

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

RECEIVED  
Office of Oil and Gas  
JUN 30 2017  
WV Department of  
Environmental Protection

API 47-91-01304 County Taylor District Fetterman  
Quad Gladesville Pad Name Pysell Field/Pool Name \_\_\_\_\_  
Farm name Orthodox Education Society/Charles & Leverne Macdonald, ET AL Well Number 2HM  
Operator (as registered with the OOG) PDC Mountaineer, LLC  
Address 6031 Wallace Road Extension, Suite 300 City Wexford State PA Zip 15090

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,365,331.3 Easting 589,768.8  
Landing Point of Curve Northing 4,365,363.1 Easting 589,853.1  
Bottom Hole Northing 4,367,771.6 Easting 589,025.9

Elevation (ft) 1,886.25' 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)  
Synthetic Oil-based Mud

Date permit issued 9/19/2014 Date drilling commenced 4/25/2015 Date drilling ceased 5/10/2015  
Date completion activities began 8/18/2015 Date completion activities ceased 12/12/2015  
Verbal plugging (Y/N) \_\_\_\_\_ Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

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

Freshwater depth(s) ft 300' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 910' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 96', 278', 339', 401', 446', 478' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

**APPROVED**

NAME: Armed S. Sadas  
DATE: 7-26-17

Reviewed by:

EC

09/15/2017

API 47-91 - 01304

Farm name Orthodox Education Society/Charles & Levene Macdonald, ET AL Well number 2HM

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	30"	20"	70'	New	94	N/A	Y
Surface	17.5"	13 3/8"	569'	New	54.5	N/A	Y
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,532.6'	New	40	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	16,896.0	New	20	N/A	N
Tubing							
Packer type and depth set							

Comment Details Top of cement for production string brought to 2,350'MD

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Grout					Surface	8
Surface	Class A 2% CaCl <sub>2</sub>	545	15.6	1.2	654	Surface	8
Coal							
Intermediate 1	Class A	510/172	14.50/15.70	1.55/1.29	1012.38	Surface	8
Intermediate 2							
Intermediate 3							
Production	Type 1 4% Gel/Type 1 2% Gel	835/1,817	13.8/15.0	1.64/1.32	3,762.92	2350'	8
Tubing							

Drillers TD (ft) 16,936'

Loggers TD (ft) 16,936'

Deepest formation penetrated Marcellus

Plug back to (ft)

Plug back procedure None

Kick off depth (ft) 7,302' MD

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

13 3/8": 1 bow spring centralizer placed on every joint

9 5/8": 1 bow spring centralizer placed on every third joint

5 1/2": 1 rigid poly centralizer every joint in the lateral, 1 rigid poly centralizer every other joint through the curve, 1 rigid poly centralizer every third joint from kick off point to estimated TOC

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS The well was completed in 42 stages with 1680 .45" entry hole 22.7 gram perforation charges

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED Protechnics fluid chemical tracers.

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Well number 2HM

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	8/18/2015	16809	16648	40	Marcellus
2	8/21/2015	16610	16448	40	Marcellus
3	8/22/2015	16410	16248	40	Marcellus
4	8/22/2015	16210	16048	40	Marcellus
5	8/23/2015	16010	15848	40	Marcellus
6	8/23/2015	15810	15648	40	Marcellus
7	8/23/2015	15610	15448	40	Marcellus
8	8/23/2015	15410	15248	40	Marcellus
9	8/24/2015	15210	15048	40	Marcellus
10	8/24/2015	15010	14848	40	Marcellus
11	8/24/2015	14810	14648	40	Marcellus
12	8/25/2015	14610	14448	40	Marcellus
13	8/25/2015	14410	14248	40	Marcellus
14	8/25/2015	14210	14048	40	Marcellus
15	8/26/2015	14010	13848	40	Marcellus
16	8/26/2015	13810	13648	40	Marcellus

Please insert additional pages as applicable.

