

APPROVED

NAME: *Jul A. [Signature]*

DATE: 3/29/2017

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 514096

API: 47 - 017 - 06765

Submission: Initial Amended

Notes:

Received
Office of Oil & Gas
MAR 03 2017

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

API 47 - 017 - 06765 County Doddridge District Southwest
Quad Oxford Pad Name OXF 159 Field/Pool Name _____
Farm name Justin L Henderson (Life Estate) Well Number 514096
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 4,339,877.05 Easting 520,560.26
Landing Point of Curve Northing 4,338,748.18 Easting 519,742.77
Bottom Hole Northing 4,340,342.60 Easting 519,000.20

Elevation (ft) 1252 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)
Water base Mud 12.5 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 4/12/2016 Date drilling commenced 7/8/2016 Date drilling ceased 10/25/2016
Date completion activities began 11/27/2016 Date completion activities ceased 12/4/2016
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 274', 335', 411' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1322', 1389' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 256', 323', 484', 626', 742', 745' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by: _____

API 47-017 - 06765 Farm name Justin L Henderson (Life Estate) Well number 514096

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"	811'	NEW	J-55 54.5LB/FT	263'	Y
Coal							
Intermediate 1	12.375" & 12.25"	9.625"	5893'	NEW	A-500 & P-110	NONE	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	15931'	NEW	P-110 20LB/FT	NONE	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	45	0	8+
Surface	CLASS A	685	15.6	1.20	822.00	0	8
Coal							
Intermediate 1	Fetherweight / Class A	1231 / 210	12.0 / 15.6	2.0 / 1.18	2709.80	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS A / CLASS H	950 / 870	15.2 / 15.6	1.22 / 1.85	2768.50	5393'	72+
Tubing							

Drillers TD (ft) 15932' Loggers TD (ft) N/A
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 3518 MD

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 _____

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 MAR 08 2017

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

API 47- 017 - 06765 Farm name Justin L Henderson (Life Estate) Well number 514096

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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MAR 03 2017

OXF 159 Well #514096 API# 4701706765 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	256	256
WASHINGTON COAL	256	256	258	258
SAND/SHALE	258	258	323	323
WAYNESBURG A COAL	323	323	325	325
SAND/SHALE	325	325	484	484
UNIONTOWN COAL	484	484	486	486
SAND/SHALE	486	486	626	626
SEWICKLEY	626	626	628	628
SAND/SHALE	628	628	742	742
REDSTONE COAL	742	742	743	743
SAND/SHALE	743	743	745	745
PITTSBURGH COAL	745	745	749	749
SAND/SHALE	749	749	2,030.00	2,026.40
BIG LIME	2,030.00	2,026.40	2,174.00	2,170.30
SAND/SHALE	2,174.00	2,170.30	2,323.00	2,319.10
WEIR	2,323.00	2,319.10	2,437.00	2,433.00
SAND/SHALE	2,437.00	2,433.00	2,531.00	2,526.90
GANTZ	2,531.00	2,526.90	2,608.00	2,603.80
50F	2,608.00	2,603.80	2,684.00	2,679.80
SAND/SHALE	2,684.00	2,679.80	2,730.00	2,725.70
30F	2,730.00	2,725.70	2,765.00	2,760.70
SAND/SHALE	2,765.00	2,760.70	2,779.00	2,774.70
GORDON	2,779.00	2,774.70	2,870.00	2,865.60
4TH SAND	2,870.00	2,865.60	3,051.00	3,046.40
BAYARD	3,051.00	3,046.40	3,151.00	3,146.20
SAND/SHALE	3,151.00	3,146.20	3,388.00	3,382.80
WARREN	3,388.00	3,382.80	3,447.00	3,441.70
SAND/SHALE	3,447.00	3,441.70	3,459.00	3,453.70
SPEECHLEY	3,459.00	3,453.70	3,703.00	3,695.70
SAND/SHALE	3,703.00	3,695.70	4,139.00	4,116.20
BALLTOWN A	4,139.00	4,116.20	4,253.00	4,222.90
SAND/SHALE	4,253.00	4,222.90	4,338.00	4,301.10
RILEY	4,338.00	4,301.10	4,484.00	4,432.10
SAND/SHALE	4,484.00	4,432.10	5,009.00	4,853.40
BENSON	5,009.00	4,853.40	5,049.00	4,881.60
SAND/SHALE	5,049.00	4,881.60	5,180.00	4,968.80
ALEXANDER	5,180.00	4,968.80	6,211.00	5,406.70
RHINESTREET UPPER	6,211.00	5,406.70	6,362.00	5,453.20
RHINESTREET	6,362.00	5,453.20	6,385.00	5,460.90
SONYEA	6,385.00	5,460.90	9,282.00	6,485.60
MIDDLESEX	9,282.00	6,485.60	9,404.00	6,537.80
GENESSEE	9,404.00	6,537.80	9,574.00	6,603.80
GENESEO	9,574.00	6,603.80	9,687.00	6,641.90
TULLY	9,687.00	6,641.90	9,745.00	6,659.00
HAMILTON	9,745.00	6,659.00	9,840.00	6,681.40
MARCELLUS	9,840.00	6,681.40	15,932.00	6,679.24

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Office of Oil & Gas
MAR 08 2017

OXF159
WV 514096
EQT PRODUCTION COMPANY

BOTTOM HOLE LATITUDE 39°15'00"

8,527'

TH

TOP HOLE LONGITUDE 80°45'00" 182'

13.817'

BOTTOM HOLE LONGITUDE 80°45'00"

COUNTY NAME

PERMIT

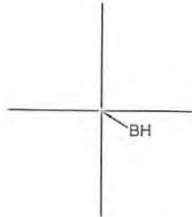
ROYALTY OWNERS		
WBM HEIRS PROPERTIES, LLC	2400 AC±	LEASE NO. 060460

AS DRILLED COORDINATES (OXF159 H7)			
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD27 S.P.C.(FT)	N. 260,319.53	E. 1,842,386.59	
NAD27 GEO.	LAT-(N) 39.207634	LONG-(W) 80.762037	
NAD83 UTM (M)	N. 4,339,877.05	E. 520,560.26	
LANDING POINT			
NAD27 S.P.C.(FT)	N. 256,659.84	E. 1,839,842.13	
NAD27 GEO.	LAT-(N) 39.197681	LONG-(W) 80.771538	
NAD83 UTM (M)	N. 4,338,748.18	E. 519,742.77	
BOTTOM HOLE			
NAD27 S.P.C.(FT)	N. 261,932.77	E. 1,837,292.62	
NAD27 GEO.	LAT-(N) 39.212065	LONG-(W) 80.780002	
NAD83 UTM (M)	N. 4,340,342.60	E. 519,000.20	

A	JUSTIN L. HENDERSON (LIFE)	1602.90 ACRES±	TM SW-06-01
B	IKE MORRIS	6600.75 ACRES±	TM SW-10-02
C	IKE MORRIS	2331.51 ACRES±	TM SW-07-01
D	CHARLES P. HEASTER ET AL.	901.72 ACRES±	TM WU-23-01

NOTES ON SURVEY

- 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.
- AS DRILLED COORDINATES PROVIDED BY EQT.



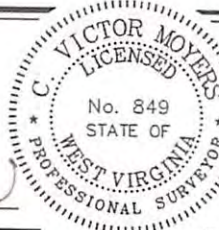
SPECIAL NOTE

THERE IS NO SURVEY OR LEGAL DESCRIPTION DEFINING THE ACTUAL LOCATION OF THE 164 ACRE MEADOWLAND RESERVATION, DUE TO THE PASSAGE OF TIME SINCE THE RESERVATION WAS CREATED IT APPEARS THERE IS NO LIVING PERSON(S) WITH KNOWLEDGE OF ITS TRUE LOCATION. LOCATION OF RESERVATION SHOWN HEREON COMPILED FROM: "A" A MAP TITLED "CARNEGIE NATURAL GAS CO. LEEMAN MAXWELL LEASES, DODDRIDGE COUNTY, WEST VA" "B" PERMETER OF RESERVATION AS SHOWN BY GLENN TRADER "CARETAKER OF HENDERSONS" PORTION OF MAXWELL LANDS WHICH WAS LOCATED USING A MAPPING GRADE GPS RECEIVER "C" DETAILS SHOWN ON 1939 USDA AERIAL PHOTOGRAPHY OBTAINED FROM THE WV GEOLOGICAL SURVEY. SLS RECOMMENDS THAT PROPER LEGAL STEPS BE TAKEN TO CONFIRM CONCURRENCE OF ALL APPROPRIATE PARTIES RELATIVE TO THE RESERVATION AS SHOWN HEREON. THIS PLAT IS SUBJECT TO ANY ADDITIONAL INFORMATION (UNDISCOVERED TO DATE) WHICH MAY CHANGE THE LOCATION AND/OR CONFIGURATION OF THE RESERVATION AS SHOWN HEREON.

