

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.

Complaint OGCC Employee:

NOAV

Spill

Inspection

Tracking No: 441436

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

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

GENERAL INFORMATION

OGCC Operator Number: 47120		Contact Name and Telephone	
Name of Operator: Kerr-McGee Oil and Gas Onshore, LP		Name: Phillip Hamlin	
Address: 1099 18th Street, Suite 1800		No: 970-336-3500	
City: Denver State: CO Zip: 80202		Fax: 970-336-3656	
API/Facility No: 05-123-16852		County: Weld	
Facility Name: Richardson		Facility Number: V 3-2	
Well Name: Richardson		Well Number: V 3-2	
Location (Qtr, Sec, Twp, Rng, Meridian): NWNE S3 T2N, R67W		Latitude: 40.172282 Longitude: -104.874173	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Condensate and Produced Water

Site Conditions: Is location within a sensitive area (according to Rule 901e)? Y N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Agriculture, Crop Land

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Silty sand to silty clay

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Surface water is located approximately 950 feet north of the release area, and the nearest water well is located approximately 200 feet from the release area.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	39' N-S x 30' E-W x 3' bgs	Excavation, soil sampling, and laboratory analysis
<input type="checkbox"/> Vegetation		
<input checked="" type="checkbox"/> Groundwater	See attached data	Groundwater sampling and laboratory analysis
<input type="checkbox"/> Surface water		

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

On March 31, 2015, hydrocarbon impacts were discovered during plugging and abandonment activities adjacent to the Richardson V 3-2 wellhead. The volume of released material is unknown. The well was shut in, associated underground infrastructure removed, and petroleum hydrocarbon impacted soil was excavated and transported off-site for disposal. Groundwater was encountered in the excavation at approximately 3 feet below ground surface (bgs). An Initial Form 19 was submitted on April 3, 2015, and a Supplemental Form 19 was submitted on April 10, 2015. The COGCC has issued Spill Tracking number 441436 for this release.

Describe how source is to be removed:

Excavation activities commenced on March 31, 2015, and approximately 110 cubic yards (cy) of impacted soil were removed 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 final extent of the excavation area and submitted to Origins Laboratory in Denver, Colorado for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) and total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260B, TPH - diesel range organics and oil range organics (DRO and ORO) by USEPA Method 8015, electrical conductivity (EC), and pH. Laboratory results for the confirmation soil samples indicated that constituent concentrations were below applicable COGCC standards at the final extent of the excavation. Groundwater was encountered in the excavation at approximately 3 feet bgs. A vacuum truck was used to remove approximately 50 barrels of impacted groundwater from the excavation, which were transported to a licensed injection facility for disposal. Subsequently, a groundwater sample (GW01) was collected from the excavation area for laboratory analysis of BTEX. Groundwater sample GW01 exhibited a benzene concentration of 2,740 µg/L, a toluene concentration of 7,470 µg/L, and total xylenes concentrations of 6,660 µg/L, exceeding the applicable COGCC groundwater standards. An additional 50 barrels of impacted groundwater were removed from within the excavation area. A second groundwater sample (GW02) was subsequently collected from the excavation area and submitted for laboratory analysis of BTEX. Analytical results received on April 10, 2015, indicated that benzene, toluene, and total xylenes concentrations remain above regulatory standards. Soil analytical results are summarized in Table 1 and groundwater analytical results are summarized in Table 2. 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.:

The impacted soil was excavated and transported to the Front Range Landfill in Erie, Colorado. The impacted groundwater was removed by a vacuum truck and transported to a licensed injection facility for disposal. 50 pounds of activated carbon were added to the groundwater in the excavation prior to backfilling. Additional proposed groundwater remediation measures are described on the following page.



Tracking Number: 441436
Name of Operator: Kerr-McGee Oil and Gas Onshore, LP
OGCC Operator No: 47120
Received Date:
Well Name & No: Richardson V 3-2
Facility Name & No.: Richardson V 3-2

REMEDIATION WORKPLAN (CONT.)

