

Well Operator's Report of Well Work



Well Number: 512891

API: 47 - 095 - 02279

Submission: Initial Amended

Notes:

Received
Office of Oil & Gas
JUL 20 2016

10/28/2016

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

API 47-095-02279 County TYLER District CENTERVILLE
Quad WEST UNION 7.5' Pad Name WEU4 Field/Pool Name N/A
Farm name DONNA J. PETER Well Number 512891
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 N. 4,357,475.69 Easting E. 515,449.91
Landing Point of Curve Northing N. 4,357,713.18 Easting E. 515,803.67
Bottom Hole Northing N. 4,358,773.00 Easting E. 515,282.10

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 12.3 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 03/06/2016
Date completion activities began 4/11/2016 Date completion activities ceased 4/21/2016
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

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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 218', 285', 707' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

APPROVED
NAME: [Signature]
DATE: 5/8/16 10/28/2016

API 47-095 - 02279

Farm name DONNA J. PETER

Well number 512891

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"	754'	NEW	J-55	206'	Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	2865'	NEW	A-500	1810'	Y
Intermediate 2							
Intermediate 3							
Production	8 1/2"	5 1/2"	11,743'	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	678/582	15.2/15.6	1.25/2.06	2046	3113	72
Tubing							

Drillers TD (ft) 11,745

Loggers TD (ft) N/A

Deepest formation penetrated MARCELLUS

Plug back to (ft) N/A

Plug back procedure Pumped 2 bbls water, pumped 197 sks./208.82 ft³/sks Class H Cement 1.06 yld. at 16.4 PPG, pumped 5 bbls water to displace and clean out lines.

Kick off depth (ft) 4355

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 spiral centralizers run every joint from bottom to 4304 ftMD.

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 02279 Farm name DONNA J. PETER Well number 512891

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

Logging Company HOSSCO
Address 614 Trotters Lane City Charleston State WV Zip 25312

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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512891 Final Formations API# 47-095-02279				
Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
SAND/SHALE	1	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	1,545.00	1,545.00
MAXTON	1,545.00	1,545.00	1,839.00	1,839.00
BIG LIME	1,839.00	1,839.00	2,261.00	2,261.00
WEIR	2,261.00	2,261.00	2,379.00	2,379.00
GANTZ	2,379.00	2,379.00	2,472.00	2,472.00
50F	2,472.00	2,472.00	2,697.00	2,697.00
GORDON	2,697.00	2,697.00	3,017.00	3,017.00
BAYARD	3,017.00	3,017.00	3,349.00	3,349.00
WARREN	3,349.00	3,349.00	3,444.00	3,444.00
SPEECHLEY	3,444.00	3,444.00	3,865.00	3,865.00
BALLTOWN A	3,865.00	3,865.00	4,003.00	4,003.00
BALLTOWN B	4,003.00	4,003.00	4,300.00	4,299.90
BRADFORD	4,300.00	4,299.90	4,564.00	4,560.30
RILEY	4,564.00	4,560.30	4,981.00	4,927.00
BENSON	4,981.00	4,927.00	5,232.00	5,116.40
ALEXANDER	5,232.00	5,116.40	5,826.00	5,568.40
RHINESTREET	5,826.00	5,568.40	6,124.00	5,790.60
RHINESTREET UPPER	6,124.00	5,790.60	6,788.00	6,306.00
SONYEA	6,788.00	6,306.00	6,937.00	6,419.20
MIDDLESEX	6,937.00	6,419.20	7,013.00	6,470.30
GENESSEE	7,013.00	6,470.30	7,162.00	6,551.00
GENESE0	7,162.00	6,551.00	7,233.00	6,581.30
TULLY	7,233.00	6,581.30	7,353.00	6,618.10
MARCELLUS	7,353.00	6,618.10	11,745.00	6,630.13

