

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303) 894-2100 Fax 894-2109



FOR OGCC USE ONLY

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe): _____

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No: _____

GENERAL INFORMATION

| | | | |
|----------------------------------------------------------------------|------------------------------------|----------------------------------------------------------|--|
| OGCC Operator Number: 47120 | | Contact Name and Telephone | |
| Name of Operator: <u>Kerr-McGee Oil and Gas Onshore, LP</u> | | Name: <u>Phillip Hamlin</u> | |
| Address: <u>1099 18th Street, Suite 1800</u> | | No: <u>970-336-3500</u> | |
| City: <u>Denver</u> | State: <u>CO</u> Zip: <u>80202</u> | Fax: <u>970-336-3656</u> | |
| API/Facility No: <u>05-123-19963</u> | | County: <u>Weld</u> | |
| Facility Name: _____ | | Facility Number: _____ | |
| Well Name: <u>HSR-Grant Brothers</u> | | Well Number: <u>10-31</u> | |
| Location (QtrQtr, Sec, Twp, Rng, Meridian): <u>NESE S31 T2N R67W</u> | | Latitude: <u>40.091582</u> Longitude: <u>-104.924528</u> | |

TECHNICAL CONDITIONS

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): <u>Crude Oil and Produced Water</u> | |
| Site Conditions: Is location within a sensitive area (according to Rule 901e)? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If yes, attach evaluation. | |
| Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): <u>Non-Crop Land</u> | |
| Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: <u>Sandy Clay to Clay</u> | |
| Potential receptors (water wells within 1/4 mi, surface waters, etc.): <u>There is no surface water within 1/4 mile of the site.</u> | |
| <u>The nearest water well is approximately 725' northwest of the release area.</u> | |
| Description of Impact (if previously provided, refer to that form or document): | |
| Impacted Media (check): | Extent of Impact: |
| <input checked="" type="checkbox"/> Soils | <u>24' (E-W) x 26' (N-S) x 10' bgs</u> |
| <input type="checkbox"/> Vegetation | _____ |
| <input checked="" type="checkbox"/> Groundwater | <u>See attached data</u> |
| <input type="checkbox"/> Surface water | _____ |
| How Determined: | |
| <u>Excavation, soil sampling, and laboratory analysis</u> | |
| _____ | |
| <u>Groundwater sampling and laboratory analysis</u> | |
| _____ | |

REMEDIALATION WORKPLAN

| |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Describe initial action taken (if previously provided, refer to that form or document): On February 12, 2016, historical hydrocarbon impacts were discovered along the produced water sump dumpline during construction activities at the HSR-Grant Brothers 10-31 production facility. The volume of released material is unknown. The facility was shut in, associated infrastructure repaired, and excavation activities commenced. Groundwater was encountered at approximately 10 feet below ground surface (bgs). An Initial Form 19 was submitted to the COGCC on February 15, 2016 (Document # 400988955) and a Supplemental Form 19 was submitted to the COGCC on February 22, 2016 (Document # 400993405). The COGCC has issued Spill Tracking #444846 for this release. |
| Describe how source is to be removed: On February 12, 2016, excavation activities commenced and approximately 500 cubic yards of impacted material were excavated and transported to the Front Range Regional Landfill in Erie, Colorado for disposal. Excavation activities were guided in the field using a photoionization detector (PID) to measure volatile organic compound (VOC) concentrations in soil. Soil samples were collected from the sidewalls of the final extent of the excavation area at approximately 8 feet bgs. Soil samples were submitted to Origins Laboratory in Denver, Colorado for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260, TPH - diesel range organics and oil range organics (DRO and ORO) by USEPA Method 8015, electrical conductivity (EC), and pH. Laboratory results indicated that constituent concentrations in the soil samples collected from the final lateral extent of the excavation area were below applicable COGCC Table 910-1 standards. Soils were excavated into the phreatic zone to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. Groundwater was encountered in the excavation at approximately 10 feet bgs. Approximately 80 barrels of groundwater were removed from the excavation area via vacuum truck and transported to a licensed injection facility for disposal. A groundwater sample (GW01) was collected and submitted for laboratory analysis of BTEX. Analytical results received on February 18, 2016, indicated that the benzene concentration in sample GW01 was above the applicable COGCC Table 910-1 groundwater standard. Soil and groundwater analytical results are summarized in Tables 1 and 2, respectively. Soil and excavation groundwater sample locations are illustrated on Figure 1 and laboratory analytical reports are included as Attachment A. |
| Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.: Impacted soil was excavated and transported to the Front Range Regional Landfill in Erie, Colorado. Impacted groundwater was transported to a licensed injection facility for disposal. Prior to backfilling the excavation, approximately 110 pounds of activated carbon were introduced to the groundwater table to mitigate remaining aqueous phase hydrocarbon impacts. Additional groundwater monitoring measures are described on the following page. |

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado
(303) 894-2100 Fax 894-2109



Page 2

REMEDIATION WORKPLAN (CONT.)