OGCC Employee: _____

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):
Temporary groundwater monitoring and/or remediation wells will be installed at the site to further assess the extent of groundwater impacts. These wells will be sampled on a quarterly basis, with groundwater samples submitted for laboratory analysis of BTEX by USEPA Method 8260B. Quarterly groundwater monitoring at these temporary monitoring well locations will be conducted until BTEX 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 area has been backfilled with clean soil and graded to match adjacent topography. 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:
Data indicated that impacted soil has been delineated and removed from the site. Temporary monitoring/remediation wells will be installed to further assess groundwater impacts and evaluate potential remedial options. Remediation and monitoring will be performed as necessary until the site has met applicable COGCC closure criteria. Soil and groundwater analytical results are summarized in Table 1 and Table 2, respectively. The analytical reports are included in 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

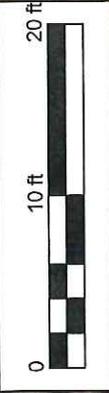
Date Site Investigation Began: 3/31/2015	Date Site Investigation Completed: TBD	Remediation Plan Submitted: _____
Remediation Start Date: 3/31/2015	Anticipated Completion Date: 8/31/2016	Actual Completion Date: _____

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: Title: Senior HSE Representative Date: 6/12/2015

OGCC Approved: _____ Title: _____ Date: _____



Surface Drainage



B - Benzene
 TPH - Total Petroleum Hydrocarbons
 Mg/kg - Milligrams Per Kilogram
 µg/L - Micrograms Per Liter

Image Source:
Google Earth 2015

LEGEND

- Approximate Excavation Extent
- Approximate Release Location
- Approximate Soil Sample Location
- Approximate Groundwater Sample Location

TASMAN 6899 Pecos St., Unit C
 GEOSCIENCES Denver, CO 80221

Facility Diagram
 Kerr-McGee Oil and Gas Onshore, LP
 Richardson V 3-2
 NWNE S3 T2N R67W
 Weld County, CO

DRAWN BY: BRN
 DATE: 4/7/2015

FIGURE 1
 SITE AND SAMPLE
 LOCATION MAP

ANALYTICAL TABLES

TABLE 1
RICHARDSON V3-2
SOIL SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH - GRO (mg/kg)	TEPH - DRO + ORO (mg/kg)	Electrical Conductivity (EC) (mmhos/cm)	pH (units)
COGCC standards for soil (mg/kg) ⁽¹⁾										
N01@2	3/31/2015	2	<0.002	<0.002	<0.002	<0.002	<0.200	<200	4	6 - 9
S01@2	3/31/2015	2	<0.002	<0.002	<0.002	<0.002	<0.200	<200	0.138	9.28
E01@2	3/31/2015	2	<0.002	<0.002	<0.002	<0.002	<0.200	<200	0.146	8.74
W01@2	3/31/2015	2	<0.002	<0.002	<0.002	<0.002	<0.200	<200	0.169	9.03
W02@2	4/2/2015	2	NA	NA	NA	NA	NA	NA	0.121	9.22
N02@2	4/2/2015	2	NA	NA	NA	NA	NA	NA	NA	8.56
E02@2	4/2/2015	2	NA	NA	NA	NA	NA	NA	NA	9.10
N03@2	4/8/2015	2	NA	NA	NA	NA	NA	NA	NA	9.26
E03@2	4/8/2015	2	NA	NA	NA	NA	NA	NA	NA	8.92
										8.99

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

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

mg/kg = Milligrams per kilogram.

bgs = Below ground surface.

mmhos/cm = Millihos per centimeter

NA = Not analyzed for constituent

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

TABLE 2
 RICHARDSON V3-2
 GROUNDWATER SAMPLE RESULTS SUMMARY TABLE
 KERR-McGEE OIL AND GAS ONSHORE LP

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (ft bgs)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
GW01	3/31/2015	1,740	7,470	494	6,660	~3
GW02	4/9/2015	353	1,330	138	1,820	~3

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

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

ft bgs = Feet below ground surface

BOLD= Analytical result is in exceedance of COGCC groundwater standards.

