

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

API 47-033-05766 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 1
Operator (as registered with the OOG) Arsenal Resources
Address 6031 Wallace Road Ext., Ste 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 4340242.39 Easting 554632.23
Landing Point of Curve Northing 4340325.26 Easting 554376.14
Bottom Hole Northing 4341444.12 Easting 553960.863

Elevation (ft) 1155 1111.40 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 9/20/2013 Date drilling commenced 5/11/2015 Date drilling ceased 3/26/2017
Date completion activities began 5/17/2017 Date completion activities ceased 5/29/2017
Verbal plugging (Y/N) N Date permission granted NA Granted by NA

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

Freshwater depth(s) ft _____ 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

APPROVED
NAME: S P Dubois III
DATE: 11/13/2017

Reviewed by: ZEL

01/05/2018

API 47- 033 - 05766

Farm name Domneck Paletta Estate C/O Tony Palotta, G. Diane Sullivan

Well number 1

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	94.00	NA	Y
Surface	17 1/2"	13 3/8"	550'	New	54.50	120'	Y
Coal	NA	NA	NA	NA	NA	NA	NA
Intermediate 1	12 1/4"	9 5/8"	2,634'	New	40	NA	Y
Intermediate 2	NA	NA	NA	NA	NA	NA	NA
Intermediate 3	NA	NA	NA	NA	NA	NA	NA
Production	8 1/2"	5 1/2"	11,887'	New	20	NA	N
Tubing	NA	NA	NA	NA	NA	NA	NA
Packer type and depth set		NA					

Comment Details Cement to surface on Conductor, Surface, and Intermediate. Top of Cement at 1,239ft

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	A	210	15.60	1.20	252	Surface	8+
Surface	A	520	15.60	1.20	624	Surface	8+
Coal	NA	NA	NA	NA	NA	NA	NA
Intermediate 1	A	550/170	14.50/15.70	1.55/1.29	852.5/219.3	Surface	8+
Intermediate 2	NA	NA	NA	NA	NA	NA	NA
Intermediate 3	NA	NA	NA	NA	NA	NA	NA
Production	A	1896	13.80	1.33	2521.68	1,239'	8+
Tubing	NA	NA	NA	NA	NA	NA	NA

Drillers TD (ft) 11,900

Loggers TD (ft) NA

Deepest formation penetrated Marcellus

Plug back to (ft) NA

Plug back procedure NA

Kick off depth (ft) KOP of Curve at 6420', No Plug

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

24" - No centralizers 13 3/8" - one bow spring centralizer on every other joint 9 5/8" - one bow spring centralizer every third joint from TD to surface 5 1/2" - one semi rigid centralizer on every joint from TD of casing to end of curve. Then every other joint to KOP. Every third joint from KOP to 2,500'; there will be no centralizers from 2,500' to surface.

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS 22 stages, 880 perforations

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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API 47- 033 - 05766 Farm name Dominick Paletta Estate C/O Tony Paletta, G. Diane Sullivan Well number 1

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
		See Attached			

Please insert additional pages as applicable.

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)
			See Attached					

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Please insert additional pages as applicable.

Stage No.	Perforation Date	Perforated From MD Ft.	Perforated to MD Ft.	Number of Perforations	Formation(s)
1	5/28/2017	7442	7604	40	Marcellus Shale
2	5/28/2017	7642	7804	40	Marcellus Shale
3	5/27/2017	7842	8004	40	Marcellus Shale
4	5/27/2017	8042	8204	40	Marcellus Shale
5	5/26/2017	8242	8404	40	Marcellus Shale
6	5/25/2017	8442	8604	40	Marcellus Shale
7	5/25/2017	8642	8804	40	Marcellus Shale
8	5/25/2017	8842	9004	40	Marcellus Shale
9	5/24/2017	9042	9204	40	Marcellus Shale
10	5/23/2017	9242	9404	40	Marcellus Shale
11	5/23/2017	9442	9604	40	Marcellus Shale
12	5/23/2017	9642	9804	40	Marcellus Shale
13	5/22/2017	9842	10004	40	Marcellus Shale
14	5/22/2017	10042	10204	40	Marcellus Shale
15	5/21/2017	10242	10404	40	Marcellus Shale
16	5/21/2017	10442	10604	40	Marcellus Shale
17	5/20/2017	10642	10804	40	Marcellus Shale
18	5/20/2017	10842	11004	40	Marcellus Shale
19	5/19/2017	11042	11204	40	Marcellus Shale
20	5/18/2017	11242	11404	40	Marcellus Shale
21	5/18/2017	11442	11604	40	Marcellus Shale
22	5/15/2017	11642	11801	40	Marcellus Shale

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Stage Number	Stimulation Date	Average Rate (bpm)	Average Pressure (psi)	Breakdown Pressure (psi)	ISIP (psi)	Sand Volume (lbs)	Water Volume (Bbls)
1	5/17/2017	79	8243	8519	4404	600720	14700
2	5/18/2017	78	7946	6349	4698	600480	14975
3	5/19/2017	79	7783	6434	4675	600080	13518
4	5/19/2017	80	7767	7249	5041	603500	11905
5	5/20/2017	79	7728	6706	4909	572480	11873
6	5/20/2017	80	7559	6043	4822	605980	12142
7	5/21/2017	80	7366	6115	4871	600760	11395
8	5/21/2017	81	7686	6271	5290	600440	11558
9	5/22/2017	80	7312	6645	4970	600940	10815
10	5/22/2017	77	7457	6221	4986	600500	13208
11	5/23/2017	79	7239	6530	5395	600600	10831
12	5/23/2017	80	7530	6419	5492	605740	10650
13	5/24/2017	78	7635	6058	4816	600440	15434
14	5/24/2017	81	7985	6542	4889	605580	10831
15	5/25/2017	79	7451	6478	4975	600640	10738
16	5/25/2017	78	7450	6684	5105	603840	11668
17	5/26/2017	75	7525	6439	5450	600800	13601
18	5/27/2017	80	7450	6109	4624	600380	14689
19	5/27/2017	80	7201	6701	4638	599140	11483
20	5/28/2017	68	7702	6018	4586	605220	14330
21	5/28/2017	77	7013	6280	5805	600640	10454
22	5/28/2017	80	7004	6502	5580	604520	10921

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
Marcellus Shale	7135	TVD	7280 MD
_____	_____	_____	_____
_____	_____	_____	_____

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 DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
Sand/silt	0	6915	0	6960	Sand/silt
Burket	6915	6937	6960	6990	Shale, gas
Tully	6937	6996	6990	7052	Limestone
Mahantango	6996	7135	7052	7280	Shale
Marcellus	7135	7191	7280	7450	Shale, gas
Purcell	7191	7195	7450	7500	Limestone, gas
Lower Marcellus	7195	7233	7500	11900	Shale, gas

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Please insert additional pages as applicable.

Drilling Contractor H&P
 Address 1437 South Boulder Ave. City Tulsa State OK Zip 74119

Logging Company NA
 Address _____ City _____ State _____ Zip _____

Cementing Company Universal Well Services
 Address 18360 Technology Dr Box 4 City Meadville State PA Zip 16335

Stimulating Company Keane Group
 Address 2121 Sage Road City Houston State TX Zip 77056

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Please insert additional pages as applicable.

Completed by Arsenal Resources Telephone _____
 Signature [Signature] Title PERMITTING MANAGER Date 8/22/17

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

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/17/2017
Job End Date:	5/29/2017
State:	West Virginia
County:	Harrison
API Number:	47-033-05766-00-00
Operator Name:	Arsenal Resources
Well Name and Number:	Paletta 1H
Latitude:	39.21019000
Longitude:	-80.36819000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,232
Total Base Water Volume (gal):	11,546,808
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	Ascent	Carrier/Base Fluid	Water	7732-18-5	100.00000	87.52971	None
Sand (Proppant)	Keane	Proppant	Crystalline silica: Quartz (SiO2)	14808-60-7	100.00000	12.00280	None
Hydrochloric Acid (7.5%)	Keane	Acid Inhibitor	Water	7732-18-5	92.50000	0.31989	None
			Hydrochloric Acid	7647-01-0	7.50000	0.02594	None
KFR-16FW	Keane	Friction Reducer	Water	7732-18-5	60.00000	0.05751	None
			Distillates (petroleum), hydrotreated light	64742-47-8	20.00000	0.01917	None
			ammonium chloride	12125-02-9	1.50000	0.00144	None
			bleic acid diethanolamide	93-83-4	1.50000	0.00144	None
			alcohols, C12-16, ethoxylated	68551-12-2	1.00000	0.00096	None
MBC-516	Keane	Biocide	Water	7732-18-5	56.70000	0.00495	None
			Glutaral	111-30-8	26.70000	0.00233	None

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			didecyldimethylammonium chloride	7173-51-5	8.00000	0.00070	None
			quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	58424-85-1	5.30000	0.00046	None
			ethonal	54-17-5	2.80000	0.00024	None
KLSI-21	Keane	Scale Inhibitor					
			polyphosphonic acids, esters with triethanolamine, sodium salts	58131-72-6	30.00000	0.00455	None
KAI-12	Keane	Acid Inhibitor					
			Ethylene glycol	107-21-1	40.00000	0.00077	None
			dipropylene glycol, monomethyl ether	34590-94-8	20.00000	0.00039	None
			Tar bases, quinoline derivs., benzyl chloride-quaternized	72480-70-7	10.00000	0.00019	None
			Ethoxylated alcohol	58131-39-5	10.00000	0.00019	None
			formic acid	54-18-6	10.00000	0.00019	None
			Cinnamaldehyde	104-55-2	10.00000	0.00019	None
			soproyl alcohol	57-63-0	5.00000	0.00010	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.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Water	7732-18-5	92.50000	0.31989	
			Distillates (petroleum), hydrotreated light	54742-47-8	20.00000	0.01917	
			Glutaral	111-30-8	26.70000	0.00233	
			oleic acid diethanolamide	93-83-4	1.50000	0.00144	
			ammonium chloride	12125-02-9	1.50000	0.00144	
			alcohols, C12-16, ethoxylated	58551-12-2	1.00000	0.00096	
			didecyldimethylammonium chloride	7173-51-5	8.00000	0.00070	
			quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	58424-85-1	5.30000	0.00046	
			dipropylene glycol, monomethyl ether	34590-94-8	20.00000	0.00039	
			ethonal	54-17-5	2.80000	0.00024	
			Ethoxylated alcohol	58131-39-5	10.00000	0.00019	
			formic acid	54-18-6	10.00000	0.00019	
			Tar bases, quinoline derivs., benzyl chloride-quaternized	72480-70-7	10.00000	0.00019	
			Cinnamaldehyde	104-55-2	10.00000	0.00019	
			soproyl alcohol	57-63-0	5.00000	0.00010	
			Water	7732-18-5	85.00000	0.00001	

* 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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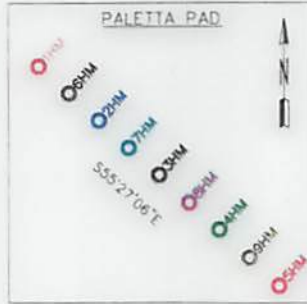
THRASHER

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

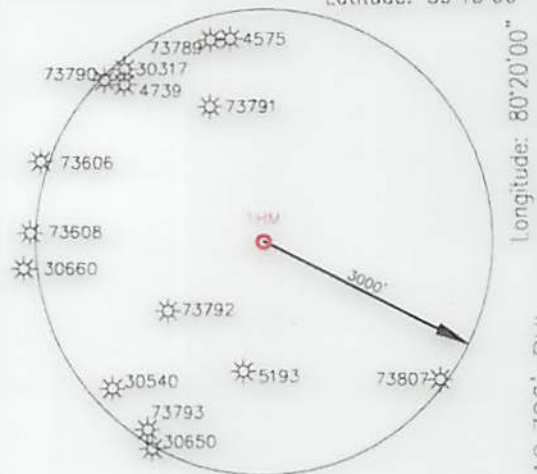
NOTES ON SURVEY

- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY
- OWNER 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.

8/07/2018

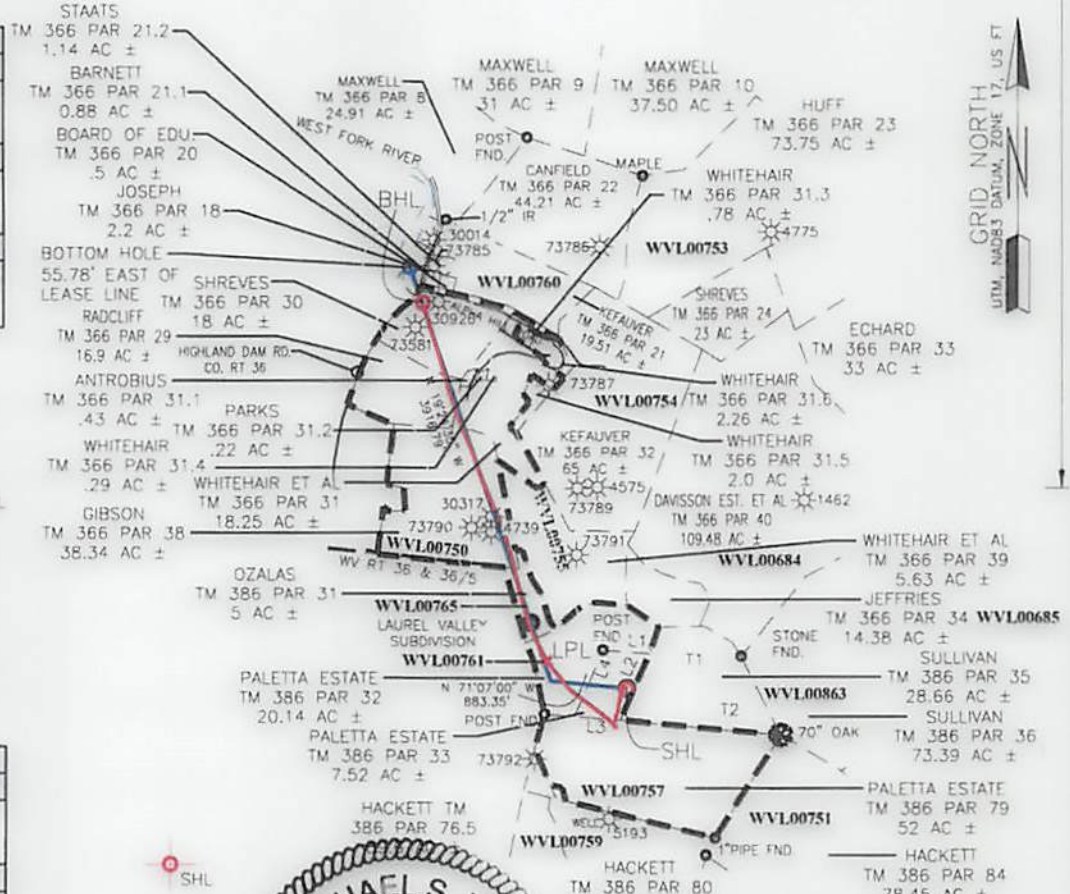


9,600' SHL
11,774' BHL
Latitude: 39°15'00"



Longitude: 80°20'00"

AS-DRILLED COORDINATES:
SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,340,242.39
EASTING: 554,632.23
LANDING POINT LOCATION (LPL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,340,325.25
EASTING: 554,376.14
BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,341,444.12
EASTING: 553,980.863

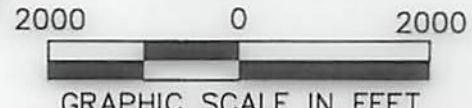


PROPOSED COORDINATES:
SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,340,242.39
EASTING: 554,632.23
LANDING POINT LOCATION (LPL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,340,443.89
EASTING: 554,322.67
BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,341,552.72
EASTING: 553,916.95

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.



LINE	BEARING	DISTANCE
L1	S86°10'43"E	487.67'
L2	S23°37'40"W	756.81'
L3	N85°48'29"W	478.81'
L4	N23°04'17"E	750.93'
T1	S74°27'56"W	1243.46'
T2	N73°16'47"W	1686.46'



P.S. 2270 *MSW* 8/1/17

<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 ELEVATION: GRADE GPS (NAVD 88, US FT)</p>	<p>PALETTA PAD</p> <p>OPERATOR'S WELL #: 1HM</p> <p>API WELL #: 47 033 05766</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</p> <p>DISTRICT: UNION COUNTY: HARRISON</p> <p>SURFACE OWNER: DOMINECK PALETTA, ESTATE</p> <p>OIL & GAS ROYALTY OWNER: DOMINECK PALETTA ESTATE C/O TONY PALETTA, DIANE G. SULLIVAN</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: 7,233' TVD 11,900' TMD</p>	<p>DESIGNATED AGENT: WILLIAM VEIGEL</p> <p>ADDRESS: 65 PROFESSIONAL PLACE, SUITE 200</p> <p>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: 07-24-2017</p> <p>DRAWN BY: R. DOERR</p> <p>SCALE: 1" = 2000'</p> <p>DRAWING NO: 030-3243</p> <p>WELL LOCATION PLAT</p>