 | Sodium     | 13300  | ug/L  |      | 100   | 300 | 300  | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7440-24-6 | Strontium  | 114    | ug/L  |      | 1     | 5   | 5    | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7440-28-0 | Thallium   | 0.60   | ug/L  | U    | 0.6   | 2   | 2    | 1  | MS | BAJ     | 10/05/17 13:06 | 171005-2       | 1700115          |
| 7440-31-5 | Tin        | 2.5    | ug/L  | U    | 2.5   | 10  | 10   | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7440-61-1 | Uranium    | 0.067  | ug/L  | U    | 0.067 | 0.2 | 0.2  | 1  | MS | BAJ     | 10/06/17 08:46 | 171005-9       | 1700115          |
| 7440-62-2 | Vanadium   | 2.56   | ug/L  | J    | 1     | 5   | 5    | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |
| 7440-66-6 | Zinc       | 3.3    | ug/L  | U    | 3.3   | 10  | 10   | 1  | P  | JWJ     | 09/21/17 17:16 | 092117-1       | 1700104          |



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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-2729**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 432570002**BASIS:** As Received**DATE COLLECTED** 07-SEP-17**CLIENT ID:** CAWA-17-142891**LEVEL:** Low**DATE RECEIVED** 13-SEP-17**MATRIX:** W**%SOLIDS:** 0

| CAS | Analyte           | Result | Units | Qual | MDL   | PQL  | CRDL | DF | M* | Analyst | Run Date       | Analytical Run | Analytical Batch |
|-----|-------------------|--------|-------|------|-------|------|------|----|----|---------|----------------|----------------|------------------|
|     | Hardness as CaCO3 | 63.6   | mg/L  |      | 0.453 | 1.24 | 1.24 | 1  |    | TXT1    | 10/02/17 14:46 |                | 1705736          |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method          | Initial wt./vol. | Units | Final wt./vol. | Units | Date     | Analyst |
|------------------|------------|----------------------|------------------|-------|----------------|-------|----------|---------|
| 1700104          | 1700103    | SW846 3005A          | 50               | mL    | 50             | mL    | 09/13/17 | JXM8    |
| 1700115          | 1700114    | SW846 3005A          | 50               | mL    | 50             | mL    | 09/13/17 | JXM8    |
| 1702200          | 1702198    | EPA 245.1/245.2 Prep | 20               | mL    | 20             | mL    | 09/20/17 | AXS5    |

**\*Analytical Methods:**

**P** SW846 3005A/6010C  
**MS** SW846 3005A/6020A  
**AV** EPA 245.2 1974

# **Quality Control Summary**

**METALS**  
**-3b-**  
**PREPARATION BLANK SUMMARY**

SDG NO. 2017-2729

Contract: ESHL00114

Matrix: W

| <u>Sample ID</u> | <u>Analyte</u> | <u>Result</u> | <u>Units</u> | <u>Acceptance Window</u> | <u>Conc Qual</u> | <u>M*</u> | <u>MDL</u> | <u>RDL</u> |
|------------------|----------------|---------------|--------------|--------------------------|------------------|-----------|------------|------------|
| 1203873771       | Aluminum       | 68            | ug/L         | +/-200                   | U                | P         | 68         | 200        |
|                  | Barium         | 1             | ug/L         | +/-5                     | U                | P         | 1          | 5          |
|                  | Beryllium      | 1             | ug/L         | +/-5                     | U                | P         | 1          | 5          |
|                  | Boron          | 15            | ug/L         | +/-50                    | U                | P         | 15         | 50         |
|                  | Calcium        | 50            | ug/L         | +/-200                   | U                | P         | 50         | 200        |
|                  | Cobalt         | 1             | ug/L         | +/-5                     | U                | P         | 1          | 5          |
|                  | Copper         | 3             | ug/L         | +/-10                    | U                | P         | 3          | 10         |
|                  | Iron           | 30            | ug/L         | +/-100                   | U                | P         | 30         | 100        |
|                  | Magnesium      | 110           | ug/L         | +/-300                   | U                | P         | 110        | 300        |
|                  | Manganese      | 2             | ug/L         | +/-10                    | U                | P         | 2          | 10         |
|                  | Potassium      | 91.5          | ug/L         | +/-150                   | J                | P         | 50         | 150        |
|                  | Silica         | 53            | ug/L         | +/-213                   | U                | P         | 53         | 213        |
|                  | Sodium         | 143           | ug/L         | +/-300                   | J                | P         | 100        | 300        |
|                  | Strontium      | 1             | ug/L         | +/-5                     | U                | P         | 1          | 5          |
|                  | Tin            | 2.5           | ug/L         | +/-10                    | U                | P         | 2.5        | 10         |
|                  | Vanadium       | 1             | ug/L         | +/-5                     | U                | P         | 1          | 5          |
|                  | Zinc           | 3.3           | ug/L         | +/-10                    | U                | P         | 3.3        | 10         |
| 1203873788       | Antimony       | 1             | ug/L         | +/-3                     | U                | MS        | 1          | 3          |
|                  | Arsenic        | 2             | ug/L         | +/-5                     | U                | MS        | 2          | 5          |
|                  | Cadmium        | 0.3           | ug/L         | +/-1                     | U                | MS        | 0.3        | 1          |
|                  | Chromium       | 3             | ug/L         | +/-10                    | U                | MS        | 3          | 10         |
|                  | Lead           | 0.5           | ug/L         | +/-2                     | U                | MS        | 0.5        | 2          |
|                  | Molybdenum     | 0.2           | ug/L         | +/-0.5                   | U                | MS        | 0.2        | 0.5        |
|                  | Uranium        | 0.067         | ug/L         | +/-0.2                   | U                | MS        | 0.067      | 0.2        |
|                  | Nickel         | 0.6           | ug/L         | +/-2                     | U                | MS        | 0.6        | 2          |
|                  | Selenium       | 2             | ug/L         | +/-5                     | U                | MS        | 2          | 5          |
|                  | Silver         | 0.3           | ug/L         | +/-1                     | U                | MS        | 0.3        | 1          |
|                  | Thallium       | 0.6           | ug/L         | +/-2                     | U                | MS        | 0.6        | 2          |
| 1203878928       | Mercury        | 0.067         | ug/L         | +/-0.2                   | U                | AV        | 0.067      | 0.2        |

## \*Analytical Methods:

P SW846 3005A/6010C  
MS SW846 3005A/6020A  
AV EPA 245.1/245.2

## METALS

-5a-

## Matrix Spike Summary

SDG NO. 2017-2729 Client ID: CAWA-17-142856S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 432570001 Spike ID: 1203873774

| <u>Analyte</u> | <u>Units</u> | <u>Acceptance<br/>Limit</u> | <u>Spiked<br/>Result</u> | <u>C</u> | <u>Sample<br/>Result</u> | <u>C</u> | <u>Spike<br/>Added</u> | <u>%<br/>Recovery</u> | <u>Qual</u> | <u>M*</u> |
|----------------|--------------|-----------------------------|--------------------------|----------|--------------------------|----------|------------------------|-----------------------|-------------|-----------|
| Aluminum       | ug/L         | 75-125                      | 4990                     |          | 68                       | U        | 5000                   | 99.3                  |             | P         |
| Barium         | ug/L         | 75-125                      | 562                      |          | 78.3                     |          | 500                    | 96.8                  |             | P         |
| Beryllium      | ug/L         | 75-125                      | 486                      |          | 1                        | U        | 500                    | 97.1                  |             | P         |
| Boron          | ug/L         | 75-125                      | 493                      |          | 15                       | U        | 500                    | 96.2                  |             | P         |
| Calcium        | ug/L         | 75-125                      | 22200                    |          | 17800                    |          | 5000                   | 88.9                  |             | P         |
| Cobalt         | ug/L         | 75-125                      | 497                      |          | 1                        | U        | 500                    | 99.4                  |             | P         |
| Copper         | ug/L         | 75-125                      | 490                      |          | 3                        | U        | 500                    | 98.1                  |             | P         |
| Iron           | ug/L         | 75-125                      | 5030                     |          | 37.9                     | J        | 5000                   | 99.8                  |             | P         |
| Magnesium      | ug/L         | 75-125                      | 9950                     |          | 4960                     |          | 5000                   | 99.7                  |             | P         |
| Manganese      | ug/L         | 75-125                      | 491                      |          | 11                       |          | 500                    | 96                    |             | P         |
| Potassium      | ug/L         | 75-125                      | 9050                     |          | 4410                     |          | 5000                   | 92.9                  |             | P         |
| Silica         | ug/L         |                             | 54200                    |          | 44700                    |          | 10700                  | 89                    | N/A         | P         |
| Sodium         | ug/L         | 75-125                      | 18300                    |          | 13700                    |          | 5000                   | 91.9                  |             | P         |
| Strontium      | ug/L         | 75-125                      | 588                      |          | 116                      |          | 500                    | 94.3                  |             | P         |
| Tin            | ug/L         | 75-125                      | 481                      |          | 2.5                      | U        | 500                    | 95.9                  |             | P         |
| Vanadium       | ug/L         | 75-125                      | 487                      |          | 2.69                     | J        | 500                    | 96.8                  |             | P         |
| Zinc           | ug/L         | 75-125                      | 492                      |          | 3.3                      | U        | 500                    | 98.2                  |             | P         |

