

December 10, 2018

Olsson Associates

James Hix

1525 Raleigh St, Suite 400

Denver

CO 80204

Project Name - GWOG - Colorado State #2

Project Number - 018-3312

Attached are your analytical results for GWOG - Colorado State #2 received by Origins Laboratory, Inc. December 03, 2018. This project is associated with Origins project number Y812001-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-3312
Project: GWOG - Colorado State #2

CROSS REFERENCE REPORT

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|--------------|---------------|--------|-------------------------|------------------|
| PZ-1 | Y812001-01 | Water | November 30, 2018 12:45 | 12/03/2018 08:45 |
| PZ-2 | Y812001-02 | Water | November 30, 2018 14:00 | 12/03/2018 08:45 |
| PZ-3 | Y812001-03 | Water | November 30, 2018 14:44 | 12/03/2018 08:45 |
| PZ-4 | Y812001-04 | Water | November 30, 2018 15:25 | 12/03/2018 08:45 |
| EGW-1 | Y812001-05 | Water | November 30, 2018 13:48 | 12/03/2018 08:45 |
| SS-10N@6.0ft | Y812001-06 | Soil | November 30, 2018 13:05 | 12/03/2018 08:45 |
| SS-11W@6.0ft | Y812001-07 | Soil | November 30, 2018 13:45 | 12/03/2018 08:45 |

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
 1525 Raleigh St, Suite 400
 Denver CO 80204

James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

Origins Laboratory

F-012207-01-R1
 Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: Y812001

Client: Olsson

Client Project ID: GWOG - Colorado State #2

Checklist Completed by: JG

Shipped Via: HD

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 12/3/2018

Airbill #: N/A

Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____ (Describe)

Cooler Number/Temperature: 1, 4.6 °C _____ °C _____ °C _____ °C

Thermometer ID: T003

| Requirement Description | Yes | No | N/A | Comments (if any) |
|---|-------------------------------------|-------------------------------------|-----|-------------------|
| If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ? | <input checked="" type="checkbox"/> | | | |
| Is there ice present (document if blue ice is used) | <input checked="" type="checkbox"/> | | | |
| Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact) | | <input checked="" type="checkbox"/> | | |
| Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact) | | <input checked="" type="checkbox"/> | | |
| Were all samples received intact ⁽¹⁾ ? | <input checked="" type="checkbox"/> | | | |
| Was adequate sample volume provided ⁽¹⁾ ? | <input checked="" type="checkbox"/> | | | |
| Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ? | | <input checked="" type="checkbox"/> | | |
| Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ? | <input checked="" type="checkbox"/> | | | |
| Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ? | <input checked="" type="checkbox"/> | | | |
| Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ? | <input checked="" type="checkbox"/> | | | |
| Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ? | <input checked="" type="checkbox"/> | | | |
| For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative. | | <input checked="" type="checkbox"/> | | |
| Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH) | | <input checked="" type="checkbox"/> | | |
| Additional Comments (if any): | | | | |

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) JGP

Date/Time Reviewed 12/4/18

Origins Laboratory, Inc.



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Olsson Associates
 1525 Raleigh St, Suite 400
 Denver CO 80204

James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

PZ-1

11/30/2018 12:45:00PM

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Analyst | Prepared | Analyzed | Notes |
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|

GEL Laboratories, LLC
Y812001-01 (Water)

Alkalinity by SM 2320B

| | | | | | | | | | |
|---|-----|------|------|---|---------|------|------------|------------|---|
| Alkalinity, Total as CaCO ₃ | 312 | 4.00 | mg/L | 1 | 1827522 | RXB5 | 11/30/2018 | 12/04/2018 | |
| Bicarbonate alkalinity (CaCO ₃) | 312 | 4.00 | " | " | " | RXB5 | " | " | |
| Carbonate alkalinity (CaCO ₃) | ND | 4.00 | " | " | " | RXB5 | " | " | U |

Anions by EPA 300.0

| | | | | | | | | | |
|----------|------|------|------|-----|---------|------|---|------------|--|
| Chloride | 197 | 20.0 | mg/L | 100 | 1828228 | LXA2 | " | 12/05/2018 | |
| Sulfate | 1240 | 40.0 | " | " | " | LXA2 | " | " | |

BTEX by EPA 8260C

| | | | | | | | | | |
|----------------|----|------|------|---|---------|-----|------------|------------|----|
| Benzene | ND | 1.00 | ug/L | 1 | B8L0405 | JTD | 12/04/2018 | 12/05/2018 | Ua |
| Toluene | ND | 1.00 | " | " | " | JTD | " | " | Ua |
| Ethylbenzene | ND | 1.00 | " | " | " | JTD | " | " | Ua |
| Xylenes, total | ND | 1.00 | " | " | " | JTD | " | " | Ua |

| | | | | | | | | | |
|----------------------------------|--------|--------|--|--|---|---|---|---|--|
| Surrogate: 1,2-Dichloroethane-d4 | 105 % | 84-121 | | | " | " | " | " | |
| Surrogate: Toluene-d8 | 100 % | 85-115 | | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | 99.1 % | 84-114 | | | " | " | " | " | |

Dissolved Metals by 200.8

| | | | | | | | | | |
|-----------|--------|------|------|----|---------|-----|------------|------------|---|
| Calcium | 303000 | 2000 | ug/L | 10 | 1828325 | BAJ | 12/05/2018 | 12/08/2018 | |
| Iron | 42.3 | 100 | " | 1 | " | BAJ | " | " | J |
| Magnesium | 141000 | 300 | " | 10 | " | BAJ | " | " | |

Origins Laboratory, Inc.



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 Denver CO 80204

James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

PZ-1

11/30/2018 12:45:00PM

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Analyst | Prepared | Analyzed | Notes |
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|

GEL Laboratories, LLC
Y812001-01 (Water)

Dissolved Metals by 200.8

| | | | | | | | | | |
|-----------|--------|------|------|----|---------|-----|------------|------------|--|
| Manganese | 159 | 5.00 | ug/L | 1 | 1828325 | BAJ | 12/05/2018 | 12/08/2018 | |
| Potassium | 5340 | 300 | " | " | " | BAJ | " | " | |
| Sodium | 209000 | 2500 | " | 10 | " | BAJ | " | " | |

Nitrate/Nitrite by EPA 353.2

| | | | | | | | | | |
|---------------------------|-------|-------|------|---|---------|------|------------|------------|--|
| Nitrogen, Nitrate/Nitrite | 0.260 | 0.020 | mg/L | 1 | 1828704 | KLP1 | 11/30/2018 | 12/06/2018 | |
|---------------------------|-------|-------|------|---|---------|------|------------|------------|--|

pH in Water by EPA 9040C

| | | | | | | | | | |
|----|------|--|----------|---|---------|------|------------|------------|--|
| pH | 7.09 | | pH Units | 1 | B8L0407 | OLAB | 12/04/2018 | 12/04/2018 | |
|----|------|--|----------|---|---------|------|------------|------------|--|

