



May 31, 2022

Tasman Geosciences

Mike Jahn

6855 West 119th Avenue

Broomfield CO 80020

Project Name - KMG - UPRR Pan Am B1 41

Project Number - [none]

Attached are your analytical results for KMG - UPRR Pan Am B1 41 received by Origins Laboratory, Inc. May 18, 2022. This project is associated with Origins project number Y205470-01.

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
6855 West 119th Avenue
Broomfield CO 80020

Mike Jahn
Project Number: [none]
Project: KMG - UPRR Pan Am B1 41

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH-B01@6'	Y205470-01	Soil	May 18, 2022 13:00	05/18/2022 14:30

Origins Laboratory, Inc.



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Mike Jahn
Project Number: [none]
Project: KMG - UPRR Pan Am B1 41

[illegible]

Origins Laboratory, Inc.

Byron

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6855 West 119th Avenue
Broomfield CO 80020

Mike Jahn
Project Number: [none]
Project: KMG - UPRR Pan Am B1 41

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: Y205470

Client: Tasman
Client Project ID: UPRR Pan Am B1 41

Checklist Completed by: JG

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

Date/time completed: 5/18/22

Airbill #: N/A

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

Cooler Number/Temperature: 1, 12.3 °C 1 °C 1 °C (Describe) °C

Thermometer ID: T004

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

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

Reviewed by (Project Manager) [Signature]

5/18/22
Date/Time Reviewed

Origins Laboratory, Inc.

[Signature]

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Broomfield CO 80020

Mike Jahn
Project Number: [none]
Project: KMG - UPRR Pan Am B1 41

WH-B01@6'
5/18/2022 1:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y205470-01 (Soil)

Boron (DTPA Sorbitol)

Boron	0.435	0.0988	mg/L	1	B2E1910	05/19/2022	05/20/2022
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DRO/ORO by EPA 8015D

Diesel (C10-C28)	97.5	25.0	mg/kg	1	B2E1824	05/18/2022	05/18/2022
Residual Range Organics (C28-C40)	159	100	"	"	"	"	"

Surrogate: o-Terphenyl	80.1 %	50-150	"	"	"
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GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	0.0110	0.00200	mg/kg	1	B2E1825	05/18/2022	05/18/2022
1,3,5-Trimethylbenzene	0.00432	0.00200	"	"	"	"	"
Benzene	ND	0.00200	"	"	"	"	" U
Ethylbenzene	ND	0.00200	"	"	"	"	" U
Naphthalene	0.00744	0.00380	"	"	"	"	"
Toluene	ND	0.00200	"	"	"	"	" U
Xylenes, total	0.0124	0.00200	"	"	"	"	"
Gasoline Range Hydrocarbons	0.639	0.200	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	110 %	70-130	"	"	05/18/2022
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WH-B01@6'
5/18/2022 1:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y205470-01 (Soil)

GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	105 %	70-130	B2E18 25	05/18/2022	05/18/2022
Surrogate: 4-Bromofluorobenzene	105 %	70-130	"	"	"

Metals by Saturated Paste by EPA 6010

Calcium	2.43	0.499	meq/L	10	[CALC]	05/19/2022	05/20/2022
Magnesium	2.36	0.823	"	"	"	"	"
Sodium	1.48	0.435	"	"	"	"	"

PAH by 8270D SIM

1-Methylnaphthalene	0.0121	0.000364	0.00067	mg/Kg	1	L618028	05/25/2022	05/25/2022
2-Methylnaphthalene	0.0171	0.000645	0.00067	"	"	"	"	"
Acenaphthene	0.00231	0.000304	0.00067	"	"	"	"	"
Anthracene	ND	0.000334	0.00067	"	"	"	"	"
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"
Chrysene	0.00193	0.000624	0.00067	"	"	"	"	"
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"
Fluoranthene	0.000736	0.000394	0.00067	"	"	"	"	"
Fluorene	0.00574	0.000286	0.00067	"	"	"	"	"

B

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WH-B01@6'
5/18/2022 1:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, Inc.
Y205470-01 (Soil)

PAH by 8270D SIM

Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	mg/Kg	1	L618028	05/25/2022	05/25/2022
Pyrene	0.00141	0.000643	0.00067	"	"	"	"	"

Surrogate: 2-Fluorobiphenyl	62.7 %		33-115			"	"	"
Surrogate: 4-Terphenyl-d14	78.9 %		33-122			"	"	"
Surrogate: Nitrobenzene-d5	60.8 %		29-110			"	"	"

pH in Soil by 9045D

pH	8.51			pH Units	1	B2E1911	05/19/2022	05/20/2022
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SAR by 20B Saturated Paste

