

EE3
Vaneta 1-32D
057-06467

		TDS
Pull 10	Lower Frontier Perfs	35000 mg/L
Pull 8	Upper Frontier Perfs	35000 mg/L
Pull 11	Upper Frontier Perfs	36000 mg/L
Pull 10	Upper Frontier Perfs	33000 mg/L

April 18, 2013 report

		TDS	Gasoline Range HCs
Pull 7	Entrada	4000 mg/L	730 µg/L
Pull 10	Lakota	3900 mg/L	640 µg/L
Pull 13	Dakota	3900 mg/L	500 µg/L @ DL
Pull 15	Dakota	3900 mg/L	ND

May 6, 2013 report

BK-5/7/2014

(11)

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

Dakota
Lakota
Entrada

May 06, 2013

Andy Ashby
EE3 LLC
4410 Arapahoe #100
Boulder, CO 80303
RE: Vaneta Frontier

Enclosed are the results of analyses for samples received by Summit Scientific on 04/25/13 18:18. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Joseph J Egry IV
Laboratory Director

This report shall not be reproduced, except in its entirety, without the written approval of Summit Scientific. Test results relate only to samples analyzed.

Summit Scientific is the sole authority for authorizing edits or modifications to this document. Unauthorized modification of this report is strictly prohibited.

S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Pull 7	R304182-01	Water	04/21/13 07:30	04/25/13 18:18
Pull 10	R304182-02	Water	04/21/13 18:00	04/25/13 18:18
Pull 13	R304182-03	Water	04/23/13 14:00	04/25/13 18:18
Pull 15	R304182-04	Water	04/24/13 10:20	04/25/13 18:18



EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier

Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Summit Scientific

141 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9310 • 303-174-5933 Fax

FF3 LLC

1100 Avenue A Suite 100

Wm. Budden Co. 10309

Phone 913-441-7771 Fax:

Order Number

Project Manager: Judy Horby

www.mscsolutions.com

Project Name: 1000th Franchise

Project Number:

[illegible]

www.2science.com

Summit Scientific

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

S2

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 7 (ENTRADA)
R304182-01 (Water)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	3043012	04/30/13	05/01/13	8015M	
C28-C36 (ORO)	ND	5.0	"	"	"	"	"	"	

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	47.2-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Gasoline Range Hydrocarbons	730	500	ug/l	1	3042912	04/29/13	05/02/13	EPA 8260B	

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		106 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	45-146		"	"	"	"	

Total Metals by EPA Method 6020

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	41.9	1.00	mg/L	1	3043003	04/30/13	05/02/13	EPA 6020A	

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Iron	221	0.100	"	"	"	"	05/02/13	"	

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Potassium	72.9	0.0206	"	"	"	"	"	"	

Summit Scientific

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



S2

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 7 (ENTRADA)
R304182-01 (Water)

Summit Scientific

Total Metals by EPA Method 6020

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	4.46	0.500	mg/L	1	3043003	04/30/13	05/02/13	EPA 6020A	

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium	1770	0.500	"	"	"	"	"	"	

Dissolved Metals by EPA Method 200.8

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	34.8	0.00100	mg/L	1	3043004	04/30/13	05/02/13	EPA 200.8	

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	5.37	0.200	"	"	"	"	"	"	

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Hardness, Calculation	109	0.822	mg/L as CaCO3	"	[CALC]	"	"	Calculation	

Anions by EPA Method 300.0

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	3.61	0.111	mg/L	10	3042605	04/26/13	04/26/13	EPA 300.0	
Chloride	924	11.1	"	"	"	"	"	"	
Fluoride	3.53	1.00	"	"	"	"	"	"	
Nitrate as N	ND	0.444	"	"	"	"	"	"	R-01
Nitrite as N	ND	0.222	"	"	"	"	"	"	R-01
Phosphate - Ortho (as PO4)	ND	0.556	"	"	"	"	"	"	R-01
Sulfate	501	11.1	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 7 (ENTRADA)
R304182-01 (Water)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	7.41	0.00100	mmhos/cm	1	3042904	04/29/13	04/29/13	EPA 120.1	

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.980	1.000	pH Units	"	3042608	04/26/13	04/26/13	EPA 9040	

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	4000	1.0	mg/L	"	3050206	04/27/13	04/27/13	TDS Meter	

Specific Gravity, SM 2710 F

Date Sampled: 04/21/13 07:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Gravity	0.999	0.100	%	1	3042906	04/29/13	04/29/13	SM 2710 F, Specific Gravity	

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 10
R304182-02 (Water)

(LICKOTA)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	3043012	04/30/13	05/01/13	8015M	
C28-C36 (ORO)	ND	5.0	"	"	"	"	"	"	

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		116 %	47.2-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Gasoline Range Hydrocarbons	640	500	ug/l	1	3042912	04/29/13	05/02/13	EPA 8260B	

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		103 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		115 %	45-146		"	"	"	"	

Total Metals by EPA Method 6020

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	33.1	1.00	mg/L	1	3043003	04/30/13	05/02/13	EPA 6020A	

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Iron	74.4	0.100	"	"	"	"	05/02/13	"	

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Potassium	53.2	0.0206	"	"	"	"	"	"	

Summit Scientific

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

S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 10 (LAKOTA)
R304182-02 (Water)

Summit Scientific

Total Metals by EPA Method 6020

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	5.57	0.500	mg/L	1	3043003	04/30/13	05/02/13	EPA 6020A	

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium	1750	0.500	"	"	"	"	"	"	

Dissolved Metals by EPA Method 200.8

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	35.1	0.00100	mg/L	1	3043004	04/30/13	05/02/13	EPA 200.8	

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	4.42	0.200	"	"	"	"	"	"	

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Hardness, Calculation	106	0.822	mg/L as CaCO ₃	"	[CALC]	"	"	Calculation	

Anions by EPA Method 300.0

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	1.90	0.111	mg/L	10	3042605	04/26/13	04/26/13	EPA 300.0	
Chloride	801	11.1	"	"	"	"	"	"	
Fluoride	13.0	1.00	"	"	"	"	"	"	
Nitrate as N	ND	0.444	"	"	"	"	"	"	R-01
Nitrite as N	ND	0.222	"	"	"	"	"	"	R-01
Phosphate - Ortho (as PO ₄)	4.12	0.556	"	"	"	"	"	"	
Sulfate	336	11.1	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 10 (LAKOTA)
R304182-02 (Water)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	7.22	0.00100	mmhos/cm	1	3042904	04/29/13	04/29/13	EPA 120.1	

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.110	1.000	pH Units	"	3042608	04/26/13	04/26/13	EPA 9040	

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	3900	1.0	mg/L	"	3050206	04/27/13	04/27/13	TDS Meter	

Specific Gravity, SM 2710 F

Date Sampled: 04/21/13 18:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Gravity	1.00	0.100	%	1	3042906	04/29/13	04/29/13	SM 2710 F, Specific Gravity	

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 13
R304182-03 (Water)

(DAKOTA)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	3043012	04/30/13	05/01/13	8015M	
C28-C36 (ORO)	ND	5.0	"	"	"	"	"	"	

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	47.2-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Gasoline Range Hydrocarbons	500	500	ug/l	1	3042912	04/29/13	05/02/13	EPA 8260B	

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		101 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	45-146		"	"	"	"	

Total Metals by EPA Method 6020

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	26.3	1.00	mg/L	1	3043003	04/30/13	05/02/13	EPA 6020A	

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Iron	60.2	0.100	"	"	"	"	05/02/13	"	

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Potassium	51.0	0.0206	"	"	"	"	"	"	

Summit Scientific

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

S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 13
R304182-03 (Water)

(DAKOTA)

Summit Scientific

Total Metals by EPA Method 6020

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	4.51	0.500	mg/L	1	3043003	04/30/13	05/02/13	EPA 6020A	

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium	1600	0.500	"	"	"	"	"	"	

Dissolved Metals by EPA Method 200.8

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	24.6	0.00100	mg/L	1	3043004	04/30/13	05/02/13	EPA 200.8	

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	4.90	0.200	"	"	"	"	"	"	

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Hardness, Calculation	81.7	0.822	mg/L as CaCO ₃	"	[CALC]	"	"	Calculation	

Anions by EPA Method 300.0

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	1.96	0.111	mg/L	10	3042605	04/26/13	04/26/13	EPA 300.0	
Chloride	835	11.1	"	"	"	"	"	"	
Fluoride	11.3	1.00	"	"	"	"	"	"	
Nitrate as N	ND	0.444	"	"	"	"	"	"	R-01
Nitrite as N	ND	0.222	"	"	"	"	"	"	R-01
Phosphate - Ortho (as PO ₄)	ND	0.556	"	"	"	"	"	"	R-01
Sulfate	331	11.1	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 13
R304182-03 (Water)

(DAKOTA)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	7.27	0.00100	mmhos/cm	1	3042904	04/29/13	04/29/13	EPA 120.1	

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.210	1.000	pH Units	"	3042608	04/26/13	04/26/13	EPA 9040	

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	3900	1.0	mg/L	"	3050206	04/27/13	04/27/13	TDS Meter	

Specific Gravity, SM 2710 F

Date Sampled: 04/23/13 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Gravity	1.00	0.100	%	1	3042906	04/29/13	04/29/13	SM 2710 F, Specific Gravity	

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 15
R304182-04 (Water)

(DAKOTA)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	3043012	04/30/13	05/01/13	8015M	
C28-C36 (ORO)	ND	5.0	"	"	"	"	"	"	

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	47.2-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Gasoline Range Hydrocarbons	ND	500	ug/l	1	3042912	04/29/13	05/02/13	EPA 8260B	

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		103 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		116 %	45-146		"	"	"	"	

Total Metals by EPA Method 6020

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	24.9	1.00	mg/L	1	3043003	04/30/13	05/02/13	EPA 6020A	

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Iron	159	0.100	"	"	"	"	05/02/13	"	

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Potassium	43.4	0.0206	"	"	"	"	"	"	

Summit Scientific

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

S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 15
R304182-04 (Water)

(DAKOTA)

Summit Scientific

Total Metals by EPA Method 6020

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	3.36	0.500	mg/L	1	3043003	04/30/13	05/02/13	EPA 6020A	

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium	1430	0.500	"	"	"	"	"	"	

Dissolved Metals by EPA Method 200.8

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	10.3	0.00100	mg/L	1	3043004	04/30/13	05/02/13	EPA 200.8	

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	1.95	0.200	"	"	"	"	"	"	

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Hardness, Calculation	33.8	0.822	mg/L as CaCO ₃	"	[CALC]	"	"	Calculation	

Anions by EPA Method 300.0

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	1.90	0.111	mg/L	10	3042605	04/26/13	04/26/13	EPA 300.0	
Chloride	830	11.1	"	"	"	"	"	"	
Fluoride	12.6	1.00	"	"	"	"	"	"	
Nitrate as N	ND	0.444	"	"	"	"	"	"	R-01
Nitrite as N	ND	0.222	"	"	"	"	"	"	R-01
Phosphate - Ortho (as PO ₄)	ND	0.556	"	"	"	"	"	"	R-01
Sulfate	317	11.1	"	"	"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Pull 15
R304182-04 (Water)

(DAKOTA)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	7.08	0.00100	mmhos/cm	1	3042904	04/29/13	04/29/13	EPA 120.1	

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.530	1.000	pH Units	"	3042608	04/26/13	04/26/13	EPA 9040	

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	3900	1.0	mg/L	"	3050206	04/27/13	04/27/13	TDS Meter	

Specific Gravity, SM 2710 F

Date Sampled: 04/24/13 10:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Gravity	1.00	0.100	%	1	3042906	04/29/13	04/29/13	SM 2710 F, Specific Gravity	

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Extractable Petroleum Hydrocarbons by 8015 - Quality Control

Summit Scientific

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

Batch 3043012 - EPA 3520B

Blank (3043012-BLK1)

Prepared: 04/30/13 Analyzed: 05/01/13

C10-C28 (DRO)	ND	5.0	mg/L
C28-C36 (ORO)	ND	5.0	"

LCS (3043012-BS1)

Prepared: 04/30/13 Analyzed: 05/01/13

C10-C28 (DRO)	54.7	5.0	mg/L	50.1	109	80-149
---------------	------	-----	------	------	-----	--------

LCS Dup (3043012-BS1)

Prepared: 04/30/13 Analyzed: 05/01/13

C10-C28 (DRO)	51.6	5.0	mg/L	50.1	103	80-149	5.83	14
---------------	------	-----	------	------	-----	--------	------	----

Matrix Spike (3043012-MS1)

Source: R304182-01

Prepared: 04/30/13 Analyzed: 05/01/13

C10-C28 (DRO)	47.9	5.0	mg/L	50.1	ND	95.6	80-120
---------------	------	-----	------	------	----	------	--------

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch 3042912 - EPA 5030 Water MS

Blank (3042912-BLK1)

Prepared & Analyzed: 04/29/13

Gasoline Range Hydrocarbons	ND	500	ug/l								
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.2		110		37-154			
Surrogate: Toluene-d8	12.8		"	13.3		96.2		45-149			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		103		45-146			

Blank (3042912-BLK2)

Prepared & Analyzed: 04/29/13

Gasoline Range Hydrocarbons	ND	500	ug/l								
Surrogate: 1,2-Dichloroethane-d4	15.8		"	13.2		119		37-154			
Surrogate: Toluene-d8	13.2		"	13.3		98.6		45-149			
Surrogate: 4-Bromofluorobenzene	14.0		"	13.3		105		45-146			

LCS (3042912-BS1)

Prepared & Analyzed: 04/29/13

Gasoline Range Hydrocarbons	489	500	ug/l					30-150			
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.2		110		37-154			
Surrogate: Toluene-d8	11.7		"	13.3		87.8		45-149			
Surrogate: 4-Bromofluorobenzene	14.5		"	13.3		109		45-146			

LCS (3042912-BS2)

Prepared & Analyzed: 04/30/13

Gasoline Range Hydrocarbons	391	500	ug/l					30-150			
Surrogate: 1,2-Dichloroethane-d4	10.9		"	13.2		82.1		37-154			
Surrogate: Toluene-d8	13.2		"	13.3		99.4		45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.0		45-146			

LCS Dup (3042912-BSD1)

Prepared & Analyzed: 04/30/13

Gasoline Range Hydrocarbons	386	500	ug/l					30-150	23.4	0	
Surrogate: 1,2-Dichloroethane-d4	11.0		"	13.2		83.5		37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.6		45-149			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.7		45-146			

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch 3042912 - EPA 5030 Water MS

LCS Dup (3042912-BSD2)

Prepared & Analyzed: 04/30/13

Gasoline Range Hydrocarbons	398	500	ug/l				30-150	1.60	0	
Surrogate: 1,2-Dichloroethane-d4	10.9		"	13.2		82.4	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.6	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.2	45-146			

Matrix Spike (3042912-MS1)

Source: R304173-06

Prepared & Analyzed: 04/30/13

Gasoline Range Hydrocarbons	339	500	ug/l		ND		30-150			
Surrogate: 1,2-Dichloroethane-d4	11.4		"	13.2		86.2	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.8	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.3	45-146			

Matrix Spike (3042912-MS2)

Source: R304173-07

Prepared & Analyzed: 04/30/13

Gasoline Range Hydrocarbons	341	500	ug/l		ND		30-150			
Surrogate: 1,2-Dichloroethane-d4	10.3		"	13.2		77.5	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		100	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.5	45-146			

Matrix Spike Dup (3042912-MSD1)

Source: R304173-06

Prepared & Analyzed: 04/30/13

Gasoline Range Hydrocarbons	309	500	ug/l		ND		30-150	9.46	25	
Surrogate: 1,2-Dichloroethane-d4	10.9		"	13.2		82.7	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.1	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.2	45-146			

Matrix Spike Dup (3042912-MSD2)

Source: R304173-07

Prepared & Analyzed: 04/30/13

Gasoline Range Hydrocarbons	336	500	ug/l		ND		30-150	1.50	25	
Surrogate: 1,2-Dichloroethane-d4	9.59		"	13.2		72.5	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.5	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.5	45-146			

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Total Metals by EPA Method 6020 - Quality Control
Summit Scientific

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

Batch 3043003 - EPA 3010A

Blank (3043003-BLK1)

Prepared: 04/30/13 Analyzed: 05/02/13

Calcium	ND	1.00	mg/L
Iron	ND	0.100	"
Magnesium	ND	0.500	"
Potassium	ND	0.0206	"
Sodium	ND	0.500	"

LCS (3043003-BS1)

Prepared: 04/30/13 Analyzed: 05/02/13

Calcium	4.48	1.00	mg/L	4.10	109	80-120
Iron	0.110	0.100	"	0.100	110	80-120
Magnesium	2.10	0.500	"	2.10	99.8	80-120
Potassium	6.93	0.0206	"	7.00	99.0	80-120
Sodium	6.75	0.500	"	7.10	95.1	80-120

Matrix Spike (3043003-MS1)

Source: R304182-01

Prepared: 04/30/13 Analyzed: 05/02/13

Calcium	47.8	1.00	mg/L	4.10	41.9	145	75-125		QM-07
Iron	230	0.100	"	0.100	221	NR	75-125		QM-07
Magnesium	6.01	0.500	"	2.10	4.46	74.2	75-125		QM-07
Potassium	79.1	0.0206	"	7.00	72.9	88.2	75-125		
Sodium	1780	0.500	"	7.10	1770	201	75-125		QM-07

Matrix Spike Dup (3043003-MSD1)

Source: R304182-01

Prepared: 04/30/13 Analyzed: 05/02/13

Calcium	45.1	1.00	mg/L	4.10	41.9	78.9	75-125	5.81	25	
Iron	225	0.100	"	0.100	221	NR	75-125	2.04	25	QM-07
Magnesium	7.45	0.500	"	2.10	4.46	143	75-125	21.3	25	QM-07
Potassium	77.5	0.0206	"	7.00	72.9	65.9	75-125	1.99	25	QM-07
Sodium	1730	0.500	"	7.10	1770	NR	75-125	3.00	25	QM-07

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Dissolved Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 3043004 - EPA 3010A

Blank (3043004-BLK1)

Prepared: 04/30/13 Analyzed: 05/02/13

Calcium	ND	0.00100	mg/L
Magnesium	ND	0.200	"

LCS (3043004-BS1)

Prepared: 04/30/13 Analyzed: 05/02/13

Calcium	3.99	0.00100	mg/L	4.00	99.9	45-175
Magnesium	1.86	0.200	"	2.00	93.0	80-120

LCS Dup (3043004-BSD1)

Prepared: 04/30/13 Analyzed: 05/02/13

Calcium	4.04	0.00100	mg/L	4.00	101	45-175	1.03	20
Magnesium	1.89	0.200	"	2.00	94.3	80-120	1.38	20

Matrix Spike (3043004-MS1)

Source: R304182-03

Prepared: 04/30/13 Analyzed: 05/02/13

Calcium	38.7	0.00100	mg/L	4.00	24.6	352	80-120		QM-07
Magnesium	4.70	0.200	"	2.00	4.90	NR	80-120		QM-07

Matrix Spike Dup (3043004-MSD1)

Source: R304182-03

Prepared: 04/30/13 Analyzed: 05/02/13

Calcium	26.9	0.00100	mg/L	4.00	24.6	56.5	80-120	36.0	20	QM-07
Magnesium	6.38	0.200	"	2.00	4.90	73.8	80-120	30.3	20	QM-07

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch 3042605 - General Prep

Blank (3042605-BLK1)

Prepared & Analyzed: 04/26/13

Bromide	ND	0.0111	mg/L
Chloride	ND	1.11	"
Fluoride	ND	0.100	"
Nitrate as N	ND	0.0444	"
Nitrite as N	ND	0.0222	"
Phosphate - Ortho (as PO4)	ND	0.0556	"
Sulfate	ND	1.11	"

LCS (3042605-BS1)

Prepared & Analyzed: 04/26/13

Bromide	0.119	0.0111	mg/L	0.111	107	90-110
Chloride	11.4	1.11	"	11.1	102	90-110
Fluoride	0.959	0.100	"	1.00	95.9	90-110
Nitrate as N	0.417	0.0444	"	0.444	93.8	90-110
Nitrite as N	0.212	0.0222	"	0.222	95.5	90-110
Phosphate - Ortho (as PO4)	0.577	0.0556	"	0.556	104	90-110
Sulfate	10.6	1.11	"	11.1	95.4	90-110

LCS Dup (3042605-BSD1)

Prepared & Analyzed: 04/26/13

Bromide	0.107	0.0111	mg/L	0.111	96.0	90-110	10.8	10
Chloride	11.3	1.11	"	11.1	102	90-110	0.294	10
Fluoride	0.990	0.100	"	1.00	99.0	90-110	3.19	10
Nitrate as N	0.414	0.0444	"	0.444	93.2	90-110	0.535	10
Nitrite as N	0.212	0.0222	"	0.222	95.5	90-110	0.00	10
Phosphate - Ortho (as PO4)	0.607	0.0556	"	0.556	109	90-110	5.07	10
Sulfate	10.4	1.11	"	11.1	93.6	90-110	1.86	10

Matrix Spike (3042605-MS1)

Source: R304182-01

Prepared & Analyzed: 04/26/13

Bromide	3.71	0.111	mg/L	0.111	3.61	90.0	80-120	
Chloride	826	11.1	"	11.1	924	NR	80-120	QM-4X
Fluoride	6.72	1.00	"	1.00	3.53	319	80-120	QM-07
Nitrate as N	0.711	0.444	"	0.444	ND	160	80-120	QM-07
Nitrite as N	0.267	0.222	"	0.222	ND	120	80-120	
Phosphate - Ortho (as PO4)	3.88	0.556	"	0.556	ND	698	80-120	QM-07
Sulfate	463	11.1	"	11.1	501	NR	80-120	QM-4X

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch 3042605 - General Prep

Matrix Spike Dup (3042605-MSD1)	Source: R304182-01			Prepared & Analyzed: 04/26/13						
Bromide	3.71	0.111	mg/L	0.111	3.61	90.0	80-120	0.00	20	
Chloride	843	11.1	"	11.1	924	NR	80-120	2.04	20	QM-4X
Fluoride	6.68	1.00	"	1.00	3.53	314	80-120	0.663	20	QM-07
Nitrate as N	0.700	0.444	"	0.444	ND	158	80-120	1.57	20	QM-07
Nitrite as N	0.267	0.222	"	0.222	ND	120	80-120	0.00	20	
Phosphate - Ortho (as PO ₄)	ND	0.556	"	0.556	ND		80-120		20	QM-07
Sulfate	464	11.1	"	11.1	501	NR	80-120	0.223	20	QM-4X

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

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

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

Batch 3042608 - General Preparation

LCS (3042608-BS1) Prepared & Analyzed: 04/26/13

pH	5.990	1.000	pH Units	6.00	99.8	99-101
----	-------	-------	----------	------	------	--------

Duplicate (3042608-DUP1) Source: R304182-01 Prepared & Analyzed: 04/26/13

pH	6.990	1.000	pH Units	6.980	0.143	13.7
----	-------	-------	----------	-------	-------	------

Batch 3042904 - General Preparation

Duplicate (3042904-DUP1) Source: R304182-01 Prepared & Analyzed: 04/29/13

Specific Conductance (EC)	7.44	0.00100	mmhos/cm	7.41	0.337	20
---------------------------	------	---------	----------	------	-------	----

Batch 3050206 - General Preparation

Blank (3050206-BLK1) Prepared & Analyzed: 04/27/13

Total Dissolved Solids	ND	1.0	mg/L
------------------------	----	-----	------

Duplicate (3050206-DUP1) Source: R304182-01 Prepared & Analyzed: 04/27/13

Total Dissolved Solids	4000	1.0	mg/L	4000	0.301	20
------------------------	------	-----	------	------	-------	----

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Specific Gravity, SM 2710 F - Quality Control
Summit Scientific

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

Batch 3042906 - General Preparation

Duplicate (3042906-DUP1)

Source: R304182-01

Prepared & Analyzed: 04/29/13

Specific Gravity	0.998	0.100	%	0.999	0.0801	200
------------------	-------	-------	---	-------	--------	-----

Summit Scientific

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



S₂

EE3 LLC
4410 Arapahoe #100
Boulder CO, 80303

Project: Vaneta Frontier
Project Number: [none]
Project Manager: Andy Ashby

Reported:
05/06/13 11:47

Notes and Definitions

- R-01 The Reporting Limit for this analyte has been raised to account for matrix interference.
- QM-4X The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- Q7 Sample was received the laboratory in an inappropriate sample container.
- Q2 Sample received by laboratory with headspace.
- 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