ATTACHMENT A

LABORATORY ANALYTICAL REPORTS

April 01, 2015

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Richardson V 3-2

Project Number - [none]

Attached are your analytical results for KMG - Richardson V 3-2 received by Origins Laboratory, Inc. March 31, 2015. This project is associated with Origins project number X503408-01.

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



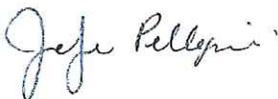
Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01 @ 2	X503408-01	Soil	March 31, 2015 13:25	03/31/2015 16:00
S01 @ 2	X503408-02	Soil	March 31, 2015 13:17	03/31/2015 16:00
E01 @ 2	X503408-03	Soil	March 31, 2015 13:20	03/31/2015 16:00
W01 @ 2	X503408-04	Soil	March 31, 2015 13:27	03/31/2015 16:00
GW01	X503408-05	Water	March 31, 2015 13:30	03/31/2015 16:00

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.

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XSO3408

Client: Tasman
 Client Project ID: Richardson V 3-2

Checklist Completed by: Jeff Smith
 Date/time completed: 3/31/15

Shipped Via: Pak Up
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: NA

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

Cooler Number/Temperature: 1 / 4.3 °C / _____ °C / _____ °C / _____ °C (Describe)

Thermometer ID: Z053

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"/>			PH
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"/>		3/31/15 A HLL
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"/>			HLL
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.

Jeff Smith
 Reviewed by (Project Manager)

3/31/15
 Date/Time Reviewed

Origins Laboratory, Inc.

Jeff 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

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

N01 @ 2
3/31/2015 1:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503408-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5C31008	03/31/2015	03/31/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

Surrogate: o-Terphenyl 81.9 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5C31006	03/31/2015	03/31/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 110 % 70-130 " " "
 Surrogate: Toluene-d8 98.4 % 70-130 " " "
 Surrogate: 4-Bromofluorobenzene 101 % 70-130 " " "

pH in Soil by EPA 9045D

pH	9.28		pH Units	1	5C31011	03/31/2015	03/31/2015	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.138		mmhos/cm	"	5C31012	"	"	
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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

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

S01 @ 2
 3/31/2015 1:17:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X503408-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5C31008	03/31/2015	03/31/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

Surrogate: o-Terphenyl 75.7 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5C31006	03/31/2015	03/31/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 110 % 70-130 " " "
 Surrogate: Toluene-d8 97.8 % 70-130 " " "
 Surrogate: 4-Bromofluorobenzene 102 % 70-130 " " "

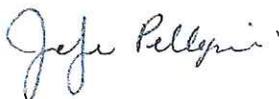
pH in Soil by EPA 9045D

pH	8.74		pH Units	1	5C31011	03/31/2015	03/31/2015	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.146		mmhos/cm	"	5C31012	"	"	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

E01 @ 2
3/31/2015 1:20:00PM

Reporting

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503408-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5C31008	03/31/2015	03/31/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

Surrogate: o-Terphenyl	77.4 %	59-131			"	"	"	
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5C31006	03/31/2015	03/31/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	93.2 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

pH in Soil by EPA 9045D

pH	9.03		pH Units	1	5C31011	03/31/2015	03/31/2015	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.169		mmhos/cm	"	5C31012	"	"	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

W01 @ 2
 3/31/2015 1:27:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 X503408-04 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5C31008	03/31/2015	03/31/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

Surrogate: o-Terphenyl 75.1 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5C31006	03/31/2015	03/31/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 112 % 70-130 " " "
 Surrogate: Toluene-d8 98.3 % 70-130 " " "
 Surrogate: 4-Bromofluorobenzene 101 % 70-130 " " "

pH in Soil by EPA 9045D

pH	9.22		pH Units	1	5C31011	03/31/2015	03/31/2015	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.121		mmhos/cm	"	5C31012	"	"	
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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

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

GW01
3/31/2015 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X503408-05 (Water)

BTEX by EPA 8260C

Benzene	1740	20.0	ug/L	20	5C30011	03/31/2015	03/31/2015	
Toluene	7470	100	"	100	"	"	03/31/2015	
Ethylbenzene	494	20.0	"	20	"	"	03/31/2015	
Xylenes, total	6660	20.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	94.5 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	98.7 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	109 %	88.6-111			"	"	"	

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

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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
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Batch 5C30011 - EPA 5030B (Water)

Blank (5C30011-BLK1)

Prepared: 03/30/2015 Analyzed: 03/31/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		101	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.5	88.6-111			

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.