OGCC Employee: _____

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No.: _____

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Temporary groundwater monitoring wells will be installed at the site to further assess the extent of groundwater impacts. These wells will be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain below COGCC groundwater standards for four consecutive quarters.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The excavation has been backfilled with clean soil and graded to match the adjacent topography. Kerr-McGee's tank battery remains at the site. Reclamation activities at the site will be compliant with COGCC regulations.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☒ Y ☐ N If yes, describe:

Laboratory data indicate that impacted soils in the excavation have been remediated to below COGCC Table 910-1 standards. Temporary monitoring wells will be installed to further assess groundwater impacts. Groundwater samples will be collected from the temporary monitoring wells until BTEX concentrations remain below the applicable COGCC standards for four consecutive quarters. Soil and groundwater analytical results are summarized in Tables 1 and 2, respectively. The analytical laboratory reports are included as Attachment A.

Final disposition of E&P waste (land treated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Impacted soil was transported to the Front Range Regional Landfill in Erie, Colorado for disposal. Impacted groundwater was transported to a licensed injection facility for disposal.

IMPLEMENTATION SCHEDULE

| | | |
|------------------------------------------|----------------------------------------|-----------------------------------|
| Date Site Investigation Began: 2/12/2016 | Date Site Investigation Completed: TBD | Remediation Plan Submitted: _____ |
| Remediation Start Date: 2/12/2016 | Anticipated Completion Date: 7/15/2017 | Actual Completion Date: _____ |

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Phillip Hamlin

Signed: [Signature] Title: Senior HSE Representative Date: 4/8/2015

OGCC Approved: _____ Title: _____ Date: _____

FIGURE



| | |
|--------------|-------------------|
| DATE: | February 22, 2016 |
| DESIGNED BY: | B. Nelson |
| DRAWN BY: | B. Nelson |



Kerr-McGee Oil and Gas Onshore, LP
HSR-Grant Brothers 10-31
NESE, Section 31, Township 2 North, Range 67 West
Weld County, Colorado

Sample Location
Map

FIGURE
1

ANALYTICAL TABLES

TABLE 1
HSR-GRANT BROTHERS 10-31
SOIL SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

| Sample ID | Date | Depth (ft. bgs) | Benzene (mg/kg) | Toluene (mg/kg) | Ethylbenzene (mg/kg) | Total Xylenes (mg/kg) | TVPH- GRO (mg/kg) | TEPH- DRO (mg/kg) | TEPH- ORO (mg/kg) | EC (mmhos/cm) | pH (units) |
|--------------------------------------------------------|----------|--------------------|--------------------|--------------------|-------------------------|-----------------------------|-------------------------|-------------------------|-------------------------|--------------------------------|---------------|
| COGCC standards for soil (mg/kg) ⁽¹⁾ | | | 0.17 | 85 | 100 | 175 | 500 | | | 4 mmhos/cm or 2x BG | 6-9 |
| W01 @8' | 02/16/16 | 8 | <0.050 | <0.050 | 0.450 | <0.050 | 39.4 | 130 | <200 | 0.155 | 8.60 |
| N01 @8' | 02/16/16 | 8 | 0.090 | <0.050 | 0.716 | <0.050 | 73.1 | 85.0 | <200 | 0.117 | 8.69 |
| S01 @8' | 02/16/16 | 8 | <0.050 | <0.050 | 0.213 | <0.050 | 28.0 | <50 | <200 | 0.150 | 8.61 |
| E01 @8' | 02/16/16 | 8 | 0.034 | <0.002 | <0.002 | <0.002 | 10.5 | <50 | <200 | 0.0905 | 8.37 |

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 1, 2015.

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

TVPH - GRO = Total volatile petroleum hydrocarbons - gasoline range organics

TEPH - DRO = Total extractable petroleum hydrocarbons - diesel range organics

TEPH - ORO = Total extractable petroleum hydrocarbons - oil range organics

EC = Electrical conductivity

BG = Background

mmhos/cm = Millimhos per centimeter

mg/kg = Milligrams per kilogram.

ft. bgs = Feet below ground surface.

BOLD = Analytical result is in exceedance of COGCC Table 910-1 soil standards.

TABLE 2
HSR-GRANT BROTHERS 10-31
GROUNDWATER SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

| Sample ID | Date | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Total Xylenes (µg/L) | Depth To Water (ft. BGS) |
|--------------------------------------------------------------|----------|-------------------|-------------------|------------------------|-------------------------|-----------------------------|
| COGCC Standards for groundwater (µg/L) ⁽¹⁾ | | 5 | 560 | 700 | 1,400 | |
| GW01 | 02/17/16 | 1,500 | <4.0 | 438 | 676 | ~10 |

Notes:

1. Standards for groundwater are taken from 2 CCR 404-1, Table 910-1, effective January 1, 2015.

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

µg/L = Micrograms per liter.

ft. BGS = Feet below ground surface

BOLD = Analytical result is in exceedance of COGCC Table 910-1 groundwater standards.

**ATTACHMENT A
LABORATORY
ANALYTICAL REPORTS**

February 17, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - KMG - Grant Bros 10-31

Project Number - [none]

Attached are your analytical results for KMG - Grant Bros 10-31 received by Origins Laboratory, Inc. February 16, 2016. This project is associated with Origins project number X602171-01.

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



Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - Grant Bros 10-31

CROSS REFERENCE REPORT

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|-----------|---------------|--------|-------------------------|------------------|
| W01 @ 8' | X602171-01 | Soil | February 16, 2016 14:50 | 02/16/2016 16:45 |
| N01 @ 8' | X602171-02 | Soil | February 16, 2016 14:57 | 02/16/2016 16:45 |
| S01 @ 8' | X602171-03 | Soil | February 16, 2016 15:03 | 02/16/2016 16:45 |
| E01 @ 8' | X602171-04 | Soil | February 16, 2016 15:06 | 02/16/2016 16:45 |

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

ORIGINS LABORATORY, INC

www.originslaboratory.com

page 1 of 1

Client: Tasman Geosciences

Address:

Telephone Number: 352 262 9910

Email Address: info@tasman-geo.com

Project Manager: Bob Cornez

Project Name: Grant Bros 10-31

Project Number:

Samples Collected By: Zak F. Brock N.

| Sample ID Description | Date Sampled | Time Sampled | # of Containers | Preservative | | | | Matrix | | | Analysis | Sample Instructions |
|-----------------------|--------------|--------------|-----------------|--------------|-----|------------------|-------|-------------|------|------------|--------------------------------------------------------|---------------------|
| | | | | Unpreserved | HCl | HNO ₃ | Other | Groundwater | Soil | Air Summ # | | |
| N0108' | 2/16/14 | 1450 | 2 | X | | | | X | | | GISEX 8240 TPH, DO, DOB, BGS EC, pH, SAR (if EC) | 1 |
| N0108' | | 1457 | 2 | | | | | | | | | 2 |
| S0108' | | 1503 | 2 | | | | | | | | | 3 |
| E0108' | | 1506 | 2 | | | | | | | | | 4 |
| | | | | | | | | | | | | 5 |
| | | | | | | | | | | | | 6 |
| | | | | | | | | | | | | 7 |
| | | | | | | | | | | | | 8 |
| | | | | | | | | | | | | 9 |
| | | | | | | | | | | | | 10 |

Relinquished By: [Signature]

Relinquished By: [Signature]

Date: 2/16/14

Date:

Time: 1430

Time:

Received By: [Signature]

Received By:

Date: 2/16/14

Date:

Time: 1645

Time:

Turnaround Time:

Same Day ☒ 24 Hr ☐ 48 Hr ☐ 72 Hr ☐ Standard ☐

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X602171

Client: Tasman

Client Project ID: Grant Bros 10-31

Checklist Completed by: Jef Smith

Shipped Via: Pick Up

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

Date/time completed: 2/16/16

Airbill #: NA

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

Cooler Number/Temperature: L 13.9 °C 1 °C 1 °C 1 °C (Describe)

Thermometer ID: 1253

| Requirement Description | Yes | No | N/A | Comments (if any) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|-----|-------------------|
| If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ? | X | | | |
| Is there ice present (document if blue ice is used) | X | | | |
| Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact) | | X | | |
| Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact) | | 1 | | |
| Were all samples received intact ⁽¹⁾ ? | 1 | | | |
| Was adequate sample volume provided ⁽¹⁾ ? | 1 | | | |
| Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ? | X | | | PH |
| Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ? | X | | | |
| Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ? | 1 | | | |
| Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ? | 1 | | | |
| Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ? | 1 | | | |
| For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative. | | | X | |
| 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 HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH) | | | 1 | |
| 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.

Jef Smith
Reviewed by (Project Manager)

2/16/16
Date/Time Reviewed

Origins Laboratory, Inc.

Jef Pellegrini

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

W01 @ 8'
2/16/2016 2:50:00PM

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

Origins Laboratory, Inc.
X602171-01 (Soil)

DRO/RRO by EPA8015C

| | | | | | | | | |
|-----------------------------------|-----|-----|-------|---|---------|------------|------------|---|
| Diesel (C10-C28) | 130 | 50 | mg/kg | 1 | B6B1510 | 02/16/2016 | 02/16/2016 | |
| Residual Range Organics (C28-C40) | ND | 200 | " | " | " | " | " | U |

Surrogate: o-Terphenyl 73.2 % 59-131 " " "

GBTEX by EPA 8260C

| | | | | | | | | |
|-----------------------------|-------|-------|-------|----|---------|------------|------------|---|
| Gasoline Range Hydrocarbons | 39.4 | 5.00 | mg/kg | 25 | B6B1509 | 02/16/2016 | 02/16/2016 | |
| Benzene | ND | 0.050 | " | " | " | " | " | U |
| Toluene | ND | 0.050 | " | " | " | " | " | U |
| Ethylbenzene | 0.450 | 0.050 | " | " | " | " | " | |
| Xylenes, total | ND | 0.050 | " | " | " | " | " | U |

Surrogate: 1,2-Dichloroethane-d4 76.4 % 70-130 " " "
Surrogate: Toluene-d8 99.5 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 97.3 % 70-130 " " "

pH in Soil by EPA 9045D

| | | | | | | | | |
|----|------|--|----------|---|---------|------------|------------|--|
| pH | 8.60 | | pH Units | 1 | B6B1507 | 02/16/2016 | 02/16/2016 | |
|----|------|--|----------|---|---------|------------|------------|--|

Specific Conductance by Modified 9050A

| | | | | | | | | |
|---------------------------|-------|--|----------|---|---------|------------|------------|--|
| Specific Conductance (EC) | 0.155 | | mmhos/cm | " | B6B1508 | 02/16/2016 | 02/16/2016 | |
|---------------------------|-------|--|----------|---|---------|------------|------------|--|

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

N01 @ 8'
2/16/2016 2:57:00PM

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

Origins Laboratory, Inc.
X602171-02 (Soil)

DRO/RRO by EPA8015C

| | | | | | | | | |
|-----------------------------------|----|-----|-------|---|---------|------------|------------|---|
| Diesel (C10-C28) | 85 | 50 | mg/kg | 1 | B6B1510 | 02/16/2016 | 02/16/2016 | |
| Residual Range Organics (C28-C40) | ND | 200 | " | " | " | " | " | U |

| | | | | | | | | |
|------------------------|--------|--------|--|--|---|---|---|--|
| Surrogate: o-Terphenyl | 78.8 % | 59-131 | | | " | " | " | |
|------------------------|--------|--------|--|--|---|---|---|--|

GBTEX by EPA 8260C

| | | | | | | | | |
|-----------------------------|-------|-------|-------|----|---------|------------|------------|---|
| Gasoline Range Hydrocarbons | 73.1 | 5.00 | mg/kg | 25 | B6B1509 | 02/16/2016 | 02/16/2016 | |
| Benzene | 0.090 | 0.050 | " | " | " | " | " | |
| Toluene | ND | 0.050 | " | " | " | " | " | U |
| Ethylbenzene | 0.716 | 0.050 | " | " | " | " | " | |
| Xylenes, total | ND | 0.050 | " | " | " | " | " | U |

| | | | | | | | | |
|----------------------------------|--------|--------|--|--|---|---|---|--|
| Surrogate: 1,2-Dichloroethane-d4 | 82.4 % | 70-130 | | | " | " | " | |
| Surrogate: Toluene-d8 | 99.2 % | 70-130 | | | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | 95.8 % | 70-130 | | | " | " | " | |

pH in Soil by EPA 9045D

| | | | | | | | | |
|----|------|--|----------|---|---------|------------|------------|--|
| pH | 8.69 | | pH Units | 1 | B6B1507 | 02/16/2016 | 02/16/2016 | |
|----|------|--|----------|---|---------|------------|------------|--|

Specific Conductance by Modified 9050A

| | | | | | | | | |
|---------------------------|-------|--|----------|---|---------|------------|------------|--|
| Specific Conductance (EC) | 0.117 | | mmhos/cm | " | B6B1508 | 02/16/2016 | 02/16/2016 | |
|---------------------------|-------|--|----------|---|---------|------------|------------|--|

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

S01 @ 8'
2/16/2016 3:03:00PM

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

Origins Laboratory, Inc.
X602171-03 (Soil)

DRO/RRO by EPA8015C

| | | | | | | | | |
|-----------------------------------|----|-----|-------|---|---------|------------|------------|---|
| Diesel (C10-C28) | ND | 50 | mg/kg | 1 | B6B1510 | 02/16/2016 | 02/16/2016 | U |
| Residual Range Organics (C28-C40) | ND | 200 | " | " | " | " | " | U |

Surrogate: o-Terphenyl 58.1 % 59-131 " " " S-04

GBTEX by EPA 8260C

| | | | | | | | | |
|-----------------------------|-------|-------|-------|----|---------|------------|------------|---|
| Gasoline Range Hydrocarbons | 28.0 | 5.00 | mg/kg | 25 | B6B1509 | 02/16/2016 | 02/17/2016 | |
| Benzene | ND | 0.050 | " | " | " | " | " | U |
| Toluene | ND | 0.050 | " | " | " | " | " | U |
| Ethylbenzene | 0.213 | 0.050 | " | " | " | " | " | |
| Xylenes, total | ND | 0.050 | " | " | " | " | " | U |

Surrogate: 1,2-Dichloroethane-d4 82.1 % 70-130 " " "

Surrogate: Toluene-d8 99.9 % 70-130 " " "

Surrogate: 4-Bromofluorobenzene 93.1 % 70-130 " " "

pH in Soil by EPA 9045D

| | | | | | | | | |
|----|------|--|----------|---|---------|------------|------------|--|
| pH | 8.61 | | pH Units | 1 | B6B1507 | 02/16/2016 | 02/16/2016 | |
|----|------|--|----------|---|---------|------------|------------|--|

Specific Conductance by Modified 9050A

| | | | | | | | | |
|---------------------------|-------|--|----------|---|---------|------------|------------|--|
| Specific Conductance (EC) | 0.150 | | mmhos/cm | " | B6B1508 | 02/16/2016 | 02/16/2016 | |
|---------------------------|-------|--|----------|---|---------|------------|------------|--|

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

E01 @ 8'
2/16/2016 3:06:00PM

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

Origins Laboratory, Inc.
X602171-04 (Soil)

DRO/RRO by EPA8015C

| | | | | | | | | |
|-----------------------------------|----|-----|-------|---|---------|------------|------------|---|
| Diesel (C10-C28) | ND | 50 | mg/kg | 1 | B6B1510 | 02/16/2016 | 02/16/2016 | U |
| Residual Range Organics (C28-C40) | ND | 200 | " | " | " | " | " | U |

Surrogate: o-Terphenyl 76.6 % 59-131 " " "

GBTEX by EPA 8260C

| | | | | | | | | |
|-----------------------------|-------|-------|-------|---|---------|------------|------------|---|
| Gasoline Range Hydrocarbons | 10.5 | 0.200 | mg/kg | 1 | B6B1509 | 02/16/2016 | 02/17/2016 | |
| Benzene | 0.034 | 0.002 | " | " | " | " | " | |
| Toluene | ND | 0.002 | " | " | " | " | " | U |
| Ethylbenzene | ND | 0.002 | " | " | " | " | " | U |
| Xylenes, total | ND | 0.002 | " | " | " | " | " | U |

Surrogate: 1,2-Dichloroethane-d4 83.9 % 70-130 " " "
Surrogate: Toluene-d8 104 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 103 % 70-130 " " "

pH in Soil by EPA 9045D

| | | | | | | | | |
|----|------|--|----------|---|---------|------------|------------|--|
| pH | 8.37 | | pH Units | 1 | B6B1507 | 02/16/2016 | 02/16/2016 | |
|----|------|--|----------|---|---------|------------|------------|--|

Specific Conductance by Modified 9050A

| | | | | | | | | |
|---------------------------|--------|--|----------|---|---------|------------|------------|--|
| Specific Conductance (EC) | 0.0905 | | mmhos/cm | " | B6B1508 | 02/16/2016 | 02/16/2016 | |
|---------------------------|--------|--|----------|---|---------|------------|------------|--|

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1509 - EPA 5030 (soil) | | | | | | | | | | |
| Blank (B6B1509-BLK1) | | | | | Prepared: 02/15/2016 Analyzed: 02/16/2016 | | | | | |
| Gasoline Range Hydrocarbons | ND | 0.200 | mg/kg | | | | | | | U |
| Benzene | ND | 0.002 | " | | | | | | | U |
| Toluene | ND | 0.002 | " | | | | | | | U |
| Ethylbenzene | ND | 0.002 | " | | | | | | | U |
| Xylenes, total | ND | 0.002 | " | | | | | | | U |
| Surrogate: 1,2-Dichloroethane-d4 | 65.5 | | ug/kg | 62.5 | | 105 | 70-130 | | | |
| Surrogate: Toluene-d8 | 65.4 | | " | 62.5 | | 105 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 58.7 | | " | 62.5 | | 93.9 | 70-130 | | | |

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1509 - EPA 5030 (soil) | | | | | | | | | | |
| LCS (B6B1509-BS1) | | | | | Prepared: 02/15/2016 Analyzed: 02/16/2016 | | | | | |
| Benzene | 0.094 | 0.002 | mg/kg | 0.100 | | 94.1 | 77.1-124 | | | |
| Toluene | 0.095 | 0.002 | " | 0.100 | | 94.6 | 74.5-128 | | | |
| Ethylbenzene | 0.095 | 0.002 | " | 0.100 | | 94.9 | 66.4-127 | | | |
| m,p-Xylene | 0.188 | 0.004 | " | 0.200 | | 93.8 | 76.6-124 | | | |
| o-Xylene | 0.095 | 0.002 | " | 0.100 | | 94.6 | 76.6-124 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 56.5 | | ug/kg | 62.5 | | 90.3 | 70-130 | | | |
| Surrogate: Toluene-d8 | 61.1 | | " | 62.5 | | 97.7 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 64.9 | | " | 62.5 | | 104 | 70-130 | | | |

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1509 - EPA 5030 (soil)

| Matrix Spike (B6B1509-MS1) | | Source: X602155-01 | | | Prepared: 02/15/2016 Analyzed: 02/16/2016 | | | | | |
|----------------------------------|-------|--------------------|-------|-------|-------------------------------------------|------|----------|--|--|--|
| Benzene | 0.095 | 0.002 | mg/kg | 0.100 | ND | 95.4 | 71.8-126 | | | |
| Toluene | 0.101 | 0.002 | " | 0.100 | ND | 101 | 65.1-130 | | | |
| Ethylbenzene | 0.091 | 0.002 | " | 0.100 | ND | 91.3 | 62.2-130 | | | |
| m,p-Xylene | 0.181 | 0.004 | " | 0.200 | ND | 90.3 | 46.5-137 | | | |
| o-Xylene | 0.091 | 0.002 | " | 0.100 | ND | 91.4 | 54.2-134 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 56.2 | | ug/kg | 62.5 | | 89.9 | 70-130 | | | |
| Surrogate: Toluene-d8 | 64.6 | | " | 62.5 | | 103 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 62.5 | | " | 62.5 | | 100 | 70-130 | | | |

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1509 - EPA 5030 (soil) | | | | | | | | | | |
| Matrix Spike Dup (B6B1509-MSD1) | | Source: X602155-01 | | | Prepared: 02/15/2016 Analyzed: 02/16/2016 | | | | | |
| Benzene | 0.092 | 0.002 | mg/kg | 0.100 | ND | 92.5 | 71.8-126 | 3.07 | 11.3 | |
| Toluene | 0.090 | 0.002 | " | 0.100 | ND | 90.0 | 65.1-130 | 11.2 | 15.4 | |
| Ethylbenzene | 0.086 | 0.002 | " | 0.100 | ND | 86.3 | 62.2-130 | 5.65 | 19.6 | |
| m,p-Xylene | 0.177 | 0.004 | " | 0.200 | ND | 88.3 | 46.5-137 | 2.27 | 19.2 | |
| o-Xylene | 0.085 | 0.002 | " | 0.100 | ND | 85.3 | 54.2-134 | 6.88 | 17.9 | |
| Surrogate: 1,2-Dichloroethane-d4 | 55.8 | | ug/kg | 62.5 | | 89.2 | 70-130 | | | |
| Surrogate: Toluene-d8 | 62.6 | | " | 62.5 | | 100 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 62.8 | | " | 62.5 | | 100 | 70-130 | | | |

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1510 - EPA 3580

Blank (B6B1510-BLK1)

Prepared: 02/15/2016 Analyzed: 02/16/2016

| | | | | | | | | | | |
|-----------------------------------|----|-----|-------|------|--|------|--------|--|--|---|
| Diesel (C10-C28) | ND | 50 | mg/kg | | | | | | | U |
| Residual Range Organics (C28-C40) | ND | 200 | " | | | | | | | U |
| Surrogate: o-Terphenyl | 49 | | " | 50.0 | | 97.4 | 59-131 | | | |

LCS (B6B1510-BS1)

Prepared: 02/15/2016 Analyzed: 02/16/2016

| | | | | | | | | | | |
|-----------------------------------|------|-----|-------|------|--|-----|--------|--|--|--|
| Diesel (C10-C28) | 1100 | 50 | mg/kg | 1000 | | 113 | 64-121 | | | |
| Residual Range Organics (C28-C40) | 1100 | 200 | " | 1000 | | 110 | 58-124 | | | |
| Surrogate: o-Terphenyl | 50 | | " | 50.0 | | 101 | 59-131 | | | |

Matrix Spike (B6B1510-MS1)

Source: X602145-06

Prepared: 02/15/2016 Analyzed: 02/16/2016

| | | | | | | | | | | |
|-----------------------------------|-----|-----|-------|------|----|------|--------|--|--|--|
| Diesel (C10-C28) | 880 | 50 | mg/kg | 1000 | ND | 87.9 | 53-125 | | | |
| Residual Range Organics (C28-C40) | 860 | 200 | " | 1000 | 12 | 84.4 | 47-133 | | | |
| Surrogate: o-Terphenyl | 41 | | " | 50.0 | | 82.1 | 59-131 | | | |

Matrix Spike Dup (B6B1510-MSD1)

Source: X602145-06

Prepared: 02/15/2016 Analyzed: 02/16/2016

| | | | | | | | | | | |
|-----------------------------------|-----|-----|-------|------|----|------|--------|------|----|--|
| Diesel (C10-C28) | 920 | 50 | mg/kg | 1000 | ND | 91.8 | 53-125 | 4.35 | 20 | |
| Residual Range Organics (C28-C40) | 880 | 200 | " | 1000 | 12 | 86.7 | 47-133 | 2.64 | 20 | |
| Surrogate: o-Terphenyl | 45 | | " | 50.0 | | 89.7 | 59-131 | | | |

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1507 - NO PREP | | | | | | | | | | |
| Duplicate (B6B1507-DUP1) | | Source: X602145-05 | | | Prepared: 02/15/2016 Analyzed: 02/16/2016 | | | | | |
| pH | 8.21 | | pH Units | | 8.26 | | | 0.607 | 25 | |
| Batch B6B1508 - NO PREP | | | | | | | | | | |
| Blank (B6B1508-BLK1) | | Prepared: 02/15/2016 Analyzed: 02/16/2016 | | | | | | | | |
| Specific Conductance (EC) | 0.00340 | | mmhos/cm | | | | | | | |
| Duplicate (B6B1508-DUP1) | | Source: X602145-05 | | | Prepared: 02/15/2016 Analyzed: 02/16/2016 | | | | | |
| Specific Conductance (EC) | 0.0471 | | mmhos/cm | | 0.0439 | | | 7.03 | 25 | |

Origins Laboratory, Inc.



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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - Grant Bros 10-31

Notes and Definitions

U Sample is Non-Detect.

S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

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.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



February 18, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - KMG - Grant Bros 10-31

Project Number - [none]

Attached are your analytical results for KMG - Grant Bros 10-31 received by Origins Laboratory, Inc. February 17, 2016. This project is associated with Origins project number X602191-01.

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



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - Grant Bros 10-31

CROSS REFERENCE REPORT

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|-----------|---------------|--------|-------------------------|------------------|
| GW01 | X602191-01 | Water | February 17, 2016 14:45 | 02/17/2016 17:00 |

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

ORIGINS LABORATORY, INC X602191 www.originslaboratory.com

Client: Tasman LLC Project Manager: Bob Cornez
Address: _____ Project Name: Grant Brothers 10-31
Telephone Number: 912 334 2402 Project Number: _____
Email Address: rcornez@tasman-geo.com Samples Collected By: Brock Nelson

1725 Elk Place | Phone: 303 433 1322 | Fax: 303 265 9445 | Denver, CO 80211

| Sample ID Description | Date Sampled | Time Sampled | # of Containers | Preservative | | | | Matrix | | | | Analysis | Sample Instructions |
|-----------------------|--------------|--------------|-----------------|--------------|-----|------------------|-------|-------------|------|------------|-----------|------------|---------------------|
| | | | | Unpreserved | HCl | HNO ₃ | Other | Groundwater | Soil | Air Sample | Container | | |
| GWC1 | 2/17/16 | 1445 | 5 | | X | | | X | | | | BTEX (826) | 1 |
| | | | | | | | | | | | | | 2 |
| | | | | | | | | | | | | | 3 |
| | | | | | | | | | | | | | 4 |
| | | | | | | | | | | | | | 5 |
| | | | | | | | | | | | | | 6 |
| | | | | | | | | | | | | | 7 |
| | | | | | | | | | | | | | 8 |
| | | | | | | | | | | | | | 9 |
| | | | | | | | | | | | | | 10 |

Relinquished By: [Signature] Date: 2/17/16 Time: 1700 Received By: [Signature] Date: 2.17.16 Time: 1700
Relinquished By: _____ Date: _____ Time: _____ Received By: _____ Date: _____ Time: _____

Turnaround Time: Same Day ☒ 24 Hr ☐ 48 Hr ☐ 72 Hr ☐ Standard ☐

8-1 Date Results Needed _____

Origins Laboratory, Inc.