## \*Analytical Methods:

P SW846 3005A/6010C

## METALS

-5a-

## Matrix Spike Summary

SDG NO. 2017-2729 Client ID: CAWA-17-142856S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 432570001 Spike ID: 1203873791

| <u>Analyte</u> | <u>Units</u> | <u>Acceptance<br/>Limit</u> | <u>Spiked<br/>Result</u> | <u>C</u> | <u>Sample<br/>Result</u> | <u>C</u> | <u>Spike<br/>Added</u> | <u>%<br/>Recovery</u> | <u>Qual</u> | <u>M*</u> |
|----------------|--------------|-----------------------------|--------------------------|----------|--------------------------|----------|------------------------|-----------------------|-------------|-----------|
| Antimony       | ug/L         | 75-125                      | 54.4                     |          | 1                        | U        | 50                     | 108                   |             | MS        |
| Arsenic        | ug/L         | 75-125                      | 51.4                     |          | 2                        | U        | 50                     | 100                   |             | MS        |
| Cadmium        | ug/L         | 75-125                      | 52.6                     |          | 0.3                      | U        | 50                     | 105                   |             | MS        |
| Chromium       | ug/L         | 75-125                      | 52.8                     |          | 3                        | U        | 50                     | 105                   |             | MS        |
| Lead           | ug/L         | 75-125                      | 50.3                     |          | 0.5                      | U        | 50                     | 101                   |             | MS        |
| Molybdenum     | ug/L         | 75-125                      | 55.4                     |          | 0.852                    |          | 50                     | 109                   |             | MS        |
| Nickel         | ug/L         | 75-125                      | 50.4                     |          | 0.6                      | U        | 50                     | 100                   |             | MS        |
| Selenium       | ug/L         | 75-125                      | 50                       |          | 2                        | U        | 50                     | 99.6                  |             | MS        |
| Silver         | ug/L         | 75-125                      | 51.5                     |          | 0.3                      | U        | 50                     | 103                   |             | MS        |
| Thallium       | ug/L         | 75-125                      | 47.5                     |          | 0.6                      | U        | 50                     | 95                    |             | MS        |
| Uranium        | ug/L         | 75-125                      | 49.2                     |          | 0.067                    | U        | 50                     | 98.4                  |             | MS        |

## \*Analytical Methods:

MS SW846 3005A/6020A

## METALS

-5a-

## Matrix Spike Summary

SDG NO. 2017-2729

Client ID: WT\_SIP-17-135650S

Contract: ESHL00114

Level: Low

Matrix: WATER

% Solids:

Sample ID: 432507001

Spike ID: 1203878931

| <u>Analyte</u> | <u>Units</u> | <u>Acceptance<br/>Limit</u> | <u>Spiked<br/>Result</u> | <u>C</u> | <u>Sample<br/>Result</u> | <u>C</u> | <u>Spike<br/>Added</u> | <u>%<br/>Recovery</u> | <u>Qual</u> | <u>M*</u> |
|----------------|--------------|-----------------------------|--------------------------|----------|--------------------------|----------|------------------------|-----------------------|-------------|-----------|
| Mercury        | ug/L         | 75-125                      | 2.16                     |          | 0.067                    | U        | 2                      | 105                   |             | AV        |

## \*Analytical Methods:

AV EPA 245.1/245.2

**Metals**  
**-6-**  
**Duplicate Sample Summary**

SDG No.: 2017-2729

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-142856D

Matrix: WATER

Level: Low

Sample ID: 432570001

Duplicate ID: 1203873773

Percent Solids for Dup: N/A

| Analyte   | Units | Acceptance Limit | Sample Result | C | Duplicate Result | C | RPD  | Qual | M* |
|-----------|-------|------------------|---------------|---|------------------|---|------|------|----|
| Aluminum  | ug/L  |                  | 68 U          |   | 68 U             |   |      |      | P  |
| Barium    | ug/L  | +/-20%           | 78.3          |   | 77.5             |   | .95  |      | P  |
| Beryllium | ug/L  |                  | 1 U           |   | 1 U              |   |      |      | P  |
| Boron     | ug/L  |                  | 15 U          |   | 15 U             |   |      |      | P  |
| Calcium   | ug/L  | +/-20%           | 17800         |   | 18000            |   | 1.24 |      | P  |
| Cobalt    | ug/L  |                  | 1 U           |   | 1 U              |   |      |      | P  |
| Copper    | ug/L  |                  | 3 U           |   | 3 U              |   |      |      | P  |
| Iron      | ug/L  | +/-100           | 37.9 J        |   | 34 J             |   | 11   |      | P  |
| Magnesium | ug/L  | +/-20%           | 4960          |   | 5040             |   | 1.51 |      | P  |
| Manganese | ug/L  | +/-10            | 11            |   | 11               |   | .854 |      | P  |
| Potassium | ug/L  | +/-20%           | 4410          |   | 4420             |   | .211 |      | P  |
| Silica    | ug/L  | +/-20%           | 44700         |   | 45500            |   | 1.83 |      | P  |
| Sodium    | ug/L  | +/-20%           | 13700         |   | 13900            |   | 1.48 |      | P  |
| Strontium | ug/L  | +/-20%           | 116           |   | 118              |   | 1.21 |      | P  |
| Tin       | ug/L  |                  | 2.5 U         |   | 2.5 U            |   |      |      | P  |
| Vanadium  | ug/L  | +/-5             | 2.69 J        |   | 2.55 J           |   | 5.19 |      | P  |
| Zinc      | ug/L  |                  | 3.3 U         |   | 3.3 U            |   |      |      | P  |

\*Analytical Methods:

P SW846 3005A/6010C

**Metals**  
**-6-**  
**Duplicate Sample Summary**

SDG No.: 2017-2729

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-142856D

Matrix: WATER

Level: Low

Sample ID: 432570001

Duplicate ID: 1203873790

Percent Solids for Dup: N/A

| Analyte    | Units | Acceptance Limit | Sample Result | C | Duplicate Result | C | RPD  | Qual | M* |
|------------|-------|------------------|---------------|---|------------------|---|------|------|----|
| Antimony   | ug/L  |                  | 1 U           |   | 1 U              |   |      |      | MS |
| Arsenic    | ug/L  |                  | 2 U           |   | 2 U              |   |      |      | MS |
| Cadmium    | ug/L  |                  | 0.3 U         |   | 0.3 U            |   |      |      | MS |
| Chromium   | ug/L  |                  | 3 U           |   | 3 U              |   |      |      | MS |
| Lead       | ug/L  |                  | 0.5 U         |   | 0.5 U            |   |      |      | MS |
| Molybdenum | ug/L  | +/- .5           | 0.852         |   | 0.888            |   | 4.14 |      | MS |
| Nickel     | ug/L  |                  | 0.6 U         |   | 0.6 U            |   |      |      | MS |
| Selenium   | ug/L  |                  | 2 U           |   | 2 U              |   |      |      | MS |
| Silver     | ug/L  |                  | 0.3 U         |   | 0.3 U            |   |      |      | MS |
| Thallium   | ug/L  |                  | 0.6 U         |   | 0.6 U            |   |      |      | MS |
| Uranium    | ug/L  |                  | 0.067 U       |   | 0.067 U          |   |      |      | MS |

\*Analytical Methods:

MS SW846 3005A/6020A



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**Metals**  
**-6-**  
**Duplicate Sample Summary**

**SDG No.:** 2017-2729**Lab Code:** GEL**Contract:** ESHL00114**Client ID:** WT\_SIP-17-135650D**Matrix:** WATER**Level:** Low**Sample ID:** 432507001**Duplicate ID:** 1203878930**Percent Solids for Dup:** N/A

