

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: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132233

WORK ORDER:

| | AS PLANNED | AS COLLECTED | | AS PLANNED | AS COLLECTED |
|---------------------------------|---------------|--------------|----------------------|---------------|---------------|
| Date Collected (MM/DD/YYYY): | 05-04-2017 | OK | FIELD MATRIX: | WG | OK |
| TIME COLLECTED (HH:MM): | 10:24 | | MEDIA: | UA | |
| PRS ID: | NA | | SAMPLE TECH CODE: | GSP | |
| LOCATION ID: | R-46 | | FIELD PREP: | UF | |
| LOCATION TYPE: | NA | | FIELD QC TYPE: | REG | |
| TOP DEPTH: | | | SAMPLE USAGE: | INV | |
| BOTTOM DEPTH: | | | EXCAVATED: | | YES / NO / NA |

| PRIORITY | ORDER | CONTAINER | # | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|----------------|-----------------------------|---|--------------|---------------|----------------------|
| NA | MSGP-Hg | 1 LITER POLY | 1 | HNO3 | Y | NA |
| | WSP-8260B-VOA | 40 ML SEPTUM AMBER GLASS | 2 | HCL | | |
| | WSP-8270C-SVOA | 1 LITER AMBER GLASS | 2 | ICE | | |
| | WSP-CN(T) | 250 ML POLY | 1 | NAOH | | |
| | WSP-LL-H-3 | 1 LITER POLY | 1 | NONE | | |
| | WSP-TKN+TOC | 500 ML AMBER 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):

| | | | |
|---|---------------------------------|--|-------------------------------|
| RELINQUISHED BY (Printed Name) ANDREW UIGIL (Signature) <i>Andrew Uigil</i> | Date/Time 05/04/2017 1330 | RECEIVED BY <i>M. Montoya</i> (Printed Name) _____ (Signature) _____ | Date/Time 05/04/17 1330 |
|---|---------------------------------|--|-------------------------------|

Date/Time

Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132327

WORK ORDER:

| | AS PLANNED | AS COLLECTED | | AS PLANNED | AS COLLECTED |
|---------------------------------|---------------|--------------|----------------------|---------------|---------------|
| Date Collected (MM/DD/YYYY): | 5/4/2017 | OK | FIELD MATRIX: | WG | OK |
| TIME COLLECTED (HH:MM): | 1147 | | MEDIA: | UA | |
| PRS ID: | OK | | SAMPLE TECH CODE: | RSP | |
| LOCATION ID: | SCI-2 | | FIELD PREP: | F | |
| LOCATION TYPE: | Mon | | FIELD QC TYPE: | REG | |
| TOP DEPTH: | OK | | SAMPLE USAGE: | INV | |
| BOTTOM DEPTH: | ↓ | ↓ | EXCAVATED: | | YES / NO / NA |

| PRIORITY | ORDER | CONTAINER | # | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|----------------------------------|-----------------------|---|--------------|---------------|----------------------|
| NA | WSP-All Metals | 1 LITER POLY | 1 | HNO3 ICE | Y | NA |
| ↓ | WSP-CR52/53 | 1 LITER POLY | 1 | ICE | ↓ | ↓ |
| ↓ | WSP- GENINORG+PerChlorat e | 1 LITER POLY | 1 | ICE | ↓ | ↓ |
| ↓ | WSP- NH3+NO3/NO2 | 500 ML AMBER GLASS | 1 | H2SO4 | ↓ | ↓ |

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): T. Bonham, T. Walker

| | | | |
|---|-----------------------------|--|-----------------------------|
| RELINQUISHED BY (Printed Name) Tanner Bonham (Signature) <i>[Signature]</i> | Date/Time 5/4/17 1225 | RECEIVED BY <i>M. Martin</i> (Printed Name) <i>[Signature]</i> (Signature) | Date/Time 5/4/17 1225 |
| RELINQUISHED BY (Printed Name) (Signature) | Date/Time | RECEIVED BY (Printed Name) (Signature) | Date/Time |

Report Date: 05/02/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132213

WORK ORDER:

| | AS PLANNED | AS COLLECTED | | AS PLANNED | AS COLLECTED |
|---------------------------------|---------------|--------------|----------------------|---------------|---------------|
| Date Collected (MM/DD/YYYY): | 05-04-2017 | OK | FIELD MATRIX: | WG | OK |
| TIME COLLECTED (HH:MM): | 10:24 | | MEDIA: | UA | |
| PRS ID: | NA | | SAMPLE TECH CODE: | GSP | |
| LOCATION ID: | R-46 | | FIELD PREP: | F | |
| LOCATION TYPE: | NA | | FIELD QC TYPE: | REG | |
| TOP DEPTH: | | | SAMPLE USAGE: | INV | |
| BOTTOM DEPTH: | | | EXCAVATED: | | YES / NO / NA |

| PRIORITY | ORDER | CONTAINER | # | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|----------------------------------|-----------------------|---|--------------|---------------|----------------------|
| NA | WSP-All Metals | 1 LITER POLY | 1 | HNO3 ICE | Y | NA |
| | WSP- GENINORG+PerChlorat e | 1 LITER POLY | 1 | ICE | | |
| | WSP- NH3+NO3/NO2 | 500 ML AMBER GLASS | 1 | H2SO4 | | |

SAMPLE COMMENTS:

Sampled ~ 50' from running diesel generator

LOCATION COMMENTS:

FIELD PARAMETERS:

| | | | | | | |
|----------------------------------|-------|-------|------------------|------|-------------------------|-------|
| Sample Time | 10:24 | HH:MM | Dissolved Oxygen | 6.83 | Flow (in gpm) | 4.92 |
| Oxidation-Reduction Potential | 206.8 | | pH | 7.86 | Specific Conductance | 120.1 |
| Temperature | 20.8 | | Turbidity | 0.29 | | |

COLLECTED BY (PRINT): A. Vigil, D. Jaramila

| | | | |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY (Printed Name) ANTONIO VIGIL (Signature) Antonio Vigil | Date/Time 05/04/2017 1330 | RECEIVED BY (Printed Name) M. Marquez (Signature) M. Marquez | Date/Time 5/4/17 1330 |
| RELINQUISHED BY (Printed Name) (Signature) | Date/Time | RECEIVED BY (Printed Name) (Signature) | Date/Time |

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132302

WORK ORDER:

| | AS PLANNED | AS COLLECTED | | AS PLANNED | AS COLLECTED |
|---------------------------------|---------------|--------------|----------------------|---------------|---------------|
| Date Collected (MM/DD/YYYY): | 05-04-2017 | OK | FIELD MATRIX: | WG | OK |
| TIME COLLECTED (HH:MM): | 10:24 | | MEDIA: | UA | |
| PRS ID: | NA | | SAMPLE TECH CODE: | DC | |
| LOCATION ID: | R-46 | | FIELD PREP: | UF | |
| LOCATION TYPE: | NA | | FIELD QC TYPE: | FTB | |
| TOP DEPTH: | | | SAMPLE USAGE: | QC | |
| BOTTOM DEPTH: | | | EXCAVATED: | | YES / NO (NA) |

| PRIORITY | ORDER | CONTAINER | # | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|-------------------|-----------------------------|------------------------|--------------|---------------|----------------------|
| NA | WSP-8260B- VOA | 40 ML SEPTUM AMBER GLASS | 1 2 5/4/17 13 | HCL | Y | NA |

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): A. Vigil, D. Jaramillo

| | | | |
|---|---------------------------------|---|-----------------------------|
| RELINQUISHED BY (Printed Name) Andrew Vigil (Signature) [Signature] | Date/Time 05/04/2017 1330 | RECEIVED BY (Printed Name) M. Montoya (Signature) [Signature] | Date/Time 5/4/17 1330 |
| RELINQUISHED BY (Printed Name) (Signature) | Date/Time | RECEIVED BY (Printed Name) (Signature) | Date/Time |

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132223

WORK ORDER:

| | AS PLANNED | AS COLLECTED | | AS PLANNED | AS COLLECTED |
|---------------------------------|---------------|--------------|----------------------|---------------|-----------------|
| Date Collected (MM/DD/YYYY): | 05-04-2017 | OK | FIELD MATRIX: | WG | OK |
| TIME COLLECTED (HH:MM): | 11:59 | | MEDIA: | UA | |
| PRS ID: | NA | | SAMPLE TECH CODE: | GSP | |
| LOCATION ID: | R-14 S1 | | FIELD PREP: | UF | |
| LOCATION TYPE: | NA | | FIELD QC TYPE: | REG | |
| TOP DEPTH: | | | SAMPLE USAGE: | INV | |
| BOTTOM DEPTH: | | | EXCAVATED: | | YES / 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-8270C-SVOA | 1 LITER AMBER GLASS | 2 | ICE | | |
| | WSP-LL-H-3 | 1 LITER POLY | 1 | NONE | | |

SAMPLE COMMENTS:

Sampled 40 ft. from running diesel generator

LOCATION COMMENTS:

None

FIELD PARAMETERS:

| | | | | | | |
|-------------------------------|-------|-------|------------------|------|----------------------|-------|
| Sample Time | 11:59 | HH:MM | Dissolved Oxygen | 5.72 | Flow (in gpm) | 6.98 |
| Oxidation-Reduction Potential | 187.9 | | pH | 8.11 | Specific Conductance | 127.4 |
| Temperature | 23.4 | | Turbidity | 0.20 | | |

COLLECTED BY (PRINT):

A.V. Gil, D. Jaramila

| | | | |
|--|---------------------------------|---|-----------------------------|
| RELINQUISHED BY (Printed Name) ANOREN YIGIL (Signature) <i>[Signature]</i> | Date/Time 05/04/2017 1330 | RECEIVED BY <i>[Signature]</i> (Printed Name) (Signature) | Date/Time 5/4/17 1330 |
| RELINQUISHED BY (Printed Name) (Signature) | Date/Time | RECEIVED BY (Printed Name) (Signature) | Date/Time |

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132468

WORK ORDER:

| | AS PLANNED | AS COLLECTED | | AS PLANNED | AS COLLECTED |
|---------------------------------|---------------|--------------|----------------------|---------------|-----------------|
| Date Collected (MM/DD/YYYY): | 05-04-2017 | OK | FIELD MATRIX: | WG | OK |
| TIME COLLECTED (HH:MM): | 11:59 | | MEDIA: | UA | |
| PRS ID: | NA | | SAMPLE TECH CODE: | DC | |
| LOCATION ID: | R-14 S1 | | FIELD PREP: | UF | |
| LOCATION TYPE: | NA | | FIELD QC TYPE: | FTB | |
| TOP DEPTH: | | | SAMPLE USAGE: | QC | |
| BOTTOM DEPTH: | | | EXCAVATED: | | YES / NO / (NA) |

| PRIORITY | ORDER | CONTAINER | # | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|-------------------|-----------------------------|-----------------|--------------|---------------|----------------------|
| NA | WSP-8260B- VOA | 40 ML SEPTUM AMBER GLASS | 2 IN. 5/4/17 | HCL | Y | NA |

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): A. Vigil, D. Jaramillo

| | | | |
|---|---------------------------------|---|-----------------------------|
| RELINQUISHED BY (Printed Name) A. Vigil (Signature) [Signature] | Date/Time 05/04/2017 1330 | RECEIVED BY (Printed Name) M. Montoya (Signature) [Signature] | Date/Time 5/4/17 1330 |
| RELINQUISHED BY (Printed Name) (Signature) | Date/Time | RECEIVED BY (Printed Name) (Signature) | Date/Time |

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132336

WORK ORDER:

| | AS PLANNED | AS COLLECTED | | AS PLANNED | AS COLLECTED |
|---------------------------------|---------------|--------------|----------------------|---------------|----------------------|
| Date Collected (MM/DD/YYYY): | 5/4/2017 | OK | FIELD MATRIX: | WG | OK |
| TIME COLLECTED (HH:MM): | 1147 | | MEDIA: | UA | |
| PRS ID: | OK | | SAMPLE TECH CODE: | RSP | |
| LOCATION ID: | SCI-2 | | FIELD PREP: | UF | |
| LOCATION TYPE: | Mon | | FIELD QC TYPE: | REG | |
| TOP DEPTH: | OK | | SAMPLE USAGE: | INV | |
| BOTTOM DEPTH: | ↓ | ↓ | EXCAVATED: | | YES / NO / <u>NA</u> |

| PRIORITY | ORDER | CONTAINER | # | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|-------------|--------------------|---|--------------|---------------|----------------------|
| NA | MSGP-Hg | 1 LITER POLY | 1 | HNO3 | Y | NA |
| ↓ | WSP-CN(T) | 250 ML POLY | 1 | NAOH | ↓ | ↓ |
| ↓ | WSP-TKN+TOC | 500 ML AMBER GLASS | 1 | H2SO4 | ↓ | ↓ |

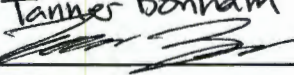
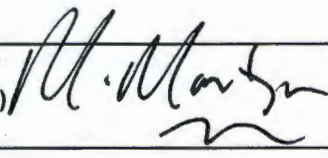
SAMPLE COMMENTS: breezy while sampling

LOCATION COMMENTS: None

FIELD PARAMETERS:

| | | | | | | |
|-------------------------------|-------|-------|------------------|------|----------------------|------|
| Sample Time | 1147 | HH:MM | Dissolved Oxygen | 8.12 | Flow (in gpm) | 0.89 |
| Oxidation-Reduction Potential | 154.5 | | pH | 7.02 | Specific Conductance | 619 |
| Temperature | 14.6 | | Turbidity | 1.29 | | |

COLLECTED BY (PRINT): T. Bonham, T. Walker

| | | | |
|--|-------------------------------|---|-----------------------------|
| RELINQUISHED BY (Printed Name) Tanner Bonham (Signature)  | Date/Time 5/4/2017 1225 | RECEIVED BY (Printed Name) M. Martin (Signature)  | Date/Time 5/4/17 1225 |
| RELINQUISHED BY (Printed Name) (Signature) | Date/Time | RECEIVED BY (Printed Name) (Signature) | Date/Time |

Report Date: 05/02/2017

DATA VALIDATION REPORT

Chain Of Custody No. 2017-1486

1. Distribution Of Samples In EDD.

| SDG | Analytical Method | Regular Samples | Field Duplicates | Trip Blanks | Field Blanks | Equipment Blanks |
|--------|-------------------|-----------------|------------------|-------------|--------------|------------------|
| 422570 | EPA:120.1 | 2 | | | | |
| 422570 | EPA:150.1 | 2 | | | | |
| 422570 | EPA:160.1 | 2 | | | | |
| 422570 | EPA:170.0 | 5 | | 2 | | |
| 422570 | EPA:245.2 | 4 | | | | |
| 422570 | EPA:300.0 | 2 | | | | |
| 422570 | EPA:310.1 | 2 | | | | |
| 422570 | EPA:335.4 | 2 | | | | |
| 422570 | EPA:350.1 | 2 | | | | |
| 422570 | EPA:351.2 | 2 | | | | |
| 422570 | EPA:353.2 | 2 | | | | |
| 422570 | EPA:365.4 | 2 | | | | |
| 422570 | SM:A2340B | 2 | | | | |
| 422570 | SW-846:6010C | 2 | | | | |
| 422570 | SW-846:6020 | 2 | | | | |
| 422570 | SW-846:6850 | 2 | | | | |
| 422570 | SW-846:8260B | 2 | | 2 | | |
| 422570 | SW-846:8270D | 2 | | | | |
| 422570 | SW-846:9060 | 2 | | | | |

| | | | | | | 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 |
|--------|-------------------|-----------------|-------------|-----------------|------------------|-------------|--------------|------------------|---------------|---------------|-------------------|-------------------|-----------------------|---------------------|-------------------------|-------------|------------------|----------------|----------------|--------------------|----------------|
| SDG | Analytical Method | Analysis Lot ID | Prep Lot ID | Regular Samples | Field Duplicates | | | | | | | | | | | | | | | | |
| 422570 | EPA:120.1 | 1663499 | 1663499 | 2 | | | | | | | | | | 1 | | | | 1 | | | |
| 422570 | EPA:150.1 | 1665849 | 1665849 | 2 | | | | | | | | | | 1 | | | | 1 | | | |
| 422570 | EPA:160.1 | 1664155 | 1664155 | 2 | | | | 1 | | | | | | 1 | | | | 1 | | | |
| 422570 | EPA:170.0 | NA | NA | 5 | | 2 | | | | | | | | | | | | | | | |
| 422570 | EPA:245.2 | 1662863 | 1662854 | 4 | | | | | 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 |
|--------|-------------------|-----------------|-------------|-----------------|------------------|-------------|--------------|------------------|---------------|---------------|-------------------|-------------------|-----------------------|---------------------|-------------------------|-------------|------------------|----------------|----------------|--------------------|----------------|
| 422570 | EPA:300.0 | 1664539 | 1664539 | 2 | | | | | 1 | | | | | 1 | | | | 1 | | | |
| 422570 | EPA:310.1 | 1665848 | 1665848 | 2 | | | | | | 1 | | | | 1 | | | | 1 | | | |
| 422570 | EPA:335.4 | 1662558 | 1662557 | 2 | | | | | 1 | 1 | | | | 1 | | | | 1 | | | |
| 422570 | EPA:350.1 | 1661776 | 1661775 | 2 | | | | | 1 | 1 | | | | 1 | | | | 1 | | | |
| 422570 | EPA:351.2 | 1662576 | 1662574 | 2 | | | | | 1 | 1 | | | | 1 | | | | 1 | | | |
| 422570 | EPA:353.2 | 1663213 | 1663213 | 2 | | | | | 1 | | | | | 1 | | | | 1 | | | |
| 422570 | EPA:365.4 | 1662570 | 1662568 | 2 | | | | | 1 | 1 | | | | 1 | | | | 1 | | | |
| 422570 | SM:A2340B | 1670476 | 1670476 | 2 | | | | | | | | | | | | | | | | | |
| 422570 | SW-846:6010C | 1662753 | 1662752 | 2 | | | | | 1 | 1 | | | | 1 | | | | 1 | | | |
| 422570 | SW-846:6020 | 1662760 | 1662759 | 2 | | | | | 1 | 1 | | | | 1 | | | | 1 | | | |
| 422570 | SW-846:6020 | 1667968 | 1667967 | 2 | | | | | 1 | 1 | | | | 1 | | | | 1 | | | |
| 422570 | SW-846:6850 | 1662828 | 1662825 | 2 | | | | | 1 | 1 | 1 | | | 1 | | | | | | | |
| 422570 | SW-846:8260B | 1665467 | 1665467 | 2 | | 2 | | | 1 | | | | | 2 | | | | | | | |
| 422570 | SW-846:8270D | 1663446 | 1663445 | 2 | | | | | 1 | 1 | 1 | | | 1 | | | | | | | |
| 422570 | SW-846:9060 | 1663112 | 1663112 | 2 | | | | | 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 | CAMO-17-132213 | 422570003 | REG | 1 | 0 | 0 | 0 |
| EPA:120.1 | GENERAL CHEMISTRY | CAMO-17-132216 | 1203785788 | DUP | 1 | 0 | 0 | 0 |
| EPA:120.1 | GENERAL CHEMISTRY | CASA-17-132327 | 422570006 | REG | 1 | 0 | 0 | 0 |
| EPA:120.1 | GENERAL CHEMISTRY | LCS | 1203785786 | LCS | 0 | 0 | 1 | 0 |
| EPA:150.1 | GENERAL CHEMISTRY | CAMO-17-132213 | 422570003 | REG | 1 | 0 | 0 | 0 |
| EPA:150.1 | GENERAL CHEMISTRY | CAMO-17-132216 | 1203791299 | DUP | 1 | 0 | 0 | 0 |
| EPA:150.1 | GENERAL CHEMISTRY | CASA-17-132327 | 422570006 | REG | 1 | 0 | 0 | 0 |
| EPA:150.1 | GENERAL CHEMISTRY | LCS | 1203791298 | LCS | 0 | 0 | 1 | 0 |
| EPA:160.1 | GENERAL CHEMISTRY | CAMO-17-132213 | 1203787280 | DUP | 1 | 0 | 0 | 0 |
| EPA:160.1 | GENERAL CHEMISTRY | CAMO-17-132213 | 422570003 | REG | 1 | 0 | 0 | 0 |
| EPA:160.1 | GENERAL CHEMISTRY | CASA-17-132327 | 422570006 | REG | 1 | 0 | 0 | 0 |
| EPA:160.1 | GENERAL CHEMISTRY | LCS | 1203787278 | LCS | 0 | 0 | 1 | 0 |
| EPA:160.1 | GENERAL CHEMISTRY | MB | 1203787277 | MB | 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:170.0 | VOC | CAMO-17-132213 | 422570003 | REG | 1 | 0 | 0 | 0 |
| EPA:170.0 | VOC | CAMO-17-132223 | 422570001 | REG | 1 | 0 | 0 | 0 |
| EPA:170.0 | VOC | CAMO-17-132233 | 422570004 | REG | 1 | 0 | 0 | 0 |
| EPA:170.0 | VOC | CAMO-17-132302 | 422570005 | FTB | 1 | 0 | 0 | 0 |
| EPA:170.0 | VOC | CAMO-17-132468 | 422570002 | FTB | 1 | 0 | 0 | 0 |
| EPA:170.0 | VOC | CASA-17-132327 | 422570006 | REG | 1 | 0 | 0 | 0 |
| EPA:170.0 | VOC | CASA-17-132336 | 422570007 | REG | 1 | 0 | 0 | 0 |
| EPA:245.2 | INORGANIC | CAMO-17-132213 | 422570003 | REG | 1 | 0 | 0 | 0 |
| EPA:245.2 | INORGANIC | CAMO-17-132216 | 1203784147 | DUP | 1 | 0 | 0 | 0 |
| EPA:245.2 | INORGANIC | CAMO-17-132216 | 1203784149 | MS | 0 | 0 | 1 | 0 |
| EPA:245.2 | INORGANIC | CAMO-17-132233 | 422570004 | REG | 1 | 0 | 0 | 0 |
| EPA:245.2 | INORGANIC | CASA-17-132327 | 422570006 | REG | 1 | 0 | 0 | 0 |
| EPA:245.2 | INORGANIC | CASA-17-132336 | 422570007 | REG | 1 | 0 | 0 | 0 |
| EPA:245.2 | INORGANIC | LCS | 1203784146 | LCS | 0 | 0 | 1 | 0 |
| EPA:245.2 | INORGANIC | MB | 1203784145 | MB | 1 | 0 | 0 | 0 |
| EPA:300.0 | GENERAL CHEMISTRY | CAMO-17-132213 | 1203788155 | DUP | 4 | 0 | 0 | 0 |
| EPA:300.0 | GENERAL CHEMISTRY | CAMO-17-132213 | 422570003 | REG | 4 | 0 | 0 | 0 |
| EPA:300.0 | GENERAL CHEMISTRY | CASA-17-132327 | 422570006 | REG | 4 | 0 | 0 | 0 |
| EPA:300.0 | GENERAL CHEMISTRY | LCS | 1203788154 | LCS | 0 | 0 | 4 | 0 |
| EPA:300.0 | GENERAL CHEMISTRY | MB | 1203788153 | MB | 4 | 0 | 0 | 0 |
| EPA:310.1 | GENERAL CHEMISTRY | CAMO-17-132213 | 422570003 | REG | 2 | 0 | 0 | 0 |
| EPA:310.1 | GENERAL CHEMISTRY | CAMO-17-132216 | 1203791292 | DUP | 2 | 0 | 0 | 0 |
| EPA:310.1 | GENERAL CHEMISTRY | CAMO-17-132216 | 1203791295 | MS | 0 | 0 | 1 | 0 |
| EPA:310.1 | GENERAL CHEMISTRY | CASA-17-132327 | 422570006 | REG | 2 | 0 | 0 | 0 |
| EPA:310.1 | GENERAL CHEMISTRY | LCS | 1203791289 | LCS | 0 | 0 | 1 | 0 |
| EPA:335.4 | GENERAL CHEMISTRY | CAMO-17-132233 | 1203783360 | DUP | 1 | 0 | 0 | 0 |
| EPA:335.4 | GENERAL CHEMISTRY | CAMO-17-132233 | 1203783361 | MS | 0 | 0 | 1 | 0 |
| EPA:335.4 | GENERAL CHEMISTRY | CAMO-17-132233 | 422570004 | REG | 1 | 0 | 0 | 0 |
| EPA:335.4 | GENERAL CHEMISTRY | CASA-17-132336 | 422570007 | REG | 1 | 0 | 0 | 0 |
| EPA:335.4 | GENERAL CHEMISTRY | LCS | 1203783359 | LCS | 0 | 0 | 1 | 0 |
| EPA:335.4 | GENERAL CHEMISTRY | MB | 1203783358 | MB | 1 | 0 | 0 | 0 |
| EPA:350.1 | GENERAL CHEMISTRY | CAMO-17-132213 | 422570003 | REG | 1 | 0 | 0 | 0 |
| EPA:350.1 | GENERAL CHEMISTRY | CASA-17-132320 | 1203783330 | DUP | 1 | 0 | 0 | 0 |
| EPA:350.1 | GENERAL CHEMISTRY | CASA-17-132320 | 1203783331 | MS | 0 | 0 | 1 | 0 |
| EPA:350.1 | GENERAL CHEMISTRY | CASA-17-132327 | 422570006 | REG | 1 | 0 | 0 | 0 |
| EPA:350.1 | GENERAL CHEMISTRY | LCS | 1203781426 | LCS | 0 | 0 | 1 | 0 |
| EPA:350.1 | GENERAL CHEMISTRY | MB | 1203781425 | MB | 1 | 0 | 0 | 0 |
| EPA:351.2 | GENERAL CHEMISTRY | CAMO-17-132233 | 422570004 | REG | 1 | 0 | 0 | 0 |
| EPA:351.2 | GENERAL CHEMISTRY | CASA-17-132329 | 1203783405 | DUP | 1 | 0 | 0 | 0 |
| EPA:351.2 | GENERAL CHEMISTRY | CASA-17-132329 | 1203783406 | MS | 0 | 0 | 1 | 0 |

DATA VALIDATION REPORT

| Analytical Method | Analytical Method Category | Field Sample ID | Lab Sample ID | Sample Purpose | Target Analytes | Surrogates | Spiked Compounds | TICS |
|-------------------|----------------------------|-----------------|---------------|----------------|-----------------|------------|------------------|------|
| EPA:351.2 | GENERAL CHEMISTRY | CASA-17-132336 | 422570007 | REG | 1 | 0 | 0 | 0 |
| EPA:351.2 | GENERAL CHEMISTRY | LCS | 1203783402 | LCS | 0 | 0 | 1 | 0 |
| EPA:351.2 | GENERAL CHEMISTRY | MB | 1203783401 | MB | 1 | 0 | 0 | 0 |
| EPA:353.2 | GENERAL CHEMISTRY | CAMO-17-132213 | 1203785038 | DUP | 1 | 0 | 0 | 0 |
| EPA:353.2 | GENERAL CHEMISTRY | CAMO-17-132213 | 422570003 | REG | 1 | 0 | 0 | 0 |
| EPA:353.2 | GENERAL CHEMISTRY | CASA-17-132327 | 422570006 | REG | 1 | 0 | 0 | 0 |
| EPA:353.2 | GENERAL CHEMISTRY | LCS | 1203785035 | LCS | 0 | 0 | 1 | 0 |
| EPA:353.2 | GENERAL CHEMISTRY | MB | 1203785034 | MB | 1 | 0 | 0 | 0 |
| EPA:365.4 | GENERAL CHEMISTRY | CAMO-17-132213 | 422570003 | REG | 1 | 0 | 0 | 0 |
| EPA:365.4 | GENERAL CHEMISTRY | CASA-17-132320 | 1203783390 | DUP | 1 | 0 | 0 | 0 |
| EPA:365.4 | GENERAL CHEMISTRY | CASA-17-132320 | 1203783392 | MS | 0 | 0 | 1 | 0 |
| EPA:365.4 | GENERAL CHEMISTRY | CASA-17-132327 | 422570006 | REG | 1 | 0 | 0 | 0 |
| EPA:365.4 | GENERAL CHEMISTRY | LCS | 1203783388 | LCS | 0 | 0 | 1 | 0 |
| EPA:365.4 | GENERAL CHEMISTRY | MB | 1203783387 | MB | 1 | 0 | 0 | 0 |
| SM:A2340B | INORGANIC | CAMO-17-132213 | 422570003 | REG | 1 | 0 | 0 | 0 |
| SM:A2340B | INORGANIC | CASA-17-132327 | 422570006 | REG | 1 | 0 | 0 | 0 |
| SW-846:6010C | INORGANIC | CAMO-17-132213 | 1203783893 | DUP | 17 | 0 | 0 | 0 |
| SW-846:6010C | INORGANIC | CAMO-17-132213 | 1203783894 | MS | 0 | 0 | 17 | 0 |
| SW-846:6010C | INORGANIC | CAMO-17-132213 | 422570003 | REG | 17 | 0 | 0 | 0 |
| SW-846:6010C | INORGANIC | CASA-17-132327 | 422570006 | REG | 17 | 0 | 0 | 0 |
| SW-846:6010C | INORGANIC | LCS | 1203783892 | LCS | 0 | 0 | 17 | 0 |
| SW-846:6010C | INORGANIC | MB | 1203783891 | MB | 17 | 0 | 0 | 0 |
| SW-846:6020 | INORGANIC | CAMO-17-132213 | 1203783908 | DUP | 8 | 0 | 0 | 0 |
| SW-846:6020 | INORGANIC | CAMO-17-132213 | 1203783909 | MS | 0 | 0 | 8 | 0 |
| SW-846:6020 | INORGANIC | CAMO-17-132213 | 1203796398 | DUP | 3 | 0 | 0 | 0 |
| SW-846:6020 | INORGANIC | CAMO-17-132213 | 1203796399 | MS | 0 | 0 | 3 | 0 |
| SW-846:6020 | INORGANIC | CAMO-17-132213 | 422570003 | REG | 11 | 0 | 0 | 0 |
| SW-846:6020 | INORGANIC | CASA-17-132327 | 422570006 | REG | 11 | 0 | 0 | 0 |
| SW-846:6020 | INORGANIC | LCS | 1203783907 | LCS | 0 | 0 | 8 | 0 |
| SW-846:6020 | INORGANIC | LCS | 1203796397 | LCS | 0 | 0 | 3 | 0 |
| SW-846:6020 | INORGANIC | MB | 1203783906 | MB | 8 | 0 | 0 | 0 |
| SW-846:6020 | INORGANIC | MB | 1203796396 | MB | 3 | 0 | 0 | 0 |
| SW-846:6850 | LCMS/MS PERCHLORATE | CAMO-17-132213 | 422570003 | REG | 1 | 0 | 0 | 0 |
| SW-846:6850 | LCMS/MS PERCHLORATE | CASA-17-132320 | 1203784063 | MS | 0 | 0 | 1 | 0 |
| SW-846:6850 | LCMS/MS PERCHLORATE | CASA-17-132320 | 1203784064 | MSD | 0 | 0 | 1 | 0 |
| SW-846:6850 | LCMS/MS PERCHLORATE | CASA-17-132327 | 422570006 | REG | 1 | 0 | 0 | 0 |
| SW-846:6850 | LCMS/MS PERCHLORATE | LCS | 1203784062 | LCS | 0 | 0 | 1 | 0 |
| SW-846:6850 | LCMS/MS PERCHLORATE | MB | 1203784061 | MB | 1 | 0 | 0 | 0 |
| SW-846:8260B | VOC | CAMO-17-132223 | 422570001 | REG | 80 | 3 | 0 | 0 |
| SW-846:8260B | VOC | CAMO-17-132233 | 422570004 | REG | 80 | 3 | 0 | 0 |

DATA VALIDATION REPORT

| Analytical Method | Analytical Method Category | Field Sample ID | Lab Sample ID | Sample Purpose | Target Analytes | Surrogates | Spiked Compounds | TICS |
|-------------------|----------------------------|-----------------|---------------|----------------|-----------------|------------|------------------|------|
| SW-846:8260B | VOC | CAMO-17-132302 | 422570005 | FTB | 80 | 3 | 0 | 0 |
| SW-846:8260B | VOC | CAMO-17-132468 | 422570002 | FTB | 80 | 3 | 0 | 0 |
| SW-846:8260B | VOC | LCS | 1203790474 | LCS | 0 | 3 | 70 | 0 |
| SW-846:8260B | VOC | LCS | 1203790475 | LCS | 0 | 3 | 10 | 0 |
| SW-846:8260B | VOC | MB | 1203790473 | MB | 80 | 3 | 0 | 0 |
| SW-846:8270D | SVOC | CAMO-17-132223 | 1203785630 | MS | 0 | 6 | 76 | 0 |
| SW-846:8270D | SVOC | CAMO-17-132223 | 1203785631 | MSD | 0 | 6 | 76 | 0 |
| SW-846:8270D | SVOC | CAMO-17-132223 | 422570001 | REG | 80 | 6 | 0 | 0 |
| SW-846:8270D | SVOC | CAMO-17-132233 | 422570004 | REG | 80 | 6 | 0 | 0 |
| SW-846:8270D | SVOC | LCS | 1203785629 | LCS | 0 | 6 | 76 | 0 |
| SW-846:8270D | SVOC | MB | 1203785628 | MB | 80 | 6 | 0 | 0 |
| SW-846:9060 | GENERAL CHEMISTRY | CAMO-17-132233 | 422570004 | REG | 1 | 0 | 0 | 0 |
| SW-846:9060 | GENERAL CHEMISTRY | CASA-17-132329 | 1203784882 | DUP | 1 | 0 | 0 | 0 |
| SW-846:9060 | GENERAL CHEMISTRY | CASA-17-132336 | 422570007 | REG | 1 | 0 | 0 | 0 |
| SW-846:9060 | GENERAL CHEMISTRY | LCS | 1203784881 | LCS | 0 | 0 | 1 | 0 |
| SW-846:9060 | GENERAL CHEMISTRY | MB | 1203784880 | MB | 1 | 0 | 0 | 0 |

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

| Blank FS ID | Blank Lab Sample | Blank Type | Analytical Method | Sample | Parameter Name | Blank Lab Result | Lab Qualifier | Blank Lab Units | Blank Lab Detection Limit |
|----------------|------------------|--------------|-------------------|--------|-------------------------|------------------|---------------|-----------------|---------------------------|
| MB | 1203783401 | METHOD BLANK | EPA:351.2 | W | Total Kjeldahl Nitrogen | 0.0517 | J | mg/L | 0.100 |
| MB | 1203783891 | METHOD BLANK | SW-846:6010C | W | Sodium | -147 | J | ug/L | 300 |
| CAMO-17-132468 | 422570002 | TRIP BLANK | EPA:170.0 | W | Temperature | 4 | | Deg C | |

DATA VALIDATION REPORT

| Blank FS ID | Blank Lab Sample | Blank Type | Analytical Method | Sample | Parameter Name | | Blank Lab Result | Lab Qualifier | Blank Lab Units | Blank Lab Detection Limit |
|----------------|------------------|------------|-------------------|--------|----------------|---|------------------|---------------|-----------------|---------------------------|
| CAMO-17-132302 | 422570005 | TRIP BLANK | EPA:170.0 | W | Temperature | 4 | | Deg C | | |

| Field Sample ID | Blank Lab | Blank Type | Analytical Method | Parameter Name | Blank Lab Result | Blank Lab Units | Lab Result | Lab Qualifier | Lab Detection Limit | Detect Flag | Detect to Nondetect Factor | Detect to Estimated Factor | Use Factors |
|-----------------|------------|--------------|-------------------|-------------------------|------------------|-----------------|------------|---------------|---------------------|-------------|----------------------------|----------------------------|-------------|
| CASA-17-132336 | 1203783401 | METHOD BLANK | EPA:351.2 | Total Kjeldahl Nitrogen | 0.0517 | mg/L | 0.357 | | 0.100 | Y | 5 | 100 | Y |
| CAMO-17-132213 | 1203783891 | METHOD BLANK | SW-846:6010C | Sodium | -147 | ug/L | 9720 | | 300 | Y | | | |
| CASA-17-132327 | 1203783891 | METHOD BLANK | SW-846:6010C | Sodium | -147 | ug/L | 24700 | | 300 | Y | | | |

6. Any surrogate recoveries outside the control limits?

No.

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

| Field Sample ID | MS Lab Sample ID | MSD Lab Sample ID | Analytical Method | Parameter Name | Analysis Lot ID | Analysis Date | Sample Matrix | MS Spike Recovery | MSD Spike Recovery | MS Upper Limit | MS Lower Limit | MS Reject Limit | RPD | RPD Limit |
|-----------------|------------------|-------------------|-------------------|----------------------|-----------------|---------------|---------------|-------------------|--------------------|----------------|----------------|-----------------|-----|-----------|
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Aniline | 1663445 | 05-10-2017 | W | 76 | 0 | 113 | 37 | | 200 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Atrazine | 1663445 | 05-10-2017 | W | 93 | 33 | 129 | 42 | | 94 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Benzydine | 1663445 | 05-10-2017 | W | 20 | 0 | 130 | 15 | | 200 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Benzo(a)anthracene | 1663445 | 05-10-2017 | W | 93 | 63 | 120 | 39 | | 38 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Benzo(b)fluoranthene | 1663445 | 05-10-2017 | W | 86 | 122 | 122 | 31 | | 34 | 30 |

DATA VALIDATION REPORT

| Field Sample ID | MS Lab Sample ID | MSD Lab Sample ID | Analytical Method | Parameter Name | Analysis Lot ID | Analysis Date | Sample Matrix | MS Spike Recovery | MSD Spike Recovery | MS Upper Limit | MS Lower Limit | MS Reject Limit | RPD | RPD Limit |
|-----------------|------------------|-------------------|-------------------|-----------------------------|-----------------|---------------|---------------|-------------------|--------------------|----------------|----------------|-----------------|-----|-----------|
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Benzyl Alcohol | 1663445 | 05-10-2017 | W | 81 | 48 | 116 | 37 | | 51 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Butylbenzylphthalate | 1663445 | 05-10-2017 | W | 86 | 61 | 129 | 40 | | 34 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Chloroaniline[4-] | 1663445 | 05-10-2017 | W | 107 | 0 | 138 | 44 | | 200 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Chrysene | 1663445 | 05-10-2017 | W | 100 | 66 | 124 | 41 | | 41 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Dibenz(a,h)anthracene | 1663445 | 05-10-2017 | W | 105 | 131 | 125 | 30 | | 22 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Dichlorobenzene[1,2-] | 1663445 | 05-10-2017 | W | 64 | 47 | 99 | 28 | | 31 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Dichlorobenzene[1,3-] | 1663445 | 05-10-2017 | W | 61 | 41 | 97 | 27 | | 40 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Dichlorobenzene[1,4-] | 1663445 | 05-10-2017 | W | 64 | 44 | 97 | 28 | | 38 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Dichlorobenzidine[3,3'-] | 1663445 | 05-10-2017 | W | 107 | 0 | 124 | 34 | | 200 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Diphenylamine | 1663445 | 05-10-2017 | W | 77 | 31 | 118 | 37 | | 85 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Hexachlorobenzene | 1663445 | 05-10-2017 | W | 79 | 57 | 118 | 40 | | 32 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Hexachlorobutadiene | 1663445 | 05-10-2017 | W | 60 | 20 | 98 | 26 | | 98 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Hexachlorocyclopentadiene | 1663445 | 05-10-2017 | W | 45 | 20 | 79 | 26 | | 79 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Hexachloroethane | 1663445 | 05-10-2017 | W | 57 | 27 | 94 | 29 | | 72 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Indeno(1,2,3-cd)pyrene | 1663445 | 05-10-2017 | W | 105 | 128 | 121 | 27 | | 20 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Nitroaniline[2-] | 1663445 | 05-10-2017 | W | 87 | 58 | 121 | 41 | | 40 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Nitroaniline[3-] | 1663445 | 05-10-2017 | W | 110 | 0 | 144 | 42 | | 200 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Nitroaniline[4-] | 1663445 | 05-10-2017 | W | 98 | 0 | 133 | 30 | | 200 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Pyrene | 1663445 | 05-10-2017 | W | 80 | 57 | 128 | 35 | | 34 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Pyridine | 1663445 | 05-10-2017 | W | 42 | 10 | 93 | 24 | | 125 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Tetrachlorobenzene[1,2,4,5] | 1663445 | 05-10-2017 | W | 68 | 46 | 101 | 32 | | 40 | 30 |
| CAMO-17-132223 | 1203785630 | 1203785631 | SW-846:8270D | Trichlorobenzene[1,2,4-] | 1663445 | 05-10-2017 | W | 64 | 45 | 102 | 26 | | 35 | 30 |

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

DATA VALIDATION REPORT

| LCS Lab Sample | LCSD Lab | Analytical Method | Parameter Name | Lab Lot ID | Analysis | Sample Matrix | LCS Spike Recovery | LCSD Spike Recovery | Upper Limit | Lower Limit | Upper Rejection Limit | Lower Rejection Limit | RPD | RPD Limit |
|----------------|----------|-------------------|----------------|------------|------------|---------------|--------------------|---------------------|-------------|-------------|-----------------------|-----------------------|-----|-----------|
| 1203785629 | | SW-846:8270D | Benzoic Acid | 1663445 | 05-10-2017 | W | 18 | | 74 | 21 | | | | |

9. Any Field Duplicate RPDs outside the desired limits?

No.

