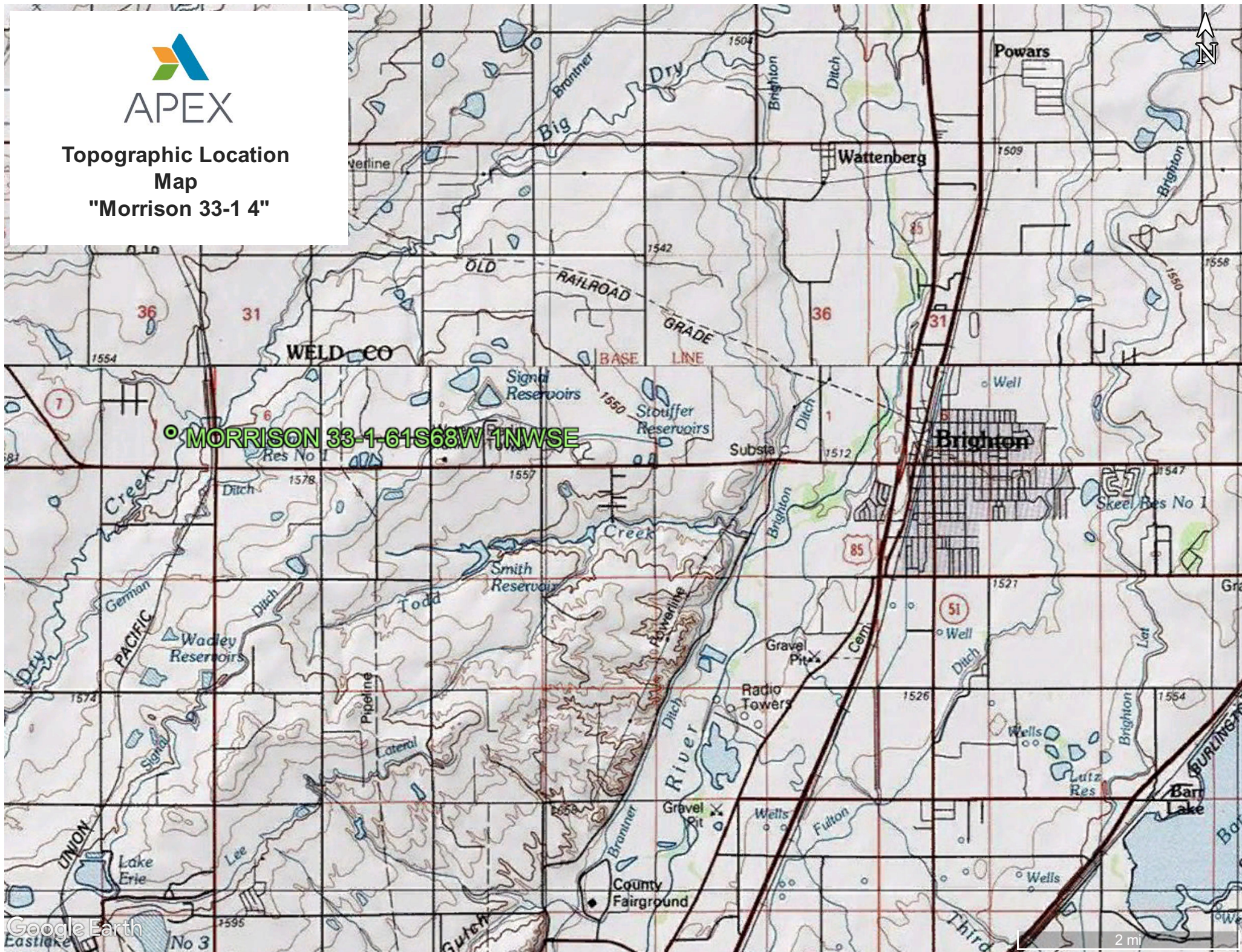




Topographic Location
Map
"Morrison 33-1 4"

• MORRISON 33-1-61S68W 1NWSE





Laboratory Results Summary Table - Soil Borings Morrison 33-1 4 East

			Organics (mg/kg)				
COGCC Allowable Concentration (Soil) -->			500	0.17	85	100	175
Location	Sample Date	Sample ID	TPH (total volatile and extractable petroleum hydrocarbons) (TPH-GRO + TPH-DRO)	Benzene	Toluene	Ethylbenzene	Xylenes - total
Morrison 33-1 4	10/25/18	BH2@6	7.9	<0.0020	<0.0050	<0.0050	0.035
Morrison 33-1 4	10/25/18	BH6@8	15	<0.0020	<0.0050	0.021	0.061
Morrison 33-1 4	10/25/18	BH7@7	600	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH2@14	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH7@10	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH6@12	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH1@16	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH5@6	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH5@12	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH4@8	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH4@12	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH8@12	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH8@10	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH3@12	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH3@8	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH9@8	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH9@12	<50	<0.0020	<0.0050	<0.0050	<0.010
Morrison 33-1 4	10/25/18	BH1@6	650	0.014	<0.0050	0.50	0.023



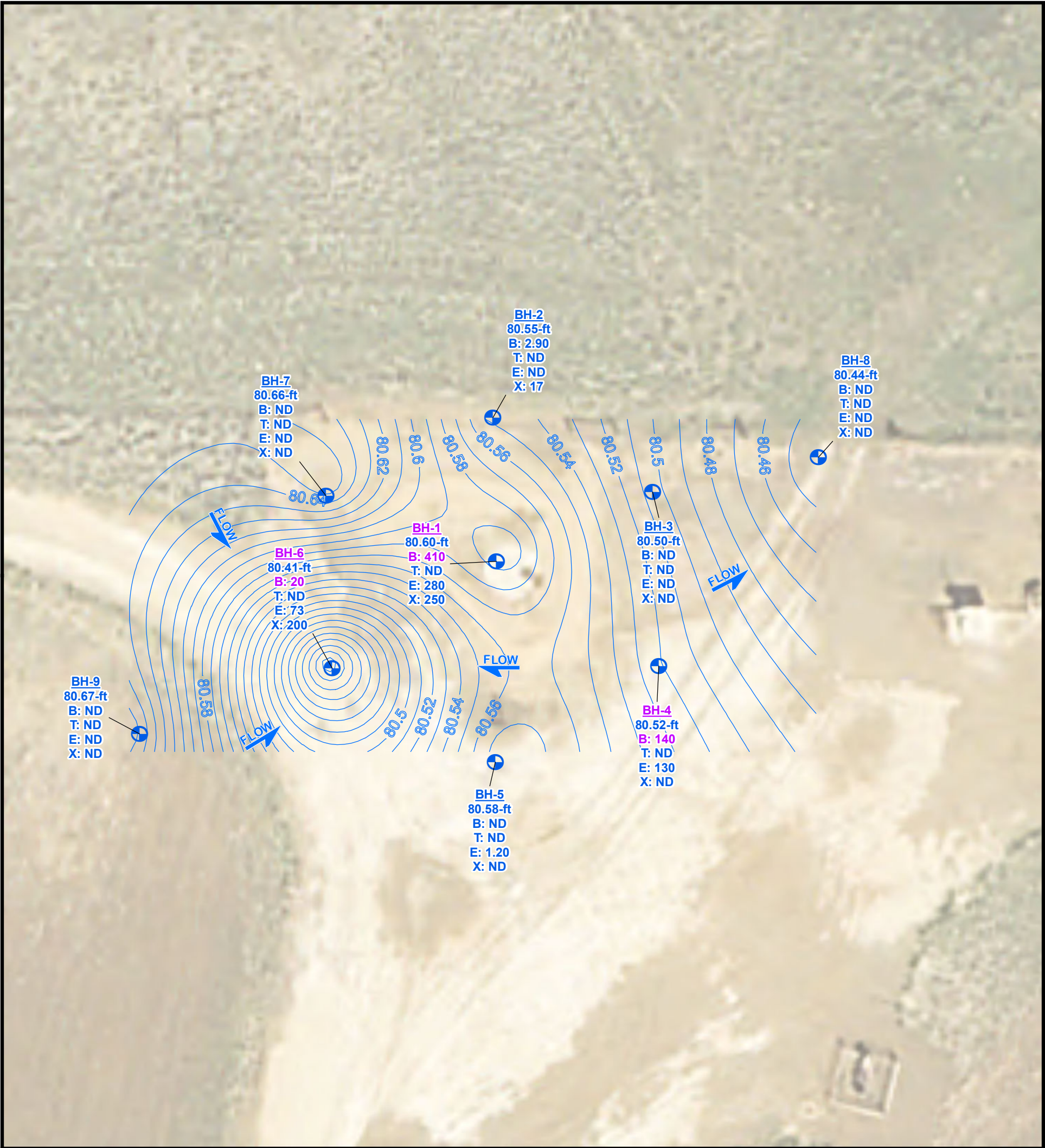
Laboratory Results Summary Table - Groundwater Morrison 33-1 4

			Organic Compounds (µg/L)			
COGCC Allowable Concentration (Water)			5	1,000	700	10,000
Location	Sample Date	Sample ID	Benzene	Toluene	Ethylbenzene	Xylenes - total
Morrison 33-1	10/25/18	BH01	410	<1	280	250
Morrison 33-1	10/25/18	BH02	2.9	<1	<1	17
Morrison 33-1	10/25/18	BH03	<1	<1	<1	<2
Morrison 33-1	10/25/18	BH04	140	<1	130	<2
Morrison 33-1	10/25/18	BH05	<1	<1	1.2	<2
Morrison 33-1	10/25/18	BH06	20	<1	73	200
Morrison 33-1	10/25/18	BH07	<1	<1	<1	<2
Morrison 33-1	10/25/18	BH08	<1	<1	<1	<2
Morrison 33-1	10/25/18	BH09	<1	<1	<1	<2
Morrison 33-1	2/27/19	BH01	26	<1	7.2	<2
Morrison 33-1	2/27/19	BH02	6	<1	3.5	<2
Morrison 33-1	2/27/19	BH04	45	<1	1.5	<2
Morrison 33-1	2/27/19	BH06	1.3	<1	<1	<2
Morrison 33-1	2/27/19	BH08	<1	<1	<1	<2
Morrison 33-1	5/30/19	BH01	17	<1	3.9	<2
Morrison 33-1	5/30/19	BH02	<1	<1	<1	<2
Morrison 33-1	5/30/19	BH03	<1	<1	<1	<2
Morrison 33-1	5/30/19	BH04	450	1.3	64	<2
Morrison 33-1	5/30/19	BH05	<1	<1	<1	<2



Laboratory Results Summary Table - Groundwater Morrison 33-1 4

			Organic Compounds (µg/L)			
COGCC Allowable Concentration (Water)			5	1,000	700	10,000
Location	Sample Date	Sample ID	Benzene	Toluene	Ethylbenzene	Xylenes - total
Morrison 33-1	5/30/19	BH06	<1	<1	<1	<2
Morrison 33-1	5/30/19	BH07	<1	<1	<1	<2
Morrison 33-1	5/30/19	BH08	<1	<1	<1	<2
Morrison 33-1	5/30/19	BH09	<1	<1	<1	<2
Morrison 33-1	9/6/19	BH01	16	<1	<1	<2
Morrison 33-1	9/6/19	BH02	<1	<1	<1	<2
Morrison 33-1	9/6/19	BH03	<1	<1	<1	<2
Morrison 33-1	9/6/19	BH04	7.1	<1	<1	<2
Morrison 33-1	9/6/19	BH06	<1	<1	<1	<2
Morrison 33-1	9/6/19	BH07	<1	<1	<1	<2
Morrison 33-1	9/6/19	BH08	<1	<1	<1	<2
Morrison 33-1	9/6/19	BH09	<1	<1	<1	<2
Morrison 33-1	10/4/19	BH10	<1	<1	<1	<2
Morrison 33-1	10/4/19	BH11	<1	<1	<1	<2



Extraction Oil & Gas
Morrison 33-1 4 (EAST)
COGCC Location ID: 320318
Temporary Monitoring Well Layout &
GW Elevations for the
10/25/2018 Sampling Event

Legal Description: NWSE, Sec 1, T1S R68W
County: Adams
Land Use: Cropland
Topography: 0-3% Slopes
Run-Off Risk: Low
Soil Type: Arvada loam
Receiving Waters: Big Dry Creek



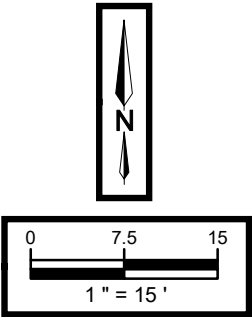
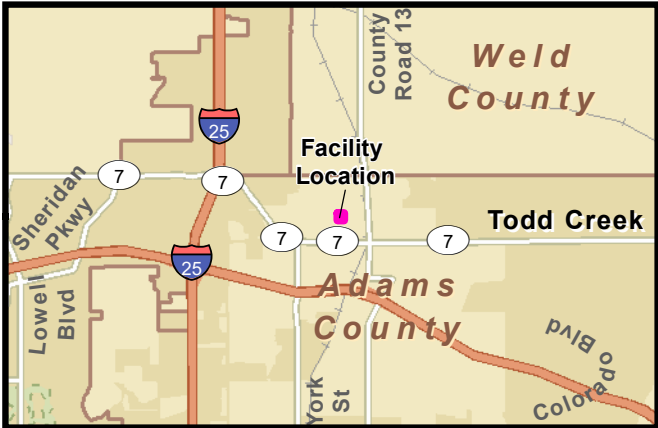
BH-1
80.60-ft

