

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 13, 2025

Jacob Whritenour
Tasman Geosciences
6855 W. 119th Ave.
Broomfield, CO 80020

RE: Noble - Arens G26-19 Flowline
Work Order #2502132

Enclosed are the results of analyses for samples received by Summit Scientific on 02/07/25 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Natalie Tessier For Paul Shrewsbury
President



Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@2'	2502132-01	Soil	02/07/25 10:32	02/07/25 18:00
SS02@2'	2502132-02	Soil	02/07/25 10:34	02/07/25 18:00
SS03@2'	2502132-03	Soil	02/07/25 10:36	02/07/25 18:00
SS04@2'	2502132-04	Soil	02/07/25 10:38	02/07/25 18:00
FS01@4'	2502132-05	Soil	02/07/25 10:30	02/07/25 18:00

		Send Data To:	Send Invoice To:
Client: Noble	Project Manager: Andy Sagen		Company: Noble
Address: 6855 W. 119th Ave.	E-Mail: tas-chevron-1@tasman-geo.com		Project Name/Location:
City/State/Zip: Broomfield/CO/ 80020	RBUEUF27@chevron.com		AFE#:
Phone: 303-668-5268	Project Name: <i>Arens 626-1A Flowline</i>		PO/Billing Codes:
Sampler Name: Natalie Crozier	Project Number:		Contact: Dan Peterson

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix		Analysis Requested							Special Instructions			
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH		Boron - HWS	HOLD	
1	SS01@2'	2/7/25	1032	2			X			X			X	X	X	X	X	X		SAR, EC, pH by saturated paste	
2	SS02@2'	↓	1034	↓									↓	↓	↓	↓	↓	↓			
3	SS03@2'	↓	1036	↓									↓	↓	↓	↓	↓	↓			
4	SS04@2'	↓	1038	↓									↓	↓	↓	↓	↓	↓			
5	FS01@4'	↓	1030	↓									↓	↓	↓	↓	↓	↓			
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					

Relinquished by: <i>M. Crozier</i>	Date/Time: 2/7/25 1345	Received by: Tasman Lock Box	Date/Time: 2/7/25 1345	TAT Business Days	Field DO	Notes: BTEXN, TPH, +TABs on same day. Remaining Analytes on 48 hr TAT
Relinquished by: <i>Tasman Lock Box</i>	Date/Time: 2/25 1800	Received by: <i>[Signature]</i>	Date/Time: 2/25 1800	Same Day <input checked="" type="checkbox"/>	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
Temperature Upon Receipt: 2-1	Corrected Temperature: 6	IR gun #:		Standard	Field Turb.	HNO3 lot #:



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Reported:
03/13/25 13:47

SS01@2'
2502132-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BIB0397	02/07/25	02/08/25	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0346	86.4 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0407	102 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0370	92.4 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BIB0401	02/07/25	02/08/25	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	7.03	56.2 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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SS01@2'
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PAH by EPA Method 8270D SIM

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BIB1082	02/19/25	03/01/25	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0171	51.3 %	40-140		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0164	49.3 %	40-140		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BIB0429	02/10/25	02/10/25	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	2.07	0.200	mg/kg dry	1	BIB0455	02/10/25	02/10/25	EPA 6020B
Barium	73.4	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	3.82	0.400	"	"	"	"	"	"
Lead	4.40	0.200	"	"	"	"	"	"
Nickel	4.57	0.400	"	"	"	"	"	"
Silver	0.0267	0.0200	"	"	"	"	"	"
Zinc	17.9	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BIB0412	02/09/25	02/10/25	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	135	0.0500	mg/L dry	1	BIB0400	02/07/25	02/12/25	EPA 6020B	
Magnesium	73.1	0.0500	"	"	"	"	"	"	
Sodium	601	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	10.4	0.00100	units	1	BIB0731	02/13/25	02/13/25	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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2502132-01 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	86.5			%	1	BIB0427	02/10/25	02/10/25	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	3.55	0.0100		mmhos/cm	1	BIB0403	02/07/25	02/10/25	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **02/07/25 10:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.25			pH Units	1	BIB0402	02/07/25	02/10/25	EPA 9045D	

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Project Number: UWRWE-A3241-ABN
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Reported:
03/13/25 13:47