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.

| Location ID | COC Number | Field Sample ID | Sample Purpose | Analysis Type Code | Analytical Suite | Analytical Method | Parameter Name | Lab Qualifier | Validation Qualifier | Validation Reason Codes | Detect Flag | Lab Result | Lab Units | Report Result | Report Units | Report MDA | Report Uncertainty | Lab Matrix | Sample Date | Percent | Analysis Lot ID | Validation Status Code | Use Flag |
|-------------|------------|-----------------|----------------|--------------------|-------------------|-------------------|-------------------------|---------------|----------------------|-------------------------|-------------|------------|-----------|---------------|--------------|------------|--------------------|------------|-------------|---------|-----------------|------------------------|----------|
| R-14 S1 | 2017-1486 | CAMO-17-132223 | REG | INIT | SVOC | SW-846:8270D | Benzoic Acid | U | UJ | SV12a | N | 20.0 | ug/L | 20.0 | ug/L | | | W | 05/04/2017 | | 1663446 | VAL | Y |
| R-46 | 2017-1486 | CAMO-17-132233 | REG | INIT | SVOC | SW-846:8270D | Benzoic Acid | U | UJ | SV12a | N | 21.3 | ug/L | 21.3 | ug/L | | | W | 05/04/2017 | | 1663446 | VAL | Y |
| SCI-2 | 2017-1486 | CASA-17-132336 | REG | INIT | GENERAL CHEMISTRY | EPA:351.2 | Total Kjeldahl Nitrogen | | J | I4a | Y | 0.357 | mg/L | 0.357 | mg/L | | | W | 05/04/2017 | | 1662576 | VAL | Y |

Reason Code

Description

I4a

The affected analytes are considered estimated and biased high because this analyte was identified in the method blank but was >5x

DATA VALIDATION REPORT

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. |
| SV12a | The LCS percent recovery was < the LAL but >10%. Follow the external laboratory limits located within the associated data package. |
| 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 |
|-----------------|-------------|----------------|-------------------|-----------------------|---------------|
| CAMO-17-132213 | R-46 | REG | EPA:120.1 | 0 | 1 |
| CAMO-17-132213 | R-46 | REG | EPA:150.1 | 0 | 1 |
| CAMO-17-132213 | R-46 | REG | EPA:160.1 | 0 | 1 |
| CAMO-17-132213 | R-46 | REG | EPA:170.0 | 0 | 1 |
| CAMO-17-132213 | R-46 | REG | EPA:245.2 | 0 | 1 |
| CAMO-17-132213 | R-46 | REG | EPA:300.0 | 0 | 4 |
| CAMO-17-132213 | R-46 | REG | EPA:310.1 | 0 | 2 |
| CAMO-17-132213 | R-46 | REG | EPA:350.1 | 0 | 1 |
| CAMO-17-132213 | R-46 | REG | EPA:353.2 | 0 | 1 |
| CAMO-17-132213 | R-46 | REG | EPA:365.4 | 0 | 1 |
| CAMO-17-132213 | R-46 | REG | SM:A2340B | 0 | 1 |
| CAMO-17-132213 | R-46 | REG | SW-846:6010C | 0 | 17 |
| CAMO-17-132213 | R-46 | REG | SW-846:6020 | 0 | 11 |
| CAMO-17-132213 | R-46 | REG | SW-846:6850 | 0 | 1 |
| CAMO-17-132223 | R-14 S1 | REG | EPA:170.0 | 0 | 1 |
| CAMO-17-132223 | R-14 S1 | REG | SW-846:8260B | 0 | 80 |
| CAMO-17-132223 | R-14 S1 | REG | SW-846:8270D | 0 | 80 |
| CAMO-17-132233 | R-46 | REG | EPA:170.0 | 0 | 1 |
| CAMO-17-132233 | R-46 | REG | EPA:245.2 | 0 | 1 |
| CAMO-17-132233 | R-46 | REG | EPA:335.4 | 0 | 1 |
| CAMO-17-132233 | R-46 | REG | EPA:351.2 | 0 | 1 |
| CAMO-17-132233 | R-46 | REG | SW-846:8260B | 0 | 80 |
| CAMO-17-132233 | R-46 | REG | SW-846:8270D | 0 | 80 |
| CAMO-17-132233 | R-46 | REG | SW-846:9060 | 0 | 1 |
| CAMO-17-132302 | R-46 | FTB | EPA:170.0 | 0 | 1 |
| CAMO-17-132302 | R-46 | FTB | SW-846:8260B | 0 | 80 |

DATA VALIDATION REPORT

| Field Sample ID | Location ID | Sample Purpose | Analytical Method | No. Unuseable Records | Total Records |
|-----------------|-------------|----------------|-------------------|-----------------------|---------------|
| CAMO-17-132468 | R-14 S1 | FTB | EPA:170.0 | 0 | 1 |
| CAMO-17-132468 | R-14 S1 | FTB | SW-846:8260B | 0 | 80 |
| CASA-17-132327 | SCI-2 | REG | EPA:120.1 | 0 | 1 |
| CASA-17-132327 | SCI-2 | REG | EPA:150.1 | 0 | 1 |
| CASA-17-132327 | SCI-2 | REG | EPA:160.1 | 0 | 1 |
| CASA-17-132327 | SCI-2 | REG | EPA:170.0 | 0 | 1 |
| CASA-17-132327 | SCI-2 | REG | EPA:245.2 | 0 | 1 |
| CASA-17-132327 | SCI-2 | REG | EPA:300.0 | 0 | 4 |
| CASA-17-132327 | SCI-2 | REG | EPA:310.1 | 0 | 2 |
| CASA-17-132327 | SCI-2 | REG | EPA:350.1 | 0 | 1 |
| CASA-17-132327 | SCI-2 | REG | EPA:353.2 | 0 | 1 |
| CASA-17-132327 | SCI-2 | REG | EPA:365.4 | 0 | 1 |
| CASA-17-132327 | SCI-2 | REG | SM:A2340B | 0 | 1 |
| CASA-17-132327 | SCI-2 | REG | SW-846:6010C | 0 | 17 |
| CASA-17-132327 | SCI-2 | REG | SW-846:6020 | 0 | 11 |
| CASA-17-132327 | SCI-2 | REG | SW-846:6850 | 0 | 1 |
| CASA-17-132336 | SCI-2 | REG | EPA:170.0 | 0 | 1 |
| CASA-17-132336 | SCI-2 | REG | EPA:245.2 | 0 | 1 |
| CASA-17-132336 | SCI-2 | REG | EPA:335.4 | 0 | 1 |
| CASA-17-132336 | SCI-2 | REG | EPA:351.2 | 0 | 1 |
| CASA-17-132336 | SCI-2 | REG | SW-846:9060 | 0 | 1 |

May 31, 2017

Mr. Keith Greene
Los Alamos National Laboratory
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

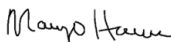
Re: LANL- WQH Water Samples
Work Order: 422570
SDG: 2017-1486

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on May 06, 2017, and analyzed for GC/MS Semivolatile, 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: 2017-1486
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Work Order #: 422570
SDG: 2017-1486

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Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Workorder #: 422570
SDG # : 2017-1486**

May 31, 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 May 06, 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 temperature was within specification (0 - 6C). Shipping container temperatures were checked, documented, and within specifications. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following samples:

| <u>Laboratory ID</u> | <u>Client ID</u> |
|-----------------------------|-------------------------|
| 422570001 | CAMO-17-132223 |
| 422570002 | CAMO-17-132468 |
| 422570003 | CAMO-17-132213 |
| 422570004 | CAMO-17-132233 |
| 422570005 | CAMO-17-132302 |
| 422570006 | CASA-17-132327 |
| 422570007 | CASA-17-132336 |

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: GC/MS Semivolatile, 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
Margo Herron for
Valerie Davis
Project Manager

List of current GEL Certifications as of 31 May 2017

| State | Certification |
|--------------------------|------------------------------|
| 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 | SC000122017-1 |
| 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 |
| S.Carolina Radchem | 10120002 |
| South Carolina Chemistry | 10120001 |
| Tennessee | TN 02934 |
| Texas NELAP | T104704235-17-12 |
| Utah NELAP | SC000122017-22 |
| Vermont | VT87156 |
| Virginia NELAP | 460202 |
| Washington | C780 |
| West Virginia | 997404 |

Chain of Custody and Supporting Documentation

COC/Lab Request #:
2017-1486
Page 1 of 1

| Special Instructions: | | | | | |
|-----------------------|---------------------------------|-----------------------------|--------------------------------|-------------|------------|
| Relinquished by: | Print Name: <i>John Montoya</i> | Date/Time: <i>5/17/2000</i> | Received by: <i>Alan Keith</i> | Print Name: | Date/Time: |
| Relinquished by: | Print Name: | Date/Time: | Received by: | Print Name: | Date/Time: |
| Relinquished by: | Print Name: | Date/Time: | Received by: | Print Name: | Date/Time: |



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

| | |
|-----------------------------|---|
| Client: <u>LANL</u> | SDG/AR/COC/Work Order: <u>422570</u> |
| Received By: <u>A.K</u> | Date Received: <u>5-6-17</u> |
| Carrier and Tracking Number | Circle Applicable: <input checked="" type="radio"/> FedEx Express <input type="radio"/> FedEx Ground <input type="radio"/> UPS <input type="radio"/> Field Services <input type="radio"/> Courier <input type="radio"/> Other <u>5098 1782 0426</u> |

| | | |
|--|---|--|
| Suspected Hazard Information | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. |
| Shipped as a DOT Hazardous? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Hazard Class Shipped: _____ UN#: _____ |
| COC/Samples marked or classified as radioactive? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> <u>0</u> CPM mR/Hr Classified as: Rad 1 Rad 2 Rad 3 |
| Is package, COC, and/or Samples marked HAZ? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | If yes, select Hazards below, and contact the GEL Safety Group. 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"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 2 Chain of custody documents included with shipment? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?* | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Preservation Method: Wet Ice <input checked="" type="checkbox"/> Ice Packs <input type="checkbox"/> Dry ice <input type="checkbox"/> None <input type="checkbox"/> Other: _____ *all temperatures are recorded in Celsius |
| 4 Daily check performed and passed on IR temperature gun? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Temperature Device Serial #: <u>IR 4-17</u> Secondary Temperature Device Serial # (If Applicable): _____ |
| 5 Sample containers intact and sealed? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 6 Samples requiring chemical preservation at proper pH? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Sample ID's and Containers Affected: _____ If Preservation added, Lot #: _____ |
| 7 Do any samples require Volatile Analysis? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | If Yes, Are Encores or Soil Kits present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A (If unknown, select No) VOA vials free of headspace? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Sample ID's and containers affected: _____ |
| 8 Samples received within holding time? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | ID's and tests affected: _____ |
| 9 Sample ID's on COC match ID's on bottles? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Sample ID's and containers affected: _____ |
| 10 Date & time on COC match date & time on bottles? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Sample ID's affected: _____ |
| 11 Number of containers received match number indicated on COC? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Sample ID's affected: _____ |
| 12 Are sample containers identifiable as GEL provided? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 13 COC form is properly signed in relinquished/received sections? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

Comments (Use Continuation Form if needed):

Do Not Lift Using This Tag

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 05MAY17
ACTWGT: 53.0 LB MAN
CAD: 0014176/CAFE2916

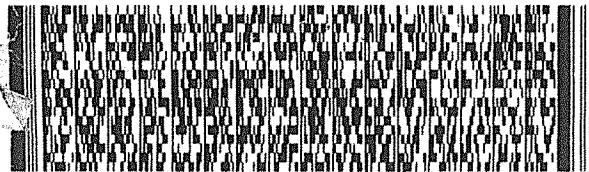
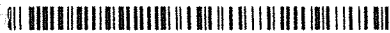
BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 21PD0ASRGW04BAGWEO



FedEx
Express



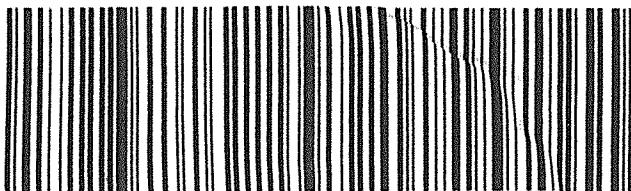
J1513150813014

TRK# 5908 1782 0426
0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO RBWA

29407
SC-US CHS



Part # 153148V-434 RIT2 08/15

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 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 identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor |
| N/A | Spike recovery limits do not apply. Sample concentration exceeds spike concentration 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 #: 2017-1486
Work Order #: 422570**

Method/Analysis Information

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

Analytical Method: SW-846:8260B

Analytical Batch Number: 1665467

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 422570001 | CAMO-17-132223 |
| 422570002 | CAMO-17-132468 |
| 422570004 | CAMO-17-132233 |
| 422570005 | CAMO-17-132302 |
| 1203790473 | Method Blank (MB) |
| 1203790474 | Laboratory Control Sample (LCS) |
| 1203790475 | Laboratory Control Sample (LCS) |
| 1203790476 | 422436002(CAMO-17-132236) Post Spike (PS) |
| 1203790477 | 422436002(CAMO-17-132236) Post Spike (PS) |
| 1203790478 | 422436002(CAMO-17-132236) Post Spike Duplicate (PSD) |
| 1203790479 | 422436002(CAMO-17-132236) Post Spike Duplicate (PSD) |

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# 25.

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 blank 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 422436002 (CAMO-17-132236) 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**Data Exception (DER) Documentation**

A Data exception reports (DERs) was not generated to document procedural anomalies that may deviate from referenced SOP or contractual documents.

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) were not required for this SDG.

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:

| Instrument ID | Instrument | System Configuration | Column ID | Column Description | P & T Trap |
|----------------------|---|-----------------------------|------------------|------------------------------------|-----------------------|
| VOA1.I | Hewlett Packard 5973 GC/MS w/ OI 4560/Archon Autosampler | HP6890/HP5973 | RTX-624 | Restek, 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: 2017-1486 GEL Work Order: 422570

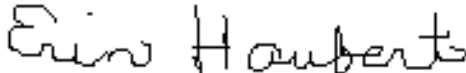
The Qualifiers in this report are defined as follows:

- * 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: Erin Haubert

Date: 01 JUN 2017

Title: Data Validator

Sample Data Summary

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570001

Date Collected: 05/04/2017 11:59

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 14:05

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 14:05

Data File: 051617V1\11211.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570001

Date Collected: 05/04/2017 11:59

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 14:05

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 14:05

Data File: 051617V1\11211.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------|---|-----------------------------|
| SDG Number: 2017-1486 | Date Collected: 05/04/2017 11:59 | Matrix: W |
| Lab Sample ID: 422570001 | Date Received: 05/06/2017 09:00 | |
| | Client: ARSL004 | Project: ESHL00114 |
| Client ID: CAMO-17-132223 | Method: SW-846:8260B | SOP Ref: GL-OA-E-038 |
| Batch ID: 1665467 | Inst: VOA1.I | Dilution: 1 |
| Run Date: 05/16/2017 14:05 | Analyst: VXY1 | Purge Vol: 5 mL |
| Prep Date: 05/16/2017 14:05 | | |
| Data File: 051617V1\11211.D | Column: DB-624 | |

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

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 55.5 | 50.0 | ug/L 111 | (71%-134%) |
| Bromofluorobenzene | 51.8 | 50.0 | ug/L 104 | (70%-131%) |
| Toluene-d8 | 53.1 | 50.0 | ug/L 106 | (74%-124%) |

Tentatively Identified Compound Summary

| CAS No. | Tentatively Identified Compound (TIC) | RT | Estimated | Units | Fit | Qual |
|---------|---------------------------------------|--------|-----------|-------|-----|------|
| | unknown siloxane | 14.549 | 20.5 | ug/L | 0 | J |

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570002

Date Collected: 05/04/2017 11:59

Date Received: 05/06/2017 09:00

Matrix: W

Client ID: CAMO-17-132468

Batch ID: 1665467

Run Date: 05/16/2017 14:34

Prep Date: 05/16/2017 14:34

Data File: 051617V1\11212.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.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 | 1.00 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 96-18-4 | 1,2,3-Trichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 120-82-1 | 1,2,4-Trichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-63-6 | 1,2,4-Trimethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | U | 1.00 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-50-1 | 1,2-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 107-06-2 | 1,2-Dichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 126-99-8 | 2-Chloro-1,3-butadiene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-49-8 | 2-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | U | 10.0 | ug/L | 1.50 | 10.0 |
| 75-05-8 | Acetonitrile | U | 25.0 | ug/L | 8.00 | 25.0 |
| 107-02-8 | Acrolein | U | 5.00 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | U | 5.00 | ug/L | 1.50 | 5.00 |
| 71-43-2 | Benzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | U | 1.00 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570002

Date Collected: 05/04/2017 11:59

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 14:34

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 14:34

Data File: 051617V1\11212.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570002

Date Collected: 05/04/2017 11:59

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAMO-17-132468

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 14:34

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 14:34

Column: DB-624

Data File: 051617V1\11212.D

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

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 55.7 | 50.0 | ug/L 111 | (71%-134%) |
| Bromofluorobenzene | 51.8 | 50.0 | ug/L 104 | (70%-131%) |
| Toluene-d8 | 52.2 | 50.0 | ug/L 104 | (74%-124%) |

Tentatively Identified Compound Summary

| CAS No. | Tentatively Identified Compound (TIC) | RT | Estimated | Units | Fit | Qual |
|---------|---------------------------------------|--------|-----------|-------|-----|------|
| | unknown siloxane | 14.549 | 26 | ug/L | 0 | J |

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570004

Date Collected: 05/04/2017 10:24

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 15:03

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 15:03

Data File: 051617V1\11213.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570004

Date Collected: 05/04/2017 10:24

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 15:03

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 15:03

Data File: 051617V1\11213.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570004

Date Collected: 05/04/2017 10:24

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAMO-17-132233

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 15:03

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 15:03

Column: DB-624

Data File: 051617V1\11213.D

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

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 56.7 | 50.0 | ug/L 113 | (71%-134%) |
| Bromofluorobenzene | 52.8 | 50.0 | ug/L 106 | (70%-131%) |
| Toluene-d8 | 53.3 | 50.0 | ug/L 107 | (74%-124%) |

Tentatively Identified Compound Summary

| CAS No. | Tentatively Identified Compound (TIC) | RT | Estimated | Units | Fit | Qual |
|---------|---------------------------------------|--------|-----------|-------|-----|------|
| | unknown siloxane | 14.549 | 15.1 | ug/L | 0 | J |

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570005

Date Collected: 05/04/2017 10:24

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 15:32

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 15:32

Data File: 051617V1\11214.D

Column: DB-624

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1486

Lab Sample ID: 422570005

Date Collected: 05/04/2017 10:24

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 15:32

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 15:32

Data File: 051617V1\11214.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570005

Date Collected: 05/04/2017 10:24

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Method: SW-846:8260B

Project: ESHL00114

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 15:32

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 15:32

Data File: 051617V1\11214.D

Column: DB-624

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

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 55.8 | 50.0 | ug/L 112 | (71%-134%) |
| Bromofluorobenzene | 52.5 | 50.0 | ug/L 105 | (70%-131%) |
| Toluene-d8 | 53.0 | 50.0 | ug/L 106 | (74%-124%) |

Tentatively Identified Compound Summary

| CAS No. | Tentatively Identified Compound (TIC) | RT | Estimated | Units | Fit | Qual |
|---------|---------------------------------------|--------|-----------|-------|-----|------|
| | unknown siloxane | 14.558 | 7.22 | ug/L | 0 | J |

Quality Control Summary

Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2017-1486**Matrix Type: LIQUID**

| Sample ID | Client ID | DCED4 %REC | TOL %REC | BFB %REC |
|------------|-----------------------|---------------|-------------|-------------|
| 1203790474 | LCS for batch 1665467 | 99 | 101 | 94 |
| 1203790475 | LCS for batch 1665467 | 100 | 103 | 95 |
| 1203790473 | MB for batch 1665467 | 102 | 104 | 99 |
| 422570001 | CAMO-17-132223 | 111 | 106 | 104 |
| 422570002 | CAMO-17-132468 | 111 | 104 | 104 |
| 422570004 | CAMO-17-132233 | 113 | 107 | 106 |
| 422570005 | CAMO-17-132302 | 112 | 106 | 105 |
| 1203790476 | CAMO-17-132236PS | 109 | 106 | 97 |
| 1203790478 | CAMO-17-132236PSD | 105 | 108 | 97 |
| 1203790477 | CAMO-17-132236PS | 102 | 107 | 97 |
| 1203790479 | CAMO-17-132236PSD | 105 | 107 | 98 |

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 4

SDG Number: 2017-1486

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1665467

Matrix: WATER

Lab Sample ID 1203790474

Instrument: VOA1.I

Analysis Date: 05/16/2017 10:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|-------------|--------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 179601-23-1 | LCS m,p-Xylenes | 100 | 0.0 | 104 | 104 | 71-127 |
| 75-05-8 | LCS Acetonitrile | 1250 | 0.0 | 972 | 78 | 61-125 |
| 67-64-1 | LCS Acetone | 250 | 0.0 | 320 | 128 | 48-157 |
| 74-88-4 | LCS Iodomethane | 250 | 0.0 | 223 | 89 | 72-128 |
| 75-15-0 | LCS Carbon disulfide | 250 | 0.0 | 225 | 90 | 69-138 |
| 108-05-4 | LCS Vinyl acetate | 250 | 0.0 | 208 | 83 | 67-125 |
| 78-93-3 | LCS 2-Butanone | 250 | 0.0 | 299 | 120 | 55-138 |
| 108-10-1 | LCS 4-Methyl-2-pentanone | 250 | 0.0 | 238 | 95 | 66-124 |
| 591-78-6 | LCS 2-Hexanone | 250 | 0.0 | 332 | 133 | 56-140 |
| 75-71-8 | LCS Dichlorodifluoromethane | 50.0 | 0.0 | 48.2 | 96 | 40-160 |
| 74-87-3 | LCS Chloromethane | 50.0 | 0.0 | 39.0 | 78 | 58-135 |
| 75-01-4 | LCS Vinyl chloride | 50.0 | 0.0 | 43.2 | 86 | 65-137 |
| 74-83-9 | LCS Bromomethane | 50.0 | 0.0 | 47.1 | 94 | 63-137 |
| 75-00-3 | LCS Chloroethane | 50.0 | 0.0 | 44.3 | 89 | 69-129 |
| 75-69-4 | LCS Trichlorofluoromethane | 50.0 | 0.0 | 48.1 | 96 | 69-138 |
| 60-29-7 | LCS Ethyl ether | 50.0 | 0.0 | 42.8 | 86 | 72-125 |
| 75-35-4 | LCS 1,1-Dichloroethylene | 50.0 | 0.0 | 45.8 | 92 | 66-126 |
| 75-09-2 | LCS Methylene chloride | 50.0 | 0.0 | 38.3 | 77 | 68-119 |
| 1634-04-4 | LCS tert-Butyl methyl ether | 50.0 | 0.0 | 48.5 | 97 | 76-128 |
| 156-60-5 | LCS trans-1,2-Dichloroethylene | 50.0 | 0.0 | 45.5 | 91 | 71-124 |
| 75-34-3 | LCS 1,1-Dichloroethane | 50.0 | 0.0 | 44.7 | 89 | 73-123 |
| 156-59-2 | LCS cis-1,2-Dichloroethylene | 50.0 | 0.0 | 45.3 | 91 | 75-123 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1486

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1665467

Matrix: WATER

Lab Sample ID 1203790474

Instrument: VOA1.I

Analysis Date: 05/16/2017 10:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|------------|---------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 594-20-7 | LCS 2,2-Dichloropropane | 50.0 | 0.0 | 51.7 | 103 | 72-138 |
| 74-97-5 | LCS Bromochloromethane | 50.0 | 0.0 | 43.7 | 87 | 76-125 |
| 67-66-3 | LCS Chloroform | 50.0 | 0.0 | 44.5 | 89 | 76-123 |
| 71-55-6 | LCS 1,1,1-Trichloroethane | 50.0 | 0.0 | 48.6 | 97 | 74-136 |
| 563-58-6 | LCS 1,1-Dichloropropene | 50.0 | 0.0 | 48.4 | 97 | 72-129 |
| 56-23-5 | LCS Carbon tetrachloride | 50.0 | 0.0 | 49.5 | 99 | 72-140 |
| 107-06-2 | LCS 1,2-Dichloroethane | 50.0 | 0.0 | 42.0 | 84 | 74-122 |
| 71-43-2 | LCS Benzene | 50.0 | 0.0 | 43.8 | 88 | 72-121 |
| 79-01-6 | LCS Trichloroethylene | 50.0 | 0.0 | 47.0 | 94 | 74-125 |
| 78-87-5 | LCS 1,2-Dichloropropane | 50.0 | 0.0 | 43.2 | 86 | 73-121 |
| 74-95-3 | LCS Dibromomethane | 50.0 | 0.0 | 42.9 | 86 | 78-123 |
| 75-27-4 | LCS Bromodichloromethane | 50.0 | 0.0 | 45.4 | 91 | 77-131 |
| 10061-01-5 | LCS cis-1,3-Dichloropropylene | 50.0 | 0.0 | 42.8 | 86 | 78-131 |
| 108-88-3 | LCS Toluene | 50.0 | 0.0 | 49.0 | 98 | 71-121 |
| 10061-02-6 | LCS trans-1,3-Dichloropropylene | 50.0 | 0.0 | 48.9 | 98 | 78-131 |
| 79-00-5 | LCS 1,1,2-Trichloroethane | 50.0 | 0.0 | 46.7 | 93 | 74-118 |
| 142-28-9 | LCS 1,3-Dichloropropane | 50.0 | 0.0 | 47.8 | 96 | 74-118 |
| 127-18-4 | LCS Tetrachloroethylene | 50.0 | 0.0 | 54.4 | 109 | 69-129 |
| 124-48-1 | LCS Dibromochloromethane | 50.0 | 0.0 | 52.2 | 104 | 76-137 |
| 106-93-4 | LCS 1,2-Dibromoethane | 50.0 | 0.0 | 49.3 | 99 | 78-122 |
| 108-90-7 | LCS Chlorobenzene | 50.0 | 0.0 | 48.4 | 97 | 74-120 |
| 100-41-4 | LCS Ethylbenzene | 50.0 | 0.0 | 51.8 | 104 | 73-125 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1486

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1665467

Matrix: WATER

Lab Sample ID 1203790474

Instrument: VOA1.I

Analysis Date: 05/16/2017 10:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|----------|---------------------------------|----------------------|----------------------|---------------------|---------------|-------------------|
| 95-47-6 | LCS o-Xylene | 50.0 | 0.0 | 52.7 | 105 | 74-126 |
| 100-42-5 | LCS Styrene | 50.0 | 0.0 | 51.9 | 104 | 72-130 |
| 75-25-2 | LCS Bromoform | 50.0 | 0.0 | 53.9 | 108 | 72-136 |
| 98-82-8 | LCS Isopropylbenzene | 50.0 | 0.0 | 56.5 | 113 | 70-130 |
| 79-34-5 | LCS 1,1,2,2-Tetrachloroethane | 50.0 | 0.0 | 46.2 | 92 | 70-126 |
| 96-18-4 | LCS 1,2,3-Trichloropropane | 50.0 | 0.0 | 50.3 | 101 | 74-122 |
| 108-86-1 | LCS Bromobenzene | 50.0 | 0.0 | 50.9 | 102 | 74-120 |
| 103-65-1 | LCS n-Propylbenzene | 50.0 | 0.0 | 51.9 | 104 | 67-128 |
| 108-67-8 | LCS 1,3,5-Trimethylbenzene | 50.0 | 0.0 | 53.8 | 108 | 70-129 |
| 95-49-8 | LCS 2-Chlorotoluene | 50.0 | 0.0 | 54.0 | 108 | 71-124 |
| 106-43-4 | LCS 4-Chlorotoluene | 50.0 | 0.0 | 51.1 | 102 | 69-125 |
| 98-06-6 | LCS tert-Butylbenzene | 50.0 | 0.0 | 58.2 | 116 | 72-130 |
| 95-63-6 | LCS 1,2,4-Trimethylbenzene | 50.0 | 0.0 | 53.6 | 107 | 70-126 |
| 135-98-8 | LCS sec-Butylbenzene | 50.0 | 0.0 | 56.5 | 113 | 70-131 |
| 99-87-6 | LCS 4-Isopropyltoluene | 50.0 | 0.0 | 56.7 | 113 | 71-131 |
| 541-73-1 | LCS 1,3-Dichlorobenzene | 50.0 | 0.0 | 50.2 | 100 | 72-121 |
| 106-46-7 | LCS 1,4-Dichlorobenzene | 50.0 | 0.0 | 49.6 | 99 | 71-120 |
| 104-51-8 | LCS n-Butylbenzene | 50.0 | 0.0 | 57.6 | 115 | 68-134 |
| 96-12-8 | LCS 1,2-Dibromo-3-chloropropane | 50.0 | 0.0 | 46.0 | 92 | 68-141 |
| 87-68-3 | LCS Hexachlorobutadiene | 50.0 | 0.0 | 59.6 | 119 | 72-136 |
| 91-20-3 | LCS Naphthalene | 50.0 | 0.0 | 51.6 | 103 | 72-132 |
| 87-61-6 | LCS 1,2,3-Trichlorobenzene | 50.0 | 0.0 | 59.7 | 119 | 70-130 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-1486

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1665467

Matrix: WATER

Lab Sample ID 1203790474

Instrument: VOA1.I

Analysis Date: 05/16/2017 10:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|----------|-------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|
| 120-82-1 | LCS 1,2,4-Trichlorobenzene | 50.0 | 0.0 | 61.1 | 122 | 71-129 |
| 630-20-6 | LCS 1,1,1,2-Tetrachloroethane | 50.0 | 0.0 | 52.2 | 104 | 79-127 |
| 95-50-1 | LCS 1,2-Dichlorobenzene | 50.0 | 0.0 | 50.8 | 102 | 74-120 |
| 71-36-3 | LCS n-Butyl alcohol | 5000 | 0.0 | 5240 | 105 | 63-138 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-1486

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1665467

Matrix: WATER

Lab Sample ID 1203790475

Instrument: VOA1.I

Analysis Date: 05/16/2017 11:13

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|----------|------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|
| 107-02-8 | LCS Acrolein | 250 | 0.0 | 242 | 97 | 60-140 |
| 76-13-1 | LCS Trichlorotrifluoroethane | 250 | 0.0 | 212 | 85 | 61-148 |
| 107-05-1 | LCS Allyl chloride | 250 | 0.0 | 208 | 83 | 59-125 |
| 107-13-1 | LCS Acrylonitrile | 250 | 0.0 | 196 | 79 | 65-122 |
| 107-12-0 | LCS Propionitrile | 250 | 0.0 | 198 | 79 | 64-124 |
| 126-98-7 | LCS Methacrylonitrile | 250 | 0.0 | 201 | 80 | 64-126 |
| 80-62-6 | LCS Methyl methacrylate | 250 | 0.0 | 211 | 84 | 69-127 |
| 97-63-2 | LCS Ethyl methacrylate | 250 | 0.0 | 227 | 91 | 66-130 |
| 78-83-1 | LCS Isobutyl alcohol | 2500 | 0.0 | 2080 | 83 | 65-135 |
| 126-99-8 | LCS 2-Chloro-1,3-butadiene | 50.0 | 0.0 | 43.5 | 87 | 66-147 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-1486

Sample Type: Post Spike

Client ID: CAMO-17-132236PS

Matrix: W

Lab Sample ID 1203790476

Instrument: VOA1.I

Analysis Date: 05/16/2017 19:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|-------------|-------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 179601-23-1 | PS m,p-Xylenes | 100 | 0.00 U | 100 | 100 | 59-132 |
| 75-05-8 | PS Acetonitrile | 1250 | 0.00 U | 990 | 79 | 56-131 |
| 67-64-1 | PS Acetone | 250 | 0.00 U | 141 | 56 | 25-155 |
| 74-88-4 | PS Iodomethane | 250 | 0.00 U | 228 | 91 | 66-133 |
| 75-15-0 | PS Carbon disulfide | 250 | 0.00 U | 208 | 83 | 61-141 |
| 108-05-4 | PS Vinyl acetate | 250 | 0.00 U | 226 | 90 | 48-133 |
| 78-93-3 | PS 2-Butanone | 250 | 0.00 U | 177 | 71 | 25-143 |
| 108-10-1 | PS 4-Methyl-2-pentanone | 250 | 0.00 U | 244 | 98 | 61-127 |
| 591-78-6 | PS 2-Hexanone | 250 | 0.00 U | 234 | 94 | 33-138 |
| 75-71-8 | PS Dichlorodifluoromethane | 50.0 | 0.00 U | 30.0 | 60 | 33-164 |
| 74-87-3 | PS Chloromethane | 50.0 | 0.00 U | 32.7 | 65 | 53-139 |
| 75-01-4 | PS Vinyl chloride | 50.0 | 0.00 U | 35.9 | 72 | 58-140 |
| 74-83-9 | PS Bromomethane | 50.0 | 0.00 U | 47.4 | 95 | 59-146 |
| 75-00-3 | PS Chloroethane | 50.0 | 0.00 U | 40.2 | 80 | 65-129 |
| 75-69-4 | PS Trichlorofluoromethane | 50.0 | 0.00 U | 44.6 | 89 | 65-141 |
| 60-29-7 | PS Ethyl ether | 50.0 | 0.00 U | 47.1 | 94 | 69-127 |
| 75-35-4 | PS 1,1-Dichloroethylene | 50.0 | 0.00 U | 41.6 | 83 | 59-130 |
| 75-09-2 | PS Methylene chloride | 50.0 | 0.00 U | 39.3 | 79 | 62-123 |
| 1634-04-4 | PS tert-Butyl methyl ether | 50.0 | 0.00 U | 49.0 | 98 | 69-132 |
| 156-60-5 | PS trans-1,2-Dichloroethylene | 50.0 | 0.00 U | 44.1 | 88 | 65-127 |
| 75-34-3 | PS 1,1-Dichloroethane | 50.0 | 0.00 U | 44.4 | 89 | 67-127 |
| 156-59-2 | PS cis-1,2-Dichloroethylene | 50.0 | 0.00 U | 46.4 | 93 | 69-127 |

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Post Spike

Client ID: CAMO-17-132236PS

Matrix: W

Lab Sample ID 1203790476

Instrument: VOA1.I

Analysis Date: 05/16/2017 19:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|------------|--------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 594-20-7 | PS 2,2-Dichloropropane | 50.0 | 0.00 U | 48.6 | 97 | 66-137 |
| 74-97-5 | PS Bromochloromethane | 50.0 | 0.00 U | 47.4 | 95 | 71-130 |
| 67-66-3 | PS Chloroform | 50.0 | 0.00 U | 46.5 | 93 | 71-129 |
| 71-55-6 | PS 1,1,1-Trichloroethane | 50.0 | 0.00 U | 47.0 | 94 | 69-139 |
| 563-58-6 | PS 1,1-Dichloropropene | 50.0 | 0.00 U | 44.5 | 89 | 67-130 |
| 56-23-5 | PS Carbon tetrachloride | 50.0 | 0.00 U | 47.7 | 95 | 66-143 |
| 107-06-2 | PS 1,2-Dichloroethane | 50.0 | 0.00 U | 47.6 | 95 | 69-130 |
| 71-43-2 | PS Benzene | 50.0 | 0.00 U | 42.6 | 85 | 66-125 |
| 79-01-6 | PS Trichloroethylene | 50.0 | 0.00 U | 45.6 | 91 | 65-131 |
| 78-87-5 | PS 1,2-Dichloropropane | 50.0 | 0.00 U | 44.0 | 88 | 67-127 |
| 74-95-3 | PS Dibromomethane | 50.0 | 0.00 U | 47.3 | 95 | 72-129 |
| 75-27-4 | PS Bromodichloromethane | 50.0 | 0.00 U | 49.4 | 99 | 70-138 |
| 10061-01-5 | PS cis-1,3-Dichloropropylene | 50.0 | 0.00 U | 43.9 | 88 | 70-134 |
| 108-88-3 | PS Toluene | 50.0 | 0.00 U | 47.4 | 95 | 60-126 |
| 10061-02-6 | PS trans-1,3-Dichloropropylene | 50.0 | 0.00 U | 51.4 | 103 | 69-135 |
| 79-00-5 | PS 1,1,2-Trichloroethane | 50.0 | 0.00 U | 50.5 | 101 | 66-125 |
| 142-28-9 | PS 1,3-Dichloropropane | 50.0 | 0.00 U | 50.9 | 102 | 67-124 |
| 127-18-4 | PS Tetrachloroethylene | 50.0 | 0.00 U | 49.5 | 99 | 60-130 |
| 124-48-1 | PS Dibromochloromethane | 50.0 | 0.00 U | 58.1 | 116 | 68-143 |
| 106-93-4 | PS 1,2-Dibromoethane | 50.0 | 0.00 U | 54.7 | 109 | 71-127 |
| 108-90-7 | PS Chlorobenzene | 50.0 | 0.00 U | 48.9 | 98 | 64-124 |
| 100-41-4 | PS Ethylbenzene | 50.0 | 0.00 U | 50.0 | 100 | 61-130 |

