

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: <u>Kerr-McGee Oil and Gas Onshore, LP</u>		Name: <u>Phil Hamlin</u>	
Address: <u>1099 18th Street, Suite 1800</u>		No: <u>970-336-3500</u>	
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u>		Fax: <u>970-336-3656</u>	
API/Facility No: _____	County: <u>Weld</u>	Facility Number: <u>62N65W21SWSW</u>	
Facility Name: <u>Ernie F Adamson Gas Unit</u>	Well Name: <u>ADAMSON ERNIE F GU</u>	Well Number: <u>1X</u>	
Location (Qtr, Sec, Twp, Rng, Meridian): <u>SESW S21 T2N R65W</u>		Latitude: <u>40.120121</u> Longitude: <u>-104.674624</u>	

TECHNICAL CONDITIONS

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

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

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Non-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 water well is located 223 feet north of the release area.
No surface water is located within 1/4-mile of the site.

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

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>40' (E-W) x 52' (N-S) x 32-35' bgs</u>	<u>Excavation, soil sampling, and laboratory analysis.</u>
<input type="checkbox"/> Vegetation	_____	_____
<input checked="" type="checkbox"/> Groundwater	<u>See attached data.</u>	<u>Groundwater sampling and laboratory analysis.</u>
<input type="checkbox"/> Surface water	_____	_____

REMEDIATION WORKPLAN

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

On July 19, 2016, a corroded dumphine was encountered during plugging and abandonment activities at the Ernie F Adamson Gas Unit-62N65W21SWSW production facility. The facility was shut-in, associated underground infrastructure removed, and excavation activities commenced. Groundwater was not encountered within the initial excavation. An initial Form 19 was submitted to the COGCC on August 1, 2016 (COGCC Document No. 401086657), and a supplemental Form 19 was submitted to the COGCC on August 8, 2016 (COGCC Document No. 401089844.) The COGCC has not yet issued a Spill Tracking number for this release.

Describe how source is to be removed:

On July 29, 2016, excavation activities commenced and approximately 540 cubic yards of impacted material were removed and transported to the Buffalo Ridge Landfill in Keenesburg, 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 and base of the excavation area at approximately 12-18 feet bgs and 15-20 feet bgs, respectively. The soil samples were submitted to Origins Laboratory for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260C, TPH - diesel and oil range organics (DRO and ORO) by USEPA 8015, electrical conductivity (EC), and pH. Laboratory analytical results indicated that benzene and TPH concentrations in soil sample B05@20' were above the applicable COGCC Table 910-1 standards. Due to the depth of impacts and unstable sidewalls, further excavation activities were not conducted. To further assess the extent of soil impacts, exploratory excavations were advanced within the excavation area at five locations in the vicinity of the failed base sample B05@20'. Exploratory excavations were advanced from 20 feet bgs to between 32 and 36 feet bgs. Soil was screened using a PID and soil samples were collected from the final vertical extent of the five exploratory excavations and submitted to Origins Laboratory for analysis of BTEX, TPH - GRO by USEPA Method 8260C, TPH - DRO and ORO by USEPA 8015, EC, and pH. Laboratory analytical results indicated that benzene and/or TPH concentrations in three soil samples collected from the final vertical extent of the exploratory excavations were above the applicable COGCC Table 910-1 standards. To further assess the extent of hydrocarbon impacts, three boreholes were advanced adjacent to the excavation area. Soil samples were collected from above the water table from each borehole and submitted to Origins Laboratory for analysis of BTEX, TPH-GRO by USEPA Method 8260C, TPH - DRO and ORO by USEPA 8015. Constituent concentrations in soil samples collected from the three boreholes were below the applicable COGCC Table 910-1 standards. Groundwater was encountered at approximately 32 to 35 feet bgs in the soil borings. Temporary monitoring wells were installed in the boreholes and groundwater samples (BH01 - BH03) were collected and submitted to Origins Laboratory for analysis of BTEX. Analytical results indicated that benzene, ethylbenzene, and total xylenes concentrations in groundwater samples BH01 and BH02 were above the applicable COGCC Table 910-1 standards. Soil analytical results are summarized in Table 1 and groundwater analytical results are summarized in Table 2. Soil sample locations are presented on Figure 1 and groundwater sample locations are presented on Figure 2. Laboratory analytical reports are provided as Attachment A and borehole logs are provided as Attachment B. The remedial approach to address remaining impacts is provided in the following sections.

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 Buffalo Ridge landfill in Keenesburg, Colorado. Remaining soil and groundwater impacts will be addressed using on-site chemical oxidation (chemox) to remediate impacts to below COGCC Table 910-1 standards. Additional proposed groundwater monitoring measures are described on the following page.

State of Colorado Oil and Gas Conservation Commission

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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.): Three temporary groundwater monitoring wells were installed adjacent to the excavation area to assess the extent of impacted soil and groundwater. Based on the areal extent of the proposed on-site treatment area, the three existing temporary monitoring wells (BH01 - BH03) may be destroyed/abandoned during treatment activities. Following completion of the on-site soil and groundwater treatment, additional temporary monitoring wells will be installed at the site to assess the extent of groundwater impacts post-treatment. These wells will be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain below COGCC groundwater standards for four consecutive quarters.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required. Upon completion of remediation activities, the excavation will be backfilled with clean soil and graded to match the adjacent topography. The Ernie F Adamson Gas Unit-62N65W21SWSW production facility has been removed and will not be replaced. 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? [X] Y [] N If yes, describe: Soil and groundwater analytical results indicate that hydrocarbon impacts remain at the site. Remediation activities will be completed to treat impacted soil and groundwater at the site. Following remediation activities, temporary groundwater monitoring wells will be installed to further assess groundwater impacts. Groundwater samples will be collected from the temporary monitoring wells on a quarterly basis 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 Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. Remaining impacted material will be treated in place.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 7/19/2016 Date Site Investigation Completed: TBD Remediation Plan Submitted: Remediation Start Date: 7/29/2016 Anticipated Completion Date: 8/31/2018 Actual Completion Date:

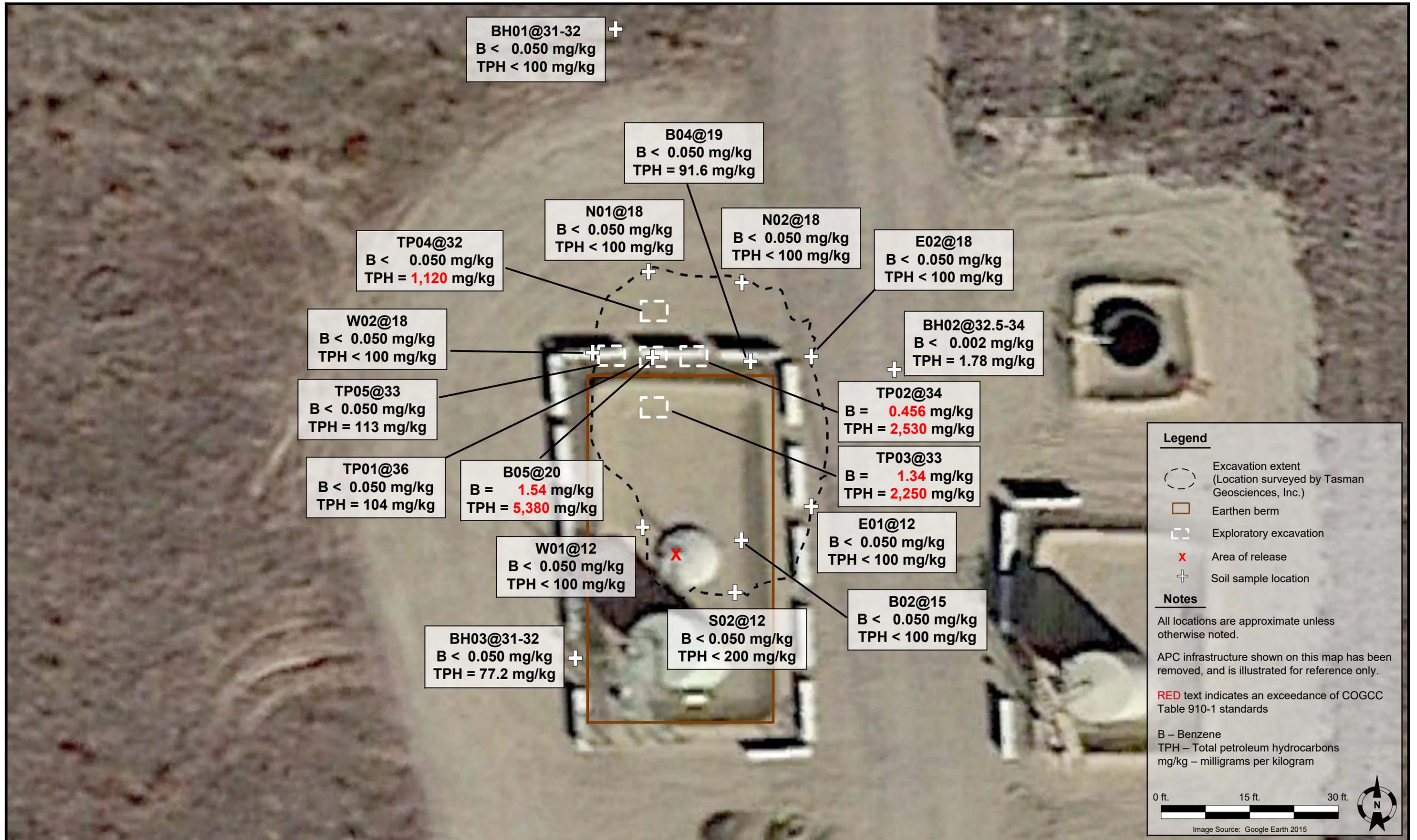
I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Phillip Hamlin

