

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

API 47-085-10218 County RITCHIE District UNION
Quad PULLMAN Pad Name PUL96 Field/Pool Name N/A
Farm name JAMES H. & WILMA J. WILSON Well Number 515888
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing N. 4,340,217.84 Easting E. 501,221.33
Landing Point of Curve Northing N. 4,340,065.28 Easting E. 500,946.56
Bottom Hole Northing N. 4,338,555.70 Easting E. 501,383.45

Elevation (ft) 1183' 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 w/o Flowback
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)

Water base Mud 11.5 ppg, Synthetic Base Mud 11.5 ppg, barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution, calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 07/23/2015 Date drilling commenced 09/24/2015 Date drilling ceased 2/16/2016
Date completion activities began 8/6/2016 Date completion activities ceased 8/13/2016
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 342,368,399,556 Open mine(s) (Y/N) depths N
Salt water depth(s) ft No salt water shows Void(s) encountered (Y/N) depths N
Coal depth(s) ft No coal seams Cavern(s) encountered (Y/N) depths N

Is coal being mined in area (Y/N) N

APPROVED
NAME: Michael Doff
DATE: 12-21-2012

Reviewed by: _____

API 47-085 - 10218

Farm name JAMES H. & WILMA J. WILSON Well number 515888

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	24"	20"	40'	NEW	A-500	N/A	Y
Surface	17 1/2"	13 3/8"	665'	NEW	J-55	205'	Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	2570'	NEW	A-500	781', 1729'	Y
Intermediate 2							
Intermediate 3							
Production	8 1/2"	5 1/2"	12,406'	NEW	P-110	N/A	N
Tubing							
Packer type and depth set							

Comment Details _____

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	CLASS A	38	15.6	1.18	44.84	0	8
Surface	CLASS A	599	15.6	1.20	718.80	0	8
Coal							
Intermediate 1	CLASS A	988	15.6	1.18	1165.84	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS H / CLASS H	835 / 682	15.2 / 15.6	1.25 / 2.06	2,448.7	2,016'	72
Tubing							

Drillers TD (ft) 14,644'

Loggers TD (ft) N/A

Deepest formation penetrated MARCELLUS

Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 4,741'

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 _____

CONDUCTOR: NONE

SURFACE: 2 CENTRALIZERS AT JOINTS 1 AND 12

INTERMEDIATE: 6 CENTRALIZERS PLACED EVERY 500'

PRODUCTION: Composite body spiral centralizers run every joint from bottom to 4,896 ftMD, then one centralizer each at 3,722', 2,758', & 2,582'

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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515888 Final Formations API #47-08510218				
Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
SAND/SHALE	1	1	1,060	1,060
MAXTON	1,060	1,060	1,086	1,086
SAND/SHALE	1,086	1,086	1,117	1,117
BIG LIME	1,117	1,117	1,242	1,242
SAND/SHALE	1,242	1,242	2,319	2,319
BIG INJUN	2,319	2,319	2,467	2,467
SAND/SHALE	2,467	2,467	2,672	2,672
GANTZ	2,672	2,672	2,754	2,754
50F	2,754	2,754	2,841	2,841
GORDON	2,841	2,841	3,054	3,054
5TH	3,054	3,054	3,111	3,111
BAYARD	3,111	3,111	3,513	3,513
WARREN	3,513	3,513	3,623	3,623
SPEECHLEY	3,623	3,623	3,961	3,961
BALLTOWN A	3,961	3,961	4,204	4,204
BALLTOWN B	4,204	4,204	4,351	4,351
BRADFORD	4,351	4,351	4,607	4,607
RILEY	4,607	4,607	4,948	4,947
BENSON	4,948	4,947	5,227	5,200
ALEXANDER	5,227	5,200	5,241	5,211
ANGOLA	5,241	5,211	5,999	5,748
RHINESTREET UPPER	5,999	5,748	6,097	5,819
RHINESTREET	6,097	5,819	6,484	6,115
SONYEA	6,484	6,115	6,624	6,210
MIDDLESEX	6,624	6,210	6,718	6,264
GENESSEE	6,718	6,264	6,812	6,308
GENESE0	6,812	6,308	6,888	6,336
TULLY	6,888	6,336	6,933	6,349
MARCELLUS	6,933	6,349	12,407	6,375

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515888-47-085-10218-0000- Stimulated Stages