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Post Spike

Client ID: CAMO-17-132236PS

Matrix: W

Lab Sample ID 1203790476

Instrument: VOA1.I

Analysis Date: 05/16/2017 19:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|----------|--------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 95-47-6 | PS o-Xylene | 50.0 | 0.00 U | 52.4 | 105 | 62-131 |
| 100-42-5 | PS Styrene | 50.0 | 0.00 U | 52.8 | 106 | 59-135 |
| 75-25-2 | PS Bromoform | 50.0 | 0.00 U | 60.8 | 122 | 64-138 |
| 98-82-8 | PS Isopropylbenzene | 50.0 | 0.00 U | 54.0 | 108 | 55-133 |
| 79-34-5 | PS 1,1,2,2-Tetrachloroethane | 50.0 | 0.00 U | 50.6 | 101 | 62-129 |
| 96-18-4 | PS 1,2,3-Trichloropropane | 50.0 | 0.00 U | 56.3 | 113 | 70-124 |
| 108-86-1 | PS Bromobenzene | 50.0 | 0.00 U | 53.4 | 107 | 62-124 |
| 103-65-1 | PS n-Propylbenzene | 50.0 | 0.00 U | 49.8 | 100 | 50-133 |
| 108-67-8 | PS 1,3,5-Trimethylbenzene | 50.0 | 0.00 U | 52.8 | 106 | 53-135 |
| 95-49-8 | PS 2-Chlorotoluene | 50.0 | 0.00 U | 53.6 | 107 | 56-128 |
| 106-43-4 | PS 4-Chlorotoluene | 50.0 | 0.00 U | 50.9 | 102 | 53-130 |
| 98-06-6 | PS tert-Butylbenzene | 50.0 | 0.00 U | 55.9 | 112 | 55-135 |
| 95-63-6 | PS 1,2,4-Trimethylbenzene | 50.0 | 0.00 U | 53.7 | 107 | 53-132 |
| 135-98-8 | PS sec-Butylbenzene | 50.0 | 0.00 U | 54.2 | 108 | 50-138 |
| 99-87-6 | PS 4-Isopropyltoluene | 50.0 | 0.00 U | 54.3 | 109 | 49-138 |
| 541-73-1 | PS 1,3-Dichlorobenzene | 50.0 | 0.00 U | 51.3 | 103 | 56-126 |
| 106-46-7 | PS 1,4-Dichlorobenzene | 50.0 | 0.00 U | 50.7 | 101 | 55-125 |
| 104-51-8 | PS n-Butylbenzene | 50.0 | 0.00 U | 53.6 | 107 | 43-142 |
| 96-12-8 | PS 1,2-Dibromo-3-chloropropane | 50.0 | 0.00 U | 52.1 | 104 | 62-141 |
| 87-68-3 | PS Hexachlorobutadiene | 50.0 | 0.00 U | 56.0 | 112 | 40-147 |
| 91-20-3 | PS Naphthalene | 50.0 | 0.00 U | 53.5 | 107 | 62-134 |
| 87-61-6 | PS 1,2,3-Trichlorobenzene | 50.0 | 0.00 U | 57.5 | 115 | 52-135 |

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Post Spike

Client ID: CAMO-17-132236PS

Matrix: W

Lab Sample ID 1203790476

Instrument: VOA1.I

Analysis Date: 05/16/2017 19:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|----------|------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|
| 120-82-1 | PS 1,2,4-Trichlorobenzene | 50.0 | 0.00 U | 58.2 | 116 | 50-133 |
| 630-20-6 | PS 1,1,1,2-Tetrachloroethane | 50.0 | 0.00 U | 55.6 | 111 | 71-133 |
| 95-50-1 | PS 1,2-Dichlorobenzene | 50.0 | 0.00 U | 52.7 | 105 | 60-125 |
| 71-36-3 | PS n-Butyl alcohol | 5000 | 0.00 U | 5290 | 106 | 60-140 |

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Post Spike Duplicate

Client ID: CAMO-17-132236PSD

Matrix: W

Lab Sample ID 1203790478

Instrument: VOA1.I

Analysis Date: 05/16/2017 20:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits | RPD % | Acceptance Limits |
|-------------|--------------------------------|----------------------|----------------------|---------------------|---------------|-------------------|----------|-------------------|
| 179601-23-1 | PSD m,p-Xylenes | 100 | 0.00 U | 101 | 101 | 59-132 | 1 | 0-20 |
| 75-05-8 | PSD Acetonitrile | 1250 | 0.00 U | 944 | 76 | 56-131 | 5 | 0-20 |
| 67-64-1 | PSD Acetone | 250 | 0.00 U | 133 | 53 | 25-155 | 6 | 0-20 |
| 74-88-4 | PSD Iodomethane | 250 | 0.00 U | 225 | 90 | 66-133 | 1 | 0-20 |
| 75-15-0 | PSD Carbon disulfide | 250 | 0.00 U | 205 | 82 | 61-141 | 1 | 0-20 |
| 108-05-4 | PSD Vinyl acetate | 250 | 0.00 U | 218 | 87 | 48-133 | 4 | 0-20 |
| 78-93-3 | PSD 2-Butanone | 250 | 0.00 U | 165 | 66 | 25-143 | 7 | 0-20 |
| 108-10-1 | PSD 4-Methyl-2-pentanone | 250 | 0.00 U | 237 | 95 | 61-127 | 3 | 0-20 |
| 591-78-6 | PSD 2-Hexanone | 250 | 0.00 U | 223 | 89 | 33-138 | 5 | 0-20 |
| 75-71-8 | PSD Dichlorodifluoromethane | 50.0 | 0.00 U | 29.2 | 58 | 33-164 | 3 | 0-20 |
| 74-87-3 | PSD Chloromethane | 50.0 | 0.00 U | 31.5 | 63 | 53-139 | 4 | 0-20 |
| 75-01-4 | PSD Vinyl chloride | 50.0 | 0.00 U | 34.9 | 70 | 58-140 | 3 | 0-20 |
| 74-83-9 | PSD Bromomethane | 50.0 | 0.00 U | 46.9 | 94 | 59-146 | 1 | 0-20 |
| 75-00-3 | PSD Chloroethane | 50.0 | 0.00 U | 40.3 | 81 | 65-129 | 0 | 0-20 |
| 75-69-4 | PSD Trichlorofluoromethane | 50.0 | 0.00 U | 43.8 | 88 | 65-141 | 2 | 0-20 |
| 60-29-7 | PSD Ethyl ether | 50.0 | 0.00 U | 46.0 | 92 | 69-127 | 2 | 0-20 |
| 75-35-4 | PSD 1,1-Dichloroethylene | 50.0 | 0.00 U | 41.0 | 82 | 59-130 | 1 | 0-20 |
| 75-09-2 | PSD Methylene chloride | 50.0 | 0.00 U | 38.9 | 78 | 62-123 | 1 | 0-20 |
| 1634-04-4 | PSD tert-Butyl methyl ether | 50.0 | 0.00 U | 47.8 | 96 | 69-132 | 2 | 0-20 |
| 156-60-5 | PSD trans-1,2-Dichloroethylene | 50.0 | 0.00 U | 43.3 | 87 | 65-127 | 2 | 0-20 |
| 75-34-3 | PSD 1,1-Dichloroethane | 50.0 | 0.00 U | 43.7 | 87 | 67-127 | 1 | 0-20 |
| 156-59-2 | PSD cis-1,2-Dichloroethylene | 50.0 | 0.00 U | 45.6 | 91 | 69-127 | 2 | 0-20 |

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Post Spike Duplicate

Client ID: CAMO-17-132236PSD

Matrix: W

Lab Sample ID 1203790478

Instrument: VOA1.I

Analysis Date: 05/16/2017 20:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits | RPD % | Acceptance Limits |
|------------|---------------------------------|----------------------|----------------------|---------------------|---------------|-------------------|----------|-------------------|
| 594-20-7 | PSD 2,2-Dichloropropane | 50.0 | 0.00 U | 47.6 | 95 | 66-137 | 2 | 0-20 |
| 74-97-5 | PSD Bromochloromethane | 50.0 | 0.00 U | 46.7 | 93 | 71-130 | 1 | 0-20 |
| 67-66-3 | PSD Chloroform | 50.0 | 0.00 U | 45.7 | 91 | 71-129 | 2 | 0-20 |
| 71-55-6 | PSD 1,1,1-Trichloroethane | 50.0 | 0.00 U | 46.3 | 93 | 69-139 | 2 | 0-20 |
| 563-58-6 | PSD 1,1-Dichloropropene | 50.0 | 0.00 U | 43.6 | 87 | 67-130 | 2 | 0-20 |
| 56-23-5 | PSD Carbon tetrachloride | 50.0 | 0.00 U | 46.7 | 93 | 66-143 | 2 | 0-20 |
| 107-06-2 | PSD 1,2-Dichloroethane | 50.0 | 0.00 U | 46.3 | 93 | 69-130 | 3 | 0-20 |
| 71-43-2 | PSD Benzene | 50.0 | 0.00 U | 42.2 | 84 | 66-125 | 1 | 0-20 |
| 79-01-6 | PSD Trichloroethylene | 50.0 | 0.00 U | 45.1 | 90 | 65-131 | 1 | 0-20 |
| 78-87-5 | PSD 1,2-Dichloropropane | 50.0 | 0.00 U | 43.6 | 87 | 67-127 | 1 | 0-20 |
| 74-95-3 | PSD Dibromomethane | 50.0 | 0.00 U | 46.3 | 93 | 72-129 | 2 | 0-20 |
| 75-27-4 | PSD Bromodichloromethane | 50.0 | 0.00 U | 48.7 | 97 | 70-138 | 2 | 0-20 |
| 10061-01-5 | PSD cis-1,3-Dichloropropylene | 50.0 | 0.00 U | 43.7 | 87 | 70-134 | 0 | 0-20 |
| 108-88-3 | PSD Toluene | 50.0 | 0.00 U | 48.1 | 96 | 60-126 | 1 | 0-20 |
| 10061-02-6 | PSD trans-1,3-Dichloropropylene | 50.0 | 0.00 U | 51.1 | 102 | 69-135 | 1 | 0-20 |
| 79-00-5 | PSD 1,1,2-Trichloroethane | 50.0 | 0.00 U | 49.5 | 99 | 66-125 | 2 | 0-20 |
| 142-28-9 | PSD 1,3-Dichloropropane | 50.0 | 0.00 U | 50.5 | 101 | 67-124 | 1 | 0-20 |
| 127-18-4 | PSD Tetrachloroethylene | 50.0 | 0.00 U | 50.2 | 100 | 60-130 | 1 | 0-20 |
| 124-48-1 | PSD Dibromochloromethane | 50.0 | 0.00 U | 57.4 | 115 | 68-143 | 1 | 0-20 |
| 106-93-4 | PSD 1,2-Dibromoethane | 50.0 | 0.00 U | 53.6 | 107 | 71-127 | 2 | 0-20 |
| 108-90-7 | PSD Chlorobenzene | 50.0 | 0.00 U | 49.1 | 98 | 64-124 | 0 | 0-20 |
| 100-41-4 | PSD Ethylbenzene | 50.0 | 0.00 U | 50.4 | 101 | 61-130 | 1 | 0-20 |

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Post Spike Duplicate

Client ID: CAMO-17-132236PSD

Matrix: W

Lab Sample ID 1203790478

Instrument: VOA1.I

Analysis Date: 05/16/2017 20:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits | RPD % | Acceptance Limits |
|----------|---------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|----------|----------------------|
| 95-47-6 | PSD o-Xylene | 50.0 | 0.00 U | 52.1 | 104 | 62-131 | 0 | 0-20 |
| 100-42-5 | PSD Styrene | 50.0 | 0.00 U | 52.5 | 105 | 59-135 | 1 | 0-20 |
| 75-25-2 | PSD Bromoform | 50.0 | 0.00 U | 58.8 | 118 | 64-138 | 3 | 0-20 |
| 98-82-8 | PSD Isopropylbenzene | 50.0 | 0.00 U | 53.5 | 107 | 55-133 | 1 | 0-20 |
| 79-34-5 | PSD 1,1,2,2-Tetrachloroethane | 50.0 | 0.00 U | 49.4 | 99 | 62-129 | 2 | 0-20 |
| 96-18-4 | PSD 1,2,3-Trichloropropane | 50.0 | 0.00 U | 53.2 | 106 | 70-124 | 6 | 0-20 |
| 108-86-1 | PSD Bromobenzene | 50.0 | 0.00 U | 52.8 | 106 | 62-124 | 1 | 0-20 |
| 103-65-1 | PSD n-Propylbenzene | 50.0 | 0.00 U | 49.5 | 99 | 50-133 | 1 | 0-20 |
| 108-67-8 | PSD 1,3,5-Trimethylbenzene | 50.0 | 0.00 U | 52.8 | 106 | 53-135 | 0 | 0-20 |
| 95-49-8 | PSD 2-Chlorotoluene | 50.0 | 0.00 U | 53.8 | 108 | 56-128 | 0 | 0-20 |
| 106-43-4 | PSD 4-Chlorotoluene | 50.0 | 0.00 U | 51.0 | 102 | 53-130 | 0 | 0-20 |
| 98-06-6 | PSD tert-Butylbenzene | 50.0 | 0.00 U | 55.0 | 110 | 55-135 | 2 | 0-20 |
| 95-63-6 | PSD 1,2,4-Trimethylbenzene | 50.0 | 0.00 U | 52.5 | 105 | 53-132 | 2 | 0-20 |
| 135-98-8 | PSD sec-Butylbenzene | 50.0 | 0.00 U | 52.5 | 105 | 50-138 | 3 | 0-20 |
| 99-87-6 | PSD 4-Isopropyltoluene | 50.0 | 0.00 U | 52.6 | 105 | 49-138 | 3 | 0-20 |
| 541-73-1 | PSD 1,3-Dichlorobenzene | 50.0 | 0.00 U | 50.4 | 101 | 56-126 | 2 | 0-20 |
| 106-46-7 | PSD 1,4-Dichlorobenzene | 50.0 | 0.00 U | 50.1 | 100 | 55-125 | 1 | 0-20 |
| 104-51-8 | PSD n-Butylbenzene | 50.0 | 0.00 U | 52.5 | 105 | 43-142 | 2 | 0-20 |
| 96-12-8 | PSD 1,2-Dibromo-3-chloropropane | 50.0 | 0.00 U | 49.2 | 98 | 62-141 | 6 | 0-20 |
| 87-68-3 | PSD Hexachlorobutadiene | 50.0 | 0.00 U | 50.2 | 100 | 40-147 | 11 | 0-20 |
| 91-20-3 | PSD Naphthalene | 50.0 | 0.00 U | 51.7 | 103 | 62-134 | 3 | 0-20 |
| 87-61-6 | PSD 1,2,3-Trichlorobenzene | 50.0 | 0.00 U | 56.9 | 114 | 52-135 | 1 | 0-20 |

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Post Spike Duplicate

Client ID: CAMO-17-132236PSD

Matrix: W

Lab Sample ID 1203790478

Instrument: VOA1.I

Analysis Date: 05/16/2017 20:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits | RPD % | Acceptance Limits |
|----------|-------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|----------|----------------------|
| 120-82-1 | PSD 1,2,4-Trichlorobenzene | 50.0 | 0.00 U | 56.5 | 113 | 50-133 | 3 | 0-20 |
| 630-20-6 | PSD 1,1,1,2-Tetrachloroethane | 50.0 | 0.00 U | 55.6 | 111 | 71-133 | 0 | 0-20 |
| 95-50-1 | PSD 1,2-Dichlorobenzene | 50.0 | 0.00 U | 52.8 | 106 | 60-125 | 0 | 0-20 |
| 71-36-3 | PSD n-Butyl alcohol | 5000 | 0.00 U | 4900 | 98 | 60-140 | 8 | 0-20 |

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Post Spike

Client ID: CAMO-17-132236PS

Matrix: W

Lab Sample ID 1203790477

Instrument: VOA1.I

Analysis Date: 05/16/2017 20:48

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|----------|-----------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|
| 107-02-8 | PS Acrolein | 250 | 0.00 U | 233 | 93 | 49-141 |
| 76-13-1 | PS Trichlorotrifluoroethane | 250 | 0.00 U | 203 | 81 | 57-149 |
| 107-05-1 | PS Allyl chloride | 250 | 0.00 U | 213 | 85 | 54-128 |
| 107-13-1 | PS Acrylonitrile | 250 | 0.00 U | 204 | 82 | 59-129 |
| 107-12-0 | PS Propionitrile | 250 | 0.00 U | 212 | 85 | 58-131 |
| 126-98-7 | PS Methacrylonitrile | 250 | 0.00 U | 212 | 85 | 59-134 |
| 80-62-6 | PS Methyl methacrylate | 250 | 0.00 U | 225 | 90 | 62-135 |
| 97-63-2 | PS Ethyl methacrylate | 250 | 0.00 U | 242 | 97 | 60-136 |
| 78-83-1 | PS Isobutyl alcohol | 2500 | 0.00 U | 2220 | 89 | 60-143 |
| 126-99-8 | PS 2-Chloro-1,3-butadiene | 50.0 | 0.00 U | 42.2 | 84 | 63-146 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2017-1486

Sample Type: Post Spike Duplicate

Client ID: CAMO-17-132236PSD

Matrix: W

Lab Sample ID 1203790479

Instrument: VOA1.I

Analysis Date: 05/16/2017 21:17

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits | RPD % | Acceptance Limits |
|----------|------------------------------|----------------------|----------------------|---------------------|---------------|-------------------|----------|-------------------|
| 107-02-8 | PSD Acrolein | 250 | 0.00 U | 232 | 93 | 49-141 | 1 | 0-20 |
| 76-13-1 | PSD Trichlorotrifluoroethane | 250 | 0.00 U | 198 | 79 | 57-149 | 3 | 0-20 |
| 107-05-1 | PSD Allyl chloride | 250 | 0.00 U | 208 | 83 | 54-128 | 3 | 0-20 |
| 107-13-1 | PSD Acrylonitrile | 250 | 0.00 U | 198 | 79 | 59-129 | 3 | 0-20 |
| 107-12-0 | PSD Propionitrile | 250 | 0.00 U | 202 | 81 | 58-131 | 5 | 0-20 |
| 126-98-7 | PSD Methacrylonitrile | 250 | 0.00 U | 209 | 84 | 59-134 | 1 | 0-20 |
| 80-62-6 | PSD Methyl methacrylate | 250 | 0.00 U | 220 | 88 | 62-135 | 2 | 0-20 |
| 97-63-2 | PSD Ethyl methacrylate | 250 | 0.00 U | 242 | 97 | 60-136 | 0 | 0-20 |
| 78-83-1 | PSD Isobutyl alcohol | 2500 | 0.00 U | 2100 | 84 | 60-143 | 6 | 0-20 |
| 126-99-8 | PSD 2-Chloro-1,3-butadiene | 50.0 | 0.00 U | 42.1 | 84 | 63-146 | 0 | 0-20 |

Method Blank Summary

Page 1 of 1

SDG Number: 2017-1486

Client: ARSL004

Matrix: WATER

Client ID: MB for batch 1665467

Instrument ID: VOA1.I

Data File: 051617V1\1I206BA.D

Lab Sample ID: 1203790473

Prep Date: 05/16/2017 11:41

Analyzed: 05/16/17 11:41

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 |
|--------------------------|---------------|--------------------|---------------|---------------|
| 01 LCS for batch 1665467 | 1203790474 | 051617V1\1I203LA.D | 05/16/17 | 1015 |
| 02 LCS for batch 1665467 | 1203790475 | 051617V1\1I205LA.D | 05/16/17 | 1113 |
| 03 CAMO-17-132223 | 422570001 | 051617V1\1I211.D | 05/16/17 | 1405 |
| 04 CAMO-17-132468 | 422570002 | 051617V1\1I212.D | 05/16/17 | 1434 |
| 05 CAMO-17-132233 | 422570004 | 051617V1\1I213.D | 05/16/17 | 1503 |
| 06 CAMO-17-132302 | 422570005 | 051617V1\1I214.D | 05/16/17 | 1532 |
| 07 CAMO-17-132236PS | 1203790476 | 051617V1\1I223.D | 05/16/17 | 1950 |
| 08 CAMO-17-132236PSD | 1203790478 | 051617V1\1I224.D | 05/16/17 | 2019 |
| 09 CAMO-17-132236PS | 1203790477 | 051617V1\1I225.D | 05/16/17 | 2048 |
| 10 CAMO-17-132236PSD | 1203790479 | 051617V1\1I226.D | 05/16/17 | 2117 |

Quality Control Data

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 1203790473

Client Sample: QC for batch 1665467

Client ID: MB for batch 1665467

Batch ID: 1665467

Run Date: 05/16/2017 11:41

Prep Date: 05/16/2017 11:41

Data File: 051617V1\11206BA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.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 | 1.00 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 96-18-4 | 1,2,3-Trichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 120-82-1 | 1,2,4-Trichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-63-6 | 1,2,4-Trimethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | U | 1.00 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-50-1 | 1,2-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 107-06-2 | 1,2-Dichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 126-99-8 | 2-Chloro-1,3-butadiene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-49-8 | 2-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | U | 10.0 | ug/L | 1.50 | 10.0 |
| 75-05-8 | Acetonitrile | U | 25.0 | ug/L | 8.00 | 25.0 |
| 107-02-8 | Acrolein | U | 5.00 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | U | 5.00 | ug/L | 1.50 | 5.00 |
| 71-43-2 | Benzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | U | 1.00 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 1203790473

Client Sample: QC for batch 1665467

Client ID: MB for batch 1665467

Batch ID: 1665467

Run Date: 05/16/2017 11:41

Prep Date: 05/16/2017 11:41

Data File: 051617V1\11206BA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.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 | 1.00 | ug/L | 0.300 | 1.00 |
| 75-15-0 | Carbon disulfide | U | 5.00 | ug/L | 1.50 | 5.00 |
| 56-23-5 | Carbon tetrachloride | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-90-7 | Chlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-00-3 | Chloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 67-66-3 | Chloroform | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-87-3 | Chloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 124-48-1 | Dibromochloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-95-3 | Dibromomethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-71-8 | Dichlorodifluoromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 60-29-7 | Ethyl ether | U | 1.00 | ug/L | 0.300 | 1.00 |
| 97-63-2 | Ethyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-41-4 | Ethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 87-68-3 | Hexachlorobutadiene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-88-4 | Iodomethane | U | 5.00 | ug/L | 1.50 | 5.00 |
| 78-83-1 | Isobutyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 75-09-2 | Methylene chloride | U | 10.0 | ug/L | 1.00 | 10.0 |
| 91-20-3 | Naphthalene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 107-12-0 | Propionitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-42-5 | Styrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 127-18-4 | Tetrachloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-88-3 | Toluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-01-6 | Trichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-69-4 | Trichlorofluoromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 76-13-1 | Trichlorotrifluoroethane | U | 5.00 | ug/L | 2.00 | 5.00 |
| 108-05-4 | Vinyl acetate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 75-01-4 | Vinyl chloride | U | 1.00 | ug/L | 0.300 | 1.00 |
| 156-59-2 | cis-1,2-Dichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 10061-01-5 | cis-1,3-Dichloropropylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 179601-23-1 | m,p-Xylenes | U | 2.00 | ug/L | 0.300 | 2.00 |
| 71-36-3 | n-Butyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 104-51-8 | n-Butylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 103-65-1 | n-Propylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-47-6 | o-Xylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 135-98-8 | sec-Butylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

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| | | |
|--|-----------------------------|-----------------------------|
| SDG Number: 2017-1486 | Matrix: WATER | |
| Lab Sample ID: 1203790473 | | |
| Client Sample: QC for batch 1665467 | Client: ARSL004 | Project: QC |
| Client ID: MB for batch 1665467 | Method: SW-846:8260B | SOP Ref: GL-OA-E-038 |
| Batch ID: 1665467 | Inst: VOA1.I | Dilution: 1 |
| Run Date: 05/16/2017 11:41 | Analyst: VXY1 | Purge Vol: 5 mL |
| Prep Date: 05/16/2017 11:41 | | |
| Data File: 051617V1\11206BA.D | Column: DB-624 | |

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

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 50.9 | 50.0 | ug/L 102 | (71%-134%) |
| Bromofluorobenzene | 49.5 | 50.0 | ug/L 99 | (70%-131%) |
| Toluene-d8 | 51.9 | 50.0 | ug/L 104 | (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

Page 1 of 3

SDG Number: 2017-1486

Lab Sample ID: 1203790474

Client Sample: QC for batch 1665467

Client ID: LCS for batch 1665467

Batch ID: 1665467

Run Date: 05/16/2017 10:15

Prep Date: 05/16/2017 10:15

Data File: 051617V1\11203LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.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 | | 52.2 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | | 48.6 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | | 46.2 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | | 46.7 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | | 44.7 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | | 45.8 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | | 48.4 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | | 59.7 | ug/L | 0.300 | 1.00 |
| 96-18-4 | 1,2,3-Trichloropropane | | 50.3 | ug/L | 0.300 | 1.00 |
| 120-82-1 | 1,2,4-Trichlorobenzene | | 61.1 | ug/L | 0.300 | 1.00 |
| 95-63-6 | 1,2,4-Trimethylbenzene | | 53.6 | ug/L | 0.300 | 1.00 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | | 46.0 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | | 49.3 | 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 | | 42.0 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | | 43.2 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | | 53.8 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | | 50.2 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | | 47.8 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | | 49.6 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | | 51.7 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | | 299 | ug/L | 1.50 | 5.00 |
| 126-99-8 | 2-Chloro-1,3-butadiene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-49-8 | 2-Chlorotoluene | | 54.0 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | | 332 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | | 51.1 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | | 56.7 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | | 238 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | | 320 | ug/L | 1.50 | 10.0 |
| 75-05-8 | Acetonitrile | | 972 | ug/L | 8.00 | 25.0 |
| 107-02-8 | Acrolein | U | 5.00 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | U | 5.00 | ug/L | 1.50 | 5.00 |
| 71-43-2 | Benzene | | 43.8 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | | 50.9 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | | 43.7 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | | 45.4 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | | 53.9 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 1203790474

Client Sample: QC for batch 1665467

Client ID: LCS for batch 1665467

Batch ID: 1665467

Run Date: 05/16/2017 10:15

Prep Date: 05/16/2017 10:15

Data File: 051617V1\11203LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.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 | | 47.1 | ug/L | 0.300 | 1.00 |
| 75-15-0 | Carbon disulfide | | 225 | ug/L | 1.50 | 5.00 |
| 56-23-5 | Carbon tetrachloride | | 49.5 | ug/L | 0.300 | 1.00 |
| 108-90-7 | Chlorobenzene | | 48.4 | ug/L | 0.300 | 1.00 |
| 75-00-3 | Chloroethane | | 44.3 | ug/L | 0.300 | 1.00 |
| 67-66-3 | Chloroform | | 44.5 | ug/L | 0.300 | 1.00 |
| 74-87-3 | Chloromethane | | 39.0 | ug/L | 0.300 | 1.00 |
| 124-48-1 | Dibromochloromethane | | 52.2 | ug/L | 0.300 | 1.00 |
| 74-95-3 | Dibromomethane | | 42.9 | ug/L | 0.300 | 1.00 |
| 75-71-8 | Dichlorodifluoromethane | | 48.2 | ug/L | 0.300 | 1.00 |
| 60-29-7 | Ethyl ether | | 42.8 | ug/L | 0.300 | 1.00 |
| 97-63-2 | Ethyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-41-4 | Ethylbenzene | | 51.8 | ug/L | 0.300 | 1.00 |
| 87-68-3 | Hexachlorobutadiene | | 59.6 | ug/L | 0.300 | 1.00 |
| 74-88-4 | Iodomethane | | 223 | ug/L | 1.50 | 5.00 |
| 78-83-1 | Isobutyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | | 56.5 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 75-09-2 | Methylene chloride | | 38.3 | ug/L | 1.00 | 10.0 |
| 91-20-3 | Naphthalene | | 51.6 | ug/L | 0.300 | 1.00 |
| 107-12-0 | Propionitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-42-5 | Styrene | | 51.9 | ug/L | 0.300 | 1.00 |
| 127-18-4 | Tetrachloroethylene | | 54.4 | ug/L | 0.300 | 1.00 |
| 108-88-3 | Toluene | | 49.0 | ug/L | 0.300 | 1.00 |
| 79-01-6 | Trichloroethylene | | 47.0 | ug/L | 0.300 | 1.00 |
| 75-69-4 | Trichlorofluoromethane | | 48.1 | ug/L | 0.300 | 1.00 |
| 76-13-1 | Trichlorotrifluoroethane | U | 5.00 | ug/L | 2.00 | 5.00 |
| 108-05-4 | Vinyl acetate | | 208 | ug/L | 1.50 | 5.00 |
| 75-01-4 | Vinyl chloride | | 43.2 | ug/L | 0.300 | 1.00 |
| 156-59-2 | cis-1,2-Dichloroethylene | | 45.3 | ug/L | 0.300 | 1.00 |
| 10061-01-5 | cis-1,3-Dichloropropylene | | 42.8 | 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 | | 5240 | ug/L | 15.0 | 50.0 |
| 104-51-8 | n-Butylbenzene | | 57.6 | ug/L | 0.300 | 1.00 |
| 103-65-1 | n-Propylbenzene | | 51.9 | ug/L | 0.300 | 1.00 |
| 95-47-6 | o-Xylene | | 52.7 | ug/L | 0.300 | 1.00 |
| 135-98-8 | sec-Butylbenzene | | 56.5 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

| | | | |
|-----------------------|-----------------------|-----------------|--------------|
| SDG Number: | 2017-1486 | Matrix: | WATER |
| Lab Sample ID: | 1203790474 | | |
| Client Sample: | QC for batch 1665467 | Client: | ARSL004 |
| Client ID: | LCS for batch 1665467 | Method: | SW-846:8260B |
| Batch ID: | 1665467 | Inst: | VOA1.I |
| Run Date: | 05/16/2017 10:15 | Analyst: | VXY1 |
| Prep Date: | 05/16/2017 10:15 | | |
| Data File: | 051617V1\11203LA.D | Column: | DB-624 |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4 | tert-Butyl methyl ether | | 48.5 | ug/L | 0.300 | 1.00 |
| 98-06-6 | tert-Butylbenzene | | 58.2 | ug/L | 0.300 | 1.00 |
| 156-60-5 | trans-1,2-Dichloroethylene | | 45.5 | ug/L | 0.300 | 1.00 |
| 10061-02-6 | trans-1,3-Dichloropropylene | | 48.9 | ug/L | 0.300 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 49.3 | 50.0 | 99 | (71%-134%) |
| Bromofluorobenzene | 47.1 | 50.0 | 94 | (70%-131%) |
| Toluene-d8 | 50.4 | 50.0 | 101 | (74%-124%) |

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 1203790475

Client Sample: QC for batch 1665467

Client ID: LCS for batch 1665467

Batch ID: 1665467

Run Date: 05/16/2017 11:13

Prep Date: 05/16/2017 11:13

Data File: 051617V1\11205LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.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 | 1.00 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 96-18-4 | 1,2,3-Trichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 120-82-1 | 1,2,4-Trichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-63-6 | 1,2,4-Trimethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | U | 1.00 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-50-1 | 1,2-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 107-06-2 | 1,2-Dichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 126-99-8 | 2-Chloro-1,3-butadiene | | 43.5 | ug/L | 0.300 | 1.00 |
| 95-49-8 | 2-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | U | 10.0 | ug/L | 1.50 | 10.0 |
| 75-05-8 | Acetonitrile | U | 25.0 | ug/L | 8.00 | 25.0 |
| 107-02-8 | Acrolein | | 242 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | | 196 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | | 208 | ug/L | 1.50 | 5.00 |
| 71-43-2 | Benzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | U | 1.00 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 1203790475

Client Sample: QC for batch 1665467

Client ID: LCS for batch 1665467

Batch ID: 1665467

Run Date: 05/16/2017 11:13

Prep Date: 05/16/2017 11:13

Data File: 051617V1\11205LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.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 | 1.00 | ug/L | 0.300 | 1.00 |
| 75-15-0 | Carbon disulfide | U | 5.00 | ug/L | 1.50 | 5.00 |
| 56-23-5 | Carbon tetrachloride | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-90-7 | Chlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-00-3 | Chloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 67-66-3 | Chloroform | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-87-3 | Chloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 124-48-1 | Dibromochloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-95-3 | Dibromomethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-71-8 | Dichlorodifluoromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 60-29-7 | Ethyl ether | U | 1.00 | ug/L | 0.300 | 1.00 |
| 97-63-2 | Ethyl methacrylate | | 227 | ug/L | 1.50 | 5.00 |
| 100-41-4 | Ethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 87-68-3 | Hexachlorobutadiene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-88-4 | Iodomethane | U | 5.00 | ug/L | 1.50 | 5.00 |
| 78-83-1 | Isobutyl alcohol | | 2080 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | | 201 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | | 211 | ug/L | 1.50 | 5.00 |
| 75-09-2 | Methylene chloride | U | 10.0 | ug/L | 1.00 | 10.0 |
| 91-20-3 | Naphthalene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 107-12-0 | Propionitrile | | 198 | ug/L | 1.50 | 5.00 |
| 100-42-5 | Styrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 127-18-4 | Tetrachloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-88-3 | Toluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-01-6 | Trichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-69-4 | Trichlorofluoromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 76-13-1 | Trichlorotrifluoroethane | | 212 | ug/L | 2.00 | 5.00 |
| 108-05-4 | Vinyl acetate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 75-01-4 | Vinyl chloride | U | 1.00 | ug/L | 0.300 | 1.00 |
| 156-59-2 | cis-1,2-Dichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 10061-01-5 | cis-1,3-Dichloropropylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 179601-23-1 | m,p-Xylenes | U | 2.00 | ug/L | 0.300 | 2.00 |
| 71-36-3 | n-Butyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 104-51-8 | n-Butylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 103-65-1 | n-Propylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-47-6 | o-Xylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 135-98-8 | sec-Butylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

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| | |
|--|-----------------------------|
| SDG Number: 2017-1486 | Matrix: WATER |
| Lab Sample ID: 1203790475 | |
| Client Sample: QC for batch 1665467 | Client: ARSL004 |
| Client ID: LCS for batch 1665467 | Method: SW-846:8260B |
| Batch ID: 1665467 | Inst: VOA1.I |
| Run Date: 05/16/2017 11:13 | Analyst: VXY1 |
| Prep Date: 05/16/2017 11:13 | Purge Vol: 5 mL |
| Data File: 051617V1\1I205LA.D | Column: DB-624 |

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

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 49.9 | 50.0 | ug/L | 100 (71%-134%) |
| Bromofluorobenzene | 47.7 | 50.0 | ug/L | 95 (70%-131%) |
| Toluene-d8 | 51.6 | 50.0 | ug/L | 103 (74%-124%) |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1486 | Date Collected: | 05/03/2017 12:24 | Matrix: | W |
| Lab Sample ID: | 1203790476 | Date Received: | 05/05/2017 09:25 | | |
| Client Sample: | QC for batch 1665467 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAMO-17-132236PS | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1665467 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 05/16/2017 19:50 | Analyst: | VXY1 | Purge Vol: | 5 mL |
| Prep Date: | 05/16/2017 19:50 | | | | |
| Data File: | 051617V1\11223.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane | | 55.6 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | | 47.0 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | | 50.6 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | | 50.5 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | | 44.4 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | | 41.6 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | | 44.5 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | | 57.5 | ug/L | 0.300 | 1.00 |
| 96-18-4 | 1,2,3-Trichloropropane | | 56.3 | ug/L | 0.300 | 1.00 |
| 120-82-1 | 1,2,4-Trichlorobenzene | | 58.2 | ug/L | 0.300 | 1.00 |
| 95-63-6 | 1,2,4-Trimethylbenzene | | 53.7 | ug/L | 0.300 | 1.00 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | | 52.1 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | | 54.7 | ug/L | 0.300 | 1.00 |
| 95-50-1 | 1,2-Dichlorobenzene | | 52.7 | ug/L | 0.300 | 1.00 |
| 107-06-2 | 1,2-Dichloroethane | | 47.6 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | | 44.0 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | | 52.8 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | | 51.3 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | | 50.9 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | | 50.7 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | | 48.6 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | | 177 | ug/L | 1.50 | 5.00 |
| 126-99-8 | 2-Chloro-1,3-butadiene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-49-8 | 2-Chlorotoluene | | 53.6 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | | 234 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | | 50.9 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | | 54.3 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | | 244 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | | 141 | ug/L | 1.50 | 10.0 |
| 75-05-8 | Acetonitrile | | 990 | ug/L | 8.00 | 25.0 |
| 107-02-8 | Acrolein | U | 5.00 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | U | 5.00 | ug/L | 1.50 | 5.00 |
| 71-43-2 | Benzene | | 42.6 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | | 53.4 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | | 47.4 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | | 49.4 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | | 60.8 | ug/L | 0.300 | 1.00 |