Signed: [Signature] Title: Senior HSE Representative Date: 11/23/2016

OGCC Approved: Title: Date:

FIGURES



DATE: November 8, 2016

DESIGNED BY: B. Cornez

DRAWN BY: M. Jahn



Kerr-McGee Oil and Gas Onshore, LP
Ernie F Adamson Gas Unit – 62N65W21SWSW
 SESW, Section 21, Township 2 North, Range 65 West
 Weld County, Colorado

Soil Sample
 Location Map

FIGURE
 1

BH01
B = 1,000 µg/L
T = 13.4 µg/L
E = 1,010 µg/L
X = 9,870 µg/L

BH02
B = 1,240 µg/L
T < 4.00 µg/L
E = 1,540 µg/L
X = 15,700 µg/L

BH03
B < 4.00 µg/L
T < 4.00 µg/L
E < 4.00 µg/L
X = 12.6 µg/L

Legend

-  Temporary groundwater monitoring well (surveyed by Tasman Geosciences Inc.)
-  Earthen berm
-  Excavation extent (Location surveyed by Tasman Geosciences, Inc.)
-  Area of release

Notes

All locations are approximate unless otherwise noted.
 APC infrastructure shown on this map has been removed, and is illustrated for reference only.
RED text indicates an exceedance of COGCC Table 910-1 standards
 B – Benzene
 T – Toluene
 E – Ethylbenzene
 X – Total xylenes
 µg/L – micrograms per liter

0 ft. 15 ft. 30 ft.



Image Source: Google Earth 2015

DATE: November 8, 2016

DESIGNED BY: B. Cornez

DRAWN BY: M. Jahn



Kerr-McGee Oil and Gas Onshore, LP
Ernie F Adamson Gas Unit – 62N65W21SWSW
 SESW, Section 21, Township 2 North, Range 65 West
 Weld County, Colorado

Groundwater Sample
 Location Map

FIGURE
 2

TABLES

TABLE 1
ERNIE F ADAMSON GAS UNIT-62N65W21SWSW
SOIL SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample Location	Date	Depth (ft. bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH-GRO (mg/kg)	TEPH-DRO (mg/kg)	TEPH-ORO (mg/kg)	EC (mmhos/cm)	pH (units)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	500			4 mmhos/cm or 2x BG	6-9
S01@12'	07/29/16	12	<0.050	<0.050	<0.050	<0.050	<5.00	<25.0	<100	0.457	7.83
E01@12'	07/29/16	12	<0.050	<0.050	<0.050	<0.050	<5.00	<25.0	<100	0.0779	8.52
W01@12'	07/29/16	12	<0.050	<0.050	<0.050	<0.050	<5.00	<25.0	<100	0.0151	8.47
B01@14'	07/29/16	12	0.202	<0.050	0.141	0.203	<5.00	<25.0	<100	0.282	7.59
N01@18'	08/02/16	18	<0.050	<0.050	<0.050	<0.050	<5.00	<25.0	<100	0.0341	6.95
N02@18'	08/02/16	18	<0.050	<0.050	<0.050	<0.050	<5.00	<25.0	<100	0.0209	7.37
W02@18'	08/02/16	18	<0.050	<0.050	<0.050	<0.050	<5.00	<25.0	<100	0.0703	7.38
E02@18'	08/02/16	18	<0.050	<0.050	<0.050	<0.050	<5.00	<25.0	<100	0.0810	7.53
B02@15'	08/02/16	15	<0.050	<0.050	<0.050	<0.050	<5.00	<25.0	<100	0.302	8.15
B03@19'	08/02/16	19	0.054	1.18	1.01	23.0	373	462	<100	0.262	8.36
B04@19'	08/02/16	19	<0.050	<0.050	<0.050	0.902	33.4	58.2	<100	0.317	8.37
B05@20'	08/04/16	20	1.54	29.6	17.2	263	2,920	2,460	<100	0.211	9.49*
TP01@36'	08/24/16	36	<0.050	<0.050	0.114	0.234	12.4	91.7	<100	0.143	7.79
TP02@34'	08/24/16	34	0.456	1.16	9.22	149	1,780	753	<100	0.231	8.15
TP03@33'	08/24/16	33	1.34	<0.498	5.68	104	1,050	1,200	<100	0.182	8.32
TP04@32'	08/24/16	32	<0.050	0.076	2.24	36.9	461	659	<100	0.0975	7.84
TP05@33'	08/24/16	33	<0.050	<0.050	<0.050	0.345	73.7	39.4	<100	0.0763	7.67
BH01@31-32'	09/02/16	31-32	<0.050	<0.050	<0.050	<0.050	<5.00	<25.0	<100	0.146	8.24
BH02@32.5-34'	09/02/16	32.5-34	<0.002	<0.002	0.006	0.025	1.78	<25.0	<100	0.124	7.56
BH03@31-32'	09/02/16	31-32	<0.050	<0.050	<0.050	<0.050	29.8	37.4	<100	0.150	7.59

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

COGCC = Colorado Oil and Gas Conservation Commission

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

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

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

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

EC = Electrical conductivity

BG = Background

mmhos/cm = Millimhos per centimeter

mg/kg = Milligrams per kilogram.

ft. bgs = Feet below ground surface.

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

* - pH sample was collected below the designated root zone (>3' bgs)

TABLE 2
ERNIE F ADAMSON GAS UNIT-62N65W21SWSW
GROUNDWATER SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample Location	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	
BH01	09/02/16	1,000	13.4	1,010	9,870	NM
BH02	09/02/16	1,240	<4.00	1,540	15,700	NM
BH03	09/02/16	<4.00	<4.00	<4.00	12.6	NM

Notes:

1. Standards for groundwater are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

COGCC = Colorado Oil and Gas Conservation Commission

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

µg/L = Micrograms per liter.

ft. BTOC = Feet below top of casing.

NM = Not measured.

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

ATTACHMENT A
LABORATORY ANALYTICAL DATA



August 01, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Adamson Ernie F GU #X1 Project Number - [none]

Attached are your analytical results for KMG - Adamson Ernie F GU #X1 received by Origins Laboratory, Inc. July 29, 2016. This project is associated with Origins project number X607324-01.

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 - Adamson Ernie F GU #X1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S01 @ 12'	X607324-01	Soil	July 29, 2016 12:50	07/29/2016 17:00
E01 @ 12'	X607324-02	Soil	July 29, 2016 12:55	07/29/2016 17:00
W01 @ 12'	X607324-03	Soil	July 29, 2016 13:00	07/29/2016 17:00
B01 @ 14'	X607324-04	Soil	July 29, 2016 13:05	07/29/2016 17:00

Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

www.originslaboratory.com

X607324

page of



Client: Tasman Geosciences
 Address: [Redacted]
 Telephone Number: (352) 262-9910
 Email Address: CORNEZ@TASMAN-GEOSCI.COM

Project Manager: Bob Cornez
 Project Name: ADAMSON ERNIE F GU #X1
 Project Number: [Redacted]
 Samples Collected By: KAIK FOSMARK

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative					Matrix			Analysis			Turnaround Time: Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/>		
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summ #	Other	GIBTEX 8260	TPH-DPH-ORA-8015	pH, E.C., SMC (C, 4.0)		Sample Instructions	
S012#12'	7/27/16	1250	2	X				X					X				
E012#12'	7/27/16	1255	2	X				X					X				
W012#12'	7/27/16	1300	2	X				X					X				
B012#14'	7/29/16	1305	2	X				X					X				
Relinquished By: [Signature]	Date: 7/29/16	Time: 1505	Time: 1505	Received By: [Signature]	Date: 7-29-16	Time: 1700	Received By: [Signature]	Date: 7-29-16	Time: 1700	Standard							

Date Results Needed: [Redacted]

Origins Laboratory, Inc.

Jefe Pellegrini

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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X607324

Client: Tasman
 Client Project ID: Adamson Ernie F GU #X1

Checklist Completed by: J.Pellegrini
 Date/time completed: 7/27/16

Shipped Via: Dixie
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: N/A

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

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

Thermometer ID: T203

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

J.Pellegrini
 Reviewed by (Project Manager)

7/29/16
 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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

S01 @ 12'
7/29/2016 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X607324-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6G2903	07/29/2016	07/29/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 75.2 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6G2902	07/29/2016	07/29/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 107 % 70-130 " " "
Surrogate: Toluene-d8 96.5 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 101 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.83		pH Units	1	B6G2906	07/29/2016	07/29/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.457		mmhos/cm	"	B6G2907	07/29/2016	07/29/2016	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

E01 @ 12'
7/29/2016 12:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X607324-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6G2903	07/29/2016	07/29/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 72.1 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6G2902	07/29/2016	07/29/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 108 % 70-130 " " "
Surrogate: Toluene-d8 96.6 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 102 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.52		pH Units	1	B6G2906	07/29/2016	07/29/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0779		mmhos/cm	"	B6G2907	07/29/2016	07/29/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

W01 @ 12'
7/29/2016 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X607324-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6G2903	07/29/2016	07/29/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 64.7 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6G2902	07/29/2016	07/29/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 108 % 70-130 " " "
Surrogate: Toluene-d8 96.4 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 100 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.47		pH Units	1	B6G2906	07/29/2016	07/29/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0151		mmhos/cm	"	B6G2907	07/29/2016	07/29/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