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Olsson Associates
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 Denver CO 80204

James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

PZ-2

11/30/2018 2:00:00PM

| Analyte | Result | Reporting | | Units | Dilution | Batch | Analyst | Prepared | Analyzed | Notes |
|---------|--------|-----------|--|-------|----------|-------|---------|----------|----------|-------|
| | | Limit | | | | | | | | |

GEL Laboratories, LLC
Y812001-02 (Water)

Alkalinity by SM 2320B

| | | | | | | | | | |
|---|-----|------|------|---|---------|------|------------|------------|---|
| Alkalinity, Total as CaCO ₃ | 262 | 4.00 | mg/L | 1 | 1827522 | RXB5 | 11/30/2018 | 12/04/2018 | |
| Bicarbonate alkalinity (CaCO ₃) | 262 | 4.00 | " | " | " | RXB5 | " | " | |
| Carbonate alkalinity (CaCO ₃) | ND | 4.00 | " | " | " | RXB5 | " | " | U |

Anions by EPA 300.0

| | | | | | | | | | |
|----------|------|------|------|-----|---------|------|---|------------|--|
| Chloride | 46.2 | 20.0 | mg/L | 100 | 1828228 | LXA2 | " | 12/05/2018 | |
| Sulfate | 578 | 40.0 | " | " | " | LXA2 | " | " | |

BTEX by EPA 8260C

| | | | | | | | | | |
|----------------|----|------|------|---|---------|-----|------------|------------|----|
| Benzene | ND | 1.00 | ug/L | 1 | B8L0405 | JTD | 12/04/2018 | 12/05/2018 | Ua |
| Toluene | ND | 1.00 | " | " | " | JTD | " | " | Ua |
| Ethylbenzene | ND | 1.00 | " | " | " | JTD | " | " | Ua |
| Xylenes, total | ND | 1.00 | " | " | " | JTD | " | " | Ua |

| | | | | | | | | |
|----------------------------------|--------|--------|--|--|---|---|---|--|
| Surrogate: 1,2-Dichloroethane-d4 | 103 % | 84-121 | | | " | " | " | |
| Surrogate: Toluene-d8 | 100 % | 85-115 | | | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | 97.2 % | 84-114 | | | " | " | " | |

Dissolved Metals by 200.8

| | | | | | | | | | |
|-----------|--------|------|------|----|---------|-----|------------|------------|---|
| Calcium | 174000 | 2000 | ug/L | 10 | 1828325 | BAJ | 12/05/2018 | 12/08/2018 | |
| Iron | ND | 100 | " | 1 | " | BAJ | " | " | U |
| Magnesium | 82800 | 300 | " | 10 | " | BAJ | " | " | |

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Denver CO 80204

James Hix
Project Number: 018-3312
Project: GWOG - Colorado State #2

PZ-2

11/30/2018 2:00:00PM

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Analyst | Prepared | Analyzed | Notes |
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|

GEL Laboratories, LLC
Y812001-02 (Water)

Dissolved Metals by 200.8

| | | | | | | | | | |
|-----------|-------|------|------|----|---------|-----|------------|------------|--|
| Manganese | 305 | 5.00 | ug/L | 1 | 1828325 | BAJ | 12/05/2018 | 12/08/2018 | |
| Potassium | 7120 | 300 | " | " | " | BAJ | " | " | |
| Sodium | 65200 | 2500 | " | 10 | " | BAJ | " | " | |

Nitrate/Nitrite by EPA 353.2

| | | | | | | | | | |
|---------------------------|-------|-------|------|---|---------|------|------------|------------|--|
| Nitrogen, Nitrate/Nitrite | 0.199 | 0.020 | mg/L | 1 | 1828704 | KLP1 | 11/30/2018 | 12/06/2018 | |
|---------------------------|-------|-------|------|---|---------|------|------------|------------|--|

pH in Water by EPA 9040C

| | | | | | | | | | |
|----|------|--|----------|---|---------|------|------------|------------|--|
| pH | 7.73 | | pH Units | 1 | B8L0407 | OLAB | 12/04/2018 | 12/04/2018 | |
|----|------|--|----------|---|---------|------|------------|------------|--|

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 Denver CO 80204

James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

PZ-3

11/30/2018 2:44:00PM

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Analyst | Prepared | Analyzed | Notes |
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|

Origins Laboratory, Inc.
Y812001-03 (Water)

BTEX by EPA 8260C

| | | | | | | | | | |
|----------------|----|------|------|---|---------|-----|------------|------------|----|
| Benzene | ND | 1.00 | ug/L | 1 | B8L0405 | JTD | 12/04/2018 | 12/05/2018 | Ua |
| Toluene | ND | 1.00 | " | " | " | JTD | " | " | Ua |
| Ethylbenzene | ND | 1.00 | " | " | " | JTD | " | " | Ua |
| Xylenes, total | ND | 1.00 | " | " | " | JTD | " | " | Ua |

| | | | | | | | | | |
|----------------------------------|--------|--------|--|--|---|---|---|---|--|
| Surrogate: 1,2-Dichloroethane-d4 | 104 % | 84-121 | | | " | " | " | " | |
| Surrogate: Toluene-d8 | 100 % | 85-115 | | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | 97.3 % | 84-114 | | | " | " | " | " | |

pH in Water by EPA 9040C

| | | | | | | | | | |
|----|------|--|----------|---|---------|------|------------|------------|--|
| pH | 7.79 | | pH Units | 1 | B8L0407 | OLAB | 12/04/2018 | 12/04/2018 | |
|----|------|--|----------|---|---------|------|------------|------------|--|

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Olsson Associates
 1525 Raleigh St, Suite 400
 Denver CO 80204

James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

PZ-4

11/30/2018 3:25:00PM

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Analyst | Prepared | Analyzed | Notes |
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|

GEL Laboratories, LLC
Y812001-04 (Water)

Alkalinity by SM 2320B

| | | | | | | | | | |
|---|-----|------|------|---|---------|------|------------|------------|---|
| Alkalinity, Total as CaCO ₃ | 224 | 4.00 | mg/L | 1 | 1827522 | RXB5 | 11/30/2018 | 12/04/2018 | |
| Bicarbonate alkalinity (CaCO ₃) | 224 | 4.00 | " | " | " | RXB5 | " | " | |
| Carbonate alkalinity (CaCO ₃) | ND | 4.00 | " | " | " | RXB5 | " | " | U |

Anions by EPA 300.0

| | | | | | | | | | |
|----------|------|------|------|-----|---------|------|---|------------|--|
| Chloride | 50.5 | 20.0 | mg/L | 100 | 1828228 | LXA2 | " | 12/05/2018 | |
| Sulfate | 2030 | 80.0 | " | 200 | " | LXA2 | " | 12/06/2018 | |

BTEX by EPA 8260C

| | | | | | | | | | |
|----------------|----|------|------|---|---------|-----|------------|------------|----|
| Benzene | ND | 1.00 | ug/L | 1 | B8L0405 | JTD | 12/04/2018 | 12/05/2018 | Ua |
| Toluene | ND | 1.00 | " | " | " | JTD | " | " | Ua |
| Ethylbenzene | ND | 1.00 | " | " | " | JTD | " | " | Ua |
| Xylenes, total | ND | 1.00 | " | " | " | JTD | " | " | Ua |

| | | | | | | | | | |
|----------------------------------|--------|--------|--|--|---|---|---|--|--|
| Surrogate: 1,2-Dichloroethane-d4 | 99.5 % | 84-121 | | | " | " | " | | |
| Surrogate: Toluene-d8 | 102 % | 85-115 | | | " | " | " | | |
| Surrogate: 4-Bromofluorobenzene | 97.5 % | 84-114 | | | " | " | " | | |

pH in Water by EPA 9040C

| | | | | | | | | | |
|----|------|--|----------|---|---------|------|------------|------------|--|
| pH | 7.63 | | pH Units | 1 | B8L0407 | OLAB | 12/04/2018 | 12/04/2018 | |
|----|------|--|----------|---|---------|------|------------|------------|--|

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Olsson Associates
 1525 Raleigh St, Suite 400
 Denver CO 80204

James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

EGW-1

11/30/2018 1:48:00PM

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Analyst | Prepared | Analyzed | Notes |
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|

Origins Laboratory, Inc.
Y812001-05 (Water)

BTEX by EPA 8260C

| | | | | | | | | | |
|----------------------------------|-------------|------|------|--------|---------|-----|------------|------------|--|
| Benzene | 3.36 | 1.00 | ug/L | 1 | B8L0405 | JTD | 12/04/2018 | 12/05/2018 | |
| Toluene | 2.54 | 1.00 | " | " | " | JTD | " | " | |
| Ethylbenzene | 11.4 | 1.00 | " | " | " | JTD | " | " | |
| Xylenes, total | 83.9 | 1.00 | " | " | " | JTD | " | " | |
| Surrogate: 1,2-Dichloroethane-d4 | 98.9 % | | | 84-121 | | " | " | " | |
| Surrogate: Toluene-d8 | 104 % | | | 85-115 | | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | 97.6 % | | | 84-114 | | " | " | " | |

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 1525 Raleigh St, Suite 400
 Denver CO 80204

James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

SS-10N@6.0ft
11/30/2018 1:05:00PM

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Analyst | Prepared | Analyzed | Notes |
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|

Origins Laboratory, Inc.
Y812001-06 (Soil)

BTEX by EPA 8260C

| | | | | | | | | | |
|----------------|--------------|-------|-------|---|---------|-----|------------|------------|----|
| Benzene | ND | 0.002 | mg/kg | 1 | B8L0302 | KDK | 12/03/2018 | 12/04/2018 | Ua |
| Toluene | ND | 0.002 | " | " | " | KDK | " | " | Ua |
| Ethylbenzene | ND | 0.002 | " | " | " | KDK | " | " | Ua |
| Xylenes, total | 0.008 | 0.002 | " | " | " | KDK | " | " | |

| | | | | | | | | | |
|----------------------------------|--------|--------|--|--|---|---|---|---|--|
| Surrogate: 1,2-Dichloroethane-d4 | 107 % | 70-130 | | | " | " | " | " | |
| Surrogate: Toluene-d8 | 92.9 % | 70-130 | | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | 94.7 % | 70-130 | | | " | " | " | " | |

TPH-Carbon Chain by EPA Method 8015C

| | | | | | | | | | |
|-----------------------------------|----|------|-------|---|---------|-----|------------|------------|----|
| Gasoline (C6-C10) | ND | 50.0 | mg/kg | 1 | B8L0303 | JTD | 12/03/2018 | 12/03/2018 | Ua |
| Diesel (C10-C28) | ND | 50.0 | " | " | " | JTD | " | " | Ua |
| Residual Range Organics (C28-C40) | ND | 200 | " | " | " | JTD | " | " | Ua |

| | | | | | | | | | |
|------------------------|--------|--------|--|--|---|---|---|---|--|
| Surrogate: o-Terphenyl | 81.8 % | 65-146 | | | " | " | " | " | |
|------------------------|--------|--------|--|--|---|---|---|---|--|

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 Denver CO 80204

James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

SS-11W@6.0ft
11/30/2018 1:45:00PM

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Analyst | Prepared | Analyzed | Notes |
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|
|---------|--------|-----------------|-------|----------|-------|---------|----------|----------|-------|

Origins Laboratory, Inc.
Y812001-07 (Soil)

BTEX by EPA 8260C

| | | | | | | | | | |
|----------------|----|-------|-------|---|---------|-----|------------|------------|----|
| Benzene | ND | 0.002 | mg/kg | 1 | B8L0302 | KDK | 12/03/2018 | 12/04/2018 | Ua |
| Toluene | ND | 0.002 | " | " | " | KDK | " | " | Ua |
| Ethylbenzene | ND | 0.002 | " | " | " | KDK | " | " | Ua |
| Xylenes, total | ND | 0.002 | " | " | " | KDK | " | " | Ua |

| | | | | | | | | | |
|----------------------------------|--------|--------|--|--|---|---|---|---|--|
| Surrogate: 1,2-Dichloroethane-d4 | 107 % | 70-130 | | | " | " | " | " | |
| Surrogate: Toluene-d8 | 93.3 % | 70-130 | | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | 104 % | 70-130 | | | " | " | " | " | |

TPH-Carbon Chain by EPA Method 8015C

| | | | | | | | | | |
|-----------------------------------|----|------|-------|---|---------|-----|------------|------------|----|
| Gasoline (C6-C10) | ND | 50.0 | mg/kg | 1 | B8L0303 | JTD | 12/03/2018 | 12/03/2018 | Ua |
| Diesel (C10-C28) | ND | 50.0 | " | " | " | JTD | " | " | Ua |
| Residual Range Organics (C28-C40) | ND | 200 | " | " | " | JTD | " | " | Ua |

| | | | | | | | | | |
|------------------------|--------|--------|--|--|---|---|---|---|--|
| Surrogate: o-Terphenyl | 84.0 % | 65-146 | | | " | " | " | " | |
|------------------------|--------|--------|--|--|---|---|---|---|--|

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James Hix
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 Project: GWOG - Colorado State #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0302 - EPA 5030 (soil)

Blank (B8L0302-BLK1)

