

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 514480

API: 47 - 085 - 10290

Submission: Initial Amended

Notes:

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WV Department of
Environmental Protection

Reviewed

02/16/2018

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

API 47-085-10290 County RITCHIE District CLAY
 Quad PENNSBORO 7.5' Pad Name PEN54 Field/Pool Name _____
 Farm name Jerry Morton et al Well Number 514480
 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 4,345,371.61 Easting 506,276.12
 Landing Point of Curve Northing 4,346,094.04 Easting 507,144.61
 Bottom Hole Northing 4,348,250.80 Easting 506,428.41

Elevation (ft) 1016 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

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Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water
 Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)

Water based mud 13.0 ppg, barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, sodium hydroxide, chrome lignosulfonate, calcium hydroxide, sodium acid pyrophosphate, bentonite, Methyl ester of sulfonated tannin, treated silica, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, glutaraldehyde, ground walnut shells, calcium carbonate, fibrous cellulose.

Date permit issued 07/26/2016 Date drilling commenced 08/08/2016 Date drilling ceased 09/01/2016
 Date completion activities began 09/08/2017 Date completion activities ceased 10/16/2017
 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 109',115',312',637',739',755',780' Open mine(s) (Y/N) depths N
 Salt water depth(s) ft 1360' Void(s) encountered (Y/N) depths N
 Coal depth(s) ft 336',799',877',1088',1192' Cavern(s) encountered (Y/N) depths N
 Is coal being mined in area (Y/N) N

Reviewed by: _____

02/16/2018

API 47-085 - 10290 Farm name Jerry Morton et al Well number 514480

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 40LB/FT	NONE	Y
Surface	17.5"	13.375"	906'	NEW	J-55 54.5LB/FT	311'	Y
Coal							
Intermediate 1	12.375" & 12.25"	9.625"	5394'	NEW	A-500 & P-110 40lb/ft	3334'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	16200'	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set		Davis Lynch casing packer and diverter tool placed at 3315' Two stage cement job performed.					

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	58	15.6	1.18	69	0	8+
Surface	CLASS A	730	15.6	1.20	876	0	8
Coal							
Intermediate 1	CLASS A	335/310 & 1235	14.2/15.6 & 15.6	1.24/1.18 & 1.18	2239	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS A / CLASS H	800 / 1065	15.2 / 15.6	1.12 / 1.85	2866	3886'	72+
Tubing							

Drillers TD (ft) 16203' Loggers TD (ft) N/A
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

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Kick off depth (ft) 3555'

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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- RAN AT LEAST EVERY 500' FEET
 INTERMEDIATE- RAN AT LEAST EVERY 500' FEET
 PRODUCTION- COMPOSITE BODY CENTRALIZERS RAN EVERY JOINT FROM SHOE TO KOP

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 _____

API 47- 085 - 10290 Farm name Jerry Morton et al Well number 514480

Drilling Contractor _____
Address _____ City _____ State _____ Zip _____

Logging Company _____
Address _____ City _____ State _____ Zip _____

Logging Company PROFESSIONAL DIRECTIONAL
Address 103 SUDS RUN ROAD City MT. CLARE State WV Zip 26408

Cementing Company ALLIED SERVICES
Address 116 KIMMEL SCHOOL ROAD City SHELOCTA State PA Zip 15773

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API 47-085-10290	514480			PEN54
Final Formations				
Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
SAND/SHALE	1	1	336	336
COAL	336	336	344	344
SAND/SHALE	344	344	799	799
COAL	799	799	802	802
SAND/SHALE	802	802	877	877
COAL	877	877	882	882
SAND/SHALE	882	882	1088	1088
COAL	1088	1088	1092	1092
SAND/SHALE	1092	1092	1192	1192
COAL	1192	1192	1197	1197
SAND/SHALE	1197	1197	1426	1426
MAXTON	1426	1426	1621	1621
BIG LIME	1621	1621	2003	2003
WEIR	2003	2003	2221	2221
GANTZ	2221	2221	2366	2366
SOF	2366	2366	2461	2461
GORDON	2461	2461	2619	2619
STH	2619	2619	2633	2633
BAYARD	2633	2633	3088	3088
WARREN	3088	3088	3166	3166
SPEECHLEY	3166	3166	3556	3556
BALLTOWN A	3556	3556	3911	3905
BALLTOWN B	3911	3905	3962	3955
BRADFORD	3962	3955	4212	4194
RILEY	4212	4194	4595	4544
BENSON	4595	4544	4842	4748
ALEXANDER	4842	4748	5381	5149
RHINESTREET	5381	5149	5643	5339
RHINESTREET UPPER	5643	5339	6826	5760
SONYEA	6826	5760	7912	6128
MIDDLESEX	7912	6128	8075	6182
GENESSEE	8075	6182	8415	6272
TULLY	8415	6272	8485	6285
HAMILTON	8485	6285	8538	6293
MARCELLUS	8538	6293	16203	6364

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514480 47-085-10290-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	9/16/2017	16,176	16,200	10	MARCELLUS
1	9/8/2017	16,015	16,137	32	MARCELLUS
2	9/9/2017	15,815	15,977	40	MARCELLUS
3	9/10/2017	15,615	15,777	40	MARCELLUS
4	9/13/2017	15,415	15,577	40	MARCELLUS
5	9/13/2017	15,215	15,377	40	MARCELLUS
6	9/14/2017	15,015	15,177	40	MARCELLUS
7	9/14/2017	14,815	14,977	40	MARCELLUS
8	10/4/2017	14,615	14,769	40	MARCELLUS
9	10/5/2017	14,415	14,577	40	MARCELLUS
10	10/5/2017	14,215	14,377	40	MARCELLUS
11	10/5/2017	14,015	14,177	40	MARCELLUS
12	10/5/2017	13,815	13,977	40	MARCELLUS
13	10/6/2017	13,615	13,777	40	MARCELLUS
14	10/6/2017	13,415	13,577	40	MARCELLUS
15	10/6/2017	13,215	13,377	40	MARCELLUS
16	10/11/2017	13,015	13,137	32	MARCELLUS
16	10/6/2017	13,185	13,187	40	MARCELLUS
17	10/6/2017	12,815	12,977	40	MARCELLUS
18	10/12/2017	12,615	12,777	40	MARCELLUS
19	10/12/2017	12,415	12,577	40	MARCELLUS
20	10/12/2017	12,215	12,377	40	MARCELLUS
21	10/12/2017	12,015	12,177	40	MARCELLUS
22	10/13/2017	11,815	11,977	40	MARCELLUS
23	10/13/2017	11,615	11,777	40	MARCELLUS
24	10/13/2017	11,415	11,577	40	MARCELLUS
25	10/13/2017	11,215	11,377	40	MARCELLUS
26	10/14/2017	11,015	11,177	40	MARCELLUS
27	10/14/2017	10,815	10,977	40	MARCELLUS
28	10/14/2017	10,615	10,777	40	MARCELLUS
29	10/14/2017	10,375	10,577	48	MARCELLUS
30	10/14/2017	10,088	10,250	40	MARCELLUS
31	10/15/2017	9,888	10,050	40	MARCELLUS
32	10/15/2017	9,728	9,850	32	MARCELLUS
33	10/15/2017	9,493	9,615	32	MARCELLUS
34	10/15/2017	9,293	9,455	40	MARCELLUS
35	10/15/2017	9,093	9,255	40	MARCELLUS
36	10/16/2017	8,893	9,055	40	MARCELLUS
37	10/16/2017	8,693	8,855	40	MARCELLUS
38	10/16/2017	8,493	8,655	40	MARCELLUS

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514480 47-085-10290-0000 - 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)
1.01	9/8/2017	18	6,832	8,828	4,071	0	1,069	0
1	9/9/2017	92	8,754	9,305	3,709	450,540	8,357	0
2	9/9/2017	82	8,748	9,299	3,797	461,460	8,051	0
3	9/12/2017	94	8,432	9,339	4,259	460,360	7,979	0
4	9/13/2017	97	8,132	8,399	3,758	449,960	8,059	0
5	9/13/2017	93	8,322	9,011	4,535	450,360	7,767	0
6	9/14/2017	73	8,744	9,343	4,103	450,460	7,865	0
7	10/4/2017	98	8,256	8,956	2,882	445,340	7,998	0
8	10/5/2017	99	8,400	9,089	3,422	448,240	7,877	0
9	10/5/2017	97	7,577	8,455	2,931	450,020	8,157	0
10	10/5/2017	96	7,988	8,692	3,144	454,760	8,119	0
11	10/5/2017	89	7,875	9,444	2,977	454,680	9,022	0
12	10/5/2017	97	8,111	8,657	3,143	456,960	7,780	0
13	10/6/2017	93	7,542	8,430	3,477	455,400	7,685	0
14	10/6/2017	96	7,730	8,297	3,156	447,380	7,833	0
15	10/6/2017	96	7,529	8,083	3,132	450,120	7,998	0
16	10/11/2017	27	4,924	6,362	4,425	0	410	0
16	10/12/2017	100	8,129	8,500	3,342	453,120	7,392	0
17	10/12/2017	98	8,444	9,232	3,416	448,160	7,487	0
18	10/12/2017	95	8,709	9,260	3,420	449,000	8,121	0
19	10/12/2017	98	8,088	8,545	3,597	454,500	7,927	0
20	10/12/2017	100	8,084	8,519	4,274	455,220	7,308	0
21	10/13/2017	100	7,964	8,439	3,780	450,080	7,384	0
22	10/13/2017	99	7,950	8,483	3,369	454,500	7,718	0
23	10/13/2017	100	8,446	8,661	3,826	453,760	8,075	0
24	10/14/2017	100	8,050	8,726	3,124	454,360	7,282	0
25	10/14/2017	100	8,142	9,113	3,189	450,480	7,585	0
26	10/14/2017	97	7,868	8,617	3,187	455,820	7,713	0
27	10/14/2017	95	7,791	8,736	2,983	456,760	7,631	0
28	10/14/2017	100	7,415	8,207	3,135	451,560	7,210	0
29	10/15/2017	100	7,883	7,963	3,233	540,320	10,494	0
30	10/15/2017	100	7,579	8,126	3,008	457,360	7,113	0
31	10/15/2017	98	7,568	8,129	3,428	449,760	7,503	0
32	10/15/2017	99	7,602	8,212	3,173	359,580	6,208	0
33	10/15/2017	100	7,274	8,418	3,279	359,900	5,904	0
34	10/15/2017	100	7,816	8,039	3,452	447,080	6,929	0
35	10/16/2017	100	7,409	8,273	3,923	446,880	6,976	0
36	10/16/2017	98	7,474	8,207	4,176	454,840	7,088	0
37	10/16/2017	98	7,168	7,701	3,750	449,500	6,957	0
38	10/16/2017	100	6,853	7,396	3,255	448,820	7,141	0

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/8/2017
Job End Date:	10/16/2017
State:	West Virginia
County:	Ritchie
API Number:	47-085-10290-00-00
Operator Name:	EQT Production
Well Name and Number:	514480
Latitude:	39.25757100
Longitude:	-80.92742600
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,293
Total Base Water Volume (gal):	12,313,194
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	Keane	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	85.53282	None
BrOx	Dirk Thomas and Gas Solutions	Biocide					
			Water	7732-18-5	50.00000	0.03395	None

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			Water	7732-18-5	89.00000	0.00098	None
Other Chemical (s)	Listed Above	See Trade Name (s) List					
			Water	7732-18-5	89.00000	0.00098	
			Water	7732-18-5	50.00000	0.03395	
KWG-111L	Keane	Gel					
				Listed Below			
Hydrochloric Acid (15%)	Keane	Acidizing					
				Listed Below			
Sand (Proppant)	Keane	Proppant					
				Listed Below			
KFR-23	Keane	Friction Reducer					
				Listed Below			
KAI-12	Keane	Acid Corrosion Inhibitor					
				Listed Below			
KSI-19	Keane	Scale Inhibitor					
				Listed Below			

Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

	RECEIVED Office of Oil and Gas		Silica Substrate	14808-60-7	100.00000	14.22367	None
	JAN 16 2018		Hydrochloric Acid	7647-01-0	15.00000	0.02324	None

			copolymer of 2-propenamide	69418-26-4	20.00000	0.01358	
			copolymer of 2-propenamide	69418-26-4	20.00000	0.01358	None
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01358	
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01358	None
			Methanol	67-56-1	30.00000	0.00577	None
			Methanol	67-56-1	30.00000	0.00577	
			alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00136	
			oleic acid diethanolamide	93-83-4	2.00000	0.00136	
			alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00136	None
			oleic acid diethanolamide	93-83-4	2.00000	0.00136	None
			Methanol	67-56-1	90.00000	0.00021	None
			Sodium Hypochlorite	7681-52-9	16.00000	0.00018	None
			Sodium Hypochlorite	7681-52-9	16.00000	0.00018	
			Sodium Hydroxide	1310-73-2	5.00000	0.00006	None
			Sodium Hydroxide	1310-73-2	5.00000	0.00006	
			Solvent Naphtha (petroleum) heavy aliph	64742-96-7	60.00000	0.00005	None
			Solvent Naphtha (petroleum) heavy aliph	64742-96-7	60.00000	0.00005	
			Guar Gum	9000-30-0	60.00000	0.00005	
			Guar Gum	9000-30-0	60.00000	0.00005	None
			Fatty Imidazoline	61790-69-0	5.00000	0.00001	None
			Isoproyl Alcohol	67-63-0	5.00000	0.00001	None
			Alcohols, C7-9-iso-, C8-rich	68526-83-0	5.00000	0.00001	None
			Alcohols, C7-9-iso-, C8-rich	68526-83-0	5.00000	0.00001	
			Prop-2-yn-1-ol	107-19-7	5.00000	0.00001	None
			Xylene	1330-20-7	5.00000	0.00001	None
			Trade Secret	Proprietary	10.00000	0.00001	None

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			Trade Secret	Proprietary	10.00000	0.00001	
			Ethylbenzene	100-41-4	1.00000	0.00000	None
			Ethylbenzene	100-41-4	1.00000	0.00000	

* 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)

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PEN54
WV 514480
EQT PRODUCTION COMPANY

TOP HOLE | 3,047'

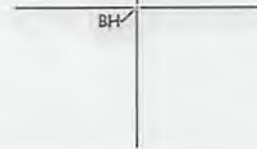
BOTTOM HOLE | 2,537'

LATITUDE 39°17'30"±

LONGITUDE 80°55'00"±

NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'
3. AS DRILLED INFORMATION PROVIDED BY EQT.



SUBSURFACE EASEMENT		
HEARTWOOD FORESTLAND FUND IV LP	198.90 AC±	TAX MAP 31 PARCEL 11

AS DRILLED COORDINATES (PEN54 H7)

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'27 S.P.C.(FT) N. 279,133.71 E. 1,595,813.09
 NAD'27 GEO. LAT-(N) 39.257571 LONG-(W) 80.927426
 NAD'83 UTM (M) N. 4,345,371.64 E. 506,276.12

LANDING POINT
 NAD'27 S.P.C.(FT) N. 281,456.65 E. 1,598,702.68
 NAD'27 GEO. LAT-(N) 39.264073 LONG-(W) 80.917352
 NAD'83 UTM (M) N. 4,346,094.04 E. 507,144.61