B01 @ 14'
7/29/2016 1:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X607324-04 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6G2903	07/29/2016	07/29/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 77.8 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6G2902	07/29/2016	07/29/2016	U
Benzene	0.202	0.050	"	"	"	"	"	
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	0.141	0.050	"	"	"	"	"	
Xylenes, total	0.203	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 109 % 70-130 " " "
Surrogate: Toluene-d8 97.4 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 103 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.59		pH Units	1	B6G2906	07/29/2016	07/29/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.282		mmhos/cm	"	B6G2907	07/29/2016	07/29/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6G2902 - EPA 5030 (soil)										
Blank (B6G2902-BLK1)										
					Prepared: 07/29/2016 Analyzed: 07/29/2016					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	72		ug/kg	62.5		116	70-130			
Surrogate: Toluene-d8	59		"	62.5		93.8	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6G2902 - EPA 5030 (soil)

LCS (B6G2902-BS1)

Prepared: 07/29/2016 Analyzed: 07/29/2016

Benzene	0.113	0.002	mg/kg	0.100		113	77.1-124			
Toluene	0.106	0.002	"	0.100		106	74.5-128			
Ethylbenzene	0.107	0.002	"	0.100		107	66.4-127			
m,p-Xylene	0.217	0.004	"	0.200		109	76.6-124			
o-Xylene	0.107	0.002	"	0.100		107	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	69		ug/kg	62.5		111	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6G2902 - EPA 5030 (soil)

Matrix Spike (B6G2902-MS1)	Source: X607311-01			Prepared: 07/29/2016 Analyzed: 07/29/2016						
Benzene	0.105	0.002	mg/kg	0.100	ND	105	71.8-126			
Toluene	0.098	0.002	"	0.100	ND	98.1	65.1-130			
Ethylbenzene	0.100	0.002	"	0.100	ND	100	62.2-130			
m,p-Xylene	0.203	0.004	"	0.200	ND	102	46.5-137			
o-Xylene	0.100	0.002	"	0.100	ND	100	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	69		ug/kg	62.5		111	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.0	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6G2902 - EPA 5030 (soil)

Matrix Spike Dup (B6G2902-MSD1)	Source: X607311-01			Prepared: 07/29/2016 Analyzed: 07/29/2016						
Benzene	0.104	0.002	mg/kg	0.100	ND	104	71.8-126	0.877	11.3	
Toluene	0.097	0.002	"	0.100	ND	97.1	65.1-130	1.00	15.4	
Ethylbenzene	0.100	0.002	"	0.100	ND	100	62.2-130	0.240	19.6	
m,p-Xylene	0.203	0.004	"	0.200	ND	102	46.5-137	0.138	19.2	
o-Xylene	0.100	0.002	"	0.100	ND	100	54.2-134	0.160	17.9	
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.3	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B6G2903 - EPA 3580

Blank (B6G2903-BLK1)

Prepared: 07/29/2016 Analyzed: 07/29/2016

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	45		"	50.0		89.1	59-131			

LCS (B6G2903-BS1)

Prepared: 07/29/2016 Analyzed: 07/29/2016

Diesel (C10-C28)	1030	50.0	mg/kg	1000		103	64-121			
Residual Range Organics (C28-C40)	1020	200	"	1000		102	58-124			
Surrogate: o-Terphenyl	48		"	50.0		95.7	59-131			

Matrix Spike (B6G2903-MS1)

Source: X607311-01

Prepared: 07/29/2016 Analyzed: 07/29/2016

Diesel (C10-C28)	1150	50.0	mg/kg	1000	17.4	113	53-125			
Residual Range Organics (C28-C40)	1100	200	"	1000	ND	110	47-133			
Surrogate: o-Terphenyl	52		"	50.0		103	59-131			

Matrix Spike Dup (B6G2903-MSD1)

Source: X607311-01

Prepared: 07/29/2016 Analyzed: 07/29/2016

Diesel (C10-C28)	1080	50.0	mg/kg	1000	17.4	107	53-125	6.03	20	
Residual Range Organics (C28-C40)	1000	200	"	1000	ND	100	47-133	9.20	20	
Surrogate: o-Terphenyl	49		"	50.0		98.9	59-131			

Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6G2906 - NO PREP										
Duplicate (B6G2906-DUP1)		Source: X607320-01			Prepared: 07/29/2016 Analyzed: 07/29/2016					
pH	8.22		pH Units		8.26			0.485	25	
Batch B6G2907 - NO PREP										
Blank (B6G2907-BLK1)		Prepared: 07/29/2016 Analyzed: 07/29/2016								
Specific Conductance (EC)	0.00310		mmhos/cm							
Duplicate (B6G2907-DUP1)		Source: X607320-01			Prepared: 07/29/2016 Analyzed: 07/29/2016					
Specific Conductance (EC)	0.160		mmhos/cm		0.158			1.13	25	

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 - Adamson Ernie F GU #X1

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

August 03, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Adamson Ernie F GU #X1 Project Number - [none]

Attached are your analytical results for KMG - Adamson Ernie F GU #X1 received by Origins Laboratory, Inc. August 02, 2016. This project is associated with Origins project number X608021-01.

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

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

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

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

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

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



Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Adamson Ernie F GU #X1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01@18	X608021-01	Soil	August 2, 2016 10:55	08/02/2016 16:45
N02@18	X608021-02	Soil	August 2, 2016 10:10	08/02/2016 16:45
W02@18	X608021-03	Soil	August 2, 2016 11:05	08/02/2016 16:45
E02@18	X608021-04	Soil	August 2, 2016 10:30	08/02/2016 16:45
B02@15	X608021-05	Soil	August 2, 2016 10:45	08/02/2016 16:45
B03@19	X608021-06	Soil	August 2, 2016 9:55	08/02/2016 16:45
B04@19	X608021-07	Soil	August 2, 2016 10:15	08/02/2016 16:45

Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X608021

Client: Tasman Geosciences
 Client Project ID: Adamson Ernie F GU #X1

Checklist Completed by: J. Henderson
 Date/time completed: 8/2/12 1710

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

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

Cooler Number/Temperature: 1 / 13.1 °C 1 / _____ °C 1 / _____ °C (Describe)

Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 8°C ⁽¹⁾ ?		X		Sample <u>Sanedung</u>
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	X			<u>PH</u>
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			X	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)			X	
Additional Comments (if any):				

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

Reviewed by: JPH (Project Manager)

Date/Time Reviewed: 8/3/12

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 - Adamson Ernie F GU #X1

N01@18
8/2/2016 10:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608021-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6H0202	08/02/2016	08/03/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 65.0 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6H0211	08/02/2016	08/02/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "
Surrogate: Toluene-d8 99.2 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 95.1 % 70-130 " " "

pH in Soil by EPA 9045D

pH	6.95		pH Units	1	B6H0212	08/02/2016	08/02/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0341		mmhos/cm	"	B6H0213	08/02/2016	08/02/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

N02@18
8/2/2016 10:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608021-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6H0202	08/02/2016	08/03/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 76.7 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6H0211	08/02/2016	08/02/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 104 % 70-130 " " "
Surrogate: Toluene-d8 99.2 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 94.7 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.37		pH Units	1	B6H0212	08/02/2016	08/02/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0209		mmhos/cm	"	B6H0213	08/02/2016	08/02/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

W02@18
8/2/2016 11:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608021-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6H0202	08/02/2016	08/03/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 83.8 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6H0211	08/02/2016	08/02/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "
Surrogate: Toluene-d8 100 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 95.8 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.38		pH Units	1	B6H0212	08/02/2016	08/02/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0703		mmhos/cm	"	B6H0213	08/02/2016	08/02/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

E02@18
8/2/2016 10:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608021-04 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6H0202	08/02/2016	08/03/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 61.0 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6H0211	08/02/2016	08/02/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "
Surrogate: Toluene-d8 99.2 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 95.4 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.53		pH Units	1	B6H0212	08/02/2016	08/02/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0810		mmhos/cm	"	B6H0213	08/02/2016	08/02/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

B02@15
8/2/2016 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608021-05 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6H0202	08/02/2016	08/03/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 71.0 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6H0211	08/02/2016	08/02/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "
Surrogate: Toluene-d8 99.3 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 94.1 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.15		pH Units	1	B6H0212	08/02/2016	08/02/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.302		mmhos/cm	"	B6H0213	08/02/2016	08/02/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

B03@19
8/2/2016 9:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608021-06 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	462	25.0	mg/kg	1	B6H0202	08/02/2016	08/03/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 87.1 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	373	5.00	mg/kg	25	B6H0211	08/02/2016	08/02/2016	
Benzene	0.054	0.050	"	"	"	"	"	
Toluene	1.18	0.050	"	"	"	"	"	
Ethylbenzene	1.01	0.050	"	"	"	"	"	
Xylenes, total	23.0	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "
 Surrogate: Toluene-d8 106 % 70-130 " " "
 Surrogate: 4-Bromofluorobenzene 101 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.36		pH Units	1	B6H0212	08/02/2016	08/02/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.262		mmhos/cm	"	B6H0213	08/02/2016	08/02/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

B04@19
8/2/2016 10:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608021-07 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	58.2	25.0	mg/kg	1	B6H0202	08/02/2016	08/03/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 79.6 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	33.4	5.00	mg/kg	25	B6H0211	08/02/2016	08/02/2016	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	0.902	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "
 Surrogate: Toluene-d8 99.2 % 70-130 " " "
 Surrogate: 4-Bromofluorobenzene 96.1 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.37		pH Units	1	B6H0212	08/02/2016	08/02/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.317		mmhos/cm	"	B6H0213	08/02/2016	08/02/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H0211 - EPA 5030 (soil)

Blank (B6H0211-BLK1)

Prepared: 08/02/2016 Analyzed: 08/02/2016

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.7	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.4	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H0211 - EPA 5030 (soil)

LCS (B6H0211-BS1)

