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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Harold D. Ward, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Monday, April 5, 2021  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

EQT PRODUCTION COMPANY  
625 LIBERTY AVE., SUITE 1700

PITTSBURGH, PA 15222

Re: Permit Modification Approval for PRINE 5H  
47-103-03356-00-00

**Lateral Extension**

EQT PRODUCTION COMPANY

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: PRINE 5H  
Farm Name: HOWARD M HENDERSON  
U.S. WELL NUMBER: 47-103-03356-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 4/5/2021

Promoting a healthy environment.

04/09/2021



March 8, 2021

Via FedEx Overnight

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304

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WV Department of  
Environmental Protection

RE: Well Work Permit Modification Application  
Prine 5H Well  
Permit Number 47-103-03356-00-00  
Center District  
Wetzel County, WV

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WV Department of  
Environmental Protection

WVDEP Recipient,

Attached please find following information to modify the existing Well Work Permit for this well:

- Corrected Page 1 of form WW-6B, adding a **previously unidentified coal seam**
- Completed Form WW-6B and supporting documents, approved by the Oil and Gas Inspector
- Revised Well Bore Diagram
- Well Location Plat
- Completed Form WW-6A1 and supporting documentation
- Revised Offset Well Map and Data for the previously provided Hydraulic Fracturing Monitoring Plan

EQT is proposing to extend the lateral from the previously permitted length. This well has been drilled vertically to a total measured depth of 7,134'.

Oil and Gas Inspector Bryan Harris confirmed via phone conversation that the revised page 1 of form WW-6B did not need re-signed to add a coal seam. Both the signed page and the revised page have been included with this submittal.

EQT Production trusts that if any portion of the submitted documentation is found to be inadequate for processing the permit, notification will be made to our Permitting department at your earliest convenience. It is EQT Production's intent to cooperate fully to provide any additional requested documentation and clarification in a timely manner such that permitting proceeds in a predictable and logical manner.

Best Regards,

John Zavatchan  
Project Specialist – Permitting  
[jzavatchan@eqt.com](mailto:jzavatchan@eqt.com)  
724-746-9073

04/09/2021

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

1) Well Operator: EQT Production Company 306686 Wetzel Center Littleton  
Operator ID County District Quadrangle

2) Operator's Well Number: 5H Well Pad Name: Prine

3) Farm Name/Surface Owner: Howard M. Henderson Public Road Access: CR 8/7

4) Elevation, current ground: 1,335' (built) Elevation, proposed post-construction: 1,335'

5) Well Type (a) Gas  Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_

Other \_\_\_\_\_

(b) If Gas Shallow  Deep \_\_\_\_\_

Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus, 7,489', 48', 2,620 psi

8) Proposed Total Vertical Depth: 7,489'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 21,492'

11) Proposed Horizontal Leg Length: 12,399'

12) Approximate Fresh Water Strata Depths: 143'

13) Method to Determine Fresh Water Depths: Offset Wells - 47-103-02572, 47-103-02349, 47-103-02189, 47-103-02244

14) Approximate Saltwater Depths: 1,976', 2,110'

15) Approximate Coal Seam Depths: 602'-613', 842'-845', 1,071'-1,075', 1,180'-1,185'

16) Approximate Depth to Possible Void (coal mine, karst, other): N/A

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes \_\_\_\_\_ No

(a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_



18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	26	New	A-500	85.6	40	40	98 ft <sup>3</sup> / CTS
Fresh Water	13 3/8	New	J-55	54.5	1300	1300	1196 ft <sup>3</sup> / CTS
Coal							
Intermediate	9 5/8	New	P-110	40	2900	2900	1092 ft <sup>3</sup> / CTS
Production	5 1/2	New	P-110	20	21492	21492	500' above intermediate casing
Tubing							
Liners							

*DMH 2/24/21*

<b>TYPE</b>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	26	30	0.312	1050	18	Class A	1.18
Fresh Water	13 3/8	17 1/2	0.380	2730	2184	Class A <sub>+</sub>	1.13
Coal							
Intermediate	9 5/8	12 3/8	0.395	7900	6320	Class A	1.18
Production	5 1/2	8 1/2	0.361	14360	11488	Class A/H	1.04 - 2.098
Tubing							
Liners							

**PACKERS**

Kind:				
Sizes:				
Depths Set:				

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

This well has been drilled to a TMD of 7,134'. Continue drilling and complete a new horizontal well in the Marcellus Formation. Finish drilling the curve. Drill the lateral in the Marcellus. Cement casing.

*DMAH 2/24/21*

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from freshwater sources. This water is mixed with sand and a small percentage (less than 0.1%) of chemicals (including 15% Hydrochloric acid, friction reducer, biocide, and scale inhibitor), referred to in the industry as a "slickwater" completion. Maximum anticipated internal casing pressure is expected to be approximately 10,000 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 350,000 gallons of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000-600,000 pounds of proppant per stage.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): Site Built

22) Area to be disturbed for well pad only, less access road (acres): Site Built

23) Describe centralizer placement for each casing string:

- Surface: Bow spring centralizers – One centralizer at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers– One centralizer at the shoe and one spaced every 500'.
- Production: One solid body centralizer spaced every joint from production casing shoe to KOP

24) Describe all cement additives associated with each cement type:

Conductor: Class A no additives  
Surface: Calcium Chloride. Used to speed the setting of cement slurries  
Intermediate: Calcium Chloride. Used to speed the setting of cement slurries.  
Production: Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

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25) Proposed borehole conditioning procedures:

Surface: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.  
Intermediate: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.  
Production: Perform a cleanup cycle by pumping 3-8 bottoms up or until the shakers are clean. Check volume of cuttings coming across the shakers every 15 minutes.

