



February 03, 2023

Tasman Geosciences

Jake Whritenour

6855 West 119th Avenue

Broomfield CO 80020

Project Name - Noble - Huntsman G13-10

Project Number - UWRWE-A2951-ABN

Attached are your analytical results for Noble - Huntsman G13-10 received by Origins Laboratory, Inc. January 26, 2023. This project is associated with Origins project number Y301432-01.

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

Jake Whritenour  
Project Number: UWRWE-A2951-ABN  
Project: Noble - Huntsman G13-10

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-A@4'	Y301432-01	Soil	January 26, 2023 9:19	01/26/2023 12:53
FL01-B@5'	Y301432-02	Soil	January 26, 2023 8:57	01/26/2023 12:53
FL01-E@3.5'	Y301432-03	Soil	January 26, 2023 9:51	01/26/2023 12:53

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager



Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Jake Whritenour  
 Project Number: UWRWE-A2951-ABN  
 Project: Noble - Huntsman G13-10

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

**Sample Receipt Checklist**

Origins Work Order: 4301432 Client: Tasman  
 Client Project ID: Huntsman G13-10

Checklist Completed by: ENS/IDM Shipped Via: HO  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 1/26/23 Airbill #: 134

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

Cooler Number/Temperature: 130°C / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C

Thermometer ID: TOO4

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

<sup>(1)</sup>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) 

Date/Time Reviewed 1/26/23

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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 Project Number: UWRWE-A2951-ABN  
 Project: Noble - Huntsman G13-10

**FL01-A@4'**

**1/26/2023 9:19:00AM**

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y301432-01 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.247	0.0999	mg/L	1	B3A2710	KAP	01/27/2023	01/30/2023	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B3A3001	B	01/30/2023	01/30/2023	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	B	"	"	U

Surrogate: o-Terphenyl 85.3 % 50-150 " " " "

**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B3A3019	ZZZ	01/30/2023	01/30/2023	U
1,3,5-Trimethylbenzene	0.00284	0.00200	"	"	"	ZZZ	"	"	"
Benzene	ND	0.00200	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	ZZZ	"	"	U
Toluene	ND	0.00200	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	0.00200	"	"	"	ZZZ	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	ZZZ	"	"	U

Surrogate: 1,2-Dichloroethane-d4 95.2 % 70-130 " " " "  
 Surrogate: Toluene-d8 89.5 % 70-130 " " " "  
 Surrogate: 4-Bromofluorobenzene 97.0 % 70-130 " " " "

**Metals by Saturated Paste by EPA 6010**

Origins Laboratory, Inc.



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**FL01-A@4'**

**1/26/2023 9:19:00AM**

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y301432-01 (Soil)**

**Metals by Saturated Paste by EPA 6010**

Calcium	ND	0.499	meq/L	10	[CALC]	KAP	01/27/2023	01/30/2023	
Magnesium	ND	0.823	"	"	"	KAP	"	"	
Sodium	<b>0.682</b>	0.435	"	"	"	KAP	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.00201	mg/Kg	1	L661411		01/30/2023	01/31/2023	
2-Methylnaphthalene	ND	0.00201	"	"	"		"	"	
Acenaphthene	ND	0.00067	"	"	"		"	"	
Anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)pyrene	ND	0.00067	"	"	"		"	"	
Benzo(b)fluoranthene	ND	0.00067	"	"	"		"	"	
Benzo(k)fluoranthene	ND	0.00067	"	"	"		"	"	
Chrysene	ND	0.00067	"	"	"		"	"	
Dibenz(a,h)anthracene	ND	0.00067	"	"	"		"	"	
Fluoranthene	ND	0.00067	"	"	"		"	"	
Fluorene	ND	0.00067	"	"	"		"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00067	"	"	"		"	"	
Naphthalene	ND	0.00201	"	"	"		"	"	

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**FL01-A@4'**

**1/26/2023 9:19:00AM**

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Waypoint Analytical, LLC.**  
**Y301432-01 (Soil)**

**PAH by 8270D SIM**

Pyrene	ND	0.00067	mg/Kg	1	L661411			01/30/2023	01/31/2023
Surrogate: 2-Fluorobiphenyl	45.8 %		33-115		"	"	"	"	"
Surrogate: 4-Terphenyl-d14	56.3 %		33-122		"	"	"	"	"
Surrogate: Nitrobenzene-d5	42.8 %		29-110		"	"	"	"	"