Prepared: 08/02/2016 Analyzed: 08/02/2016

Benzene	0.098	0.002	mg/kg	0.100		98.2	77.1-124			
Toluene	0.097	0.002	"	0.100		96.9	74.5-128			
Ethylbenzene	0.097	0.002	"	0.100		96.7	66.4-127			
m,p-Xylene	0.195	0.004	"	0.200		97.3	76.6-124			
o-Xylene	0.101	0.002	"	0.100		101	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.8	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.1	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H0211 - EPA 5030 (soil)

Matrix Spike (B6H0211-MS1)	Source: X608021-01			Prepared: 08/02/2016 Analyzed: 08/02/2016						
Benzene	0.105	0.002	mg/kg	0.100	ND	105	71.8-126			
Toluene	0.106	0.002	"	0.100	ND	106	65.1-130			
Ethylbenzene	0.110	0.002	"	0.100	ND	110	62.2-130			
m,p-Xylene	0.219	0.004	"	0.200	ND	103	46.5-137			
o-Xylene	0.107	0.002	"	0.100	ND	107	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.0	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H0211 - EPA 5030 (soil)

Matrix Spike Dup (B6H0211-MSD1)	Source: X608021-01			Prepared: 08/02/2016 Analyzed: 08/02/2016						
Benzene	0.103	0.002	mg/kg	0.100	ND	103	71.8-126	1.75	11.3	
Toluene	0.104	0.002	"	0.100	ND	104	65.1-130	1.95	15.4	
Ethylbenzene	0.109	0.002	"	0.100	ND	109	62.2-130	0.953	19.6	
m,p-Xylene	0.216	0.004	"	0.200	ND	102	46.5-137	1.32	19.2	
o-Xylene	0.107	0.002	"	0.100	ND	107	54.2-134	0.448	17.9	
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.0	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.2	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B6H0202 - EPA 3580

Blank (B6H0202-BLK1)

Prepared: 08/02/2016 Analyzed: 08/02/2016

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	38		"	50.0		76.8	59-131			

LCS (B6H0202-BS1)

Prepared: 08/02/2016 Analyzed: 08/02/2016

Diesel (C10-C28)	1130	50.0	mg/kg	1000		113	64-121			
Residual Range Organics (C28-C40)	1180	200	"	1000		118	58-124			
Surrogate: o-Terphenyl	50		"	50.0		101	59-131			

LCS Dup (B6H0202-BSD1)

Prepared: 08/02/2016 Analyzed: 08/02/2016

Diesel (C10-C28)	1070	50.0	mg/kg	1000		107	64-121	5.65	20	
Residual Range Organics (C28-C40)	1110	200	"	1000		111	58-124	6.45	20	
Surrogate: o-Terphenyl	47		"	50.0		94.8	59-131			

Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6H0212 - NO PREP										
Duplicate (B6H0212-DUP1)		Source: X608021-01			Prepared: 08/02/2016 Analyzed: 08/02/2016					
pH	6.98		pH Units		6.95			0.431	25	
Batch B6H0213 - NO PREP										
Blank (B6H0213-BLK1)		Prepared: 08/02/2016 Analyzed: 08/02/2016								
Specific Conductance (EC)	0.00270		mmhos/cm							
Duplicate (B6H0213-DUP1)		Source: X608021-01			Prepared: 08/02/2016 Analyzed: 08/02/2016					
Specific Conductance (EC)	0.0326		mmhos/cm		0.0341			4.50	25	

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Adamson Ernie F GU #X1

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

August 05, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Adamson Ernie F GU #X1 Project Number - [none]

Attached are your analytical results for KMG - Adamson Ernie F GU #X1 received by Origins Laboratory, Inc. August 04, 2016. This project is associated with Origins project number X608044-01.

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

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

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

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

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

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



Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Adamson Ernie F GU #X1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B05@20'	X608044-01	Soil	August 4, 2016 9:35	08/04/2016 15:35

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 - Adamson Ernie F GU #X1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X1082044

Client: Tasman Geosciences
 Client Project ID: Adamson Ernie F GU #X1

Checklist Completed by: J. Henderson

Shipped Via: H/D
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: WA

Date/time completed: 8/4/16 1535

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

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

Thermometer ID: T003

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

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

[Signature]
 Reviewed By (Project Manager)

8/4/16
 Date/Time Reviewed

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 - Adamson Ernie F GU #X1

B05@20'
8/4/2016 9:35:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608044-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	2460	25.0	mg/kg	1	B6H0402	08/04/2016	08/04/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 104 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	2920	50.0	mg/kg	250	B6H0405	08/04/2016	08/04/2016	
Benzene	1.54	0.498	"	"	"	"	"	
Toluene	29.6	0.498	"	"	"	"	"	
Ethylbenzene	17.2	0.498	"	"	"	"	"	
Xylenes, total	263	0.498	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 101 % 70-130 " " "

Surrogate: Toluene-d8 109 % 70-130 " " "

Surrogate: 4-Bromofluorobenzene 109 % 70-130 " " "

pH in Soil by EPA 9045D

pH	9.49		pH Units	1	B6H0406	08/04/2016	08/04/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.211		mmhos/cm	"	B6H0407	"	08/04/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H0405 - EPA 5030 (soil)

Blank (B6H0405-BLK1)

Prepared: 08/04/2016 Analyzed: 08/04/2016

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		106	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.3	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H0405 - EPA 5030 (soil)

LCS (B6H0405-BS1)

Prepared: 08/04/2016 Analyzed: 08/04/2016

Benzene	0.109	0.002	mg/kg	0.100		109	77.1-124			
Toluene	0.106	0.002	"	0.100		106	74.5-128			
Ethylbenzene	0.105	0.002	"	0.100		105	66.4-127			
m,p-Xylene	0.211	0.004	"	0.200		105	76.6-124			
o-Xylene	0.104	0.002	"	0.100		104	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.5	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H0405 - EPA 5030 (soil)

Matrix Spike (B6H0405-MS1)	Source: X608045-01			Prepared: 08/04/2016 Analyzed: 08/04/2016						
Benzene	0.100	0.002	mg/kg	0.100	ND	100	71.8-126			
Toluene	0.097	0.002	"	0.100	ND	96.8	65.1-130			
Ethylbenzene	0.097	0.002	"	0.100	ND	96.9	62.2-130			
m,p-Xylene	0.196	0.004	"	0.200	ND	97.8	46.5-137			
o-Xylene	0.098	0.002	"	0.100	ND	98.0	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	70		ug/kg	62.5		113	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H0405 - EPA 5030 (soil)

Matrix Spike Dup (B6H0405-MSD1)	Source: X608045-01			Prepared: 08/04/2016 Analyzed: 08/04/2016						
Benzene	0.101	0.002	mg/kg	0.100	ND	101	71.8-126	0.457	11.3	
Toluene	0.098	0.002	"	0.100	ND	98.0	65.1-130	1.27	15.4	
Ethylbenzene	0.097	0.002	"	0.100	ND	97.4	62.2-130	0.453	19.6	
m,p-Xylene	0.198	0.004	"	0.200	ND	99.0	46.5-137	1.26	19.2	
o-Xylene	0.099	0.002	"	0.100	ND	99.4	54.2-134	1.36	17.9	
Surrogate: 1,2-Dichloroethane-d4	71		ug/kg	62.5		113	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.7	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B6H0402 - EPA 3580

Blank (B6H0402-BLK1)

Prepared: 08/04/2016 Analyzed: 08/04/2016

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	38		"	50.0		75.8	59-131			

LCS (B6H0402-BS1)

Prepared: 08/04/2016 Analyzed: 08/04/2016

Diesel (C10-C28)	1080	50.0	mg/kg	1000		108	64-121			
Residual Range Organics (C28-C40)	1090	200	"	1000		109	58-124			
Surrogate: o-Terphenyl	50		"	50.0		100	59-131			

Matrix Spike (B6H0402-MS1)

Source: X608037-01

Prepared: 08/04/2016 Analyzed: 08/04/2016

Diesel (C10-C28)	1020	50.0	mg/kg	1000	15.1	100	53-125			
Residual Range Organics (C28-C40)	1030	200	"	1000	ND	103	47-133			
Surrogate: o-Terphenyl	45		"	50.0		89.3	59-131			

Matrix Spike Dup (B6H0402-MSD1)

Source: X608037-01

Prepared: 08/04/2016 Analyzed: 08/04/2016

Diesel (C10-C28)	1010	50.0	mg/kg	1000	15.1	99.6	53-125	0.836	20	
Residual Range Organics (C28-C40)	1020	200	"	1000	ND	102	47-133	1.39	20	
Surrogate: o-Terphenyl	45		"	50.0		90.4	59-131			

Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6H0406 - NO PREP										
Duplicate (B6H0406-DUP1)		Source: X608044-01			Prepared: 08/04/2016 Analyzed: 08/04/2016					
pH	9.55		pH Units		9.49			0.630	25	
Batch B6H0407 - NO PREP										
Blank (B6H0407-BLK1)		Prepared: 08/04/2016 Analyzed: 08/04/2016								
Specific Conductance (EC)	0.00230		mmhos/cm							
Duplicate (B6H0407-DUP1)		Source: X608044-01			Prepared: 08/04/2016 Analyzed: 08/04/2016					
Specific Conductance (EC)	0.224		mmhos/cm		0.211			5.98	25	

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Adamson Ernie F GU #X1

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



August 25, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Adamson Ernie F GU #X1 Project Number - [none]

Attached are your analytical results for KMG - Adamson Ernie F GU #X1 received by Origins Laboratory, Inc. August 24, 2016. This project is associated with Origins project number X608257-01.