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STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	8/21/15	68	7712	7000	5343	326274	8617	0
2	8/22/15	73	7760	7058	5908	261081	10701	0
3	8/22/15	77	8265	6162	5010	322201	10377	0
4	8/23/15	79	8416	6799	5039	400401	10035	0
5	8/23/15	78	8213	6591	5429	333801	9304	0
6	8/23/15	77	8142	6055	5525	400061	10463	0
7	8/23/15	80	8277	6427	5087	400821	10341	0
8	8/24/15	73	8409	6527	4728	400081	12014	0
9	8/24/15	63	7411	6191	5275	400081	12895	0
10	8/24/15	81	7935	6652	5669	380201	8964	0
11	8/25/15	80	8070	7007	5280	405401	9093	0
12	8/25/15	74	7624	6353	4790	404341	8827	0
13	8/25/15	77	7676	6231	5051	400201	8117	0
14	8/26/15	77	7708	5852	5748	404601	7367	0
15	8/26/15	80	7809	5794	5538	400801	7152	0
16	8/26/15	76	7744	6306	5395	405161	10238	0

Please insert additional pages as applicable.

API 47- 91 - 01304 Farm name Orthodox Education Society/Charles & Levome Macdonald, ET AL Well number 2HM

**PERFORATION RECORD**

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	8/26/2015	13610	13448	40	Marcellus
18	8/27/2015	13410	13248	40	Marcellus
19	8/27/2015	13210	13048	40	Marcellus
20	8/27/2015	13010	12848	40	Marcellus
21	8/28/2015	12810	12648	40	Marcellus
22	8/28/2015	12610	12448	40	Marcellus
23	8/28/2015	12410	12248	40	Marcellus
24	8/29/2015	12210	12048	40	Marcellus
25	8/29/2015	12010	11848	40	Marcellus
26	8/31/2015	11810	11648	40	Marcellus
27	8/31/2015	11610	11448	40	Marcellus
28	9/1/2015	11410	11248	40	Marcellus
29	9/1/2015	11210	11048	40	Marcellus
30	9/2/2015	11010	10848	40	Marcellus
31	9/2/2015	10810	10648	40	Marcellus
32	9/2/2015	10610	10448	40	Marcellus

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Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	8/27/15	78	8064	5945	5566	391301	7781	0
18	8/27/15	83	8373	6920	6083	404481	7550	0
19	8/27/15	80	8388	6909	5071	400461	7420	0
20	8/28/15	72	7916	6938	4907	403261	9506	0
21	8/28/15	79	8236	7199	5379	401801	8921	0
22	8/28/15	79	8161	7024	5972	360701	8458	0
23	8/29/15	78	8155	6620	6627	400801	8147	0
24	8/30/15	79	8268	6632	6180	400201	9042	0
25	8/31/15	80	8071	7528	6208	405161	8214	0
26	8/31/15	80	8052	6638	6237	402241	10959	0
27	9/1/15	81	8127	8014	6881	408861	9001	0
28	9/1/15	78	8031	6967	6219	402951	9326	0
29	9/2/15	78	7919	8562	6255	401901	8116	0
30	9/2/15	80	8086	8355	4867	400661	10604	0
31	9/2/15	80	8262	6416	5121	406281	10383	0
32	9/3/15	80	8150	6909	6362	400601	7949	0

Please insert additional pages as applicable.

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Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
33	9/3/2015	10410	10248	40	Marcellus
34	9/3/2015	10210	10048	40	Marcellus
35	9/3/2015	10010	9848	40	Marcellus
36	9/5/2015	9810	9648	40	Marcellus
37	9/5/2015	9610	9448	40	Marcellus
38	9/6/2015	9410	9248	40	Marcellus
39	9/6/2015	9210	9048	40	Marcellus
40	9/6/2015	9010	8848	40	Marcellus
41	9/7/2015	8810	8648	40	Marcellus
42	9/7/2015	8610	8448	40	Marcellus

