

Gallatin Water Department

Sample Delivery Group: L884458
Samples Received: 01/18/2017
Project Number: 2927B
Description: Drinking Water - Inorganic Chemical Monitoring
Site: 0253
Report To: Mr. David Kellogg
239 Hancock Street
Gallatin, TN 37066

Entire Report Reviewed By:



Rodney Shinbaum
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



| | | |
|---|----|--|
| ¹ Cp: Cover Page | 1 | |
| ² Tc: Table of Contents | 2 | |
| ³ Ss: Sample Summary | 3 | |
| ⁴ Cn: Case Narrative | 4 | |
| ⁵ Sr: Sample Results | 5 | |
| ENTRY POINT L884458-01 | 5 | |
| ⁶ Qc: Quality Control Summary | 7 | |
| Gravimetric Analysis by Method 2540 C-1997 | 7 | |
| Wet Chemistry by Method 2120B | 8 | |
| Wet Chemistry by Method 2150 B-2011 | 9 | |
| Wet Chemistry by Method 300.0 | 10 | |
| Wet Chemistry by Method 335.4 | 12 | |
| Wet Chemistry by Method 5540 C-2000 | 13 | |
| Mercury by Method 245.1 | 14 | |
| Metals (ICP) by Method 200.7 | 15 | |
| Metals (ICPMS) by Method 200.8 | 17 | |
| ⁷ Gl: Glossary of Terms | 19 | |
| ⁸ Al: Accreditations & Locations | 20 | |
| ⁹ Sc: Chain of Custody | 21 | |

SAMPLE SUMMARY



ENTRY POINT L884458-01 DW

Collected by: T. Everertt
 Collected date/time: 01/18/17 10:27
 Received date/time: 01/18/17 11:09

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst |
|--|----------|----------|-----------------------|--------------------|---------|
| Gravimetric Analysis by Method 2540 C-1997 | WG944938 | 1 | 01/22/17 03:39 | 01/22/17 07:22 | JM |
| Mercury by Method 245.1 | WG946060 | 1 | 01/24/17 12:14 | 01/24/17 19:22 | NJB |
| Metals (ICP) by Method 200.7 | WG944806 | 1 | 01/21/17 08:47 | 01/23/17 12:59 | CCE |
| Metals (ICPMS) by Method 200.8 | WG944521 | 1 | 01/21/17 08:53 | 01/23/17 21:54 | VSS |
| Metals (ICPMS) by Method 200.8 | WG944521 | 1 | 01/21/17 08:53 | 01/24/17 11:38 | LAT |
| Wet Chemistry by Method 2120B | WG944415 | 1 | 01/20/17 09:47 | 01/20/17 09:47 | MHM |
| Wet Chemistry by Method 2150 B-2011 | WG944414 | 1 | 01/18/17 17:12 | 01/18/17 17:12 | MHM |
| Wet Chemistry by Method 300.0 | WG944511 | 1 | 01/20/17 02:10 | 01/20/17 02:10 | KCF |
| Wet Chemistry by Method 335.4 | WG946724 | 1 | 01/25/17 22:16 | 01/26/17 18:17 | ASK |
| Wet Chemistry by Method 5540 C-2000 | WG944757 | .25 | 01/20/17 07:30 | 01/20/17 08:26 | MHM |

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Rodney Shinbaum
Technical Service Representative

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Additional Information

| Analyte | Result | Units | Reference Limit |
|--------------|--------|-------|-----------------|
| pH (On Site) | 7.4 | | |
| Entry Point | A | | |
| Sample Type | B | | |

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Gravimetric Analysis by Method 2540 C-1997

| Analyte | Result | Qualifier | Det. Limit | Reference Limit | Dilution | Analysis date / time | Batch | Analyst |
|------------------|--------|-----------|------------|-----------------|----------|----------------------|--------------------------|---------|
| Dissolved Solids | 195 | | 10.0 | 500 | 1 | 01/22/2017 07:22 | WG944938 | JM |

Wet Chemistry by Method 2120B

| Analyte | Result | Qualifier | Det. Limit | Reference Limit | Dilution | Analysis date / time | Batch | Analyst |
|---------|--------|-----------|------------|-----------------|----------|----------------------|--------------------------|---------|
| Color | 1.00 | | 1.00 | 15 | 1 | 01/20/2017 09:47 | WG944415 | MHM |

