

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
OCT 10 2023
WV Department of
Environmental Protection

API 47-051-01810 County Marshall District Clay
Quad Powhatan Point, WV/OH Pad Name MND1 Field/Pool Name _____
Farm name Murray Energy Well Number MND1AHS
Operator (as registered with the OOG) HG Energy II Appalachia, LLC
Address 5260 Dupont Rd. City Parkersburg State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4411134.3 Easting 519309.0
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing 4413680.0 Easting 518408.0

Elevation (ft) 1150 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

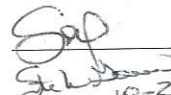
Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
Air/ OBM

Barite, Lime, CaCL, base oil, Gilsonite, Asphalt, clay, Emulsifier, sulfatone, safevert FLG, safevert WA

Date permit issued ~~01/18/2019~~ 10/21/21 Date drilling commenced 10/21/2021 Date drilling ceased 2/10/2022
Date completion activities began 2/25/2022 Date completion activities ceased 5/25/2022
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 521' Open mine(s) (Y/N) depths N
Salt water depth(s) ft Not observed Void(s) encountered (Y/N) depths N
Coal depth(s) ft 622,694 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:

10-10-2023

API 47-051 - 01810 Farm name Murray Energy Well number MND1AHS

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	28"	20"	40'	New	94 lbs/ft J-55		Yes
Surface	18.5"	13.375"	1091' ✓	New	54.5 lbs/ft J-55		Yes
Coal							
Intermediate 1	12.25"	9.625"	2602'	New	40 lbs/ft J55		Yes
Intermediate 2							
Intermediate 3							
Production	8.5	5.5	15885' ✓	New	20# & 23 lbs/ft CDC HTO		Yes
Tubing	4.67	2.375	7357	New	4.7 lbs/ft J55		not cemented
Packer type and depth set							

Comment Details 16 bbls of Class A 2% calcium cement pumped to surface

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	75	15.6				
Surface	Class A	1182	15.6	1.19	1179.55	Surface	8
Coal							
Intermediate 1	Class A	895	15.6	1.23	894.7	Surface	8
Intermediate 2							
Intermediate 3							
Production	Class A	3605	15.6	1.19	3609.4	Surface	8
Tubing							

Drillers TD (ft) ¹⁵⁹¹⁷ _____ Loggers TD (ft) _____
 Deepest formation penetrated Marcellus _____ Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) ⁶⁷⁵⁰ _____

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 _____

13.375" casing: centralizer run every joint to 20" casing then placed every 3 joints to surface
 9.625" casing: Centralizers run every other joint to 13.375" casing then placed every 3 joints to surface
 5.5" casing: Centralizer run every joint to top of curve (KOP) then centralizers placed every 3 joints to surface

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 _____

API 47- 051 - 01810 Farm name Murray Energy Well number MND1AHS

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6208-6267	TVD 7312-15917 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface 2883 psi Bottom Hole _____ psi DURATION OF TEST 982 hrs
 OPEN FLOW Gas 7776 mcfpd Oil _____ bpd NGL _____ bpd Water 2304 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	
	0		0		
		See Attached			

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling
 Address 10350 Richmond Ave, Suite 700 City Houston State TX Zip 77042
 Logging Company Renegade Wireline Services
 Address 191 Earnhardt Rd. City Hunker State PA Zip 15639
 Cementing Company Schlumberger
 Address 300 Schlumberger Dr. City Sugar Land State TX Zip 77478
 Stimulating Company Producers Supply Corp
 Address 109 Graham St. City Zanesville State OH Zip 43701
 Please insert additional pages as applicable.

Completed by Diane White Telephone 304-420-1119
 Signature Diane White Title Sr Staff Regulatory Agent Date 3/3/2023

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

HG Energy II Appalachia, LLC

MND1 AHS

Perforation Record

Stage #	Perforation Date	Perforation from Depth	Perforation to Depth	Number of Perforations	Formation
Sleeve/1	3/20/2022	15833	15807	2	Marcellus
2	3/20/2022	15773	15605	28	Marcellus
3	3/20/2022	15577	15409	28	Marcellus
4	3/21/2022	15381	15213	28	Marcellus
5	3/21/2022	15185	15017	28	Marcellus
6	3/21/2022	14989	14821	28	Marcellus
7	3/22/2022	14793	14625	28	Marcellus
8	3/24/2022	14597	14429	28	Marcellus
9	3/24/2022	14401	14233	28	Marcellus
10	4/5/2022	14205	14037	28	Marcellus
11	4/5/2022	14009	13841	28	Marcellus
12	4/5/2022	13813	13645	28	Marcellus
13	4/6/2022	13617	13449	28	Marcellus
14	4/6/2022	13421	13253	28	Marcellus
15	4/7/2022	13225	13057	28	Marcellus
16	4/9/2022	13029	12861	28	Marcellus
17	4/9/2022	12833	12665	28	Marcellus
18	4/10/2022	12637	12469	28	Marcellus
19	4/10/2022	12441	12273	28	Marcellus
20	4/11/2022	12245	12077	28	Marcellus
21	4/11/2022	12049	11881	28	Marcellus
22	4/11/2022	11853	11685	28	Marcellus
23	4/12/2022	11657	11489	28	Marcellus
24	4/12/2022	11461	11293	28	Marcellus
25	4/13/2022	11265	11097	28	Marcellus
26	4/13/2022	11069	10901	28	Marcellus
27	4/14/2022	10873	10705	28	Marcellus
28	4/14/2022	10677	10509	28	Marcellus
29	4/15/2022	10481	10313	28	Marcellus
30	4/15/2022	10285	10117	28	Marcellus
31	4/15/2022	10089	9921	28	Marcellus
32A	4/16/2022	9893	9725	28	Marcellus
32B	4/17/2022	9893	9685	56	Marcellus
33A	4/17/2022	9659	9509	28	Marcellus
33B	4/18/2022	9659	9477	56	Marcellus
34	4/18/2022	9451	9307	28	Marcellus
35A	4/18/2022	9281	9137	28	Marcellus
35B	4/19/2022	9281	9104	48	Marcellus
36	4/19/2022	9078	8924	28	Marcellus
37	4/19/2022	8898	8746	28	Marcellus
38	4/20/2022	8720	8552	28	Marcellus
39	4/21/2022	8526	8358	28	Marcellus
40	4/21/2022	8332	8164	28	Marcellus
41	4/22/2022	8138	7970	28	Marcellus
42A	4/22/2022	7944	7776	28	Marcellus
42B	4/23/2022	7944	7746	56	Marcellus
43	4/24/2022	7718	7564	28	Marcellus
44	4/25/2022	7538	7388	28	Marcellus

HG Energy II Appalachia, LLC

MND1 AHS

Stimulation Record

Stage #	Date	Average Pump Rate (BPM)	Average Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Proppant (LBS)	Water (BBLs)
Sleeve/1	3/20/2022	82.0	5944	7022	3063	276150	7,059
2	3/20/2022	93.0	7,741	5,280	3,955	631980	13,218
3	3/20/2022	97.0	8,150	5,393	4,109	661650	12,069
4	3/21/2022	99.0	7,558	5,505	4,726	660000	11,488
5	3/21/2022	98.0	7,800	5,668	4,637	661440	9,953
6	3/21/2022	100.0	7,925	5,310	4,654	666500	10,536
7	3/22/2022	91.0	7,466	5,105	4,811	670280	12,982
8	3/24/2022	94.0	7,659	5,187	4,613	648900	9,491
9	3/24/2022	97.0	7,530	5,217	4,688	651280	9,685
10	4/5/2022	99.0	7,751	5,541	4,631	628970	9,270
11	4/5/2022	96.0	7,581	5,607	4,985	642410	11,106
12	4/5/2022	84.0	7,897	5,031	4,725	630450	10,895
13	4/6/2022	94.0	7,676	5,088	4,706	639870	10,439
14	4/6/2022	92.0	7,569	5,061	4,677	631180	10,088
15	4/7/2022	98.0	8,176	5,268	4,598	501600	9,776
16	4/9/2022	98.0	7,582	4,469	4,970	629630	11,134
17	4/9/2022	99.0	7,472	4,906	4,865	630810	10,954
18	4/10/2022	89.0	7,602	5,109	4,145	630500	9,578
19	4/10/2022	93.0	7,972	5,419	4,436	488380	9,312
20	4/11/2022	92.0	7,225	4,912	4,786	633430	9,604
21	4/11/2022	91.0	7,511	5,567	4,487	645150	9,654
22	4/11/2022	98.0	7,932	5,340	4,416	631030	10,062
23	4/12/2022	92.0	7,491	5,172	4,882	629290	9,848
24	4/12/2022	86.0	7,427	5,250	4,200	631440	11,564
25	4/13/2022	101.0	7,697	4,960	4,479	632130	10,888
26	4/13/2022	94.0	7,499	4,912	4,447	549800	9,296
27	4/14/2022	94.0	7,518	5,876	3,952	643790	9,588
28	4/14/2022	89.0	7,619	5,350	3,487	627400	9,456
29	4/15/2022	89.0	7,222	5,046	5,054	632900	10,517
30	4/15/2022	95.0	8,065	5,333	3,915	579270	9,153
31	4/15/2022	91.0	7,538	4,997	4,840	618800	9,688
32A	4/16/2022	35.0	7,575	4,963	4,267	300	2,666
32B	4/17/2022	96.0	7,232	4,997	3,414	637200	9,724
33A	4/17/2022	42.0	6,794	5,425	4,210	800	4,074
33B	4/18/2022	88.0	6,989	5,425	4,676	631900	14,356
34	4/18/2022	101.0	7,543	5,201	4,923	631010	10,330
35A	4/18/2022	69.0	7,824	5,383	4,425	600	3,377
35B	4/19/2022	91.0	7,181	4,661	4,021	638100	9,876
36	4/19/2022	96.0	7,579	5,127	4,831	630910	9,542
37	4/19/2022	92.0	7,025	3,273	5,297	631980	10,564
38	4/20/2022	88.0	6,663	5,004	5,023	631000	8,982
39	4/21/2022	73.0	7,987	5,029	3,803	605420	9,500
40	4/21/2022	83.0	6,449	4,902	4,565	636200	11,038
41	4/22/2022	95.0	6,868	5,107	5,006	633410	10,964
42A	4/22/2022	65.0	7,675	4,865	4,482	0	1,461
42B	4/23/2022	93.0	6,683	5,709	3,853	631940	9,910
43	4/24/2022	80.0	6,887	4,607	4,461	632400	10,964
44	4/25/2022	85.0	6,987	3,840	5,656	634000	10,365

HG Energy II Appalachia, LLC
MND1- AHS
Geological Information

Elevation - 1177' Formation	Top			Base	
	MD	TVD		MD	TVD
Pittsburgh Coal	694	694		699	699
Surface casing set	1132		Drill	1091	
Greenbrier Big Lime	1732	1731		1758	1758
Loyalhanna Big Injun	1822	1821		1862	1861
Pocono Big Injun (Price Formation)	1908	1906		2063	2061
5th sand/Weir	2170	2162		2182	2179
Intermediate casing set	2640		Drill	2602	
Speechley	3282	3263		3326	3304
Java	5217	4784		5302	4854
Angola	5230	4957		5728	5193
Rhinestreet	6383	5706		6788	6014
Cashaqua	6788	6014		6901	6088
Middlesex	6901	6088		6948	6115
West River	6948	6115		7065	6173
Burket	7065	6173		7112	6192
Tully	7112	6192		7200	6227
Hamilton	7200	6227		7312	6267
Marcellus shale	7312	6267		15917	6208

AS DRILLED PLAT

6,870' to Top Hole

39° 52' 30"

9,804' to Bottom Hole

767' to Bottom Hole

80° 45' 00"

9,129' to Top Hole

WELL: MND1 AHS Coordinates

WV SPC North (NAD 27)

SURFACE LOCATION
N - 494,217.9
E - 1,642,179.9

LANDING POINT
N - 495,558
E - 1,644,259

BOTTOM HOLE
N - 502,622
E - 1,639,362

UTM NAD 83 (mtr)
SURFACE LOCATION
N - 4,411,134.3
E - 519,309.0

BOTTOM HOLE
N - 4,413,680
E - 518,408

LAT/LONG (NAD 83)
SURFACE LOCATION
39.850009°
80.774286°

BOTTOM HOLE
39.872968°
80.784751°

See Detail 1

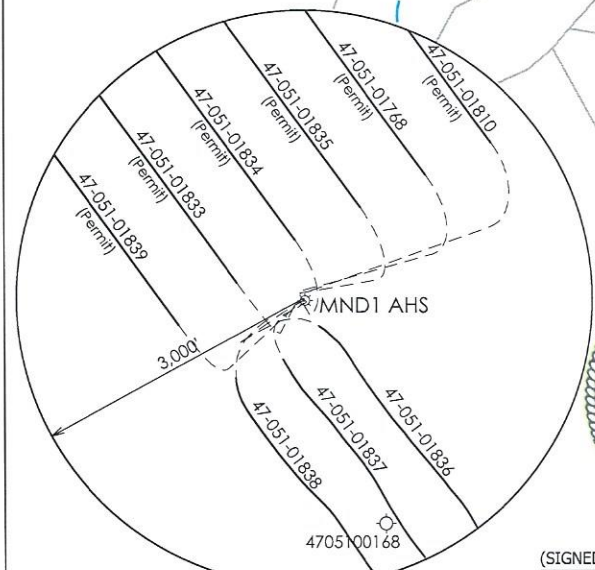
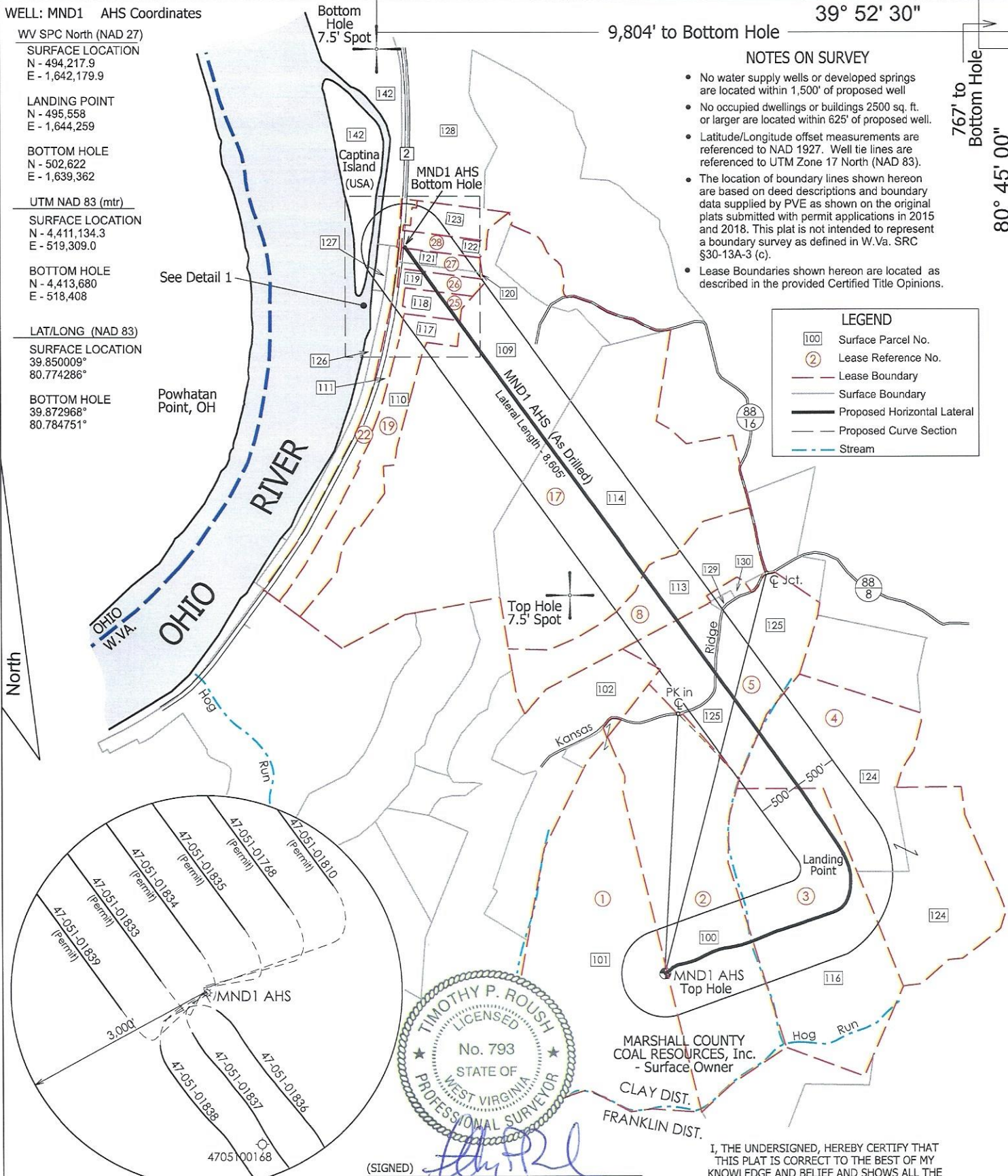
Powhatan Point, OH

NOTES ON SURVEY

- No water supply wells or developed springs are located within 1,500' of proposed well
- No occupied dwellings or buildings 2500 sq. ft. or larger are located within 625' of proposed well.
- Latitude/Longitude offset measurements are referenced to NAD 1927. Well tie lines are referenced to UTM Zone 17 North (NAD 83).
- The location of boundary lines shown hereon are based on deed descriptions and boundary data supplied by PVE as shown on the original plats submitted with permit applications in 2015 and 2018. This plat is not intended to represent a boundary survey as defined in W.Va. SRC §30-13A-3 (c).
- Lease Boundaries shown hereon are located as described in the provided Certified Title Opinions.

LEGEND

	Surface Parcel No.
	Lease Reference No.
	Lease Boundary
	Surface Boundary
	Proposed Horizontal Lateral
	Proposed Curve Section
	Stream



(SIGNED) *Timothy P. Roush*
TIMOTHY P. ROUSH PS 793

MARSHALL COUNTY COAL RESOURCES, Inc. - Surface Owner

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 DEPARTMENT OF ENVIRONMENTAL PROTECTION.

+ DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

FILE NO. _____
SCALE: **1" = 1,500'**
MINIMUM DEGREE OF ACCURACY: **Sub-Meter**
PROVEN SOURCE OF ELEVATION: **DGPS Survey**



WEST VIRGINIA
Department of Environmental Protection
Office of Oil and Gas
601 57th Street
Charleston, West Virginia 25301

DATE **March 3, 2023**
WELL NAME **MND1 AHS**
API WELL NO. **47 - 051 - 01810**
State County Permit

WELL TYPE: OIL ___ GAS **X** LIQUID INJECTION ___ WASTE DISPOSAL ___ (IF "GAS") PRODUCTION **X** STORAGE ___ DEEP ___ SHALLOW **X**

LOCATION: ELEVATION **1,150'** WATERSHED **Hog Run - Ohio River**
DISTRICT: **Clay** COUNTY: **Marshall** QUADRANGLE: **Powhatan Point 7.5'**
SURFACE OWNER: **Marshall County Coal Resources, Inc.** ACREAGE: **128.32 Ac.**
OIL & GAS ROYALTY OWNER: **HG Energy II Appalachia, LLC** LEASE ACREAGE: **128.32 Ac.** LEASE NO. _____
PROPOSED WORK: DRILL **X** CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE **X** PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) **As Drilled Plat**
PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ TARGET FORMATION **Marcellus Shale** ESTIMATED DEPTH **6,208' TVD**
15,917' TMD

WELL OPERATOR: **HG Energy II Appalachia, LLC** ADDRESS: **5260 DuPont Road Parkersburg, WV 26101**
DESIGNATED AGENT: **Diane White** ADDRESS: **5260 DuPont Road Parkersburg, WV 26101**

WELL: MND1 AHS Coordinates

AS DRILLED PLAT

WV SPC North (NAD 27)

SURFACE LOCATION

N - 494,217.9
E - 1,642,179.9

LANDING POINT

N - 495,558
E - 1,644,259

BOTTOM HOLE

N - 502,622
E - 1,639,362

UTM NAD 83 (mtr)

SURFACE LOCATION

N - 4,411,134.3
E - 519,309.0

BOTTOM HOLE

N - 4,413,680
E - 518,408

LAT/LONG (NAD 83)

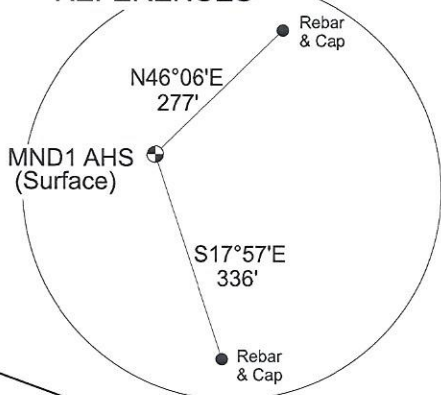
SURFACE LOCATION

39.850009°
80.774286°

BOTTOM HOLE

39.872968°
80.784751°

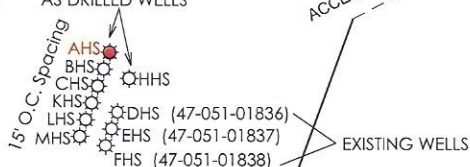
WELL REFERENCES



LEASE TABLE

①	HG ENERGY II APPALACHIA, LLC	TMP 04-14-10
②	HG ENERGY II APPALACHIA, LLC	TMP 04-14-09
③	HG ENERGY II APPALACHIA, LLC	TMP 04-14-08
④	EUGENE C. & ELIZABETH A. ESTEP	TMP 04-13-02
⑤	WENDELL B. & CAROLYN S. RINE	TMP 04-14-07
⑧	MOUNTAINEER NATURAL GAS CO.	TMP 04-07-18
⑰	PAUL J. & JULIE D. MAIDENS	TMP 04-07-14; 07-17
⑲	NYLA J. BELL	TMP 04-07-15
⑳	NYLA J. BELL	TMP 04-07-16
㉕	RITA A. BERRY	TMP 04-07-15.02
㉖	EDWARD & LOIS PETERS	TMP 04-07-15.10
㉗	DONALD CHICHILO	TMP 04-07-15.01; 15.07
㉘	RANDOLPH BRUNNER	TMP 04-07-15.05

AS DRILLED WELLS

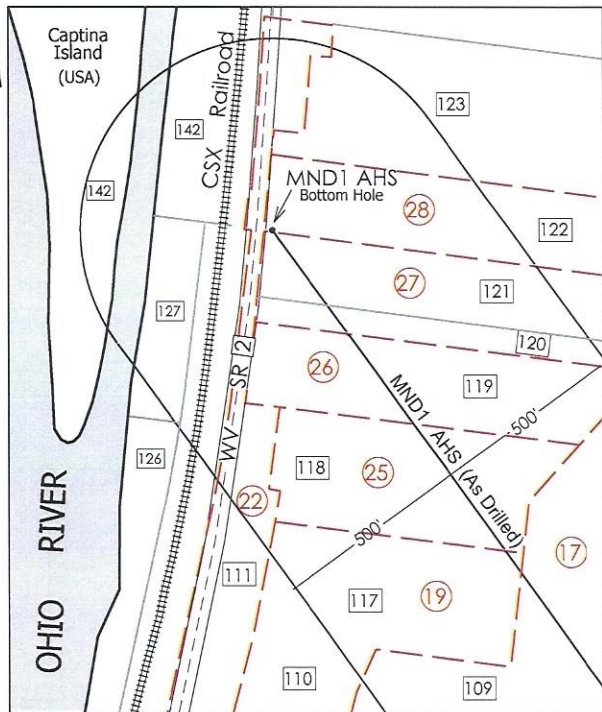


MND1 Pad Wellhead Layout

SURFACE PARCEL TABLE

100	Marshall County Coal Resources, Inc.	TMP 04-14-09
101	Marshall County Coal Resources, Inc.	TMP 04-14-10
102	Robert E. Tschappat Sr. et ux.	TMP 04-14-06
109	Paul J. & Julie D. Maidens	TMP 04-07-14
110	W.Va. Department of Highways	TMP 04-07-15
111	State Road Commission	TMP 04-07-16
113	Carmella Faye & Michael Rose	TMP 04-07-18
114	Paul J. & Julie D. Maidens	TMP 04-07-17
116	Marshall County Coal Resources, Inc.	TMP 04-14-08
117	W.Va. Department of Highways	TMP 04-07-15.03
118	W.Va. Department of Highways	TMP 04-07-15.02
119	W.Va. Department of Highways	TMP 04-15-10
120	W.Va. Department of Highways	TMP 04-07-15.07
121	W.Va. Department of Highways	TMP 04-07-15.01
122	W.Va. Department of Highways	TMP 04-07-15.05
123	W.Va. Department of Highways	TMP 04-07-15.08
124	Eugene C. & Elizabeth A. Estep	TMP 04-13-02
125	Wendell B. & Carolyn S. Rine	TMP 04-14-07
126	Jim Arritt et al.	TMP 04-07-15.09
127	Black Gold Group	TMP 04-07-15.06
128	John T. Wilson Jr.	TMP 04-06-07
129	Lloyd Rutan - Life Est.	TMP 04-07-18.01
130	Raymond Rutan	TMP 04-07-18.02
142	U.S.A.	TMP 04-06-07.1

DETAIL 1
Scale: 1"=500'



- DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

FILE NO. _____
SCALE: 1" = 1,500'
MINIMUM DEGREE OF ACCURACY: Sub-Meter
PROVEN SOURCE OF ELEVATION: DGPS Survey



WEST VIRGINIA
Department of Environmental Protection
Office of Oil and Gas
601 57th Street
Charleston, West Virginia 25301

DATE March 3, 2023
WELL NAME MND1 AHS
API WELL NO. 47 - 051 - 01810
State County Permit

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ (IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION: ELEVATION 1,150' WATERSHED Hog Run - Ohio River
DISTRICT: Clay COUNTY: Marshall QUADRANGLE: Powhatan Point 7.5'
SURFACE OWNER: Marshall County Coal Resources, Inc. ACREAGE: 128.32 Ac.
OIL & GAS ROYALTY OWNER: HG Energy II Appalachia, LLC LEASE ACREAGE: 128.32 Ac. LEASE NO. _____
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As Drilled Plat
PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ TARGET FORMATION Marcellus Shale ESTIMATED DEPTH 6,208' TVD
15,917' TMD

WELL OPERATOR: HG Energy II Appalachia, LLC
ADDRESS: 5260 DuPont Road
Parkersburg, WV 26101

DESIGNATED AGENT: Diane White
ADDRESS: 5260 DuPont Road
Parkersburg, WV 26101