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 - Adamson Ernie F GU #X1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TP01 @ 36'	X608257-01	Soil	August 24, 2016 12:15	08/24/2016 18:07
TP02 @ 34'	X608257-02	Soil	August 24, 2016 12:30	08/24/2016 18:07
TP03 @ 33'	X608257-03	Soil	August 24, 2016 13:30	08/24/2016 18:07
TP04 @ 32'	X608257-04	Soil	August 24, 2016 14:15	08/24/2016 18:07
TP05 @ 33'	X608257-05	Soil	August 24, 2016 15:00	08/24/2016 18:07

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 - Adamson Ernie F GU #X1



X608257 www.originslaboratory.com

page 1 of 1

Client: APL

Address: _____

Telephone Number: 9704709042

Email Address: rcornez@tasmangeos.com

Project Manager: Bob Cornez

Project Name: Adamson Ernie F GU #X1

Project Number: _____

Samples Collected By: R. Jarvis

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions
				Registered	HCl	HNO ₃	Other	Quartzite	Sol	At Same Container #	Other	Standard	Q15 TML	Q15 RCL	
TP01 @ 36'	8/24/16	1215	2	X					X			X	X	X	1
TP02 @ 34'	↓	1230	↓	↓					↓			↓	↓	↓	2
TP03 @ 33'	↓	1330	↓	↓					↓			↓	↓	↓	3
TP04 @ 32'	↓	1415	↓	↓					↓			↓	↓	↓	4
TP05 @ 33'	↓	1500	↓	↓					↓			↓	↓	↓	5
															6
															7
															8
															9
															10

Relinquished By: [Signature] Date: 8/24/16 Time: 1505

Relinquished By: _____ Date: _____ Time: _____

Received By: [Signature] Date: 8/24/16 Time: 1505

Received By: _____ Date: _____ Time: _____

Turnaround Time: Same Day 24 Hr
 48 Hr 72 Hr
 Standard ARK1

3-3 Date Results Needed _____

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 - Adamson Ernie F GU #X1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X608257

Client: Tasman

Client Project ID: Adamson Ernie F GU #X1

Checklist Completed by: Jeff Smith

Shipped Via: HTD

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

Date/time completed: 8/24/12

Airbill #: NK

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

(Describe)

Cooler Number/Temperature: 1 / 13.3 °C 1 / _____ °C 1 / _____ °C 1 / _____ °C

Thermometer ID: T303

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

8/24/12
 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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

TP01 @ 36'
8/24/2016 12:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608257-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	91.7	25.0	mg/kg	1	B6H2408	08/24/2016	08/25/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 67.1 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	12.4	5.00	mg/kg	25	B6H2407	08/24/2016	08/25/2016	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	0.114	0.050	"	"	"	"	"	
Xylenes, total	0.234	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 102 % 70-130 " " 08/25/2016
 Surrogate: Toluene-d8 96.6 % 70-130 " " "
 Surrogate: 4-Bromofluorobenzene 107 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.79		pH Units	1	B6H2405	08/24/2016	08/24/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.143		mmhos/cm	"	B6H2406	"	08/24/2016	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

TP02 @ 34'
8/24/2016 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608257-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	753	25.0	mg/kg	1	B6H2408	08/24/2016	08/25/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 91.6 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	1780	50.0	mg/kg	250	B6H2407	08/24/2016	08/25/2016	
Benzene	0.456	0.050	"	25	"	"	08/25/2016	
Toluene	1.16	0.050	"	"	"	"	"	
Ethylbenzene	9.22	0.498	"	250	"	"	08/25/2016	
Xylenes, total	149	0.498	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 101 % 70-130 " " "

Surrogate: Toluene-d8 98.9 % 70-130 " " "

Surrogate: 4-Bromofluorobenzene 111 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.15		pH Units	1	B6H2405	08/24/2016	08/24/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.231		mmhos/cm	"	B6H2406	"	08/24/2016	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

TP03 @ 33'
8/24/2016 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608257-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	1200	25.0	mg/kg	1	B6H2408	08/24/2016	08/25/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 86.0 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	1050	50.0	mg/kg	250	B6H2407	08/24/2016	08/25/2016	
Benzene	1.34	0.498	"	"	"	"	"	
Toluene	ND	0.498	"	"	"	"	"	U
Ethylbenzene	5.68	0.498	"	"	"	"	"	
Xylenes, total	104	0.498	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 102 % 70-130 " " "
 Surrogate: Toluene-d8 99.1 % 70-130 " " "
 Surrogate: 4-Bromofluorobenzene 109 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.32		pH Units	1	B6H2405	08/24/2016	08/24/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.182		mmhos/cm	"	B6H2406	"	08/24/2016	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

TP04 @ 32'
8/24/2016 2:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608257-04 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	659	25.0	mg/kg	1	B6H2408	08/24/2016	08/25/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 75.4 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	461	5.00	mg/kg	25	B6H2407	08/24/2016	08/25/2016	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	0.076	0.050	"	"	"	"	"	
Ethylbenzene	2.24	0.050	"	"	"	"	"	
Xylenes, total	36.9	0.498	"	250	"	"	08/25/2016	

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "
 Surrogate: Toluene-d8 97.7 % 70-130 " " "
 Surrogate: 4-Bromofluorobenzene 110 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.84		pH Units	1	B6H2405	08/24/2016	08/24/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0975		mmhos/cm	"	B6H2406	"	08/24/2016	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

TP05 @ 33'
8/24/2016 3:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X608257-05 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	73.7	25.0	mg/kg	1	B6H2408	08/24/2016	08/25/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 84.0 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	39.4	5.00	mg/kg	25	B6H2407	08/24/2016	08/25/2016	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	0.345	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 102 % 70-130 " " 08/25/2016
 Surrogate: Toluene-d8 97.0 % 70-130 " " "
 Surrogate: 4-Bromofluorobenzene 110 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.67		pH Units	1	B6H2405	08/24/2016	08/24/2016	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0763		mmhos/cm	"	B6H2406	"	08/24/2016	
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Origins Laboratory, Inc.



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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H2407 - EPA 5030 (soil)

Blank (B6H2407-BLK1)

Prepared: 08/24/2016 Analyzed: 08/24/2016

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	59		"	62.5		95.0	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		109	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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H2407 - EPA 5030 (soil)

LCS (B6H2407-BS1)

Prepared: 08/24/2016 Analyzed: 08/24/2016

Benzene	0.099	0.002	mg/kg	0.100		98.9	77.1-124			
Toluene	0.093	0.002	"	0.100		92.6	74.5-128			
Ethylbenzene	0.096	0.002	"	0.100		96.4	66.4-127			
m,p-Xylene	0.193	0.004	"	0.200		96.6	76.6-124			
o-Xylene	0.098	0.002	"	0.100		97.8	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.9	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		109	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H2407 - EPA 5030 (soil)

Matrix Spike (B6H2407-MS1)	Source: X608231-01			Prepared: 08/24/2016 Analyzed: 08/24/2016						
Benzene	0.157	0.002	mg/kg	0.200	ND	78.6	71.8-126			
Toluene	0.147	0.002	"	0.200	ND	73.3	65.1-130			
Ethylbenzene	0.148	0.002	"	0.200	ND	74.2	62.2-130			
m,p-Xylene	0.297	0.004	"	0.400	ND	74.3	46.5-137			
o-Xylene	0.153	0.002	"	0.200	ND	76.6	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	73		ug/kg	62.5		116	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.4	70-130			
Surrogate: 4-Bromofluorobenzene	70		"	62.5		111	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B6H2407 - EPA 5030 (soil)

Matrix Spike Dup (B6H2407-MSD1)	Source: X608231-01			Prepared: 08/24/2016 Analyzed: 08/24/2016						
Benzene	0.142	0.002	mg/kg	0.200	ND	71.2	71.8-126	9.75	11.3	QM-07
Toluene	0.132	0.002	"	0.200	ND	65.8	65.1-130	10.9	15.4	
Ethylbenzene	0.129	0.002	"	0.200	ND	64.4	62.2-130	14.2	19.6	
m,p-Xylene	0.258	0.004	"	0.400	ND	64.4	46.5-137	14.3	19.2	
o-Xylene	0.132	0.002	"	0.200	ND	65.8	54.2-134	15.1	17.9	
Surrogate: 1,2-Dichloroethane-d4	73		ug/kg	62.5		116	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.4	70-130			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		107	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B6H2408 - EPA 3580

Blank (B6H2408-BLK1)

Prepared: 08/24/2016 Analyzed: 08/24/2016

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	46		"	50.0		91.0	59-131			

LCS (B6H2408-BS1)

Prepared: 08/24/2016 Analyzed: 08/24/2016

Diesel (C10-C28)	885	50.0	mg/kg	1000		88.5	64-121			
Residual Range Organics (C28-C40)	887	200	"	1000		88.7	58-124			
Surrogate: o-Terphenyl	41		"	50.0		82.7	59-131			

Matrix Spike (B6H2408-MS1)

Source: X608231-01

Prepared: 08/24/2016 Analyzed: 08/24/2016

Diesel (C10-C28)	944	50.0	mg/kg	1000	16.0	92.8	53-125			
Residual Range Organics (C28-C40)	961	200	"	1000	ND	96.1	47-133			
Surrogate: o-Terphenyl	46		"	50.0		91.5	59-131			

Matrix Spike Dup (B6H2408-MSD1)

Source: X608231-01

Prepared: 08/24/2016 Analyzed: 08/24/2016

Diesel (C10-C28)	853	50.0	mg/kg	1000	16.0	83.7	53-125	10.3	20	
Residual Range Organics (C28-C40)	840	200	"	1000	ND	84.0	47-133	13.5	20	
Surrogate: o-Terphenyl	43		"	50.0		85.6	59-131			

Origins Laboratory, Inc.