Wet Chemistry by Method 2150 B-2011

| Analyte | Result | Qualifier | Det. Limit | Reference Limit | Dilution | Analysis date / time | Batch | Analyst |
|---------|--------|-----------|------------|-----------------|----------|----------------------|--------------------------|---------|
| Odor | 1.00 | | 1.00 | 3 | 1 | 01/18/2017 17:12 | WG944414 | MHM |

Wet Chemistry by Method 300.0

| Analyte | Result | Qualifier | Det. Limit | Reference Limit | Dilution | Analysis date / time | Batch | Analyst |
|----------|--------|-----------|------------|-----------------|----------|----------------------|--------------------------|---------|
| Chloride | 13.1 | | 1.00 | 250 | 1 | 01/20/2017 02:10 | WG944511 | KCF |
| Fluoride | 0.687 | | 0.100 | 2 | 1 | 01/20/2017 02:10 | WG944511 | KCF |
| Sulfate | 20.4 | | 5.00 | 250 | 1 | 01/20/2017 02:10 | WG944511 | KCF |

Wet Chemistry by Method 335.4

| Analyte | Result | Qualifier | Det. Limit | Reference Limit | Dilution | Analysis date / time | Batch | Analyst |
|---------|--------|-----------|------------|-----------------|----------|----------------------|--------------------------|---------|
| Cyanide | ND | | 0.00500 | 0.20 | 1 | 01/26/2017 18:17 | WG946724 | ASK |

Wet Chemistry by Method 5540 C-2000

| Analyte | Result | Qualifier | Det. Limit | Reference Limit | Dilution | Analysis date / time | Batch | Analyst |
|---------|--------|-----------|------------|-----------------|----------|----------------------|--------------------------|---------|
| MBAS | ND | | 0.0250 | 0.50 | .25 | 01/20/2017 08:26 | WG944757 | MHM |

Mercury by Method 245.1

| Analyte | Result | Qualifier | Det. Limit | Reference Limit | Dilution | Analysis date / time | Batch | Analyst |
|---------|--------|-----------|------------|-----------------|----------|----------------------|--------------------------|---------|
| Mercury | ND | | 0.000200 | 0.0020 | 1 | 01/24/2017 19:22 | WG946060 | NJB |

Metals (ICP) by Method 200.7

| Analyte | Result | Qualifier | Det. Limit | Reference Limit | Dilution | Analysis date / time | Batch | Analyst |
|-----------|--------|-----------|------------|-----------------|----------|----------------------|--------------------------|---------|
| Aluminum | ND | | 0.200 | 0.20 | 1 | 01/23/2017 12:59 | WG944806 | CCE |
| Barium | 0.0211 | | 0.00500 | 2 | 1 | 01/23/2017 12:59 | WG944806 | CCE |
| Chromium | ND | | 0.0100 | 0.10 | 1 | 01/23/2017 12:59 | WG944806 | CCE |
| Copper | ND | | 0.0100 | 1 | 1 | 01/23/2017 12:59 | WG944806 | CCE |
| Iron | ND | | 0.100 | 0.30 | 1 | 01/23/2017 12:59 | WG944806 | CCE |
| Manganese | ND | | 0.0100 | 0.05 | 1 | 01/23/2017 12:59 | WG944806 | CCE |
| Nickel | ND | | 0.0100 | 0.10 | 1 | 01/23/2017 12:59 | WG944806 | CCE |
| Silver | ND | | 0.00500 | 0.10 | 1 | 01/23/2017 12:59 | WG944806 | CCE |

ENTRY POINT

Collected date/time: 01/18/17 10:27

SAMPLE RESULTS - 01

L884458

ONE LAB. NATIONWIDE.



Metals (ICP) by Method 200.7

| Analyte | Result | Qualifier | Det. Limit | Reference Limit | Dilution | Analysis | Batch | Analyst |
|---------|--------|-----------|------------|-----------------|----------|------------------|--------------------------|---------|
| | mg/l | | mg/l | mg/l | | date / time | | |
| Sodium | 10.6 | <u>01</u> | 1.00 | | 1 | 01/23/2017 12:59 | WG944806 | CCE |
| Zinc | ND | | 0.0500 | 5 | 1 | 01/23/2017 12:59 | WG944806 | CCE |

