

Well Operator's Report of Well Work



Well Number: 512892

API: 47 - 095 - 02280

Submission: Initial Amended

Notes:

Received
Office of Oil & Gas
JUL 14 2016

APPROVED

NAME:

DATE:

A handwritten signature in blue ink, appearing to be 'A. J. ...', is written over the 'DATE:' label.

10/28/2016

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

API 47-095-02280 County TYLER District CENTERVILLE
Quad WEST UNION 7.5' Pad Name WEU4 Field/Pool Name N/A
Farm name DONNA J. PETER Well Number 512892
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,357,471.45 Easting 515,451.62
Landing Point of Curve Northing 4,357,445.45 Easting 515,285.94
Bottom Hole Northing 4,358,418.91 Easting 514,812.22

Elevation (ft) 1079' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

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

Mud Type(s) and Additive(s)
Water base Mud 12.5 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution, calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 08/28/2015 Date drilling commenced 12/16/2015 Date drilling ceased 03/15/2016
Date completion activities began 4/9/2016 Date completion activities ceased 4/20/2016
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 132',175',186',204' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1128',1219',1222' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 228',279',696' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
10/28/2016

API 47-095 - 02280 Farm name DONNA J. PETER Well number 512892

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24"	20"	40'	NEW	A-500	N/A	Y
Surface	17 1/2"	13 3/8"	753'	NEW	J-55	205'	Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	2868'	NEW	A-500	1772'	Y
Intermediate 2							
Intermediate 3							
Production	8 1/2"	5 1/2"	10712'	NEW	P-110	N/A	N
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	38	15.6	1.18	44.84	0	8
Surface	CLASS A	637	15.6	1.21	770.77	0	8
Coal							
Intermediate 1	CLASS A / CLASS H	575 / 439	15.6 / 16.0	1.19 / 1.24	1228.61	0	8
Intermediate 2							
Intermediate 3							
Production	Class H/ Class H	594/484	15.2/15.6	1.25/2.06	1740	3362	72
Tubing							

Drillers TD (ft) 10,729' Loggers TD (ft) N/A

Deepest formation penetrated MARCELLUS Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5016

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

CONDUCTOR: NONE

SURFACE: 3 CENTRALIZERS (LESS THAN EVERY 500')

INTERMEDIATE: 7 CENTRALIZERS (LESS THAN EVERY 500')

PRODUCTION: Composite body centralizers run every joint from bottom to 4991'

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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API 47- 095 - 02280 Farm name DONNA J. PETER Well number 512892

Drilling Contractor Savanna Drilling Rig 803
Address 125 Industry Road City Waynesburg State PA Zip 15370

Logging Company KLX ENERGY SERVICES
Address 1498 Evans City Rd City Evans City State PA Zip 16033

Logging Company GYRODATA
Address 601 MAYER ST. City BRIDGEVILLE State PA Zip 15017

Logging Company Phoenix Technology Services
Address 1805 Brittmoore Road City Houston State TX Zip 77043

Logging Company ProDirectional
Address 421 North Metro Drive City Morgantown State WV Zip 26501

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512892 Final Formations API# 47-095-02280

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
SAND/SHALE	1		240	240
COAL	240	240	242	242
SAND/SHALE	242	242	291	291
COAL	291	291	295	295
SAND/SHALE	295	295	706	706
COAL	706	706	710	710
SAND/SHALE	710	710	1545	1545
MAXTON	1545	1545	1839	1839
BIG LIME	1839	1839	2261	2261
WEIR	2261	2261	2379	2379
GANTZ	2379	2379	2472	2472
50F	2472	2472	2697	2697
GORDON	2697	2697	3017	3017
BAYARD	3017	3017	3349	3349
WARREN	3349	3349	3444	3444
SPEECHLEY	3444	3444	3865	3865
BALLTOWN A	3865	3865	4003	4003
BALLTOWN B	4003	4003	4300	4300
BRADFORD	4300	4300	4564	4564
RILEY	4564	4564	4981	4981
BENSON	4981	4981	5232	5227
ALEXANDER	5232	5227	5826	5726
RHINESTREET	5826	5726	6124	5979
RHINESTREET UPPER	6124	5979	6468	6293
SONYEA	6468	6293	6602	6403
MIDDLESEX	6602	6403	6664	6448
GENESSEE	6664	6448	6782	6519
GENESE0	6782	6519	6842	6548
TULLY	6842	6548	6936	6583
MARCELLUS	6936	6583	10729	6644