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| <b>Analyte</b> | <b>Units</b> | <b>Acceptance<br/>Limit</b> | <b>Sample<br/>Result</b> | <b>C</b> | <b>Duplicate<br/>Result</b> | <b>C</b> | <b>RPD</b> | <b>Qual</b> | <b>M*</b> |
|----------------|--------------|-----------------------------|--------------------------|----------|-----------------------------|----------|------------|-------------|-----------|
| Mercury        | ug/L         |                             | 0.067                    | U        | 0.067                       | U        |            |             | AV        |

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**\*Analytical Methods:**

AV EPA 245.1/245.2

## METALS

-7-

## Laboratory Control Sample Summary

SDG NO. 2017-2729

Contract: ESHL00114

Aqueous LCS Source:OS2I

Solid LCS Source:

| <u>Sample ID</u> | <u>Analyte</u> | <u>Units</u> | <u>True Value</u> | <u>Result</u> | <u>C</u> | <u>% Recovery</u> | <u>Acceptance Limit</u> | <u>M*</u> |
|------------------|----------------|--------------|-------------------|---------------|----------|-------------------|-------------------------|-----------|
| 1203873772       |                |              |                   |               |          |                   |                         |           |
|                  | Calcium        | ug/L         | 5000              | 5110          |          | 102               | 80-120                  | P         |
|                  | Cobalt         | ug/L         | 500               | 497           |          | 99.5              | 80-120                  | P         |
|                  | Copper         | ug/L         | 500               | 486           |          | 97.1              | 80-120                  | P         |
|                  | Iron           | ug/L         | 5000              | 5050          |          | 101               | 80-120                  | P         |
|                  | Magnesium      | ug/L         | 5000              | 5150          |          | 103               | 80-120                  | P         |
|                  | Manganese      | ug/L         | 500               | 485           |          | 96.9              | 80-120                  | P         |
|                  | Potassium      | ug/L         | 5000              | 4910          |          | 98.2              | 80-120                  | P         |
|                  | Silica         | ug/L         | 10700             | 9830          |          | 91.8              | 80-120                  | P         |
|                  | Sodium         | ug/L         | 5000              | 5050          |          | 101               | 80-120                  | P         |
|                  | Strontium      | ug/L         | 500               | 482           |          | 96.3              | 80-120                  | P         |
|                  | Tin            | ug/L         | 500               | 476           |          | 95.2              | 80-120                  | P         |
|                  | Vanadium       | ug/L         | 500               | 483           |          | 96.5              | 80-120                  | P         |
|                  | Zinc           | ug/L         | 500               | 492           |          | 98.3              | 80-120                  | P         |
|                  | Boron          | ug/L         | 500               | 473           |          | 94.6              | 80-120                  | P         |
|                  | Aluminum       | ug/L         | 5000              | 5040          |          | 101               | 80-120                  | P         |
|                  | Barium         | ug/L         | 500               | 482           |          | 96.5              | 80-120                  | P         |
|                  | Beryllium      | ug/L         | 500               | 479           |          | 95.8              | 80-120                  | P         |

## \*Analytical Methods:

P SW846 3005A/6010C

## METALS

-7-

## Laboratory Control Sample Summary

SDG NO. 2017-2729

Contract: ESHL00114

Aqueous LCS Source:O2Si

Solid LCS Source:

| <u>Sample ID</u> | <u>Analyte</u> | <u>Units</u> | <u>True Value</u> | <u>Result</u> | <u>C</u> | <u>% Recovery</u> | <u>Acceptance Limit</u> | <u>M*</u> |
|------------------|----------------|--------------|-------------------|---------------|----------|-------------------|-------------------------|-----------|
| 1203873789       |                |              |                   |               |          |                   |                         |           |
|                  | Antimony       | ug/L         | 50                | 56.5          |          | 113               | 80-120                  | MS        |
|                  | Arsenic        | ug/L         | 50                | 51            |          | 102               | 80-120                  | MS        |
|                  | Cadmium        | ug/L         | 50                | 54.2          |          | 108               | 80-120                  | MS        |
|                  | Chromium       | ug/L         | 50                | 53.4          |          | 107               | 80-120                  | MS        |
|                  | Lead           | ug/L         | 50                | 51.7          |          | 103               | 80-120                  | MS        |
|                  | Molybdenum     | ug/L         | 50                | 53.5          |          | 107               | 80-120                  | MS        |
|                  | Nickel         | ug/L         | 50                | 51.1          |          | 102               | 80-120                  | MS        |
|                  | Selenium       | ug/L         | 50                | 50.7          |          | 101               | 80-120                  | MS        |
|                  | Silver         | ug/L         | 50                | 52.7          |          | 105               | 80-120                  | MS        |
|                  | Thallium       | ug/L         | 50                | 48.6          |          | 97.2              | 80-120                  | MS        |
|                  | Uranium        | ug/L         | 50                | 48.1          |          | 96.3              | 80-120                  | MS        |

## \*Analytical Methods:

MS SW846 3005A/6020A

## METALS

-7-

## Laboratory Control Sample Summary

SDG NO. 2017-2729

Contract: ESHL00114

Aqueous LCS Source: GEL

Solid LCS Source:

| <u>Sample ID</u> | <u>Analyte</u> | <u>Units</u> | <u>True Value</u> | <u>Result</u> | <u>C</u> | <u>% Recovery</u> | <u>Acceptance Limit</u> | <u>M*</u> |
|------------------|----------------|--------------|-------------------|---------------|----------|-------------------|-------------------------|-----------|
| 1203878929       | Mercury        | ug/L         | 2                 | 2.08          |          | 104               | 85-115                  | AV        |

## \*Analytical Methods:

AV EPA 245.1/245.2

## METALS

-9-

## Serial Dilution Sample Summary

SDG NO. 2017-2729 Client ID CAWA-17-142856L

Contract: ESHL00114

Matrix: LIQUID Level: Low

Sample ID: 432570001 Serial Dilution ID: 1203873775

| <u>Analyte</u> | <u>Initial<br/>Value<br/>ug/L</u> | <u>C</u> | <u>Serial<br/>Value<br/>ug/L</u> | <u>C</u> | <u>%<br/>Difference</u> | <u>Qual</u> | <u>Acceptance<br/>Limit</u> | <u>M*</u> |
|----------------|-----------------------------------|----------|----------------------------------|----------|-------------------------|-------------|-----------------------------|-----------|
| Aluminum       | 68                                | U        | 340                              | U        |                         |             |                             | P         |
| Barium         | 78.3                              |          | 80.9                             |          | 3.406                   |             | 10                          | P         |
| Beryllium      | 1                                 | U        | 5                                | U        |                         |             |                             | P         |
| Boron          | 15                                | U        | 75                               | U        |                         |             |                             | P         |
| Calcium        | 17800                             |          | 18200                            |          | 2.112                   |             | 10                          | P         |
| Cobalt         | 1                                 | U        | 5                                | U        |                         |             |                             | P         |
| Copper         | 3                                 | U        | 15                               | U        |                         |             |                             | P         |
| Iron           | 37.9                              | J        | 150                              | U        | 8.97                    |             |                             | P         |
| Magnesium      | 4960                              |          | 5100                             |          | 2.688                   |             |                             | P         |
| Manganese      | 11                                |          | 11.5                             | J        | 4.449                   |             |                             | P         |
| Potassium      | 4410                              |          | 4800                             |          | 8.776                   |             | 10                          | P         |
| Silica         | 44700                             |          | 45300                            |          | 1.453                   |             | 10                          | P         |
| Sodium         | 13700                             |          | 14700                            |          | 7.538                   |             | 10                          | P         |
| Strontium      | 116                               |          | 118                              |          | 1.307                   |             | 10                          | P         |
| Tin            | 2.5                               | U        | 12.5                             | U        |                         |             |                             | P         |
| Vanadium       | 2.69                              | J        | 5                                | U        | 38.692                  |             |                             | P         |
| Zinc           | 3.3                               | U        | 16.5                             | U        |                         |             |                             | P         |

## \*Analytical Methods:

P SW846 3005A/6010C

## METALS

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## Serial Dilution Sample Summary

SDG NO. 2017-2729

Client ID: CAWA-17-142856L

Contract: ESHL00114

Matrix: LIQUID

Level: Low

Sample ID: 432570001

Serial Dilution ID: 1203873792

| <u>Analyte</u> | <u>Initial<br/>Value<br/>ug/L</u> | <u>C</u> | <u>Serial<br/>Value<br/>ug/L</u> | <u>C</u> | <u>%<br/>Difference</u> | <u>Qual</u> | <u>Acceptance<br/>Limit</u> | <u>M*</u> |
|----------------|-----------------------------------|----------|----------------------------------|----------|-------------------------|-------------|-----------------------------|-----------|
| Antimony       | 1                                 | U        | 5                                | U        |                         |             |                             | MS        |
| Arsenic        | 2                                 | U        | 10                               | U        |                         |             |                             | MS        |
| Cadmium        | .3                                | U        | 1.5                              | U        |                         |             |                             | MS        |
| Chromium       | 3                                 | U        | 15                               | U        |                         |             |                             | MS        |
| Lead           | .5                                | U        | 2.5                              | U        |                         |             |                             | MS        |
| Molybdenum     | .852                              |          | 1                                | U        | 13.732                  |             |                             | MS        |
| Nickel         | .6                                | U        | 3                                | U        |                         |             |                             | MS        |
| Selenium       | 2                                 | U        | 10                               | U        |                         |             |                             | MS        |
| Silver         | .3                                | U        | 1.5                              | U        |                         |             |                             | MS        |
| Thallium       | .6                                | U        | 3                                | U        |                         |             |                             | MS        |
| Uranium        | .067                              | U        | .335                             | U        |                         |             |                             | MS        |

## \*Analytical Methods:

MS SW846 3005A/6020A

## METALS

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## Serial Dilution Sample Summary

**SDG NO.** 2017-2729 **Client ID:** WT\_SIP-17-135650L**Contract:** ESHL00114**Matrix:** LIQUID **Level:** Low**Sample ID:** 432507001 **Serial Dilution ID:** 1203878932

| <u>Analyte</u> | <u>Initial<br/>Value<br/>ug/L</u> | <u>C</u> | <u>Serial<br/>Value<br/>ug/L</u> | <u>C</u> | <u>%<br/>Difference</u> | <u>Qual</u> | <u>Acceptance<br/>Limit</u> | <u>M*</u> |
|----------------|-----------------------------------|----------|----------------------------------|----------|-------------------------|-------------|-----------------------------|-----------|
| Mercury        | .067                              | U        | .335                             | U        |                         |             |                             | AV        |

## \*Analytical Methods:

AV EPA 245.1/245.2

# **General Chem Analysis**



# Case Narrative

**General Chemistry  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-2729  
Work Order #: 432570**

**Method/Analysis Information**

**Product:** Carbon and Total Organic

**Analytical Batch:** 1701620

**Method:** SW 9060 Total Organic Carbon

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW-846:9060:

| <b>Sample ID</b> | <b>Client ID</b>                                 |
|------------------|--|
| 432570002        | CAWA-17-142891                                   |
| 1203877657       | Method Blank (MB)                                |
| 1203877658       | Laboratory Control Sample (LCS)                  |
| 1203877659       | 432570002(CAWA-17-142891) Sample Duplicate (DUP) |
| 1203877662       | 432570002(CAWA-17-142891) Post Spike (PS)        |

The samples in this SDG were analyzed on an "as received" basis.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV# 15.

**Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

**Calibration Information**

The Carbon analysis was performed on a O-I Analytical 1030W Carbon Analyzer.

**Initial Calibration**

All initial calibration requirements have been met for this SDG.

**Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

**Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within

acceptance limits.

### **Quality Control (QC) Information**

#### **Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

#### **Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

#### **Quality Control (QC) Designation**

Sample 432570002 (CAWA-17-142891) was selected for QC analysis.

#### **Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

#### **Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

### **Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

#### **Holding Times**

All samples in this SDG met the specified holding time.

#### **Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

#### **Sample Dilutions**

The samples in this SDG did not require dilutions.

#### **Sample Re-analysis**

The samples in this SDG did not require re-analysis.

### **Miscellaneous Information**

#### **Additional Comments**

Additional comments were not required for this SDG.

#### **Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will

always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

### **Method/Analysis Information**

|                          |                          |                |           |
|--------------------------|--------------------------|----------------|-----------|
| <b>Product:</b>          | <b>Cyanide and Total</b> |                |           |
| <b>Analytical Batch:</b> | 1700209                  | <b>Method:</b> | WSP-CN(T) |
| <b>Prep Batch :</b>      | 1700208                  | <b>Method:</b> | EPA 335.4 |

### **Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA 335.4 1993:

| <b>Sample ID</b> | <b>Client ID</b>                                       |
|------------------|--|
| 432570002        | CAWA-17-142891   |
| 1203873999       | Method Blank (MB)                                      |
| 1203874000       | Laboratory Control Sample (LCS)                        |
| 1203874001       | 432570002(CAWA-17-142891) Sample Duplicate (DUP)       |
| 1203874002       | 432570002(CAWA-17-142891) Matrix Spike (MS)            |
| 1203874805       | 432570002(CAWA-17-142891) Matrix Spike Duplicate (MSD) |

The samples in this SDG were analyzed on an "as received" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-095 REV# 20.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The Flow Injection analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

**Y Intercept Rule**

The absolute value of the intercept is less than 3 times the MDL.

**Quality Control (QC) Information****Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

**Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

**Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

**Quality Control (QC) Designation**

Sample 432570002 (CAWA-17-142891) was selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

**MS/MSD Relative Percent Difference (RPD) Statement**

The RPD between the spike and spike duplicate met the acceptance limits.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

Sample1203874000 (LCS) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

**Miscellaneous Information****Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an

effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

### **Method/Analysis Information**

**Product:** Ion Chromatography

**Analytical Batch:** 1700336

**Method:** WSP-ANIONS

### **Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA:300.0:

| <b>Sample ID</b> | <b>Client ID</b>                                 |
|------------------|--|
| 432570001        | CAWA-17-142856                                   |
| 1203874284       | Method Blank (MB)                                |
| 1203874285       | Laboratory Control Sample (LCS)                  |
| 1203874286       | 432325001(CAWA-17-142886) Sample Duplicate (DUP) |
| 1203874287       | 432325001(CAWA-17-142886) Post Spike (PS)        |

The samples in this SDG were analyzed on an "as received" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 25.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The Ion Chromatography analysis was performed on a Dionex ICS-5000 Ion Chromatograph.

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

### **Y Intercept Rule**

The absolute value of the intercept is less than 3 times the MDL.



### **Quality Control (QC) Information**

#### **Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

#### **Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

#### **Quality Control (QC) Designation**

Sample 432325001 (CAWA-17-142886) was selected for QC analysis.

#### **Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

#### **Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

### **Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

#### **Holding Times**

All samples in this SDG met the specified holding time.

#### **Sample Dilutions**

The following sample 432570001 (CAWA-17-142856) was diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

|          |        |
|----------|--------|
| Analyte  | 432570 |
|          | 001    |
| Chloride | 2X     |

#### **Sample Re-analysis**

The samples in this SDG did not require re-analysis.

### **Miscellaneous Information**

#### **Manual Integrations**

Samples 1203874286 (CAWA-17-142886DUP), 1203874287 (CAWA-17-142886PS) and 432570001 (CAWA-17-142856) were manually integrated to correctly position the baseline as set in the calibration standards.

#### **Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

### **Method/Analysis Information**

|                          |                         |                |                |
|--------------------------|-------------------------|----------------|----------------|
| <b>Product:</b>          | <b>Ammonia Nitrogen</b> |                |                |
| <b>Analytical Batch:</b> | 1700465                 | <b>Method:</b> | NH3            |
| <b>Prep Batch :</b>      | 1700464                 | <b>Method:</b> | EPA 350.1 Prep |

### **Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA:350.1:

| <b>Sample ID</b> | <b>Client ID</b>                                 |
|------------------|--|
| 432570001        | CAWA-17-142856                                   |
| 1203874555       | Method Blank (MB)                                |
| 1203874556       | Laboratory Control Sample (LCS)                  |
| 1203874557       | 432570001(CAWA-17-142856) Sample Duplicate (DUP) |
| 1203874558       | 432570001(CAWA-17-142856) Matrix Spike (MS)      |

The samples in this SDG were analyzed on an "as received" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-106 REV# 9.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Calibration Verification Information**

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within

acceptance limits.

**Y Intercept Rule**

The absolute value of the intercept is less than 3 times the MDL.

