

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 47-91-01299 County Taylor District Fetterman
Quad Gladesville Pad Name OES Field/Pool Name _____
Farm name Orthodox Education Society Well Number 5HM
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 4,365,677 Easting 588,790
Landing Point of Curve Northing 4,365,950 Easting 588,873
Bottom Hole Northing 4,367,625 Easting 588,465

Elevation (ft) 1948' 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 8/29/2014 Date drilling commenced 4/12/2015 Date drilling ceased 4/28/2015
Date completion activities began 6/5/2015 Date completion activities ceased 7/24/2015
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 245' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 910' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 273', 328', 414', 468' Cavern(s) encountered (Y/N) depths N

Is coal being mined in area (Y/N) _____

Reviewed by:

EC

09/15/2017

APPROVED
NAME: Ken Bruynolds
DATE: 8/24/17

API 47-91 - 01299 Farm name Orthodox Education Society Well number 5HM

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"	24"	80'	New	94	N/A	Y
Surface	17.5"	13 3/8"	599'	New	54.5	N/A	Y
Coal							
Intermediate 1	12 1/4"	9 5/8"	2572'	New	40	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	14890'	New	20	N/A	Y 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	Grout					Surface	8
Surface	Class A 2% CaCl ₂	534	15.6	1.20	636	Surface	8
Coal							
Intermediate 1	Class A	782	15.1	1.42	1110.44	Surface	8
Intermediate 2							
Intermediate 3							
Production	Type 1 4% Gel/Type 1 2% Gel	2299	14.4	1.48	3402.52	2350'	8
Tubing							

Drillers TD (ft) 14,890' Loggers TD (ft) 14,890'

Deepest formation penetrated Marcellus Plug back to (ft) _____

Plug back procedure None

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Kick off depth (ft) 7259' MD

JUN 30 2017

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 _____

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS The well was completed in 32 stages with 1280 .42" entry hole 22.7 gram perforating charges

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	6/15/2015	14795	14633	40	Marcellus
2	6/20/2015	14595	14433	40	Marcellus
3	6/20/2015	14395	14233	40	Marcellus
4	6/20/2015	14195	14033	40	Marcellus
5	6/21/2015	13995	13833	40	Marcellus
6	6/21/2015	13795	13633	40	Marcellus
7	6/21/2015	13595	13433	40	Marcellus
8	6/22/2015	13395	13233	40	Marcellus
9	6/22/2015	13195	13033	40	Marcellus
10	6/23/2015	12995	12833	40	Marcellus
11	6/23/2015	12795	12633	40	Marcellus
12	6/24/2015	12595	12433	40	Marcellus
13	6/25/2015	12395	12233	40	Marcellus
14	6/25/2015	12195	12033	40	Marcellus
15	6/26/2015	11995	11833	40	Marcellus
16	6/26/2015	11795	11633	40	Marcellus

Please insert additional pages as applicable.

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STIMULATION INFORMATION PER STAGE

JUN 30 2017

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)	Nitrogen/other (units)
1	6/20/15	55	7549	6350	5050	400780	9538	0
2	6/20/15	62	7834	6244	4735	401000	13899	0
3	6/20/15	66	8021	6942	4799	404960	9620	0
4	6/21/15	63	7863	6305	4921	362640	9806	0
5	6/21/15	58	8070	6344	5511	180980	7206	0
6	6/21/15	68	8237	6838	5740	201940	7826	0
7	6/22/15	75	8009	6208	5454	400580	9557	0
8	6/22/15	70	7964	6144	5389	324440	9172	0
9	6/22/15	74	8001	6720	5454	321000	8939	0
10	6/23/15	76	8239	6205	6047	405240	12011	0
11	6/24/15	64	8248	5912	5482	384500	8622	0
12	6/25/15	77	7577	6377	5715	401000	8395	0
13	6/25/15	77	7662	6627	5844	401500	7533	0
14	6/25/15	73	7623	5797	5175	328500	8993	0
15	6/26/15	79	7504	5776	5493	400620	8710	0
16	6/26/15	76	7495	6298	5518	400630	8108	0

Please insert additional pages as applicable.