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 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6H2405 - NO PREP										
Duplicate (B6H2405-DUP1)		Source: X608234-01			Prepared: 08/24/2016 Analyzed: 08/24/2016					
pH	8.51		pH Units		8.69			2.09	25	
Batch B6H2406 - NO PREP										
Blank (B6H2406-BLK1)		Prepared: 08/24/2016 Analyzed: 08/24/2016								
Specific Conductance (EC)	0.00290		mmhos/cm							
Duplicate (B6H2406-DUP1)		Source: X608234-01			Prepared: 08/24/2016 Analyzed: 08/24/2016					
Specific Conductance (EC)	1.20		mmhos/cm		1.25			3.83	25	

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Adamson Ernie F GU #X1

Notes and Definitions

U Sample is Non-Detect.

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.

Jen Pellegrini For Noelle Doyle Mathis, President

September 06, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Adamson Ernie F GU #X1 Project Number - [none]

Attached are your analytical results for KMG - Adamson Ernie F GU #X1 received by Origins Laboratory, Inc. September 02, 2016. This project is associated with Origins project number X609027-01.

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

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

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

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

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

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



Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Adamson Ernie F GU #X1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01 @ 31-32	X609027-01	Soil	September 2, 2016 10:12	09/02/2016 17:27
BH02 @ 32.5-34	X609027-02	Soil	September 2, 2016 13:09	09/02/2016 17:27
BH03 @ 31-32	X609027-03	Soil	September 2, 2016 16:05	09/02/2016 17:27
BH01	X609027-04	Water	September 2, 2016 13:40	09/02/2016 17:27
BH02	X609027-05	Water	September 2, 2016 16:00	09/02/2016 17:27
BH03	X609027-06	Water	September 2, 2016 16:40	09/02/2016 17:27

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 - Adamson Ernie F GU #X1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X609027

Client: Tasman
 Client Project ID: Adamson Ernie FGU #X1

Checklist Completed by: Jeff Smith
 Date/time completed: 9/2/12

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

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

Cooler Number/Temperature: 1, 19 °C _____ °C _____ °C (Describe) _____ °C

Thermometer ID: T003

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

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

Reviewed by: [Signature] (Project Manager) Date/Time Reviewed: 9/2/12

Origins Laboratory, Inc.

Jeff Pellegrini

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

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

BH01 @ 31-32
9/2/2016 10:12:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X609027-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B6I0205	09/02/2016	09/02/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 79.3 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6I0204	09/02/2016	09/02/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "
Surrogate: Toluene-d8 100 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 107 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.24		pH Units	1	B6I0206	09/02/2016	09/05/2016	O-04
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.146		mmhos/cm	"	B6I0207	"	"	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

BH02 @ 32.5-34
9/2/2016 1:09:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X609027-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B610205	09/02/2016	09/02/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 81.5 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	1.78	0.200	mg/kg	1	B610204	09/02/2016	09/02/2016	
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	0.006	0.002	"	"	"	"	"	
Xylenes, total	0.025	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 107 % 70-130 " " "
Surrogate: Toluene-d8 106 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 105 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.56		pH Units	1	B610206	09/02/2016	09/05/2016	O-04
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.124		mmhos/cm	"	B610207	"	"	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

BH03 @ 31-32
9/2/2016 4:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X609027-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	37.4	25.0	mg/kg	1	B6I0205	09/02/2016	09/02/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 72.1 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	29.8	5.00	mg/kg	25	B6I0204	09/02/2016	09/03/2016	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 103 % 70-130 " " "
Surrogate: Toluene-d8 100 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 104 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.59		pH Units	1	B6I0206	09/02/2016	09/05/2016	O-04
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.150		mmhos/cm	"	B6I0207	"	"	
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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

BH01
9/2/2016 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X609027-04 (Water)

BTEX by EPA 8260C

Benzene	1000	50.0	ug/L	50	B610201	09/02/2016	09/02/2016	
Toluene	13.4	4.00	"	4	"	"	09/02/2016	
Ethylbenzene	1010	50.0	"	50	"	"	09/02/2016	
Xylenes, total	9870	50.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.4 %	85-115			"	"	09/02/2016	
Surrogate: 4-Bromofluorobenzene	99.8 %	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 - Adamson Ernie F GU #X1

BH02

9/2/2016 4:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X609027-05 (Water)

BTEX by EPA 8260C

Benzene	1240	50.0	ug/L	50	B610201	09/02/2016	09/02/2016	
Toluene	ND	4.00	"	4	"	"	09/02/2016	U
Ethylbenzene	1540	50.0	"	50	"	"	09/02/2016	
Xylenes, total	15700	50.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	103 %	84-121			"	"	09/02/2016	
Surrogate: Toluene-d8	109 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	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 - Adamson Ernie F GU #X1

BH03
9/2/2016 4:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X609027-06 (Water)

BTEX by EPA 8260C

Benzene	ND	4.00	ug/L	4	B610201	09/02/2016	09/02/2016	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	12.6	4.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	97.2 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.4 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	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 - Adamson Ernie F GU #X1

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 B610201 - EPA 5030B (Water)

Blank (B610201-BLK1)

Prepared: 09/02/2016 Analyzed: 09/02/2016

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5	99.9		84-121			
Surrogate: Toluene-d8	62		"	62.5	99.6		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

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610201 - EPA 5030B (Water)

Blank (B610201-BLK2)

Prepared: 09/02/2016 Analyzed: 09/02/2016

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	69		"	62.5	110		84-121			
Surrogate: Toluene-d8	61		"	62.5	97.5		85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	101		84-114			

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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610201 - EPA 5030B (Water)

LCS (B610201-BS1)

Prepared: 09/02/2016 Analyzed: 09/02/2016

Benzene	51.0	1.00	ug/L	50.0		102	73.3-129			
Toluene	49.3	1.00	"	50.0		98.6	76.2-123			
Ethylbenzene	50.6	1.00	"	50.0		101	73.6-130			
m,p-Xylene	98.2	2.00	"	100		98.2	76.1-126			
o-Xylene	49.1	1.00	"	50.0		98.2	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		98.2	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.5	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.4	84-114			

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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610201 - EPA 5030B (Water)

LCS (B610201-BS2)

Prepared: 09/02/2016 Analyzed: 09/02/2016

Benzene	53.8	1.00	ug/L	50.0		108	73.3-129			
Toluene	52.4	1.00	"	50.0		105	76.2-123			
Ethylbenzene	53.4	1.00	"	50.0		107	73.6-130			
m,p-Xylene	103	2.00	"	100		103	76.1-126			
o-Xylene	51.8	1.00	"	50.0		104	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.5	84-121			
Surrogate: Toluene-d8	63		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

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 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610201 - EPA 5030B (Water)

Matrix Spike (B610201-MS1)	Source: X608328-01			Prepared: 09/02/2016 Analyzed: 09/02/2016						
Benzene	75.2	1.00	ug/L	50.0	12.3	126	74-130			
Toluene	60.5	1.00	"	50.0	ND	121	73-131			
Ethylbenzene	61.7	1.00	"	50.0	ND	123	76-132			
m,p-Xylene	118	2.00	"	100	ND	118	69-139			
o-Xylene	57.7	1.00	"	50.0	ND	115	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.4	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.8	84-114			

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Tasman Geosciences
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 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610201 - EPA 5030B (Water)

Matrix Spike (B610201-MS2)	Source: X608328-02			Prepared: 09/02/2016 Analyzed: 09/02/2016						
Benzene	45.1	1.00	ug/L	50.0	ND	90.3	74-130			
Toluene	43.3	1.00	"	50.0	ND	86.6	73-131			
Ethylbenzene	43.6	1.00	"	50.0	ND	87.2	76-132			
m,p-Xylene	86.4	2.00	"	100	ND	86.4	69-139			
o-Xylene	43.4	1.00	"	50.0	ND	86.7	74-131			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.4	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.1	84-114			

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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610201 - EPA 5030B (Water)

Matrix Spike Dup (B610201-MSD1)	Source: X608328-01			Prepared: 09/02/2016 Analyzed: 09/02/2016						
Benzene	70.6	1.00	ug/L	50.0	12.3	117	74-130	6.22	20	
Toluene	58.9	1.00	"	50.0	ND	118	73-131	2.63	20	
Ethylbenzene	61.6	1.00	"	50.0	ND	123	76-132	0.211	20	
m,p-Xylene	118	2.00	"	100	ND	118	69-139	0.152	20	
o-Xylene	57.1	1.00	"	50.0	ND	114	74-131	1.10	20	
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.6	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	84-114			

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 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610201 - EPA 5030B (Water)

Matrix Spike Dup (B610201-MSD2)	Source: X608328-02			Prepared: 09/02/2016 Analyzed: 09/02/2016						
Benzene	54.3	1.00	ug/L	50.0	ND	109	74-130	18.4	20	
Toluene	52.6	1.00	"	50.0	ND	105	73-131	19.3	20	
Ethylbenzene	56.2	1.00	"	50.0	ND	112	76-132	25.2	20	QR-02
m,p-Xylene	108	2.00	"	100	ND	108	69-139	22.3	20	QR-02
o-Xylene	53.6	1.00	"	50.0	ND	107	74-131	21.1	20	QR-02
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.5	84-121			
Surrogate: Toluene-d8	62		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.2	84-114			

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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610204 - EPA 5030 (soil)

Blank (B610204-BLK1)

Prepared: 09/02/2016 Analyzed: 09/02/2016

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		109	70-130			

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Tasman Geosciences
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 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610204 - EPA 5030 (soil)