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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
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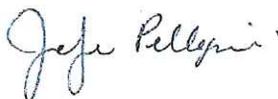
Batch 5C30011 - EPA 5030B (Water)

LCS (5C30011-BS1)

Prepared: 03/30/2015 Analyzed: 03/31/2015

Benzene	48.2	1.0	ug/L	50.0		96.5	75-126			
Toluene	46.9	1.0	"	50.0		93.8	78.7-126			
Ethylbenzene	44.5	1.0	"	50.0		88.9	80-130			
m,p-Xylene	91.6	2.0	"	100		91.6	77.2-133			
o-Xylene	44.8	1.0	"	50.0		89.5	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.6	87.3-113			
Surrogate: Toluene-d8	60		"	62.5		95.4	90.9-108			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		105	88.6-111			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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
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Batch 5C30011 - EPA 5030B (Water)

Matrix Spike (5C30011-MS1)	Source: X503362-01			Prepared: 03/30/2015 Analyzed: 03/31/2015						
Benzene	52.0	1.0	ug/L	50.0	ND	104	74-130			
Toluene	58.5	1.0	"	50.0	ND	117	73-131			
Ethylbenzene	48.1	1.0	"	50.0	ND	96.2	76-132			
m,p-Xylene	101	2.0	"	100	ND	101	69-139			
o-Xylene	54.2	1.0	"	50.0	ND	108	74-131			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.9	87.3-113			
Surrogate: Toluene-d8	65		"	62.5		103	90.9-108			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	88.6-111			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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
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Batch 5C30011 - EPA 5030B (Water)

Matrix Spike Dup (5C30011-MSD1)	Source: X503362-01			Prepared: 03/30/2015 Analyzed: 03/31/2015						
Benzene	58.5	1.0	ug/L	50.0	ND	117	74-130	11.9	20	
Toluene	64.9	1.0	"	50.0	ND	130	73-131	10.4	20	
Ethylbenzene	55.9	1.0	"	50.0	ND	112	76-132	15.1	20	
m,p-Xylene	111	2.0	"	100	ND	111	69-139	8.61	20	
o-Xylene	53.1	1.0	"	50.0	ND	106	74-131	1.98	20	
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		100	87.3-113			
Surrogate: Toluene-d8	67		"	62.5		108	90.9-108			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.6	88.6-111			

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.

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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
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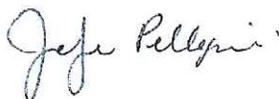
Batch 5C31006 - EPA 5030 (soil)

Blank (5C31006-BLK1)

Prepared: 03/31/2015 Analyzed: 03/31/2015

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	66.7		ug/kg	62.5	107		70-130			
Surrogate: Toluene-d8	61.4		"	62.5	98.3		70-130			
Surrogate: 4-Bromofluorobenzene	63.4		"	62.5	101		70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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 5C31006 - EPA 5030 (soil)

LCS (5C31006-BS1)

Prepared: 03/31/2015 Analyzed: 03/31/2015

Benzene	0.105	0.002	mg/kg	0.100		105	77.1-124			
Toluene	0.103	0.002	"	0.100		103	74.5-128			
Ethylbenzene	0.104	0.002	"	0.100		104	66.4-127			
m,p-Xylene	0.209	0.004	"	0.200		105	76.6-124			
o-Xylene	0.109	0.002	"	0.100		109	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	64.2		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	62.0		"	62.5		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	62.3		"	62.5		99.7	70-130			

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.

