west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

July 15, 2016

EQT PRODUCTION COMPANY
120 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330

Re: Permit Modification Approval for API Number 8510227, Well #: 514475

Lateral Extension

Oil and Gas Operator:
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.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas

EQT

4708510227 MOD

June 27, 2016

Mr. Gene Smith
West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304

Re: Modification of 47-08510227

Dear Mr. Smith,

Enclosed is an updated WW-6B, schematics, WW-6A1, mylar plat and rec plan. EQT would like to lengthen the lateral on the above API number.

If you have any questions, please do not hesitate to contact me at (304) 848-0076.

Sincerely,

Vicki Roark
Permitting Supervisor-WV

Enc.

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July 11, 2016

470 [illegible] 227 Mod

Mr. Gene Smith
West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304

Re: Modification of 47-085-10227

Dear Mr. Smith,

Enclosed is an updated Monitoring plan and mylar plat to bring the permit into compliance with the new regulations passed on 7/9/16.

If you have any questions, please do not hesitate to contact me at (304) 848-0076.

Sincerely,

Vicki Roark
Permitting Supervisor-WV

Enc.

4708510227

WW-6B
(04/15)

API NO. 47- 085 - 10227
OPERATOR WELL NO. 514475
Well Pad Name: PEN54

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

1) Well Operator:	EQT Production Company	306686	Ritchie	Clay	Pennsboro
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: 514475 Well Pad Name: PEN54

3) Farm Name/Surface Owner: Jerry Morton et al Public Road Access: Rt 50

4) Elevation, current ground: 1016 Elevation, proposed post-construction: 1016

5) Well Type (a) Gas X Oil _____ Underground Storage _____
Other _____
(b)If Gas Shallow X Deep _____
Horizontal X

Michael Dott 6/28/16

6) Existing Pad: Yes or No _____

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus, 6307', 49', 2190 PSI, Top of Marcellus 6275

8) Proposed Total Vertical Depth: 6307

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18171

11) Proposed Horizontal Leg Length: 10936

12) Approximate Fresh Water Strata Depths: 99, 105, 302, 627, 729, 745, 770

13) Method to Determine Fresh Water Depths: By offset wells

14) Approximate Saltwater Depths: 1350

15) Approximate Coal Seam Depths: 326, 789, 867, 1078, 1182

16) Approximate Depth to Possible Void (coal mine, karst, other): None reported

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

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

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WW-6B
(04/15)

4708510227

API NO. 47- 085 - 10227 Mod
OPERATOR WELL NO. 514475
Well Pad Name: PEN54

18) **CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20	New	A-500	78.6	40	40	60 ft^3 / CTS
Fresh Water	13 3/8	New	J-55	54.5	900	900	793 ft^3 / CTS
Coal							
Intermediate	9 5/8	New	P-110	40	5176	5176	2036 ft^3 / CTS
Production	5 1/2	New	P-110	20	18171	18171	TOC is 500' above top producing zone
Tubing	2 3/8		J-55	4.7		May not be run, if run set 40' above top perf or 80° inclination	
Liners							

MAC 6/28/16

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	26	.375	1378	1102	Class A	1.18
Fresh Water	13 3/8	17 1/2	.38	2700	2160	See Variance	1.19
Coal							
Intermediate	9 5/8	12 3/8	.395	7900	6320	See Variance	1.19
Production	5 1/2	8 1/2	.361	12640	10112	Class H	1.07/1.86
Tubing	2 3/8	NA	.19	7700			
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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4708510227 MOD

WW-6B
(10/14)

API NO. 47- 085 - 10227
OPERATOR WELL NO. 514475
Well Pad Name: PEN54

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

Drill and complete a new horizontal well in the Marcellus Formation. Drill the vertical to an approximate depth of 5580'. Kick off and drill curve. Drill the lateral in the Marcellus. Cement casing.

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

MDG 6/28/16

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 0.3%) of chemicals (including 15% Hydrochloric acid, gelling agent, gel breaker, 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 10000 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 200,000 barrels of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000 pounds of sand per stage.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 52.03

22) Area to be disturbed for well pad only, less access road (acres): 21.5

23) Describe centralizer placement for each casing string:

- Surface: Bow spring centralizers – One at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers– One 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 (Type 1 Cement). 0-3% Calcium Chlonde Used to speed the setting of cement slurries, .25% Flake Loss Circulation Material (LCM) is used to combat the loss of the cement slurry to a thief zone.
Intermediate (Type 1 Cement): 0-3% Calcium Chloride. Salt is used in shallow, low temperature formations to speed the setting of cement slurries. 0.25% flake. Loss Circulation Material (LCM) is used to combat the loss of whole drilling fluid or cement slurry (not filtrate) to a thief zone.
Production: Lead (Type H Cement): 0.2% CD-20 (dispersant makes cement easier to mix). .15% SuperFL-300 (fluid loss/lengthens thickening time) .15% SEC-10 (fluid loss) 50.50 POZ (extender)
Tail (Type H Cement): 0.2% Super CR-1 (Retarder). Lengthens thickening time. .3% Super FL-200 (fluid loss) .2% SEC-10 (Fluid loss). .2% SuperFL-350 (fluid loss) Reduces amount of water lost to formation. 60 % Calcuim Carbonate. Acid solubility.

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: Pump marker sweep with nut plug to determine actual hole washout. Calculate a gauge holes bottoms up volume. Perform a cleanup cycle by pumping 3-5 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.

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4708510227

EQT Production

Hydraulic Fracturing Monitoring Plan

Pad ID: PEN54

Ritchie County, WV

7/12/16

Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near EQT hydraulic fracturing in Ritchie County, WV prior to hydraulic fracturing at the following EQT wells on the PEN54 pad: 514415, 514416

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 6,300' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability Alexander formation (approximately 5,200' TVD).

The plan is being implemented as an additional safety measure to be utilized in conjunction with existing best management practices and emergency action plans for the site. These additional measures include pre-notification of conventional well operators of the timing and location of the hydraulic fracturing, establishment of measures conventional well operators should implement, and assurance that the OOG is notified of the timeline, as well as any issues that may arise during fracturing.

1. Communications with Conventional Well Operators

EQT, using available data (WV Geological Survey, WVDEP website, and IHS data service), has identified all known conventional wells and well operators within 1,500 feet of this pad and the lateral sections. A map showing these wells along with a list of the wells and operators is included in **Attachment A.**

Upon approval of this plan, EQT will notify these operators, via letter, of the hydraulic fracturing schedule for these wells. A copy of this letter is included in **Attachment B.**

The letter provides recommendations to these conventional operators to 1) increase their monitoring of their wells during that time period, 2) ensure that their well head equipment is sound, and 3) provide immediate notification to EQT and the OOG in the event of any changes in their well conditions.

Specifically, the letter recommends that conventional well operators conduct the following activities during and after fracturing operations:

1. Inspect their surface equipment prior to fracturing to establish integrity and establish pre-frac well conditions
2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas or pressure
3. Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity
4. Notify the OOG and EQT if any changes in water, gas production, pressure, or other anomalies are identified

2. Reporting

EQT will provide information relating to the hydraulic fracturing schedule, communication with conventional operators, and ongoing monitoring of the work upon request of OOG or immediately in the event of any noted abnormalities.

4708510227

625 Liberty Ave, Suite 1700
Pittsburgh PA 15222
www.eqt.com

TEL: (412) 395-3305
FAX: (412) 395-2156

John Centofanti
Corporate Director,
Environmental Affairs

(date)

[Conventional Well Operator]
[address]
[state]

RE: Ritchie County Hydraulic Fracturing Notice

Dear Sir/Madam,

EQT has developed a Marcellus pad (Pennsboro 54 pad) located in Ritchie County, WV. As an owner or operator of conventional natural gas wells in this area, we are requesting your assistance in this matter.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 6,300' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability, Alexander formation (approximately 5,200' TVD).

EQT anticipates conducting hydraulic fracturing at the Pennsboro 54 pad during the [first,second, third,fourth] quarter of [year]. We have identified conventional natural gas wells operated by your company within 1,500' (lateral distance) of our new/planned laterals. Plats for each well on this pad are attached.

We recommend that conventional well operators conduct the following activities before, during, and after fracturing operations:

1. Inspect surface equipment, prior to fracturing, to establish integrity and establish well conditions.
2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas, or pressure.
3. Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity.
4. Notify the OOG and EQT if any changes in water, gas production, pressure, or other anomalies are identified.

Please feel free to contact me at 412-395-3305 with any questions or comments. You may also contact the West Virginia Office of Oil and Gas at 304-926-0440.

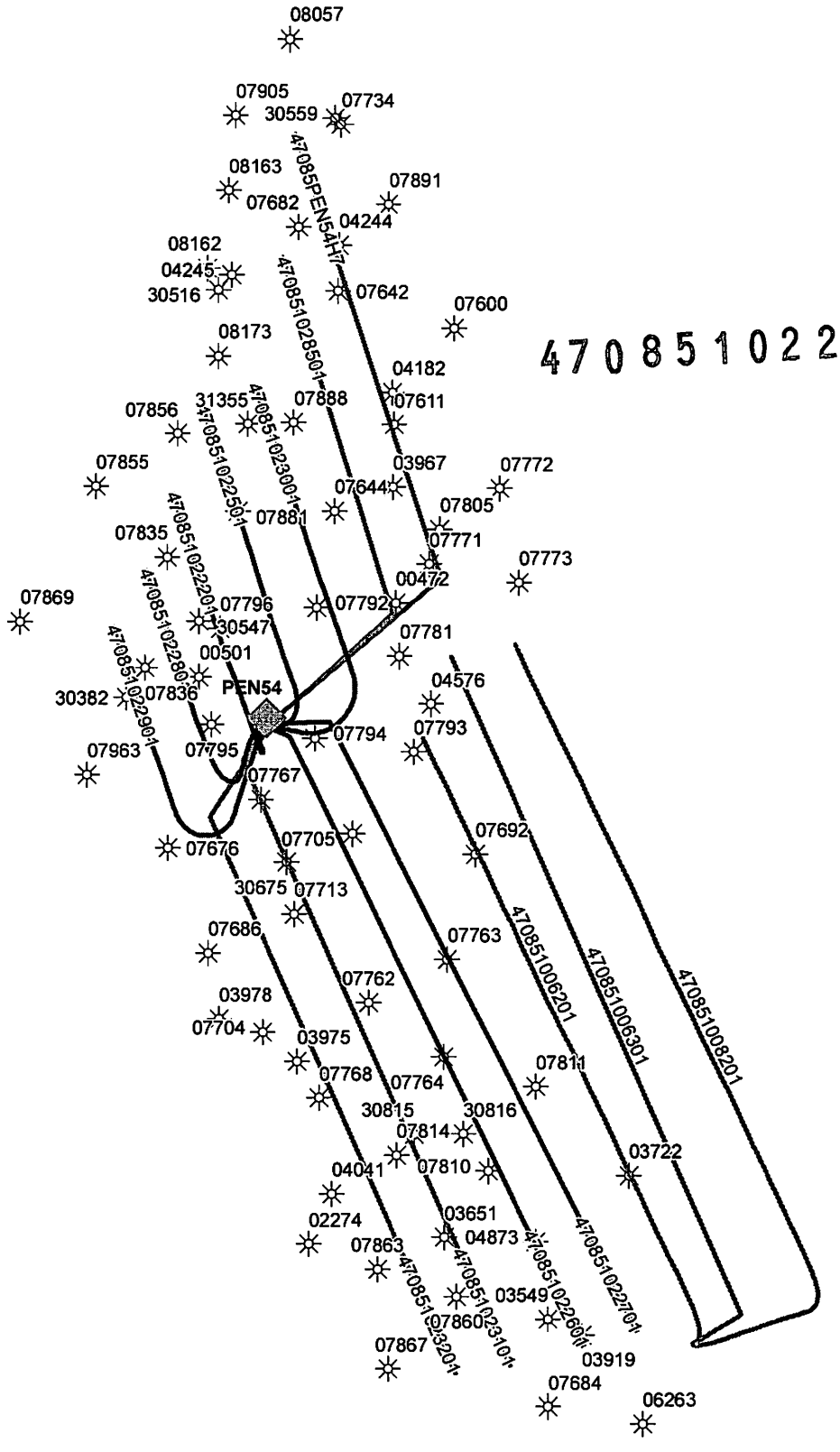
Sincerely,
EQT Production

John Centofanti
Corporate Director, Environmental Affairs

cc: James Martin, WV Office of Oil and Gas

SAMPLE

Attachment B



EQT

EQT Corporation
625 Liberty Avenue
Pittsburgh, PA 15222

PEN54 Offset Wells

Vertical Offsets and Foreign Laterals within 1500'

Legend

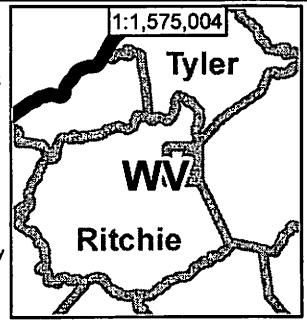
- PEN54 Offset Wells
- GENESEO Spud
- MARCELLUS Spud
- MIDDLESEX Spud
- UTICA Spud
- GENESEO Plat
- MARCELLUS Plat
- MIDDLESEX Plat
- POINT PLEASANT Plat
- UTICA Plat

2,600 1,300 0 2,600 Feet

1:33,243

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.