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512892 47-095-02280-0000 - Stimulated Stages

Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	4/9/2016	12.30	7,530	8,559	5,322	0	502	0
1	4/10/2016	100.41	8,108	8,618	3,179	252,100.00	6,430	0
2	4/10/2016	101.00	8,588	8,771	4,401	252,040.00	5,939	0
3	4/10/2016	100.80	8,434	8,750	3,359	255,500.00	5,927	0
4	4/11/2016	100.80	8,583	8,822	3,529	249,390.00	5,951	0
5	4/11/2016	100.60	8,103	8,982	4,153	249,040.00	5,771	0
6	4/12/2016	99.40	8,281	8,924	3,488	256,180.00	5,908	0
7	4/12/2016	100.29	7,952	8,494	4,380	252,160.00	5,992	0
8	4/12/2016	101.70	8,317	8,623	4,345	249,060.00	5,808	0
9	4/13/2016	100.39	7,458	7,655	4,371	251,000.00	5,957	0
10	4/14/2016	100.40	7,293	7,402	4,624	250,920.00	5,728	0
11	4/14/2016	99.92	7,574	9,517	4,423	249,100.00	5,893	0
12	4/14/2016	101.60	7,938	8,229	3,986	251,020.00	5,745	0
13	4/15/2016	97.83	8,362	8,868	4,697	250,700.00	5,688	0
14	4/15/2016	101.80	8,154	8,351	3,769	248,300.00	5,616	0
15	4/16/2016	101.60	8,115	8,944	4,728	251,500.00	5,790	0
16	4/16/2016	101.98	7,926	8,502	4,481	251,100.00	5,892	0
17	4/17/2016	101.74	7,862	8,474	4,674	249,640.00	6,036	0
18	4/17/2016	100.80	7,418	7,638	4,530	250,800.00	5,708	0
19	4/18/2016	101.60	7,647	8,593	4,080	251,640.00	5,840	0
20	4/18/2016	101.80	7,592	8,037	4,239	249,320.00	5,618	0
21	4/19/2016	94.68	8,535	9,290	4,514	249,300.00	5,420	0
22	4/19/2016	95.44	8,465	9,241	4,662	250,000.00	5,577	0
23	4/20/2016	101.40	8,106	8,665	4,802	250,840.00	5,738	0
24	4/20/2016	100.40	8,132	8,440	4,419	250,200.00	5,864	0
25	4/20/2016	99.50	8,233	8,686	4,741	250,700.00	6,267	0

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512892 47-095-02280-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	4/9/2016	10,724	10,725	10	MARCELLUS
1	4/10/2016	10,578	10,670	32	MARCELLUS
2	4/10/2016	10,428	10,550	40	MARCELLUS
3	4/10/2016	10,278	10,398	40	MARCELLUS
4	4/11/2016	10,128	10,250	40	MARCELLUS
5	4/11/2016	9,978	10,100	40	MARCELLUS
6	4/11/2016	9,828	9,950	40	MARCELLUS
7	4/12/2016	9,678	9,800	40	MARCELLUS
8	4/12/2016	9,528	9,650	40	MARCELLUS
9	4/13/2016	9,378	9,500	40	MARCELLUS
10	4/13/2016	9,228	9,348	40	MARCELLUS
11	4/14/2016	9,078	9,200	40	MARCELLUS
12	4/14/2016	8,928	9,048	40	MARCELLUS
13	4/15/2016	8,778	8,900	40	MARCELLUS
14	4/15/2016	8,628	8,750	40	MARCELLUS
15	4/15/2016	8,478	8,600	40	MARCELLUS
16	4/16/2016	8,328	8,448	40	MARCELLUS
17	4/17/2016	8,178	8,298	40	MARCELLUS
18	4/17/2016	8,028	8,148	40	MARCELLUS
19	4/18/2016	7,878	8,000	40	MARCELLUS
20	4/18/2016	7,728	7,850	40	MARCELLUS
21	4/19/2016	7,578	7,700	40	MARCELLUS
22	4/19/2016	7,428	7,550	40	MARCELLUS
23	4/19/2016	7,278	7,400	40	MARCELLUS
24	4/20/2016	7,128	7,250	40	MARCELLUS
25	4/20/2016	6,978	7,100	40	MARCELLUS