LCS (B610204-BS1)

Prepared: 09/02/2016 Analyzed: 09/02/2016

Benzene	0.117	0.002	mg/kg	0.100		117	77.1-124			
Toluene	0.112	0.002	"	0.100		112	74.5-128			
Ethylbenzene	0.112	0.002	"	0.100		112	66.4-127			
m,p-Xylene	0.224	0.004	"	0.200		112	76.6-124			
o-Xylene	0.110	0.002	"	0.100		110	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	71		ug/kg	62.5		114	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.3	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	70-130			

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 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610204 - EPA 5030 (soil)

Matrix Spike (B610204-MS1)	Source: X608326-02			Prepared: 09/02/2016 Analyzed: 09/05/2016						
Benzene	0.099	0.002	mg/kg	0.100	ND	99.1	71.8-126			
Toluene	0.097	0.002	"	0.100	ND	96.6	65.1-130			
Ethylbenzene	0.098	0.002	"	0.100	ND	97.6	62.2-130			
m,p-Xylene	0.195	0.004	"	0.200	ND	97.3	46.5-137			
o-Xylene	0.099	0.002	"	0.100	ND	98.6	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	70		ug/kg	62.5		113	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		105	70-130			

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 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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 B610204 - EPA 5030 (soil)

Matrix Spike Dup (B610204-MSD1)	Source: X608326-02			Prepared: 09/02/2016 Analyzed: 09/05/2016						
Benzene	0.096	0.002	mg/kg	0.100	ND	96.4	71.8-126	2.76	11.3	
Toluene	0.093	0.002	"	0.100	ND	93.1	65.1-130	3.69	15.4	
Ethylbenzene	0.093	0.002	"	0.100	ND	92.5	62.2-130	5.36	19.6	
m,p-Xylene	0.184	0.004	"	0.200	ND	92.0	46.5-137	5.61	19.2	
o-Xylene	0.093	0.002	"	0.100	ND	93.3	54.2-134	5.57	17.9	
Surrogate: 1,2-Dichloroethane-d4	71		ug/kg	62.5		114	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	70-130			

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 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Extractable Petroleum Hydrocarbons by 8015C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B6I0205 - EPA 3580

Blank (B6I0205-BLK1)

Prepared: 09/02/2016 Analyzed: 09/02/2016

Diesel (C10-C28)	53.6	50.0	mg/kg							A-01
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	41		"	50.0		81.5	59-131			

LCS (B6I0205-BS1)

Prepared: 09/02/2016 Analyzed: 09/02/2016

Diesel (C10-C28)	999	50.0	mg/kg	1000		99.9	64-121			
Residual Range Organics (C28-C40)	867	200	"	1000		86.7	58-124			
Surrogate: o-Terphenyl	47		"	50.0		94.2	59-131			

Matrix Spike (B6I0205-MS1)

Source: X608326-02

Prepared: 09/02/2016 Analyzed: 09/02/2016

Diesel (C10-C28)	1060	50.0	mg/kg	1000	20.5	104	53-125			
Residual Range Organics (C28-C40)	910	200	"	1000	ND	91.0	47-133			
Surrogate: o-Terphenyl	51		"	50.0		103	59-131			

Matrix Spike Dup (B6I0205-MSD1)

Source: X608326-02

Prepared: 09/02/2016 Analyzed: 09/02/2016

Diesel (C10-C28)	1010	50.0	mg/kg	1000	20.5	99.0	53-125	4.98	20	
Residual Range Organics (C28-C40)	877	200	"	1000	ND	87.7	47-133	3.69	20	
Surrogate: o-Terphenyl	49		"	50.0		97.7	59-131			

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 Denver CO 80211

Bob Cornez
 Project Number: [none]
 Project: KMG - Adamson Ernie F GU #X1

Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6I0206 - NO PREP										
Duplicate (B6I0206-DUP1)		Source: X609026-01			Prepared: 09/02/2016 Analyzed: 09/05/2016					
pH	8.03		pH Units		8.10			0.868	25	
Batch B6I0207 - NO PREP										
Blank (B6I0207-BLK1)		Prepared: 09/02/2016 Analyzed: 09/05/2016								
Specific Conductance (EC)	0.00330		mmhos/cm							
Duplicate (B6I0207-DUP1)		Source: X609026-01			Prepared: 09/02/2016 Analyzed: 09/05/2016					
Specific Conductance (EC)	0.119		mmhos/cm		0.122			2.42	25	

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - Adamson Ernie F GU #X1

Notes and Definitions

U Sample is Non-Detect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

O-04 This sample was analyzed outside the EPA recommended holding time.

A-01 The Method Blank contains this analyte above the MRL, but the sample results are less than the MRL.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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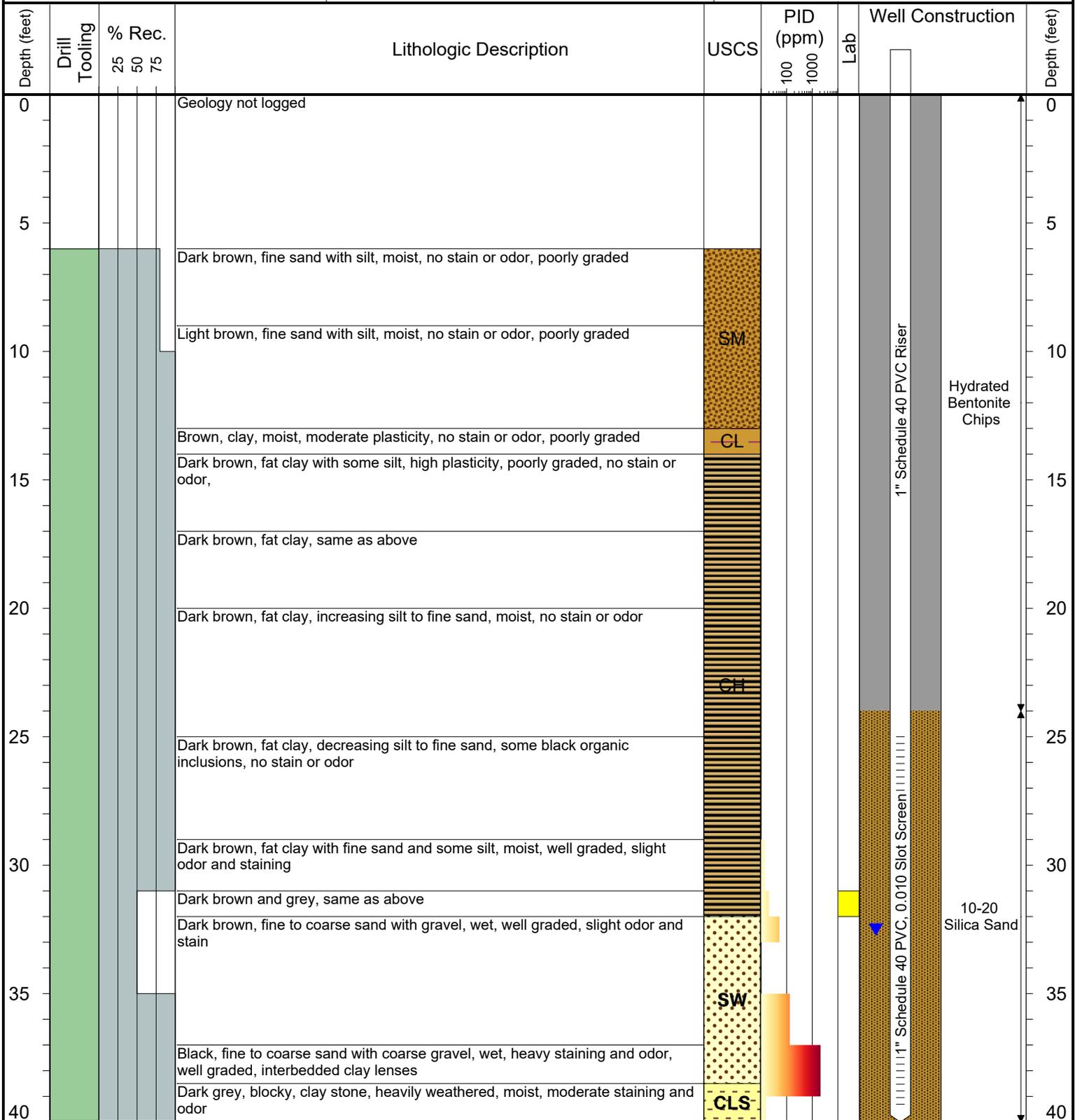
The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ATTACHMENT B
BOREHOLE LOGS



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Anadarko	ERNIE F ADAMSON GAS UNIT-62N65W21SWSW
LOGGED BY: Zach Mahaffey	
PROJECT MANAGER: Mike Jahn P.G.	BORING / WELL ID: BH01
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe 9300-SK	WELL COMPLETION: Flush Mount
DRILL BIT SIZE (INCHES): 3	NORTHING (CO STATE PLANE): 40.117750313713
DATE STARTED - COMPLETED: 9/2/2016-9/2/2016	EASTING (CO STATE PLANE): -104.66917882366
TOTAL WELL DEPTH (FT. BGS): 40	CASING ELEVATION (FT. AMSL): 4894.34
DEPTH TO WATER (FT. BGS): 32.5	GROUND ELEVATION (FT. AMSL): 4894.44