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512891-095-02279-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	4/1/2016	11,742	11,743	10	MARCELLUS
1	4/11/2016	11,567	11,689	40	MARCELLUS
2	4/11/2016	11,387	11,539	48	MARCELLUS
3	4/12/2016	11,207	11,359	48	MARCELLUS
4	4/12/2016	11,027	11,179	48	MARCELLUS
5	4/13/2016	10,847	10,999	48	MARCELLUS
6	4/14/2016	10,667	10,817	48	MARCELLUS
7	4/14/2016	10,487	10,637	48	MARCELLUS
8	4/14/2016	10,307	10,459	48	MARCELLUS
9	4/15/2016	10,127	10,279	48	MARCELLUS
10	4/15/2016	9,947	10,097	48	MARCELLUS
11	4/16/2016	9,767	9,919	48	MARCELLUS
12	4/16/2016	9,587	9,739	48	MARCELLUS
13	4/17/2016	9,407	9,557	48	MARCELLUS
14	4/17/2016	9,227	9,374	48	MARCELLUS
15	4/18/2016	9,047	9,199	48	MARCELLUS
16	4/18/2016	8,867	9,019	48	MARCELLUS
17	4/19/2016	8,687	8,839	48	MARCELLUS
18	4/19/2016	8,507	8,659	48	MARCELLUS
19	4/20/2016	8,327	8,479	48	MARCELLUS
20	4/20/2016	8,147	8,296	48	MARCELLUS
21	4/20/2016	7,967	8,119	48	MARCELLUS
22	4/21/2016	7,787	7,939	48	MARCELLUS
23	4/21/2016	7,607	7,759	48	MARCELLUS
24	4/21/2016	7,427	7,579	48	MARCELLUS

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512891-095-02279-0000 - Stimulated Stages

Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	4/11/2016	17.36	7,153	8,029	4,292	0	600	0
1	4/11/2016	100.60	8,269	8,493	4,214	300,880.00	7,647	0
2	4/12/2016	100.52	8,290	8,545	4,606	300,080.00	7,017	0
3	4/12/2016	101.20	8,823	9,057	3,812	296,860.00	6,680	0
4	4/13/2016	100.80	8,656	8,826	4,711	301,160.00	6,651	0
5	4/13/2016	100.90	7,788	8,064	4,456	303,600.00	6,923	0
6	4/14/2016	101.44	7,876	8,486	4,713	299,160.00	6,990	0
7	4/14/2016	98.83	7,996	9,255	4,505	302,000.00	6,830	0
8	4/15/2016	101.60	7,939	8,123	4,192	299,060.00	6,741	0
9	4/15/2016	99.82	8,608	9,084	4,380	301,060.00	6,829	0
10	4/15/2016	101.80	8,761	9,043	4,236	300,160.00	6,609	0
11	4/16/2016	100.46	8,577	9,090	4,669	301,060.00	6,797	0
12	4/17/2016	101.50	8,455	8,963	4,482	302,620.00	6,692	0
13	4/17/2016	101.40	8,407	8,658	4,240	299,500.00	6,678	0
14	4/18/2016	100.50	8,320	9,184	4,208	300,540.00	7,376	0
15	4/18/2016	101.05	8,006	9,444	4,897	299,860.00	6,810	0
16	4/19/2016	101.10	8,013	8,168	4,729	300,960.00	6,666	0
17	4/19/2016	100.85	7,909	8,313	4,735	301,120.00	6,721	0
18	4/20/2016	100.90	8,027	8,479	4,921	301,460.00	6,652	0
19	4/20/2016	101.80	8,014	8,316	3,763	300,340.00	6,982	0
20	4/20/2016	101.80	7,845	8,160	3,998	301,200.00	6,479	0
21	4/21/2016	101.30	7,515	9,199	4,477	300,300.00	6,618	0
22	4/21/2016	101.50	7,476	7,761	5,115	301,400.00	7,955	0
23	4/21/2016	100.60	7,664	7,902	4,258	303,400.00	7,078	0
24	4/21/2016	101.10	7,937	8,514	3,998	304,660.00	7,036	0

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	4/11/2016
Job End Date	4/21/2016
State	West Virginia
County	Tyler
API Number	47-095-02279-00-00
Operator Name	EQT Production
Well Name and Number	512891
Latitude	39.36652000
Longitude	-80.82082000
Datum	NAD83
Federal Well	NO
Indian Well	NO
True Vertical Depth	6,618
Total Base Water Volume (gal)	6,974,394
Total Base Non Water Volume	0