1 Cp

2 Tc

Metals (ICPMS) by Method 200.8

| Analyte | Result | Qualifier | Det. Limit | Reference Limit | Dilution | Analysis | Batch | Analyst |
|-----------|--------|-----------|------------|-----------------|----------|------------------|--------------------------|---------|
| | mg/l | | mg/l | mg/l | | date / time | | |
| Antimony | ND | | 0.00100 | 0.0060 | 1 | 01/23/2017 21:54 | WG944521 | VSS |
| Arsenic | ND | | 0.00100 | 0.01 | 1 | 01/24/2017 11:38 | WG944521 | LAT |
| Beryllium | ND | | 0.00100 | 0.0040 | 1 | 01/23/2017 21:54 | WG944521 | VSS |
| Cadmium | ND | | 0.00100 | 0.0050 | 1 | 01/23/2017 21:54 | WG944521 | VSS |
| Selenium | ND | | 0.00100 | 0.05 | 1 | 01/24/2017 11:38 | WG944521 | LAT |
| Thallium | ND | | 0.00100 | 0.0020 | 1 | 01/24/2017 11:38 | WG944521 | LAT |

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3192595-1 01/22/17 07:22

| Analyte | MB Result | MB Qualifier | MB MDL | MB RDL |
|------------------|-----------|--------------|--------|--------|
| Dissolved Solids | U | | 2.82 | 10.0 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

L884458-01 Original Sample (OS) • Duplicate (DUP)

(OS) L884458-01 01/22/17 07:22 • (DUP) R3192595-4 01/22/17 07:22

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|------------------|-----------------|------------|----------|---------|---------------|----------------|
| Dissolved Solids | 195 | 192 | 1 | 1.55 | | 5 |

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3192595-2 01/22/17 07:22 • (LCSD) R3192595-3 01/22/17 07:22

| Analyte | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|------------------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|------|------------|
| Dissolved Solids | 8800 | 8260 | 8480 | 93.9 | 96.4 | 85.0-115 | | | 2.63 | 5 |

⁷ Gl

⁸ Al

⁹ Sc



[L884458-01](#)

L884458-01 Original Sample (OS) • Duplicate (DUP)

(OS) L884458-01 01/20/17 09:47 • (DUP) WG944415-1 01/20/17 09:47

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | <u>DUP Qualifier</u> | DUP RPD Limits |
|---------|-----------------|------------|----------|---------|----------------------|----------------|
| | pcu | pcu | | % | | % |
| Color | 1.00 | 1.00 | 1 | 0.000 | | 20 |

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) WG944414-1 01/18/17 17:12

| Analyte | MB Result | MB Qualifier | MB MDL | MB RDL |
|---------|-----------|--------------|--------|--------|
| | T.O.N. | | T.O.N. | T.O.N. |
| Odor | 1.00 | | 0.333 | 1.00 |

L884458-01 Original Sample (OS) • Duplicate (DUP)

(OS) L884458-01 01/18/17 17:12 • (DUP) WG944414-2 01/18/17 17:12

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---------|-----------------|------------|----------|---------|---------------|----------------|
| | T.O.N. | T.O.N. | | % | | % |
| Odor | 1.00 | 1.00 | 1 | 0.000 | | 20 |

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3191795-1 01/19/17 17:43

| Analyte | MB Result | MB Qualifier | MB MDL | MB RDL |
|----------|-----------|--------------|--------|--------|
| | mg/l | | mg/l | mg/l |
| Chloride | U | | 0.0519 | 1.00 |
| Fluoride | U | | 0.0099 | 0.100 |
| Sulfate | U | | 0.0774 | 5.00 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L884477-01 Original Sample (OS) • Duplicate (DUP)

(OS) L884477-01 01/19/17 21:12 • (DUP) R3191795-6 01/19/17 21:26

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|----------|-----------------|------------|----------|---------|---------------|----------------|
| | mg/l | mg/l | | % | | % |
| Chloride | 10.4 | 10.5 | 1 | 0 | | 20 |
| Fluoride | 0.399 | 0.400 | 1 | 0 | | 20 |
| Sulfate | 10.4 | 10.4 | 1 | 0 | | 20 |

L884592-01 Original Sample (OS) • Duplicate (DUP)