**pH in Soil by 9045D**

pH	7.61		pH Units	1	B3A2721	HJD		01/27/2023	01/28/2023
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**SAR by 20B Saturated Paste**

SAR	1.72		SAR	1	B3A2706	KAP		01/27/2023	01/30/2023
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	0.812	0.00500	mmhos/cm	1	B3A2721	HJD		01/27/2023	01/28/2023
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**FL01-B@5'**

**1/26/2023 8:57:00AM**

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y301432-02 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.0653	0.0999	mg/L	1	B3A2710	KAP	01/27/2023	01/30/2023	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B3A3001	B	01/30/2023	01/30/2023	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	B	"	"	U

Surrogate: o-Terphenyl	85.9 %		50-150		"	"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	0.00322	0.00200	mg/kg	1	B3A3019	ZZZ	01/30/2023	01/30/2023	
1,3,5-Trimethylbenzene	0.00262	0.00200	"	"	"	ZZZ	"	"	
Benzene	ND	0.00200	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	ZZZ	"	"	U
Toluene	ND	0.00200	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	0.00200	"	"	"	ZZZ	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	ZZZ	"	"	U

Surrogate: 1,2-Dichloroethane-d4	95.7 %		70-130		"	"	"	"	
Surrogate: Toluene-d8	89.2 %		70-130		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	96.0 %		70-130		"	"	"	"	

**Metals by Saturated Paste by EPA 6010**

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**FL01-B@5'**

**1/26/2023 8:57:00AM**

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y301432-02 (Soil)**

**Metals by Saturated Paste by EPA 6010**

Calcium	1.47	0.499	meq/L	10	[CALC]	KAP	01/27/2023	01/30/2023	
Magnesium	ND	0.823	"	"	"	KAP	"	"	
Sodium	ND	0.435	"	"	"	KAP	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.00201	mg/Kg	1	L661411		01/30/2023	01/31/2023	
2-Methylnaphthalene	ND	0.00201	"	"	"		"	"	
Acenaphthene	ND	0.00067	"	"	"		"	"	
Anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)pyrene	ND	0.00067	"	"	"		"	"	
Benzo(b)fluoranthene	ND	0.00067	"	"	"		"	"	
Benzo(k)fluoranthene	ND	0.00067	"	"	"		"	"	
Chrysene	ND	0.00067	"	"	"		"	"	
Dibenz(a,h)anthracene	ND	0.00067	"	"	"		"	"	
Fluoranthene	ND	0.00067	"	"	"		"	"	
Fluorene	ND	0.00067	"	"	"		"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00067	"	"	"		"	"	
Naphthalene	ND	0.00201	"	"	"		"	"	

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**FL01-B@5'**

**1/26/2023 8:57:00AM**

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Waypoint Analytical, LLC.**  
**Y301432-02 (Soil)**

**PAH by 8270D SIM**

Pyrene	ND	0.00067	mg/Kg	1	L661411		01/30/2023	01/31/2023	
Surrogate: 2-Fluorobiphenyl	52.9 %		33-115		"	"	"	"	"
Surrogate: 4-Terphenyl-d14	66.9 %		33-122		"	"	"	"	"
Surrogate: Nitrobenzene-d5	52.6 %		29-110		"	"	"	"	"

**pH in Soil by 9045D**

pH	8.25		pH Units	1	B3A2721	HJD	01/27/2023	01/28/2023	
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**SAR by 20B Saturated Paste**

SAR	0.303		SAR	1	B3A2706	KAP	01/27/2023	01/30/2023	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	0.261	0.00500	mmhos/cm	1	B3A2721	HJD	01/27/2023	01/28/2023	
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 Project: Noble - Huntsman G13-10

**FL01-E@3.5'**  
**1/26/2023 9:51:00AM**

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y301432-03 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	1.63	0.0999	mg/L	1	B3A2710	KAP	01/27/2023	01/30/2023	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B3A3001	B	01/30/2023	01/30/2023	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	B	"	"	U

Surrogate: o-Terphenyl	89.4 %		50-150		"	"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg	1	B3A3019	ZZZ	01/30/2023	01/30/2023	U
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	ZZZ	"	"	U
Benzene	ND	0.00200	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	ZZZ	"	"	U
Toluene	ND	0.00200	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	0.00200	"	"	"	ZZZ	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	ZZZ	"	"	U

Surrogate: 1,2-Dichloroethane-d4	98.5 %		70-130		"	"	"	"	
Surrogate: Toluene-d8	89.7 %		70-130		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	97.7 %		70-130		"	"	"	"	

