

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 47-33-05774 County Harrison District Union
Quad Mount Clare Pad Name Paletta Field/Pool Name _____
Farm name Domineck Paletta Estate C/O Tony Paletta, G. Diane Sullivan Well Number 9H
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 4340236.433 Easting 554647.562
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing _____ Easting _____

Elevation (ft) 1,161.4 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

APPROVED

NAME: Sam Ward

DATE: 8/06/2017

Date permit issued 9/20/2013 Date drilling commenced 5/27/2015 Date drilling ceased 6/7/2015
Date completion activities began 9/23/2015 Date completion activities ceased 8/30/2015
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 200' Open mine(s) (Y/N) depths N
Salt water depth(s) ft _____ Void(s) encountered (Y/N) depths N
Coal depth(s) ft _____ Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:

EC

09/15/2017

API 47- 33 - 05774

Farm name Domineck Paletta Estate C/O Tony Paletta, G. Diane Sullivan Well number 9H

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"	90'	New	94	N/A	Y
Surface	17.5"	13 3/8"	607'	New	54.5	N/A	Y
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,629'	New	40	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	12,017.0'	New	20	N/A	N
Tubing							
Packer type and depth set							RECEIVED Office of Oil and Gas

Comment Details Top of cement for production string brought to 2,450'MD

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CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	WV Department of Environmental Protection	
						Cement Top (MD)	WOC (hrs)
Conductor	Grout					Surface	8
Surface	Class A 2% CaCl ₂	552	15.6	1.2	662.4	Surface	8
Coal							
Intermediate 1	Class A	536/172	14.50/15.70	1.55/1.29	1052.68	Surface	8
Intermediate 2							
Intermediate 3							
Production	Type 1 4% Gel/Type 1 2% Gel	749/1021	13.80/15.00	1.64/1.32	2576.08	2450	8
Tubing							

Drillers TD (ft) 12,027' Loggers TD (ft) 12,027'
 Deepest formation penetrated Marcellus Plug back to (ft) _____
 Plug back procedure None

Kick off depth (ft) 6,831' 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 21 stages utilizing .45" 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	10/7/15	11931	11769	40	Marcellus
2	11/9/15	11731	11569	40	Marcellus
3	11/9/15	11531	11369	40	Marcellus
4	11/10/15	11331	11169	40	Marcellus
5	11/10/15	11131	10969	40	Marcellus
6	11/10/15	10931	10769	40	Marcellus
7	11/11/15	10731	10569	40	Marcellus
8	11/11/15	10537	10369	40	Marcellus
9	11/11/15	10331	10169	40	Marcellus
10	11/11/15	10131	9969	40	Marcellus
11	11/12/15	9931	9769	40	Marcellus
12	11/12/15	9731	9569	40	Marcellus
13	11/12/15	9531	9369	40	Marcellus
14	11/12/15	9331	9169	40	Marcellus
15	11/13/15	9131	8969	40	Marcellus
16	11/13/15	8931	8769	40	Marcellus

Please insert additional pages as applicable.

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STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

WV Department of
Environmental Protection

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	11/9/15	77	7324	8365	5479	400301	7825	0
2	11/9/15	80	7510	6266	4581	400921	8689	0
3	11/10/15	80	7501	6763	5375	400661	7393	0
4	11/10/15	80	7553	6253	5354	403080	7951	0
5	11/10/15	81	7860	6548	5100	403881	7436	0
6	11/11/15	79	7446	6616	5643	400061	7321	0
7	11/11/15	79	7487	6602	5540	404481	7464	0
8	11/11/15	81	7626	6646	5832	405981	7709	0
9	11/11/15	81	7591	6559	5161	400041	7579	0
10	11/12/15	78	7461	6530	5440	295841	8733	0
11	11/12/15	81	7864	6455	5504	401981	7929	0
12	11/12/15	82	7708	6337	5536	401181	7832	0
13	11/12/15	81	7619	6799	5440	401641	7443	0
14	11/13/15	81	7656	6956	5293	400261	7347	0
15	11/13/15	84	7575	7221	5261	401401	9044	0
16	11/13/15	82	7483	6981	5769	403541	7685	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.