Stage Number	Stimulation 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)
Initiation Sleeve	08/06/2016 08:05	15.6	6,224.00	7417	4540		561	0
1	08/06/2016 13:28	99.6	8,443.00	6233	3104	248,064	5312	0
2	08/06/2016 18:15	95.1	8,433.00	6082	3180	260,000	5949	0
3	08/06/2016 23:09	98.9	8,098.00	6029	3278	249,001	5073	0
4	08/07/2016 04:15	98.9	8,100.00	6944	3228	149,500	4904	0
5	08/07/2016 08:14	92.8	8,397.00	7113	3562	250,000	6669	0
6	08/07/2016 12:38	94.8	8,300.00	7511	2615	250,000	5450	0
7	08/07/2016 16:36	95.6	7,978.00	7190	2929	249,001	5230	0
8	08/07/2016 20:26	97	7,956.00	6729	2811	249,001	5232	0
9	08/08/2016 00:09	101.1	8,078.00	6380	2803	250,000	5092	0
10	08/08/2016 03:56	95	8,377.00	6717	3012	249,001	4962	0
11	08/08/2016 08:20	96.6	8,359.00	6961	3228	250,000	5045	0
12	08/08/2016 12:55	95	8,398.00	7406	3108	255,000	5141	0
13	08/08/2016 17:02	93.7	8,141.00	7677	3223	249,001	4972	0
14	08/09/2016 00:04	97.7	7,998.00	7672	3447	249,499	4909	0
15	08/09/2016 03:26	100.8	7,952.00	6229	2301	250,000	4793	0
16	08/09/2016 07:09	97.7	7,569.00	7153	3440	250,000	4839	0
17	08/09/2016 10:49	94.7	7,998.00	6974	2944	250,000	5055	0
18	08/09/2016 15:24	46.4	8,781.00	5880	4131	9,000	3009	0
18.1	08/09/2016 20:08	93.66	8,080.00	7518	3173	241,001	5185	0
19	08/10/2016 01:14	90.9	7,966.00	6396	3566	250,000	5519	0
20	08/10/2016 07:38	98.2	7,736.00	6267	3382	255,000	5164	0
21	08/10/2016 14:22	99.5	7,922.00	6026	3442	250,000	5063	0
22	08/10/2016 18:15	99.8	7,383.00	7392	3202	250,000	4936	0
23	08/10/2016 23:30	69.2	8,769.00	7385	4348	6,100	6806	0
23.02	08/11/2016 06:00	72.4	8,536.00		4073	2,000		0
23.1	08/11/2016 19:36	92.3	7,827.00	6752	2911	240,599	6142	0
24	08/11/2016 23:19	44.3	8,347.00	7376	4423	1,300	3571	0
24.1	08/12/2016 04:26	91.3	7,311.00	7232	2889	249,001	6436	0
25	08/12/2016 07:55	93.3	7,291.00	6173	2590	245,000	7294	0
26	08/12/2016 12:10	99.4	7,640.00	6144	2992	250,500	5571	0
27	08/12/2016 15:18	98.9	7,246.00	7738	2563	250,000	4799	0
28	08/12/2016 18:12	99.7	7,376.00	7730	3184	250,500	4912	0
29	08/12/2016 21:07	97.1	7,266.00	6961	3249	248,000	4833	0
30	08/13/2016 01:10	99.8	7,087.00	8074	3163	248,699	4821	0
31	08/13/2016 04:16	99.2	7,307.00	6940	2739	251,001	4667	0
32	08/13/2016 07:59	96	7,907.00	6391	2800	249,001	4871	0
33	08/13/2016 10:53	98	7,786.00	6796	2579	251,001	4897	0
34	08/13/2016 13:52	99.5	7,197.00	7468	2362	250,000	4662	0
35	08/13/2016 17:09	100.6	7,058.00	7902	2478	249,001	4663	0
36	08/13/2016 20:48	96.9	7,152.00	5940	3207	248,064	5281	0