10/28/2016

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/9/2016
Job End Date:	4/20/2016
State:	West Virginia
County:	Tyler
API Number:	47-095-02280-00-00
Operator Name:	EQT Production
Well Name and Number:	512892
Latitude:	39.36649000
Longitude:	-80.82080000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,583
Total Base Water Volume (gal):	6,157,410
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Keane Group	Carrier/Base Fluid	Water	7732-18-5	100.00000	88.78272	None
Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100.00000	10.83259	None
MC MX 5-3886	Multi-Chem	Specialty Brine	Calcium nitrate.4H2O	13477-34-4	100.00000	0.10912	None
Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03396	None
FFR760	Keane Group	Friction Reducer	Hydrotreated Light Distillate	64742-47-8	30.00000	0.01207	None
			Alkyl Alcohol	68002-96-0	10.00000	0.00402	None
			Oxyalkylated alcohol A	69227-21-0	5.00000	0.00207	None
MC MX 8-2544	Multi-Chem	Live Culture - Nitrate Reducing Bacteria	Sodium chloride	7647-14-5	100.00000	0.00945	None
			Sodium nitrate	7631-99-4	5.00000	0.00047	None
EC6330A	Keane Group	Scale Inhibitor	Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00145	None

AI 600	Keane Group	Ethylene Glycol	107-21-1	5.00000	0.00145	None
		Corrosion Inhibitor				
		Ethylene Glycol	107-21-1	40.00000	0.00022	None
		Dimethylformamide	68-12-2	20.00000	0.00011	None
		Nonyl Phenol Ethoxylate, Branched	127087-87-0	15.00000	0.00008	None
		Cinnamialdehyde	104-55-2	15.00000	0.00008	None
		Pyridine, alkyl derives, quaternized with benzyl chloride	68909-18-2	15.00000	0.00008	None
		2-Butoxyethanol	111-76-2	5.00000	0.00003	None
		1-Octanol	111-87-5	5.00000	0.00003	None
		1-Decanol	112-30-1	5.00000	0.00003	None
		Methanol	67-56-1	2.50000	0.00001	None
		Triethyl Phosphate	78-40-0	2.50000	0.00001	None
		Alkyl Pyridine	68391-11-7	1.00000	0.00001	None

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided. Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. AS DRILLED INFORMATION PROVIDED BY EQT.

**EQT PRODUCTION COMPANY
W.H. ASH ET AL LEASE
152 ACRES±
WELL NO. WV 512892
(WEU4 H3)**

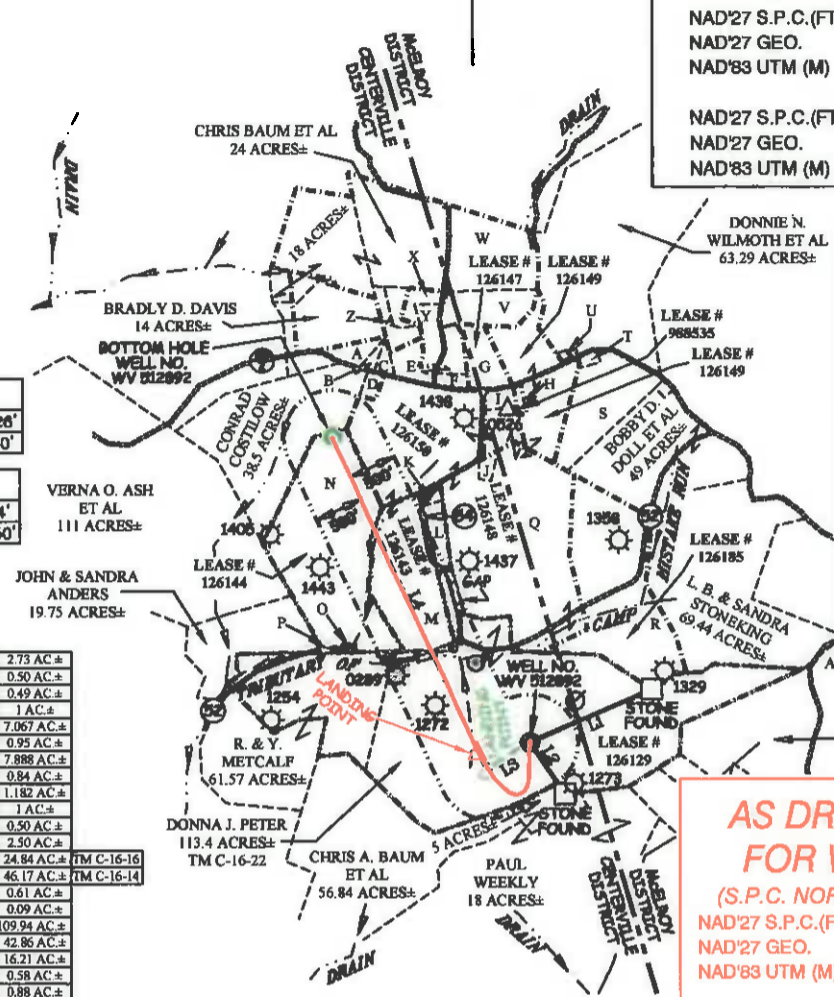
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'27 S.P.C.(FT) N. 318,336.31 E. 1,626,585.65
 NAD'27 GEO. LAT-(N) 39.366485 LONG-(W) 80.820801
 NAD'83 UTM (M) N. 4,357,471.45 E. 515,451.82

LANDING POINT
 NAD'27 S.P.C.(FT) N. 318,046.31 E. 1,626,140.19
 NAD'27 GEO. LAT-(N) 39.366671 LONG-(W) 80.822361
 NAD'83 UTM (M) N. 4,357,380.83 E. 515,317.39

BOTTOM HOLE
 NAD'27 S.P.C.(FT) N. 321,480.77 E. 1,624,538.66
 NAD'27 GEO. LAT-(N) 39.375034 LONG-(W) 80.828205
 NAD'83 UTM (M) N. 4,358,419.00 E. 514,812.03

LEGEND

LEASE LINE	---
SURFACE LINE	----
PROPOSED PATH	----
AS DRILLED PATH	----
OFFSET LINE	----
THE LINE	----
CREEK	----
ROAD	----
FENCE LINE	----
COUNTY ROUTE	----
PROPOSED WELL	⊙
EXISTING WELL	⊙
PERMITTED WELL	⊙
ABANDONED WELL	⊙
PLUGGED WELL	⊙
STORAGE WELL	⊙
CENTERVILLE DISTRICT TAX MAP-PARCEL	C-00-00
McELROY DISTRICT TAX MAP-PARCEL	M-00-00



CORNER TIES

BEARING & DISTANCE	
L1 N 66°30' E	1378.26'
L2 S 34°20' E	846.40'

LATERAL PATH

BEARING & DISTANCE	
L3 S 56°56' W	531.54'
L4 N 26°00' W	3789.50'