WV Department of Environmental Protection

09/15/2017

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	6/26/2015	11595	11433	40	Marcellus
18	6/27/2015	11395	11233	40	Marcellus
19	6/27/2015	11195	11033	40	Marcellus
20	6/28/2015	10995	10833	40	Marcellus
21	6/28/2015	10795	10633	40	Marcellus
22	6/29/2015	10595	10433	40	Marcellus
23	6/29/2015	10395	10233	40	Marcellus
24	6/30/2015	10195	10033	40	Marcellus
25	6/30/2015	9995	9833	40	Marcellus
26	6/30/2015	9795	9633	40	Marcellus
27	6/30/2015	9595	9433	40	Marcellus
28	7/1/2015	9395	9233	40	Marcellus
29	7/1/2015	9195	9033	40	Marcellus
30	7/1/2015	8995	8833	40	Marcellus
31	7/2/2015	8795	8633	40	Marcellus
32	7/2/2015	8595	8433	40	Marcellus

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Please insert additional pages as applicable.

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STIMULATION INFORMATION PER STAGE

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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)
17	6/27/15	73	7394	7099	6115	393740	8086	0
18	6/27/15	78	7877	6924	5636	372420	7744	0
19	6/28/15	79	7697	7235	6187	400400	11031	0
20	6/28/15	81	7841	7553	6577	404120	8474	0
21	6/29/15	79	7697	6716	6723	403660	8409	0
22	6/29/15	79	7523	6795	6112	402520	7747	0
23	6/30/15	80	7528	6863	6183	400840	7277	0
24	6/30/15	81	7685	8111	6377	402340	7173	0
25	6/30/15	78	7571	7210	6698	403640	7398	0
26	6/30/15	80	7653	6788	6555	338480	6802	0
27	7/1/15	79	7778	6967	6806	394220	8570	0
28	7/1/15	77	8028	8429	4735	402480	8873	0
29	7/1/15	79	8273	7042	5558	214860	7461	0
30	7/2/15	72	7980	6738	5475	402780	10532	0
31	7/2/15	76	7967	7160	6720	345020	9400	0
32	7/2/15	83	7978	7539	5829	404610	7385	0

Please insert additional pages as applicable.

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

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Please insert additional pages as applicable.

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 ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
Sands, Silts, and 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	7491	7512	7776	7800	Shale
Tully	7512	7584	7800	7905	Limestone
Mahantango	7584	7785	7905	8296	Shale- Gas Show
Marcellus	7785	7839	8296	14890	Shale- Gas shows through lateral
Purcell	7839	7875	8569	8619	Limestone
Onondaga	7875		8619		Limestone
					*Onondaga top estimated from 4709101126
					*Big Lime through Elk from 47091201126, Burkett to Lower Marcellus 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 USWS
Address 770 South Post Oak Lane, Suite 405 City Houston State TX Zip 77056

Please insert additional pages as applicable.

Completed by Eddie Caron Telephone 724-940-1204
Signature [Signature] Title Permitting Manager Date 4-19-17

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

09/15/2017

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/19/2015
Job End Date:	7/2/2015
State:	West Virginia
County:	Taylor
API Number:	47-091-01299-00-00
Operator Name:	Mountaineer Keystone, LLC
Well Name and Number:	OES R5 HM
Longitude:	-79.96846800
Latitude:	39.43598500
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	8,800
Total Base Water Volume (gal):	11,969,670
Total Base Non Water Volume:	632,914

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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	Mountaineer Keystone	Base Fluid					
			Water	7732-18-5	100.00000	88.83140	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	10.50600	
HCL Acid (3% to 7.5%)	U.S. Well Services	Bulk Acid					
			Water	7732-18-5	97.00000	0.46026	
			Hydrogen Chloride	7647-01-0	7.50000	0.04132	
WFRA-1000	U.S. Well Services	Friction Reducer					
			Water	7732-18-5	60.00000	0.03070	
			2-Propenoic acid, polymer with 2 propenamides	9003-06-9	30.00000	0.01535	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01259	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.03244	
			Hydrogen Chloride	7647-01-0	18.00000	0.00775	
WFRA-405	U.S. Well Services	Friction Reducer					
			Water	7732-18-5	40.00000	0.01212	
			Anionic Polyacrylamide	Proprietary	40.00000	0.01212	

			Sodium Chloride	7647-14-5	20.00000	0.00606
			Petroleum Distillates	64742-47-8	20.00000	0.00488
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00152
SI-1100	J.S. Well Services	Scale Inhibitor				
			Water	7732-18-5	80.00000	0.01017
			Ethylene Glycol	107-21-1	25.00000	0.00359
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00150
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	7.50000	0.00129
			Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1	5.00000	0.00083
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00083
			Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5	2.00000	0.00033
K-BAC 1020	J.S. Well Services	Anti-Bacterial Agent				
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00414
			Deionized Water	7732-18-5	28.00000	0.00236
AI-301	J.S. Well Services	Acid Corrosion Inhibitors				
			Diethylene Glycol	111-46-6	30.00000	0.00018
			Methenamine	100-97-0	20.00000	0.00015
			Hydrogen Chloride	7647-01-0	10.00000	0.00006
			Polyethylene polyamine	68603-67-8	10.00000	0.00006
			Coco amine	61791-14-8	5.00000	0.00003

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)

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

1. COORDINATE SYSTEM IS WV STATE PLANE NORTH, NAD 83 DATUM, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE OES

2. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PORTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS

3. THIS PLAN DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON

4. NO DWELLINGS AND BUILDINGS WITHIN 65 FEET OF PROPOSED CENTER OF PAD

5. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL

6. NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE

7. NO NATURALLY OCCURRING THOUT STREAMS WITHIN 300 FEET OF LIMITS OF DISTURBANCE

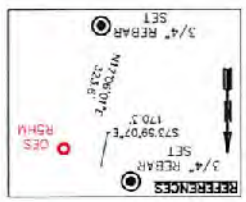
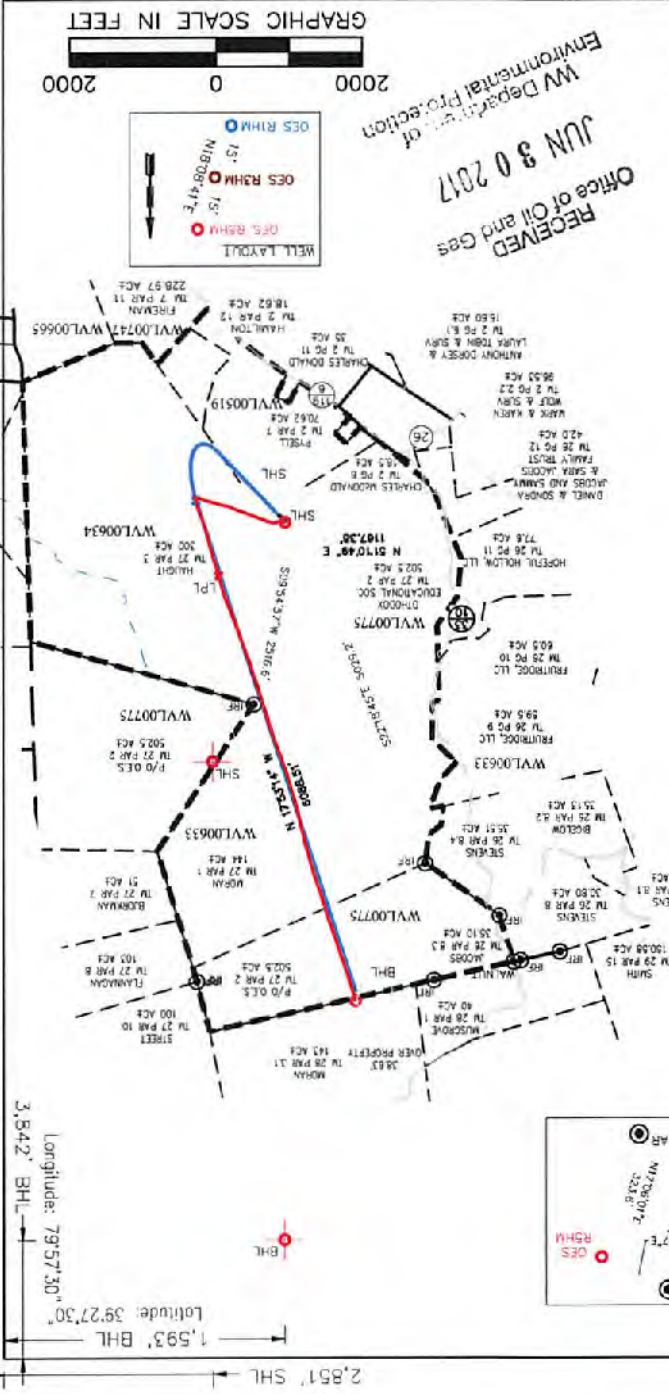
EXISTING WELLS WITHIN 3000'