SAR	0.959			SAR	1	B2E1909	05/19/2022	05/20/2022
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Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.674		0.00500	mmhos/cm	1	B2E1911	05/19/2022	05/20/2022
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Total Metals by 6020B

Arsenic	4.19	0.0855	0.25	mg/Kg	5	L617648	05/23/2022	05/25/2022
Barium	123	0.042	0.25	"	"	"	"	"
Cadmium	0.188	0.0259	0.25	"	"	"	"	"

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WH-B01@6'
5/18/2022 1:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, Inc.
Y205470-01 (Soil)

Total Metals by 6020B

Copper	11.7	0.0806	0.25	mg/Kg	5	L617648	05/23/2022	05/25/2022	
Lead	11.1	0.031	0.25	"	"	"	"	"	
Nickel	13.1	0.0633	0.25	"	"	"	"	"	
Selenium	0.535	0.103	0.25	"	"	"	"	"	
Silver	0.0606	0.0067	0.25	"	"	"	"	"	J
Zinc	52.2	0.534	2.5	"	"	"	"	"	

Total Metals by 7196A

Chromium, Hexavalent	ND	0.488	1	mg/Kg	2	L618590	05/18/2022	05/27/2022	
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Extractable Petroleum Hydrocarbons by 8015D - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2E1824 - EPA 3550B										
Blank (B2E1824-BLK1)					Prepared: 05/18/2022 Analyzed: 05/18/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	24		"	24.9		94.8	50-150			

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Extractable Petroleum Hydrocarbons by 8015D - 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 B2E1824 - EPA 3550B

LCS (B2E1824-BS1)

Prepared: 05/18/2022 Analyzed: 05/18/2022

Diesel (C10-C28)	873	50.0	mg/kg	1000		87.3	70-130			
Residual Range Organics (C28-C40)	879	200	"	1000		87.9	70-130			
Surrogate: o-Terphenyl	41		"	49.8		81.9	50-150			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2E1824 - EPA 3550B										
LCS Dup (B2E1824-BSD1)					Prepared: 05/18/2022 Analyzed: 05/18/2022					
Diesel (C10-C28)	863	50.0	mg/kg	1000		86.3	70-130	1.16	35	QM-10
Residual Range Organics (C28-C40)	883	200	"	1000		88.3	70-130	0.447	35	QM-10
Surrogate: o-Terphenyl	47		"	49.8		93.6	50-150			QM-10

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Extractable Petroleum Hydrocarbons by 8015D - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2E1825 - EPA 5030 (soil)										
Blank (B2E1825-BLK1)					Prepared: 05/18/2022 Analyzed: 05/18/2022					
1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.0100	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		115	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		107	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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Project: KMG - UPRR Pan Am B1 41

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2E1825 - EPA 5030 (soil)										
LCS (B2E1825-BS1)					Prepared: 05/18/2022 Analyzed: 05/18/2022					
1,2,4-Trimethylbenzene	0.106	0.00200	mg/kg	0.100		106	70-130			
1,3,5-Trimethylbenzene	0.108	0.00200	"	0.100		108	70-130			
Benzene	0.103	0.00200	"	0.100		103	70-130			
Ethylbenzene	0.111	0.00200	"	0.100		111	70-130			
Naphthalene	0.102	0.0100	"	0.100		102	70-130			
Toluene	0.112	0.00200	"	0.100		112	70-130			
o-Xylene	0.109	0.00200	"	0.100		109	70-130			
m,p-Xylene	0.220	0.00400	"	0.200		110	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		112	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		105	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2E1825 - EPA 5030 (soil)										
Matrix Spike (B2E1825-MS1)		Source: Y205471-01			Prepared: 05/18/2022 Analyzed: 05/18/2022					
1,2,4-Trimethylbenzene	0.0937	0.00200	mg/kg	0.100	ND	93.7	70-130			
1,3,5-Trimethylbenzene	0.0948	0.00200	"	0.100	ND	94.8	70-130			
Benzene	0.0921	0.00200	"	0.100	ND	92.1	70-130			
Ethylbenzene	0.0998	0.00200	"	0.100	ND	99.8	70-130			
Naphthalene	0.0818	0.0100	"	0.100	ND	81.8	70-130			
Toluene	0.0972	0.00200	"	0.100	ND	97.2	70-130			
o-Xylene	0.0979	0.00200	"	0.100	ND	97.9	70-130			
m,p-Xylene	0.198	0.00400	"	0.200	ND	98.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.15		"	0.125		122	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.6	70-130			
Surrogate: 4-Bromofluorobenzene	0.14		"	0.125		108	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2E1825 - EPA 5030 (soil)										
Matrix Spike Dup (B2E1825-MSD1)		Source: Y205471-01			Prepared: 05/18/2022 Analyzed: 05/18/2022					
1,2,4-Trimethylbenzene	0.0712	0.00200	mg/kg	0.100	ND	71.2	70-130	27.3	20	QR-DUP
1,3,5-Trimethylbenzene	0.0727	0.00200	"	0.100	ND	72.7	70-130	26.3	20	QR-DUP
Benzene	0.0721	0.00200	"	0.100	ND	72.1	70-130	24.4	20	QR-DUP
Ethylbenzene	0.0780	0.00200	"	0.100	ND	78.0	70-130	24.5	20	QR-DUP
Naphthalene	0.0662	0.0100	"	0.100	ND	66.2	70-130	21.2	20	QR-DUP
Toluene	0.0777	0.00200	"	0.100	ND	77.7	70-130	22.2	20	QR-DUP
o-Xylene	0.0770	0.00200	"	0.100	ND	77.0	70-130	23.9	20	QR-DUP
m,p-Xylene	0.153	0.00400	"	0.200	ND	76.7	70-130	25.1	20	QR-DUP
Surrogate: 1,2-Dichloroethane-d4	0.15		"	0.125		120	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		106	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260D - 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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Saturated Paste - 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 B2E1911 - NO PREP