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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
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Batch 5C31006 - EPA 5030 (soil)

Matrix Spike (5C31006-MS1)

Source: X503375-01

Prepared: 03/31/2015 Analyzed: 03/31/2015

Benzene	0.100	0.002	mg/kg	0.100	ND	100	71.8-126			
Toluene	0.097	0.002	"	0.100	ND	97.0	65.1-130			
Ethylbenzene	0.097	0.002	"	0.100	ND	97.4	62.2-130			
m,p-Xylene	0.196	0.004	"	0.200	ND	98.0	46.5-137			
o-Xylene	0.099	0.002	"	0.100	ND	99.4	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	64.2		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	61.1		"	62.5		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	62.5		"	62.5		100	70-130			

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Jen Pellegrini For Noelle Doyle Mathis, President

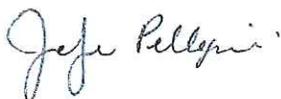
Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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 5C31006 - EPA 5030 (soil)										
Matrix Spike Dup (5C31006-MSD1)		Source: X503375-01			Prepared: 03/31/2015 Analyzed: 03/31/2015					
Benzene	0.102	0.002	mg/kg	0.100	ND	102	71.8-126	1.72	11.3	
Toluene	0.100	0.002	"	0.100	ND	99.8	65.1-130	2.78	15.4	
Ethylbenzene	0.099	0.002	"	0.100	ND	99.4	62.2-130	2.05	19.6	
m,p-Xylene	0.201	0.004	"	0.200	ND	100	46.5-137	2.39	19.2	
o-Xylene	0.102	0.002	"	0.100	ND	102	54.2-134	2.46	17.9	
Surrogate: 1,2-Dichloroethane-d4	64.0		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	62.2		"	62.5		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	62.5		"	62.5		100	70-130			

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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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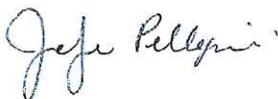
Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5C31008 - EPA 3580

Blank (5C31008-BLK1)					Prepared: 03/31/2015 Analyzed: 03/31/2015					
Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	37		"	50.0		73.3	59-131			
LCS (5C31008-BS1)					Prepared: 03/31/2015 Analyzed: 03/31/2015					
Diesel (C10-C28)	950	50	mg/kg	1000		95.0	64-121			
Residual Range Organics (C28-C36)	1000	200	"	1000		101	58-124			
Surrogate: o-Terphenyl	48		"	50.0		95.3	59-131			
Matrix Spike (5C31008-MS1)					Source: X503408-01		Prepared: 03/31/2015 Analyzed: 03/31/2015			
Diesel (C10-C28)	1000	50	mg/kg	1000	17	102	53-125			
Residual Range Organics (C28-C36)	880	200	"	1000	ND	88.0	47-133			
Surrogate: o-Terphenyl	34		"	50.0		68.0	59-131			
Matrix Spike Dup (5C31008-MSD1)					Source: X503408-01		Prepared: 03/31/2015 Analyzed: 03/31/2015			
Diesel (C10-C28)	910	50	mg/kg	1000	17	89.0	53-125	13.3	20	
Residual Range Organics (C28-C36)	1000	200	"	1000	ND	100	47-133	13.0	20	
Surrogate: o-Terphenyl	37		"	50.0		74.4	59-131			

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.

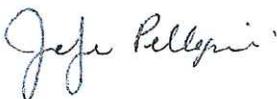
Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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 5C31011 - NO PREP										
Duplicate (5C31011-DUP1)		Source: X503408-01			Prepared: 03/31/2015 Analyzed: 03/31/2015					
pH	9.25		pH Units		9.28			0.324	25	
Batch 5C31012 - NO PREP										
Blank (5C31012-BLK1)					Prepared: 03/31/2015 Analyzed: 03/31/2015					
Specific Conductance (EC)	0.00200		mmhos/cm							
Duplicate (5C31012-DUP1)		Source: X503408-01			Prepared: 03/31/2015 Analyzed: 03/31/2015					
Specific Conductance (EC)	0.139		mmhos/cm		0.138			0.938	25	

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

Notes and Definitions

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.

Jen Pellegrini For Noelle Doyle Mathis, President

April 03, 2015

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Richardson V 3-2

Project Number - [none]

Attached are your analytical results for KMG - Richardson V 3-2 received by Origins Laboratory, Inc. April 02, 2015. This project is associated with Origins project number X504032-01.