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515888-47-085-10218-0000 Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	3/4/2016	12408.00	12,406.00	10	MARCELLUS
1	08/06/2016 10:35	12381.00	12,260.00	32	MARCELLUS
2	08/06/2016 16:31	12110.00	12,232.00	40	MARCELLUS
3	08/06/2016 21:37	11960.00	12,082.00	40	MARCELLUS
4	08/07/2016 02:21	11810.00	11,930.00	40	MARCELLUS
5	08/07/2016 06:57	11660.00	11,782.00	40	MARCELLUS
6	08/07/2016 11:12	11510.00	11,632.00	40	MARCELLUS
7	08/07/2016 15:28	11362.00	11,482.00	40	MARCELLUS
8	08/07/2016 19:04	11210.00	11,332.00	40	MARCELLUS
9	08/07/2016 22:57	11060.00	11,182.00	40	MARCELLUS
10	08/08/2016 02:40	10910.00	11,032.00	40	MARCELLUS
11	08/08/2016 06:25	10760.00	10,882.00	40	MARCELLUS
12	08/08/2016 11:00	10610.00	10,732.00	40	MARCELLUS
13	08/08/2016 16:02	10460.00	10,580.00	40	MARCELLUS
14	08/08/2016 19:26	10310.00	10,432.00	40	MARCELLUS
15	08/09/2016 02:23	10160.00	10,282.00	40	MARCELLUS
16	08/09/2016 06:08	10010.00	10,130.00	40	MARCELLUS
17	08/09/2016 09:28	9860.00	9,982.00	40	MARCELLUS
18	08/09/2016 13:26	9710.00	9,832.00	40	MARCELLUS
18.1	08/09/2016 19:02	9665.00	9,725.00	24	MARCELLUS
19	08/09/2016 22:37	9515.00	9,637.00	40	MARCELLUS
20	08/10/2016 03:48	9365.00	9,485.00	40	MARCELLUS
21	08/10/2016 12:51	9215.00	9,337.00	40	MARCELLUS
22	08/10/2016 16:42	9065.00	9,187.00	40	MARCELLUS
23	08/10/2016 20:37	8915.00	9,035.00	40	MARCELLUS
23.1	08/11/2016 17:37	8865.00	9,035.00	16	MARCELLUS
24	08/11/2016 22:19	8715.00	8,835.00	40	MARCELLUS
24.1	08/11/2016 02:36	8760.00	8,820.00	24	MARCELLUS
25	08/12/2016 06:58	8565.00	8,687.00	40	MARCELLUS
26	08/12/2016 10:43	8415.00	8,537.00	40	MARCELLUS
27	08/12/2016 14:26	8265.00	8,387.00	40	MARCELLUS
28	08/12/2016 17:21	8118.00	8,237.00	40	MARCELLUS
29	08/12/2016 20:18	7965.00	8,087.00	40	MARCELLUS
30	08/12/2016 23:26	7815.00	7,935.00	40	MARCELLUS
31	08/13/2016 03:20	7665.00	7,787.00	40	MARCELLUS
32	08/13/2016 06:34	7515.00	7,637.00	40	MARCELLUS
33	08/13/2016 10:02	7365.00	7,485.00	40	MARCELLUS
34	08/13/2016 12:54	7215.00	7,337.00	40	MARCELLUS
35	08/13/2016 15:48	7065.00	7,187.00	40	MARCELLUS
36	08/13/2016 19:33	6915.00	7,037.00	40	MARCELLUS

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/6/2016
Job End Date:	8/13/2016
State:	West Virginia
County:	Ritchie
API Number:	47-085-10218-00-00
Operator Name:	EQT Production
Well Name and Number:	515888
Latitude:	39.21115200
Longitude:	-80.98602200
Datum:	NAD83
Federal Wells:	NO
Indian Well:	NO
True Vertical Depth:	6,349
Total Base Water Volume (gal):	8,496,180
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	Halliburton	Carrier/Base Fluid					
				Listed Below			
MC MX 8-2544	Multi-Chem Group	Live Culture - Nitrate Reducing Bacteria					
				Listed Below			

				Polyacrylate	Proprietary	30.00000	0.04436	
				Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.04436	
				Polyacrylate	Proprietary	30.00000	0.04436	None
				Ethylene glycol	107-21-1	60.00000	0.03651	
				Ethylene glycol	107-21-1	60.00000	0.03651	None
				Contains no hazardous substances in concentrations above cut-off values according to the competent authority	Proprietary	100.00000	0.02925	
				Contains no hazardous substances in concentrations above cut-off values according to the competent authority	Proprietary	100.00000	0.02925	None
				Sodium chloride	7647-14-5	100.00000	0.02243	None
				Ethoxylated alcohols	Proprietary	5.00000	0.00739	
				Ethoxylated alcohols	Proprietary	5.00000	0.00739	None
				Fatty nitrogen derived amides	Proprietary	5.00000	0.00739	None
				Fatty nitrogen derived amides	Proprietary	5.00000	0.00739	
				Polyacrylate	Proprietary	30.00000	0.00673	None
				Sodium nitrate	7631-99-4	5.00000	0.00112	None
				Fatty nitrogen derived amides	Proprietary	5.00000	0.00112	None
				Sodium chloride	7647-14-5	5.00000	0.00112	None
				Methanol	67-56-1	60.00000	0.00083	None
				Methanol	67-56-1	60.00000	0.00083	
				Ethoxylated alcohols	Proprietary	30.00000	0.00041	
				Modified thiourea polymer	Proprietary	30.00000	0.00041	
				Ethoxylated alcohols	Proprietary	30.00000	0.00041	None
				Modified thiourea polymer	Proprietary	30.00000	0.00041	None

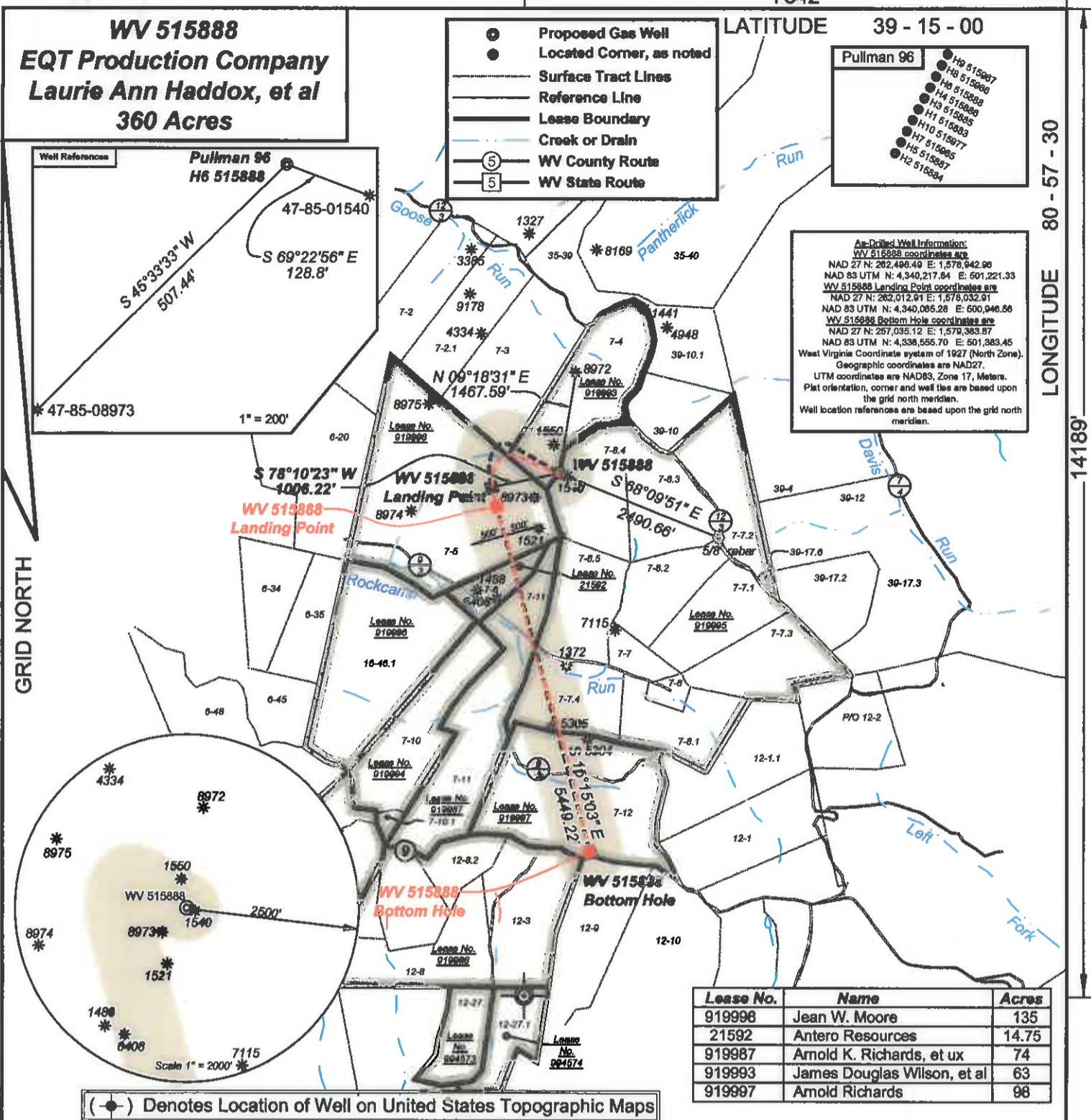
		Propargyl alcohol	107-19-7	10.00000	0.00014
		Propargyl alcohol	107-19-7	10.00000	0.00014 None

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)



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 regulations issued and prescribed by the Department of Environmental Protection.

Dwayne A. Hall
 P.S. 2089SU



FILE NO: 243-14
 DRAWING NO: 243-14 Pullman 96 H6.dwg
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1:2500
 PROVEN SOURCE OF ELEVATION: NGS CORS Station

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 OIL AND GAS DIVISION

DATE: March 10 20 16
 OPERATOR'S WELL NO. 515888
 API WELL NO
 47 - 85 - 10218
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: Original: 1194' Proposed: 1182' WATERSHED Goose Run of Rockcamp Run QUADRANGLE: Pullman
 DISTRICT: Union COUNTY: Ritchie
 SURFACE OWNER: James H. & Wilma J. Wilson ACREAGE: 40.089
 ROYALTY OWNER: Laurie Ann Haddox, et al LEASE NO: 919995 ACREAGE: 360
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus ESTIMATED DEPTH: TVD 6,398'

WELL OPERATOR: EQT Production Company DESIGNATED AGENT: Rex C. Ray
 ADDRESS: PO Box 280 / 115 Professional Place ADDRESS: PO Box 280 / 115 Professional Place
Bridgeport, WV 26330 Bridgeport, WV 26330