

FREMONT ENVIRONMENTAL INC.

May 26, 2015

#9705

Mr. Jacob Evans
Noble Energy Inc.
1625 Broadway, Suite 2000
Denver, CO 80202

Subject: **Site Investigation Report**
 Anacapa 32-31
 API # 05-123-22116
 Weld County, Colorado
 Fremont Project No. C014-025
 Facility #332304, Spill #2148554

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Site Investigation Report for the Anacapa 32-31 site in Weld County, Colorado. The enclosed report describes site investigation and sampling efforts to assess soil and ground water quality at the site.

Please contact me at (303) 956-8714 if you require any additional information.

Fremont appreciates the opportunity to provide this service.

Sincerely,
FREMONT ENVIRONMENTAL INC.



Paul V. Henahan, P.E.
Senior Consultant

Enclosure

SITE INVESTIGATION REPORT

NOBLE ENERGY INC.

ANACAPA 32-31

WELD COUNTY, COLORADO

FREMONT PROJECT NO. C014-025

FACILITY #332304, SPILL #2148554

Prepared by:

Fremont Environmental Inc.

1759 Redwing Lane

Broomfield, CO 80020

(303) 956-8714

May 26, 2015

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SITE INVESTIGATION REPORT
NOBLE ENERGY INC.
ANACAPA 32-31
WELD COUNTY, COLORADO
FREMONT PROJECT NO. C014-025
FACILITY #332304, SPILL #2148554

1.0 INTRODUCTION

The purpose of this document is to present soil and ground water quality data collected during a site investigation at the Anacapa 32-13 site in Weld County, Colorado. Impacted soil and ground water were identified at this location due to a release from the flow line. Seven monitoring wells were installed at this site on April 24, 2015 to delineate the magnitude and extent of subsurface impacts.

2.0 BACKGROUND INFORMATION

2.1 Site Location

The Anacapa 32-31 site is located approximately three miles northeast of Hudson, Colorado in Weld County as shown on Figure 1. The site is located in a rural and agricultural area 1.0 miles southeast of the intersection of Interstate 76 and County Road 16. The location is further described as the SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 31, Township 2N, Range 64W.

2.2 Site History

The site consists of the flow line for the Anacapa 32-31 natural gas well. The well was drilled in 1994 to a depth of approximately 7,825 feet.

Soil impacts were observed at the location during routine maintenance on the flow line at this location. These soil impacts initiated this excavation effort.

An excavation to remediate the source impacts was undertaken by Fremont Environmental Inc. (Fremont) in April 2015. Approximately 1,600 cubic yards of impacted soil were excavated and removed from the flow line release area. One ground water sample was collected from the excavation and analyzed for petroleum constituents. The laboratory analysis of the water sample indicated that the sample exhibited dissolved petroleum constituent concentrations of benzene that were greater than the Colorado Oil and Gas Conservation Commission's (COGCC's) Table 910-1 limits. As a result, a site investigation to determine the extent of ground water impacts was required.

Agricultural grade gypsum was placed at the water table during backfilling to promote anaerobic biodegradation of residual petroleum in the soil and ground water. The site was re-contoured to match the surrounding surface after backfilling was completed.

3.0 SITE INVESTIGATION ACTIVITIES

3.1 Soil Borings/Monitoring Wells

A site investigation was conducted at the facility on April 24, 2015. A total of seven soil borings were advanced utilizing a Geoprobe rig. All of these borings were completed as flush-mounted, 1-inch diameter monitoring wells. These monitoring wells were used to delineate the extent of soil and ground water impacts at the site. The locations of the monitoring wells are illustrated on the attached figures.

Generally, the subsurface consists of topsoil which is then underlain by sandy clay that extends to a depth of approximately 10 feet. The sandy clay is then underlain by fine sand and silt to a depth of 16 feet. The maximum depth of the borings was 16 feet.

Ground water is present across the site at a depth of approximately five to seven feet. Geologic cross sections are presented on Figure 4.

The 1-inch diameter monitoring wells were constructed with 10 feet sections of well screen that were placed at a total depth of approximately 15 feet and completed at the ground surface with flush-mounted vaults. Soil samples from each of the borings were evaluated in the field using a photoionization detector (PID). Logs of the monitoring wells are presented in Appendix A.

Soil samples were collected from each of the borings and sent to Summit Scientific, Inc. in Golden, Colorado for the analyses of benzene, toluene, ethylbenzene and xylenes (BTEX), naphthalene, total petroleum hydrocarbons-gasoline range organics (TPH-GRO), and TPH-diesel range organics (TPH-DRO).

Soil impacts were not observed in any of the seven borings above the COGCC's Table 910-1 limits for BTEX, naphthalene, TPH-GRO and TPH-DRO. The soil chemistry is presented on Figure 5 and summarized on Table 1. The laboratory's report is provided in Appendix C.

3.2 Ground Water Monitoring

Ground water levels were measured in the seven monitoring wells on April 24, 2015 in accordance with the Sampling Plan included in Appendix B. The data are summarized in Table 2.

Water table contours inferred from the April 2015 data are illustrated on Figure 6. Based on these data, ground water is inferred to flow to the northeast. The water table

gradient was calculated at approximately 0.023 feet per foot (ft/ft) for the April 2015 data.

3.3 Ground Water Sampling and Analysis

Ground water samples were collected from the seven monitoring wells on April 24, 2015. All ground water samples were submitted to Summit Scientific, Inc. for analyses of benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8260C.

The ground water concentrations for six of the seven monitoring wells were below their respective COGCC Table 910-1 values. However, the benzene concentration in well MW-5 was 43 ug/L, which exceeds the COGCC Table 910-1 limit of 5 ug/L. The ground water chemistry is shown on Figure 7. The ground water analytical data are summarized in Table 2. A copy of the laboratory's report is presented in Appendix C.

4.0 DISCUSSION

A site investigation was conducted at the Anacapa 32-31 location on April 24, 2015 as a result of a release from the well's flow line. Seven monitoring wells were installed at the site to delineate the magnitude and extent of soil and ground water impacts.

Soil impacts above the COGCC Table 910-1 limits were not observed in any of the seven monitoring wells. Approximately 1,600 cubic yards of impacted soil had previously been excavated and removed from the site. Gypsum was placed in that excavation to enhance anaerobic biodegradation of residual soil and ground water impacts.

The data collected from the monitoring wells indicates that the ground water flow direction is to the northeast. The BTEX concentrations in the six of the seven

monitoring wells were less than the COGCC Table 910-1 limits; however, well MW-5 had a benzene concentration of 43 ug/L. These data are illustrated on Figure 7.

A Point of Compliance (POC) limit has not yet been established on the downgradient edge of the ground water impacts. The existing downgradient well, MW-5, has a benzene concentration of 43 ug/L. Since this concentration is above the COGCC Table 910-1 standard, additional monitoring wells will be required. However, since this release location is in the middle of an active corn field, the landowner has requested that any additional monitoring wells not be installed until after the corn has been harvested which is anticipated to be in November 2015.

Noble is currently evaluating the remedial options available to address residual ground water impacts. It is possible that monitored natural attenuation (MNA) will be adequate for this site. In the interim, Noble will sample the ground water at this site on a quarterly basis to evaluate the BTEX concentrations relative (COGCC's) Table 910-1 requirements.

5.0 REMARKS

The discussion and conclusions contained in this report represent our professional opinions. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by **FREMONT ENVIRONMENTAL INC.**



5/26/15

Date_____

Paul V. Henehan, P.E.

Senior Consultant

Reviewed by:



5/26/15

Date_____

Michael R. Gerstner

Senior Geologist

TABLES

TABLE 1
SUMMARY OF SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
ANACAPA 32-31, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C014-025

SAMPLE LOCATION	DATE SAMPLED	DEPTH ft	BENZENE mg/kg	TOLUENE mg/kg	ETHYL BENZENE mg/kg	TOTAL XYLENES mg/kg	NAPHTH-ALENE mg/kg	TPH-GRO mg/kg	TPH-DRO mg/kg
MW-1	04/24/15	8	<0.002	<0.005	<0.005	<0.010	<0.010	<0.5	<50
MW-2	04/24/15	8	<0.002	<0.005	<0.005	<0.010	<0.010	<0.5	<50
MW-3	04/24/15	4	<0.002	<0.005	<0.005	<0.010	<0.010	<0.5	<50
MW-4	04/24/15	7	<0.002	<0.005	<0.005	<0.010	<0.010	<0.5	<50
MW-5	04/24/15	5	<0.002	<0.005	<0.005	<0.010	<0.010	<0.5	<50
MW-6	04/24/15	8	<0.002	<0.005	<0.005	<0.010	<0.010	<0.5	<50
MW-7	04/24/15	6	<0.002	<0.005	<0.005	<0.010	<0.010	<0.5	<50
COGCC Table 910-1 Concentrations			0.17	85	100	175	23	500*	500*

The TPH-GRO and TPH-DRO concentrations are added together; if the sum of the two is >500 mg/kg, this exceeds the COGCC Table 910-1 limit

TABLE 2
SUMMARY OF GROUND WATER ELEVATION DATA AND CHEMISTRY DATA
NOBLE ENERGY INC.
ANACAPA 32-31, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C014-025

SAMPLE LOCATION	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	TOC ELEVATION (feet)	DEPTH TO GROUND WATER (ft)	GROUND WATER ELEVATION (ft)	FREE PRODUCT THICKNESS (ft)
MW-1	04/24/15	<1.0	<1.0	<1.0	<1.0	100.00	6.93	93.07	NP
MW-2	04/24/15	<1.0	<1.0	<1.0	<1.0	99.35	7.26	92.09	NP
MW-3	04/24/15	<1.0	<1.0	<1.0	<1.0	98.53	6.23	92.30	NP
MW-4	04/24/15	<1.0	<1.0	<1.0	<1.0	96.29	4.47	91.82	NP
MW-5	04/24/15	43	<1.0	<1.0	2.8	96.43	5.34	91.09	NP
MW-6	04/24/15	<1.0	<1.0	<1.0	<1.0	97.89	6.46	91.43	NP
MW-7	04/24/15	<1.0	<1.0	<1.0	53	98.09	6.05	92.04	NP
Table 910-1 Limits		5	560	700	1,400				

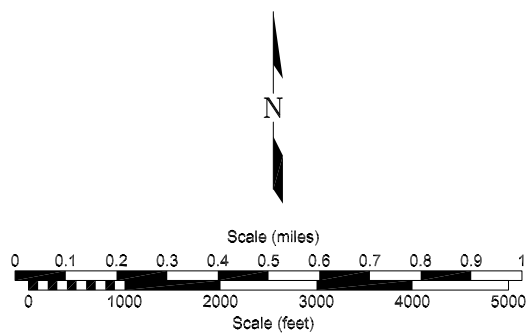
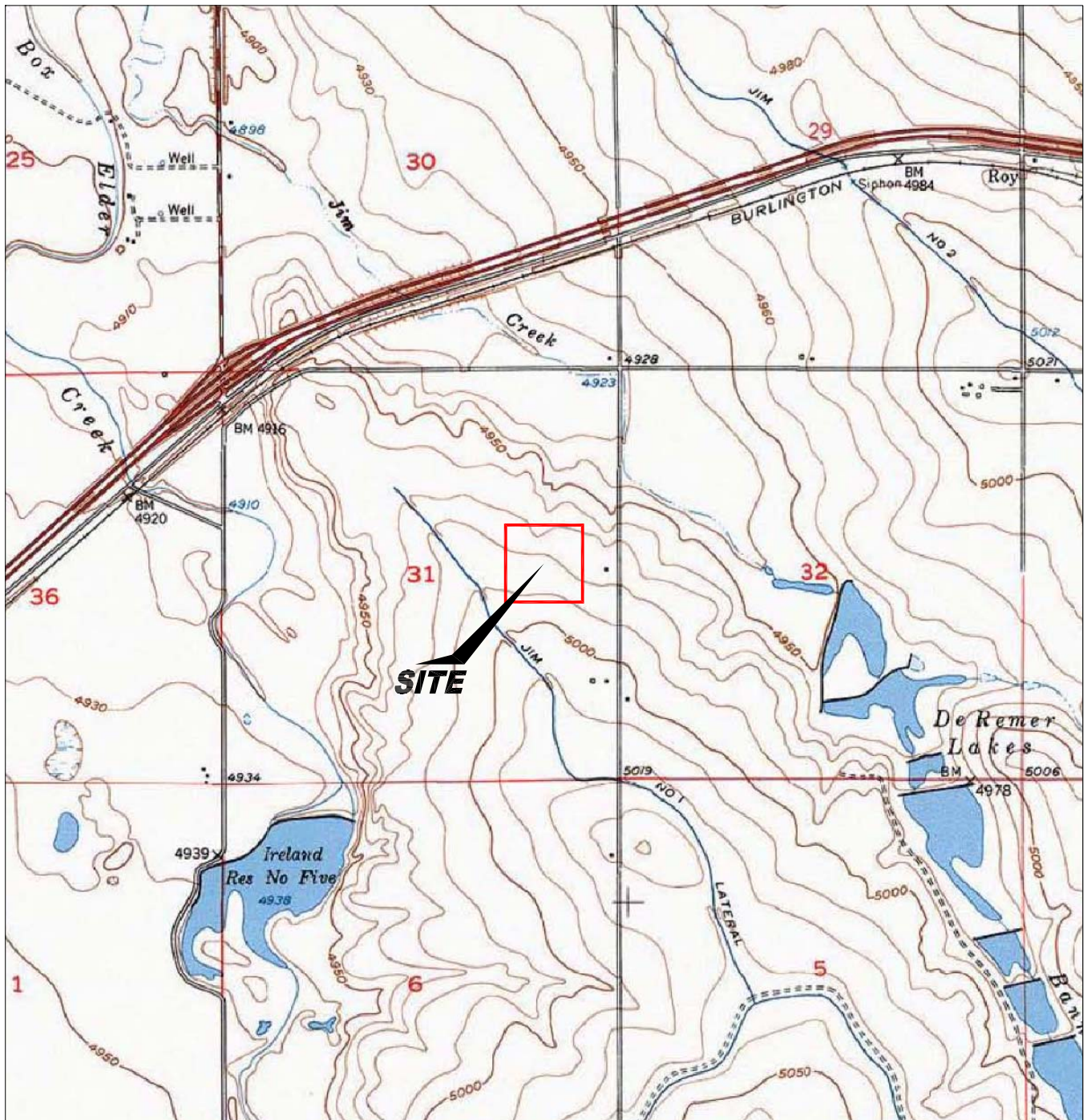
Bold face values exceed the COGCC limits

NP - No Free Product

NS - Not Sampled

NM - Not Measured

FIGURES



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP

Noble Eric Anacapa 32-31
SW NE Section 31, T2N, R64W
Weld County, Colorado

Project No.
C014-025

Prepared by

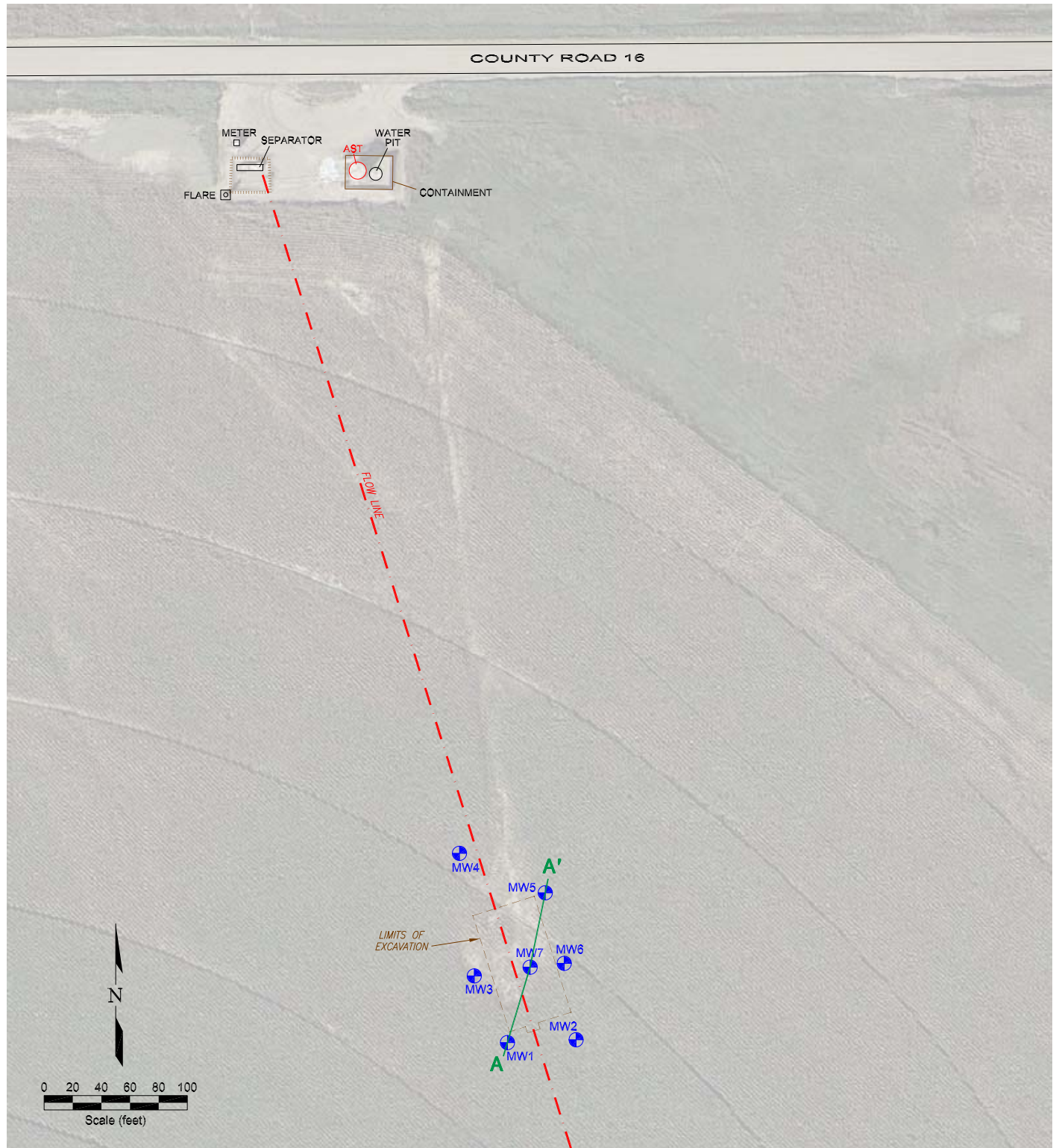
Drawn by
JMA

Date
5/8/15

Reviewed by

Filename
14025T





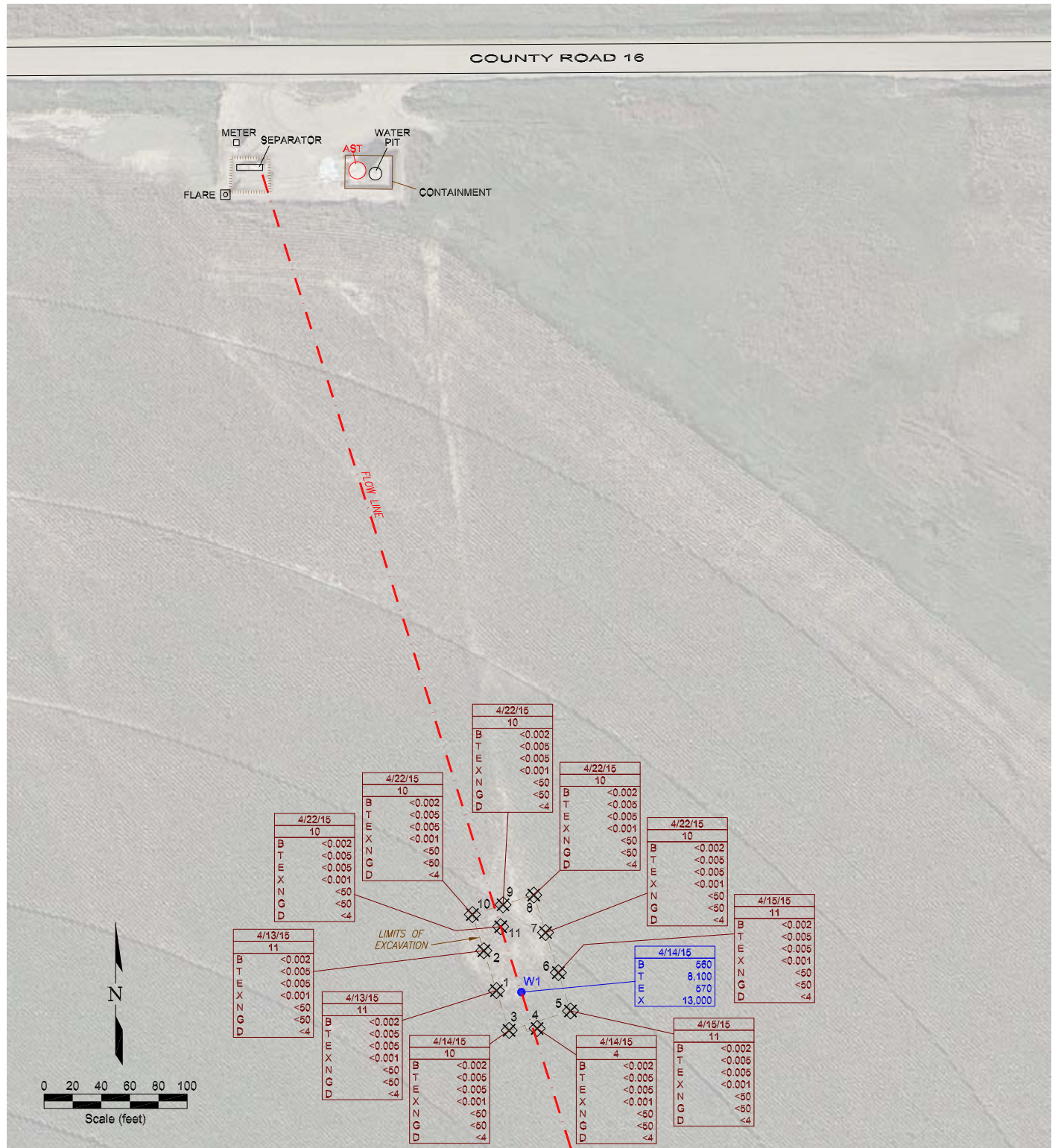
LEGEND

	MONITORING WELL
	FENCE LINE
	BERM
	ABOVE GROUND STORAGE TANK
	PIPELINE
	FORMER FACILITY

Figure 2
SITE MAP

Noble Eric Anacapa 32-31
SW NE Section 31, T2N, R64W
Weld County, Colorado

Project No. C014-025	Prepared by	Drawn by JMA	
Date 5/8/15	Reviewed by	Filename 14025Q	



LEGEND

	BERM
	ABOVE GROUND STORAGE TANK
	PIPELINE
	SOIL SAMPLE LOCATION
	WATER SAMPLE LOCATION

4/13/15	11	DATE SAMPLED	4/14/15	4	DATE SAMPLED
B	<0.002	SAMPLE DEPTH (ft)	B	580	BENZENE (ug/L)
T	<0.005	BENZENE (mg/kg)	T	8,100	ETHYLBENZENE (ug/L)
E	<0.005	TOLUENE (mg/kg)	E	570	TOLUENE (ug/L)
X	<0.005	ETHYLBENZENE (mg/kg)	X	13,000	TOTAL XYLENES (ug/L)
N	<0.001	TOTAL XYLENES (mg/kg)			
G	<60	NAPHTALENE (mg/kg)			
D	<60	TPH-GRO (mg/kg)			
	<4	TPH-DRO (mg/kg)			

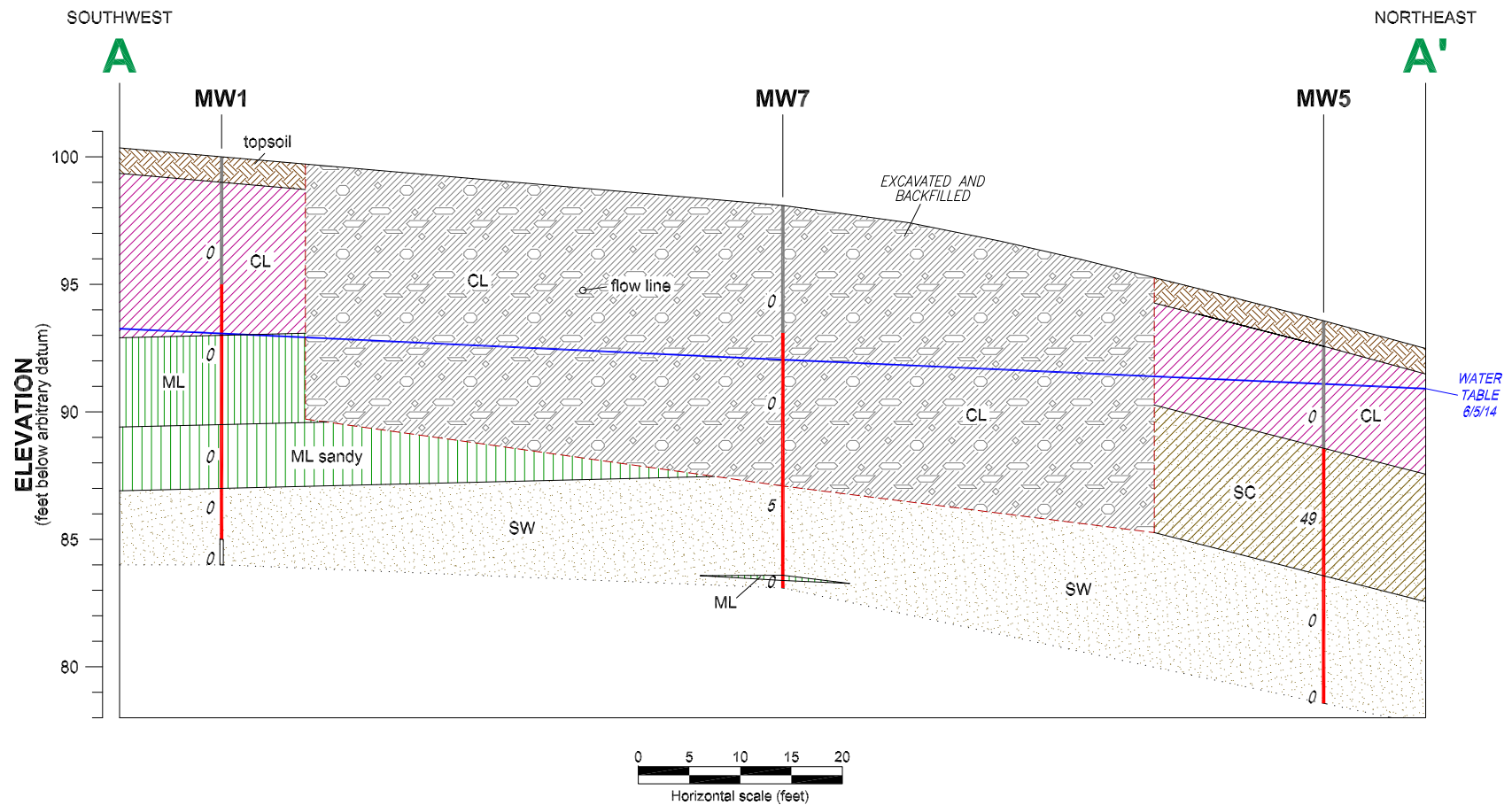
Figure 3

EXCAVATION/SAMPLE LOCATIONS

Noble Eric Anacapa 32-31
SW NE Section 31, T2N, R64W
Weld County, Colorado

Project No. C014-025	Prepared by	Drawn by JMA
Date 5/8/15	Reviewed by	Filename 14025Q





LEGEND

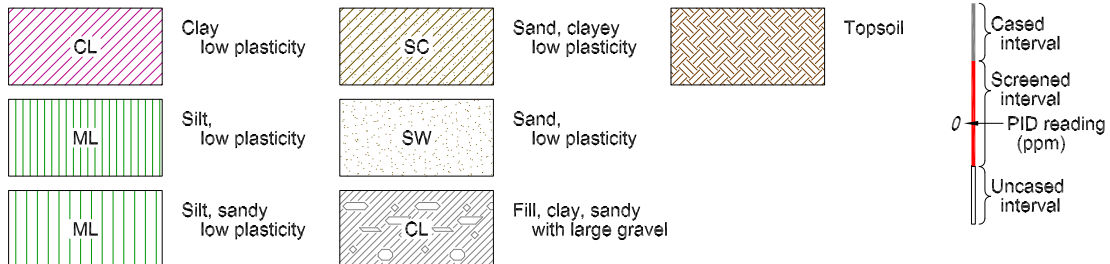


Figure 4

CROSS-SECTION A-A'

Noble Eric Anacapa 32-31
SW NE Section 31, T2N, R64W
Weld County, Colorado

Project No.
C014-025

Prepared by

Drawn by
JMA

Date
5/8/15

Reviewed by

Filename
14025Q



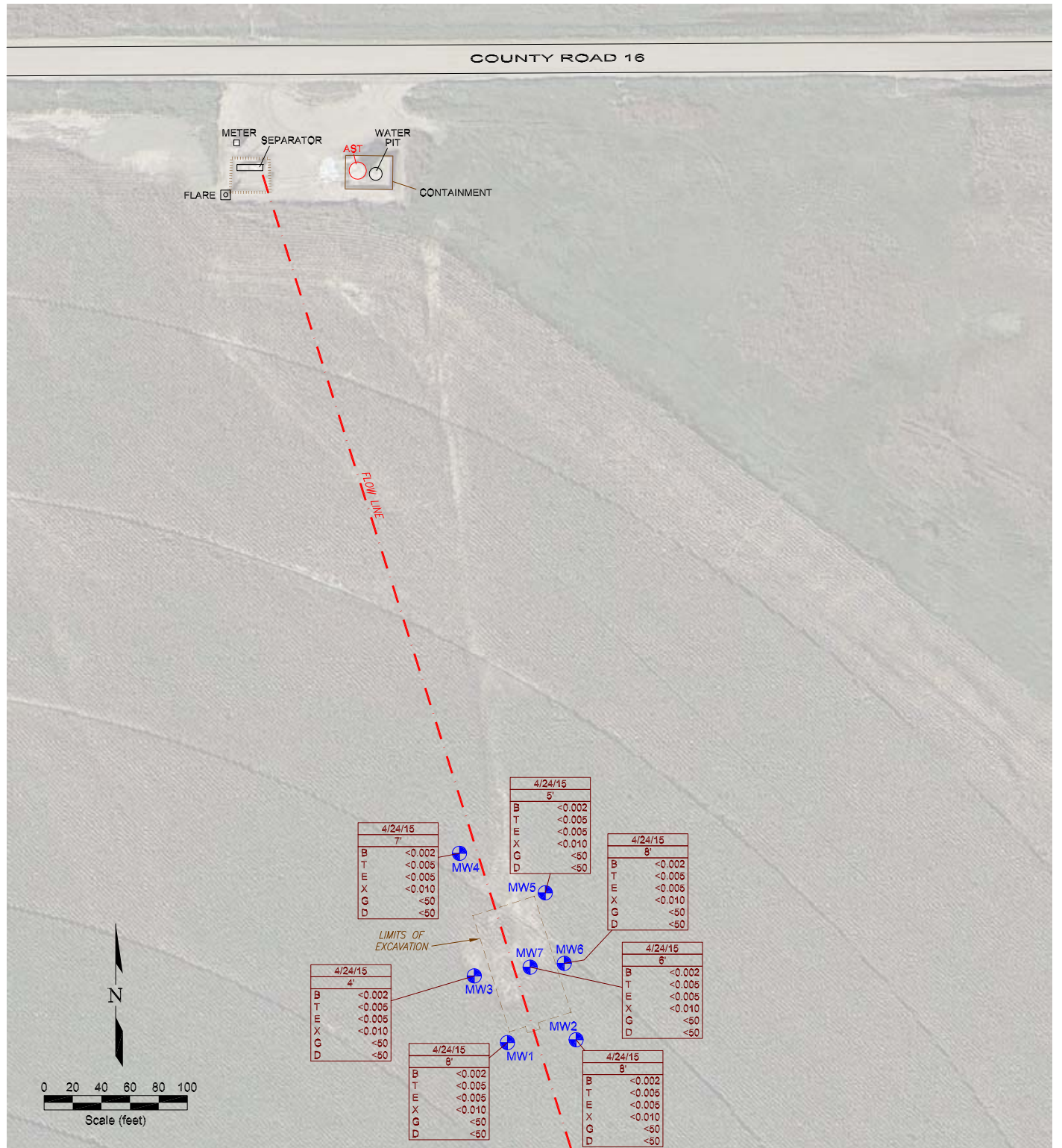


Figure 5
SOIL CHEMISTRY

Noble Eric Anacapa 32-31
SW NE Section 31, T2N, R64W
Weld County, Colorado

Project No.
C014-025

Prepared by

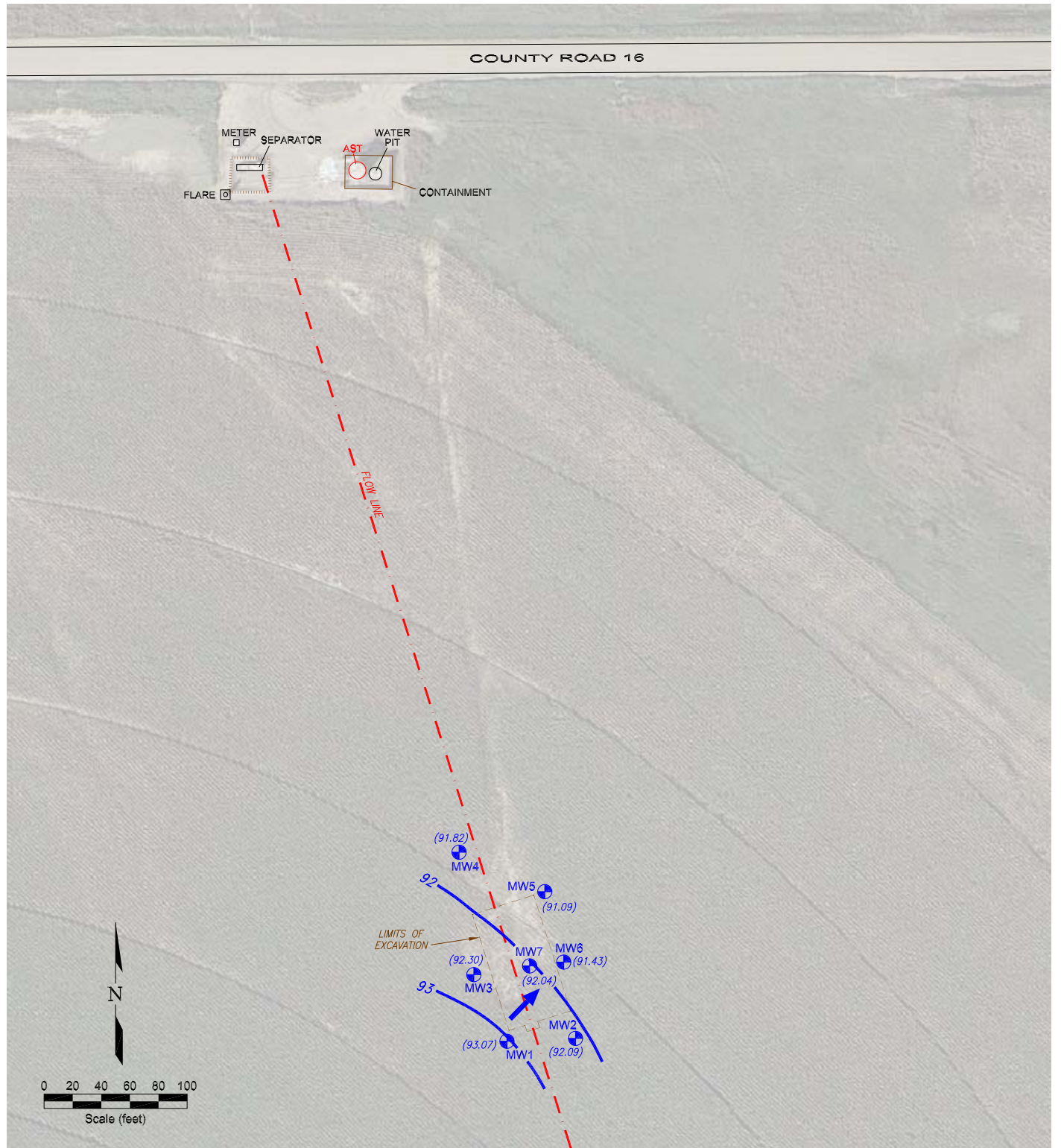
Drawn by
JMA

Date
5/8/15

Reviewed by

Filename
14025Q





LEGEND

- MONITORING WELL
- BERM
- ABOVE GROUND STORAGE TANK
- PIPELINE
- GROUND WATER ELEVATION (ft above arbitrary datum)
- WATER TABLE CONTOUR
- GROUND WATER FLOW DIRECTION

Figure 6
INFERRED GROUNDWATER CONTOUR
APRIL 24, 2015

Noble Eric Anacapa 32-31
 SW NE Section 31, T2N, R64W
 Weld County, Colorado

Project No.
C014-025

Prepared by

Drawn by
JMA

Date
5/8/15

Reviewed by

Filename
14025Q



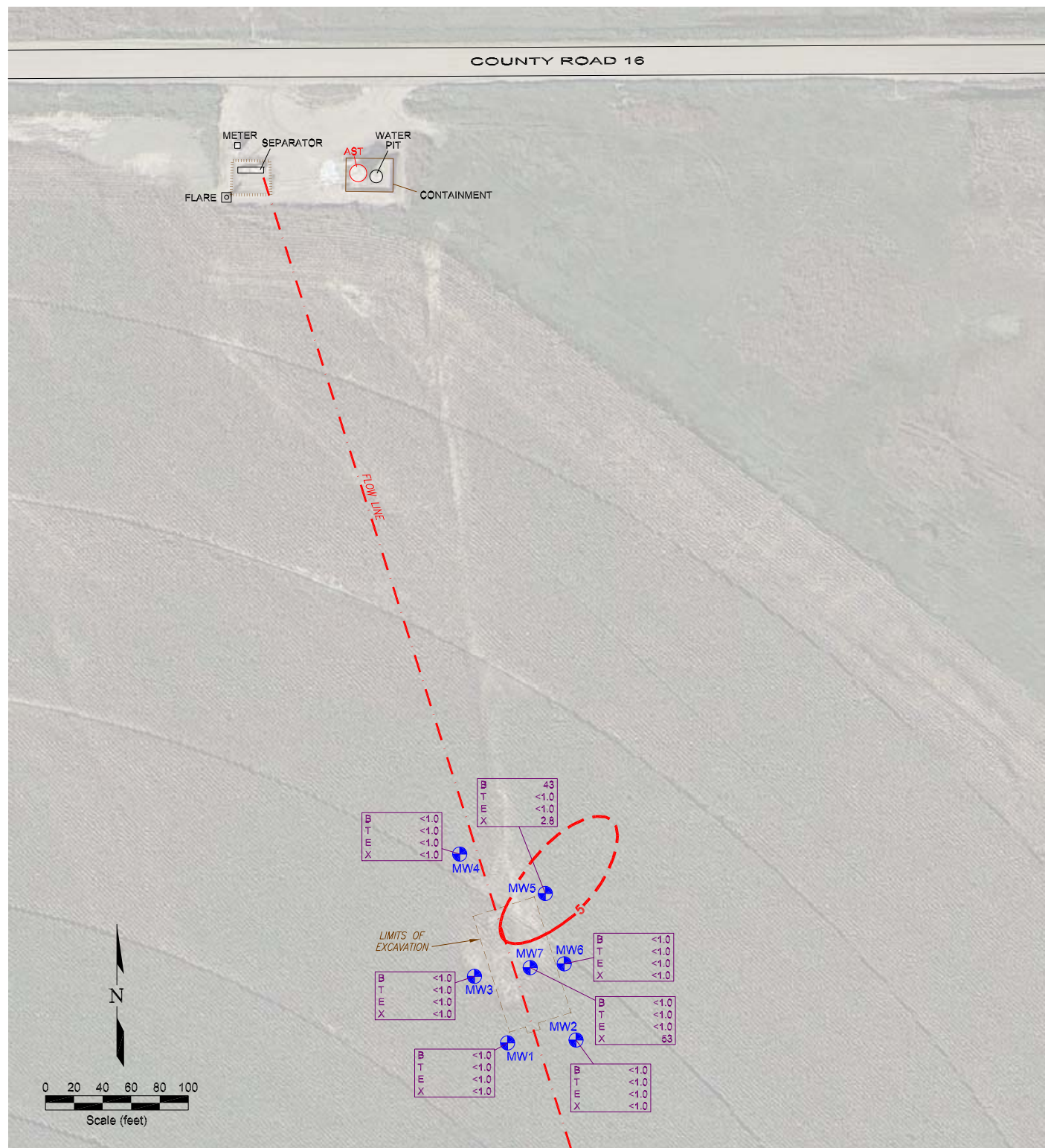


Figure 7
GROUND WATER CHEMISTRY MAP
APRIL 24, 2015

Noble Eric Anacapa 32-31
 SW NE Section 31, T2N, R64W
 Weld County, Colorado

Project No.
C014-025

Prepared by

Drawn by
JMA

Date
5/8/15

Reviewed by

Filename
14025Q



APPENDIX A

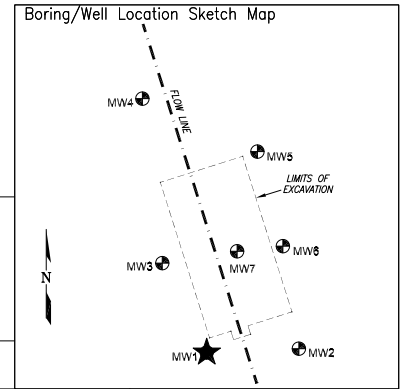
BORING LOGS



BORING/WELL CONSTRUCTION LOG

Page 1 of 1

Boring/Well No. MW1	Total Depth 16'	Location Noble Energy Eric Anacapa 32-31 SW NE Section 31, T2N, R64W Weld County, Colorado		
Project No./Name C014-025/Eric Anacapa 32-31		Approved By		
Drilling Contractor/Driller DrillPro		Geologist/Office PVH		
Drilling Equipment/Method Hurricane		Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 4/24/15
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. PVC/1"	Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"		
Elevation of: (ft. above datum)	Ground Surface .	Top of Well Casing 100.00	Top of Screen 95.00	Bottom of Screen 85.00
		Ground Water Surface/Date Measured 93.07 4/24/15		



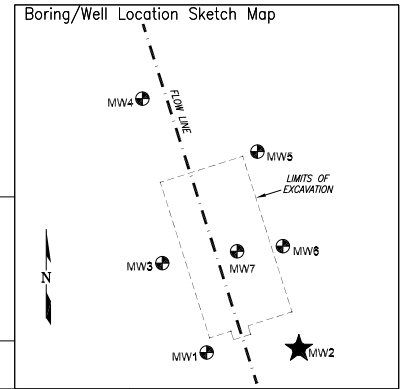
DEPTH (feet)	WELL CONSTRUCTION	LITHOLOGY		Penetration Rate (blows/ft)	Sample Interval (feet)	PID Values (ppm)
		GRAPHIC LOG	VISUAL DESCRIPTION			
			Topsoil			
			Clay, sandy, moist, brown, firm, no stain, no odor			
	Bentonite	1" Blank				
5		CL			4	0
			Water level 6.93'			
			Silt, light brown, dry, firm, no stain, no odor		8	0
10		ML				
			Silt, sandy, dry		12	0
	#10-20 Silica Sand	1" Screen				
15		SW	Sand, fine, packed hard, wet, no stain, no odor - almost refusal		14	0
			TD 16'		16	0
20						



BORING/WELL CONSTRUCTION LOG

Page 1 of 1

Boring/Well No. MW2	Total Depth 15'	Location Noble Energy Eric Anacapa 32-31 SW NE Section 31, T2N, R64W Weld County, Colorado	
Project No./Name C014-025/Eric Anacapa 32-31		Approved By	
Drilling Contractor/Driller DrillPro			
Geologist/Office PVH			
Drilling Equipment/Method Hurricane		Size/Type of Bit 2.5" direct push	Sampling Method direct push
		Start/Finish Date 4/24/15	
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. PVC/1"	Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"	
Elevation of: (ft. above datum)	Ground Surface .	Top of Well Casing 99.35	Top of Screen 94.35
		Bottom of Screen 84.35	Ground Water Surface/Date Measured 92.09 4/24/15



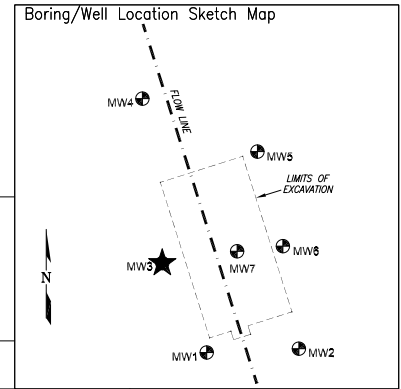
DEPTH (feet)	WELL CONSTRUCTION	LITHOLOGY		Penetration Rate (blows/ft)	Sample Interval (feet)	PID Values (ppm)
		GRAPHIC LOG	VISUAL DESCRIPTION			
			Topsoil			
			Clay, sandy, no stain, no odor			
	Bentonite	CL	moist			
	1" Blank					
5		ML	Silt, sandy		4	0
		ML	Silt, dry, no stain, no odor			
		ML	Water level 7.26'		8	0
10		SM	Sand, silty			
		SW	Sand, fine			
		ML	Silt, sandy, dry, no stain, no odor			
	#10-20 Silica Sand	SM	Sand, silty, wet		12	0
	1" Screen					
15		ML	Silt, sandy, very firm, dense, no stain, no odor		15	0
			TD 15'			
20						



BORING/WELL CONSTRUCTION LOG

Page 1 of 1

Boring/Well No. MW3	Total Depth 15'	Location Noble Energy Eric Anacapa 32-31 SW NE Section 31, T2N, R64W Weld County, Colorado		
Project No./Name C014-025/Eric Anacapa 32-31		Approved By		
Drilling Contractor/Driller DrillPro		Geologist/Office PVH		
Drilling Equipment/Method Hurricane		Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 4/24/15
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. PVC/1"	Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"		
Elevation of: (ft. above datum)	Ground Surface .	Top of Well Casing 98.53	Top of Screen 93.53	Bottom of Screen 83.53
		Ground Water Surface/Date Measured 92.30 4/24/15		



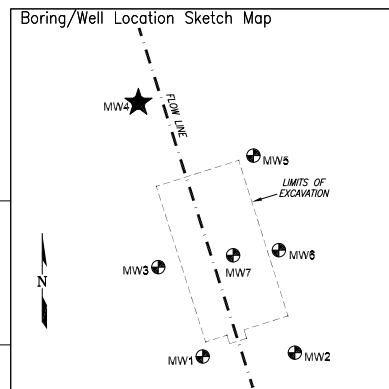
DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/ft)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION			
				Topsoil			
				Clay, sandy, moist, no stain, no odor			
	Bentonite	1" Blank		firm		4	142
5			CL	Water level 6.23'			
				wet and softer		8	0
10			SW	Sand, fine, very dense, no stain, no odor wet			
				Rock, white			
	#10-20 Silica Sand	1" Screen	SW	Sand, fine, brown, very dense, no stain no odor hard to penetrate with direct push		12	1
15				TD 15'		15	0
20							



BORING/WELL CONSTRUCTION LOG

Page 1 of 1

Boring/Well No. MW4	Total Depth 14.5'	Location Noble Energy Eric Anacapa 32-31 SW NE Section 31, T2N, R64W Weld County, Colorado		
Project No./Name C014-025/Eric Anacapa 32-31		Approved By		
Drilling Contractor/Driller DrillPro		Geologist/Office PVH		
Drilling Equipment/Method Hurricane		Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 4/24/15
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. PVC/1"	Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"		
Elevation of: (ft. above datum)	Ground Surface .	Top of Well Casing 96.29	Top of Screen 91.29	Bottom of Screen 81.29
		Ground Water Surface/Date Measured 91.82 4/24/15		



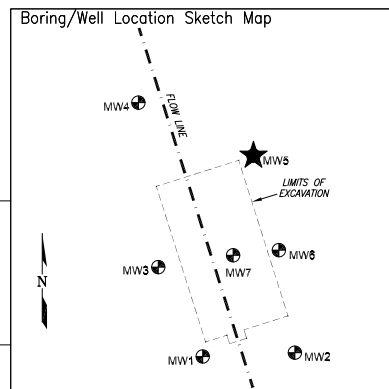
DEPTH (feet)	WELL CONSTRUCTION	LITHOLOGY		Penetration Rate (blows/ft)	Sample Interval (feet)	PID Values (ppm)
		GRAPHIC LOG	VISUAL DESCRIPTION			
			Topsoil			
			Clay, sandy, moist, no stain, no odor			
	Bentonite	CL				
	1" Blank					
5		ML	Silt, sandy, firm Water level 4.47'		4	0
		SW	Sand, fine, no stain, no odor wet		8	0
10		ML	Siltstone, dark brown Silt, very firm			
	#10-20 Silica Sand	SW	Sand, fine, wet, no stain no odor		12	0
	1" Screen					
15			refusal due to packing TD 14.5'		14.5	0
20						



BORING/WELL CONSTRUCTION LOG

Page 1 of 1

Boring/Well No. MW5	Total Depth 15'	Location Noble Energy Eric Anacapa 32-31 SW NE Section 31, T2N, R64W Weld County, Colorado	
Project No./Name C014-025/Eric Anacapa 32-31		Approved By	
Drilling Contractor/Driller DrillPro		Geologist/Office PVH	
Drilling Equipment/Method Hurricane		Size/Type of Bit 2.5" direct push	Sampling Method direct push
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Casing Mtrl./Dia. PVC/1"	Start/Finish Date 4/24/15
Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"			
Elevation of: (ft. above datum)	Ground Surface .	Top of Well Casing 96.43	Top of Screen 91.43
		Bottom of Screen 81.43	Ground Water Surface/Date Measured 91.09 4/24/15



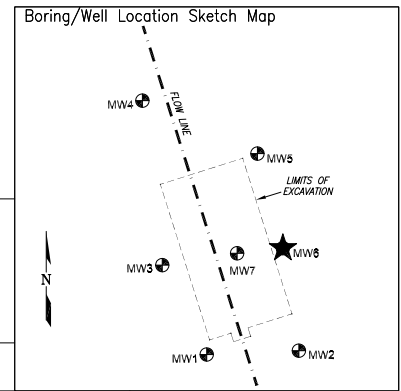
DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/ft)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION			
				Topsoil			
				Clay, sandy, moist, no stain, no odor			
	Bentonite	1" Blank	CL			4	0
5				Sand, clayey, no stain, no odor Water level 5.34' wet			
			SC			8	49
10				Sand, fine, no stain, no odor hard to direct push			
	#10-20 Silica Sand	1" Screen	SW			12	0
15				TD 15'		15	0
20							



BORING/WELL CONSTRUCTION LOG

Page 1 of 1

Boring/Well No. MW6	Total Depth 14.5'	Location Noble Energy Eric Anacapa 32-31 SW NE Section 31, T2N, R64W Weld County, Colorado	
Project No./Name C014-025/Eric Anacapa 32-31		Approved By	
Drilling Contractor/Driller DrillPro		Geologist/Office PVH	
Drilling Equipment/Method Hurricane		Size/Type of Bit 2.5" direct push	Sampling Method direct push
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Casing Mtrl./Dia. PVC/1"	Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"
Elevation of: (ft. above datum)	Ground Surface .	Top of Well Casing 97.89	Top of Screen 92.89
		Bottom of Screen 82.89	Ground Water Surface/Date Measured 91.43 4/24/15



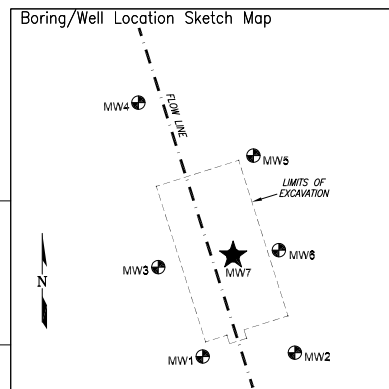
DEPTH (feet)	WELL CONSTRUCTION	LITHOLOGY		Penetration Rate (blows/ft)	Sample Interval (feet)	PID Values (ppm)
		GRAPHIC LOG	VISUAL DESCRIPTION			
			Topsoil			
			Clay, sandy, firm, dry no stain, no odor			
	Bentonite	1" Blank				
5		CL			4	0
			Water level 6.46'			
		SM	Sand, silty			
		ML	Silt, sandy, firm, dry, no stain, no odor		8	0
10						
			Sand, fine, wet, no stain, no odor wet			
	#10-20 Silica Sand	1" Screen			12	0
15		SW				
			TD 14.5' - refusal		14.5	0
20						



BORING/WELL CONSTRUCTION LOG

Page 1 of 1

Boring/Well No. MW7	Total Depth 15'	Location Noble Energy Eric Anacapa 32-31 SW NE Section 31, T2N, R64W Weld County, Colorado	
Project No./Name C014-025/Eric Anacapa 32-31		Approved By	
Drilling Contractor/Driller DrillPro		Geologist/Office PVH	
Drilling Equipment/Method Hurricane		Size/Type of Bit 2.5" direct push	Sampling Method direct push
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Start/Finish Date 4/24/15	
Casing Mtrl./Dia. PVC/1"	Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"		
Elevation of: (ft. above datum)	Ground Surface .	Top of Well Casing 98.09	Top of Screen 93.09
		Bottom of Screen 83.09	Ground Water Surface/Date Measured 92.04 4/24/15



DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/ft)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION			
5	Bentonite	1" Blank	CL	Clay, sandy, with large gravel, dry, no stain, no odor - new backfill		4	0
10				Water level 6.05'		8	0
				wet			
15	#10-20 Silica Sand	1" Screen	SW	Sand, fine, no stain, no odor hard to direct push		12	5
20				Silt lens		15	0
				TD 15'			

APPENDIX B

SAMPLING PLAN

SAMPLING METHODS AND PROCEDURES

Water Level Measurements

All ground water level measurements will be obtained using an electric measuring device, which indicates when a probe is in contact with ground water. Measurements will be obtained by lowering the device into the well until the water surface had been encountered, and by measuring the distance from the top of the inside riser pipe to the probe. All of the measurements will be recorded to the nearest 0.01 ft. To minimize cross-contamination, the water level indicator will be decontaminated with isopropyl alcohol and distilled water between each well.

Monitoring Well Sampling

All monitoring wells were sampled from the “cleanest” to the “most contaminated” according to the protocols listed below.

Field Protocol

- Step 1 Measure water level in each well.
- Step 2 Purge each monitoring well by evacuating a minimum of three well bore volumes using a disposable polyethylene bailer.
- Step 3 Collect water samples using a disposable polyethylene bailer.
- Step 4 Cool samples to approximately 4°C for transportation.
- Step 5 Store water samples and transport to a specific laboratory, following all documentation and chain-of-custody procedures.

Upon completion of ground water sampling, a chain-of-custody log will be completed. Chain-of-custody records include the following information: project, project number, shipped by, shipped to, suspected hazard, sampling point, location, field identification number, date collected, sample type, number of containers, analysis required, and sampler's signature.

The chain-of-custody records will be shipped with the samples to the laboratory. Upon arrival at the laboratory the samples will be checked in and signed by the appropriate laboratory personnel. Laboratory identification numbers will be noted on the chain-of-custody record. Upon completion of the laboratory analysis, the completed chain-of-custody record will be returned to the project manager.

Analytical Methods

The following list identifies the various chemical constituents and analytical methods which will be used for their quantification.

<u>Chemical Parameter</u>	<u>Method</u>
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)	EPA Method – 8260C

APPENDIX C

LABORATORY DOCUMENTATION

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

May 03, 2015

Paul Henehan
Fremont Environmental
1630 South College Avenue
Ft. Collins, CO 80525
RE: Noble - Anacapa 32-31

Enclosed are the results of analyses for samples received by Summit Scientific on 04/27/15 12:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury
President



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	1504258-01	Water	04/24/15 00:00	04/27/15 12:00
MW-2	1504258-02	Water	04/24/15 00:00	04/27/15 12:00
MW-3	1504258-03	Water	04/24/15 00:00	04/27/15 12:00
MW-4	1504258-04	Water	04/24/15 00:00	04/27/15 12:00
MW-5	1504258-05	Water	04/24/15 00:00	04/27/15 12:00
MW-6	1504258-06	Water	04/24/15 00:00	04/27/15 12:00
MW-7	1504258-07	Water	04/24/15 00:00	04/27/15 12:00
MW-1 8 FT	1504258-08	Soil	04/24/15 00:00	04/27/15 12:00
MW-2 8 FT	1504258-09	Soil	04/24/15 00:00	04/27/15 12:00
MW-3 4 FT	1504258-10	Soil	04/24/15 00:00	04/27/15 12:00
MW-4 7 FT	1504258-11	Soil	04/24/15 00:00	04/27/15 12:00
MW-5 5 FT	1504258-12	Soil	04/24/15 00:00	04/27/15 12:00
MW-6 8 FT	1504258-13	Soil	04/24/15 00:00	04/27/15 12:00
MW-7 6 FT	1504258-14	Soil	04/24/15 00:00	04/27/15 12:00

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.



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

Summit Scientific

1504258.1

S₂

741 Corporate Circle, Suite J&K ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933

Page 1 of 2

Client: FREMONT/NOBLE

Project Manager: HENEHAN

Address:

E-Mail:

City/State/Zip:

Phone:

Fax:

Project Name: NOBLE - ANACAPA 32-31

Sampler Name:

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions	
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	BTEX	GR/DRO	NAP/HTH			
1	MW-1	4/24/15		2			✓		✓				✓					
2	MW-2			2			✓		✓				✓					
3	MW-3			2			✓		✓				✓					
4	MW-4			3	✓				✓				✓					
5	MW-5			3	✓				✓				✓					
6	MW-6			3	✓				✓				✓					
7	MW-7			2	✓				✓				✓					
8	MW-1 8 FT			1			✓			✓			✓	✓	✓			
9	MW-2 8 FT			1			✓			✓			✓	✓	✓			
10	MW-3 4 FT			1			✓			✓			✓	✓	✓			

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time (Check)	Notes: on ice
<u>Paul Henehan</u>	<u>4/27/15</u>	<u>MD</u>	<u>4/27/15 1200</u>	Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/>	
				24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>	
				48 hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	
<u>MD</u>	<u>4/27/15 1:10 PM</u>	<u>Michael Clements</u>	<u>4/27/15 1:00 PM</u>	Temperature Upon Receipt: <u>76°C</u>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

www.s2scientific.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.



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

Summit Scientific

1504258.2

S₂

741 Corporate Circle, Suite J&K ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933

Page 2 of 2

Client: Fremont / Noble

Project Manager:

Address:

E-Mail:

City/State/Zip:

Phone:

Fax:

Project Name:

Sampler Name:

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	BTEX	Geo/Deo	NAPHTH		
1	MW-4 7 FT	4/24/15		1			✓		✓			✓	✓	✓			
2	MW-5 5 FT			1			✓		✓			✓	✓	✓			
3	MW-6 8 FT			1			✓		✓			✓	✓	✓			
4	MW-7 6 FT																
5																	
6																	
7																	
8																	
9																	
10																	

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time	(Check)	Notes: on ice
<u>Q. H. H. E.</u>	4/27/15	<u>MD</u>	4/27/15 1200	Same Day	72 hours	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours	Standard	
<u>MD</u>	4/27/15 1:10 PM	<u>Q. H. H. E.</u>	4/27/15 12:15 PM	48 hours		
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	Temperature Upon Receipt:	
				Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	7.6°C	

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



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

Sample Receipt Checklist

S2 Work Order: 1504254

Client: Fremont

Client Project ID: Anacapa 32-31

Shipped Via: PU

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

Airbill #: _____

Matrix (check all that apply): Air X Soil/Solid X Water Other: _____
(Describe)

Cooler ID					
Temp (°C)	7.6				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
If custody seals are present, are they intact ⁽¹⁾ ?			X	
Are short holding time analytes or samples with HTs due within 48 hours present?			X	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		X		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	X			
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, etc.				HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			X	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Ben Shrewsbury
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

4/30/15 1635
Date/Time



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-1
1504258-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504318	05/01/15	05/01/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.5 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.8 %	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.



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-2
1504258-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1504318	05/01/15	05/01/15	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	1.0		"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		96.7 %		37-154		"	"	"	"	
Surrogate: Toluene-d8		95.8 %		45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %		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.



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-3
1504258-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504318	05/01/15	05/01/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.2 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.5 %	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.



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-4
1504258-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504282	05/02/15	05/02/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.4 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		101 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	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.



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-5
1504258-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	43	1.0	ug/l	1	1504282	05/02/15	05/02/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	2.8	1.0	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		105 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		119 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		98.3 %	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.



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-6
1504258-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504282	05/02/15	05/02/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		101 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	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.



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-7
1504258-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504282	05/02/15	05/02/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	53	1.0	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		109 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	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.



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-1 8 FT
1504258-08 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1504293	04/29/15	05/01/15	8015M	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.8 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1504295	04/29/15	05/01/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-2 8 FT
1504258-09 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1504293	04/29/15	05/01/15	8015M	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.7 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1504295	04/29/15	05/01/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-3 4 FT
1504258-10 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1504293	04/29/15	05/01/15	8015M	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1504295	04/29/15	05/01/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		117 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-4 7 FT
1504258-11 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1504293	04/29/15	05/01/15	8015M	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1504295	04/29/15	05/01/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-5 5 FT
1504258-12 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1504293	04/29/15	05/01/15	8015M	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.7 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1504295	04/29/15	05/01/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-6 8 FT
1504258-13 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1504293	04/29/15	05/01/15	8015M	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.8 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1504295	04/29/15	05/01/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

MW-7 6 FT
1504258-14 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1504293	04/29/15	05/01/15	8015M	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.2 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1504295	04/29/15	05/01/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **04/24/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31
Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

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 1504293 - EPA 3550A

Blank (1504293-BLK1)

Prepared: 04/29/15 Analyzed: 04/30/15

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 11.5 " 12.2 94.4 30-150

LCS (1504293-BS1)

Prepared: 04/29/15 Analyzed: 04/30/15

C10-C28 (DRO) 448 50 mg/kg 501 89.4 73-134

Surrogate: o-Terphenyl 11.5 " 12.2 94.2 30-150

Matrix Spike (1504293-MS1)

Source: 1504266-01

Prepared: 04/29/15 Analyzed: 04/30/15

C10-C28 (DRO) 1590 50 mg/kg 501 818 153 50-148 QM-07

Surrogate: o-Terphenyl 11.9 " 12.2 97.3 30-150

Matrix Spike Dup (1504293-MSD1)

Source: 1504266-01

Prepared: 04/29/15 Analyzed: 04/30/15

C10-C28 (DRO) 1560 50 mg/kg 501 818 149 50-148 1.37 13 QM-07

Surrogate: o-Terphenyl 13.4 " 12.2 110 30-150

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31
Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

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 1504282 - EPA 5030 Water MS

Blank (1504282-BLK1)

Prepared & Analyzed: 04/28/15

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.4		"	13.2		109	37-154			
Surrogate: Toluene-d8	12.8		"	13.3		95.9	45-149			
Surrogate: 4-Bromofluorobenzene	13.7		"	13.3		103	45-146			

LCS (1504282-BS1)

Prepared & Analyzed: 04/28/15

Benzene	28.5	1.0	ug/l	33.3		85.6	51-132			
Toluene	30.2	1.0	"	33.3		90.6	51-138			
Ethylbenzene	32.6	1.0	"	33.1		98.6	58-146			
m,p-Xylene	66.3	2.0	"	66.5		99.6	57-144			
o-Xylene	33.8	1.0	"	32.8		103	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.2		111	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.4	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.1	45-146			

Matrix Spike (1504282-MS1)

Source: 1504244-02

Prepared & Analyzed: 04/29/15

Benzene	28.2	1.0	ug/l	33.3	ND	84.7	34-141			
Toluene	28.8	1.0	"	33.3	ND	86.5	27-151			
Ethylbenzene	31.8	1.0	"	33.1	ND	96.2	29-160			
m,p-Xylene	64.9	2.0	"	66.5	ND	97.6	20-166			
o-Xylene	33.1	1.0	"	32.8	ND	101	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.8		"	13.2		112	37-154			
Surrogate: Toluene-d8	12.8		"	13.3		95.8	45-149			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.5	45-146			

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31
Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

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 1504282 - EPA 5030 Water MS

Matrix Spike Dup (1504282-MSD1)			Source: 1504244-02		Prepared & Analyzed: 04/29/15					
Benzene	29.4	1.0	ug/l	33.3	ND	88.4	34-141	4.23	32	
Toluene	30.8	1.0	"	33.3	ND	92.5	27-151	6.77	25	
Ethylbenzene	32.4	1.0	"	33.1	ND	98.1	29-160	1.99	50	
m,p-Xylene	66.6	2.0	"	66.5	ND	100	20-166	2.51	36	
o-Xylene	34.1	1.0	"	32.8	ND	104	33-159	2.91	26	
Surrogate: 1,2-Dichloroethane-d4	16.2		"	13.2		122	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.5	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.3	45-146			

Batch 1504295 - EPA 5030 Soil MS

Blank (1504295-BLK1)			Prepared: 04/29/15 Analyzed: 05/01/15							
Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0454		"	0.0396		115	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0423		"	0.0400		106	21-167			

LCS (1504295-BS1)			Prepared: 04/29/15 Analyzed: 05/01/15							
Naphthalene	ND	0.010	mg/kg							
Benzene	0.0886	0.0020	"	0.100		88.6	58-130			
Toluene	0.0880	0.0050	"	0.100		88.0	61-134			
Ethylbenzene	0.0949	0.0050	"	0.0992		95.7	74-139			
m,p-Xylene	0.185	0.010	"	0.200		92.8	73-137			
o-Xylene	0.0968	0.0050	"	0.0984		98.4	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0444		"	0.0396		112	23-173			
Surrogate: Toluene-d8	0.0402		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0411		"	0.0400		103	21-167			

Summit Scientific

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31
Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

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 1504295 - EPA 5030 Soil MS

Matrix Spike (1504295-MS1)

Source: 1504246-01

Prepared: 04/29/15 Analyzed: 05/01/15

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0892	0.0020	"	0.100	ND	89.2	30-131			
Toluene	0.0890	0.0050	"	0.100	ND	89.0	30-134			
Ethylbenzene	0.0956	0.0050	"	0.0992	ND	96.4	22-153			
m,p-Xylene	0.188	0.010	"	0.200	ND	94.0	10-159			
o-Xylene	0.0988	0.0050	"	0.0984	ND	100	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0448		"	0.0396		113	23-173			
Surrogate: Toluene-d8	0.0407		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	21-167			

Matrix Spike Dup (1504295-MSD1)

Source: 1504246-01

Prepared: 04/29/15 Analyzed: 05/01/15

Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.0881	0.0020	"	0.100	ND	88.1	30-131	1.22	34	
Toluene	0.0884	0.0050	"	0.100	ND	88.4	30-134	0.643	30	
Ethylbenzene	0.0958	0.0050	"	0.0992	ND	96.5	22-153	0.157	24	
m,p-Xylene	0.187	0.010	"	0.200	ND	93.7	10-159	0.256	68	
o-Xylene	0.0994	0.0050	"	0.0984	ND	101	31-151	0.605	38	
Surrogate: 1,2-Dichloroethane-d4	0.0471		"	0.0396		119	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0410		"	0.0400		103	21-167			

Batch 1504318 - EPA 5030 Water MS

Blank (1504318-BLK1)

Prepared & Analyzed: 05/01/15

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.2		104	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.6	45-149			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.9	45-146			

Summit Scientific

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Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

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 1504318 - EPA 5030 Water MS

LCS (1504318-BS1)

Prepared & Analyzed: 05/01/15

Benzene	50.4	1.0	ug/l	50.0		101	51-132		
Toluene	50.1	1.0	"	50.0		100	51-138		
Ethylbenzene	51.8	1.0	"	50.0		104	58-146		
m,p-Xylene	103	2.0	"	100		103	57-144		
o-Xylene	51.2	1.0	"	50.0		102	53-146		
Surrogate: 1,2-Dichloroethane-d4	13.2		"	13.2		100	37-154		
Surrogate: Toluene-d8	13.4		"	13.3		100	45-149		
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	45-146		

Matrix Spike (1504318-MS1)

Source: 1504291-01

Prepared & Analyzed: 05/01/15

Benzene	52.4	1.0	ug/l	50.0	ND	105	34-141		
Toluene	52.7	1.0	"	50.0	ND	105	27-151		
Ethylbenzene	54.0	1.0	"	50.0	ND	108	29-160		
m,p-Xylene	108	2.0	"	100	ND	108	20-166		
o-Xylene	53.7	1.0	"	50.0	ND	107	33-159		
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.2		103	37-154		
Surrogate: Toluene-d8	13.4		"	13.3		101	45-149		
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	45-146		

Matrix Spike Dup (1504318-MSD1)

Source: 1504291-01

Prepared & Analyzed: 05/01/15

Benzene	52.8	1.0	ug/l	50.0	ND	106	34-141	0.665	32
Toluene	52.9	1.0	"	50.0	ND	106	27-151	0.378	25
Ethylbenzene	54.5	1.0	"	50.0	ND	109	29-160	0.811	50
m,p-Xylene	109	2.0	"	100	ND	109	20-166	1.10	36
o-Xylene	53.2	1.0	"	50.0	ND	106	33-159	0.786	26
Surrogate: 1,2-Dichloroethane-d4	13.2		"	13.2		100	37-154		
Surrogate: Toluene-d8	13.5		"	13.3		101	45-149		
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	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.



Fremont Environmental
1630 South College Avenue
Ft. Collins CO, 80525

Project: Noble - Anacapa 32-31

Project Number: C014-025
Project Manager: Paul Henehan

Reported:
05/03/15 15:05

Notes and Definitions

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.

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

Summit Scientific

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