(OS) L884592-01 01/19/17 22:11 • (DUP) R3191795-7 01/19/17 23:26

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|----------|-----------------|------------|----------|---------|---------------|----------------|
| | mg/l | mg/l | | % | | % |
| Chloride | 28.4 | 28.5 | 1 | 0 | | 20 |
| Fluoride | 0.214 | 0.202 | 1 | 6 | | 20 |
| Sulfate | 32.2 | 32.3 | 1 | 0 | | 20 |

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3191795-2 01/19/17 17:58 • (LCSD) R3191795-3 01/19/17 18:12

| Analyte | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|----------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|-----|------------|
| | mg/l | mg/l | mg/l | % | % | % | | | % | % |
| Chloride | 40.0 | 39.3 | 39.2 | 98 | 98 | 90-110 | | | 0 | 20 |
| Fluoride | 8.00 | 7.89 | 7.89 | 99 | 99 | 90-110 | | | 0 | 20 |
| Sulfate | 40.0 | 39.2 | 39.1 | 98 | 98 | 90-110 | | | 0 | 20 |

L884316-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L884316-02 01/19/17 18:57 • (MS) R3191795-5 01/19/17 19:12

| Analyte | Spike Amount | Original Result | MS Result | MS Rec. | Dilution | Rec. Limits | MS Qualifier |
|----------|--------------|-----------------|-----------|---------|----------|-------------|--------------|
| | mg/l | mg/l | mg/l | % | | % | |
| Fluoride | 5.00 | 8.70 | 13.1 | 87 | 1 | 80-120 | E |



L884601-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L884601-01 01/20/17 00:55 • (MS) R3191795-8 01/20/17 01:10 • (MSD) R3191795-9 01/20/17 01:25

| Analyte | Spike Amount mg/l | Original Result mg/l | MS Result mg/l | MSD Result mg/l | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|----------|----------------------|-------------------------|-------------------|--------------------|--------------|---------------|----------|------------------|--------------|---------------|----------|-----------------|
| Chloride | 50.0 | 23.1 | 73.7 | 73.9 | 101 | 102 | 1 | 80-120 | | | 0 | 20 |
| Fluoride | 5.00 | ND | 5.12 | 5.18 | 102 | 104 | 1 | 80-120 | | | 1 | 20 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3193100-1 01/26/17 18:11

| Analyte | MB Result | MB Qualifier | MB MDL | MB RDL |
|---------|-----------|--------------|--------|---------|
| Cyanide | U | | 0.0018 | 0.00500 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L884958-01 Original Sample (OS) • Duplicate (DUP)

(OS) L884958-01 01/26/17 18:24 • (DUP) R3193100-6 01/26/17 18:25

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---------|-----------------|------------|----------|---------|---------------|----------------|
| Cyanide | ND | 0.00394 | 1 | 0 | | 20 |

L885180-06 Original Sample (OS) • Duplicate (DUP)

(OS) L885180-06 01/26/17 18:36 • (DUP) R3193100-7 01/26/17 18:37

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---------|-----------------|------------|----------|---------|---------------|----------------|
| Cyanide | ND | 0.000 | 1 | 0 | | 20 |

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3193100-2 01/26/17 18:12 • (LCSD) R3193100-3 01/26/17 18:13

| Analyte | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|---------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|-----|------------|
| Cyanide | 0.100 | 0.106 | 0.108 | 106 | 108 | 90-110 | | | 2 | 20 |

L884893-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L884893-02 01/26/17 18:19 • (MS) R3193100-4 01/26/17 18:20 • (MSD) R3193100-5 01/26/17 18:23

| Analyte | Spike Amount | Original Result | MS Result | MSD Result | MS Rec. | MSD Rec. | Dilution | Rec. Limits | MS Qualifier | MSD Qualifier | RPD | RPD Limits |
|---------|--------------|-----------------|-----------|------------|---------|----------|----------|-------------|--------------|---------------|-----|------------|
| Cyanide | 0.200 | ND | 0.189 | 0.190 | 95 | 95 | 1 | 90-110 | | | 1 | 20 |



Method Blank (MB)

(MB) R3191808-1 01/20/17 08:22

| Analyte | MB Result | MB Qualifier | MB MDL | MB RDL |
|---------|-----------|--------------|--------|--------|
| MBAS | U | | 0.019 | 0.100 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L884458-01 Original Sample (OS) • Duplicate (DUP)

(OS) L884458-01 01/20/17 08:26 • (DUP) R3191808-4 01/20/17 08:26

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---------|-----------------|------------|----------|---------|---------------|----------------|
| MBAS | ND | 0.000 | .25 | 0 | | 20 |

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3191808-2 01/20/17 08:23 • (LCSD) R3191808-3 01/20/17 08:23

| Analyte | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|---------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|-----|------------|
| MBAS | 1.00 | 0.929 | 0.909 | 93 | 91 | 90-110 | | | 2 | 20 |

L884767-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L884767-02 01/20/17 08:29 • (MS) R3191808-5 01/20/17 08:30 • (MSD) R3191808-6 01/20/17 08:30

| Analyte | Spike Amount | Original Result | MS Result | MSD Result | MS Rec. | MSD Rec. | Dilution | Rec. Limits | MS Qualifier | MSD Qualifier | RPD | RPD Limits |
|---------|--------------|-----------------|-----------|------------|---------|----------|----------|-------------|--------------|---------------|-----|------------|
| MBAS | 1.00 | U | 0.946 | 0.961 | 95 | 96 | 1 | 90-110 | | | 2 | 20 |



Method Blank (MB)

(MB) R3192564-1 01/24/17 19:02

| Analyte | MB Result | MB Qualifier | MB MDL | MB RDL |
|---------|-----------|--------------|----------|----------|
| Mercury | U | | 0.000049 | 0.000200 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3192564-2 01/24/17 19:04 • (LCSD) R3192564-3 01/24/17 19:06

| Analyte | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|---------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|-----|------------|
| Mercury | 0.00300 | 0.00297 | 0.00286 | 99 | 95 | 85-115 | | | 4 | 20 |

L884958-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L884958-01 01/24/17 19:09 • (MS) R3192564-4 01/24/17 19:11 • (MSD) R3192564-5 01/24/17 19:13

| Analyte | Spike Amount | Original Result | MS Result | MSD Result | MS Rec. | MSD Rec. | Dilution | Rec. Limits | MS Qualifier | MSD Qualifier | RPD | RPD Limits |
|---------|--------------|-----------------|-----------|------------|---------|----------|----------|-------------|--------------|---------------|-----|------------|
| Mercury | 0.00300 | ND | 0.00306 | 0.00310 | 102 | 103 | 1 | 70-130 | | | 1 | 20 |

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3192216-1 01/23/17 12:49

| Analyte | MB Result | MB Qualifier | MB MDL | MB RDL |
|-----------|-----------|--------------|--------|---------|
| | mg/l | | mg/l | mg/l |
| Aluminum | 0.0292 | J | 0.0273 | 0.200 |
| Barium | U | | 0.001 | 0.00500 |
| Chromium | U | | 0.0018 | 0.0100 |
| Copper | U | | 0.007 | 0.0100 |
| Iron | U | | 0.0282 | 0.100 |
| Manganese | U | | 0.002 | 0.0100 |
| Nickel | U | | 0.0058 | 0.0100 |
| Silver | U | | 0.0027 | 0.00500 |
| Sodium | U | | 0.0939 | 1.00 |
| Zinc | U | | 0.0034 | 0.0500 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3192216-3 01/23/17 12:54 • (LCSD) R3192216-4 01/23/17 12:56

| Analyte | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|-----------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|-----|------------|
| | mg/l | mg/l | mg/l | % | % | % | | | % | % |
| Aluminum | 10.0 | 10.3 | 10.2 | 103 | 102 | 85-115 | | | 1 | 20 |
| Barium | 1.00 | 1.05 | 1.03 | 105 | 103 | 85-115 | | | 1 | 20 |
| Chromium | 1.00 | 1.03 | 1.01 | 103 | 101 | 85-115 | | | 3 | 20 |
| Copper | 1.00 | 1.02 | 0.998 | 102 | 100 | 85-115 | | | 2 | 20 |
| Iron | 10.0 | 10.1 | 9.92 | 101 | 99 | 85-115 | | | 2 | 20 |
| Manganese | 1.00 | 0.992 | 0.977 | 99 | 98 | 85-115 | | | 1 | 20 |
| Nickel | 1.00 | 1.04 | 1.03 | 104 | 103 | 85-115 | | | 1 | 20 |
| Silver | 0.200 | 0.197 | 0.194 | 99 | 97 | 85-115 | | | 2 | 20 |
| Sodium | 10.0 | 10.1 | 9.93 | 101 | 99 | 85-115 | | | 2 | 20 |
| Zinc | 1.00 | 1.06 | 1.04 | 106 | 104 | 85-115 | | | 1 | 20 |