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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	88.60604	None
Sand (Proppant)	Keane Group	Proppant					
MC MX 5-3886	Multi-Chem	Specialty Brine	Silica Substrate	14808-60-7	100.00000	10.99549	None
Hydrochloric Acid (15%)	Keane Group	Acidizing	Calcium nitrate.4H2O	13477-34-4	100.00000	0.10948	None
FFR760	Keane Group	Friction Reducer	Hydrochloric Acid	7647-01-0	15.00000	0.02984	None
ECM FR NI 200	ECM	Friction Reducing Agent	Hydro-treated Light Distillate	64742-47-8	30.00000	0.01154	None
			Alkyl Alcohol	68002-96-0	10.00000	0.00385	None
			Oxyalkylated alcohol A	69227-21-0	5.00000	0.00192	None
			Water	7732-18-5	50.00000	0.00668	None
			Copolymer of Two Propenamide	69418-26-4	30.00000	0.00401	None
			Petroleum Distillate	64742-47-8	20.00000	0.00267	None
			Alcohols, C-12-16, Ethoxyated	68551-12-2	2.00000	0.00027	None

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			Oleic Acid Diethanolamide	93-83-4	2.00000	0.00027	None
			Ammonium Chloride ((NH4)Cl)	12125-02-9	1.00000	0.00013	None
MC MX 8-2544	Multi-Chem	Live Culture - Nitrate Reducing Bacteria					
			Sodium chloride	7847-14-5	100.00000	0.00947	None
			Sodium nitrate	7631-99-4	5.00000	0.00047	None
EC6330A	Keane Group	Scale Inhibitor					
			Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00142	None
			Ethylene Glycol	107-21-1	5.00000	0.00142	None
AI 600	Keane Group	Corrosion Inhibitor					
			Ethylene Glycol	107-21-1	40.00000	0.00020	None
			Dimethylformamide	68-12-2	20.00000	0.00010	None
			Cinnamialdehyde	104-55-2	15.00000	0.00007	None
			Nonyl Phenol Ethoxylate, Branched	127087-87-0	15.00000	0.00007	None
			Pyridine, alkyl derivatives, quaternized with benzyl chloride	68909-18-2	15.00000	0.00007	None
			1-Decanol	112-30-1	5.00000	0.00002	None
			1-Octanol	111-87-5	5.00000	0.00002	None
			2-Butoxyethanol	111-76-2	5.00000	0.00002	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	0.00000	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)

LEGEND

LEASE LINE	
SURFACE LINE	
PROPOSED PATH	
AS DRILLED PATH	
OFFSET LINE	
TE 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

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	FRIBERIKE DOHRMANN	7.067 AC±
F	WILBUR COMMUNITY CLUB	0.95 AC±
G	JOHN STARKY	7.888 AC± TMM-21-04
H	CHRIS A. BAUM ET AL	0.84 AC± TMM-21-05
I	TERRY G. WEEKLEY	1.182 AC± TMM-21-41
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±
N	CONRAD COSTILOW	46.17 AC±
O	RICHARD & YVONNE METCALF	0.61 AC±
P	JOHN & SANDRA ANDERS	0.09 AC±
Q	JOHN & SANDRA ANDERS	19.75 AC±
R	L.B. & SANDRA STONEKING	47.96 AC± TMM-21-29
S	DONNA J. PETER	113.4 AC± TMM C-16-22
T	ELIZABETH ABRUZZINO	109.94 AC± TMM C-16-10
U	BRADLY D. DAVIS	14 AC±
V	WILBUR CEMETERY COMMUNITY INC.	0.197 AC±
W	WILBUR CHAPEL	0.84 AC±
X	WILBUR CEMETERY	2 AC±
Y	KATHLEEN WINKELMANN	0.88 AC±
Z	RICHARD & YVONNE METCALF	61.57 AC±

LATITUDE 39°22'30"

**EQT PRODUCTION COMPANY
W.H. ASH ET AL LEASE
152 ACRES±
WELL NO. WV 512891
(WEU4 H2)**

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

NAD'27 S.P.C.(FT) N. 318,350.31 E. 1,628,580.26
NAD'27 GEO. LAT-(N) 39.366523 LONG-(W) 80.820821
NAD'83 UTM (M) N. 4,357,475.69 E. 515,449.91