**Quality Control (QC) Information**

**Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

**Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

**Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

**Quality Control (QC) Designation**

Sample 432570001 (CAWA-17-142856) was selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

Samples 1203874555 (MB), 1203874556 (LCS), 1203874557 (CAWA-17-142856DUP), 1203874558 (CAWA-17-142856MS) and 432570001 (CAWA-17-142856) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

**Miscellaneous Information**

**Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

### **Method/Analysis Information**

|                          |                                |                |                |
|--------------------------|--------------------------------|----------------|----------------|
| <b>Product:</b>          | <b>Total Kjeldahl Nitrogen</b> |                |                |
| <b>Analytical Batch:</b> | 1700469                        | <b>Method:</b> | TKN            |
| <b>Prep Batch :</b>      | 1700468                        | <b>Method:</b> | EPA 351.2 Prep |

### **Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA:351.2:

| <b>Sample ID</b> | <b>Client ID</b>                                 |
|------------------|--|
| 432570002        | CAWA-17-142891                                   |
| 1203874559       | Method Blank (MB)                                |
| 1203874560       | Laboratory Control Sample (LCS)                  |
| 1203874561       | 432570002(CAWA-17-142891) Sample Duplicate (DUP) |
| 1203874563       | 432570002(CAWA-17-142891) Matrix Spike (MS)      |

The samples in this SDG were analyzed on an "as received" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-104 REV# 14.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Calibration Verification Information**

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within

acceptance limits.

**Y Intercept Rule**

The absolute value of the intercept is less than 3 times the MDL.

**Quality Control (QC) Information**

**Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

**Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

**Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

**Quality Control (QC) Designation**

Sample 432570002 (CAWA-17-142891) was selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

The samples in this SDG did not require re-analysis.

**Miscellaneous Information**

**Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages

electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.



### **Method/Analysis Information**

**Product:** Nitrate Nitrite by Cadmium Reduction

**Analytical Batch:** 1700478

**Method:** NO3NO2

### **Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA:353.2:

| <b>Sample ID</b> | <b>Client ID</b>                                 |
|------------------|--|
| 432570001        | CAWA-17-142856                                   |
| 1203874585       | Method Blank (MB)                                |
| 1203874586       | Laboratory Control Sample (LCS)                  |
| 1203874590       | 432570001(CAWA-17-142856) Sample Duplicate (DUP) |
| 1203874595       | 432570001(CAWA-17-142856) Post Spike (PS)        |

The samples in this SDG were analyzed on an "as received" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-128 REV# 9.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8500 Series.

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Calibration Verification Information**

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

**Y Intercept Rule**

The absolute value of the intercept is less than 3 times the MDL.

**Quality Control (QC) Information****Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

**Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

**Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

**Quality Control (QC) Designation**

Sample 432570001 (CAWA-17-142856) was selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

The samples in this SDG did not require re-analysis.

**Miscellaneous Information****Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are

present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

### **Method/Analysis Information**

|                          |                         |                |                |
|--------------------------|-------------------------|----------------|----------------|
| <b>Product:</b>          | <b>Total Phosphorus</b> |                |                |
| <b>Analytical Batch:</b> | 1700471                 | <b>Method:</b> | PO4            |
| <b>Prep Batch :</b>      | 1700470                 | <b>Method:</b> | EPA 365.4 Prep |

### **Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA 365.4 1974:

| <b>Sample ID</b> | <b>Client ID</b>                                 |
|------------------|--|
| 432570001        | CAWA-17-142856                                   |
| 1203874565       | Method Blank (MB)                                |
| 1203874566       | Laboratory Control Sample (LCS)                  |
| 1203874567       | 432570001(CAWA-17-142856) Sample Duplicate (DUP) |
| 1203874570       | 432570001(CAWA-17-142856) Matrix Spike (MS)      |

The samples in this SDG were analyzed on an "as received" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-103 REV# 10.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Continuing Calibration Blanks**

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

### **Calibration Verification Information (CCV)**

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

### **Y Intercept Rule**

The absolute value of the intercept is less than 3 times the MDL.

#### **Quality Control (QC) Information**

##### **Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

##### **Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

##### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

##### **Quality Control (QC) Designation**

Sample 432570001 (CAWA-17-142856) was selected for QC analysis.

##### **Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

##### **Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

#### **Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

##### **Holding Times**

All samples in this SDG met the specified holding time.

##### **Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

##### **Sample Dilutions**

The samples in this SDG did not require dilutions.

##### **Sample Re-analysis**

The samples in this SDG did not require re-analysis.

#### **Miscellaneous Information**

##### **Additional Comments**

Additional comments were not required for this SDG.

##### **Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will

always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

### **Method/Analysis Information**

**Product:** Solids and Total Dissolved

**Analytical Batch:** 1700092

**Method:** TDS

### **Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA:160.1:

| <b>Sample ID</b> | <b>Client ID</b>                                 |
|------------------|--|
| 432570001        | CAWA-17-142856                                   |
| 1203873721       | Method Blank (MB)                                |
| 1203873722       | Laboratory Control Sample (LCS)                  |
| 1203873723       | 432512001(CAPA-17-142952) Sample Duplicate (DUP) |

The samples in this SDG were analyzed on an "as received" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-001 REV# 15.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The Solids analysis was performed on a Sartorius Balance BAL216. Solids lab

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Quality Control (QC) Information**

#### **Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

#### **Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

### **Consecutive Weight Checks**

All consecutive weight checks were met.

#### **Quality Control (QC) Designation**

Sample 432512001 (CAPA-17-142952) was selected for QC analysis.

#### **Duplicate Relative Percent Difference (RPD) Statement**

The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample:

| Analyte                | Sample                         | Value         |
|------------------------|--------------------------------|---------------|
| Total Dissolved Solids | 1203873723 (CAPA-17-142952DUP) | 71.4* (0%-5%) |

#### **Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

#### **Holding Times**

All samples in this SDG met the specified holding time.

#### **Sample Dilutions**

The samples in this SDG did not require dilutions.

#### **Sample Re-analysis**

The samples in this SDG did not require re-analysis.

#### **Miscellaneous Information**

#### **Additional Comments**

Additional comments were not required for this SDG.

#### **Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.



### **Method/Analysis Information**

**Product:** Specific Conductivity

**Analytical Batch:** 1703142

**Method:** EPA120.1 Specific Conductivity

### **Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA:120.1:

| <b>Sample ID</b> | <b>Client ID</b>                                 |
|------------------|--|
| 432570001        | CAWA-17-142856                                   |
| 1203881177       | Laboratory Control Sample (LCS)                  |
| 1203881179       | 432325001(CAWA-17-142886) Sample Duplicate (DUP) |

The samples in this SDG were analyzed on an "as received" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-009 REV# 14.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The Titration and Ion analysis was performed on a Orion 160 Conductivity Meter.

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Initial Standardization**

The titrant was properly standardized

### **Calibration Verification Information**

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

### **Quality Control (QC) Information**

#### **Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

**Quality Control (QC) Designation**

Sample 432325001 (CAWA-17-142886) was selected for QC analysis.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

The samples in this SDG did not require re-analysis.

**Miscellaneous Information****Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

### **Method/Analysis Information**

**Product:** pH  
**Analytical Batch:** 1701903 **Method:** PH

### **Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA 150.1 1982:

| <b>Sample ID</b> | <b>Client ID</b>                                 |
|------------------|--|
| 432570001        | CAWA-17-142856                                   |
| 1203878363       | Laboratory Control Sample (LCS)                  |
| 1203878364       | 432570001(CAWA-17-142856) Sample Duplicate (DUP) |
| 1203878365       | 433059007(CAWA-17-142879) Sample Duplicate (DUP) |

The samples in this SDG were analyzed on an "as received" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-008 REV# 22.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The Titration and Ion analysis was performed on a Thermo Orion Star A111. Immediates

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Initial Standardization**

The titrant was properly standardized

### **Quality Control (QC) Information**

#### **Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

#### **Quality Control (QC) Designation**

Samples 432570001 (CAWA-17-142856) and 433059007 (CAWA-17-142879) were selected for QC analysis.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

| Sample                         | Analyte | Value  |
|--------------------------------|---------|--|
| 1203878364 (CAWA-17-142856DUP) | pH      | Received 13-SEP-17, out of holding 07-SEP-17 |
| 1203878365 (CAWA-17-142879DUP) | pH      | Received 19-SEP-17, out of holding 15-SEP-17 |
| 432570001 (CAWA-17-142856)     | pH      | Received 13-SEP-17, out of holding 07-SEP-17 |

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

The samples in this SDG did not require re-analysis.

**Miscellaneous Information**

**Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

### **Method/Analysis Information**

**Product:** Alkalinity

**Analytical Batch:** 1701895      **Method:** EPA 310.1 Total Alkalinity

### **Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA:310.1:

| <b>Sample ID</b> | <b>Client ID</b>                                 |
|------------------|--|
| 432570001        | CAWA-17-142856                                   |
| 1203878342       | Laboratory Control Sample (LCS)                  |
| 1203878343       | 432570001(CAWA-17-142856) Sample Duplicate (DUP) |
| 1203878345       | 432570001(CAWA-17-142856) Matrix Spike (MS)      |

The samples in this SDG were analyzed on an "as received" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-033 REV# 13.