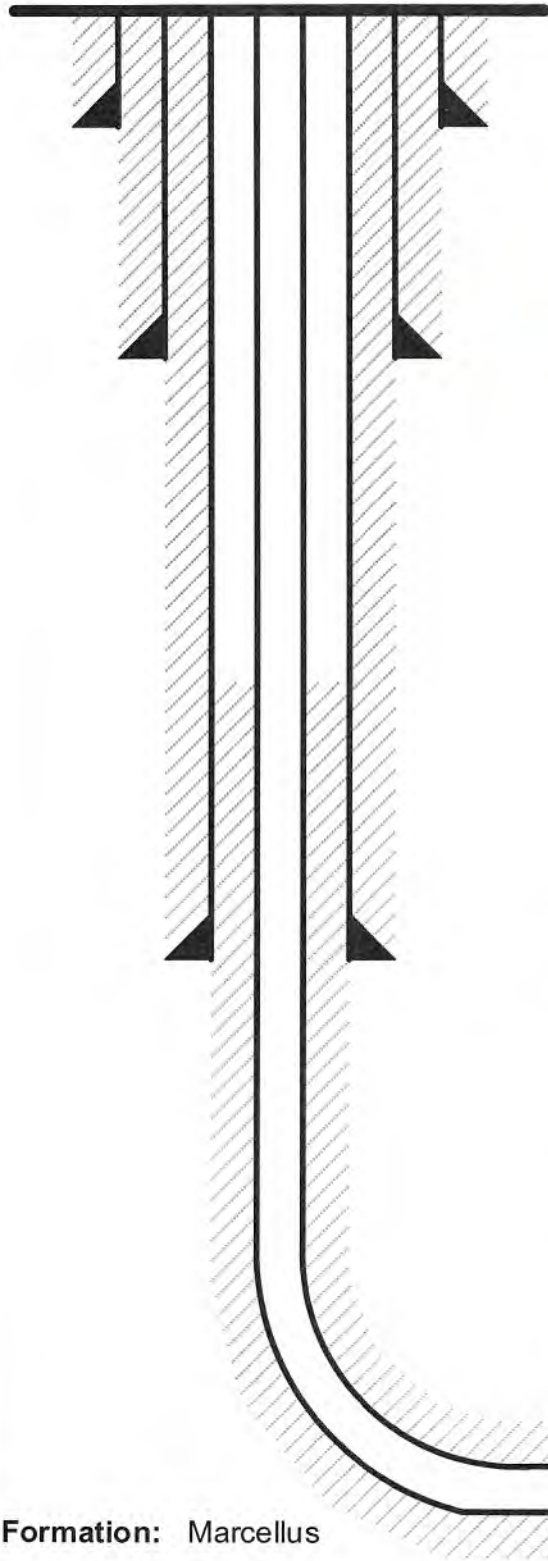
\*Note: Attach additional sheets as needed.

**EQT Production**

**Wellbore Diagram**

Well: Prine 5H  
Pad: Prine  
Elevation: 1336' GL 1349' KB

County: Wetzel  
State: West Virginia



**Conductor @ 40'**

26", 85.6#, A-500, cement to surface w/ Class A

**Surface @ 1,300'**

13-3/8", 54.5#, J-55, cement to surface w/ Class A

**Intermediate @ 2,900'**

9-5/8", 40#, P-110, cement to surface w/ Class A

**Production @ 21,492' MD / 7,489' TVD**

5-1/2", 20#, P-110, cement to 500' inside 9-5/8" w/ Class A/H

**Formation: Marcellus**

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*DMA 2/24/21*

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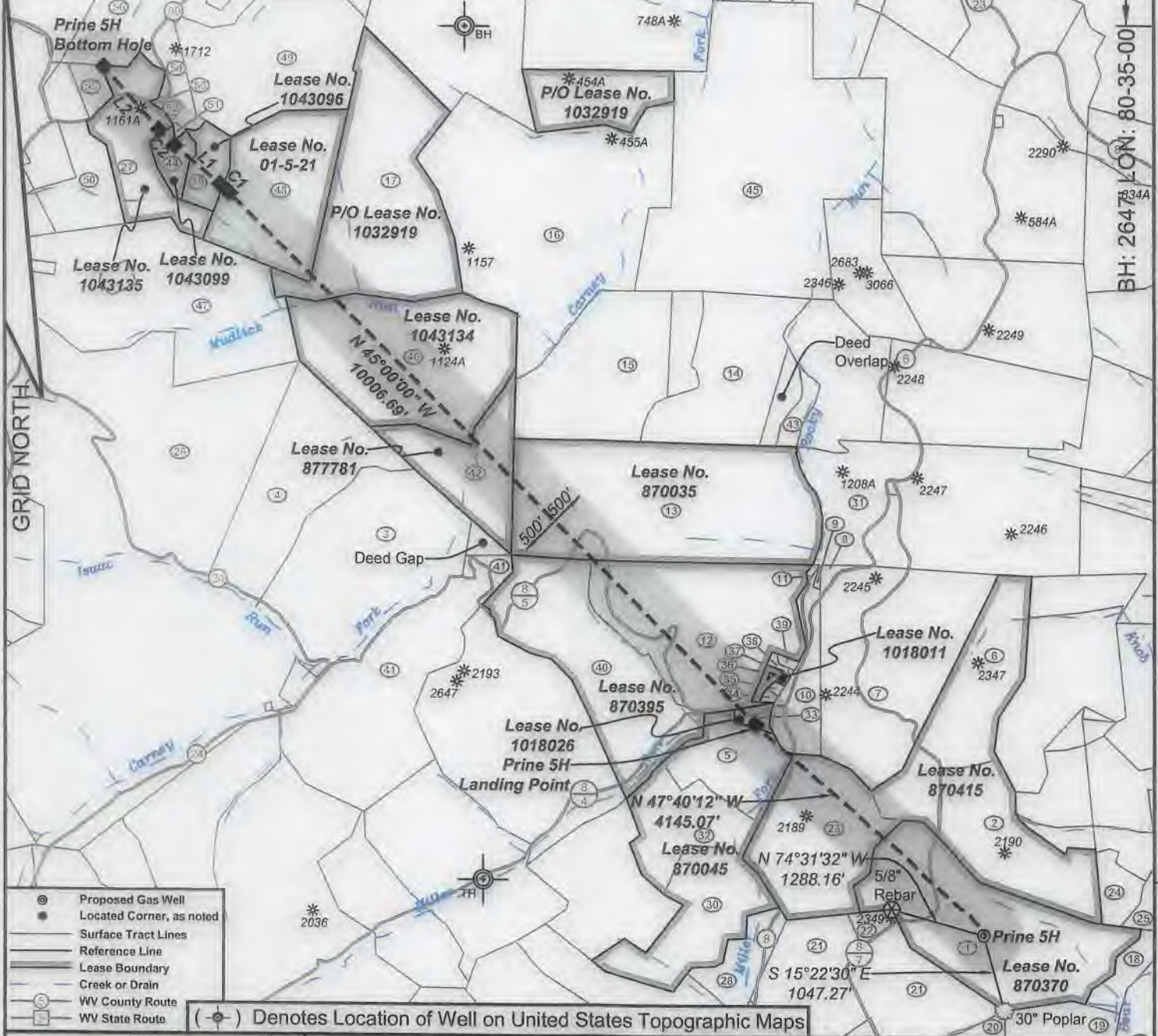