L884458-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L884458-01 01/23/17 12:59 • (MS) R3192216-6 01/23/17 13:05 • (MSD) R3192216-7 01/23/17 13:07

| Analyte | Spike Amount | Original Result | MS Result | MSD Result | MS Rec. | MSD Rec. | Dilution | Rec. Limits | MS Qualifier | MSD Qualifier | RPD | RPD Limits |
|-----------|--------------|-----------------|-----------|------------|---------|----------|----------|-------------|--------------|---------------|-----|------------|
| | mg/l | mg/l | mg/l | mg/l | % | % | | % | | | % | % |
| Aluminum | 10.0 | ND | 10.2 | 10.8 | 102 | 108 | 1 | 75-125 | | | 6 | 20 |
| Barium | 1.00 | 0.0211 | 1.05 | 1.11 | 103 | 109 | 1 | 75-125 | | | 6 | 20 |
| Chromium | 1.00 | ND | 1.01 | 1.07 | 101 | 107 | 1 | 75-125 | | | 5 | 20 |
| Copper | 1.00 | ND | 1.00 | 1.06 | 100 | 106 | 1 | 75-125 | | | 6 | 20 |
| Iron | 10.0 | ND | 9.91 | 10.5 | 99 | 105 | 1 | 75-125 | | | 6 | 20 |
| Manganese | 1.00 | ND | 0.971 | 1.02 | 97 | 102 | 1 | 75-125 | | | 5 | 20 |
| Nickel | 1.00 | ND | 1.03 | 1.09 | 103 | 109 | 1 | 75-125 | | | 6 | 20 |



[L884458-01](#)

L884458-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L884458-01 01/23/17 12:59 • (MS) R3192216-6 01/23/17 13:05 • (MSD) R3192216-7 01/23/17 13:07

| Analyte | Spike Amount mg/l | Original Result mg/l | MS Result mg/l | MSD Result mg/l | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---------|----------------------|-------------------------|-------------------|--------------------|--------------|---------------|----------|------------------|--------------|---------------|----------|-----------------|
| Silver | 0.200 | ND | 0.195 | 0.205 | 97 | 103 | 1 | 75-125 | | | 5 | 20 |
| Sodium | 10.0 | 10.6 | 20.7 | 22.6 | 101 | 120 | 1 | 75-125 | | | 9 | 20 |
| Zinc | 1.00 | ND | 1.04 | 1.09 | 104 | 109 | 1 | 75-125 | | | 5 | 20 |

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Method Blank (MB)

(MB) R3192306-1 01/23/17 19:49

| Analyte | MB Result | MB Qualifier | MB MDL | MB RDL |
|-----------|-----------|--------------|----------|---------|
| | mg/l | | mg/l | mg/l |
| Antimony | U | | 0.000754 | 0.00100 |
| Beryllium | U | | 0.00028 | 0.00100 |
| Cadmium | U | | 0.00022 | 0.00100 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3192467-1 01/24/17 11:14

| Analyte | MB Result | MB Qualifier | MB MDL | MB RDL |
|----------|-----------|--------------|---------|---------|
| | mg/l | | mg/l | mg/l |
| Arsenic | U | | 0.00017 | 0.00100 |
| Selenium | U | | 0.00032 | 0.00100 |
| Thallium | U | | 0.00028 | 0.00100 |

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3192306-3 01/23/17 19:59 • (LCSD) R3192306-4 01/23/17 20:05

| Analyte | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|-----------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|-----|------------|
| | mg/l | mg/l | mg/l | % | % | % | | | % | % |
| Antimony | 0.0579 | 0.0518 | 0.0516 | 89 | 89 | 85-115 | | | 0 | 20 |
| Beryllium | 0.0500 | 0.0477 | 0.0538 | 95 | 108 | 85-115 | | | 12 | 20 |
| Cadmium | 0.0500 | 0.0488 | 0.0473 | 98 | 95 | 85-115 | | | 3 | 20 |