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 JANUARY 05 . 20 14

REVISED 05/08/14, 07/21/15, 12/21/15, 02/01/16 & 11/02/16

OPERATORS WELL NO. WV 514096

API
WELL NO. 47 - 017 - 06765H
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7889AD514096.dwg

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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



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

LOCATION:
ELEVATION PAD ELEVATION 1252' WATERSHED BLUESTONE CREEK
DISTRICT SOUTHWEST COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'

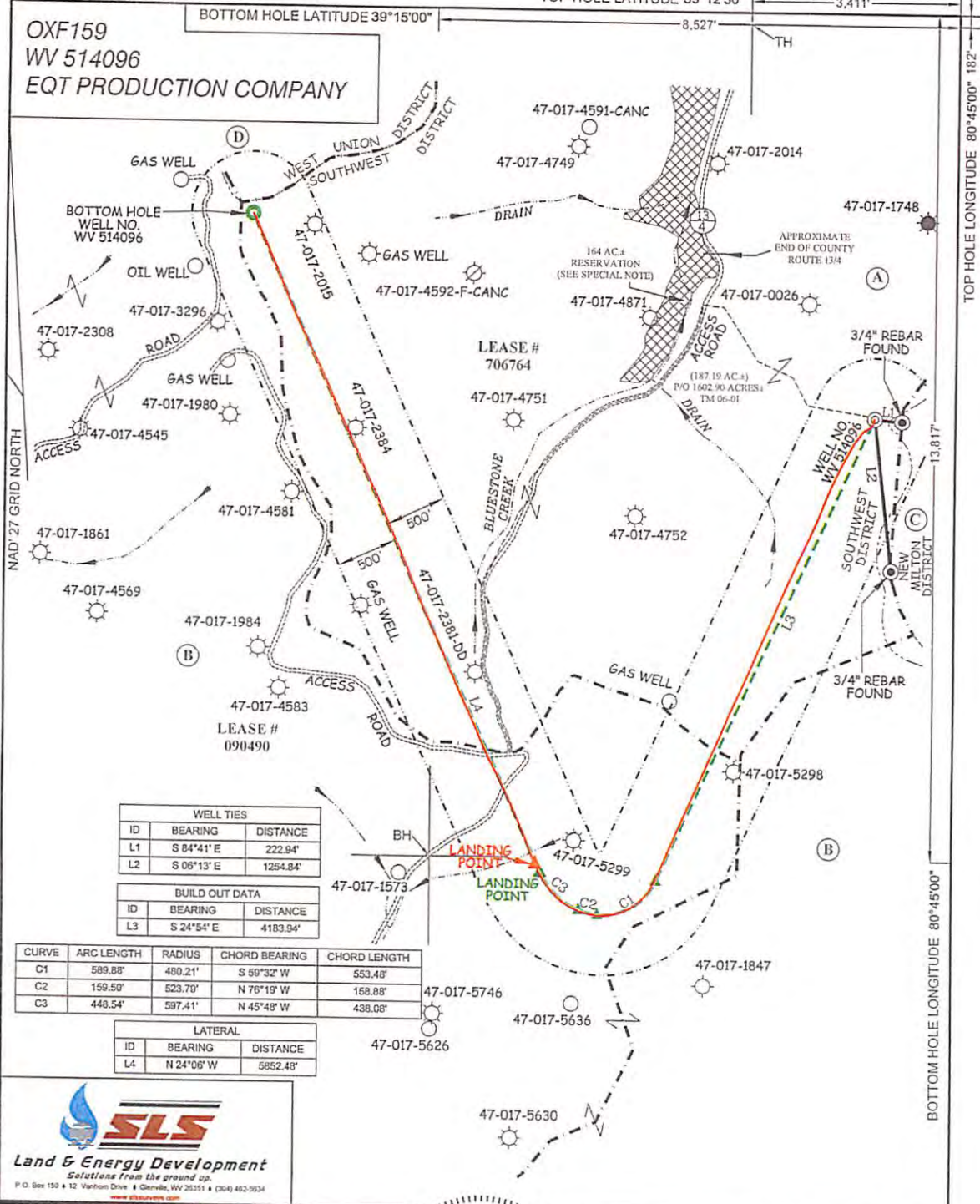
SURFACE OWNER JUSTIN L. HENDERSON (LIFE) ACREAGE 187.19 OF 1,602.90±
ROYALTY OWNER LEEMAN MAXWELL HRS ACREAGE 2.164±

PROPOSED WORK:
DRILL X CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE X 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 6,663'

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

OXF159
WV 514096
EQT PRODUCTION COMPANY



WELL TIES		
ID	BEARING	DISTANCE
L1	S 84°41' E	222.94'
L2	S 08°13' E	1254.84'

BUILD OUT DATA		
ID	BEARING	DISTANCE
L3	S 24°54' E	4183.94'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	589.88'	480.21'	S 59°32' W	553.48'
C2	159.50'	523.79'	N 76°19' W	158.88'
C3	448.54'	597.41'	N 45°48' W	438.08'

LATERAL		
ID	BEARING	DISTANCE
L4	N 24°06' W	5852.48'

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Land & Energy Development
 Solutions from the ground up.
 P.O. Box 150 • 12 Varian Drive • Glenview, WV 26351 • (204) 452-5934
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AS DRILLED COORDINATES (OXF159 H7)
 (S.P.C. NORTH ZONE) (UTM/M) ZONE 17 NORTH

NAD27 S.P.C. (FT)	N 290,319.53	E 1,842,386.55
NAD27 GEO.	LAT. (N) 39.207934	LONG. (W) 80.712037
NAD83 UTM (M)	N 4,338,977.65	E 503,593.29

LANDING POINT

NAD27 S.P.C. (FT)	N 256,259.84	E 1,632,842.13
NAD27 GEO.	LAT. (N) 39.197991	LONG. (W) 80.711539
NAD83 UTM (M)	N 4,338,748.18	E 519,742.77

BOTTOM HOLE

NAD27 S.P.C. (FT)	N 261,932.77	E 1,637,292.62
NAD27 GEO.	LAT. (N) 39.212095	LONG. (W) 80.710032
NAD83 UTM (M)	N 4,340,342.60	E 519,000.20

(+) 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: - - - - -
- FENCE LINE: - - - - -
- COUNTY ROUTE: - - - - -
- PROPOSED WELL: (Symbol)
- EXISTING WELL: (Symbol)
- PERMITTED WELL: (Symbol)
- SOUTHWEST DISTRICT TAX MAP-PARCEL: SW-00-00
- WEST UNION DISTRICT TAX MAP-PARCEL: WU-00-00

SCALE 1" = 1000' FILE NO. 7889AD514096.dwg
 DATE JANUARY 06, 20 14
 REVISED 05/08/14, 07/21/15, 12/21/15, 02/01/16 & 11/02/16
 OPERATORS WELL NO. WV 514096
 API WELL NO. 47 - 017 - 06765H
 NO. STATE COUNTY PERMIT

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

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**

TOP HOLE LONGITUDE 80°45'00" 182' BOTTOM HOLE LONGITUDE 80°45'00" 13,817'