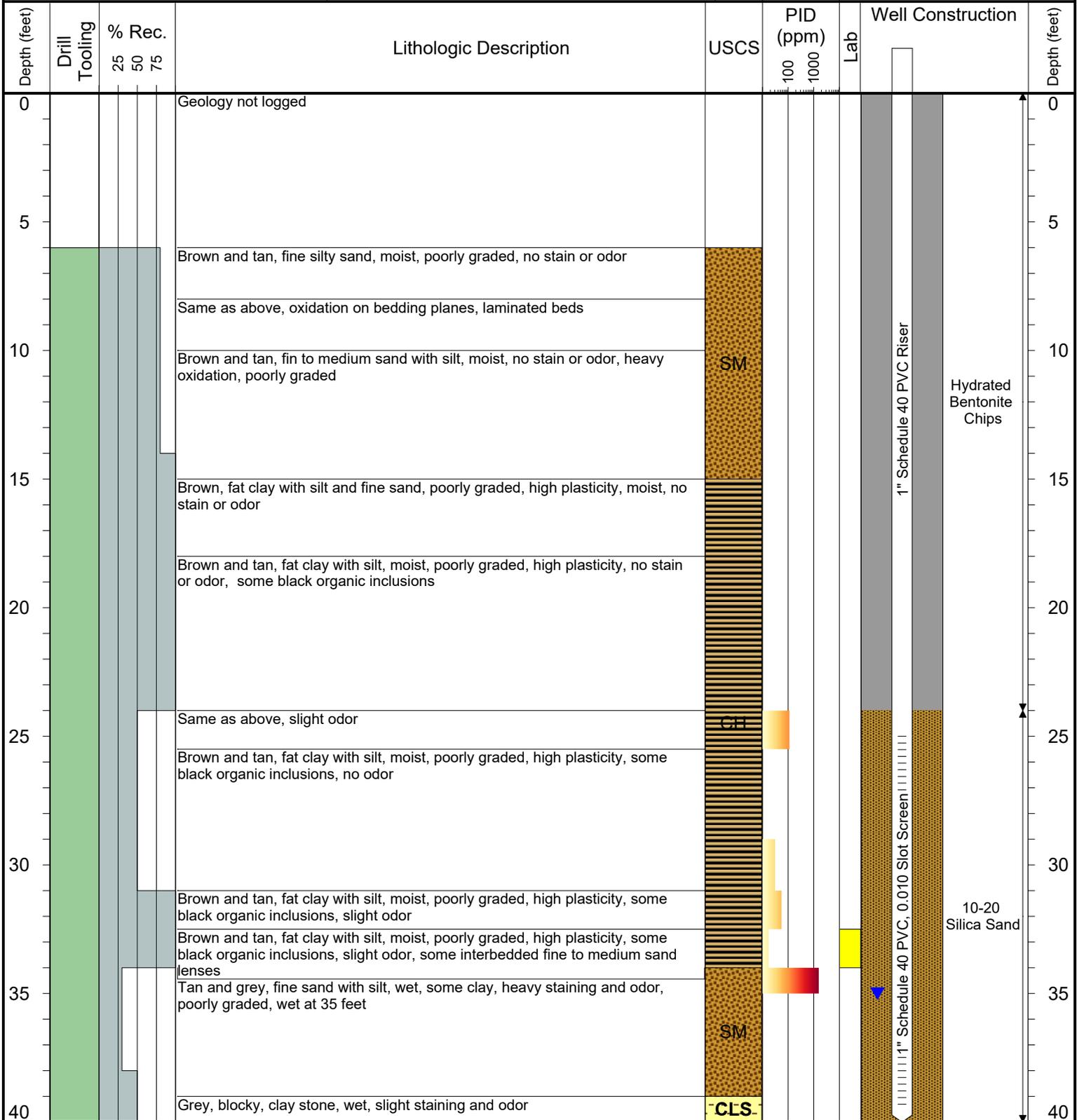


Drilling / Sample Method:		Laboratory Sample Types:	
Macro-Core	Perforated Injection Tool	Geotechnical Lab	Geotechnical & Analytical Chemistry Lab
Expendable Well Tip	HydroPunch Groundwater Sampler	Analytical Chemistry Lab	



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Anadarko	ERNIE F ADAMSON GAS UNIT-62N65W21SWSW
LOGGED BY: Zach Mahaffey	
PROJECT MANAGER: Mike Jahn P.G.	BORING / WELL ID: BH02
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe 9300-SK	WELL COMPLETION: Flush Mount
DRILL BIT SIZE (INCHES): 3	NORTHING (CO STATE PLANE): 40.117590387125
DATE STARTED - COMPLETED: 9/2/2016-9/2/2016	EASTING (CO STATE PLANE): -104.6690061183
TOTAL WELL DEPTH (FT. BGS): 40	CASING ELEVATION (FT. AMSL): 4896.34
DEPTH TO WATER (FT. BGS): 35	GROUND ELEVATION (FT. AMSL): 4896.65



Drilling / Sample Method:

- Macro-Core
- Expendable Well Tip
- Perforated Injection Tool
- HydroPunch Groundwater Sampler

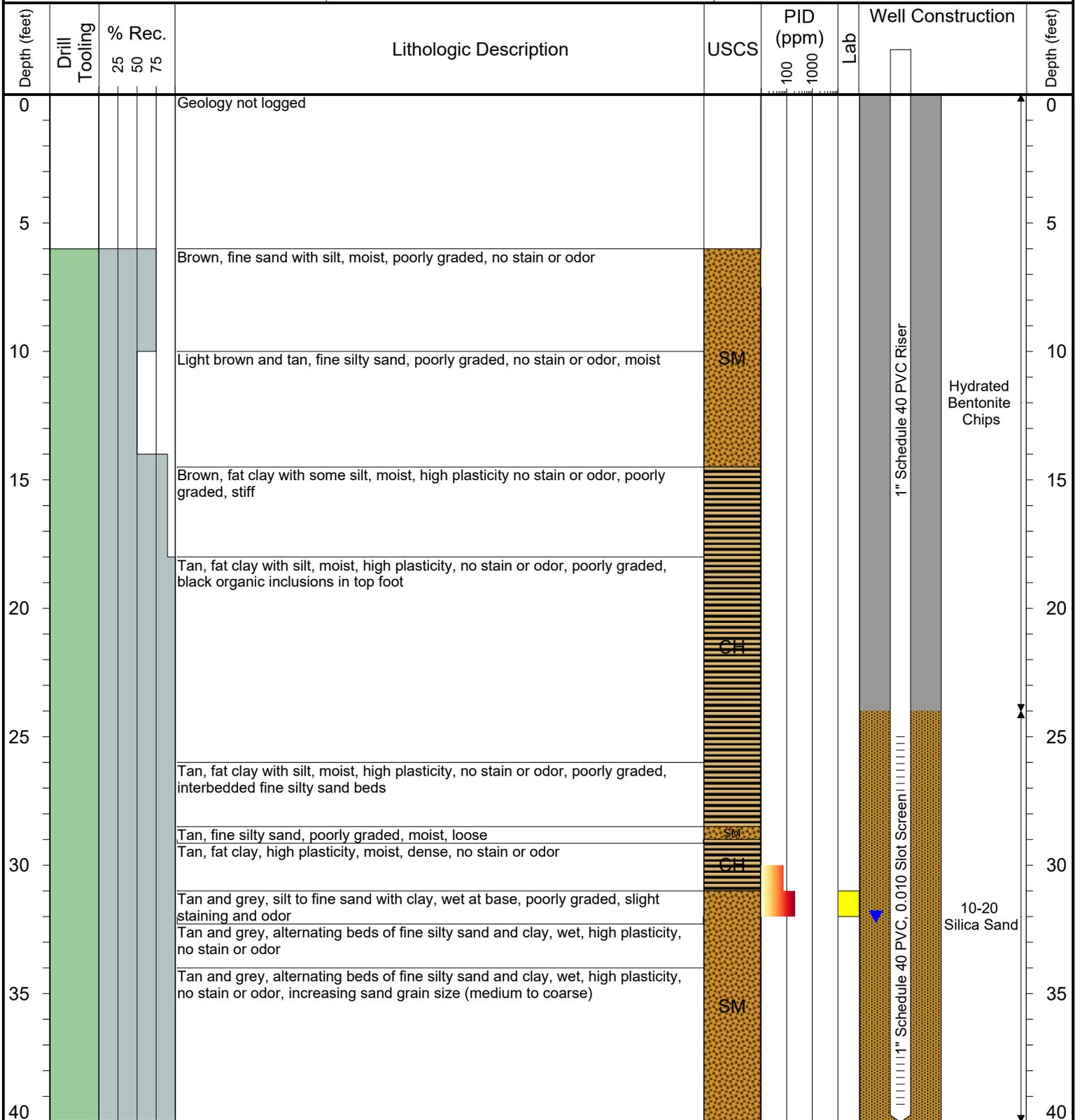
Laboratory Sample Types:

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Anadarko	ERNIE F ADAMSON GAS UNIT-62N65W21SWSW
LOGGED BY: Zach Mahaffey	
PROJECT MANAGER: Mike Jahn P.G.	BORING / WELL ID: BH03
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe 9300-SK	WELL COMPLETION: Flush Mount
DRILL BIT SIZE (INCHES): 3	NORTHING (CO STATE PLANE): 40.117455979631
DATE STARTED - COMPLETED: 9/2/2016-9/2/2016	EASTING (CO STATE PLANE): -104.669200202
TOTAL WELL DEPTH (FT. BGS): 40	CASING ELEVATION (FT. AMSL): 4895.34
DEPTH TO WATER (FT. BGS): 32	GROUND ELEVATION (FT. AMSL): 4895.37



Drilling / Sample Method:		Laboratory Sample Types:	
Macro-Core	Perforated Injection Tool	Geotechnical Lab	Geotechnical & Analytical Chemistry Lab
Expendable Well Tip	HydroPunch Groundwater Sampler	Analytical Chemistry Lab	