Created By:

Printed By: mearsR on 7/13/2016

Path: \\MDCFCS2\grsdept\GIS_Department\GIS_Users\MearsR\Scratch\Vertical Offsets\Foreign Well Working Map.mxd

WellID	WellStatus	Comp Date	FmatTD	Permit	Operator	Longitude	Latitude	Target Fm	Datum Eleva	SS Depth	Total Depth
4708500472	GAS	9/10/1936		00472	GLEN MCBURNEY	-80.9199	39.2630		704.0000	-1092.0000	1796.0000
4708500501	GAS	11/19/1936		00501	GLEN MCBURNEY	-80.9311	39.2598		763.0000	-1014.0000	1777.0000
4708502274	GAS	1/22/1961	LOWER HURON SHALE	02274	T F HODGE	-80.9249	39.2349		872.0000	-1532.0000	2404.0000
4708503549	GAS	7/10/1974		03549	MURVIN OIL	-80.9113	39.2316		1107.0000	-1427.0000	2534.0000
4708503651	GAS	11/29/1976		03651	MURVIN OIL	-80.9172	39.2352		880.0000	-1100.0000	1980.0000
4708503722	GAS	12/17/1977		03722	HAUGHT	-80.9067	39.2379		1181.0000	-1094.0000	2275.0000
4708503919	GAS-P	7/11/1916		03919	EPC	-80.9094	39.2309		1020.0000	-1059.0000	2079.0000
4708503967	GAS-P	9/28/1915		03967	EPC	-80.9201	39.2681		784.0000	-980.0000	1764.0000
4708503975	GAS	1/8/1918		03975	EPC	-80.9255	39.2429		0.0000	-1924.0000	1924.0000
4708503978	GAS	1/31/1918		03978	EPC	-80.9300	39.2448		0.0000	-1845.0000	1845.0000
4708504041	GAS	10/5/1978		04041	MURVIN OIL	-80.9236	39.2371		950.0000	-1556.0000	2506.0000
4708504182	GAS	2/20/1979		04182	HAUGHT	-80.9201	39.2722		917.0000	-1493.0000	2410.0000
4708504244	UNK	6/1/1914		04244	EPC	-80.9231	39.2786		0.0000	-2017.0000	2017.0000
4708504245	GAS-P	6/28/1915		04245	EPC	-80.9292	39.2773		801.0000	-931.0000	1732.0000
4708504576	UNK	9/12/1911		04576	PERKINS	-80.9179	39.2586		780.0000	-1755.0000	2535.0000
4708504873	O&G	9/16/1980	SONYEA	04873	EPC	-80.9120	39.2350		902.0000	-5088.0000	5990.0000
4708506263	GAS		ALEXANDER	06263	PETRO-AM CORP	-80.9059	39.2270			5450.0000	5450.0000
4708507600	GAS	2/9/1987		07600	UNION	-80.9166	39.2750		895.0000	-4343.0000	5238.0000
4708507611	GAS	3/9/1987		07611	KEY OIL	-80.9200	39.2708		885.0000	-4328.0000	5213.0000
4708507642	GAS	3/24/1987		07642	KEY OIL	-80.9232	39.2766		1005.0000	-4295.0000	5300.0000
4708507644	GAS	4/1/1987		07644	KEY OIL	-80.9234	39.2670		1085.0000	-4290.0000	5375.0000
4708507676	GAS	11/15/1988		07676	E A E	-80.9329	39.2523		944.0000	-3562.0000	4506.0000
4708507682	GAS	9/30/1987		07682	KEY OIL	-80.9254	39.2794		795.0000	-4328.0000	5123.0000
4708507684	GAS	11/20/1988		07684	ECA	-80.9113	39.2277		1104.0000	-4285.0000	5389.0000
4708507686	GAS	10/22/1987		07686	ECA	-80.9306	39.2477		1012.0000	-3930.0000	4942.0000
4708507692	GAS	10/6/1987		07692	E A E	-80.9154	39.2520		989.0000	-4219.0000	5208.0000
4708507704	GAS	10/27/1987		07704	ECA	-80.9275	39.2442		1059.0000	-3929.0000	4988.0000
4708507705	GAS	5/27/1988		07705	ECA	-80.9224	39.2529		1046.0000	-3907.0000	4953.0000
4708507713	GAS	6/3/1988		07713	ECA	-80.9257	39.2494		1128.0000	-3550.0000	4678.0000
4708507734	GAS	3/17/1988		07734	KEY OIL	-80.9230	39.2839		913.0000	-4307.0000	5220.0000
4708507762	GAS	6/17/1988		07762	E A E	-80.9215	39.2455		1138.0000	-3635.0000	4773.0000
4708507763	GAS	5/20/1988		07763	ECA	-80.9170	39.2474		996.0000	-4017.0000	5013.0000
4708507764	GAS	6/17/1988		07764	ECA	-80.9172	39.2431		869.0000	-3652.0000	4521.0000
4708507767	GAS	6/10/1988		07767	ECA	-80.9276	39.2544		1097.0000	-3581.0000	4678.0000
4708507768	GAS	6/12/1988		07768	ECA	-80.9243	39.2413		1042.0000	-3562.0000	4604.0000
4708507771	GAS	6/30/1988		07771	ECA	-80.9180	39.2647		1000.0000	-4286.0000	5286.0000
4708507772	GAS	7/8/1988		07772	ECA	-80.9140	39.2680		994.0000	-4271.0000	5265.0000
4708507773	GAS	7/1/1988		07773	ECA	-80.9129	39.2639		1011.0000	-4254.0000	5265.0000
4708507781	GAS	7/17/1988		07781	ECA	-80.9197	39.2607		807.0000	-4239.0000	5046.0000
4708507792	GAS	10/13/1988		07792	ECA	-80.9244	39.2628		896.0000	-4252.0000	5148.0000
4708507793	GAS	8/11/1988		07793	ECA	-80.9189	39.2565		1041.0000	-4222.0000	5263.0000
4708507794	GAS	8/17/1988		07794	E A E	-80.9245	39.2571		909.0000	-4251.0000	5160.0000

4708506207 Mod

4708507795	GAS	9/2/1988	07795	E A E	-80.9304	39.2577	989.0000	-4232.0000	5221.0000
4708507796	GAS	11/3/1988	07796	E A E	-80.9299	39.2619	792.0000	-4235.0000	5027.0000
4708507805	GAS	9/23/1988	07805	PERKINS	-80.9174	39.2662	992.0000	-1283.0000	2275.0000
4708507810	GAS	10/21/1988	07810	ECA	-80.9147	39.2381	1166.0000	-4290.0000	5456.0000
4708507811	GAS	10/29/1988	07811	ECA	-80.9120	39.2418	1184.0000	-3633.0000	4817.0000
4708507814	GAS	10/22/1988	07814	E A E	-80.9199	39.2388	858.0000	-3594.0000	4452.0000
4708507835	GAS	6/14/1989	07835	E A E	-80.9329	39.2650	1053.0000	-4278.0000	5331.0000
4708507836	GAS	6/9/1989	07836	ECA	-80.9342	39.2602	860.0000	-4215.0000	5075.0000
4708507855	GAS	8/4/1989	07855	ECA	-80.9370	39.2681	1021.0000	-4344.0000	5365.0000
4708507856	GAS	8/12/1989	07856	ECA	-80.9323	39.2704	984.0000	-4330.0000	5314.0000
4708507860	GAS	9/15/1989	07860	ECA	-80.9165	39.2326	818.0000	-3628.0000	4446.0000
4708507863	GAS	9/8/1989	07863	ECA	-80.9210	39.2338	922.0000	-3612.0000	4534.0000
4708507867	GAS	10/14/1989	07867	ECA	-80.9204	39.2294	879.0000	-4317.0000	5196.0000
4708507869	GAS	9/14/1989	07869	E A E	-80.9413	39.2622	1139.0000	-4241.0000	5380.0000
4708507881	GAS	10/16/1989	07881	ECA	-80.9289	39.2670	1021.0000	-4251.0000	5272.0000
4708507888	GAS	10/27/1989	07888	ECA	-80.9257	39.2709	985.0000	-4295.0000	5280.0000
4708507891	GAS	11/3/1989	07891	ECA	-80.9203	39.2804	1093.0000	-4278.0000	5371.0000
4708507905	GAS	8/15/1990	07905	ECA	-80.9290	39.2843	914.0000	-4232.0000	5146.0000
4708507963	GAS	9/7/1990	07963	ECA	-80.9375	39.2555	938.0000	-4234.0000	5172.0000
4708508057	GAS	7/7/1991	08057	KEY OIL	-80.9259	39.2876	960.0000	-4266.0000	5226.0000
4708508162	GAS	8/25/1993	08162	KEY OIL	-80.9306	39.2776	898.0000	-4242.0000	5140.0000
4708508163	GAS	8/31/1993	08163	KEY OIL	-80.9294	39.2810	840.0000	-4250.0000	5090.0000
4708508173	GAS	10/27/1993	08173	KEY OIL	-80.9300	39.2738	782.0000	-4209.0000	4991.0000
4708530382	GAS	9/4/1917	30382	I H BEREN	-80.9353	39.2589	829.0000	-1031.0000	1860.0000
4708530516	GAS	6/8/1941	30516	HOPE NAT GAS	-80.9300	39.2767	785.0000	-948.0000	1733.0000
4708530547	GAS	12/2/1915	30547	PGH & WV GAS	-80.9311	39.2622	829.0000	-994.0000	1823.0000
4708530559	GAS	12/29/1915	30559	PGH & WV GAS	-80.9233	39.2842	817.0000	-1020.0000	1837.0000
4708530675	GAS	10/23/1926	30675	PGH & WV GAS	-80.9261	39.2517	1040.0000	-1001.0000	2041.0000
4708530815	UNK		30815	F S DEEM	-80.9189	39.2397	824.0000	-869.0000	1693.0000
4708530816	GAS		30816	F S DEEM	-80.9161	39.2397	878.0000	-99999.0000	100877.0000
4708531355	GAS	10/10/1915	31355	EPC	-80.9283	39.2708	1.0000	-1999.0000	2000.0000

4708[illegible]0227 MOD

WELL ID	FORMATION
4708503549	BIG LIME
4708503549	BIG INJUN /SD/
4708503549	BEREA
4708503549	DEVONIAN /SD/
4708503651	BIG LIME
4708503651	BIG INJUN /SD/
4708503722	BIG LIME
4708503722	BIG INJUN /SD/
4708504041	BLUE MONDAY /SD/
4708504041	BIG INJUN /SD/
4708504041	WEIR /SD/
4708504182	LITTLE LIME
4708504182	BLUE MONDAY /SD/
4708504182	BIG LIME
4708504182	BIG INJUN /SD/
4708504182	WEIR /SD/
4708504182	BEREA
4708504873	WARREN /SD/
4708504873	SPEECHLEY
4708504873	BALLTOWN /SD/
4708504873	BRADFORD /SD/
4708504873	RILEY /SD/
4708504873	BENSON /SD/
4708504873	ALEXANDER
4708506263	BIG LIME
4708506263	BIG INJUN /SD/
4708506263	BEREA
4708506263	DEVONIAN /SH/
4708507600	BLUE MONDAY /SD/
4708507600	BIG LIME
4708507600	BIG INJUN /SD/
4708507600	RILEY /SD/
4708507600	BENSON /SD/
4708507600	ALEXANDER
4708507611	BIG LIME
4708507611	BIG INJUN /SD/
4708507611	BEREA
4708507611	RILEY /SD/
4708507611	BENSON /SD/
4708507611	ALEXANDER
4708507642	MAXTON
4708507642	LITTLE LIME
4708507642	BIG LIME
4708507642	BIG INJUN /SD/
4708507642	BEREA
4708507642	RILEY /SD/

PERFORATED FORMATION
NON-PERFORATED POTENTIAL FORMATION

4708510227 MOD

4708507642 BENSON /SD/
4708507642 ALEXANDER
4708507644 BIG LIME
4708507644 BIG INJUN /SD/
4708507644 BEREA
4708507644 RILEY /SD/
4708507644 BENSON /SD/
4708507644 ALEXANDER
4708507676 BIG LIME
4708507676 BIG INJUN /SD/
4708507676 WEIR /SD/
4708507676 WARREN /SD/
4708507676 RILEY /SD/
4708507682 MAXTON
4708507682 BIG LIME
4708507682 BIG INJUN /SD/
4708507682 BEREA
4708507682 BALLTOWN /SD/
4708507682 BENSON /SD/
4708507682 ALEXANDER
4708507684 LITTLE LIME
4708507684 BIG LIME
4708507684 BIG INJUN /SD/
4708507684 WEIR /SD/
4708507684 WARREN /SD/
4708507684 RILEY /SD/
4708507684 BENSON /SD/
4708507684 ALEXANDER
4708507686 BIG LIME
4708507686 BIG INJUN /SD/
4708507686 WEIR /SD/
4708507686 WARREN /SD/
4708507686 RILEY /SD/
4708507686 BENSON /SD/
4708507692 BIG LIME
4708507692 BIG INJUN /SD/
4708507692 WEIR /SD/
4708507692 WARREN /SD/
4708507692 SPEECHLEY
4708507692 RILEY /SD/
4708507692 BENSON /SD/
4708507692 ALEXANDER
4708507704 BIG LIME
4708507704 BIG INJUN /SD/
4708507704 WEIR /SD/
4708507704 WARREN /SD/
4708507704 RILEY /SD/

4708510227 MAD

4708507704 BENSON /SD/
4708507705 BIG LIME
4708507705 BIG INJUN /SD/
4708507705 BEREA
4708507705 WARREN /SD/
4708507705 SPEECHLEY
4708507705 RILEY /SD/
4708507705 BENSON /SD/
4708507713 LITTLE LIME
4708507713 BIG LIME
4708507713 WARREN /SD/
4708507713 SPEECHLEY
4708507713 RILEY /SD/
4708507734 LITTLE LIME
4708507734 BIG LIME
4708507734 BIG INJUN /SD/
4708507734 BEREA
4708507734 RILEY /SD/
4708507734 BENSON /SD/
4708507734 ALEXANDER
4708507762 LITTLE LIME
4708507762 BIG LIME
4708507762 BIG INJUN /SD/
4708507762 WARREN /SD/
4708507762 RILEY /SD/
4708507763 BIG LIME
4708507763 BIG INJUN /SD/
4708507763 WEIR /SD/
4708507763 WARREN /SD/
4708507763 BALLTOWN /SD/
4708507763 RILEY /SD/
4708507763 BENSON /SD/
4708507764 BLUE MONDAY /SD/
4708507764 BIG LIME
4708507764 BIG INJUN /SD/
4708507764 WEIR /SD/
4708507764 WARREN /SD/
4708507764 RILEY /SD/
4708507767 BLUE MONDAY /SD/
4708507767 BIG LIME
4708507767 BIG INJUN /SD/
4708507767 BEREA
4708507767 WARREN /SD/
4708507767 RILEY /SD/
4708507768 LITTLE LIME
4708507768 BIG LIME
4708507768 WARREN /SD/

4708510227

4708507768 SPEECHLEY
4708507768 RILEY /SD/
4708507771 BLUE MONDAY /SD/
4708507771 BIG LIME
4708507771 BIG INJUN /SD/
4708507771 WEIR /SD/
4708507771 WARREN /SD/
4708507771 RILEY /SD/
4708507771 BENSON /SD/
4708507771 ALEXANDER
4708507772 BIG LIME
4708507772 BIG INJUN /SD/
4708507772 WARREN /SD/
4708507772 RILEY /SD/
4708507772 BENSON /SD/
4708507772 ALEXANDER
4708507773 BIG LIME
4708507773 BIG INJUN /SD/
4708507773 WEIR /SD/
4708507773 WARREN /SD/
4708507773 SPEECHLEY
4708507773 RILEY /SD/
4708507773 BENSON /SD/
4708507773 ALEXANDER
4708507781 BIG LIME
4708507781 BIG INJUN /SD/
4708507781 WARREN /SD/
4708507781 BENSON /SD/
4708507781 ALEXANDER
4708507792 BLUE MONDAY /SD/
4708507792 BIG LIME
4708507792 BIG INJUN /SD/
4708507792 WEIR /SD/
4708507792 WARREN /SD/
4708507792 RILEY /SD/
4708507792 BENSON /SD/
4708507792 ALEXANDER
4708507793 BIG LIME
4708507793 BIG INJUN /SD/
4708507793 WEIR /SD/
4708507793 BEREA
4708507793 WARREN /SD/
4708507793 RILEY /SD/
4708507793 BENSON /SD/
4708507793 ALEXANDER
4708507794 BIG LIME
4708507794 BIG INJUN /SD/

4708510227 Nov

4708507794 WARREN /SD/
4708507794 RILEY /SD/
4708507794 BENSON /SD/
4708507794 ALEXANDER
4708507795 BIG LIME
4708507795 BIG INJUN /SD/
4708507795 WARREN /SD/
4708507795 RILEY /SD/
4708507795 BENSON /SD/
4708507795 ALEXANDER
4708507796 LITTLE LIME
4708507796 BIG LIME
4708507796 BIG INJUN /SD/
4708507796 WEIR /SD/
4708507796 WARREN /SD/
4708507796 RILEY /SD/
4708507796 BENSON /SD/
4708507796 ALEXANDER
4708507805 MAXTON/SD/
4708507805 BIG LIME
4708507805 BIG INJUN /SD/
4708507805 WEIR /SD/
4708507805 DEVONIAN /SH/
4708507810 BIG LIME
4708507810 BIG INJUN /SD/
4708507810 WEIR /SD/
4708507810 WARREN /SD/
4708507810 RILEY /SD/
4708507810 BENSON /SD/
4708507810 ALEXANDER
4708507811 LITTLE LIME
4708507811 BIG LIME
4708507811 BIG INJUN /SD/
4708507811 WEIR /SD/
4708507811 WARREN /SD/
4708507811 BALLTOWN /SD/
4708507811 RILEY /SD/
4708507814 LITTLE LIME
4708507814 BIG LIME
4708507814 BIG INJUN /SD/
4708507814 WEIR /SD/
4708507814 WARREN /SD/
4708507814 RILEY /SD/
4708507835 BIG LIME
4708507835 WEIR /SD/
4708507835 WARREN /SD/
4708507835 RILEY /SD/

4708510227

4708507835 BENSON /SD/
4708507835 ALEXANDER
4708507836 BIG LIME
4708507836 WEIR /SD/
4708507836 WARREN /SD/
4708507836 RILEY /SD/
4708507836 BENSON /SD/
4708507836 ALEXANDER
4708507855 BIG LIME
4708507855 BIG INJUN /SD/
4708507855 WEIR /SD/
4708507855 WARREN /SD/
4708507855 RILEY /SD/
4708507855 BENSON /SD/
4708507855 ALEXANDER
4708507856 LITTLE LIME
4708507856 BIG LIME
4708507856 BIG INJUN /SD/
4708507856 WEIR /SD/
4708507856 WARREN /SD/
4708507856 RILEY /SD/
4708507856 BENSON /SD/
4708507856 ALEXANDER
4708507860 BIG LIME
4708507860 WEIR /SD/
4708507860 BEREA
4708507860 WARREN /SD/
4708507860 RILEY /SD/
4708507863 LITTLE LIME
4708507863 BIG LIME
4708507863 WEIR /SD/
4708507863 WARREN /SD/
4708507863 RILEY /SD/
4708507867 BIG LIME
4708507867 WEIR /SD/
4708507867 BEREA
4708507867 WARREN /SD/
4708507867 RILEY /SD/
4708507867 BENSON /SD/
4708507867 ALEXANDER
4708507869 LITTLE LIME
4708507869 BIG LIME
4708507869 WEIR /SD/
4708507869 WARREN /SD/
4708507869 RILEY /SD/
4708507869 BENSON /SD/
4708507869 ALEXANDER

4708510227 MD4

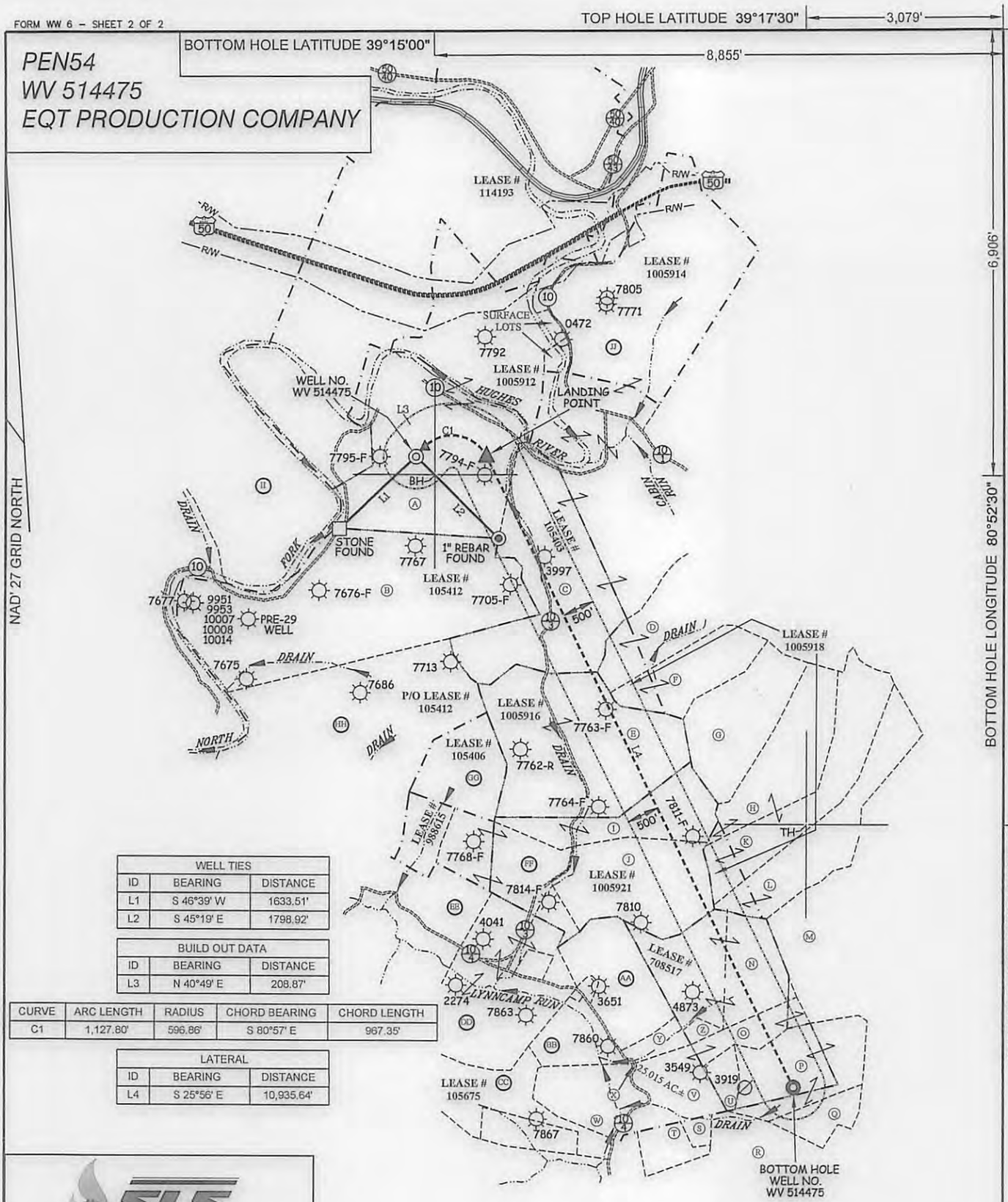
4708507881 LITTLE LIME
4708507881 BIG LIME
4708507881 WEIR /SD/
4708507881 BEREA
4708507881 WARREN /SD/
4708507881 RILEY /SD/
4708507881 BENSON /SD/
4708507881 ALEXANDER
4708507888 BIG LIME
4708507888 WEIR /SD/
4708507888 BEREA
4708507888 WARREN /SD/
4708507888 RILEY /SD/
4708507888 BENSON /SD/
4708507888 ALEXANDER
4708507891 BIG LIME
4708507891 WEIR /SD/
4708507891 BEREA
4708507891 WARREN /SD/
4708507891 RILEY /SD/
4708507891 BENSON /SD/
4708507891 ALEXANDER
4708507905 LITTLE LIME
4708507905 BIG LIME
4708507905 WEIR /SD/
4708507905 BEREA
4708507905 WARREN /SD/
4708507905 RILEY /SD/
4708507905 BENSON /SD/
4708507905 ALEXANDER
4708507963 BIG LIME
4708507963 BIG INJUN /SD/
4708507963 WEIR /SD/
4708507963 BEREA
4708507963 WARREN /SD/
4708507963 RILEY /SD/
4708507963 BENSON /SD/
4708507963 ALEXANDER
4708508057 LITTLE LIME
4708508057 BIG LIME
4708508057 BIG INJUN /SD/
4708508057 GORDON /SD/
4708508057 RILEY /SD/
4708508057 BENSON /SD/
4708508057 ALEXANDER
4708508162 MAXTON
4708508162 LITTLE LIME

4708510227 Mod

4708508162 BIG LIME
4708508162 BIG INJUN /SD/
4708508162 WARREN /SD/
4708508162 RILEY /SD/
4708508162 RILEY 3
4708508162 BENSON /SD/
4708508162 ALEXANDER
4708508163 MAXTON
4708508163 LITTLE LIME
4708508163 BIG LIME
4708508163 BIG INJUN /SD/
4708508163 WARREN /SD/
4708508163 RILEY /SD/
4708508163 RILEY 3
4708508163 BENSON /SD/
4708508163 ALEXANDER
4708508173 BIG INJUN /SD/
4708508173 WARREN /SD/
4708508173 RILEY /SD/
4708508173 RILEY 3
4708508173 BENSON /SD/
4708508173 ALEXANDER

4708510227 MOD

PEN54
WV 514475
EQT PRODUCTION COMPANY



WELL TIES		
ID	BEARING	DISTANCE
L1	S 46°39' W	1633.51'
L2	S 45°19' E	1798.92'

BUILD OUT DATA		
ID	BEARING	DISTANCE
L3	N 40°49' E	208.87'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	1,127.80'	596.86'	S 80°57' E	967.35'

LATERAL		
ID	BEARING	DISTANCE
L4	S 25°56' E	10,935.64'

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www.slssurveys.com

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

NAD'27 S.P.C.(FT)	N. 279,201.67	E. 1,595,781.38
NAD'27 GEO.	LAT-(N) 39.257756	LONG-(W) 80.927542
NAD'83 UTM (M)	N. 4,345,392.18	E. 506,266.12
LANDING POINT		
NAD'27 S.P.C.(FT)	N. 279,207.68	E. 1,596,873.23
NAD'27 GEO.	LAT-(N) 39.257820	LONG-(W) 80.923687
NAD'83 UTM (M)	N. 4,345,399.57	E. 506,598.71
BOTTOM HOLE		
NAD'27 S.P.C.(FT)	N. 269,373.03	E. 1,601,655.26
NAD'27 GEO.	LAT-(N) 39.231028	LONG-(W) 80.906257
NAD'83 UTM (M)	N. 4,342,427.83	E. 508,105.56

C. VICTOR MOYERS
LICENSED
No. 849
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR
C.V. 7-12-16

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

LEGEND

LEASE LINE
SURFACE LINE
WELL LATERAL
OFFSET LINE
TIE LINE
CREEK
ROAD
COUNTY ROUTE
STATE ROUTE
PROPOSED WELL
EXISTING WELL
PERMITTED WELL
CLAY DISTRICT TAX MAP–PARCEL C–TM–00–00

SCALE 1" = 2000' FILE NO. 8083P514475R3

DATE JUNE 25 , 20 15

REVISED 07/01/15, 06/23/16 & 07/12/16

OPERATORS WELL NO. WV 514475

API WELL NO. 47 — 085 — 10227
STATE COUNTY PERMIT

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

COUNTY NAME

PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330

DESIGNATED AGENT REX C. RAY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330

SLS
124568

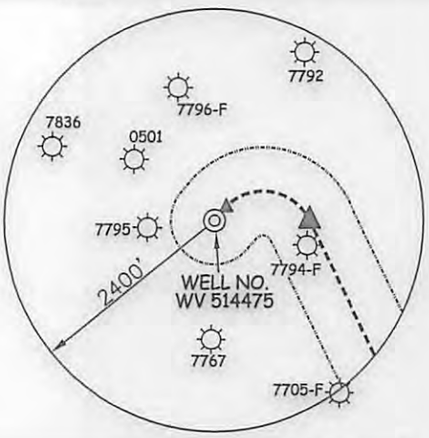
TOP HOLE LATITUDE 39°17'30" | 3,079'

BOTTOM HOLE LATITUDE 39°15'00" | 8,855'

PEN54
WV 514475
EQT PRODUCTION COMPANY

ROYALTY OWNERS		
DONALD R. REYNOLDS ET AL	126 AC.±	LEASE NO. 1005916
DEAN E. FLANAGAN ET AL	153 AC.±	LEASE NO. 1005921
EQT PRODUCTION COMPANY ET AL	156 AC.±	LEASE NO. 708517

A	JERRY MORTON ET AL	243.50 ACRES±	C-TM-31-05
B	HEARTWOOD FORESTLAND FUND IV LP	185.30 ACRES±	C-TM-31-14
C	HEARTWOOD FORESTLAND FUND IV LP	196.90 ACRES±	C-TM-31-11
D	HEARTWOOD FORESTLAND FUND IV LP	53 ACRES±	C-TM-31-15
E	RANDALL LAMM	126.32 ACRES±	C-TM-31-19
F	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	42.51 ACRES±	C-TM-32-02
G	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	56.14 ACRES±	C-TM-32-02
H	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	57 ACRES±	C-TM-32-04
I	RANDALL LAMM	44 ACRES±	C-TM-36-5.1
J	RONNIE WAGES	66.95 ACRES±	C-TM-36-05
K	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	66.45 ACRES±	BH C-TM-32-05
L	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	57.60 ACRES±	C-TM-32-07
M	JACK MACKAY ET AL	235.03 ACRES±	C-TM-37-03
N	RONALD DODD ET AL	70.40 ACRES±	C-TM-37-02
O	JEFFERY JETT	18.31 ACRES±	C-TM-37-04
P	EDWIN G. WILLIAMS	40.77 ACRES±	C-TM-37-05
Q	EDWIN G. WILLIAMS	23 ACRES±	C-TM-37-5.1
R	MARY SIMMONS (LIFE) ET AL	30 ACRES±	C-TM-37-07
S	REBECCA COTTRILL ET AL	4.3 ACRES±	C-TM-37-08
T	CHARLES E. COTTRILL ET AL	16.15 ACRES±	C-TM-36-25
U	ROGER & MARY WILLIAMS	8.068 ACRES±	C-TM-37-5.2
V	JEFFERY JETT	25.015 ACRES±	C-TM-36-21.1
W	JUNIOR COTTRILL ET AL	33.065 ACRES±	C-TM-36-21
X	JEFFERY JETT	0.472 ACRES±	C-TM-36-21.2
Y	GARY COTTRILL	5.051 ACRES±	C-TM-36-11.4
Z	ROY DODD	2.51 ACRES±	C-TM-36-13
AA	GARY COTTRILL	40.847 ACRES±	C-TM-36-11.5
BB	GARY COTTRILL ET AL	23.322 ACRES±	C-TM-36-11
CC	ERNEST McATEE ET AL	48.88 ACRES±	C-TM-36-20
DD	PAUL HILVERS	90.70 ACRES±	C-TM-36-09
EE	FOUSS FARMS LLC	19 ACRES±	C-TM-36-08
FF	JACK HARGIS ET AL	45.47 ACRES±	C-TM-36-04
GG	RANDALL LAMM	45.502 ACRES±	C-TM-36-03
HH	HEARTWOOD FORESTLAND FUND IV LP	168.20 ACRES±	C-TM-31-14.1
II	DONALD DEEM ET AL	133.07 ACRES±	C-TM-31-10
JJ	ANTERO TREATMENT LLC	175.85 ACRES±	C-TM-31-06



BOTTOM HOLE LONGITUDE 80°52'30"

TOP HOLE LONGITUDE 80°55'00"

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

NAD'27 S.P.C.(FT)	N. 279,201.67	E. 1,595,781.38
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	LANDING POINT	
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NAD'27 GEO.	LAT-(N) 39.257820	LONG-(W) 80.923687
NAD'83 UTM (M)	N. 4,345,399.57	E. 506,598.71
	BOTTOM HOLE	
NAD'27 S.P.C.(FT)	N. 269,373.03	E. 1,601,655.26
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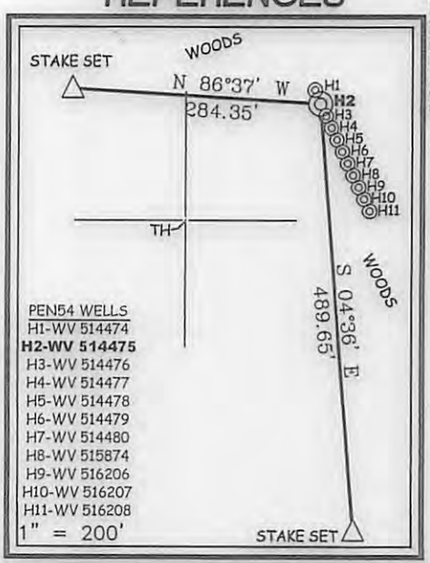
NAD'83 UTM (M)	N. 4,342,427.83	E. 508,105.56

REFERENCES



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www.slssurveys.com

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'.

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

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

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

DATE JUNE 25, 20 15

REVISED 07/01/15, 06/23/16 & 07/12/16

OPERATORS WELL NO. WV 514475

API WELL NO. 47 — 085 — 10227
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500

FILE NO. 8083P514475R3.dwg

SCALE SEE NOTE 2

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 INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION: GROUND ELEVATION 1,016' PROPOSED 1,016' WATERSHED NORTH FORK HUGHES RIVER

DISTRICT CLAY COUNTY RITCHIE QUADRANGLES PENNSBORO & PULLMAN 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 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 6,275'

COUNTY NAME

PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330

DESIGNATED AGENT REX C. RAY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330

SLS
124568

4708510227

RECEIVED
Office of Oil and Gas
JUN 28 2016
WV Department of
Environmental Protection
MAC 6/28/16

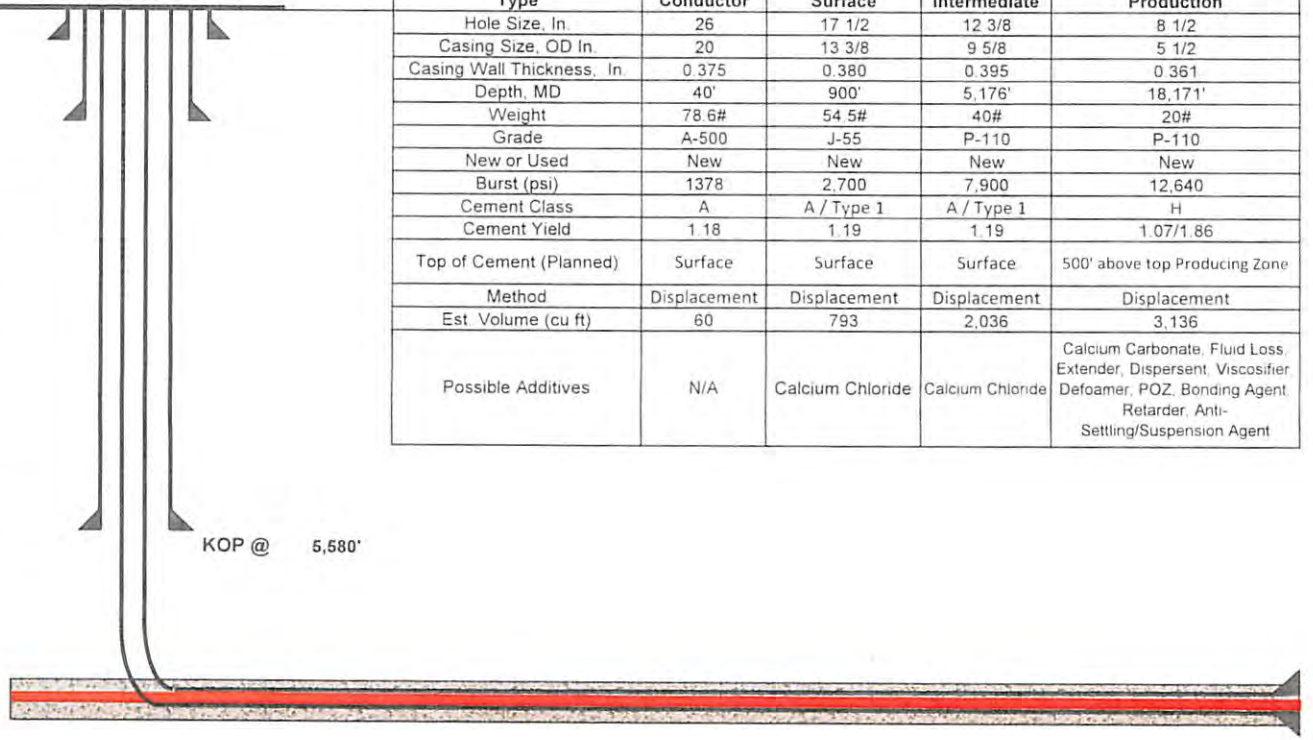
Well 514475(PEN54H2)

EQT Production
Pennsboro Quad
Ritchie County, WV

Azimuth 154
Vertical Section 11450

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	770	
Surface Casing	900	
Base Red Rock	1163	
Maxton	1660	1774
Big Lime	1867	2007
Weir	2262	2366
Gantz	2474	2821
Fifty foot	2616	2636
Thirty foot	2679	2703
Gordon	2726	2766
Forth Sand	2816	2827
Bayard	2947	3350
Warren	3350	3417
Speechley	3429	3486
Balltown A	3949	3988
Riley	4469	4514
Benson	4982	5023
Alexander	5102	5126
Intermediate Casing	5176	
Sonyea	6016	6119
Middlesex	6119	6175
Genesee	6175	6224
Geneseo	6224	6254
Tully	6254	6269
Hamilton	6269	6275
Marcellus	6275	6324
Production Casing	18171	MD
Onondaga	6324	



Casing and Cementing	Deepest Fresh Water: 770'			
Type	Conductor	Surface	Intermediate	Production
Hole Size, In.	26	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	20	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.375	0.380	0.395	0.361
Depth, MD	40'	900'	5,176'	18,171'
Weight	78.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110
New or Used	New	New	New	New
Burst (psi)	1378	2,700	7,900	12,640
Cement Class	A	A / Type 1	A / Type 1	H
Cement Yield	1.18	1.19	1.19	1.07/1.86
Top of Cement (Planned)	Surface	Surface	Surface	500' above top Producing Zone
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	60	793	2,036	3,136
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 5580'
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

4708510227

WW-6A1
(5/13)

Operator's Well No. 514475

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

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: Victoria Roark
Its: Permitting Supervisor

RECEIVED
Office of Oil and Gas
JUN 28 2016
WV Department of
Environmental Protection

4708510227

WW-6A1 attachment

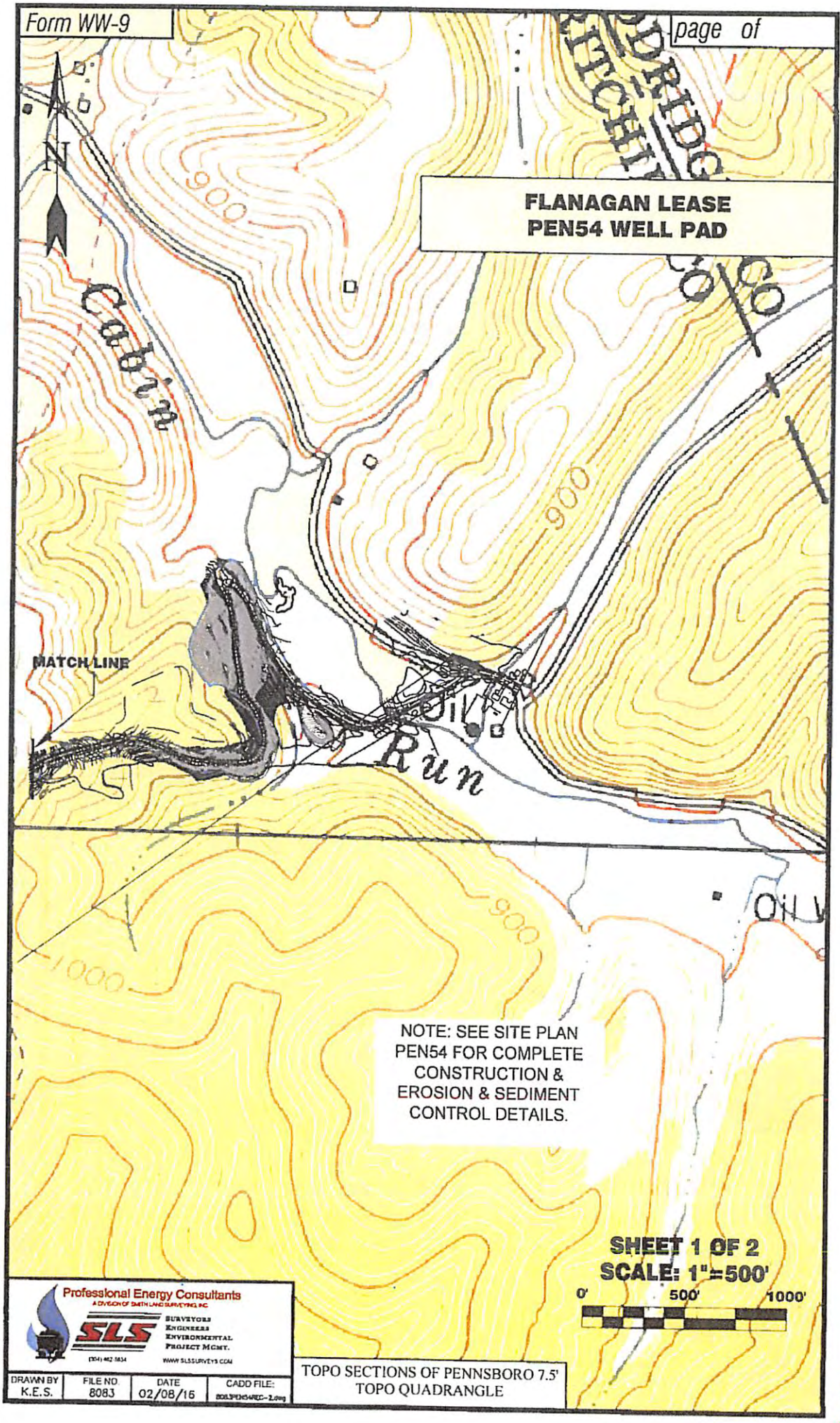
Operator's Well No. 514475

Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
105403	**Ellen S. Francaviglia, et al (current royalty owner)**		***	
	W.A. Flanagan, et al (original lessor)	The Philadelphia Company of West Virginia		LB63/295
	The Philadelphia Company of West Virginia	Pittsburgh and West Virginia Gas Company		DB55/362
	Pittsburgh and West Virginia Gas Company	Equitable Gas Company		DB 126/473
	Equitable Gas Company	Equitrans, Inc.		LB 201/253
	Equitrans,Inc.	Equitrans,LP.		AB269/182
	Equitrans,LP	Equitable Production/Eastern States, Inc.		DB234/830
	Equitable Production/Eastern States, Inc.	Equitable Production Company		CB557/56
	Equitable Production Company	EQT Production Company		DB 6/443
1005916	**Donald R. Reynolds, et al (current royalty owner)**		min pd 1/8th	
	Mary E. Sorrells (original lessor)	Eastern American Energy Corporation		LB197/229
	Eastern American Energy Corporation	Energy Corporation of American (Merger)		CB6/450
	Energy Corporation of American	Antero Resources Corporation		LB257/377
	Antero Resources Corporation	EQT Production Company		LB277/1037
1005921	**Dean E. Flanagan, et al (current royalty owner)**		min pd 1/8th	
	Robert F. Johnson, et al (original lessor)	Eastern American Energy Corporation		LB202/249
	Eastern American Energy Corporation	Energy Corporation of American (Merger)		CB6/450
	Energy Corporation of American	Antero Resources Corporation		LB257/377
	Antero Resources Corporation	EQT Production Company		LB277/1037
708517	**EQT Production Company, et al (current royalty owner)**		min pd 1/8th	
	Matilda and Gainer Donoho (original lessor)	Carnegie Natural Gas Company		LB35/455
	Carnegie Natural Gas Company	Carnegie Production Company		DB228/859
	Carnegie Production Company	Equitable Production - Eastern States, Inc		See attached
	Equitable Production/Eastern States, Inc.	Equitable Production Company		CB557/56
	Equitable Production Company	EQT Production Company		DB6/443

*** We will pay one-eighth of the total amount paid to or received by or allowed to the owner of the working interest at the wellhead for the oil or gas so extracted, produced, or marketed before deducting the amount to be paid to or set aside for the owner of the oil or gas in place, on all such oil or gas to be extracted, produced, or marketed from the well.

Form WW-9 page of

4708510227



Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING INC
SLS SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT.
(304) 462-1634 WWW.SLSSURVEYS.COM

DRAWN BY	FILE NO.	DATE	CADD FILE:
K.E.S.	8083	02/08/16	8083PEN54REC-2.dwg

TOPO SECTIONS OF PENNSBORO 7.5' TOPO QUADRANGLE

MDG
6/28/16

Form WW-9

page of

4708510227

NOTE: SEE SITE PLAN PEN54 FOR COMPLETE CONSTRUCTION & EROSION & SEDIMENT CONTROL DETAILS.

N

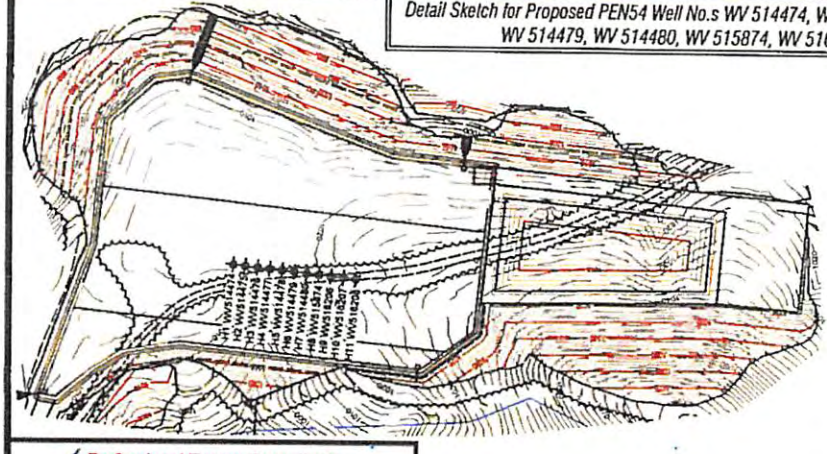
FLANAGAN LEASE
PEN54 WELL PAD

SHEET 2 OF 2
SCALE: 1"=500'

0' 500' 1000'

MATCH LINE

Detail Sketch for Proposed PEN54 Well No.s WV 514474, WV 514475, WV 514476, WV 514477, WV 514478, WV 514479, WV 514480, WV 515874, WV 516206, WV 516207 & WV 516208



NOTE: SEE SITE PLAN PEN54 FOR COMPLETE CONSTRUCTION & EROSION & SEDIMENT CONTROL DETAILS.

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SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT.
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DRAWN BY	FILE NO.	DATE	CADD FILE:
K.E.S.	8083	02/08/16	8083PEN54REC-2.dwg

TOPO SECTIONS OF PENNSBORO 7.5' TOPO QUADRANGLE

Not To Scale

MAG 6/28/16

4708502274 mod

Attachment A 1 of 3

WellID	WellStatus	Comp Date	FmatTD	Permit	Operator	Longitude	Latitude	Target Fm	Datum Eleva	SS Depth	Total Depth
4708500472	GAS	9/10/1936		00472	GLEN MCBURNEY	-80.9199	39.2630		704.0000	-1092.0000	1796.0000
4708500501	GAS	11/19/1936		00501	GLEN MCBURNEY	-80.9311	39.2598		763.0000	-1014.0000	1777.0000
4708502274	GAS	1/22/1961	LOWER HURON SHALE	02274	T F HODGE	-80.9249	39.2349		872.0000	-1532.0000	2404.0000
4708503549	GAS	7/10/1974		03549	MURVIN OIL	-80.9113	39.2316		1107.0000	-1427.0000	2534.0000
4708503651	GAS	11/29/1976		03651	MURVIN OIL	-80.9172	39.2352		880.0000	-1100.0000	1980.0000
4708503722	GAS	12/17/1977		03722	HAUGHT	-80.9067	39.2379		1181.0000	-1094.0000	2275.0000
4708503919	GAS-P	7/11/1916		03919	EPC	-80.9094	39.2309		1020.0000	-1059.0000	2079.0000
4708503967	GAS-P	9/28/1915		03967	EPC	-80.9201	39.2681		784.0000	-980.0000	1764.0000
4708503975	GAS	1/8/1918		03975	EPC	-80.9255	39.2429		0.0000	-1924.0000	1924.0000
4708503978	GAS	1/31/1918		03978	EPC	-80.9300	39.2448		0.0000	-1845.0000	1845.0000
4708504041	GAS	10/5/1978		04041	MURVIN OIL	-80.9236	39.2371		950.0000	-1556.0000	2506.0000
4708504182	GAS	2/20/1979		04182	HAUGHT	-80.9201	39.2722		917.0000	-1493.0000	2410.0000
4708504244	UNK	6/1/1914		04244	EPC	-80.9231	39.2786		0.0000	-2017.0000	2017.0000
4708504245	GAS-P	6/28/1915		04245	EPC	-80.9292	39.2773		801.0000	-931.0000	1732.0000
4708504576	UNK	9/12/1911		04576	PERKINS	-80.9179	39.2586		780.0000	-1755.0000	2535.0000
4708504873	O&G	9/16/1980	SONYEA	04873	EPC	-80.9120	39.2350		902.0000	-5088.0000	5990.0000
4708507600	GAS	2/9/1987		07600	UNION	-80.9166	39.2750		895.0000	-4343.0000	5238.0000
4708507611	GAS	3/9/1987		07611	KEY OIL	-80.9200	39.2708		885.0000	-4328.0000	5213.0000
4708507642	GAS	3/24/1987		07642	KEY OIL	-80.9232	39.2766		1005.0000	-4295.0000	5300.0000
4708507644	GAS	4/1/1987		07644	KEY OIL	-80.9234	39.2670		1085.0000	-4290.0000	5375.0000
4708507676	GAS	11/15/1988		07676	E A E	-80.9329	39.2523		944.0000	-3562.0000	4506.0000
4708507682	GAS	9/30/1987		07682	KEY OIL	-80.9254	39.2794		795.0000	-4328.0000	5123.0000
4708507684	GAS	11/20/1988		07684	ECA	-80.9113	39.2277		1104.0000	-4285.0000	5389.0000
4708507686	GAS	10/22/1987		07686	ECA	-80.9306	39.2477		1012.0000	-3930.0000	4942.0000
4708507692	GAS	10/6/1987		07692	E A E	-80.9154	39.2520		989.0000	-4219.0000	5208.0000
4708507704	GAS	10/27/1987		07704	ECA	-80.9275	39.2442		1059.0000	-3929.0000	4988.0000
4708507705	GAS	5/27/1988		07705	ECA	-80.9224	39.2529		1046.0000	-3907.0000	4953.0000
4708507713	GAS	6/3/1988		07713	ECA	-80.9257	39.2494		1128.0000	-3550.0000	4678.0000
4708507734	GAS	3/17/1988		07734	KEY OIL	-80.9230	39.2839		913.0000	-4307.0000	5220.0000
4708507762	GAS	6/17/1988		07762	E A E	-80.9215	39.2455		1138.0000	-3635.0000	4773.0000
4708507763	GAS	5/20/1988		07763	ECA	-80.9170	39.2474		996.0000	-4017.0000	5013.0000
4708507764	GAS	6/17/1988		07764	ECA	-80.9172	39.2431		869.0000	-3652.0000	4521.0000
4708507767	GAS	6/10/1988		07767	ECA	-80.9276	39.2544		1097.0000	-3581.0000	4678.0000
4708507768	GAS	6/12/1988		07768	ECA	-80.9243	39.2413		1042.0000	-3562.0000	4604.0000
4708507771	GAS	6/30/1988		07771	ECA	-80.9180	39.2647		1000.0000	-4286.0000	5286.0000
4708507772	GAS	7/8/1988		07772	ECA	-80.9140	39.2680		994.0000	-4271.0000	5265.0000
4708507773	GAS	7/1/1988		07773	ECA	-80.9129	39.2639		1011.0000	-4254.0000	5265.0000
4708507781	GAS	7/17/1988		07781	ECA	-80.9197	39.2607		807.0000	-4239.0000	5046.0000

VOID

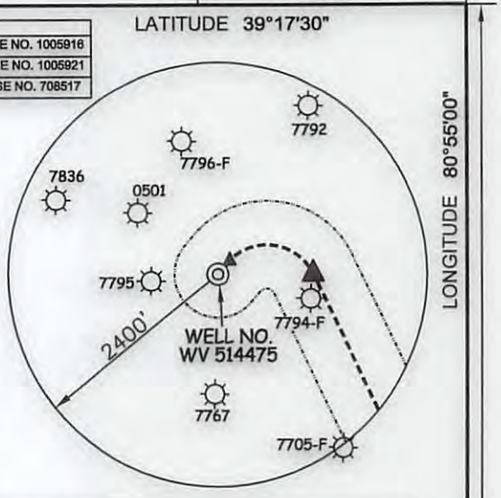
4708510227 rev

Attachment A 2 of 3

4708507792	GAS	10/13/1988		07792	ECA	-80.9244	39.2628	896.0000	-4252.0000	5148.0000
4708507793	GAS	8/11/1988		07793	ECA	-80.9189	39.2565	1041.0000	-4222.0000	5263.0000
4708507794	GAS	8/17/1988		07794	E A E	-80.9245	39.2571	909.0000	-4251.0000	5160.0000
4708507795	GAS	9/2/1988		07795	E A E	-80.9304	39.2577	989.0000	-4232.0000	5221.0000
4708507796	GAS	11/3/1988		07796	E A E	-80.9299	39.2619	792.0000	-4235.0000	5027.0000
4708507805	GAS	9/23/1988		07805	PERKINS	-80.9174	39.2662	992.0000	-1283.0000	2275.0000
4708507810	GAS	10/21/1988		07810	ECA	-80.9147	39.2381	1166.0000	-4290.0000	5456.0000
4708507811	GAS	10/29/1988		07811	ECA	-80.9120	39.2418	1184.0000	-3633.0000	4817.0000
4708507814	GAS	10/22/1988		07814	E A E	-80.9199	39.2388	858.0000	-3594.0000	4452.0000
4708507835	GAS	6/14/1989		07835	E A E	-80.9329	39.2650	1053.0000	-4278.0000	5331.0000
4708507836	GAS	6/9/1989		07836	ECA	-80.9342	39.2602	860.0000	-4215.0000	5075.0000
4708507855	GAS	8/4/1989		07855	ECA	-80.9370	39.2681	1021.0000	-4344.0000	5365.0000
4708507856	GAS	8/12/1989		07856	ECA	-80.9323	39.2704	984.0000	-4330.0000	5314.0000
4708507860	GAS	9/15/1989		07860	ECA	-80.9165	39.2326	818.0000	-3628.0000	4446.0000
4708507863	GAS	9/8/1989		07863	ECA	-80.9210	39.2338	922.0000	-3612.0000	4534.0000
4708507867	GAS	10/14/1989		07867	ECA	-80.9204	39.2294	879.0000	-4317.0000	5196.0000
4708507869	GAS	9/14/1989		07869	E A E	-80.9413	39.2622	1139.0000	-4241.0000	5380.0000
4708507881	GAS	10/16/1989		07881	ECA	-80.9289	39.2670	1021.0000	-4251.0000	5272.0000
4708507888	GAS	10/27/1989		07888	ECA	-80.9257	39.2709	985.0000	-4295.0000	5280.0000
4708507891	GAS	11/3/1989		07891	ECA	-80.9203	39.2804	1093.0000	-4278.0000	5371.0000
4708507905	GAS	8/15/1990		07905	ECA	-80.9290	39.2843	914.0000	-4232.0000	5146.0000
4708507963	GAS	9/7/1990		07963	ECA	-80.9375	39.2555	938.0000	-4234.0000	5172.0000
4708508057	GAS	7/7/1991		08057	KEY OIL	-80.9259	39.2876	960.0000	-4266.0000	5226.0000
4708508162	GAS	8/25/1993		08162	KEY OIL	-80.9306	39.2776	898.0000	-4242.0000	5140.0000
4708508163	GAS	8/31/1993		08163	KEY OIL	-80.9294	39.2810	840.0000	-4250.0000	5090.0000
4708508173	GAS	10/27/1993		08173	KEY OIL	-80.9300	39.2738	782.0000	-4209.0000	4991.0000
4708530382	GAS	9/4/1917		30382	I H BEREN	-80.9353	39.2589	829.0000	-1031.0000	1860.0000
4708530516	GAS	6/8/1941		30516	HOPE NAT GAS	-80.9300	39.2767	785.0000	-948.0000	1733.0000
4708530547	GAS	12/2/1915		30547	PGH & WV GAS	-80.9311	39.2622	829.0000	-994.0000	1823.0000
4708530559	GAS	12/29/1915		30559	PGH & WV GAS	-80.9233	39.2842	817.0000	-1020.0000	1837.0000
4708530675	GAS	10/23/1926		30675	PGH & WV GAS	-80.9261	39.2517	1040.0000	-1001.0000	2041.0000
4708530815	UNK			30815	F S DEEM	-80.9189	39.2397	824.0000	-869.0000	1693.0000
4708530816	GAS			30816	F S DEEM	-80.9161	39.2397	878.0000	-99999.0000	100877.0000
4708531355	GAS	10/10/1915		31355	EPC	-80.9283	39.2708	1.0000	-1999.0000	2000.0000
4708506263	GAS		ALEXANDER	06263	PETRO-AM CORP	-80.9059	39.2270		5450.0000	5450.0000

PEN54
WV 514475
EQT PRODUCTION COMPANY

ROYALTY OWNERS		
DONALD R. REYNOLDS ET AL	126 AC.±	LEASE NO. 1005916
DEAN E. FLANAGAN ET AL	153 AC.±	LEASE NO. 1005921
EQT PRODUCTION COMPANY ET AL	158 AC.±	LEASE NO. 708517

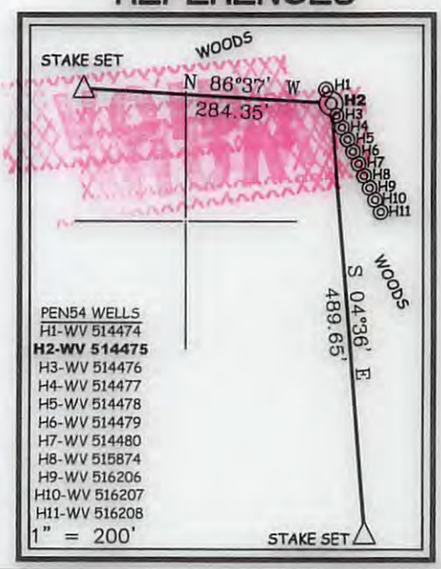


A	JERRY MORTON ET AL	243.50 ACRES±	C-TM-31-05
B	HEARTWOOD FORESTLAND FUND IV LP	185.30 ACRES±	C-TM-31-14
C	HEARTWOOD FORESTLAND FUND IV LP	196.90 ACRES±	C-TM-31-11
D	HEARTWOOD FORESTLAND FUND IV LP	53 ACRES±	C-TM-31-15
E	RANDALL LAMM	126.32 ACRES±	C-TM-31-19
F	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	42.51 ACRES±	C-TM-32-02
G	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	56.14 ACRES±	C-TM-32-02
H	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	57 ACRES±	C-TM-32-04
I	RANDALL LAMM	44 ACRES±	C-TM-36-5.1
J	RONNIE WAGES	66.95 ACRES±	C-TM-36-05
K	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	66.45 ACRES±	C-TM-32-05
L	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	57.60 ACRES±	C-TM-32-07
M	JACK MACKAY ET AL	235.03 ACRES±	C-TM-37-03
N	RONALD DODD ET AL	70.40 ACRES±	C-TM-37-02
O	JEFFERY JETT	18.31 ACRES±	C-TM-37-04
P	EDWIN G. WILLIAMS	40.77 ACRES±	C-TM-37-05
Q	EDWIN G. WILLIAMS	23 ACRES±	C-TM-37-5.1
R	MARY SIMMONS (LIFE) ET AL	30 ACRES±	C-TM-37-07
S	REBECCA COTTRILL ET AL	4.3 ACRES±	C-TM-37-08
T	CHARLES E. COTTRILL ET AL	16.15 ACRES±	C-TM-36-25
U	ROGER & MARY WILLIAMS	8.068 ACRES±	C-TM-37-5.2
V	JEFFERY JETT	25.015 ACRES±	C-TM-36-21.1
W	JUNIOR COTTRILL ET AL	33.065 ACRES±	C-TM-36-21
X	JEFFERY JETT	0.472 ACRES±	C-TM-36-21.2
Y	GARY COTTRILL	5.051 ACRES±	C-TM-36-11.4
Z	ROY DODD	2.51 ACRES±	C-TM-36-13
AA	GARY COTTRILL	40.847 ACRES±	C-TM-36-11.5
BB	GARY COTTRILL ET AL	23.322 ACRES±	C-TM-36-11
CC	ERNEST McATEE ET AL	48.88 ACRES±	C-TM-36-20
DD	PAUL HILVERS	90.70 ACRES±	C-TM-36-09
EE	FOUSS FARMS LLC	19 ACRES±	C-TM-36-08
FF	JACK HARGIS ET AL	45.47 ACRES±	C-TM-36-04
GG	RANDALL LAMM	45.502 ACRES±	C-TM-36-03
HH	HEARTWOOD FORESTLAND FUND IV LP	168.20 ACRES±	C-TM-31-14.1
II	DONALD DEEM ET AL	133.07 ACRES±	C-TM-31-10
JJ	ANTERO TREATMENT LLC	175.85 ACRES±	C-TM-31-06

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

NAD'27 S.P.C.(FT)	N. 279,201.67	E. 1,595,781.38
NAD'27 GEO.	LAT-(N) 39.257756	LONG-(W) 80.927542
NAD'83 UTM (M)	N. 4,345,392.18	E. 506,266.12
	LANDING POINT	
NAD'27 S.P.C.(FT)	N. 279,207.68	E. 1,596,873.23
NAD'27 GEO.	LAT-(N) 39.257820	LONG-(W) 80.923687
NAD'83 UTM (M)	N. 4,345,399.57	E. 506,598.71
	BOTTOM HOLE	
NAD'27 S.P.C.(FT)	N. 269,373.03	E. 1,601,655.26
NAD'27 GEO.	LAT-(N) 39.231028	LONG-(W) 80.906257
NAD'83 UTM (M)	N. 4,342,427.83	E. 508,105.56

REFERENCES



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Solutions from the ground up.
P.O. Box 150 ♦ 12 Vanhorn Drive ♦ Glenville, WV 26351 ♦ (304) 462-5634
www.slssurveys.com

NOTES ON SURVEY

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2. WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.

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. 2288 Earl N. Thompson

EARL N. THOMPSON LICENSED No. 2288 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

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

DATE JUNE 25 , 20 15

REVISED 07/01/15 & 06/23/16

OPERATORS WELL NO. WV 514475

API WELL NO. 47 — 085 — 10227
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500

FILE NO. 8083P514475R2.dwg

SCALE SEE NOTE 2

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 INJECTION ____ WASTE DISPOSAL ____ IF "GAS" PRODUCTION X STORAGE ____ DEEP ____ SHALLOW X

LOCATION :
ELEVATION GROUND 1,016' PROPOSED 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 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 6,275'

COUNTY NAME

PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330

DESIGNATED AGENT REX C. RAY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330

SLS
124568

PEN54
WV 514475
EQT PRODUCTION COMPANY

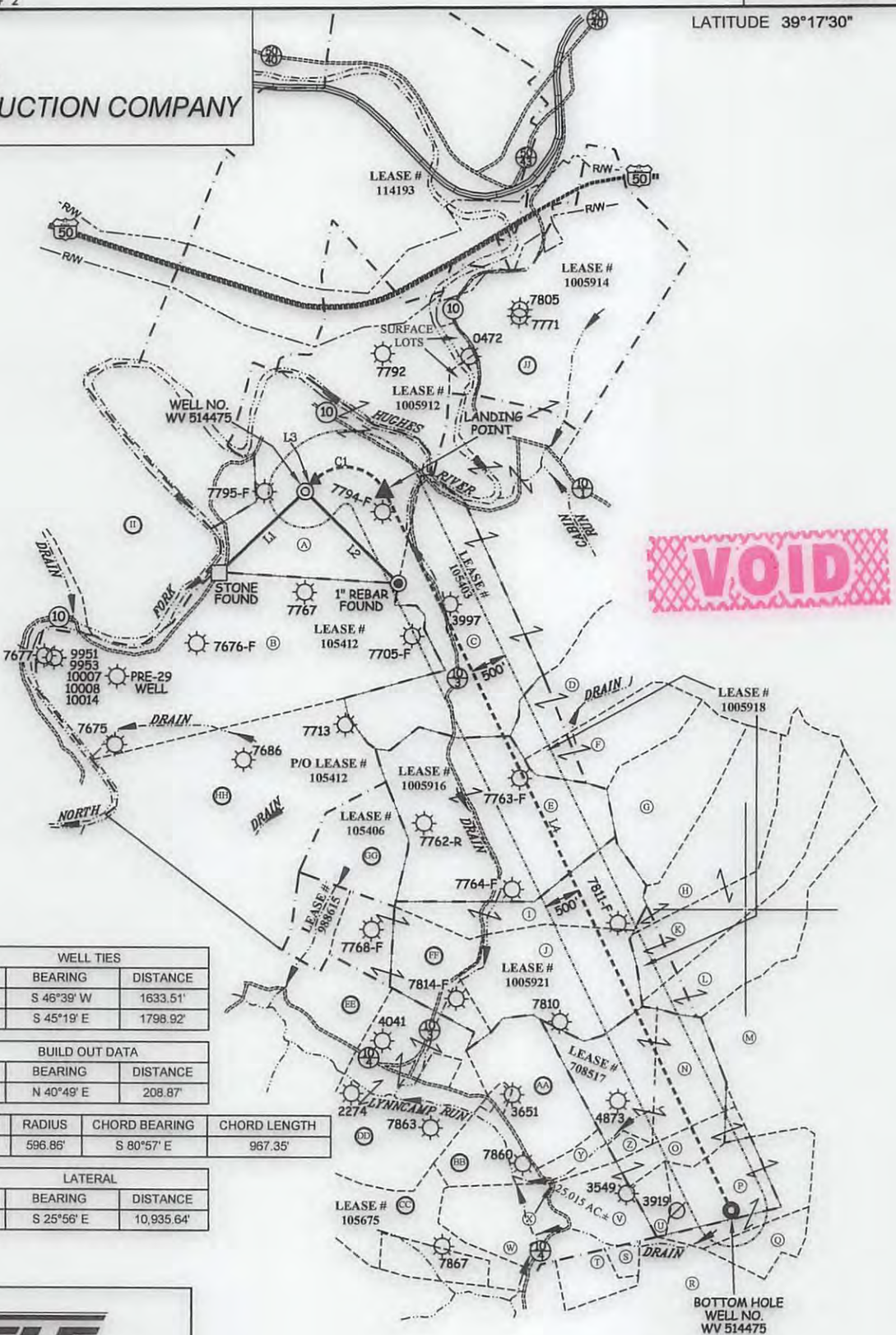
3,079'

LATITUDE 39°17'30"

LONGITUDE 80°55'00"

12,351'

NAD' 27 GRID NORTH



WELL TIES		
ID	BEARING	DISTANCE
L1	S 46°39' W	1633.51'
L2	S 45°19' E	1798.92'

BUILD OUT DATA		
ID	BEARING	DISTANCE
L3	N 40°49' E	208.87'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	1,127.80',	596.86'	S 80°57' E	967.35'

LATERAL		
ID	BEARING	DISTANCE
L4	S 25°56' E	10,935.64'

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

NAD'27 S.P.C.(FT)	N. 279,201.67	E. 1,595,781.38
NAD'27 GEO.	LAT-(N) 39.257756	LONG-(W) 80.927542
NAD'83 UTM (M)	N. 4,345,392.18	E. 506,266.12
LANDING POINT		
NAD'27 S.P.C.(FT)	N. 279,207.68	E. 1,596,873.23
NAD'27 GEO.	LAT-(N) 39.257820	LONG-(W) 80.923687
NAD'83 UTM (M)	N. 4,345,399.57	E. 506,598.71
BOTTOM HOLE		
NAD'27 S.P.C.(FT)	N. 269,373.03	E. 1,601,655.26
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EARL N. THOMPSON
LICENSED
No. 2288
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR

E.T. 6/23/16

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

LEGEND

LEASE LINE
SURFACE LINE
WELL LATERAL
OFFSET LINE
TIE LINE
CREEK
ROAD
COUNTY ROUTE
STATE ROUTE
PROPOSED WELL
EXISTING WELL
PERMITTED WELL
CLAY DISTRICT TAX MAP–PARCEL C–TM–00–00

SCALE 1" = 2000'

DATE JUNE 25 , 20 15

REVISED 07/01/15 & 06/23/16

OPERATORS WELL NO. WV 514475

API WELL NO. 47 — 085 — 10227
STATE COUNTY PERMIT

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

COUNTY NAME

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BRIDGEPORT, WV 26330

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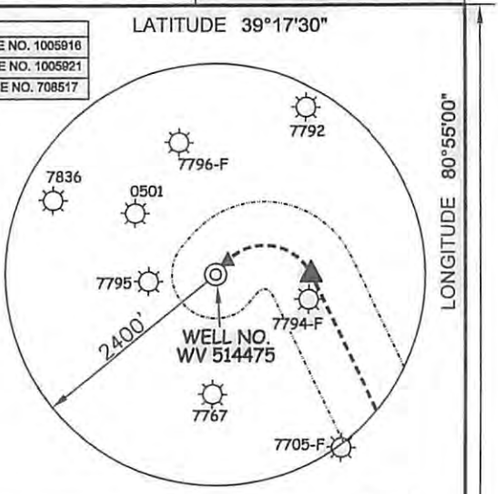
BRIDGEPORT, WV 26330

SLS
124568

FORM WW 6 – SHEET 1 OF 2

PEN54
WV 514475
EQT PRODUCTION COMPANY

ROYALTY OWNERS		
DONALD R. REYNOLDS ET AL	126 AC.±	LEASE NO. 1005916
DEAN E. FLANAGAN ET AL	153 AC.±	LEASE NO. 1005921
EQT PRODUCTION COMPANY ET AL	156 AC.±	LEASE NO. 708517



A	JERRY MORTON ET AL	243.50 ACRES±	C-TM-31-05
B	HEARTWOOD FORESTLAND FUND IV LP	185.30 ACRES±	C-TM-31-14
C	HEARTWOOD FORESTLAND FUND IV LP	196.90 ACRES±	C-TM-31-11
D	HEARTWOOD FORESTLAND FUND IV LP	53 ACRES±	C-TM-31-15
E	RANDALL LAMM	126.32 ACRES±	C-TM-31-19
F	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	42.51 ACRES±	C-TM-32-02
G	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	56.14 ACRES±	C-TM-32-02
H	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	57 ACRES±	C-TM-32-04
I	RANDALL LAMM	44 ACRES±	C-TM-36-5.1
J	RONNIE WAGES	66.95 ACRES±	C-TM-36-05
K	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	66.45 ACRES±	C-TM-32-05
L	COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY	57.60 ACRES±	C-TM-32-07
M	JACK MACKAY ET AL	235.03 ACRES±	C-TM-37-03
N	RONALD DODD ET AL	70.40 ACRES±	C-TM-37-02
O	JEFFERY JETT	18.31 ACRES±	C-TM-37-04
P	EDWIN G. WILLIAMS	40.77 ACRES±	C-TM-37-05
Q	EDWIN G. WILLIAMS	23 ACRES±	C-TM-37-5.1
R	MARY SIMMONS (LIFE) ET AL	30 ACRES±	C-TM-37-07
S	REBECCA COTTRILL ET AL	4.3 ACRES±	C-TM-37-08
T	CHARLES E. COTTRILL ET AL	16.15 ACRES±	C-TM-36-25
U	ROGER & MARY WILLIAMS	8.068 ACRES±	C-TM-37-5.2
V	JEFFERY JETT	25.015 ACRES±	C-TM-36-21.1
W	JUNIOR COTTRILL ET AL	33.065 ACRES±	C-TM-36-21
X	JEFFERY JETT	0.472 ACRES±	C-TM-36-21.2
Y	GARY COTTRILL	5.051 ACRES±	C-TM-36-11.4
Z	ROY DODD	2.51 ACRES±	C-TM-36-13
AA	GARY COTTRILL	40.847 ACRES±	C-TM-36-11.5
BB	GARY COTTRILL ET AL	23.322 ACRES±	C-TM-36-11
CC	ERNEST McATEE ET AL	48.88 ACRES±	C-TM-36-20
DD	PAUL HILVERS	90.70 ACRES±	C-TM-36-09
EE	FOUSS FARMS LLC	19 ACRES±	C-TM-36-08
FF	JACK HARGIS ET AL	45.47 ACRES±	C-TM-36-04
GG	RANDALL LAMM	45.502 ACRES±	C-TM-36-03
HH	HEARTWOOD FORESTLAND FUND IV LP	168.20 ACRES±	C-TM-31-14.1
II	DONALD DEEM ET AL	133.07 ACRES±	C-TM-31-10
JJ	ANTERO TREATMENT LLC	175.85 ACRES±	C-TM-31-06

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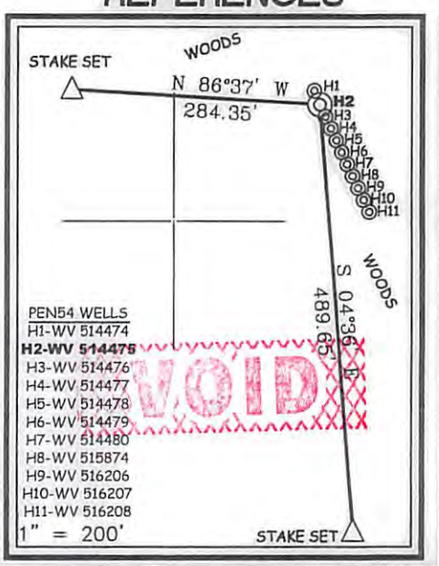

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DATE JUNE 25 , 20 15

REVISED 07/01/15 & 06/23/16

OPERATORS WELL NO. WV 514475

API WELL NO. 47 — 095 — 1827
STATE COUNTY PERMIT

RECEIVED
Office of Oil & Gas
JUN 28 2016
WV Department of Environmental Protection

MINIMUM DEGREE OF ACCURACY 1 / 2500

FILE NO. 8083P514475R2.dwg

SCALE SEE NOTE 2

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

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OFFICE OF OIL AND GAS

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ROYALTY OWNER ELLEN S. FRANCAVIGLIA ET AL ACREAGE 268±

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PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH 6,275'

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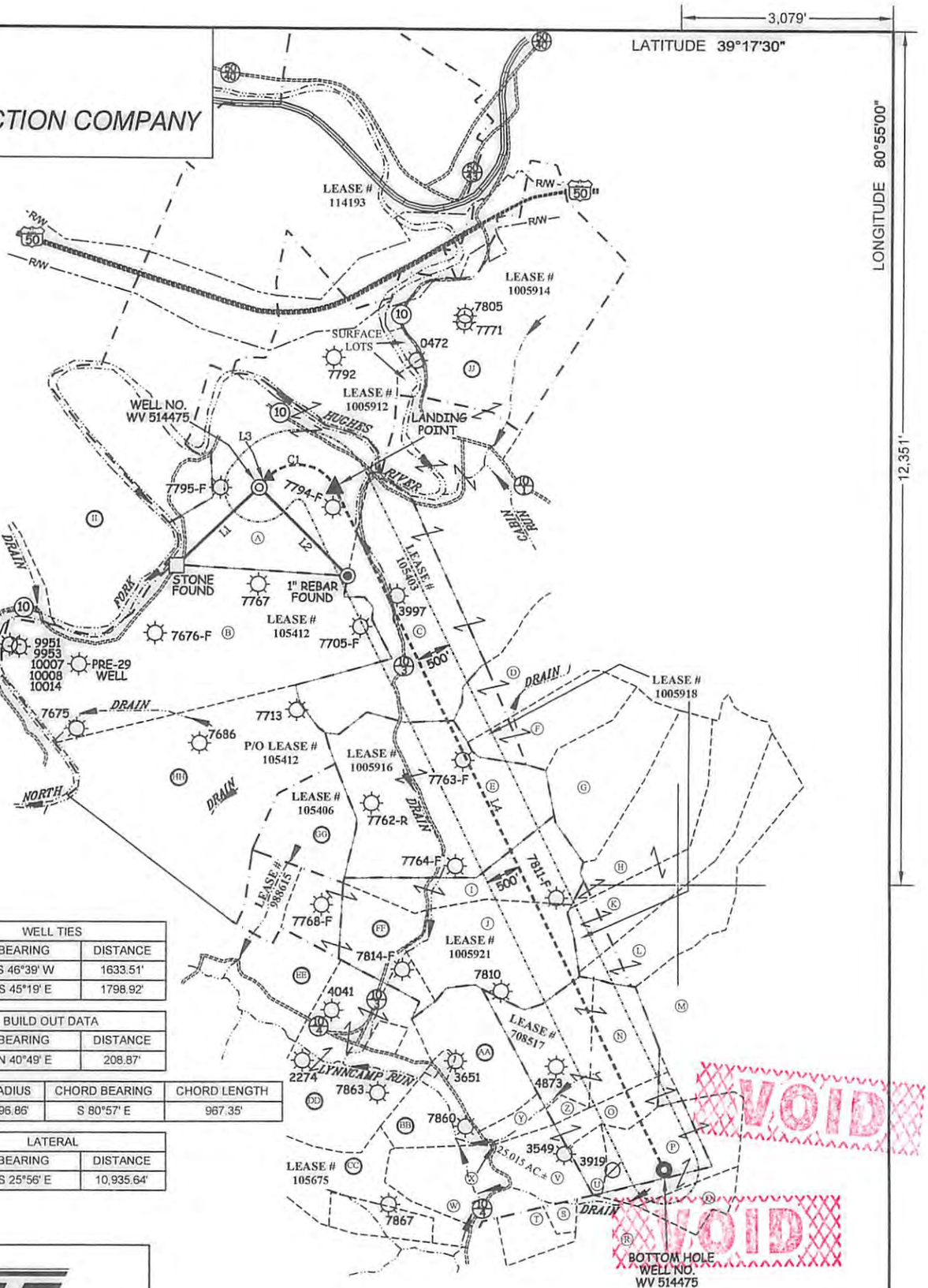
SLS 124588

MDC 6/28/16

PEN54
WV 514475
EQT PRODUCTION COMPANY



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CLAY DISTRICT TAX MAP–PARCEL C–TM–00–00

SCALE 1" = 2000'

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OPERATORS WELL NO. WV 514475

API WELL NO. 47 — 085 — 10227
STATE — COUNTY — PERMIT

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SLS
12458

MDC
6/28/16