514096 - 47-017-067650000- 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	11/27/2016	11	5,022	6,714	4,350	0	1,123.00	0
1	11/27/2016	97	8,451	8,758	4,278	450,678	10,017	0
2	11/28/2016	95	8,319	8,716	4,611	452,050	9,985	0
3	11/28/2016	101	8,695	9,109	4,654	449,120	9,618	0
4	11/29/2016	101	8,731	8,977	4,889	448,810	9,600	0
5	11/29/2016	100	8,473	8,779	4,976	450,120	9,707	0
6	11/29/2016	101	8,541	8,789	4,765	449,180	9,702	0
7	11/29/2016	101	8,466	8,696	4,860	449,280	9,588	0
8	11/30/2016	101	8,418	9,349	4,759	447,450	9,579	0
9	11/30/2016	99	8,803	9,039	4,688	449,640	9,628	0
10	11/30/2016	101	8,702	8,922	4,942	450,070	9,454	0
11	11/30/2016	101	8,391	8,645	4,824	449,590	9,458	0
12	11/30/2016	101	8,354	8,597	4,963	449,810	9,446	0
13	12/1/2016	101	8,623	8,842	4,769	450,623	9,295	0
14	12/1/2016	101	8,327	8,563	4,832	450,747	9,233	0
15	12/1/2016	101	8,247	8,517	5,137	450,290	9,379	0
16	12/1/2016	101	8,116	8,333	5,020	451,610	9,180	0
17	12/2/2016	101	8,656	8,878	4,812	450,078	9,225	0
18	12/2/2016	101	8,178	8,427	4,897	449,776	9,185	0
19	12/2/2016	100	8,111	8,818	4,993	451,559	9,234	0
20	12/2/2016	102	8,252	8,453	5,042	450,400	9,162	0
21	12/3/2016	101	8,067	8,262	5,006	451,520	9,101	0
22	12/3/2016	101	8,155	8,402	4,848	451,666	9,207	0
23	12/3/2016	101	8,176	8,659	4,745	451,476	9,060	0
24	12/3/2016	101	8,196	8,389	5,050	451,004	8,950	0
25	12/3/2016	101	8,189	8,510	5,032	451,112	9,408	0
26	12/4/2016	101	8,145	8,374	5,086	446,537	9,130	0
27	12/4/2016	100	8,368	8,712	4,658	449,481	8,916	0
28	12/4/2016	101	8,219	8,514	4,887	452,190	8,855	0
29	12/4/2016	102	8,242	8,683	5,076	452,074	8,924	0
30	12/4/2016	101	7,841	8,132	5,207	452,157	8,993	0

514096 - 47-017-06765-0000- Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	11/7/2016	15,904	15,931	10	MARCELLUS
1	11/27/2016	15,743	15,906	32	MARCELLUS
2	11/28/2016	15,545	15,705	40	MARCELLUS
3	11/28/2016	15,345	15,505	40	MARCELLUS
4	11/29/2016	15,143	15,305	40	MARCELLUS
5	11/29/2016	14,943	15,102	40	MARCELLUS
6	11/29/2016	14,743	14,905	40	MARCELLUS
7	11/29/2016	14,543	14,705	40	MARCELLUS
8	11/30/2016	14,343	14,505	40	MARCELLUS
9	11/30/2016	14,143	14,305	40	MARCELLUS
10	11/30/2016	13,943	14,105	40	MARCELLUS
11	11/30/2016	13,743	13,905	40	MARCELLUS
12	11/30/2016	13,543	13,705	40	MARCELLUS
13	12/1/2016	13,343	13,505	40	MARCELLUS
14	12/1/2016	13,141	13,305	40	MARCELLUS
15	12/1/2016	12,943	13,106	40	MARCELLUS
16	12/1/2016	12,743	12,905	40	MARCELLUS
17	12/2/2016	12,543	12,705	40	MARCELLUS
18	12/2/2016	12,343	12,505	40	MARCELLUS
19	12/2/2016	12,144	12,305	40	MARCELLUS
20	12/2/2016	11,943	12,105	40	MARCELLUS
21	12/3/2016	11,740	11,905	40	MARCELLUS
22	12/3/2016	11,543	11,705	40	MARCELLUS
23	12/3/2016	11,343	11,505	40	MARCELLUS
24	12/3/2016	11,143	11,305	40	MARCELLUS
25	12/3/2016	10,943	11,105	40	MARCELLUS
26	12/4/2016	10,743	10,905	40	MARCELLUS
27	12/4/2016	10,543	10,705	40	MARCELLUS
28	12/4/2016	10,343	10,505	40	MARCELLUS
29	12/4/2016	10,143	10,305	40	MARCELLUS
30	12/4/2016	9,943	10,105	40	MARCELLUS

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/27/2016
Job End Date:	12/4/2016
State:	West Virginia
County:	Doddridge
API Number:	47-017-06765-00-00
Operator Name:	EQT Production
Well Name and Number:	514096
Latitude:	39.20783400
Longitude:	-80.76203600
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,681
Total Base Water Volume (gal):	11,816,364
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	FTS International	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	87.65565	None
EMC Surf 200	ECM Supply	Enhancer					
			Water	7732-18-5	50.00000	0.02984	None

Other Chemical (s)	Listed Above	See Trade Name (s) List					
			Water	7732-18-5	50.00000	0.02984	
CI-150	FTS International	Acid corrosion inhibitor					
				Listed Below			
ECM FR NI 200	ECM Supply	Friction Reducing Agent					
				Listed Below			
CS-500-SI	FTS International	Scale inhibitor					
				Listed Below			
Sand (Proppant)	FTS International	Proppant					
				Listed Below			
MC MX 8-2544	Multi-Chem Group	Live Culture - Nitrate Reducing Bacteria					
				Listed Below			
Hydrochloric Acid (15%)	FTS International	Acidizing					
				Listed Below			
MC MX 5-3886	Multi-Chem Group	Specialty Brine					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Silica Substrate	14808-60-7	100.00000	12.00959	None

		Calcium Nitrate.4H2O	13477-34-4	100.00000	0.10745	
		Calcium Nitrate.4H2O	13477-34-4	100.00000	0.10745	None
		Hydrochloric Acid	7647-01-0	15.00000	0.01965	None
		Copolymer of Two Propenamide	69418-26-4	30.00000	0.01790	
		Copolymer of Two Propenamide	69418-26-4	30.00000	0.01790	None
		Petroleum Distillate	64742-47-8	20.00000	0.01194	None
		Petroleum Distillate	64742-47-8	20.00000	0.01194	
		Sodium chloride	7647-14-5	100.00000	0.00971	None
		Sodium chloride	7647-14-5	100.00000	0.00971	
		Ethylene glycol	107-21-1	10.00000	0.00246	
		Ethylene glycol	107-21-1	10.00000	0.00246	None
		Alcohols, C-12-16, Ethoxylated	68551-12-2	2.00000	0.00119	
		Alcohols, C-12-16, Ethoxylated	68551-12-2	2.00000	0.00119	None
		Oleic Acid Diethanolamide	93-83-4	2.00000	0.00119	
		Oleic Acid Diethanolamide	93-83-4	2.00000	0.00119	None
		Diethylene glycol monobutyl ether	112-34-5	30.00000	0.00065	
		Diethylene glycol monobutyl ether	112-34-5	30.00000	0.00065	None
		Ammonium Chloride ((NH4)Cl)	12125-02-9	1.00000	0.00060	
		Ammonium Chloride ((NH4)Cl)	12125-02-9	1.00000	0.00060	None
		Sodium nitrate	7631-99-4	5.00000	0.00049	None
		Sodium nitrate	7631-99-4	5.00000	0.00049	
		Ethylene glycol	107-21-1	30.00000	0.00007	None
		Isopropanol	67-63-0	30.00000	0.00007	None
		Organic amine resin salt	Proprietary	30.00000	0.00007	None
		Dimethylformamide	68-12-2	10.00000	0.00002	None
		Aromatic aldehyde	Proprietary	10.00000	0.00002	None

			Quaternary ammonium compound	Proprietary	10.00000	0.00002	None
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* 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(f) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

OXF159
WV 514096
EQT PRODUCTION COMPANY

ROYALTY OWNERS		
WBM HEIRS PROPERTIES, LLC	2400 AC.±	LEASE NO. 090490

AS DRILLED COORDINATES
(OXF159 H7)

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 260,319.53	E. 1,642,386.59
NAD'27 GEO.	LAT-(N) 39.207834	LONG-(W) 80.762037
NAD'83 UTM (M)	N. 4,339,877.05	E. 520,560.26
LANDING POINT		
NAD'27 S.P.C.(FT)	N. 256,659.84	E. 1,639,642.13
NAD'27 GEO.	LAT-(N) 39.197681	LONG-(W) 80.771538
NAD'83 UTM (M)	N. 4,338,748.18	E. 519,742.77
BOTTOM HOLE		
NAD'27 S.P.C.(FT)	N. 261,932.77	E. 1,637,292.62
NAD'27 GEO.	LAT-(N) 39.212065	LONG-(W) 80.780092
NAD'83 UTM (M)	N. 4,340,342.60	E. 519,000.20

A	JUSTIN L. HENDERSON (LIFE)	1602.90 ACRES±	TM SW-06-01
B	IKE MORRIS	6600.75 ACRES±	TM SW-10-02
C	IKE MORRIS	2331.51 ACRES±	TM SW-07-01
D	CHARLES P. HEASTER ET AL	901.72 ACRES±	TM WU-23-01

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. AS DRILLED COORDINATES PROVIDED BY EQT.



SPECIAL NOTE

THERE IS NO SURVEY OR LEGAL DESCRIPTION DEFINING THE ACTUAL LOCATION OF THE 164 ACRE MEADOWLAND RESERVATION. DUE TO THE PASSAGE OF TIME SINCE THE RESERVATION WAS CREATED IT APPEARS THERE IS NO LIVING PERSON(S) WITH KNOWLEDGE OF ITS TRUE LOCATION. LOCATION OF RESERVATION SHOWN HEREON COMPILED FROM: "A" A MAP TITLED "CARNAGIE NATURAL GAS CO. LEEMAN MAXWELL LEASES, DODDRIDGE COUNTY, WEST VA" "B" PERIMETER OF RESERVATION AS SHOWN BY GLENN TRADER "CARETAKER OF HENDERSONS" PORTION OF MAXWELL LANDS" WHICH WAS LOCATED USING A MAPPING GRADE GPS RECEIVER "C" DETAILS SHOWN ON 1939 USDA AERIAL PHOTOGRAPHY OBTAINED FROM THE WV GEOLOGICAL SURVEY. SLS RECOMMENDS THAT PROPER LEGAL STEPS BE TAKEN TO CONFIRM CONCURRENCE OF ALL APPROPRIATE PARTIES RELATIVE TO THE RESERVATION AS SHOWN HEREON. THIS PLAT IS SUBJECT TO ANY ADDITIONAL INFORMATION (UNDISCOVERED TO DATE) WHICH MAY CHANGE THE LOCATION AND/OR CONFIGURATION OF THE RESERVATION AS SHOWN HEREON.



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 JANUARY 06, 20 14
 REVISED 05/08/14, 07/21/15, 12/21/15, 02/01/16 & 11/02/16
 OPERATORS WELL NO. WV 514096
 API WELL NO. 47 - 017 - 06765H
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7889AD514096.dwg

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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: ELEVATION PAD ELEVATION 1252' WATERSHED BLUESTONE CREEK

DISTRICT SOUTHWEST COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'

SURFACE OWNER JUSTIN L. HENDERSON (LIFE) ACREAGE 187.19 OF 1,602.90±

ROYALTY OWNER LEEMAN MAXWELL HRS ACREAGE 2,164±

PROPOSED WORK: LEASE NO. 706764

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 6,663'

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY

ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280

BRIDGEPORT, WV 26330 BRIDGEPORT, WV 26330

Interim WR35

TOP HOLE LONGITUDE 80°45'00" 182'

13,817'

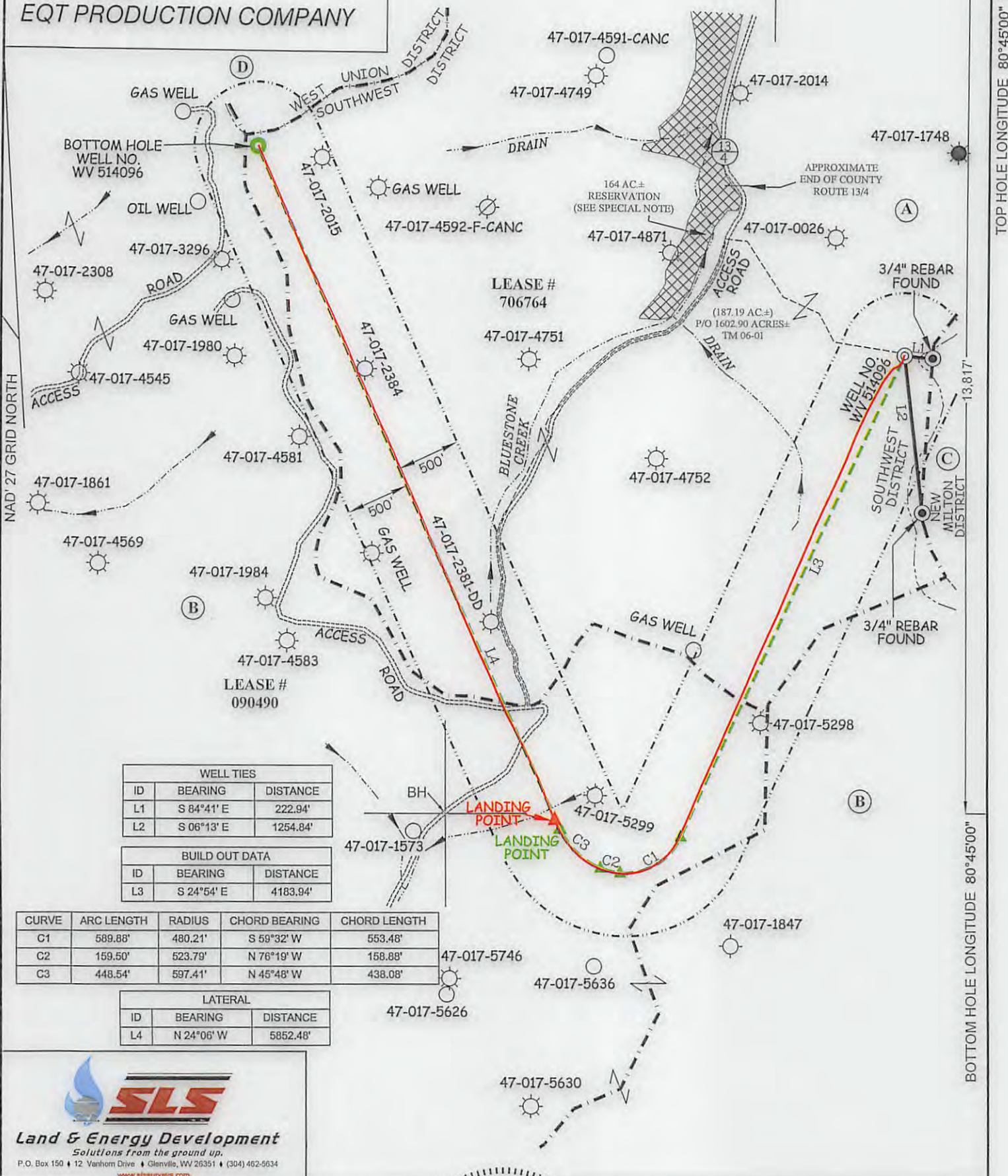
BOTTOM HOLE LONGITUDE 80°45'00"

COUNTY NAME

PERMIT

OXF159
WV 514096
EQT PRODUCTION COMPANY

BOTTOM HOLE LATITUDE 39°15'00"



WELL TIES		
ID	BEARING	DISTANCE
L1	S 84°41' E	222.94'
L2	S 06°13' E	1254.84'

BUILD OUT DATA		
ID	BEARING	DISTANCE
L3	S 24°54' E	4183.94'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	589.88'	480.21'	S 59°32' W	553.48'
C2	159.50'	523.79'	N 76°19' W	158.88'
C3	448.54'	597.41'	N 45°48' W	438.08'

LATERAL		
ID	BEARING	DISTANCE
L4	N 24°06' W	5852.48'

SLS
Land & Energy Development
Solutions from the ground up.
 P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634
 www.slsurveyors.com

AS DRILLED COORDINATES
 (OXF159 H7)
 (S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

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SCALE **1" = 1000'** FILE NO. **7889AD514096.dwg**
 DATE **JANUARY 06**, 20 **14**
 REVISED **05/08/14, 07/21/15, 12/21/15, 02/01/16 & 11/02/16**
 OPERATORS WELL NO. **WV 514096**
 API WELL **47 — 017 — 06765H**
 NO. STATE COUNTY PERMIT

VICTOR MOYERS
 LICENSED
 No. 849
 STATE OF
WEST VIRGINIA
 PROFESSIONAL SURVEYOR

C.V. 11-02-16

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	----
FENCE LINE	----
COUNTY ROUTE	----
PROPOSED WELL	⊙
EXISTING WELL	⊙
PERMITTED WELL	⊙
SOUTHWEST DISTRICT TAX MAP-PARCEL	SW-00-00
WEST UNION DISTRICT TAX MAP-PARCEL	WU-00-00

COUNTY NAME
 PERMIT

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

Interim WR35