Temp. Monitoring
Well Location &
Relative GW
Elevation

FLOW

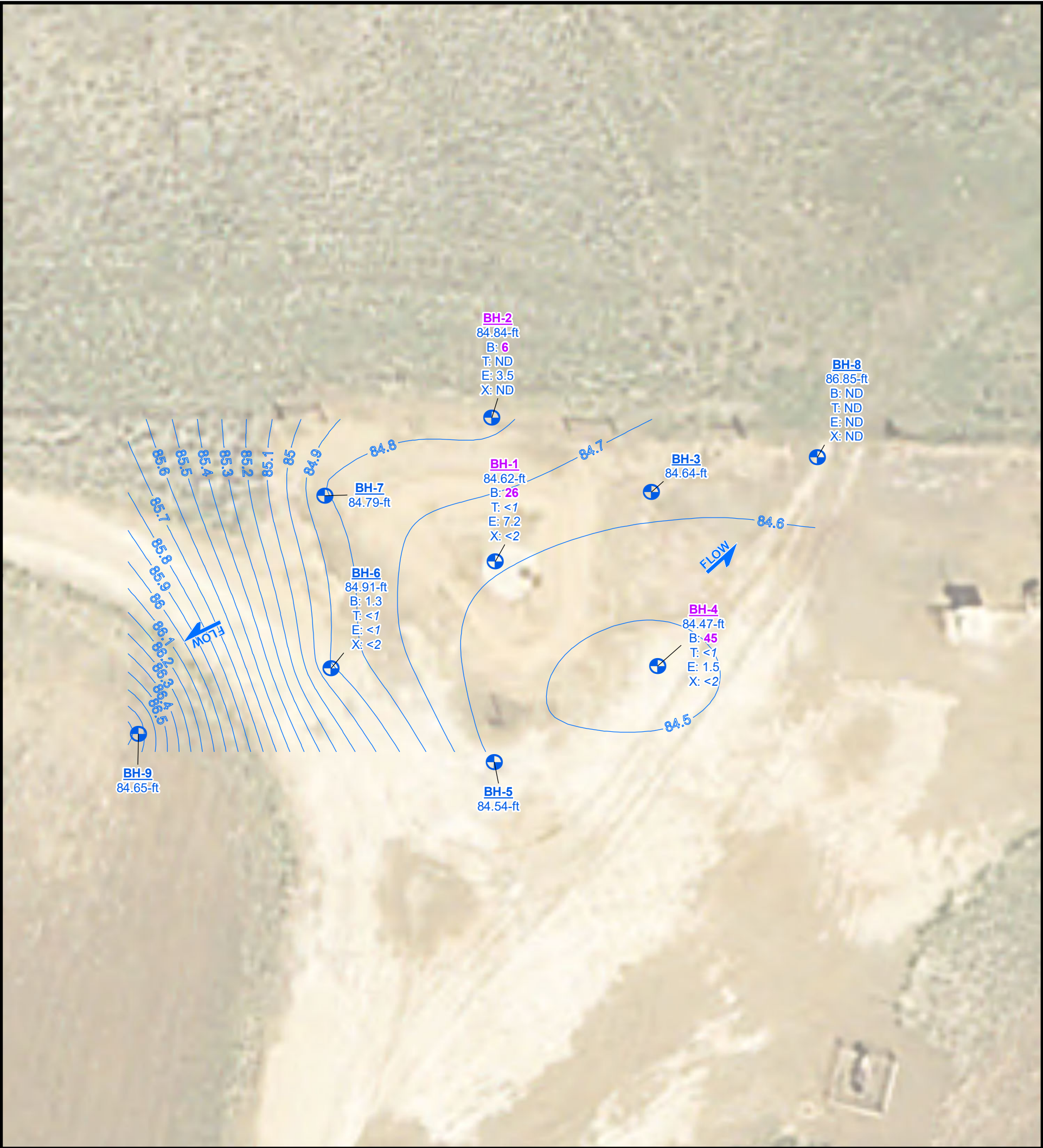
Estimated
Groundwater Flow
Direction

* Sample ID in Purple font
indicates a regulatory
exceedance.



Sample ID	Latitude NAD83	Longitude NAD 83
BH-1	39.991684	-104.947656
BH-2	39.991743	-104.947658
BH-3	39.991713	-104.947574
BH-4	39.991642	-104.947570
BH-5	39.991603	-104.947657
BH-6	39.991641	-104.947743
BH-7	39.991711	-104.947747
BH-8	39.991727	-104.947486
BH-9	39.991614	-104.947845

Spatial data collected for this project was acquired using a GPS with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. To accurately reflect field conditions, illustrated data may have been manually corrected in order to fit with the aerial imagery reference points and other collected data points.



Extraction Oil & Gas
Morrison 33-1 4 (EAST)
COGCC Location ID: 320318
Temporary Monitoring Well Layout &
GW Elevations for the
2/27/2019 Sampling Event

Legal Description: NWSE, Sec 1, T1S R68W
County: Adams
Land Use: Cropland
Topography: 0-3% Slopes
Run-Off Risk: Low
Soil Type: Arvada loam
Receiving Waters: Big Dry Creek

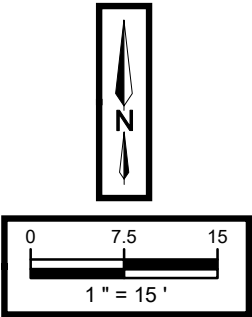
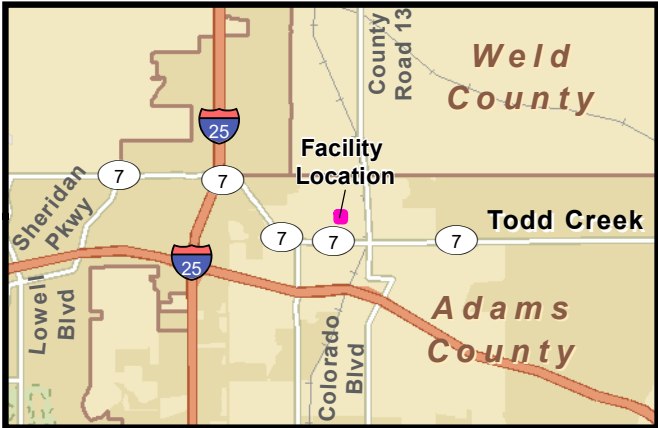


- BH-1**
80.60-ft
- Temp. Monitoring Well Location & Relative GW Elevation
- Estimated Groundwater Contour
- Estimated Groundwater Flow Direction

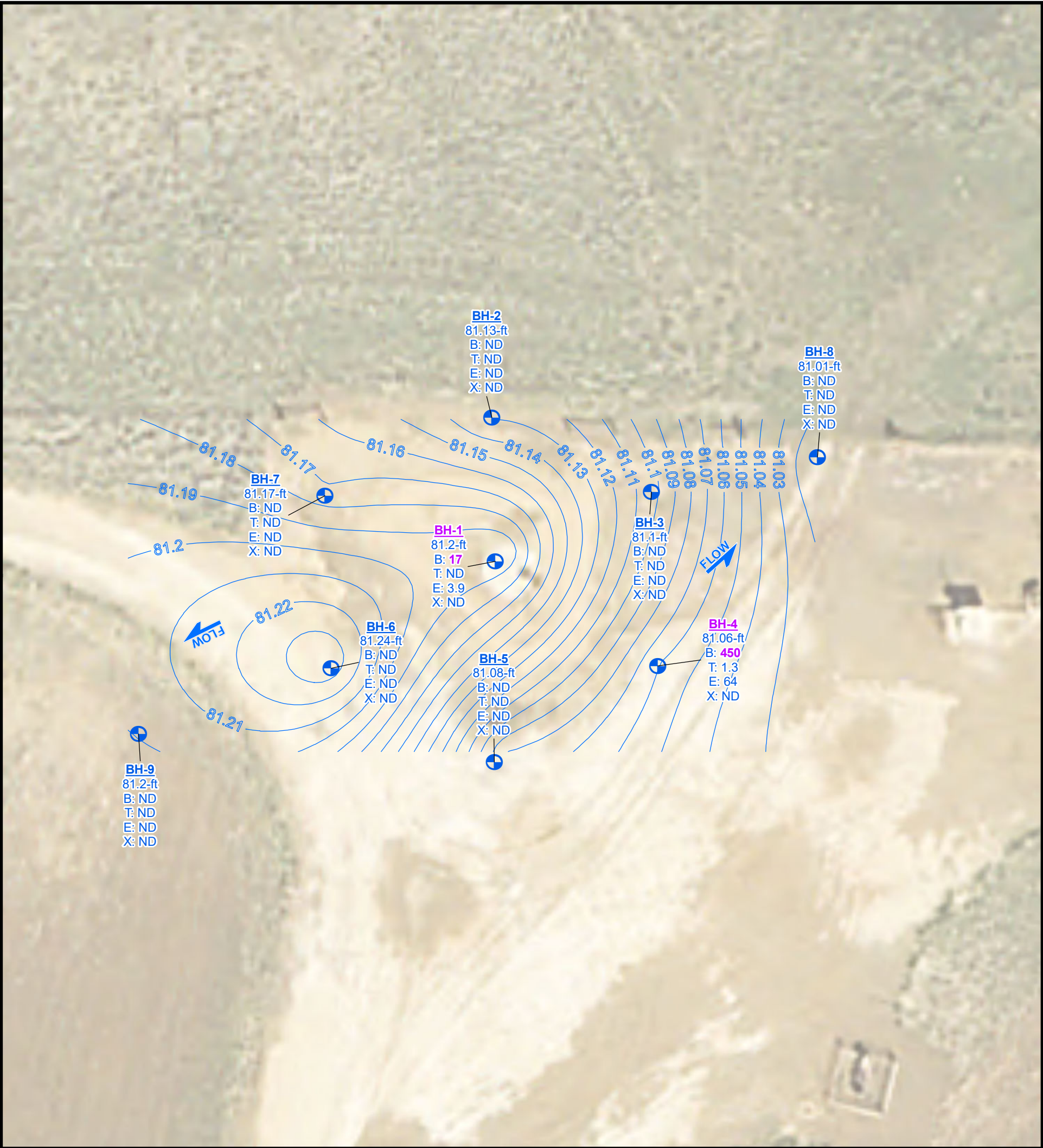
* Sample ID in Purple font indicates a regulatory exceedance.

* Organic Compounds in ug/L

Sample ID	Latitude NAD83	Longitude NAD 83
BH-1	39.991684	-104.947656
BH-2	39.991743	-104.947658
BH-3	39.991713	-104.947574
BH-4	39.991642	-104.947570
BH-5	39.991603	-104.947657
BH-6	39.991641	-104.947743
BH-7	39.991711	-104.947747
BH-8	39.991727	-104.947486
BH-9	39.991614	-104.947845



Spatial data collected for this project was acquired using a GPS with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. To accurately reflect field conditions, illustrated data may have been manually corrected in order to fit with the aerial imagery reference points and other collected data points.



Extraction Oil & Gas
Morrison 33-1 4 (EAST)
COGCC Location ID: 320318
Temporary Monitoring Well Layout &
GW Elevations for the
5/30/2019 Sampling Event

Legal Description: NWSE, Sec 1, T1S R68W
County: Adams
Land Use: Cropland
Topography: 0-3% Slopes
Run-Off Risk: Low
Soil Type: Arvada loam
Receiving Waters: Big Dry Creek

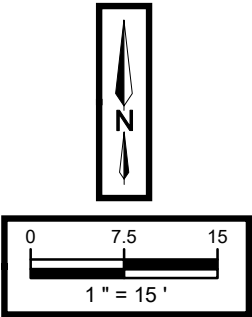
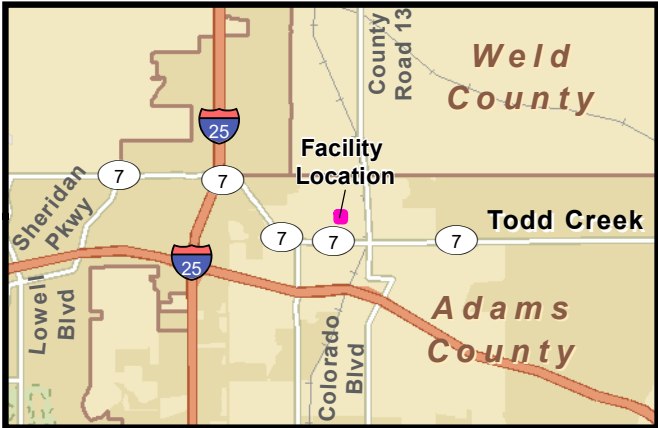


- BH-1**
80.60-ft
- Temp. Monitoring Well Location & Relative GW Elevation
- Estimated Groundwater Contour
- Estimated Groundwater Flow Direction