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Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
33	9/3/15	80	8198	6884	5658	407761	7945	0
34	9/3/15	75	7940	7063	6083	400901	8157	0
35	9/5/15	80	8079	7077	5833	401561	7797	0
36	9/5/15	80	8238	7074	4692	295201	6624	0
37	9/6/15	85	8163	6541	6584	400101	8014	0
38	9/6/15	83	8169	7274	6037	404021	8053	0
39	9/6/15	75	7926	7635	6040	400911	8435	0
40	9/7/15	75	8269	7471	5207	377221	9513	0
41	9/7/15	70	7925	8390	5375	384361	8293	0
42	9/8/15	73	8258	8730	6033	401801	9858	0

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PRODUCING FORMATION(S)	DEPTHS	
	TVD	MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

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GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface \_\_\_\_\_ psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs

OPEN FLOW Gas \_\_\_\_\_ mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ bpd  
GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
Sands, Silts, Coals	0	1042	0	1042	Sand, Silt, and Coal
Big Lime	1042	2778	1042	2779	Sandstone
Balltown	2778	2848	2779	2849	Sandstone
Bradford	3508	3558	3509	3559	Sandstone
Benson	4197	4267	4199	4269	Sandstone
Elk	4543	4593	4544	4594	Siltstone
Burkett	7516	7525	7662	7670	Shale
Tully	7525	7646	7670	7827	Limestone
Mahantango	7646	7802	7827	8133	Shale
Marcellus	7802	7893	8133	16936	Shale-Gas shows through lateral
Purcell	7857	7860	8325	8330	Limestone
Onondaga	7893		N/A*		Limestone
					*Onondaga MD not listed- lateral drilled in Marcellus**Onondaga top estimated from 4709101126 thickness
					**Big Lime through Elk from 47091201126, Burkett to Purcell taken from mudlog.

Please insert additional pages as applicable.

Drilling Contractor Sidewinder Drilling  
Address 952 Echo Land, Suite 460 City Houston State TX Zip 77024

Logging Company \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Cementing Company Universal Well Services  
Address \_\_\_\_\_ City Buckhannon State WV Zip 26201

Stimulating Company US Well Services  
Address 770 South Post Oak Lane Suite 410 City Houston State TX Zip 77056

Please insert additional pages as applicable.

Completed by EDDIE CARROLL Telephone 1-724-940-1204  
Signature [Signature] Title Permitting Manager Date 4/17/17

Submission of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

# Hydraulic Fracturing Fluid Product Component Information Disclosure

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 WV Department of  
 Environmental Protection

Job Start Date:	8/21/2015
Job End Date:	9/8/2015
State:	West Virginia
County:	Taylor
API Number:	47-091-01304-00-00
Operator Name:	Arsenal Resources
Well Name and Number:	Pysell 2HM
Latitude:	39.43285000
Longitude:	-79.95694000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,710
Total Base Water Volume (gal):	15,899,898
Total Base Non Water Volume:	



## 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
SI-1100	U.S. Well Services, Inc.	Scale Inhibitor					
				Listed Below			
WFRA-1000	U.S. Well Services, Inc.	Friction Reducer					
				Listed Below			

Sand	U.S. Well Services, Inc.	Proppant					
				Listed Below			
Water	Arsenal Resources	Base Fluid					
				Listed Below			
AI-302	U.S. Well Services, Inc.	Acid Corrosion Inhibitors					
				Listed Below			
HCL Acid (12.6%-18.0%)	U.S. Well Services, Inc.	Bulk Acid					
				Listed Below			
K-BAC 1020	U.S. Well Services, Inc.	Anti-Bacterial Agent					
				Listed Below			
HCL Acid (28%)	U.S. Well Services, Inc.	Bulk Acid					
				Listed Below			
HCL Acid (3%-7.5%)	U.S. Well Services, Inc.	Bulk Acid					
				Listed Below			

Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

			H2O	7732-18-5	100.00000	86.05649	
			Crystalline Silica, Quartz	14808-60-7	100.00000	13.32186	
			Water	7732-18-5	97.00000	0.44658	
			Hydrogen Chloride	7647-01-0	7.50000	0.04009	
			Water	7732-18-5	87.50000	0.03525	