Jefe Pellegrini

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X60291

Client: Tasman

Client Project ID: Grant Brothers 10-31

Checklist Completed by: L.F. Smith

Shipped Via: Pick up

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

Date/time completed: 2/17/12

Airbill #: NA

Matrix(s) Received: (Check all that apply): Soil/Solid ☒ Water ☐ Other: ☐

Cooler Number/Temperature: 1 / 8.1 °C 1 °C 1 °C (Describe)

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"/> | | <u>Sampled Same Day</u> |
| 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 HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH) | <input checked="" type="checkbox"/> | | | <u>HCL</u> |
| 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.

L.F. Smith
Reviewed by (Project Manager)

2/17/12
Date/Time Reviewed

Origins Laboratory, Inc.

Jefe Pellegrini

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

GW01

2/17/2016 2:45:00PM

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

Origins Laboratory, Inc.
X602191-01 (Water)

BTEX by EPA 8260C

| | | | | | | | | |
|----------------------------------|--------|--------|------|----|---------|------------|------------|---|
| Benzene | 1500 | 50.0 | ug/L | 50 | B6B1513 | 02/17/2016 | 02/17/2016 | |
| Toluene | ND | 4.0 | " | 4 | " | " | 02/17/2016 | U |
| Ethylbenzene | 438 | 4.0 | " | " | " | " | " | |
| Xylenes, total | 676 | 4.0 | " | " | " | " | " | |
| Surrogate: 1,2-Dichloroethane-d4 | 104 % | 84-121 | | | " | " | " | |
| Surrogate: Toluene-d8 | 99.5 % | 85-115 | | | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | 98.5 % | 84-114 | | | " | " | " | |

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1513 - EPA 5030B (Water) | | | | | | | | | | |
| Blank (B6B1513-BLK1) | | | | | Prepared: 02/15/2016 Analyzed: 02/17/2016 | | | | | |
| Benzene | ND | 1.0 | ug/L | | | | | | | U |
| Toluene | ND | 1.0 | " | | | | | | | U |
| Ethylbenzene | ND | 1.0 | " | | | | | | | U |
| Xylenes, total | ND | 1.0 | " | | | | | | | U |
| Surrogate: 1,2-Dichloroethane-d4 | 71 | | " | 62.5 | 113 | | 84-121 | | | |
| Surrogate: Toluene-d8 | 61 | | " | 62.5 | 96.8 | | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 65 | | " | 62.5 | 104 | | 84-114 | | | |

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1513 - EPA 5030B (Water)

Blank (B6B1513-BLK2)

Prepared: 02/15/2016 Analyzed: 02/17/2016

| | | | | | | | | | | |
|----------------------------------|----|-----|------|------|--|------|--------|--|--|---|
| Benzene | ND | 1.0 | ug/L | | | | | | | U |
| Toluene | ND | 1.0 | " | | | | | | | U |
| Ethylbenzene | ND | 1.0 | " | | | | | | | U |
| Xylenes, total | ND | 1.0 | " | | | | | | | U |
| Surrogate: 1,2-Dichloroethane-d4 | 62 | | " | 62.5 | | 99.7 | 84-121 | | | |
| Surrogate: Toluene-d8 | 62 | | " | 62.5 | | 99.9 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 63 | | " | 62.5 | | 101 | 84-114 | | | |

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1513 - EPA 5030B (Water) | | | | | | | | | | |
| LCS (B6B1513-BS1) | | | | | Prepared: 02/15/2016 Analyzed: 02/17/2016 | | | | | |
| Benzene | 48.7 | 1.0 | ug/L | 50.0 | | 97.5 | 73.3-129 | | | |
| Toluene | 45.9 | 1.0 | " | 50.0 | | 91.8 | 76.2-123 | | | |
| Ethylbenzene | 46.3 | 1.0 | " | 50.0 | | 92.6 | 73.6-130 | | | |
| m,p-Xylene | 92.3 | 2.0 | " | 100 | | 92.3 | 76.1-126 | | | |
| o-Xylene | 45.5 | 1.0 | " | 50.0 | | 91.0 | 76.6-124 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 67 | | " | 62.5 | | 107 | 84-121 | | | |
| Surrogate: Toluene-d8 | 60 | | " | 62.5 | | 96.1 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 64 | | " | 62.5 | | 103 | 84-114 | | | |

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1513 - EPA 5030B (Water)

LCS (B6B1513-BS2)

Prepared: 02/15/2016 Analyzed: 02/17/2016

| | | | | | | | | | | |
|----------------------------------|------|-----|------|------|--|------|----------|--|--|--|
| Benzene | 50.0 | 1.0 | ug/L | 50.0 | | 100 | 73.3-129 | | | |
| Toluene | 50.6 | 1.0 | " | 50.0 | | 101 | 76.2-123 | | | |
| Ethylbenzene | 50.2 | 1.0 | " | 50.0 | | 100 | 73.6-130 | | | |
| m,p-Xylene | 102 | 2.0 | " | 100 | | 102 | 76.1-126 | | | |
| o-Xylene | 49.8 | 1.0 | " | 50.0 | | 99.7 | 76.6-124 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 65 | | " | 62.5 | | 104 | 84-121 | | | |
| Surrogate: Toluene-d8 | 63 | | " | 62.5 | | 101 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 62 | | " | 62.5 | | 98.8 | 84-114 | | | |