Prepared: 12/03/2018 Analyzed: 12/03/2018

| | | | | | | | | | | |
|---|-------------|-------|----------|--------------|--|-------------|---------------|--|--|----|
| Benzene | ND | 0.002 | mg/kg | | | | | | | Ua |
| Toluene | ND | 0.002 | " | | | | | | | Ua |
| Ethylbenzene | ND | 0.002 | " | | | | | | | Ua |
| Xylenes, total | ND | 0.002 | " | | | | | | | Ua |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>0.13</i> | | <i>"</i> | <i>0.125</i> | | <i>107</i> | <i>70-130</i> | | | |
| <i>Surrogate: Toluene-d8</i> | <i>0.12</i> | | <i>"</i> | <i>0.125</i> | | <i>93.5</i> | <i>70-130</i> | | | |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>0.12</i> | | <i>"</i> | <i>0.125</i> | | <i>95.8</i> | <i>70-130</i> | | | |

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James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0302 - EPA 5030 (soil)

Blank (B8L0302-BLK2)

Prepared: 12/03/2018 Analyzed: 12/03/2018

| | | | | | | | | | | |
|---|-------------|-------|----------|--------------|--|-------------|---------------|--|--|----|
| Benzene | ND | 0.002 | mg/kg | | | | | | | Ua |
| Toluene | ND | 0.002 | " | | | | | | | Ua |
| Ethylbenzene | ND | 0.002 | " | | | | | | | Ua |
| Xylenes, total | ND | 0.002 | " | | | | | | | Ua |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | <i>0.13</i> | | <i>"</i> | <i>0.125</i> | | <i>105</i> | <i>70-130</i> | | | |
| <i>Surrogate: Toluene-d8</i> | <i>0.12</i> | | <i>"</i> | <i>0.125</i> | | <i>93.7</i> | <i>70-130</i> | | | |
| <i>Surrogate: 4-Bromofluorobenzene</i> | <i>0.12</i> | | <i>"</i> | <i>0.125</i> | | <i>95.9</i> | <i>70-130</i> | | | |

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0302 - EPA 5030 (soil)

LCS (B8L0302-BS1)

Prepared: 12/03/2018 Analyzed: 12/03/2018

| | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|--|------|----------|--|--|--|
| Benzene | 0.113 | 0.002 | mg/kg | 0.100 | | 113 | 77.1-124 | | | |
| Toluene | 0.102 | 0.002 | " | 0.100 | | 102 | 74.5-128 | | | |
| Ethylbenzene | 0.105 | 0.002 | " | 0.100 | | 105 | 66.4-127 | | | |
| m,p-Xylene | 0.208 | 0.004 | " | 0.200 | | 104 | 76.6-124 | | | |
| o-Xylene | 0.105 | 0.002 | " | 0.100 | | 105 | 76.6-124 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.13 | | " | 0.125 | | 103 | 70-130 | | | |
| Surrogate: Toluene-d8 | 0.12 | | " | 0.125 | | 94.1 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.13 | | " | 0.125 | | 102 | 70-130 | | | |

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0302 - EPA 5030 (soil)

LCS (B8L0302-BS2)

Prepared: 12/03/2018 Analyzed: 12/03/2018

| | | | | | | | | | | |
|----------------------------------|-------|-------|-------|-------|--|------|----------|--|--|--|
| Benzene | 0.119 | 0.002 | mg/kg | 0.100 | | 119 | 77.1-124 | | | |
| Toluene | 0.105 | 0.002 | " | 0.100 | | 105 | 74.5-128 | | | |
| Ethylbenzene | 0.106 | 0.002 | " | 0.100 | | 106 | 66.4-127 | | | |
| m,p-Xylene | 0.210 | 0.004 | " | 0.200 | | 105 | 76.6-124 | | | |
| o-Xylene | 0.106 | 0.002 | " | 0.100 | | 106 | 76.6-124 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.13 | | " | 0.125 | | 103 | 70-130 | | | |
| Surrogate: Toluene-d8 | 0.12 | | " | 0.125 | | 92.4 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.13 | | " | 0.125 | | 102 | 70-130 | | | |

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0302 - EPA 5030 (soil)

| Matrix Spike (B8L0302-MS1) | Source: Y811425-01 | | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | | |
|----------------------------------|--------------------|-------|-------|---|--------|------|----------|--|--|--|
| Benzene | 0.120 | 0.002 | mg/kg | 0.100 | ND | 120 | 71.8-126 | | | |
| Toluene | 0.103 | 0.002 | " | 0.100 | ND | 103 | 65.1-130 | | | |
| Ethylbenzene | 0.109 | 0.002 | " | 0.100 | 0.0006 | 108 | 62.2-130 | | | |
| m,p-Xylene | 0.216 | 0.004 | " | 0.200 | 0.003 | 107 | 46.5-137 | | | |
| o-Xylene | 0.109 | 0.002 | " | 0.100 | 0.001 | 107 | 54.2-134 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.13 | | " | 0.125 | | 106 | 70-130 | | | |
| Surrogate: Toluene-d8 | 0.12 | | " | 0.125 | | 93.6 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.13 | | " | 0.125 | | 105 | 70-130 | | | |

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0302 - EPA 5030 (soil)

| Matrix Spike (B8L0302-MS2) | Source: Y811425-02 | | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | | |
|----------------------------------|--------------------|-------|-------|---|-------|------|----------|--|--|--|
| Benzene | 0.099 | 0.002 | mg/kg | 0.100 | ND | 98.6 | 71.8-126 | | | |
| Toluene | 0.082 | 0.002 | " | 0.100 | ND | 81.5 | 65.1-130 | | | |
| Ethylbenzene | 0.083 | 0.002 | " | 0.100 | ND | 83.4 | 62.2-130 | | | |
| m,p-Xylene | 0.165 | 0.004 | " | 0.200 | 0.001 | 81.9 | 46.5-137 | | | |
| o-Xylene | 0.085 | 0.002 | " | 0.100 | 0.001 | 83.4 | 54.2-134 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.14 | | " | 0.125 | | 110 | 70-130 | | | |
| Surrogate: Toluene-d8 | 0.12 | | " | 0.125 | | 92.1 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.13 | | " | 0.125 | | 104 | 70-130 | | | |

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0302 - EPA 5030 (soil)

| Matrix Spike Dup (B8L0302-MSD1) | Source: Y811425-01 | | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | | |
|----------------------------------|--------------------|-------|-------|---|--------|------|----------|------|------|--|
| Benzene | 0.116 | 0.002 | mg/kg | 0.100 | ND | 116 | 71.8-126 | 3.38 | 11.3 | |
| Toluene | 0.097 | 0.002 | " | 0.100 | ND | 97.0 | 65.1-130 | 6.06 | 15.4 | |
| Ethylbenzene | 0.097 | 0.002 | " | 0.100 | 0.0006 | 96.7 | 62.2-130 | 11.2 | 19.6 | |
| m,p-Xylene | 0.193 | 0.004 | " | 0.200 | 0.003 | 95.5 | 46.5-137 | 11.2 | 19.2 | |
| o-Xylene | 0.098 | 0.002 | " | 0.100 | 0.001 | 96.8 | 54.2-134 | 10.2 | 17.9 | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.13 | | " | 0.125 | | 105 | 70-130 | | | |
| Surrogate: Toluene-d8 | 0.12 | | " | 0.125 | | 92.9 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.13 | | " | 0.125 | | 102 | 70-130 | | | |