Blank (B2E1911-BLK1)

Prepared: 05/19/2022 Analyzed: 05/20/2022

pH	0.00		pH Units
Specific Conductance (EC)	0.00320	0.0300	mmhos/cm

Duplicate (B2E1911-DUP1)

Source: Y205470-01

Prepared: 05/19/2022 Analyzed: 05/20/2022

Specific Conductance (EC)	0.851	0.0300	mmhos/cm	0.674	23.2	25
pH	8.53		pH Units	8.51	0.235	25

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PAH by 8270D SIM - Quality Control
Waypoint Analytical, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L618028 - 3550B

MSD (L 95737-MSD-L618028)		Source: Y205470-01			Prepared: 05/25/2022 Analyzed: 05/25/2022					
Dibenz(a,h)anthracene	0.136	0.000614	mg/Kg	0.166	95737	81.9	30-130	6.8	30	
Fluoranthene	0.118	0.000394	"	0.166	0.000736	70.6	30-130	6.1	30	
Fluorene	0.124	0.000286	"	0.166	0.00574	71.2	30-130	2.3	30	
Indeno(1,2,3-cd)pyrene	0.14	0.000627	"	0.166	95737	84.3	30-130	3.6	30	
Pyrene	0.112	0.000643	"	0.166	0.00141	66.6	30-130	6.4	30	
Anthracene	0.11	0.000334	"	0.166	95737	66.2	30-130	1.8	30	
1-Methylnaphthalene	0.0972	0.000364	"	0.166	0.0121	51.2	30-130	19.3	30	
Benzo(k)fluoranthene	0.0857	0.000437	"	0.166	95737	51.6	30-130	0	30	
Benzo(b)fluoranthene	0.107	0.000585	"	0.166	95737	64.4	30-130	18.8	30	
Benzo(a)anthracene	0.135	0.000493	"	0.166	95737	81.3	30-130	3.7	30	
Acenaphthene	0.105	0.000304	"	0.166	0.00231	61.8	30-130	5.5	30	
2-Methylnaphthalene	0.111	0.000645	"	0.166	0.0171	56.5	30-130	14.2	30	
Chrysene	0.117	0.000624	"	0.166	0.00193	69.3	30-130	0.8	30	
Benzo(a)pyrene	0.122	0.000468	"	0.166	95737	73.4	30-130	4.1	30	
Surrogate: Nitrobenzene-d5	60.1		"	0.331	202	60.1	29-110			
Surrogate: 4-Terphenyl-d14	85.1		"	0.331	262	85.1	33-122			
Surrogate: 2-Fluorobiphenyl	60.7		"	0.331	208	60.7	33-115			

MS (L 95737-MS-L618028)		Source: Y205470-01			Prepared: 05/25/2022 Analyzed: 05/25/2022					
Benzo(b)fluoranthene	0.0886	0.000585	mg/Kg	0.165	95737	53.6	30-130			
Anthracene	0.112	0.000334	"	0.165	95737	67.8	30-130			
Acenaphthene	0.111	0.000304	"	0.165	0.00231	65.8	30-130			
2-Methylnaphthalene	0.128	0.000645	"	0.165	0.0171	67.2	30-130			
Benzo(a)pyrene	0.117	0.000468	"	0.165	95737	70.9	30-130			
1-Methylnaphthalene	0.118	0.000364	"	0.165	0.0121	64.1	30-130			
Benzo(a)anthracene	0.13	0.000493	"	0.165	95737	78.7	30-130			
Pyrene	0.105	0.000643	"	0.165	0.00141	62.7	30-130			