AS-DRILLED COORDINATES:

SURFACE HOLE LOCATION (SHL)	NORTHING: 4,365,617.77
UTM (MAD3, ZONE 17, METERS)	EASTING: 589,789.99
LANDING POINT LOCATION (LPL)	NORTHING: 4,365,903.38
UTM (MAD3, ZONE 17, METERS)	EASTING: 589,063.18
BOTTOM HOLE LOCATION (BHL)	NORTHING: 4,367,661.25
UTM (MAD3, ZONE 17, METERS)	EASTING: 589,466.21
PROPOSED COORDINATES:	
SURFACE HOLE LOCATION (SHL)	NORTHING: 4,366,677.8
UTM (MAD3, ZONE 17, METERS)	EASTING: 589,789.9
LANDING POINT LOCATION (LPL)	NORTHING: 4,367,950.0
UTM (MAD3, ZONE 17, METERS)	EASTING: 589,162.7
BOTTOM HOLE LOCATION (BHL)	NORTHING: 4,367,623.8
UTM (MAD3, ZONE 17, METERS)	EASTING: 589,466.2

1. THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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.



(+) DENOTES LOCATION OF WELL ON MINIMUM ACCURACY: 1/200

PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAD 83, US FT)

OPERATOR'S WELL #: OES NO. RSHM

API WELL #: 47

STATE: WV

COUNTY: TAYLOR

CITY: BRIDGEPORT

ZIP CODE: 26330

ADDRESS: 6031 WALLACE ROAD EXTENSION #300

DESIGNATED AGENT: WILLIAM VEIGEL

DATE: 06-08-2017

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

WATERHEAD: WHITE DAY CREEK

DISTRICT: FETERMAN

COUNTY: TAYLOR

QUADRANGLE: GLADSVILLE 7.5

SURFACE OWNER: ORTHODOX EDUCATIONAL SOCIETY

OIL & GAS ROYALTY OWNER: ORTHODOX EDUCATIONAL SOCIETY/CHARLES & LAVERNE MCDONALD

ACREAGE: 502.5 ±

ACREAGE: 885.39 ± (LEASE)

CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORM NEW FORMATION

CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) AS-DRILLED

TARGET FORMATION: MARCELLUS SHALE

ESTIMATED DEPTH: LATERAL: 7,288 TO 14,890 TMD

WELL OPERATOR: ARSENAL RESOURCES

ADDRESS: 6031 WALLACE ROAD EXTENSION #300

STATE: PA ZIP CODE: 15090

CITY: BRIDGEPORT

DESIGNATED AGENT: WILLIAM VEIGEL

LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCTION WELLS
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR
- 1,000' DHP BUFFER
- AS-DRILLED PATH
- 500' DHP BUFFER
- LEASE BOUNDARY

REVISIONS:

DATE: 06-08-2017

DRAWN BY: RDOERR

SCALE: 1" = 2000'

DRAWING NO: 030-3241

WELL LOCATION PLAN

2,851' SHL

3,842' BHL

Latitude: 39°27'30"

Longitude: 79°57'30"

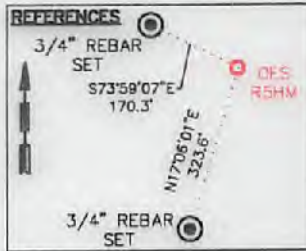
8,114' SHL

THRASHER

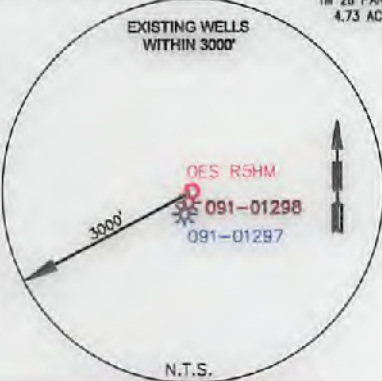
THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

NOTES ON SURVEY

- COORDINATES SYSTEM IS WV STATE PLANE NORTH, NAD 83 DATUM, 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 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.



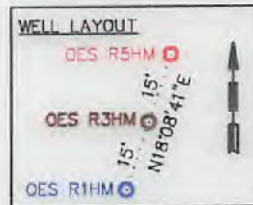
GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT



AS-DRILLED COORDINATES:	
SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,365,677.77	EASTING: 588,789.98
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,365,905.35	EASTING: 589,063.38
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,367,661.25	EASTING: 588,464.21
PROPOSED COORDINATES:	
SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,365,677.8	EASTING: 588,789.9
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,367,950.0	EASTING: 589,162.7
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,367,625.8	EASTING: 588,465.2

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



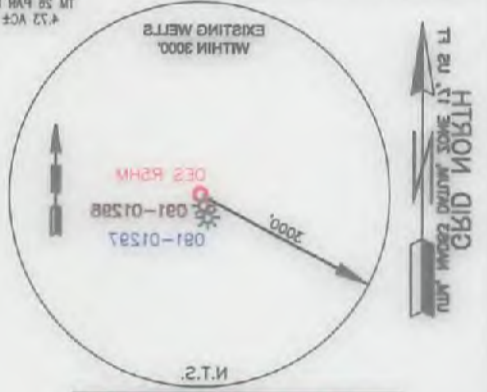
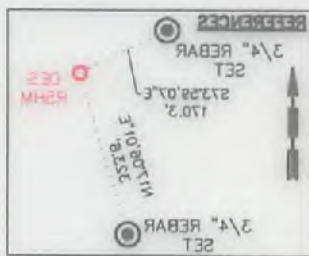
2000 0 2000

GRAPHIC SCALE IN FEET

<p>(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS</p> <p>WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034</p>	MINIMUM DEGREE OF ACCURACY: 1/200 PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)	OPERATOR'S WELL #: OES NO. R5HM API WELL #: 47 091 01299 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 DISTRICT: FETTERMAN COUNTY: TAYLOR SURFACE OWNER: ORTHODOX EDUCATIONAL SOCIETY OIL & GAS ROYALTY OWNER: ORTHODOX EDUCATIONAL SOCIETY/CHARLES & LAVERNE MacDONALD 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: LATERAL: 7,788 TVD 14,890 TMD	ELEVATION: 1951.00' QUADRANGLE: GLADESVILLE 7.5' ACREAGE: 502.5 ± ACREAGE: 885.39 ± (LEASE)
WELL OPERATOR: ARSENAL RESOURCES ADDRESS: 6031 WALLACE ROAD EXTENSION #300 CITY: WEXFORD STATE: PA ZIP CODE: 15090	DESIGNATED AGENT: WILLIAM VEIGEL ADDRESS: 65 PROFESSIONAL PLACE, SUITE 200 CITY: BRIDGEPORT STATE: WV ZIP CODE: 26330	REVISIONS: DATE: 06-21-2017
LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD △ ABANDONED WELL ◊ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR	--- LEASE BOUNDARY - - - 500' DHP BUFFER --- PROPOSED PATH --- AS-DRILLED PATH --- DHP BUFFER	

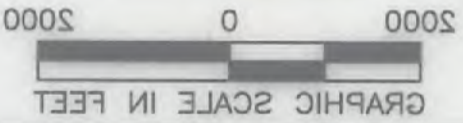
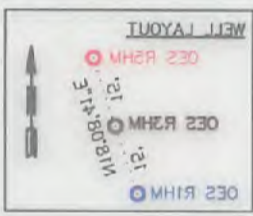
THE THRASHER GROUP, INC.
 500 WHITE OAK BLVD.
 BRIDGEPORT, WV 26230
 PHONE 304-624-4108

- NOTES ON SURVEY**
- COORDINATE SYSTEM IS WV STATE PLANE NORTH, NAD 83 DATUM, 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 CENTER OF PAD.
 - NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
 - NO PERMANENT STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
 - NO NATURALLY PRODUCING TIGHT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.



AS DRILLED COORDINATES	
SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	EASTING: 588,789.88 NORTHING: 4,362,677.77
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	EASTING: 588,063.38 NORTHING: 4,362,902.32
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	EASTING: 588,484.21 NORTHING: 4,367,867.25
PROPOSED COORDINATES	
SURFACE HOLE LOCATION (SHL):	
UTM (NAD83, ZONE 17, METERS):	EASTING: 588,789.9 NORTHING: 4,362,677.8
LANDING POINT LOCATION (LPL):	
UTM (NAD83, ZONE 17, METERS):	EASTING: 588,162.7 NORTHING: 4,367,850.0
BOTTOM HOLE LOCATION (BHL):	
UTM (NAD83, ZONE 17, METERS):	EASTING: 588,485.2 NORTHING: 4,367,825.8

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.



8'11.4" SHL
 1'20.2" BHL
 3,842' BHL
 30.27'30" Latitude
 78.21'20" Longitude

WELLS: 47 OPERATOR'S WELL #: OES NO. R5HM API WELL #: 091 01299 STATE: COUNTY: PERMIT:		UNITED STATES TOPOGRAPHIC MAPS (+) DENOTES LOCATION OF WELL ON ACCURACY: 1/200 DEGREE OF MINIMUM	
WELLS: 47 OPERATOR'S WELL #: OES NO. R5HM API WELL #: 091 01299 STATE: COUNTY: PERMIT:		OFFICE OF OIL & GAS 801 5TH STREET CHARLESTON, WV 25034 WVDEP	
WELLS: 47 OPERATOR'S WELL #: OES NO. R5HM API WELL #: 091 01299 STATE: COUNTY: PERMIT:		WATERSHED: WHITE DAY CREEK DISTRICT: FETTERMAN COUNTY: TAYLOR QUADRANGLE: GLADESVILLE 7.5' ELEVATION: 1821.00' 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"/>	
WELLS: 47 OPERATOR'S WELL #: OES NO. R5HM API WELL #: 091 01299 STATE: COUNTY: PERMIT:		SURFACE OWNER: ORTHODOX EDUCATIONAL SOCIETY OIL & GAS ROYALTY OWNER: ORTHODOX EDUCATIONAL SOCIETY / CHARLES & LAVARNE McDONALD ACREAGE: 502.5 ± ACREAGE: 882.38 ± (LEASE) PERFORATE NEW FORMATION: <input type="checkbox"/> PLUG OFF OLD FORMATION: <input type="checkbox"/> PLUG OR STIMULATE: <input type="checkbox"/> FRACTURE OR STIMULATE: <input type="checkbox"/> REDRILL: <input type="checkbox"/> REDRILL DEEPER: <input type="checkbox"/> CLEAN OUT & REPLUG: <input type="checkbox"/> OTHER CHANGE (SPECIFY) AS-DRILLED: <input checked="" type="checkbox"/> LATERAL: 2.788 TWD 14.890 TMD	
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WELLS: 47 OPERATOR'S WELL #: OES NO. R5HM API WELL #: 091 01299 STATE: COUNTY: PERMIT:		TARGET FORMATION: MARCELLUS SHALE ESTIMATED DEPTH: 1480' TMD REVISIONS: DATE: 08-21-2017 DRAWN BY: R. DOERR SCALE: 1" = 2000' DRAWING NO: 030-3241 WELL LOCATION PLAT	

09/15/2017