### **Preparation/Analytical Method Verification**

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

### **Calibration Information**

The Titration and Ion analysis was performed on a Electronic bottle-top buret.

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Initial Standardization**

The titrant was properly standardized

### **Quality Control (QC) Information**

#### **Laboratory Control Sample Duplicate (LCSD)**

An LCSD was not used in place of matrix QC.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

### **Quality Control (QC) Designation**

Sample 432570001 (CAWA-17-142856) was selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

The samples in this SDG did not require re-analysis.

**Miscellaneous Information**

**Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

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**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

## **GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### **Qualifier Definition Report for**

ARSL004 ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)

Client SDG: 2017-2729 GEL Work Order: 432570


#### **The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- H Analytical holding time was exceeded
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

#### **Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

**Signature:** 

**Name:** Aubrey Kingsbury

**Date:** 04 OCT 2017

**Title:** Analyst I

# **Sample Data Summary**



# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: October 4, 2017

Company : Los Alamos National Laboratory  
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545  
Contact: Ms. Nita Patel  
Project: LANL- WQH Water Samples

Client SDG: 2017-2729

Client Sample ID: CAWA-17-142856  
Sample ID: 432570001  
Matrix: W  
Collect Date: 07-SEP-17 10:31  
Receive Date: 13-SEP-17  
Collector: Client

Project: ESHL00114  
Client ID: ARSL004

| Parameter                                    | Qualifier | Result | DL    | RL    | Units    | PF   | DF | Analyst | Date     | Time | Batch   | Method |
|--|-----------|--------|-------|-------|----------|------|----|---------|----------|------|---------|--------|
| Ion Chromatography                           |           |        |       |       |          |      |    |         |          |      |         |        |
| WSP-ANIONS "As Received"                     |           |        |       |       |          |      |    |         |          |      |         |        |
| Bromide                                      | U         | ND     | 0.067 | 0.200 | mg/L     |      | 1  | MXL2    | 09/15/17 | 0318 | 1700336 | 1      |
| Fluoride                                     | J         | 0.0749 | 0.033 | 0.100 | mg/L     |      | 1  |         |          |      |         |        |
| Sulfate                                      |           | 4.39   | 0.133 | 0.400 | mg/L     |      | 1  |         |          |      |         |        |
| Chloride                                     |           | 12.6   | 0.134 | 0.400 | mg/L     |      | 2  | MXL2    | 09/15/17 | 1937 | 1700336 | 2      |
| Nutrient Analysis                            |           |        |       |       |          |      |    |         |          |      |         |        |
| NH3 "As Received"                            |           |        |       |       |          |      |    |         |          |      |         |        |
| Nitrogen, Ammonia                            | J         | 0.0221 | 0.017 | 0.050 | mg/L     | 1.00 | 1  | KLP1    | 09/18/17 | 0900 | 1700465 | 3      |
| NO3NO2 "As Received"                         |           |        |       |       |          |      |    |         |          |      |         |        |
| Nitrogen, Nitrate/Nitrite                    | J         | 0.0308 | 0.017 | 0.050 | mg/L     |      | 1  | AXH3    | 09/15/17 | 0909 | 1700478 | 4      |
| PO4 "As Received"                            |           |        |       |       |          |      |    |         |          |      |         |        |
| Phosphorus, Total as P                       |           | 0.174  | 0.020 | 0.050 | mg/L     | 1.00 | 1  | KLP1    | 09/15/17 | 1032 | 1700471 | 5      |
| Solids Analysis                              |           |        |       |       |          |      |    |         |          |      |         |        |
| TDS "As Received"                            |           |        |       |       |          |      |    |         |          |      |         |        |
| Total Dissolved Solids                       |           | 137    | 3.40  | 14.3  | mg/L     |      |    | KLP1    | 09/13/17 | 1407 | 1700092 | 6      |
| Titration and Ion Analysis                   |           |        |       |       |          |      |    |         |          |      |         |        |
| EPA 310.1 Total Alkalinity "As Received"     |           |        |       |       |          |      |    |         |          |      |         |        |
| Alkalinity, Total as CaCO3                   |           | 76.2   | 1.45  | 4.00  | mg/L     |      |    | RXB5    | 09/19/17 | 1425 | 1701895 | 7      |
| Carbonate alkalinity (CaCO3)                 | U         | ND     | 1.45  | 4.00  | mg/L     |      |    |         |          |      |         |        |
| EPA120.1 Specific Conductivity "As Received" |           |        |       |       |          |      |    |         |          |      |         |        |
| Conductivity                                 |           | 231    | 1.00  | 1.00  | umhos/cm |      | 1  | VH1     | 09/28/17 | 1108 | 1703142 | 8      |
| PH "As Received"                             |           |        |       |       |          |      |    |         |          |      |         |        |
| pH at Temp 15.4C                             | H         | 8.30   | 0.010 | 0.100 | SU       |      | 1  | RXB5    | 09/19/17 | 1423 | 1701903 | 9      |

The following Prep Methods were performed:

| Method         | Description                              | Analyst | Date     | Time | Prep Batch |
|----------------|--|---------|----------|------|------------|
| EPA 350.1 Prep | EPA 350.1 Ammonia Nitrogen Prep          | AXH3    | 09/18/17 | 0809 | 1700464    |
| EPA 365.4 Prep | EPA 365.4 Phosphorus, Total in liquid PR | AXH3    | 09/14/17 | 1200 | 1700470    |

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: October 4, 2017

Company : Los Alamos National Laboratory  
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545  
Contact: Ms. Nita Patel  
Project: LANL- WQH Water Samples

Client SDG: 2017-2729

Client Sample ID: CAWA-17-142856  
Sample ID: 432570001

Project: ESHL00114  
Client ID: ARSL004

| Parameter  | Qualifier      | Result | DL               | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|--|----------------|--------|------------------|----|-------|----|----|---------|------|------|-------|--------|
| The following Analytical Methods were performed: |                |        |                  |    |       |    |    |         |      |      |       |        |
| Method   | Description    |        | Analyst Comments |    |       |    |    |         |      |      |       |        |
| 1  | EPA:300.0      |        |                  |    |       |    |    |         |      |      |       |        |
| 2  | EPA:300.0      |        |                  |    |       |    |    |         |      |      |       |        |
| 3  | EPA:350.1      |        |                  |    |       |    |    |         |      |      |       |        |
| 4  | EPA:353.2      |        |                  |    |       |    |    |         |      |      |       |        |
| 5  | EPA 365.4 1974 |        |                  |    |       |    |    |         |      |      |       |        |
| 6  | EPA:160.1      |        |                  |    |       |    |    |         |      |      |       |        |
| 7  | EPA:310.1      |        |                  |    |       |    |    |         |      |      |       |        |
| 8  | EPA:120.1      |        |                  |    |       |    |    |         |      |      |       |        |
| 9  | EPA 150.1 1982 |        |                  |    |       |    |    |         |      |      |       |        |

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: October 4, 2017

Company : Los Alamos National Laboratory  
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545  
Contact: Ms. Nita Patel  
Project: LANL- WQH Water Samples

Client SDG: 2017-2729

Client Sample ID: CAWA-17-142891  
Sample ID: 432570002  
Matrix: W  
Collect Date: 07-SEP-17 10:31  
Receive Date: 13-SEP-17  
Collector: Client

Project: ESHL00114  
Client ID: ARSL004

| Parameter                                  | Qualifier | Result | DL    | RL    | Units | PF   | DF | Analyst | Date     | Time | Batch   | Method |
|--|-----------|--------|-------|-------|-------|------|----|---------|----------|------|---------|--------|
| Carbon Analysis                            |           |        |       |       |       |      |    |         |          |      |         |        |
| SW 9060 Total Organic Carbon "As Received" |           |        |       |       |       |      |    |         |          |      |         |        |
| Total Organic Carbon Average               |           | 2.81   | 0.330 | 1.00  | mg/L  |      | 1  | TSM     | 09/21/17 | 1640 | 1701620 | 1      |
| Flow Injection Analysis                    |           |        |       |       |       |      |    |         |          |      |         |        |
| WSP-CN(T) "As Received"                    |           |        |       |       |       |      |    |         |          |      |         |        |
| Cyanide, Total                             | U         | ND     | 1.67  | 5.00  | ug/L  | 1.00 | 1  | AXH3    | 09/15/17 | 0809 | 1700209 | 2      |
| Nutrient Analysis                          |           |        |       |       |       |      |    |         |          |      |         |        |
| TKN "As Received"                          |           |        |       |       |       |      |    |         |          |      |         |        |
| Nitrogen, Total Kjeldahl                   | U         | ND     | 0.033 | 0.100 | mg/L  | 1.00 | 1  | KLP1    | 09/14/17 | 1314 | 1700469 | 3      |

