

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.

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No:

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: 331483		County: Weld	
Facility Name: Barefoot		Facility Number: 32N-25HZ	
Well Name: Rademacher		Well Number: 9-25A	
Location (QtrQtr, Sec, Twp, Rng, Meridian): NESE S25 T3N R68W		Latitude: 40.195764 Longitude: -104.943447	

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)?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N If yes, attach evaluation.
Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.):	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.):	The nearest surface water is located approximately 110' southwest of the site. The nearest water well is located approximately 650' southwest of the release area.
Description of Impact (if previously provided, refer to that form or document):	
Impacted Media (check):	Extent of Impact:
<input checked="" type="checkbox"/> Soils	20' (E-W) x 20' (N-S) x 4.5' bgs
<input type="checkbox"/> Vegetation	
<input checked="" type="checkbox"/> Groundwater	See attached data
<input type="checkbox"/> Surface water	
How Determined:	
Excavation, soil sampling, and laboratory analysis	
Groundwater sampling and laboratory analysis	

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):
On September 9, 2014, historical hydrocarbon impacts were discovered during tank battery replacement activities at the Barefoot 32N-25HZ production facility. The volume of released material is unknown. The facility was shut in, associated infrastructure removed, and excavation activities commenced. Groundwater was encountered in the excavation at approximately 4.5 feet below ground surface (bgs). An Initial Form 19 was submitted to the COGCC on September 15, 2014 (Document # 400687505), and a Supplemental Form 19 was submitted to the COGCC on September 18, 2014 (Document # 400689212). The COGCC has issued Spill Tracking number 439531 for this release.
Describe how source is to be removed:
On September 11, 2014, excavation activities commenced and approximately 240 cubic yards of impacted material were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, 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 3 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. 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 4.5 feet bgs. A groundwater sample (GW01) were collected and submitted for laboratory analysis of BTEX. Analytical results received on September 12, 2014, indicated that the benzene concentration in sample GW01 was above the applicable COGCC Table 910-1 groundwater standard. Approximately 45 barrels of impacted groundwater were removed via vacuum truck and transported to a licensed injection facility for disposal. 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 Kerr-McGee Land Treatment Facility in Weld County, Colorado. Impacted groundwater was removed via vacuum truck and transported to a licensed injection facility for disposal. Prior to backfilling the excavation, 200 pounds of activated carbon were added to the groundwater table to mitigate remaining 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



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

REMEDIATION WORKPLAN (CONT.)

OGCC Employee: _____

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

Between May 14, 2015 and February 12, 2016, five temporary groundwater monitoring wells (BH01-BH05) were installed at the site to assess the extent of potential groundwater impacts. Groundwater samples are collected on a quarterly basis, and submitted to Origins Laboratory in Denver, Colorado for analysis of BTEX by USEPA Method 8260B. Temporary monitoring well locations and groundwater analytical results from the most recent sampling event are illustrated in Figure 2, and a first quarter 2016 groundwater elevation contour map is presented in Figure 3. Groundwater analytical results are summarized in Table 2, and the groundwater laboratory analytical reports and well completion diagrams are included as Attachments A and B, respectively. Additional temporary monitoring wells may be installed in order to maintain downgradient points of compliance, as necessary. Quarterly groundwater monitoring at the temporary monitoring 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 has been backfilled with clean soil and graded to match the adjacent topography. Kerr-McGee's tank battery has been reconstructed and remains on the location. 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 the impacted soils in the excavation have been remediated to below COGCC standards. Temporary monitoring/remediation wells have been installed to further assess groundwater impacts; groundwater points of compliance have been achieved. Groundwater samples will continue to 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 Kerr-McGee Land Treatment Facility in Weld County, Colorado for disposal. Impacted groundwater was transported to a licensed injection facility for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 9/9/2014	Date Site Investigation Completed: 2/12/2016	Remediation Plan Submitted: _____
Remediation Start Date: 9/11/2014	Anticipated Completion Date: 12/12/2016	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: **3/17/2016**

OGCC Approved: _____

Title: _____

Date: _____

FIGURES



DATE: February 11, 2016		Kerr-McGee Oil and Gas Onshore, LP BAREFOOT 32N-25HZ NESE, Section 25, Township 3 North, Range 68 West Weld County, Colorado	Sample Location Map	FIGURE 1
DESIGNED BY: R. Bruner				
DRAWN BY: R. Bruner				



DATE:	February 11, 2016
DESIGNED BY:	R. Bruner
DRAWN BY:	R. Bruner



Kerr-McGee Oil and Gas Onshore, LP
BAREFOOT 32N-25HZ
NESE, Section 25, Township 3 North, Range 68 West
Weld County, Colorado

Groundwater Sample Results
Map (02/18/16)

FIGURE
2



DATE:	February 29, 2016
DESIGNED BY:	D. Wade
DRAWN BY:	Z. Mahaffey



Kerr-McGee Oil and Gas Onshore, LP
BAREFOOT 32N-25HZ
NESE, Section 25, Township 3 North, Range 68 West
Weld County, Colorado

Groundwater Elevation Contour
Map (02/18/2016)

FIGURE
3

ANALYTICAL TABLES

TABLE 1
BAREFOOT 32N-25HZ
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)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	500		
N01@3	09/11/14	3	<0.0020	<0.0020	<0.0020	0.0046	0.313	<50	<100
S01@3	09/11/14	3	<0.0020	<0.0020	<0.0020	0.0075	3.62	<50	<100
E01@3	09/11/14	3	0.0020	<0.0020	<0.0020	0.374	196	88	<100
W01@3	09/11/14	3	<0.0020	<0.0020	0.0385	<0.0020	11.1	<50	<100

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

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
BAREFOOT 32N-25HZ
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. BTOC)
COGCC Standards for groundwater (µg/L) ⁽¹⁾		5	560	700	1,400	
GW01	09/11/14	138	<1.0	23.2	31.9	~4.5*
BH01	05/22/15	<1.0	<1.0	<1.0	<1.0	NM
BH01	08/28/15	<1.0	<1.0	<1.0	<1.0	7.42
BH01	11/11/15	<1.0	<1.0	<1.0	<1.0	7.77
BH01	02/18/16	<1.0	<1.0	<1.0	<1.0	7.01
BH02	05/22/15	<1.0	<1.0	<1.0	<1.0	NM
BH02	08/28/15	2.5	<1.0	<1.0	<1.0	7.20
BH02	11/11/15	1.2	<1.0	<1.0	<1.0	7.44
BH02	02/18/16	1.2	<1.0	<1.0	<1.0	6.72
BH03	05/22/15	<1.0	<1.0	<1.0	<1.0	NM
BH03	08/28/15	<1.0	<1.0	<1.0	<1.0	7.47
BH03	11/11/15	<1.0	<1.0	<1.0	<1.0	7.78
BH03	02/18/16	<1.0	<1.0	<1.0	<1.0	7.05
BH04	02/18/16	<1.0	<1.0	<1.0	<1.0	6.86
BH05	02/18/16	<1.0	<1.0	<1.0	<1.0	7.84

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.

NM = Not measured due to equipment malfunction

ft. BTOC = Feet below top of casing.

* feet below ground surface

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

**ATTACHMENT A
LABORATORY
ANALYTICAL REPORTS**



September 12, 2014

Tasman Geosciences

Phil Hamlin

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - Edward Rademacher #2

Project Number - WO# 88601464

Attached are your analytical results for Edward Rademacher #2 received by Origins Laboratory, Inc. September 11, 2014. This project is associated with Origins project number X409124-01.

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

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #2

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01 @ 3	X409124-01	Soil	September 11, 2014 0:00	09/11/2014 16:00
S01 @ 3	X409124-02	Soil	September 11, 2014 0:00	09/11/2014 16:00
E01 @ 3	X409124-03	Soil	September 11, 2014 0:00	09/11/2014 16:00
W01 @ 3	X409124-04	Soil	September 11, 2014 0:00	09/11/2014 16:00
GW01	X409124-05	Water	September 11, 2014 0:00	09/11/2014 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.

Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #2

ORIGINS

LABORATORY, INC

www.originslaboratory.com

page 1 of 1

X409124

Client: Anadarko
Project Manager: Phil Hamlin
Project Name: Edward Rademacher #2
Project Number: WO# 88601464
Samples Collected By: Phil Hamlin

Address:
Telephone Number:
Email Address:

Fax: 303.265.9645

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis		Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	As Sampled	Other	Analysis	
N0103	7/11/14		1	X				X			X	X	1
S0103	7/11/14		1	X				X			X	X	2
E0103	7/11/14		1	X				X			X	X	3
W0103	7/11/14		1	X				X			X	X	4
G0101	7/11/14		3	X				X			X	X	5
													6
													7
													8
													9
													10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
Phil Hamlin	9/11/14	1400	Phil Hamlin	9-11-14	1400	24 Hr
						48 Hr
						72 Hr
						Standard 4.4

Date Results Needed By: 9/12/14

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

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #2

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X409124

Client: Tasman

Client Project ID: Edward Rademacher #2

Checklist Completed by: Jeff Smith

Shipped Via: Pick Up

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

Date/Time completed: 9/11/14 1637

Airbill #: NA

Matrix(s) Received: (Check all that apply)

☒ Soil/Solid

☒ Water

Other

Cooler Number/Temperature: 14.4 °C / 1 °C / 1 °C (Describe)

Thermometer ID: 7202

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ^{1,2} ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue-coils 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 ^{1,2} ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ^{1,2} ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ^{1,2} ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ^{1,2} ?		<input checked="" type="checkbox"/>		No Sample Time
Does the COC agree with the number and type of sample bottles received ^{1,2} ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ^{1,2} ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ^{1,2} ?	<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 ^{1,2} ? (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 Na ₂ O ₂ +NaOH, ZnAc+NaOH)	<input checked="" type="checkbox"/>			AC
Additional Comments (if any):				

^{1,2}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

9-11-14 1745
Date/Time Reviewed

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

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #2

N01 @ 3

9/11/2014 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409124-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4111020	09/11/2014	09/11/2014
Residual Range Organics (C28-C36)	ND	100	"	"	"	"	"

<i>Surrogate: o-Terphenyl</i>	85.9 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	0.313	0.200	mg/kg	1	4111019	09/11/2014	09/11/2014
Benzene	ND	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	0.0046	0.0020	"	"	"	"	"

<i>Surrogate: 1,2-Dichloroethane-d4</i>	91.0 %	70-130			"	"	"
<i>Surrogate: Toluene-d8</i>	103 %	70-130			"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>	102 %	70-130			"	"	"

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #2

S01 @ 3

9/11/2014 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409124-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4111020	09/11/2014	09/11/2014
Residual Range Organics (C28-C36)	ND	100	"	"	"	"	"

<i>Surrogate: o-Terphenyl</i>	<i>88.0 %</i>	<i>59-131</i>			<i>"</i>	<i>"</i>	<i>"</i>
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	3.62	0.200	mg/kg	1	4111019	09/11/2014	09/11/2014
Benzene	ND	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	0.0075	0.0020	"	"	"	"	"

<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>91.0 %</i>	<i>70-130</i>			<i>"</i>	<i>"</i>	<i>"</i>
<i>Surrogate: Toluene-d8</i>	<i>105 %</i>	<i>70-130</i>			<i>"</i>	<i>"</i>	<i>"</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>105 %</i>	<i>70-130</i>			<i>"</i>	<i>"</i>	<i>"</i>

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #2

E01 @ 3

9/11/2014 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409124-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	88	50	mg/kg	1	4111020	09/11/2014	09/11/2014
Residual Range Organics (C28-C36)	ND	100	"	"	"	"	"

<i>Surrogate: o-Terphenyl</i>	93.7 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	196	5.00	mg/kg	25	4111019	09/11/2014	09/12/2014
Benzene	0.0020	0.0020	"	1	"	"	09/11/2014
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	0.374	0.0020	"	"	"	"	"

<i>Surrogate: 1,2-Dichloroethane-d4</i>	91.0 %	70-130			"	"	"
<i>Surrogate: Toluene-d8</i>	113 %	70-130			"	"	09/12/2014
<i>Surrogate: 4-Bromofluorobenzene</i>	101 %	70-130			"	"	"

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #2

W01 @ 3

9/11/2014 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409124-04 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4111020	09/11/2014	09/11/2014
Residual Range Organics (C28-C36)	ND	100	"	"	"	"	"

<i>Surrogate: o-Terphenyl</i>	85.9 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	11.1	0.200	mg/kg	1	4111019	09/11/2014	09/11/2014
Benzene	ND	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	0.0385	0.0020	"	"	"	"	"
Xylenes, total	ND	0.0020	"	"	"	"	"

<i>Surrogate: 1,2-Dichloroethane-d4</i>	85.3 %	70-130			"	"	"
<i>Surrogate: Toluene-d8</i>	101 %	70-130			"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>	112 %	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.

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #2

GW01

9/11/2014 12:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X409124-05 (Water)

BTEX by EPA 8260C

Benzene	138	1.0	ug/L	1	4110009	09/11/2014	09/11/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	23.2	1.0	"	"	"	"	"	
Xylenes, total	31.9	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	96.3 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	97.9 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #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 4110009 - EPA 5030B (Water)

Blank (4110009-BLK1)

Prepared: 09/10/2014 Analyzed: 09/11/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	97.6		87.3-113			
Surrogate: Toluene-d8	63		"	62.5	101		90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.9		88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #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 4I10009 - EPA 5030B (Water)

LCS (4I10009-BS1)

Prepared: 09/10/2014 Analyzed: 09/11/2014

Benzene	48.0	1.0	ug/L	50.0		95.9	75-126			
Toluene	49.4	1.0	"	50.0		98.8	78.7-126			
Ethylbenzene	50.0	1.0	"	50.0		100	81-130			
m,p-Xylene	99.8	2.0	"	100		99.8	77.2-133			
o-Xylene	49.7	1.0	"	50.0		99.5	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.1	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		99.5	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	88.6-111			

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Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #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 4110009 - EPA 5030B (Water)

Matrix Spike (4110009-MS1)		Source: X409092-10			Prepared: 09/10/2014 Analyzed: 09/11/2014					
Benzene	44.5	1.0	ug/L	50.0	0.1	88.6	74-130			
Toluene	46.4	1.0	"	50.0	ND	92.8	73-131			
Ethylbenzene	47.1	1.0	"	50.0	ND	94.3	76-132			
m,p-Xylene	94.9	2.0	"	100	ND	94.9	69-139			
o-Xylene	46.7	1.0	"	50.0	ND	93.4	74-131			
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		89.7	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		100	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.6	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.

Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #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 4110009 - EPA 5030B (Water)

Matrix Spike Dup (4110009-MSD1)		Source: X409092-10			Prepared: 09/10/2014 Analyzed: 09/11/2014					
Benzene	44.6	1.0	ug/L	50.0	0.1	89.0	74-130	0.382	20	
Toluene	46.5	1.0	"	50.0	ND	93.0	73-131	0.280	20	
Ethylbenzene	46.6	1.0	"	50.0	ND	93.3	76-132	1.07	20	
m,p-Xylene	93.9	2.0	"	100	ND	93.9	69-139	1.06	20	
o-Xylene	47.1	1.0	"	50.0	ND	94.2	74-131	0.853	20	
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		90.6	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		100	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.3	88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #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 4111019 - EPA 5030 (soil)

Blank (4111019-BLK1)

Prepared: 09/11/2014 Analyzed: 09/11/2014

Gasoline Range Hydrocarbons	ND	0.2	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	62.1		ug/kg	62.5		99.3	70-130			
Surrogate: Toluene-d8	61.5		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	63.8		"	62.5		102	70-130			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #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 4I11019 - EPA 5030 (soil)

LCS (4I11019-BS1)

Prepared: 09/11/2014 Analyzed: 09/11/2014

Benzene	0.1	0.002	mg/kg	0.100		101	77.1-124			
Toluene	0.1	0.002	"	0.100		96.3	74.5-128			
Ethylbenzene	0.1	0.002	"	0.100		99.4	66.4-127			
m,p-Xylene	0.2	0.004	"	0.200		101	76.6-124			
o-Xylene	0.1	0.002	"	0.100		101	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	62.3		ug/kg	62.5		99.7	70-130			
Surrogate: Toluene-d8	60.9		"	62.5		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	61.8		"	62.5		98.8	70-130			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #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 4111019 - EPA 5030 (soil)

Matrix Spike (4111019-MS1)		Source: X409122-02			Prepared: 09/11/2014 Analyzed: 09/11/2014					
Benzene	0.1	0.002	mg/kg	0.100	ND	102	71.8-126			
Toluene	0.1	0.002	"	0.100	ND	98.9	65.1-130			
Ethylbenzene	0.1	0.002	"	0.100	ND	98.1	62.2-130			
m,p-Xylene	0.2	0.004	"	0.200	0.002	97.9	46.5-137			
o-Xylene	0.1	0.002	"	0.100	0.0005	98.9	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	62.8		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	62.4		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	63.4		"	62.5		101	70-130			

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #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 4111019 - EPA 5030 (soil)

Matrix Spike Dup (4111019-MSD1)		Source: X409122-02			Prepared: 09/11/2014 Analyzed: 09/11/2014					
Benzene	0.1	0.002	mg/kg	0.100	ND	101	71.8-126	1.24	11.3	
Toluene	0.1	0.002	"	0.100	ND	98.4	65.1-130	0.487	15.4	
Ethylbenzene	0.1	0.002	"	0.100	ND	97.4	62.2-130	0.757	19.6	
m,p-Xylene	0.2	0.004	"	0.200	0.002	97.4	46.5-137	0.559	19.2	
o-Xylene	0.1	0.002	"	0.100	0.0005	99.4	54.2-134	0.462	17.9	
Surrogate: 1,2-Dichloroethane-d4	61.4		ug/kg	62.5		98.2	70-130			
Surrogate: Toluene-d8	61.6		"	62.5		98.6	70-130			
Surrogate: 4-Bromofluorobenzene	62.6		"	62.5		100	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.

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Phil Hamlin
Project Number: WO# 88601464
Project: Edward Rademacher #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 8015M - 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 4111020 - EPA 3580

Blank (4111020-BLK1)

Prepared: 09/11/2014 Analyzed: 09/11/2014

Diesel (C10-C28) ND 50 mg/kg

Residual Range Organics (C28-C36) ND 100 "

Surrogate: o-Terphenyl 49 g 50.0 98.9 59-131

LCS (4111020-BS1)

Prepared: 09/11/2014 Analyzed: 09/11/2014

Diesel (C10-C28) 770 50 mg/kg 1000 77.3 64-121

Residual Range Organics (C28-C36) 850 100 " 1000 85.4 58-124

Surrogate: o-Terphenyl 46 g 50.0 92.0 59-131

Matrix Spike (4111020-MS1)

Source: X409122-01

Prepared: 09/11/2014 Analyzed: 09/11/2014

Diesel (C10-C28) 780 50 mg/kg 1000 18 76.1 53-125

Residual Range Organics (C28-C36) 850 100 " 1000 59 78.7 47-133

Surrogate: o-Terphenyl 44 g 50.0 87.8 59-131

Matrix Spike Dup (4111020-MSD1)

Source: X409122-01

Prepared: 09/11/2014 Analyzed: 09/11/2014

Diesel (C10-C28) 790 50 mg/kg 1000 18 77.1 53-125 1.29 20

Residual Range Organics (C28-C36) 840 100 " 1000 59 78.0 47-133 0.814 20

Surrogate: o-Terphenyl 45 g 50.0 89.0 59-131

Origins Laboratory, Inc.



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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Phil Hamlin

Project Number: WO# 88601464

Project: Edward Rademacher #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.

Noelle Doyle Mathis, President



May 29, 2015

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

**Project Name - KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35**

Project Number - [none]

Attached are your analytical results for KMG - Rademacher 9,16-25A,10,15,23,37,38,39-35 received by Origins Laboratory, Inc. May 22, 2015. This project is associated with Origins project number X505213-01.

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	X505213-01	Water	May 22, 2015 10:23	05/22/2015 17:10
BH02	X505213-02	Water	May 22, 2015 10:24	05/22/2015 17:10
BH03	X505213-03	Water	May 22, 2015 10:33	05/22/2015 17:10

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

www.originslaboratory.com

X505213

ORIGINS
LABORATORY, INC

page 1 of 1

Client: Amudathu
Address: 6899 Pecos St. Unit C
Telephone Number: 303 487 1228
Email Address: R.Cornez @ Tasman-geo.com

Project Manager: Bob Cornez
Project Name: Rademacher 9, 16-25A, 10, 15, 23, 37, 38, 39-35
Project Number:
Samples Collected By: Tyler Mathis - Tasman Geosciences

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #		
BH01	5/22/2015	10:23		X				X			X	1
BH02	↓	10:24		↓				↓			↓	2
BH03	↓	10:33										3
												4
												5
												6
												7
												8
												9
												10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
<u>RM</u>	5/22/2015	17:00	<u>[Signature]</u>	5/22/15	17:00	Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard

Date Results Needed

5.8°C

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X505213

Client: Tasman

Client Project ID: KMG-Rademacher

Checklist Completed by: Jen Pellegrini

Shipped Via: HL

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

Date/time completed: 5/26/15

Airbill #: 111A

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

Cooler Number/Temperature: 1 15.8 °C 1 °C 1 °C (Describe) 1 °C

Thermometer ID: T0CB

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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	<input 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.

Jen Pellegrini
Reviewed by (Project Manager)

5/26/15
Date/Time Reviewed

Origins Laboratory, Inc.

Jen 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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

BH01

5/22/2015 10:23:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X505213-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5E27012	05/27/2015	05/28/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.6 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	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

Bob Cornez
Project Number: [none]
Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

BH02

5/22/2015 10:24:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X505213-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5E27012	05/27/2015	05/28/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	87.3-113	"	"	"
Surrogate: Toluene-d8	100 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	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

Bob Cornez
Project Number: [none]
Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

BH03

5/22/2015 10:33:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X505213-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5E27012	05/27/2015	05/28/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5E27012 - EPA 5030B (Water)

Blank (5E27012-BLK1)

Prepared: 05/27/2015 Analyzed: 05/28/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	96.8		87.3-113			
Surrogate: Toluene-d8	62		"	62.5	98.8		90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	100		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

Bob Cornez
Project Number: [none]
Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5E27012 - EPA 5030B (Water)

LCS (5E27012-BS1)

Prepared: 05/27/2015 Analyzed: 05/28/2015

Benzene	46.2	1.0	ug/L	50.0		92.4	75-126			
Toluene	47.6	1.0	"	50.0		95.2	78.7-126			
Ethylbenzene	48.7	1.0	"	50.0		97.4	80-130			
m,p-Xylene	95.8	2.0	"	100		95.8	77.2-133			
o-Xylene	45.9	1.0	"	50.0		91.9	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.7	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.5	88.6-111			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5E27012 - EPA 5030B (Water)

Matrix Spike (5E27012-MS1)		Source: X505240-01			Prepared: 05/27/2015 Analyzed: 05/28/2015					
Benzene	46.4	1.0	ug/L	50.0	ND	92.9	74-130			
Toluene	46.4	1.0	"	50.0	ND	92.9	73-131			
Ethylbenzene	49.7	1.0	"	50.0	ND	99.4	76-132			
m,p-Xylene	97.2	2.0	"	100	ND	97.2	69-139			
o-Xylene	46.7	1.0	"	50.0	ND	93.3	74-131			
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		98.3	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

Bob Cornez
Project Number: [none]
Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5E27012 - EPA 5030B (Water)

Matrix Spike Dup (5E27012-MSD1)		Source: X505240-01			Prepared: 05/27/2015 Analyzed: 05/28/2015					
Benzene	57.1	1.0	ug/L	50.0	ND	114	74-130	20.5	20	QM-07
Toluene	57.8	1.0	"	50.0	ND	116	73-131	21.9	20	QM-07
Ethylbenzene	59.1	1.0	"	50.0	ND	118	76-132	17.3	20	
m,p-Xylene	116	2.0	"	100	ND	116	69-139	17.2	20	
o-Xylene	55.0	1.0	"	50.0	ND	110	74-131	16.3	20	
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.3	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

Bob Cornez

Project Number: [none]

Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

Notes and Definitions

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

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.

September 02, 2015

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver

CO 80211

**Project Name - KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35****Project Number - [none]**

Attached are your analytical results for KMG - Rademacher 9,16-25A,10,15,23,37,38,39-35 received by Origins Laboratory, Inc. August 28, 2015. This project is associated with Origins project number X508343-01.

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	X508343-01	Water	August 28, 2015 9:35	08/28/2015 11:45
BH02	X508343-02	Water	August 28, 2015 9:15	08/28/2015 11:45
BH03	X508343-03	Water	August 28, 2015 9:20	08/28/2015 11:45

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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

www.originslaboratory.com

page 1 of 1

ORIGINS **LABORATORY, INC** **X508343**

Client: APL/Tasman Project Manager/Send Report to: Christine Wasko
Address: 6899 Pecos SE Denver, CO 80211
Telephone Number: _____
Project Name/Number: Rademacher, 9-16-25A, 10, 15, 23, 37, 38, 39-35
Sample Collected By: Kevin Walter

Sample ID Description	Date Sampled	Time Sampled	Preparative	Matrix	Analysis/Method	Sample Instructions
BH01	8/28/15	0935	X	X	BTEX	1
BH02	↓	0915	X	X	X	2
BH03	↓	0920	X	X	X	3
						4
						5
						6
						7
						8
						9
						10
Relinquished by: <u>Joe Pellegrini</u>	Date: <u>8/28/15</u>	Time: <u>1145</u>	Received by: <u>Phil Hamlin</u>	Date: <u>8/28/15</u>	Time: <u>1145</u>	Turnaround Time: <input checked="" type="checkbox"/> Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> Standard
Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____	

Comments:

Date Results Needed:

Origins Laboratory, Inc.