**Metals by Saturated Paste by EPA 6010**

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**FL01-E@3.5'**

**1/26/2023 9:51:00AM**

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y301432-03 (Soil)**

**Metals by Saturated Paste by EPA 6010**

Calcium	9.42	0.499	meq/L	10	[CALC]	KAP	01/27/2023	01/30/2023	
Magnesium	7.56	0.823	"	"	"	KAP	"	"	
Sodium	13.9	0.435	"	"	"	KAP	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.00201	mg/Kg	1	L661411		01/30/2023	01/31/2023	
2-Methylnaphthalene	ND	0.00201	"	"	"		"	"	
Acenaphthene	ND	0.00067	"	"	"		"	"	
Anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)anthracene	ND	0.00067	"	"	"		"	"	
Benzo(a)pyrene	ND	0.00067	"	"	"		"	"	
Benzo(b)fluoranthene	ND	0.00067	"	"	"		"	"	
Benzo(k)fluoranthene	ND	0.00067	"	"	"		"	"	
Chrysene	ND	0.00067	"	"	"		"	"	
Dibenz(a,h)anthracene	ND	0.00067	"	"	"		"	"	
Fluoranthene	ND	0.00067	"	"	"		"	"	
Fluorene	ND	0.00067	"	"	"		"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00067	"	"	"		"	"	
Naphthalene	ND	0.00201	"	"	"		"	"	
Pyrene	ND	0.00067	"	"	"		"	"	

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**FL01-E@3.5'**  
**1/26/2023 9:51:00AM**

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Waypoint Analytical, LLC.**  
**Y301432-03 (Soil)**

**PAH by 8270D SIM**

Surrogate: 2-Fluorobiphenyl	55.6 %		33-115		L6614		01/30/2023	01/31/2023	
Surrogate: 4-Terphenyl-d14	64.9 %		33-122		"		"	"	
Surrogate: Nitrobenzene-d5	52 %		29-110		"		"	"	

**pH in Soil by 9045D**

pH	8.29		pH Units	1	B3A2721	HJD	01/27/2023	01/28/2023	
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**SAR by 20B Saturated Paste**

SAR	4.76		SAR	1	B3A2706	KAP	01/27/2023	01/30/2023	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	2.42	0.00500	mmhos/cm	1	B3A2721	HJD	01/27/2023	01/28/2023	
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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 B3A3001 - EPA 3580**

**Blank (B3A3001-BLK1)**

Prepared: 01/30/2023 Analyzed: 01/30/2023

Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	23		"	24.9		92.1	50-150			

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Broomfield CO 80020

Jake Whritenour  
Project Number: UWRWE-A2951-ABN  
Project: Noble - Huntsman G13-10

**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 B3A3001 - EPA 3580

LCS (B3A3001-BS1)

Prepared: 01/30/2023 Analyzed: 01/30/2023

Diesel (C10-C28)	939	50.0	mg/kg	1000		93.9	70-130			
Residual Range Organics (C28-C40)	898	200	"	1000		89.8	70-130			
Surrogate: o-Terphenyl	46		"	49.8		93.3	50-150			

Origins Laboratory, Inc.

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Jen Pellegrini, Project Manager



Tasman Geosciences  
 6855 West 119th Avenue  
 Broomfield CO 80020

Jake Whritenour  
 Project Number: UWRWE-A2951-ABN  
 Project: Noble - Huntsman G13-10

**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 B3A3001 - EPA 3580**

**Matrix Spike (B3A3001-MS1)**

**Source: Y301432-01**

Prepared: 01/30/2023 Analyzed: 01/30/2023

Diesel (C10-C28)	911	50.0	mg/kg	1000	ND	91.1	70-130			
Residual Range Organics (C28-C40)	866	200	"	1000	ND	86.6	70-130			
Surrogate: o-Terphenyl	43		"	49.8		86.6	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 B3A3001 - EPA 3580**

**Matrix Spike Dup (B3A3001-MSD1)**

**Source: Y301432-01**

Prepared: 01/30/2023 Analyzed: 01/30/2023

Diesel (C10-C28)	903	50.0	mg/kg	1000	ND	90.3	70-130	0.871	35	
Residual Range Organics (C28-C40)	864	200	"	1000	ND	86.4	70-130	0.289	35	
Surrogate: o-Terphenyl	43		"	49.8		86.4	50-150			

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 Project: Noble - Huntsman G13-10