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Tasman Geosciences
6855 West 119th Avenue
Broomfield CO 80020

Mike Jahn
Project Number: [none]
Project: KMG - UPRR Pan Am B1 41

PAH by 8270D SIM - Quality Control
Waypoint Analytical, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L618028 - 3550B

MS (L 95737-MS-L618028)		Source: Y205470-01			Prepared: 05/25/2022 Analyzed: 05/25/2022					
Indeno(1,2,3-cd)pyrene	0.135	0.000627	mg/Kg	0.165	95737	81.8	30-130			
Fluorene	0.127	0.000286	"	0.165	0.00574	73.4	30-130			
Fluoranthene	0.111	0.000394	"	0.165	0.000736	66.8	30-130			
Dibenz(a,h)anthracene	0.127	0.000614	"	0.165	95737	76.9	30-130			
Chrysene	0.116	0.000624	"	0.165	0.00193	69.1	30-130			
Benzo(k)fluoranthene	0.0857	0.000437	"	0.165	95737	51.9	30-130			
Surrogate: 4-Terphenyl-d14	78.7		"	0.33	262	78.7	33-122			
Surrogate: 2-Fluorobiphenyl	70.6		"	0.33	208	70.6	33-115			
Surrogate: Nitrobenzene-d5	71.5		"	0.33	202	71.5	29-110			

LCS (LCS-L618028)		Prepared: 05/25/2022 Analyzed: 05/25/2022								
Indeno(1,2,3-cd)pyrene	0.11	0.000627	mg/Kg	0.167		65.8	30-130			
Benzo(b)fluoranthene	0.097	0.000585	"	0.167		58	30-130			
2-Methylnaphthalene	0.113	0.000645	"	0.167		67.6	30-130			
Acenaphthene	0.11	0.000304	"	0.167		65.8	30-130			
Benzo(a)anthracene	0.125	0.000493	"	0.167		74.8	30-130			
Benzo(a)pyrene	0.123	0.000468	"	0.167		73.6	30-130			
Benzo(k)fluoranthene	0.0956	0.000437	"	0.167		57.2	30-130			
Chrysene	0.116	0.000624	"	0.167		69.4	30-130			
Dibenz(a,h)anthracene	0.124	0.000614	"	0.167		74.2	30-130			
1-Methylnaphthalene	0.104	0.000364	"	0.167		62.2	30-130			
Fluorene	0.113	0.000286	"	0.167		67.6	30-130			
Pyrene	0.112	0.000643	"	0.167		67	30-130			
Fluoranthene	0.115	0.000394	"	0.167		68.8	30-130			
Anthracene	0.115	0.000334	"	0.167		68.8	30-130			
Surrogate: 2-Fluorobiphenyl	74.1		"	0.333		74.1	33-115			
Surrogate: 4-Terphenyl-d14	91.5		"	0.333		91.5	33-122			

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Mike Jahn
Project Number: [none]
Project: KMG - UPRR Pan Am B1 41

PAH by 8270D SIM - Quality Control
Waypoint Analytical, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch L618028 - 3550B										
LCS (LCS-L618028)					Prepared: 05/25/2022 Analyzed: 05/25/2022					
Surrogate: Nitrobenzene-d5	73.5		mg/Kg	0.333		73.5	29-110			
LRB (LRB-L618028)					Prepared: 05/25/2022 Analyzed: 05/25/2022					
Benzo(k)fluoranthene	ND	0.00067	mg/Kg				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Pyrene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Fluoranthene	0.000452	0.00067	"				-			J
Anthracene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
1-Methylnaphthalene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Surrogate: 2-Fluorobiphenyl	77.1		"	0.333		77.1	33-115			
Surrogate: 4-Terphenyl-d14	93.9		"	0.333		93.9	33-122			
Surrogate: Nitrobenzene-d5	78.9		"	0.333		78.9	29-110			

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Tasman Geosciences
6855 West 119th Avenue
Broomfield CO 80020