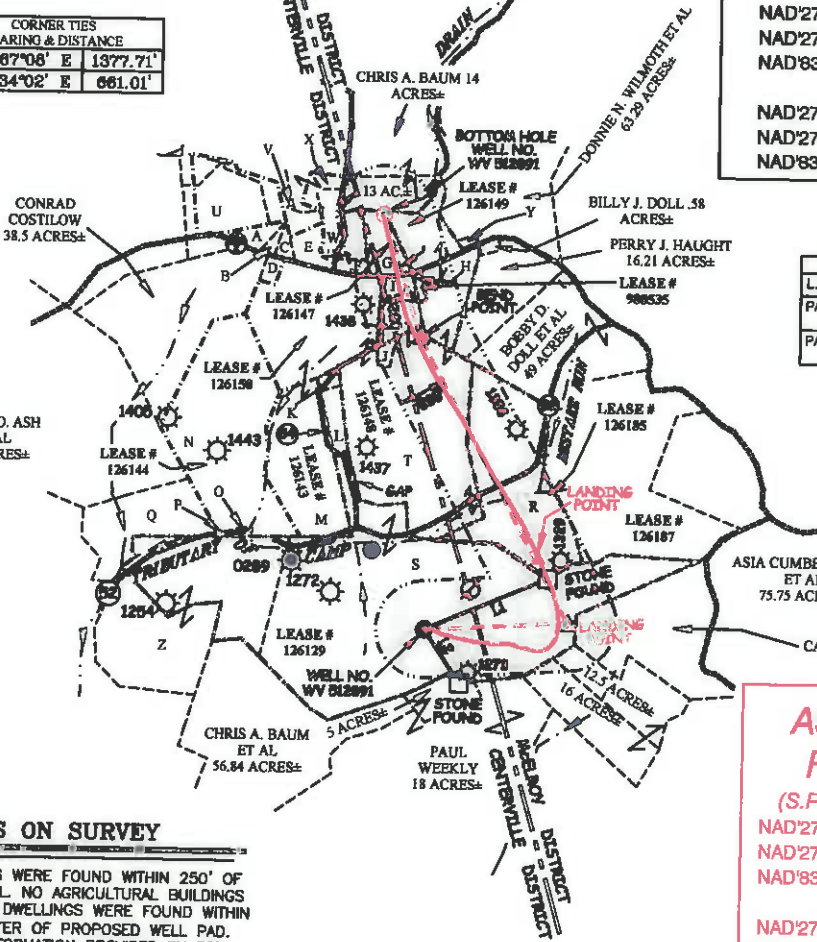
LANDING POINT
NAD'27 S.P.C.(FT) N. 318,440.89 E. 1,628,063.74
NAD'27 GEO. LAT-(N) 39.366831 LONG-(W) 80.815579
NAD'83 UTM (M) N. 4,357,510.78 E. 515,901.40

BEND POINT
NAD'27 S.P.C.(FT) N. 321,369.40 E. 1,628,502.21
NAD'27 GEO. LAT-(N) 39.374808 LONG-(W) 80.821254
NAD'83 UTM (M) N. 4,358,395.07 E. 515,410.79

BOTTOM HOLE
NAD'27 S.P.C.(FT) N. 322,618.77 E. 1,626,115.48
NAD'27 GEO. LAT-(N) 39.378222 LONG-(W) 80.822667
NAD'83 UTM (M) N. 4,358,773.72 E. 515,286.62

CORNER TIES BEARING & DISTANCE

11	N 67°08' E	1377.71'
12	S 34°02' E	661.01'



ROYALTY OWNERS

L. BRUCE STONEKING ET AL	42 AC±	LEASE NO. 126185
PATRICIA S. DOTSON LIVING TRUST ET AL	52 AC±	LEASE NO. 126148
PATRICIA S. DOTSON LIVING TRUST ET AL	9 AC±	LEASE NO. 126147

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.

Professional Energy Consultants
A DIVISION OF S&P LAND SURVEYING, INC.

S&P
SURVEYS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.

(204) 492-4854
WWW.S&P.SURVEYS.COM

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*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JUNE 04, 20 15
REVISED 06/18/15, 02/17/16, 03/21/16 & 06/15/16

OPERATORS WELL NO. WV 512891
API WELL NO. 47 - 095 - 02279H
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7701AD512891R
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 1,097 (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 6,696'

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

COUNTY NAME
PERMIT