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3192467-3 01/24/17 11:21 • (LCSD) R3192467-4 01/24/17 11:24

| Analyte | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|----------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|-----|------------|
| | mg/l | mg/l | mg/l | % | % | % | | | % | % |
| Arsenic | 0.0500 | 0.0485 | 0.0477 | 97 | 95 | 85-115 | | | 2 | 20 |
| Selenium | 0.0500 | 0.0501 | 0.0496 | 100 | 99 | 85-115 | | | 1 | 20 |
| Thallium | 0.0500 | 0.0456 | 0.0481 | 91 | 96 | 85-115 | | | 5 | 20 |

L884190-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L884190-01 01/23/17 20:10 • (MS) R3192306-5 01/23/17 20:16 • (MSD) R3192306-6 01/23/17 20:21

| Analyte | Spike Amount | Original Result | MS Result | MSD Result | MS Rec. | MSD Rec. | Dilution | Rec. Limits | MS Qualifier | MSD Qualifier | RPD | RPD Limits |
|-----------|--------------|-----------------|-----------|------------|---------|----------|----------|-------------|--------------|---------------|-----|------------|
| | mg/l | mg/l | mg/l | mg/l | % | % | | % | | | % | % |
| Antimony | 0.0500 | ND | 0.0531 | 0.0514 | 106 | 103 | 1 | 70-130 | | | 3 | 20 |
| Beryllium | 0.0500 | ND | 0.0426 | 0.0451 | 85 | 90 | 1 | 70-130 | | | 6 | 20 |



[L884458-01](#)

L884190-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L884190-01 01/23/17 20:10 • (MS) R3192306-5 01/23/17 20:16 • (MSD) R3192306-6 01/23/17 20:21

| Analyte | Spike Amount mg/l | Original Result mg/l | MS Result mg/l | MSD Result mg/l | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | <u>MS Qualifier</u> | <u>MSD Qualifier</u> | RPD % | RPD Limits % |
|---------|----------------------|-------------------------|-------------------|--------------------|--------------|---------------|----------|------------------|---------------------|----------------------|----------|-----------------|
| Cadmium | 0.0500 | ND | 0.0472 | 0.0466 | 94 | 93 | 1 | 70-130 | | | 1 | 20 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Abbreviations and Definitions

| | |
|-----------------|---|
| SDG | Sample Delivery Group. |
| MDL | Method Detection Limit. |
| RDL | Reported Detection Limit. |
| ND | Not detected at the Reporting Limit (or MDL where applicable). |
| U | Not detected at the Reporting Limit (or MDL where applicable). |
| RPD | Relative Percent Difference. |
| Original Sample | The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG. |
| Rec. | Recovery. |

Qualifier Description

| | |
|----|---|
| E | The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL). |
| J | The identification of the analyte is acceptable; the reported value is an estimate. |
| O1 | The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference. |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.
 * Not all certifications held by the laboratory are applicable to the results reported in the attached report.



State Accreditations

| | | | |
|-----------------------|-------------|-----------------------------|-------------------|
| Alabama | 40660 | Nevada | TN-03-2002-34 |
| Alaska | UST-080 | New Hampshire | 2975 |
| Arizona | AZ0612 | New Jersey–NELAP | TN002 |
| Arkansas | 88-0469 | New Mexico | TN00003 |
| California | 01157CA | New York | 11742 |
| Colorado | TN00003 | North Carolina | Env375 |
| Connecticut | PH-0197 | North Carolina ¹ | DW21704 |
| Florida | E87487 | North Carolina ² | 41 |
| Georgia | NELAP | North Dakota | R-140 |
| Georgia ¹ | 923 | Ohio–VAP | CL0069 |
| Idaho | TN00003 | Oklahoma | 9915 |
| Illinois | 200008 | Oregon | TN200002 |
| Indiana | C-TN-01 | Pennsylvania | 68-02979 |
| Iowa | 364 | Rhode Island | 221 |
| Kansas | E-10277 | South Carolina | 84004 |
| Kentucky ¹ | 90010 | South Dakota | n/a |
| Kentucky ² | 16 | Tennessee ¹⁴ | 2006 |
| Louisiana | AI30792 | Texas | T 104704245-07-TX |
| Maine | TN0002 | Texas ⁵ | LAB0152 |
| Maryland | 324 | Utah | 6157585858 |
| Massachusetts | M-TN003 | Vermont | VT2006 |
| Michigan | 9958 | Virginia | 109 |
| Minnesota | 047-999-395 | Washington | C1915 |
| Mississippi | TN00003 | West Virginia | 233 |
| Missouri | 340 | Wisconsin | 9980939910 |
| Montana | CERT0086 | Wyoming | A2LA |
| Nebraska | NE-OS-15-05 | | |