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0302 - EPA 5030 (soil)

| Matrix Spike Dup (B8L0302-MSD2) | Source: Y811425-02 | | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | | |
|----------------------------------|--------------------|-------|-------|---|-------|------|----------|------|------|--|
| Benzene | 0.107 | 0.002 | mg/kg | 0.100 | ND | 107 | 71.8-126 | 8.19 | 11.3 | |
| Toluene | 0.089 | 0.002 | " | 0.100 | ND | 88.6 | 65.1-130 | 8.39 | 15.4 | |
| Ethylbenzene | 0.088 | 0.002 | " | 0.100 | ND | 87.5 | 62.2-130 | 4.82 | 19.6 | |
| m,p-Xylene | 0.175 | 0.004 | " | 0.200 | 0.001 | 86.6 | 46.5-137 | 5.51 | 19.2 | |
| o-Xylene | 0.089 | 0.002 | " | 0.100 | 0.001 | 88.1 | 54.2-134 | 5.45 | 17.9 | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.13 | | " | 0.125 | | 106 | 70-130 | | | |
| Surrogate: Toluene-d8 | 0.12 | | " | 0.125 | | 92.0 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.13 | | " | 0.125 | | 103 | 70-130 | | | |

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0405 - EPA 5030B (Water)

Blank (B8L0405-BLK1)

Prepared: 12/04/2018 Analyzed: 12/05/2018

| | | | | | | | | | | |
|---|----|------|------|------|------|--|--------|--|--|----|
| Benzene | ND | 1.00 | ug/L | | | | | | | Ua |
| Toluene | ND | 1.00 | " | | | | | | | Ua |
| Ethylbenzene | ND | 1.00 | " | | | | | | | Ua |
| Xylenes, total | ND | 1.00 | " | | | | | | | Ua |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 62 | | " | 62.5 | 99.2 | | 84-121 | | | |
| <i>Surrogate: Toluene-d8</i> | 66 | | " | 62.5 | 106 | | 85-115 | | | |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 65 | | " | 62.5 | 104 | | 84-114 | | | |

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 Project: GWOG - Colorado State #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0405 - EPA 5030B (Water)

Blank (B8L0405-BLK2)

Prepared: 12/04/2018 Analyzed: 12/05/2018

| | | | | | | | | | | |
|---|----|------|------|------|-----|--|--------|--|--|----|
| Benzene | ND | 1.00 | ug/L | | | | | | | Ua |
| Toluene | ND | 1.00 | " | | | | | | | Ua |
| Ethylbenzene | ND | 1.00 | " | | | | | | | Ua |
| Xylenes, total | ND | 1.00 | " | | | | | | | Ua |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 65 | | " | 62.5 | 104 | | 84-121 | | | |
| <i>Surrogate: Toluene-d8</i> | 65 | | " | 62.5 | 104 | | 85-115 | | | |
| <i>Surrogate: 4-Bromofluorobenzene</i> | 64 | | " | 62.5 | 102 | | 84-114 | | | |

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0405 - EPA 5030B (Water)

LCS (B8L0405-BS1)

Prepared: 12/04/2018 Analyzed: 12/05/2018

| | | | | | | | | | | |
|----------------------------------|------|------|------|------|--|------|----------|--|--|--|
| Benzene | 45.6 | 1.00 | ug/L | 50.0 | | 91.2 | 73.3-129 | | | |
| Toluene | 50.2 | 1.00 | " | 50.0 | | 100 | 76.2-123 | | | |
| Ethylbenzene | 50.8 | 1.00 | " | 50.0 | | 102 | 73.6-130 | | | |
| m,p-Xylene | 102 | 2.00 | " | 100 | | 102 | 76.1-126 | | | |
| o-Xylene | 51.8 | 1.00 | " | 50.0 | | 104 | 76.6-124 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 63 | | " | 62.5 | | 100 | 84-121 | | | |
| Surrogate: Toluene-d8 | 66 | | " | 62.5 | | 106 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 62 | | " | 62.5 | | 99.5 | 84-114 | | | |

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Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0405 - EPA 5030B (Water)

LCS (B8L0405-BS2)

Prepared: 12/04/2018 Analyzed: 12/05/2018

| | | | | | | | | | | |
|----------------------------------|------|------|------|------|--|------|----------|--|--|--|
| Benzene | 55.8 | 1.00 | ug/L | 50.0 | | 112 | 73.3-129 | | | |
| Toluene | 54.2 | 1.00 | " | 50.0 | | 108 | 76.2-123 | | | |
| Ethylbenzene | 56.3 | 1.00 | " | 50.0 | | 113 | 73.6-130 | | | |
| m,p-Xylene | 109 | 2.00 | " | 100 | | 109 | 76.1-126 | | | |
| o-Xylene | 55.1 | 1.00 | " | 50.0 | | 110 | 76.6-124 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 62 | | " | 62.5 | | 99.3 | 84-121 | | | |
| Surrogate: Toluene-d8 | 59 | | " | 62.5 | | 94.4 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 61 | | " | 62.5 | | 97.0 | 84-114 | | | |

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Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0405 - EPA 5030B (Water)

| Matrix Spike (B8L0405-MS1) | Source: Y811437-01 | | | Prepared: 12/04/2018 Analyzed: 12/05/2018 | | | | | | |
|----------------------------------|--------------------|------|------|---|----|------|--------|--|--|--|
| Benzene | 55.0 | 1.00 | ug/L | 50.0 | ND | 110 | 74-130 | | | |
| Toluene | 58.2 | 1.00 | " | 50.0 | ND | 116 | 73-131 | | | |
| Ethylbenzene | 58.7 | 1.00 | " | 50.0 | ND | 117 | 76-132 | | | |
| m,p-Xylene | 117 | 2.00 | " | 100 | ND | 117 | 69-139 | | | |
| o-Xylene | 59.6 | 1.00 | " | 50.0 | ND | 119 | 74-131 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 69 | | " | 62.5 | | 110 | 84-121 | | | |
| Surrogate: Toluene-d8 | 65 | | " | 62.5 | | 104 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 62 | | " | 62.5 | | 99.6 | 84-114 | | | |