TH: 9034' LAT: 39-42-30

BH: 9270' LAT: 39-42-30

**Prine 5H  
LIT53  
EQT Production Company**

LINE	BEARING	DISTANCE		
L1	N 50°00'00" W	799.70'		
L2	N 40°56'38" W	1123.17'		
CURVE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH
C1	1911.94'	166.86'	N 47°30'01" W	166.81'
C2	1912.08'	302.22'	N 45°28'19" W	301.91'



*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.*

*Ben R. Singleton*  
P.S. 2092



FILE NO: 289-16  
DRAWING NO: Prine 5H  
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: February 25 20 21  
OPERATOR'S WELL NO.: Prine 5H  
API WELL NO **MOD**  
47 - 103 - 03356  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
LOCATION: ELEVATION: 1335' WATERSHED Tributary of Bear Run QUADRANGLE: Littleton  
DISTRICT: Center COUNTY: Wetzel  
SURFACE OWNER: Howard M. Henderson ACREAGE: 112  
ROYALTY OWNER: Jamie Joe Prine, et al LEASE NO: 870370 ACREAGE: 111  
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: 7,489'

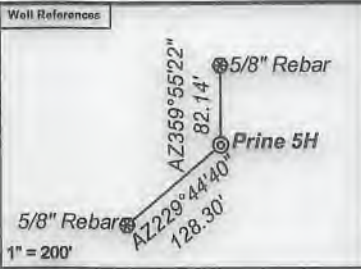
WELL OPERATOR: EQT Production Company DESIGNATED AGENT: Joseph C. Mallow  
ADDRESS: 400 Woodcliff Drive ADDRESS: 115 Professional Place PO Box 280  
Canonsburg, PA 15317 Bridgeport, WV 26330

04/09/2021



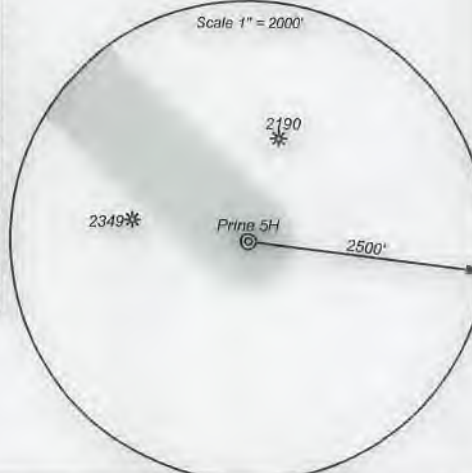
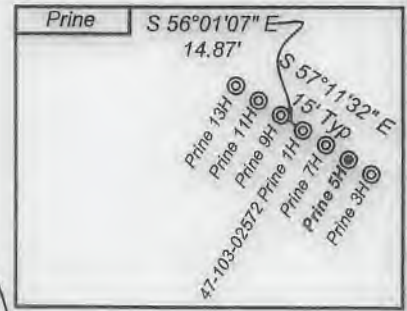
**Prine 5H  
LIT53  
EQT Production Company**

Tract I.D.	Tax Map No.	Parcel No.	County	District	Surface Tract Owner	Acres
1	8	43	Wetzel	Center	Howard M. Henderson	112.00
2	8	44	Wetzel	Center	William D. Henderson	85.00
3	7	7	Wetzel	Center	Charles D. Wood	108.27
4	7	8.1	Wetzel	Center	Rickey A. & Carol A. Yeater	149.00
5	8	40.1	Wetzel	Center	Robert E. Dorsey, Sr	38.00
6	8	29	Wetzel	Center	Howard M. & William D. Henderson	57.00
7	8	26	Wetzel	Center	Matthew J. Rice	108.00
8	8	27	Wetzel	Center	Evan H. & Janet L. Backinger	1.80
9	8	28	Wetzel	Center	Evan H. & Janet L. Backinger	0.25
10	8	24	Wetzel	Center	Charles P. & Franny P. Wade	19.44
11	8	25	Wetzel	Center	Evan H. & Janet L. Backinger	0.44
12	8	17	Wetzel	Center	Evan H. & Janet L. Backinger	61.00
13	8	7	Wetzel	Center	EQT Production Company	150.00
14	8	2	Wetzel	Center	EQT Production Company	72.43
15	8	1	Wetzel	Center	EQT Production Company	81.50
16	5	23	Wetzel	Center	Robert Long, et al.	172.50
17	5	14	Wetzel	Center	Benjamin E. Yarber	224.00
18	11	9	Wetzel	Center	Howard M. Henderson	10.10
19	11	6	Wetzel	Center	James B. & Margie L. Montgomery	82.00
20	11	8.1	Wetzel	Center	Larry L. & Lois J. Doem	94.50
21	11	8	Wetzel	Center	Ray S. & Timmy R. Suss	90.50
22	11	8.2	Wetzel	Center	Roger L. & Sandra K. Wade	4.00
23	8	42	Wetzel	Center	Jeffrey P. & Howard M. Henderson	67.00
24	8	55	Wetzel	Center	Ashley Murphy, et al.	0.43
25	8	47	Wetzel	Center	Howard M. Henderson	14.75
26	7	8	Wetzel	Center	Wallace J. Dolan	192.21
27	9	39	Wetzel	Center	Steve Long	34.25
28	11	5.1	Wetzel	Center	Robert E. Dorsey, Sr.	20.00
29	4	35.7	Wetzel	Center	Robert L. Long, et al.	13.00
30	8	30	Wetzel	Center	Robert E. Dorsey, Sr.	56.00
31	8	8	Wetzel	Center	Lillian M. Pitzer & Jason L. Wright	57.00
32	8	40	Wetzel	Center	Robert E. Dorsey, Sr.	34.00
33	8	21	Wetzel	Center	Charles P. & Franny P. Wade	3.00
34	8	22	Wetzel	Center	William R. White	0.88
35	8	23	Wetzel	Center	William R. White, et al.	0.58
36	8	20	Wetzel	Center	William R. White	2.87
37	8	18.1	Wetzel	Center	Kenneth R. Morris, et al.	0.10
38	8	18	Wetzel	Center	William R. White	1.00
39	8	19	Wetzel	Center	William R. White	0.56
40	8	16	Wetzel	Center	Evan H. & Janet L. Backinger	79.30
41	8	36	Wetzel	Center	Kenneth J. Hollobaugh	87.00
42	8	8	Wetzel	Center	David Wood	44.00
43	8	3.1	Wetzel	Center	Dalison Lumber Inc	15.88
44	4	35.8	Wetzel	Center	Robert L. Long	9.00
45	5	15	Wetzel	Center	Howard M. Henderson	226.00
46	5	22	Wetzel	Center	Mike Ross Inc	103.75
47	4	52	Wetzel	Center	James L. Musgrave, et al.	127.72
48	5	21	Wetzel	Center	Susan Miller, et al.	69.25
49	5	13	Wetzel	Center	Susan Miller, et al.	80.00
50	4	35.1	Wetzel	Center	Steve Long	35.77
51	4	35.9	Wetzel	Center	Ethan Wayman	0.40
52	4	35.6	Wetzel	Center	Roger & Kittle Long	1.14
53	4	36	Wetzel	Center	Christian Church	
54	4	35.2	Wetzel	Center	Rodger S. Long	13.28
55	4	35.5	Wetzel	Center	Charles Fred Musgrave, et al.	5.71
56	4	25	Wetzel	Center	Susan L. & John F. Thomas	30.00



**Notes:**  
 Prine 5H coordinates are  
 NAD 27 N: 427,853.43 E: 1,697,745.41  
 NAD 27 Lat: 39.669745 Long: -80.573759  
 NAD 83 UTM N: 4,391,199.13 E: 536,575.03  
 Prine 5H Landing Point coordinates are  
 NAD 27 N: 430,644.72 E: 1,694,681.05  
 NAD 27 Lat: 39.677306 Long: -80.584764  
 NAD 83 UTM N: 4,392,033.91 E: 535,627.26  
 Prine 5H Bottom Hole coordinates are  
 NAD 27 N: 439,407.58 E: 1,685,918.19  
 NAD 27 Lat: 39.701068 Long: -80.616281  
 NAD 83 UTM N: 4,394,658.94 E: 532,913.03  
 West Virginia Coordinate system of 1927 (North Zone)  
 based upon Differential GPS Measurements.  
 Plat orientation, corner and well ties are based upon  
 the grid north meridian.  
 Well location references are based upon the grid north  
 meridian.  
 UTM coordinates are NAD83, Zone 17, Meters.

Lease No.	Owner	Acres
870415	Howard Henderson, et al.	189
870045	Green Dot Farm, Inc., et al.	125
1018026	Charles P. Wade II, et ux.	3
1018011	Diana Dawn Van Horn, et al.	2.87
870395	Brian R. Morgan, et al.	170
870035	Stone Hill Minerals Holdings, LLC, et al.	150
877781	David & Imogene Wood	44
1043134	Kathleen O'Grady	103.75
1032919	Benjamin Yarber, et ux.	136.595184 of 224
1-5-21	Susan Miller, et al.	69.25
1043096	Mary Gallo, et al.	13
1043099	Mary Gallo, et al.	9
1043135	Mary Gallo, et al.	34.250

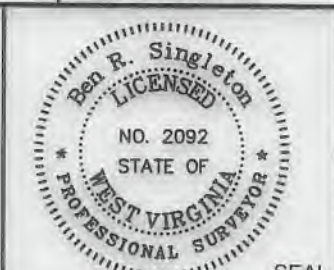


Proposed Gas Well  
 Located Corner, as noted  
 Surface Tract Lines  
 Reference Line  
 Lease Boundary  
 Creek or Drain  
 WV County Route  
 WV State Route



*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.*

*Ben R. Singleton*  
 P.S. 2092



FILE NO: 289-16  
 DRAWING NO: Prine 5H  
 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: February 25 20 21  
 OPERATOR'S WELL NO.: Prine 5H  
 API WELL NO: 47-103-03356  
 STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
 (IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
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 DISTRICT: Center COUNTY: Wetzel  
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 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY)  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus ESTIMATED DEPTH: 7,489'

WELL OPERATOR: EQT Production Company DESIGNATED AGENT: Joseph C. Mallow  
 ADDRESS: 400 Woodcliff Drive ADDRESS: 115 Professional Place PO Box 280  
 Canonsburg, PA 15317 Bridgeport, WV 26330

04/09/2021



**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
See Attached				

**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

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The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: EQT Production Company  
 By: John Zavatchan *John F. Zavatchan Jr.*  
 Its: Project Specialist Permitting

WW-6A1 attachment

Operator's Well No.

Prine 5H

<b>Lease No.</b>	<b>Grantor, Lessor, etc.</b>	<b>Grantee, Lessee, etc.</b>	<b>Royalty</b>	<b>Book/Page</b>
<b><u>870370</u></b>	<b><u>Jamie Joe Prine, et al</u></b>		"at least 1/8th per WV Code 22-6-8"	
	Lloyd Joe Prine and Betty M. Prine, h/w	Drilling Appalachian Corporation		OG 85A/380
	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538
	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
<b><u>870415</u></b>	<b><u>Howard Henderson, et al.</u></b>		"at least 1/8th per WV Code 22-6-8"	
	Maxine Henderson	Drilling Appalachian Corporation		OG 85A/306
	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538
	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
<b><u>870045</u></b>	<b><u>Green Dot Farm, Inc., et al</u></b>		"at least 1/8th per WV Code 22-6-8"	
	Green Dot Farm, Inc.	Drilling Appalachian Corporation		OG 103A/265
	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 106A/11 & 135A/344
	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707

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**1018026**

**Charles P. Wade II, et ux**

"at least 1/8th per  
WV Code 22-6-8"

Charles P. Wade, II and Franny P. Wade, h/w

EQT Production Company

OG 179A/745

**1018011**

**Diana Dawn Van Horn, et al**

"at least 1/8th per  
WV Code 22-6-8"

Diana Dawn Van Horn, a married woman dealing in her  
sole/sep. prop.

EQT Production Company

OG 179A/532

**870395**

**Brian R. Morgan, et al.**

"at least 1/8th per  
WV Code 22-6-8"

Teaunna Morgan  
Drilling Appalachian Corporation  
Drilling Appalachian Corporation  
Grenadier Energy Partners, LLC  
Statoil USA Onshore Properties Inc.

Drilling Appalachian Corporation  
Grenadier Energy Partners, LLC  
Statoil USA Onshore Properties Inc.  
Statoil USA Onshore Properties Inc.  
EQT Production Company

OG 109A/909  
OG 110A/821 & 135A/356  
OG 138A/54  
OG 138A/1  
OG 175A/707

**870035**

**Stone Hill Minerals Holdings, LLC, et al.**

"at least 1/8th per  
WV Code 22-6-8"

Stone Hill Minerals Holdings, LLC

EQT Production Company

OG 180A/52

**877781**

**David & Imogene Wood**

"at least 1/8th per  
WV Code 22-6-8"

David Wood and Imogene Wood, h/w  
Drilling Appalachian Corporation  
Drilling Appalachian Corporation  
Grenadier Energy Partners, LLC  
Statoil USA Onshore Properties Inc., et al

Drilling Appalachian Corporation  
Grenadier Energy Partners, LLC  
Statoil USA Onshore Properties Inc.  
Statoil USA Onshore Properties Inc.  
EQT Production Company

OG 112A/259  
OG 116A/878 & 135A/359  
OG 138A/54  
OG 138A/1  
OG 185A/916

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**1032919**

**Benjamin Yarber, et ux.**

"at least 1/8th per  
WV Code 22-6-8"

Benjamin Yarber and Maria Yarber, h/w	Drilling Appalachian Corporation	OG 92A/544
Drilling Appalachian Corporation	Chesapeake Appalachia, L.L.C.	OG 103A/187
Chesapeake Appalachia, L.L.C.	Statoil USA Onshore Properties Inc.	OG 124A/437
Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC	OG 157A/540
Statoil USA Onshore Properties Inc.	SWN Exchange Title Holder LLC	OG 158A/801
SWN Exchange Title Holder LLC	SWN Production Company, LLC	Corp. Book 13/296
SWN Production Company, LLC	Antero Exchange Properties LLC	OG 177A/533
Antero Exchange Properties LLC	Antero Resources Corporation	Corp. Book 13/311
Antero Resources Corporation	EQT Production Company	OG 208A/605

**1043134**

**Kathleen O'Grady**

"at least 1/8th per  
WV Code 22-6-8"

Kathleen O'Grady, a/k/a Nancy O'Grady, a single woman	Antero Resources Corporation	187A/126
Antero Resources Corporation	EQT Production Company	OG 231A/22

**1-5-21**

**Susan Miller, et al.**

"at least 1/8th per  
WV Code 22-6-8"

Robert Keith Miller Estate, by Susan Miller, acting as Executrix and Susan Miller, individually, a widow	Chesapeake Appalachia, L.L.C.	OG 146A/585
Chesapeake Appalachia, L.L.C.	Statoil USA Onshore Properties Inc.	OG 157A/504
Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC	OG 157A/540
SWN Production Company, LLC	Antero Exchange Properties LLC	OG 177A/533
Statoil USA Onshore Properties Inc.	Antero Exchange Properties LLC	OG 177A/738
Antero Exchange Properties LLC	Antero Resources Corporation	Corp. Book 13/311
	See Attached Letter	

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**1043096**

**Mary Gallo, et al.**

"at least 1/8th per  
WV Code 22-6-8"

Mary Gallo, aka Mary M. Gallo and Ernest B. Gallo, her  
husband

EQT Production Company

OG 249A/84

**1043099**

**Mary Gallo, et al.**

"at least 1/8th per  
WV Code 22-6-8"

Mary Gallo, aka Mary M. Gallo and Ernest B. Gallo, her  
husband

EQT Production Company

OG 249A/87

**1043135**

**Mary Gallo, et al.**

"at least 1/8th per  
WV Code 22-6-8"

Mary Gallo, aka Mary M. Gallo and Ernest B. Gallo, her  
husband

EQT Production Company

OG 249A/144

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February 8, 2021

Jared Hurst  
Antero Resources Corporation  
1615 Wynkoop Street  
Denver, CO 90202

RE: **Permission to Permit and Drill**

Wetzel County, West Virginia

Dear Mr. Hurst,

EQT Production Company ("**EQT**") hereby requests permission from Antero Resources Corporation ("**Antero**") to proceed with EQT's plans to drill one or more horizontal wells in, under, and through certain properties subject to oil and gas interests owned or controlled by Antero located in Wetzel County, West Virginia, as more particularly described on Exhibit A to this letter agreement (the "**O&G Interests**"), and insofar and only insofar as such O&G Interests are located within the Units (as defined below) and further insofar and only insofar as to the Target Rights (the "**Properties**"), pursuant to the terms and conditions of this letter agreement. Antero and EQT are currently parties to an Acreage Trade Agreement dated December 8, 2020 (as amended from time-to-time, the "**Trade Agreement**"), which includes the Properties. The closing of the Trade Agreement is scheduled to occur on or before June 17, 2021, subject to the term of the Trade Agreement. EQT desires to drill the Properties for EQT's units more particularly described on Exhibit B to this letter agreement (the "**Units**") prior to the Closing contemplated by the Trade Agreement. Capitalized terms not otherwise defined herein shall have the meanings ascribed to them in the Trade Agreement.

In order to generate mutual goodwill between EQT and Antero, and for one hundred dollars (\$100.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Antero hereby grants EQT the right to apply for and obtain all applicable governmental permits for the drilling of one or more wellbore laterals in, under, and through the Properties (collectively, "**Wells**") and to drill, complete and produce such Wells.

In the event that the Trade Agreement is terminated pursuant to its terms (or is not terminated but fails to Close with respect to all or any portion of the Properties), then EQT and Antero shall enter into one (1) or more mutually-agreed joint operating agreements (with each contract area covering a Unit) with respect to the Properties (or the portions thereof for which Closing failed to occur), effective as of the date hereof.

EQT hereby agrees to release, protect, indemnify, defend and hold harmless Antero from and against any claims, expenses, damages, injuries, claims or obligations or liabilities (including reasonable attorneys' fees) that may be brought by any third party against Antero or its Affiliates to the extent arising out of EQT's drilling or other operations pursuant to this letter agreement and that arise on or after the date of this letter agreement through the Expiration Date (as defined

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below). This paragraph shall survive (a) the Closing and the assignment or lease, as applicable, related to the Properties, (b) the the execution of a mutually-agreed joint operating agreement with respect to any Properties, or (c) any termination of all or any part of this letter agreement.

Nothing in this letter agreement will diminish any current or future rights of Antero in the Properties or other properties. This letter agreement and the rights and obligations of EQT and Antero hereunder will terminate (on a Property-by-Property basis) upon the earlier of (I) the execution of a mutually-agreed joint operating agreement with respect to such Property or (II) if and when Antero and EQT consummate the Closing of the Trade Agreement with respect to such Property ("**Expiration Date**").

If the above meets your approval, please execute in the space provided below and return one signed copy to the letterhead address. Should you have any questions, please contact Jarred Detweiler at (412) 660-6276.

*[Signature Pages Follow.]*

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Sincerely,

**EQT PRODUCTION COMPANY**

DocuSigned by:  
By: Corey Peck  
B59B4A84E0C848A  
Name: Corey Peck  
Title: Managing Director – Land ops

*Signature Page to Letter Agreement*

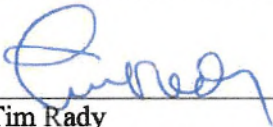
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AGREED TO AND ACCEPTED:

**ANTERO RESOURCES CORPORATION**

By:   
Name: Tim Rady  
Title: Vice President - Land

*Signature Page to Letter Agreement*

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**EXHIBIT A  
PROPERTIES**

Lessors/Grantor	Lessee/Grantee	Lease/Deed Date	Gross Acres	State	County	District	Vol	Pg	Parcels
Long, Ronald M., a married man acting in his own right	Columbia Natural Resources LLC	6/29/2005	131.000	WV	Wetzel	Center	85A	76	P/O 01-5-21 01-4-52
Wiegand, Eileen, a married woman acting in her own right	Columbia Natural Resources LLC	6/29/2005	91.706	WV	Wetzel	Center	85A	78	P/O 01-5-21 01-4-52
Anderson, Noel, a married woman acting in her own right	Columbia Natural Resources LLC	6/29/2005	91.706	WV	Wetzel	Center	85A	80	P/O 01-5-21 01-4-52
Musgrave, Ila Mae, a married woman acting in her own right	Columbia Natural Resources LLC	6/29/2005	91.706	WV	Wetzel	Center	85A	82	P/O 01-5-21 01-4-52
Blake, Paul J., widower	Columbia Natural Resources LLC	7/6/2005	91.706	WV	Wetzel	Center	85A	36	P/O 01-5-21 01-4-52
Chaplin, Mary Lynn, a married woman acting in her own right	Columbia Natural Resources LLC	7/6/2005	91.706	WV	Wetzel	Center	85A	142	P/O 01-5-21 01-4-52
Musgrave, Gregory Neil, single	Columbia Natural Resources LLC	7/21/2005	127.720	WV	Wetzel	Center	85A	38	P/O 01-5-21 01-4-52
Wykert, Dinn Louise, a married woman acting in her own right	Columbia Natural Resources LLC	7/21/2005	127.720	WV	Wetzel	Center	85A	40	P/O 01-5-21 01-4-52
Musgrave, Charles Fred, a married man acting in his own right	Columbia Natural Resources LLC	7/21/2005	89.873	WV	Wetzel	Center	85A	90	P/O 01-5-21 01-4-52
Robert Keith Miller Estate by Susan Miller, acting as Executive and Susan Miller, individually, a widow	Chesapeake Appalachia LLC	11/16/2013	69.250	WV	Wetzel	Center	145A	880	P/O 01-5-21 01-4-52
Green Oak Farm, Inc.	Andro Resources Corporation	4/7/2017	149.000	WV	Wetzel	Center	185A	930	01-7-6.1
BBC Appalachia Minerals LLC	BRC Working Interest Company LLC	8/27/2009	7.320	WV	Wetzel	Church	102A	505	02-14-38

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BRC Appalachian Minerals I LLC	BRC Working Interest Company LLC	8/27/2009	7.300	WV	Wetzel	Church	102A	505	02-18-5
BRC Appalachian Minerals I LLC	BRC Working Interest Company LLC	8/27/2009	1.800	WV	Wetzel	Church	102A	505	02-9-7
BRC Appalachian Minerals I LLC	BRC Working Interest Company LLC	8/27/2009	35.750	WV	Wetzel	Clay	102A	505	03-6-27
BRC Appalachian Minerals I LLC	BRC Working Interest Company LLC	8/27/2009	0.352	WV	Wetzel	Clay	102A	505	03-6-28
BRC Appalachian Minerals I LLC	BRC Working Interest Company LLC	8/27/2009	7.470	WV	Wetzel	Clay/Center	102A	505	03-6-29
BRC Appalachian Minerals I LLC	BRC Working Interest Company LLC	8/27/2009	0.729	WV	Wetzel	Clay/Center	102A	505	03-6-29.1
BRC Appalachian Minerals I LLC	BRC Working Interest Company LLC	8/27/2009	1.569	WV	Wetzel	Clay	102A	505	03-6-29.2
BRC Appalachian Minerals I LLC	BRC Working Interest Company LLC	8/27/2009	62.500	WV	Wetzel	Center	102A	505	01-12-7, 01-12-7.1

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**EXHIBIT B  
UNITS**

<b>Unit Name(s)</b>	<b>Legal Description</b>
Prine North 1	<i>As depicted in the attached Exhibit B-1.</i>
Prine North 3	
Sizemore NS 8	

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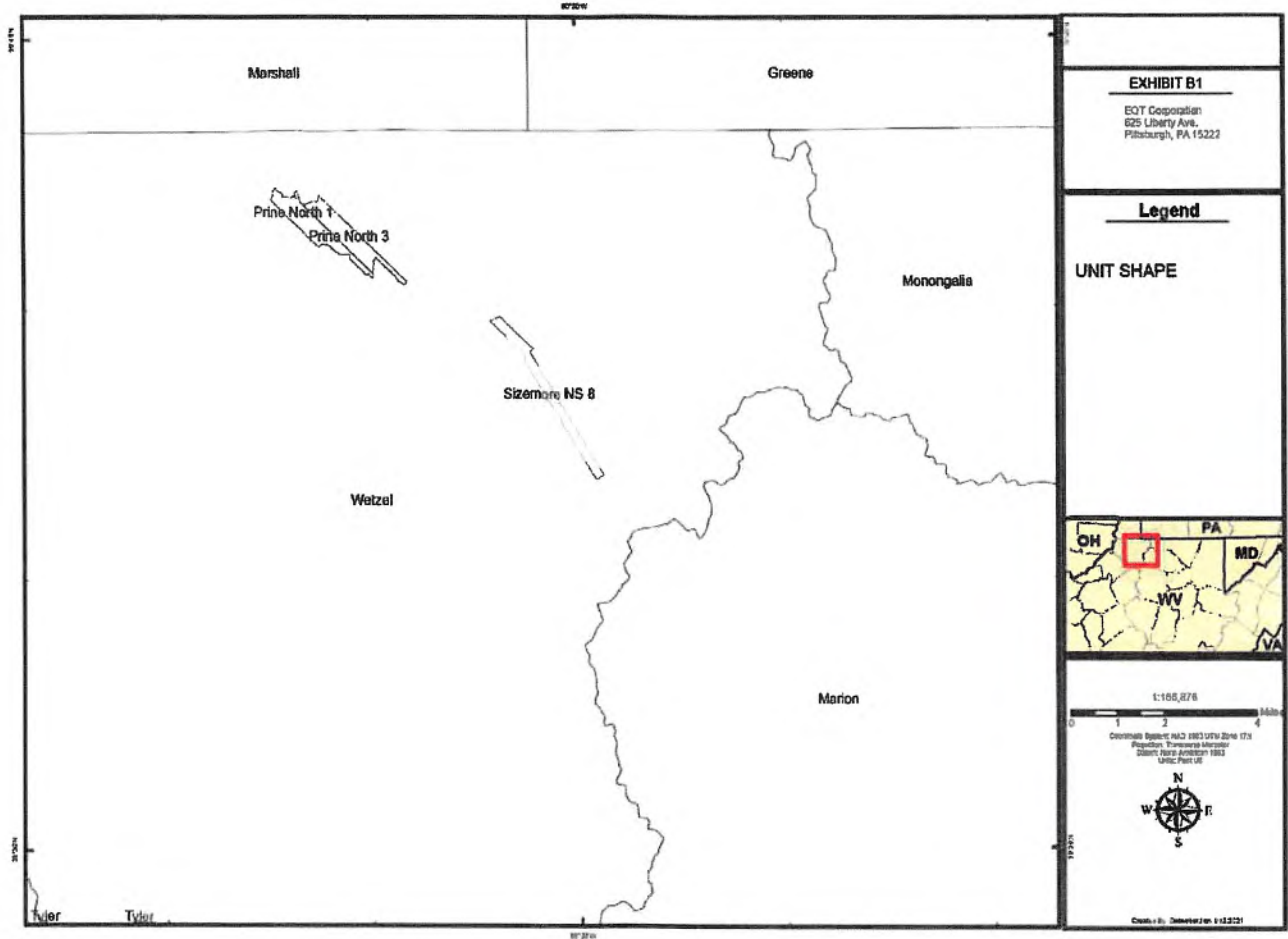
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**EXHIBIT B-1**



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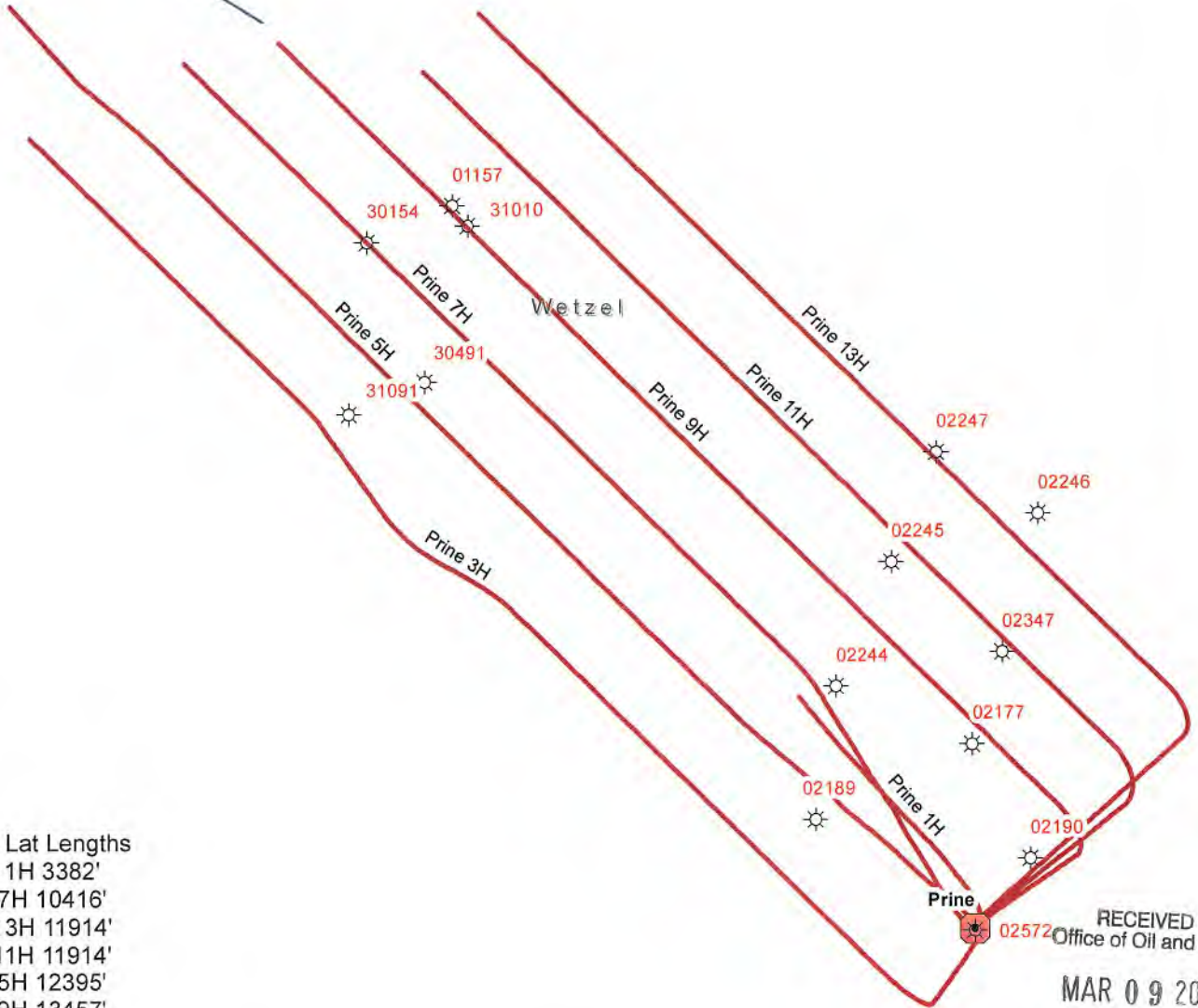
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471030320501



Planned Lat Lengths

- Prine 1H 3382'
- Prine 7H 10416'
- Prine 13H 11914'
- Prine 11H 11914'
- Prine 5H 12395'
- Prine 9H 13457'
- Prine 3H 14905'

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EQT Corporation  
625 Liberty Avenue  
Pittsburgh, PA 15222

Prine - North

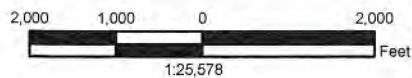
Vertical Offsets and  
Foreign Laterals  
within 500'

Legend

- Foreign Well Offset
- Foreign Horizontals
- Well Pad Sites

Well Lateral\_FM Formation

- Genesee
- Marcellus
- Utica



Disclaimer:

This map is confidential and is to be used only for the express informational purposes for which it was created. Unauthorized use, copying, or dissemination is strictly prohibited. EQT does not warrant the accuracy of the location of any items shown on this map, including, but not limited to, any structures, well or pipeline facilities, property boundaries, topography, roadways, or waterways. The items shown on the map may not have been placed on the map using survey lines or GPS coordinates. The specific location of any of the map items should be determined by a field survey performed by a licensed surveyor upon consultation with EQT.



04/09/2021



WellID	WellStatus	date	FmatTD	Permit	RemarksPRO	Operator	Longitude	Latitude	DatumEleva	TotalDepth-SS	Total Depth
4710301157	UNK	12/17/1923		01157		W M BISSETT	-80.5968	39.6943	1268.0000	-1938.0000	3206.0000
4710302177	UNK	6/28/2006		02177	BNJ	D A C	-80.5739	39.6760	1473.0000	-2226.0000	3699.0000
4710302189	GAS	8/30/2006		02189	BNJ/GDN	D A C	-80.5808	39.6735	0.0000	-3605.0000	3605.0000
4710302190	GAS	9/8/2006		02190	BNJ/GDN	D A C	-80.5713	39.6721	0.0000	-3500.0000	3500.0000
4710302244	GAS	7/9/2007		02244	BNJGDN5SDBYD	D A C	-80.5799	39.6780	1361.0000	-2282.0000	3643.0000
4710302245	GAS	8/4/2007		02245	BNJ/GDN	D A C	-80.5775	39.6822	1386.0000	-2149.0000	3535.0000
4710302246	GAS	7/16/2007		02246	BNJ/GDN	D A C	-80.5710	39.6838	1439.0000	-2269.0000	3708.0000
4710302247	GAS	7/21/2007		02247	BNJ/GDN	D A C	-80.5755	39.6859	1534.0000	-2152.0000	3686.0000
4710302347	GAS	5/15/2008		02347	BNJGDN	D A C	-80.5726	39.6791	1361.0000	-2315.0000	3676.0000
4710302572	GAS	7/29/2010		02572		GRENADIER ENERGY PARTNERS	-80.5738	39.6697	1332.0000	-5168.0000	6500.0000
4710330154	OIL			30154		OPER IN MIN.OWN	-80.6006	39.6930	1173.0000	-1944.0000	3117.0000
4710330491	OIL GS	8/10/1917		30491		JENNINGS BRTHRS	-80.5981	39.6883	972.0000	-1954.0000	2926.0000
4710331010	GAS	8/15/1934	LOWER HURON SHALE	31010		CARNEGIE NAT GAS	-80.5961	39.6936	1260.0000	-1946.0000	3206.0000
4710331091	UNK		LOWER HURON SHALE	31091		OPER IN MIN.OWN	-80.6014	39.6872	1200.0000	-1945.0000	3145.0000

Foreign Horizontal

WellID	DatumEleva	Deviated	WellStatus	Name	Spuddate	Operator
471030320501	1411.0000		1 GAS	210H DURIG DANIEL WTZ	11/18/2017	SWN PRODUCTION

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