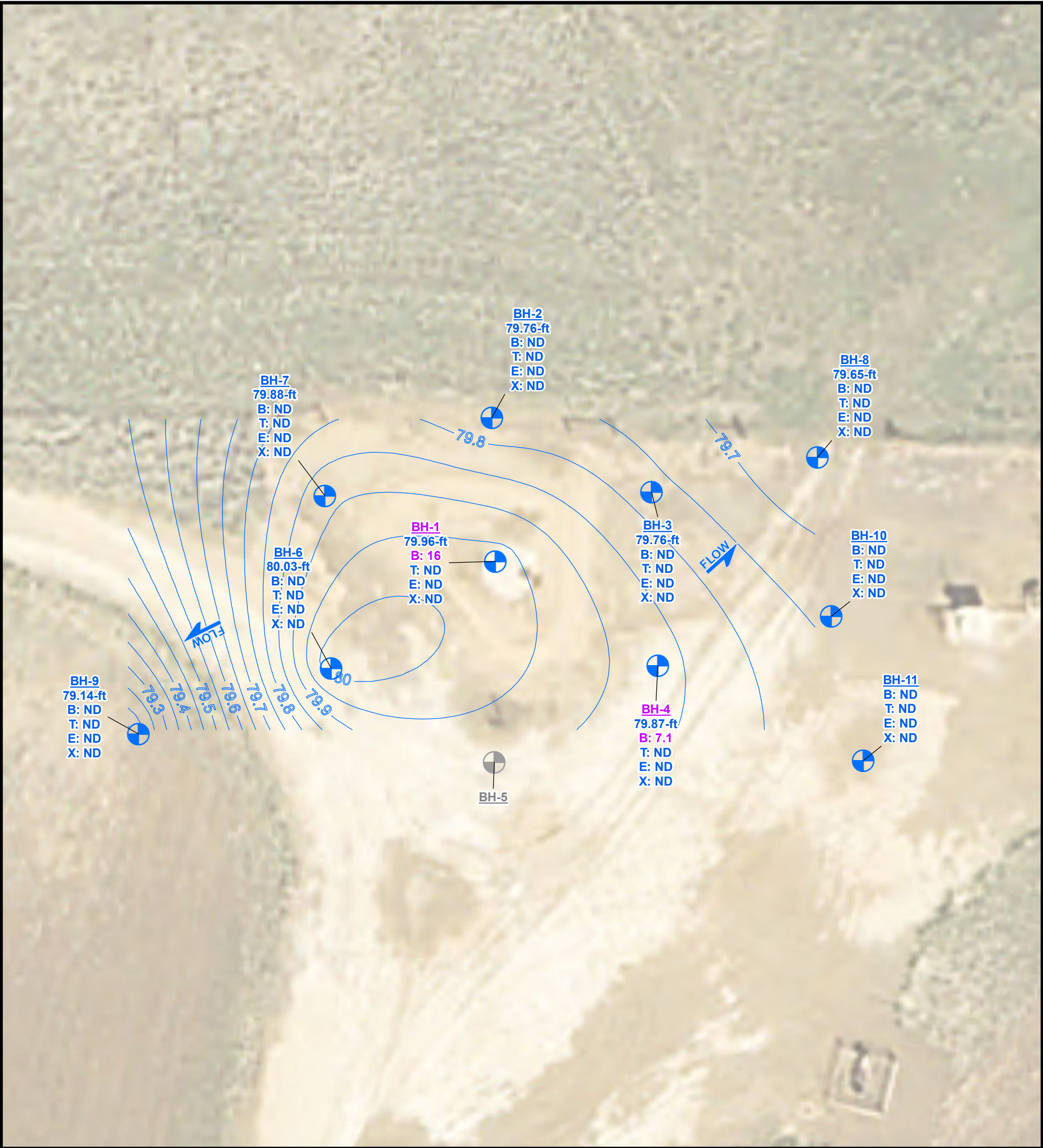
* Sample ID in Purple font indicates a regulatory exceedance.

* Organic Compounds in ug/L

Sample ID	Latitude NAD83	Longitude NAD 83
BH-1	39.991684	-104.947656
BH-2	39.991743	-104.947658
BH-3	39.991713	-104.947574
BH-4	39.991642	-104.947570
BH-5	39.991603	-104.947657
BH-6	39.991641	-104.947743
BH-7	39.991711	-104.947747
BH-8	39.991727	-104.947486
BH-9	39.991614	-104.947845

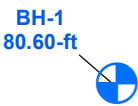


Spatial data collected for this project was acquired using a GPS with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. To accurately reflect field conditions, illustrated data may have been manually corrected in order to fit with the aerial imagery reference points and other collected data points.

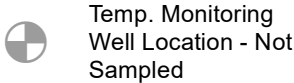


Extraction Oil & Gas
Morrison 33-1 4 (EAST)
COGCC Location ID: 320318
Temporary Monitoring Well layout & GW Elevations for the 9/6/2019 and 10/4/2019 Sampling Events

Legal Description: NWSE, Sec 1, T1S R68W
County: Adams
Land Use: Cropland
Topography: 0-3% Slopes
Run-Off Risk: Low
Soil Type: Arvada loam
Receiving Waters: Big Dry Creek



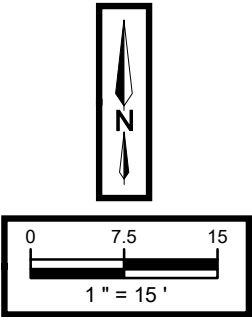
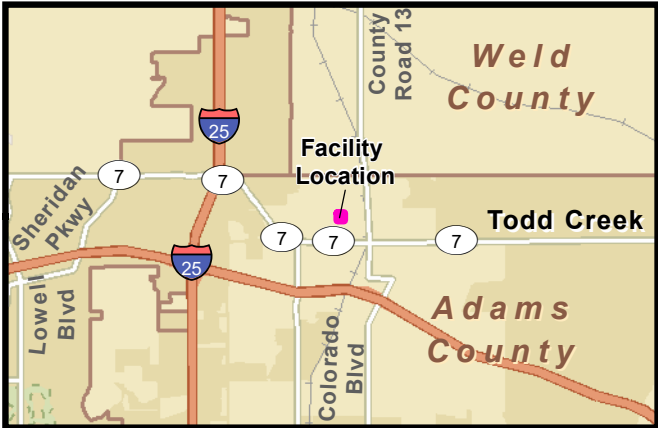
Temp. Monitoring Well Location & Relative GW Elevation; BH-2; BH-3; BH-4; BH-6; BH-7; BH-8; BH-9; BH-10; BH-11



Estimated Groundwater Contour
Estimated Groundwater Flow Direction

* Sample ID in Purple font indicates a regulatory exceedance.

* Organic Compounds in ug/L
ND - Non-Detect



Sample ID	Latitude NAD83	Longitude NAD 83
BH-1	39.991684	-104.947656
BH-2	39.991743	-104.947658
BH-3	39.991713	-104.947574
BH-4	39.991642	-104.947570
BH-5	39.991603	-104.947657
BH-6	39.991641	-104.947743
BH-7	39.991711	-104.947747
BH-8	39.991727	-104.947486
BH-9	39.991614	-104.947845
BH-10	39.991662	-104.947479
BH-11	39.991603	-104.947462

Spatial data collected for this project was acquired using a GPS with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. To accurately reflect field conditions, illustrated data may have been manually corrected in order to fit with the aerial imagery reference points and other collected data points.

Attachment A

Boring Logs

Additional Information:



Well Completion Detail

Street Box
Diam. = _____

Surveyed Dif.
Btwn. GS and
TOC

Grout

Bentonite
Type - _____

Sand Pack

Screen

* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

WELL CONSTRUCTION LOG

Project 744-1804.01-
Number 320318

Well
Number BTH

Drilling Summary

Total Depth of Hole: 10'
Hole Diameter: _____
Drilling Company: Drill Pro
Driller: _____
Rig Type: _____
Bits: _____
Geologist: Sage Maher

Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>10/25/18</u>	<u>1100</u>	<u>10/25/18</u>	_____
Well Completion:	_____	_____	_____	_____
Grouting:	_____	_____	_____	_____

Depth to Water (Below TOC)

Depth: _____ Date: 10/25/18 Time: _____

Well Construction Materials

	Grout	Seals	Filter
Quantity:	_____	_____	_____
Type:	_____	_____	_____

	Screen	
Size:	<u>10'</u>	Config.: <u>5x40</u>
Area/Ft.:	_____	Comp.: <u>PVC</u>
Inside Diam.:	_____	Outside Diam.: _____

Comments



Boring Location Sketch

SOIL BORING LOG

Project Number

744.1604.01

Boring Number

BH2

Sheet

1 of 1



N

Project ExtractionLocation Morrison 33-1-41568W 1NWSE

Drilling Method & Equipment

Direct Push W/DPDTDrilling Contractor Drill ProDate 10/25/18Water Level ~6Start 1227Finish 1255Logger S. Maher

Depth Below Surface	Sample			Standard Penetration Test Results	Soil Description USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content, Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor	Symbol of USCS Log	Staining	PID Readings (ppm)	PID Reading Depths (bgs)
	Interval	Depth/Time	Recovery						
				6"/6"/6"/6"					
6					hydrovae to 6'				
7					6-7' black sandy clay vfg-vcg, saturated, med plastic, med dense, staining + odor	CL	Y	18.2	6
10					7-10' light grey poorly sorted sand, loose, saturated, staining + odor	SP	Y	7.0	8
12					* color changes @ 9' to med brown			2.2	10
13					10-12' light grey sandy clay, vfg-vcg, very dense, med plastic, staining + odor	CL	Y	5.8	12
14					12'-13' poorly sorted sand, med brown, loose, saturated, no odor or stain	SP	N	0.8	14
					13-14' med brown sandy clay, very dense, med plastic no odor or staining vfg-vcg	CL	N		
Total Depth(s) =				Soil Sample(s):	Rationale		Additional Information:		
14				2	High PID @ 6' Bottom @ 14'				



Well Completion Detail

Street Box
Diam. = _____

Surveyed Dif.
Btwn. GS and
TOC

Grout

Bentonite
Type - _____

Sand Pack

Screen

* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

WELL CONSTRUCTION LOG

Project 744.1804.01-
Number 320318

Well
Number BH2

Drilling Summary

Total Depth of Hole: 141
Hole Diameter: _____
Drilling Company: Drill Pro
Driller: _____
Rig Type: _____
Bits: _____
Geologist: Sage Maher

Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>10/25/18</u>	<u>1227</u>	_____	_____
Well Completion:	_____	_____	_____	_____
Grouting:	_____	_____	_____	_____

Depth to Water (Below TOC)

Depth: _____ Date: 10/25/18 Time: _____

Well Construction Materials

	Grout	Seals	Filter
Quantity:	_____	_____	_____
Type:	_____	_____	_____

	Screen
Size:	<u>10'</u>
Area/Ft.:	_____
Inside Diam.:	_____
Config.:	<u>3CH 40'</u>
Comp.:	<u>PVC</u>
Outside Diam.:	_____

Comments



Boring Location Sketch

SOIL BORING LOG

Project Number

Boring Number

Sheet

744.1804.01

BH3

1 of 1

Project ExtractionLocation Morrison 33-1-UISUBW INWSE

Drilling Method & Equipment

Direct Push 66205Drilling Contractor Drill ProDate 10/25/18Water Level ~6'Start 1259Finish 1342Logger S. Maher

Depth Below Surface	Sample			Standard Penetration Test Results	Soil Description USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content, Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor	Symbol of USCS Log	Staining	PID Readings (ppm)	PID Reading Depths (bgs)
	Interval	Depth/Time	Recovery						
				6" 6" 6" 6"					
					hydrovac to 6'				
6								0.0	6
								0.0	8
10					4-10' clayey sand med brown, vfg-veg, very loose, low plasticity w/ lenses of poorly sorted sand (vfg-veg), saturated	SC	N	0.0	10
12								0.4	12
					10-12' gravelly sandy clay, grey with orange mottles, med plastic, very dense, no staining or odor, saturated	#4	N		
Total Depth(s) =				Soil Sample(s):		Rationale		Additional Information:	
12						8' High PD 12' Base		6' sample too saturated	



Well Completion Detail

Street Box
Diam. = _____

Surveyed Dif.
Btwn. GS and
TOC

Grout

Bentonite
Type - _____

Sand Pack

Screen

* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

WELL CONSTRUCTION LOG

Project 744.1804.01-
Number 3203.8

Well
Number BH3

Drilling Summary

Total Depth of Hole: 12'
Hole Diameter: _____
Drilling Company: Drill Pro
Driller: _____
Rig Type: _____
Bits: _____
Geologist: Sage Maher

Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>10/25/18</u>	<u>1259</u>	_____	_____
Well Completion:	_____	_____	_____	_____
Grouting:	_____	_____	_____	_____

Depth to Water (Below TOC)

Depth: _____ Date: _____ Time: _____

Well Construction Materials

	Grout	Seals	Filter
Quantity:	_____	_____	_____
Type:	_____	_____	_____

	Screen	
Size:	<u>10'</u>	Config.: <u>3in 40</u>
Area/Ft.:	_____	Comp.: <u>PVC</u>
Inside Diam.:	_____	Outside Diam.: _____

Comments



Boring Location Sketch

SOIL BORING LOG

Project Number Boring Number Sheet

744.1804.01

BH4

1 of 1

Project Extraction Location Marion 33-1-WISW 1NWSEDrilling Method & Equipment WZODT Direct Push Drilling Contractor DrillProDate 10/25/18 Water Level ~4' Start 1142 Finish 1154 Logger S. Maher

Depth Below Surface	Sample			Standard Penetration Test Results	Soil Description USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content, Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor	Symbol of USCS Log	Staining	PID Readings (ppm)	PID Reading Depths (bgs)
	Interval	Depth/Time	Recovery						
				6" / 6" / 6" / 6"					
					hydrovac to 8' due to GW * GW interface < 6'				
8					8-12' poorly sorted sand vfg-vcg, loose, saturated * 8-9' is light gray + 9-12' is med. brown	SP		7.9 - 8 0.0 - 10 0.1 - 12	
12									
Total Depth(s) =				Soil Sample(s):	Rationale		Additional Information:		
12'				2	High PID @ 8' Bottom @ 12'				

Morrison 33-1-01868W 1NWSE



Well Completion Detail

Street Box
Diam. = _____

Surveyed Dif.
Btwn. GS and
TOC

Grout

Bentonite
Type - _____

Sand Pack

Screen

* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

WELL CONSTRUCTION LOG

Project 744-1804.01
Number 320318

Well
Number BH4

Drilling Summary

Total Depth of Hole: 12'
Hole Diameter: _____
Drilling Company: _____
Driller: Drill Pro
Rig Type: _____
Bits: _____
Geologist: Sage Maher

Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>10/25/18</u>	<u>1142</u>	_____	_____
Well Completion:	_____	_____	_____	_____
Grouting:	_____	_____	_____	_____

Depth to Water (Below TOC)

Depth: _____ Date: 10/25/18 Time: _____

Well Construction Materials

	Grout	Seals	Filter
Quantity:	_____	_____	_____
Type:	_____	_____	_____

	Screen	
Size:	<u>10'</u>	Config.: <u>Sch 40</u>
Area/Ft.:	_____	Comp.: <u>PVC</u>
Inside Diam.:	_____	Outside Diam.: _____

Comments



Boring Location Sketch

SOIL BORING LOG

Project Number

Boring Number

Sheet

744-1804.01

BH5

1 of 1

Project ExtractionLocation Morrison 33-1-41508 W 1NWSEDrilling Method & Equipment Direct Push 1020 PTDrilling Contractor Drill ProDate 10/25/18 Water Level ~6Start 1131Finish 1140Logger S. Maher

Depth Below Surface	Sample			Standard Penetration Test Results	Soil Description USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor	Symbol of USCS Log	Staining	PID Readings (ppm)	PID Reading Depths (bgs)
	Interval	Depth/Time	Recovery						
				6" / 6" / 6" / 6"					
					hydrovac to 6'				
					*GW @ ~7'			6.1	6
6					6-11' poorly sorted sand, med brown, vfg-veg, loose saturated, no odor or stain	SP	N	1.3	8
11					11-12' sandy clay, med brown, vfg-veg, very dense, med plastic, no odor or stain, sat.	CL	N	1.4	10
12								0.4	12
Total Depth(s) =				Soil Sample(s):		Rationale		Additional Information:	
12						High PID @ 6'			
						Base @ 12			



Well Completion Detail

Street Box
Diam. = _____

Surveyed Dif.
Btwn. GS and
TOC

Grout

Bentonite
Type - _____

Sand Pack

Screen

* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

WELL CONSTRUCTION LOG

Project
Number

BH5

Well 744-1804-10
Number 320318

Drilling Summary

Total Depth of Hole: 12'
Hole Diameter: _____
Drilling Company: DrillPro
Driller: _____
Rig Type: _____
Bits: _____
Geologist: Sage Maher

Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>10/25/18</u>	<u>1131</u>		
Well Completion:				
Grouting:				

Depth to Water (Below TOC)

Depth: _____ Date: 10/25/18 Time: _____

Well Construction Materials

	Grout	Seals	Filter
Quantity:	_____	_____	_____
Type:	_____	_____	_____
	Screen		
Size:	<u>10'</u>	Config.: <u>SCN 40</u>	
Area/Ft.:	_____	Comp.: <u>PVC</u>	
Inside Diam.:	_____	Outside Diam.:	_____

Comments



Boring Location Sketch

SOIL BORING LOG

Project Number Boring Number Sheet

7441.1804.01

BAG

1 of 1

Project ExtractionLocation Morrison 33-1-61568W 1NWSEDrilling Method & Equipment Direct Push UG20DT Drilling Contractor Drill ProDate 10/25/18 Water Level ~6' Start 1050 Finish 1104 Logger S. Maher

Depth Below Surface	Sample			Standard Penetration Test Results	Soil Description USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content, Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor	Symbol of USCS Log	Staining	PID Readings (ppm)	PID Reading Depths (bgs)
	Interval	Depth/Time	Recovery						
				6" / 6" / 6" / 6"					
					Hydrovac to 8'				
8					8-9' grey clayey sand vfg - vcg. Med. plastic, low density, saturated odor & staining	SC	Y	0.1	6
9								94.9	8
12					9-12' med brown poorly sorted sand. vfg - vcg low plastic, low dense, loose, saturated	SP	N	13.2	10
								3.0	12
								0.3	14
Total Depth(s) =				Soil Sample(s):	Rationale		Additional Information:		
14				1	High PID @ 8' Bgs @ 12' Sw int in hydrovac				



Well Completion Detail

Street Box
Diam. = _____

Surveyed Dif.
Btwn. GS and
TOC

Grout

Bentonite
Type - _____

Sand Pack

Screen

* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

WELL CONSTRUCTION LOG

Project 744.1804.01
Number 320318

Well
Number BHLE

Drilling Summary

Total Depth of Hole: 14'
Hole Diameter: _____
Drilling Company: Drill Pro
Driller: _____
Rig Type: _____
Bits: _____
Geologist: Sage Maher

Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>10/25/18</u>	<u>1050</u>	_____	_____
Well Completion:	_____	_____	_____	_____
Grouting:	_____	_____	_____	_____

Depth to Water (Below TOC)

Depth: _____ Date: 10/25/18 Time: _____

Well Construction Materials

	Grout	Seals	Filter
Quantity:	_____	_____	_____
Type:	_____	_____	_____
	Screen		
Size:	<u>10'</u>	Config.: <u>Sch 40</u>	
Area/Ft.:	_____	Comp.: <u>PVC</u>	
Inside Diam.:	_____	Outside Diam.:	_____

Comments



Boring Location Sketch

SOIL BORING LOG

Project Number Boring Number Sheet

744.1804.01

BH 7

1 of 1

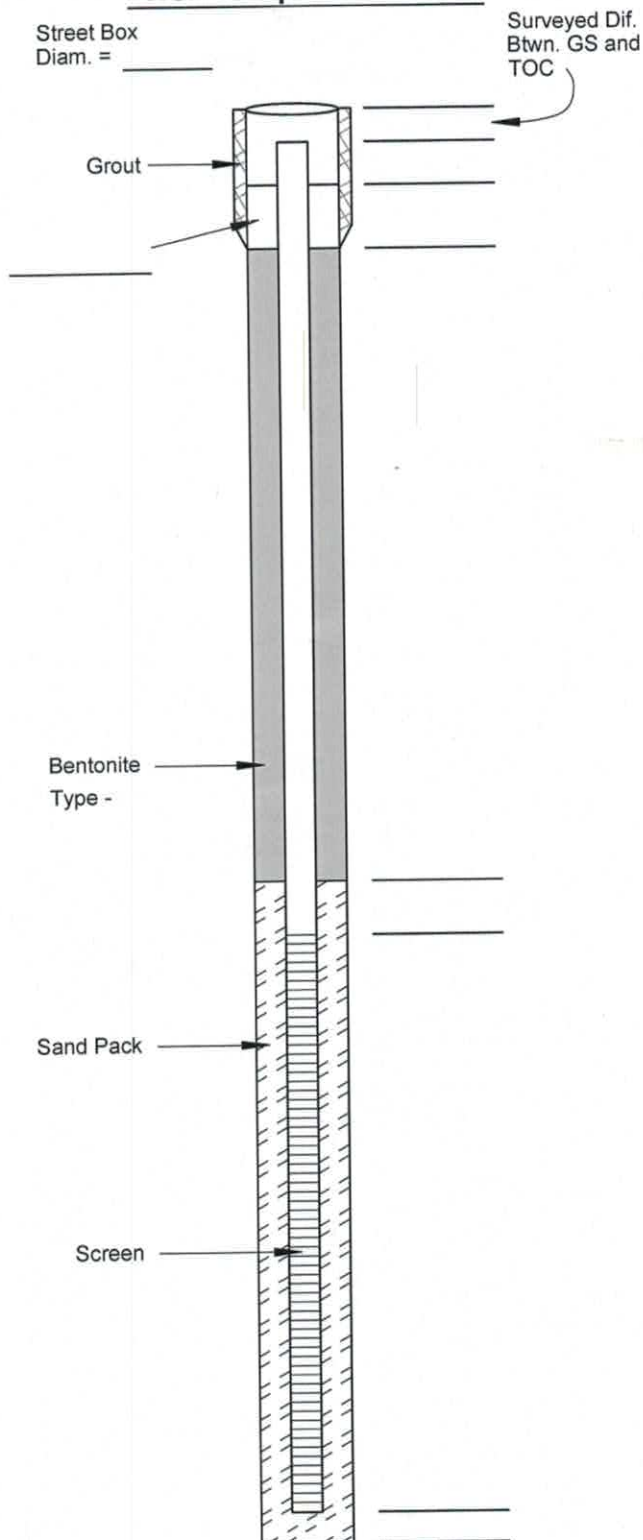
Project ExtractionLocation Morrison 33-1-61568W 1NWSEDrilling Method & Equipment Direct Push 6020DTDrilling Contractor DrillProDate 10/25/18Water Level -6'Start 1015Finish 1045Logger R. Finley

Depth Below Surface	Sample			Standard Penetration Test Results	Soil Description USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content, Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor	Symbol of USCS Log	Staining	PID Readings (ppm)	PID Reading Depths (bgs)
	Interval	Depth/Time	Recovery						
				6" 6" 6" 6"					
					Hydrovac to 6'			0.1	4
					*GW interface			3.7	7
8					6-8' m-d bwn clayey sand vfg-fg. high plastic, low dense moist to saturated no odor	SC	N	0.0	8
11					8-11' m bwn poorly sorted sand vfg-vcg low plastic, loose	SP	N	1.1	10
13					11-13' saturated			0.8	12
15					11-13' m grey sandy clay vfg-very dense, mid plastic	SC	N	0.0	14
					13-15' m bwn poorly sorted sand vfg-vcg low plastic, loose	SP	N		
Total Depth(s) =				Soil Sample(s):		Rationale:		Additional Information:	
15'				2		*GW interface @ 7' High PID @ 10'			

Monrovia 33-1-61868W 1NWSE



Well Completion Detail



* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC =

WELL CONSTRUCTION LOG

Project 744-1804.01
Number 320318

Well Number BH7

Drilling Summary

Total Depth of Hole: 15'
Hole Diameter: _____
Drilling Company: Drill Pro
Driller: [Signature]
Rig Type: _____
Bits: _____
Geologist: Sage Maher

Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>10/25/18</u>	<u>1015</u>		
Well Completion:				
Grouting:				

Depth to Water (Below TOC)

Depth: _____ Date: 10/25/18 Time: _____

Well Construction Materials

	Grout	Seals	Filter
Quantity:			
Type:			

	Screen	
Size:	<u>10'</u>	Config.: <u>Sch 40</u>
Area/Ft.:		Comp.: <u>PVC</u>
Inside Diam.:		Outside Diam.:

Comments



Boring Location Sketch

SOIL BORING LOG

Project Number

Boring Number

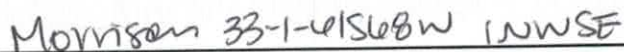
Sheet

744-1804.01 BHTB

1 of 1

Project ExtractionLocation Morrison 33-1-61S 68W 1NWSEDrilling Method & Equipment Direct Push 4420DTDrilling Contractor Drill ProDate 10/25/16 Water Level N/A Start 1205 Finish 1225 Logger S. Maher

Depth Below Surface	Sample			Standard Penetration Test Results 6"/6"/6"/6"	Soil Description USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor	Symbol of USCS Log	Staining	PID Readings (ppm)	PID Reading Depths (bgs)
	Interval	Depth/Time	Recovery						
8					improve to 8'			0.0	8
11					8-11' med brown poorly sorted sand, vfg-veg, loose, saturated, no odor or staining	SP	N	0.1	10
12					11-12' med brown sandy clay, vfg-veg, very dense, med. plastic, no odor or staining	CL	N	0.0	12
Total Depth(s) =				Soil Sample(s):		Rationale		Additional Information:	
12				2		High PID @ 10 Base @ 12			



WELL CONSTRUCTION LOG

Surveyed Dif.
Btwn. GS and
TOC

Grout

Bentonite
Type -

Sand Pack

Screen

* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC =

Drilling Summary

Total Depth of Hole: 12'

Hole Diameter:

Drilling Company: Drill Pro

Driller:

Rig Type:

Bits:

Geologist: Sage Maher

Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>10/25/18</u>	<u>1205</u>	_____	_____
Well Completion:	_____	_____	_____	_____
Grouting:	_____	_____	_____	_____

Depth to Water (Below TOC)

Depth: _____ Date: 10/25/18 Time: _____

Well Construction Materials

	Grout	Seals	Filter
Quantity:	_____	_____	_____
Type:	_____	_____	_____

Screen

Size: 10' Config.: Sch 40

Area/Ft.: _____ Comp.: PVC

Inside Diam.: _____ Outside Diam.: _____

Comments

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or printed text on the paper. A small, dark speck is visible near the bottom left corner.



Boring Location Sketch

SOIL BORING LOG

Project Number 744.1804.01 Boring Number BH 9 Sheet 1 of 1Project Extraction Location Morrison 33-1-0150BW INWSEDrilling Method & Equipment Direct Push w/20PT Drilling Contractor Drill ProDate 10/25/18 Water Level N/C Start 1352 Finish 1415 Logger S. Maher

Depth Below Surface	Sample			Standard Penetration Test Results	Soil Description USCS Group Symbol, Name, Gradation or Plasticity, Particle Size Distribution, Color, Moisture Content Relative Density or Consistency, Soil Structure, Mineralogy, Stain or Odor	Symbol of USCS Log	Staining	PID Readings (ppm)	PID Reading Depths (bgs)
	Interval	Depth/Time	Recovery						
0				6"/6"/6"/6"	hand augered to 6'				
6					6-8' med brown clayey sand, loose, med plastic (vfg-veg) saturated	SC	N	0.0	6
8					8-10' poorly sorted sand vfg-veg (med brown) loose, saturated	SP	N	0.0	8
10								0.0	10
12					10-12' sandy clay, med brown, very dense, med plastic w/ sand lens (moderately sorted, med. grain), sat.	CL	N	0.0	12
Total Depth(s) =				Soil Sample(s):		Rationale		Additional Information:	
12				2		8 for clearance 12 for base			



Well Completion Detail

Street Box
Diam. = _____

Surveyed Dif.
Btwn. GS and
TOC

Grout

Bentonite
Type - _____

Sand Pack

Screen

* Measuring Point is Below Ground Surface (bgs)

Total Depth from TOC = _____

WELL CONSTRUCTION LOG

Project 744-1804-01
Number 320318

Well
Number BH9

Drilling Summary

Total Depth of Hole: 12'
Hole Diameter: _____
Drilling Company: Drill Pro
Driller: Tennant
Rig Type: W420DT
Bits: Direct Push
Geologist: Sage Maher

Time Log

	Start		Finish	
	Date	Time	Date	Time
Drilling:	<u>10/25/18</u>	<u>1352</u>	_____	_____
Well Completion:	_____	_____	_____	_____
Grouting:	_____	_____	_____	_____

Depth to Water (Below TOC)

Depth: _____ Date: 10/25/18 Time: _____

Well Construction Materials

	Grout	Seals	Filter
Quantity:	_____	_____	_____
Type:	_____	_____	_____

	Screen	
Size:	<u>10 Slot</u>	Config.: <u>Sch 40</u>
Area/Ft.:	<u>10'</u>	Comp.: <u>PVC</u>
Inside Diam.:	_____	Outside Diam.: _____

Comments

Attachment B

Laboratory Analytical Reports

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 02, 2018

Maggie Graham

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Morrison 33-1

Enclosed are the results of analyses for samples received by Summit Scientific on 10/25/18 18:05. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH7@7	1810324-01	Soil	10/25/18 10:45	10/25/18 18:05
BH7@10	1810324-02	Soil	10/25/18 10:48	10/25/18 18:05
BH6@8	1810324-03	Soil	10/25/18 11:02	10/25/18 18:05
BH6@12	1810324-04	Soil	10/25/18 11:04	10/25/18 18:05
BH1@6	1810324-05	Soil	10/25/18 11:28	10/25/18 18:05
BH1@16	1810324-06	Soil	10/25/18 11:35	10/25/18 18:05
BH5@6	1810324-07	Soil	10/25/18 11:49	10/25/18 18:05
BH5@12	1810324-08	Soil	10/25/18 11:51	10/25/18 18:05
BH4@8	1810324-09	Soil	10/25/18 11:59	10/25/18 18:05
BH4@12	1810324-10	Soil	10/25/18 12:01	10/25/18 18:05
BH8@12	1810324-11	Soil	10/25/18 12:22	10/25/18 18:05
BH8@10	1810324-12	Soil	10/25/18 12:23	10/25/18 18:05
BH2@14	1810324-13	Soil	10/25/18 12:49	10/25/18 18:05
BH2@6	1810324-14	Soil	10/25/18 12:54	10/25/18 18:05
BH3@12	1810324-15	Soil	10/25/18 13:44	10/25/18 18:05
BH3@8	1810324-16	Soil	10/25/18 13:46	10/25/18 18:05
BH9@8	1810324-17	Soil	10/25/18 14:18	10/25/18 18:05
BH9@12	1810324-18	Soil	10/25/18 14:20	10/25/18 18:05
BH01	1810324-19	Water	10/25/18 15:08	10/25/18 18:05
BH02	1810324-20	Water	10/25/18 14:31	10/25/18 18:05
BH03	1810324-21	Water	10/25/18 14:51	10/25/18 18:05
BH04	1810324-22	Water	10/25/18 14:57	10/25/18 18:05
BH05	1810324-23	Water	10/25/18 14:48	10/25/18 18:05
BH06	1810324-24	Water	10/25/18 14:38	10/25/18 18:05
BH07	1810324-25	Water	10/25/18 15:01	10/25/18 18:05
BH08	1810324-26	Water	10/25/18 15:03	10/25/18 18:05
BH09	1810324-27	Water	10/25/18 15:15	10/25/18 18:05

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

Summit Scientific

A handwritten signature in black ink, appearing to be 'MSM'.

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.

Summit Scientific

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310 • 303-374-5933 Fax

1810324.1

Page 1 of 3

Client: APEX Companies, LLC

Address: 176 Cole Blvd. Suite 250

City/State/Zip: Lakewood, Colorado 80101

Phone: 720-501-5065

Fax:

Sampler Name: Sage Maher & Ryan Finkes

Project Manager: Maggie Graham 720-501-5065

E-Mail: DenverRemediation@ApexCos.onmicrosoft.com

Project Name: MORRISON 33-1

Project Number: 2347-6000-930.88

				Preservative				Matrix		Analyze For:										Special Instructions	
Sample Description	Date Sampled	Time Sampled	Number of Containers	HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	TPH	BTEX								
BH7@7	10/25/18	1045	1			X			X			✓	✓								Call Maggie Graham with questions
BH2@10		1048	1																		
BH6@8		1102	1																		
BH10@12		1104	1																		
BH1@10		1128	1																		
BH7@16		1135	1																		
BH5@6		1149	1																		
BH5@12		1151	1																		
BH4@8		1159	1																		
BH4@12		1201	1																		
Relinquished by: <i>[Signature]</i>		Date/Time: 10/25/18 18:00		Received by: <i>[Signature]</i>		Date/Time: 10/25/18 18:00		Turn Around Time (Check)		Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>										Notes Circle applicable regulatory agency: COGCC/CDPHE	
Relinquished by: <i>[Signature]</i>		Date/Time: 10/25/18		Received by: <i>[Signature]</i>		Date/Time: 10-25-18 18:05		Sample Integrity:													
Relinquished by:		Date/Time:		Received in Lab by:		Date/Time:		Temperature Upon Receipt: 12.0													
								Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Client Name: XOG											

Summit Scientific

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310 ♦ 303-374-5933 Fax

1810324-2

Page 1 of 3

Client: APEX Companies, LLC

Address: 176 Cole Blvd. Suite 250

City/State/Zip: Lakewood, Colorado 80101

Phone: 720-501-5065

Fax:

Sampler Name: Sage Maher & Ryan Finley

Project Manager: Maggie Graham 720-501-5065

E-Mail: DenverRemediation@ApexCos.onmicrosoft.com

Project Name: Morrison 33-1

Project Number: 2347-6000-930.88

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	TPH	BTEX	RUSH! (same day)		
BH8@12	10/25/18	1222	1			X			X						Call Maggie Graham with questions Please <u>RUSH</u> * BH2@14 and BH2@6 (same day)	
BH8@10		1223	1													
BH2@14		1249	1													
BH2@6		1254	1													
BH3@12		1344	1													
BH3@8		1346	1													
BH9@8		1418	1													
BH9@12		1420	1													
Relinquished by: <i>[Signature]</i>				Date/Time: 10-25-18 18:00		Received by: <i>[Signature]</i>				Date/Time: 10-25-18 18:00		Turn Around Time (Check)				Notes Circle applicable regulatory agency: COGCC/CDPHE Client Name: <u>XOG</u>
Relinquished by: <i>[Signature]</i>				Date/Time: 10/25/18		Received by: <i>[Signature]</i>				Date/Time: 10-25-18 18:05		Same Day <input checked="" 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 in Lab by:				Date/Time:		Sample Integrity: Temperature Upon Receipt: <u>12.0</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				

Summit Scientific

S₂

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

1810324.3

Page 3 of 3

Client: APEX COMPANIES

Project Manager: Maggie Graham

Address: 1710 COLE BLVD.

E-Mail: Denver Remediation@apexcos.onmicrosoft.com

City/State/Zip: LAKEWOOD, CO 80101

Phone: 720-501-5065

Project Name: Morrison 33-1

Sampler Name: RF

Project Number: 2347-6000-930.88

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	BTEX	SAME DAY							
1	BH01	10/25/18	1508	3	X				X					X							
2	BH02		1437																		
3	BH03		1451																		
4	BH04		1457																		
5	BH05		1448																		
6	BH06		1438																		
7	BH07		1501																		
8	BH08		1503																		
9	BH09		1515																		
10																					

Relinquished by: Ryan July	Date/Time: 10/25/18 18:05	Received by: [Signature]	Date/Time: 10-25-18 18:05	Turn Around Time (Check)	Notes: XOG
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input checked="" 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:	
				Temperature Upon Receipt: _____	
				Samples Intact: Yes No	

Sample Receipt Checklist

S2 Work Order 1810324

Client: APEX/XOG Client Project ID: MORRISON 33-1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

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

Temp (°C)	<u>12.0</u>
-----------	-------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	X			
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 samples with holding times due within 48 hours sample 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⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	X			HCL
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			X	
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.

Muri
Custodian Printed Name or Initials

PA 10-25-18
Signature of Custodian

10:10
Date/Time



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH7@7
1810324-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	600	50	mg/kg	1	1810395	10/26/18	10/27/18	EPA 8015M	

Date Sampled: **10/25/18 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH7@10
1810324-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 10:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 10:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 10:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/27/18	EPA 8015M	

Date Sampled: **10/25/18 10:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		101 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH6@8
1810324-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/29/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.021	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.061	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	15	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		76.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		127 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		140 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/27/18	EPA 8015M	

Date Sampled: **10/25/18 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH6@12
1810324-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 11:04**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 11:04**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 11:04**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/27/18	EPA 8015M	

Date Sampled: **10/25/18 11:04**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		101 %	30-150		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH1@6
1810324-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 11:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.014	0.0020	mg/kg	1	1810394	10/26/18	10/29/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.50	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.023	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	220	5.0	"	10	"	"	"	"	

Date Sampled: **10/25/18 11:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		973 %	20-170		"	"	"	"	S-02
Surrogate: 4-Bromofluorobenzene		631 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 11:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	430	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 11:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH1@16
1810324-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 11:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 11:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 11:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 11:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		97.6 %	30-150		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH5@6
1810324-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH5@12
1810324-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 11:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 11:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 11:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 11:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		107 %	30-150		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH4@8
1810324-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 11:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 11:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		98.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		127 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 11:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 11:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH4@12
1810324-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 12:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 12:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 12:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 12:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		101 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH8@12
1810324-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 12:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 12:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 12:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 12:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		101 %	30-150		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH8@10
1810324-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 12:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 12:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 12:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 12:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH2@14
1810324-13 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 12:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810376	10/25/18	10/25/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 12:49**

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

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 12:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810377	"	10/25/18	EPA 8015M	

Date Sampled: **10/25/18 12:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		92.0 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH2@6
1810324-14 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 12:54**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810376	10/25/18	10/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.035	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	7.9	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 12:54**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		150 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 12:54**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810377	"	10/25/18	EPA 8015M	

Date Sampled: **10/25/18 12:54**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		89.4 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH3@12
1810324-15 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 13:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 13:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 13:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 13:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		101 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH3@8
1810324-16 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 13:46**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 13:46**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 13:46**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 13:46**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH9@8
1810324-17 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 14:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 14:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 14:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 14:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH9@12
1810324-18 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 14:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1810394	10/26/18	10/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/25/18 14:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/25/18 14:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1810395	10/26/18	10/28/18	EPA 8015M	

Date Sampled: **10/25/18 14:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH01
1810324-19 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 15:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	410	10	ug/l	10	1810428	10/30/18	10/31/18	EPA 8260B	
Toluene	ND	1.0	"	1	"	"	"	"	
Ethylbenzene	280	1.0	"	"	"	"	"	"	
Xylenes (total)	250	2.0	"	"	"	"	"	"	

Date Sampled: **10/25/18 15:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		140 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH02
1810324-20 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 14:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	2.9	1.0	ug/l	1	1810344	10/25/18	10/25/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	17	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **10/25/18 14:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		83.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.6 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH03
1810324-21 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 14:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1810428	10/30/18	10/31/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **10/25/18 14:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		115 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH04
1810324-22 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 14:57**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	140	1.0		ug/l	1	1810428	10/30/18	10/31/18	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	130	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **10/25/18 14:57**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		112 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		139 %		21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH05
1810324-23 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 14:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1810428	10/30/18	10/31/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	1.2	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **10/25/18 14:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH06
1810324-24 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 14:38**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	20	1.0	ug/l	1	1810428	10/30/18	10/31/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	73	1.0	"	"	"	"	"	"	
Xylenes (total)	200	2.0	"	"	"	"	"	"	

Date Sampled: **10/25/18 14:38**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		121 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH07
1810324-25 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 15:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1810428	10/30/18	10/31/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **10/25/18 15:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH08
1810324-26 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 15:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1810428	10/30/18	10/31/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **10/25/18 15:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

BH09
1810324-27 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/25/18 15:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1810428	10/30/18	10/31/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **10/25/18 15:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

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 1810344 - EPA 5030 Water MS

Blank (1810344-BLK1)

Prepared: 10/24/18 Analyzed: 10/26/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	9.74		"	13.2		73.8	23-173			
Surrogate: Toluene-d8	12.7		"	13.3		95.0	20-170			
Surrogate: 4-Bromofluorobenzene	11.7		"	13.3		88.1	21-167			

LCS (1810344-BS1)

Prepared: 10/24/18 Analyzed: 10/26/18

Benzene	23.6	1.0	ug/l	33.3		70.7	70-130			
Toluene	26.7	1.0	"	33.3		80.0	70-130			
Ethylbenzene	28.4	1.0	"	33.3		85.3	70-130			
m,p-Xylene	59.1	2.0	"	66.7		88.6	70-130			
o-Xylene	29.4	1.0	"	33.3		88.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	10.0		"	13.2		76.1	23-173			
Surrogate: Toluene-d8	12.7		"	13.3		95.3	20-170			
Surrogate: 4-Bromofluorobenzene	12.1		"	13.3		90.6	21-167			

Matrix Spike (1810344-MS1)

Source: 1810291-01

Prepared: 10/24/18 Analyzed: 10/26/18

Benzene	28.1	1.0	ug/l	33.3	ND	84.2	70-130			
Toluene	26.4	1.0	"	33.3	ND	79.3	70-130			
Ethylbenzene	41.0	1.0	"	33.3	ND	123	70-130			
m,p-Xylene	60.4	2.0	"	66.7	ND	90.6	70-130			
o-Xylene	30.2	1.0	"	33.3	ND	90.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	9.98		"	13.2		75.6	23-173			
Surrogate: Toluene-d8	12.2		"	13.3		91.4	20-170			
Surrogate: 4-Bromofluorobenzene	12.0		"	13.3		90.4	21-167			

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

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 1810344 - EPA 5030 Water MS

Matrix Spike Dup (1810344-MSD1)

Source: 1810291-01

Prepared: 10/24/18 Analyzed: 10/26/18

Benzene	26.8	1.0	ug/l	33.3	ND	80.4	70-130	4.59	30	
Toluene	28.3	1.0	"	33.3	ND	84.9	70-130	6.91	30	
Ethylbenzene	41.0	1.0	"	33.3	ND	123	70-130	0.122	30	
m,p-Xylene	64.0	2.0	"	66.7	ND	96.1	70-130	5.88	30	
o-Xylene	32.9	1.0	"	33.3	ND	98.6	70-130	8.30	30	
Surrogate: 1,2-Dichloroethane-d4	10.1		"	13.2		76.7	23-173			
Surrogate: Toluene-d8	12.3		"	13.3		92.2	20-170			
Surrogate: 4-Bromofluorobenzene	12.1		"	13.3		90.9	21-167			

Batch 1810376 - EPA 5030 Soil MS

Blank (1810376-BLK1)

Prepared: 10/25/18 Analyzed: 10/26/18

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0469		"	0.0396		118	23-173			
Surrogate: Toluene-d8	0.0411		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0460		"	0.0400		115	21-167			

LCS (1810376-BS1)

Prepared: 10/25/18 Analyzed: 10/26/18

Benzene	0.0765	0.0020	mg/kg	0.100		76.5	70-130			
Toluene	0.0837	0.0050	"	0.100		83.7	70-130			
Ethylbenzene	0.0880	0.0050	"	0.100		88.0	70-130			
m,p-Xylene	0.168	0.010	"	0.200		84.2	70-130			
o-Xylene	0.0898	0.0050	"	0.100		89.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0460		"	0.0396		116	23-173			
Surrogate: Toluene-d8	0.0410		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0422		"	0.0400		106	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

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 1810376 - EPA 5030 Soil MS

Matrix Spike (1810376-MS1)		Source: 1810321-01			Prepared: 10/25/18 Analyzed: 10/26/18					
Benzene	0.0773	0.0020	mg/kg	0.100	ND	77.3	70-130			
Toluene	0.0879	0.0050	"	0.100	ND	87.9	70-130			
Ethylbenzene	0.0904	0.0050	"	0.100	ND	90.4	70-130			
m,p-Xylene	0.176	0.010	"	0.200	ND	88.2	70-130			
o-Xylene	0.0927	0.0050	"	0.100	ND	92.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0492		"	0.0396		124	23-173			
Surrogate: Toluene-d8	0.0419		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0450		"	0.0400		113	21-167			

Matrix Spike Dup (1810376-MSD1)		Source: 1810321-01			Prepared: 10/25/18 Analyzed: 10/26/18					
Benzene	0.0822	0.0020	mg/kg	0.100	ND	82.2	70-130	6.06	30	
Toluene	0.0893	0.0050	"	0.100	ND	89.3	70-130	1.66	30	
Ethylbenzene	0.0887	0.0050	"	0.100	ND	88.7	70-130	1.88	30	
m,p-Xylene	0.174	0.010	"	0.200	ND	87.0	70-130	1.37	30	
o-Xylene	0.0892	0.0050	"	0.100	ND	89.2	70-130	3.89	30	
Surrogate: 1,2-Dichloroethane-d4	0.0490		"	0.0396		124	23-173			
Surrogate: Toluene-d8	0.0430		"	0.0400		107	20-170			
Surrogate: 4-Bromofluorobenzene	0.0436		"	0.0400		109	21-167			

Batch 1810394 - EPA 5030 Soil MS

Blank (1810394-BLK1)		Prepared & Analyzed: 10/26/18								
Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0400		108	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0422		"	0.0400		105	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

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 1810394 - EPA 5030 Soil MS

LCS (1810394-BS1)

Prepared & Analyzed: 10/26/18

Benzene	0.113	0.0020	mg/kg	0.100		113	70-130
Toluene	0.117	0.0050	"	0.100		117	70-130
Ethylbenzene	0.124	0.0050	"	0.100		124	70-130
m,p-Xylene	0.249	0.010	"	0.200		124	70-130
o-Xylene	0.118	0.0050	"	0.100		118	70-130
Surrogate: 1,2-Dichloroethane-d4	0.0399		"	0.0400		99.8	23-173
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		101	21-167

Matrix Spike (1810394-MS1)

Source: 1810324-01

Prepared & Analyzed: 10/26/18

Benzene	0.119	0.0020	mg/kg	0.100	ND	119	70-130
Toluene	0.125	0.0050	"	0.100	ND	125	70-130
Ethylbenzene	0.132	0.0050	"	0.100	ND	132	70-135
m,p-Xylene	0.264	0.010	"	0.200	ND	132	70-135
o-Xylene	0.127	0.0050	"	0.100	ND	127	70-130
Surrogate: 1,2-Dichloroethane-d4	0.0425		"	0.0400		106	23-173
Surrogate: Toluene-d8	0.0405		"	0.0400		101	20-170
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		101	21-167

Matrix Spike Dup (1810394-MSD1)

Source: 1810324-01

Prepared & Analyzed: 10/26/18

Benzene	0.109	0.0020	mg/kg	0.100	ND	109	70-130	8.20	30
Toluene	0.114	0.0050	"	0.100	ND	114	70-130	9.41	30
Ethylbenzene	0.120	0.0050	"	0.100	ND	120	70-130	9.05	30
m,p-Xylene	0.241	0.010	"	0.200	ND	121	70-130	8.95	30
o-Xylene	0.116	0.0050	"	0.100	ND	116	70-130	9.30	30
Surrogate: 1,2-Dichloroethane-d4	0.0421		"	0.0400		105	23-173		
Surrogate: Toluene-d8	0.0400		"	0.0400		100	20-170		
Surrogate: 4-Bromofluorobenzene	0.0408		"	0.0400		102	21-167		

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

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 1810428 - EPA 5030 Water MS

Blank (1810428-BLK1)

Prepared: 10/30/18 Analyzed: 10/31/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.9		"	13.2		97.7	23-173			
Surrogate: Toluene-d8	13.5		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	15.9		"	13.3		119	21-167			

LCS (1810428-BS1)

Prepared: 10/30/18 Analyzed: 10/31/18

Benzene	26.2	1.0	ug/l	33.3		78.8	70-130			
Toluene	26.9	1.0	"	33.3		80.6	70-130			
Ethylbenzene	28.9	1.0	"	33.3		86.6	70-130			
m,p-Xylene	56.4	2.0	"	66.7		84.6	70-130			
o-Xylene	30.0	1.0	"	33.3		90.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.2		104	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	14.7		"	13.3		110	21-167			

Matrix Spike (1810428-MS1)

Source: 1810324-19

Prepared: 10/30/18 Analyzed: 10/31/18

Benzene	328	1.0	ug/l	33.3	409	NR	70-130			E
Toluene	27.8	1.0	"	33.3	ND	83.3	70-130			
Ethylbenzene	302	1.0	"	33.3	283	57.3	70-130			E
m,p-Xylene	279	2.0	"	66.7	245	50.2	70-130			E
o-Xylene	31.3	1.0	"	33.3	ND	93.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	18.9		"	13.2		143	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		100	20-170			
Surrogate: 4-Bromofluorobenzene	18.0		"	13.3		135	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

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 1810428 - EPA 5030 Water MS

Matrix Spike Dup (1810428-MSD1)		Source: 1810324-19			Prepared: 10/30/18 Analyzed: 10/31/18					
Benzene	308	1.0	ug/l	33.3	409	NR	70-130	6.37	30	E
Toluene	28.7	1.0	"	33.3	ND	86.0	70-130	3.19	30	
Ethylbenzene	287	1.0	"	33.3	283	10.3	70-130	5.32	30	E
m,p-Xylene	264	2.0	"	66.7	245	27.3	70-130	5.64	30	E
o-Xylene	31.6	1.0	"	33.3	ND	94.8	70-130	0.954	30	
Surrogate: 1,2-Dichloroethane-d4	17.0		"	13.2		128	23-173			
Surrogate: Toluene-d8	13.6		"	13.3		102	20-170			
Surrogate: 4-Bromofluorobenzene	17.8		"	13.3		133	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
11/02/18 07:12

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 1810377 - EPA 3550A

Blank (1810377-BLK1)

Prepared: 10/25/18 Analyzed: 10/26/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1810377-BS1)

Prepared: 10/25/18 Analyzed: 10/26/18

C10-C28 (DRO) 526 50 mg/kg 500 105 70-130

Matrix Spike (1810377-MS1)

Source: 1810321-01

Prepared: 10/25/18 Analyzed: 10/26/18

C10-C28 (DRO) 540 50 mg/kg 500 22.7 103 70-130

Matrix Spike Dup (1810377-MSD1)

Source: 1810321-01

Prepared: 10/25/18 Analyzed: 10/26/18

C10-C28 (DRO) 579 50 mg/kg 500 22.7 111 70-130 6.97 20

Batch 1810395 - EPA 3550A

Blank (1810395-BLK1)

Prepared: 10/26/18 Analyzed: 10/27/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1810395-BS1)

Prepared: 10/26/18 Analyzed: 10/27/18

C10-C28 (DRO) 580 50 mg/kg 500 116 70-130

Matrix Spike (1810395-MS1)

Source: 1810324-02

Prepared: 10/26/18 Analyzed: 10/27/18

C10-C28 (DRO) 586 50 mg/kg 500 14.9 114 70-130

Matrix Spike Dup (1810395-MSD1)

Source: 1810324-02

Prepared: 10/26/18 Analyzed: 10/27/18

C10-C28 (DRO) 602 50 mg/kg 500 14.9 117 70-130 2.55 20

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
11/02/18 07:12

Notes and Definitions

S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
E	The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 06, 2019

Maggie Graham

Extraction Oil&Gas

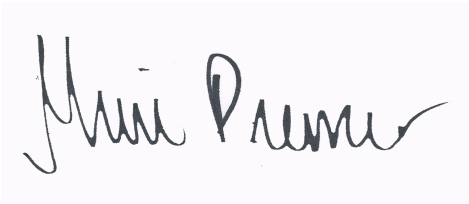
370 17th Street Suite 5300

Denver, CO 80202

RE: Morrison 33-1

Enclosed are the results of analyses for samples received by Summit Scientific on 02/27/19 16:13. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is cursive and reads "Muri Premer".

Muri Premer For Ben Shrewsbury

Laboratory Manager



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
03/06/19 09:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH8	1902268-01	Water	02/27/19 14:00	02/27/19 16:13
BH4	1902268-02	Water	02/27/19 14:45	02/27/19 16:13
BH1	1902268-03	Water	02/27/19 14:26	02/27/19 16:13
BH6	1902268-04	Water	02/27/19 14:15	02/27/19 16:13
BH2	1902268-05	Water	02/27/19 14:30	02/27/19 16:13

Summit Scientific

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Summit Scientific

303-277-9310 ♦ 303-374-5933 Fax

Client: APEX Companies, LLC

Address: 176 Cole Blvd. Suite 250

City/State/Zip: Lakewood, Colorado 80101

Phone: 720-501-5065 Fax:

Sampler Name: Ryan Finley + Ken Worthington

Project Manager: Maggie Graham 720-501-5065; 907-538-7699c

E-Mail: DenverRemediation@ApexCos.onmicrosoft.com

Project Name: Moscow 33-1

Project Number: 2347-6600-930,88

www.s2scientific.com

Sample Receipt Checklist

S2 Work Order 1902268

Client: APEX/COGCC Client Project ID: Morrison 33-1

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other H.D. Airbill #: _____

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

Temp (°C)	<u>7.9</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl, HNO3 heavy
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH 5-9 / fixed by lab
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

UP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

2.27.19 1845
Date/Time



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

BH8
1902268-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/27/19 14:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1902348	02/28/19	03/03/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **02/27/19 14:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		92.1 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.0 %		21-167		"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **02/27/19 14:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Phosphorus	1.94	0.0100		mg/L	1	1902360	02/28/19	02/28/19	EPA 200.8	

Ferrous Iron

Date Sampled: **02/27/19 14:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Ferrous Iron	1.680	0.02000		mg/L	1	1903015	02/27/19	02/27/19	SM3500-Fe	

Anions by EPA Method 300.0

Date Sampled: **02/27/19 14:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Sulfate	2240	60.0		mg/L	200	1902353	02/28/19	02/28/19	EPA 300.0	
Nitrate as N	2.02	0.0500		"	1	"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

BH8
1902268-01 (Water)

Summit Scientific

Anions by EPA Method 300.0

Summit Scientific

A handwritten signature in black ink, appearing to read 'John Palmer', on a light blue background.

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

BH4
1902268-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/27/19 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	45	1.0	ug/l	1	1902348	02/28/19	03/03/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	1.5	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **02/27/19 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	21-167		"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **02/27/19 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Phosphorus	2.33	0.0100	mg/L	1	1902360	02/28/19	02/28/19	EPA 200.8	

Ferrous Iron

Date Sampled: **02/27/19 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Ferrous Iron	2.360	0.02000	mg/L	1	1903015	02/27/19	02/27/19	SM3500-Fe	

Anions by EPA Method 300.0

Date Sampled: **02/27/19 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Nitrate as N	0.145	0.0500	mg/L	1	1902353	02/28/19	02/28/19	EPA 300.0	
Sulfate	409	60.0	"	200	"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

BH4
1902268-02 (Water)

Summit Scientific

Anions by EPA Method 300.0

Chemical Oxygen Demand by EPA Approved Method Hach 8000

Date Sampled: **02/27/19 14:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chemical Oxygen Demand	49.3	3.00		mg/L	1	1903043	03/05/19	03/05/19	Hach 8000	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

BH1
1902268-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/27/19 14:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	26	1.0	ug/l	1	1902348	02/28/19	03/03/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	7.2	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **02/27/19 14:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		90.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **02/27/19 14:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Phosphorus	0.993	0.0100	mg/L	1	1902360	02/28/19	02/28/19	EPA 200.8	

Ferrous Iron

Date Sampled: **02/27/19 14:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Ferrous Iron	8.100	0.2000	mg/L	10	1903015	02/27/19	02/27/19	SM3500-Fe	

Anions by EPA Method 300.0

Date Sampled: **02/27/19 14:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	1870	60.0	mg/L	200	1902353	02/28/19	02/28/19	EPA 300.0	
Nitrate as N	1.19	0.0500	"	1	"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

BH1
1902268-03 (Water)

Summit Scientific

Anions by EPA Method 300.0

Chemical Oxygen Demand by EPA Approved Method Hach 8000

Date Sampled: **02/27/19 14:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chemical Oxygen Demand	41.6	3.00		mg/L	1	1903043	03/05/19	03/05/19	Hach 8000	

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

BH6
1902268-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/27/19 14:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	1.3	1.0		ug/l	1	1902348	02/28/19	03/03/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **02/27/19 14:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		89.9 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		21-167		"	"	"	"	

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

BH2
1902268-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/27/19 14:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	6.0	1.0		ug/l	1	1902348	02/28/19	03/03/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	3.5	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **02/27/19 14:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		91.7 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %		21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

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 1902348 - EPA 5030 Water MS

Blank (1902348-BLK1)

Prepared: 02/28/19 Analyzed: 03/02/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	11.6		"	13.3		86.7	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.7	20-170			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.5	21-167			

LCS (1902348-BS1)

Prepared: 02/28/19 Analyzed: 03/02/19

Benzene	33.0	1.0	ug/l	33.3		99.1	70-130			
Toluene	34.6	1.0	"	33.3		104	70-130			
Ethylbenzene	36.3	1.0	"	33.3		109	70-130			
m,p-Xylene	75.0	2.0	"	66.7		112	70-130			
o-Xylene	34.2	1.0	"	33.3		102	70-130			
Surrogate: 1,2-Dichloroethane-d4	11.7		"	13.3		87.6	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.8	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.4	21-167			

Matrix Spike (1902348-MS1)

Source: 1902253-01

Prepared: 02/28/19 Analyzed: 03/02/19

Benzene	33.4	1.0	ug/l	33.3	ND	100	70-130			
Toluene	35.2	1.0	"	33.3	ND	106	70-130			
Ethylbenzene	35.6	1.0	"	33.3	ND	107	70-130			
m,p-Xylene	73.7	2.0	"	66.7	ND	111	70-130			
o-Xylene	33.7	1.0	"	33.3	ND	101	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.1		"	13.3		90.9	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.3	20-170			
Surrogate: 4-Bromofluorobenzene	12.5		"	13.3		94.1	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

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 1902348 - EPA 5030 Water MS

Matrix Spike Dup (1902348-MSD1)		Source: 1902253-01			Prepared: 02/28/19 Analyzed: 03/02/19					
Benzene	32.8	1.0	ug/l	33.3	ND	98.3	70-130	1.84	30	
Toluene	34.2	1.0	"	33.3	ND	103	70-130	2.91	30	
Ethylbenzene	35.7	1.0	"	33.3	ND	107	70-130	0.224	30	
m,p-Xylene	74.2	2.0	"	66.7	ND	111	70-130	0.568	30	
o-Xylene	33.7	1.0	"	33.3	ND	101	70-130	0.119	30	
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.6	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		95.8	20-170			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		97.0	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
03/06/19 09:30

Total 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 1902360 - EPA 200.8

Blank (1902360-BLK1)

Prepared & Analyzed: 02/28/19

Phosphorus ND 0.0100 mg/L

LCS (1902360-BS1)

Prepared & Analyzed: 02/28/19

Phosphorus 5.18 0.0100 mg/L 5.00 104 85-115

Duplicate (1902360-DUP1)

Source: 1902259-01

Prepared & Analyzed: 02/28/19

Phosphorus ND 0.0100 mg/L ND 20

Matrix Spike (1902360-MS1)

Source: 1902259-01

Prepared & Analyzed: 02/28/19

Phosphorus 4.86 0.0100 mg/L 5.00 ND 97.2 70-130

Matrix Spike Dup (1902360-MSD1)

Source: 1902259-01

Prepared & Analyzed: 02/28/19

Phosphorus 4.90 0.0100 mg/L 5.00 ND 98.0 70-130 0.821 25

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
03/06/19 09:30

Ferrous Iron - Quality Control
Summit Scientific

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

Batch 1903015 - General Preparation

Blank (1903015-BLK1)

Prepared & Analyzed: 02/27/19

Ferrous Iron ND 0.02000 mg/L

LCS (1903015-BS1)

Prepared & Analyzed: 02/27/19

Ferrous Iron 2.01 0.02000 mg/L 2.00 100 80-120

Duplicate (1903015-DUP1)

Source: 1902268-01

Prepared & Analyzed: 02/27/19

Ferrous Iron 1.70 0.02000 mg/L 1.68 1.18 200

Matrix Spike (1903015-MS1)

Source: 1902268-01

Prepared & Analyzed: 02/27/19

Ferrous Iron 3.28 0.02000 mg/L 2.00 1.68 80.0 75-125

Matrix Spike Dup (1903015-MSD1)

Source: 1902268-01

Prepared & Analyzed: 02/27/19

Ferrous Iron 3.25 0.02000 mg/L 2.00 1.68 78.5 75-125 0.919 20

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
03/06/19 09:30

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 1902353 - General Preparation

Blank (1902353-BLK1)

Prepared & Analyzed: 02/28/19

Sulfate	ND	0.300	mg/L
Nitrate as N	ND	0.0500	"

LCS (1902353-BS1)

Prepared & Analyzed: 02/28/19

Nitrate as N	3.22	0.0500	mg/L	3.00	107	90-110
Sulfate	15.9	0.300	"	15.0	106	90-110

Duplicate (1902353-DUP1)

Source: 1902268-03

Prepared & Analyzed: 02/28/19

Sulfate	ND	0.300	mg/L	1870			20	QM-02
Nitrate as N	1.16	0.0500	"	1.19			1.87	20

Matrix Spike (1902353-MS1)

Source: 1902268-03

Prepared & Analyzed: 02/28/19

Nitrate as N	4.28	0.0500	mg/L	3.00	1.19	103	80-120	
Sulfate	ND	0.300	"	15.0	1870	NR	80-120	QM-02

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
03/06/19 09:30

Chemical Oxygen Demand by EPA Approved Method Hach 8000 - Quality Control
Summit Scientific

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

Batch 1903043 - General Preparation

Blank (1903043-BLK1)

Prepared & Analyzed: 03/05/19

Chemical Oxygen Demand ND 3.00 mg/L

LCS (1903043-BS1)

Prepared & Analyzed: 03/05/19

Chemical Oxygen Demand 99.3 3.00 mg/L 100 99.3 70-130

Duplicate (1903043-DUP1)

Source: 1902268-02

Prepared & Analyzed: 03/05/19

Chemical Oxygen Demand 49.1 3.00 mg/L 49.3 0.407 20

Matrix Spike (1903043-MS1)

Source: 1902268-02

Prepared & Analyzed: 03/05/19

Chemical Oxygen Demand 153 3.00 mg/L 100 49.3 104 75-125

Matrix Spike Dup (1903043-MSD1)

Source: 1902268-02

Prepared & Analyzed: 03/05/19

Chemical Oxygen Demand 150 3.00 mg/L 100 49.3 101 75-125 1.98 20

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
03/06/19 09:30

Notes and Definitions

QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 06, 2019

Maggie Graham

Extraction Oil&Gas

370 17th Street Suite 5300

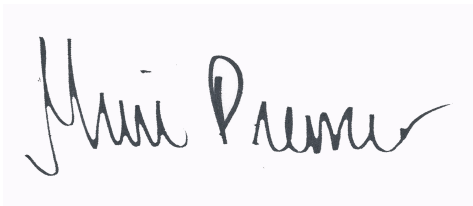
Denver, CO 80202

RE: Morrison 33-1

Work Order # 1905332

Enclosed are the results of analyses for samples received by Summit Scientific on 05/30/19 19:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is written in a cursive style and appears to read "Muri Premier".

Muri Premier For Ben Shrewsbury

Laboratory Manager



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
06/06/19 10:10

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH1	1905332-01	Water	05/30/19 16:30	05/30/19 19:25
BH2	1905332-02	Water	05/30/19 16:55	05/30/19 19:25
BH3	1905332-03	Water	05/30/19 17:55	05/30/19 19:25
BH4	1905332-04	Water	05/30/19 17:30	05/30/19 19:25
BH5	1905332-05	Water	05/30/19 16:10	05/30/19 19:25
BH6	1905332-06	Water	05/30/19 15:15	05/30/19 19:25
BH7	1905332-07	Water	05/30/19 15:45	05/30/19 19:25
BH8	1905332-08	Water	05/30/19 18:15	05/30/19 19:25
BH9	1905332-09	Water	05/30/19 14:45	05/30/19 19:25

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.

1905332

303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Sampler Name: AB

Project Number: 2347-6000-930.88

www.s2scientific.com

1905332

Sample Receipt Checklist

S2 Work Order _____

Client: Apex / XOG Client Project ID: Morrison 33-1Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____Matrix (check all that apply): Air Soil/Solid X Water Other: _____
(Describe)

Temp (°C)	1.5°
-----------	------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			on ice
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		✓		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , ect	✓			HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.AT
Custodian Printed Name or Initials[Signature]
Signature of Custodian5-30-19 19:25
Date/Time



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

BH1
1905332-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/30/19 16:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	17	1.0		ug/l	1	1905421	05/31/19	06/01/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	3.9	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **05/30/19 16:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		95.1 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		115 %		21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

BH2
1905332-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/30/19 16:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905421	05/31/19	06/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/30/19 16:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		95.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	21-167		"	"	"	"	

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

BH3
1905332-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/30/19 17:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905421	05/31/19	06/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/30/19 17:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		95.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	21-167		"	"	"	"	

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

BH4
1905332-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/30/19 17:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	450	10		ug/l	10	1905421	05/31/19	06/02/19	EPA 8260B	
Toluene	1.3	1.0		"	1	"	"	"	"	
Ethylbenzene	64	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **05/30/19 17:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		92.3 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		114 %		21-167		"	"	"	"	

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

BH5
1905332-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/30/19 16:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905421	05/31/19	06/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/30/19 16:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		93.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

BH6
1905332-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/30/19 15:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905421	05/31/19	06/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/30/19 15:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		94.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

BH7
1905332-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/30/19 15:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905421	05/31/19	06/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/30/19 15:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		92.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.9 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

BH8
1905332-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/30/19 18:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905421	05/31/19	06/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/30/19 18:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		93.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.8 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

BH9
1905332-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/30/19 14:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905421	05/31/19	06/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/30/19 14:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		81.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.6 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

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 1905421 - EPA 5030 Water MS

Blank (1905421-BLK1)

Prepared: 05/31/19 Analyzed: 06/01/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	11.3		"	13.3		84.8	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.5	20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.8	21-167			

LCS (1905421-BS1)

Prepared: 05/31/19 Analyzed: 06/01/19

Benzene	32.7	1.0	ug/l	33.3		98.2	70-130			
Toluene	35.1	1.0	"	33.3		105	70-130			
Ethylbenzene	37.4	1.0	"	33.3		112	70-130			
m,p-Xylene	72.4	2.0	"	66.7		109	70-130			
o-Xylene	34.4	1.0	"	33.3		103	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3		97.7	23-173			
Surrogate: Toluene-d8	13.8		"	13.3		103	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	21-167			

Matrix Spike (1905421-MS1)

Source: 1905332-01

Prepared: 05/31/19 Analyzed: 06/01/19

Benzene	58.8	1.0	ug/l	33.3	17.1	125	70-130			
Toluene	35.0	1.0	"	33.3	ND	105	70-130			
Ethylbenzene	44.5	1.0	"	33.3	3.91	122	70-130			
m,p-Xylene	72.0	2.0	"	66.7	ND	108	70-130			
o-Xylene	34.4	1.0	"	33.3	ND	103	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3		97.4	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		100	20-170			
Surrogate: 4-Bromofluorobenzene	15.0		"	13.3		113	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
06/06/19 10:10

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 1905421 - EPA 5030 Water MS

Matrix Spike Dup (1905421-MSD1)		Source: 1905332-01			Prepared: 05/31/19 Analyzed: 06/01/19					
Benzene	55.4	1.0	ug/l	33.3	17.1	115	70-130	5.81	30	
Toluene	35.3	1.0	"	33.3	ND	106	70-130	0.910	30	
Ethylbenzene	44.0	1.0	"	33.3	3.91	120	70-130	1.04	30	
m,p-Xylene	73.4	2.0	"	66.7	ND	110	70-130	1.95	30	
o-Xylene	34.9	1.0	"	33.3	ND	105	70-130	1.56	30	
Surrogate: 1,2-Dichloroethane-d4	13.2		"	13.3		99.0	23-173			
Surrogate: Toluene-d8	13.5		"	13.3		102	20-170			
Surrogate: 4-Bromofluorobenzene	15.2		"	13.3		114	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
06/06/19 10:10

Notes and Definitions

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 13, 2019

Maggie Graham

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Morrison 33-1

Work Order # 1909078

Enclosed are the results of analyses for samples received by Summit Scientific on 09/06/19 15:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is written in a cursive style and reads "Muri Premier".

Muri Premier For Ben Shrewsbury

Laboratory Manager



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
09/13/19 11:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1909078-01	Water	09/06/19 12:45	09/06/19 15:10
BH02	1909078-02	Water	09/06/19 12:59	09/06/19 15:10
BH03	1909078-03	Water	09/06/19 13:53	09/06/19 15:10
BH04	1909078-04	Water	09/06/19 13:22	09/06/19 15:10
BH06	1909078-05	Water	09/06/19 12:24	09/06/19 15:10
BH07	1909078-06	Water	09/06/19 12:00	09/06/19 15:10
BH08	1909078-07	Water	09/06/19 14:08	09/06/19 15:10
BH09	1909078-08	Water	09/06/19 11:37	09/06/19 15:10

Summit Scientific

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Summit Scientific

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310 ♦ 303-374-5933 Fax

Page _____ of _____

Client: APEX Companies, LLC

Address: 176 Cole Blvd. Suite 250

City/State/Zip: Lakewood, Colorado 80101

Phone: 720-501-5065

Fax:

Sampler Name: AB

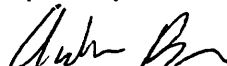
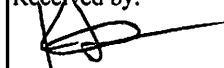
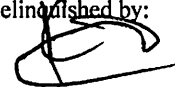
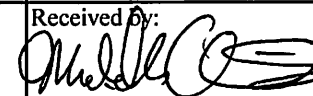
Project Manager: Maggie Graham 720-501-5065

E-Mail: DenverRemediation@ApexCos.onmicrosoft.com

Project Name: Morrison 33-1

Project Number: 2347-6000-930.88

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:												Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	B	T	E	x											
BH01	9/6/19	1245	3	X				X					X													Call Maggie Graham with questions No BH05 sample
BH02		1259	1																							
BH03		1353																								
BH04		1322																								
BH06		1224																								
BH07		1206																								
BH08		1408																								
BH09		1137																								

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time (Check)	Notes
	9/6/19 1420		9.6.19 1420	Same Day <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>	Circle applicable regulatory agency: COGCC/ CDPHE Client Name: <u>XOG</u>
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	
	9.6.19 1510		9/6/19 1510	Temperature Upon Receipt: <u>12.2</u> Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:		

Sample Receipt Checklist

S2 Work Order 1909078

Client: Aper

Client Project ID: Morrison 33-1

Shipped Via: ☒ H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: _____

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

Temp (°C)	<u>12.2</u>
-----------	-------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

MC
Custodian Printed Name or Initials

MC
Signature of Custodian

9/6/19
Date/Time
9/6/19
myc



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
09/13/19 11:22

BH01
1909078-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/19 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	16	1.0		ug/l	1	1909111	09/10/19	09/11/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **09/06/19 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		105 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		92.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		124 %		21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
09/13/19 11:22

BH02
1909078-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/19 12:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1909111	09/10/19	09/11/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/06/19 12:59**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		122 %	21-167		"	"	"	"	

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
09/13/19 11:22

BH03
1909078-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/19 13:53**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1909111	09/10/19	09/11/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/06/19 13:53**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
09/13/19 11:22

BH04
1909078-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/19 13:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	7.1	1.0		ug/l	1	1909111	09/10/19	09/11/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **09/06/19 13:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		104 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		94.4 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		120 %		21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
09/13/19 11:22

BH06
1909078-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/19 12:24**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1909111	09/10/19	09/11/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/06/19 12:24**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
09/13/19 11:22

BH07
1909078-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/19 12:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1909111	09/10/19	09/11/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/06/19 12:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.3 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
09/13/19 11:22

BH08
1909078-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/19 14:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1909111	09/10/19	09/11/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/06/19 14:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
09/13/19 11:22

BH09
1909078-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/19 11:37**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1909111	09/10/19	09/11/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/06/19 11:37**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

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.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
09/13/19 11:22

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 1909111 - EPA 5030 Water MS

Blank (1909111-BLK1)

Prepared: 09/10/19 Analyzed: 09/11/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		96.1	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	21-167			

LCS (1909111-BS1)

Prepared: 09/10/19 Analyzed: 09/11/19

Benzene	31.7	1.0	ug/l	33.3		95.0	51-132			
Toluene	31.9	1.0	"	33.3		95.6	51-138			
Ethylbenzene	31.9	1.0	"	33.3		95.6	58-146			
m,p-Xylene	63.8	2.0	"	66.7		95.7	57-144			
o-Xylene	31.1	1.0	"	33.3		93.4	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.9		"	13.3		112	23-173			
Surrogate: Toluene-d8	12.4		"	13.3		93.2	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	21-167			

Matrix Spike (1909111-MS1)

Source: 1909078-01

Prepared: 09/10/19 Analyzed: 09/11/19

Benzene	31.9	1.0	ug/l	33.3	15.5	49.1	34-141			
Toluene	31.4	1.0	"	33.3	ND	94.3	27-151			
Ethylbenzene	32.6	1.0	"	33.3	ND	98.0	29-160			
m,p-Xylene	65.1	2.0	"	66.7	ND	97.7	20-166			
o-Xylene	31.2	1.0	"	33.3	ND	93.5	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	23-173			
Surrogate: Toluene-d8	12.4		"	13.3		93.2	20-170			
Surrogate: 4-Bromofluorobenzene	15.0		"	13.3		112	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
09/13/19 11:22

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 1909111 - EPA 5030 Water MS

Matrix Spike Dup (1909111-MSD1)		Source: 1909078-01			Prepared: 09/10/19 Analyzed: 09/11/19					
Benzene	31.8	1.0	ug/l	33.3	15.5	49.0	34-141	0.0942	30	
Toluene	31.5	1.0	"	33.3	ND	94.4	27-151	0.0954	30	
Ethylbenzene	33.5	1.0	"	33.3	ND	100	29-160	2.48	30	
m,p-Xylene	66.6	2.0	"	66.7	ND	99.9	20-166	2.29	30	
o-Xylene	32.3	1.0	"	33.3	ND	96.8	33-159	3.44	30	
Surrogate: 1,2-Dichloroethane-d4	15.5		"	13.3		116	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.5	20-170			
Surrogate: 4-Bromofluorobenzene	15.2		"	13.3		114	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
09/13/19 11:22

Notes and Definitions

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 09, 2019

Maggie Graham

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Morrison 33-1

Work Order # 1910064

Enclosed are the results of analyses for samples received by Summit Scientific on 10/04/19 15:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is written in a cursive style and reads "Muri Premer".

Muri Premer For Ben Shrewsbury

Laboratory Manager



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
10/09/19 17:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH10	1910064-01	Water	10/04/19 13:00	10/04/19 15:50
BH11	1910064-02	Water	10/04/19 12:35	10/04/19 15:50

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.

1910064

Page 1 of 1

Project Number: 2347 6000 930 . 88

www.s2scientific.com

Sample Receipt Checklist

S2 Work Order 1910064

Client: APEX / XOG

Client Project ID: MORRISON 331

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____

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

Temp (°C)	<u>12.4</u>
-----------	-------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	<u>+</u>			
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<u>+</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>+</u>			
If custody seals are present, are they intact ⁽¹⁾ ?			<u>+</u>	
Are samples with holding times due within 48 hours sample due within 48 hours present?			<u>+</u>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<u>+</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>+</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>+</u>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<u>+</u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<u>+</u>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<u>+</u>			
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?	<u>.</u>		<u>+</u>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<u>+</u>	
Additional Comments (if any):				

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

MP
Custodian Printed Name or Initials

AE
Signature of Custodian

10-4-19 15:50
Date/Time



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
10/09/19 17:38

BH10
1910064-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/04/19 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1910113	10/07/19	10/08/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **10/04/19 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		80.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
10/09/19 17:38

BH11
1910064-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/04/19 12:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1910113	10/07/19	10/08/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **10/04/19 12:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		79.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.8 %	21-167		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1
Project Number: 2347-6000-930.88
Project Manager: Maggie Graham

Reported:
10/09/19 17:38

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 1910113 - EPA 5030 Water MS

LCS (1910113-BS1)

Prepared: 10/07/19 Analyzed: 10/08/19

Benzene	28.4	1.0	ug/l	33.3		85.1	51-132			
Toluene	26.6	1.0	"	33.3		79.9	51-138			
Ethylbenzene	29.6	1.0	"	33.3		88.9	58-146			
m,p-Xylene	53.0	2.0	"	66.7		79.6	57-144			
o-Xylene	27.0	1.0	"	33.3		81.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	11.1		"	13.3		83.3	23-173			
Surrogate: Toluene-d8	12.4		"	13.3		92.9	20-170			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.9	21-167			

Matrix Spike (1910113-MS1)

Source: 1910030-01

Prepared: 10/07/19 Analyzed: 10/08/19

Benzene	27.5	1.0	ug/l	33.3	ND	82.4	34-141			
Toluene	30.1	1.0	"	33.3	ND	90.4	27-151			
Ethylbenzene	30.5	1.0	"	33.3	ND	91.4	29-160			
m,p-Xylene	55.6	2.0	"	66.7	ND	83.4	20-166			
o-Xylene	27.8	1.0	"	33.3	ND	83.5	33-159			
Surrogate: 1,2-Dichloroethane-d4	9.51		"	13.3		71.3	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.9	20-170			
Surrogate: 4-Bromofluorobenzene	12.5		"	13.3		93.5	21-167			

Matrix Spike Dup (1910113-MSD1)

Source: 1910030-01

Prepared: 10/07/19 Analyzed: 10/08/19

Benzene	27.0	1.0	ug/l	33.3	ND	80.9	34-141	1.76	30	
Toluene	32.1	1.0	"	33.3	ND	96.4	27-151	6.43	30	
Ethylbenzene	30.4	1.0	"	33.3	ND	91.2	29-160	0.263	30	
m,p-Xylene	56.2	2.0	"	66.7	ND	84.4	20-166	1.20	30	
o-Xylene	27.8	1.0	"	33.3	ND	83.5	33-159	0.0359	30	
Surrogate: 1,2-Dichloroethane-d4	10.8		"	13.3		81.1	23-173			
Surrogate: Toluene-d8	14.4		"	13.3		108	20-170			
Surrogate: 4-Bromofluorobenzene	12.5		"	13.3		93.5	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Morrison 33-1

Project Number: 2347-6000-930.88

Project Manager: Maggie Graham

Reported:
10/09/19 17:38

Notes and Definitions

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