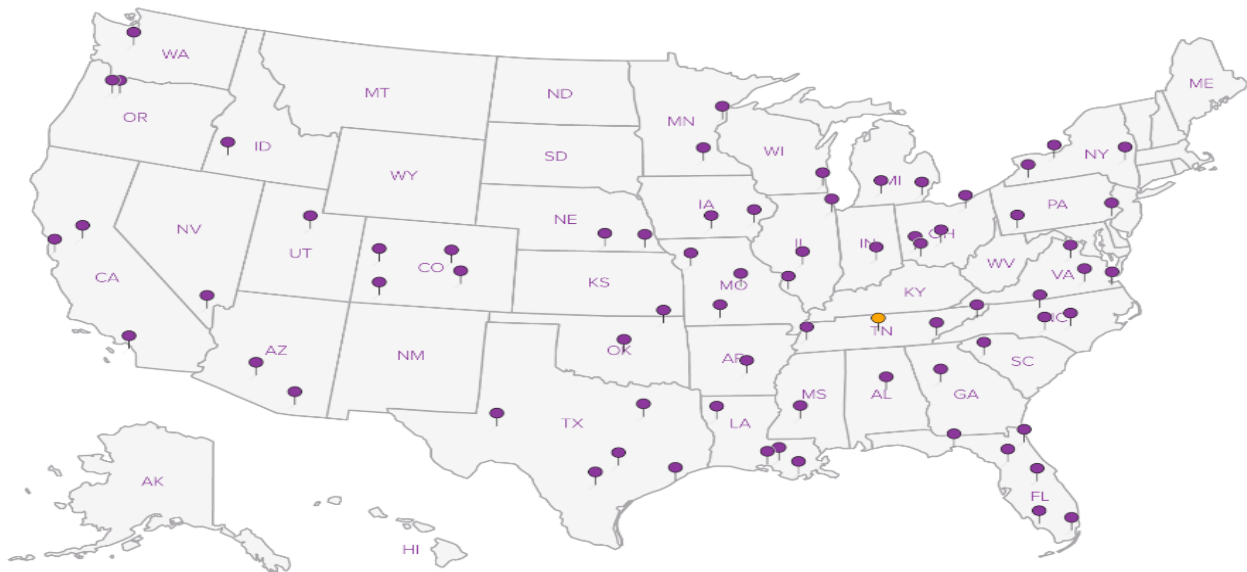
Third Party & Federal Accreditations

| | | | |
|-------------------------------|---------|------|---------|
| A2LA – ISO 17025 | 1461.01 | AIHA | 100789 |
| A2LA – ISO 17025 ⁵ | 1461.02 | DOD | 1461.01 |
| Canada | 1461.01 | USDA | S-67674 |
| EPA–Crypto | TN00003 | | |

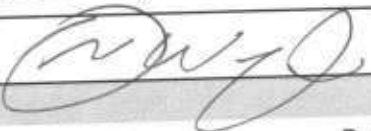
¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**





| Cooler Receipt Form | | | | | |
|--|---------------------------|---------|-------------------------------------|----|-------------------------------------|
| Client: GALLOI | SDG# | L884458 | | | |
| Cooler Received/Opened On: 01/18/17 | Temperature Upon Receipt: | 9.6 °C | | | |
| Received By: Don Wright | on ice | | | | |
| Signature:  | | | | | |
| Receipt Check List | | | Yes | No | N/A |
| Were custody seals on outside of cooler and intact? | | | | | <input checked="" type="checkbox"/> |
| Were custody papers properly filled out? | | | <input checked="" type="checkbox"/> | | |
| Did all bottles arrive in good condition? | | | <input checked="" type="checkbox"/> | | |
| Were correct bottles used for the analyses requested? | | | <input checked="" type="checkbox"/> | | |
| Was sufficient amount of sample sent in each bottle? | | | <input checked="" type="checkbox"/> | | |
| Were all applicable sample containers correctly preserved and checked for preservation? (Any not in accepted range noted on COC) | | | | | <input checked="" type="checkbox"/> |
| If applicable, was an observable VOA headspace present? | | | | | <input checked="" type="checkbox"/> |
| Non Conformance Generated. (If yes see attached NCF) | | | | | <input checked="" type="checkbox"/> |