WV Department of
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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 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	1817	0	1820	Sand, Silt, and Coal
Big Lime	1817	1876	1820	1879	Sandstone
Balltown	3599	3641	3608	3650	Sandstone
Bradford	4332	4361	4341	4371	Sandstone
Benson	4906	4973	4915	4982	Sandstone
Elk	5190	5248	5199	5257	Siltstone
Burkett	6875	6898	7123	7148	Shale
Tully	6898	6951	7148	7211	Limestone
Mahantango	6951	7109	7211	7439	Shale- Gas Show at 7430' MD
Marcellus	7109	7201	7439	12027	Shale-Gas shows through lateral
Purcell	7173	7176	7646	7652	Limestone
Onondaga	7201	7220			Limestone
					*Onondaga MD not listed-lateral drilled in Marcellus**Onondaga top estimated from 4703305741 thickness
					**Big Lime through Elk from 4703305741, 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 USWS
Address 770 South Post Oak Lane, Suite 405 City Houston State TX Zip 77056

Please insert additional pages as applicable.

Completed by EDDIE GARDEN Telephone 724-940-1264
Signature [Signature] Title REGISTERED MEMBER Date 4-17-17

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:	10/29/2015
Job End Date:	11/15/2015
State:	West Virginia
County:	Harrison
API Number:	47-033-05774-00-00
Operator Name:	Arsenal Resources
Well Name and Number:	Paletta 9HM
Latitude:	39.20959000
Longitude:	-80.36722000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,176
Total Base Water Volume (gal):	6,891,570
Total Base Non Water Volume:	

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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
AI-302	U.S. Well Services, Inc.	Acid Corrosion Inhibitors					
				Listed Below			
Water	Arsenal Resources	Base Fluid					
				Listed Below			

K-BAC 1020	U.S. Well Services, Inc.	Anti-Bacterial Agent					
				Listed Below			
Sand	U.S. Well Services, Inc.	Proppant					
				Listed Below			
WFRA-1000	U.S. Well Services, Inc.	Friction Reducer					
				Listed Below			
HCL Acid (3%-7.5%)	U.S. Well Services, Inc.	Bulk Acid					
				Listed Below			
HCL Acid (28%)	U.S. Well Services, Inc.	Bulk Acid					
				Listed Below			
HCL Acid (12.6%-18.0%)	U.S. Well Services, Inc.	Bulk Acid					
				Listed Below			
SI-1100	U.S. Well Services, Inc.	Scale Inhibitor					
				Listed Below			

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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	

			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	
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00080	
			Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1	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-ol compound with methyloxirane	38172-91-7	15.00000	0.00008	

* 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)

Environmental Protection
 W/ Department of
 JUN 9 2017
 Office of Oil and
 REVENUE and
 seas

THRASHER

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 DATA.
- 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.

AS-DRILLED COORDINATES:

SURFACE HOLE LOCATION (SHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,340,230.59
EASTING: 554,649.99

LANDING POINT LOCATION (LPL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,340,246.40
EASTING: 555,056.10

BOTTOM HOLE LOCATION (BHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,339,100.16
EASTING: 555,474.84

PALETTA PAD



PROPOSED COORDINATES:

SURFACE HOLE LOCATION (SHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,340,230.59
EASTING: 554,649.99

LANDING POINT LOCATION (LPL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,340,491.47
EASTING: 554,970.19

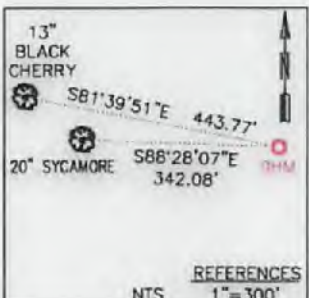
BOTTOM HOLE LOCATION (BHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,339,090.42
EASTING: 555,483.10