Joe 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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X568343

Client: APC/Tasman

Client Project ID: Rademacher, 9-16-25A

Checklist Completed by: J. Pellegrini

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

Date/time completed: 8/28/15

Airbill #: _____

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

Cooler Number/Temperature: 1 / 10.2 °C _____ / _____ °C _____ / _____ °C (Describe)

Thermometer ID: 7003

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>24 hrs.</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.

Reviewed by (Project Manager) [Signature]

Date/Time Reviewed 8/31/15

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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

BH01

8/28/2015 9:35:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X508343-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5H31011	08/31/2015	09/01/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	96.4 %	84-121			"	"	"
Surrogate: Toluene-d8	99.9 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	100 %	84-114			"	"	"

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

BH02

8/28/2015 9:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X508343-02 (Water)

BTEX by EPA 8260C

Benzene	2.5	1.0	ug/L	1	5H31011	08/31/2015	09/01/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	95.4 %	84-121			"	"	"
Surrogate: Toluene-d8	101 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	98.7 %	84-114			"	"	"

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

BH03

8/28/2015 9:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X508343-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5H31011	08/31/2015	09/01/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.4 %	84-121			"	"	"
Surrogate: Toluene-d8	101 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	100 %	84-114			"	"	"

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5H31011 - EPA 5030B (Water)

Blank (5H31011-BLK1)

Prepared: 08/31/2015 Analyzed: 09/01/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5	93.5		84-121			
Surrogate: Toluene-d8	62		"	62.5	99.3		85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5	96.1		84-114			

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5H31011 - EPA 5030B (Water)

Blank (5H31011-BLK2)

Prepared: 08/31/2015 Analyzed: 09/01/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.6	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.8	84-114			

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5H31011 - EPA 5030B (Water)

LCS (5H31011-BS1)

Prepared: 08/31/2015 Analyzed: 09/01/2015

Benzene	52.2	1.0	ug/L	50.0		104	75-126			
Toluene	51.9	1.0	"	50.0		104	78.7-126			
Ethylbenzene	54.0	1.0	"	50.0		108	80-130			
m,p-Xylene	108	2.0	"	100		108	77.2-133			
o-Xylene	55.0	1.0	"	50.0		110	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		93.1	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.5	84-114			

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 - Rademacher
 9,16-25A,10,15,23,37,38,39-35

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 5H31011 - EPA 5030B (Water)

LCS (5H31011-BS2)

Prepared: 08/31/2015 Analyzed: 09/01/2015

Benzene	45.5	1.0	ug/L	50.0		91.1	75-126			
Toluene	44.0	1.0	"	50.0		88.0	78.7-126			
Ethylbenzene	46.2	1.0	"	50.0		92.5	80-130			
m,p-Xylene	92.8	2.0	"	100		92.8	77.2-133			
o-Xylene	46.5	1.0	"	50.0		93.0	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		93.8	84-121			
Surrogate: Toluene-d8	63		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5H31011 - EPA 5030B (Water)

Matrix Spike (5H31011-MS1)		Source: X508343-02			Prepared: 08/31/2015 Analyzed: 09/01/2015					
Benzene	51.7	1.0	ug/L	50.0	2.5	98.4	74-130			
Toluene	49.2	1.0	"	50.0	ND	98.4	73-131			
Ethylbenzene	52.4	1.0	"	50.0	ND	105	76-132			
m,p-Xylene	103	2.0	"	100	ND	103	69-139			
o-Xylene	51.7	1.0	"	50.0	ND	103	74-131			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.8	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.9	84-114			

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5H31011 - EPA 5030B (Water)

Matrix Spike (5H31011-MS2)		Source: X508343-03			Prepared: 08/31/2015 Analyzed: 09/01/2015					
Benzene	57.5	1.0	ug/L	50.0	ND	115	74-130			
Toluene	56.5	1.0	"	50.0	ND	113	73-131			
Ethylbenzene	61.0	1.0	"	50.0	ND	122	76-132			
m,p-Xylene	120	2.0	"	100	ND	120	69-139			
o-Xylene	59.3	1.0	"	50.0	ND	119	74-131			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.4	84-121			
Surrogate: Toluene-d8	63		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

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 - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5H31011 - EPA 5030B (Water)

Matrix Spike Dup (5H31011-MSD1)		Source: X508343-02			Prepared: 08/31/2015 Analyzed: 09/01/2015					
Benzene	56.6	1.0	ug/L	50.0	2.5	108	74-130	9.16	20	
Toluene	53.4	1.0	"	50.0	ND	107	73-131	8.09	20	
Ethylbenzene	56.4	1.0	"	50.0	ND	113	76-132	7.19	20	
m,p-Xylene	110	2.0	"	100	ND	110	69-139	6.77	20	
o-Xylene	55.3	1.0	"	50.0	ND	111	74-131	6.82	20	
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		91.1	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.3	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	84-114			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

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 5H31011 - EPA 5030B (Water)

Matrix Spike Dup (5H31011-MSD2)		Source: X508343-03			Prepared: 08/31/2015 Analyzed: 09/01/2015					
Benzene	56.1	1.0	ug/L	50.0	ND	112	74-130	2.46	20	
Toluene	54.4	1.0	"	50.0	ND	109	73-131	3.79	20	
Ethylbenzene	57.2	1.0	"	50.0	ND	114	76-132	6.31	20	
m,p-Xylene	112	2.0	"	100	ND	112	69-139	6.74	20	
o-Xylene	54.6	1.0	"	50.0	ND	109	74-131	8.11	20	
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		98.2	84-121			
Surrogate: Toluene-d8	63		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	84-114			

Origins Laboratory, Inc.



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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Christine Wasko

Project Number: [none]

Project: KMG - Rademacher
9,16-25A,10,15,23,37,38,39-35

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



November 17, 2015

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

**Project Name - KMG - Rademacher
9,16-25A,10,15,23,37,38,39-25**

Project Number - [none]

Attached are your analytical results for KMG - Rademacher 9,16-25A,10,15,23,37,38,39-25 received by Origins Laboratory, Inc. November 11, 2015. This project is associated with Origins project number X511127-01.

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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	X511127-01	Water	November 11, 2015 9:30	11/11/2015 15:00
BH02	X511127-02	Water	November 11, 2015 9:35	11/11/2015 15:00
BH03	X511127-03	Water	November 11, 2015 9:40	11/11/2015 15:00

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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

www.originslaboratory.com

X511127

ORIGINS
LABORATORY, INC

Client: Tasman Geo
Address:
Telephone Number: 326 94 554
Email Address: R.D. Mathis - 960 (Am)
Project Manager: Bob Cornez
Project Name: Rademacher 9,16-25A,10,15,23,37,38,39-25
Project Number:
Samples Collected By: EDK

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #			Other
BH41	11/11/15	0930	3									STEP 8260	1
BH42	0935	2											2
BH43	0940	3											3
													4
													5
													6
													7
													8
													9
													10

Relinquished By:	Date: 11/11/15	Time: 1500	Received By:	Date: 11.11.15	Time: 1500	Turnaround Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/>

Date Results Needed

40°C

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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X511127

Client: Tasman

Client Project ID: Rademacher 9, 16-25A...

Checklist Completed by: KRush

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

Date/time completed: 11.11.15 @ 1700

Airbill #: _____

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

Cooler Number/Temperature: 1 / 4.0 °C _____ / _____ °C _____ / _____ °C _____ / _____ °C

Thermometer ID: TW3

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input checked="" type="checkbox"/>			HC1
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) [Signature]

Date/Time Reviewed 11/13/15

Origins Laboratory, Inc.

[Signature]

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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

BH01

11/11/2015 9:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X511127-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B5K1204	11/12/2015	11/13/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	111 %	84-121			"	"	"
Surrogate: Toluene-d8	102 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	99.9 %	84-114			"	"	"

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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

BH02

11/11/2015 9:35:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X511127-02 (Water)

BTEX by EPA 8260C

Benzene	1.2	1.0	ug/L	1	B5K1204	11/12/2015	11/13/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	84-121			"	"	"
Surrogate: Toluene-d8	101 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	97.8 %	84-114			"	"	"

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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

BH03

11/11/2015 9:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X511127-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B5K1204	11/12/2015	11/13/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	109 %	84-121			"	"	"
Surrogate: Toluene-d8	101 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	97.9 %	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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

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 B5K1204 - EPA 5030B (Water)

Blank (B5K1204-BLK1)

Prepared: 11/12/2015 Analyzed: 11/12/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	70		"	62.5	111		84-121			
Surrogate: Toluene-d8	63		"	62.5	101		85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	100		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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

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 B5K1204 - EPA 5030B (Water)

Blank (B5K1204-BLK2)

Prepared: 11/12/2015 Analyzed: 11/13/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	69		"	62.5	110		84-121			
Surrogate: Toluene-d8	63		"	62.5	100		85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5	98.6		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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

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 B5K1204 - EPA 5030B (Water)

LCS (B5K1204-BS1)

Prepared: 11/12/2015 Analyzed: 11/12/2015

Benzene	47.8	1.0	ug/L	50.0		95.5	75-126			
Toluene	46.8	1.0	"	50.0		93.7	78.7-126			
Ethylbenzene	48.8	1.0	"	50.0		97.6	80-130			
m,p-Xylene	99.6	2.0	"	100		99.6	77.2-133			
o-Xylene	49.4	1.0	"	50.0		98.8	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		103	84-121			
Surrogate: Toluene-d8	62		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

Origins Laboratory, Inc.



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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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

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 B5K1204 - EPA 5030B (Water)

LCS (B5K1204-BS2)

Prepared: 11/12/2015 Analyzed: 11/13/2015

Benzene	45.8	1.0	ug/L	50.0		91.6	75-126			
Toluene	44.6	1.0	"	50.0		89.2	78.7-126			
Ethylbenzene	45.0	1.0	"	50.0		89.9	80-130			
m,p-Xylene	91.6	2.0	"	100		91.6	77.2-133			
o-Xylene	48.3	1.0	"	50.0		96.6	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5		105	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

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 B5K1204 - EPA 5030B (Water)

Matrix Spike (B5K1204-MS1)		Source: X511127-01			Prepared: 11/12/2015 Analyzed: 11/13/2015					
Benzene	54.0	1.0	ug/L	50.0	ND	108	74-130			
Toluene	53.7	1.0	"	50.0	ND	107	73-131			
Ethylbenzene	55.7	1.0	"	50.0	ND	111	76-132			
m,p-Xylene	114	2.0	"	100	0.5	113	69-139			
o-Xylene	57.3	1.0	"	50.0	ND	115	74-131			
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.8	84-114			

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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

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 B5K1204 - EPA 5030B (Water)

Matrix Spike (B5K1204-MS2)		Source: X511127-02			Prepared: 11/12/2015 Analyzed: 11/13/2015					
Benzene	41.2	1.0	ug/L	50.0	1.2	80.0	74-130			
Toluene	39.9	1.0	"	50.0	ND	79.8	73-131			
Ethylbenzene	41.5	1.0	"	50.0	ND	82.9	76-132			
m,p-Xylene	85.2	2.0	"	100	ND	85.2	69-139			
o-Xylene	43.7	1.0	"	50.0	ND	87.5	74-131			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	84-114			

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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

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 B5K1204 - EPA 5030B (Water)

Matrix Spike Dup (B5K1204-MSD1)		Source: X511127-01			Prepared: 11/12/2015 Analyzed: 11/13/2015					
Benzene	50.3	1.0	ug/L	50.0	ND	101	74-130	6.98	20	
Toluene	50.4	1.0	"	50.0	ND	101	73-131	6.36	20	
Ethylbenzene	52.6	1.0	"	50.0	ND	105	76-132	5.61	20	
m,p-Xylene	107	2.0	"	100	0.5	106	69-139	6.45	20	
o-Xylene	53.6	1.0	"	50.0	ND	107	74-131	6.66	20	
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5		106	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.4	84-114			

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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

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 B5K1204 - EPA 5030B (Water)

Matrix Spike Dup (B5K1204-MSD2)		Source: X511127-02			Prepared: 11/12/2015 Analyzed: 11/13/2015					
Benzene	47.2	1.0	ug/L	50.0	1.2	92.0	74-130	13.5	20	
Toluene	44.9	1.0	"	50.0	ND	89.9	73-131	11.9	20	
Ethylbenzene	46.7	1.0	"	50.0	ND	93.3	76-132	11.8	20	
m,p-Xylene	96.1	2.0	"	100	ND	96.1	69-139	12.1	20	
o-Xylene	48.2	1.0	"	50.0	ND	96.5	74-131	9.81	20	
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	84-114			

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 - Rademacher
9,16-25A,10,15,23,37,38,39-25

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



February 26, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - KMG - Rademacher 9,16-25A

Project Number - [none]

Attached are your analytical results for KMG - Rademacher 9,16-25A received by Origins Laboratory, Inc. February 19, 2016. This project is associated with Origins project number X602240-01.

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 - Rademacher 9,16-25A

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	X602240-01	Water	February 18, 2016 14:20	02/19/2016 16:00
BH02	X602240-02	Water	February 18, 2016 14:50	02/19/2016 16:00
BH03	X602240-03	Water	February 18, 2016 14:10	02/19/2016 16:00
BH04	X602240-04	Water	February 18, 2016 14:40	02/19/2016 16:00
BH05	X602240-05	Water	February 18, 2016 14:30	02/19/2016 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.

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

ORIGINS LABORATORY, INC **XL602240** www.originslaboratory.com page 1 of 1

Client: Tasman Geo Project Manager: Bob Cornez
Address: _____ Project Name: Rademacher 9,16-25A
Telephone Number: 912 230 2807 Project Number: _____
Email Address: rcornez2@tasman-geo.com Samples Collected By: Bob Cornez
APC Zarrine: Sam LeRue

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix				Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	As Is/In Situ	Other		
BH01	2/18/16	1420	2		X							BTEX (8260)	1
BH02		1450	3		X								2
BH03		1410	3		X								3
BH04		1440	3		X								4
BH05		1450	3		X								5
													6
													7
													8
													9
													10

Relinquished By: [Signature] Date: 2/19/16 Time: _____ Received By: Kassie Date: 2.19.16 Time: 1600
Relinquished By: _____ Date: _____ Time: _____ Received By: _____ Date: _____ Time: _____

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

3-2 Date Results Needed _____

Origins Laboratory, Inc.

Jen 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 - Rademacher 9,16-25A

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X602240

Client: Tasman
Client Project ID: KMG-Rademacher

Checklist Completed by: Jeff Smith

Shipped Via: 417
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/22/12

Airbill #: N/A

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

Cooler Number/Temperature: 1 3.2 °C 1 °C 1 °C (Describe) 1 °C

Thermometer ID: TC03

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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	<input type="checkbox"/>	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.

Jeff Smith
Reviewed by (Project Manager)

2/22/12
Date/Time Reviewed

Origins Laboratory, Inc.

Jen 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 - Rademacher 9,16-25A

BH01

2/18/2016 2:20:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X602240-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6B2301	02/23/2016	02/24/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	84-121	"	"	"
Surrogate: Toluene-d8	96.8 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	96.8 %	84-114	"	"	"

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 - Rademacher 9,16-25A

BH02

2/18/2016 2:50:00PM

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

Origins Laboratory, Inc.
X602240-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6B2301	02/23/2016	02/24/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	110 %	84-121			"	"	"	
Surrogate: Toluene-d8	96.7 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.2 %	84-114			"	"	"	

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 - Rademacher 9,16-25A

BH03

2/18/2016 2:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X602240-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6B2301	02/23/2016	02/24/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	110 %	84-121			"	"	"
Surrogate: Toluene-d8	97.8 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	96.3 %	84-114			"	"	"

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 - Rademacher 9,16-25A

BH04

2/18/2016 2:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X602240-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6B2301	02/23/2016	02/24/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	107 %	84-121			"	"	"
Surrogate: Toluene-d8	99.1 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	97.7 %	84-114			"	"	"

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 - Rademacher 9,16-25A

BH05

2/18/2016 2:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X602240-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	B6B2301	02/23/2016	02/24/2016	U
Toluene	ND	1.0	"	"	"	"	"	U
Ethylbenzene	ND	1.0	"	"	"	"	"	U
Xylenes, total	ND	1.0	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4
Surrogate: Toluene-d8
Surrogate: 4-Bromofluorobenzene

109 % 84-121
97.7 % 85-115
96.8 % 84-114

" " "
" " "
" " "

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 - Rademacher 9,16-25A

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 B6B2301 - EPA 5030B (Water)

Blank (B6B2301-BLK1)

Prepared: 02/23/2016 Analyzed: 02/24/2016

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	65		"	62.5	105		84-121			
Surrogate: Toluene-d8	61		"	62.5	98.1		85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5	96.1		84-114			

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 - Rademacher 9,16-25A

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 B6B2301 - EPA 5030B (Water)

LCS (B6B2301-BS1)

Prepared: 02/23/2016 Analyzed: 02/24/2016

Benzene	49.3	1.0	ug/L	50.0		98.6	73.3-129			
Toluene	48.8	1.0	"	50.0		97.6	76.2-123			
Ethylbenzene	48.9	1.0	"	50.0		97.8	73.6-130			
m,p-Xylene	99.1	2.0	"	100		99.1	76.1-126			
o-Xylene	49.0	1.0	"	50.0		98.1	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.6	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.3	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.8	84-114			

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 - Rademacher 9,16-25A

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 B6B2301 - EPA 5030B (Water)

Matrix Spike (B6B2301-MS1)		Source: X602239-01			Prepared: 02/23/2016 Analyzed: 02/24/2016					
Benzene	58.9	1.0	ug/L	50.0	ND	118	74-130			
Toluene	57.8	1.0	"	50.0	ND	116	73-131			
Ethylbenzene	59.0	1.0	"	50.0	ND	118	76-132			
m,p-Xylene	119	2.0	"	100	ND	119	69-139			
o-Xylene	58.9	1.0	"	50.0	ND	118	74-131			
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	84-121			
Surrogate: Toluene-d8	62		"	62.5		98.5	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.4	84-114			

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 - Rademacher 9,16-25A

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 B6B2301 - EPA 5030B (Water)

Matrix Spike Dup (B6B2301-MSD1)		Source: X602239-01			Prepared: 02/23/2016 Analyzed: 02/24/2016					
Benzene	49.7	1.0	ug/L	50.0	ND	99.3	74-130	17.1	20	
Toluene	48.3	1.0	"	50.0	ND	96.7	73-131	17.9	20	
Ethylbenzene	48.7	1.0	"	50.0	ND	97.5	76-132	19.1	20	
m,p-Xylene	98.9	2.0	"	100	ND	98.9	69-139	18.3	20	
o-Xylene	50.4	1.0	"	50.0	ND	101	74-131	15.6	20	
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.3	84-121			
Surrogate: Toluene-d8	62		"	62.5		98.5	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.4	84-114			

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 - Rademacher 9,16-25A

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.

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

**ATTACHMENT B
WELL COMPLETION
LOGS**



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Kerr-McGee Oil and Gas Onshore, LP

DRILLED BY: Brandon LaVasseur

PROJECT MANAGER: Robert Cornez

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: AMS PowerProbe

DRILL BIT SIZE (INCHES): 2-3/8"

DATE STARTED - COMPLETED: 5/14/2015

TOTAL WELL DEPTH (FT. BGS): 11

DEPTH TO WATER (FT. BGS): 7.77 (11/11/15)

Barefoot 32N-25HZ

BORING / WELL ID: BH01

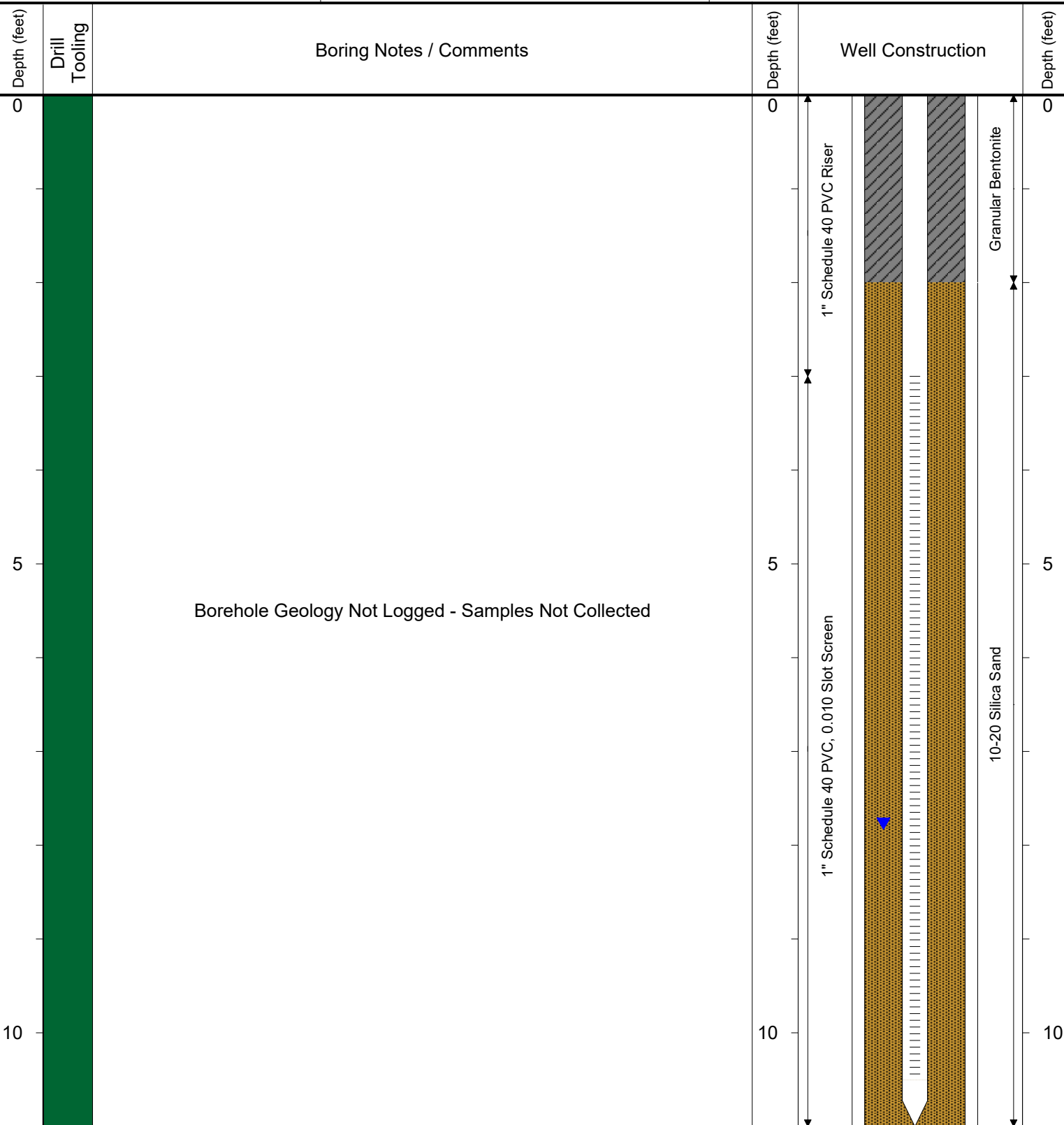
SURFACE COMPLETION: Flush Mount

LATITUDE (NAD 83): 40.193076

LONGITUDE (NAD 83): -104.947487

CASING ELEVATION (FT. AMSL): 4866.77

GROUND ELEVATION (FT. AMSL): 4866.98



Drilling / Sample Method:

Solid-Stem Auger

Direct Push - Expendable Well Tip



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Kerr-McGee Oil and Gas Onshore, LP

DRILLED BY: Brandon LaVasseur

PROJECT MANAGER: Robert Cornez

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: AMS PowerProbe

DRILL BIT SIZE (INCHES): 2-3/8"

DATE STARTED - COMPLETED: 5/14/2015

TOTAL WELL DEPTH (FT. BGS): 13

DEPTH TO WATER (FT. BGS): 7.44 (11/11/15) ▼

Barefoot 32N-25HZ

BORING / WELL ID: BH02

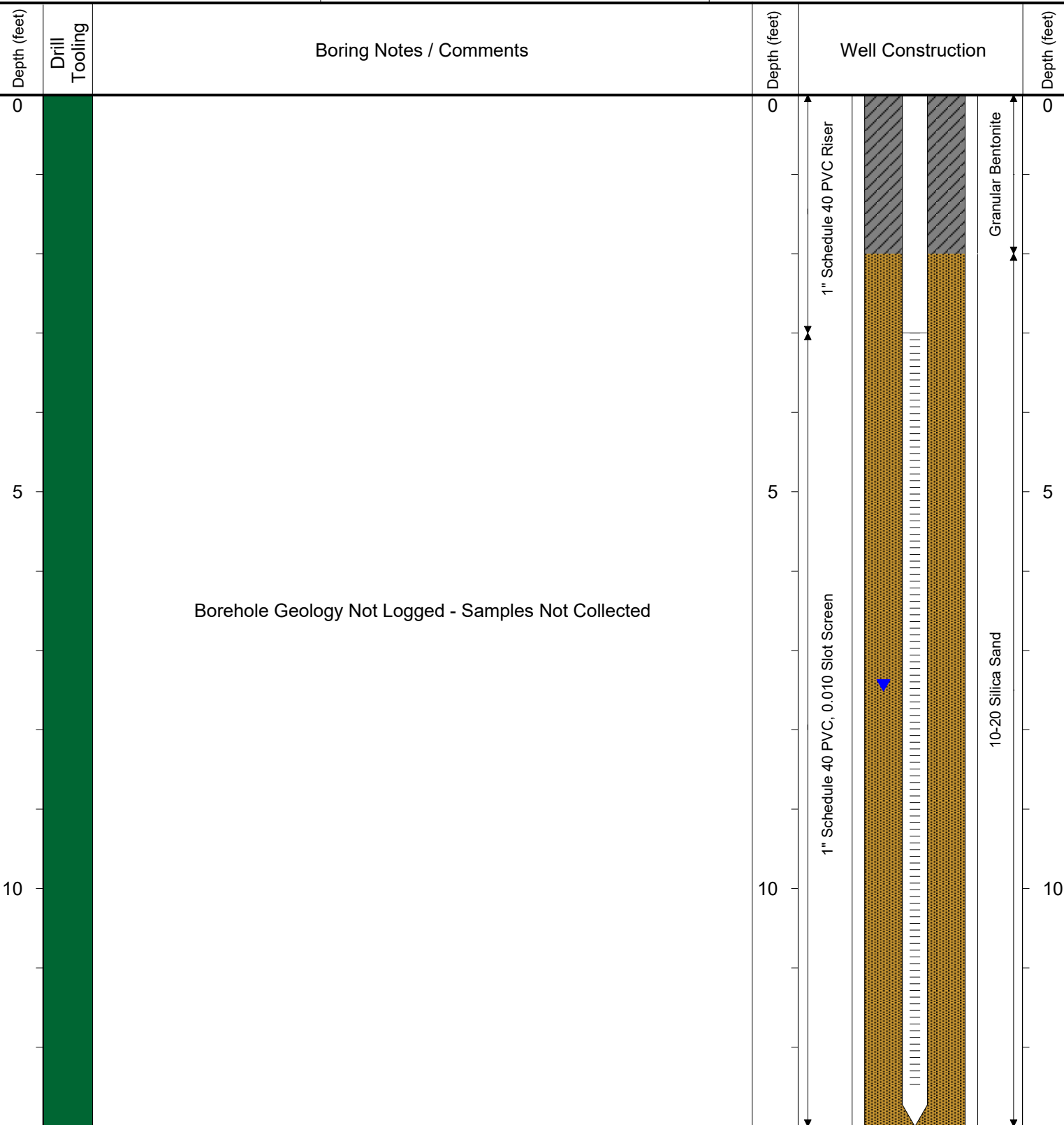
SURFACE COMPLETION: Flush Mount

LATITUDE (NAD 83): 40.193119

LONGITUDE (NAD 83): -104.947455

CASING ELEVATION (FT. AMSL): 4867.24

GROUND ELEVATION (FT. AMSL): 4867.41



Drilling / Sample Method:

Solid-Stem Auger

Direct Push - Expendable Well Tip



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Kerr-McGee Oil and Gas Onshore, LP

DRILLED BY: Brandon LaVasseur

PROJECT MANAGER: Robert Cornez

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: AMS PowerProbe

DRILL BIT SIZE (INCHES): 2-3/8"

DATE STARTED - COMPLETED: 5/14/2015

TOTAL WELL DEPTH (FT. BGS): 13

DEPTH TO WATER (FT. BGS): 7.78 (11/11/15) ▼

Barefoot 32N-25HZ

BORING / WELL ID: BH03

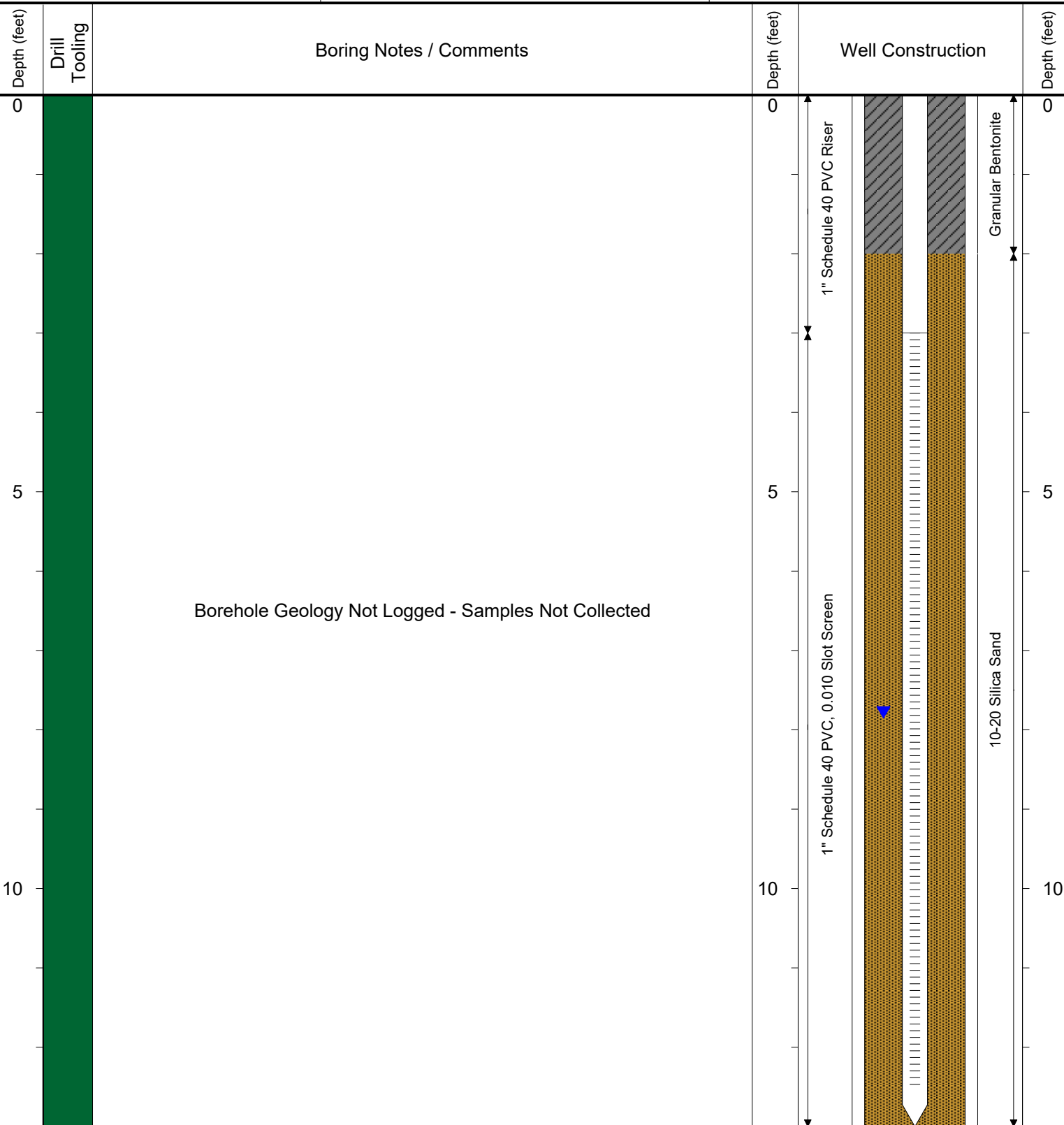
SURFACE COMPLETION: Flush Mount

LATITUDE (NAD 83): 40.19321

LONGITUDE (NAD 83): -104.947531


CASING ELEVATION (FT. AMSL): 4867.54

GROUND ELEVATION (FT. AMSL): 4867.75



Drilling / Sample Method:

 Solid-Stem Auger

 Direct Push - Expendable Well Tip



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Kerr-McGee Oil and Gas Onshore, LP

DRILLED BY: Brandon LaVasseur

PROJECT MANAGER: Robert Cornez

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: AMS PowerProbe

DRILL BIT SIZE (INCHES): 2-3/8"