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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1513 - EPA 5030B (Water)

| Matrix Spike (B6B1513-MS1) | | Source: X602127-01 | | | Prepared: 02/15/2016 Analyzed: 02/17/2016 | | | | | |
|----------------------------------|------|--------------------|------|------|-------------------------------------------|------|--------|--|--|--|
| Benzene | 48.3 | 1.0 | ug/L | 50.0 | ND | 96.7 | 74-130 | | | |
| Toluene | 45.9 | 1.0 | " | 50.0 | ND | 91.7 | 73-131 | | | |
| Ethylbenzene | 46.2 | 1.0 | " | 50.0 | ND | 92.4 | 76-132 | | | |
| m,p-Xylene | 92.5 | 2.0 | " | 100 | ND | 92.5 | 69-139 | | | |
| o-Xylene | 47.4 | 1.0 | " | 50.0 | ND | 94.8 | 74-131 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 66 | | " | 62.5 | | 106 | 84-121 | | | |
| Surrogate: Toluene-d8 | 60 | | " | 62.5 | | 96.5 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 66 | | " | 62.5 | | 105 | 84-114 | | | |

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1513 - EPA 5030B (Water)

| Matrix Spike (B6B1513-MS2) | | Source: X602127-02 | | | Prepared: 02/15/2016 Analyzed: 02/17/2016 | | | | | |
|----------------------------------|------|--------------------|------|------|-------------------------------------------|------|--------|--|--|--|
| Benzene | 42.1 | 1.0 | ug/L | 50.0 | ND | 84.2 | 74-130 | | | |
| Toluene | 39.9 | 1.0 | " | 50.0 | ND | 79.9 | 73-131 | | | |
| Ethylbenzene | 40.0 | 1.0 | " | 50.0 | ND | 80.0 | 76-132 | | | |
| m,p-Xylene | 80.4 | 2.0 | " | 100 | ND | 80.4 | 69-139 | | | |
| o-Xylene | 41.2 | 1.0 | " | 50.0 | ND | 82.3 | 74-131 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 67 | | " | 62.5 | | 108 | 84-121 | | | |
| Surrogate: Toluene-d8 | 62 | | " | 62.5 | | 99.0 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 64 | | " | 62.5 | | 103 | 84-114 | | | |

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1513 - EPA 5030B (Water)

| Matrix Spike Dup (B6B1513-MSD1) | | Source: X602127-01 | | | Prepared: 02/15/2016 Analyzed: 02/17/2016 | | | | | |
|----------------------------------|------|--------------------|------|------|-------------------------------------------|------|--------|------|----|--|
| Benzene | 44.3 | 1.0 | ug/L | 50.0 | ND | 88.5 | 74-130 | 8.79 | 20 | |
| Toluene | 41.5 | 1.0 | " | 50.0 | ND | 83.0 | 73-131 | 10.0 | 20 | |
| Ethylbenzene | 41.5 | 1.0 | " | 50.0 | ND | 83.0 | 76-132 | 10.7 | 20 | |
| m,p-Xylene | 83.3 | 2.0 | " | 100 | ND | 83.3 | 69-139 | 10.4 | 20 | |
| o-Xylene | 42.5 | 1.0 | " | 50.0 | ND | 85.0 | 74-131 | 11.0 | 20 | |
| Surrogate: 1,2-Dichloroethane-d4 | 67 | | " | 62.5 | | 108 | 84-121 | | | |
| Surrogate: Toluene-d8 | 61 | | " | 62.5 | | 96.8 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 65 | | " | 62.5 | | 104 | 84-114 | | | |

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Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Grant Bros 10-31

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 B6B1513 - EPA 5030B (Water)

| Matrix Spike Dup (B6B1513-MSD2) | | Source: X602127-02 | | | Prepared: 02/15/2016 Analyzed: 02/17/2016 | | | | | |
|----------------------------------|------|--------------------|------|------|-------------------------------------------|------|--------|------|----|--|
| Benzene | 49.8 | 1.0 | ug/L | 50.0 | ND | 99.5 | 74-130 | 16.7 | 20 | |
| Toluene | 46.4 | 1.0 | " | 50.0 | ND | 92.9 | 73-131 | 15.0 | 20 | |
| Ethylbenzene | 46.8 | 1.0 | " | 50.0 | ND | 93.7 | 76-132 | 15.7 | 20 | |
| m,p-Xylene | 93.6 | 2.0 | " | 100 | ND | 93.6 | 69-139 | 15.3 | 20 | |
| o-Xylene | 47.2 | 1.0 | " | 50.0 | ND | 94.4 | 74-131 | 13.6 | 20 | |
| Surrogate: 1,2-Dichloroethane-d4 | 68 | | " | 62.5 | | 109 | 84-121 | | | |
| Surrogate: Toluene-d8 | 60 | | " | 62.5 | | 96.5 | 85-115 | | | |
| Surrogate: 4-Bromofluorobenzene | 65 | | " | 62.5 | | 103 | 84-114 | | | |

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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - Grant Bros 10-31

Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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Jen Pellegrini For Noelle Doyle Mathis, President