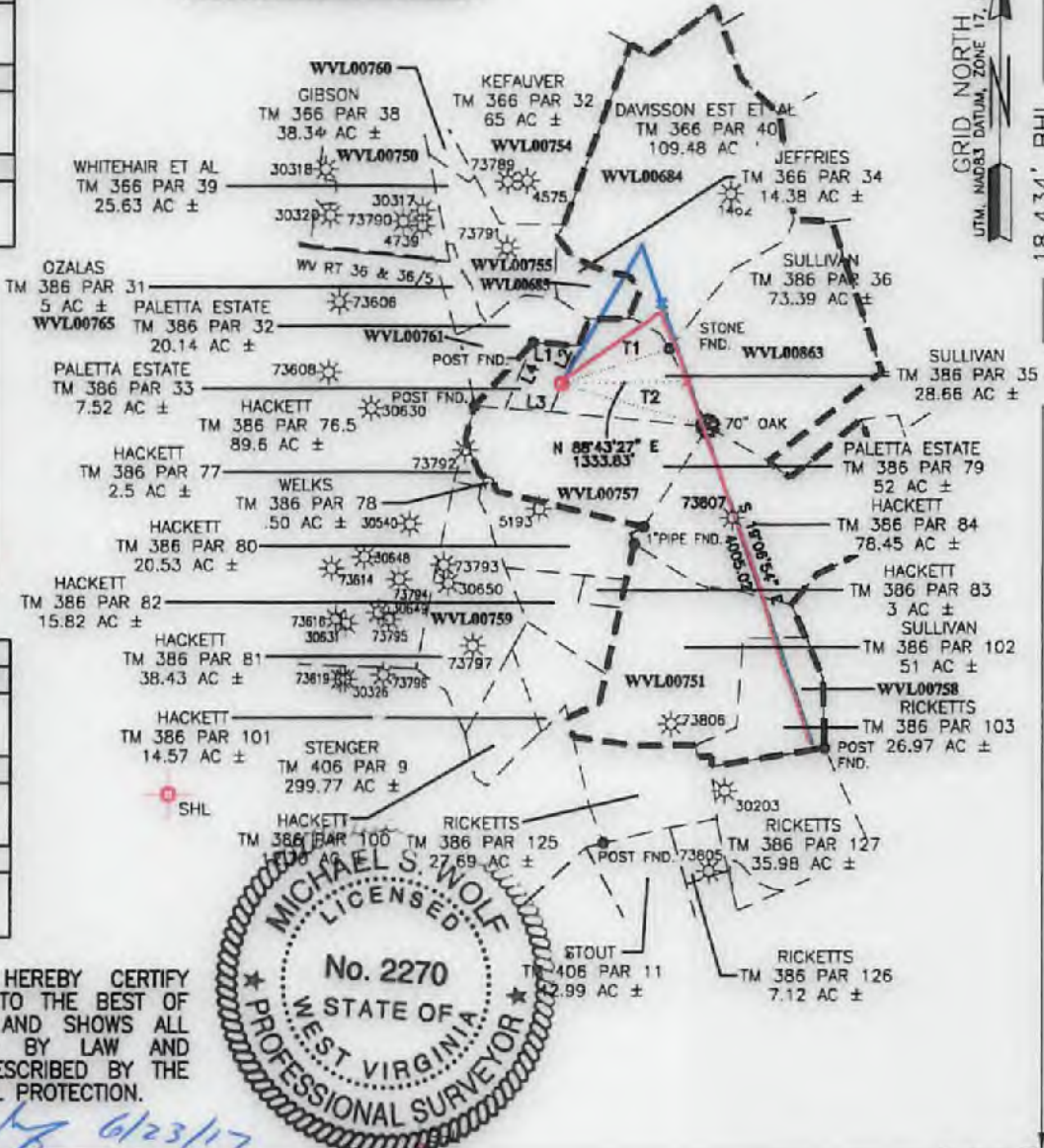
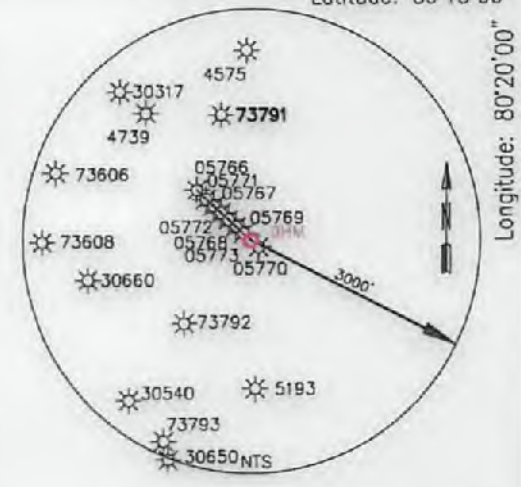
I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2270

M.S. Wolf 6/23/17



LINE	BEARING	DISTANCE
L1	S86°10'43\"/>	
L2	S23°37'40\"/>	
L3	N85°48'29\"/>	
L4	N23°04'17\"/>	
T1	S71°54'03\"/>	
T2	N74°02'16\"/>	