BOTTOM HOLE
 NAD'27 S.P.C.(FT) N. 288,573.46 E. 1,596,470.56
 NAD'27 GEO. LAT-(N) 39.283514 LONG-(W) 80.925633
 NAD'83 UTM (M) N. 4,348,250.80 E. 506,428.41

A	JERRY MORTON ET AL	243.50 ACRES±	TM C-31-05
B	HEARTWOOD FORESTLAND FUND IV LP	185.3 ACRES±	TM C-31-14
C	DONALD & BARBARA DEEM	133.07 ACRES±	TM C-31-10
D	HEARTWOOD FORESTLAND FUND IV LP	196.90 ACRES±	TM C-31-11
E	ROGER SATTERFIELD	3 ACRES±	TM C-31-5.2
F	JOSEPH FLANAGAN ET AL	2.5 ACRES±	TM C-31-5.3
G	ANTERO TREATMENT LLC	175.85 ACRES±	TM C-31-6
H	JUDITH & JO ANN ROBINSON	106.265 ACRES±	TM C-31-22
I	VIRGINIA COTTRILL	25.5 ACRES±	TM C-31-04
J	VIRGINIA COTTRILL	55.73 ACRES±	TM C-26-56.2
K	VIRGINIA COTTRILL	57.63 ACRES±	TM C-26-56.1
L	VIRGINIA COTTRILL	84.35 ACRES±	TM C-26-56
M	WV RAILROAD MAINTENANCE AUTHORITY	48.14 ACRES±	TM C-26-19
N	WV RAILROAD MAINTENANCE AUTHORITY	P/O 1141.03 ACRES±	TM C-26-X
O	ROY & LINDA HAMMOND	77.088 ACRES±	TM C-26-57
P	JANICE WILLIAMS	111.876 ACRES±	TM C-26-58.9
Q	EQT PRODUCTION COMPANY	46.63 ACRES±	TM C-26-58
R	JANICE WILLIAMS	1.715 ACRES±	TM C-26-58.2
S	EUSTACE LAMM ET AL	2.28 ACRES±	TM C-26-20.1
T	EARL DAUGHERTY	1.80 ACRES±	TM C-26-52.1
U	JEAN & KRISTINE KNUITSEN	5.34 ACRES±	TM C-26-58.3
V	KATRINA DOTSON	1.01 ACRES±	TM C-26-58.4
W	KEVIN & MICHELE ESTEP	2.912 ACRES±	TM C-26-57.1
X	BRIAN & JULIE RICHEY	7.69 ACRES±	TM C-26-58.8
Y	FERYL & MAHLON HARRIS	8.38 ACRES±	TM C-26-58.1
Z	FERYL & MAHLON HARRIS	16.62 ACRES±	TM C-26-58.6
AA	WILLIAM & JANET BROADWATER	37.565 ACRES±	TM C-26-12
BB	CITY OF PENNSBORO	25.246 ACRES±	TM C-26-12.1
CC	CITY OF PENNSBORO	4.778 ACRES±	TM C-26-5.1
DD	MOUNTVIEW CONFERENCE CHURCH	10.41 ACRES±	TM C-26-58.5
EE	TODD G. GILLENWATER	65 ACRES±	TM C-26-11
FF	TERRY & JANET HALL	5.71 ACRES±	TM C-26-4.4
GG	CITY OF PENNSBORO	2.625 ACRES±	TM C-26-4.3
HH	P.M. MANAGEMENT COMPANY	83.022 ACRES±	TM C-26-05
II	WILLIAM & JANET BROADWATER	8.203 ACRES±	TM C-26-4.1
JJ	WILLIAM & JANET BROADWATER	50 ACRES±	TM C-26-4.2
KK	CAROL COGAR ET AL	172.44 ACRES±	TM C-32-01
LL	TODD G. GILLENWATER	10.18 ACRES±	TM C-26-11.1

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ROYALTY OWNERS		
GUY FLANNAGAN ET AL	126 AC±	LEASE NO. 1005912
JOYCE FOWLER WILSON ET AL	122.408 AC±	LEASE NO. 1005914
MARY LEE AZELVANDRE ET AL	600 AC±	LEASE NO. 114193
CAROL A. MARSH	72 AC±	LEASE NO. 706265
WEST VIRGINIA RAIL AUTHORITY	24.30 AC±	LEASE NO. 1012475

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 DIVISION OF ENVIRONMENTAL PROTECTION.



P.S. 849 *C. Victor Moyers*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE JUNE 24, 20 15
 REVISED 05/12/16, 07/13/16 & 09/09/16
 OPERATORS WELL NO. WV 514480
 API WELL NO. **47 - 085 - 10290H**
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8083AD514480.dwg
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE SEE NOTE 2

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

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: PAD ELEVATION 1,016' WATERSHED NORTH FORK HUGHES RIVER
 DISTRICT CLAY COUNTY RITCHIE QUADRANGLE PENNSBORO 7.5'

SURFACE OWNER JERRY MORTON ET AL ACREAGE 243.50±
 ROYALTY OWNER ELLEN S. FRANCAVIGLIA ET AL ACREAGE 268±

PROPOSED WORK: LEASE NO. 105403

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS
 ESTIMATED DEPTH 6,275'

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY
 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

12,419' TOP HOLE

02/16/2018

PEN54
WV 514480
EQT PRODUCTION COMPANY

WELL TIES		
ID	BEARING	DISTANCE
L1	N 22°10' W	1974.21'
L2	N 05°17' E	3801.35'

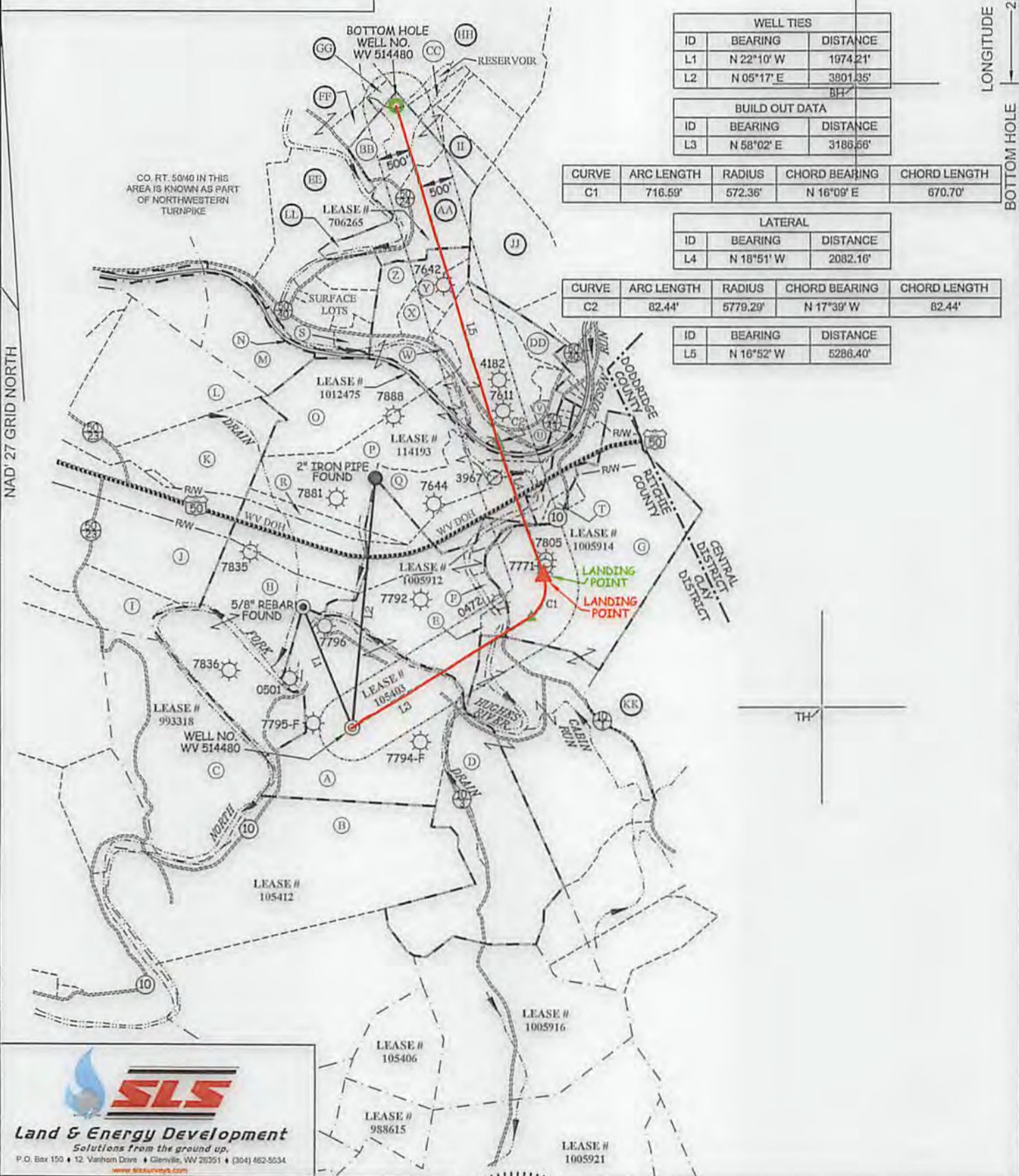
BUILD OUT DATA		
ID	BEARING	DISTANCE
L3	N 58°02' E	3186.56'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	716.59'	572.36'	N 16°09' E	670.70'

LATERAL		
ID	BEARING	DISTANCE
L4	N 16°51' W	2082.16'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C2	82.44'	5779.29'	N 17°39' W	82.44'

ID	BEARING	DISTANCE
L5	N 16°52' W	5286.40'



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AS DRILLED COORDINATES (PEN54 H7)
 (S.P.C. NORTH ZONE) (UTM/M) ZONE 17 NORTH
 NAD27 S.P.C.(FT) N. 279,133.71 E. 1,595,813.09
 NAD27 GEO. LAT.(N) 39.257571 LONG.(W) 80.927426
 NAD83 UTM (M) N. 4,345,371.64 E. 509,276.12
LANDING POINT
 NAD27 S.P.C.(FT) N. 281,456.65 E. 1,598,702.58
 NAD27 GEO. LAT.(N) 39.264073 LONG.(W) 80.917352
 NAD83 UTM (M) N. 4,346,094.04 E. 507,144.61
BOTTOM HOLE
 NAD27 S.P.C.(FT) N. 289,573.46 E. 1,598,470.56
 NAD27 GEO. LAT.(N) 39.283514 LONG.(W) 80.925633
 NAD83 UTM (M) N. 4,348,250.80 E. 506,428.41

SCALE 1" = 2000' FILE NO. 8083AD514480
 DATE JUNE 24, 20 15
 REVISED 05/12/16, 07/13/16 & 09/09/16
 OPERATORS WELL NO. WV 514480
 API WELL NO. 47 — 085 — 10290H
 NO. STATE COUNTY PERMIT

VICTOR MOYERS
 LICENSED
 No. 849
 STATE OF WEST VIRGINIA
 PROFESSIONAL SURVEYOR
 9-09-16

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

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

LEGEND

- LEASE LINE
- SURFACE LINE
- PROPOSED PATH
- AS DRILLED PATH
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- RAIL ROAD
- COUNTY ROUTE
- STATE ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- CLAY DISTRICT TAX MAP—PARCEL

02/16/2016

WELL OPERATOR **EQT PRODUCTION COMPANY** DESIGNATED AGENT **REX C. RAY**
 ADDRESS **115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330** ADDRESS **115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330**