The following Prep Methods were performed:

| Method         | Description                            | Analyst | Date     | Time | Prep Batch |
|----------------|--|---------|----------|------|------------|
| EPA 335.4      | EPA 335.4 Total Cyanide                | AXH3    | 09/15/17 | 0738 | 1700208    |
| EPA 351.2 Prep | EPA 351.2 Total Kjeldahl Nitrogen Prep | AXH3    | 09/14/17 | 1200 | 1700468    |

The following Analytical Methods were performed:

| Method | Description    | Analyst Comments |
|--------|----------------|------------------|
| 1      | SW-846:9060    |                  |
| 2      | EPA 335.4 1993 |                  |
| 3      | EPA:351.2      |                  |

### Notes:

Column headers are defined as follows:

|                                       |                                |
|---------------------------------------|--------------------------------|
| DF: Dilution Factor                   | Lc/LC: Critical Level          |
| DL: Detection Limit                   | PF: Prep Factor                |
| MDA: Minimum Detectable Activity      | RL: Reporting Limit            |
| MDC: Minimum Detectable Concentration | SQL: Sample Quantitation Limit |

# **Quality Control Summary**

# GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: October 4, 2017

Page 1 of 6

Los Alamos National Laboratory  
TA-00, SM1237, Rm104C  
Los Alamos, New Mexico

Contact: Ms. Nita Patel

Workorder: 432570

| Parmname                       | NOM       | Sample | Qual | QC   | Units | RPD%  | REC% | Range      | Anlst | Date     | Time  |
|--------------------------------|-----------|--------|------|------|-------|-------|------|------------|-------|----------|-------|
| <b>Carbon Analysis</b>         |           |        |      |      |       |       |      |            |       |          |       |
| Batch                          | 1701620   |        |      |      |       |       |      |            |       |          |       |
| QC1203877659                   | 432570002 | DUP    |      |      |       |       |      |            |       |          |       |
| Total Organic Carbon Average   |           | 2.81   |      | 2.83 | mg/L  | 0.673 | ^    | (+/-1.00)  | TSM   | 09/21/17 | 17:27 |
| QC1203877658                   | LCS       |        |      |      |       |       |      |            |       |          |       |
| Total Organic Carbon Average   | 10.0      |        |      | 10.0 | mg/L  |       |      | (80%-120%) |       | 09/21/17 | 16:29 |
| QC1203877657                   | MB        |        |      |      |       |       |      |            |       |          |       |
| Total Organic Carbon Average   |           |        | U    | ND   | mg/L  |       |      |            |       | 09/21/17 | 16:17 |
| QC1203877662                   | 432570002 | PS     |      |      |       |       |      |            |       |          |       |
| Total Organic Carbon Average   | 10.0      | 2.81   |      | 13.4 | mg/L  |       |      | (75%-125%) |       | 09/21/17 | 18:14 |
| <b>Flow Injection Analysis</b> |           |        |      |      |       |       |      |            |       |          |       |
| Batch                          | 1700209   |        |      |      |       |       |      |            |       |          |       |
| QC1203874001                   | 432570002 | DUP    |      |      |       |       |      |            |       |          |       |
| Cyanide, Total                 |           | U      | ND   | U    | ND    | ug/L  | N/A  |            | AXH3  | 09/15/17 | 08:14 |
| QC1203874000                   | LCS       |        |      |      |       |       |      |            |       |          |       |
| Cyanide, Total                 | 50.0      |        |      | 53.6 | ug/L  |       |      | (90%-110%) |       | 09/15/17 | 08:17 |
| QC1203873999                   | MB        |        |      |      |       |       |      |            |       |          |       |
| Cyanide, Total                 |           |        | U    | ND   | ug/L  |       |      |            |       | 09/15/17 | 08:07 |
| QC1203874002                   | 432570002 | MS     |      |      |       |       |      |            |       |          |       |
| Cyanide, Total                 | 100       | U      | ND   | 102  | ug/L  |       |      | (90%-110%) |       | 09/15/17 | 08:15 |
| QC1203874805                   | 432570002 | MSD    |      |      |       |       |      |            |       |          |       |
| Cyanide, Total                 | 100       | U      | ND   | 101  | ug/L  | 0.985 |      | (0%-20%)   |       | 09/15/17 | 08:16 |

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| Parmname                  | NOM       | Sample | Qual  | QC | Units | RPD% | REC%  | Range      | Anlst | Date     | Time  |
|---------------------------|-----------|--------|-------|----|-------|------|-------|------------|-------|----------|-------|
| <b>Ion Chromatography</b> |           |        |       |    |       |      |       |            |       |          |       |
| Batch                     | 1700336   |        |       |    |       |      |       |            |       |          |       |
| QC1203874286              | 432325001 | DUP    |       |    |       |      |       |            |       |          |       |
| Bromide                   |           | U      | ND    | U  | ND    | mg/L | N/A   |            | MXL2  | 09/14/17 | 22:29 |
| Chloride                  |           |        | 1.66  |    | 1.64  | mg/L | 1.06  | (0%-20%)   |       |          |       |
| Fluoride                  |           |        | 0.112 |    | 0.109 | mg/L | 2.9 ^ | (+/-0.100) |       |          |       |
| Sulfate                   |           |        | 4.43  |    | 4.42  | mg/L | 0.296 | (0%-20%)   |       |          |       |
| QC1203874285              | LCS       |        |       |    |       |      |       |            |       |          |       |
| Bromide                   | 1.25      |        |       |    | 1.27  | mg/L | 102   | (80%-120%) |       | 09/14/17 | 21:31 |
| Chloride                  | 5.00      |        |       |    | 4.76  | mg/L | 95.1  | (80%-120%) |       |          |       |
| Fluoride                  | 2.50      |        |       |    | 2.47  | mg/L | 98.9  | (80%-120%) |       |          |       |
| Sulfate                   | 10.0      |        |       |    | 9.73  | mg/L | 97.3  | (80%-120%) |       |          |       |
| QC1203874284              | MB        |        |       |    |       |      |       |            |       |          |       |
| Bromide                   |           |        | U     |    | ND    | mg/L |       |            |       | 09/14/17 | 21:02 |
| Chloride                  |           |        | U     |    | ND    | mg/L |       |            |       |          |       |
| Fluoride                  |           |        | U     |    | ND    | mg/L |       |            |       |          |       |
| Sulfate                   |           |        | U     |    | ND    | mg/L |       |            |       |          |       |
| QC1203874287              | 432325001 | PS     |       |    |       |      |       |            |       |          |       |
| Bromide                   | 1.25      | U      | ND    |    | 1.24  | mg/L | 96.2  | (75%-125%) |       | 09/14/17 | 22:58 |
| Chloride                  | 5.00      |        | 1.66  |    | 6.43  | mg/L | 95.5  | (75%-125%) |       |          |       |