Mike Jahn
Project Number: [none]
Project: KMG - UPRR Pan Am B1 41

Total Metals by 6020B - Quality Control Waypoint Analytical, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch L617648 - 3050B										
MSD (L 95770-MSD-L617648)			Source: 95770		Prepared: 05/23/2022 Analyzed: 05/25/2022					
Silver	0.449	0.0067	mg/Kg	0.469	0.012	93	75-125	0.8	80	
Barium	89.9	0.042	"	4.69	48.2	889	75-125	14.6	80	*
Cadmium	0.586	0.0259	"	0.469	0.137	96	75-125	2	80	
Copper	7.37	0.0806	"	2.35	5.8	67	75-125	0.8	80	*
Lead	9.93	0.031	"	2.35	7.88	87	75-125	4.8	80	
Arsenic	7.25	0.0855	"	2.35	6.54	30	75-125	2	80	*
Zinc	52.4	0.534	"	23.5	32.4	85	75-125	0.3	80	
Nickel	9.12	0.0633	"	2.35	7.56	67	75-125	42.8	80	*
Selenium	4.28	0.103	"	4.69	0.313	85	75-125	1.3	80	
MS (L 95770-MS-L617648)			Source: 95770		Prepared: 05/23/2022 Analyzed: 05/25/2022					
Copper	7.31	0.0806	mg/Kg	2.39	5.8	63	75-125			*
Zinc	52.2	0.534	"	23.9	32.4	83	75-125			
Lead	9.46	0.031	"	2.39	7.88	66	75-125			*
Selenium	4.34	0.103	"	4.78	0.313	84	75-125			
Cadmium	0.598	0.0259	"	0.478	0.137	96	75-125			
Silver	0.453	0.0067	"	0.478	0.012	92	75-125			
Barium	77.6	0.042	"	4.78	48.2	615	75-125			*
Arsenic	7.4	0.0855	"	2.39	6.54	36	75-125			*
Nickel	14.1	0.0633	"	2.39	7.56	274	75-125			*
LCS (LCS-L617648)			Prepared: 05/23/2022 Analyzed: 05/25/2022							
Cadmium	0.463	0.0259	mg/Kg	0.5		93	80-120			
Arsenic	2.49	0.0855	"	2.5		100	80-120			
Barium	4.8	0.042	"	5		96	80-120			
Copper	2.47	0.0806	"	2.5		99	80-120			
Lead	2.34	0.031	"	2.5		94	80-120			

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Tasman Geosciences
6855 West 119th Avenue
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Mike Jahn
Project Number: [none]
Project: KMG - UPRR Pan Am B1 41

Total Metals by 6020B - Quality Control Waypoint Analytical, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L617648 - 3050B

LCS (LCS-L617648)

Prepared: 05/23/2022 Analyzed: 05/25/2022

Nickel	2.53	0.0633	mg/Kg	2.5		101	80-120			
Selenium	4.74	0.103	"	5		95	80-120			
Zinc	24.7	0.534	"	25		99	80-120			
Silver	0.475	0.0067	"	0.5		95	80-120			

LRB (LRB-L617648)

Prepared: 05/23/2022 Analyzed: 05/25/2022

Zinc	ND	2.5	mg/Kg				-			
Silver	ND	0.25	"				-			
Selenium	ND	0.25	"				-			
Nickel	ND	0.25	"				-			
Lead	ND	0.25	"				-			
Copper	ND	0.25	"				-			
Cadmium	ND	0.25	"				-			
Barium	0.0428	0.25	"				-			J
Arsenic	ND	0.25	"				-			

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Broomfield CO 80020

Mike Jahn
Project Number: [none]
Project: KMG - UPRR Pan Am B1 41

Total Metals by 7196A - Quality Control Waypoint Analytical, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch L618590 -										
DUP (L 86733-DUP)		Source: 86733			Prepared: Analyzed: 05/27/2022					
Chromium, Hexavalent	ND	0.244	mg/Kg		86733	-		0	20	
MS (L 86733-MS)		Source: 86733			Prepared: Analyzed: 05/27/2022					
Chromium, Hexavalent	4.03	0.244	mg/Kg	7.71	86733	52	75-125			*
LCS (LCS)					Prepared: Analyzed: 05/27/2022					
Chromium, Hexavalent	6.84	0.244	mg/Kg	8		86	75-125			
LRB (LRB)					Prepared: Analyzed: 05/27/2022					
Chromium, Hexavalent	ND	0.5	mg/Kg							

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Tasman Geosciences
6855 West 119th Avenue
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Mike Jahn
Project Number: [none]
Project: KMG - UPRR Pan Am B1 41

Notes and Definitions

U Sample is Non-Detect.

QR-DUP RPD exceeds QC acceptance criteria, this indicates source sample is not homogenous.

QM-10 LCS/LCSD were analyzed in place of MS/MSD.

J Estimated Value. Analyte below reported quantitation limit.

B Analyte detected in associated method blank.

* QC Failure

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

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