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

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N02 @ 2	X504032-01	Soil	April 2, 2015 15:25	04/02/2015 17:00
W02 @ 2	X504032-02	Soil	April 2, 2015 15:27	04/02/2015 17:00
E02 @ 2	X504032-03	Soil	April 2, 2015 15:30	04/02/2015 17:00

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XS04032

Client: Tasman
 Client Project ID: Richardson V3-2

Checklist Completed by: Jesse Smith

Shipped Via: Pick Up
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 4/2/15

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 3.7 °C 1 °C 1 °C (Describe)

Thermometer ID: T053

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"/>			PH
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.

Jesse Smith
 Reviewed by (Project Manager)

4/2/15
 Date/Time Reviewed

Origins Laboratory, Inc.

Jesse 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

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

N02 @ 2
4/2/2015 3:25:00PM

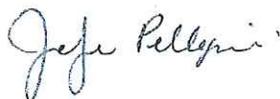
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X504032-01 (Soil)

pH in Soil by EPA 9045D

pH	9.10		pH Units	1	5D02015	04/02/2015	04/02/2015	
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Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

W02 @ 2

4/2/2015 3:27:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X504032-02 (Soil)

pH in Soil by EPA 9045D

pH	8.56		pH Units	1	5D02015	04/02/2015	04/02/2015	
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Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

E02 @ 2
4/2/2015 3:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X504032-03 (Soil)

pH in Soil by EPA 9045D

pH	9.26		pH Units	1	5D02015	04/02/2015	04/02/2015	
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Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5D02015 - NO PREP

Duplicate (5D02015-DUP1)

Source: X504029-01

Prepared: 04/02/2015 Analyzed: 04/02/2015

pH	8.09		pH Units		8.11			0.247	25	
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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

Notes and Definitions

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 For Noelle Doyle Mathis, President

April 09, 2015

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Richardson V 3-2

Project Number - [none]

Attached are your analytical results for KMG - Richardson V 3-2 received by Origins Laboratory, Inc. April 08, 2015. This project is associated with Origins project number X504105-01.

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

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
E03 @ 2	X504105-01	Soil	April 8, 2015 9:23	04/08/2015 16:40
N03 @ 2	X504105-05	Soil	April 8, 2015 9:10	04/08/2015 16:40

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.

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X504105 Client: Tasman
 Client Project ID: Richardson V3-2
 Checklist Completed by: Jesse Smith Shipped Via: Pick Up
 Date/time completed: 4/8/15 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: NA
 Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____
 Cooler Number/Temperature: 1 13.3 °C _____ °C _____ °C (Describe)
 Thermometer ID: 1203

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)		1		
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⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
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⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	X			
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 HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)			X	
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)

4-8-15/1235
 Date/Time Reviewed

Origins Laboratory, Inc.

Jesse 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

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

E03 @ 2
4/8/2015 9:23:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X504105-01 (Soil)

pH in Soil by EPA 9045D

pH	8.99		pH Units	1	5D08008	04/08/2015	04/08/2015	
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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.

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

N03 @ 2
4/8/2015 9:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X504105-05 (Soil)

pH in Soil by EPA 9045D

pH	8.92		pH Units	1	5D08008	04/08/2015	04/08/2015	
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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.

Jen Pellegrini For Noelle Doyle Mathis, President

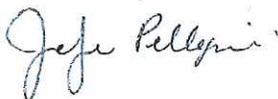
Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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 5D08008 - NO PREP										
Duplicate (5D08008-DUP1)		Source: X504076-02			Prepared: 04/08/2015 Analyzed: 04/08/2015					
pH	8.21		pH Units		8.27			0.728	25	
Duplicate (5D08008-DUP2)		Source: X504105-01			Prepared: 04/08/2015 Analyzed: 04/08/2015					
pH	9.02		pH Units		8.99			0.333	25	

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

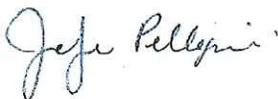
Notes and Definitions

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.