DATE STARTED - COMPLETED: 2/12/2016

TOTAL WELL DEPTH (FT. BGS): 13

DEPTH TO WATER (FT. BGS): 6.86 (02/18/16) ▼

Barefoot 32N-25HZ

BORING / WELL ID: BH04

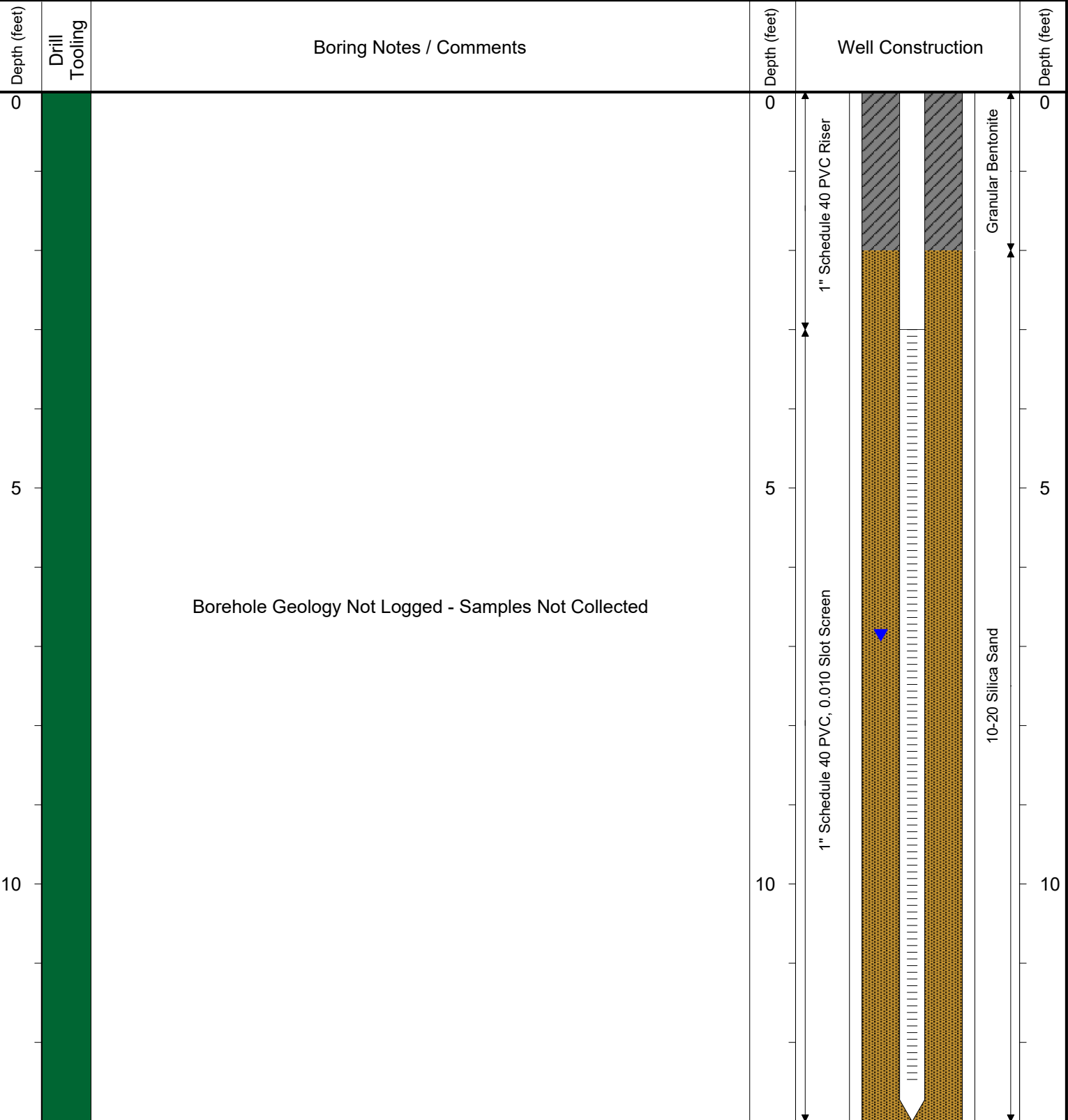
SURFACE COMPLETION: Flush Mount

LATITUDE (NAD 83): 40.193138

LONGITUDE (NAD 83): -104.947782

CASING ELEVATION (FT. AMSL): 4867.23

GROUND ELEVATION (FT. AMSL): 4867.72



Drilling / Sample Method:

- Solid-Stem Auger
- Direct Push - Expendable Well Tip



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Kerr-McGee Oil and Gas Onshore, LP

DRILLED BY: Brandon LaVasseur

PROJECT MANAGER: Robert Cornez

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: AMS PowerProbe

DRILL BIT SIZE (INCHES): 2-3/8"

DATE STARTED - COMPLETED: 2/12/2016

TOTAL WELL DEPTH (FT. BGS): 13

DEPTH TO WATER (FT. BGS): 7.84 (02/18/16) ▼

Barefoot 32N-25HZ

BORING / WELL ID: BH05

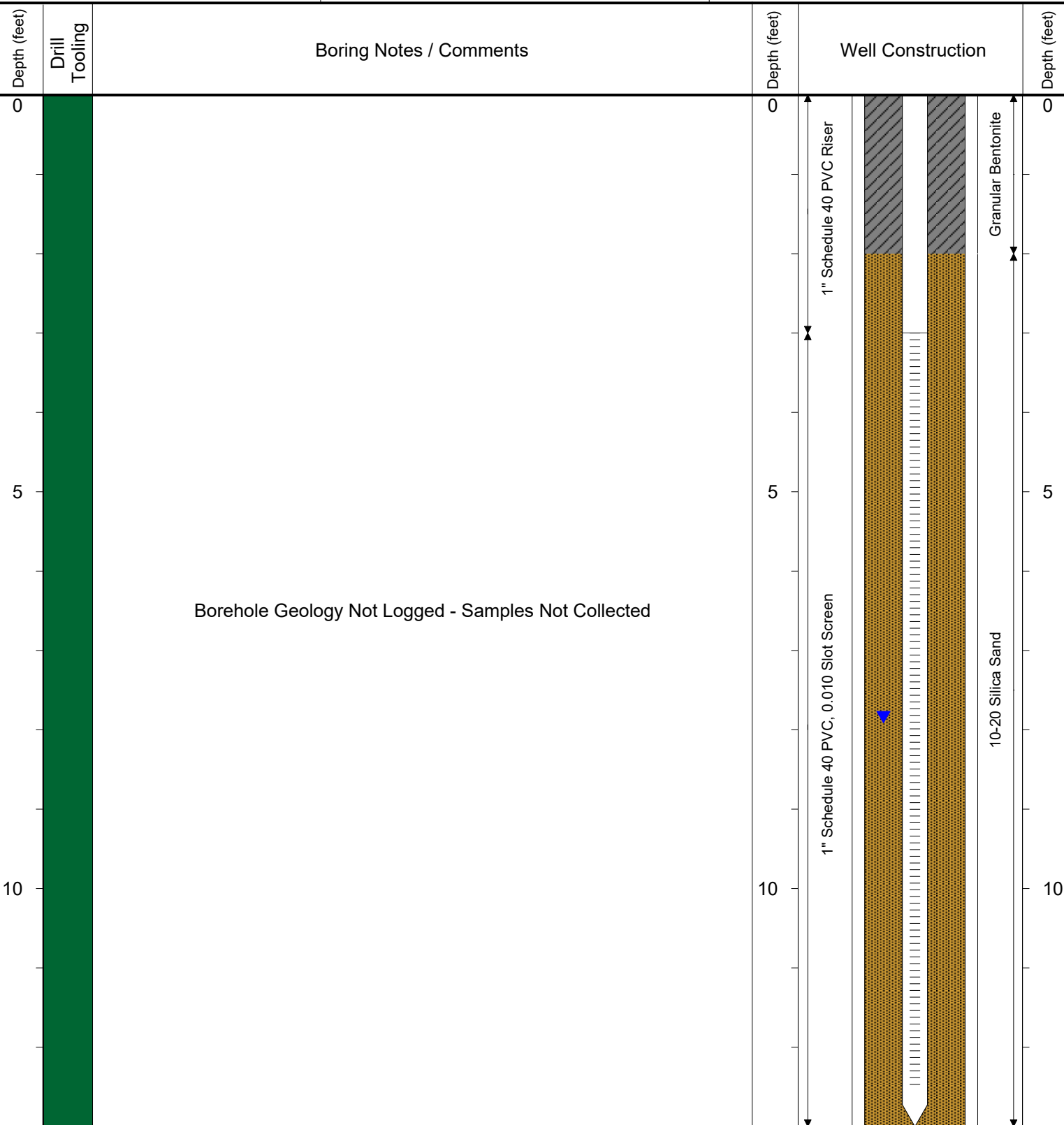
SURFACE COMPLETION: Flush Mount

LATITUDE (NAD 83): 40.193061

LONGITUDE (NAD 83): -104.947696

CASING ELEVATION (FT. AMSL): 4867.08

GROUND ELEVATION (FT. AMSL): 4867.41



Drilling / Sample Method:

Solid-Stem Auger

Direct Push - Expendable Well Tip