A	BRADLEY D. DAVIS	2.73 AC±
B	WILLIAM DOLL ET AL	0.50 AC±
C	WILLIAM DOLL ET AL	0.49 AC±
D	WILLIAM DOLL	1 AC±
E	FRIEDERIKE DOHRMANN	7.067 AC±
F	WILBUR COMMUNITY CLUB	0.95 AC±
G	JOHN STARKEY	7.888 AC±
H	CHRIS A. BAUM ET AL	0.84 AC±
I	TERRY G. WEEKLEY	1.182 AC±
J	RUTH O. & OLIN L. DOLL	1 AC±
K	GARY PROSSER	0.50 AC±
L	GARY & BARBARA PROSSER	2.50 AC±
M	HOWARD SHRIVER ET AL	24.84 AC± TM C-16-16
N	CONRAD COSTILOW	46.17 AC± TM C-16-14
O	RICHARD & YVONNE METCALF	0.61 AC±
P	JOHN & SANDRA ANDERS	0.09 AC±
Q	ELIZABETH ABRUZZINO	109.94 AC±
R	L.B. & SANDRA STONEKING	42.86 AC±
S	PERRY J. HAUGHT	16.21 AC±
T	BILLY J. DOLL	0.58 AC±
U	KATHLEEN WINKELMANN	0.88 AC±
V	CHRIS A. BAUM	13 AC±
W	CHRIS A. BAUM	14 AC±
X	WILBUR CEMETERY	2 AC±
Y	WILBUR CHAPEL	0.84 AC±
Z	WILBUR CEMETERY COMMUNITY INC	0.197 AC±

ROYALTY OWNERS

FANCY M. MERCER ET AL	26 AC±	LEASE NO. 128143
ROBA B. CRESS ET AL	47 AC±	LEASE NO. 128144

**AS DRILLED COORDINATES
FOR WELL NO. WV 512892**
 (S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'27 S.P.C.(FT) N. 318,336.31 E. 1,626,585.65
 NAD'27 GEO. LAT-(N) 39.366485 LONG-(W) 80.820801
 NAD'83 UTM (M) N. 4,357,471.45 E. 515,451.82

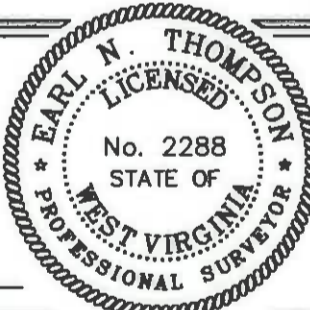
LANDING POINT
 NAD'27 S.P.C.(FT) N. 318,260.08 E. 1,626,040.52
 NAD'27 GEO. LAT-(N) 39.366254 LONG-(W) 80.822725
 NAD'83 UTM (M) N. 4,357,445.45 E. 515,285.94

BOTTOM HOLE
 NAD'27 S.P.C.(FT) N. 321,480.49 E. 1,624,539.29
 NAD'27 GEO. LAT-(N) 39.375034 LONG-(W) 80.828203
 NAD'83 UTM (M) N. 4,358,418.91 E. 514,812.22

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE SEPTEMBER 03, 20 14
 REVISED 06/04/15, 06/18/15, 04/06/16 & 06/13/16
 OPERATORS WELL NO. WV 512892
 API WELL NO. 47 - 095 - 02280H
 STATE COUNTY PERMIT



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.



P.S.
 2288 *Earl N. Thompson*

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7701AD512892R
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

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

LOCATION: ELEVATION 1,088'(GROUND) 1,079'(PROPOSED) WATERSHED TRIBUTARY OF CAMP MISTAKE RUN
 DISTRICT CENTERVILLE COUNTY TYLER QUADRANGLE WEST UNION 7.5'
 SURFACE OWNER DONNA J. PETER ACREAGE 113.40±
 ROYALTY OWNER WACO OIL & GAS CO. INC. ET AL ACREAGE 152±
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER
 PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
 ESTIMATED DEPTH TVD 6.698'

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