**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 B3A3019 - EPA 5030 (soil)**

**Blank (B3A3019-BLK1)**

Prepared: 01/30/2023 Analyzed: 01/30/2023

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	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		89.8	70-130			
Surrogate: Toluene-d8	0.11		"	0.125		91.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.4	70-130			

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 Project Number: UWRWE-A2951-ABN  
 Project: Noble - Huntsman G13-10

**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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**Batch B3A3019 - EPA 5030 (soil)**

**LCS (B3A3019-BS1)**

Prepared: 01/30/2023 Analyzed: 01/30/2023

1,2,4-Trimethylbenzene	0.0888	0.00200	mg/kg	0.100		88.8	70-130			
1,3,5-Trimethylbenzene	0.0888	0.00200	"	0.100		88.8	70-130			
Benzene	0.103	0.00200	"	0.100		103	70-130			
Ethylbenzene	0.0861	0.00200	"	0.100		86.1	70-130			
Naphthalene	0.0930	0.00380	"	0.100		93.0	70-130			
Toluene	0.0892	0.00200	"	0.100		89.2	70-130			
o-Xylene	0.0869	0.00200	"	0.100		86.9	70-130			
m,p-Xylene	0.195	0.00400	"	0.200		97.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		86.8	70-130			
Surrogate: Toluene-d8	0.11		"	0.125		91.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		94.2	70-130			

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 Project: Noble - Huntsman G13-10

**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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Batch B3A3019 - EPA 5030 (soil)

Matrix Spike (B3A3019-MS1)

Source: Y301432-01

Prepared: 01/30/2023 Analyzed: 01/30/2023

1,2,4-Trimethylbenzene	0.0863	0.00200	mg/kg	0.100	0.000820	85.5	70-130			
1,3,5-Trimethylbenzene	0.0907	0.00200	"	0.100	0.00284	87.8	70-130			
Benzene	0.102	0.00200	"	0.100	ND	102	70-130			
Ethylbenzene	0.0855	0.00200	"	0.100	ND	85.5	70-130			
Naphthalene	0.0822	0.00380	"	0.100	0.000860	81.3	70-130			
Toluene	0.0871	0.00200	"	0.100	ND	87.1	70-130			
o-Xylene	0.0865	0.00200	"	0.100	0.000720	85.8	70-130			
m,p-Xylene	0.195	0.00400	"	0.200	ND	97.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		88.7	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		92.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		95.5	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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**Batch B3A3019 - EPA 5030 (soil)**

**Matrix Spike Dup (B3A3019-MSD1)**

**Source: Y301432-01**

Prepared: 01/30/2023 Analyzed: 01/30/2023

1,2,4-Trimethylbenzene	0.0817	0.00200	mg/kg	0.100	0.000820	80.9	70-130	5.48	20	
1,3,5-Trimethylbenzene	0.0874	0.00200	"	0.100	0.00284	84.6	70-130	3.66	20	
Benzene	0.0994	0.00200	"	0.100	ND	99.4	70-130	2.17	20	
Ethylbenzene	0.0835	0.00200	"	0.100	ND	83.5	70-130	2.34	20	
Naphthalene	0.0842	0.00380	"	0.100	0.000860	83.4	70-130	2.48	20	
Toluene	0.0855	0.00200	"	0.100	ND	85.5	70-130	1.83	20	
o-Xylene	0.0837	0.00200	"	0.100	0.000720	83.0	70-130	3.24	20	
m,p-Xylene	0.190	0.00400	"	0.200	ND	94.9	70-130	2.66	20	
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		88.8	70-130			
Surrogate: Toluene-d8	0.11		"	0.125		91.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		95.5	70-130			

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Project: Noble - Huntsman G13-10

**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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**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B3A2706 - Saturated Paste Metals**

**Blank (B3A2706-BLK1)**

Prepared: 01/27/2023 Analyzed: 01/30/2023

SAR	0.00		SAR							U
Calcium PPM	ND	10.0	mg/L							U
Magnesium PPM	ND	10.0	"							U
Sodium PPM	0.413	10.0	"							

**Duplicate (B3A2706-DUP1)**

Source: Y301407-03

Prepared: 01/27/2023 Analyzed: 01/30/2023

SAR	0.00		SAR		0.874			200	200	U
Calcium PPM	44.5	10.0	mg/L		68.7			42.7	50	
Magnesium PPM	14.0	10.0	"		14.9			5.91	50	
Sodium PPM	18.5	10.0	"		30.6			49.2	50	