Jen Pellegrini For Noelle Doyle Mathis, President



April 10, 2015

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Richardson V 3-2

Project Number - [none]

Attached are your analytical results for KMG - Richardson V 3-2 received by Origins Laboratory, Inc. April 09, 2015. This project is associated with Origins project number X504122-01.

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

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW02	X504122-01	Water	April 9, 2015 9:30	04/09/2015 16:30

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.

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X50422

Client: Tasman
 Client Project ID: Richardson

Checklist Completed by: David Mathis
 Date/time completed: 4-9-15

Shipped Via: _____
 (UPS, FedEx, Hand Delivered (Pick-up), etc.)
 Airbill #: _____

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

Cooler Number/Temperature: 16.3 °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⁾ ?		X		Sampled today
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)		X		
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		X		
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⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	X			
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)	X			HCL
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: [Signature] (Project Manager)

4/9/15
 Date/Time Reviewed

Origins Laboratory, Inc.

Jen Pellegrini

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

GW02

4/9/2015 9:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X504122-01 (Water)

BTEX by EPA 8260C

Benzene	353	50.0	ug/L	50	5D09013	04/09/2015	04/09/2015	
Toluene	1330	50.0	"	"	"	"	"	
Ethylbenzene	138	50.0	"	"	"	"	"	
Xylenes, total	1820	50.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	102 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	91.1 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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
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Batch 5D09013 - EPA 5030B (Water)

Blank (5D09013-BLK1)

Prepared: 04/09/2015 Analyzed: 04/09/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5	104		87.3-113			
Surrogate: Toluene-d8	64		"	62.5	102		90.9-108			
Surrogate: 4-Bromofluorobenzene	56		"	62.5	90.0		88.6-111			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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
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Batch 5D09013 - EPA 5030B (Water)

LCS (5D09013-BS1)

Prepared: 04/09/2015 Analyzed: 04/09/2015

Benzene	50.6	1.0	ug/L	50.0		101	75-126			
Toluene	51.9	1.0	"	50.0		104	78.7-126			
Ethylbenzene	55.5	1.0	"	50.0		111	80-130			
m,p-Xylene	108	2.0	"	100		108	77.2-133			
o-Xylene	50.9	1.0	"	50.0		102	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.4	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	58		"	62.5		92.2	88.6-111			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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
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Batch 5D09013 - EPA 5030B (Water)

Matrix Spike (5D09013-MS1)	Source: X504089-02			Prepared: 04/09/2015 Analyzed: 04/09/2015						
Benzene	48.7	1.0	ug/L	50.0	ND	97.4	74-130			
Toluene	52.4	1.0	"	50.0	ND	105	73-131			
Ethylbenzene	55.8	1.0	"	50.0	ND	112	76-132			
m,p-Xylene	109	2.0	"	100	ND	109	69-139			
o-Xylene	51.7	1.0	"	50.0	ND	103	74-131			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		96.9	87.3-113			
Surrogate: Toluene-d8	64		"	62.5		102	90.9-108			
Surrogate: 4-Bromofluorobenzene	58		"	62.5		92.7	88.6-111			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Christine Wasko
 Project Number: [none]
 Project: KMG - Richardson V 3-2

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 5D09013 - EPA 5030B (Water)										
Matrix Spike Dup (5D09013-MSD1)		Source: X504089-02			Prepared: 04/09/2015 Analyzed: 04/09/2015					
Benzene	46.2	1.0	ug/L	50.0	ND	92.5	74-130	5.20	20	
Toluene	48.8	1.0	"	50.0	ND	97.7	73-131	6.98	20	
Ethylbenzene	51.4	1.0	"	50.0	ND	103	76-132	8.22	20	
m,p-Xylene	101	2.0	"	100	ND	101	69-139	7.52	20	
o-Xylene	48.8	1.0	"	50.0	ND	97.7	74-131	5.59	20	
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.3	87.3-113			
Surrogate: Toluene-d8	64		"	62.5		102	90.9-108			
Surrogate: 4-Bromofluorobenzene	58		"	62.5		92.6	88.6-111			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Richardson V 3-2

Notes and Definitions

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.

Jen Pellegrini For Noelle Doyle Mathis, President