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0405 - EPA 5030B (Water)

| Matrix Spike (B8L0405-MS2) | Source: Y811437-02 | | | Prepared: 12/04/2018 Analyzed: 12/05/2018 | | | | | | |
|-----------------------------------|---------------------------|------|------|--|----|-----|--------|--|--|--|
| Benzene | 50.7 | 1.00 | ug/L | 50.0 | ND | 101 | 74-130 | | | |
| Toluene | 54.1 | 1.00 | " | 50.0 | ND | 108 | 73-131 | | | |
| Ethylbenzene | 54.0 | 1.00 | " | 50.0 | ND | 108 | 76-132 | | | |
| m,p-Xylene | 107 | 2.00 | " | 100 | ND | 107 | 69-139 | | | |
| o-Xylene | 53.3 | 1.00 | " | 50.0 | ND | 107 | 74-131 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 63 | | " | 62.5 | | 101 | 84-121 | | | |
| Surrogate: Toluene-d8 | 65 | | " | 62.5 | | 104 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 62 | | " | 62.5 | | 100 | 84-114 | | | |

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 Project: GWOG - Colorado State #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0405 - EPA 5030B (Water)

| Matrix Spike Dup (B8L0405-MSD1) | Source: Y811437-01 | | | Prepared: 12/04/2018 Analyzed: 12/05/2018 | | | | | | |
|----------------------------------|--------------------|------|------|---|----|------|--------|-------|----|--|
| Benzene | 56.8 | 1.00 | ug/L | 50.0 | ND | 114 | 74-130 | 3.18 | 20 | |
| Toluene | 59.0 | 1.00 | " | 50.0 | ND | 118 | 73-131 | 1.35 | 20 | |
| Ethylbenzene | 59.2 | 1.00 | " | 50.0 | ND | 118 | 76-132 | 0.967 | 20 | |
| m,p-Xylene | 120 | 2.00 | " | 100 | ND | 120 | 69-139 | 2.61 | 20 | |
| o-Xylene | 59.8 | 1.00 | " | 50.0 | ND | 120 | 74-131 | 0.402 | 20 | |
| Surrogate: 1,2-Dichloroethane-d4 | 64 | | " | 62.5 | | 103 | 84-121 | | | |
| Surrogate: Toluene-d8 | 64 | | " | 62.5 | | 102 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 61 | | " | 62.5 | | 97.7 | 84-114 | | | |

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

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 Denver CO 80204

James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0405 - EPA 5030B (Water)

| Matrix Spike Dup (B8L0405-MSD2) | Source: Y811437-02 | | | Prepared: 12/04/2018 Analyzed: 12/05/2018 | | | | | | |
|----------------------------------|--------------------|------|------|---|----|------|--------|-------|----|--|
| Benzene | 51.6 | 1.00 | ug/L | 50.0 | ND | 103 | 74-130 | 1.76 | 20 | |
| Toluene | 54.2 | 1.00 | " | 50.0 | ND | 108 | 73-131 | 0.258 | 20 | |
| Ethylbenzene | 53.8 | 1.00 | " | 50.0 | ND | 108 | 76-132 | 0.315 | 20 | |
| m,p-Xylene | 108 | 2.00 | " | 100 | ND | 108 | 69-139 | 0.886 | 20 | |
| o-Xylene | 54.5 | 1.00 | " | 50.0 | ND | 109 | 74-131 | 2.19 | 20 | |
| Surrogate: 1,2-Dichloroethane-d4 | 60 | | " | 62.5 | | 95.7 | 84-121 | | | |
| Surrogate: Toluene-d8 | 65 | | " | 62.5 | | 104 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 62 | | " | 62.5 | | 99.7 | 84-114 | | | |

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 Project Number: 018-3312
 Project: GWOG - Colorado State #2

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0303 - EPA 3550B

Blank (B8L0303-BLK1)

Prepared: 12/03/2018 Analyzed: 12/03/2018

| | | | | | | | | | | |
|-----------------------------------|----|------|-------|--|--|--|--|--|--|----|
| Gasoline (C6-C10) | ND | 50.0 | mg/kg | | | | | | | Ua |
| Diesel (C10-C28) | ND | 50.0 | " | | | | | | | Ua |
| Residual Range Organics (C28-C40) | ND | 200 | " | | | | | | | Ua |

Surrogate: o-Terphenyl

35.3

"

50.0

70.6

65-146

Blank (B8L0303-BLK2)

Prepared: 12/03/2018 Analyzed: 12/03/2018

| | | | | | | | | | | |
|-----------------------------------|----|------|-------|--|--|--|--|--|--|----|
| Gasoline (C6-C10) | ND | 50.0 | mg/kg | | | | | | | Ua |
| Diesel (C10-C28) | ND | 50.0 | " | | | | | | | Ua |
| Residual Range Organics (C28-C40) | ND | 200 | " | | | | | | | Ua |

Surrogate: o-Terphenyl

39.9

"

50.0

79.7

65-146

Blank (B8L0303-BLK3)

Prepared: 12/03/2018 Analyzed: 12/03/2018

| | | | | | | | | | | |
|-----------------------------------|----|------|-------|--|--|--|--|--|--|----|
| Gasoline (C6-C10) | ND | 50.0 | mg/kg | | | | | | | Ua |
| Diesel (C10-C28) | ND | 50.0 | " | | | | | | | Ua |
| Residual Range Organics (C28-C40) | ND | 200 | " | | | | | | | Ua |

Surrogate: o-Terphenyl

41.8

"

50.0

83.6

65-146

LCS (B8L0303-BS1)

Prepared: 12/03/2018 Analyzed: 12/03/2018

| | | | | | | | | | | |
|-----------------------------------|-----|------|-------|------|--|------|----------|--|--|--|
| Gasoline (C6-C10) | 927 | 50.0 | mg/kg | 1000 | | 92.7 | 66.7-119 | | | |
| Diesel (C10-C28) | 916 | 50.0 | " | 1000 | | 91.6 | 70.1-127 | | | |
| Residual Range Organics (C28-C40) | 846 | 200 | " | 1000 | | 84.6 | 54.5-139 | | | |

Surrogate: o-Terphenyl

43.0

"

50.0

86.0

65-146

Origins Laboratory, Inc.



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 Project: GWOG - Colorado State #2

Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|-----------------------------------|--------|---------------------------|-------|-------------|---|------|-------------|-----|-----------|-------|
| Batch B8L0303 - EPA 3550B | | | | | | | | | | |
| LCS (B8L0303-BS2) | | | | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | |
| Gasoline (C6-C10) | 773 | 50.0 | mg/kg | 1000 | | 77.3 | 66.7-119 | | | |
| Diesel (C10-C28) | 778 | 50.0 | " | 1000 | | 77.8 | 70.1-127 | | | |
| Residual Range Organics (C28-C40) | 725 | 200 | " | 1000 | | 72.5 | 54.5-139 | | | |
| Surrogate: o-Terphenyl | 35.8 | | " | 50.0 | | 71.6 | 65-146 | | | |
| LCS (B8L0303-BS3) | | | | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | |
| Gasoline (C6-C10) | 953 | 50.0 | mg/kg | 1000 | | 95.3 | 66.7-119 | | | |
| Diesel (C10-C28) | 1020 | 50.0 | " | 1000 | | 102 | 70.1-127 | | | |
| Residual Range Organics (C28-C40) | 927 | 200 | " | 1000 | | 92.7 | 54.5-139 | | | |
| Surrogate: o-Terphenyl | 47.7 | | " | 50.0 | | 95.5 | 65-146 | | | |
| Matrix Spike (B8L0303-MS1) | | Source: Y811425-01 | | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | |
| Gasoline (C6-C10) | 1080 | 50.0 | mg/kg | 1000 | 27.0 | 105 | 56.4-132 | | | |
| Diesel (C10-C28) | 1200 | 50.0 | " | 1000 | ND | 120 | 57.4-138 | | | |
| Residual Range Organics (C28-C40) | 1120 | 200 | " | 1000 | 23.6 | 110 | 47.7-129 | | | |
| Surrogate: o-Terphenyl | 54.5 | | " | 50.0 | | 109 | 65-146 | | | |
| Matrix Spike (B8L0303-MS2) | | Source: Y811425-02 | | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | |
| Gasoline (C6-C10) | 1050 | 50.0 | mg/kg | 1000 | 47.4 | 100 | 56.4-132 | | | |
| Diesel (C10-C28) | 1100 | 50.0 | " | 1000 | 43.7 | 105 | 57.4-138 | | | |
| Residual Range Organics (C28-C40) | 974 | 200 | " | 1000 | 24.0 | 95.1 | 47.7-129 | | | |
| Surrogate: o-Terphenyl | 49.5 | | " | 50.0 | | 99.1 | 65-146 | | | |
| Matrix Spike (B8L0303-MS3) | | Source: Y812010-01 | | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | |
| Gasoline (C6-C10) | 908 | 50.0 | mg/kg | 1000 | ND | 90.8 | 56.4-132 | | | |
| Diesel (C10-C28) | 962 | 50.0 | " | 1000 | ND | 96.2 | 57.4-138 | | | |
| Residual Range Organics (C28-C40) | 853 | 200 | " | 1000 | 6.77 | 84.6 | 47.7-129 | | | |

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James Hix
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 Project: GWOG - Colorado State #2

Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|--|--------|-----------------|---------------------------|-------------|---|------|-------------|-------|-----------|-------|
| Batch B8L0303 - EPA 3550B | | | | | | | | | | |
| Matrix Spike (B8L0303-MS3) | | | Source: Y812010-01 | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | |
| Surrogate: o-Terphenyl | 43.0 | | mg/kg | 50.0 | | 86.1 | 65-146 | | | |
| Matrix Spike Dup (B8L0303-MSD1) | | | Source: Y811425-01 | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | |
| Gasoline (C6-C10) | 1020 | 50.0 | mg/kg | 1000 | 27.0 | 98.8 | 56.4-132 | 5.97 | 22 | |
| Diesel (C10-C28) | 1170 | 50.0 | " | 1000 | ND | 117 | 57.4-138 | 2.49 | 18.3 | |
| Residual Range Organics (C28-C40) | 1110 | 200 | " | 1000 | 23.6 | 108 | 47.7-129 | 1.40 | 30.1 | |
| Surrogate: o-Terphenyl | 51.1 | | " | 50.0 | | 102 | 65-146 | | | |
| Matrix Spike Dup (B8L0303-MSD2) | | | Source: Y811425-02 | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | |
| Gasoline (C6-C10) | 994 | 50.0 | mg/kg | 1000 | 47.4 | 94.7 | 56.4-132 | 5.34 | 22 | |
| Diesel (C10-C28) | 1080 | 50.0 | " | 1000 | 43.7 | 104 | 57.4-138 | 1.49 | 18.3 | |
| Residual Range Organics (C28-C40) | 984 | 200 | " | 1000 | 24.0 | 96.0 | 47.7-129 | 0.972 | 30.1 | |
| Surrogate: o-Terphenyl | 49.3 | | " | 50.0 | | 98.5 | 65-146 | | | |
| Matrix Spike Dup (B8L0303-MSD3) | | | Source: Y812010-01 | | Prepared: 12/03/2018 Analyzed: 12/03/2018 | | | | | |
| Gasoline (C6-C10) | 913 | 50.0 | mg/kg | 1000 | ND | 91.3 | 56.4-132 | 0.558 | 22 | |
| Diesel (C10-C28) | 956 | 50.0 | " | 1000 | ND | 95.6 | 57.4-138 | 0.538 | 18.3 | |
| Residual Range Organics (C28-C40) | 851 | 200 | " | 1000 | 6.77 | 84.4 | 47.7-129 | 0.266 | 30.1 | |
| Surrogate: o-Terphenyl | 42.4 | | " | 50.0 | | 84.7 | 65-146 | | | |

Origins Laboratory, Inc.



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James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B8L0407 - NO PREP

| | | | | | | | | | | |
|---------------------------------|---------------------------|--|----------|---|------|--|--|------|-----|--|
| Duplicate (B8L0407-DUP1) | Source: Y811364-01 | | | Prepared: 12/04/2018 Analyzed: 12/04/2018 | | | | | | |
| pH | 7.80 | | pH Units | | 7.80 | | | 0.00 | 200 | |

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

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James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

Alkalinity by SM 2320B - Quality Control
GEL Laboratories, LLC

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|--------------------------------|--------|-----------------|-------|-------------|---|------|-------------|------|-----------|-------|
| Batch 1827522 - | | | | | | | | | | |
| LCS (1204170823-BKS) | | | | | Prepared: Analyzed: 12/04/2018 | | | | | |
| Alkalinity, Total as CaCO3 | 105 | 4.00 | mg/L | 100 | | 105 | 90-110 | | | |
| DUP (1204170824 D) | | | | | Source: Y812001-04 Prepared: Analyzed: 12/04/2018 | | | | | |
| Carbonate alkalinity (CaCO3) | ND | 4.00 | mg/L | | <1.45 | | 0-20 | 0 | 20 | U |
| Alkalinity, Total as CaCO3 | 220 | 4.00 | " | | 224 | | 0-20 | 1.79 | 20 | |
| Bicarbonate alkalinity (CaCO3) | 220 | 4.00 | " | | 224 | | 0-20 | 1.79 | 20 | |
| MS (1204170825 S) | | | | | Source: Y812001-04 Prepared: Analyzed: 12/04/2018 | | | | | |
| Alkalinity, Total as CaCO3 | 322 | 4.00 | mg/L | 100 | 224 | 98.4 | 80-120 | | | |

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James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