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| Parmname                  | NOM       | Sample | Qual   | QC   | Units | RPD% | REC% | Range      | Anlst      | Date     | Time           |
|---------------------------|-----------|--------|--------|------|-------|------|------|------------|------------|----------|----------------|
| <b>Ion Chromatography</b> |           |        |        |      |       |      |      |            |            |          |                |
| Batch                     | 1700336   |        |        |      |       |      |      |            |            |          |                |
| Fluoride                  | 2.50      | 0.112  |        | 2.48 | mg/L  |      | 94.9 | (75%-125%) | MXL2       | 09/14/17 | 22:58          |
| Sulfate                   | 10.0      | 4.43   |        | 14.3 | mg/L  |      | 98.8 | (75%-125%) |            |          |                |
| <b>Nutrient Analysis</b>  |           |        |        |      |       |      |      |            |            |          |                |
| Batch                     | 1700465   |        |        |      |       |      |      |            |            |          |                |
| QC1203874557              | 432570001 | DUP    |        |      |       |      |      |            |            |          |                |
| Nitrogen, Ammonia         |           | J      | 0.0221 | U    | ND    | mg/L | 200  | ^          | KLP1       | 09/18/17 | 09:01          |
| QC1203874556              | LCS       |        |        |      |       |      |      |            |            |          |                |
| Nitrogen, Ammonia         | 1.00      |        |        |      | 1.09  | mg/L | 109  | (90%-110%) |            | 09/18/17 | 08:59          |
| QC1203874555              | MB        |        |        |      |       |      |      |            |            |          |                |
| Nitrogen, Ammonia         |           |        | U      | ND   | mg/L  |      |      |            |            | 09/18/17 | 08:58          |
| QC1203874558              | 432570001 | MS     |        |      |       |      |      |            |            |          |                |
| Nitrogen, Ammonia         | 1.00      | J      | 0.0221 |      | 1.04  | mg/L | 102  | (90%-110%) |            | 09/18/17 | 09:02          |
| Batch                     | 1700469   |        |        |      |       |      |      |            |            |          |                |
| QC1203874561              | 432570002 | DUP    |        |      |       |      |      |            |            |          |                |
| Nitrogen, Total Kjeldahl  |           | U      | ND     | U    | ND    | mg/L | N/A  |            | KLP1       | 09/14/17 | 13:15          |
| QC1203874560              | LCS       |        |        |      |       |      |      |            |            |          |                |
| Nitrogen, Total Kjeldahl  | 1.00      |        |        |      | 0.949 | mg/L | 94.9 | (90%-110%) |            | 09/14/17 | 13:14          |
| QC1203874559              | MB        |        |        |      |       |      |      |            |            |          |                |
| Nitrogen, Total Kjeldahl  |           |        | U      | ND   | mg/L  |      |      |            |            | 09/14/17 | 13:13          |
| QC1203874563              | 432570002 | MS     |        |      |       |      |      |            |            |          |                |
| Nitrogen, Total Kjeldahl  | 1.00      | U      | ND     |      | 0.973 | mg/L | 94.4 | (90%-110%) |            | 09/14/17 | 13:16          |
| Batch                     | 1700471   |        |        |      |       |      |      |            |            |          |                |
| QC1203874567              | 432570001 | DUP    |        |      |       |      |      |            |            |          |                |
| Phosphorus, Total as P    |           |        | 0.174  |      | 0.177 | mg/L | 1.71 | ^          | (+/-0.050) | KLP1     | 09/15/17 10:33 |

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| Parmname                  | NOM       | Sample | Qual   | QC    | Units  | RPD%  | REC%  | Range      | Anlst      | Date     | Time           |
|---------------------------|-----------|--------|--------|-------|--------|-------|-------|------------|------------|----------|----------------|
| <b>Nutrient Analysis</b>  |           |        |        |       |        |       |       |            |            |          |                |
| Batch                     | 1700471   |        |        |       |        |       |       |            |            |          |                |
| QC1203874566              | LCS       |        |        |       |        |       |       |            |            |          |                |
| Phosphorus, Total as P    | 1.00      |        |        | 0.990 | mg/L   |       | 99    | (80%-124%) | KLP1       | 09/15/17 | 10:31          |
| QC1203874565              | MB        |        |        |       |        |       |       |            |            |          |                |
| Phosphorus, Total as P    |           |        | U      | ND    | mg/L   |       |       |            |            | 09/15/17 | 10:30          |
| QC1203874570              | 432570001 | MS     |        |       |        |       |       |            |            |          |                |
| Phosphorus, Total as P    | 1.00      | 0.174  |        | 1.40  | mg/L   |       | 123   | (63%-139%) |            | 09/15/17 | 10:38          |
| Batch                     | 1700478   |        |        |       |        |       |       |            |            |          |                |
| QC1203874590              | 432570001 | DUP    |        |       |        |       |       |            |            |          |                |
| Nitrogen, Nitrate/Nitrite |           | J      | 0.0308 | J     | 0.0311 | mg/L  | 0.969 | ^          | (+/-0.050) | AXH3     | 09/15/17 09:15 |
| QC1203874586              | LCS       |        |        |       |        |       |       |            |            |          |                |
| Nitrogen, Nitrate/Nitrite | 1.00      |        |        | 1.04  | mg/L   |       | 104   | (90%-110%) |            | 09/15/17 | 08:51          |
| QC1203874585              | MB        |        |        |       |        |       |       |            |            |          |                |
| Nitrogen, Nitrate/Nitrite |           |        | U      | ND    | mg/L   |       |       |            |            | 09/15/17 | 08:49          |
| QC1203874595              | 432570001 | PS     |        |       |        |       |       |            |            |          |                |
| Nitrogen, Nitrate/Nitrite | 1.00      | J      | 0.0308 | 1.06  | mg/L   |       | 103   | (90%-110%) |            | 09/15/17 | 09:16          |
| <b>Solids Analysis</b>    |           |        |        |       |        |       |       |            |            |          |                |
| Batch                     | 1700092   |        |        |       |        |       |       |            |            |          |                |
| QC1203873723              | 432512001 | DUP    |        |       |        |       |       |            |            |          |                |
| Total Dissolved Solids    |           |        | 266    | 129   | mg/L   | 71.4* |       | (0%-5%)    | KLP1       | 09/13/17 | 14:07          |
| QC1203873722              | LCS       |        |        |       |        |       |       |            |            |          |                |
| Total Dissolved Solids    | 300       |        |        | 303   | mg/L   |       | 101   | (95%-105%) |            | 09/13/17 | 14:07          |
| QC1203873721              | MB        |        |        |       |        |       |       |            |            |          |                |
| Total Dissolved Solids    |           |        | U      | ND    | mg/L   |       |       |            |            | 09/13/17 | 14:07          |



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| Parmname                          | NOM       | Sample | Qual | QC   | Units    | RPD%  | REC% | Range      | Anlst | Date     | Time  |
|-----------------------------------|-----------|--------|------|------|----------|-------|------|------------|-------|----------|-------|
| <b>Titration and Ion Analysis</b> |           |        |      |      |          |       |      |            |       |          |       |
| Batch                             | 1701895   |        |      |      |          |       |      |            |       |          |       |
| QC1203878343                      | 432570001 | DUP    |      |      |          |       |      |            |       |          |       |
| Alkalinity, Total as CaCO3        |           | 76.2   |      | 77.6 | mg/L     | 1.82  |      | (0%-20%)   | RXB5  | 09/19/17 | 14:29 |
| Carbonate alkalinity (CaCO3)      | U         | ND     | U    | ND   | mg/L     | N/A   |      |            |       |          |       |
| QC1203878342                      | LCS       |        |      |      |          |       |      |            |       |          |       |
| Alkalinity, Total as CaCO3        | 100       |        |      | 108  | mg/L     |       | 108  | (90%-110%) |       | 09/19/17 | 14:16 |
| QC1203878345                      | 432570001 | MS     |      |      |          |       |      |            |       |          |       |
| Alkalinity, Total as CaCO3        | 100       | 76.2   |      | 178  | mg/L     |       | 101  | (80%-120%) |       | 09/19/17 | 14:30 |
| Batch                             | 1701903   |        |      |      |          |       |      |            |       |          |       |
| QC1203878364                      | 432570001 | DUP    |      |      |          |       |      |            |       |          |       |
| pH                                | H         | 8.30   | H    | 8.31 | SU       | 0.12  |      | (0%-5%)    | RXB5  | 09/19/17 | 14:27 |
| QC1203878365                      | 433059007 | DUP    |      |      |          |       |      |            |       |          |       |
| pH                                | H         | 7.14   | H    | 7.19 | SU       | 0.698 |      | (0%-5%)    |       | 09/19/17 | 15:09 |
| QC1203878363                      | LCS       |        |      |      |          |       |      |            |       |          |       |
| pH                                | 7.00      |        |      | 6.98 | SU       |       | 99.7 | (99%-101%) |       | 09/19/17 | 13:55 |
| Batch                             | 1703142   |        |      |      |          |       |      |            |       |          |       |
| QC1203881179                      | 432325001 | DUP    |      |      |          |       |      |            |       |          |       |
| Conductivity                      |           | 162    |      | 159  | umhos/cm | 2.18  |      | (0%-10%)   | VH1   | 09/28/17 | 11:06 |
| QC1203881177                      | LCS       |        |      |      |          |       |      |            |       |          |       |
| Conductivity                      | 1410      |        |      | 1410 | umhos/cm |       | 99.7 | (95%-105%) |       | 09/28/17 | 11:00 |

- Notes:**
- < Result is less than value reported
  - > Result is greater than value reported
  - B The target analyte was detected in the associated blank.
  - E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
  - H Analytical holding time was exceeded

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| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------|-----|--------|------|----|-------|------|------|-------|-------|------|------|
| J        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| J        |     |        |      |    |       |      |      |       |       |      |      |
| N/A      |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| N1       |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| ND       |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| NJ       |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| Q        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| R        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| R        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| U        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| X        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| Z        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| ^        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| d        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| e        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |
| h        |     |        |      |    |       |      |      |       |       |      |      |
|          |     |        |      |    |       |      |      |       |       |      |      |

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.