<p>(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS</p> <p>WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034</p>	<p>MINIMUM DEGREE OF ACCURACY: 1/200</p> <p>PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)</p>	<p>OPERATOR'S WELL #: 9HM</p> <p>API WELL #: 47 033 05774</p> <p>STATE COUNTY PERMIT</p>
	<p>WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW</p> <p>WATERSHED: WEST FORK RIVER ELEVATION: 1161.40'</p> <p>DISTRICT: UNION COUNTY: HARRISON QUADRANGLE: MOUNT CLARE 7.5'</p> <p>SURFACE OWNER: DOMINECK PALETTA, ESTATE ACREAGE: 7.52 ±</p> <p>OIL & GAS ROYALTY OWNER: DOMINECK PALETTA ESTATE C/O TONY PALETTA, DIANE G. SULLIVAN ACREAGE: 448.57 ± (LEASE)</p> <p>DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION</p> <p>CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE X (SPECIFY) AS-DRILLED</p> <p>TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,162' TVD 13,027' TMD</p>	
<p>WELL OPERATOR: ARSENAL RESOURCES ADDRESS: 6031 WALLACE ROAD EXTENSION #300 CITY: WEXFORD STATE: WV ZIP CODE: 15090</p>	<p>DESIGNATED AGENT: WILLIAM VEIGEL ADDRESS: 65 PROFESSIONAL PLACE, SUITE 200 CITY: BRIDGEPORT STATE: WV ZIP CODE: 26330</p>	<p>LEGEND:</p> <ul style="list-style-type: none"> ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ⊙ EXISTING / PRODUCING WELLHEAD ⊘ ABANDONED WELL ⊙ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR --- LEASE BOUNDARY --- 500' DHP BUFFER --- AS-DRILLED PATH --- PROPOSED PATH
<p>REVISIONS:</p>		<p>DATE: 06-22-2017</p> <p>DRAWN BY: R. DOERR</p> <p>SCALE: 1" = 2000'</p> <p>DRAWING NO: 030-3243</p> <p>WELL LOCATION PLAT</p>

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

- COORDINATES SYSTEM IS UTM, NAD83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS PARCELS SHOWN HEREON.
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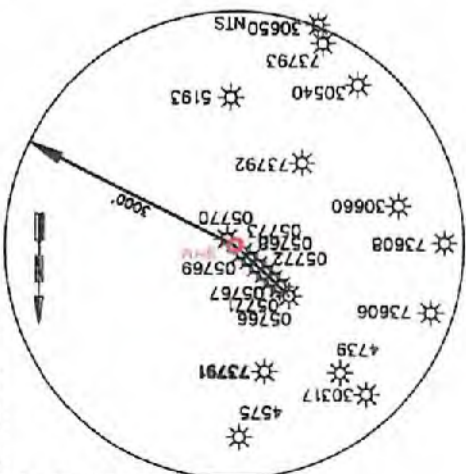
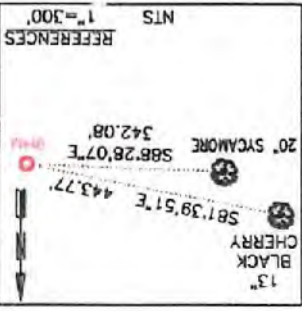
AS-DRIILLED COORDINATES:

SURFACE HOLE LOCATION (BHL):	NORTHING: 4,340,230.59
UTM (NAD83, ZONE 17, METERS):	EASTING: 554,664.99
LANDING POINT LOCATION (LPL):	NORTHING: 4,340,491.47
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BOTTOM HOLE LOCATION (BHL):	NORTHING: 4,339,090.42
UTM (NAD83, ZONE 17, METERS):	EASTING: 555,483.10

PROPOSED COORDINATES:

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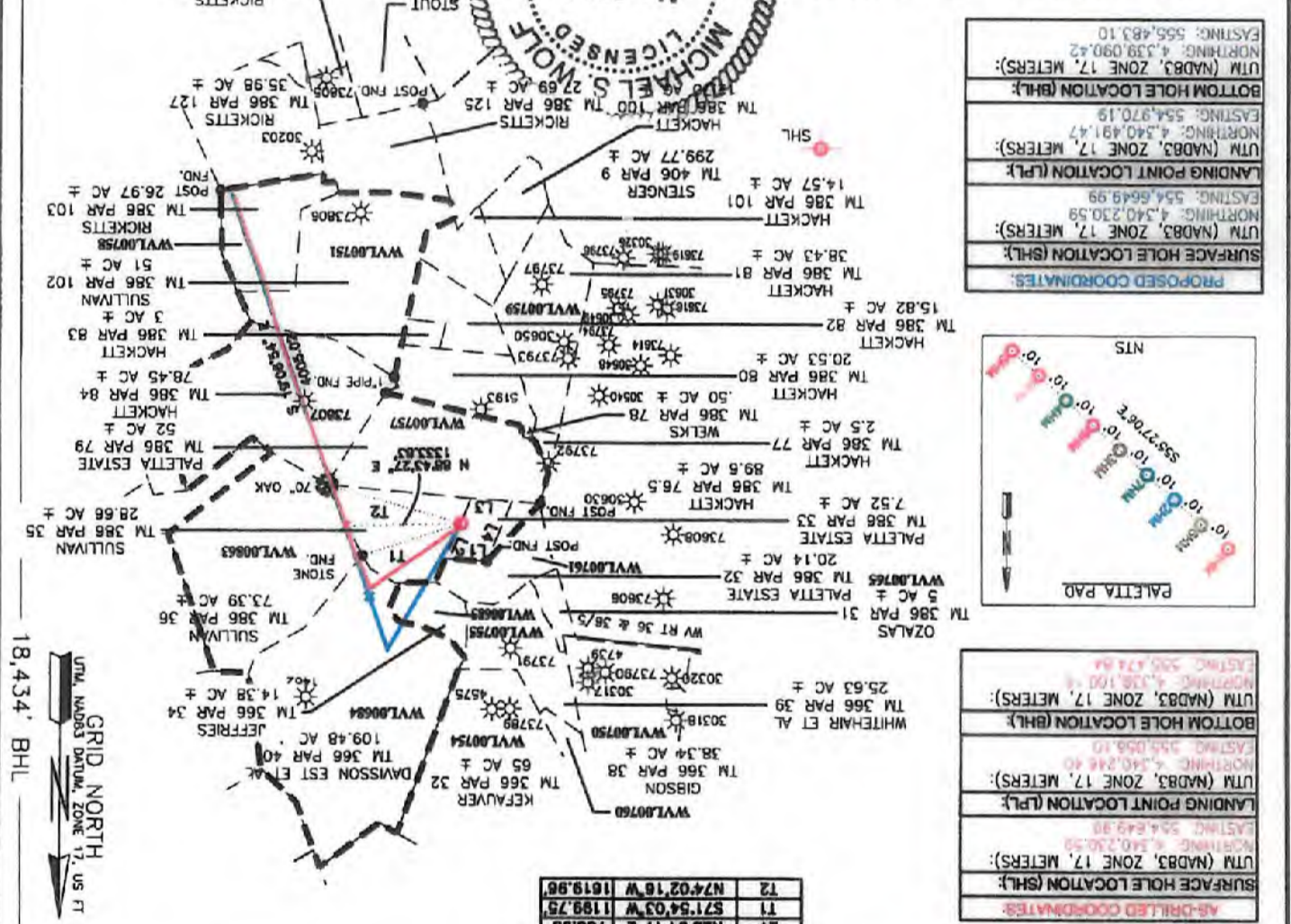
LINE	BEARING	DISTANCE
L1	S86°10'43"E	487.67
L2	S23°37'40"W	758.81
L3	N85°48'28"W	478.81
L4	N23°04'17"E	750.93
L5	S71°54'03"W	1189.75
L6	N74°02'18"W	1619.86



WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW
 WATERSHED: WEST FORK RIVER DISTRICT: UNION COUNTY: HARRISON
 SURFACE OWNER: DOMINECK PALETTA ESTATE OIL & GAS ROYALTY OWNER: DOMINECK PALETTA ESTATE C/O TONY PALETTA, DIANE G. SULLIVAN
 DRILL: DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION
 CONVERT: PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) AS-DRIILLED
 TARGET FORMATION: MARCELLUS
 WELL OPERATOR: ARSENAL RESOURCES
 ADDRESS: 6031 WALLACE ROAD EXTENSION #300 CITY: WEXFORD STATE: WV ZIP CODE: 15090
 DESIGNATED AGENT: WILLIAM VEIGEL
 CITY: WEXFORD STATE: WV ZIP CODE: 26330

WELL LOCATION: PALETTA PAD
 DRAWN BY: R. DOERR
 SCALE: 1" = 2000'
 DRAWING NO.: 030-3243
 DATE: 06-22-2017
 REVISIONS:
 LEGEND:
 ○ PROPOSED SURFACE HOLE / BOTTOM HOLE
 * EXISTING / PRODUCING WELLS
 * ABANDONED WELL
 * PLUGGED & ABANDONED WELL
 △ CUT CONDUCTOR
 --- LEASE BOUNDARY
 --- 500' DHP BUFFER
 --- AS-DRIILLED PATH
 --- PROPOSED PATH

I, 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. P.S. 2270
 MICHAEL S. WOLF
 LICENSED PROFESSIONAL SURVEYOR
 WEST VIRGINIA
 NO. 2270



GRID NORTH
 UTM, NAD83 DATUM, ZONE 17, US FT
 18,434' BHL
 14,705' SHL
 9,542' SHL
 6,862' BHL
 39'15.00" Latitude
 80'20.00" Longitude