SS02@2'
2502132-02 (Soil)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BIB0397	02/07/25	02/08/25	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0354	88.6 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0409	102 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0377	94.2 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BIB0401	02/07/25	02/08/25	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	6.85	54.8 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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03/13/25 13:47

SS02@2'
2502132-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BIB1082	02/19/25	03/01/25	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0189	56.8 %	40-140		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0186	55.9 %	40-140		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BIB0429	02/10/25	02/10/25	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SS02@2'
2502132-02 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.64	0.200	mg/kg dry	1	BIB0455	02/10/25	02/10/25	EPA 6020B	
Barium	46.3	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	2.61	0.400	"	"	"	"	"	"	
Lead	3.35	0.200	"	"	"	"	"	"	
Nickel	3.47	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	13.4	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BIB0412	02/09/25	02/10/25	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	109	0.0500	mg/L dry	1	BIB0400	02/07/25	02/12/25	EPA 6020B	
Magnesium	45.5	0.0500	"	"	"	"	"	"	
Sodium	382	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	7.75	0.00100	units	1	BIB0731	02/13/25	02/13/25	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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SS02@2'
2502132-02 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	84.8			%	1	BIB0427	02/10/25	02/10/25	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	2.46	0.0100		mmhos/cm	1	BIB0403	02/07/25	02/10/25	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **02/07/25 10:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.31			pH Units	1	BIB0402	02/07/25	02/10/25	EPA 9045D	

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SS03@2'
2502132-03 (Soil)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	BIB0397	02/07/25	02/09/25	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4	0.0336	83.9 %	50-150	"	"	"	"	"	
Surrogate: Toluene-d8	0.0397	99.2 %	50-150	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0374	93.4 %	50-150	"	"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	BIB0401	02/07/25	02/08/25	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl	8.33	66.6 %	30-150	"	"	"	"	"	

PAH by EPA Method 8270D SIM

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SS03@2'
2502132-03 (Soil)

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Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BIB1082	02/19/25	03/01/25	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0168	50.3 %	40-140		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0175	52.6 %	40-140		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BIB0429	02/10/25	02/10/25	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

SS03@2'
2502132-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.11	0.200	mg/kg dry	1	BIB0455	02/10/25	02/10/25	EPA 6020B	
Barium	48.8	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	4.31	0.400	"	"	"	"	"	"	
Lead	4.26	0.200	"	"	"	"	"	"	
Nickel	4.34	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	17.2	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BIB0412	02/09/25	02/10/25	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	103	0.0500	mg/L dry	1	BIB0400	02/07/25	02/12/25	EPA 6020B	
Magnesium	54.5	0.0500	"	"	"	"	"	"	
Sodium	564	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	11.2	0.00100	units	1	BIB0731	02/13/25	02/13/25	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Tasman Geosciences
6855 W. 119th Ave.
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Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

SS03@2'
2502132-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	87.1			%	1	BIB0427	02/10/25	02/10/25	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	3.26	0.0100		mmhos/cm	1	BIB0403	02/07/25	02/10/25	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **02/07/25 10:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.37			pH Units	1	BIB0402	02/07/25	02/10/25	EPA 9045D	

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Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

SS04@2'
2502132-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BIB0397	02/07/25	02/09/25	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0342	85.6 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0406	102 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0383	95.7 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BIB0401	02/07/25	02/08/25	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	7.43	59.5 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

SS04@2'
2502132-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BIB1082	02/19/25	03/01/25	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0157	47.0 %	40-140		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0174	52.1 %	40-140		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BIB0429	02/10/25	02/10/25	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

SS04@2'
2502132-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	2.39	0.200	mg/kg dry	1	BIB0455	02/10/25	02/10/25	EPA 6020B
Barium	65.4	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	4.92	0.400	"	"	"	"	"	"
Lead	9.09	0.200	"	"	"	"	"	"
Nickel	5.44	0.400	"	"	"	"	"	"
Silver	0.0295	0.0200	"	"	"	"	"	"
Zinc	21.8	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BIB0412	02/09/25	02/10/25	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	87.7	0.0500	mg/L dry	1	BIB0400	02/07/25	02/12/25	EPA 6020B	
Magnesium	29.0	0.0500	"	"	"	"	"	"	
Sodium	199	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.71	0.00100	units	1	BIB0731	02/13/25	02/13/25	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

SS04@2'
2502132-04 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	86.2			%	1	BIB0427	02/10/25	02/10/25	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	1.62	0.0100		mmhos/cm	1	BIB0403	02/07/25	02/10/25	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **02/07/25 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.84			pH Units	1	BIB0402	02/07/25	02/10/25	EPA 9045D	

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

FS01@4'
2502132-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BIB0397	02/07/25	02/09/25	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0316	79.0 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0393	98.3 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0374	93.6 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BIB0401	02/07/25	02/08/25	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	7.34	58.7 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

FS01@4'
2502132-05 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BIB1082	02/19/25	03/06/25	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0183	55.0 %	40-140		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0181	54.2 %	40-140		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BIB0429	02/10/25	02/10/25	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline
Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

FS01@4'
2502132-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.79	0.200	mg/kg dry	1	BIB0455	02/10/25	02/10/25	EPA 6020B	
Barium	53.8	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	4.29	0.400	"	"	"	"	"	"	
Lead	5.31	0.200	"	"	"	"	"	"	
Nickel	4.77	0.400	"	"	"	"	"	"	
Silver	0.0218	0.0200	"	"	"	"	"	"	
Zinc	18.5	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BIB0412	02/09/25	02/10/25	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	178	0.0500	mg/L dry	1	BIB0400	02/07/25	02/12/25	EPA 6020B	
Magnesium	75.8	0.0500	"	"	"	"	"	"	
Sodium	445	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	7.04	0.00100	units	1	BIB0731	02/13/25	02/13/25	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

FS01@4'
2502132-05 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	82.0			%	1	BIB0427	02/10/25	02/10/25	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	2.97	0.0100		mmhos/cm	1	BIB0403	02/07/25	02/10/25	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **02/07/25 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.17			pH Units	1	BIB0402	02/07/25	02/10/25	EPA 9045D	

Summit Scientific

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Project: Noble - Arens G26-19 Flowline
Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BIB0397 - EPA 5030 Soil MS

Blank (BIB0397-BLK1)

Prepared: 02/07/25 Analyzed: 02/08/25

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0366		"	0.0400		91.6	50-150			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	50-150			
Surrogate: 4-Bromofluorobenzene	0.0381		"	0.0400		95.2	50-150			

LCS (BIB0397-BS1)

Prepared: 02/07/25 Analyzed: 02/08/25

Benzene	0.0854	0.0020	mg/kg	0.100		85.4	70-130			
Toluene	0.0855	0.0050	"	0.100		85.5	70-130			
Ethylbenzene	0.0939	0.0050	"	0.100		93.9	70-130			
m,p-Xylene	0.181	0.010	"	0.200		90.4	70-130			
o-Xylene	0.0867	0.0050	"	0.100		86.7	70-130			
1,2,4-Trimethylbenzene	0.0853	0.0050	"	0.100		85.3	70-130			
1,3,5-Trimethylbenzene	0.0863	0.0050	"	0.100		86.3	70-130			
Naphthalene	0.0719	0.0038	"	0.100		71.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0370		"	0.0400		92.6	50-150			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.4	50-150			

Matrix Spike (BIB0397-MS1)

Source: 2502129-01

Prepared: 02/07/25 Analyzed: 02/08/25

Benzene	0.119	0.0020	mg/kg	0.100	0.0289	90.4	70-130			
Toluene	0.112	0.0050	"	0.100	0.0206	91.6	70-130			
Ethylbenzene	0.0991	0.0050	"	0.100	0.00654	92.6	70-130			
m,p-Xylene	0.203	0.010	"	0.200	0.0276	87.6	70-130			
o-Xylene	0.0933	0.0050	"	0.100	ND	93.3	70-130			
1,2,4-Trimethylbenzene	0.0927	0.0050	"	0.100	0.00975	82.9	70-130			
1,3,5-Trimethylbenzene	0.0878	0.0050	"	0.100	ND	87.8	70-130			
Naphthalene	0.0777	0.0038	"	0.100	ND	77.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0388		"	0.0400		97.0	50-150			
Surrogate: Toluene-d8	0.0410		"	0.0400		103	50-150			
Surrogate: 4-Bromofluorobenzene	0.0384		"	0.0400		96.0	50-150			

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch BIB0397 - EPA 5030 Soil MS

Matrix Spike Dup (BIB0397-MSD1)	Source: 2502129-01			Prepared: 02/07/25 Analyzed: 02/08/25						
Benzene	0.0991	0.0020	mg/kg	0.100	0.0289	70.2	70-130	18.5	30	
Toluene	0.0927	0.0050	"	0.100	0.0206	72.1	70-130	19.0	30	
Ethylbenzene	0.0897	0.0050	"	0.100	0.00654	83.2	70-130	9.98	30	
m,p-Xylene	0.177	0.010	"	0.200	0.0276	74.8	70-130	13.5	30	
o-Xylene	0.0841	0.0050	"	0.100	ND	84.1	70-130	10.4	30	
1,2,4-Trimethylbenzene	0.0832	0.0050	"	0.100	0.00975	73.4	70-130	10.8	30	
1,3,5-Trimethylbenzene	0.0812	0.0050	"	0.100	ND	81.2	70-130	7.85	30	
Naphthalene	0.0742	0.0038	"	0.100	ND	74.2	70-130	4.54	30	
Surrogate: 1,2-Dichloroethane-d4	0.0390		"	0.0400		97.4	50-150			
Surrogate: Toluene-d8	0.0417		"	0.0400		104	50-150			
Surrogate: 4-Bromofluorobenzene	0.0385		"	0.0400		96.2	50-150			

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Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline
Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

Batch BIB0401 - EPA 3550A

Blank (BIB0401-BLK1)

Prepared: 02/07/25 Analyzed: 02/08/25

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: <i>o</i> -Terphenyl	9.88		"	12.5		79.0	30-150			

LCS (BIB0401-BS1)

Prepared: 02/07/25 Analyzed: 02/08/25

C10-C28 (DRO)	551	50	mg/kg	500		110	70-130			
Surrogate: <i>o</i> -Terphenyl	11.0		"	12.5		88.2	30-150			

Matrix Spike (BIB0401-MS1)

Source: 2502129-01

Prepared: 02/07/25 Analyzed: 02/08/25

C10-C28 (DRO)	524	50	mg/kg	500	17.6	101	70-130			
Surrogate: <i>o</i> -Terphenyl	9.28		"	12.5		74.2	30-150			

Matrix Spike Dup (BIB0401-MSD1)

Source: 2502129-01

Prepared: 02/07/25 Analyzed: 02/08/25

C10-C28 (DRO)	544	50	mg/kg	500	17.6	105	70-130	3.83	20	
Surrogate: <i>o</i> -Terphenyl	9.41		"	12.5		75.3	30-150			

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Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline
Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch BIB1082 - EPA 5030 Soil MS

Blank (BIB1082-BLK1)

Prepared: 02/19/25 Analyzed: 03/06/25

Acenaphthene	ND	0.00500	mg/kg								
Anthracene	ND	0.00500	"								
Benzo (a) anthracene	ND	0.00500	"								
Benzo (a) pyrene	ND	0.00500	"								
Benzo (b) fluoranthene	ND	0.00500	"								
Benzo (k) fluoranthene	ND	0.00500	"								
Chrysene	ND	0.00500	"								
Dibenz (a,h) anthracene	ND	0.00500	"								
Fluoranthene	ND	0.00500	"								
Fluorene	ND	0.00500	"								
Indeno (1,2,3-cd) pyrene	ND	0.00500	"								
Pyrene	ND	0.00500	"								
1-Methylnaphthalene	ND	0.00500	"								
2-Methylnaphthalene	ND	0.00500	"								
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0184</i>		"	<i>0.0333</i>		<i>55.1</i>		<i>40-140</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0205</i>		"	<i>0.0333</i>		<i>61.4</i>		<i>40-140</i>			

LCS (BIB1082-BS1)

Prepared: 02/19/25 Analyzed: 03/01/25

Acenaphthene	0.0167	0.00500	mg/kg	0.0333		50.0		40-140			
Anthracene	0.0171	0.00500	"	0.0333		51.4		40-140			
Benzo (a) anthracene	0.0183	0.00500	"	0.0333		54.8		40-140			
Benzo (a) pyrene	0.0172	0.00500	"	0.0333		51.6		40-140			
Benzo (b) fluoranthene	0.0173	0.00500	"	0.0333		52.0		40-140			
Benzo (k) fluoranthene	0.0161	0.00500	"	0.0333		48.2		40-140			
Chrysene	0.0167	0.00500	"	0.0333		50.0		40-140			
Dibenz (a,h) anthracene	0.0169	0.00500	"	0.0333		50.8		40-140			
Fluoranthene	0.0175	0.00500	"	0.0333		52.6		40-140			
Fluorene	0.0171	0.00500	"	0.0333		51.4		40-140			
Indeno (1,2,3-cd) pyrene	0.0173	0.00500	"	0.0333		52.0		40-140			
Pyrene	0.0165	0.00500	"	0.0333		49.5		40-140			
1-Methylnaphthalene	0.0169	0.00500	"	0.0333		50.7		40-140			
2-Methylnaphthalene	0.0165	0.00500	"	0.0333		49.6		40-140			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0168</i>		"	<i>0.0333</i>		<i>50.5</i>		<i>40-140</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0178</i>		"	<i>0.0333</i>		<i>53.5</i>		<i>40-140</i>			

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BIB1082 - EPA 5030 Soil MS

Matrix Spike (BIB1082-MS1)	Source: 2502131-01			Prepared: 02/19/25 Analyzed: 03/01/25						
Acenaphthene	0.0178	0.00500	mg/kg	0.0333	ND	53.3	40-140			
Anthracene	0.0177	0.00500	"	0.0333	ND	53.2	40-140			
Benzo (a) anthracene	0.0180	0.00500	"	0.0333	ND	53.9	40-140			
Benzo (a) pyrene	0.0168	0.00500	"	0.0333	ND	50.3	40-140			
Benzo (b) fluoranthene	0.0164	0.00500	"	0.0333	ND	49.3	40-140			
Benzo (k) fluoranthene	0.0153	0.00500	"	0.0333	ND	46.0	40-140			
Chrysene	0.0164	0.00500	"	0.0333	ND	49.3	40-140			
Dibenz (a,h) anthracene	0.0171	0.00500	"	0.0333	ND	51.3	40-140			
Fluoranthene	0.0183	0.00500	"	0.0333	ND	54.9	40-140			
Fluorene	0.0180	0.00500	"	0.0333	ND	54.2	40-140			
Indeno (1,2,3-cd) pyrene	0.0167	0.00500	"	0.0333	ND	50.2	40-140			
Pyrene	0.0156	0.00500	"	0.0333	ND	46.7	40-140			
1-Methylnaphthalene	0.0180	0.00500	"	0.0333	ND	54.1	40-140			
2-Methylnaphthalene	0.0177	0.00500	"	0.0333	ND	53.0	40-140			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0180</i>		<i>"</i>	<i>0.0333</i>		<i>54.0</i>	<i>40-140</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0186</i>		<i>"</i>	<i>0.0333</i>		<i>55.9</i>	<i>40-140</i>			

Matrix Spike Dup (BIB1082-MSD1)	Source: 2502131-01			Prepared: 02/19/25 Analyzed: 03/01/25						
Acenaphthene	0.0138	0.00500	mg/kg	0.0333	ND	41.4	40-140	25.0	30	
Anthracene	0.0142	0.00500	"	0.0333	ND	42.5	40-140	22.3	30	
Benzo (a) anthracene	0.0148	0.00500	"	0.0333	ND	44.3	40-140	19.7	30	
Benzo (a) pyrene	0.0140	0.00500	"	0.0333	ND	42.0	40-140	17.9	30	
Benzo (b) fluoranthene	0.0140	0.00500	"	0.0333	ND	41.9	40-140	16.4	30	
Benzo (k) fluoranthene	0.0129	0.00500	"	0.0333	ND	38.7	40-140	17.2	30	QM-05
Chrysene	0.0133	0.00500	"	0.0333	ND	39.8	40-140	21.4	30	QM-05
Dibenz (a,h) anthracene	0.0140	0.00500	"	0.0333	ND	42.1	40-140	19.7	30	
Fluoranthene	0.0144	0.00500	"	0.0333	ND	43.3	40-140	23.6	30	
Fluorene	0.0143	0.00500	"	0.0333	ND	43.0	40-140	22.9	30	
Indeno (1,2,3-cd) pyrene	0.0146	0.00500	"	0.0333	ND	43.8	40-140	13.6	30	
Pyrene	0.0129	0.00500	"	0.0333	ND	38.6	40-140	19.0	30	QM-05
1-Methylnaphthalene	0.0140	0.00500	"	0.0333	ND	41.9	40-140	25.5	30	
2-Methylnaphthalene	0.0139	0.00500	"	0.0333	ND	41.6	40-140	24.1	30	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0141</i>		<i>"</i>	<i>0.0333</i>		<i>42.3</i>	<i>40-140</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0148</i>		<i>"</i>	<i>0.0333</i>		<i>44.3</i>	<i>40-140</i>			

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline
Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch BIB0429 - EPA 3050B

Blank (BIB0429-BLK1)

Prepared & Analyzed: 02/10/25

Boron ND 2.00 mg/L

LCS (BIB0429-BS1)

Prepared: 02/10/25 Analyzed: 02/11/25

Boron 5.20 2.00 mg/L 5.00 104 80-120

Duplicate (BIB0429-DUP1)

Source: 2502129-01

Prepared & Analyzed: 02/10/25

Boron 0.229 2.00 mg/L 0.321 33.5 20 QR-01

Matrix Spike (BIB0429-MS1)

Source: 2502129-01

Prepared & Analyzed: 02/10/25

Boron 5.53 2.00 mg/L 4.99 0.321 105 75-125

Matrix Spike Dup (BIB0429-MSD1)

Source: 2502129-01

Prepared & Analyzed: 02/10/25

Boron 5.79 2.00 mg/L 4.99 0.321 110 75-125 4.54 25

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Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Total Metals by EPA 6020B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD		

Batch BIB0455 - EPA 3050B

Blank (BIB0455-BLK1)

Prepared & Analyzed: 02/10/25

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							
Selenium	ND	0.260	"							

LCS (BIB0455-BS1)

Prepared & Analyzed: 02/10/25

Arsenic	40.0	0.200	mg/kg wet	40.3	99.2	80-120
Barium	40.5	0.400	"	40.3	100	80-120
Cadmium	2.08	0.200	"	2.02	103	80-120
Copper	42.8	0.400	"	40.3	106	80-120
Lead	20.8	0.200	"	20.2	103	80-120
Nickel	40.0	0.400	"	40.3	99.1	80-120
Silver	2.06	0.0200	"	2.02	102	80-120
Zinc	40.5	0.400	"	40.3	100	80-120
Selenium	3.67	0.260	"	4.03	91.0	80-120

Duplicate (BIB0455-DUP1)

Source: 2502131-01

Prepared & Analyzed: 02/10/25

Arsenic	7.85	0.200	mg/kg dry	11.6	38.5	20	QR-04
Barium	89.2	0.400	"	93.3	4.40	20	
Cadmium	0.370	0.200	"	0.337	9.30	20	
Copper	9.23	0.400	"	12.0	26.3	20	QR-04
Lead	10.5	0.200	"	9.94	5.51	20	
Nickel	10.9	0.400	"	11.6	6.18	20	
Silver	0.0437	0.0200	"	0.0443	1.23	20	
Zinc	33.7	0.400	"	37.0	9.32	20	
Selenium	0.404	0.260	"	0.428	5.62	20	

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Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Total Metals by EPA 6020B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

Batch BIB0455 - EPA 3050B

Matrix Spike (BIB0455-MS1)	Source: 2502131-01			Prepared & Analyzed: 02/10/25								
Arsenic	52.5	0.200	mg/kg dry	46.3	11.6	88.3	75-125					
Barium	135	0.400	"	46.3	93.3	91.2	75-125					
Cadmium	2.71	0.200	"	2.31	0.337	102	75-125					
Copper	57.9	0.400	"	46.3	12.0	99.1	75-125					
Lead	31.4	0.200	"	23.1	9.94	92.8	75-125					
Nickel	53.9	0.400	"	46.3	11.6	91.5	75-125					
Silver	2.29	0.0200	"	2.31	0.0443	96.8	75-125					
Zinc	77.6	0.400	"	46.3	37.0	87.8	75-125					
Selenium	3.44	0.260	"	4.63	0.428	65.0	75-125					QM-05

Matrix Spike Dup (BIB0455-MSD1)	Source: 2502131-01			Prepared & Analyzed: 02/10/25								
Arsenic	52.5	0.200	mg/kg dry	48.5	11.6	84.2	75-125	0.0315	25			
Barium	125	0.400	"	48.5	93.3	65.1	75-125	8.17	25			QM-05
Cadmium	2.80	0.200	"	2.43	0.337	102	75-125	3.35	25			
Copper	57.3	0.400	"	48.5	12.0	93.3	75-125	1.04	25			
Lead	32.2	0.200	"	24.3	9.94	91.6	75-125	2.33	25			
Nickel	53.9	0.400	"	48.5	11.6	87.2	75-125	0.0242	25			
Silver	2.47	0.0200	"	2.43	0.0443	100	75-125	7.81	25			
Zinc	75.8	0.400	"	48.5	37.0	80.0	75-125	2.37	25			
Selenium	3.88	0.260	"	4.85	0.428	71.1	75-125	12.1	25			QM-05

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline
Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

Batch BIB0412 - 3060A Mod

Blank (BIB0412-BLK1)		Prepared: 02/09/25 Analyzed: 02/10/25								
Chromium, Hexavalent	ND	0.30	mg/kg wet							
LCS (BIB0412-BS1)		Prepared: 02/09/25 Analyzed: 02/10/25								
Chromium, Hexavalent	27.5	0.30	mg/kg wet	25.5		108	80-120			
Duplicate (BIB0412-DUP1)		Source: 2502127-01		Prepared: 02/09/25 Analyzed: 02/10/25						
Chromium, Hexavalent	ND	0.30	mg/kg dry		ND				20	
Matrix Spike (BIB0412-MS1)		Source: 2502127-01		Prepared: 02/09/25 Analyzed: 02/10/25						
Chromium, Hexavalent	30.5	0.30	mg/kg dry	29.0	ND	105	75-125			
Matrix Spike Dup (BIB0412-MSD1)		Source: 2502127-01		Prepared: 02/09/25 Analyzed: 02/10/25						
Chromium, Hexavalent	35.4	0.30	mg/kg dry	30.9	ND	115	75-125	14.8	20	

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch BIB0400 - General Preparation

Blank (BIB0400-BLK1)

Prepared: 02/07/25 Analyzed: 02/11/25

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

LCS (BIB0400-BS1)

Prepared: 02/07/25 Analyzed: 02/11/25

Calcium	3.93	0.0500	mg/L wet	5.00	78.7	70-130
Magnesium	5.15	0.0500	"	5.00	103	70-130
Sodium	5.18	0.0500	"	5.00	104	70-130

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 Project Manager: Jacob Whritenour

Reported:
 03/13/25 13:47

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike	Source		%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

Batch BIB0427 - General Preparation

Duplicate (BIB0427-DUP1)

Source: 2502126-01

Prepared & Analyzed: 02/10/25

% Solids	79.2		%		81.6			2.91		20	
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Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
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Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch BIB0403 - General Preparation

Blank (BIB0403-BLK1)

Prepared: 02/07/25 Analyzed: 02/10/25

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BIB0403-BS1)

Prepared: 02/07/25 Analyzed: 02/10/25

Specific Conductance (EC) 0.157 0.0100 mmhos/cm 0.150 105 95-105

Duplicate (BIB0403-DUP1)

Source: 2502092-01

Prepared: 02/07/25 Analyzed: 02/10/25

Specific Conductance (EC) 0.268 0.0100 mmhos/cm 0.270 0.967 20

Summit Scientific

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Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BIB0402 - General Preparation

LCS (BIB0402-BS1)

Prepared: 02/07/25 Analyzed: 02/10/25

pH	9.19	pH Units	9.18	100	95-105
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Duplicate (BIB0402-DUP1)

Source: 2502092-01

Prepared: 02/07/25 Analyzed: 02/10/25

pH	8.29	pH Units	8.27	0.242	20
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Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
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Project: Noble - Arens G26-19 Flowline

Project Number: UWRWE-A3241-ABN
Project Manager: Jacob Whritenour

Reported:
03/13/25 13:47

Notes and Definitions

- QR-04 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits. Sample results were accepted based on LCS and/or LCSD recoveries and/or RPD values.
- QR-01 Analyses are not controlled on RPD values from sample concentrations below the reporting limit. Sample results were accepted based on LCS and/or LCSD recoveries and/or RPD values.
- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. Sample results were accepted based on LCS and/or LCSD recoveries and/or RPD values.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference