west virginia department of environmental protection

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

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

Monday, October 17, 2016
WELL WORK PERMIT
Horizontal 6A / Horizontal 6A Well - 1

EQT PRODUCTION COMPANY
120 PROFESSIONAL PLACE
BUILDING II
BRIDGEPORT, WV 26330

Re: Permit approval for 515434
47-095-02365-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless 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: 515434
Farm Name: VIVIAN J. WELLS, ET AL
U.S. WELL NUMBER: 47-095-02365-00-00
Horizontal 6A / Horizontal 6A Well - 1
Date Issued: 10/17/2016

API Number: _____

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

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1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.

2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.

3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.

4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.

5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations,* 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.

6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.

8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

9. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.

5/20

June 13, 2016

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

Re: Inspector sign off 47-09502365

47 09 502 365

Dear Mr. Smith,

Enclosed is the inspector sign offs for the above API#.

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

Sincerely,

Vicki Roark
Permitting Supervisor-WV

Enc.

Received
Office of Oil & Gas
JUN 14 2016

WW-6B
(04/15)

4709502365

API NO. 47- 095 -
OPERATOR WELL NO. 515434
Well Pad Name: SHR60

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

1) Well Operator: EQT Production Company | 306686 (Operator ID) | Tyler (County) | McElroy (District) | Shirley (Quadrangle)

2) Operator's Well Number: 515434 Well Pad Name: SHR60

3) Farm Name/Surface Owner: Vivian J Wells et al Public Road Access: 60/2

4) Elevation, current ground: 1011 Elevation, proposed post-construction: 1011

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

DmH 6-7-16 JB 6/7/16

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus, 6596' TVD, 52', 2747 PSI

8) Proposed Total Vertical Depth: 6596'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 20921'

11) Proposed Horizontal Leg Length: 12767'

12) Approximate Fresh Water Strata Depths: 83, 133, 570, 906'

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

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14) Approximate Saltwater Depths: 1198, 1865'

15) Approximate Coal Seam Depths: 19, 420, 686, 875, 1315'

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

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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Office of Oil & Gas
JUN 14 2016

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WW-6B
(04/15)

API NO. 47- 095 -
OPERATOR WELL NO. 515434
Well Pad Name: SHR60

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	60	60	90 ft^3 / CTS
Fresh Water	13 3/8	New	J-55	54.5	992	992	874 ft^3 / CTS
Coal							
Intermediate	9 5/8	New	A-500	40	2777	2777	1084 ft^3 / CTS
Production	5 1/2	New	P-110	20	20921	20921	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							

DMH 6-7-16 JB 6/7/16

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	3950	3160	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							

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PACKERS

Kind:				
Sizes:				
Depths Set:				

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WW-6B
(10/14)

4709502365

API NO. 47- 95 -
OPERATOR WELL NO. 515434
Well Pad Name: SHR60

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 2847'. Kick off and drill curve. Drill the lateral in the Marcellus. Cement casing.

DMH 6-7-16 JPS 6/7/16

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 0.3%) 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): no additional

22) Area to be disturbed for well pad only, less access road (acres): no additional

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 cent at the shoe and one spaced every 500'.
- Production: One solid body cent spaced every joint from production casing shoe to KOP

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

Conductor: Class A no additives
Surface (Type 1 Cement): 0-3% Calcium Chloride 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 % Calcium 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.

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JUN 14 2016

*Note: Attach additional sheets as needed.

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EQT Production

Hydraulic Fracturing Monitoring Plan

Pad ID: SHR60

Tyler County, WV

8/22/16

Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near EQT hydraulic fracturing in Tyler County, WV prior to hydraulic fracturing at the following EQT wells on the SHR60 pad: 515434

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 6,600' 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 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.**

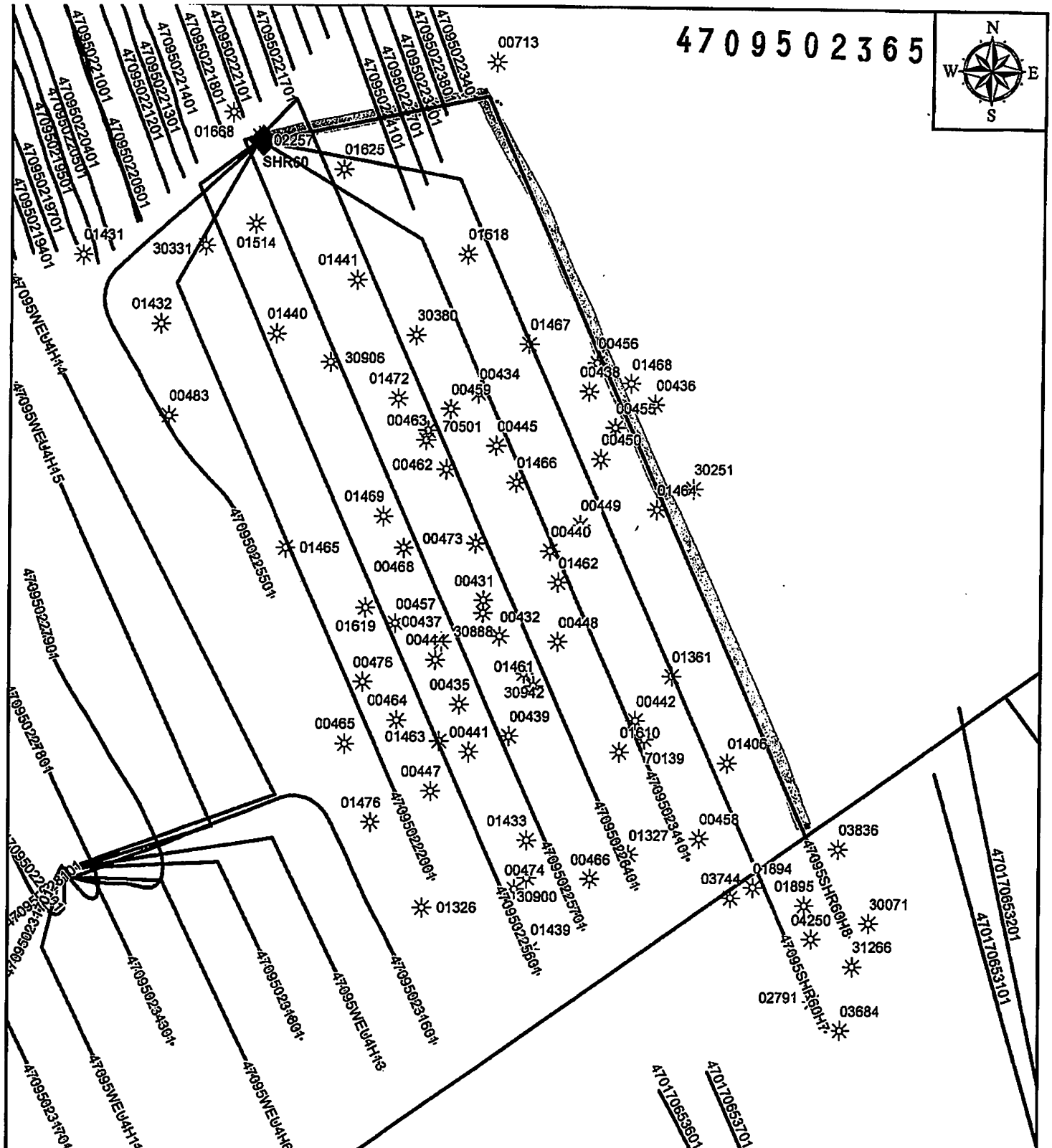
The letter provides recommendations to these conventional operators to 1) increase their monitoring of their wells during that time period, 2) ensure that their well head equipment is sound, and 3) provide immediate notification to EQT and the OOG in the event of any changes in their well conditions.

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.



EQT

EQT Corporation
625 Liberty Avenue
Pittsburgh, PA 15222

SHR60

Vertical Offsets and Foreign Laterals within 500'

Legend

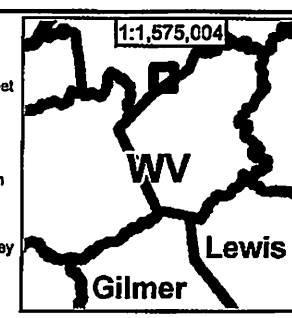
- SHR60 Vertical Offsets
- Genesse Spud
- Marcellus Spud
- Middlesex Spud
- Utica Spud
- GENESSO
- MARCELLUS
- MIDDLESEX
- POINT PLEASANT
- UTICA

1,700 850 0 1,700 Feet

1:21,875

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.



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Attachment A (1)

WellID	WellStatus	Comp Date	Fm at TD	Permit	Operator	Longitude	Latitude	Target Fm	Datum Eleva	SS Depth	Total Depth
4701701894	STORAGE	6/28/1978		01894	EPC	-80.7864	39.3661		1155.0000	-1062.0000	2217.0000
4701701895	STORAGE	9/15/1978		01895	EPC	-80.7838	39.3654		1263.0000	-867.0000	2130.0000
4701702791	STORAGE	12/17/1980		02791	EPC	-80.7834	39.3617		1240.0000	-947.0000	2187.0000
4701703684	GAS	1/29/1989		03684	STONEWALL GAS	-80.7820	39.3606		1204.0000	-4146.0000	5350.0000
4701703744	GAS	1/4/1990		03744	STONEWALL GAS	-80.7875	39.3657		1216.0000	-4114.0000	5330.0000
4701703836	GAS	8/16/1990		03836	STONEWALL GAS	-80.7821	39.3676		1014.0000	-4136.0000	5150.0000
4701704250	GAS	4/29/1996		04250	DOMINION	-80.7835	39.3641		1238.0000	-4104.0000	5342.0000
4701730071	GAS			30071	CLIFTON O&G	-80.7806	39.3647		1200.0000	-1080.0000	2280.0000
4701731266	O&G			31266	LAUDERMAN O & G	-80.7814	39.3631		789.0000	[redacted]	
4709500431	STORAGE	7/3/1972		00431	EPC	-80.7999	39.3771		1057.0000	-991.0000	2048.0000
4709500432	STORAGE	10/10/1972		00432	EPC	-80.7991	39.3757		988.0000	-960.0000	1948.0000
4709500434	STORAGE	7/27/1972		00434	EPC	-80.8002	39.3850		1047.0000	-963.0000	2010.0000
4709500435	STORAGE	6/25/1910		00435	EPC	-80.8011	39.3731		1024.0000	-946.0000	1970.0000
4709500436	STORAGE	7/11/1974		00436	EPC	-80.7914	39.3846		983.0000	-947.0000	1930.0000
4709500437	STORAGE	8/1/1973		00437	EPC	-80.8020	39.3755		1180.0000	-952.0000	2132.0000
4709500438	STORAGE	9/25/1989		00438	EQUITRANS	-80.7947	39.3851		832.0000	-1102.0000	1934.0000
4709500439	STORAGE	10/24/1972		00439	EPC	-80.7986	39.3719		1201.0000	-937.0000	2138.0000
4709500440	STORAGE	8/31/1911	LOWER HURON SHALE	00440	EPC	-80.7966	39.3790		865.0000	-955.0000	1820.0000
4709500441	STORAGE	9/19/1973		00441	EPC	-80.8006	39.3713		1108.0000	-952.0000	2060.0000
4709500442	STORAGE	8/15/1973		00442	EPC	-80.7923	39.3725		1257.0000	-927.0000	2184.0000
4709500444	STORAGE	8/8/1973		00444	EPC	-80.8023	39.3748		1204.0000	-945.0000	2149.0000
4709500445	STORAGE	11/5/1910		00445	EPC	-80.7993	39.3830		1011.0000	-947.0000	1958.0000
4709500447	STORAGE	3/22/1973		00447	EPC	-80.8025	39.3698		1113.0000	-931.0000	2044.0000
4709500448	STORAGE	7/19/1973		00448	EPC	-80.7962	39.3755		1012.0000	-1112.0000	2124.0000
4709500449	STORAGE	2/5/1973		00449	EPC	-80.7951	39.3800		864.0000	-1636.0000	2500.0000
4709500450	STORAGE	4/19/1973		00450	EPC	-80.7941	39.3825		833.0000	-960.0000	1793.0000
4709500455	STORAGE	8/4/1973		00455	EPC	-80.7934	39.3837		917.0000	-1687.0000	2604.0000
4709500456	STORAGE	5/11/1973		00456	EPC	-80.7943	39.3862		815.0000	-953.0000	1768.0000
4709500457	STORAGE	8/13/1973		00457	EPC	-80.8043	39.3762		1026.0000	-945.0000	1971.0000
4709500458	STORAGE	12/3/1910		00458	EPC	-80.7891	39.3680		1219.0000	-931.0000	2150.0000
4709500459	STORAGE	9/13/1973		00459	EPC	-80.8016	39.3844		1067.0000	-963.0000	2030.0000
4709500462	STORAGE	11/20/1973		00462	EPC	-80.8018	39.3821		1017.0000	-943.0000	1960.0000
4709500463	STORAGE	3/14/1974		00463	EPC	-80.8028	39.3832		984.0000	-1707.0000	2691.0000
4709500464	STORAGE	2/28/1974		00464	EPC	-80.8042	39.3725		1180.0000	-930.0000	2110.0000
4709500465	STORAGE	1/23/1974		00465	EPC	-80.8068	39.3716		1059.0000	-928.0000	1987.0000
4709500466	STORAGE	2/15/1974		00466	EPC	-80.7945	39.3664		1177.0000	-911.0000	2088.0000
4709500468	STORAGE	9/6/1974		00468	EPC	-80.8039	39.3791		1058.0000	-929.0000	1987.0000
4709500473	STORAGE	1/29/1975		00473	EPC	-80.8003	39.3793		1075.0000	-925.0000	2000.0000

Attachment A (2)

4709502365

4709500474	STORAGE	3/27/1975		00474	EPC	-80.7983	39.3660	1122.0000	-905.0000	2027.0000
4709500476	STORAGE	7/28/1975		00476	EPC	-80.8059	39.3739	965.0000	-952.0000	1917.0000
4709500483	STORAGE	8/23/1977		00483	EPC	-80.8157	39.3841	1042.0000	-1055.0000	2097.0000
4709500713	GAS	3/24/1911		00713	CNG	-80.7994	39.3976	969.0000	-1762.0000	2731.0000
4709501326	GAS	1/19/1991		01326	STONEWALL GAS	-80.8029	39.3653	967.0000	-4083.0000	5050.0000
4709501327	GAS	1/12/1990		01327	STONEWALL GAS	-80.7926	39.3674	1222.0000	-4128.0000	5350.0000
4709501361	GAS	1/29/1990		01361	STONEWALL GAS	-80.7905	39.3742	1138.0000	-4062.0000	5200.0000
4709501406	STORAGE	8/13/1990		01406	DOMINION	-80.7877	39.3709	1000.0000	-4125.0000	5125.0000
4709501431	GAS	12/1/1990		01431	STONEWALL GAS	-80.8200	39.3902	803.0000	-4247.0000	5050.0000
4709501432	GAS	10/23/1990		01432	STONEWALL GAS	-80.8161	39.3876	882.0000	-4118.0000	5000.0000
4709501433	STORAGE	10/3/1990		01433	STONEWALL GAS	-80.7977	39.3679	1218.0000	-4082.0000	5300.0000
4709501439	GAS	1/29/1991		01439	STONEWALL GAS	-80.7975	39.3637	1077.0000	-4098.0000	5175.0000
4709501440	GAS	11/13/1990		01440	STONEWALL GAS	-80.8103	39.3873	1022.0000	-4104.0000	5126.0000
4709501441	GAS	12/21/1990		01441	STONEWALL GAS	-80.8063	39.3893	1082.0000	-4118.0000	5200.0000
4709501461	GAS	6/25/1991		01461	STONEWALL GAS	-80.7974	39.3738	938.0000	-4135.0000	5073.0000
4709501462	GAS	6/19/1991		01462	STONEWALL GAS	-80.7962	39.3778	957.0000	-4109.0000	5066.0000
4709501463	GAS	7/17/1991		01463	STONEWALL GAS	-80.8021	39.3717	1223.0000	-4077.0000	5300.0000
4709501464	GAS	6/13/1991		01464	STONEWALL GAS	-80.7913	39.3806	904.0000	-4136.0000	5040.0000
4709501465	GAS	6/7/1991		01465	STONEWALL GAS	-80.8098	39.3791	1096.0000	-4104.0000	5200.0000
4709501466	GAS	7/9/1991		01466	STONEWALL GAS	-80.7983	39.3816	1080.0000	-4120.0000	5200.0000
4709501467	GAS	6/19/1991		01467	STONEWALL GAS	-80.7977	39.3869	1107.0000	-4143.0000	5250.0000
4709501468	GAS	7/20/1992		01468	STONEWALL GAS	-80.7926	39.3854	1022.0000	-4148.0000	5170.0000
4709501469	GAS	6/26/1991		01469	STONEWALL GAS	-80.8049	39.3803	904.0000	-4116.0000	5020.0000
4709501472	GAS	7/10/1991		01472	STONEWALL GAS	-80.8042	39.3848	1062.0000	-4118.0000	5180.0000
4709501476	GAS	6/5/1992		01476	STONEWALL GAS	-80.8055	39.3686	1167.0000	-4103.0000	5270.0000
4709501514	GAS	1/15/1993		01514	STONEWALL GAS	-80.8114	39.3914	1075.0000	-4155.0000	5230.0000
4709501610	GAS	6/8/1994		01610	STONEWALL GAS	-80.7931	39.3713	1206.0000	-4138.0000	5344.0000
4709501618	GAS	6/22/1994		01618	STONEWALL GAS	-80.8008	39.3903	992.0000	-4133.0000	5125.0000
4709501619	GAS	6/16/1994		01619	STONEWALL GAS	-80.8058	39.3768	1020.0000	-4170.0000	5190.0000
4709501625	GAS	11/16/1994		01625	STONEWALL GAS	-80.8070	39.3935	1053.0000	-4122.0000	5175.0000
4709501668	GAS	11/3/1996		01668	D A C	-80.8125	39.3956	986.0000	-1244.0000	2230.0000
4709502257	UNKNOWN	[redacted]		02257	EPC	-80.8112	39.3947	1011.0000	-5689.0000	6700.0000
4709530331	GAS	12/22/1913	LOWER HURON SHALE	30331	HOPE NAT GAS	-80.8139	39.3906	1003.0000	-1722.0000	2725.0000
4709530380	GAS	3/15/1910	LOWER HURON SHALE	30380	HOPE NAT GAS	-80.8033	39.3872	1010.0000	-1705.0000	2715.0000
4709530251	PSEUDO	[redacted]			HOPE NATURAL GAS	-80.7895	39.3814	[redacted]		
4709530888	PSEUDO				HOPE NATURAL GAS	-80.7999	39.3766			
4709530906	PSEUDO				HOPE NATURAL GAS	-80.8076	39.3862			
4709530942	PSEUDO				HOPE NATURAL GAS	-80.7979	39.3743			
4709570501	PSEUDO				HOPE NATURAL GAS	-80.8027	39.3836			

Attachment A(3)

4709502365

4709530900 UNKWN	2/16/1912	HOPE NATURAL GAS	-80.7977	39.3664	[redacted]
4709570139 UNKWN	2/16/1910	HOPE NATURAL GAS	-80.7919	39.3718	

4 7 0 9 5 0 2 3 6 5

Attachment A (4)

4709502365

UWI	Top Source	Interpreter	Code	Name	Depth Top	Base Depth
47095014660000	PI		354BGLM	BIG LIME	1920	2000
47095014660000	PI		352BGIJ	BIG INJUN /SD/	2009	2135
47095014660000	PI		305GRDN	GORDON /SD/	2700	2765
47095014660000	PI		304BNSN	BENSON /SD/	4990	5055
47095014310000	PI		354LTLL	LITTLE LIME	1635	1648
47095014310000	PI		354BGLM	BIG LIME	1668	1770
47095014310000	PI		352BGIJ	BIG INJUN /SD/	1770	1895
47095014310000	PI		305GRDN	GORDON /SD/	2474	2486
47095014310000	PI		304RILY	RILEY /SD/	4338	
47095016190000	PI		354MXTNL	MAXTON LOWER/SD/	1602	1707
47095016190000	PI		354LTLL	LITTLE LIME	1825	1835
47095016190000	PI		354BGLM	BIG LIME	1860	1925
47095016190000	PI		352BGIJ	BIG INJUN /SD/	1940	2078
47095016190000	PI		304BNSN	BENSON /SD/	4940	4950
47095016180000	PI		354LTLL	LITTLE LIME	1840	1857
47095016180000	PI		354BGLM	BIG LIME	1874	1964
47095016180000	PI		352BGIJ	BIG INJUN /SD/	1975	2095
47095016180000	PI		304BNSN	BENSON /SD/	4928	
47095016680000	PI		354BGLM	BIG LIME	1886	
47095016680000	PI		352KENR	KEENER /SD/	1942	
47095016680000	PI		352BGIJ	BIG INJUN /SD/	1958	
47095014630000	PI		354BGLM	BIG LIME	2064	2138
47095014630000	PI		352BGIJ	BIG INJUN /SD/	2138	2238
47095014630000	PI		305GRDN	GORDON /SD/	2845	2875
47095014630000	PI		304RILY	RILEY /SD/	4665	
47095014630000	PI		304BNSN	BENSON /SD/	5148	
47017042500000	PI		354LTLL	LITTLE LIME	2068	2079
47017042500000	PI		354BGLM	BIG LIME	2104	2198
47017042500000	PI		352BGIJ	BIG INJUN /SD/	2216	2309
47017042500000	PI		304RILY	RILEY /SD/	4725	4790
47017042500000	PI		304BNSN	BENSON /SD/	5183	
47095004320000	PI		406PBRGC	PITTSBURGH COAL	598	603
47095004320000	PI		405DKBG	DUNKARD BIG/SD/	938	964
47095004320000	PI		403SLSD	SALT SD /GROUP/	1236	1624
47095004320000	PI		354MXTN	MAXTON	1702	1762
47095004320000	PI		354LTLL	LITTLE LIME	1812	1832
47095004320000	PI		354BGLM	BIG LIME	1844	1904
47095004320000	PI		352BGIJ	BIG INJUN /SD/	1910	2062
47095004320000	PI		351WEIR	WEIR /SD/	2216	2312
47095004320000	PI		305GNTZ	GANTZ /SD/	2424	
47095013610000	PI		354BGLM	BIG LIME	1998	2083
47095013610000	PI		352BGIJ	BIG INJUN /SD/	2083	2200
47095013610000	PI		305GRDN	GORDON /SD/	2770	2825
47095013610000	PI		304RILY	RILEY /SD/	4585	4665
47095013610000	PI		304BNSN	BENSON /SD/	5032	
47095014400000	PI		354LTLL	LITTLE LIME	1851	1865

Attachment A (5)

4709502365

47095014400000	PI	354BGLM	BIG LIME	1885	2048
47095014400000	PI	352BGIJ	BIG INJUN /SD/	2048	2105
47095014400000	PI	305GRDN	GORDON /SD/	2668	2710
47095014400000	PI	304RILY	RILEY /SD/	4525	4535
47095014400000	PI	304BNSN	BENSON /SD/	4965	4980
47095014720000	PI	354BGLM	BIG LIME	1925	1995
47017037440000	PI	354BGLM	BIG LIME	2075	2165
47017037440000	PI	352BGIJ	BIG INJUN /SD/	2165	
47095014640000	PI	354BGLM	BIG LIME	1772	1840
47095014640000	PI	352BGIJ	BIG INJUN /SD/	1840	1990
47095014640000	PI	305GRDN	GORDON /SD/	2550	2565
47095014640000	PI	304RILY	RILEY /SD/	4400	
47095014640000	PI	304BNSN	BENSON /SD/	4845	4905
47095016100000	PI	354LTLL	LITTLE LIME	2034	2045
47095016100000	PI	354BGLM	BIG LIME	2066	2130
47095016100000	PI	352BGIJ	BIG INJUN /SD/	2155	2266
47095016100000	PI	304BNSN	BENSON /SD/	5128	
47095014330000	PI	354LTLL	LITTLE LIME	2038	2050
47095014330000	PI	354BGLM	BIG LIME	2067	2145
47095014330000	PI	352BGIJ	BIG INJUN /SD/	2180	
47095014330000	PI	305GRDN	GORDON /SD/	2815	2840
47095014330000	PI	304RILY	RILEY /SD/	4681	4744
47095014330000	PI	304BNSN	BENSON /SD/	5105	
47095014670000	PI	354LTLL	LITTLE LIME	1955	1970
47095014620000	PI	354LTLL	LITTLE LIME	1789	1800
47095014620000	PI	354BGLM	BIG LIME	1820	1900
47095014620000	PI	352BGIJ	BIG INJUN /SD/	1900	2050
47095014620000	PI	305GRDN	GORDON /SD/	2590	2630
47095014620000	PI	304RILY	RILEY /SD/	4465	4520
47095014620000	PI	304BNSN	BENSON /SD/	4907	
47095016250000	PI	354LTLL	LITTLE LIME	1897	1928
47095016250000	PI	354BGLM	BIG LIME	1928	2088
47095016250000	PI	354PCCV	PENCIL CAVE	2088	2100
47095016250000	PI	352BGIJ	BIG INJUN /SD/	2100	2153
47095016250000	PI	305GRDN	GORDON /SD/	2715	2725
47095016250000	PI	304BNSN	BENSON /SD/	5020	
47095016250000	PI	304RILY	RILEY /SD/		4620
47095014390000	PI	354LTLL	LITTLE LIME	1915	1930
47095014390000	PI	354BGLM	BIG LIME	1945	2026
47095014390000	PI	352BGIJ	BIG INJUN /SD/	2026	2054
47095014390000	PI	305GRDN	GORDON /SD/	2725	2775
47095014390000	PI	304RILY	RILEY /SD/	4580	4600
47095014390000	PI	304BNSN	BENSON /SD/	5015	5023
47017036840000	PI	354MXTN	MAXTON	1604	1623
47017036840000	PI	352KENR	KEENER /SD/	1770	1793
47017036840000	PI	352BGIJ	BIG INJUN /SD/	1793	1835
47017036840000	PI	351WEIR	WEIR /SD/	2030	2100

Attachment A(6)

4709502365

47017036840000	PI	351BERE	BEREA	2140	2146
47017036840000	PI	309DVNND	DEVONIAN /SD/	2146	
47095004380000	PI	406PBRGC	PITTSBURGH COAL	460	464
47095004380000	PI	405MRPY	MURPHY /SD/	716	734
47095004380000	PI	404GSSD	GAS SAND	972	1024
47095004380000	PI	403SLSD	SALT SD /GROUP/	1102	1470
47095004380000	PI	403MXTN	MAXTON/SD/	1562	1646
47095004380000	PI	354LTLL	LITTLE LIME	1666	1682
47095004380000	PI	354BGLM	BIG LIME	1698	1752
47095004380000	PI	352BGIN	BIG INJUN	1764	1922
47095004380000	PI	352SQUW	SQUAW /SD/	1981	1990
47095004380000	PI	351WEIR	WEIR /SD/	2072	2164
47095004380000	PI	305GNTZ	GANTZ /SD/	2270	2284
47095004380000	PI	305GRDN	GORDON /SD/	2494	
47095015140000	PI	354LTLL	LITTLE LIME	1912	1935
47095015140000	PI	354BGLM	BIG LIME	1950	2054
47095015140000	PI	352BGIJ	BIG INJUN /SD/	2072	2170
47095015140000	PI	304BNSN	BENSON /SD/	5040	5045
47095004640000	PI	406PBRGC	PITTSBURGH COAL	770	773
47095004640000	PI	405MRPY	MURPHY /SD/	1050	1072
47095004640000	PI	405DKDSL	DUNKARD LITTLE /SD/	1172	1179
47095004640000	PI	405DKBG	DUNKARD BIG/SD/	1214	1256
47095004640000	PI	404GSSD	GAS SAND	1308	1328
47095004640000	PI	403SLSD	SALT SD /GROUP/	1420	1856
47095004640000	PI	354MXTN	MAXTON	1886	1940
47095004640000	PI	354LTLL	LITTLE LIME	1992	2010
47095004640000	PI	354BGLM	BIG LIME	2020	2078
47095004640000	PI	352BGIJ	BIG INJUN /SD/	2088	2244
47095004640000	PI	351WEIR	WEIR /SD/	2396	2492
47095004640000	PI	305GNTZ	GANTZ /SD/	2600	2622
47095004640000	PI	305GRDNX	GORDON STRAY /SD/	2686	2742
47095004640000	PI	305GRDN	GORDON /SD/	2794	
47095014690000	PI	354LTLL	LITTLE LIME	1718	1728
47095014690000	PI	354BGLM	BIG LIME	1750	1826
47095013260000	PI	354LTLL	LITTLE LIME	1778	1792
47095013260000	PI	354BGLM	BIG LIME	1815	1905
47095013260000	PI	352BGIJ	BIG INJUN /SD/	1918	2015
47095013260000	PI	305GRDN	GORDON /SD/	2565	2605
47095013260000	PI	304RILY	RILEY /SD/	4405	4480
47095014680000	PI	354LTLL	LITTLE LIME	1913	1920
47095014680000	PI	354BGLM	BIG LIME	1926	2012
47095014680000	PI	352KENR	KEENER /SD/	2012	2024
47095014680000	PI	352BGIJ	BIG INJUN /SD/	2024	2132
47095014680000	PI	305GRDN	GORDON /SD/	2704	2765
47095014680000	PI	304RILY	RILEY /SD/	4545	5020
47095014680000	PI	304BNSN	BENSON /SD/	5020	5024
47017038360000	PI	354LTLL	LITTLE LIME	1830	1862

Attachment A(7)

47017038360000	PI	354BGLM	BIG LIME	1862	1938
47017038360000	PI	352BGIJ	BIG INJUN /SD/	1948	2085
47017038360000	PI	305GRDN	GORDON /SD/	2640	2650
47017038360000	PI	304BNSN	BENSON /SD/	4935	4965
47095014650000	PI	354LTLL	LITTLE LIME	1917	1930
47095014650000	PI	354BGLM	BIG LIME	1950	2025
47095014650000	PI	352BGIJ	BIG INJUN /SD/	2025	2175
47095014650000	PI	305GRDN	GORDON /SD/	2685	2750
47095014650000	PI	304RILY	RILEY /SD/	4585	4655
47095014650000	PI	304BNSN	BENSON /SD/	5000	5070
47095004830000	PI	406PBRGC	PITTSBURGH COAL	678	680
47095004830000	PI	405DKRD	DUNKARD /SD/ PENN/	1140	1156
47095004830000	PI	404GSSD	GAS SAND	1204	1236
47095004830000	PI	403SLSD	SALT SD /GROUP/	1296	1718
47095004830000	PI	354MXTN	MAXTON	1859	1878
47095004830000	PI	354LTLL	LITTLE LIME	1886	1908
47095004830000	PI	354BGLM	BIG LIME	1930	1980
47095004830000	PI	352KENR	KEENER /SD/	1984	2004
47095004830000	PI	352BGIJ	BIG INJUN /SD/	2006	2140
47095014410000	PI	354LTLL	LITTLE LIME	1915	1930
47095014410000	PI	354BGLM	BIG LIME	1958	2048
47095014410000	PI	352BGIJ	BIG INJUN /SD/	2048	2170
47095014410000	PI	305GRDN	GORDON /SD/	2744	2790
47095014410000	PI	304RILY	RILEY /SD/	4596	
47095014760000	PI	354BGLM	BIG LIME	2024	2105
47095014760000	PI	352BGIJ	BIG INJUN /SD/	2109	2226
47095014760000	PI	304BNSN	BENSON /SD/	5075	
47095013270000	PI	304BNSN	BENSON /SD/	4745	
47095014060000	PI	354BGLM	BIG LIME	1833	1937
47095014060000	PI	352BGIJ	BIG INJUN /SD/	1937	2078
47095014060000	PI	305GRDN	GORDON /SD/	2621	2681
47095014060000	PI	304RILY	RILEY /SD/	4485	4555
47095014060000	PI	304BNSN	BENSON /SD/	4925	4950
47095014320000	PI	354LTLL	LITTLE LIME	1740	
47095014320000	PI	354BGLM	BIG LIME	1780	
47095014320000	PI	352BGIJ	BIG INJUN /SD/	1850	
47095014320000	PI	305GRDN	GORDON /SD/	2560	
47095014320000	PI	304RILY	RILEY /SD/	4430	
47095014610000	PI	354LTLL	LITTLE LIME	1755	1768
47095014610000	PI	354BGLM	BIG LIME	1797	1855
47095014610000	PI	352KENR	KEENER /SD/	1855	1876
47095014610000	PI	352BGIJ	BIG INJUN /SD/	1876	2009
47095014610000	PI	305GRDN	GORDON /SD/	2565	2585
47095014610000	PI	304RILY	RILEY /SD/	4425	

Perforated Formations

Attachment A(8)

4709502365

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

EQT

(date)

[Conventional Well Operator]
[address]
[state]

RE: Tyler County Hydraulic Fracturing Notice

Dear Sir/Madam,

EQT has developed a Marcellus pad (Shirley 60 pad) located in Tyler 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 6,600' 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 Shirley 60 pad during the [first,second, third,fourth] quarter of [year]. We have identified conventional natural gas wells operated by your company within 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

Well **515434 (SHR60H8)**

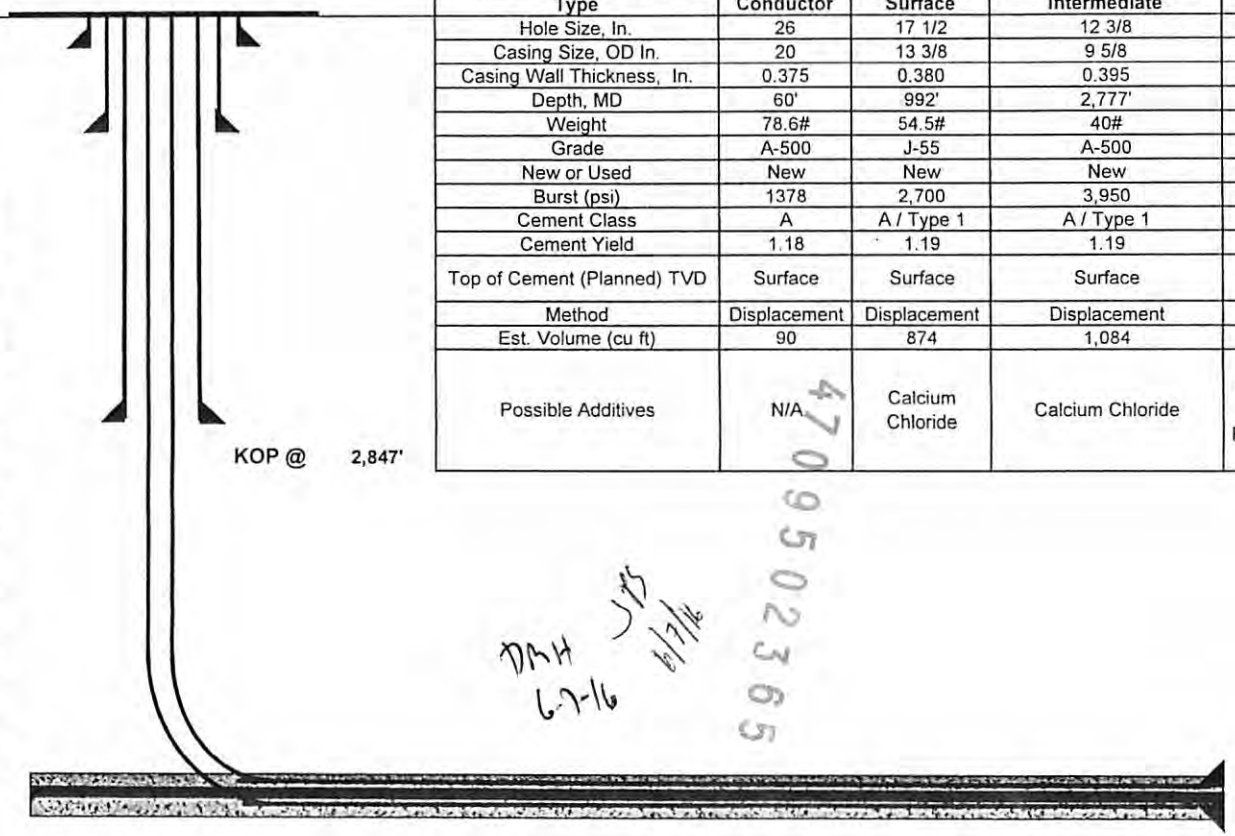
EQT Production

Shirley Quad
Tyler County, WV

Azimuth 157
Vertical Section 13853

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	60	
Base Fresh Water	906	
Surface Casing	992	
Maxton	**1534**	**1587**
Big Lime	**1829**	**2111**
Base Red Rock	**1876**	
Weir	**2251**	**2317**
Gantz	**2368**	**2415**
Fifty foot	**2461**	**1496**
Thirty foot	**2595**	**2636**
Gordon	**2686**	**2700**
Intermediate Casing	2777	
Bayard	**3007**	**3067**
Warren	**3339**	**3413**
Speechley	**3433**	**3551**
Balltown A	**3855**	**3925**
Riley	**4548**	**4585**
Benson	**4965**	**5002**
Alexander	**5222**	**5294**
Sonyea	**6212**	**6381**
Middlesex	**6381**	**6425**
Genesee	**6425**	**6501**
Geneseo	**6501**	**6530**
Tully	**6530**	**6554**
Hamilton	**6554**	**6571**
Marcellus	**6571**	**6623**
Production Casing	20921	MD
Onondaga	**6623**	



Casing and Cementing — Deepest Fresh Water: **906'**

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	60'	992'	2,777'	20,921'
Weight	78.6#	54.5#	40#	20#
Grade	A-500	J-55	A-500	P-110
New or Used	New	New	New	New
Burst (psi)	1378	2,700	3,950	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) TVD	Surface	Surface	Surface	500' above top Producing Zone
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	90	874	1,084	4,113
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

DAH 6-7-16 JB 6/7/16

4709502365

Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 2847'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

Received
Office of Oil & Gas
JUN 14 2016

4709502365

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
dep.wv.gov

March 18, 2014

Nabors Completion & Production Services Company
1380 Route 286 Hwy E #121
Indiana PA 15701

4709502365

Re: Cement Variance Request

Dear Sir or Madam,

This agency is approving a variance request for the cement blend listed below to be used on surface and coal protection strings for the drilling of oil and gas wells in the state of West Virginia. The variance cannot be used without requesting its use on a permit application and approval by this agency:

- Type 1 (2% Calcium Chloride-Accelerator, 0.25% Super Flake-Lost Circulation, 5.2% Water, 94% Type "1" Cement)

If you have any questions regarding this matter feel free to contact me at 304-926-0499, ext. 1653.

Sincerely,

James Peterson by GCS

James Peterson
Environmental Resources Specialist / Permitting

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Office of Oil and Gas
MAY 20 2016
WV Department of
Environmental Protection

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
dep.wv.gov

BEFORE THE OFFICE OF OIL AND GAS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OF WEST VIRGINIA

IN THE MATTER OF A VARIANCE FROM	)	**ORDER NO. 2014 - 17**
REGULATION 35 CSR § 4-11.4/11.5/14.1	)	
AND 35 CSR § 8-9.2.h. 4/5/6/8 OF THE	)	
THE OPERATIONAL	)	
REGULATIONS OF CEMENTING OIL	)	
AND GAS WELLS	)	

REPORT OF THE OFFICE

Nabors Completion & Production Services Co. requests approval of a different cement blend for use in cementing surface and coal protection casing of oil and gas wells.

FINDINGS OF FACT

1.) Nabors Completion & Production Services Co. proposes the following cement blend:

- 2% Calcium Chloride (Accelerator)
- 0.25 % Super Flake (Lost Circulation)
- 94% Type "1" Cement
- 5.20 % Water

2.) Laboratory testing results indicate that the blend listed in Fact No. 1 will achieve a 500 psi compressive strength within 6 hours and a 2,435 psi compressive strength within 24 hours.

4709902365

RECEIVED
Office of Oil and Gas
MAY 20 2016
WV Department of
Environmental Protection

CONCLUSIONS OF LAW

Pursuant to Articles 6 and 6A, Chapter 22 of the Code of West Virginia, the Office of Oil and Gas has jurisdiction over the subject matter embraced in said notice, and the persons interested therein, and jurisdiction to promulgate the hereinafter prescribed Order.

Pursuant to 35 CSR § 4-11.5 and 35 CSR § 8-9.2.h.8 the Chief of the Office of Oil and Gas may approve different cement blends upon the well operator providing satisfactory proof that different cement types are adequate.

ORDER

It is ordered that Nabors Completion & Production Services Co. may use the cement blend listed in Findings of Fact No.1 for the cementing of surface and coal protection casing of oil and gas wells in the State as may be requested by oil and gas operators. The waiting time on the cement blend shall be **8** hours. The cement blend shall be mixed in strict accordance with the specifications for each blend and weight measurements made on-site to assure the cement slurries meet the minimum weight specifications. A sample shall be collected and, if after **8** hours the cement is not set up, additional time will be required. Nabors Completion & Production Services Co. shall keep a record of cement blend jobs in which the cement blend approved under this order is to be used and made available to the Office of Oil and Gas upon request.

Dated this, the 18th day of March, 2014.

IN THE NAME OF THE STATE OF WEST VIRGINIA

OFFICE OF OIL AND GAS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OF THE STATE OF WEST VIRGINIA

James Martin, Chief
Office of Oil and Gas

4709502365

WW-9
(4/16)

4709502365

API Number 47 - 95 - _____
Operator's Well No. 515434

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name EQT Production Company OP Code 306686

Watershed (HUC 10) Morrison Run of McElroy Creek Quadrangle Shirley

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes ☑ No ☐

Will a pit be used? Yes ☑ No ☐

If so, please describe anticipated pit waste: flowback and residual solids

Will a synthetic liner be used in the pit? Yes ☑ No ☐ If so, what ml.? 60

Proposed Disposal Method For Treated Pit Wastes:

- ____ Land Application
- ■ Underground Injection (UIC Permit Number 0014, 8462, 4037)
- ■ Reuse (at API Number Various)
- ■ Off Site Disposal (Supply form WW-9 for disposal location)
- ____ Other (Explain _____

DMH 6-7-16
JPS 6-7-16

Will closed loop system be used? If so, describe: Yes, The closed loop system will remove drill cuttings from the drilling fluid. The drill cuttings are then prepared for transportation to an off-site disposal facility.

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. See Attached

-If oil based, what type? Synthetic, petroleum, etc. Synthetic Mud

Additives to be used in drilling medium? See Attached

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? See Attached List

Received
Office of Oil & Gas
JUN 14 2016

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

4709502365

Company Official Signature _____

Company Official (Typed Name) Victoria J. Roark

Company Official Title Permitting Supervisor

Subscribed and sworn before me this 18 day of May, 20 16

Notary Public _____

My commission expires 8-24-22

OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
Pamela Sykes
EQT Production
PO Box 280
Bridgeport, WV 26330
My Commission Expires Aug. 24, 2022

Form WW-9

4709502365

Operator's Well No. 515434

EQT Production Company

Proposed Revegetation Treatment: Acres Disturbed No Additional Prevegetation pH 6.3

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type Granular 10-20-20

Fertilizer amount 1/3 lbs/acre

Mulch 2 Tons/acre

4709502365

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
KY-31	40	Orchard Grass	15
Alsike Clover	5	Alsike Clover	5
Annual Rye	15		

Attach:
Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [signature]

Comments:

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Office of Oil & Gas
JUN 14 2016

Title: Oil + Gas Inspector Date: 6-7-16

Field Reviewed? (✓) Yes ( ) No

WW-9 Attachment

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc.

- Air is used to drill the top-hole sections of the wellbore (surface, intermediate, and pilot). Water based mud may be necessary depending on hole conditions to stabilize and drill the intermediate section. The pilot hole, curve, and lateral sections will be drilled with either air, water based mud, or oil based mud.

4709502365

Additives to be used in drilling medium?

- Air - biodegradable oil lubricant, detergent, defoaming, water. Water based mud – Barite, viscosifer, alkalinity control, lime, filtration control, deflocculates, biodegradable oil lubricant, defoaming, walnut shell, salt, x-cide, carbonates. Oil based mud – synthetic base oil, emulsifier, salt, lime, viscosifer, alkalinity control, filtration control, deflocculates, biodegradable oil lubricant, defoaming, carbonates.

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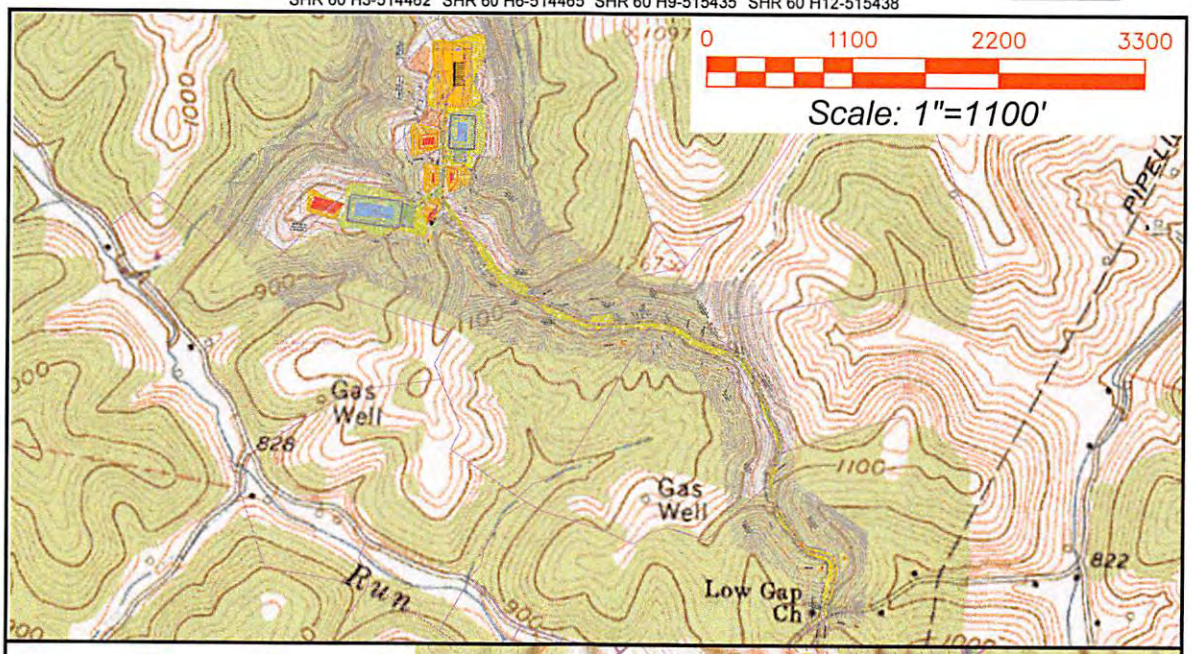
Office of Oil and Gas

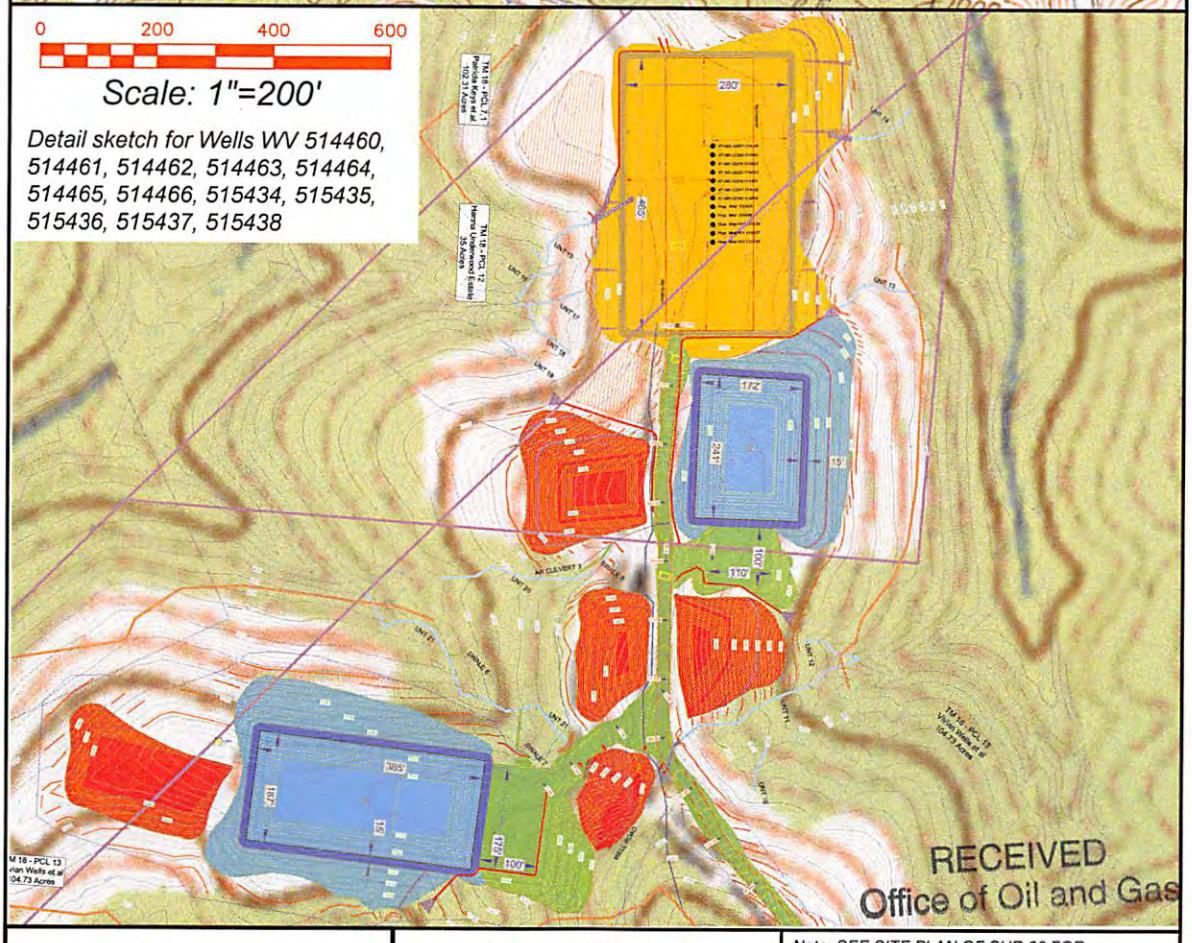
MAY 20 2016

WV Department of
Environmental Protection

WW-9

SHR 60 H1-514460 SHR 60 H4-514463 SHR 60 H7-514466 SHR 60 H10-515436
SHR 60 H2-514461 SHR 60 H5-514464 SHR 60 H8-515434 SHR 60 H11-515437
SHR 60 H3-514462 SHR 60 H6-514465 SHR 60 H9-515435 SHR 60 H12-515438





Shirley 7.5' USGS QUADRANGLE		Proposed Disturbance Area	
Projected culvert inventory. (for bid purposes only)		Well Site Location	See Site Plan
15" minimum diameter culverts	See Site Plan	Proposed Access Road	See Site Plan
24" minimum diameter culverts	See Site Plan	Approximate Total Disturbance	See Site Plan

DRAWN BY: Ben Singleton PS	DATE: April 24,2016	FILE NO. 208-13	DRAWING FILE NO. ACAD-208-13-Rec Plan

Note: SEE SITE PLAN OF SHR 60 FOR COMPLETE GRADING & DRAINAGE CONSTRUCTION INCLUDING EROSION & SEDIMENT CONTROL DETAILS, ETC.

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MAY 2 6 2016
WV Department of
Environmental Protection

SURVEYING AND MAPPING SERVICES PERFORMED BY:
ALLEGHENY SURVEYS, INC.
1-800-482-8606
Birch River Office
Phone: (304) 649-8606
Fax: (304) 649-8608
237 Birch River Road
P.O. Box 438
Birch River, WV 26610

47095023

EQT Production Water plan

Offsite disposals for Marcellus wells

CWS TRUCKING INC.
P.O. Box 391
Williamstown, WV 26187
740-516-3586
Noble County/Noble Township
Permit # 3390

LAD LIQUID ASSETS DISPOSAL INC.
226 Rankin Road
Washington, PA 15301
724-350-2760
724-222-6080
724-229-7034 fax
Ohio County/Wheeling
Permit # USEPA WV 0014

TRI COUNTY WASTE WATER MANAGEMENT, INC.
1487 Toms Run Road
Holbrook, PA 15341
724-627-7178 Plant
724-499-5647 Office
Greene County/Waynesburg
Permit # TC-1009

Waste Management - Meadowfill Landfill
Rt. 2, Box 68 Dawson Drive
Bridgeport, WV 26330
304-326-6027
Permit #SWF-1032-98
Approval #100785WV

Waste Management - Northwestern Landfill
512 E. Dry Road
Parkersburg, WV 26104
304-428-0602
Permit #SWF-1025 WV-0109400
Approval #100833WV

BROAD STREET ENERGY LLC
37 West Broad Street
Suite 1100
Columbus, Ohio 43215
740-516-5381
Washington County/Belpre Twp.
Permit # 8462

TRIAD ENERGY
P.O. Box 430
Reno, OH 45773
740-516-6021 Well
740-374-2940 Reno Office Jennifer
Nobel County/Jackson Township
Permit # 4037

KING EXCAVATING CO.
Advanced Waste Services
101 River Park Drive
New Castle, Pa. 16101
Facility Permit# PAR000029132

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MAY 20 2016
WV Department of
Environmental Protection

4709502365

EQT

Where energy meets innovation.™

Site Specific Safety Plan

EQT SHR 60 Pad

4709502365

Shirley
Tyler County, WV

For Wells:

515434

Date Prepared: **February 3, 2016**

EQT Production

Permitting Supervisor
Title

5/18/16
Date

WV Oil and Gas Inspector

Oil + Gas Inspector
Title

6/7/16
Date

Received
Office of Oil & Gas
JUN 14 2016

WW-6A1
(5/13)

Operator's Well No. 515434

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				

4709502

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:

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Office of Oil and Gas
MAY 20 2016
WV Department of
Environmental Protection

- 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

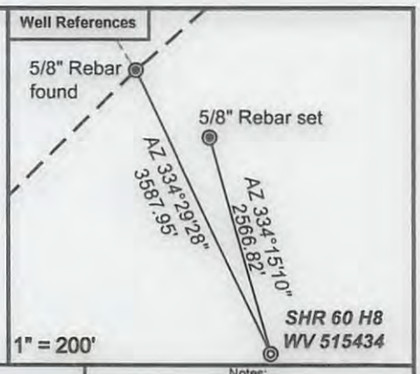
The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity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

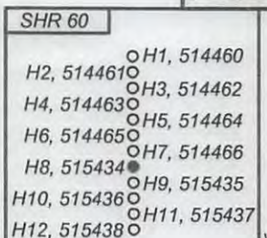
Well Operator: EQT Production Company
By: Victoria J Roark
Its: Permitting Supervisor

WV 515434
EQT Production Company
SHR 60

Tract I.D.	Tax Map No.	Parcel No.	County	District	Surface Tract Owner	Acres
1	18	12	Tyler	McElroy	Hanna A. Underwood Estate	35.00
2	18	13	Tyler	McElroy	Blaine Underwood Estate, et al.	104.73
3	18	9	Tyler	McElroy	Lawrence Rayburn, et al.	100.00
4	18	11	Tyler	McElroy	Susan Spencer	132.00
5	19	49	Tyler	McElroy	James Edward Cumberledge Heirs, et al.	57.50
6	19	50	Tyler	McElroy	Ronald L. Cumberledge	123.15
7	19	50.1	Tyler	McElroy	Terry J. & Cheryl Cumberledge	1.85
8	18	14	Tyler	McElroy	Terry J. Cumberledge, et al.	54.81
9	18	18	Tyler	McElroy	Terry J. Cumberledge, et al.	49.87
10	19	70.1	Tyler	McElroy	Edith J. Pratt	8.77
11	19	73.1	Tyler	McElroy	Daniel J. & Regina F. Haught	0.71
12	19	71	Tyler	McElroy	Edith J. Pratt	3.30
13	19	79	Tyler	McElroy	Terry J. & Cheryl Cumberledge	1.13
14	19	72	Tyler	McElroy	Terry J. & Cheryl Cumberledge	18.09
15	19	73	Tyler	McElroy	Dena S. Pratt	14.17
16	19	70	Tyler	McElroy	Ronald L. Cumberledge	13.99
17	19	74	Tyler	McElroy	John L. Marks Jr. & Linda K. Marks	19.00
18	19	75	Tyler	McElroy	Roger L. Pratt	24.19
19	19	76	Tyler	McElroy	Joshua & Zachary Stubbs	0.784
20	19	75.1	Tyler	McElroy	Joshua & Zachary Stubbs	0.04
21	19	78	Tyler	McElroy	Roger L. Pratt, et al.	43.81
22	22	1.1	Tyler	McElroy	Nick A. & Darlene K. Demoss	6.83
23	22	1	Tyler	McElroy	Nick A. & Darlene K. Demoss	18.25
24	22	2	Tyler	McElroy	June Pratt, et al.	7.00
25	22	3	Tyler	McElroy	Jacqueline Wickman, et al.	71.62
26	22	14	Tyler	McElroy	Paul Dean Steinman Jr. & Marc J. Steinman	126.00
27	22	13	Tyler	McElroy	Warren C. Putman	147.77
28	18	7.1	Tyler	McElroy	Patricia A. Keys, et al.	102.31
29	18	10	Tyler	McElroy	Susan Spencer	2.92
30	18	15	Tyler	McElroy	Susan Spencer	8.00
31	18	16	Tyler	McElroy	Donald E. Bible Sr.	35.50
32	18	23	Tyler	McElroy	Clyde Seckman Estate	111.75
33	15	32	Tyler	McElroy	Betty June Weese	360.00
34	19	1	Tyler	McElroy	Susan Spencer	53.00
35	19	48	Tyler	McElroy	Lloyd D. & Donna J. Talkington	85.00
36	19	51	Tyler	McElroy	Randall K. Anderson Jr. & Vicki L. Anderson	68.00
37	18	19	Tyler	McElroy	John Paul Davis	35.00
38	18	17	Tyler	McElroy	Allen Dale Fornash, et al.	43.00
39	19	80	Tyler	McElroy	John Paul Davis	25.00
40	19	69	Tyler	McElroy	John L. Marks Jr. & Linda K. Marks	38.50
41	22	5	Tyler	McElroy	William H. & Josh F. Middleton	102.29
42	22	4	Tyler	McElroy	Jacqueline Wickman, et al.	72.83
43	21	21	Tyler	McElroy	James B. Scott	30.00
44	22	20	Tyler	McElroy	James B. Scott	30.00
45	22	19	Tyler	McElroy	Berdina Rose, et al.	55.00
46	2	1	Doddridge	West Union	James M. Petrovich, et al.	70.00
47	2	18	Doddridge	West Union	David R. & Elizabeth A. Beveridge	125.00
48	22	18.1	Tyler	McElroy	Bruce W. Boland	18.91
49	22	18	Tyler	McElroy	Bruce W. Boland	86.75
50	2	2	Doddridge	West Union	Jason J. Boggs	66.87
51	2	11	Doddridge	West Union	Mark Ziegenfuss	99.94
52	4	1	Doddridge	Grant	Warren C. Putman	77.00
53	22	12	Tyler	McElroy	Terry Lee Dotson, et al.	48.754
54	22	13.1	Tyler	McElroy	Jacqueline Wickman, et al.	9.98

Well References





Notes:
WV 515434 coordinates are
NAD 27 N: 328,477.21 E: 1,629,439.38
NAD 27 Lat: 39.394439 Long: -80.811232
NAD 83 UTM N: 4,360,575.44 E: 516,269.46
WV 515434 Landing Point coordinates are
NAD 27 N: 329,085.34 E: 1,632,679.69
NAD 27 Lat: 39.396238 Long: -80.799799
NAD 83 UTM N: 4,360,777.21 E: 517,253.54
WV 515434 Bottom Hole coordinates are
NAD 27 N: 317,332.69 E: 1,637,668.41
NAD 27 Lat: 39.364170 Long: -80.781555
NAD 83 UTM N: 4,357,222.12 E: 518,833.10

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.	Acres	Owner
126158	58	Dulcie Frances Bonnell, et al.
125951	225	Mona R. Cumberledge, et al.
126171	78	Daniel G. Cumberledge, et al.
126140	25	Roger L. Pratt
126160	44	Michael E. Smith, et al.
126159	25	Nick A. Demoss, et al.
126141	7	Patricia J. Perry, et al.
126317	62	Donna K. Fahey, et al.
126183	89	Robert J. Nichols, et al.
126239	234	Paul Tallman, et al.

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

T.M.P.	Subsurface Easement	Acres
18-11	Susan Spencer	132.00

ALLEGHENY SURVEYS, INC.

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 Singleton
P.S. 2092

Ben R. Singleton LICENSED NO. 2092 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

SEAL

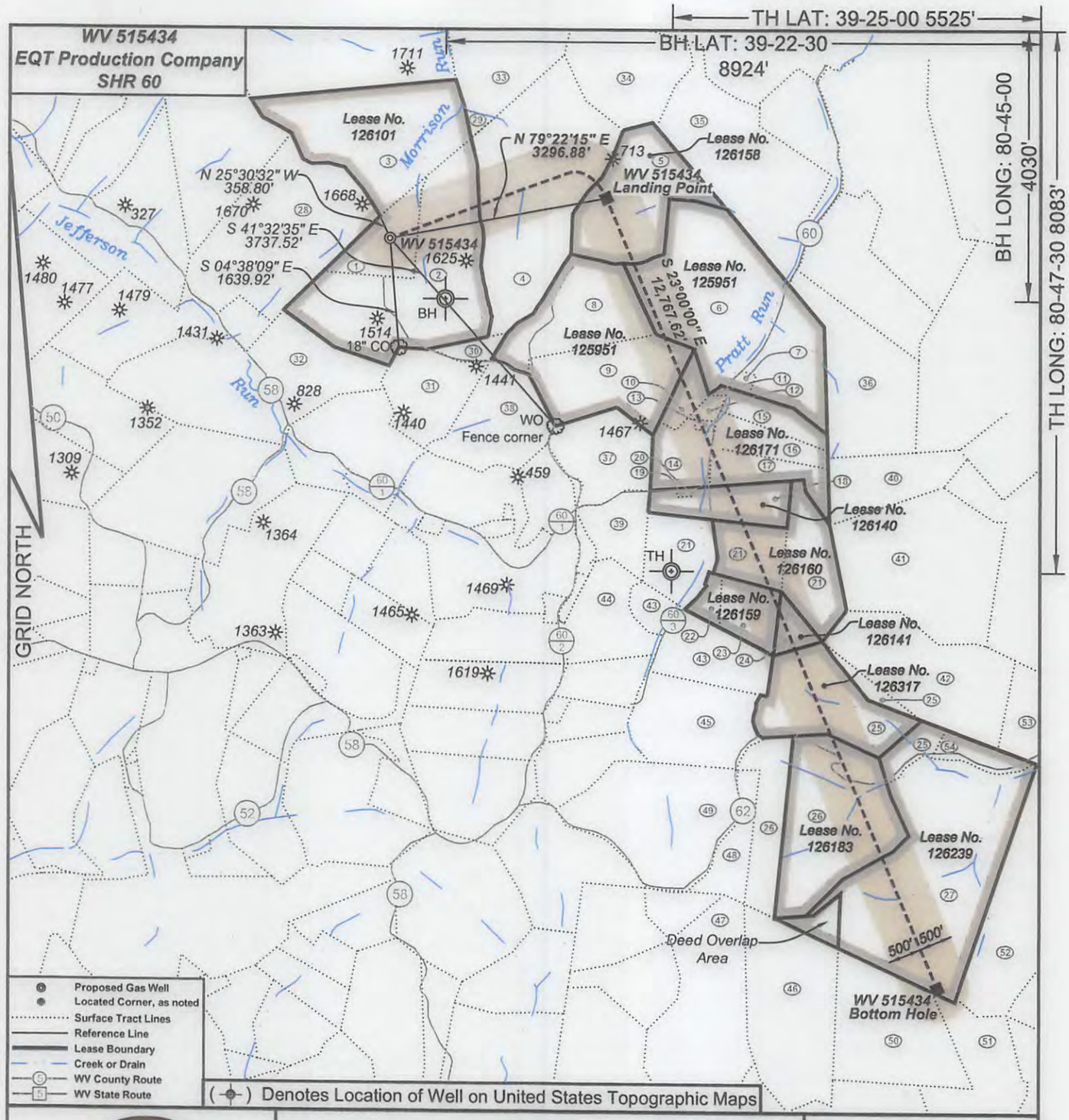
FILE NO: 208-13
DRAWING NO: 208-13 SHR 60 H8
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1:2500
PROVEN SOURCE OF ELEVATION: NGS CORS Station

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

DATE: May 12 20 16
OPERATOR'S WELL NO.: WV 515434
API WELL NO HGA
47 - 95 - 02365 HGA
STATE COUNTY PERMIT

WELL TYPE: ☐ OIL ☒ GAS ☐ LIQUID INJECTION ☐ WASTE DISPOSAL
(IF GAS) PRODUCTION: ☐ STORAGE ☐ DEEP ☒ SHALLOW
LOCATION: ELEVATION: As-Built 1,011' WATERSHED Morrison Run of McElroy Creek QUADRANGLE: Shirley
DISTRICT: McElroy COUNTY: Tyler
SURFACE OWNER: Vivian J. Wells, et al. ACREAGE: 35.38
ROYALTY OWNER: George Birklein, et al. LEASE NO: 126101 ACREAGE: 240
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: 6596

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



ALLEGHENY SURVEYS, INC.

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Ben Singleton

P.S. 2092

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SEAL

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DRAWING NO: 208-13 SHR 60 H8
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: May 12 20 16
OPERATOR'S WELL NO.: WV 515434
API WELL NO HGA
47 - 95 - 02365 HGA
STATE COUNTY PERMIT

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(IF GAS) PRODUCTION: ☐ STORAGE ☐ DEEP ☒ SHALLOW
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ROYALTY OWNER: George Birklein, et al. LEASE NO: 126101 ACREAGE: 240
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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: 6596

WELL OPERATOR: EQT Production Company
ADDRESS: 115 Professional Place PO Box 280
Bridgeport, WV 26330

DESIGNATED AGENT: Rex C. Ray
ADDRESS: 115 Professional Place PO Box 280
Bridgeport, WV 26330

WW-6A1 attachment

Operator's Well No. 515434

Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page	
126101	George Birklein, et al (current royalty owner)		***		
	WM. Blaine Underwood Et ux et al (original lessor)	Equitable Gas Co.		DB186/86	
	Equitable Gas Co.	Equitrans, Inc.		DB274/471	
	Equitrans, Inc./Equitable Gas Company/Equitable Resrouces, Inc.	Equitrans, L.P.		DB433/777	
	Equitrans, L.P.	EQT Production Company		DB396/640	
	Equitrans, L.P.	EQT Production Company		OG420/10	Tyler Co.
126212	Susan L. Spencer (current royalty owner)				
	Susan L Spencer	EQT Production Company		513/207	Subsurface
126158	Dulcie Frances Bonnell, et al (current royalty owner)		***		
	Blanche Cumberledge, et al (original lessor)	Equitable Gas Company		DB192/302	
	Equitable Gas Company	Equitrans Inc		DB274/471	
	Equitrans, Inc./Equitable Gas Company/Equitable Resrouces, Inc.	Equitrans, L.P.		DB433/777	
	Equitrans, L.P.	EQT Production Company		DB396/640	
125951	Mona R. Cumberledge, et al (current royalty owner)		1/8 MinPd		
	Jacob A. Cumberledge, et ux (original lessor)	Equitable Gas Co.		DB202/294	
	Equitable Gas Co.	Equitrans, Inc.		DB274/471	
	Equitrans, Inc./Equitable Gas Company/Equitable Resources, Inc.	Equitrans, L.P.		DB433/777	
	Equitrans, L.P.	EQT Production Company		DB396/640	Tyler Co.
126171	Daniel Cumberledge, et al (current royalty owner)		***		
	Gay Cumberledge, Widow, et al (original lessor)	Equitable Gas Company		DB193/502	
	Equitable Gas Company	Equitrans, Inc.		DB274/471	
	Equitrans, Inc.	Equitrans, L.P.		DB433/777	
	Equitrans, L.P.	EQT Production Company		DB396/640	Tyler Co.
126140	Roger L. Pratt (current royalty owner)		***		
	Aumbra Pratt, Widow (original lessor)	Equitable Gas Company		DB191/530	
	Equitable Gas Company	Equitrans, Inc.		DB274/471	
	Equitrans, Inc.	Equitrans, L.P.		DB433/777	
	Equitrans, L.P.	EQT Production Company		DB396/640	Tyler Co.
126160	Michael E. Smith, et al (current royalty owner)		***		
	Alto Pratt, et al (original lessor)	Equitable Gas Company		DB192/292	
	Equitable Gas Company	Equitrans Inc		DB274/471	
	Equitrans, Inc./Equitable Gas Company/Equitable Resrouces, Inc.	Equitrans, L.P.		DB433/777	
	Equitrans, L.P.	EQT Production Company		DB396/640	
126159	Nick A. Demoss, et al (current royalty owner)		***		
	Earl Stubbs, et ux (original lessor)	Equitable Gas Company		DB192/253	
	Equitable Gas Company	Equitrans Inc		DB274/471	
	Equitrans, Inc./Equitable Gas Company/Equitable Resrouces, Inc.	Equitrans, L.P.		DB433/777	
	Equitrans, L.P.	EQT Production Company		DB396/640	
126141	Patricia J Perry, et al (current royalty owner)		1/8 Min Pd		
	Aumbra Pratt (original lessor)	Equitable Gas Company		DB191/527	
	Equitable Gas Company	Equitrans Inc		DB274/471	
	Equitrans, Inc./Equitable Gas Company/Equitable Resrouces, Inc.	Equitrans, L.P.		DB433/777	
	Equitrans, L.P.	EQT Production Company		DB396/640	
126317	Donna K. Fahey, et al (current royalty owner)		***		
	James B. Fahey, et ux	Equitable Gas Company		DB213/184	
	Equitable Gas Company	Equitrans, Inc.		DB274/471	
	Equitrans, Inc.	Equitrans, L.P.		DB433/777	
	Equitrans, L.P.	EQT Production Company		DB396/640	Tyler Co.
126183	Robert J. Nichols, et al (current royalty owner)		***		
	Talmage Nichols, et ux	Equitable Gas Company		DB195/378	
	Equitable Gas Company	Equitrans, Inc.		DB274/471	
	Equitrans, Inc.	Equitrans, L.P.		DB433/777	
	Equitrans, L.P.	EQT Production Company		DB396/640	Tyler Co.
126239	Paul Tallman, et al (current royalty owner)		***		
	Erma M. Pitts, et al	Equitable Gas Company		DB98/357	
	Equitable Gas Company	Equitrans, Inc.		DB154/475	
	Equitrans, Inc.	Equitrans, L.P.		DB329/645	
	Equitrans, L.P.	EQT Production Company		OG268/689	Doddridge

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*** 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 deducing the amount to be paid 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

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EQT Production Company
2400 Zenith Ridge Rd.
Suite 200
Canonsburg, PA 15317
www.eqt.com

Todd Klaner
Manager, Permitting
tklaner@eqt.com

May 19, 2016

WV DEP Reviewer

RE: EQT Production Company
PAD ID – SHR60
Well# - 515434
Tyler County

Dear Reviewer,

This well indicated by this permit application contains a Subsurface Easement Agreement for non-productive portions of the well bore. Attached is a Memorandum of Subsurface Use Agreement which gives EQT the right to drill below the surface of the tract 18/11shown on the well plat.

EQT Production understands that the WVDEP will issue the permit in the normal process subject to the completeness of the requirements of the Office of Oil and Gas and does not take a position with regards to the property rights under this agreement.

EQT Production agrees that the WVDEP's issuance of the permit is in no way an affirmance or validation of EQT Production's claimed rights.

Regards,

Todd Klaner
Manager, Permitting
EQT Production Company

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Teresa A Hamilton
Tyler County 01:05:47 PM
Instrument No 116403
Date Recorded 12/14/2015
Document Type NOU
Pages Recorded 2
Book-Page 513-207
Recording Fee $5.00
Additional $6.00

MEMORANDUM OF
SUBSURFACE RIGHT-OF-WAY AND EASEMENT AGREEMENT

County Clerk please also index under the following: [Susan L. Spencer]

1. **NAME AND ADDRESS OF GRANTOR:**

   Susan L. Spencer
   HC 74 Box 98
   Alma, WV 26320

2. **NAME AND ADDRESS OF GRANTEE:**

   EQT Production Company
   625 Liberty Avenue
   Suite 1700
   Pittsburgh, PA 15222

3. **SUBSURFACE RIGHT-OF-WAY AND EASEMENT AGREEMENT REFERENCE:** A SUBSURFACE RIGHT-OF-WAY AND EASEMENT AGREEMENT ("Agreement") dated the **29th** day of **October, 2015**, was entered into for good and valuable consideration by and between **Susan L. Spencer, a married woman dealing in her sole and separate property** ("Grantor", whether one or more) and EQT Production Company ("Grantee"). Upon completion of any wellbore within the subsurface area underlying the Property (as defined in Section 4), this subsurface easement in the area of the wellbore and the one hundred (100') feet on each side of the wellbore that parallels it shall become an exclusive right of way and easement in that area. The final wellbore locations are as described in a final, as-built map(s) to be filed as a part of an affidavit in the aforesaid Clerk's Office following the completion of the following well(s) located on Grantee's ***SHR60 and SHR96*** well pads. If an as-built map is not available for a wellbore within the subsurface area underlying the Property, any third-party with the right to operate within such area may contact Grantee's land department for a copy of such as-built map. Grantee shall provide notice of additional wellbores located within the subsurface area underlying the Property by filing an amendment, affidavit or other appropriate document.

4. **DESCRIPTION OF PREMISES:** That certain tract or parcel of land containing 132 acres, more or less, located in Tyler County, West Virginia, being the same lands conveyed to Grantor by Deed dated the 21st day of October, 2011, of record in the Office of the Clerk of the County Commission of Tyler County, West Virginia in Deed Book 388, at Page 164 ("the Property").

5. **TERM:** The Agreement shall run with the land and shall remain in full force and effect until released and relinquished by the Grantee back to the Grantor, in writing.

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(REMAINDER OF PAGE LEFT BLANK INTENTIONALLY)

IN WITNESS WHEREOF, the parties have signed their names hereto as of the date of the Agreement referenced in Section 3 above.

GRANTOR:

Susan L. Spencer

Susan L. Spencer

GRANTEE:
EQT Production Company

By: John W. Damato
Its: Attorney in fact

STATE OF WEST VIRGINIA;

COUNTY OF TYLER:

I, Chad A. Vintorini, a Notary Public, in and for said State and County, do hereby certify that Susan L. Spencer, a married woman dealing in her sole and separate property, personally known to be the same persons whose names are subscribed to the foregoing instrument, appeared before me this day in person in the State and County aforesaid, and acknowledged and delivered the said instrument to be her free act and deeds for uses and purposes therein set forth.

Given under my hand this 30th day of October, 2015.

My Commission expires: Jan. 12, 2022.

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
Chad A. Vintorini
149 Wedgewood Rd.
Ravenswood, WV 26164
My Commission Expires Jan. 12, 2022

Notary Public

470950236 5

STATE OF WEST VIRGINIA;

COUNTY OF HARRISON:

I, Tina Maxwell, a Notary Public, in and for said State and County, do hereby certify that John W. Damato, personally known to be the same person whose name is subscribed to the foregoing instrument and the Attorney in fact of EQT Production Company, appeared before me this day in person in the State and County aforesaid, and acknowledged and delivered the said instrument to be his free act and deed for uses and purposes therein set forth on behalf of said company.

Given under my hand this 4th day of November, 2015.

My Commission expires: August 29, 2019.

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
TINA MAXWELL
EQT PRODUCTION COMPANY
115 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330
My Commission Expires August 29, 2019

Notary Public

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This instrument was prepared by EQT Production Company, 625 Liberty Avenue, Pittsburgh, PA 15222.

April 28, 2016

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

Re: SHR60 well pad, well number 515434
McElroy District, Tyler County

Dear Mr. Martin,

EQT Production Company is submitting an application for a new well work permit for the above well number. Upon information and belief, Operator's lease and/ or other real property rights permit it to conduct drilling operations for the subject well in the location shown on the plat, including under any public roads that the well lateral crosses.

Sincerely,

Vicki Roark
Permitting Supervisor-WV

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EQT Production 115 Professional Place I P.O. Box 280 I Bridgeport, WV 26330
T 304.848.0000 I F 304.848.0040 I www.eqt.com

WW-6AC
(1/12)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

Date of Notice Certification: 5-18-16

API No. 47- 95 -
Operator's Well No. 515434
Well Pad Name: SHR60

Notice has been given:
Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State:	WV	UTM NAD 83	Easting:	516269.4643
County:	Tyler		Northing:	4360575.439
District:	McElroy	Public Road Access:		60/2
Quadrangle:	Shirley	Generally used farm name:		Vivian J Wells et al
Watershed:	Morrison Run of McElroy Creek			

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following: *PLEASE CHECK ALL THAT APPLY	OOG OFFICE USE ONLY
☐ 1. NOTICE OF SEISMIC ACTIVITY or ☒ NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED	☐ RECEIVED/ NOT REQUIRED
☐ 2. NOTICE OF ENTRY FOR PLAT SURVEY or ☒ NO PLAT SURVEY WAS CONDUCTED	☐ RECEIVED
☒ 3. NOTICE OF INTENT TO DRILL or ☐ NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or ☐ WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)	☐ RECEIVED/ NOT REQUIRED
☒ 4. NOTICE OF PLANNED OPERATION	☐ RECEIVED
☒ 5. PUBLIC NOTICE	☐ RECEIVED
☒ 6. NOTICE OF APPLICATION	☐ RECEIVED

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Required Attachments:
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

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Certification of Notice is hereby given:

THEREFORE, I _____, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	EQT Production Company	Address:	115 Professional Place PO Box 280
By:	Victoria J Roark		Bridgeport WV 26330
Its:	Permitting Supervisor	Facsimile:	304-848-0041
Telephone:	304-848-0076	Email:	vroark@eqt.com

OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
Pamela Sykes
EQT Production
PO Box 280
Bridgeport, WV 26330
My Commission Expires Aug. 24, 2022

Subscribed and sworn before me this 18 day of May 2016.

_____ Notary Public

My Commission Expires 8-24-22

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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WW-6A
(9-13)

API NO. 47- 95 -
OPERATOR WELL NO. 515434
Well Pad Name: SHR60

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 5-18-16 **Date Permit Application Filed:** 5-18-16

Notice of:

☑ PERMIT FOR ANY WELL WORK

☐ CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

☐ PERSONAL SERVICE

☐ REGISTERED MAIL

☑ METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

☑ Application Notice ☑ WSSP Notice ☑ E&S Plan Notice ☑ Well Plat Notice is hereby provided to:

☑ SURFACE OWNER(s)
Name: See Attached
Address:

Name:
Address:

☑ SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: See Attached
Address:

Name:
Address:

☑ SURFACE OWNER(s) (Impoundments or Pits)
Name: See Attached
Address:

☑ COAL OWNER OR LESSEE
Name: See Attached
Address:

☐ COAL OPERATOR
Name:
Address:

☐ SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name:
Address:

☐ OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name:
Address:

*Please attach additional forms if necessary

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Surface Owners:

Vivian Janice Wells
1814 Oil Ridge Road
Sistersville WV 26175

George Birklein
121 Oxford St
Sistersville WV 26175

Albina Pasko
18 Jensen St
East Brunswick NJ 08816

Clifford Haug
3894 Cellar Creek Rd
Blackstone VA 23824

Timothy M Haug
3890 Cellar Creek Rd
Blackstone VA 23824

Benjamin A Haug
3894 Cellar Creek Rd
Blackstone VA 23824

Jean Jackubowski
158 Baumgardner Rd
Willow Street PA 17584

Theodore Jackubowski
1212 Kelso Blvd
Windermere FL 34786

Louis Jackubowski Jr
1922 Robindale Ave
Lancaster PA 17601

Mary Jean Ross
904 Truce Road
Holtwood PA 17532

Susan Buzzard
21 Cherokee Rd
Willow Street PA 17584

Sharon Graeff
3217 Eisenbrown Rd
Reading PA 19605

Virginia Hornberger
3415 River Road
Reading PA 19605

Anthony Jackubowski Jr
535 Shawnee St
Wilkes-Barre PA 18702

Raymond A Jackubowski
123 North Pioneer Ave
Shavertown PA 18708

Beverly A Chisdock
213 Lehigh St
Avoca PA 18641

Cynthia Kryzwicki
37 Lee Park Ave Apt 2
Wilkes Barre PA 18702

Andrea Shotts
432-2 East Main St
Plymouth PA 18651

Lisa Wesolowski
254 Lampman St
Avoca PA 18641

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Surface Owners: Access Road

Vivian Janice Wells
1814 Oil Ridge Road
Sistersville WV 26175

George Birklein
121 Oxford St
Sistersville WV 26175

Albina Pasko
18 Jensen St
East Brunswick NJ 08816

Clifford Haug
3894 Cellar Creek Rd
Blackstone VA 23824

Timothy M Haug
3890 Cellar Creek Rd
Blackstone VA 23824

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Blackstone VA 23824

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Windermere FL 34786

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1922 Robindale Ave
Lancaster PA 17601

Mary Jean Ross
904 Truce Road
Holtwood PA 17532

Susan Buzzard
21 Cherokee Road
Willow Street PA 17584

Sharon Graeff
3217 Eisenbrown Rd
Reading PA 19605

Virginia Hornberger
3415 River Road
Reading PA 19605

Anthony Jackubowski Jr
535 Shawnee St
Wilkes-Barre PA 18702

Raymond A Jackubowski
123 North Pioneer Ave
Shavertown PA 18708

Beverly A Chisdock
213 Lehigh St
Avoca PA 18641

Cynthia Kryzwicki
37 Lee Park Ave Apt 2
Wilkes-Barre PA 18702

Andrea Shotts
432-2 East Main St
Plymouth PA 18651

Lisa Wesolowski
254 Lampman St
Avoca PA 18641

John Paul Davis
544 Crystal Lake Road
West Union WV 26456

Richard E Hansen
1043 Low Gap Road
Wilber WV 26459

Joyce K Hill
88 Arvilla Rd
Bens Run WV 26146

Terry J Cumberledge
1384 Pratts Run Road
Alma WV 26320

Allen Dale Fornash
9217 Bachelor Rd NW
Waynesburg OH 44688

Donald E Bible Sr
2400 Millarton St SE
Canton OH 44707

Susan L Spencer
HC 74 Box 98
Alma WV 26320

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Surface Owners: Pits/Impoundments

Vivian Janice Wells
1814 Oil Ridge Road
Sistersville WV 26175

George Birklein
121 Oxford St
Sistersville WV 26175

Albina Pasko
18 Jensen St
East Brunswick NJ 08816

Clifford Haug
3894 Cellar Creek Rd
Blackstone VA 23824

Timothy M Haug
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Anthony Jackubowski Jr
535 Shawnee St
Wilkes-Barre PA 18702

Raymond A Jackubowski
123 North Pioneer Ave
Shavertown PA 18708

Beverly A Chisdock
213 Lehigh St
Avoca PA 18641

Cynthia Kryzwicki
213 Nicholson St
Wilkes-Barre PA 18702

Andrea Shotts
432-2 East Main St
Plymouth PA 18651

Lisa Wesolowski
254 Lampman St
Avoca PA 18641

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Coal Owners:

Vivian Janice Wells
1814 Oil Ridge Road
Sistersville WV 26175

George Birklein
121 Oxford St
Sistersville WV 26175

Albina Pasko
18 Jensen St
East Brunswick NJ 08816

Clifford Haug
3894 Cellar Creek Rd
Blackstone VA 23824

Timothy M Haug
3890 Cellar Creek Rd
Blackstone VA 23824

Benjamin A Haug
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Blackstone VA 23824

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Virginia Hornberger
3415 River Road
Reading PA 19605

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Raymond A Jackubowski
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Avoca PA 18641

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Environmental Protection

WW-6A
(8-13)

API NO. 47- 95 -
OPERATOR WELL NO. 515434
Well Pad Name: SHR60

Notice is hereby given:
Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:
Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

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Well Location Restrictions
Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:
Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:
Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

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Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

WW-6A
(8-13)

API NO. 47- 95 -
OPERATOR WELL NO. 515434
Well Pad Name: SHR60

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

(1) The proposed well work will constitute a hazard to the safety of persons;
(2) The plan for soil erosion and sediment control is not adequate or effective;
(3) Damage would occur to publicly owned lands or resources; or
(4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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WW-6A
(8-13)

API NO. 47- 95 -
OPERATOR WELL NO. 515434
Well Pad Name: SHR60

Notice is hereby given by:

Well Operator: EQT Production Company
Telephone: 304-848-0076
Email: vroark@eqt.com

Address: 115 Professional Place PO Box 280
Bridgeport WV 26330
Facsimile: 304-848-0041

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
Pamela Sykes
EQT Production
PO Box 280
Bridgeport, WV 26330
My Commission Expires Aug. 24, 2022

Subscribed and sworn before me this 18 day of May, 2016.

Pamela Sykes Notary Public

My Commission Expires 8-24-22

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Environmental Protection

WW-6A4
(1/12)

Operator Well No. 515434

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.
Date of Notice: 04/15/2016 **Date Permit Application Filed:** 04/25/2016

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

☐ HAND DELIVERY ☒ CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided,* That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however,* That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: See Attached
Address:

Name: See Attached
Address:

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: WV
County: Tyler
District: McElroy
Quadrangle: Shirley
Watershed: Morrison Run of McElroy Creek

UTM NAD 83 Easting: 516269.4643
Northing: 4360575.439
Public Road Access: 60/2
Generally used farm name: Vivian J Wells et al

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: EQT Production Company
Address: 115 Professional Place PO Box 280
Bridgeport WV 26330
Telephone: 304-848-0076
Email: vroark@eqt.com
Facsimile: 304-848-0041

Authorized Representative: Victoria Roark
Address: 115 Professional Place PO Box 280
Bridgeport WV 26330
Telephone: 304-848-0076
Email: vroark@eqt.com
Facsimile: 304-848-0041

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Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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Surface Owners:

Vivian Janice Wells
1814 Oil Ridge Road
Sistersville WV 26175

George Birklein
121 Oxford St
Sistersville WV 26175

Albina Pasko
18 Jensen St
East Brunswick NJ 08816

Clifford Haug
3894 Cellar Creek Rd
Blackstone VA 23824

Timothy M Haug
3890 Cellar Creek Rd
Blackstone VA 23824

Benjamin A Haug
3894 Cellar Creek Rd
Blackstone VA 23824

Jean Jackubowski
158 Baumgardner Road
Willow Street PA 17584

Theodore Jackubowski
1212 Kelso Blvd
Windermere FL 34786

Louis Jackubowski Jr
1922 Robindale Ave
Lancaster PA 17601

Mary Jean Ross
904 Truce Road
Holtwood PA 17532

Susan Buzzard
21 Cherokee Road
Willow Street PA 17584

Sharon Graeff
3217 Eisenbrown Rd
Reading PA 19605

Virginia Hornberger
3415 River Road
Reading PA 19605

Anthony Jackubowski Jr
535 Shawnee St
Wilkes-Barre PA 18702

Raymond A Jackubowski
123 North Pioneer Ave
Shavertown PA 18708

Beverly A Chisdock
213 Lehigh St
Avoca PA 18641

Cynthia Kryzwicki
37 Lee Park Ave Apt 2
Wilkes-Barre PA 18702

Andrea Shotts
432-2 East Main St
Plymouth PA 18651

Lisa Wesolowski
254 Lampman St
Avoca PA 18641

John Paul Davis
544 Crystal Lake Road
West Union WV 26456

Richard E Hansen
1043 Low Gap Road
Wilber WV 26459

Joyce K Hill
88 Arvilla Rd
Bens Run WV 26146

Terry J Cumberledge
1384 Pratts Run Road
Alma WV 26320

4709502365

Allen Dale Fornash
9217 Bachelor Rd NW
Waynesburg OH 44688

Donald E Bible Sr
2400 Millarton St SE
Canton OH 44707

Susan L Spencer
HC 74 Box 98
Alma WV 26320

WW-6A5
(1/12)

Operator Well No. 515434

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**
Date of Notice: 5-18-16 **Date Permit Application Filed:** 5-18-16

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

☒ CERTIFIED MAIL RETURN RECEIPT REQUESTED ☐ HAND DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: See Attached
Address:

Name: See Attached
Address:

Notice is hereby given:
Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: WV
County: Tyler
District: McElroy
Quadrangle: Shirley
Watershed: Morrison Run of McElroy Creek

UTM NAD 83 Easting: 516269.4643
Northing: 4360575.439
Public Road Access: 60/2
Generally used farm name: Vivian J Wells et al

This Notice Shall Include:
Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1)A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: EQT Production Company
Telephone: 304-848-0076
Email: vroark@eqt.com

Address: 115 Professional Place PO Box 280
Bridgeport WV 26330
Facsimile: 304-848-0041

4709502365

Oil and Gas Privacy Notice:
The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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Surface Owners:

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Susan Buzzard
21 Cherokee Road
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Sharon Graeff
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Virginia Hornberger
3415 River Road
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535 Shawnee St
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Raymond A Jackubowski
123 North Pioneer Ave
Shavertown PA 18708

Beverly A Chisdock
213 Lehigh St
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2400 Millarton St SE
Canton OH 44707

Susan L Spencer
HC 74 Box 98
Alma WV 26320

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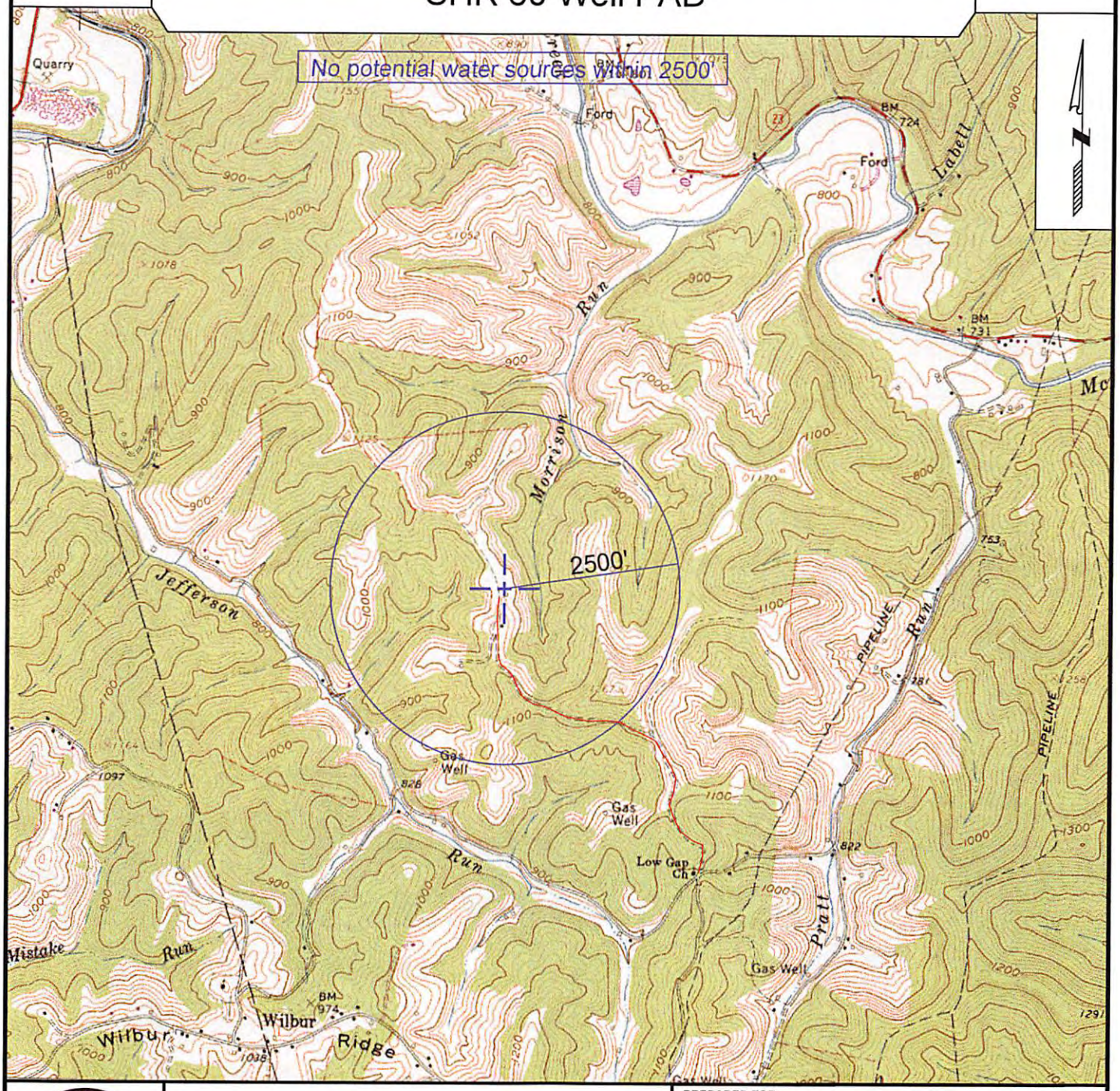
Topo Quad:	Shirley 7.5'	Scale:	1 " = 1000'
County:	Tyler	Date:	May 3, 2016
District:	McElroy	Project No:	208-12-C-13

Water

SHR 60 Well PAD



SURVEYING AND MAPPING SERVICES PERFORMED BY:

ALLEGHENY SURVEYS, INC.

1-800-482-8606
237 Birch River Road
Birch River, WV 26610
PH: (304) 649-8606
FAX: (304) 649-8608

PREPARED FOR:

EQT Production Company

P.O. Box 280
Bridgeport, WV 26330

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Earl Ray Tomblin
Governor

Paul A. Mattox, Jr., P. E.
Secretary of Transportation/
Commissioner of Highways

Reissued January 5, 2016

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the SHR 60 Well Pad, Tyler County

514460 SHR 60 H1	514461 SHR 60 H2	514462 SHR 60 H3
514463 SHR 60 H4	514464 SHR 60 H5	514465 SHR 60 H6
514466 SHR 60 H7	515434 SHR 60 H8	515435 SHR 60 H9
515436 SHR 60 H10	515437 SHR 60 H11	515438 SHR 60 H12
515968 SHR 60 H13		

Dear Mr. Martin,

This well site will be accessed from DOH Permit #06-2014-0798 issued to EQT Production Company for access to the State Road for a well site located off of Tyler County Route 60/1 SLS.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton

Gary K. Clayton P.E.
Regional Maintenance Engineer
Central Office Oil & Gas Coordinator

47095023 65

Cc: Nick Bumgardner
EQT Production Company
CH, OM, D-6
File

Anticipated Frac Additives

Chemical Names and CAS numbers

Material	Ingredient	CAS Number
Water		
Sand		
Friction Reducer	Hydrotreated light petroleum distillate	14808-60-7
Biocide	Tributyl tetradecyl phosphonium chloride	64742-47-8
Scale Inhibitor	Ammonium chloride	81741-28-8
15% Hydrochloric Acid	Hydrochloric Acid	12125-02-9
Corrosion Inhibitor	Propargyl Alcohol	7647-01-0
Corrosion Inhibitor	Methanol	107-19-7
Gelling Agent	Guar Gum	67-56-1
Oxidizing Breaker	Sodium Persulfate	9000-30-0
Buffering Agent	Potassium Carbonate	7775-27-1
		584-08-7

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MAY 20 2016

WV Department of
Environmental Protection

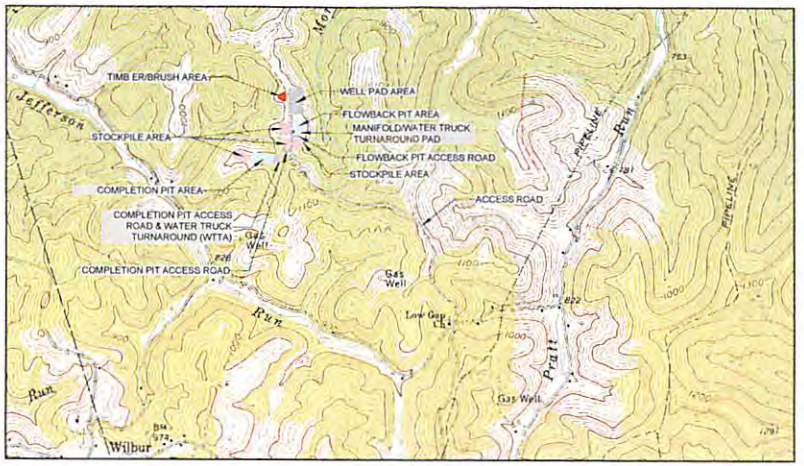
EQT SHR-60

AS-BUILT PLANS

EQT PRODUCTION COMPANY

GRAPHIC SCALE

1 INCH = 1 MILE



SHIRLEY QUAD
MCELROY CREEK WATERSHED
0 1000 2000 3000

WELL LEGEND	API NUMBER
SHR 60 H1 - 514460	47-095-02257
SHR 60 H2 - 514461	47-095-02264
SHR 60 H3 - 514462	47-095-02255
SHR 60 H4 - 514463	47-095-02220
SHR 60 H5 - 514464	47-095-02256
SHR 60 H6 - 514465	
SHR 60 H7 - 514466	
SHR 60 H8 - 515434	
SHR 60 H9 - 515435	
SHR 60 H10 - 515436	
SHR 60 H11 - 515437	
SHR 60 H12 - 515438	

AFFECTED PROPERTIES
McELROY DISTRICT - TYLER COUNTY, WV

TM - PCL 12
HANNA UNDERWOOD ESTATE
35 ACRES
SITE DISTURBANCE

DRILL PAD = 5.39 ACRES
FLOWBACK PIT = 2.35
FLOWBACK ACCESS ROAD = 0.03 ACRES
FLOWBACK PIT MANIFOLD / WTTA PAD = 0.14 ACRES
MAIN ACCESS ROAD = 0.42 ACRES
TOPSOIL PAD = 3.32 ACRES
TIMBER STORAGE = 0.98 ACRES
TOTAL DISTURBANCE = 10.63 ACRES
TOTAL WOODED AREA DISTURBANCE = 10.19 ACRES

TM 18 - PCL 13
VIVIAN WELLS et al
104.73 ACRES
SITE DISTURBANCE

FLOWBACK PIT MANIFOLD / WTTA PAD = 0.43 ACRES
FLOWBACK PIT = 0.03 ACRES
FLOWBACK PIT ACCESS ROAD = 0.10 ACRES
MAIN ACCESS ROAD = 2.73 ACRES
COMPLETION PIT = 4.49 ACRES
COMPLETION PIT TRUCK TURNAROUND (WTTA) = 1.25
COMPLETION PIT WTTA ACCESS = 0.33 ACRES
SPOIL PADS = 4.71 ACRES
TOTAL DISTURBANCE = 14.07 ACRES
TOTAL WOODED AREA DISTURBANCE = 12.71 ACRES

TM 18 - PCL 14
TERRY CUMBERLEDGE et al
54.81 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 0.35 ACRES
TOTAL DISTURBANCE = 0.35 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.23 ACRES

TM 18 - PCL 15
SUSAN SPENCER
8 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 0.85 ACRES
TOTAL DISTURBANCE = 0.85 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.51 ACRES

TM 18 - PCL 16
DONALD E. BIBLE
35.5 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 1.24 ACRES
TOTAL DISTURBANCE = 1.24 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.91 ACRES

TM 18 - PCL 17
ALLEN FORNASH
43 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 1.19 ACRES
TOTAL DISTURBANCE = 1.19 ACRES
TOTAL WOODED AREA DISTURBANCE = 1.04 ACRES

TM 18 - PCL 18
TERRY CUMBERLEDGE et al
49.87 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 1.23 ACRES
TOTAL DISTURBANCE = 1.23 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.88 ACRES

TM 18 - PCL 19
JOHN PAUL DAVIS
35 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 1.24 ACRES
TOTAL DISTURBANCE = 1.24 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.73 ACRES

TM 18 - PCL 20.2
RICHARD HANSON
19.88 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 1.13 ACRES
TOTAL DISTURBANCE = 1.13 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.80 ACRES

Dan H J PS 6/13/16
6-7-16

ASBUILT EARTHWORK GRADING VOLUMES				DESIGN VOLUMES		
DESCRIPTION	CUT (CY)	FILL (CY)	NET (CY)	CUT (CY)	FILL (CY)	NET (CY)
MAIN ACCESS ROAD	10,043	14,136	-4,093	4,419	22,070	-17,651
WELL PAD	36,752	13,260	23,492	30,808	17,295	13,513
COMPLETION PIT	35,923	22,746	13,177	31,080	22,696	8,384
FLOWBACK PIT	23,879	13,168	10,661	22,254	12,750	9,504
COMPLETION PIT ACCESS / WTTA	21,675	24	21,651	20,898	446	20,452
FLOWBACK PIT ACCESS / MANIFOLD	3,891	1,070	2,821	3,262	913	2,349
COMP / WTTA STOCKPILE	0	16,860	-16,860	0	10,459	-10,459
FLOWBACK STOCKPILE	0	3,422	3,422	0	10,952	-10,952
SPOIL PADS #1 & #2	0	8,861	8,861	0	15,140	-15,140
TOPSOIL STORAGE	0	22,108	-22,108	15,711	0	15,711
TOTAL	132,113	115,655	16,458	128,432	112,721	15,711

THESE VOLUMES ARE BASED ON THE AERIAL TOPOGRAPHY PROVIDED BY BLUE MOUNTAIN AERIAL MAPPING AND THE FIELD COLLECTED AS-BUILT SURFACE PROVIDED BY ALLEGHENY SURVEYS INC.

	ELEV	FLOW BACK PIT VOLUMES					Unincised
		CF	CY	BBLS	GALLONS	AC-FT	AC-FT
	1022	0	0	0	0	0.000	0
	1023	14,221	488	2,533	106,380	0.326	0
	1024	30,692	1,137	5,466	229,591	0.705	0
INCISED VOLUME	1025	48,380	1,792	8,616	361,906	1.111	0.000
	1026	67,661	2,506	12,050	506,138	1.553	0.443
	1027	89,293	3,307	15,903	667,956	2.050	0.919
	1028	112,105	4,152	19,965	838,601	2.574	1.463
	1029	136,791	5,066	24,362	1,023,264	3.140	2.030
	1030	164,279	6,084	29,257	1,228,888	3.771	2.661
	1031	193,015	7,149	34,375	1,443,848	4.431	3.320
	1032	223,838	8,290	39,864	1,674,419	5.139	4.028
	1033	257,825	9,549	45,917	1,928,659	5.919	4.808
CAPACITY	1034	293,019	10,853	52,185	2,191,927	6.727	5.616
	1035	330,589	12,244	58,876	2,472,969	7.589	6.479
TOP OF BERM	1036	370,746	13,731	66,028	2,773,363	8.511	7.401

	ELEV	COMPLETION PIT ASBUILT VOLUMES					Unincised
		CF	CY	BBLS	GALLONS	AC-FT	AC-FT
	1008	0	0	0	0	0.000	0
	1009	13,253	491	2360	99139	0.304	0
	1010	38,445	1424	6847	287588	0.883	0
	1011	70,889	2626	12625	530285	1.627	0
	1012	105,941	3924	18867	792491	2.432	0
INCISED VOLUME	1013	144,744	5361	25778	1082757	3.323	0.000
	1014	184,967	6851	32942	1383645	4.246	0.923
	1015	227,788	8437	40568	1703967	5.229	1.906
	1016	274,704	10174	48923	2054922	6.306	2.983
	1017	323,074	11966	57538	2416753	7.417	4.094
	1018	374,356	13865	66671	2800368	8.594	5.271
	1019	430,310	15937	76636	3218932	9.879	6.556
	1020	487,715	18064	86859	3648349	11.196	7.874
CAPACITY	1021	548,197	20304	97631	4100785	12.585	9.262
	1022	613,756	22732	109307	4591198	14.090	10.767
TOP OF BERM	1023	680,900	25219	121264	5093469	15.631	12.308

FLOODPLAIN CONDITIONS

DO SITE CONSTRUCTON ACTIVITIES TAKE PLACE IN FLOODPLAIN	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR	NO
HEC-RAS STUDY COMPLETED	N/A
FLOODPLAIN SHOWN ON DRAWINGS	N/A
FIRM MAP NUMBER(S) FOR SITE	54095C0175C
ACREAGES OF CONSTRUCTION IN FLOODPLAIN	N/A

As-Built Certification

These drawings have been prepared from actual field surveys and reflect the locations and as-built conditions known to exist following construction of this site, to the best of my knowledge

SHEET INDEX

COVER SHEET / LOCATION MAP	1
AS-BUILT SITE PLAN	2-6
AS-BUILT ROAD PROFILE	7

Project Contacts

Chris Metzgar - EQT Production Company
304-848-0075 Office

Surveyor & Engineer

Ben Singleton - PS - Allegheny Surveys Inc
304-649-8606 Off

Tom Corathers - PE, PS - Hornor Brothers Engineers
304-624-6445 Office

SITE LOCATIONS NAD 83	LATITUDE	LONGITUDE
Center of Pad	39.394582	-80.811061
Center of Flow Back Pit	39.393399	-80.810802
Center of Completion Pit	39.391721	-80.813088
Beginning of Access Road	39.383561	-80.800865

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West Virginia State Law
(Section XIV: Chapter 24-C)
Requires that you call two business days before you dig in the state of West Virginia.
IT'S THE LAW!!

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DATE	REVISIONS
01.08.2016	Add API Nos. to H1,H2,H3,H4,H5

Allegheny Surveys Inc.
P.O. Box 438
237 Birch River Road
Birch River, WV 26610
304-649-8606

Hornor Bros. Engineers
Since 1902 Civil, Mining, Environmental and Geotechnical
140 South Bend Drive, Post Office Box 186, Clarksburg, West Virginia, 26301 (304) 624-6445

THIS DOCUMENT PREPARED FOR EQT PRODUCTION COMPANY

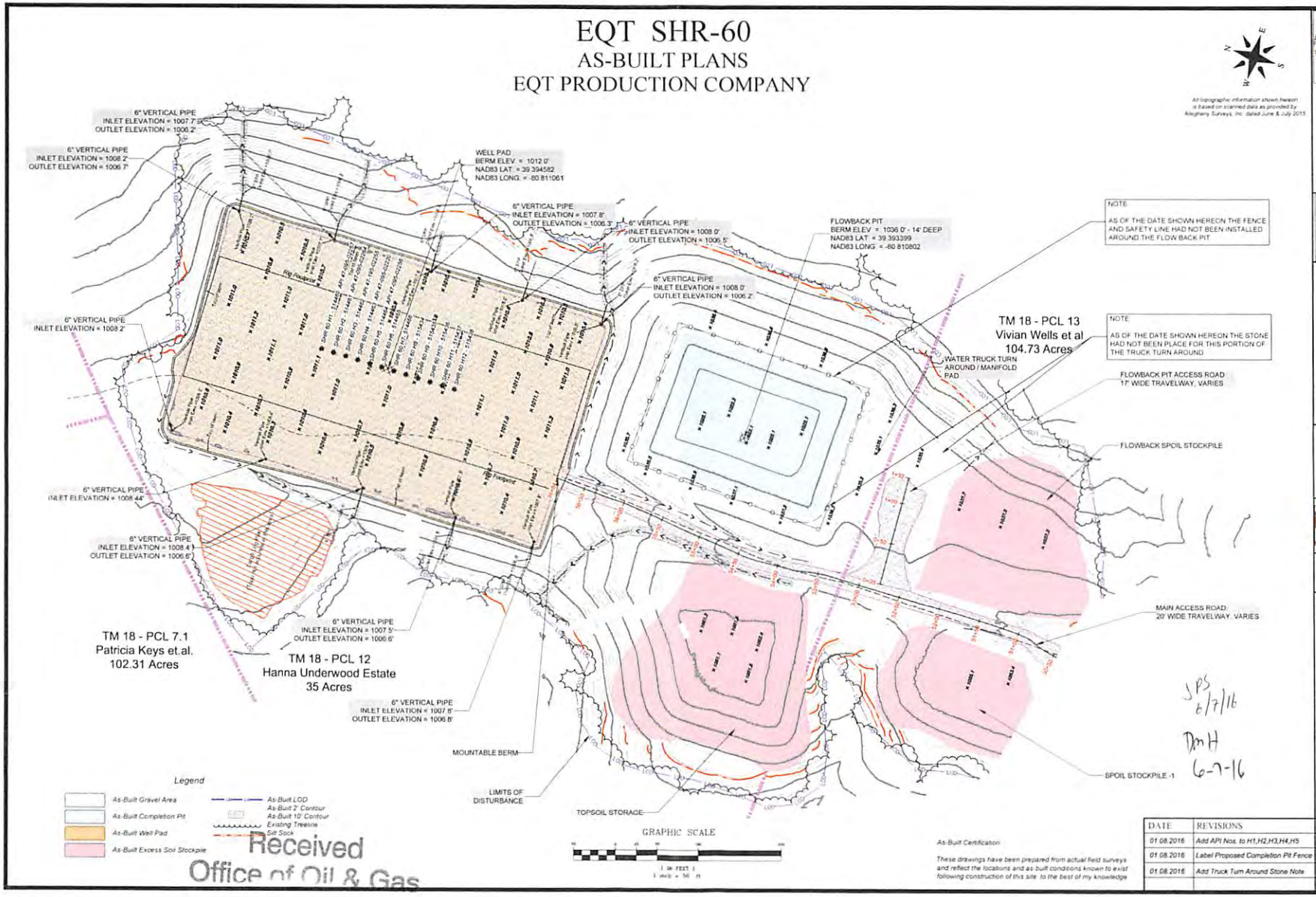
COVER SHEET/SITE LOCATION MAP
SHR 60
WELL PAD SITE
McELROY DISTRICT
TYLER COUNTY, WV

Date 7-21-2015
Scale As Shown
Designed By: TJH
File No.
Page 1 of 7

Received
Office of Oil & Gas
JUN 14 2016

4709502365

EQT SHR-60
AS-BUILT PLANS
EQT PRODUCTION COMPANY



DATE	REVISIONS
01.08.2016	Add API Nos. to H1,H2,H3,H4,H5
01.08.2016	Label Proposed Completion Pit Fence
01.08.2016	Add Truck Turn Around Stone Note

Allegheny Surveys Inc.
P.O. Box 438
237 Birch River Road
Birch River, WV 26610
304-649-8606

Hornor Bros. Engineers
Civil, Mining, Environmental and Petroleum Engineering

THIS DOCUMENT PREPARED FOR EQT PRODUCTION COMPANY

AS-BUILT SITE PLAN
SHR 60
DRILL PAD SITE
McELROY DISTRICT
TYLER COUNTY, WV

Date
Scale 1" = 50'

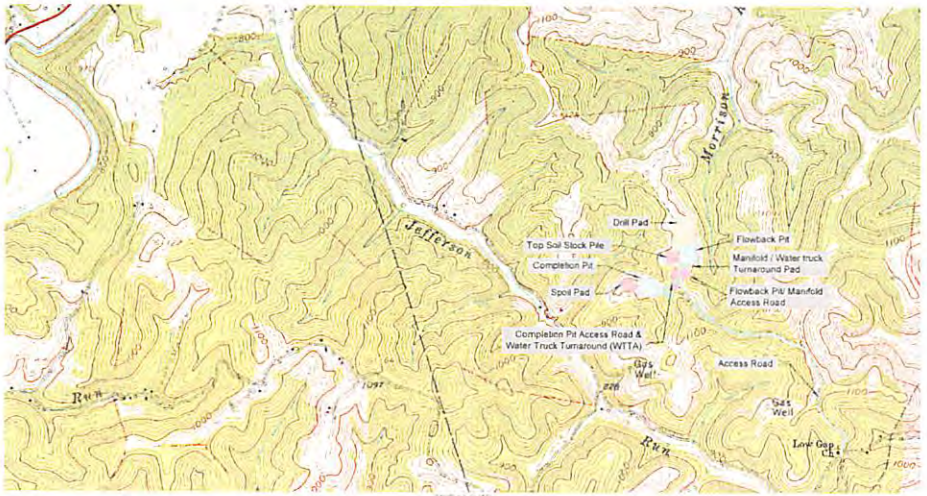
Received
Office of Oil & Gas
JUN 14 2016

4709502365

SHR - 60 - ALT

FINAL SITE DESIGN ALT, CONSTRUCTION PLANS, & EROSION & SEDIMENT CONTROL PLANS
EQT PRODUCTION COMPANY

West Virginia Coordinate System of 1983
State Plane Grid North
Elevations NAVD88
Established By Survey Grade GPS



SHIRLEY QUAD
MCELROY CREEK WATERSHED
1000 2000 3000

FLOODPLAIN CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR	NO
HEC-RAS STUDY COMPLETED	N/A
FLOODPLAIN SHOWN ON DRAWINGS	N/A
FIRM MAP NUMBER(S) FOR SITE	54095C0175C
ACREAGES OF CONSTRUCTION IN FLOODPLAIN	N/A

SITE LOCATIONS NAD83		
	LATITUDE	LONGITUDE
Center of Pad	39.394562	80.811106
Center of Flow Back Pit	39.393400	80.810804
Center of Completion Pit	39.391721	80.811309
Beginning of Access Road	39.393577	80.808830

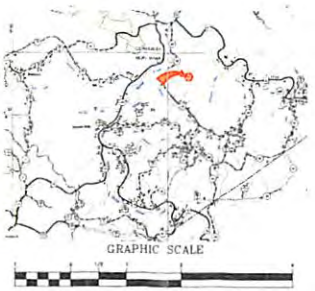
NO WETLANDS ARE IMPACTED

THE CURRENT SOIL pH IS 6.3

Design Certification

The drawings, construction notes, and reference diagrams attached hereto have been prepared in accordance with the West Virginia Code of State Rules Division of Environmental Protection Office of Oil and Gas §35-4-21 The information reflects a temporary frac pit pond. The computed above grade storage volume is less than 15 acre feet filling method pumped. frac pond is lined

APPROVED
WVDEP OOG
3-24-15



SHEET INDEX

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Project Contacts

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304-672-9921

Dan Taylor- Consol
1-724-485-4014

Surveyor & Engineer

Ben Singleton - PS - Allegheny Surveys Inc
304-649-8606 Off

Tom Corathers - PE, PS - Hornor Brothers Engineers
304-624-6445 Office

DMH 6-7-16
JPS 6/9/16

AFFECTED PROPERTIES
McELROY DISTRICT - TYLER COUNTY, WV

TM 18 - PCL 12
HANNA LAUDERWOOD ESTATE
28 ACRES
SITE DISTURBANCE

DRILL PAD = 5.39 ACRES
FLOWBACK PIT = 2.35
FLOWBACK ACCESS ROAD = 0.03 ACRES
FLOWBACK PIT - MANIFOLD / WTTA PAD = 0.14 ACRES
MAIN ACCESS ROAD = 0.42 ACRES
TOPSOIL PAD = 1.32 ACRES
TIMBER STORAGE = 0.98 ACRES
TOTAL DISTURBANCE = 10.63 ACRES
TOTAL WOODED AREA DISTURBANCE = 10.19 ACRES

TM 18 - PCL 13
VIVIAN WELLS et al
10.73 ACRES
SITE DISTURBANCE

FLOWBACK PIT MANIFOLD / WTTA PAD = 1.43 ACRES
FLOWBACK PIT = 0.03 ACRES
FLOWBACK PIT ACCESS ROAD = 0.11 ACRES
MAIN ACCESS ROAD = 2.13 ACRES
COMPLETION PIT = 4.49 ACRES
COMPLETION PIT TRUCK TURNAROUND / WTTA = 1.25
COMPLETION PIT / WTTA ACCESS = 0.33 ACRES
SPOIL PADS = 4.71 ACRES
TOTAL DISTURBANCE = 14.27 ACRES
TOTAL WOODED AREA DISTURBANCE = 12.71 ACRES

TM 18 - PCL 14
TERRY CUMBERLEDGE et al
34.91 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 0.35 ACRES
TOTAL DISTURBANCE = 0.35 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.33 ACRES

TM 18 - PCL 15
SUSAN SPENCER
8 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 0.85 ACRES
TOTAL DISTURBANCE = 0.85 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.51 ACRES

TM 18 - PCL 16
DONALD E. BIBLE
25.5 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 1.24 ACRES
TOTAL DISTURBANCE = 1.24 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.91 ACRES

TM 18 - PCL 17
ALLEN FORNASH
43 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 1.19 ACRES
TOTAL DISTURBANCE = 1.19 ACRES
TOTAL WOODED AREA DISTURBANCE = 1.04 ACRES

TM 18 - PCL 18
TERRY CUMBERLEDGE et al
49.87 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 1.23 ACRES
TOTAL DISTURBANCE = 1.23 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.96 ACRES

TM 18 - PCL 19
JOHN PAUL DAVIS
30 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 1.24 ACRES
TOTAL DISTURBANCE = 1.24 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.13 ACRES

TM 18 - PCL 20.3
RICHARD HANSON
15.86 ACRES
SITE DISTURBANCE

MAIN ACCESS ROAD = 1.12 ACRES
TOTAL DISTURBANCE = 1.12 ACRES
TOTAL WOODED AREA DISTURBANCE = 0.80 ACRES

DATE	REVISIONS
03-31-2015	[illegible]
10-01-2015	[illegible]

Allegheny Surveys Inc.
P.O. Box 438
237 Birch River Road
Birch River, WV 26610
304-649-8606

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EQT

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COVER SHEET AND LOCATION MAP
SHR - 60
DRILL PAD SITE - ALT
McELROY DISTRICT
TYLER COUNTY, WV

Date: 10-16-2014
Scale: AS NOTED
Designed by: DBL & DEL
Job No: [illegible]
Page: 1 of 29

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Anticipated Frac Additives
Chemical Names and CAS numbers

4709502365

Material	Ingredient	CAS Number
Water		
Sand		
Friction Reducer	Hydrotreated light petroleum distillate	14808-60-7
Biocide	Tributyl tetradecyl phosphonium chloride	64742-47-8
Scale Inhibitor	Ammonium chloride	81741-28-8
15% Hydrochloric Acid	Hydrochloric Acid	12125-02-9
Corrosion Inhibitor	Propargyl Alcohol	7647-01-0
Corrosion Inhibitor	Methanol	107-19-7
Gelling Agent	Guar Gum	67-56-1
Oxidizing Breaker	Sodium Persulfate	9000-30-0
Buffering Agent	Potassium Carbonate	7775-27-1
		584-08-7

DMH 6-7-16 JS 6-7-16

4709502

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