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 Bureau of Land Management



			Water	7732-18-5	60.00000	0.03239	
			2-Propenoic acid, polymer with propenamide	9003-06-9	30.00000	0.01620	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01328	
			Water	7732-18-5	80.00000	0.00983	
			Hydrogen Chloride	7647-01-0	18.00000	0.00842	
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00426	
			Ethylene Glycol	107-21-1	25.00000	0.00347	
			Water	7732-18-5	72.00000	0.00290	
			Deionized Water	7732-18-5	28.00000	0.00244	
			Copolymer of Maleic and Acrylic Acid	52255-49-9	10.00000	0.00145	
			Hydrogen Chloride	7647-01-0	28.00000	0.00131	
			Potassium Salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	7.50000	0.00124	
			Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1	5.00000	0.00080	
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00080	
			Water	7732-18-5	95.00000	0.00053	
			Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5	2.00000	0.00032	
			2-Propyn-1-olcompound with methyloxirane	38172-91-7	15.00000	0.00008	

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 Environmental Protection  
 Maryland

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water  
 \*\* Information is based on the maximum potential for concentration and thus the total may be over 100%  
 \*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)



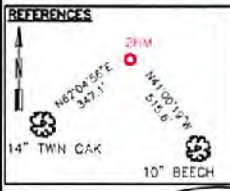
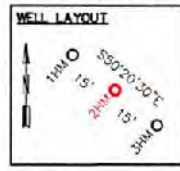
THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

AS-DRILLED COORDINATES:	
SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,355,331.34	
EASTING: 589,768.81	
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,365,401.58	
EASTING: 589,846.35	
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,357,846.83	
EASTING: 589,997.96	

PROPOSED COORDINATES:	
SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,365,331.34	
EASTING: 589,768.81	
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,365,353.11	
EASTING: 589,853.09	
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,367,771.57	
EASTING: 589,025.94	

- NOTES ON SURVEY**
- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
  - SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
  - THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
  - NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
  - NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
  - NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
  - NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

**DRAFT**  
**06-09-2017**



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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2270

	(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS	MINIMUM DEGREE OF ACCURACY: 1 IN 2500	PYSSELL PAD		
	WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034	PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)	OPERATOR'S WELL #:	47	091
			STATE	COUNTY	PERMIT

WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input type="checkbox"/> DEEP <input type="checkbox"/> GAS <input type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input type="checkbox"/>	WATERSHED: WHITE DAY CREEK	ELEVATION: 1886.25
DISTRICT: FETTERMAN	COUNTY: TAYLOR	QUADRANGLE: GLADESVILLE 7.5'
SURFACE OWNER: RUTH E. HAUGHT	ACREAGE: 300 ±	
OIL & GAS ROYALTY OWNER: ORTHODOX EDUCATIONAL SOCIETY/CHARLES & LEVERNE MACDONALD/ CHARLES & LEVERNE MACDONALD, ET AL	ACREAGE: 946.5 ± (LEASE)	
DRILL <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/>	CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input checked="" type="checkbox"/> (SPECIFY) AS-DRILLED	
TARGET FORMATION: MARCELLUS SHALE	ESTIMATED DEPTH: 7,710 TVD 16,936 TMD	

WELL OPERATOR: ARSENAL RESOURCES	DESIGNATED AGENT: WILLIAM VEIGEL
ADDRESS: 6031 WALLACE ROAD EXTENSION #300	ADDRESS: 65 PROFESSIONAL PLACE, SUITE 200
CITY: WEXFORD STATE: WV ZIP CODE: 15090	CITY: BRIDGEPORT STATE: WV ZIP CODE: 26330

LEGEND:	REVISIONS:	DATE: 05-30-2017
<ul style="list-style-type: none"> <li>○ PROPOSED SURFACE HOLE / BOTTOM HOLE</li> <li>⊙ EXISTING / PRODUCING WELLHEAD</li> <li>⊘ ABANDONED WELL</li> <li>⊕ PLUGGED &amp; ABANDONED WELL</li> <li>△ OUT CONDUCTOR</li> <li>--- LEASE BOUNDARY</li> <li>--- 500' DHP BUFFER</li> <li>--- AS-DRILLED PATH</li> <li>--- PROPOSED PATH</li> </ul>		DRAWN BY: R. DOERR SCALE: 1" = 2000' DRAWING NO: 030-3245 WELL LOCATION PLAT

RECEIVED  
Office of Oil and Gas  
JUN 30 2017  
WV Department of  
Environmental Protection

09/15/2017

13,868' SHL  
11,439' SHL  
Latitude: 39°27'30"



THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

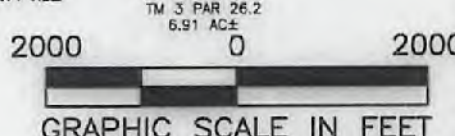
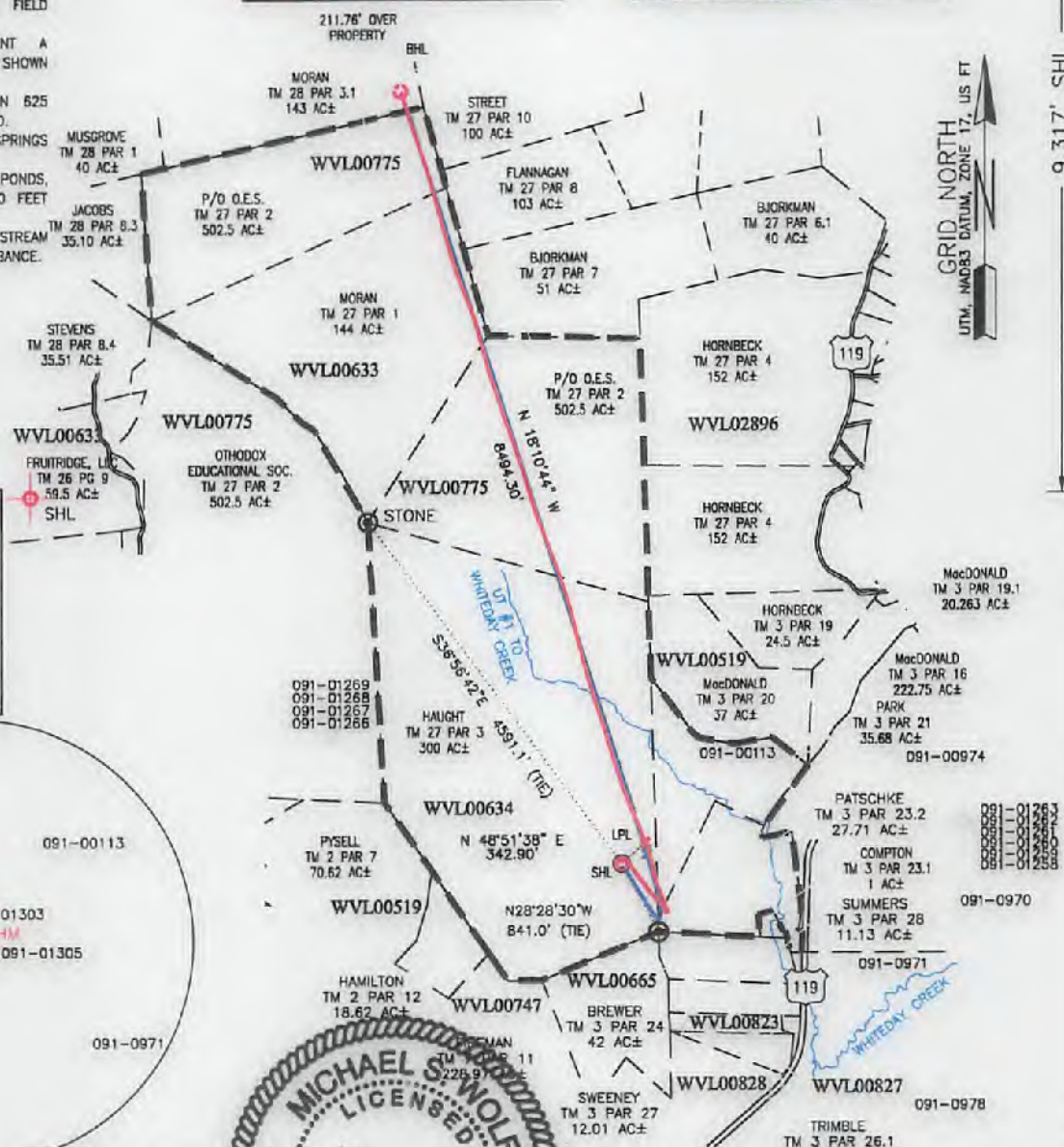
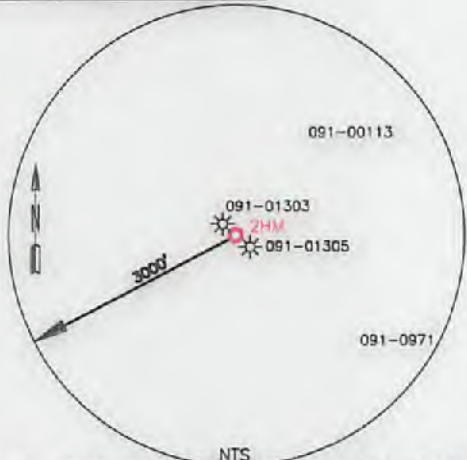
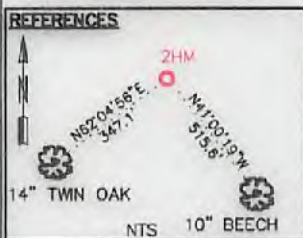
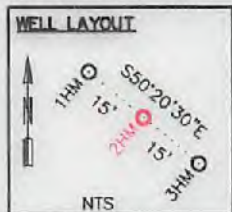
**NOTES ON SURVEY**

- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS AND BUILDINGS WITHIN 825 FEET OF PROPOSED OF CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

AS-DRILLED COORDINATES	
<b>SURFACE HOLE LOCATION (SHL):</b>	
UTM (NAD83, ZONE 17, METERS):	
NORTHING:	4,365,331.34
EASTING:	589,768.81
<b>LANDING POINT LOCATION (LPL):</b>	
UTM (NAD83, ZONE 17, METERS):	
NORTHING:	4,365,401.38
EASTING:	589,846.35
<b>BOTTOM HOLE LOCATION (BHL):</b>	
UTM (NAD83, ZONE 17, METERS):	
NORTHING:	4,367,845.83
EASTING:	588,997.96

PROPOSED COORDINATES:	
<b>SURFACE HOLE LOCATION (SHL):</b>	
UTM (NAD83, ZONE 17, METERS):	
NORTHING:	4,365,331.34
EASTING:	589,768.81
<b>LANDING POINT LOCATION (LPL):</b>	
UTM (NAD83, ZONE 17, METERS):	
NORTHING:	4,365,363.11
EASTING:	589,853.09
<b>BOTTOM HOLE LOCATION (BHL):</b>	
UTM (NAD83, ZONE 17, METERS):	
NORTHING:	4,367,771.57
EASTING:	589,025.94

Longitude: 79°55'00"  
1,033' BHL  
9,317' SHL



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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2270 *M.S. Wolf 6/23/17*

	(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS	MINIMUM DEGREE OF ACCURACY: 1 IN 2500	OPERATOR'S WELL #: PYSELL PAD 2HM
	WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034	PROVEN SURVEY SOURCE OF ELEVATION: GRADE GPS (NAVD 88, US FT)	API WELL #: 47
WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input type="checkbox"/> DEEP <input type="checkbox"/> GAS <input type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input type="checkbox"/>		ELEVATION: 1886.25	
WATERSHED: WHITE DAY CREEK		QUADRANGLE: GLADESVILLE 7.5'	
DISTRICT: FETTERMAN COUNTY: TAYLOR		ACREAGE: 300 ±	
OIL & GAS ROYALTY OWNER: ORTHODOX EDUCATIONAL SOCIETY/CHARLES & LEVERNE MACDONALD/ CHARLES & LEVERNE MACDONALD, ET AL ACREAGE: 946.5 ± (LEASE)			
DRILL <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/>		ESTIMATED DEPTH: 7,710 TVD 16,936 TMD	
CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input checked="" type="checkbox"/> (SPECIFY) AS-DRILLED		DATE: 06-21-2017	
TARGET FORMATION: MARCELLUS SHALE		DRAWN BY: R. DOERR	
WELL OPERATOR: ARSENAL RESOURCES		SCALE: 1" = 2000'	
ADDRESS: 6031 WALLACE ROAD EXTENSION #300		DRAWING NO: 030-3245	
CITY: WEXFORD STATE: WV ZIP CODE: 15090		WELL LOCATION PLAT	
CITY: BRIDGEPORT STATE: WV ZIP CODE: 26330			
LEGEND: ● PROPOSED SURFACE HOLE / BOTTOM HOLE ○ EXISTING / PRODUCING WELLHEAD ✕ ABANDONED WELL ✕ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR		REVISIONS: --- LEASE BOUNDARY --- 500' DHP BUFFER --- AS-DRILLED PATH --- PROPOSED PATH	

LEGEND:	PROPOSED SURFACE HOLE \ BOTTOM HOLE
○	PROPOSED SURFACE HOLE
●	EXISTING \ PRODUCING WELLS
⊗	ABANDONED WELL
⊕	PLUGGED & ABANDONED WELL
△	CUT CONDUCTOR
---	LEASE BOUNDARY
---	500' DHP BUFFER
---	AS-DRIILLED PATH
---	PROPOSED PATH

REVISIONS:  
 DATE: 06-21-2017  
 DRAWN BY: R. DOERR  
 SCALE: 1" = 2000'  
 DRAWING NO: 020-3248  
 WELLS LOCATION PLAT

CITY: WEXFORD STATE: WV ZIP CODE: 15090  
 CITY: BRIDGEPORT STATE: WV ZIP CODE: 26230  
 ADDRESS: 6031 WALLACE ROAD EXTENSION #300  
 ADDRESS: 65 PROFESSIONAL PLACE SUITE 200  
 DESIGNATED AGENT: WILLIAM VEJEL  
 WELLS OPERATOR: ARSENAL RESOURCES  
 TARGET FORMATION: MARCELLUS SHALE  
 ESTIMATED DEPTH: 7,710 TWD 16,935 TMD  
 CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY) AS-DRIILLED  
 DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION

OIL & GAS ROYALTY OWNER: EDITHOOK EDUCATIONAL SOCIETY \ CHARLES & LEVINE MCDONALD, ET AL. ACREAGE: 946.5 ± (LEASE)  
 SURFACE OWNER: RUTH E. HAUGHT  
 DISTRICT: FETTERMAN COUNTY: TAYLOR  
 WATERSHED: WHITE DAY CREEK  
 WELLS TYPE: OIL  WASTE DISPOSAL  PRODUCTION  DEEP  GAS  LIQUID INJECTION  STORAGE  SHALLOW

ELEVATION: (NAD 88, US FT) SOURCE OF GRADE GPS PROVEN SURVEY  
 ACCURACY: 1 IN 2500  
 OPERATOR'S WELL #: 3HM  
 API WELL #: 47  
 COUNTY PERMIT 091 01304  
 PYSSELL PAD

UNITED STATES TOPOGRAPHIC MAPS  
 WDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25034

WEST VIRGINIA PROFESSIONAL SURVEYOR No. 5270  
 MICHAEL S. WOLF LICENSED

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

REFERENCES  
 1" = 2000'  
 TWIN OAK  
 10" BEECH

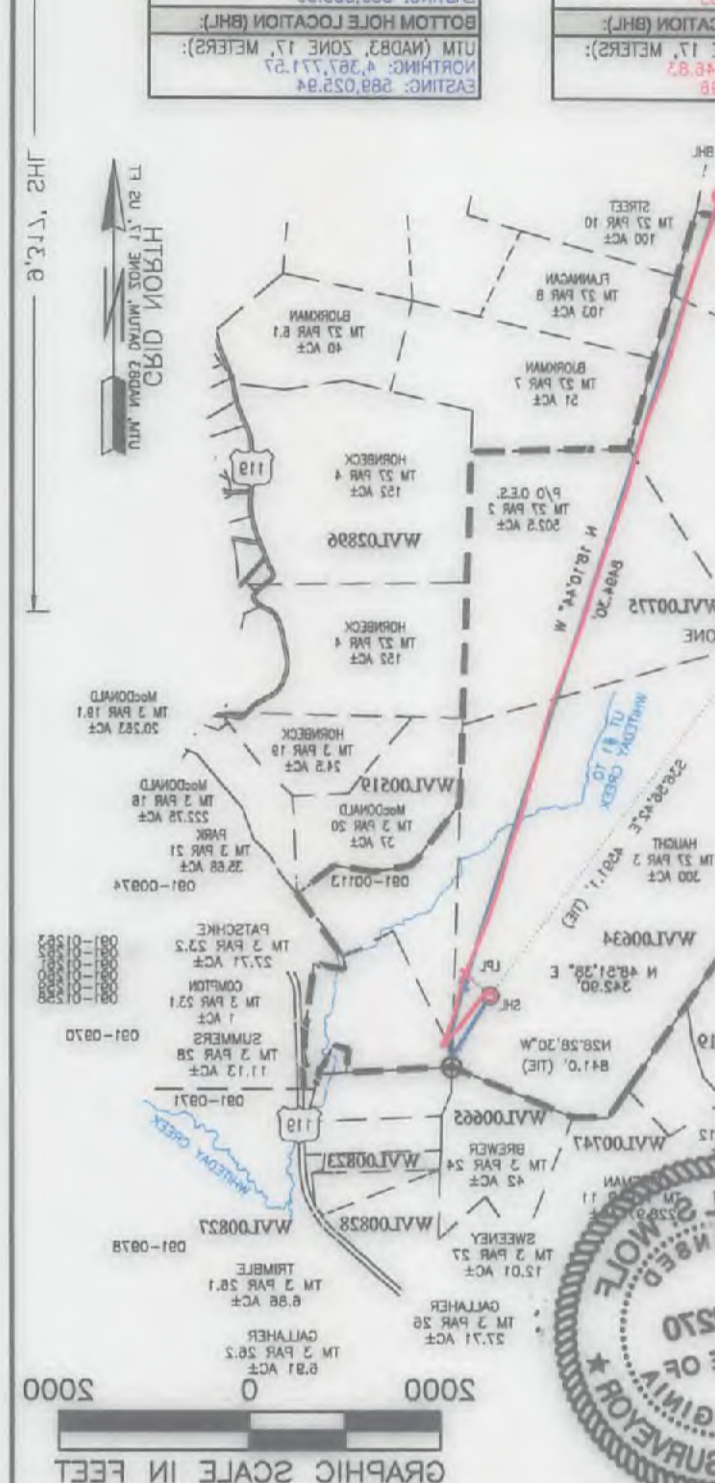
WELL LAYOUT  
 3" = 100'  
 1" = 200'

NOTES ON SURVEY  
 1. COORDINATE SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.  
 2. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.  
 3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.  
 4. NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED OR CENTER OF PAD.  
 5. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.  
 6. NO PERMANENT STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.  
 7. NO NATURALLY PRODUCING TIGHT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

THE THRASHER GROUP, INC.  
 800 WHITE OAKS BLVD.  
 BRIDGEPORT, WV 26230  
 PHONE 304-624-4108

AS-DRIILLED COORDINATES:  
 SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,365,231.24 EASTING: 589,788.81  
 LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,365,401.38 EASTING: 589,848.25  
 BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,367,846.83 EASTING: 589,932.98

PROPOSED COORDINATES:  
 SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,365,231.24 EASTING: 589,788.81  
 LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,365,263.11 EASTING: 589,827.09  
 BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,367,771.27 EASTING: 589,025.94



GRAPHIC SCALE IN FEET  
 0 2000 2000

Latitude: 39°27'30" Longitude: 79°22'00"  
 11°43' SHL 13,868' SHL

GRID NORTH  
 UTM (NAD83, ZONE 17, METERS): NORTHING: 4,365,263.11 EASTING: 589,827.09