Volatile
Certificate of Analysis
Sample Summary

| | | |
|--|---|-----------------------------|
| SDG Number: 2017-1486 | Date Collected: 05/03/2017 12:24 | Matrix: W |
| Lab Sample ID: 1203790476 | Date Received: 05/05/2017 09:25 | |
| Client Sample: QC for batch 1665467 | Client: ARSL004 | Project: QC |
| Client ID: CAMO-17-132236PS | Method: SW-846:8260B | SOP Ref: GL-OA-E-038 |
| Batch ID: 1665467 | Inst: VOA1.I | Dilution: 1 |
| Run Date: 05/16/2017 19:50 | Analyst: VXY1 | Purge Vol: 5 mL |
| Prep Date: 05/16/2017 19:50 | | |
| Data File: 051617V1\11223.D | Column: DB-624 | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9 | Bromomethane | | 47.4 | ug/L | 0.300 | 1.00 |
| 75-15-0 | Carbon disulfide | | 208 | ug/L | 1.50 | 5.00 |
| 56-23-5 | Carbon tetrachloride | | 47.7 | ug/L | 0.300 | 1.00 |
| 108-90-7 | Chlorobenzene | | 48.9 | ug/L | 0.300 | 1.00 |
| 75-00-3 | Chloroethane | | 40.2 | ug/L | 0.300 | 1.00 |
| 67-66-3 | Chloroform | | 46.5 | ug/L | 0.300 | 1.00 |
| 74-87-3 | Chloromethane | | 32.7 | ug/L | 0.300 | 1.00 |
| 124-48-1 | Dibromochloromethane | | 58.1 | ug/L | 0.300 | 1.00 |
| 74-95-3 | Dibromomethane | | 47.3 | ug/L | 0.300 | 1.00 |
| 75-71-8 | Dichlorodifluoromethane | | 30.0 | ug/L | 0.300 | 1.00 |
| 60-29-7 | Ethyl ether | | 47.1 | ug/L | 0.300 | 1.00 |
| 97-63-2 | Ethyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-41-4 | Ethylbenzene | | 50.0 | ug/L | 0.300 | 1.00 |
| 87-68-3 | Hexachlorobutadiene | | 56.0 | ug/L | 0.300 | 1.00 |
| 74-88-4 | Iodomethane | | 228 | ug/L | 1.50 | 5.00 |
| 78-83-1 | Isobutyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | | 54.0 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 75-09-2 | Methylene chloride | | 39.3 | ug/L | 1.00 | 10.0 |
| 91-20-3 | Naphthalene | | 53.5 | ug/L | 0.300 | 1.00 |
| 107-12-0 | Propionitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-42-5 | Styrene | | 52.8 | ug/L | 0.300 | 1.00 |
| 127-18-4 | Tetrachloroethylene | | 49.5 | ug/L | 0.300 | 1.00 |
| 108-88-3 | Toluene | | 47.4 | ug/L | 0.300 | 1.00 |
| 79-01-6 | Trichloroethylene | | 45.6 | ug/L | 0.300 | 1.00 |
| 75-69-4 | Trichlorofluoromethane | | 44.6 | ug/L | 0.300 | 1.00 |
| 76-13-1 | Trichlorotrifluoroethane | U | 5.00 | ug/L | 2.00 | 5.00 |
| 108-05-4 | Vinyl acetate | | 226 | ug/L | 1.50 | 5.00 |
| 75-01-4 | Vinyl chloride | | 35.9 | ug/L | 0.300 | 1.00 |
| 156-59-2 | cis-1,2-Dichloroethylene | | 46.4 | ug/L | 0.300 | 1.00 |
| 10061-01-5 | cis-1,3-Dichloropropylene | | 43.9 | ug/L | 0.300 | 1.00 |
| 179601-23-1 | m,p-Xylenes | | 100 | ug/L | 0.300 | 2.00 |
| 71-36-3 | n-Butyl alcohol | | 5290 | ug/L | 15.0 | 50.0 |
| 104-51-8 | n-Butylbenzene | | 53.6 | ug/L | 0.300 | 1.00 |
| 103-65-1 | n-Propylbenzene | | 49.8 | ug/L | 0.300 | 1.00 |
| 95-47-6 | o-Xylene | | 52.4 | ug/L | 0.300 | 1.00 |
| 135-98-8 | sec-Butylbenzene | | 54.2 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

| | | |
|--|---|-----------------------------|
| SDG Number: 2017-1486 | Date Collected: 05/03/2017 12:24 | Matrix: W |
| Lab Sample ID: 1203790476 | Date Received: 05/05/2017 09:25 | |
| Client Sample: QC for batch 1665467 | Client: ARSL004 | Project: QC |
| Client ID: CAMO-17-132236PS | Method: SW-846:8260B | SOP Ref: GL-OA-E-038 |
| Batch ID: 1665467 | Inst: VOA1.I | Dilution: 1 |
| Run Date: 05/16/2017 19:50 | Analyst: VXY1 | Purge Vol: 5 mL |
| Prep Date: 05/16/2017 19:50 | | |
| Data File: 051617V1\11223.D | Column: DB-624 | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4 | tert-Butyl methyl ether | | 49.0 | ug/L | 0.300 | 1.00 |
| 98-06-6 | tert-Butylbenzene | | 55.9 | ug/L | 0.300 | 1.00 |
| 156-60-5 | trans-1,2-Dichloroethylene | | 44.1 | ug/L | 0.300 | 1.00 |
| 10061-02-6 | trans-1,3-Dichloropropylene | | 51.4 | ug/L | 0.300 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 54.3 | 50.0 | 109 | (71%-134%) |
| Bromofluorobenzene | 48.5 | 50.0 | 97 | (70%-131%) |
| Toluene-d8 | 52.8 | 50.0 | 106 | (74%-124%) |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1486 | Date Collected: | 05/03/2017 12:24 | Matrix: | W |
| Lab Sample ID: | 1203790477 | Date Received: | 05/05/2017 09:25 | | |
| Client Sample: | QC for batch 1665467 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAMO-17-132236PS | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1665467 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 05/16/2017 20:48 | Analyst: | VXY1 | Purge Vol: | 5 mL |
| Prep Date: | 05/16/2017 20:48 | | | | |
| Data File: | 051617V1\11225.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 96-18-4 | 1,2,3-Trichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 120-82-1 | 1,2,4-Trichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-63-6 | 1,2,4-Trimethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | U | 1.00 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-50-1 | 1,2-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 107-06-2 | 1,2-Dichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 126-99-8 | 2-Chloro-1,3-butadiene | | 42.2 | ug/L | 0.300 | 1.00 |
| 95-49-8 | 2-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | U | 10.0 | ug/L | 1.50 | 10.0 |
| 75-05-8 | Acetonitrile | U | 25.0 | ug/L | 8.00 | 25.0 |
| 107-02-8 | Acrolein | | 233 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | | 204 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | | 213 | ug/L | 1.50 | 5.00 |
| 71-43-2 | Benzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | U | 1.00 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1486 | Date Collected: | 05/03/2017 12:24 | Matrix: | W |
| Lab Sample ID: | 1203790477 | Date Received: | 05/05/2017 09:25 | | |
| Client Sample: | QC for batch 1665467 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAMO-17-132236PS | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1665467 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 05/16/2017 20:48 | Analyst: | VXY1 | Purge Vol: | 5 mL |
| Prep Date: | 05/16/2017 20:48 | | | | |
| Data File: | 051617V1\11225.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9 | Bromomethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-15-0 | Carbon disulfide | U | 5.00 | ug/L | 1.50 | 5.00 |
| 56-23-5 | Carbon tetrachloride | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-90-7 | Chlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-00-3 | Chloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 67-66-3 | Chloroform | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-87-3 | Chloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 124-48-1 | Dibromochloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-95-3 | Dibromomethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-71-8 | Dichlorodifluoromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 60-29-7 | Ethyl ether | U | 1.00 | ug/L | 0.300 | 1.00 |
| 97-63-2 | Ethyl methacrylate | | 242 | ug/L | 1.50 | 5.00 |
| 100-41-4 | Ethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 87-68-3 | Hexachlorobutadiene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-88-4 | Iodomethane | U | 5.00 | ug/L | 1.50 | 5.00 |
| 78-83-1 | Isobutyl alcohol | | 2220 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | | 212 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | | 225 | ug/L | 1.50 | 5.00 |
| 75-09-2 | Methylene chloride | U | 10.0 | ug/L | 1.00 | 10.0 |
| 91-20-3 | Naphthalene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 107-12-0 | Propionitrile | | 212 | ug/L | 1.50 | 5.00 |
| 100-42-5 | Styrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 127-18-4 | Tetrachloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-88-3 | Toluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-01-6 | Trichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-69-4 | Trichlorofluoromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 76-13-1 | Trichlorotrifluoroethane | | 203 | ug/L | 2.00 | 5.00 |
| 108-05-4 | Vinyl acetate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 75-01-4 | Vinyl chloride | U | 1.00 | ug/L | 0.300 | 1.00 |
| 156-59-2 | cis-1,2-Dichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 10061-01-5 | cis-1,3-Dichloropropylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 179601-23-1 | m,p-Xylenes | U | 2.00 | ug/L | 0.300 | 2.00 |
| 71-36-3 | n-Butyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 104-51-8 | n-Butylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 103-65-1 | n-Propylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-47-6 | o-Xylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 135-98-8 | sec-Butylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

| | | |
|--|---|-----------------------------|
| SDG Number: 2017-1486 | Date Collected: 05/03/2017 12:24 | Matrix: W |
| Lab Sample ID: 1203790477 | Date Received: 05/05/2017 09:25 | |
| Client Sample: QC for batch 1665467 | Client: ARSL004 | Project: QC |
| Client ID: CAMO-17-132236PS | Method: SW-846:8260B | SOP Ref: GL-OA-E-038 |
| Batch ID: 1665467 | Inst: VOA1.I | Dilution: 1 |
| Run Date: 05/16/2017 20:48 | Analyst: VXY1 | Purge Vol: 5 mL |
| Prep Date: 05/16/2017 20:48 | | |
| Data File: 051617V1\11225.D | Column: DB-624 | |

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

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 50.9 | 50.0 | ug/L 102 | (71%-134%) |
| Bromofluorobenzene | 48.6 | 50.0 | ug/L 97 | (70%-131%) |
| Toluene-d8 | 53.5 | 50.0 | ug/L 107 | (74%-124%) |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1486 | Date Collected: | 05/03/2017 12:24 | Matrix: | W |
| Lab Sample ID: | 1203790478 | Date Received: | 05/05/2017 09:25 | | |
| Client Sample: | QC for batch 1665467 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAMO-17-132236PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1665467 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 05/16/2017 20:19 | Analyst: | VXY1 | Purge Vol: | 5 mL |
| Prep Date: | 05/16/2017 20:19 | | | | |
| Data File: | 051617V1\11224.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane | | 55.6 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | | 46.3 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | | 49.4 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | | 49.5 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | | 43.7 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | | 41.0 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | | 43.6 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | | 56.9 | ug/L | 0.300 | 1.00 |
| 96-18-4 | 1,2,3-Trichloropropane | | 53.2 | ug/L | 0.300 | 1.00 |
| 120-82-1 | 1,2,4-Trichlorobenzene | | 56.5 | ug/L | 0.300 | 1.00 |
| 95-63-6 | 1,2,4-Trimethylbenzene | | 52.5 | ug/L | 0.300 | 1.00 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | | 49.2 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | | 53.6 | ug/L | 0.300 | 1.00 |
| 95-50-1 | 1,2-Dichlorobenzene | | 52.8 | ug/L | 0.300 | 1.00 |
| 107-06-2 | 1,2-Dichloroethane | | 46.3 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | | 43.6 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | | 52.8 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | | 50.4 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | | 50.5 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | | 50.1 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | | 47.6 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | | 165 | ug/L | 1.50 | 5.00 |
| 126-99-8 | 2-Chloro-1,3-butadiene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-49-8 | 2-Chlorotoluene | | 53.8 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | | 223 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | | 51.0 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | | 52.6 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | | 237 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | | 133 | ug/L | 1.50 | 10.0 |
| 75-05-8 | Acetonitrile | | 944 | ug/L | 8.00 | 25.0 |
| 107-02-8 | Acrolein | U | 5.00 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | U | 5.00 | ug/L | 1.50 | 5.00 |
| 71-43-2 | Benzene | | 42.2 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | | 52.8 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | | 46.7 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | | 48.7 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | | 58.8 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1486 | Date Collected: | 05/03/2017 12:24 | Matrix: | W |
| Lab Sample ID: | 1203790478 | Date Received: | 05/05/2017 09:25 | | |
| Client Sample: | QC for batch 1665467 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAMO-17-132236PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1665467 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 05/16/2017 20:19 | Analyst: | VXY1 | Purge Vol: | 5 mL |
| Prep Date: | 05/16/2017 20:19 | | | | |
| Data File: | 051617V1\11224.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9 | Bromomethane | | 46.9 | ug/L | 0.300 | 1.00 |
| 75-15-0 | Carbon disulfide | | 205 | ug/L | 1.50 | 5.00 |
| 56-23-5 | Carbon tetrachloride | | 46.7 | ug/L | 0.300 | 1.00 |
| 108-90-7 | Chlorobenzene | | 49.1 | ug/L | 0.300 | 1.00 |
| 75-00-3 | Chloroethane | | 40.3 | ug/L | 0.300 | 1.00 |
| 67-66-3 | Chloroform | | 45.7 | ug/L | 0.300 | 1.00 |
| 74-87-3 | Chloromethane | | 31.5 | ug/L | 0.300 | 1.00 |
| 124-48-1 | Dibromochloromethane | | 57.4 | ug/L | 0.300 | 1.00 |
| 74-95-3 | Dibromomethane | | 46.3 | ug/L | 0.300 | 1.00 |
| 75-71-8 | Dichlorodifluoromethane | | 29.2 | ug/L | 0.300 | 1.00 |
| 60-29-7 | Ethyl ether | | 46.0 | ug/L | 0.300 | 1.00 |
| 97-63-2 | Ethyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-41-4 | Ethylbenzene | | 50.4 | ug/L | 0.300 | 1.00 |
| 87-68-3 | Hexachlorobutadiene | | 50.2 | ug/L | 0.300 | 1.00 |
| 74-88-4 | Iodomethane | | 225 | ug/L | 1.50 | 5.00 |
| 78-83-1 | Isobutyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | | 53.5 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 75-09-2 | Methylene chloride | | 38.9 | ug/L | 1.00 | 10.0 |
| 91-20-3 | Naphthalene | | 51.7 | ug/L | 0.300 | 1.00 |
| 107-12-0 | Propionitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-42-5 | Styrene | | 52.5 | ug/L | 0.300 | 1.00 |
| 127-18-4 | Tetrachloroethylene | | 50.2 | ug/L | 0.300 | 1.00 |
| 108-88-3 | Toluene | | 48.1 | ug/L | 0.300 | 1.00 |
| 79-01-6 | Trichloroethylene | | 45.1 | ug/L | 0.300 | 1.00 |
| 75-69-4 | Trichlorofluoromethane | | 43.8 | ug/L | 0.300 | 1.00 |
| 76-13-1 | Trichlorotrifluoroethane | U | 5.00 | ug/L | 2.00 | 5.00 |
| 108-05-4 | Vinyl acetate | | 218 | ug/L | 1.50 | 5.00 |
| 75-01-4 | Vinyl chloride | | 34.9 | ug/L | 0.300 | 1.00 |
| 156-59-2 | cis-1,2-Dichloroethylene | | 45.6 | ug/L | 0.300 | 1.00 |
| 10061-01-5 | cis-1,3-Dichloropropylene | | 43.7 | ug/L | 0.300 | 1.00 |
| 179601-23-1 | m,p-Xylenes | | 101 | ug/L | 0.300 | 2.00 |
| 71-36-3 | n-Butyl alcohol | | 4900 | ug/L | 15.0 | 50.0 |
| 104-51-8 | n-Butylbenzene | | 52.5 | ug/L | 0.300 | 1.00 |
| 103-65-1 | n-Propylbenzene | | 49.5 | ug/L | 0.300 | 1.00 |
| 95-47-6 | o-Xylene | | 52.1 | ug/L | 0.300 | 1.00 |
| 135-98-8 | sec-Butylbenzene | | 52.5 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|----------------------|------------------------|------------------|-------------------|-------------|
| SDG Number: | 2017-1486 | Date Collected: | 05/03/2017 12:24 | Matrix: | W |
| Lab Sample ID: | 1203790478 | Date Received: | 05/05/2017 09:25 | | |
| Client Sample: | QC for batch 1665467 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAMO-17-132236PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1665467 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 05/16/2017 20:19 | Analyst: | VXY1 | Purge Vol: | 5 mL |
| Prep Date: | 05/16/2017 20:19 | | | | |
| Data File: | 051617V1\11224.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4 | tert-Butyl methyl ether | | 47.8 | ug/L | 0.300 | 1.00 |
| 98-06-6 | tert-Butylbenzene | | 55.0 | ug/L | 0.300 | 1.00 |
| 156-60-5 | trans-1,2-Dichloroethylene | | 43.3 | ug/L | 0.300 | 1.00 |
| 10061-02-6 | trans-1,3-Dichloropropylene | | 51.1 | 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 | 48.6 | 50.0 | ug/L 97 | (70%-131%) |
| Toluene-d8 | 53.9 | 50.0 | ug/L 108 | (74%-124%) |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1486 | Date Collected: | 05/03/2017 12:24 | Matrix: | W |
| Lab Sample ID: | 1203790479 | Date Received: | 05/05/2017 09:25 | | |
| Client Sample: | QC for batch 1665467 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAMO-17-132236PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1665467 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 05/16/2017 21:17 | Analyst: | VXY1 | Purge Vol: | 5 mL |
| Prep Date: | 05/16/2017 21:17 | | | | |
| Data File: | 051617V1\11226.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 96-18-4 | 1,2,3-Trichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 120-82-1 | 1,2,4-Trichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-63-6 | 1,2,4-Trimethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | U | 1.00 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-50-1 | 1,2-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 107-06-2 | 1,2-Dichloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 126-99-8 | 2-Chloro-1,3-butadiene | | 42.1 | ug/L | 0.300 | 1.00 |
| 95-49-8 | 2-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | U | 10.0 | ug/L | 1.50 | 10.0 |
| 75-05-8 | Acetonitrile | U | 25.0 | ug/L | 8.00 | 25.0 |
| 107-02-8 | Acrolein | | 232 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | | 198 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | | 208 | ug/L | 1.50 | 5.00 |
| 71-43-2 | Benzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | U | 1.00 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1486 | Date Collected: | 05/03/2017 12:24 | Matrix: | W |
| Lab Sample ID: | 1203790479 | Date Received: | 05/05/2017 09:25 | | |
| Client Sample: | QC for batch 1665467 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAMO-17-132236PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1665467 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 05/16/2017 21:17 | Analyst: | VXY1 | Purge Vol: | 5 mL |
| Prep Date: | 05/16/2017 21:17 | | | | |
| Data File: | 051617V1\11226.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9 | Bromomethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-15-0 | Carbon disulfide | U | 5.00 | ug/L | 1.50 | 5.00 |
| 56-23-5 | Carbon tetrachloride | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-90-7 | Chlorobenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-00-3 | Chloroethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 67-66-3 | Chloroform | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-87-3 | Chloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 124-48-1 | Dibromochloromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-95-3 | Dibromomethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-71-8 | Dichlorodifluoromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 60-29-7 | Ethyl ether | U | 1.00 | ug/L | 0.300 | 1.00 |
| 97-63-2 | Ethyl methacrylate | | 242 | ug/L | 1.50 | 5.00 |
| 100-41-4 | Ethylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 87-68-3 | Hexachlorobutadiene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 74-88-4 | Iodomethane | U | 5.00 | ug/L | 1.50 | 5.00 |
| 78-83-1 | Isobutyl alcohol | | 2100 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | | 209 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | | 220 | ug/L | 1.50 | 5.00 |
| 75-09-2 | Methylene chloride | U | 10.0 | ug/L | 1.00 | 10.0 |
| 91-20-3 | Naphthalene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 107-12-0 | Propionitrile | | 202 | ug/L | 1.50 | 5.00 |
| 100-42-5 | Styrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 127-18-4 | Tetrachloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-88-3 | Toluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 79-01-6 | Trichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 75-69-4 | Trichlorofluoromethane | U | 1.00 | ug/L | 0.300 | 1.00 |
| 76-13-1 | Trichlorotrifluoroethane | | 198 | ug/L | 2.00 | 5.00 |
| 108-05-4 | Vinyl acetate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 75-01-4 | Vinyl chloride | U | 1.00 | ug/L | 0.300 | 1.00 |
| 156-59-2 | cis-1,2-Dichloroethylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 10061-01-5 | cis-1,3-Dichloropropylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 179601-23-1 | m,p-Xylenes | U | 2.00 | ug/L | 0.300 | 2.00 |
| 71-36-3 | n-Butyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 104-51-8 | n-Butylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 103-65-1 | n-Propylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 95-47-6 | o-Xylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 135-98-8 | sec-Butylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

| | | |
|--|---|-----------------------------|
| SDG Number: 2017-1486 | Date Collected: 05/03/2017 12:24 | Matrix: W |
| Lab Sample ID: 1203790479 | Date Received: 05/05/2017 09:25 | |
| Client Sample: QC for batch 1665467 | Client: ARSL004 | Project: QC |
| Client ID: CAMO-17-132236PSD | Method: SW-846:8260B | SOP Ref: GL-OA-E-038 |
| Batch ID: 1665467 | Inst: VOA1.I | Dilution: 1 |
| Run Date: 05/16/2017 21:17 | Analyst: VXY1 | Purge Vol: 5 mL |
| Prep Date: 05/16/2017 21:17 | | |
| Data File: 051617V1\11226.D | Column: DB-624 | |

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

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 52.4 | 50.0 | 105 | (71%-134%) |
| Bromofluorobenzene | 49.1 | 50.0 | 98 | (70%-131%) |
| Toluene-d8 | 53.5 | 50.0 | 107 | (74%-124%) |

Semi-Volatile Analysis

Case Narrative

**GC/MS Semivolatile
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1486
Work Order #: 422570**

Method/Analysis Information

| | |
|--------------------------|---|
| Procedure: | Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry |
| Analytical Method: | SW846 3510C/8270D |
| Prep Method: | SW846 3510C |
| Analytical Batch Number: | 1663446 |
| Prep Batch Number: | 1663445 |

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3510C/8270D:

| | |
|------------------|--|
| Sample ID | Client ID |
| 422570001 | CAMO-17-132223 |
| 422570004 | CAMO-17-132233 |
| 1203785628 | Method Blank (MB) |
| 1203785629 | Laboratory Control Sample (LCS) |
| 1203785630 | 422570001(CAMO-17-132223) Matrix Spike (MS) |
| 1203785631 | 422570001(CAMO-17-132223) 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-009 REV# 39.

Raw data reports are processed and reviewed by the analyst using the data analysis software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package. The various calibration mixes may not be calibrated using all of the calibration levels. In addition, not all of the mixes are calibrated using the same levels.

Diphenylamine has now superseded N-Nitroso-diphenylamine on Quantitation Reports, Initial Calibration Reports, Calibration Check Standard Reports, etc. Previous versions of EPA Methodologies referenced N-Nitroso-diphenylamine. However, as stated in EPA Methodology, "N-Nitroso-diphenylamine decomposes in the gas chromatographic inlet and cannot be separated from Diphenylamine." Studies of these two compounds at GEL, both independent of each other and together, showed that they not only co-elute, but also have similar mass spectra. N-Nitroso-diphenylamine and Diphenylamine will be reported as Diphenylamine on all reports and forms.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG) in this batch. A second source initial calibration verification (ICV) was included in the standard section directly behind the initial calibration.

CCV Requirements

All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D for samples and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit. Due to the CRDL failing for Benzoic acid samples 422570001 (CAMO-17-132223) and 422570004 (CAMO-17-132233) and the MB were re-analyzed on an instrument that passed CCV acceptance criteria. The re-analyses confirmed the absence of the target analytes in the sample and QC. The data are therefore reported from the original analyses only for all target analytes.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG in this batch met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS and/or LCSD (See Below) did not meet spike recovery acceptance criteria. The failures are known to be poor responding analytes as stated per the Method. This may account for the low recoveries and the data were reported.

| Sample | Analyte | Value |
|------------------|--------------|---------------|
| 1203785629 (LCS) | Benzoic acid | 18* (21%-74%) |

QC Sample Designation

Sample 422570001 (CAMO-17-132223) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement

The MS or MSD (See Below) spike recoveries were not within the acceptance limits. The associated MS or MSD passed recoveries, as did the LCS. It appears that the low spike recoveries were isolated to the MS or MSD only and were the result of a poor extraction.

| Sample | Analyte | Value |
|--------------------------------|---------|-----------------------|
| 1203785631 (CAMO-17-132223MSD) | Several | See applicable report |

MS/MSD Relative Percent Difference (RPD) Statement

The RPD values between the MS and MSD, (See Below), were not within the acceptance limits due to the large difference between the individual recoveries in each MS and MSD analyte pair. The failures may be attributed to an error in the extraction process.

| Sample | Analyte | Value |
|---|---------|-----------------------|
| 1203785630MS and 1203785631MSD (CAMO-17-132223) | Several | See applicable report |

Internal Standard (ISTD) Acceptance

The internal standard responses used to quantitate the requested target analytes were within the required acceptance criteria for the SDG associated samples in this batch.

Technical Information:**Holding Time Specifications**

All samples in this SDG in this batch met the specified holding time. GEL assigns holding times based on the associated methodology that 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.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported compound mass spectra met the detection specifications in the method.

Sample Dilutions

The samples in this SDG in this batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information:**Data Exception (DER) Documentation**

A data exception report (DER) 1630833 was generated for samples 1203785629 (LCS) and 1203785631 (CAMO-17-132223MSD) in this SDG/batch.

Manual Integrations

Manual integrations were not required on samples in this batch in this SDG for detected target analytes or surrogates.

TIC Comment

Tentatively identified compounds (TIC) were requested for samples 422570001 (CAMO-17-132223) and 422570004 (CAMO-17-132233) in this SDG in this batch.

Additional Comments

Additional comments were not required for the SDG associated samples in this batch.

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

| Instrument ID | Instrument | System Configuration | Column ID | Column Description |
|----------------------|---|-----------------------------|------------------|---|
| MSDA.I | Agilent 7890B/5977A GC/MSD with 7693A Autoinjector | Agilent7890B/5977 | DB-5MS | 25m x 0.2mm x 0.33um (5% Polysilarylene-95% Polydimethylsiloxane) |

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: 2017-1486 GEL Work Order: 422570

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: Barbara Bailey

Date: 31 MAY 2017

Title: Data Validator

Sample Data Summary

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570001

Date Collected: 05/04/2017 11:59

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Batch ID: 1663446

Inst: MSDA.I

Dilution: 1

Run Date: 05/10/2017 18:57

Analyst: JMB3

Inj. Vol: 1 uL

Prep Date: 05/10/2017 11:20

Aliquot: 1000 mL

Final Volume: 1 mL

Data File: 051017.s\Ae1015.D

Column: DB-5.625

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-----------|--------------------------------|-----------|--------|-------|---------|---------|
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 95-50-1 | 1,2-Dichlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 122-66-7 | Azobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>1,2-Diphenylhydrazine</i> | | | | | |
| 541-73-1 | 1,3-Dichlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 106-46-7 | 1,4-Dichlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 123-91-1 | 1,4-Dioxane | U | 10.0 | ug/L | 3.00 | 10.0 |
| 90-12-0 | 1-Methylnaphthalene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 95-95-4 | 2,4,5-Trichlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 88-06-2 | 2,4,6-Trichlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 120-83-2 | 2,4-Dichlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 105-67-9 | 2,4-Dimethylphenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 51-28-5 | 2,4-Dinitrophenol | U | 20.0 | ug/L | 5.00 | 20.0 |
| 121-14-2 | 2,4-Dinitrotoluene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 606-20-2 | 2,6-Dinitrotoluene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 91-58-7 | 2-Chloronaphthalene | U | 1.00 | ug/L | 0.410 | 1.00 |
| 95-57-8 | 2-Chlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 534-52-1 | 2-Methyl-4,6-dinitrophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 91-57-6 | 2-Methylnaphthalene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 88-75-5 | 2-Nitrophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 91-94-1 | 3,3'-Dichlorobenzidine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 101-55-3 | 4-Bromophenylphenylether | U | 10.0 | ug/L | 3.00 | 10.0 |
| 59-50-7 | Parachlorometa cresol | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>4-Chloro-3-methylphenol</i> | | | | | |
| 106-47-8 | 4-Chloroaniline | U | 10.0 | ug/L | 3.30 | 10.0 |
| 7005-72-3 | 4-Chlorophenylphenylether | U | 10.0 | ug/L | 3.00 | 10.0 |
| 100-02-7 | 4-Nitrophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 83-32-9 | Acenaphthene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 208-96-8 | Acenaphthylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 62-53-3 | Aniline | U | 10.0 | ug/L | 4.20 | 10.0 |
| 120-12-7 | Anthracene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 1912-24-9 | Atrazine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 92-87-5 | Benzidine | U | 10.0 | ug/L | 3.90 | 10.0 |
| 56-55-3 | Benzo(a)anthracene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 50-32-8 | Benzo(a)pyrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 205-99-2 | Benzo(b)fluoranthene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 191-24-2 | Benzo(ghi)perylene | U | 1.00 | ug/L | 0.300 | 1.00 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 3

SDG Number: 2017-1486

Lab Sample ID: 422570001

Date Collected: 05/04/2017 11:59

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSDA.I

Dilution: 1

Batch ID: 1663446

Analyst: JMB3

Inj. Vol: 1 uL

Run Date: 05/10/2017 18:57

Aliquot: 1000 mL

Final Volume: 1 mL

Prep Date: 05/10/2017 11:20

Column: DB-5.625

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|----------------------------------|-----------|--------|-------|---------|---------|
| 207-08-9 | Benzo(k)fluoranthene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 65-85-0 | Benzoic acid | U | 20.0 | ug/L | 6.00 | 20.0 |
| 100-51-6 | Benzyl alcohol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 85-68-7 | Butylbenzylphthalate | U | 10.0 | ug/L | 3.00 | 10.0 |
| 218-01-9 | Chrysene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 84-74-2 | Di-n-butylphthalate | U | 10.0 | ug/L | 3.00 | 10.0 |
| 117-84-0 | Di-n-octylphthalate | U | 10.0 | ug/L | 3.00 | 10.0 |
| 53-70-3 | Dibenzo(a,h)anthracene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 132-64-9 | Dibenzofuran | U | 10.0 | ug/L | 3.00 | 10.0 |
| 84-66-2 | Diethylphthalate | U | 10.0 | ug/L | 3.00 | 10.0 |
| 131-11-3 | Dimethylphthalate | U | 10.0 | ug/L | 3.00 | 10.0 |
| 88-85-7 | Dinoseb | U | 10.0 | ug/L | 3.00 | 10.0 |
| 122-39-4 | Diphenylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 206-44-0 | Fluoranthene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 86-73-7 | Fluorene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 118-74-1 | Hexachlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 87-68-3 | Hexachlorobutadiene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 77-47-4 | Hexachlorocyclopentadiene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 67-72-1 | Hexachloroethane | U | 10.0 | ug/L | 3.00 | 10.0 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-59-1 | Isophorone | U | 10.0 | ug/L | 3.50 | 10.0 |
| 62-75-9 | N-Methyl-N-nitrosomethylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 924-16-3 | N-Nitrosodi-n-butylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 55-18-5 | N-Nitrosodiethylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 621-64-7 | N-Nitrosodi--n-propylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>N-Nitrosodipropylamine</i> | | | | | |
| 930-55-2 | N-Nitrosopyrrolidine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 91-20-3 | Naphthalene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 98-95-3 | Nitrobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 608-93-5 | Pentachlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 87-86-5 | Pentachlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 85-01-8 | Phenanthrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-95-2 | Phenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 129-00-0 | Pyrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 110-86-1 | Pyridine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 108-60-1 | bis(2-Chloro-1-methylethyl)ether | U | 10.0 | ug/L | 3.00 | 10.0 |
| 111-91-1 | bis(2-Chloroethoxy)methane | U | 10.0 | ug/L | 3.00 | 10.0 |
| 111-44-4 | bis(2-Chloroethyl) ether | U | 10.0 | ug/L | 3.00 | 10.0 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | U | 10.0 | ug/L | 3.00 | 10.0 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-1486

Lab Sample ID: 422570001

Date Collected: 05/04/2017 11:59

Date Received: 05/06/2017 09:00

Matrix: W

Client ID: CAMO-17-132223

Batch ID: 1663446

Run Date: 05/10/2017 18:57

Prep Date: 05/10/2017 11:20

Data File: 051017.s\Ae1015.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSDA.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5.625

Project: ESHL00114

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------|-----------|--------|-------|---------|---------|
| 65794-96-9 | m,p-Cresols | U | 10.0 | ug/L | 3.70 | 10.0 |
| 99-09-2 | 3-Nitroaniline | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>m-Nitroaniline</i> | | | | | |
| 95-48-7 | o-Cresol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 88-74-4 | 2-Nitroaniline | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>o-Nitroaniline</i> | | | | | |
| 100-01-6 | 4-Nitroaniline | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>p-Nitroaniline</i> | | | | | |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 2,4,6-Tribromophenol | 83.4 | 100 | ug/L | 83 (32%-124%) |
| 2-Fluorobiphenyl | 38.0 | 50.0 | ug/L | 76 (32%-112%) |
| 2-Fluorophenol | 49.1 | 100 | ug/L | 49 (15%-88%) |
| Nitrobenzene-d5 | 38.4 | 50.0 | ug/L | 77 (36%-115%) |
| Phenol-d5 | 31.4 | 100 | ug/L | 31 (15%-91%) |
| p-Terphenyl-d14 | 39.0 | 50.0 | ug/L | 78 (36%-121%) |

Tentatively Identified Compound Summary

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

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570004

Date Collected: 05/04/2017 10:24

Date Received: 05/06/2017 09:00

Matrix: W

Client ID: CAMO-17-132233

Batch ID: 1663446

Run Date: 05/10/2017 20:19

Prep Date: 05/10/2017 11:20

Data File: 051017.s\Ae1018.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSDA.I

Analyst: JMB3

Aliquot: 940 mL

Column: DB-5.625

Project: ESHL00114

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-----------|--------------------------------|-----------|--------|-------|---------|---------|
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 120-82-1 | 1,2,4-Trichlorobenzene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 95-50-1 | 1,2-Dichlorobenzene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 122-66-7 | Azobenzene | U | 10.6 | ug/L | 3.19 | 10.6 |
| | <i>1,2-Diphenylhydrazine</i> | | | | | |
| 541-73-1 | 1,3-Dichlorobenzene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 106-46-7 | 1,4-Dichlorobenzene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 123-91-1 | 1,4-Dioxane | U | 10.6 | ug/L | 3.19 | 10.6 |
| 90-12-0 | 1-Methylnaphthalene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 95-95-4 | 2,4,5-Trichlorophenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 88-06-2 | 2,4,6-Trichlorophenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 120-83-2 | 2,4-Dichlorophenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 105-67-9 | 2,4-Dimethylphenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 51-28-5 | 2,4-Dinitrophenol | U | 21.3 | ug/L | 5.32 | 21.3 |
| 121-14-2 | 2,4-Dinitrotoluene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 606-20-2 | 2,6-Dinitrotoluene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 91-58-7 | 2-Chloronaphthalene | U | 1.06 | ug/L | 0.436 | 1.06 |
| 95-57-8 | 2-Chlorophenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 534-52-1 | 2-Methyl-4,6-dinitrophenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 91-57-6 | 2-Methylnaphthalene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 88-75-5 | 2-Nitrophenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 91-94-1 | 3,3'-Dichlorobenzidine | U | 10.6 | ug/L | 3.19 | 10.6 |
| 101-55-3 | 4-Bromophenylphenylether | U | 10.6 | ug/L | 3.19 | 10.6 |
| 59-50-7 | Parachlorometa cresol | U | 10.6 | ug/L | 3.19 | 10.6 |
| | <i>4-Chloro-3-methylphenol</i> | | | | | |
| 106-47-8 | 4-Chloroaniline | U | 10.6 | ug/L | 3.51 | 10.6 |
| 7005-72-3 | 4-Chlorophenylphenylether | U | 10.6 | ug/L | 3.19 | 10.6 |
| 100-02-7 | 4-Nitrophenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 83-32-9 | Acenaphthene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 208-96-8 | Acenaphthylene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 62-53-3 | Aniline | U | 10.6 | ug/L | 4.47 | 10.6 |
| 120-12-7 | Anthracene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 1912-24-9 | Atrazine | U | 10.6 | ug/L | 3.19 | 10.6 |
| 92-87-5 | Benzidine | U | 10.6 | ug/L | 4.15 | 10.6 |
| 56-55-3 | Benzo(a)anthracene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 50-32-8 | Benzo(a)pyrene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 205-99-2 | Benzo(b)fluoranthene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 191-24-2 | Benzo(ghi)perylene | U | 1.06 | ug/L | 0.319 | 1.06 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1486

Lab Sample ID: 422570004

Date Collected: 05/04/2017 10:24

Date Received: 05/06/2017 09:00

Matrix: W

Client ID: CAMO-17-132233

Batch ID: 1663446

Run Date: 05/10/2017 20:19

Prep Date: 05/10/2017 11:20

Data File: 051017.s\Ae1018.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSDA.I

Analyst: JMB3

Aliquot: 940 mL

Column: DB-5.625

Project: ESHL00114

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|----------------------------------|-----------|--------|-------|---------|---------|
| 207-08-9 | Benzo(k)fluoranthene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 65-85-0 | Benzoic acid | U | 21.3 | ug/L | 6.38 | 21.3 |
| 100-51-6 | Benzyl alcohol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 85-68-7 | Butylbenzylphthalate | U | 10.6 | ug/L | 3.19 | 10.6 |
| 218-01-9 | Chrysene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 84-74-2 | Di-n-butylphthalate | U | 10.6 | ug/L | 3.19 | 10.6 |
| 117-84-0 | Di-n-octylphthalate | U | 10.6 | ug/L | 3.19 | 10.6 |
| 53-70-3 | Dibenzo(a,h)anthracene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 132-64-9 | Dibenzofuran | U | 10.6 | ug/L | 3.19 | 10.6 |
| 84-66-2 | Diethylphthalate | U | 10.6 | ug/L | 3.19 | 10.6 |
| 131-11-3 | Dimethylphthalate | U | 10.6 | ug/L | 3.19 | 10.6 |
| 88-85-7 | Dinoseb | U | 10.6 | ug/L | 3.19 | 10.6 |
| 122-39-4 | Diphenylamine | U | 10.6 | ug/L | 3.19 | 10.6 |
| 206-44-0 | Fluoranthene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 86-73-7 | Fluorene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 118-74-1 | Hexachlorobenzene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 87-68-3 | Hexachlorobutadiene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 77-47-4 | Hexachlorocyclopentadiene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 67-72-1 | Hexachloroethane | U | 10.6 | ug/L | 3.19 | 10.6 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 78-59-1 | Isophorone | U | 10.6 | ug/L | 3.72 | 10.6 |
| 62-75-9 | N-Methyl-N-nitrosomethylamine | U | 10.6 | ug/L | 3.19 | 10.6 |
| 924-16-3 | N-Nitrosodi-n-butylamine | U | 10.6 | ug/L | 3.19 | 10.6 |
| 55-18-5 | N-Nitrosodiethylamine | U | 10.6 | ug/L | 3.19 | 10.6 |
| 621-64-7 | N-Nitrosodi--n-propylamine | U | 10.6 | ug/L | 3.19 | 10.6 |
| | <i>N-Nitrosodipropylamine</i> | | | | | |
| 930-55-2 | N-Nitrosopyrrolidine | U | 10.6 | ug/L | 3.19 | 10.6 |
| 91-20-3 | Naphthalene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 98-95-3 | Nitrobenzene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 608-93-5 | Pentachlorobenzene | U | 10.6 | ug/L | 3.19 | 10.6 |
| 87-86-5 | Pentachlorophenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 85-01-8 | Phenanthrene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 108-95-2 | Phenol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 129-00-0 | Pyrene | U | 1.06 | ug/L | 0.319 | 1.06 |
| 110-86-1 | Pyridine | U | 10.6 | ug/L | 3.19 | 10.6 |
| 108-60-1 | bis(2-Chloro-1-methylethyl)ether | U | 10.6 | ug/L | 3.19 | 10.6 |
| 111-91-1 | bis(2-Chloroethoxy)methane | U | 10.6 | ug/L | 3.19 | 10.6 |
| 111-44-4 | bis(2-Chloroethyl) ether | U | 10.6 | ug/L | 3.19 | 10.6 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | U | 10.6 | ug/L | 3.19 | 10.6 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-1486

Lab Sample ID: 422570004

Date Collected: 05/04/2017 10:24

Date Received: 05/06/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Client ID: CAMO-17-132233

Batch ID: 1663446

Inst: MSDA.I

Dilution: 1

Run Date: 05/10/2017 20:19

Analyst: JMB3

Inj. Vol: 1 uL

Prep Date: 05/10/2017 11:20

Aliquot: 940 mL

Final Volume: 1 mL

Data File: 051017.s\Ae1018.D

Column: DB-5.625

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------|-----------|--------|-------|---------|---------|
| 65794-96-9 | m,p-Cresols | U | 10.6 | ug/L | 3.94 | 10.6 |
| 99-09-2 | 3-Nitroaniline | U | 10.6 | ug/L | 3.19 | 10.6 |
| | <i>m-Nitroaniline</i> | | | | | |
| 95-48-7 | o-Cresol | U | 10.6 | ug/L | 3.19 | 10.6 |
| 88-74-4 | 2-Nitroaniline | U | 10.6 | ug/L | 3.19 | 10.6 |
| | <i>o-Nitroaniline</i> | | | | | |
| 100-01-6 | 4-Nitroaniline | U | 10.6 | ug/L | 3.19 | 10.6 |
| | <i>p-Nitroaniline</i> | | | | | |

| Surrogate/Tracer recovery | Result | Nominal | | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|------|-----------|-------------------|
| 2,4,6-Tribromophenol | 90.1 | 106 | ug/L | 85 | (32%-124%) |
| 2-Fluorobiphenyl | 37.2 | 53.2 | ug/L | 70 | (32%-112%) |
| 2-Fluorophenol | 41.7 | 106 | ug/L | 39 | (15%-88%) |
| Nitrobenzene-d5 | 33.6 | 53.2 | ug/L | 63 | (36%-115%) |
| Phenol-d5 | 27.0 | 106 | ug/L | 25 | (15%-91%) |
| p-Terphenyl-d14 | 38.1 | 53.2 | ug/L | 72 | (36%-121%) |

Tentatively Identified Compound Summary

| CAS No. | Tentatively Identified Compound (TIC) | RT | Estimated | Units | Fit | Qual |
|-------------|---------------------------------------|--------|-----------|-------|-----|------|
| 000080-05-7 | Phenol, 4,4'-(1-methylethylidene)b | 13.381 | 6.37 | ug/L | 97 | NJ |

Quality Control Summary

Semi-Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2017-1486**Matrix Type: LIQUID**

| Sample ID | Client ID | 2FP %REC | PHL %REC | NBZ %REC | FBP %REC | TBP %REC | TPH %REC |
|------------|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 1203785628 | MB for batch 1663445 | 44 | 28 | 73 | 74 | 79 | 71 |
| 1203785629 | LCS for batch 1663445 | 53 | 34 | 85 | 89 | 100 | 80 |
| 422570001 | CAMO-17-132223 | 49 | 31 | 77 | 76 | 83 | 78 |
| 1203785630 | CAMO-17-132223MS | 64 | 52 | 79 | 86 | 94 | 81 |
| 1203785631 | CAMO-17-132223MSD | 51 | 39 | 68 | 70 | 87 | 62 |
| 422570004 | CAMO-17-132233 | 39 | 25 | 63 | 70 | 85 | 72 |

Surrogate**Acceptance Limits**

| | | |
|-----|------------------------|------------|
| 2FP | = 2-Fluorophenol | (15%-88%) |
| PHL | = Phenol-d5 | (15%-91%) |
| NBZ | = Nitrobenzene-d5 | (36%-115%) |
| FBP | = 2-Fluorobiphenyl | (32%-112%) |
| TBP | = 2,4,6-Tribromophenol | (32%-124%) |
| TPH | = p-Terphenyl-d14 | (36%-121%) |

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-1486

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1663445

Matrix: WATER

Lab Sample ID 1203785629

Instrument: MSDA.I

Analysis Date: 05/10/2017 18:30

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|------------|---|----------------------|----------------------|---------------------|---------------|-------------------|
| 62-75-9 | LCS N-Methyl-N-nitrosomethylam | 50.0 | 0.0 | 26.1 | 52 | 30-88 |
| 110-86-1 | LCS Pyridine | 50.0 | 0.0 | 22.3 | 45 | 27-89 |
| 62-53-3 | LCS Aniline | 50.0 | 0.0 | 42.4 | 85 | 49-112 |
| 108-95-2 | LCS Phenol | 50.0 | 0.0 | 18.2 | 36 | 16-82 |
| 111-44-4 | LCS bis(2-Chloroethyl) ether | 50.0 | 0.0 | 42.3 | 85 | 51-111 |
| 95-57-8 | LCS 2-Chlorophenol | 50.0 | 0.0 | 43.0 | 86 | 49-105 |
| 541-73-1 | LCS 1,3-Dichlorobenzene | 50.0 | 0.0 | 34.5 | 69 | 37-95 |
| 106-46-7 | LCS 1,4-Dichlorobenzene | 50.0 | 0.0 | 36.1 | 72 | 38-96 |
| 95-50-1 | LCS 1,2-Dichlorobenzene | 50.0 | 0.0 | 36.5 | 73 | 39-97 |
| 108-60-1 | LCS bis(2-Chloro-1-methylethyl)et | 50.0 | 0.0 | 41.8 | 84 | 44-123 |
| 100-51-6 | LCS Benzyl alcohol | 50.0 | 0.0 | 39.2 | 78 | 44-102 |
| 95-48-7 | LCS o-Cresol | 50.0 | 0.0 | 39.3 | 79 | 41-101 |
| 65794-96-9 | LCS m,p-Cresols | 50.0 | 0.0 | 37.9 | 76 | 43-102 |
| 621-64-7 | LCS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i> | 50.0 | 0.0 | 39.9 | 80 | 54-115 |
| 67-72-1 | LCS Hexachloroethane | 50.0 | 0.0 | 32.0 | 64 | 36-96 |
| 98-95-3 | LCS Nitrobenzene | 50.0 | 0.0 | 41.3 | 83 | 53-115 |
| 78-59-1 | LCS Isophorone | 50.0 | 0.0 | 40.8 | 82 | 56-117 |
| 88-75-5 | LCS 2-Nitrophenol | 50.0 | 0.0 | 44.7 | 89 | 51-113 |
| 105-67-9 | LCS 2,4-Dimethylphenol | 50.0 | 0.0 | 38.8 | 78 | 51-104 |
| 111-91-1 | LCS bis(2-Chloroethoxy)methane | 50.0 | 0.0 | 41.6 | 83 | 55-114 |
| 120-83-2 | LCS 2,4-Dichlorophenol | 50.0 | 0.0 | 44.7 | 89 | 53-109 |
| 65-85-0 | LCS Benzoic acid | 100 | 0.0 | 18.4 | 18 * | 21-74 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1486

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1663445

Matrix: WATER

Lab Sample ID 1203785629

Instrument: MSDA.I

Analysis Date: 05/10/2017 18:30

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|----------|--|----------------------|----------------------|---------------------|---------------|----------------------|
| 106-47-8 | LCS 4-Chloroaniline | 50.0 | 0.0 | 57.1 | 114 | 65-136 |
| 87-68-3 | LCS Hexachlorobutadiene | 50.0 | 0.0 | 32.4 | 65 | 35-98 |
| 59-50-7 | LCS Parachlorometa cresol 4-Chloro-3-methylphenol | 50.0 | 0.0 | 47.1 | 94 | 55-115 |
| 91-57-6 | LCS 2-Methylnaphthalene | 50.0 | 0.0 | 38.3 | 77 | 42-103 |
| 91-20-3 | LCS Naphthalene | 50.0 | 0.0 | 37.8 | 76 | 44-102 |
| 90-12-0 | LCS 1-Methylnaphthalene | 50.0 | 0.0 | 39.4 | 79 | 45-108 |
| 77-47-4 | LCS Hexachlorocyclopentadiene | 50.0 | 0.0 | 24.5 | 49 | 34-89 |
| 88-06-2 | LCS 2,4,6-Trichlorophenol | 50.0 | 0.0 | 47.1 | 94 | 55-120 |
| 95-95-4 | LCS 2,4,5-Trichlorophenol | 50.0 | 0.0 | 49.2 | 98 | 55-116 |
| 91-58-7 | LCS 2-Chloronaphthalene | 50.0 | 0.0 | 38.2 | 76 | 44-107 |
| 88-74-4 | LCS 2-Nitroaniline o-Nitroaniline | 50.0 | 0.0 | 46.1 | 92 | 53-121 |
| 99-09-2 | LCS 3-Nitroaniline m-Nitroaniline | 50.0 | 0.0 | 60.1 | 120 | 61-139 |
| 131-11-3 | LCS Dimethylphthalate | 50.0 | 0.0 | 46.4 | 93 | 60-122 |
| 606-20-2 | LCS 2,6-Dinitrotoluene | 50.0 | 0.0 | 46.6 | 93 | 59-122 |
| 121-14-2 | LCS 2,4-Dinitrotoluene | 50.0 | 0.0 | 51.4 | 103 | 57-124 |
| 208-96-8 | LCS Acenaphthylene | 50.0 | 0.0 | 46.3 | 93 | 50-113 |
| 83-32-9 | LCS Acenaphthene | 50.0 | 0.0 | 42.9 | 86 | 49-112 |
| 51-28-5 | LCS 2,4-Dinitrophenol | 50.0 | 0.0 | 41.8 | 84 | 34-122 |
| 132-64-9 | LCS Dibenzofuran | 50.0 | 0.0 | 45.1 | 90 | 50-111 |
| 58-90-2 | LCS 2,3,4,6-Tetrachlorophenol | 50.0 | 0.0 | 47.5 | 95 | 54-122 |
| 84-66-2 | LCS Diethylphthalate | 50.0 | 0.0 | 46.4 | 93 | 57-122 |
| 100-02-7 | LCS 4-Nitrophenol | 50.0 | 0.0 | 18.6 | 37 | 15-137 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1486

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1663445

Matrix: WATER

Lab Sample ID 1203785629

Instrument: MSDA.I

Analysis Date: 05/10/2017 18:30

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|-----------|--|----------------------|----------------------|---------------------|---------------|-------------------|
| 86-73-7 | LCS Fluorene | 50.0 | 0.0 | 44.3 | 89 | 52-114 |
| 7005-72-3 | LCS 4-Chlorophenylphenylether | 50.0 | 0.0 | 43.3 | 87 | 52-121 |
| 100-01-6 | LCS 4-Nitroaniline <i>p-Nitroaniline</i> | 50.0 | 0.0 | 56.6 | 113 | 44-137 |
| 534-52-1 | LCS 2-Methyl-4,6-dinitrophenol | 50.0 | 0.0 | 48.1 | 96 | 45-124 |
| 122-39-4 | LCS Diphenylamine | 50.0 | 0.0 | 40.6 | 81 | 55-113 |
| 122-66-7 | LCS Azobenzene <i>1,2-Diphenylhydrazine</i> | 50.0 | 0.0 | 40.2 | 80 | 53-115 |
| 101-55-3 | LCS 4-Bromophenylphenylether | 50.0 | 0.0 | 41.2 | 82 | 54-116 |
| 118-74-1 | LCS Hexachlorobenzene | 50.0 | 0.0 | 41.2 | 82 | 54-115 |
| 87-86-5 | LCS Pentachlorophenol | 50.0 | 0.0 | 48.1 | 96 | 41-116 |
| 85-01-8 | LCS Phenanthrene | 50.0 | 0.0 | 43.6 | 87 | 55-110 |
| 120-12-7 | LCS Anthracene | 50.0 | 0.0 | 43.5 | 87 | 56-112 |
| 84-74-2 | LCS Di-n-butylphthalate | 50.0 | 0.0 | 43.9 | 88 | 57-123 |
| 206-44-0 | LCS Fluoranthene | 50.0 | 0.0 | 49.3 | 99 | 54-118 |
| 129-00-0 | LCS Pyrene | 50.0 | 0.0 | 41.7 | 83 | 49-121 |
| 85-68-7 | LCS Butylbenzylphthalate | 50.0 | 0.0 | 44.7 | 89 | 52-125 |
| 117-81-7 | LCS bis(2-Ethylhexyl)phthalate | 50.0 | 0.0 | 43.9 | 88 | 52-125 |
| 56-55-3 | LCS Benzo(a)anthracene | 50.0 | 0.0 | 50.3 | 101 | 57-112 |
| 218-01-9 | LCS Chrysene | 50.0 | 0.0 | 53.3 | 107 | 58-117 |
| 117-84-0 | LCS Di-n-octylphthalate | 50.0 | 0.0 | 49.7 | 99 | 50-129 |
| 205-99-2 | LCS Benzo(b)fluoranthene | 50.0 | 0.0 | 45.6 | 91 | 41-118 |
| 207-08-9 | LCS Benzo(k)fluoranthene | 50.0 | 0.0 | 46.7 | 93 | 42-121 |
| 50-32-8 | LCS Benzo(a)pyrene | 50.0 | 0.0 | 49.9 | 100 | 40-118 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1663445

Matrix: WATER

Lab Sample ID 1203785629

Instrument: MSDA.I

Analysis Date: 05/10/2017 18:30

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|-----------|--------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 193-39-5 | LCS Indeno(1,2,3-cd)pyrene | 50.0 | 0.0 | 57.0 | 114 | 34-125 |
| 53-70-3 | LCS Dibenzo(a,h)anthracene | 50.0 | 0.0 | 57.1 | 114 | 38-129 |
| 191-24-2 | LCS Benzo(ghi)perylene | 50.0 | 0.0 | 54.5 | 109 | 33-131 |
| 123-91-1 | LCS 1,4-Dioxane | 50.0 | 0.0 | 29.6 | 59 | 38-78 |
| 930-55-2 | LCS N-Nitrosopyrrolidine | 50.0 | 0.0 | 38.5 | 77 | 54-113 |
| 95-94-3 | LCS 1,2,4,5-Tetrachlorobenzene | 50.0 | 0.0 | 36.7 | 73 | 44-102 |
| 1912-24-9 | LCS Atrazine | 50.0 | 0.0 | 47.7 | 95 | 60-131 |
| 92-87-5 | LCS Benzidine | 100 | 0.0 | 27.4 | 27 | 20-144 |
| 91-94-1 | LCS 3,3'-Dichlorobenzidine | 50.0 | 0.0 | 59.6 | 119 | 43-127 |
| 120-82-1 | LCS 1,2,4-Trichlorobenzene | 50.0 | 0.0 | 34.5 | 69 | 39-99 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Matrix Spike

Client ID: CAMO-17-132223MS

Matrix: W

Lab Sample ID 1203785630

Instrument: MSDA.I

Analysis Date: 05/10/2017 19:25

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|------------|--|----------------------|----------------------|---------------------|---------------|-------------------|
| 62-75-9 | MS N-Methyl-N-nitrosomethylam | 111 | 0.00 U | 69.1 | 62 | 25-106 |
| 110-86-1 | MS Pyridine | 111 | 0.00 U | 46.6 | 42 | 24-93 |
| 62-53-3 | MS Aniline | 111 | 0.00 U | 84.9 | 76 | 37-113 |
| 108-95-2 | MS Phenol | 111 | 0.00 U | 59.7 | 54 | 23-82 |
| 111-44-4 | MS bis(2-Chloroethyl) ether | 111 | 0.00 U | 85.4 | 77 | 39-114 |
| 95-57-8 | MS 2-Chlorophenol | 111 | 0.00 U | 87.2 | 78 | 37-108 |
| 541-73-1 | MS 1,3-Dichlorobenzene | 111 | 0.00 U | 68.3 | 61 | 27-97 |
| 106-46-7 | MS 1,4-Dichlorobenzene | 111 | 0.00 U | 71.4 | 64 | 28-97 |
| 95-50-1 | MS 1,2-Dichlorobenzene | 111 | 0.00 U | 71.6 | 64 | 28-99 |
| 108-60-1 | MS bis(2-Chloro-1-methylethyl)et | 111 | 0.00 U | 84.5 | 76 | 32-127 |
| 100-51-6 | MS Benzyl alcohol | 111 | 0.00 U | 90.2 | 81 | 37-116 |
| 95-48-7 | MS o-Cresol | 111 | 0.00 U | 89.5 | 81 | 34-109 |
| 65794-96-9 | MS m,p-Cresols | 111 | 0.00 U | 91.6 | 82 | 36-120 |
| 621-64-7 | MS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i> | 111 | 0.00 U | 84.3 | 76 | 42-118 |
| 67-72-1 | MS Hexachloroethane | 111 | 0.00 U | 63.3 | 57 | 29-94 |
| 98-95-3 | MS Nitrobenzene | 111 | 0.00 U | 84.6 | 76 | 38-123 |
| 78-59-1 | MS Isophorone | 111 | 0.00 U | 85.6 | 77 | 43-120 |
| 88-75-5 | MS 2-Nitrophenol | 111 | 0.00 U | 93.1 | 84 | 39-115 |
| 105-67-9 | MS 2,4-Dimethylphenol | 111 | 0.00 U | 82.3 | 74 | 39-107 |
| 111-91-1 | MS bis(2-Chloroethoxy)methane | 111 | 0.00 U | 86.6 | 78 | 42-118 |
| 120-83-2 | MS 2,4-Dichlorophenol | 111 | 0.00 U | 93.0 | 84 | 40-111 |
| 65-85-0 | MS Benzoic acid | 222 | 0.00 U | 86.5 | 39 | 17-95 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Matrix Spike

Client ID: CAMO-17-132223MS

Matrix: W

Lab Sample ID 1203785630

Instrument: MSDA.I

Analysis Date: 05/10/2017 19:25

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | | Parmname | Amount Added ug/L | Sample Conc. ug/L | | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|----------|----|--|-------------------------|-------------------------|---|------------------------|---------------|----------------------|
| 106-47-8 | MS | 4-Chloroaniline | 111 | 0.00 | U | 119 | 107 | 44-138 |
| 87-68-3 | MS | Hexachlorobutadiene | 111 | 0.00 | U | 66.5 | 60 | 26-98 |
| 59-50-7 | MS | Parachlorometa cresol 4-Chloro-3-methylphenol | 111 | 0.00 | U | 101 | 91 | 41-122 |
| 91-57-6 | MS | 2-Methylnaphthalene | 111 | 0.00 | U | 81.6 | 73 | 29-109 |
| 91-20-3 | MS | Naphthalene | 111 | 0.00 | U | 79.0 | 71 | 31-108 |
| 90-12-0 | MS | 1-Methylnaphthalene | 111 | 0.00 | U | 83.0 | 75 | 33-112 |
| 77-47-4 | MS | Hexachlorocyclopentadiene | 111 | 0.00 | U | 50.0 | 45 | 26-79 |
| 88-06-2 | MS | 2,4,6-Trichlorophenol | 111 | 0.00 | U | 102 | 92 | 39-124 |
| 95-95-4 | MS | 2,4,5-Trichlorophenol | 111 | 0.00 | U | 105 | 94 | 42-120 |
| 91-58-7 | MS | 2-Chloronaphthalene | 111 | 0.00 | U | 80.6 | 73 | 29-113 |
| 88-74-4 | MS | 2-Nitroaniline o-Nitroaniline | 111 | 0.00 | U | 96.6 | 87 | 41-121 |
| 99-09-2 | MS | 3-Nitroaniline m-Nitroaniline | 111 | 0.00 | U | 123 | 110 | 42-144 |
| 131-11-3 | MS | Dimethylphthalate | 111 | 0.00 | U | 98.1 | 88 | 45-128 |
| 606-20-2 | MS | 2,6-Dinitrotoluene | 111 | 0.00 | U | 97.4 | 88 | 46-124 |
| 121-14-2 | MS | 2,4-Dinitrotoluene | 111 | 0.00 | U | 108 | 97 | 45-125 |
| 208-96-8 | MS | Acenaphthylene | 111 | 0.00 | U | 97.6 | 88 | 35-120 |
| 83-32-9 | MS | Acenaphthene | 111 | 0.00 | U | 89.3 | 80 | 35-117 |
| 51-28-5 | MS | 2,4-Dinitrophenol | 111 | 0.00 | U | 87.4 | 79 | 27-122 |
| 132-64-9 | MS | Dibenzofuran | 111 | 0.00 | U | 93.5 | 84 | 38-113 |
| 58-90-2 | MS | 2,3,4,6-Tetrachlorophenol | 111 | 0.00 | U | 101 | 91 | 40-128 |
| 84-66-2 | MS | Diethylphthalate | 111 | 0.00 | U | 96.8 | 87 | 43-127 |
| 100-02-7 | MS | 4-Nitrophenol | 111 | 0.00 | U | 65.5 | 59 | 17-85 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Matrix Spike

Client ID: CAMO-17-132223MS

Matrix: W

Lab Sample ID 1203785630

Instrument: MSDA.I

Analysis Date: 05/10/2017 19:25

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | | Parmname | Amount Added ug/L | Sample Conc. ug/L | | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|-----------|----|--|-------------------------|-------------------------|---|------------------------|---------------|----------------------|
| 86-73-7 | MS | Fluorene | 111 | 0.00 | U | 91.8 | 83 | 39-117 |
| 7005-72-3 | MS | 4-Chlorophenylphenylether | 111 | 0.00 | U | 90.2 | 81 | 39-121 |
| 100-01-6 | MS | 4-Nitroaniline <i>p</i> -Nitroaniline | 111 | 0.00 | U | 109 | 98 | 30-133 |
| 534-52-1 | MS | 2-Methyl-4,6-dinitrophenol | 111 | 0.00 | U | 101 | 91 | 32-126 |
| 122-39-4 | MS | Diphenylamine | 111 | 0.00 | U | 85.3 | 77 | 37-118 |
| 122-66-7 | MS | Azobenzene <i>1,2-Diphenylhydrazine</i> | 111 | 0.00 | U | 83.2 | 75 | 38-120 |
| 101-55-3 | MS | 4-Bromophenylphenylether | 111 | 0.00 | U | 86.9 | 78 | 39-121 |
| 118-74-1 | MS | Hexachlorobenzene | 111 | 0.00 | U | 88.1 | 79 | 40-118 |
| 87-86-5 | MS | Pentachlorophenol | 111 | 0.00 | U | 102 | 92 | 35-121 |
| 85-01-8 | MS | Phenanthrene | 111 | 0.00 | U | 90.9 | 82 | 40-115 |
| 120-12-7 | MS | Anthracene | 111 | 0.00 | U | 91.5 | 82 | 38-120 |
| 84-74-2 | MS | Di-n-butylphthalate | 111 | 0.00 | U | 92.5 | 83 | 41-128 |
| 206-44-0 | MS | Fluoranthene | 111 | 0.00 | U | 100 | 90 | 41-119 |
| 129-00-0 | MS | Pyrene | 111 | 0.00 | U | 89.0 | 80 | 35-128 |
| 85-68-7 | MS | Butylbenzylphthalate | 111 | 0.00 | U | 95.5 | 86 | 40-129 |
| 117-81-7 | MS | bis(2-Ethylhexyl)phthalate | 111 | 0.00 | U | 93.5 | 84 | 38-131 |
| 56-55-3 | MS | Benzo(a)anthracene | 111 | 0.00 | U | 103 | 93 | 39-120 |
| 218-01-9 | MS | Chrysene | 111 | 0.00 | U | 111 | 100 | 41-124 |
| 117-84-0 | MS | Di-n-octylphthalate | 111 | 0.00 | U | 102 | 92 | 37-134 |
| 205-99-2 | MS | Benzo(b)fluoranthene | 111 | 0.00 | U | 95.5 | 86 | 31-122 |
| 207-08-9 | MS | Benzo(k)fluoranthene | 111 | 0.00 | U | 98.3 | 88 | 33-123 |
| 50-32-8 | MS | Benzo(a)pyrene | 111 | 0.00 | U | 104 | 94 | 32-118 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Matrix Spike

Client ID: CAMO-17-132223MS

Matrix: W

Lab Sample ID 1203785630

Instrument: MSDA.I

Analysis Date: 05/10/2017 19:25

Dilution: 1

Analyst: JMB3

Prep Batch ID:1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits |
|-----------|-------------------------------|----------------------|----------------------|---------------------|---------------|----------------------|
| 193-39-5 | MS Indeno(1,2,3-cd)pyrene | 111 | 0.00 U | 116 | 105 | 27-121 |
| 53-70-3 | MS Dibenzo(a,h)anthracene | 111 | 0.00 U | 116 | 105 | 30-125 |
| 191-24-2 | MS Benzo(ghi)perylene | 111 | 0.00 U | 110 | 99 | 24-126 |
| 123-91-1 | MS 1,4-Dioxane | 111 | 0.00 U | 73.2 | 66 | 24-110 |
| 930-55-2 | MS N-Nitrosopyrrolidine | 111 | 0.00 U | 84.4 | 76 | 47-119 |
| 95-94-3 | MS 1,2,4,5-Tetrachlorobenzene | 111 | 0.00 U | 76.1 | 68 | 32-101 |
| 1912-24-9 | MS Atrazine | 111 | 0.00 U | 103 | 93 | 42-129 |
| 92-87-5 | MS Benzidine | 222 | 0.00 U | 44.2 | 20 | 15-130 |
| 91-94-1 | MS 3,3'-Dichlorobenzidine | 111 | 0.00 U | 119 | 107 | 34-124 |
| 120-82-1 | MS 1,2,4-Trichlorobenzene | 111 | 0.00 U | 71.1 | 64 | 26-102 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Matrix Spike Duplicate

Client ID: CAMO-17-132223MSD

Matrix: W

Lab Sample ID 1203785631

Instrument: MSDA.I

Analysis Date: 05/10/2017 19:52

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits | Acceptance RPD % | Acceptance Limits |
|------------|---|----------------------|----------------------|---------------------|---------------|-------------------|---------------------|-------------------|
| 62-75-9 | MSD N-Methyl-N-nitrosomethylam | 111 | 0.00 U | 53.5 | 48 | 25-106 | 25 | 0-30 |
| 110-86-1 | MSD Pyridine | 111 | 0.00 U | 10.8 | 10 * | 24-93 | 125 * | 0-30 |
| 62-53-3 | MSD Aniline | 111 | 0.00 U | 0.00 | 0 * | 37-113 | 200 * | 0-30 |
| 108-95-2 | MSD Phenol | 111 | 0.00 U | 46.0 | 41 | 23-82 | 26 | 0-30 |
| 111-44-4 | MSD bis(2-Chloroethyl) ether | 111 | 0.00 U | 76.8 | 69 | 39-114 | 11 | 0-30 |
| 95-57-8 | MSD 2-Chlorophenol | 111 | 0.00 U | 78.6 | 71 | 37-108 | 10 | 0-30 |
| 541-73-1 | MSD 1,3-Dichlorobenzene | 111 | 0.00 U | 45.5 | 41 | 27-97 | 40 * | 0-30 |
| 106-46-7 | MSD 1,4-Dichlorobenzene | 111 | 0.00 U | 48.4 | 44 | 28-97 | 38 * | 0-30 |
| 95-50-1 | MSD 1,2-Dichlorobenzene | 111 | 0.00 U | 52.2 | 47 | 28-99 | 31 * | 0-30 |
| 108-60-1 | MSD bis(2-Chloro-1-methylethyl)et | 111 | 0.00 U | 74.7 | 67 | 32-127 | 12 | 0-30 |
| 100-51-6 | MSD Benzyl alcohol | 111 | 0.00 U | 53.6 | 48 | 37-116 | 51 * | 0-30 |
| 95-48-7 | MSD o-Cresol | 111 | 0.00 U | 77.4 | 70 | 34-109 | 15 | 0-30 |
| 65794-96-9 | MSD m,p-Cresols | 111 | 0.00 U | 81.0 | 73 | 36-120 | 12 | 0-30 |
| 621-64-7 | MSD N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i> | 111 | 0.00 U | 79.5 | 72 | 42-118 | 6 | 0-30 |
| 67-72-1 | MSD Hexachloroethane | 111 | 0.00 U | 29.9 | 27 * | 29-94 | 72 * | 0-30 |
| 98-95-3 | MSD Nitrobenzene | 111 | 0.00 U | 73.1 | 66 | 38-123 | 15 | 0-30 |
| 78-59-1 | MSD Isophorone | 111 | 0.00 U | 79.1 | 71 | 43-120 | 8 | 0-30 |
| 88-75-5 | MSD 2-Nitrophenol | 111 | 0.00 U | 85.4 | 77 | 39-115 | 9 | 0-30 |
| 105-67-9 | MSD 2,4-Dimethylphenol | 111 | 0.00 U | 76.2 | 69 | 39-107 | 8 | 0-30 |
| 111-91-1 | MSD bis(2-Chloroethoxy)methane | 111 | 0.00 U | 63.9 | 58 | 42-118 | 30 | 0-30 |
| 120-83-2 | MSD 2,4-Dichlorophenol | 111 | 0.00 U | 86.5 | 78 | 40-111 | 7 | 0-30 |
| 65-85-0 | MSD Benzoic acid | 222 | 0.00 U | 104 | 47 | 17-95 | 18 | 0-30 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Matrix Spike Duplicate

Client ID: CAMO-17-132223MSD

Matrix: W

Lab Sample ID 1203785631

Instrument: MSDA.I

Analysis Date: 05/10/2017 19:52

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits | RPD % | Acceptance Limits |
|----------|--|----------------------|----------------------|---------------------|---------------|-------------------|----------|-------------------|
| 106-47-8 | MSD 4-Chloroaniline | 111 | 0.00 U | 0.00 | 0 * | 44-138 | 200 * | 0-30 |
| 87-68-3 | MSD Hexachlorobutadiene | 111 | 0.00 U | 22.7 | 20 * | 26-98 | 98 * | 0-30 |
| 59-50-7 | MSD Parachlorometa cresol 4-Chloro-3-methylphenol | 111 | 0.00 U | 94.2 | 85 | 41-122 | 7 | 0-30 |
| 91-57-6 | MSD 2-Methylnaphthalene | 111 | 0.00 U | 68.2 | 61 | 29-109 | 18 | 0-30 |
| 91-20-3 | MSD Naphthalene | 111 | 0.00 U | 69.1 | 62 | 31-108 | 13 | 0-30 |
| 90-12-0 | MSD 1-Methylnaphthalene | 111 | 0.00 U | 71.5 | 64 | 33-112 | 15 | 0-30 |
| 77-47-4 | MSD Hexachlorocyclopentadiene | 111 | 0.00 U | 21.8 | 20 * | 26-79 | 79 * | 0-30 |
| 88-06-2 | MSD 2,4,6-Trichlorophenol | 111 | 0.00 U | 100 | 90 | 39-124 | 2 | 0-30 |
| 95-95-4 | MSD 2,4,5-Trichlorophenol | 111 | 0.00 U | 95.9 | 86 | 42-120 | 9 | 0-30 |
| 91-58-7 | MSD 2-Chloronaphthalene | 111 | 0.00 U | 64.7 | 58 | 29-113 | 22 | 0-30 |
| 88-74-4 | MSD 2-Nitroaniline o-Nitroaniline | 111 | 0.00 U | 64.7 | 58 | 41-121 | 40 * | 0-30 |
| 99-09-2 | MSD 3-Nitroaniline m-Nitroaniline | 111 | 0.00 U | 0.00 | 0 * | 42-144 | 200 * | 0-30 |
| 131-11-3 | MSD Dimethylphthalate | 111 | 0.00 U | 88.7 | 80 | 45-128 | 10 | 0-30 |
| 606-20-2 | MSD 2,6-Dinitrotoluene | 111 | 0.00 U | 87.8 | 79 | 46-124 | 10 | 0-30 |
| 121-14-2 | MSD 2,4-Dinitrotoluene | 111 | 0.00 U | 98.5 | 89 | 45-125 | 9 | 0-30 |
| 208-96-8 | MSD Acenaphthylene | 111 | 0.00 U | 77.6 | 70 | 35-120 | 23 | 0-30 |
| 83-32-9 | MSD Acenaphthene | 111 | 0.00 U | 74.9 | 67 | 35-117 | 18 | 0-30 |
| 51-28-5 | MSD 2,4-Dinitrophenol | 111 | 0.00 U | 91.0 | 82 | 27-122 | 4 | 0-30 |
| 132-64-9 | MSD Dibenzofuran | 111 | 0.00 U | 79.1 | 71 | 38-113 | 17 | 0-30 |
| 58-90-2 | MSD 2,3,4,6-Tetrachlorophenol | 111 | 0.00 U | 92.0 | 83 | 40-128 | 9 | 0-30 |
| 84-66-2 | MSD Diethylphthalate | 111 | 0.00 U | 86.8 | 78 | 43-127 | 11 | 0-30 |
| 100-02-7 | MSD 4-Nitrophenol | 111 | 0.00 U | 52.0 | 47 | 17-85 | 23 | 0-30 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Matrix Spike Duplicate

Client ID: CAMO-17-132223MSD

Matrix: W

Lab Sample ID 1203785631

Instrument: MSDA.I

Analysis Date: 05/10/2017 19:52

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits | RPD % | Acceptance Limits |
|-----------|--|----------------------|----------------------|---------------------|---------------|-------------------|----------|-------------------|
| 86-73-7 | MSD Fluorene | 111 | 0.00 U | 78.8 | 71 | 39-117 | 15 | 0-30 |
| 7005-72-3 | MSD 4-Chlorophenylphenylether | 111 | 0.00 U | 73.6 | 66 | 39-121 | 20 | 0-30 |
| 100-01-6 | MSD 4-Nitroaniline <i>p</i> -Nitroaniline | 111 | 0.00 U | 0.00 | 0 * | 30-133 | 200 * | 0-30 |
| 534-52-1 | MSD 2-Methyl-4,6-dinitrophenol | 111 | 0.00 U | 95.3 | 86 | 32-126 | 6 | 0-30 |
| 122-39-4 | MSD Diphenylamine | 111 | 0.00 U | 34.6 | 31 * | 37-118 | 85 * | 0-30 |
| 122-66-7 | MSD Azobenzene <i>1,2-Diphenylhydrazine</i> | 111 | 0.00 U | 68.5 | 62 | 38-120 | 19 | 0-30 |
| 101-55-3 | MSD 4-Bromophenylphenylether | 111 | 0.00 U | 67.2 | 60 | 39-121 | 26 | 0-30 |
| 118-74-1 | MSD Hexachlorobenzene | 111 | 0.00 U | 63.6 | 57 | 40-118 | 32 * | 0-30 |
| 87-86-5 | MSD Pentachlorophenol | 111 | 0.00 U | 92.2 | 83 | 35-121 | 10 | 0-30 |
| 85-01-8 | MSD Phenanthrene | 111 | 0.00 U | 72.5 | 65 | 40-115 | 23 | 0-30 |
| 120-12-7 | MSD Anthracene | 111 | 0.00 U | 68.0 | 61 | 38-120 | 30 | 0-30 |
| 84-74-2 | MSD Di-n-butylphthalate | 111 | 0.00 U | 73.8 | 66 | 41-128 | 22 | 0-30 |
| 206-44-0 | MSD Fluoranthene | 111 | 0.00 U | 79.1 | 71 | 41-119 | 24 | 0-30 |
| 129-00-0 | MSD Pyrene | 111 | 0.00 U | 63.0 | 57 | 35-128 | 34 * | 0-30 |
| 85-68-7 | MSD Butylbenzylphthalate | 111 | 0.00 U | 67.8 | 61 | 40-129 | 34 * | 0-30 |
| 117-81-7 | MSD bis(2-Ethylhexyl)phthalate | 111 | 0.00 U | 74.0 | 67 | 38-131 | 23 | 0-30 |
| 56-55-3 | MSD Benzo(a)anthracene | 111 | 0.00 U | 70.3 | 63 | 39-120 | 38 * | 0-30 |
| 218-01-9 | MSD Chrysene | 111 | 0.00 U | 73.1 | 66 | 41-124 | 41 * | 0-30 |
| 117-84-0 | MSD Di-n-octylphthalate | 111 | 0.00 U | 80.1 | 72 | 37-134 | 24 | 0-30 |
| 205-99-2 | MSD Benzo(b)fluoranthene | 111 | 0.00 U | 135 | 122 | 31-122 | 34 * | 0-30 |
| 207-08-9 | MSD Benzo(k)fluoranthene | 111 | 0.00 U | 130 | 117 | 33-123 | 27 | 0-30 |
| 50-32-8 | MSD Benzo(a)pyrene | 111 | 0.00 U | 120 | 108 | 32-118 | 14 | 0-30 |

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1486

Sample Type: Matrix Spike Duplicate

Client ID: CAMO-17-132223MSD

Matrix: W

Lab Sample ID 1203785631

Instrument: MSDA.I

Analysis Date: 05/10/2017 19:52

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1663445

Inj. Vol: 1 uL

Batch ID: 1663446

| CAS No | Parmname | Amount Added ug/L | Sample Conc. ug/L | Spike Conc. ug/L | Recovery % | Acceptance Limits | RPD % | Acceptance Limits |
|-----------|--------------------------------|-------------------------|-------------------------|------------------------|---------------|----------------------|----------|----------------------|
| 193-39-5 | MSD Indeno(1,2,3-cd)pyrene | 111 | 0.00 U | 143 | 128 * | 27-121 | 20 | 0-30 |
| 53-70-3 | MSD Dibenzo(a,h)anthracene | 111 | 0.00 U | 146 | 131 * | 30-125 | 22 | 0-30 |
| 191-24-2 | MSD Benzo(ghi)perylene | 111 | 0.00 U | 129 | 116 | 24-126 | 16 | 0-30 |
| 123-91-1 | MSD 1,4-Dioxane | 111 | 0.00 U | 64.0 | 58 | 24-110 | 13 | 0-30 |
| 930-55-2 | MSD N-Nitrosopyrrolidine | 111 | 0.00 U | 68.8 | 62 | 47-119 | 20 | 0-30 |
| 95-94-3 | MSD 1,2,4,5-Tetrachlorobenzene | 111 | 0.00 U | 50.9 | 46 | 32-101 | 40 * | 0-30 |
| 1912-24-9 | MSD Atrazine | 111 | 0.00 U | 37.0 | 33 * | 42-129 | 94 * | 0-30 |
| 92-87-5 | MSD Benzidine | 222 | 0.00 U | 0.00 | 0 * | 15-130 | 200 * | 0-30 |
| 91-94-1 | MSD 3,3'-Dichlorobenzidine | 111 | 0.00 U | 0.00 | 0 * | 34-124 | 200 * | 0-30 |
| 120-82-1 | MSD 1,2,4-Trichlorobenzene | 111 | 0.00 U | 49.9 | 45 | 26-102 | 35 * | 0-30 |

Method Blank Summary

Page 1 of 1

| | | | | | |
|----------------|----------------------|----------------|------------------|------------|-------------------|
| SDG Number: | 2017-1486 | Client: | ARSL004 | Matrix: | WATER |
| Client ID: | MB for batch 1663445 | Instrument ID: | MSDA.I | Data File: | 051017.s\Ae1013.D |
| Lab Sample ID: | 1203785628 | Prep Date: | 05/10/2017 11:20 | Analyzed: | 05/10/17 18:02 |
| Column: | DB-5.625 | | | | |

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

| Client Sample ID | Lab Sample ID | File ID | Date Analyzed | Time Analyzed |
|--------------------------|---------------|-------------------|---------------|---------------|
| 01 LCS for batch 1663445 | 1203785629 | 051017.s\Ae1014.D | 05/10/17 | 1830 |
| 02 CAMO-17-132223 | 422570001 | 051017.s\Ae1015.D | 05/10/17 | 1857 |
| 03 CAMO-17-132223MS | 1203785630 | 051017.s\Ae1016.D | 05/10/17 | 1925 |
| 04 CAMO-17-132223MSD | 1203785631 | 051017.s\Ae1017.D | 05/10/17 | 1952 |
| 05 CAMO-17-132233 | 422570004 | 051017.s\Ae1018.D | 05/10/17 | 2019 |

Quality Control Data

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-1486

Lab Sample ID: 1203785628

Client Sample: QC for batch 1663445

Client ID: MB for batch 1663445

Batch ID: 1663446

Run Date: 05/10/2017 18:02

Prep Date: 05/10/2017 11:20

Data File: 051017.s\Ae1013.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSDA.I
Analyst: JMB3
Aliquot: 1000 mL
Column: DB-5.625

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-----------|--------------------------------|-----------|--------|-------|---------|---------|
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 95-50-1 | 1,2-Dichlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 122-66-7 | Azobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>1,2-Diphenylhydrazine</i> | | | | | |
| 541-73-1 | 1,3-Dichlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 106-46-7 | 1,4-Dichlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 123-91-1 | 1,4-Dioxane | U | 10.0 | ug/L | 3.00 | 10.0 |
| 90-12-0 | 1-Methylnaphthalene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 95-95-4 | 2,4,5-Trichlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 88-06-2 | 2,4,6-Trichlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 120-83-2 | 2,4-Dichlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 105-67-9 | 2,4-Dimethylphenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 51-28-5 | 2,4-Dinitrophenol | U | 20.0 | ug/L | 5.00 | 20.0 |
| 121-14-2 | 2,4-Dinitrotoluene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 606-20-2 | 2,6-Dinitrotoluene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 91-58-7 | 2-Chloronaphthalene | U | 1.00 | ug/L | 0.410 | 1.00 |
| 95-57-8 | 2-Chlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 534-52-1 | 2-Methyl-4,6-dinitrophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 91-57-6 | 2-Methylnaphthalene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 88-75-5 | 2-Nitrophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 91-94-1 | 3,3'-Dichlorobenzidine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 101-55-3 | 4-Bromophenylphenylether | U | 10.0 | ug/L | 3.00 | 10.0 |
| 59-50-7 | Parachlorometa cresol | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>4-Chloro-3-methylphenol</i> | | | | | |
| 106-47-8 | 4-Chloroaniline | U | 10.0 | ug/L | 3.30 | 10.0 |
| 7005-72-3 | 4-Chlorophenylphenylether | U | 10.0 | ug/L | 3.00 | 10.0 |
| 100-02-7 | 4-Nitrophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 83-32-9 | Acenaphthene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 208-96-8 | Acenaphthylene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 62-53-3 | Aniline | U | 10.0 | ug/L | 4.20 | 10.0 |
| 120-12-7 | Anthracene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 1912-24-9 | Atrazine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 92-87-5 | Benzidine | U | 10.0 | ug/L | 3.90 | 10.0 |
| 56-55-3 | Benzo(a)anthracene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 50-32-8 | Benzo(a)pyrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 205-99-2 | Benzo(b)fluoranthene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 191-24-2 | Benzo(ghi)perylene | U | 1.00 | ug/L | 0.300 | 1.00 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

| | | | |
|-----------------------|-----------------------------|----------------------|--------------------------|
| SDG Number: | 2017-1486 | Matrix: | WATER |
| Lab Sample ID: | 1203785628 | | |
| Client Sample: | QC for batch 1663445 | Client: | ARSL004 |
| Client ID: | MB for batch 1663445 | Method: | SW846 3510C/8270D |
| Batch ID: | 1663446 | Inst: | MSDA.I |
| Run Date: | 05/10/2017 18:02 | Analyst: | JMB3 |
| Prep Date: | 05/10/2017 11:20 | Aliquot: | 1000 mL |
| Data File: | 051017.s\Ae1013.D | Column: | DB-5.625 |
| | | Project: | QC |
| | | SOP Ref: | GL-OA-E-009 |
| | | Dilution: | 1 |
| | | Inj. Vol: | 1 uL |
| | | Final Volume: | 1 mL |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|----------------------------------|-----------|--------|-------|---------|---------|
| 207-08-9 | Benzo(k)fluoranthene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 65-85-0 | Benzoic acid | U | 20.0 | ug/L | 6.00 | 20.0 |
| 100-51-6 | Benzyl alcohol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 85-68-7 | Butylbenzylphthalate | U | 10.0 | ug/L | 3.00 | 10.0 |
| 218-01-9 | Chrysene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 84-74-2 | Di-n-butylphthalate | U | 10.0 | ug/L | 3.00 | 10.0 |
| 117-84-0 | Di-n-octylphthalate | U | 10.0 | ug/L | 3.00 | 10.0 |
| 53-70-3 | Dibenzo(a,h)anthracene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 132-64-9 | Dibenzofuran | U | 10.0 | ug/L | 3.00 | 10.0 |
| 84-66-2 | Diethylphthalate | U | 10.0 | ug/L | 3.00 | 10.0 |
| 131-11-3 | Dimethylphthalate | U | 10.0 | ug/L | 3.00 | 10.0 |
| 88-85-7 | Dinoseb | U | 10.0 | ug/L | 3.00 | 10.0 |
| 122-39-4 | Diphenylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 206-44-0 | Fluoranthene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 86-73-7 | Fluorene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 118-74-1 | Hexachlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 87-68-3 | Hexachlorobutadiene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 77-47-4 | Hexachlorocyclopentadiene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 67-72-1 | Hexachloroethane | U | 10.0 | ug/L | 3.00 | 10.0 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 78-59-1 | Isophorone | U | 10.0 | ug/L | 3.50 | 10.0 |
| 62-75-9 | N-Methyl-N-nitrosomethylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 924-16-3 | N-Nitrosodi-n-butylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 55-18-5 | N-Nitrosodiethylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 621-64-7 | N-Nitrosodi--n-propylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>N-Nitrosodipropylamine</i> | | | | | |
| 930-55-2 | N-Nitrosopyrrolidine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 91-20-3 | Naphthalene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 98-95-3 | Nitrobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 608-93-5 | Pentachlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 87-86-5 | Pentachlorophenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 85-01-8 | Phenanthrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-95-2 | Phenol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 129-00-0 | Pyrene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 110-86-1 | Pyridine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 108-60-1 | bis(2-Chloro-1-methylethyl)ether | U | 10.0 | ug/L | 3.00 | 10.0 |
| 111-91-1 | bis(2-Chloroethoxy)methane | U | 10.0 | ug/L | 3.00 | 10.0 |
| 111-44-4 | bis(2-Chloroethyl) ether | U | 10.0 | ug/L | 3.00 | 10.0 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | U | 10.0 | ug/L | 3.00 | 10.0 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-1486

Lab Sample ID: 1203785628

Client Sample: QC for batch 1663445

Client ID: MB for batch 1663445

Batch ID: 1663446

Run Date: 05/10/2017 18:02

Prep Date: 05/10/2017 11:20

Data File: 051017.s\Ae1013.D

Matrix: WATER

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSDA.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5.625

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------|-----------|--------|-------|---------|---------|
| 65794-96-9 | m,p-Cresols | U | 10.0 | ug/L | 3.70 | 10.0 |
| 99-09-2 | 3-Nitroaniline | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>m-Nitroaniline</i> | | | | | |
| 95-48-7 | o-Cresol | U | 10.0 | ug/L | 3.00 | 10.0 |
| 88-74-4 | 2-Nitroaniline | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>o-Nitroaniline</i> | | | | | |
| 100-01-6 | 4-Nitroaniline | U | 10.0 | ug/L | 3.00 | 10.0 |
| | <i>p-Nitroaniline</i> | | | | | |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 2,4,6-Tribromophenol | 78.5 | 100 | ug/L 79 | (32%-124%) |
| 2-Fluorobiphenyl | 37.1 | 50.0 | ug/L 74 | (32%-112%) |
| 2-Fluorophenol | 44.1 | 100 | ug/L 44 | (15%-88%) |
| Nitrobenzene-d5 | 36.6 | 50.0 | ug/L 73 | (36%-115%) |
| Phenol-d5 | 27.6 | 100 | ug/L 28 | (15%-91%) |
| p-Terphenyl-d14 | 35.5 | 50.0 | ug/L 71 | (36%-121%) |

Tentatively Identified Compound Summary

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

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-1486

Lab Sample ID: 1203785629

Client Sample: QC for batch 1663445

Client ID: LCS for batch 1663445

Batch ID: 1663446

Run Date: 05/10/2017 18:30

Prep Date: 05/10/2017 11:20

Data File: 051017.s\Ae1014.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSDA.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5.625

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-----------|--------------------------------|-----------|--------|-------|---------|---------|
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | | 36.7 | ug/L | 3.00 | 10.0 |
| 120-82-1 | 1,2,4-Trichlorobenzene | | 34.5 | ug/L | 3.00 | 10.0 |
| 95-50-1 | 1,2-Dichlorobenzene | | 36.5 | ug/L | 3.00 | 10.0 |
| 122-66-7 | Azobenzene | | 40.2 | ug/L | 3.00 | 10.0 |
| | <i>1,2-Diphenylhydrazine</i> | | | | | |
| 541-73-1 | 1,3-Dichlorobenzene | | 34.5 | ug/L | 3.00 | 10.0 |
| 106-46-7 | 1,4-Dichlorobenzene | | 36.1 | ug/L | 3.00 | 10.0 |
| 123-91-1 | 1,4-Dioxane | | 29.6 | ug/L | 3.00 | 10.0 |
| 90-12-0 | 1-Methylnaphthalene | | 39.4 | ug/L | 0.300 | 1.00 |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | | 47.5 | ug/L | 3.00 | 10.0 |
| 95-95-4 | 2,4,5-Trichlorophenol | | 49.2 | ug/L | 3.00 | 10.0 |
| 88-06-2 | 2,4,6-Trichlorophenol | | 47.1 | ug/L | 3.00 | 10.0 |
| 120-83-2 | 2,4-Dichlorophenol | | 44.7 | ug/L | 3.00 | 10.0 |
| 105-67-9 | 2,4-Dimethylphenol | | 38.8 | ug/L | 3.00 | 10.0 |
| 51-28-5 | 2,4-Dinitrophenol | | 41.8 | ug/L | 5.00 | 20.0 |
| 121-14-2 | 2,4-Dinitrotoluene | | 51.4 | ug/L | 3.00 | 10.0 |
| 606-20-2 | 2,6-Dinitrotoluene | | 46.6 | ug/L | 3.00 | 10.0 |
| 91-58-7 | 2-Chloronaphthalene | | 38.2 | ug/L | 0.410 | 1.00 |
| 95-57-8 | 2-Chlorophenol | | 43.0 | ug/L | 3.00 | 10.0 |
| 534-52-1 | 2-Methyl-4,6-dinitrophenol | | 48.1 | ug/L | 3.00 | 10.0 |
| 91-57-6 | 2-Methylnaphthalene | | 38.3 | ug/L | 0.300 | 1.00 |
| 88-75-5 | 2-Nitrophenol | | 44.7 | ug/L | 3.00 | 10.0 |
| 91-94-1 | 3,3'-Dichlorobenzidine | | 59.6 | ug/L | 3.00 | 10.0 |
| 101-55-3 | 4-Bromophenylphenylether | | 41.2 | ug/L | 3.00 | 10.0 |
| 59-50-7 | Parachlorometa cresol | | 47.1 | ug/L | 3.00 | 10.0 |
| | <i>4-Chloro-3-methylphenol</i> | | | | | |
| 106-47-8 | 4-Chloroaniline | | 57.1 | ug/L | 3.30 | 10.0 |
| 7005-72-3 | 4-Chlorophenylphenylether | | 43.3 | ug/L | 3.00 | 10.0 |
| 100-02-7 | 4-Nitrophenol | | 18.6 | ug/L | 3.00 | 10.0 |
| 83-32-9 | Acenaphthene | | 42.9 | ug/L | 0.300 | 1.00 |
| 208-96-8 | Acenaphthylene | | 46.3 | ug/L | 0.300 | 1.00 |
| 62-53-3 | Aniline | | 42.4 | ug/L | 4.20 | 10.0 |
| 120-12-7 | Anthracene | | 43.5 | ug/L | 0.300 | 1.00 |
| 1912-24-9 | Atrazine | | 47.7 | ug/L | 3.00 | 10.0 |
| 92-87-5 | Benzidine | | 27.4 | ug/L | 3.90 | 10.0 |
| 56-55-3 | Benzo(a)anthracene | | 50.3 | ug/L | 0.300 | 1.00 |
| 50-32-8 | Benzo(a)pyrene | | 49.9 | ug/L | 0.300 | 1.00 |
| 205-99-2 | Benzo(b)fluoranthene | | 45.6 | ug/L | 0.300 | 1.00 |
| 191-24-2 | Benzo(ghi)perylene | | 54.5 | ug/L | 0.300 | 1.00 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

| | | | |
|-----------------------|------------------------------|----------------------|--------------------------|
| SDG Number: | 2017-1486 | Matrix: | WATER |
| Lab Sample ID: | 1203785629 | | |
| Client Sample: | QC for batch 1663445 | Client: | ARSL004 |
| Client ID: | LCS for batch 1663445 | Method: | SW846 3510C/8270D |
| Batch ID: | 1663446 | Inst: | MSDA.I |
| Run Date: | 05/10/2017 18:30 | Analyst: | JMB3 |
| Prep Date: | 05/10/2017 11:20 | Aliquot: | 1000 mL |
| Data File: | 051017.s\Ae1014.D | Column: | DB-5.625 |
| | | Project: | QC |
| | | SOP Ref: | GL-OA-E-009 |
| | | Dilution: | 1 |
| | | Inj. Vol: | 1 uL |
| | | Final Volume: | 1 mL |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|----------------------------------|-----------|--------|-------|---------|---------|
| 207-08-9 | Benzo(k)fluoranthene | | 46.7 | ug/L | 0.300 | 1.00 |
| 65-85-0 | Benzoic acid | J | 18.4 | ug/L | 6.00 | 20.0 |
| 100-51-6 | Benzyl alcohol | | 39.2 | ug/L | 3.00 | 10.0 |
| 85-68-7 | Butylbenzylphthalate | | 44.7 | ug/L | 3.00 | 10.0 |
| 218-01-9 | Chrysene | | 53.3 | ug/L | 0.300 | 1.00 |
| 84-74-2 | Di-n-butylphthalate | | 43.9 | ug/L | 3.00 | 10.0 |
| 117-84-0 | Di-n-octylphthalate | | 49.7 | ug/L | 3.00 | 10.0 |
| 53-70-3 | Dibenzo(a,h)anthracene | | 57.1 | ug/L | 0.300 | 1.00 |
| 132-64-9 | Dibenzofuran | | 45.1 | ug/L | 3.00 | 10.0 |
| 84-66-2 | Diethylphthalate | | 46.4 | ug/L | 3.00 | 10.0 |
| 131-11-3 | Dimethylphthalate | | 46.4 | ug/L | 3.00 | 10.0 |
| 88-85-7 | Dinoseb | U | 10.0 | ug/L | 3.00 | 10.0 |
| 122-39-4 | Diphenylamine | | 40.6 | ug/L | 3.00 | 10.0 |
| 206-44-0 | Fluoranthene | | 49.3 | ug/L | 0.300 | 1.00 |
| 86-73-7 | Fluorene | | 44.3 | ug/L | 0.300 | 1.00 |
| 118-74-1 | Hexachlorobenzene | | 41.2 | ug/L | 3.00 | 10.0 |
| 87-68-3 | Hexachlorobutadiene | | 32.4 | ug/L | 3.00 | 10.0 |
| 77-47-4 | Hexachlorocyclopentadiene | | 24.5 | ug/L | 3.00 | 10.0 |
| 67-72-1 | Hexachloroethane | | 32.0 | ug/L | 3.00 | 10.0 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | | 57.0 | ug/L | 0.300 | 1.00 |
| 78-59-1 | Isophorone | | 40.8 | ug/L | 3.50 | 10.0 |
| 62-75-9 | N-Methyl-N-nitrosomethylamine | | 26.1 | ug/L | 3.00 | 10.0 |
| 924-16-3 | N-Nitrosodi-n-butylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 55-18-5 | N-Nitrosodiethylamine | U | 10.0 | ug/L | 3.00 | 10.0 |
| 621-64-7 | N-Nitrosodi--n-propylamine | | 39.9 | ug/L | 3.00 | 10.0 |
| | <i>N-Nitrosodipropylamine</i> | | | | | |
| 930-55-2 | N-Nitrosopyrrolidine | | 38.5 | ug/L | 3.00 | 10.0 |
| 91-20-3 | Naphthalene | | 37.8 | ug/L | 0.300 | 1.00 |
| 98-95-3 | Nitrobenzene | | 41.3 | ug/L | 3.00 | 10.0 |
| 608-93-5 | Pentachlorobenzene | U | 10.0 | ug/L | 3.00 | 10.0 |
| 87-86-5 | Pentachlorophenol | | 48.1 | ug/L | 3.00 | 10.0 |
| 85-01-8 | Phenanthrene | | 43.6 | ug/L | 0.300 | 1.00 |
| 108-95-2 | Phenol | | 18.2 | ug/L | 3.00 | 10.0 |
| 129-00-0 | Pyrene | | 41.7 | ug/L | 0.300 | 1.00 |
| 110-86-1 | Pyridine | | 22.3 | ug/L | 3.00 | 10.0 |
| 108-60-1 | bis(2-Chloro-1-methylethyl)ether | | 41.8 | ug/L | 3.00 | 10.0 |
| 111-91-1 | bis(2-Chloroethoxy)methane | | 41.6 | ug/L | 3.00 | 10.0 |
| 111-44-4 | bis(2-Chloroethyl) ether | | 42.3 | ug/L | 3.00 | 10.0 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | | 43.9 | ug/L | 3.00 | 10.0 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

| | |
|--|----------------------------------|
| SDG Number: 2017-1486 | Matrix: WATER |
| Lab Sample ID: 1203785629 | |
| Client Sample: QC for batch 1663445 | Client: ARSL004 |
| Client ID: LCS for batch 1663445 | Method: SW846 3510C/8270D |
| Batch ID: 1663446 | Inst: MSDA.I |
| Run Date: 05/10/2017 18:30 | Analyst: JMB3 |
| Prep Date: 05/10/2017 11:20 | Aliquot: 1000 mL |
| Data File: 051017.s\Ae1014.D | Column: DB-5.625 |
| | Project: QC |
| | SOP Ref: GL-OA-E-009 |
| | Dilution: 1 |
| | Inj. Vol: 1 uL |
| | Final Volume: 1 mL |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------|-----------|--------|-------|---------|---------|
| 65794-96-9 | m,p-Cresols | | 37.9 | ug/L | 3.70 | 10.0 |
| 99-09-2 | 3-Nitroaniline | | 60.1 | ug/L | 3.00 | 10.0 |
| | <i>m-Nitroaniline</i> | | | | | |
| 95-48-7 | o-Cresol | | 39.3 | ug/L | 3.00 | 10.0 |
| 88-74-4 | 2-Nitroaniline | | 46.1 | ug/L | 3.00 | 10.0 |
| | <i>o-Nitroaniline</i> | | | | | |
| 100-01-6 | 4-Nitroaniline | | 56.6 | ug/L | 3.00 | 10.0 |
| | <i>p-Nitroaniline</i> | | | | | |

| Surrogate/Tracer recovery | Result | Nominal | | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|------|-----------|-------------------|
| 2,4,6-Tribromophenol | 99.9 | 100 | ug/L | 100 | (32%-124%) |
| 2-Fluorobiphenyl | 44.4 | 50.0 | ug/L | 89 | (32%-112%) |
| 2-Fluorophenol | 53.0 | 100 | ug/L | 53 | (15%-88%) |
| Nitrobenzene-d5 | 42.5 | 50.0 | ug/L | 85 | (36%-115%) |
| Phenol-d5 | 34.0 | 100 | ug/L | 34 | (15%-91%) |
| p-Terphenyl-d14 | 39.9 | 50.0 | ug/L | 80 | (36%-121%) |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

| | | |
|--|---|-----------------------------|
| SDG Number: 2017-1486 | Date Collected: 05/04/2017 11:59 | Matrix: W |
| Lab Sample ID: 1203785630 | Date Received: 05/06/2017 09:00 | |
| Client Sample: QC for batch 1663445 | Client: ARSL004 | Project: QC |
| Client ID: CAMO-17-132223MS | Method: SW846 3510C/8270D | SOP Ref: GL-OA-E-009 |
| Batch ID: 1663446 | Inst: MSDA.I | Dilution: 1 |
| Run Date: 05/10/2017 19:25 | Analyst: JMB3 | Inj. Vol: 1 uL |
| Prep Date: 05/10/2017 11:20 | Aliquot: 450 mL | Final Volume: 1 mL |
| Data File: 051017.s\Ae1016.D | Column: DB-5.625 | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-----------|--------------------------------|-----------|--------|-------|---------|---------|
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | | 76.1 | ug/L | 6.67 | 22.2 |
| 120-82-1 | 1,2,4-Trichlorobenzene | | 71.1 | ug/L | 6.67 | 22.2 |
| 95-50-1 | 1,2-Dichlorobenzene | | 71.6 | ug/L | 6.67 | 22.2 |
| 122-66-7 | Azobenzene | | 83.2 | ug/L | 6.67 | 22.2 |
| | <i>1,2-Diphenylhydrazine</i> | | | | | |
| 541-73-1 | 1,3-Dichlorobenzene | | 68.3 | ug/L | 6.67 | 22.2 |
| 106-46-7 | 1,4-Dichlorobenzene | | 71.4 | ug/L | 6.67 | 22.2 |
| 123-91-1 | 1,4-Dioxane | | 73.2 | ug/L | 6.67 | 22.2 |
| 90-12-0 | 1-Methylnaphthalene | | 83.0 | ug/L | 0.667 | 2.22 |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | | 101 | ug/L | 6.67 | 22.2 |
| 95-95-4 | 2,4,5-Trichlorophenol | | 105 | ug/L | 6.67 | 22.2 |
| 88-06-2 | 2,4,6-Trichlorophenol | | 102 | ug/L | 6.67 | 22.2 |
| 120-83-2 | 2,4-Dichlorophenol | | 93.0 | ug/L | 6.67 | 22.2 |
| 105-67-9 | 2,4-Dimethylphenol | | 82.3 | ug/L | 6.67 | 22.2 |
| 51-28-5 | 2,4-Dinitrophenol | | 87.4 | ug/L | 11.1 | 44.4 |
| 121-14-2 | 2,4-Dinitrotoluene | | 108 | ug/L | 6.67 | 22.2 |
| 606-20-2 | 2,6-Dinitrotoluene | | 97.4 | ug/L | 6.67 | 22.2 |
| 91-58-7 | 2-Chloronaphthalene | | 80.6 | ug/L | 0.911 | 2.22 |
| 95-57-8 | 2-Chlorophenol | | 87.2 | ug/L | 6.67 | 22.2 |
| 534-52-1 | 2-Methyl-4,6-dinitrophenol | | 101 | ug/L | 6.67 | 22.2 |
| 91-57-6 | 2-Methylnaphthalene | | 81.6 | ug/L | 0.667 | 2.22 |
| 88-75-5 | 2-Nitrophenol | | 93.1 | ug/L | 6.67 | 22.2 |
| 91-94-1 | 3,3'-Dichlorobenzidine | | 119 | ug/L | 6.67 | 22.2 |
| 101-55-3 | 4-Bromophenylphenylether | | 86.9 | ug/L | 6.67 | 22.2 |
| 59-50-7 | Parachlorometa cresol | | 101 | ug/L | 6.67 | 22.2 |
| | <i>4-Chloro-3-methylphenol</i> | | | | | |
| 106-47-8 | 4-Chloroaniline | | 119 | ug/L | 7.33 | 22.2 |
| 7005-72-3 | 4-Chlorophenylphenylether | | 90.2 | ug/L | 6.67 | 22.2 |
| 100-02-7 | 4-Nitrophenol | | 65.5 | ug/L | 6.67 | 22.2 |
| 83-32-9 | Acenaphthene | | 89.3 | ug/L | 0.667 | 2.22 |
| 208-96-8 | Acenaphthylene | | 97.6 | ug/L | 0.667 | 2.22 |
| 62-53-3 | Aniline | | 84.9 | ug/L | 9.33 | 22.2 |
| 120-12-7 | Anthracene | | 91.5 | ug/L | 0.667 | 2.22 |
| 1912-24-9 | Atrazine | | 103 | ug/L | 6.67 | 22.2 |
| 92-87-5 | Benzidine | | 44.2 | ug/L | 8.67 | 22.2 |
| 56-55-3 | Benzo(a)anthracene | | 103 | ug/L | 0.667 | 2.22 |
| 50-32-8 | Benzo(a)pyrene | | 104 | ug/L | 0.667 | 2.22 |
| 205-99-2 | Benzo(b)fluoranthene | | 95.5 | ug/L | 0.667 | 2.22 |
| 191-24-2 | Benzo(ghi)perylene | | 110 | ug/L | 0.667 | 2.22 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

| | | |
|--|---|-----------------------------|
| SDG Number: 2017-1486 | Date Collected: 05/04/2017 11:59 | Matrix: W |
| Lab Sample ID: 1203785630 | Date Received: 05/06/2017 09:00 | |
| Client Sample: QC for batch 1663445 | Client: ARSL004 | Project: QC |
| Client ID: CAMO-17-132223MS | Method: SW846 3510C/8270D | SOP Ref: GL-OA-E-009 |
| Batch ID: 1663446 | Inst: MSDA.I | Dilution: 1 |
| Run Date: 05/10/2017 19:25 | Analyst: JMB3 | Inj. Vol: 1 uL |
| Prep Date: 05/10/2017 11:20 | Aliquot: 450 mL | Final Volume: 1 mL |
| Data File: 051017.s\Ae1016.D | Column: DB-5.625 | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|----------------------------------|-----------|--------|-------|---------|---------|
| 207-08-9 | Benzo(k)fluoranthene | | 98.3 | ug/L | 0.667 | 2.22 |
| 65-85-0 | Benzoic acid | | 86.5 | ug/L | 13.3 | 44.4 |
| 100-51-6 | Benzyl alcohol | | 90.2 | ug/L | 6.67 | 22.2 |
| 85-68-7 | Butylbenzylphthalate | | 95.5 | ug/L | 6.67 | 22.2 |
| 218-01-9 | Chrysene | | 111 | ug/L | 0.667 | 2.22 |
| 84-74-2 | Di-n-butylphthalate | | 92.5 | ug/L | 6.67 | 22.2 |
| 117-84-0 | Di-n-octylphthalate | | 102 | ug/L | 6.67 | 22.2 |
| 53-70-3 | Dibenzo(a,h)anthracene | | 116 | ug/L | 0.667 | 2.22 |
| 132-64-9 | Dibenzofuran | | 93.5 | ug/L | 6.67 | 22.2 |
| 84-66-2 | Diethylphthalate | | 96.8 | ug/L | 6.67 | 22.2 |
| 131-11-3 | Dimethylphthalate | | 98.1 | ug/L | 6.67 | 22.2 |
| 88-85-7 | Dinoseb | U | 22.2 | ug/L | 6.67 | 22.2 |
| 122-39-4 | Diphenylamine | | 85.3 | ug/L | 6.67 | 22.2 |
| 206-44-0 | Fluoranthene | | 100 | ug/L | 0.667 | 2.22 |
| 86-73-7 | Fluorene | | 91.8 | ug/L | 0.667 | 2.22 |
| 118-74-1 | Hexachlorobenzene | | 88.1 | ug/L | 6.67 | 22.2 |
| 87-68-3 | Hexachlorobutadiene | | 66.5 | ug/L | 6.67 | 22.2 |
| 77-47-4 | Hexachlorocyclopentadiene | | 50.0 | ug/L | 6.67 | 22.2 |
| 67-72-1 | Hexachloroethane | | 63.3 | ug/L | 6.67 | 22.2 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | | 116 | ug/L | 0.667 | 2.22 |
| 78-59-1 | Isophorone | | 85.6 | ug/L | 7.78 | 22.2 |
| 62-75-9 | N-Methyl-N-nitrosomethylamine | | 69.1 | ug/L | 6.67 | 22.2 |
| 924-16-3 | N-Nitrosodi-n-butylamine | U | 22.2 | ug/L | 6.67 | 22.2 |
| 55-18-5 | N-Nitrosodiethylamine | U | 22.2 | ug/L | 6.67 | 22.2 |
| 621-64-7 | N-Nitrosodi--n-propylamine | | 84.3 | ug/L | 6.67 | 22.2 |
| | <i>N-Nitrosodipropylamine</i> | | | | | |
| 930-55-2 | N-Nitrosopyrrolidine | | 84.4 | ug/L | 6.67 | 22.2 |
| 91-20-3 | Naphthalene | | 79.0 | ug/L | 0.667 | 2.22 |
| 98-95-3 | Nitrobenzene | | 84.6 | ug/L | 6.67 | 22.2 |
| 608-93-5 | Pentachlorobenzene | U | 22.2 | ug/L | 6.67 | 22.2 |
| 87-86-5 | Pentachlorophenol | | 102 | ug/L | 6.67 | 22.2 |
| 85-01-8 | Phenanthrene | | 90.9 | ug/L | 0.667 | 2.22 |
| 108-95-2 | Phenol | | 59.7 | ug/L | 6.67 | 22.2 |
| 129-00-0 | Pyrene | | 89.0 | ug/L | 0.667 | 2.22 |
| 110-86-1 | Pyridine | | 46.6 | ug/L | 6.67 | 22.2 |
| 108-60-1 | bis(2-Chloro-1-methylethyl)ether | | 84.5 | ug/L | 6.67 | 22.2 |
| 111-91-1 | bis(2-Chloroethoxy)methane | | 86.6 | ug/L | 6.67 | 22.2 |
| 111-44-4 | bis(2-Chloroethyl) ether | | 85.4 | ug/L | 6.67 | 22.2 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | | 93.5 | ug/L | 6.67 | 22.2 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

| | | |
|--|---|-----------------------------|
| SDG Number: 2017-1486 | Date Collected: 05/04/2017 11:59 | Matrix: W |
| Lab Sample ID: 1203785630 | Date Received: 05/06/2017 09:00 | |
| Client Sample: QC for batch 1663445 | Client: ARSL004 | Project: QC |
| Client ID: CAMO-17-132223MS | Method: SW846 3510C/8270D | SOP Ref: GL-OA-E-009 |
| Batch ID: 1663446 | Inst: MSDA.I | Dilution: 1 |
| Run Date: 05/10/2017 19:25 | Analyst: JMB3 | Inj. Vol: 1 uL |
| Prep Date: 05/10/2017 11:20 | Aliquot: 450 mL | Final Volume: 1 mL |
| Data File: 051017.s\Ae1016.D | Column: DB-5.625 | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------|-----------|--------|-------|---------|---------|
| 65794-96-9 | m,p-Cresols | | 91.6 | ug/L | 8.22 | 22.2 |
| 99-09-2 | 3-Nitroaniline | | 123 | ug/L | 6.67 | 22.2 |
| | <i>m-Nitroaniline</i> | | | | | |
| 95-48-7 | o-Cresol | | 89.5 | ug/L | 6.67 | 22.2 |
| 88-74-4 | 2-Nitroaniline | | 96.6 | ug/L | 6.67 | 22.2 |
| | <i>o-Nitroaniline</i> | | | | | |
| 100-01-6 | 4-Nitroaniline | | 109 | ug/L | 6.67 | 22.2 |
| | <i>p-Nitroaniline</i> | | | | | |

| Surrogate/Tracer recovery | Result | Nominal | | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|------|-----------|-------------------|
| 2,4,6-Tribromophenol | 210 | 222 | ug/L | 94 | (32%-124%) |
| 2-Fluorobiphenyl | 95.4 | 111 | ug/L | 86 | (32%-112%) |
| 2-Fluorophenol | 143 | 222 | ug/L | 64 | (15%-88%) |
| Nitrobenzene-d5 | 87.8 | 111 | ug/L | 79 | (36%-115%) |
| Phenol-d5 | 115 | 222 | ug/L | 52 | (15%-91%) |
| p-Terphenyl-d14 | 90.3 | 111 | ug/L | 81 | (36%-121%) |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

| | | |
|--|---|-----------------------------|
| SDG Number: 2017-1486 | Date Collected: 05/04/2017 11:59 | Matrix: W |
| Lab Sample ID: 1203785631 | Date Received: 05/06/2017 09:00 | |
| Client Sample: QC for batch 1663445 | Client: ARSL004 | Project: QC |
| Client ID: CAMO-17-132223MSD | Method: SW846 3510C/8270D | SOP Ref: GL-OA-E-009 |
| Batch ID: 1663446 | Inst: MSDA.I | Dilution: 1 |
| Run Date: 05/10/2017 19:52 | Analyst: JMB3 | Inj. Vol: 1 uL |
| Prep Date: 05/10/2017 11:20 | Aliquot: 450 mL | Final Volume: 1 mL |
| Data File: 051017.s\Ae1017.D | Column: DB-5.625 | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-----------|--------------------------------|-----------|--------|-------|---------|---------|
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | | 50.9 | ug/L | 6.67 | 22.2 |
| 120-82-1 | 1,2,4-Trichlorobenzene | | 49.9 | ug/L | 6.67 | 22.2 |
| 95-50-1 | 1,2-Dichlorobenzene | | 52.2 | ug/L | 6.67 | 22.2 |
| 122-66-7 | Azobenzene | | 68.5 | ug/L | 6.67 | 22.2 |
| | <i>1,2-Diphenylhydrazine</i> | | | | | |
| 541-73-1 | 1,3-Dichlorobenzene | | 45.5 | ug/L | 6.67 | 22.2 |
| 106-46-7 | 1,4-Dichlorobenzene | | 48.4 | ug/L | 6.67 | 22.2 |
| 123-91-1 | 1,4-Dioxane | | 64.0 | ug/L | 6.67 | 22.2 |
| 90-12-0 | 1-Methylnaphthalene | | 71.5 | ug/L | 0.667 | 2.22 |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | | 92.0 | ug/L | 6.67 | 22.2 |
| 95-95-4 | 2,4,5-Trichlorophenol | | 95.9 | ug/L | 6.67 | 22.2 |
| 88-06-2 | 2,4,6-Trichlorophenol | | 100 | ug/L | 6.67 | 22.2 |
| 120-83-2 | 2,4-Dichlorophenol | | 86.5 | ug/L | 6.67 | 22.2 |
| 105-67-9 | 2,4-Dimethylphenol | | 76.2 | ug/L | 6.67 | 22.2 |
| 51-28-5 | 2,4-Dinitrophenol | | 91.0 | ug/L | 11.1 | 44.4 |
| 121-14-2 | 2,4-Dinitrotoluene | | 98.5 | ug/L | 6.67 | 22.2 |
| 606-20-2 | 2,6-Dinitrotoluene | | 87.8 | ug/L | 6.67 | 22.2 |
| 91-58-7 | 2-Chloronaphthalene | | 64.7 | ug/L | 0.911 | 2.22 |
| 95-57-8 | 2-Chlorophenol | | 78.6 | ug/L | 6.67 | 22.2 |
| 534-52-1 | 2-Methyl-4,6-dinitrophenol | | 95.3 | ug/L | 6.67 | 22.2 |
| 91-57-6 | 2-Methylnaphthalene | | 68.2 | ug/L | 0.667 | 2.22 |
| 88-75-5 | 2-Nitrophenol | | 85.4 | ug/L | 6.67 | 22.2 |
| 91-94-1 | 3,3'-Dichlorobenzidine | U | 22.2 | ug/L | 6.67 | 22.2 |
| 101-55-3 | 4-Bromophenylphenylether | | 67.2 | ug/L | 6.67 | 22.2 |
| 59-50-7 | Parachlorometa cresol | | 94.2 | ug/L | 6.67 | 22.2 |
| | <i>4-Chloro-3-methylphenol</i> | | | | | |
| 106-47-8 | 4-Chloroaniline | U | 22.2 | ug/L | 7.33 | 22.2 |
| 7005-72-3 | 4-Chlorophenylphenylether | | 73.6 | ug/L | 6.67 | 22.2 |
| 100-02-7 | 4-Nitrophenol | | 52.0 | ug/L | 6.67 | 22.2 |
| 83-32-9 | Acenaphthene | | 74.9 | ug/L | 0.667 | 2.22 |
| 208-96-8 | Acenaphthylene | | 77.6 | ug/L | 0.667 | 2.22 |
| 62-53-3 | Aniline | U | 22.2 | ug/L | 9.33 | 22.2 |
| 120-12-7 | Anthracene | | 68.0 | ug/L | 0.667 | 2.22 |
| 1912-24-9 | Atrazine | | 37.0 | ug/L | 6.67 | 22.2 |
| 92-87-5 | Benzidine | U | 22.2 | ug/L | 8.67 | 22.2 |
| 56-55-3 | Benzo(a)anthracene | | 70.3 | ug/L | 0.667 | 2.22 |
| 50-32-8 | Benzo(a)pyrene | | 120 | ug/L | 0.667 | 2.22 |
| 205-99-2 | Benzo(b)fluoranthene | | 135 | ug/L | 0.667 | 2.22 |
| 191-24-2 | Benzo(ghi)perylene | | 129 | ug/L | 0.667 | 2.22 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|--------------------------|----------------------|--------------------|
| SDG Number: | 2017-1486 | Date Collected: | 05/04/2017 11:59 | Matrix: | W |
| Lab Sample ID: | 1203785631 | Date Received: | 05/06/2017 09:00 | | |
| Client Sample: | QC for batch 1663445 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAMO-17-132223MSD | Method: | SW846 3510C/8270D | SOP Ref: | GL-OA-E-009 |
| Batch ID: | 1663446 | Inst: | MSDA.I | Dilution: | 1 |
| Run Date: | 05/10/2017 19:52 | Analyst: | JMB3 | Inj. Vol: | 1 uL |
| Prep Date: | 05/10/2017 11:20 | Aliquot: | 450 mL | Final Volume: | 1 mL |
| Data File: | 051017.s\Ae1017.D | Column: | DB-5.625 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|----------------------------------|-----------|--------|-------|---------|---------|
| 207-08-9 | Benzo(k)fluoranthene | | 130 | ug/L | 0.667 | 2.22 |
| 65-85-0 | Benzoic acid | | 104 | ug/L | 13.3 | 44.4 |
| 100-51-6 | Benzyl alcohol | | 53.6 | ug/L | 6.67 | 22.2 |
| 85-68-7 | Butylbenzylphthalate | | 67.8 | ug/L | 6.67 | 22.2 |
| 218-01-9 | Chrysene | | 73.1 | ug/L | 0.667 | 2.22 |
| 84-74-2 | Di-n-butylphthalate | | 73.8 | ug/L | 6.67 | 22.2 |
| 117-84-0 | Di-n-octylphthalate | | 80.1 | ug/L | 6.67 | 22.2 |
| 53-70-3 | Dibenzo(a,h)anthracene | | 146 | ug/L | 0.667 | 2.22 |
| 132-64-9 | Dibenzofuran | | 79.1 | ug/L | 6.67 | 22.2 |
| 84-66-2 | Diethylphthalate | | 86.8 | ug/L | 6.67 | 22.2 |
| 131-11-3 | Dimethylphthalate | | 88.7 | ug/L | 6.67 | 22.2 |
| 88-85-7 | Dinoseb | U | 22.2 | ug/L | 6.67 | 22.2 |
| 122-39-4 | Diphenylamine | | 34.6 | ug/L | 6.67 | 22.2 |
| 206-44-0 | Fluoranthene | | 79.1 | ug/L | 0.667 | 2.22 |
| 86-73-7 | Fluorene | | 78.8 | ug/L | 0.667 | 2.22 |
| 118-74-1 | Hexachlorobenzene | | 63.6 | ug/L | 6.67 | 22.2 |
| 87-68-3 | Hexachlorobutadiene | | 22.7 | ug/L | 6.67 | 22.2 |
| 77-47-4 | Hexachlorocyclopentadiene | J | 21.8 | ug/L | 6.67 | 22.2 |
| 67-72-1 | Hexachloroethane | | 29.9 | ug/L | 6.67 | 22.2 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | | 143 | ug/L | 0.667 | 2.22 |
| 78-59-1 | Isophorone | | 79.1 | ug/L | 7.78 | 22.2 |
| 62-75-9 | N-Methyl-N-nitrosomethylamine | | 53.5 | ug/L | 6.67 | 22.2 |
| 924-16-3 | N-Nitrosodi-n-butylamine | U | 22.2 | ug/L | 6.67 | 22.2 |
| 55-18-5 | N-Nitrosodiethylamine | U | 22.2 | ug/L | 6.67 | 22.2 |
| 621-64-7 | N-Nitrosodi--n-propylamine | | 79.5 | ug/L | 6.67 | 22.2 |
| | <i>N-Nitrosodipropylamine</i> | | | | | |
| 930-55-2 | N-Nitrosopyrrolidine | | 68.8 | ug/L | 6.67 | 22.2 |
| 91-20-3 | Naphthalene | | 69.1 | ug/L | 0.667 | 2.22 |
| 98-95-3 | Nitrobenzene | | 73.1 | ug/L | 6.67 | 22.2 |
| 608-93-5 | Pentachlorobenzene | U | 22.2 | ug/L | 6.67 | 22.2 |
| 87-86-5 | Pentachlorophenol | | 92.2 | ug/L | 6.67 | 22.2 |
| 85-01-8 | Phenanthrene | | 72.5 | ug/L | 0.667 | 2.22 |
| 108-95-2 | Phenol | | 46.0 | ug/L | 6.67 | 22.2 |
| 129-00-0 | Pyrene | | 63.0 | ug/L | 0.667 | 2.22 |
| 110-86-1 | Pyridine | J | 10.8 | ug/L | 6.67 | 22.2 |
| 108-60-1 | bis(2-Chloro-1-methylethyl)ether | | 74.7 | ug/L | 6.67 | 22.2 |
| 111-91-1 | bis(2-Chloroethoxy)methane | | 63.9 | ug/L | 6.67 | 22.2 |
| 111-44-4 | bis(2-Chloroethyl) ether | | 76.8 | ug/L | 6.67 | 22.2 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | | 74.0 | ug/L | 6.67 | 22.2 |

**Semi-Volatile
Certificate of Analysis
Sample Summary**

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| | | |
|--|---|-----------------------------|
| SDG Number: 2017-1486 | Date Collected: 05/04/2017 11:59 | Matrix: W |
| Lab Sample ID: 1203785631 | Date Received: 05/06/2017 09:00 | |
| Client Sample: QC for batch 1663445 | Client: ARSL004 | Project: QC |
| Client ID: CAMO-17-132223MSD | Method: SW846 3510C/8270D | SOP Ref: GL-OA-E-009 |
| Batch ID: 1663446 | Inst: MSDA.I | Dilution: 1 |
| Run Date: 05/10/2017 19:52 | Analyst: JMB3 | Inj. Vol: 1 uL |
| Prep Date: 05/10/2017 11:20 | Aliquot: 450 mL | Final Volume: 1 mL |
| Data File: 051017.s\sAe1017.D | Column: DB-5.625 | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------|-----------|--------|-------|---------|---------|
| 65794-96-9 | m,p-Cresols | | 81.0 | ug/L | 8.22 | 22.2 |
| 99-09-2 | 3-Nitroaniline | U | 22.2 | ug/L | 6.67 | 22.2 |
| | <i>m-Nitroaniline</i> | | | | | |
| 95-48-7 | o-Cresol | | 77.4 | ug/L | 6.67 | 22.2 |
| 88-74-4 | 2-Nitroaniline | | 64.7 | ug/L | 6.67 | 22.2 |
| | <i>o-Nitroaniline</i> | | | | | |
| 100-01-6 | 4-Nitroaniline | U | 22.2 | ug/L | 6.67 | 22.2 |
| | <i>p-Nitroaniline</i> | | | | | |

| Surrogate/Tracer recovery | Result | Nominal | | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|------|-----------|-------------------|
| 2,4,6-Tribromophenol | 194 | 222 | ug/L | 87 | (32%-124%) |
| 2-Fluorobiphenyl | 77.8 | 111 | ug/L | 70 | (32%-112%) |
| 2-Fluorophenol | 113 | 222 | ug/L | 51 | (15%-88%) |
| Nitrobenzene-d5 | 75.2 | 111 | ug/L | 68 | (36%-115%) |
| Phenol-d5 | 86.8 | 222 | ug/L | 39 | (15%-91%) |
| p-Terphenyl-d14 | 69.1 | 111 | ug/L | 62 | (36%-121%) |

Miscellaneous

DATA EXCEPTION REPORT

| | | | |
|---|--|---|-----------------------------------|
| Mo.Day Yr. 11-MAY-17 | Division: Industrial | Quality Criteria: Specifications | Type: Process |
| Instrument Type: SEMIOVA GC/MS | Test / Method: SW846 3510C/8270D | Matrix Type: Liquid | Client Code: ESHL, SNLS |
| Batch ID: 1663446 | Sample Numbers: See Below | | |
| Potentially affected work order(s)(SDG): 422570(2017-1486),422629 Application Issues: Failed Recovery for MS/MSD, or PS/PSD Failed RPD for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD | | | |
| Specification and Requirements | | DER Disposition: | |
| Exception Description: | | | |
| 1. Failed RPD for MS/MSD: QC 1203785631MSD 2. Failed Recovery for LCS/LCSD: QC 1203785629LCS 3. Failed Recovery for MS/MSD: QC 1203785631MSD | | 1. The RPD values between the MS and MSD, (See Below), were not within the acceptance limits due to the large difference between the individual recoveries in each MS and MSD analyte pair. The failures may be attributed to an error in the extraction process. 1203785630MS and 1203785631MSD (CAMO-17-132223) Several [See applicable report]. 2. The LCS and/or LCSD (See Below) did not meet spike recovery acceptance criteria. The failures are known to be poor responding analytes as stated per the Method. This may account for the low recoveries and the data were reported. 1203785629 (LCS) Benzoic acid [18* (21%-74%)] and Caprolactam [26* (30%-61%)]. 3. The MS or MSD (See Below) spike recoveries were not within the acceptance limits. The associated MS or MSD passed recoveries, as did the LCS. It appears that the low spike recoveries were isolated to the MS or MSD only and were the result of a poor extraction. 1203785631 (CAMO-17-132223MSD) Several [See applicable report]. | |

Originator's Name:

Josh Brooks 11-MAY-17

Data Validator/Group Leader:

Barbara Bailey 11-MAY-17

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorates by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1486
Work Order #: 422570**

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: 1662828

Prep Batch Number: 1662825

Sample Analysis

| Sample ID | Client ID |
|------------------|--|
| 422570003 | 422570003 (CAMO-17-132213) |
| 422570006 | 422570006 (CASA-17-132327) |
| 1203784065 | Interference Check Sample (ICS) |
| 1203784061 | Method Blank (MB) |
| 1203784062 | Laboratory Control Sample (LCS) |
| 1203784063 | 422310001(CASA-17-132320) Matrix Spike (MS) |
| 1203784064 | 422310001(CASA-17-132320) 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.

Interference Check Sample (ICS)

The ICS spike recoveries met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Client sample 422310001 (CASA-17-132320) 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

There was a mis-injection of sample 1203784064 (CASA-17-132320MSD). The re-analysis met all acceptance criteria, and the data are reported.

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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: 2017-1486 GEL Work Order: 422570

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: Michael Penny

Date: 11 MAY 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: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAMO-17-132213Date Received: 06-MAY-17GEL Job No (SDG): 2017-1486GEL Sample ID: 422570003Date Filtered: 08-MAY-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 | 0.354 | ug/L | | 1 | 08-MAY-17 20:26 | per0508028a |
| | Perchlorate Isotope Ratio | | | 3 | | | 1 | 08-MAY-17 20:26 | per0508028a |
| 14797-73-0 | Perchlorate-101 | .05 | .2 | 0.348 | ug/L | | 1 | 08-MAY-17 20:26 | per0508028a |
| | Perchlorate-O(18) | | | 0.403 | ug/L | | 1 | 08-MAY-17 20:26 | per0508028a |

^ 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: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CASA-17-132327Date Received: 06-MAY-17GEL Job No (SDG): 2017-1486GEL Sample ID: 422570006Date Filtered: 08-MAY-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 | 0.942 | ug/L | | 1 | 08-MAY-17 20:35 | per0508029a |
| | Perchlorate Isotope Ratio | | | 3.05 | | | 1 | 08-MAY-17 20:35 | per0508029a |
| 14797-73-0 | Perchlorate-101 | .05 | .2 | 0.912 | ug/L | | 1 | 08-MAY-17 20:35 | per0508029a |
| | Perchlorate-O(18) | | | 0.460 | ug/L | | 1 | 08-MAY-17 20:35 | per0508029a |

^ 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): 2017-1486

Extract Batch Code: 1662825

Date Filtered: 08-MAY-17

Matrix: WATER

Sample ID: 1203784062

| Analyte^ | True | Found | Units | %Rec | Q | Control Limits |
|---------------------------|-------|-------|-------|------|---|----------------|
| Perchlorate | 0.200 | .192 | ug/L | 96 | | 85 - 115 |
| Perchlorate Isotope Ratio | | 2.99 | | | | - |
| Perchlorate-101 | 0.200 | .19 | ug/L | 95 | | 85 - 115 |
| Perchlorate-O(18) | | .452 | 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): 2017-1486

Extract Batch Code: 1662825

Date Extracted: 08-MAY-17

GEL MS/PS ID: 1203784063

Client ID: CASA-17-132320

GEL MSD/PSD ID: 1203784064

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 | 0.398 | ug/L | 0.617 | 110 | .616 | 109 | 0 | 30 | 75 - 125 |
| Perchlorate Isotope Ratio | 0 | 2.87 | | 3.02 | | 3.02 | | 0 | | - |
| Perchlorate-101 | 0.200 | 0.409 | ug/L | 0.602 | 97 | .59 | 90 | 2 | 30 | 75 - 125 |
| Perchlorate-O(18) | 0 | 0.449 | ug/L | 0.434 | | .51 | | 16 | | - |

^ 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: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 08-MAY-17GEL Job No (SDG): 2017-1486GEL Sample ID: 1203784061Date Filtered: 08-MAY-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 | 0.200 | ug/L | U | 1 | 08-MAY-17 18:04 | per0508013a |
| | Perchlorate Isotope Ratio | | | | | | 1 | 08-MAY-17 18:04 | per0508013a |
| 14797-73-0 | Perchlorate-101 | .05 | .2 | 0.200 | ug/L | U | 1 | 08-MAY-17 18:04 | per0508013a |
| | Perchlorate-O(18) | | | 0.462 | ug/L | | 1 | 08-MAY-17 18:04 | per0508013a |

^ 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: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 08-MAY-17GEL Job No (SDG): 2017-1486GEL Sample ID: 1203784062Date Filtered: 08-MAY-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 | 0.192 | ug/L | J | 1 | 08-MAY-17 18:13 | per0508014a |
| | Perchlorate Isotope Ratio | | | 2.99 | | | 1 | 08-MAY-17 18:13 | per0508014a |
| 14797-73-0 | Perchlorate-101 | .05 | .2 | 0.190 | ug/L | J | 1 | 08-MAY-17 18:13 | per0508014a |
| | Perchlorate-O(18) | | | 0.452 | ug/L | | 1 | 08-MAY-17 18:13 | per0508014a |

^ 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 LLC

Client Sample No.

ICSLab Code: GEL

Date Received:

Instrument: LCMSMSGEL Job No (SDG): 2017-1486Method: SW846 6850 ModifiedGEL Sample ID: 1203784065Matrix: WATERDate Filtered: 08-MAY-17Extraction Batch ID: 1662825Injection Volume (uL): 20Extraction Type: Filter/DAISample Volume/Weight: 10.0 mL

%Solids:

Concentrated Extract Volume: 10.0

| CAS No. | Analyte^ | MDL | RL | Conc* | Units | Q | Dilution Factor | Date Analyzed | GEL File ID |
|------------|---------------------------|-----|----|-------|-------|---|-----------------|-----------------|-------------|
| 14797-73-0 | Perchlorate | .05 | .2 | 0.199 | ug/L | J | 1 | 08-MAY-17 18:23 | per0508015a |
| | Perchlorate Isotope Ratio | | | 2.73 | | | 1 | 08-MAY-17 18:23 | per0508015a |
| 14797-73-0 | Perchlorate-101 | .05 | .2 | 0.215 | ug/L | | 1 | 08-MAY-17 18:23 | per0508015a |
| | Perchlorate-O(18) | | | 0.485 | ug/L | | 1 | 08-MAY-17 18:23 | per0508015a |

^ 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: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CASA-17-132320MSDate Received: 04-MAY-17GEL Job No (SDG): 2017-1486GEL Sample ID: 1203784063Date Filtered: 08-MAY-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 | 0.617 | ug/L | | 1 | 08-MAY-17 18:42 | per0508017a |
| | Perchlorate Isotope Ratio | | | 3.02 | | | 1 | 08-MAY-17 18:42 | per0508017a |
| 14797-73-0 | Perchlorate-101 | .05 | .2 | 0.602 | ug/L | | 1 | 08-MAY-17 18:42 | per0508017a |
| | Perchlorate-O(18) | | | 0.434 | ug/L | | 1 | 08-MAY-17 18:42 | per0508017a |

^ 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: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CASA-17-132320MSDDate Received: 04-MAY-17GEL Job No (SDG): 2017-1486GEL Sample ID: 1203784064Date Filtered: 08-MAY-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 | 0.616 | ug/L | | 1 | 09-MAY-17 18:35 | per0509013a |
| | Perchlorate Isotope Ratio | | | 3.02 | | | 1 | 09-MAY-17 18:35 | per0509013a |
| 14797-73-0 | Perchlorate-101 | .05 | .2 | 0.590 | ug/L | | 1 | 09-MAY-17 18:35 | per0509013a |
| | Perchlorate-O(18) | | | 0.510 | ug/L | | 1 | 09-MAY-17 18:35 | per0509013a |

^ 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 =

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

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1486
Work Order #: 422570

| Sample ID | Client ID |
|------------------|---|
| 422570003 | CAMO-17-132213 |
| 422570004 | CAMO-17-132233 |
| 422570006 | CASA-17-132327 |
| 422570007 | CASA-17-132336 |
| 1203783891 | Method Blank (MB) ICP |
| 1203783892 | Laboratory Control Sample (LCS) |
| 1203783895 | 422570003(CAMO-17-132213L) Serial Dilution (SD) |
| 1203783893 | 422570003(CAMO-17-132213D) Sample Duplicate (DUP) |
| 1203783894 | 422570003(CAMO-17-132213S) Matrix Spike (MS) |
| 1203783906 | Method Blank (MB) ICP-MS |
| 1203796396 | Method Blank (MB) ICP-MS |
| 1203783907 | Laboratory Control Sample (LCS) |
| 1203796397 | Laboratory Control Sample (LCS) |
| 1203783910 | 422570003(CAMO-17-132213L) Serial Dilution (SD) |
| 1203796400 | 422570003(CAMO-17-132213L) Serial Dilution (SD) |
| 1203783908 | 422570003(CAMO-17-132213D) Sample Duplicate (DUP) |
| 1203796398 | 422570003(CAMO-17-132213D) Sample Duplicate (DUP) |
| 1203783909 | 422570003(CAMO-17-132213S) Matrix Spike (MS) |
| 1203796399 | 422570003(CAMO-17-132213S) Matrix Spike (MS) |
| 1203784145 | Method Blank (MB) CVAA |
| 1203784146 | Laboratory Control Sample (LCS) |
| 1203784151 | 422436001(CAMO-17-132216L) Serial Dilution (SD) |
| 1203784147 | 422436001(CAMO-17-132216D) Sample Duplicate (DUP) |
| 1203784149 | 422436001(CAMO-17-132216S) Matrix Spike (MS) |

Sample Analysis

Samples 422570003,004,006 and 007 in this SDG were analyzed for metals and mercury on an "as received" basis.

Method/Analysis Information

| | |
|---------------------------------------|--|
| Analytical Batch: | 1662753, 1662760, 1667968, 1662863 and 1670476 |
| Prep Batch : | 1662752, 1662759, 1667967 and 1662854 |
| Standard Operating Procedures: | GL-MA-E-013 REV# 28, GL-MA-E-006 REV# 13, GL-MA-E-014 REV# 29, GL-MA-E-010 REV# 34 and GL-GC-E-107 REV# 10 |
| Analytical Method: | SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.2 1974 and SM:A2340B |
| Prep Method : | 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 CaCO₃ is calculated from Calcium and Magnesium results.

The Metals analysis-ICP was performed on a P E 5300 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 - ICPMS was performed on a Perkin Elmer ELAN 9000 inductively coupled plasma mass spectrometer (ICP-MS). The instrument is equipped with a cross-flow nebulizer, quadrupole mass spectrometer, and dual mode electron multiplier detector. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

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 calcium and zinc. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 422570003 (CAMO-17-132213) and 422570006 (CASA-17-132327)-ICP.

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria. However, the ICSA contained 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: 422570003 (CAMO-17-132213)-ICP, ICP-MS and ICP-MS and 422436001 (CAMO-17-132216)-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.

Data Exception (DER) Documentation

A data exception report was not required for this SDG.

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.

Hardness = 2.497 (Ca) + 4.118 (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: 2017-1486 GEL Work Order: 422570

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: 02 JUN 2017

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1486**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 422570003**BASIS:** As Received**DATE COLLECTED** 04-MAY-17**CLIENT ID:** CAMO-17-132213**LEVEL:** Low**DATE RECEIVED** 06-MAY-17**MATRIX:** W**%SOLIDS:** 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|---------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7439-97-6 | Mercury | 0.20 | ug/L | U | 0.067 | 0.2 | 0.2 | 1 | AV | AXS5 | 05/09/17 11:12 | 050917W2-10 | 1662863 |

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1486

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 422570003

BASIS: As Received

DATE COLLECTED 04-MAY-17

CLIENT ID: CAMO-17-132213

LEVEL: Low

DATE RECEIVED 06-MAY-17

MATRIX: W

%SOLIDS: 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|------------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 200 | ug/L | U | 68 | 200 | 200 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-36-0 | Antimony | 1.38 | ug/L | J | 1 | 3 | 3 | 1 | MS | BAJ | 05/22/17 16:57 | 170522-8 | 1662760 |
| 7440-38-2 | Arsenic | 5 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 05/21/17 09:51 | 170520-5 | 1662760 |
| 7440-39-3 | Barium | 22 | ug/L | | 1 | 5 | 5 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-41-7 | Beryllium | 5 | ug/L | U | 1 | 5 | 5 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-42-8 | Boron | 50 | ug/L | U | 15 | 50 | 50 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-43-9 | Cadmium | 1 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 05/20/17 18:59 | 170520-2 | 1662760 |
| 7440-70-2 | Calcium | 9880 | ug/L | | 50 | 200 | 200 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-47-3 | Chromium | 5.05 | ug/L | J | 3 | 10 | 10 | 1 | MS | PRB | 05/25/17 02:03 | 170524-9 | 1667968 |
| 7440-48-4 | Cobalt | 5 | ug/L | U | 1 | 5 | 5 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-50-8 | Copper | 10 | ug/L | U | 3 | 10 | 10 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7439-89-6 | Iron | 100 | ug/L | U | 30 | 100 | 100 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7439-92-1 | Lead | 2 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 05/20/17 18:59 | 170520-2 | 1662760 |
| 7439-95-4 | Magnesium | 3170 | ug/L | | 110 | 300 | 300 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7439-96-5 | Manganese | 10 | ug/L | U | 2 | 10 | 10 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7439-98-7 | Molybdenum | 0.948 | ug/L | | 0.2 | 0.5 | 0.5 | 1 | MS | PRB | 05/25/17 02:03 | 170524-9 | 1667968 |
| 7440-02-0 | Nickel | 2 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | PRB | 05/25/17 02:03 | 170524-9 | 1667968 |
| 7440-09-7 | Potassium | 1840 | ug/L | | 50 | 150 | 150 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7782-49-2 | Selenium | 5 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 05/22/17 16:06 | 170522-6 | 1662760 |
| 7631-86-9 | Silica | 68300 | ug/L | | 53 | 213 | 213 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-22-4 | Silver | 1 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 05/20/17 18:59 | 170520-2 | 1662760 |
| 7440-23-5 | Sodium | 9720 | ug/L | | 100 | 300 | 300 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-24-6 | Strontium | 43.1 | ug/L | | 1 | 5 | 5 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-28-0 | Thallium | 2 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 05/20/17 18:59 | 170520-2 | 1662760 |
| 7440-31-5 | Tin | 10 | ug/L | U | 2.5 | 10 | 10 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-61-1 | Uranium | 0.543 | ug/L | | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 05/21/17 09:51 | 170520-5 | 1662760 |
| 7440-62-2 | Vanadium | 7.55 | ug/L | | 1 | 5 | 5 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |
| 7440-66-6 | Zinc | 10 | ug/L | U | 3.3 | 10 | 10 | 1 | P | HSC | 05/24/17 16:52 | 052417A-1 | 1662753 |

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1486**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 422570003**BASIS:** As Received**DATE COLLECTED** 04-MAY-17**CLIENT ID:** CAMO-17-132213**LEVEL:** Low**DATE RECEIVED** 06-MAY-17**MATRIX:** W**%SOLIDS:** 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|---------|-------------------|--------|-------|------|-------|------|------|----|----|---------|----------------|----------------|------------------|
| | Hardness as CaCO3 | 37.7 | mg/L | | 0.453 | 1.24 | 1.24 | 1 | | JJ2 | 06/01/17 16:57 | | 1670476 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|----------------------|------------------|-------|----------------|-------|----------|---------|
| 1662753 | 1662752 | SW846 3005A | 50 | mL | 50 | mL | 05/08/17 | SXW1 |
| 1662760 | 1662759 | SW846 3005A | 50 | mL | 50 | mL | 05/08/17 | SXW1 |
| 1662863 | 1662854 | EPA 245.1/245.2 Prep | 20 | mL | 20 | mL | 05/08/17 | JXH5 |
| 1667968 | 1667967 | SW846 3005A | 50 | mL | 50 | mL | 05/24/17 | SXW1 |

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1486**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 422570004**BASIS:** As Received**DATE COLLECTED** 04-MAY-17**CLIENT ID:** CAMO-17-132233**LEVEL:** Low**DATE RECEIVED** 06-MAY-17**MATRIX:** W**%SOLIDS:** 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|---------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7439-97-6 | Mercury | 0.20 | ug/L | U | 0.067 | 0.2 | 0.2 | 1 | AV | AXS5 | 05/09/17 11:17 | 050917W2-10 | 1662863 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|----------------------|------------------|-------|----------------|-------|----------|---------|
| 1662863 | 1662854 | EPA 245.1/245.2 Prep | 20 | mL | 20 | mL | 05/08/17 | JXH5 |

***Analytical Methods:**

AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1486**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 422570006**BASIS:** As Received**DATE COLLECTED** 04-MAY-17**CLIENT ID:** CASA-17-132327**LEVEL:** Low**DATE RECEIVED** 06-MAY-17**MATRIX:** W**%SOLIDS:** 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|---------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7439-97-6 | Mercury | 0.20 | ug/L | U | 0.067 | 0.2 | 0.2 | 1 | AV | AXS5 | 05/09/17 11:19 | 050917W2-10 | 1662863 |

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1486

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 422570006

BASIS: As Received

DATE COLLECTED 04-MAY-17

CLIENT ID: CASA-17-132327

LEVEL: Low

DATE RECEIVED 06-MAY-17

MATRIX: W

%SOLIDS: 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|------------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 200 | ug/L | U | 68 | 200 | 200 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-36-0 | Antimony | 3 | ug/L | U | 1 | 3 | 3 | 1 | MS | BAJ | 05/22/17 17:03 | 170522-8 | 1662760 |
| 7440-38-2 | Arsenic | 5 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 05/21/17 10:02 | 170520-5 | 1662760 |
| 7440-39-3 | Barium | 71.2 | ug/L | | 1 | 5 | 5 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-41-7 | Beryllium | 5 | ug/L | U | 1 | 5 | 5 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-42-8 | Boron | 19.1 | ug/L | J | 15 | 50 | 50 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-43-9 | Cadmium | 1 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 05/20/17 19:19 | 170520-2 | 1662760 |
| 7440-70-2 | Calcium | 67600 | ug/L | | 50 | 200 | 200 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-47-3 | Chromium | 354 | ug/L | | 3 | 10 | 10 | 1 | MS | PRB | 05/25/17 02:19 | 170524-9 | 1667968 |
| 7440-48-4 | Cobalt | 5 | ug/L | U | 1 | 5 | 5 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-50-8 | Copper | 10 | ug/L | U | 3 | 10 | 10 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7439-89-6 | Iron | 100 | ug/L | U | 30 | 100 | 100 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7439-92-1 | Lead | 2 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 05/20/17 19:19 | 170520-2 | 1662760 |
| 7439-95-4 | Magnesium | 15500 | ug/L | | 110 | 300 | 300 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7439-96-5 | Manganese | 10 | ug/L | U | 2 | 10 | 10 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7439-98-7 | Molybdenum | 0.533 | ug/L | | 0.2 | 0.5 | 0.5 | 1 | MS | PRB | 05/25/17 02:19 | 170524-9 | 1667968 |
| 7440-02-0 | Nickel | 16.6 | ug/L | | 0.6 | 2 | 2 | 1 | MS | PRB | 05/25/17 02:19 | 170524-9 | 1667968 |
| 7440-09-7 | Potassium | 3790 | ug/L | | 50 | 150 | 150 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7782-49-2 | Selenium | 5 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 05/22/17 16:12 | 170522-6 | 1662760 |
| 7631-86-9 | Silica | 59800 | ug/L | | 53 | 213 | 213 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-22-4 | Silver | 1 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 05/20/17 19:19 | 170520-2 | 1662760 |
| 7440-23-5 | Sodium | 24700 | ug/L | | 100 | 300 | 300 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-24-6 | Strontium | 334 | ug/L | | 1 | 5 | 5 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-28-0 | Thallium | 2 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 05/20/17 19:19 | 170520-2 | 1662760 |
| 7440-31-5 | Tin | 3.62 | ug/L | J | 2.5 | 10 | 10 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-61-1 | Uranium | 2.13 | ug/L | | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 05/21/17 10:02 | 170520-5 | 1662760 |
| 7440-62-2 | Vanadium | 1.56 | ug/L | J | 1 | 5 | 5 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |
| 7440-66-6 | Zinc | 10 | ug/L | U | 3.3 | 10 | 10 | 1 | P | HSC | 05/24/17 16:49 | 052417A-1 | 1662753 |

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1486**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 422570006**BASIS:** As Received**DATE COLLECTED** 04-MAY-17**CLIENT ID:** CASA-17-132327**LEVEL:** Low**DATE RECEIVED** 06-MAY-17**MATRIX:** W**%SOLIDS:** 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|---------|-------------------|--------|-------|------|-------|------|------|----|----|---------|----------------|----------------|------------------|
| | Hardness as CaCO3 | 233 | mg/L | | 0.453 | 1.24 | 1.24 | 1 | | JJ2 | 06/01/17 16:57 | | 1670476 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|----------------------|------------------|-------|----------------|-------|----------|---------|
| 1662753 | 1662752 | SW846 3005A | 50 | mL | 50 | mL | 05/08/17 | SXW1 |
| 1662760 | 1662759 | SW846 3005A | 50 | mL | 50 | mL | 05/08/17 | SXW1 |
| 1662863 | 1662854 | EPA 245.1/245.2 Prep | 20 | mL | 20 | mL | 05/08/17 | JXH5 |
| 1667968 | 1667967 | SW846 3005A | 50 | mL | 50 | mL | 05/24/17 | SXW1 |

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1486**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 422570007**BASIS:** As Received**DATE COLLECTED** 04-MAY-17**CLIENT ID:** CASA-17-132336**LEVEL:** Low**DATE RECEIVED** 06-MAY-17**MATRIX:** W**%SOLIDS:** 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|---------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7439-97-6 | Mercury | 0.20 | ug/L | U | 0.067 | 0.2 | 0.2 | 1 | AV | AXS5 | 05/09/17 11:20 | 050917W2-10 | 1662863 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|----------------------|------------------|-------|----------------|-------|----------|---------|
| 1662863 | 1662854 | EPA 245.1/245.2 Prep | 20 | mL | 20 | mL | 05/08/17 | JXH5 |

***Analytical Methods:**

AV EPA 245.2 1974

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 2017-1486

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> |
|------------------|----------------|---------------|--------------|--------------------------|------------------|-----------|------------|------------|
| 1203783891 | 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 | 50 | ug/L | +/-150 | U | P | 50 | 150 |
| | Silica | 53 | ug/L | +/-213 | U | P | 53 | 213 |
| | Sodium | -147 | 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 |
| 1203783906 | 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 |
| | Lead | 0.5 | ug/L | +/-2 | U | MS | 0.5 | 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 |
| | Uranium | 0.067 | ug/L | +/-0.2 | U | MS | 0.067 | 0.2 |
| 1203784145 | Mercury | 0.067 | ug/L | +/-0.2 | U | AV | 0.067 | 0.2 |
| 1203796396 | Chromium | 3 | ug/L | +/-10 | U | MS | 3 | 10 |
| | Molybdenum | 0.2 | ug/L | +/-0.5 | U | MS | 0.2 | 0.5 |
| | Nickel | 0.6 | ug/L | +/-2 | U | MS | 0.6 | 2 |

*Analytical Methods:

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

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-1486 Client ID: CAMO-17-132213S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 422570003 Spike ID: 1203783894

| <u>Analyte</u> | <u>Units</u> | <u>Acceptance Limit</u> | <u>Spiked Result</u> | <u>C</u> | <u>Sample Result</u> | <u>C</u> | <u>Spike Added</u> | <u>% Recovery</u> | <u>Qual</u> | <u>M*</u> |
|----------------|--------------|-----------------------------|--------------------------|----------|--------------------------|----------|------------------------|-----------------------|-------------|-----------|
| Aluminum | ug/L | 75-125 | 5070 | | 68 | U | 5000 | 101 | | P |
| Barium | ug/L | 75-125 | 539 | | 22 | | 500 | 103 | | P |
| Beryllium | ug/L | 75-125 | 524 | | 1 | U | 500 | 105 | | P |
| Boron | ug/L | 75-125 | 540 | | 15 | U | 500 | 106 | | P |
| Calcium | ug/L | 75-125 | 15400 | | 9880 | | 5000 | 110 | | P |
| Cobalt | ug/L | 75-125 | 531 | | 1 | U | 500 | 106 | | P |
| Copper | ug/L | 75-125 | 536 | | 3 | U | 500 | 107 | | P |
| Iron | ug/L | 75-125 | 5430 | | 30 | U | 5000 | 109 | | P |
| Magnesium | ug/L | 75-125 | 8490 | | 3170 | | 5000 | 106 | | P |
| Manganese | ug/L | 75-125 | 509 | | 2 | U | 500 | 102 | | P |
| Potassium | ug/L | 75-125 | 7070 | | 1840 | | 5000 | 105 | | P |
| Silica | ug/L | | 81600 | | 68300 | | 10700 | 124 | N/A | P |
| Sodium | ug/L | 75-125 | 15800 | | 9720 | | 5000 | 122 | | P |
| Strontium | ug/L | 75-125 | 570 | | 43.1 | | 500 | 105 | | P |
| Tin | ug/L | 75-125 | 517 | | 2.5 | U | 500 | 103 | | P |
| Vanadium | ug/L | 75-125 | 536 | | 7.55 | | 500 | 106 | | P |
| Zinc | ug/L | 75-125 | 492 | | 3.3 | U | 500 | 98.5 | | P |

*Analytical Methods:

P SW846 3005A/6010C

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-1486 **Client ID:** CAMO-17-132213S

Contract: ESHL00114 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 422570003 **Spike ID:** 1203783909

| <u>Analyte</u> | <u>Units</u> | <u>Acceptance Limit</u> | <u>Spiked Result</u> | <u>C</u> | <u>Sample Result</u> | <u>C</u> | <u>Spike Added</u> | <u>% Recovery</u> | <u>Qual</u> | <u>M*</u> |
|----------------|--------------|-----------------------------|--------------------------|----------|--------------------------|----------|------------------------|-----------------------|-------------|-----------|
| Antimony | ug/L | 75-125 | 52.4 | | 1.38 | J | 50 | 102 | | MS |
| Arsenic | ug/L | 75-125 | 52.6 | | 2 | U | 50 | 105 | | MS |
| Cadmium | ug/L | 75-125 | 54.4 | | 0.3 | U | 50 | 109 | | MS |
| Lead | ug/L | 75-125 | 51.9 | | 0.5 | U | 50 | 104 | | MS |
| Selenium | ug/L | 75-125 | 54.5 | | 2 | U | 50 | 109 | | MS |
| Silver | ug/L | 75-125 | 50.8 | | 0.3 | U | 50 | 101 | | MS |
| Thallium | ug/L | 75-125 | 45.2 | | 0.6 | U | 50 | 89.3 | | MS |
| Uranium | ug/L | 75-125 | 57.1 | | 0.543 | | 50 | 113 | | MS |

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-1486 Client ID CAMO-17-132216S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 422436001 Spike ID: 1203784149

| <u>Analyte</u> | <u>Units</u> | <u>Acceptance Limit</u> | <u>Spiked Result</u> | <u>C</u> | <u>Sample Result</u> | <u>C</u> | <u>Spike Added</u> | <u>% Recovery</u> | <u>Qual</u> | <u>M*</u> |
|----------------|--------------|-----------------------------|--------------------------|----------|--------------------------|----------|------------------------|-----------------------|-------------|-----------|
| Mercury | ug/L | 75-125 | 2.05 | | 0.067 | U | 2 | 102 | | AV |

*Analytical Methods:

AV EPA 245.1/245.2

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-1486 **Client ID:** CAMO-17-132213S**Contract:** ESHL00114 **Level:** Low**Matrix:** WATER **% Solids:****Sample ID:** 422570003 **Spike ID:** 1203796399

| <u>Analyte</u> | <u>Units</u> | <u>Acceptance Limit</u> | <u>Spiked Result</u> | <u>C</u> | <u>Sample Result</u> | <u>C</u> | <u>Spike Added</u> | <u>% Recovery</u> | <u>Qual</u> | <u>M*</u> |
|----------------|--------------|-----------------------------|--------------------------|----------|--------------------------|----------|------------------------|-----------------------|-------------|-----------|
| Chromium | ug/L | 75-125 | 53.3 | | 5.05 | J | 50 | 96.4 | | MS |
| Molybdenum | ug/L | 75-125 | 52.1 | | 0.948 | | 50 | 102 | | MS |
| Nickel | ug/L | 75-125 | 49 | | 0.6 | U | 50 | 97.5 | | MS |

*Analytical Methods:

MS SW846 3005A/6020A

Metals
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Duplicate Sample Summary

SDG No.: 2017-1486

Lab Code: GEL

Contract: ESHL00114

Client ID: CAMO-17-132213D

Matrix: WATER

Level: Low

Sample ID: 422570003

Duplicate ID: 1203783893

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 | +/-5 | 22 | | 22.7 | | 2.98 | | P |
| Beryllium | ug/L | | 1 U | | 1 U | | | | P |
| Boron | ug/L | | 15 U | | 15 U | | | | P |
| Calcium | ug/L | +/-20% | 9880 | | 10100 | | 2.15 | | P |
| Cobalt | ug/L | | 1 U | | 1 U | | | | P |
| Copper | ug/L | | 3 U | | 3 U | | | | P |
| Iron | ug/L | | 30 U | | 30 U | | | | P |
| Magnesium | ug/L | +/-20% | 3170 | | 3300 | | 4.06 | | P |
| Manganese | ug/L | | 2 U | | 2 U | | | | P |
| Potassium | ug/L | +/-20% | 1840 | | 1810 | | 1.36 | | P |
| Silica | ug/L | +/-20% | 68300 | | 70000 | | 2.4 | | P |
| Sodium | ug/L | +/-20% | 9720 | | 11100 | | 12.9 | | P |
| Strontium | ug/L | +/-20% | 43.1 | | 46.2 | | 6.87 | | P |
| Tin | ug/L | | 2.5 U | | 2.5 U | | | | P |
| Vanadium | ug/L | +/-5 | 7.55 | | 8.17 | | 7.91 | | P |
| Zinc | ug/L | | 3.3 U | | 3.3 U | | | | P |

*Analytical Methods:

P SW846 3005A/6010C

Metals
-6-
Duplicate Sample Summary

SDG No.: 2017-1486

Lab Code: GEL

Contract: ESHL00114

Client ID: CAMO-17-132213D

Matrix: WATER

Level: Low

Sample ID: 422570003

Duplicate ID: 1203783908

Percent Solids for Dup: N/A

| Analyte | Units | Acceptance Limit | Sample Result | C | Duplicate Result | C | RPD | Qual | M* |
|----------|-------|------------------|---------------|---|------------------|---|------|------|----|
| Antimony | ug/L | +/-3 | 1.38 J | | 1.18 J | | 16 | | MS |
| Arsenic | ug/L | | 2 U | | 2 U | | | | MS |
| Cadmium | ug/L | | 0.3 U | | 0.3 U | | | | MS |
| Lead | ug/L | | 0.5 U | | 0.5 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 | +/-2 | 0.543 | | 0.524 | | 3.56 | | MS |

*Analytical Methods:

MS SW846 3005A/6020A

Metals
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Duplicate Sample Summary

SDG No.: 2017–1486**Lab Code:** GEL**Contract:** ESHL00114**Client ID:** CAMO–17–132216D**Matrix:** WATER**Level:** Low**Sample ID:** 422436001**Duplicate ID:** 1203784147**Percent Solids for Dup:** N/A

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

*Analytical Methods:

AV EPA 245.1/245.2

Metals
–6–
Duplicate Sample Summary

SDG No.: 2017–1486**Lab Code:** GEL**Contract:** ESHL00114**Client ID:** CAMO–17–132213D**Matrix:** WATER**Level:** Low**Sample ID:** 422570003**Duplicate ID:** 1203796398**Percent Solids for Dup:** N/A

| Analyte | Units | Acceptance Limit | Sample Result | C | Duplicate Result | C | RPD | Qual | M* |
|------------|-------|---------------------|------------------|---|---------------------|---|------|------|----|
| Chromium | ug/L | +/-10 | 5.05 J | | 5.09 J | | .849 | | MS |
| Molybdenum | ug/L | +/- .5 | 0.948 | | 1.02 | | 7.02 | | MS |
| Nickel | ug/L | | 0.6 U | | 0.6 U | | | | MS |

***Analytical Methods:**

MS SW846 3005A/6020A

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1486

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> |
|------------------|----------------|--------------|-------------------|---------------|----------|-------------------|-------------------------|-----------|
| 1203783892 | | | | | | | | |
| | Aluminum | ug/L | 5000 | 5160 | | 103 | 80-120 | P |
| | Barium | ug/L | 500 | 520 | | 104 | 80-120 | P |
| | Beryllium | ug/L | 500 | 517 | | 103 | 80-120 | P |
| | Boron | ug/L | 500 | 524 | | 105 | 80-120 | P |
| | Calcium | ug/L | 5000 | 5230 | | 105 | 80-120 | P |
| | Cobalt | ug/L | 500 | 528 | | 106 | 80-120 | P |
| | Copper | ug/L | 500 | 521 | | 104 | 80-120 | P |
| | Iron | ug/L | 5000 | 5440 | | 109 | 80-120 | P |
| | Magnesium | ug/L | 5000 | 5280 | | 106 | 80-120 | P |
| | Manganese | ug/L | 500 | 516 | | 103 | 80-120 | P |
| | Potassium | ug/L | 5000 | 5210 | | 104 | 80-120 | P |
| | Silica | ug/L | 10700 | 10500 | | 98.2 | 80-120 | P |
| | Sodium | ug/L | 5000 | 5760 | | 115 | 80-120 | P |
| | Strontium | ug/L | 500 | 537 | | 107 | 80-120 | P |
| | Tin | ug/L | 500 | 511 | | 102 | 80-120 | P |
| | Vanadium | ug/L | 500 | 519 | | 104 | 80-120 | P |
| | Zinc | ug/L | 500 | 487 | | 97.3 | 80-120 | P |

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1486

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> |
|------------------|----------------|--------------|-------------------|---------------|----------|-------------------|-------------------------|-----------|
| 1203783907 | | | | | | | | |
| | Antimony | ug/L | 50 | 54.2 | | 108 | 80-120 | MS |
| | Arsenic | ug/L | 50 | 54.3 | | 109 | 80-120 | MS |
| | Cadmium | ug/L | 50 | 54 | | 108 | 80-120 | MS |
| | Lead | ug/L | 50 | 54.8 | | 110 | 80-120 | MS |
| | Selenium | ug/L | 50 | 53.5 | | 107 | 80-120 | MS |
| | Silver | ug/L | 50 | 45.6 | | 91.2 | 80-120 | MS |
| | Thallium | ug/L | 50 | 46.7 | | 93.4 | 80-120 | MS |
| | Uranium | ug/L | 50 | 53.3 | | 107 | 80-120 | MS |

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1486

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> |
|------------------|----------------|--------------|-------------------|---------------|----------|-------------------|-------------------------|-----------|
| 1203784146 | Mercury | ug/L | 2 | 2.01 | | 100 | 85-115 | AV |

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1486

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> |
|------------------|----------------|--------------|-------------------|---------------|----------|-------------------|-------------------------|-----------|
| 1203796397 | | | | | | | | |
| | Chromium | ug/L | 50 | 47.9 | | 95.8 | 80-120 | MS |
| | Molybdenum | ug/L | 50 | 49 | | 98.1 | 80-120 | MS |
| | Nickel | ug/L | 50 | 50.3 | | 101 | 80-120 | MS |

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1486

Client ID: CAMO-17-132213L

Contract: ESHL00114

Matrix: LIQUID

Level: Low

Sample ID: 422570003

Serial Dilution ID: 1203783895

| <u>Analyte</u> | <u>Initial Value ug/L</u> | <u>C</u> | <u>Serial Value ug/L</u> | <u>C</u> | <u>% Difference</u> | <u>Qual</u> | <u>Acceptance Limit</u> | <u>M*</u> |
|----------------|-----------------------------------|----------|----------------------------------|----------|-------------------------|-------------|-----------------------------|-----------|
| Aluminum | 68 | U | 340 | U | | | | P |
| Barium | 22 | | 21.6 | J | 1.946 | | | P |
| Beryllium | 1 | U | 5 | U | | | | P |
| Boron | 15 | U | 75 | U | | | | P |
| Calcium | 9880 | | 9930 | | .519 | | 10 | P |
| Cobalt | 1 | U | 5 | U | | | | P |
| Copper | 3 | U | 15 | U | | | | P |
| Iron | 30 | U | 150 | U | | | | P |
| Magnesium | 3170 | | 3130 | | 1.114 | | | P |
| Manganese | 2 | U | 10 | U | | | | P |
| Potassium | 1840 | | 1770 | | 3.408 | | | P |
| Silica | 68300 | | 67900 | | .585 | | 10 | P |
| Sodium | 9720 | | 9800 | | .898 | | 10 | P |
| Strontium | 43.1 | | 40.2 | | 6.634 | | | P |
| Tin | 2.5 | U | 12.5 | U | | | | P |
| Vanadium | 7.55 | | 7.27 | J | 3.707 | | | 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. 2017-1486 **Client ID:** CAMO-17-132213L**Contract:** ESHL00114**Matrix:** LIQUID **Level:** Low**Sample ID:** 422570003 **Serial Dilution ID:** 1203783910

| <u>Analyte</u> | <u>Initial Value ug/L</u> | <u>C</u> | <u>Serial Value ug/L</u> | <u>C</u> | <u>% Difference</u> | <u>Qual</u> | <u>Acceptance Limit</u> | <u>M*</u> |
|----------------|-----------------------------------|----------|----------------------------------|----------|-------------------------|-------------|-----------------------------|-----------|
| Antimony | 1.38 | J | 5 | U | 50.362 | | | MS |
| Arsenic | 2 | U | 10 | U | | | | MS |
| Cadmium | .3 | U | 1.5 | U | | | | MS |
| Lead | .5 | U | 2.5 | U | | | | MS |
| Selenium | 2 | U | 10 | U | | | | MS |
| Silver | .3 | U | 1.5 | U | | | | MS |
| Thallium | .6 | U | 3 | U | | | | MS |
| Uranium | .543 | | .62 | J | 14.18 | | | MS |

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1486 **Client ID:** CAMO-17-132216L**Contract:** ESHL00114**Matrix:** LIQUID **Level:** Low**Sample ID:** 422436001 **Serial Dilution ID:** 1203784151

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

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1486 **Client ID:** CAMO-17-132213L**Contract:** ESHL00114**Matrix:** LIQUID **Level:** Low**Sample ID:** 422570003 **Serial Dilution ID:** 1203796400

| <u>Analyte</u> | <u>Initial Value ug/L</u> | <u>C</u> | <u>Serial Value ug/L</u> | <u>C</u> | <u>% Difference</u> | <u>Qual</u> | <u>Acceptance Limit</u> | <u>M*</u> |
|----------------|-----------------------------------|----------|----------------------------------|----------|-------------------------|-------------|-----------------------------|-----------|
| Chromium | 5.05 | J | 15 | U | 17.839 | | | MS |
| Molybdenum | .948 | | 1.01 | J | 6.013 | | | MS |
| Nickel | .6 | U | 3 | U | | | | MS |

*Analytical Methods:

MS SW846 3005A/6020A

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1486
Work Order #: 422570**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1663112

Method: SW 9060 Total Organic Carbon

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 422570004 | CAMO-17-132233 |
| 422570007 | CASA-17-132336 |
| 1203784880 | Method Blank (MB) |
| 1203784881 | Laboratory Control Sample (LCS) |
| 1203784882 | 422310002(CASA-17-132329) Sample Duplicate (DUP) |
| 1203784883 | 422310002(CASA-17-132329) 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 422310002 (CASA-17-132329) 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

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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: | Cyanide and Total | | |
| Analytical Batch: | 1662558 | Method: | WSP-CN(T) |
| Prep Batch : | 1662557 | Method: | EPA 335.4 |

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 422570004 | CAMO-17-132233 |
| 422570007 | CASA-17-132336 |
| 1203783358 | Method Blank (MB) |
| 1203783359 | Laboratory Control Sample (LCS) |
| 1203783360 | 422570004(CAMO-17-132233) Sample Duplicate (DUP) |
| 1203783361 | 422570004(CAMO-17-132233) 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-095 REV# 19.

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.

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 422570004 (CAMO-17-132233) 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**Data Exception (DER) Documentation**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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: 1664539

Method: WSP-ANIONS

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 422570003 | CAMO-17-132213 |
| 422570006 | CASA-17-132327 |
| 1203788153 | Method Blank (MB) |
| 1203788154 | Laboratory Control Sample (LCS) |
| 1203788155 | 422570003(CAMO-17-132213) Sample Duplicate (DUP) |
| 1203788157 | 422570003(CAMO-17-132213) 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-1600 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 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) Designation

Sample 422570003 (CAMO-17-132213) 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 Dilutions

The following sample 422570006 (CASA-17-132327) 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 | 422570 |
| | 006 |
| Chloride | 10X |
| Sulfate | 10X |

Sample Re-analysis

Samples 1203788153 (MB), 1203788154 (LCS), 1203788155 (CAMO-17-132213DUP), 1203788157 (CAMO-17-132213PS), 422570003 (CAMO-17-132213) and 422570006 (CASA-17-132327) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integrations

Samples 1203788155 (CAMO-17-132213DUP), 1203788157 (CAMO-17-132213PS), 422570003 (CAMO-17-132213) and 422570006 (CASA-17-132327) 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

| | | | |
|--------------------------|-------------------------|----------------|----------------|
| Product: | Ammonia Nitrogen | | |
| Analytical Batch: | 1661776 | Method: | NH3 |
| Prep Batch : | 1661775 | Method: | EPA 350.1 Prep |

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 422570003 | CAMO-17-132213 |
| 422570006 | CASA-17-132327 |
| 1203781425 | Method Blank (MB) |
| 1203781426 | Laboratory Control Sample (LCS) |
| 1203783330 | 422310001(CASA-17-132320) Sample Duplicate (DUP) |
| 1203783331 | 422310001(CASA-17-132320) 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 422310001 (CASA-17-132320) 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

Sample1203781425 (MB) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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: | Total Kjeldahl Nitrogen | | |
| Analytical Batch: | 1662576 | Method: | TKN |
| Prep Batch : | 1662574 | Method: | EPA 351.2 Prep |

Sample Analysis

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

| | |
|------------------|--|
| Sample ID | Client ID |
| 422570004 | CAMO-17-132233 |
| 422570007 | CASA-17-132336 |
| 1203783401 | Method Blank (MB) |
| 1203783402 | Laboratory Control Sample (LCS) |
| 1203783405 | 422310002(CASA-17-132329) Sample Duplicate (DUP) |
| 1203783406 | 422310002(CASA-17-132329) 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 422310002 (CASA-17-132329) 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 1203783401 (MB), 1203783402 (LCS), 1203783405 (CASA-17-132329DUP) and 1203783406 (CASA-17-132329MS) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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: 1663213

Method: NO3NO2

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 422570003 | CAMO-17-132213 |
| 422570006 | CASA-17-132327 |
| 1203785034 | Method Blank (MB) |
| 1203785035 | Laboratory Control Sample (LCS) |
| 1203785038 | 422570003(CAMO-17-132213) Sample Duplicate (DUP) |
| 1203785041 | 422570003(CAMO-17-132213) 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# 8.

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 422570003 (CAMO-17-132213) 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 following sample 422570006 (CASA-17-132327) 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 | 422570 |
| | 006 |
| Nitrogen, Nitrate/Nitrite | 10X |

Sample Re-analysis

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

Miscellaneous Information**Data Exception (DER) Documentation**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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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Method/Analysis Information

| | | | |
|--------------------------|-------------------------|----------------|----------------|
| Product: | Total Phosphorus | | |
| Analytical Batch: | 1662570 | Method: | PO4 |
| Prep Batch : | 1662568 | Method: | EPA 365.4 Prep |

Sample Analysis

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

| | |
|------------------|--|
| Sample ID | Client ID |
| 422570003 | CAMO-17-132213 |
| 422570006 | CASA-17-132327 |
| 1203783387 | Method Blank (MB) |
| 1203783388 | Laboratory Control Sample (LCS) |
| 1203783390 | 422310001(CASA-17-132320) Sample Duplicate (DUP) |
| 1203783392 | 422310001(CASA-17-132320) 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 422310001 (CASA-17-132320) 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**Data Exception (DER) Documentation**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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: 1664155

Method: TDS

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 422570003 | CAMO-17-132213 |
| 422570006 | CASA-17-132327 |
| 1203787277 | Method Blank (MB) |
| 1203787278 | Laboratory Control Sample (LCS) |
| 1203787280 | 422570003(CAMO-17-132213) 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 422570003 (CAMO-17-132213) 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**Data Exception (DER) Documentation**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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: 1663499

Method: EPA120.1 Specific Conductivity

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 422570003 | CAMO-17-132213 |
| 422570006 | CASA-17-132327 |
| 1203785786 | Laboratory Control Sample (LCS) |
| 1203785788 | 422436001(CAMO-17-132216) 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 422436001 (CAMO-17-132216) 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**Data Exception (DER) Documentation**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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: 1665849 **Method:** PH

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 422570003 | CAMO-17-132213 |
| 422570006 | CASA-17-132327 |
| 1203791298 | Laboratory Control Sample (LCS) |
| 1203791299 | 422436001(CAMO-17-132216) 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

Sample 422436001 (CAMO-17-132216) 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

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

| Sample | Analyte | Value |
|--------------------------------|---------|--|
| 1203791299 (CAMO-17-132216DUP) | pH | Received 05-MAY-17, out of holding 03-MAY-17 |
| 422570003 (CAMO-17-132213) | pH | Received 06-MAY-17, out of holding 04-MAY-17 |
| 422570006 (CASA-17-132327) | pH | Received 06-MAY-17, out of holding 04-MAY-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

Data Exception (DER) Documentation

A data exception report (DER) 1633320 was generated for samples 422570003 (CAMO-17-132213), 422570006 (CASA-17-132327) and 1203791299 (CAMO-17-132216DUP) in this SDG/batch.

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: 1665848 **Method:** EPA 310.1 Total Alkalinity

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 422570003 | CAMO-17-132213 |
| 422570006 | CASA-17-132327 |
| 1203791289 | Laboratory Control Sample (LCS) |
| 1203791292 | 422436001(CAMO-17-132216) Sample Duplicate (DUP) |
| 1203791295 | 422436001(CAMO-17-132216) 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 422436001 (CAMO-17-132216) 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**Data Exception (DER) Documentation**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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.

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.

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Qualifier Definition Report for

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

Client SDG: 2017-1486 GEL Work Order: 422570


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: 31 MAY 2017

Title: Analyst I

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: May 31, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1486

Client Sample ID: CAMO-17-132213
Sample ID: 422570003
Matrix: W
Collect Date: 04-MAY-17 10:24
Receive Date: 06-MAY-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" | | | | | | | | | | | | |
| Chloride | | 1.85 | 0.067 | 0.200 | mg/L | | 1 | MXL2 | 05/11/17 | 2020 | 1664539 | 1 |
| Fluoride | | 0.129 | 0.033 | 0.100 | mg/L | | 1 | | | | | |
| Sulfate | | 2.06 | 0.133 | 0.400 | mg/L | | 1 | | | | | |
| Bromide | U | ND | 0.067 | 0.200 | mg/L | | 1 | MXL2 | 05/12/17 | 2247 | 1664539 | 2 |
| Nutrient Analysis | | | | | | | | | | | | |
| NH3 "As Received" | | | | | | | | | | | | |
| Nitrogen, Ammonia | J | 0.0381 | 0.017 | 0.050 | mg/L | 1.00 | 1 | KLP1 | 05/08/17 | 1323 | 1661776 | 3 |
| NO3NO2 "As Received" | | | | | | | | | | | | |
| Nitrogen, Nitrate/Nitrite | | 0.352 | 0.017 | 0.050 | mg/L | | 1 | AXH3 | 05/09/17 | 0803 | 1663213 | 4 |
| PO4 "As Received" | | | | | | | | | | | | |
| Phosphorus, Total as P | J | 0.031 | 0.020 | 0.050 | mg/L | 1.00 | 1 | KLP1 | 05/18/17 | 1028 | 1662570 | 5 |
| Solids Analysis | | | | | | | | | | | | |
| TDS "As Received" | | | | | | | | | | | | |
| Total Dissolved Solids | | 114 | 3.40 | 14.3 | mg/L | | | KLP1 | 05/11/17 | 1624 | 1664155 | 6 |
| Titration and Ion Analysis | | | | | | | | | | | | |
| EPA 310.1 Total Alkalinity "As Received" | | | | | | | | | | | | |
| Alkalinity, Total as CaCO3 | | 58.2 | 1.45 | 4.00 | mg/L | | | RXB5 | 05/17/17 | 2014 | 1665848 | 7 |
| Carbonate alkalinity (CaCO3) | U | ND | 1.45 | 4.00 | mg/L | | | | | | | |
| EPA120.1 Specific Conductivity "As Received" | | | | | | | | | | | | |
| Conductivity | | 126 | 1.00 | 1.00 | umhos/cm | | 1 | VH1 | 05/12/17 | 1342 | 1663499 | 8 |
| PH "As Received" | | | | | | | | | | | | |
| pH at Temp 14.9C | H | 7.96 | 0.010 | 0.100 | SU | | 1 | RXB5 | 05/17/17 | 2014 | 1665849 | 9 |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|----------------|--|---------|----------|------|------------|
| EPA 350.1 Prep | EPA 350.1 Ammonia Nitrogen Prep | KLP1 | 05/08/17 | 1155 | 1661775 |
| EPA 365.4 Prep | EPA 365.4 Phosphorus, Total in liquid PR | KLP1 | 05/17/17 | 1500 | 1662568 |

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Certificate of Analysis

Report Date: May 31, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1486

Client Sample ID: CAMO-17-132213
Sample ID: 422570003

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 | 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 |

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Certificate of Analysis

Report Date: May 31, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1486

Client Sample ID: CAMO-17-132233
Sample ID: 422570004
Matrix: W
Collect Date: 04-MAY-17 10:24
Receive Date: 06-MAY-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 | J | 0.701 | 0.330 | 1.00 | mg/L | | 1 | TSM | 05/11/17 | 1738 | 1663112 | 1 |
| Flow Injection Analysis | | | | | | | | | | | | |
| WSP-CN(T) "As Received" | | | | | | | | | | | | |
| Cyanide, Total | U | ND | 1.67 | 5.00 | ug/L | 1.00 | 1 | AXH3 | 05/08/17 | 1132 | 1662558 | 2 |
| Nutrient Analysis | | | | | | | | | | | | |
| TKN "As Received" | | | | | | | | | | | | |
| Nitrogen, Total Kjeldahl | U | ND | 0.033 | 0.100 | mg/L | 1.00 | 1 | KLP1 | 05/09/17 | 1128 | 1662576 | 3 |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|----------------|--|---------|----------|------|------------|
| EPA 335.4 | EPA 335.4 Total Cyanide | AXH3 | 05/08/17 | 1002 | 1662557 |
| EPA 351.2 Prep | EPA 351.2 Total Kjeldahl Nitrogen Prep | KLP1 | 05/08/17 | 1700 | 1662574 |

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 |

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Certificate of Analysis

Report Date: May 31, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1486

Client Sample ID: CASA-17-132327
Sample ID: 422570006
Matrix: W
Collect Date: 04-MAY-17 11:47
Receive Date: 06-MAY-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" | | | | | | | | | | | | |
| Fluoride | | 0.176 | 0.033 | 0.100 | mg/L | | 1 | MXL2 | 05/11/17 | 2147 | 1664539 | 1 |
| Bromide | | 0.664 | 0.067 | 0.200 | mg/L | | 1 | MXL2 | 05/13/17 | 0014 | 1664539 | 2 |
| Chloride | | 70.5 | 0.670 | 2.00 | mg/L | | 10 | MXL2 | 05/13/17 | 0532 | 1664539 | 3 |
| Sulfate | | 88.6 | 1.33 | 4.00 | mg/L | | 10 | | | | | |
| Nutrient Analysis | | | | | | | | | | | | |
| NH3 "As Received" | | | | | | | | | | | | |
| Nitrogen, Ammonia | U | ND | 0.017 | 0.050 | mg/L | 1.00 | 1 | KLP1 | 05/08/17 | 1324 | 1661776 | 4 |
| NO3NO2 "As Received" | | | | | | | | | | | | |
| Nitrogen, Nitrate/Nitrite | | 3.80 | 0.170 | 0.500 | mg/L | | 10 | AXH3 | 05/09/17 | 0806 | 1663213 | 5 |
| PO4 "As Received" | | | | | | | | | | | | |
| Phosphorus, Total as P | J | 0.0364 | 0.020 | 0.050 | mg/L | 1.00 | 1 | KLP1 | 05/18/17 | 1028 | 1662570 | 6 |
| Solids Analysis | | | | | | | | | | | | |
| TDS "As Received" | | | | | | | | | | | | |
| Total Dissolved Solids | | 451 | 3.40 | 14.3 | mg/L | | | KLP1 | 05/11/17 | 1624 | 1664155 | 7 |
| Titration and Ion Analysis | | | | | | | | | | | | |
| EPA 310.1 Total Alkalinity "As Received" | | | | | | | | | | | | |
| Alkalinity, Total as CaCO3 | | 90.4 | 1.45 | 4.00 | mg/L | | | RXB5 | 05/17/17 | 2016 | 1665848 | 8 |
| Carbonate alkalinity (CaCO3) | U | ND | 1.45 | 4.00 | mg/L | | | | | | | |
| EPA120.1 Specific Conductivity "As Received" | | | | | | | | | | | | |
| Conductivity | | 632 | 1.00 | 1.00 | umhos/cm | | 1 | VH1 | 05/12/17 | 1342 | 1663499 | 9 |
| PH "As Received" | | | | | | | | | | | | |
| pH at Temp 14.8C | H | 7.64 | 0.010 | 0.100 | SU | | 1 | RXB5 | 05/17/17 | 2015 | 1665849 | 10 |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|----------------|--|---------|----------|------|------------|
| EPA 350.1 Prep | EPA 350.1 Ammonia Nitrogen Prep | KLP1 | 05/08/17 | 1155 | 1661775 |
| EPA 365.4 Prep | EPA 365.4 Phosphorus, Total in liquid PR | KLP1 | 05/17/17 | 1500 | 1662568 |

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Certificate of Analysis

Report Date: May 31, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1486

Client Sample ID: CASA-17-132327
Sample ID: 422570006

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:300.0 | | | | | | | | | | | |
| 4 | EPA:350.1 | | | | | | | | | | | |
| 5 | EPA:353.2 | | | | | | | | | | | |
| 6 | EPA 365.4 1974 | | | | | | | | | | | |
| 7 | EPA:160.1 | | | | | | | | | | | |
| 8 | EPA:310.1 | | | | | | | | | | | |
| 9 | EPA:120.1 | | | | | | | | | | | |
| 10 | 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

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Certificate of Analysis

Report Date: May 31, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545

Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1486

Client Sample ID: CASA-17-132336
Sample ID: 422570007
Matrix: W
Collect Date: 04-MAY-17 11:47
Receive Date: 06-MAY-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 | J | 0.856 | 0.330 | 1.00 | mg/L | | 1 | TSM | 05/11/17 | 1825 | 1663112 | 1 |
| Flow Injection Analysis | | | | | | | | | | | | |
| WSP-CN(T) "As Received" | | | | | | | | | | | | |
| Cyanide, Total | | 7.40 | 1.67 | 5.00 | ug/L | 1.00 | 1 | AXH3 | 05/08/17 | 1139 | 1662558 | 2 |
| Nutrient Analysis | | | | | | | | | | | | |
| TKN "As Received" | | | | | | | | | | | | |
| Nitrogen, Total Kjeldahl | | 0.357 | 0.033 | 0.100 | mg/L | 1.00 | 1 | KLP1 | 05/09/17 | 1129 | 1662576 | 3 |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|----------------|--|---------|----------|------|------------|
| EPA 335.4 | EPA 335.4 Total Cyanide | AXH3 | 05/08/17 | 1002 | 1662557 |
| EPA 351.2 Prep | EPA 351.2 Total Kjeldahl Nitrogen Prep | KLP1 | 05/08/17 | 1700 | 1662574 |

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: May 31, 2017

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Los Alamos National Laboratory
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico

Contact: Mr. Keith Greene

Workorder: 422570

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|--------------------------------|-----------|--------|-------|----|-------|------|---------|-----------------|-------|----------|-------|
| Carbon Analysis | | | | | | | | | | | |
| Batch | 1663112 | | | | | | | | | | |
| QC1203784882 | 422310002 | DUP | | | | | | | | | |
| Total Organic Carbon Average | | J | 0.357 | J | 0.359 | mg/L | 0.559 ^ | (+/-1.00) | TSM | 05/11/17 | 09:49 |
| QC1203784881 | LCS | | | | | | | | | | |
| Total Organic Carbon Average | 10.0 | | | | 9.58 | mg/L | | 95.8 (80%-120%) | | 05/11/17 | 08:52 |
| QC1203784880 | MB | | | | | | | | | | |
| Total Organic Carbon Average | | | U | | ND | mg/L | | | | 05/11/17 | 08:41 |
| QC1203784883 | 422310002 | PS | | | | | | | | | |
| Total Organic Carbon Average | 10.0 | J | 0.357 | | 9.10 | mg/L | | 87.5 (75%-125%) | | 05/11/17 | 10:33 |
| Flow Injection Analysis | | | | | | | | | | | |
| Batch | 1662558 | | | | | | | | | | |
| QC1203783360 | 422570004 | DUP | | | | | | | | | |
| Cyanide, Total | | U | ND | U | ND | ug/L | N/A | | AXH3 | 05/08/17 | 11:33 |
| QC1203783359 | LCS | | | | | | | | | | |
| Cyanide, Total | 50.0 | | | | 49.1 | ug/L | | 98.2 (90%-110%) | | 05/08/17 | 11:18 |
| QC1203783358 | MB | | | | | | | | | | |
| Cyanide, Total | | | U | | ND | ug/L | | | | 05/08/17 | 11:17 |
| QC1203783361 | 422570004 | MS | | | | | | | | | |
| Cyanide, Total | 100 | U | ND | | 102 | ug/L | | 102 (90%-110%) | | 05/08/17 | 11:34 |
| Ion Chromatography | | | | | | | | | | | |
| Batch | 1664539 | | | | | | | | | | |
| QC1203788155 | 422570003 | DUP | | | | | | | | | |
| Bromide | | U | ND | U | ND | mg/L | N/A | | MXL2 | 05/12/17 | 23:16 |

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QC Summary

Workorder: 422570

Page 2 of 6

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------|---------|--------|-------|-------|-------|-------|------|------------|-------|----------|-------|
| Ion Chromatography | | | | | | | | | | | |
| Batch | 1664539 | | | | | | | | | | |
| Chloride | | 1.85 | | 1.85 | mg/L | 0.211 | | (0%-20%) | MXL2 | 05/11/17 | 20:49 |
| Fluoride | | 0.129 | | 0.125 | mg/L | 3.15 | ^ | (+/-0.100) | | | |
| Sulfate | | 2.06 | | 2.01 | mg/L | 2.43 | | (0%-20%) | | | |
| QC1203788154 LCS | | | | | | | | | | | |
| Bromide | 1.25 | | | 1.26 | mg/L | | 101 | (80%-120%) | | 05/12/17 | 22:18 |
| Chloride | 5.00 | | | 5.10 | mg/L | | 102 | (80%-120%) | | 05/11/17 | 19:51 |
| Fluoride | 2.50 | | | 2.68 | mg/L | | 107 | (80%-120%) | | | |
| Sulfate | 10.0 | | | 10.5 | mg/L | | 105 | (80%-120%) | | | |
| QC1203788153 MB | | | | | | | | | | | |
| Bromide | | | U | ND | mg/L | | | | | 05/12/17 | 21:49 |
| Chloride | | | U | ND | mg/L | | | | | 05/11/17 | 19:22 |
| Fluoride | | | U | ND | mg/L | | | | | | |
| Sulfate | | | U | ND | mg/L | | | | | | |
| QC1203788157 422570003 PS | | | | | | | | | | | |
| Bromide | 1.25 | U | ND | 1.26 | mg/L | | 97.7 | (75%-125%) | | 05/12/17 | 23:45 |
| Chloride | 5.00 | | 1.85 | 7.20 | mg/L | | 107 | (75%-125%) | | 05/11/17 | 21:18 |
| Fluoride | 2.50 | | 0.129 | 2.74 | mg/L | | 104 | (75%-125%) | | | |
| Sulfate | 10.0 | | 2.06 | 12.8 | mg/L | | 107 | (75%-125%) | | | |

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QC Summary

Workorder: 422570

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| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|--------------------------|-----------|--------|------|--------|-------|------|------|----------------|-------|----------|-------|
| Nutrient Analysis | | | | | | | | | | | |
| Batch | 1661776 | | | | | | | | | | |
| QC1203783330 | 422310001 | DUP | | | | | | | | | |
| Nitrogen, Ammonia | | 0.0617 | | 0.104 | mg/L | 51.1 | ^ | (+/-0.050) | KLP1 | 05/08/17 | 13:05 |
| QC1203781426 | LCS | | | | | | | | | | |
| Nitrogen, Ammonia | 1.00 | | | 1.03 | mg/L | | | 103 (90%-110%) | | 05/08/17 | 12:52 |
| QC1203781425 | MB | | | | | | | | | | |
| Nitrogen, Ammonia | | | U | ND | mg/L | | | | | 05/08/17 | 13:16 |
| QC1203783331 | 422310001 | MS | | | | | | | | | |
| Nitrogen, Ammonia | 1.00 | 0.0617 | | 1.09 | mg/L | | | 103 (90%-110%) | | 05/08/17 | 13:05 |
| Batch | 1662570 | | | | | | | | | | |
| QC1203783390 | 422310001 | DUP | | | | | | | | | |
| Phosphorus, Total as P | | U | ND | U | ND | mg/L | N/A | | KLP1 | 05/18/17 | 10:12 |
| QC1203783388 | LCS | | | | | | | | | | |
| Phosphorus, Total as P | 1.00 | | | 1.07 | mg/L | | | 107 (80%-124%) | | 05/18/17 | 09:59 |
| QC1203783387 | MB | | | | | | | | | | |
| Phosphorus, Total as P | | | U | ND | mg/L | | | | | 05/18/17 | 09:58 |
| QC1203783392 | 422310001 | MS | | | | | | | | | |
| Phosphorus, Total as P | 1.00 | U | ND | 1.18 | mg/L | | | 116 (63%-139%) | | 05/18/17 | 10:13 |
| Batch | 1662576 | | | | | | | | | | |
| QC1203783405 | 422310002 | DUP | | | | | | | | | |
| Nitrogen, Total Kjeldahl | | U | ND | U | ND | mg/L | N/A | | KLP1 | 05/09/17 | 11:16 |
| QC1203783402 | LCS | | | | | | | | | | |
| Nitrogen, Total Kjeldahl | 1.00 | | | 1.09 | mg/L | | | 109 (90%-110%) | | 05/09/17 | 11:14 |
| QC1203783401 | MB | | | | | | | | | | |
| Nitrogen, Total Kjeldahl | | | J | 0.0517 | mg/L | | | | | 05/09/17 | 11:13 |

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| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|-----------------------------------|-----------|--------|-------|-------|----------|-------|------|------------|-------|----------|-------|
| Nutrient Analysis | | | | | | | | | | | |
| Batch | 1662576 | | | | | | | | | | |
| QC1203783406 | 422310002 | MS | | | | | | | | | |
| Nitrogen, Total Kjeldahl | 1.00 | U | ND | 1.10 | mg/L | | 110 | (90%-110%) | KLP1 | 05/09/17 | 11:17 |
| | | | | | | | | | | | |
| Batch | 1663213 | | | | | | | | | | |
| QC1203785038 | 422570003 | DUP | | | | | | | | | |
| Nitrogen, Nitrate/Nitrite | | | 0.352 | 0.352 | mg/L | 0 | | (0%-20%) | AXH3 | 05/09/17 | 08:04 |
| | | | | | | | | | | | |
| QC1203785035 | LCS | | | | | | | | | | |
| Nitrogen, Nitrate/Nitrite | 1.00 | | | 0.989 | mg/L | | 98.9 | (90%-110%) | | 05/09/17 | 07:57 |
| | | | | | | | | | | | |
| QC1203785034 | MB | | | | | | | | | | |
| Nitrogen, Nitrate/Nitrite | | | U | ND | mg/L | | | | | 05/09/17 | 07:56 |
| | | | | | | | | | | | |
| QC1203785041 | 422570003 | PS | | | | | | | | | |
| Nitrogen, Nitrate/Nitrite | 1.00 | | 0.352 | 1.32 | mg/L | | 96.8 | (90%-110%) | | 05/09/17 | 08:05 |
| | | | | | | | | | | | |
| Solids Analysis | | | | | | | | | | | |
| Batch | 1664155 | | | | | | | | | | |
| QC1203787280 | 422570003 | DUP | | | | | | | | | |
| Total Dissolved Solids | | | 114 | 114 | mg/L | 0 | | (0%-5%) | KLP1 | 05/11/17 | 16:24 |
| | | | | | | | | | | | |
| QC1203787278 | LCS | | | | | | | | | | |
| Total Dissolved Solids | 300 | | | 289 | mg/L | | 96.2 | (95%-105%) | | 05/11/17 | 16:24 |
| | | | | | | | | | | | |
| QC1203787277 | MB | | | | | | | | | | |
| Total Dissolved Solids | | | U | ND | mg/L | | | | | 05/11/17 | 16:24 |
| | | | | | | | | | | | |
| Titration and Ion Analysis | | | | | | | | | | | |
| Batch | 1663499 | | | | | | | | | | |
| QC1203785788 | 422436001 | DUP | | | | | | | | | |
| Conductivity | | | 254 | 255 | umhos/cm | 0.393 | | (0%-10%) | VH1 | 05/12/17 | 13:41 |
| | | | | | | | | | | | |
| QC1203785786 | LCS | | | | | | | | | | |
| Conductivity | 1410 | | | 1400 | umhos/cm | | 98.9 | (95%-105%) | | 05/12/17 | 13:36 |

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QC Summary

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| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|-----------------------------------|-----------|--------|------|------|-------|-------|------|------------|-------|----------|-------|
| Titration and Ion Analysis | | | | | | | | | | | |
| Batch | 1665848 | | | | | | | | | | |
| QC1203791292 | 422436001 | DUP | | | | | | | | | |
| Alkalinity, Total as CaCO3 | | 60.0 | | 60.6 | mg/L | 0.995 | | (0%-20%) | RXB5 | 05/17/17 | 19:54 |
| Carbonate alkalinity (CaCO3) | U | ND | U | ND | mg/L | N/A | | | | | |
| QC1203791289 | LCS | | | | | | | | | | |
| Alkalinity, Total as CaCO3 | 100 | | | 108 | mg/L | | 108 | (90%-110%) | | 05/17/17 | 19:38 |
| QC1203791295 | 422436001 | MS | | | | | | | | | |
| Alkalinity, Total as CaCO3 | 100 | 60.0 | | 164 | mg/L | | 104 | (80%-120%) | | 05/17/17 | 19:55 |
| Batch | 1665849 | | | | | | | | | | |
| QC1203791299 | 422436001 | DUP | | | | | | | | | |
| pH | H | 8.26 | H | 8.28 | SU | 0.242 | | (0%-5%) | RXB5 | 05/17/17 | 19:53 |
| QC1203791298 | LCS | | | | | | | | | | |
| pH | 7.00 | | | 6.98 | SU | | 99.7 | (99%-101%) | | 05/17/17 | 19:38 |

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
- J Value is estimated
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

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QC Summary

Workorder: 422570

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| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------|---|--------|------|----|-------|------|------|-------|-------|------|------|
| X | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier | | | | | | | | | | |
| Z | Paint Filter Test--Particulates passed through the filter, however no free liquids were observed. | | | | | | | | | | |
| ^ | RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry. | | | | | | | | | | |
| d | 5-day BOD--The 2:1 depletion requirement was not met for this sample | | | | | | | | | | |
| e | 5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for reporting purposes | | | | | | | | | | |
| h | Preparation or preservation holding time was exceeded | | | | | | | | | | |

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.

Miscellaneous

DATA EXCEPTION REPORT

| | | | |
|---|-------------------------------------|---|-----------------------------|
| Mo.Day Yr. 18-MAY-17 | Division: Industrial | Quality Criteria: Specifications | Type: Process |
| Instrument Type: ELECTRODE | Test / Method: EPA 150.1 | Matrix Type: Liquid | Client Code: ESHL |
| Batch ID: 1665849 | Sample Numbers: See Below | | |
| Potentially affected work order(s)(SDG): 422436(2017-1476),422570(2017-1486),422637(2017-1489),422638(2017-1490) Application Issues: Sample received out of holding | | | |
| Specification and Requirements | | DER Disposition: | |
| Exception Description: 1. Sample received out of holding: 422436 001,005,008 422570 003,006 422637 001 422638 001 QC 1203791299DUP | | 1. Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified. 1203791299 (CAMO-17-132216DUP) [Received 05-MAY-17, out of holding 03-MAY-17]. 422436001 (CAMO-17-132216) [Received 05-MAY-17, out of holding 03-MAY-17]. 422436005 (CAMO-17-132325) [Received 05-MAY-17, out of holding 03-MAY-17]. 422436008 (CAMO-17-132338) [Received 05-MAY-17, out of holding 03-MAY-17]. 422570003 (CAMO-17-132213) [Received 06-MAY-17, out of holding 04-MAY-17]. 422570006 (CASA-17-132327) [Received 06-MAY-17, out of holding 04-MAY-17]. 422637001 (CASA-17-132322) [Received 09-MAY-17, out of holding 05-MAY-17]. 422638001 (CASA-17-132319) [Received 09-MAY-17, out of holding 05-MAY-17]. | |

Originator's Name:

Rachael Bell 18-MAY-17

Data Validator/Group Leader:

Elzbieta Szulc 25-MAY-17