**Batch B3A2710 - DTPA Sorbitol Preparation**

**Blank (B3A2710-BLK1)**

Prepared: 01/27/2023 Analyzed: 01/30/2023

Boron	ND	0.100	mg/L							U
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**Duplicate (B3A2710-DUP1)**

Source: Y301432-01

Prepared: 01/27/2023 Analyzed: 01/30/2023

Boron	0.227	0.0999	mg/L		0.247			8.51	50	
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 Project: Noble - Huntsman G13-10

**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 B3A2721 - Saturated Paste pH/EC**

**Blank (B3A2721-BLK1)**

Prepared: 01/27/2023 Analyzed: 01/28/2023

Specific Conductance (EC) 0.00110 0.00500 mmhos/cm

**Duplicate (B3A2721-DUP1)** **Source: Y301407-04**

Prepared: 01/27/2023 Analyzed: 01/28/2023

pH 8.19 pH Units 8.39 2.41 25

Specific Conductance (EC) 0.457 0.00500 mmhos/cm 0.459 0.546 25

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 Project: Noble - Huntsman G13-10

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L661411 - 3550B**

**MSD (L 99396-MSD-L661411)**

**Source: 99396**

Prepared: 01/30/2023 Analyzed: 01/31/2023

2-Methylnaphthalene	0.0912	0.00201	mg/Kg	0.164	<0.00194	55.6	30-130	5.2	30	
Fluorene	0.095	0.00067	"	0.164	<0.000286	57.9	30-130	10	30	
Pyrene	0.106	0.00067	"	0.164	<0.000643	64.6	30-130	5.5	30	
Indeno(1,2,3-cd)pyrene	0.107	0.00067	"	0.164	<0.000627	65.2	30-130	2.7	30	
Fluoranthene	0.114	0.00067	"	0.164	<0.000394	69.5	30-130	7.5	30	
Dibenz(a,h)anthracene	0.124	0.00067	"	0.164	<0.000614	75.6	30-130	0	30	
Chrysene	0.105	0.00067	"	0.164	<0.000624	64	30-130	4.6	30	
Naphthalene	0.0936	0.00201	"	0.164	<0.00145	57	30-130	5.1	30	
1-Methylnaphthalene	0.0949	0.00201	"	0.164	<0.00109	57.8	30-130	6.2	30	
Benzo(k)fluoranthene	0.103	0.00067	"	0.164	<0.000437	62.8	30-130	3.8	30	
Acenaphthene	0.0943	0.00067	"	0.164	<0.000304	57.5	30-130	7.8	30	
Anthracene	0.0987	0.00067	"	0.164	<0.000334	60.1	30-130	5.2	30	
Benzo(a)anthracene	0.103	0.00067	"	0.164	<0.000493	62.8	30-130	5.6	30	
Benzo(a)pyrene	0.114	0.00067	"	0.164	<0.000468	69.5	30-130	5.1	30	
Benzo(b)fluoranthene	0.0961	0.00067	"	0.164	<0.000585	58.5	30-130	1.3	30	
Surrogate: 2-Fluorobiphenyl	51		"	0.329	153	51	33-115			
Surrogate: Nitrobenzene-d5	51		"	0.329	144	51	29-110			
Surrogate: 4-Terphenyl-d14	67.7		"	0.329	197	67.7	33-122			

**MS (L 99396-MS-L661411)**

**Source: 99396**

Prepared: 01/30/2023 Analyzed: 01/31/2023

Benzo(k)fluoranthene	0.107	0.00067	mg/Kg	0.167	<0.000437	64	30-130			
Acenaphthene	0.102	0.00067	"	0.167	<0.000304	61	30-130			
Naphthalene	0.0985	0.00201	"	0.167	<0.00145	58.9	30-130			
Indeno(1,2,3-cd)pyrene	0.11	0.00067	"	0.167	<0.000627	65.8	30-130			
Fluorene	0.105	0.00067	"	0.167	<0.000286	62.8	30-130			
Fluoranthene	0.123	0.00067	"	0.167	<0.000394	73.6	30-130			
Dibenz(a,h)anthracene	0.124	0.00067	"	0.167	<0.000614	74.2	30-130			

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 Project: Noble - Huntsman G13-10

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L661411 - 3550B**

**MS (L 99396-MS-L661411)**

**Source: 99396**

Prepared: 01/30/2023 Analyzed: 01/31/2023

Chrysene	0.11	0.00067	mg/Kg	0.167	<0.000624	65.8	30-130			
1-Methylnaphthalene	0.101	0.00201	"	0.167	<0.00109	60.4	30-130			
Benzo(a)pyrene	0.12	0.00067	"	0.167	<0.000468	71.8	30-130			
Anthracene	0.104	0.00067	"	0.167	<0.000334	62.2	30-130			
Pyrene	0.112	0.00067	"	0.167	<0.000643	67	30-130			
2-Methylnaphthalene	0.0961	0.00201	"	0.167	<0.00194	57.5	30-130			
Benzo(b)fluoranthene	0.0948	0.00067	"	0.167	<0.000585	56.7	30-130			
Benzo(a)anthracene	0.109	0.00067	"	0.167	<0.000493	65.2	30-130			
Surrogate: Nitrobenzene-d5	54.9		"	0.333	144	54.9	29-110			
Surrogate: 4-Terphenyl-d14	69.6		"	0.333	197	69.6	33-122			
Surrogate: 2-Fluorobiphenyl	56.7		"	0.333	153	56.7	33-115			

**LCS (LCS-L661411)**

Prepared: 01/30/2023 Analyzed: 01/31/2023

Chrysene	0.117	0.00067	mg/Kg	0.167		70	30-130			
Dibenz(a,h)anthracene	0.104	0.00067	"	0.167		62.2	30-130			
Fluoranthene	0.126	0.00067	"	0.167		75.4	30-130			
Fluorene	0.11	0.00067	"	0.167		65.8	30-130			
Indeno(1,2,3-cd)pyrene	0.0916	0.00067	"	0.167		54.8	30-130			
Naphthalene	0.107	0.00201	"	0.167		64	30-130			
Benzo(k)fluoranthene	0.103	0.00067	"	0.167		61.6	30-130			
Pyrene	0.12	0.00067	"	0.167		71.8	30-130			
Benzo(a)pyrene	0.128	0.00067	"	0.167		76.6	30-130			
Benzo(a)anthracene	0.12	0.00067	"	0.167		71.8	30-130			
Anthracene	0.108	0.00067	"	0.167		64.6	30-130			
Acenaphthene	0.107	0.00067	"	0.167		64	30-130			
2-Methylnaphthalene	0.102	0.00201	"	0.167		61	30-130			
1-Methylnaphthalene	0.108	0.00201	"	0.167		64.6	30-130			

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 Project: Noble - Huntsman G13-10

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L661411 - 3550B**

**LCS (LCS-L661411)**

Prepared: 01/30/2023 Analyzed: 01/31/2023

Benzo(b)fluoranthene	0.0966	0.00067	mg/Kg	0.167	57.8	30-130				
Surrogate: Nitrobenzene-d5	58.5		"	0.333	58.5	29-110				
Surrogate: 4-Terphenyl-d14	76.8		"	0.333	76.8	33-122				
Surrogate: 2-Fluorobiphenyl	61.8		"	0.333	61.8	33-115				

**LRB (LRB-L661411)**

Prepared: 01/30/2023 Analyzed: 01/31/2023

Chrysene	ND	0.00067	mg/Kg							
Dibenz(a,h)anthracene	ND	0.00067	"							
Fluoranthene	ND	0.00067	"							
Fluorene	ND	0.00067	"							
Benzo(k)fluoranthene	ND	0.00067	"							
Naphthalene	ND	0.00201	"							
Indeno(1,2,3-cd)pyrene	ND	0.00067	"							
Benzo(b)fluoranthene	ND	0.00067	"							
Benzo(a)pyrene	ND	0.00067	"							
Benzo(a)anthracene	ND	0.00067	"							
Acenaphthene	ND	0.00067	"							
2-Methylnaphthalene	ND	0.00201	"							
1-Methylnaphthalene	ND	0.00201	"							
Pyrene	ND	0.00067	"							
Anthracene	ND	0.00067	"							
Surrogate: Nitrobenzene-d5	60.6		"	0.333	60.6	29-110				
Surrogate: 4-Terphenyl-d14	64.8		"	0.333	64.8	33-122				
Surrogate: 2-Fluorobiphenyl	54.6		"	0.333	54.6	33-115				

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Broomfield CO 80020

Jake Whritenour  
Project Number: UWRWE-A2951-ABN  
Project: Noble - Huntsman G13-10

## Notes and Definitions

- U Sample is Non-Detect.
  - ND Analyte NOT DETECTED at or above the reporting limit
  - RPD Relative Percent Difference
- All soil results are reported at a wet weight basis.

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Jen Pellegrini, Project Manager

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