Anions by EPA 300.0 - Quality Control
GEL Laboratories, LLC

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|-------------------------------|--------|---------------------------|-------|-------------|--------------------------------|------|-------------|------|-----------|-------|
| Batch 1828228 - | | | | | | | | | | |
| BLANK (1204172348-BLK) | | | | | Prepared: Analyzed: 12/05/2018 | | | | | |
| Chloride | ND | 0.200 | mg/L | | | | - | | | U |
| Sulfate | ND | 0.400 | " | | | | - | | | U |
| LCS (1204172349-BKS) | | | | | Prepared: Analyzed: 12/05/2018 | | | | | |
| Chloride | 4.93 | 0.200 | mg/L | 5.00 | | 98.6 | 90-110 | | | |
| Sulfate | 10.3 | 0.400 | " | 10.0 | | 103 | 90-110 | | | |
| DUP (1204172350 D) | | Source: Y812001-01 | | | Prepared: Analyzed: 12/05/2018 | | | | | |
| Sulfate | 1230 | 40.0 | mg/L | | 1240 | | 0-20 | 1.26 | 20 | |
| Chloride | 198 | 20.0 | " | | 197 | | 0-20 | 0.79 | 20 | |
| PS (1204172351 S) | | Source: Y812001-01 | | | Prepared: Analyzed: 12/05/2018 | | | | | |
| Chloride | 715 | 20.0 | mg/L | 5.00 | | 104 | 90-110 | | | |
| Sulfate | 2330 | 40.0 | " | 10.0 | | 109 | 90-110 | | | |

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James Hix
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 Project: GWOG - Colorado State #2

Dissolved Metals by 200.8 - Quality Control
GEL Laboratories, LLC

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch 1828325 -

FLTB (1204172141-BLK)

Prepared: 12/05/2018 Analyzed: 12/08/2018

| | | | | | | | | | | |
|-----------|----|------|------|--|--|--|---|--|--|---|
| Magnesium | ND | 30.0 | ug/L | | | | - | | | U |
| Sodium | ND | 250 | " | | | | - | | | U |
| Manganese | ND | 5.00 | " | | | | - | | | U |
| Iron | ND | 100 | " | | | | - | | | U |
| Calcium | ND | 200 | " | | | | - | | | U |
| Potassium | ND | 300 | " | | | | - | | | U |

BLANK (1204172544-BLK)

Prepared: 12/05/2018 Analyzed: 12/08/2018

| | | | | | | | | | | |
|-----------|----|------|------|--|--|--|---|--|--|---|
| Iron | ND | 100 | ug/L | | | | - | | | U |
| Potassium | ND | 300 | " | | | | - | | | U |
| Sodium | ND | 250 | " | | | | - | | | U |
| Calcium | ND | 200 | " | | | | - | | | U |
| Manganese | ND | 5.00 | " | | | | - | | | U |
| Magnesium | ND | 30.0 | " | | | | - | | | U |

LCS (1204172545-BKS)

Prepared: 12/05/2018 Analyzed: 12/08/2018

| | | | | | | | | | | |
|-----------|------|------|------|------|------|--------|--|--|--|--|
| Calcium | 2130 | 200 | ug/L | 2000 | 106 | 85-115 | | | | |
| Iron | 2060 | 100 | " | 2000 | 103 | 85-115 | | | | |
| Magnesium | 2210 | 30.0 | " | 2000 | 110 | 85-115 | | | | |
| Manganese | 48.9 | 5.00 | " | 50.0 | 97.7 | 85-115 | | | | |
| Potassium | 2010 | 300 | " | 2000 | 101 | 85-115 | | | | |
| Sodium | 2110 | 250 | " | 2000 | 105 | 85-115 | | | | |

DUP (1204172546 D)

Source: Y812001-01

Prepared: 12/05/2018 Analyzed: 12/08/2018

| | | | | | | | | | | |
|-----------|--------|------|------|--------|------|--------|----|--|--|--|
| Magnesium | 142000 | 300 | ug/L | 141000 | 0-20 | 0.384 | 20 | | | |
| Sodium | 220000 | 2500 | " | 209000 | 0-20 | 5.34 | 20 | | | |
| Manganese | 159 | 5.00 | " | 159 | 0-20 | 0.0655 | 20 | | | |

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James Hix
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 Project: GWOG - Colorado State #2

Dissolved Metals by 200.8 - Quality Control
GEL Laboratories, LLC

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch 1828325 - EPA 200.2

| DUP (1204172546 D) | | Source: Y812001-01 | | | Prepared: 12/05/2018 Analyzed: 12/08/2018 | | | | | |
|---------------------------|--------|---------------------------|------|------|--|------|--------|------|----|---|
| Iron | 41.9 | 100 | ug/L | | 42.3 | | 0-20 | 1.05 | 20 | J |
| Calcium | 313000 | 2000 | " | | 303000 | | 0-20 | 2.94 | 20 | |
| Potassium | 5580 | 300 | " | | 5340 | | 0-20 | 4.35 | 20 | |
| MS (1204172547 S) | | Source: Y812001-01 | | | Prepared: 12/05/2018 Analyzed: 12/08/2018 | | | | | |
| Calcium | 325000 | 2000 | ug/L | 2000 | 303000 | NR | 75-125 | | | |
| Iron | 2020 | 100 | " | 2000 | 42.3 | 98.9 | 75-125 | | | |
| Magnesium | 144000 | 300 | " | 2000 | 141000 | 131 | 75-125 | | | |
| Manganese | 211 | 5.00 | " | 50.0 | 159 | 105 | 75-125 | | | |
| Potassium | 7470 | 300 | " | 2000 | 5340 | 106 | 75-125 | | | |
| Sodium | 222000 | 2500 | " | 2000 | 209000 | 678 | 75-125 | | | |

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James Hix
 Project Number: 018-3312
 Project: GWOG - Colorado State #2

Nitrate/Nitrite by EPA 353.2 - Quality Control
GEL Laboratories, LLC

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|-------------------------------|--------|-----------------|-------|-------------|--|------|-------------|------|-----------|-------|
| Batch 1828704 - | | | | | | | | | | |
| BLANK (1204173365-BLK) | | | | | Prepared: Analyzed: 12/06/2018 | | | | | |
| Nitrogen, Nitrate/Nitrite | ND | 0.020 | mg/L | | | | - | | | U |
| LCS (1204173366-BKS) | | | | | Prepared: Analyzed: 12/06/2018 | | | | | |
| Nitrogen, Nitrate/Nitrite | 0.986 | 0.020 | mg/L | 1.00 | | 98.6 | 90-110 | | | |
| DUP (1204173367 D) | | | | | Source: Y812001-01 Prepared: Analyzed: 12/06/2018 | | | | | |
| Nitrogen, Nitrate/Nitrite | 0.263 | 0.020 | mg/L | | 0.260 | | 0-20 | 1.15 | 20 | |
| PS (1204173369 S) | | | | | Source: Y812001-01 Prepared: Analyzed: 12/06/2018 | | | | | |
| Nitrogen, Nitrate/Nitrite | 1.30 | 0.020 | mg/L | 1.00 | | 104 | 90-110 | | | |

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James Hix
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Project: GWOG - Colorado State #2

Notes and Definitions

- Ua Sample is Non-Detect.
- U Result not detected above the detection limit
- J Greater than the detection limit but less than the reporting limit
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager