

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 049 - 02490 County Marion District Lincoln
Quad Shinnston Pad Name Crim Pad Field/Pool Name Marcellus
Farm name Rochester & Pittsburgh Coal Co. Well Number Crim East Unit 11H
Operator (as registered with the OOG) XTO Energy Inc.
Address P.O. Box 1008 City Jane Lew State WV Zip 26378

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4369362.694 Easting 560039.033
Landing Point of Curve Northing 4369419.954 Easting 560245.091
Bottom Hole Northing 4367022.323 Easting 562689.097

Elevation (ft) 1,221' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
SOBM

Date permit issued 6/4/2019 Date drilling commenced 6/7/2019 Date drilling ceased 9/26/2019
Date completion activities began 1/8/2020 Date completion activities ceased 2/9/2020
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft None Noted Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Noted Void(s) encountered (Y/N) depths N
Coal depth(s) ft 130' - 134', 460' - 465' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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API 47- 049 - 02490 Farm name Rochester & Pittsburgh Coal Co. Well number Crim East Unit 11H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	30"	24"	76'	New	PE&B / 95		N
Surface	17 1/2"	13 3/8"	510'	New	H-40 / 48	425'	Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	3,178'	New	J-55 / 36		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	18,896'	New	P-110 / 20		Est. TOC 5,100'
Tubing							
Packer type and depth set							

Comment Details Conductor - concrete poured directly into annulus.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	A	10 yards				0	8
Surface	A	510	15.6	1.21	617.1	0	8
Coal							
Intermediate 1	A	1130	15.6	1.19	1344.7	0	8
Intermediate 2							
Intermediate 3							
Production	H	495/1905	15.2/15.6	1.1/1.57	544.5/2990.85	Est. TOC 5,100'	8
Tubing							

Drillers TD (ft) 18,937' Loggers TD (ft) 18,912'
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 7,019'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____
Surface - Every 3rd joint.
Intermediate - Every 3rd joint.
Production - Every joint to top of production cement.

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____
ProTechnics Spectra Chem water soluble tracers

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	See attached				

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
			See attached					

Please insert additional pages as applicable.

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>7,633'</u> TVD	<u>18,937'</u> MD
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas Oil NGL Water GAS MEASURED BY

 _____ mcfpd _____ bpd _____ bpd _____ bpd Estimated Orifice Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP DEPTH IN FT NAME TVD</u>	<u>BOTTOM DEPTH IN FT TVD</u>	<u>TOP DEPTH IN FT MD</u>	<u>BOTTOM DEPTH IN FT MD</u>	<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H₂S, ETC)</u>
<u>See attached</u>	<u>0</u>		<u>0</u>		

Please insert additional pages as applicable.

Drilling Contractor Appalachian Drillers / Patterson - UTI

Address 409 Butler Road, Suite A / 207 Carlton Drive City Kittanning / Eighty Four State PA/PA Zip 16201/15330

Logging Company Baker Hughes

Address 370 Westec Drive City Mt. Pleasant State PA Zip 15666

Cementing Company C&J Energy Services

Address 1650 Hackers Creek Rd. City Jane Lew State WV Zip 26378

Stimulating Company Universal Pressure Pumping, Inc.

Address 10713 West Sam Houston Parkway North, Suite 800 City Houston State TX Zip 77064

Please insert additional pages as applicable.

Completed by Tim Sands Telephone 304-884-6000

Signature *Tim Sands* Title Regulatory Coordinator Date 5/6/2020

Submission of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

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Stage	Perf Date	Perf from MD ft.	Perf to MD ft.	Number of Perfs	Formation(s)
1.00	1/8/2020	18,555.00	18705.00	48	Marcellus
2.00	1/9/2020	18,359.00	18,505.00	48	Marcellus
3.00	1/9/2020	18,155.00	18,305.00	48	Marcellus
4.00	1/10/2020	17,955.00	18,105.00	48	Marcellus
5.00	1/11/2020	17,755.00	17,905.00	48	Marcellus
6.00	1/12/2020	17,555.00	17,707.00	48	Marcellus
7.00	1/13/2020	17,352.00	17,505.00	48	Marcellus
8.00	1/14/2020	17,155.00	17,305.00	48	Marcellus
9.00	1/14/2020	16,955.00	17,105.00	48	Marcellus
10.00	1/15/2020	16,757.00	16,905.00	48	Marcellus
11.00	1/15/2020	16,555.00	16,705.00	48	Marcellus
12.00	1/16/2020	16,355.00	16,505.00	48	Marcellus
13.00	1/17/2020	16,155.00	16,305.00	48	Marcellus
14.00	1/17/2020	15,955.00	16,104.00	48	Marcellus
15.00	1/18/2020	15,755.00	15,905.00	48	Marcellus
16.00	1/18/2020	15,555.00	15,705.00	48	Marcellus
17.00	1/19/2020	15,355.00	15,505.00	48	Marcellus
18.00	1/19/2020	15,157.00	15,305.00	48	Marcellus
19.00	1/20/2020	14,955.00	15,105.00	48	Marcellus
20.00	1/21/2020	14,755.00	14,905.00	48	Marcellus
21.00	1/22/2020	14,557.00	14,705.00	48	Marcellus
22.00	1/22/2020	14,355.00	14,505.00	48	Marcellus
23.00	1/23/2020	14,155.00	14,304.00	48	Marcellus
24.00	1/23/2020	13,985.00	14,105.00	48	Marcellus
25.00	1/24/2020	13,755.00	13,905.00	48	Marcellus
26.00	1/24/2020	13,555.00	13,705.00	48	Marcellus
27.00	1/25/2020	13,357.00	13,505.00	48	Marcellus
28.00	1/25/2020	13,155.00	13,303.00	48	Marcellus
29.00	1/26/2020	12,985.00	13,105.00	48	Marcellus
30.00	1/26/2020	12,758.00	12,905.00	48	Marcellus
31.00	1/26/2020	12,555.00	12,705.00	48	Marcellus
32.00	1/27/2020	12,355.00	12,505.00	48	Marcellus
33.00	1/28/2020	12,155.00	12,305.00	48	Marcellus
34.00	1/28/2020	11,955.00	12,107.00	48	Marcellus
35.00	1/28/2020	11,755.00	11,905.00	48	Marcellus
36.00	1/29/2020	11,555.00	11,705.00	48	Marcellus
37.00	1/30/2020	11,355.00	11,505.00	48	Marcellus
38.00	1/30/2020	11,156.00	11,305.00	48	Marcellus
39.00	1/31/2020	10,955.00	11,105.00	48	Marcellus
40.00	1/31/2020	10,755.00	10,905.00	48	Marcellus
41.00	1/31/2020	10,557.00	10,705.00	48	Marcellus
42.00	2/1/2020	10,355.00	10,505.00	48	Marcellus
43.00	2/2/2020	10,155.00	10,305.00	48	Marcellus
44.00	2/2/2020	9,955.00	10,105.00	48	Marcellus
45.00	2/3/2020	9,755.00	9,907.00	48	Marcellus
46.00	2/3/2020	9,559.00	9,705.00	48	Marcellus
47.00	2/4/2020	9,355.00	9,505.00	48	Marcellus
48.00	2/4/2020	9,155.00	9,305.00	48	Marcellus
49.00	2/5/2020	8,956.00	9,105.00	48	Marcellus
50.00	2/5/2020	8,755.00	8,903.00	48	Marcellus
51.00	2/6/2020	8,552.00	8,705.00	48	Marcellus
52.00	2/6/2020	8,355.00	8,505.00	48	Marcellus
53.00	2/7/2020	8,155.00	8,305.00	48	Marcellus
54.00	2/9/2020	7,958.00	8,105.00	48	Marcellus
55.00	2/9/2020	7,755.00	7,905.00	48	Marcellus

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 API 47-049-02490

Stage	Stimulation Date	Avg. Pump Rate (BPM)	Avg. Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen
1	1/8/2020	84.90	8,280.00	6,520	4,521.00	405,200.00	12,674.00	N/A
2	1/9/2020	85.60	8,442.00	7,173	5,015.00	405,300.00	7,624.00	N/A
3	1/9/2020	85.40	8,249.00	6,745	4,644.00	409,700.00	12,903.00	N/A
4	1/10/2020	84.80	8,120.00	6,391	5,360.00	405,100.00	12,603.00	N/A
5	1/11/2020	85.20	8,056.00	5,920	5,585.00	404,900.00	12,853.00	N/A
6	1/12/2020	85.20	7,955.00	5,144	5,189.00	400,800.00	10,088.00	N/A
7	1/13/2020	85.20	7,812.00	5,418	5,409.00	406,300.00	10,245.00	N/A
8	1/14/2020	85.00	7,931.00	6,263	5,558.00	402,500.00	9,989.00	N/A
9	1/14/2020	85.30	7,530.00	5,452	3,814.00	402,500.00	10,250.00	N/A
10	1/15/2020	85.60	8,002.00	7,018	4,682.00	405,600.00	9,977.00	N/A
11	1/16/2020	85.20	7,694.00	5,165	4,526.00	407,500.00	10,165.00	N/A
12	1/16/2020	84.70	7,894.00	5,852	5,448.00	404,100.00	10,351.00	N/A
13	1/17/2020	85.50	8,047.00	6,429	5,901.00	408,100.00	10,160.00	N/A
14	1/17/2020	85.00	7,703.00	6,647	5,100.00	406,000.00	9,650.00	N/A
15	1/18/2020	85.50	8,124.00	6,671	5,154.00	407,300.00	9,733.00	N/A
16	1/18/2020	85.10	8,071.00	7,207	5,880.00	405,400.00	9,713.00	N/A
17	1/19/2020	85.20	8,206.00	7,432	5,168.00	407,600.00	9,743.00	N/A
18	1/19/2020	85.20	8,001.00	7,490	5,045.00	405,300.00	9,663.00	N/A
19	1/20/2020	85.00	7,890.00	6,275	5,540.00	405,800.00	9,871.00	N/A
20	1/21/2020	84.70	8,064.00	6,140	5,060.00	413,800.00	9,808.00	N/A
21	1/22/2020	85.10	8,169.00	6,543	4,665.00	407,500.00	9,570.00	N/A
22	1/22/2020	84.30	7,628.00	5,658	4,870.00	407,900.00	9,308.00	N/A
23	1/23/2020	84.90	7,984.00	6,646	4,578.00	410,300.00	9,813.00	N/A
24	1/24/2020	85.30	7,879.00	7,499	5,010.00	408,400.00	9,725.00	N/A
25	1/24/2020	85.40	7,653.00	6,505	5,005.00	407,200.00	9,774.00	N/A
26	1/25/2020	85.80	7,872.00	6,528	4,610.00	409,400.00	10,756.00	N/A
27	1/25/2020	85.50	7,468.00	5,881	4,769.00	409,000.00	9,722.00	N/A
28	1/25/2020	84.90	7,344.00	6,968	4,471.00	407,500.00	9,413.00	N/A
29	1/26/2020	85.60	7,349.00	5,675	5,453.00	408,100.00	9,783.00	N/A
30	1/26/2020	85.10	7,428.00	6,782	5,500.00	407,100.00	9,414.00	N/A
31	1/27/2020	85.40	7,533.00	7,446	5,375.00	410,400.00	9,471.00	N/A
32	1/27/2020	85.50	7,583.00	7,076	5,409.00	406,800.00	9,420.00	N/A
33	1/28/2020	85.30	7,487.00	6,534	5,560.00	405,600.00	9,738.00	N/A
34	1/28/2020	85.60	7,381.00	6,248	5,688.00	410,800.00	9,120.00	N/A
35	1/29/2020	85.70	7,375.00	6,525	5,460.00	411,700.00	9,181.00	N/A
36	1/29/2020	85.10	7,152.00	6,287	5,518.00	410,900.00	9,143.00	N/A
37	1/30/2020	85.30	7,098.00	6,297	5,490.00	412,800.00	9,127.00	N/A
38	1/30/2020	85.20	7,297.00	6,450	5,706.00	410,800.00	9,123.00	N/A
39	1/31/2020	85.70	7,318.00	6,527	5,490.00	412,700.00	9,111.00	N/A
40	2/1/2020	85.40	7,270.00	6,703	5,196.00	413,300.00	9,111.00	N/A
41	2/1/2020	85.50	7,368.00	6,682	5,250.00	105,304.00	9,078.00	N/A
42	2/2/2020	85.00	7,305.00	6,348	5,236.00	411,700.00	9,067.00	N/A
43	2/2/2020	84.70	7,213.00	6,401	5,550.00	412,700.00	9,087.00	N/A
44	2/2/2020	85.50	7,297.00	6,427	5,325.00	413,500.00	9,075.00	N/A
45	2/3/2020	85.60	7,334.00	6,888	6,275.00	411,500.00	9,038.00	N/A
46	2/3/2020	85.60	7,221.00	6,633	5,322.00	412,700.00	9,100.00	N/A
47	2/4/2020	85.60	6,962.00	6,385	4,920.00	411,500.00	9,019.00	N/A
48	2/4/2020	85.50	7,013.00	6,465	5,105.00	412,000.00	9,009.00	N/A

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Well
API

Crim East Unit 11H
47-049-02490

Lithology/Formation Name	Top Depth TVD	Bottom Depth TVD	Top Depth MD	Bottom Depth MD	Describe Rock Type and Record Quantity and Type of Fluid (Freshwater, Brine, Oil, Gas, H2S, ETC)
Dirt	0	71	0	71	
Sandstone	71	130	71	130	
Coal	130	134	130	134	
Shale	134	270	134	270	
Sandstone	270	430	270	430	
Shale	430	460	430	460	
Coal	460	465	460	465	
Shale	465	533	465	533	
SDY Shale	533	620	533	620	
Red Rock	620	630	620	630	
SDY Shale	630	650	630	650	
Red Rock	650	695	650	695	
Shale	695	960	695	960	
Sandstone	960	1000	960	1000	
SDY Shale	1000	1400	1000	1400	
Sandstone	1400	1530	1400	1530	
Shale	1530	1810	1530	1810	
Sandstone	1810	1890	1810	1890	
Shale	1890	2030	1890	2030	
Sandstone	2030	2100	2030	2100	
SDY Shale	2100	2300	2100	2300	
Sandstone	2300	2380	2300	2380	
SDY Shale	2380	2510	2380	2510	
Sandstone	2510	2540	2510	2540	
SDY Shale	2540	2620	2540	2620	
Sandstone	2620	2730	2620	2730	
Shale	2730	2880	2730	2880	
Sandstone	2880	2910	2880	2910	
SDY Shale	2910	3145	2910	3145	
Shale	3145	3980	3145	3980	
Sandstone	3980	4250	3980	4250	
Shale	4250	4460	4250	4460	
SDY Shale	4460	4629	4460	4629	
Sandstone	4629	4670	4629	4670	
SDY Shale	4670	5200	4670	5200	
Shale	5200	5310	5200	5310	
Sandstone	5310	5450	5310	5450	
Shale	5450	7254	5450	7310	
Geneseo	7254	7273	7310	7334	
Burket	7273	7298	7334	7365	
Tully	7298	7348	7365	7431	
Hamilton	7348	7492	7431	7680	
Marcellus	7492		7680	18937	

BOTTOM HOLE 6045' TOP HOLE 2913'

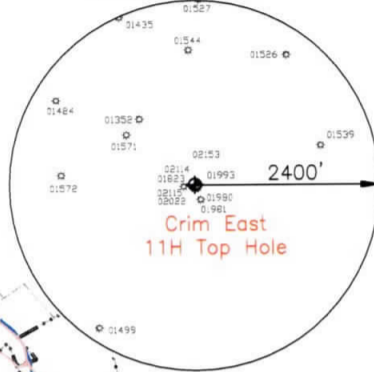
CRIM EAST UNIT 11H

SCALE: 1" = 2000' LATITUDE: 39°30'00" (TOP HOLE)
 SCALE: 1" = 2000' LATITUDE: 39°27'30" (BOTTOM HOLE)

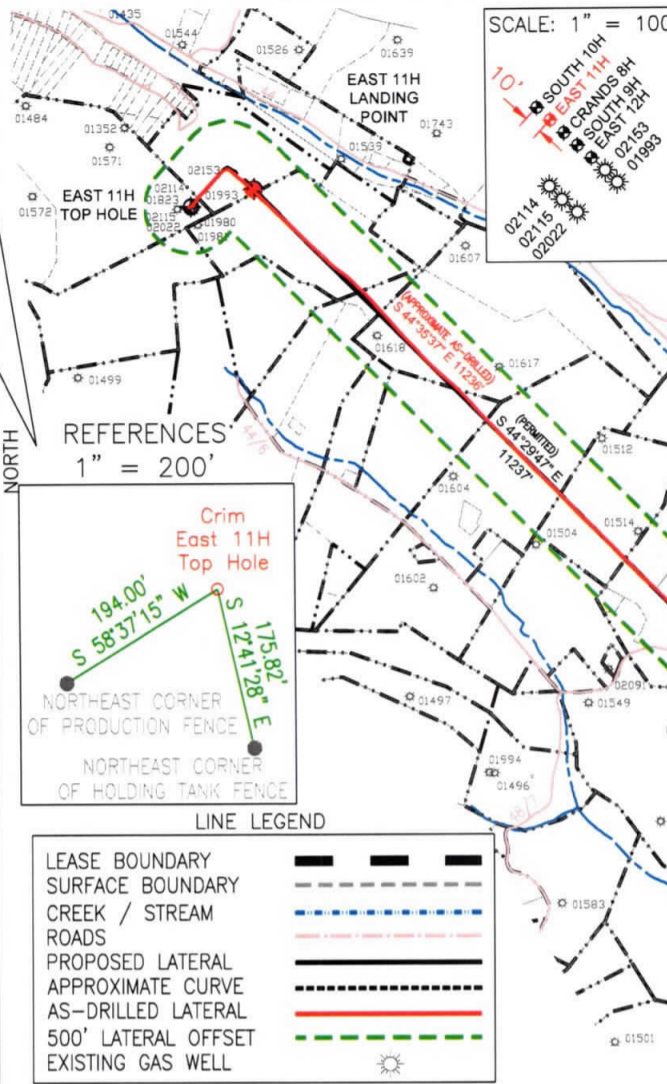
PERMITTED
 State Plane Coordinate
 West Virginia North

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 354914.431	N: 355103.264	N: 347088.168
E: 1773546.292	E: 1774236.486	E: 1782111.847
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369362.694	N: 4369423.730	N: 4367021.809
E: 560039.033	E: 560248.355	E: 562688.417
NAD 27	NAD 27	NAD 27
N 39.4716733	N 39.472087	N 39.4503927
W 80.3021795	W 80.2997406	W 80.2716006

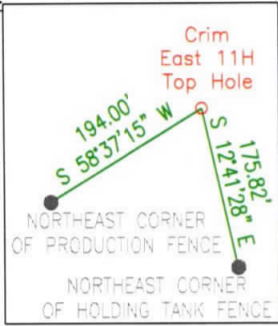
SCALE: 1" = 2400'



2862'
 10287'
 2400' = 1" : SCALE
 80°17'30" (TOP HOLE)
 80°15'00" (BOTTOM HOLE)
 LONGITUDE: 80°17'30" (TOP HOLE)
 LONGITUDE: 80°15'00" (BOTTOM HOLE)



REFERENCES
 1" = 200'



LINE LEGEND

LEASE BOUNDARY	---
SURFACE BOUNDARY	- - - -
CREEK / STREAM	~~~~~
ROADS	— · — · — ·
PROPOSED LATERAL	— · — · — ·
APPROXIMATE CURVE	- · - · - ·
AS-DRILLED LATERAL	— · — · — ·
500' LATERAL OFFSET	— · — · — ·
EXISTING GAS WELL	☀

AS-DRILLED

State Plane Coordinate
 West Virginia North

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 354914.431	N: 355091.050	N: 347089.818
E: 1773546.292	E: 1774225.570	E: 1782114.107
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369362.694	N: 4369419.954	N: 4367022.323
E: 560039.033	E: 560245.091	E: 562689.097
NAD 27	NAD 27	NAD 27
N 39.4716733	N 39.4721749	N 39.4503973
W 80.3021795	W 80.2997789	W 80.2715927

- NO DWELLINGS WITHIN 625' WERE FOUND.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
- TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
- WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
- SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN APRIL 2020 AND FILES PROVIDED BY XTO ENERGY INC.
- WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP AND SURVEYED LOCATIONS OF WELLS WITHIN 500' OF WELL BORE.

(724) 757-2417



SHEET 1 OF 2

2402 PENNSYLVANIA 66 DELMONT, PA 15626 www.jonesconsultant.com

FILE #: JC2017-25
 DRAWING #: CRIM EAST 11H AS-DRILLED
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1:2500
 PROVEN SOURCE OF ELEVATION: RTK GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: *Ryan Jones*
 R.P.E.: _____ P.S.: 2165



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



DATE: 4/7/2020
 OPERATOR'S WELL #: CRIM EAST UNIT 11H
 API WELL #: 47 049 02490
 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: LOWER WEST FORK RIVER (0502000206) ELEVATION: 1,221' (EXISTING FINISH GRADE)
 COUNTY/DISTRICT: MARION / LINCOLN QUADRANGLE: SHINNSTON 7.5'
 SURFACE OWNER: ROCHESTER & PITTSBURGH COAL COMPANY ACREAGE: 55±
 OIL & GAS ROYALTY OWNER: LOUIS A. FERRARI, ET UX ACREAGE: 810.7±

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

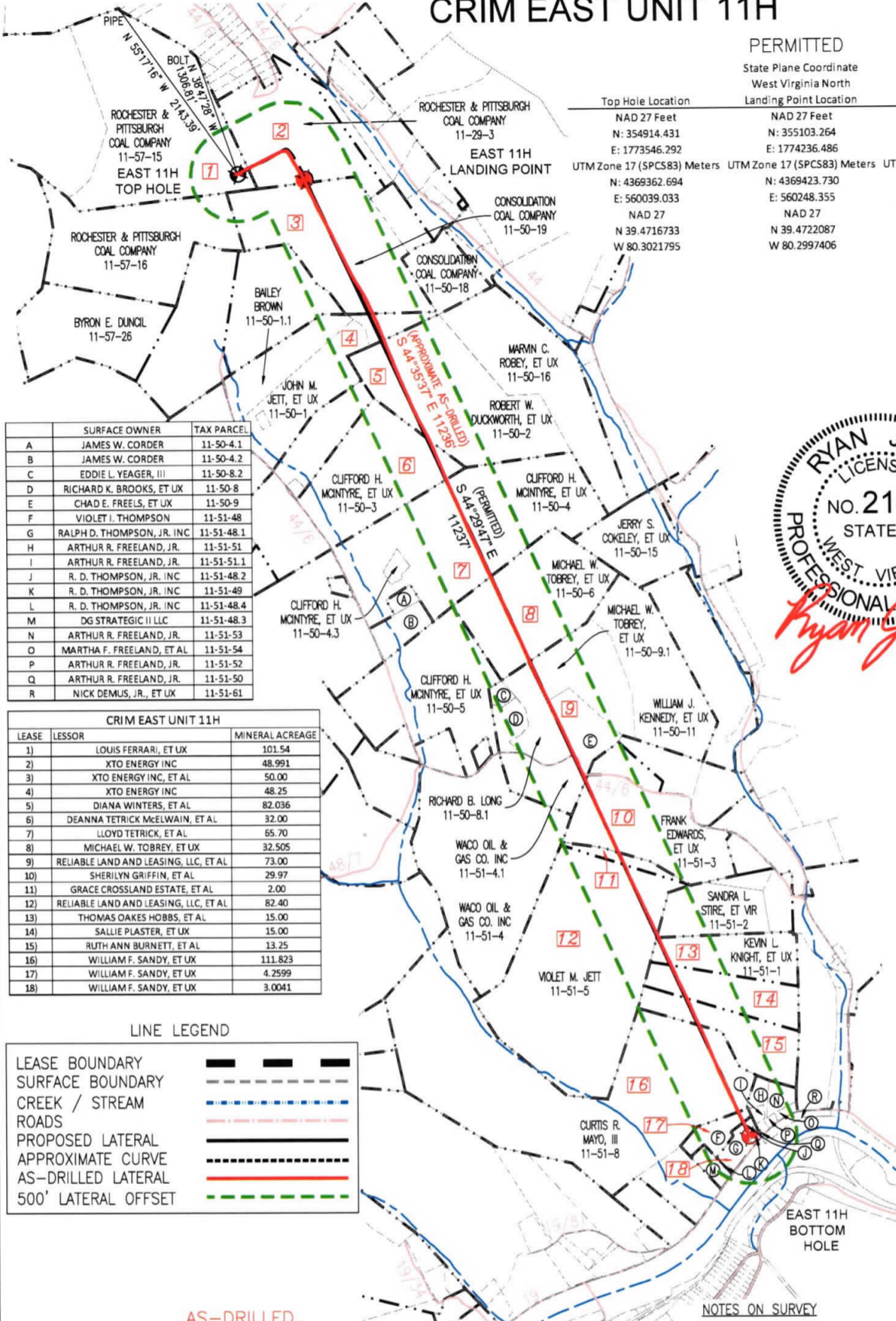
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,634' (TVD), 18,937' (TMD) (AS-DRILLED)
 WELL OPERATOR: XTO ENERGY INC. DESIGNATED AGENT: GARY BEALL
 Address: 190 THORN HILL ROAD Address: P.O. BOX 1008
 City: WARRENDALE State: PA Zip Code: 15086 City: JANE LEW State: WV Zip Code: 26378

CRIM EAST UNIT 11H

PERMITTED

State Plane Coordinate
West Virginia North

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 354914.431	N: 355103.264	N: 347088.168
E: 1773546.292	E: 1774236.486	E: 1782111.847
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369362.694	N: 4369423.730	N: 4367021.809
E: 560039.033	E: 560248.355	E: 562688.417
NAD 27	NAD 27	NAD 27
N 39.4716733	N 39.4722087	N 39.4503927
W 80.3021795	W 80.2997406	W 80.2716006



	SURFACE OWNER	TAX PARCEL
A	JAMES W. CORDER	11-50-4.1
B	JAMES W. CORDER	11-50-4.2
C	EDDIE L. YEAGER, III	11-50-8.2
D	RICHARD K. BROOKS, ET UX	11-50-8
E	CHAD E. FREELS, ET UX	11-50-9
F	VIOLET I. THOMPSON	11-51-48
G	RALPH D. THOMPSON, JR. INC	11-51-48.1
H	ARTHUR R. FREELAND, JR.	11-51-51
I	ARTHUR R. FREELAND, JR.	11-51-51.1
J	R. D. THOMPSON, JR. INC	11-51-48.2
K	R. D. THOMPSON, JR. INC	11-51-49
L	R. D. THOMPSON, JR. INC	11-51-48.4
M	DG STRATEGIC II LLC	11-51-48.3
N	ARTHUR R. FREELAND, JR.	11-51-53
O	MARTHA F. FREELAND, ET AL	11-51-54
P	ARTHUR R. FREELAND, JR.	11-51-52
Q	ARTHUR R. FREELAND, JR.	11-51-50
R	NICK DEMUS, JR., ET UX	11-51-61

LEASE	LESSOR	MINERAL ACREAGE
1)	LOUIS FERRARI, ET UX	101.54
2)	XTO ENERGY INC	48.991
3)	XTO ENERGY INC, ET AL	50.00
4)	XTO ENERGY INC	48.25
5)	DIANA WINTERS, ET AL	82.036
6)	DEANNA TETRICK McELWAIN, ET AL	32.00
7)	LLOYD TETRICK, ET AL	65.70
8)	MICHAEL W. TOBREY, ET UX	32.505
9)	RELIABLE LAND AND LEASING, LLC, ET AL	73.00
10)	SHERILYN GRIFFIN, ET AL	29.97
11)	GRACE CROSSLAND ESTATE, ET AL	2.00
12)	RELIABLE LAND AND LEASING, LLC, ET AL	82.40
13)	THOMAS OAKES HOBBS, ET AL	15.00
14)	SALLIE PLASTER, ET UX	15.00
15)	RUTH ANN BURNETT, ET AL	13.25
16)	WILLIAM F. SANDY, ET UX	111.823
17)	WILLIAM F. SANDY, ET UX	4.2599
18)	WILLIAM F. SANDY, ET UX	3.0041

LINE LEGEND

LEASE BOUNDARY	— — — — —
SURFACE BOUNDARY	- - - - -
CREEK / STREAM	~ ~ ~ ~ ~
ROADS	— — — — —
PROPOSED LATERAL	— — — — —
APPROXIMATE CURVE	- - - - -
AS-DRILLED LATERAL	— — — — —
500' LATERAL OFFSET	- - - - -

AS-DRILLED

State Plane Coordinate
West Virginia North

Top Hole Location	Landing Point Location	Bottom Hole Location
NAD 27 Feet	NAD 27 Feet	NAD 27 Feet
N: 354914.431	N: 355091.050	N: 347089.818
E: 1773546.292	E: 1774225.570	E: 1782114.107
UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters	UTM Zone 17 (SPCS83) Meters
N: 4369362.694	N: 4369419.954	N: 4367022.323
E: 560039.033	E: 560245.091	E: 562689.097
NAD 27	NAD 27	NAD 27
N 39.4716733	N 39.4721749	N 39.4503973
W 80.3021795	W 80.2997789	W 80.2715927

NOTES ON SURVEY

- NO DWELLINGS WITHIN 625' WERE FOUND.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
- TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD 83.
- WELL ELEVATION ESTABLISHED BY RTK GPS NAVD 88.
- SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARION COUNTY IN APRIL 2020 AND FILES PROVIDED BY XTO ENERGY INC.
- WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP AND SURVEYED LOCATIONS OF WELLS WITHIN 500' OF WELL BORE.

JONES CONSULTANTS, LLC

SURVEYING • MAPPING • LAND • GAS WELL • PIPELINE
2402 PENNSYLVANIA 66 DELMONT, PA 15626
(724) 757 - 2417 www.jonesconsultant.com

SUPPLEMENTAL SURFACE AND LESSOR EXHIBIT

CRIM EAST UNIT 11H

Drawn By: JRV	Date: 4/7/2020	LINCOLN DISTRICT MARION COUNTY, WEST VIRGINIA
Scale: 1" = 1500'	Sheet: SHEET 2 OF 2	File No.: JC2017-25
AFE # DD.2011.06193.CAP.DRL.01		





XTO ENERGY INC

Location: Marion County, WV
 Field: Marion
 Facility: Crim Pad

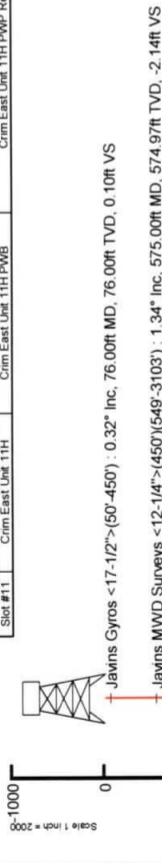
Slot: Slot #11
 Well: Crim East Unit 11H
 Wellbore: Crim East Unit 11H PWB

Plan reference wellbore is Crim East Unit 11H PWB Rev-A.0
 True vertical depths are referenced to Patterson 579 (RKB)
 Measured depths are referenced to Patterson 579 (RKB)
 Patterson 579 (RKB) to Mean Sea Level: 1247 feet
 Mean Sea Level to Ground level (At Slot: Slot #11): -1221 feet
 Coordinates are in feet referenced to Slot

Grid System: NAD2011 Lambert West Virginia SP, Northern Zone (4701), US feet
 North Reference: True north
 Scale: True distance
 Depths are in feet
 Created by: debart on 2020-03-31
 Database: WA_MPL_EASTERNUS_Details

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Crim Pad	1773568.370	354894.110	80°18'07.562"W
Slot	Local N (ft)	Local E (ft)	Longitude
Slot #11	20.12	-22.26	80°18'07.846"W
Comment	Crim East Unit 11H		
Comment	Patterson 579 (RKB) to Ground level (At Slot: Slot #11)		
Mean Sea Level to Ground level (At Slot: Slot #11)	-1221ft		
Patterson 579 (RKB) to Mean Sea Level	1247ft		

Slot	Well	Wellbore	Wellpath
Slot #11	Crim East Unit 11H	Crim East Unit 11H PWB	Crim East Unit 11H PWB Rev-A.0
Slot #11	Crim East Unit 11H	Crim East Unit 11H PWB	Crim East Unit 11H PWB Rev-A.0



Well Profile Data							
Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	VS (ft)
Tie On	6551.00	7.620	41.330	6517.31	379.08	342.45	-25.81
Proj. To Bottom	6618.00	7.620	41.330	6583.71	385.75	348.32	-26.37
Curve KOP	6990.00	7.620	41.330	6952.43	422.79	390.90	-29.52
End of 3D Arc	6994.12	7.615	38.271	6956.52	423.21	381.25	-29.57
First Take Pt	7171.03	70.000	134.987	7511.45	190.00	692.05	355.11
Landing Pt	7917.03	90.000	134.987	7546.00	51.47	830.64	10.00
BHL	18952.37	90.000	134.987	7546.00	-7749.91	8635.60	0.00

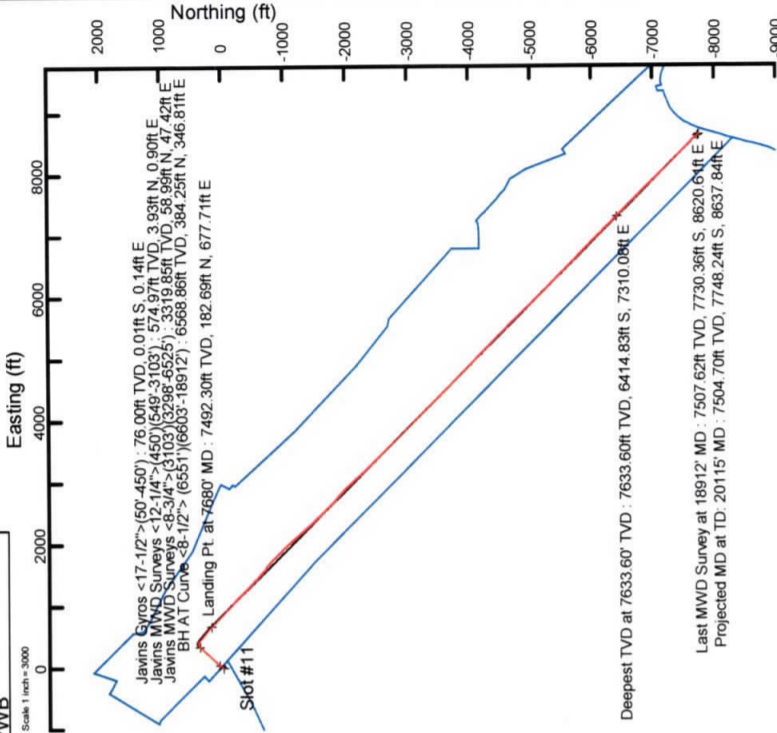
As Drilled Target Details							
Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	VS (ft)
Landing Pt	7680.00	65.775	135.21	7492.30	182.69	677.71	350.14
Deepest TVD	17050.00	88.68	135.02	7633.60	-6414.83	7310.08	9705.08
Last MWD Survey	18912.00	96.72	136.07	7507.62	-7730.36	8620.61	11561.99
Projection to TD	18937.00	96.72	136.07	7504.70	-7748.24	8637.84	11586.81

Deepest TVD at 7633.60' MD : 88.68" Inc. 17050.00ft MD, 7633.60ft TVD, 9705.08ft VS
 Last MWD Survey at 18912' MD : 96.72" Inc. 18912.00ft MD, 7507.62ft TVD, 11561.99ft VS
 Projected MD at TD : 20115' MD : 96.72" Inc. 18937.00ft MD, 7504.70ft TVD, 11586.81ft VS

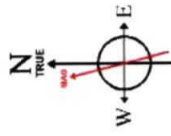
Landing Pt. at 7680' MD : 65.75" Inc. 7680.00ft MD, 7492.30ft TVD, 350.14ft VS

Deepest TVD at 7633.60' MD : 88.68" Inc. 17050.00ft MD, 7633.60ft TVD, 9705.08ft VS
 Last MWD Survey at 18912' MD : 96.72" Inc. 18912.00ft MD, 7507.62ft TVD, 11561.99ft VS
 Projected MD at TD : 20115' MD : 96.72" Inc. 18937.00ft MD, 7504.70ft TVD, 11586.81ft VS

Vertical Section (ft)
 Azimuth 134.99° with reference 0.00 N, 0.00 E



API: 47-049-02490-0000
 BH Job#: 110033839A
 Rig: Patterson 579
 Duration: 9/19/2019 - 9/25/2019



User specified (HDGM) Dip: 86.47° Field: 52171 nT
 Magnetic North is 9.13 degrees West of True North (at 9/17/2019)
 To correct azimuth from Magnetic to True subtract 9.13 degrees

Scale 1 inch = 2000



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/8/2020
Job End Date:	2/9/2020
State:	West Virginia
County:	Marion
API Number:	47-049-02490-00-00
Operator Name:	XTO Energy/ExxonMobil
Well Name and Number:	Crim East Unit 11H
Latitude:	39.47175800
Longitude:	-80.30898710
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,505
Total Base Water Volume (gal):	21,840,000
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	XTO	Carrier/Base Fluid	Water	7732-18-5	100.00000	88.41694	None
Sand	UPP	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	10.91067	None
HCL Acid (15%)	UPP	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.08422	None
K-BAC 1005	UPP	Biocide	Polyethylene glycol	25322-68-3	50.00000	0.00974	None
			Water	7732-18-5	44.30000	0.00863	None
			2,2-Dibromo-3-nitriopropionamide	10222-01-2	5.80000	0.00112	None
FR-3	UPP	Friction reducer	Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01230	None
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.50000	0.00092	None
			Oleic Acid Diethanolamide	93-83-4	1.50000	0.00092	None
Scale Hib PE-18	UPP	Scale Inhibitor	Alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00061	None

			Ethylene glycol	107-21-1	40.00000	0.00743	None
			Proprietary Scale Inhibitor	Proprietary	30.00000	0.00557	None
Unihib G	JPP	Acid inhibitor					
			Butyl diglycol	112-34-5	75.00000	0.00033	None
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00022	None
			Methanol	67-56-1	5.00000	0.00002	None
			Formaldehyde	50-00-0	1.00000	0.00000	None
			Thiourea	62-56-6	1.00000	0.00000	None
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Polyethylene glycol	25322-68-3	50.00000	0.00974	
			Water	7732-18-5	44.30000	0.00863	
			Ethylene glycol	107-21-1	40.00000	0.00743	
			Oleic Acid Diethanolamide	93-83-4	1.50000	0.00092	
			Ammonium chloride (NH4Cl)	12125-02-9	1.50000	0.00092	
			Alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00061	
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00022	
			Methanol	67-56-1	5.00000	0.00002	
			Thiourea	62-56-6	1.00000	0.00000	
			Formaldehyde	50-00-0	1.00000	0.00000	

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided. Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)