



 west virginia department of environmental protection

Office of Oil and Gas
 601 57th Street, S.E.
 Charleston, WV 25304
 (304) 926-0450
 fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, January 18, 2019
 WELL WORK PERMIT
 Horizontal 6A / Drilling Deeper

HG ENERGY II APPALACHIA, LLC
 5260 DUPONT ROAD
 PARKERSBURG, WV 26101

Re: Permit approval for MND 1 MHS
 47-051-01839-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
 Chief

Operator's Well Number: MND 1 MHS
 Farm Name: CONSOLIDATION COAL CO.
 U.S. WELL NUMBER: 47-051-01839-00-00
 Horizontal 6A Drilling Deeper
 Date Issued: 1/18/2019

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
2. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
3. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
4. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
5. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
6. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: HG Energy II Appalachia, L 494519932 Marshall Clay Powhatan Point
Operator ID County District Quadrangle

2) Operator's Well Number: MND1 MHS Well Pad Name: MND1

3) Farm Name/Surface Owner: Murray Energy Corp Public Road Access: County Highway 88/8

4) Elevation, current ground: 1150' Elevation, proposed post-construction: 1150' (pad constructed)

5) Well Type (a) Gas X Oil Underground Storage
Other

(b) If Gas Shallow X Deep
Horizontal X

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus 6130' - 6185', 55' Thick, 4204 psi

8) Proposed Total Vertical Depth: 6175'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 12373'

11) Proposed Horizontal Leg Length: 5632'

12) Approximate Fresh Water Strata Depths: 538', 801', 898', 947'

13) Method to Determine Fresh Water Depths: Nearest offset well

14) Approximate Saltwater Depths: None

15) Approximate Coal Seam Depths: 687' - 697'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes X No

(a) If Yes, provide Mine Info: Name: Wells are located in abandoned area of McElroy Mine
Depth: 692' to seam base
Seam: Pittsburgh #8
Owner: Consol Mining Company, LLC

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18) **CASING AND TUBING PROGRAM**

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	J-55	94	40' "Already grouted in"	40'	CTS
Fresh Water	13 3/8"	New	J-55	54.5	1100'	1100'	40% excess yield = 1.20, CTS
Coal							
Intermediate	9 5/8"	New	J-55	40	2500'	2500'	40% excess, CTS
Production	5 1/2"	New	P-110	23	12373'	12373'	20% excess, lead yield = 1.19, CTS
Tubing							
Liners							

Joe
09/20/18

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	26"	0.438	2110		Type 1, Class A	CTS
Fresh Water	13 3/8"	17.5"	0.380	2730		Type 1, Class A	40% excess, yield = 1.20, CTS
Coal							
Intermediate	9 5/8"	12 1/4"	0.395	3950		Type 1, Class A	40% excess, CTS
Production	5 1/2"	8 1/2"	0.415	14520	10000	Type 1, Class A	20% excess, lead yield = 1.19, CTS
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill the vertical depth to the Marcellus at an estimated total vertical depth of approximately 6,175 feet. Drill horizontal leg - stimulate and produce the Marcellus Formation. Should we encounter an unanticipated void in the coal, we will install a minimum of 20' of casing below the void but not more than 100' below the void, set a basket and grout to surface.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water and chemicals. See attached list. Maximum pressure not to exceed 10,000 psi.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 9.0 (already built)

22) Area to be disturbed for well pad only, less access road (acres): 7.6 (already built)

23) Describe centralizer placement for each casing string:

Conductor - N/A
Surface Casing - Bow Springs (over collars) on first 2 joints then every third joint to 100' from surface.
Intermediate Casing - Bow Springs (over collars) on first 12 joints, then every third joint to 100' from surface.
Production Casing - Run 1 spiral centralizer every 5 joints from the top of the curve to surface. Run 1 spiral centralizer every 3 joints from the 1st 5.5' long joint to the top of the curve.

24) Describe all cement additives associated with each cement type:

Conductor - Already grouted in
Surface Casing - "15.6 ppg PNE-1 + 3% bwoc CaCl 40% Excess/Yield=1.29 / CTS"
Intermediate Casing - "Lead: 15.4 ppg PNE-1 + 2.5% bwoc CaCl 40% Excess / Tail: 15.8 ppg PNE-1 + 2.5% bwoc CaCl zero% Excess CTS CTS"
Production Casing - "Lead: 14.5 ppg POZ-PNE-1 + 0.3% bwoc R3 + 1% bwoc EC1 + 0.75 gal/sk FP13L + 0.3% bwoc MPA170Tail: 14.8 ppg PNE-1 + 0.35% bwoc R3 + 0.75 gal/sk FP13L + 50% bwoc ASCA1 + 0.5% bwoc MPA17020% Excess/Load Yield=1.19/Tail Yield=1.54CTS"

25) Proposed borehole conditioning procedures:

Conductor - Once at casing setting depth, ensure hole is clean at TD
Surface Casing - Circulate & condition @ TD w/ Air. RH w/ casing & fill w/ Fresh Water. Circulate a minimum of 1 hole volume, plus 30 bbls of 6% bentonite Gel/50# of poly flake, then clear casing w/ Fresh Water prior to pumping cement.
Intermediate Casing - Circulate & condition @ TD w/ Air. RH w/ casing & fill w/ Fresh Water. Circulate a minimum of 1 hole volume, plus 30 bbls of 6% bentonite Gel/50# of poly flake, then clear casing w/ Fresh Water prior to pumping cement.
Production Casing - Once on bottom TD with casing, circulate at max allowable pump rate for at least 2x bottoms up, or until returns are pump pressures indicate the hole is clean. Circulate a minimum of one hole volume prior to pumping cement.

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*Note: Attach additional sheets as needed.

MND1 Well Pad
Cement Additives

Material Name	Material Type	Material Description	CAS #																		
Premium NE-1	Portland Cement	Premium NE-1 is a portland cement with early compressive strength properties.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Portland cement</td> <td>90 - 100</td> <td>65997-15-1</td> </tr> <tr> <td>Calcium oxide</td> <td>1 - 5</td> <td>1305-78-8</td> </tr> <tr> <td>Magnesium oxide</td> <td>1 - 5</td> <td>1309-48-4</td> </tr> <tr> <td>Crystalline silica: Quartz (SiO2)</td> <td>0.1 - 1</td> <td>14808-60-7</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Portland cement	90 - 100	65997-15-1	Calcium oxide	1 - 5	1305-78-8	Magnesium oxide	1 - 5	1309-48-4	Crystalline silica: Quartz (SiO2)	0.1 - 1	14808-60-7			
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Bentonite	Extender	Commonly called gel, it is a clay material used as a cement extender and to control excessive free water.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>bentonite</td> <td>90 - 100</td> <td>1302-78-9</td> </tr> <tr> <td>Crystalline silica: Quartz (SiO2)</td> <td>5 - 10</td> <td>14808-60-7</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	bentonite	90 - 100	1302-78-9	Crystalline silica: Quartz (SiO2)	5 - 10	14808-60-7									
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Calcium Chloride	Accelerator	A powdered, flaked or pelletized material used to decrease thickening time and increase the rate of strength development	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Calcium chloride</td> <td>90 - 100</td> <td>10043-52-4</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Calcium chloride	90 - 100	10043-52-4												
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Cello Flake	Lost Circulation	Graded (3/8 to 3/4 inch) cellophane flakes used as a lost circulation material.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>No hazardous ingredient</td> <td></td> <td></td> </tr> </tbody> </table>	Ingredient name	%	CAS number	No hazardous ingredient														
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FP-13L	Foam Preventer	FP-13L is a clear liquid organic phosphate antifoaming agent used in cementing operations. It is very effective minimizing air entrapment and preventing foaming tendencies of latex systems.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Tributyl phosphate</td> <td>90 - 100</td> <td>126-73-8</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Tributyl phosphate	90 - 100	126-73-8												
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Granulated Sugar	Retarder	Used to retard cement returns at surface. A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Sucrose</td> <td>90 - 100</td> <td>57-50-1</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Sucrose	90 - 100	57-50-1												
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EC-1																					
MPA-170	Gas Migration	Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>No hazardous ingredient</td> <td></td> <td></td> </tr> </tbody> </table>	Ingredient name	%	CAS number	No hazardous ingredient														
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Poz (Fly Ash)	Base	A synthetic pozzolan, (primarily Silicon Dioxide). When blended with cement, Pozzolan can be used to create lightweight cement slurries used as either a filler slurry or a sulfate resistant completion cement.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Crystalline silica: Quartz (SiO2)</td> <td>5 - 10</td> <td>14808-60-7</td> </tr> <tr> <td>Calcium oxide</td> <td>1 - 5</td> <td>1305-78-8</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Crystalline silica: Quartz (SiO2)	5 - 10	14808-60-7	Calcium oxide	1 - 5	1305-78-8									
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R-3	Retarder	A low temperature retarder used in a wide range of slurry formulations to extend the slurry thickening time.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>Organic acid salt</td> <td>40 - 50</td> <td>Trade secret.</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	Organic acid salt	40 - 50	Trade secret.												
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S-5	Surfactant	Used to water wet casing and formation to facilitate cement bonding.	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>%</th> <th>CAS number</th> </tr> </thead> <tbody> <tr> <td>2-Butoxyethanol</td> <td>20 - 30</td> <td>111-76-2</td> </tr> <tr> <td>Proprietary surfactant</td> <td>10 - 20</td> <td>Trade secret.</td> </tr> <tr> <td>D-Glucopyranose, oligomeric, C10-16-alkyl glycosides</td> <td>5 - 10</td> <td>110615-47-9</td> </tr> <tr> <td>Alkylarylsulfonate amine salt</td> <td>1 - 5</td> <td>Trade secret.</td> </tr> <tr> <td>Polyoxyalkylenes</td> <td>0.1 - 1</td> <td>Trade secret.</td> </tr> </tbody> </table>	Ingredient name	%	CAS number	2-Butoxyethanol	20 - 30	111-76-2	Proprietary surfactant	10 - 20	Trade secret.	D-Glucopyranose, oligomeric, C10-16-alkyl glycosides	5 - 10	110615-47-9	Alkylarylsulfonate amine salt	1 - 5	Trade secret.	Polyoxyalkylenes	0.1 - 1	Trade secret.
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MND1MHS
Marcellus Shale Horizontal
Marshall County, WV

		MND1MHS SHL				494147.77N 1642153.55E							
Ground Elevation		1150'				MND1MHS LP				493919.65N 1640866.41E			
Azm		325°				MND1MHS BHL				498533.64N 1637635.66E			

WELLBORE DIAGRAM	HOLE	CASING	GEOLOGY	TOP	BASE	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS
	26"	20" 94# J-55	Conductor *Conductor already set*	0	40	AIR	*Already Grouted In*	N/A	Once at casing setting depth, ensure hole is clean at TD	Conductor casing = 0.438" wall thickness Burst=2110 psi
	17.5"	13-3/8" 54.5# J-55 BTC	Fresh Water	538', 601', 898', 947'		AIR	15.6 ppg PNE-1 + 3% bwoc CaCl 40% Excess Yield=1.20 / CTS	Bow Springs (over collars) on first 2 joints then every third joint to 100' from surface	Circulate & condition @ TD w/ Air. RIH w/ casing & fill w/ Fresh Water. Circulate a minimum of 1 hole volume, plus 30 bbls of 6% bentonite Gel/50# of poly flake, then clear casing w/ Fresh Water prior to pumping cement.	Surface casing = 0.380" wall thickness Burst=2730 psi
			Surface Casing	0	1100					
			Coal(s)	687'-697'						
	12.25"	9-5/8" 40# J-55 BTC	Big Lime / Big Injun	1908 / 2024	2024 / 2137	AIR	Lead: 15.4 ppg PNE-1 + 2.5% bwoc CaCl 40% Excess / Tail: 15.9 ppg PNE-1 + 2.5% bwoc CaCl zero% Excess. CTS	Bow Springs (over collars) on first 12 joints, then every third joint to 100' from surface	Circulate & condition @ TD w/ Air. RIH w/ casing & fill w/ Fresh Water. Circulate a minimum of 1 hole volume, plus 30 bbls of 6% bentonite Gel/50# of poly flake, then clear casing w/ Fresh Water prior to pumping cement.	Intermediate casing = 0.395" wall thickness Burst=3950 psi
			Pocono / Price	2137	2290					
			5th Sand / Weir	2426	2451					
			Intermediate Casing	0	2500					
	8.5" Vertical	5-1/2" 23# P-110 HC CDC HTQ	Speechley	3254	3300	AIR and/or 9.0ppg SOBM	Lead: 14.5 ppg POZ:PNE-1 + 0.3% bwoc R3 + 1% bwoc EC1 + 0.75 gal/sk FP13L + 0.3% bwoc MPA170 Tail: 14.8 ppg PNE-1 + 0.35% bwoc R3 + 0.75 gal/sk FP13L + 50% bwoc ASCA1 + 0.5% bwoc MPA170 20% Excess Lead Yield=1.19 Tail Yield=1.94 CTS	Run 1 spiral centralizer every 5 joints from the top of the curve to surface.	Once on bottom/TD with casing, circulate at max allowable pump rate for at least 2x bottoms up, or until returns and pump pressures indicate the hole is clean. Circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.415" wall thickness Burst=14520 psi Note: Actual centralizer schedules may be changed due to hole conditions
			Java	4805	4900					
			Pipe Creek	4900	4987					
			Angola	4987	5569					
			Rheinstreet	5569	5890					
			Cashaqua	5890	5962					
			Middlesex	5962	5985					
West River			5985	6046						
Burkett			6046	6071						
Tully			6071	6095						
8.5" Lateral	5-1/2" 23# P-110 HC CDC HTQ	Hamilton	6095	6130	11.5ppg- 12.5ppg SOBM		Run 1 spiral centralizer every 3 joints from the 1st 5.5" long joint to the top of the curve.			
		Marcellus	6130	6185						
		TMD / TVD	12373	6175						
			Onondaga	6185						

LP @ 6175' TVD / 6741' MD 8.5" Hole - Cemented Long String 5-1/2" 23# P-110 HC CDC HTQ +/-5632' ft Lateral TD @ +/-6175' TVD +/-12373' MD

John
9/20/18

List of Frac Additives by Chemical Name and CAS #**MND1 Well Pad (ASH,BHS,CHS,DHS,EHS,FHS,HHS,JHS,KHS,LHS,MHS)**

Chemical Name	CAS #	Multiple CAS #'s
Pro Shale Slik 405	Mixture	68551-12-2 7647-14-5 12125-02-9 64742-47-8
Pro Hib II	Mixture	68412-54-4 68607-28-3 107-21-1 111-76-2 67-56-1 107-19-7
Silica Sand and Ground Sand	Mixture	14808-60-7 1344-28-1 1309-37-1 13463-67-7
Hydrochloric Acid 22 DEG BE	7647-01-0	
PROGEL - 4.5	64742-96-7	
BIO CLEAR 2000	Mixture	25322-68-3 10222-01-2
SCALE CLEAR SI 112	107-21-1	
PROBREAK 4	Mixture	57-50-1 107-21-1
Sulfamic Acid	5329-14-6	
PRO - Flow - 102-N	Mixture	67-63-0 68439-45-2 2687-96-9
PROGEL - 4	9000-30-0	

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01/18/2019

WW-9
(4/16)

API Number 47 - 051 - 01839
Operator's Well No. MND1 MHS

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name HG Energy II Appalachia, LLC OP Code 494519932

Watershed (HUC 10) Short Creek - Ohio River (HUC 10) Quadrangle Powhatan Point

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: _____

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number TBD - At next anticipated well)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: Yes, cuttings and fluids will be collected in a closed loop system, re-used or hauled to an approved disposal site or landfill.

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air, Freshwater and SOB

-If oil based, what type? Synthetic, petroleum, etc. Synthetic

Additives to be used in drilling medium? Water, soap, KCl, Barite, Base Oil, Wetting Agents

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Approved landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) NA

-Landfill or offsite name/permit number? See Attached

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature Diane White

Company Official (Typed Name) Diane White

Company Official Title Accountant

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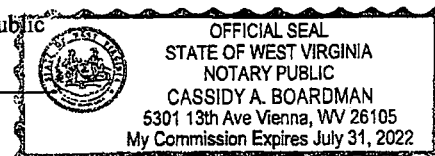
DEC 12 2018

Subscribed and sworn before me this 19th day of September, 2018

WV Department of Environmental Protection

Cassidy Boardman Notary Public

My commission expires 7/31/2022



HG Energy II Appalachia, LLC

Proposed Revegetation Treatment: Acres Disturbed 9.0 Prevegetation pH

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch Hay 2 Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5

Maintain E&S Controls through out drilling and completion process

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments:

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OCT 01 2018

WV Department of Environmental Protection

Title: Oil & Gas Impact Date: 9/20/18

Field Reviewed? (X) Yes () No

4705101839 01/18/2019

Reclamation Plan For:

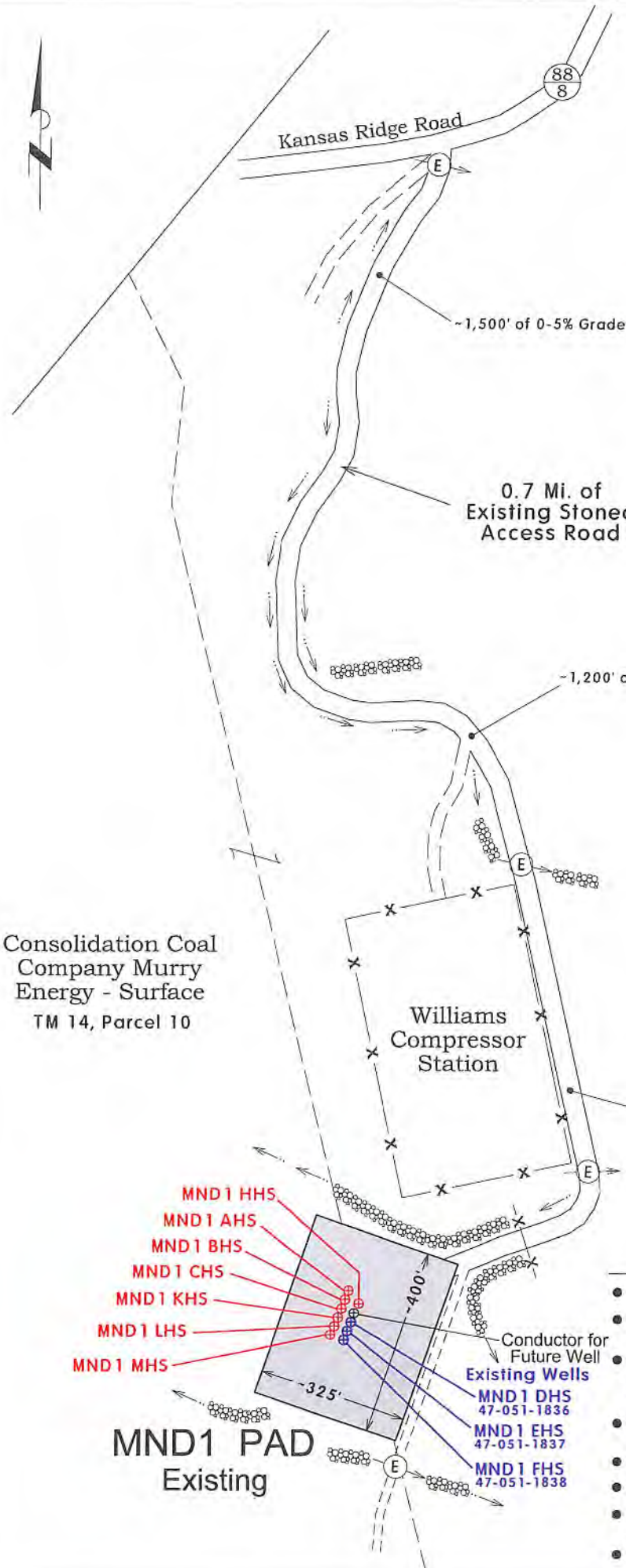
MND1 NORTH PAD

NOTE

Wells DHS, EHS and FHS were drilled in August 2018. Access road and location are existing and will be maintained.

NOTE

REFER TO THE WVDEP EROSION AND SEDIMENT CONTROL FIELD MANUAL VER. MAY 2012 FOR BMPs CONTROLLING EROSION AND SEDIMENT FROM SOIL-DISTURBING OPERATIONS.



Consolidation Coal Company
Murry Energy - Surface
TM 14, Parcel 9

Consolidation Coal Company Murry Energy - Surface
TM 14, Parcel 10

Williams Compressor Station

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Notes:

- REQUESTED PERMIT IS FOR DRILLING NEW HORIZONTAL WELL.
- ALL ACCESS ROADS ARE EXISTING AND WILL BE MAINTAINED TO WVDEP STANDARDS.
- ONLY MINIMAL EARTHWORK WILL BE REQUIRED TO COMPLETE PROPOSED WELL WORK. SEE ENGINEERED DRAWING THAT ACCOMPANIES THIS PERMIT PACKAGE FOR ADDITIONAL DETAIL.
- ALL DISTURBED AREAS WILL BE RE-VEGETATED AS OUTLINED ON FORM WW-9.
- MAINTAIN SEDIMENT BARRIERS AND DRAINAGE STRUCTURES.
- ALL ROAD GRADES <5% EXCEPT AS NOTED.
- NO DRILL PIT WILL BE CONSTRUCTED AND A CLOSED LOOP SYSTEM WILL BE UTILIZED TO HANDLE DRILL CUTTINGS.
- DRAWING NOT TO SCALE.

4705101839 01/13/2019

Reclamation Plan For:

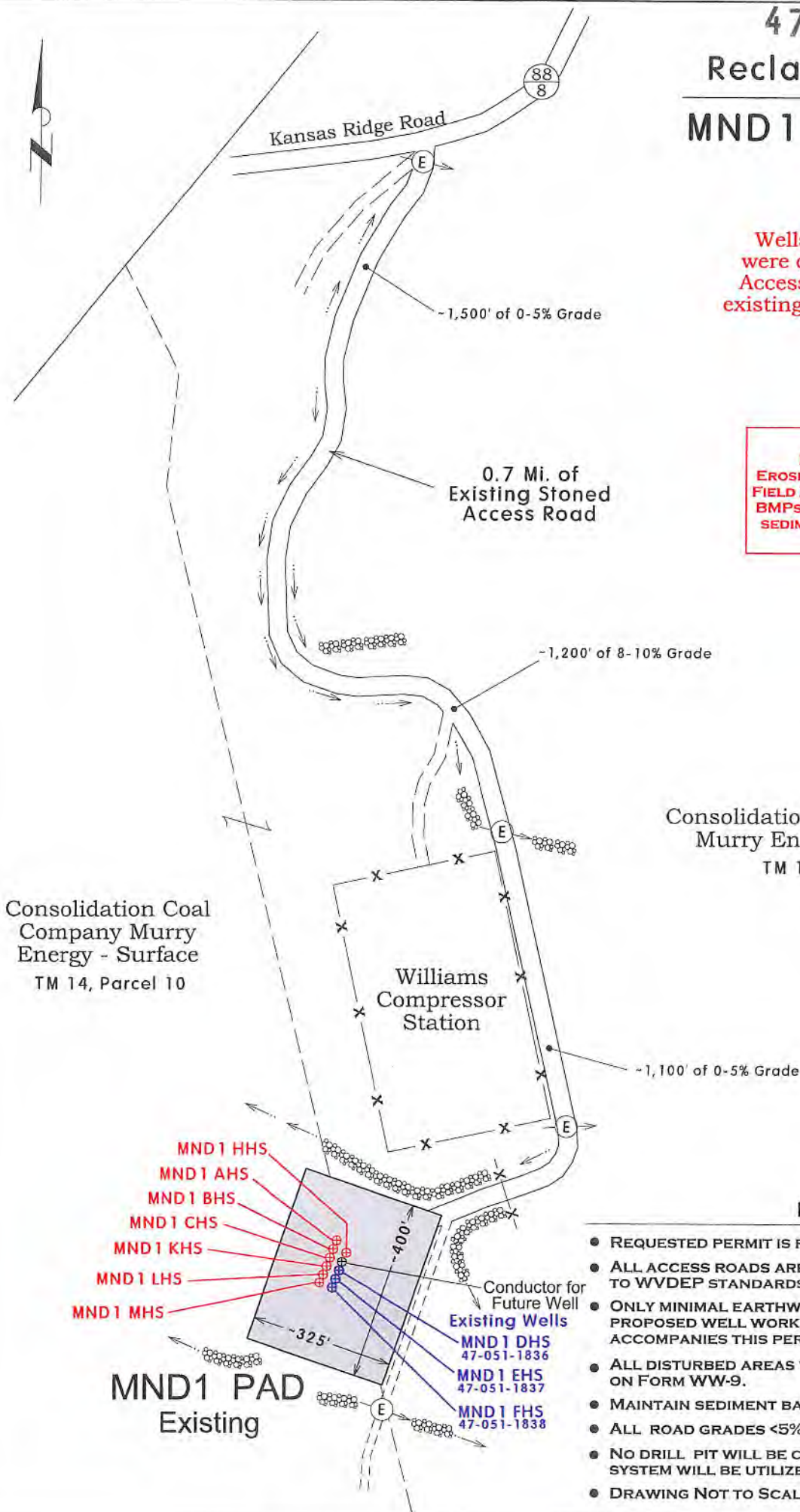
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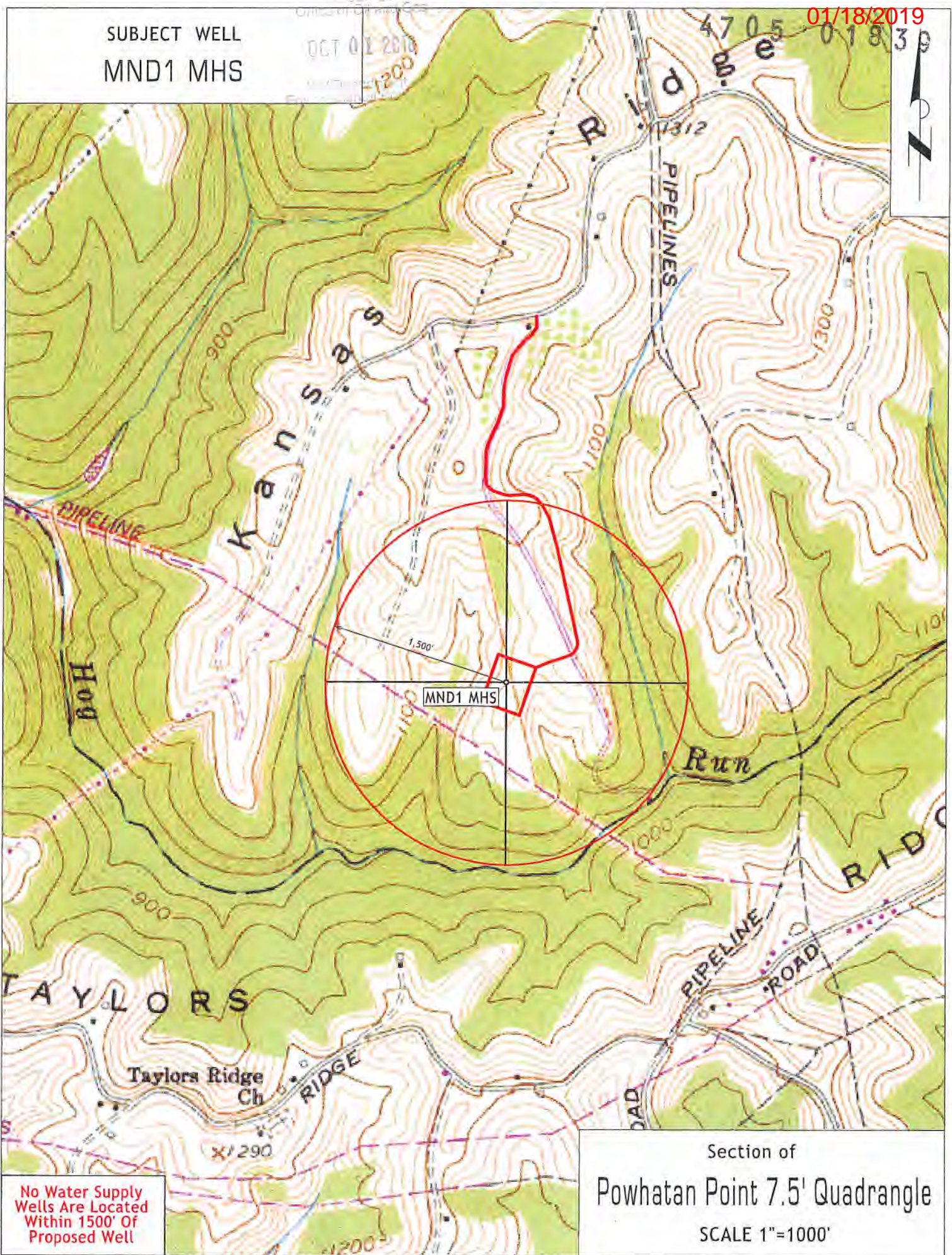
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SUBJECT WELL
MND1 MHS

OCT 01 2018
-1200

01/18/2019



MND1 MHS

1,500'

No Water Supply Wells Are Located Within 1500' Of Proposed Well

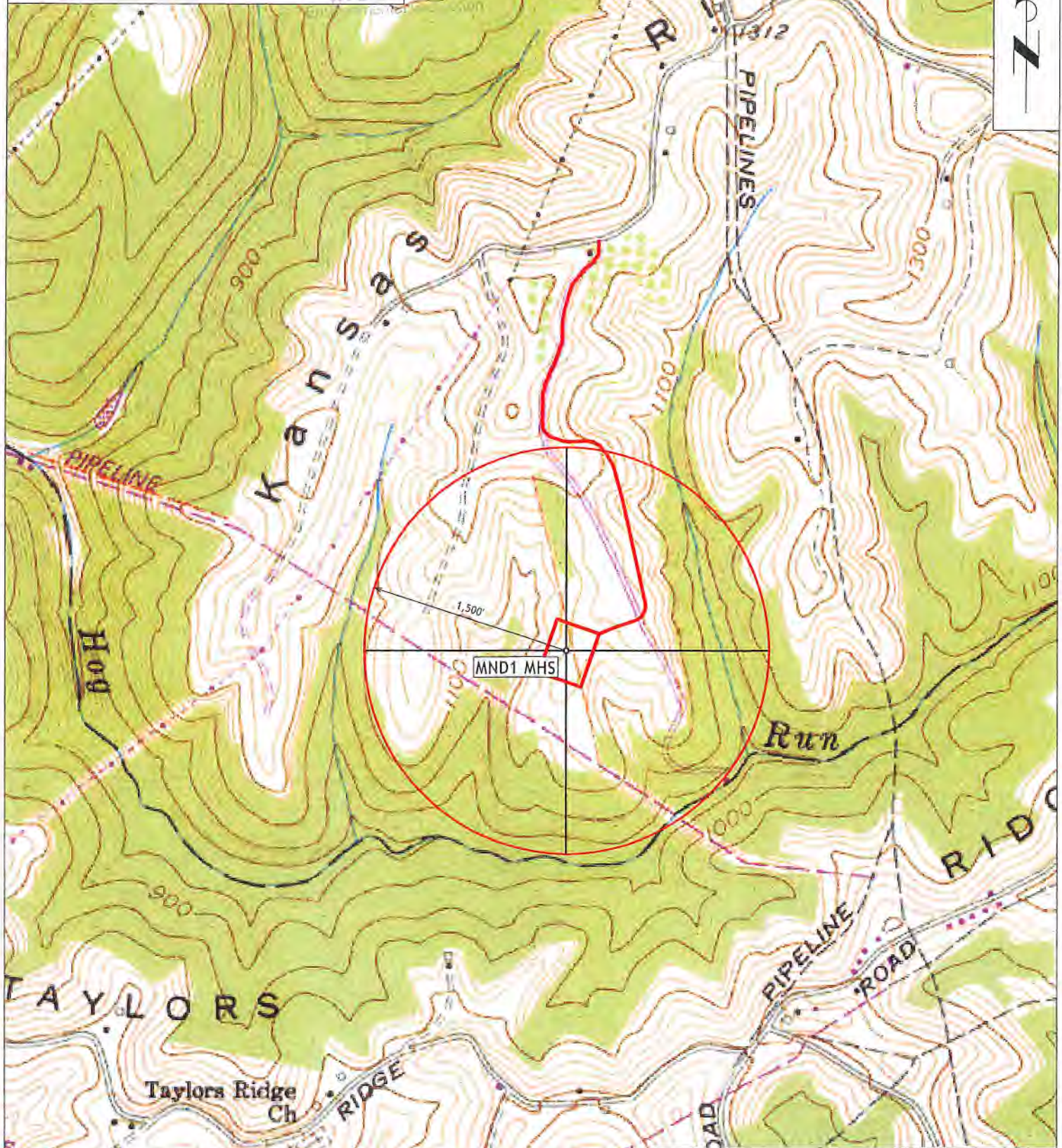
Section of
Powhatan Point 7.5' Quadrangle
SCALE 1"=1000'

4705101970

01/18/2019

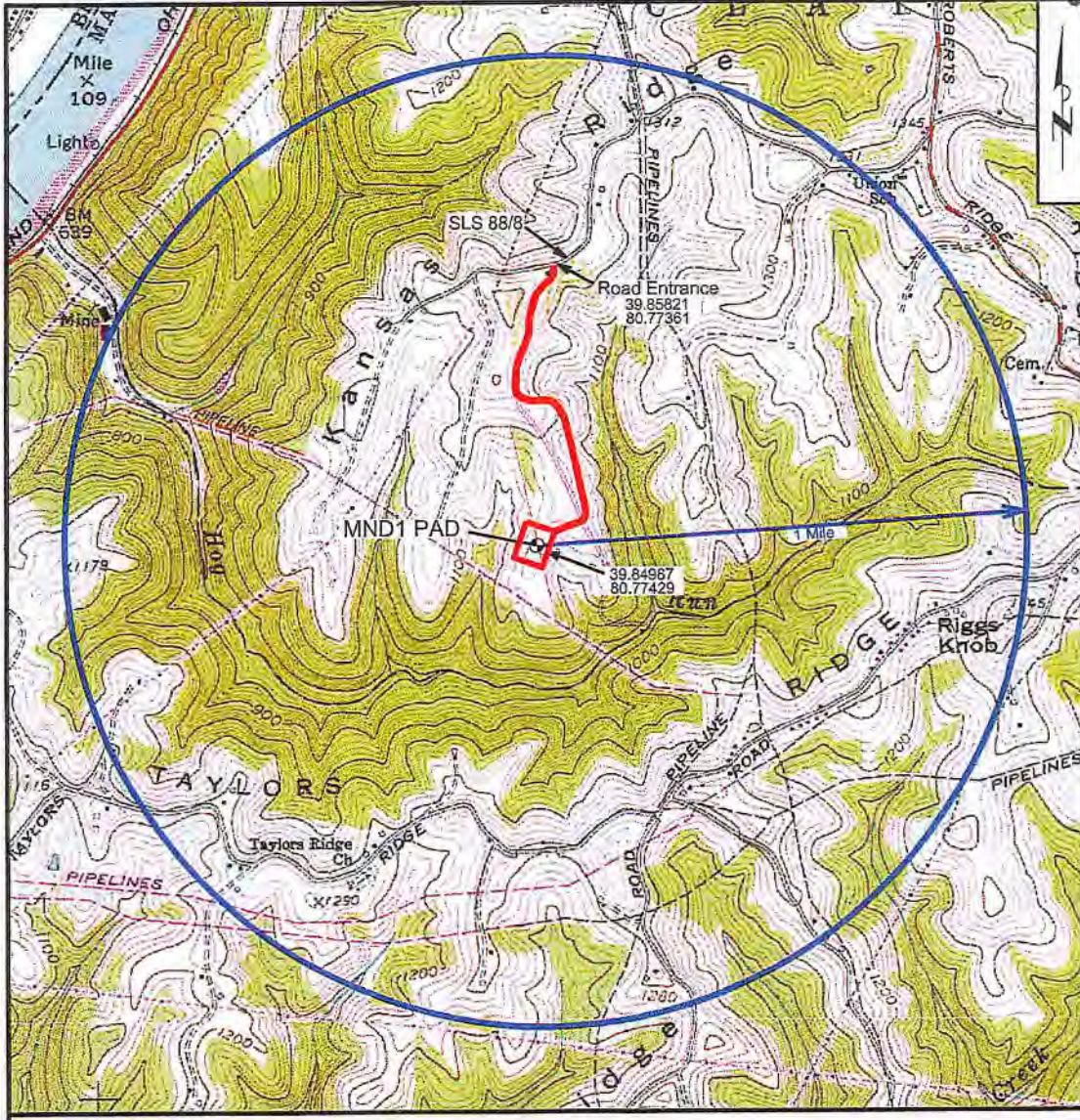
SUBJECT WELL
MND1 MHS

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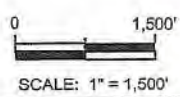
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Powhatan Point 7.5' Quadrangle
SCALE 1"=1000'



WELL SITE SAFETY PLAN FOR:
MND1 PAD
 Clay District, Marshall County, W.Va.

TOPOGRAPHIC MAP
 Powhatan Point 7.5' Quadrangle



11/10/2017

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Cuttings Disposal/Site Water

Cuttings -Haul off Company:

Eap Industries, Inc. DOT # 0876278
1575 Smith Two State Rd. Atlasburg, PA 15004
1-888-284-5227

Waste Management
200 Rangos Lane
Washington, PA 15301
724-222-3272

Environmental Coordination Services & Recycling (ECS&R)
8297 US Highway 19
Cochranon, PA 16314
814-425-7773

Disposal Locations:

Apex Environmental, LLC Permit # 06-08488
11 County Road 78
Amsterdam, OH 43903
740-543-4389

Westmoreland Waste, LLC Permit # 100277
111 Conner Lane
Belle Vernon, PA 15012
724-929-7694

Sycamore Landfill Inc, Permit #R80-079001 05-2010
4301 Sycamore Ridge Road
Hurricane, WV 25526
304-562-2611

Max Environmental Technologies, Inc. Facility Permit # PAD004835146 / 301071
233 Max Lane
Yukon, PA 25968
724-722-3500

Max Environmental Technologies, Inc. Facility Permit # PAD05087072 / 301359
200 Max Drive
Bulger, PA 15019
724-796-1571

Waste Management Kelly Run Permit # 100663
1901 Park Side Drive
Elizabeth, PA 15037
412-384-7569

Waste Management South Hills (Arnot) Permit # 100592
3100 Hill Road
Library, PA 15129
724-348-7013
412-384-7569

Waste Management Arden Permit # 100172
200 Rangos Lane
Washington, PA 15301
724-222-3272

Waste Management Meadowfill Permit # 1032
1488 Dawson Drive
Bridgeport, WV 26380

Brooke County Landfill Permit # SWF-103-97 / WV 0109029
Rd 2 Box 410
Collfers, WV 26035
304-748-0014

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412-384-7569

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Washington, PA 15301
724-222-3272

Waste Management Meadowfill Permit # 1032
1488 Dawson Drive
Bridgeport, WV 26330

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Rd 2 Box 410
Collfers, WV 26035
304-748-0014

01/18/2019

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Wetzel County Landfill Permit # SWF-1021-97 / WV 0109185
 Rt 1 Box 158A
 New Martinsville, WV 26035
 304-455-3800

01/18/2019

Energy Solutions, LLC Permit # UT 2300249
 423 West 300 South
 Suite 200
 Salt Lake City, UT 84101

Energy Solutions Services, Inc. Permit # R-73006-124
 1560 Bear Creek Road
 Oak Ridge, TN 37830

Northern A-1 Environmental Services Permit ID MID020906814
 8947 US 131 North, PO Box 1030
 Kalkaska, MI 49646
 231-258-9961

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OCT 01 2018

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 Environmental Protection

Water Haul off Companies:

Dynamic Structures, Clear Creek DOT # 720485
 3790 State Route 7
 New Waterford, OH 44445
 330-892-0164

CMS of Delaware Inc. DBA CMS Oilfield Serv
 301 Commerce Drive
 Moorestown, NJ 08057

Nabors Completion & Production Services Co.
 PO Box 975682
 Dallas, TX 75397-5682

Force, Inc.
 1380 Rte. 286 Hwy. E, Suite 303
 Indiana, PA 15701

Select Energy Services, LLC
 PO Box 203997
 Dallas, TX 75320-3997

Solo Construction
 P.O. Box 544
 St. Mary's, WV 26170

Nuverra Environmental Solutions
 11942 Veterans Memorial Highway
 Masontown, WV 26542

Equipment Transport
 1 Tyler Court
 Carlisle, PA 17015

Mustang Oilfield Services LLC
 PO Box 739
 St. Clairsville, OH 43950

Myers Well Service, -----
 2001 Ballpark Court
 Export, PA 15622

Wilson's Outdoor Services, LLC
 456 Cracraft Road
 Washington, PA 15301

Burns Drilling & Excavating
 618 Crabapple Road P.O. Box
 Wind Ridge, PA 15680

Disposal Locations:

Solidification
 Waste Management, Arden Landfill Permit # 100172
 200 Rangos Lane
 Washington, PA 15301
 724-225-1589

Nichols 1-A (SWIW #18)
 Permit # 3862
 300 Cherrington Pkwy, Suite 200
 Coraopolis, PA 15108
 412-829-7275

Solidification/Incineration
 Soil Remediation, Inc. Permit # 02-20753
 6065 Arrel-Smith Road
 Lowellville, OH 44436
 330-536-6825

Grosella (SWIW #34)
 Permit # 4096
 Rt. 88
 Garrettsville, OH
 719-276-4816

Adams #1 (Buckeye Brine, LLC)
 Permit # 34-031-2-7177
 23986 Airport Road
 Coshocton, OH 43812
 740-575-4484
 512-478-6545

Kemble 1-D Well
 Permit # 8780
 7675 East Pike
 Norwich, Oh 43767
 614-648-8898
 740-796-6495

Adams #2 (Buckeye Brine, LLC)
2205 Westover Road
Austin Tx 78703
Permit # 34-031-2-7178
740-575-4484
512-478-6545

Adams #3 (Buckeye Brine, LLC)
Permit #34-031-2-7241-00-00
2530 Exposition, Suite 117
Austin, TX 78703
512-478-6545

Mozena #1 Well (SWIW # 13)
Permit # 34-157-2-5511-00-00
5367 E. State Street
Newcomerstown, OH 43832
740-763-3966

Goff SWD #1 (SWIW # 27)
Permit # 34-119-2-8776-000
300 Cherrington Pkwy, Suite 200
Coraopolis, PA 15108
412-829-7275

SOS D#1 (SWIW #12)
Permit # 34-059-2-4202-00-00
Silcor Oilfield Services, Inc.
2999 Hubbard Road
Youngstown, OH 44505

Dudley #1 UIC (SWIW #1)
Permit # 34-121-2-2459-00-00
Select Energy Services, LLC
7994 S. Pleasants Hwy
St. Marys, WV 26170
304-665-2652

OH UIC #1 Bu keya UIC Barnesville 1 & 2
CNX Gas Company, LLC
1000 Consol Energy Drive
Permit # 34-013-2-0609-00-00
Permit # 34-013-2-0614-00-00
304-323-6568

US Steele 11385
Permit # 47-001-00561
200 Evergreen Drive
Waynesburg, PA 15730
304-323-6568

Chapin #7 UIC (SWIW #7)
Permit # 34-083-2-4137-00-00
Elkhead Gas & Oil Company
12163 Marne Rd. NE
Newark, OH 43055
740-763-3966

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Environmental Protection

HG Energy II Appalachia, LLC

Site Safety Plan

**MND 1 Well Pad
1100 Kansas Ridge Rd
Moundsville, Marshall County, WV**

November 2017: Version 1

**For Submission to
West Virginia Department of Environmental Protection,
Office of Oil and Gas**

*JW
9/20/18*

HG Energy II Appalachia, LLC.

5260 Dupont Road

Parkersburg, WV 26101

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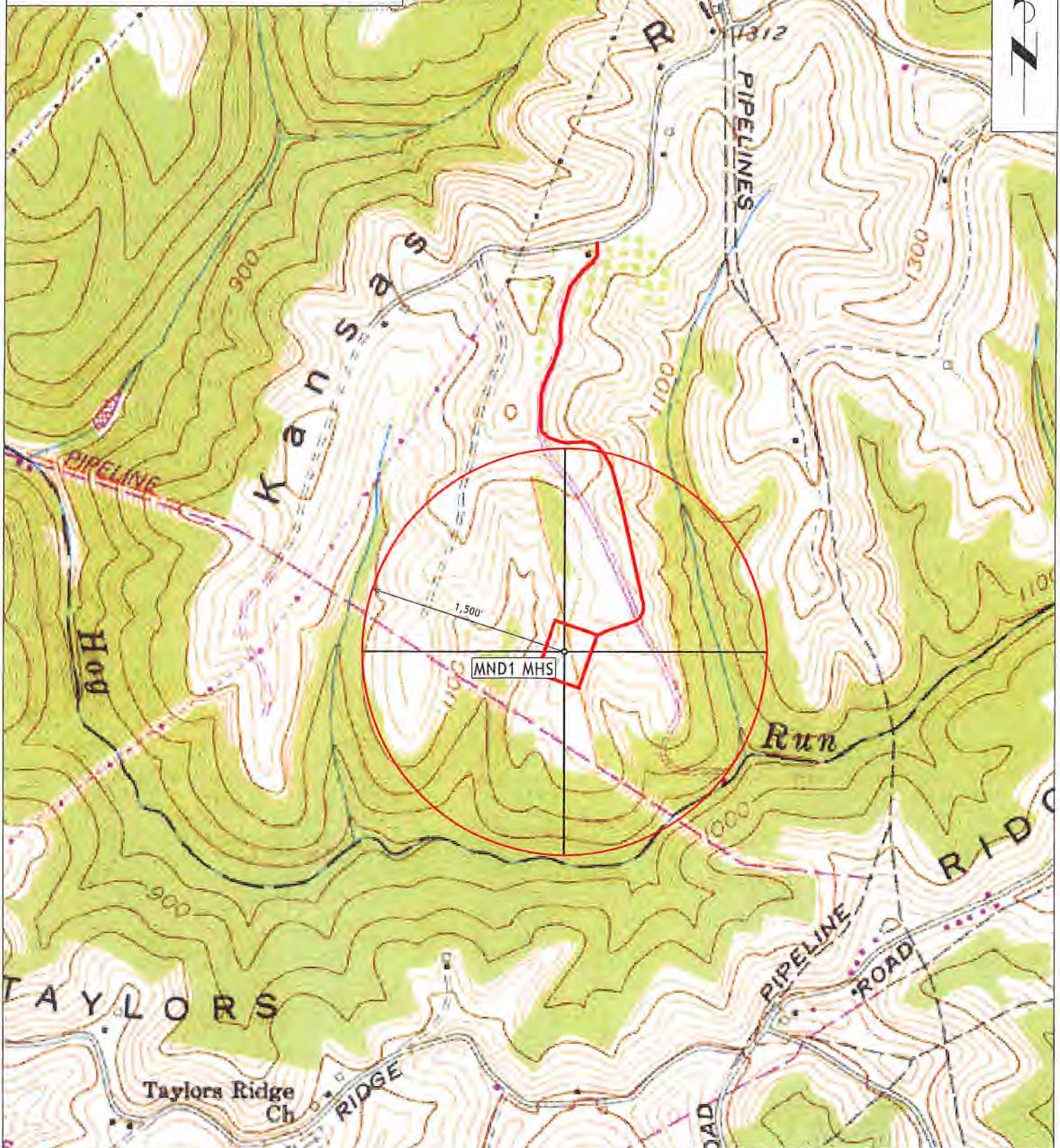
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Environmental Protection

SUBJECT WELL
MND1 MHS

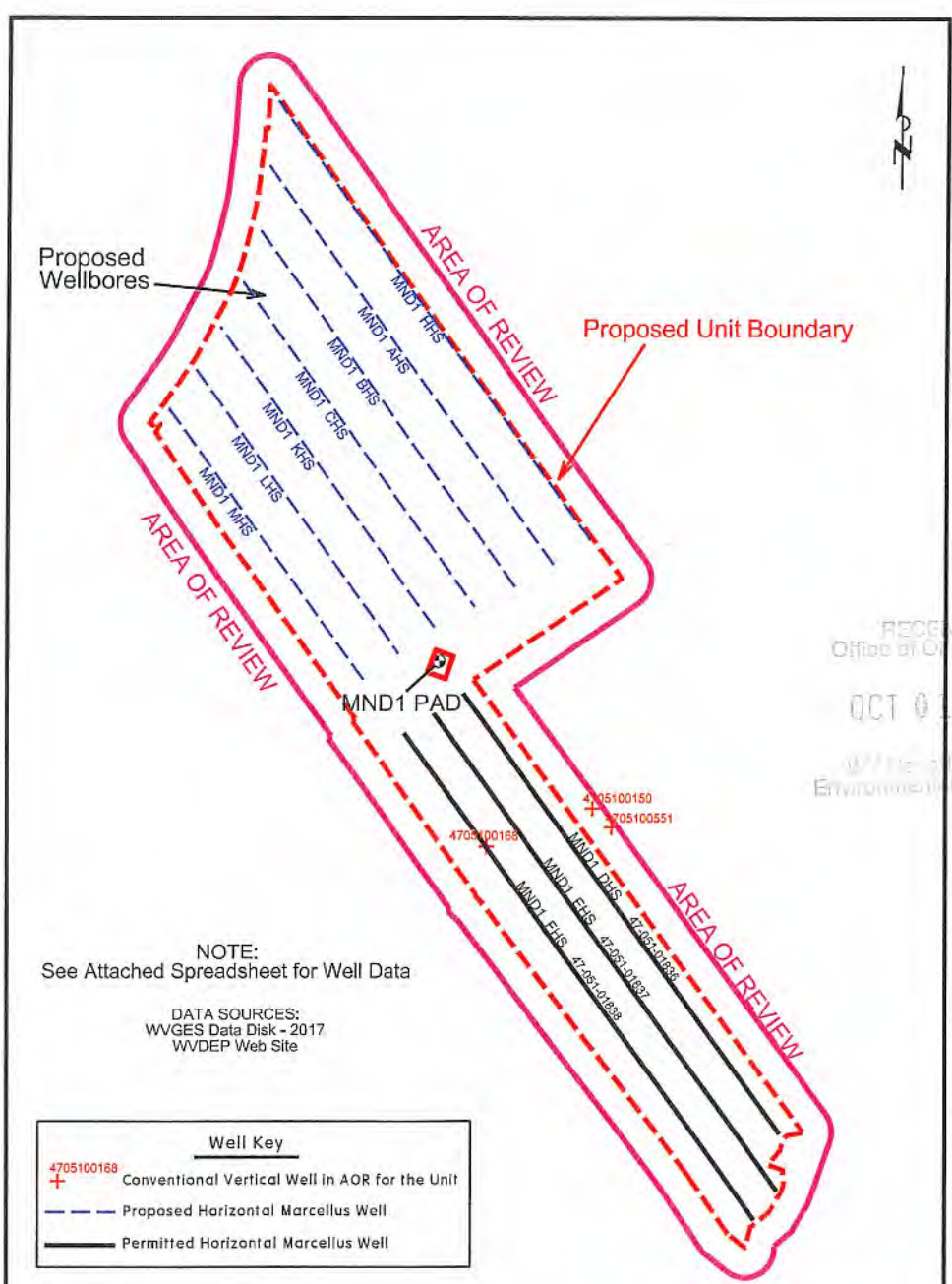
Office of the Engineer
OCT 01 2019
WVD -1200

47050429
01/18/2019



No Water Supply Wells Are Located Within 1500' Of Proposed Well

Section of
Powhatan Point 7.5' Quadrangle
SCALE 1"=1000'



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West Virginia Department of Environmental Protection

NOTE:
See Attached Spreadsheet for Well Data

DATA SOURCES:
WVGES Data Disk - 2017
WVDEP Web Site

Well Key

- + 4705100183 Conventional Vertical Well in AOR for the Unit
- - - Proposed Horizontal Marcellus Well
- Permitted Horizontal Marcellus Well

HG ENERGY, II APPALACHIA, LLC
5260 DuPont Road, Parkersburg, WV 26101



Area of Review for:

MND1 PAD

MND1 AHS Wellbore	MND1 FHS Wellbore
MND1 BHS Wellbore	MND1 HHS Wellbore
MND1 CHS Wellbore	MND1 KHS Wellbore
MND1 DHS Wellbore	MND1 LHS Wellbore
MND1 EHS Wellbore	MND1 MHS Wellbore

Clay District, Marshall County, W.Va.



8/29/18

EXISTING WELLS LOCATED WITHIN THE AREA OF REVIEW FOR:

MND1 NORTH AND PROPOSED WELLS AHS, BHS, CHS, HHS, KHS, LHS & MHS

CT	API	COUNTY	FARM	OPERATOR NAME	FORMATION NAME	WELL TYPE	TVD	STATUS	LATITUDE	LONGITUDE
1	4705100150	Marshall	Guy McDowell 1	Dinsmoore, D. H.	Allegheny Fm	Dry	1,517	P&A	39.845205	-80.764859
2	4705100168	Marshall	D H & Genevieve Mason 2	Tedrow & Moore	Big Injun (Price&eq)	Dry	1,947	ABANDONED	39.843465	-80.771254
3	4705100551	Marshall	Ralph Chaplin 1	Kentucky Central & Co.	UNKNOWN	not available	NA	P&A	39.844335	-80.763730
4	4705101836	Marshall	MND01 DHS	HG Energy, II Appalachia, LLC	Marcellus Shale	Gas	6,175	DRILLING IN PROCESS	39.849872	-80.774263
5	4705101837	Marshall	MND01 EHS	HG Energy, II Appalachia, LLC	Marcellus Shale	Gas	6,175	DRILLING IN PROCESS	39.849833	-80.774281
6	4705101838	Marshall	MND01 FHS	HG Energy, II Appalachia, LLC	Marcellus Shale	Gas	6,175	DRILLING IN PROCESS	39.849794	80.774299

SOURCE: WVGES DATASET (2017) and WVDEP WEBSITE

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OCT 01 2018
WV Department of
Environmental Protection

4705101839

SURFACE HOLE LOCATION (SHL)

UTM 17 - NAD83
 N: 4411112.721
 E: 519301.332
 NAD27, WV NORTH
 N: 494147.604
 E: 1642153.576
 LAT/LON DATUM-NAD83
 LAT: 39.849815
 LON: -80.774376

APPROX. LANDING POINT

UTM 17 - NAD83
 N: 4411036.716
 E: 518910.314
 NAD27, WV NORTH
 N: 493919.660
 E: 1640866.311
 LAT/LON DATUM-NAD83
 LAT: 39.849139
 LON: -80.778949

REFERENCE DETAIL



LINE TABLE		
LINE	BEARING	DISTANCE
R1	S57°45'26"E	139.27'
R2	N56°30'13"E	231.49'
R3	N64°45'49"W	221.84'
R4	S68°47'13"E	2197.31'
R5	N17°04'44"W	791.20'

LEGEND

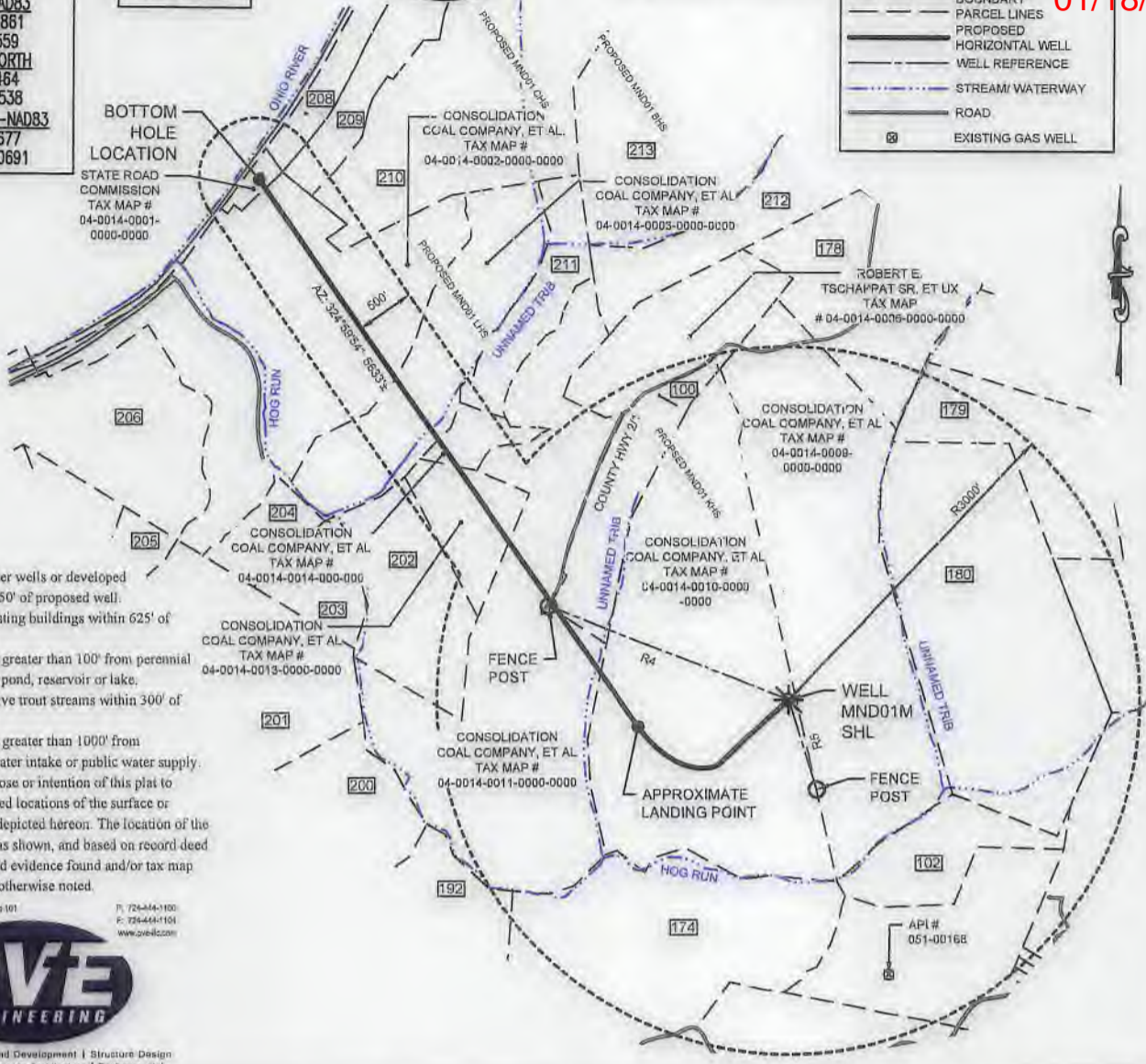
- PROPOSED WELL
- WATER SOURCE
- LEASED NUMBER
- ALL ARE POINTS UNLESS OTHERWISE NOTED
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- PROPOSED HORIZONTAL WELL
- WELL REFERENCE
- STREAM/WATERWAY
- ROAD
- EXISTING GAS WELL

01/18/2019

BOTTOM HOLE LOCATION

UTM 17 - NAD83
 N: 4412425.861
 E: 517902.559
 NAD27, WV NORTH
 N: 498533.464
 E: 1637635.538
 LAT/LON DATUM-NAD83
 LAT: 39.861677
 LON: -80.790691

WATER WELLS:
 NONE FOUND



NOTES:

1. There are no water wells or developed springs within 250' of proposed well.
2. There are no existing buildings within 625' of proposed well.
3. Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
4. There are no native trout streams within 300' of proposed well.
5. Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
6. It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, and based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.

Westport Corporate Park III, Suite 101
 2200 Clarksburg Drive
 Steersley, PA 16143

T: 724-444-1100
 F: 724-444-1101
 www.pve-llc.com



Civil Engineering | Land Development | Structure Design
 Land Planning | Landscape Architecture | Environmental

FILE #: MND 01 MHS

DRAWING #: MND 01 MHS

SCALE: 1"=1500'

MINIMUM DEGREE OF ACCURACY: 1/2500

PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT H 138: 638.58'

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.

SIGNED:

R.P.E.: 18766 L.L.S.: P.S. NO.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25304



DATE: SEPTEMBER 10, 2018

OPERATOR'S WELL #: MND 01 MHS

API WELL # 47 051 01239
 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

SHEET: 1 OF 3

WATERSHED: SHORT CREEK-OHIO RIVER

ELEVATION: 1150.00'

COUNTY/DISTRICT: MARSHALL / CLAY

QUADRANGLE: POWHATAN POINT, W. VA./OHIO

SURFACE OWNER: CONSOLIDATION COAL COMPANY/ MURRAY ENERGY

ACREAGE: 126.99

OIL & GAS ROYALTY OWNER: CNX GAS COMPANY, LLC, ET AL. ACREAGE: 126.99

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)

TARGET FORMATION: MARCELLUS

ESTIMATED DEPTH: TVD: 6,175' ± TMD: 12,374' ±

WELL OPERATOR: HG ENERGY II APPALACHIA, LLC

DESIGNATED AGENT: DIANE C. WHITE

Address: 5260 DUPONT ROAD

Address: 5260 DUPONT ROAD

City PARKERSBURG State WV Zip Code 26101

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- WATER SOURCE
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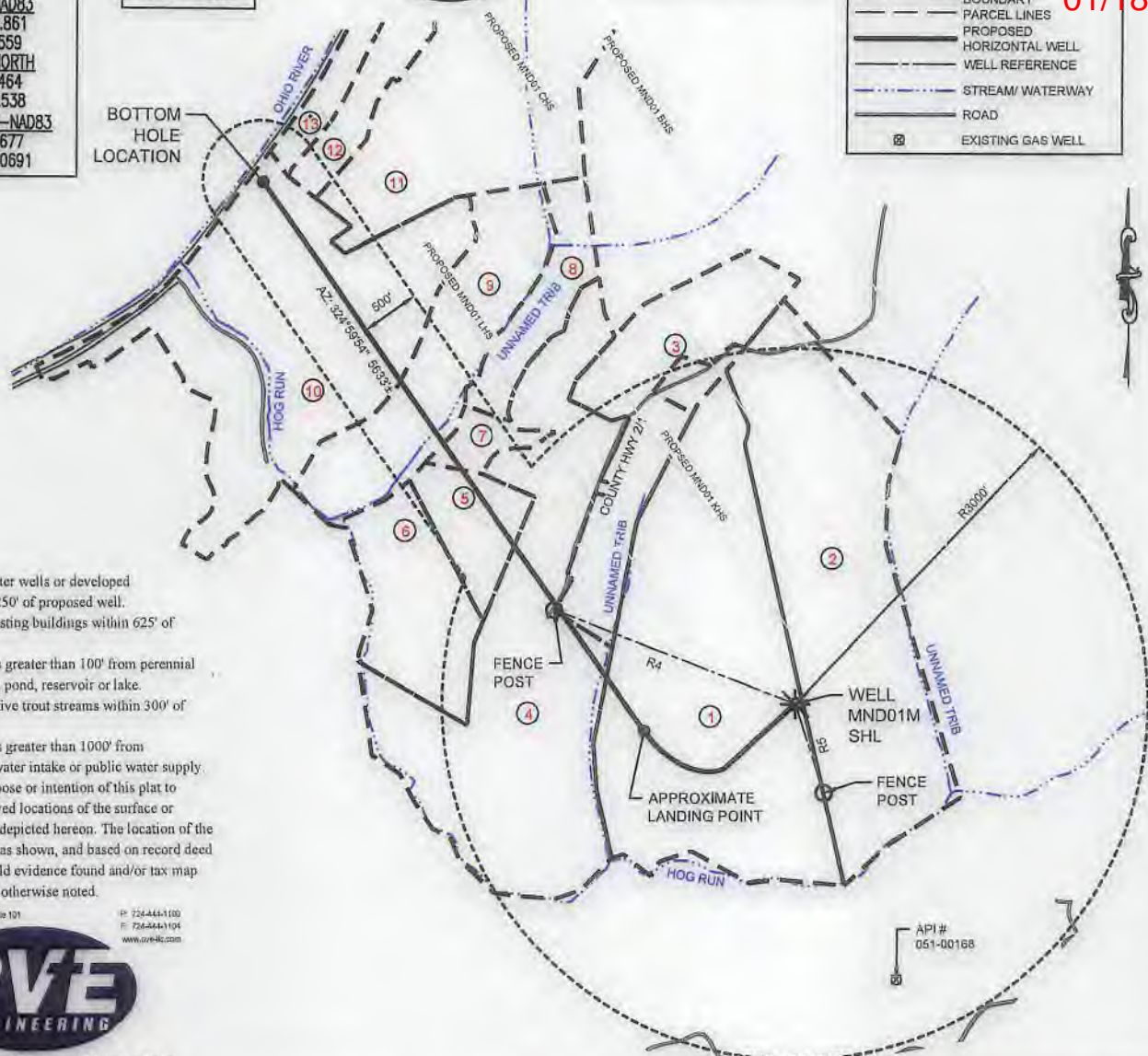
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BOTTOM HOLE LOCATION



01/18/2019

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 Sewistler, PA 15143
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 F: 724-444-1094
 www.pve4c.com



Civil Engineering | Land Development | Structure Design
 Land Planning | Landscape Architecture | Environmental

FILE #: MND 01 MHS

DRAWING #: MND 01 MHS

SCALE: 1"=1500'

MINIMUM DEGREE OF ACCURACY: 1/2500

PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT H 138: 638.58'

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DATE: SEPTEMBER 10, 2018

OPERATOR'S WELL #: MND 01 MHS

API WELL # 47 051 01839D
 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

SHEET: 2 OF 3

WATERSHED: SHORT CREEK-OHIO RIVER ELEVATION: 1150.00'

COUNTY/DISTRICT: MARSHALL / CLAY QUADRANGLE: POWHATAN POINT, W. VA./OHIO

SURFACE OWNER: MURRAY ENERGY ACREAGE: 126.99

OIL & GAS ROYALTY OWNER: CNX GAS COMPANY, LLC, ET AL. ACREAGE: 126.99

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,175' ± TMD: 12,374' ±

WELL OPERATOR: HG ENERGY II APPALACHIA, LLC DESIGNATED AGENT: DIANE C. WHITE

Address: 5260 DUPONT ROAD Address: 5260 DUPONT ROAD

City PARKERSBURG State WV Zip Code 26101 City PARKERSBURG State WV Zip Code 26101

Well is located on topo map 4,853 feet south of Latitude: 39° 52' 30"

Well is located on topo map 9,173 feet south of Latitude: 39° 52' 30"

Well is located on topo map 6,844

feet west of Longitude: 80° 45' 00"

Well is located on topo map 11,423

feet west of Longitude: 80° 45' 00"

01/18/2019

100	ROBERT E TSCHAPPAT JR	TAX MAP NO. 04-0014-0006-0001-0000
102	CHAPLIN RALPH & ELLA	TAX MAP NO. 05-0002-0018-0000-0000
174	GRAY ROBERT WILLIAM - LIFE	TAX MAP NO. 05-0002-0006-0000-0000
178	RINE WENDELL B. & CAROLYN S.	TAX MAP NO. 04-0014-0007-0000-0000
179	ESTEP EUGENE C. & ELIZABETH A.	TAX MAP NO. 04-0013-0002-0000-0000
180	CONSOLIDATION COAL COMPANY, ET AL.	TAX MAP NO. 04-0014-0008-0000-0000
192	CONSOLIDATION COAL COMPANY, ET AL.	TAX MAP NO. 05-0002-0005-0000-0000
200	CONSOLIDATION COAL COMPANY, ET AL.	TAX MAP NO. 05-0001-0007-0000-0000
201	CONSOLIDATION COAL COMPANY, ET AL.	TAX MAP NO. 05-0001-0005-0000-0000
202	CONSOLIDATION COAL COMPANY, ET AL.	TAX MAP NO. 04-0014-0012-0000-0000
203	CONSOLIDATION COAL COMPANY, ET AL.	TAX MAP NO. 05-0001-0006-0001-0000
204	CONSOLIDATION COAL COMPANY, ET AL.	TAX MAP NO. 05-0001-0006-0000-0000
205	CONSOLIDATION COAL COMPANY, ET AL.	TAX MAP NO. 05-0001-0004-0000-0000
206	CONSOLIDATION COAL COMPANY, ET AL.	TAX MAP NO. 05-0001-0001-0000-0000
208	STATE ROAD COMMISSION	TAX MAP NO. 04-0007-0016-0000-0000
209	WV DEPT. OF HIGHWAYS	TAX MAP NO. 04-0007-0015-0000-0000
210	MAIDENS PAUL J. & JULIE D.	TAX MAP NO. 04-0007-0014-0000-0000
211	BARLOW EDISON A. ET. UX.	TAX MAP NO. 04-0014-0004-0000-0000
212	DICKSON RAYMOND M.	TAX MAP NO. 04-0007-0018-0000-0000
213	MAIDENS PAUL J. & JULIE D.	TAX MAP NO. 04-0007-0017-0000-0000

LEGEND

- BOTTOM HOLE LOCATION
- TOP HOLE LOCATION
- PROPOSED WELL
- WATER SOURCE
- LEASED NUMBER
- ALL ARE POINTS UNLESS OTHERWISE NOTED
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- PROPOSED HORIZONTAL WELL
- WELL REFERENCE
- STREAM/WATERWAY
- ROAD
- EXISTING GAS WELL

1	HG ENERGY APPALACHIA, LLC.	TAX MAP NO. 04-14, PARCEL 10
2	HG ENERGY APPALACHIA, LLC.	TAX MAP NO. 04-14, PARCEL 09
3	ROBERT E. TSCHAPPAT SR. ET UX.	TAX MAP NO. 04-14, PARCEL 06
4	HG ENERGY APPALACHIA, LLC.	TAX MAP NO. 04-14, PARCEL 11
5	DAVID C. WHITE	TAX MAP NO. 04-14, PARCEL 13
6	HG ENERGY APPALACHIA, LLC.	TAX MAP NO. 04-14, PARCEL 12
7	HG ENERGY APPALACHIA, LLC.	TAX MAP NO. 04-14, PARCEL 14
8	ESTATE OF NELLIE RAMSEY DOWER ET AL.	TAX MAP NO. 04-14, PARCEL 04
9	HG ENERGY APPALACHIA, LLC.	TAX MAP NO. 04-14, PARCEL 03
10	HG ENERGY APPALACHIA, LLC.	TAX MAP NO. 04-14, PARCEL 02
11	PAUL J. & JULIE D. MAIDENS	TAX MAP NO. 04-07, PARCEL 14
12	NYLA J. BELL	TAX MAP NO. 04-07, PARCEL 15
13	NYLA J. BELL	TAX MAP NO. 04-07, PARCEL 16

Waterfront Corporate Park III, Suite 101
2099 Georgetown Drive
Sewickley, PA 15143

P: 724-444-1100
F: 724-444-1104
www.pve-llc.com



Civil Engineering | Land Development | Structure Design
Land Planning | Landscape Architecture | Environmental

FILE #: MND 01 MHS

DRAWING #: MND 01 MHS

SCALE: 1"=2000'

MINIMUM DEGREE OF ACCURACY: 1/2500

PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT H 138: 638.58'

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.

SIGNED: [Signature]

R.P.E.: 18766 L.L.S.: P.S. NO. _____



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25304



DATE: SEPTEMBER 10, 2018

OPERATOR'S WELL #: MND 01 MHS

API WELL # 47 051 018310

STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep

Gas Liquid Injection Storage Shallow

WATERSHED: SHORT CREEK-OHIO RIVER ELEVATION: 1150.00'

COUNTY/DISTRICT: MARSHALL / CLAY QUADRANGLE: POWHATAN POINT, W. VA./OHIO

SURFACE OWNER: CONSOLIDATION COAL COMPANY/ MURRAY ENERGY ACREAGE: 126.99

OIL & GAS ROYALTY OWNER: CNX GAS COMPANY, LLC, ET AL. ACREAGE: 126.99

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PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON

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TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,175' ± TMD: 12,374' ±

WELL OPERATOR: HG ENERGY II APPALACHIA, LLC DESIGNATED AGENT: DIANE C. WHITE

Address: 5260 DUPONT ROAD Address: 5260 DUPONT ROAD

City PARKERSBURG State WV Zip Code 26101 City PARKERSBURG State WV Zip Code 26101

SHEET: 3 OF 3

WW-6A1
 (3/13)

Operator's Well No. _____

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
 Chapter 22, Article 6A, Section 5(a)(5)
 IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
-------------------------	-----------------------	-----------------------	---------	-----------

** See Attached Lease Chains **

**Acknowledgement of Possible Permitting/Approval
 In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

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 Office of Oil and Gas

OCT 01 2018

WV Department of
 Environmental Protection

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: HG Energy II Appalachia, LLC
 By: Diane White Diane White
 Its: Agent

HG Energy II Appalachia, LLC
MND1 MHS Lease Chains

4705 01839 01/18/2019

HG Lease Number	MFD	Original Lessor	Original Lessee	Royalty	Book	Page
1) 623175	04-0014-0010-0000-0000	Consolidation Coal Company, et al	CNX Gas Company, LLC		646	493
		CNX Gas Company, LLC	Noble Energy, Inc.		752	66
		Noble Energy, Inc.	APPALACHIA, LLC	Fee	39	1
2) 623177	04-0014-0009-0000-0000	Consolidation Coal Company, et al	CNX Gas Company, LLC		646	493
		CNX Gas Company, LLC	Noble Energy, Inc.		752	66
		Noble Energy, Inc.	APPALACHIA, LLC	Fee	39	1
3) Q083948001	04-0014-0006-0000-0000	Robert E. Tschappat, Sr., et ux	AB Resources, LLC	Not less than 1/8	692	462
		AB Resources, LLC	Chief & Radler		24	383
		AB Resources, LLC	NPAR, LLC		25	484
		Chief & Radler/NPAR, LLC	Chevron USA, Inc.		25	1
		Chevron USA Inc.	Noble Energy, Inc./CNX Gas Company		31	59
		NOBLE ENERGY INC	APPALACHIA, LLC		39	1
4) 623176	04-0014-0011-0000-0000	Consolidation Coal Company, et al	CNX Gas Company, LLC		646	493
		CNX Gas Company, LLC	Noble Energy, Inc.		752	66
		Noble Energy, Inc.	APPALACHIA, LLC	Fee	39	1
5) Q086987002	04-0014-0013-0000-0000	David C. White (Hamann Heirship)	Noble Energy, Inc.	Not less than 1/8	855	307
		Noble Energy, Inc.	APPALACHIA, LLC		39	1
6) Q097108000	04-0014-0012-0000-0000	Consolidation Coal Company, et al	CNX Gas Company, LLC		646	493
		CNX Gas Company, LLC	Noble Energy, Inc.		752	66
		Noble Energy, Inc.	APPALACHIA, LLC	Fee	39	1
7) 623217	04-0014-0014-0000-0000	Consolidation Coal Company, et al	CNX Gas Company, LLC		646	493
		CNX Gas Company, LLC	Noble Energy, Inc.		752	66
		NOBLE ENERGY INC	APPALACHIA, LLC	Fee	39	1
8) Q075617010 Q075617006 Q075617007 Q075617003 Q075617001 Q075617002 Q075617005 Q075617004 Q075617008 Q075617009	04-0014-0004-0000-0000	Estate of Nellie Ramser Dowler, et al	Noble Energy, Inc.	Not less than 1/8	895	304
		Raul M. Karnell, II, et ux	Noble Energy, Inc.	Not less than 1/8	812	215
		Robin Knowlton, single	Noble Energy, Inc.	Not less than 1/8	833	240
		Sandra Borkowski, single	Noble Energy, Inc.	Not less than 1/8	797	478
		Joyce Ann Donald, et vir	Noble Energy, Inc.	Not less than 1/8	797	434
		Dick Tracey, et ux	Noble Energy, Inc.	Not less than 1/8	797	437
		William M. Karnell, et ux	Noble Energy, Inc.	Not less than 1/8	806	360
		Jennifer L. Duvvich, et vir	Noble Energy, Inc.	Not less than 1/8	803	606
		Tracy Clarke, et vir	Noble Energy, Inc.	Not less than 1/8	813	242
		Lee Patterson, et ux	Noble Energy, Inc.	Not less than 1/8	816	164
All the above leases from NOBLE ENERGY INC	APPALACHIA, LLC		39	1		
9) 623218	04-0014-0003-0000-0000	Consolidation Coal Company, et al	CNX Gas Company, LLC		646	493
		CNX Gas Company, LLC	Noble Energy, Inc.		752	66
		NOBLE ENERGY INC	APPALACHIA, LLC	Fee	39	1
10) 623218	04-0014-0002-0000-0000	Consolidation Coal Company, et al	CNX Gas Company, LLC		646	493
		CNX Gas Company, LLC	Noble Energy, Inc.		752	66
		NOBLE ENERGY INC	APPALACHIA, LLC	Fee	39	1
11) Q082524000	04-0007-0014-0000-0000	Paul J. Maidens, et ux	Noble Energy, Inc.	Not less than 1/8	826	90
		NOBLE ENERGY INC	APPALACHIA, LLC		39	1
12) Q080080000	04-0007-0015-0000-0000	Nyla J. Bell, widow	Noble Energy, Inc.	not less than 1/8	813	251
		NOBLE ENERGY INC	APPALACHIA, LLC		39	1
13) Q085360000	04-0007-0016-0000-0000	Nyla J. Bell, widow	Noble Energy, Inc.	Not less than 1/8	826	366
		NOBLE ENERGY INC	APPALACHIA, LLC		39	1



HG Energy, LLC
5260 Dupont Road
Parkersburg, WV 26101
(304) 420-1100 - Office
(304) 863-3172 - Fax

4705 10/18/18

September 25, 2018

Laura Adkins
WV DEP
Division of Oil & Gas
601 57th Street
Charleston, WV 25304

RE: Drilling Under Roads – MND1 MHS
Clay District, Marshall County
West Virginia

Dear Ms. Adkins:

HG Energy II Appalachia, LLC, has the right to drill, stimulate and produce wells that are drilled under the County and State Roads as designated on the plats.

Should you have any questions or desire further information, please contact me at dwhite@hgenergyllc.com or 304-420-1119.

Very truly yours,

Diane White

Diane C. White

Enclosures

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Office of Oil and Gas

OCT 01 2018

WV Department of
Environmental Protection

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

Date of Notice Certification: 09/25/2018

API No. 47- _____

Operator's Well No. MND1 MHS

Well Pad Name: MND1

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State:	West Virginia	UTM NAD 83	Easting:	519301.3
County:	Marshall		Northing:	4411112.8
District:	Clay	Public Road Access:		Country Highway 88/8
Quadrangle:	Powhatan Point	Generally used farm name:		Consol
Watershed:	Short Creek - Ohio River (HUC 10)			

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following: *PLEASE CHECK ALL THAT APPLY <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED <input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH) <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION <input checked="" type="checkbox"/> 5. PUBLIC NOTICE <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		OOG OFFICE USE ONLY <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED
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Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

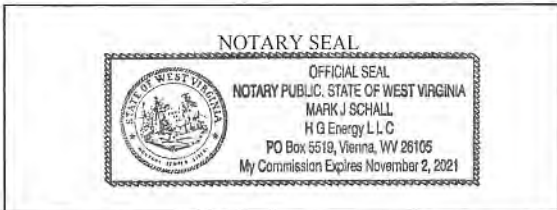
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Office of Oil and Gas

OCT 01 2018

Certification of Notice is hereby given:

THEREFORE, I Diane White, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	<u>HG Energy II Appalachia, LLC</u>	Address:	<u>5260 Dupont Road</u>
By:	<u>Diane White <i>Diane White</i></u>		<u>Parkersburg, WV 26101</u>
Its:	<u>Agent</u>	Facsimile:	<u>304-863-3172</u>
Telephone:	<u>304-420-1119</u>	Email:	<u>dwhite@hgenergyllc.com</u>



Subscribed and sworn before me this 25th day of September, 2018.

[Signature] Notary Public

My Commission Expires 11/2/2021

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION**

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 09/26/2018 **Date Permit Application Filed:** 10/02/2018

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: Murray Energy Corporation
Address: 46226 National Road
St. Clairsville, Oh 43950

Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: Same as Surface Owner
Address: _____

COAL OPERATOR

Name: Same as Surface Owner
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: No water sources within 1500'
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

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Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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OCT 07 2019
101

WW-6A
(8-13)

API NO. 47- 4705101839
OPERATOR WELL NO. MND1 MHS
Well Pad Name: MND1

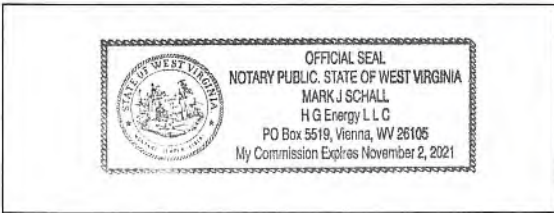
Notice is hereby given by:

Well Operator: HG Energy II Appalachia, LLC
Telephone: 304-420-1119
Email: dwhite@hgenergyllc.com *Diane White*

Address: 5260 Dupont Road
Parkersburg, WV 26101
Facsimile: 304-863-3172

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.



Subscribed and sworn before me this 26th day of September, 2018.

Mark J. Schall Notary Public

My Commission Expires 11/2/2021

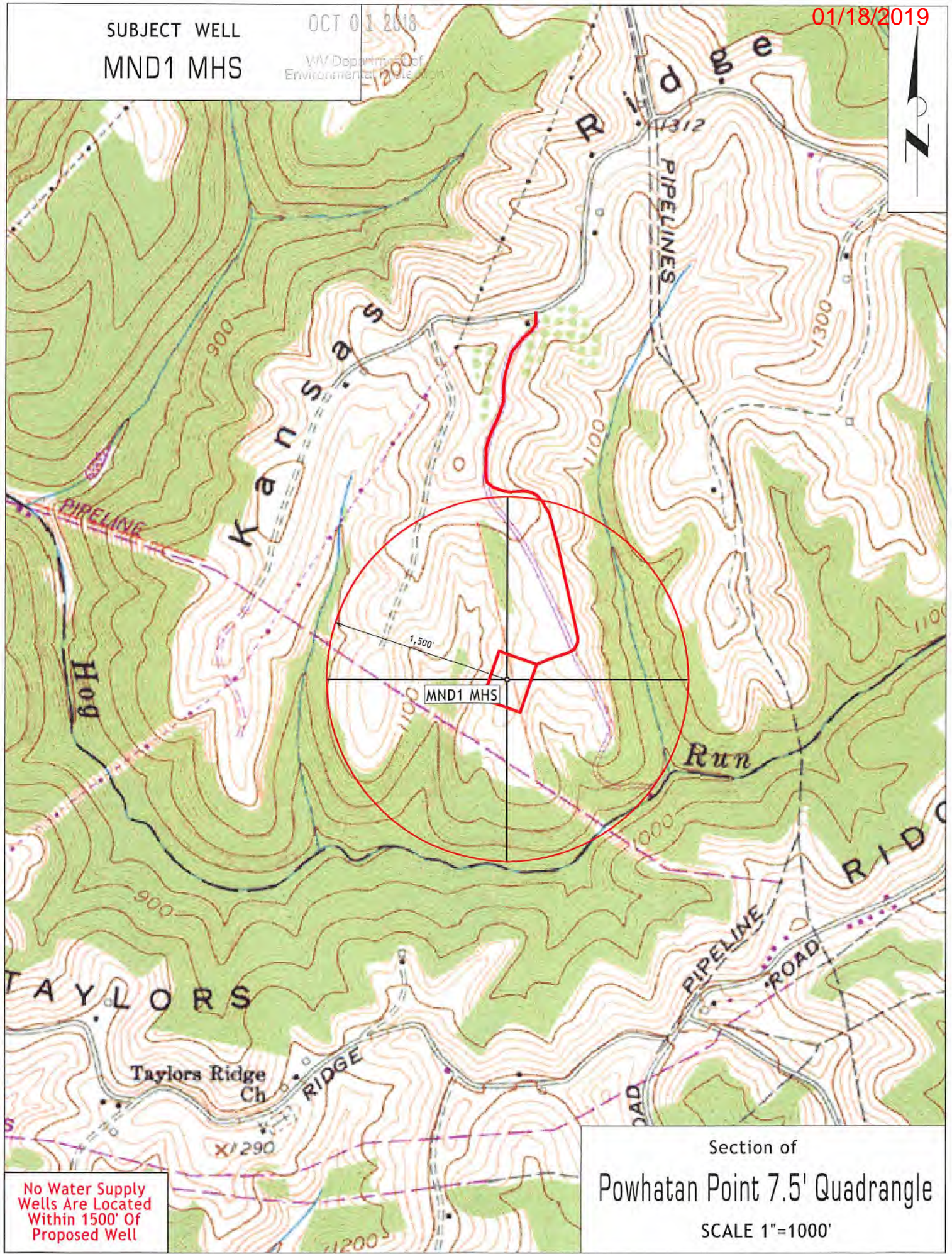
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Environmental Protection

SUBJECT WELL
MND1 MHS

OCT 01 2018

WV Department of
Environmental Protection

01/18/2019



MND1 MHS

1,500'

No Water Supply
Wells Are Located
Within 1500' Of
Proposed Well

Section of
Powhatan Point 7.5' Quadrangle

SCALE 1"=1000'

**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL**

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.
Date of Notice: 09/24/2018 **Date Permit Application Filed:** 10/05/2018

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

HAND DELIVERY CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Murray Energy Corporation
Address: 46226 National Road
St. Clairsville, OH 43950

Name: _____
Address: _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>519301.3</u>
County: <u>Marshall</u>		Northing: <u>4411112.8</u>
District: <u>Clay</u>	Public Road Access: <u>County Hwy 88/8</u>	
Quadrangle: <u>Powhatan Point</u>	Generally used farm name: <u>Consol</u>	
Watershed: <u>Short Creek -Ohio River</u>		

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: HG Energy II Appalachia, LLC
Address: 5260 Dupont Road
Parkersburg, WV 26101
Telephone: 304-420-1119
Email: dwhite@hgenergyllc.com *Diane White*
Facsimile: 304-863-3172

Authorized Representative: Diane White
Address: 5260 Dupont Road
Parkersburg, WV 26101
Telephone: 304-420-1119
Email: dwhite@hgenergyllc.com
Facsimile: 304-863-3172

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 09/26/2018 **Date Permit Application Filed:** 10/02/2018

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

- CERTIFIED MAIL
RETURN RECEIPT REQUESTED
- HAND
DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Murray Energy Corporation	Name: _____
Address: 46226 National Road	Address: _____
Saint Clairsville, OH 43950	

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia	UTM NAD 83 Easting: 519301.3
County: Marshall	Northing: 4411112.8
District: Clay	Public Road Access: County Highway 88/8
Quadrangle: Powhatan Point	Generally used farm name: Consol
Watershed: Short Creek - Ohio River (HUC 10)	

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: HG Energy II Appalachia, LLC	Address: 5260 Dupont Road
Telephone: 304-420-1119	Parkersburg, WV 26105
Email: dwhite@hgenergyllc.com <i>Diane White</i>	Facsimile: 304-863-3172

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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Department of Environmental Protection



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
 Charleston, West Virginia 25305-0430 • (304) 558-3505

Jim Justice
 Governor

Thomas J. Smith, P. E.
 Secretary of Transportation/
 Commissioner of Highways

October 26, 2017

James A. Martin, Chief
 Office of Oil and Gas
 Department of Environmental Protection
 601 57th Street, SE
 Charleston, WV 25304

Subject: DOH Permit for the MND-1 Well Pad, Marshall County

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #06-2014-0611 for the subject site to HG Energy, LLC. for access to the State Road for the well sites located off of Marshall County Route 88/8bg SLS.

The operator has signed an OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton P.E.
 Regional Maintenance Engineer
 Central Office Oil & Gas Coordinator

Cc: Diane White
 H G Energy, LLC
 CH, OM, D-6
 File

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List of Frac Additives by Chemical Name and CAS #**MND1 Well Pad (ASH,BHS,CHS,DHS,EHS,FHS,HHS,JHS,KHS,LHS,MHS)**

Chemical Name	CAS #	Multiple CAS #'s
Pro Shale Slik 405	Mixture	68551-12-2 7647-14-5 12125-02-9 64742-47-8
Pro Hib II	Mixture	68412-54-4 68607-28-3 107-21-1 111-76-2 67-56-1 107-19-7
Silica Sand and Ground Sand	Mixture	14808-60-7 1344-28-1 1309-37-1 13463-67-7
Hydrochloric Acid 22 DEG BE	7647-01-0	
PROGEL - 4.5	64742-96-7	
BIO CLEAR 2000	Mixture	25322-68-3 10222-01-2
SCALE CLEAR SI 112	107-21-1	
PROBREAK 4	Mixture	57-50-1 107-21-1
Sulfamic Acid	5329-14-6	
PRO - Flow - 102-N	Mixture	67-63-0 68439-45-2 2687-96-9
PROGEL - 4	9000-30-0	

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WV Department of
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CONSTRUCTION IMPROVEMENT PLANS FOR MND1 WELL SITE AST



MARSHALL COUNTY
WEST VIRGINIA

EXISTING API NUMBERS

- 47-051-01768
- 47-051-01810
- 47-051-01833
- 47-051-01834
- 47-051-01835
- 47-051-01836
- 47-051-01837
- 47-051-01838
- 47-051-01839

CONSTRUCTION SEQUENCE

1. Prior to commencement of any earth disturbance activity including clearing and grubbing, the registrant shall call West Virginia 811 by dialing 811 or 1-800-245-4848 to identify all utility lines. The registrant also must clearly delineate sensitive areas, riparian forest buffer boundaries, the limits of clearing, and trees that are to be conserved within the project site, and shall install appropriate barriers where equipment may not be parked, staged, operated or located for any purpose.
2. Site access - This is the first land-disturbance activity to take place at the site and should provide BMPs to minimize accelerated erosion and sedimentation from the following areas: entrance to the site, construction routes, and areas designated for equipment or other use at the site including parking, stockpiles.
3. Sediment Barriers - Install perimeter BMPs after the construction site is accessed, keeping associated clearing and grubbing limited to only that amount required for installing perimeter BMPs.
4. Land Clearing and Grading - Implement clearing and grading only after all downslope E&S BMPs have been constructed and stabilized.
5. Surface Stabilization - Apply temporary or permanent stabilization measures immediately to any disturbed areas where work has reached final grade, has been delayed or otherwise temporarily suspended.
6. Construction of Buildings, Utilities, and Paving - During construction, install and maintain any additional erosion and sediment control BMPs, and implement any structural post construction stormwater BMPs that may be required.
7. Upon completion of pad grading, compact the pad to grade and begin placement of pad soil cement.
8. Final Stabilization - Topsoiling, Trees and Shrubs - After construction is completed, install stabilization BMPs including: permanent seeding, mulching and riprap, and complete implementation of stormwater BMPs in this last construction phase. Stabilize all open areas, including borrow and spoil areas, and remove all temporary BMPs and stabilize any disturbances associated with the removal of the BMP.



PREPARED FOR
HG ENERGY, LLC
5260 DUPONT ROAD
PARKERSBURG, WEST VIRGINIA 26101
(304) 420-1100

PREPARED BY
PENN ENVIRONMENTAL & REMEDIATION, INC.
111 RYAN COURT
PITTSBURGH, PA 15205
(412) 722-1222

SHT. NO.	SHEET TITLE
1	TITLE SHEET
2-4	SITE LAYOUT PLANS
5	GENERAL NOTES
6	DETAILS AST PAD
7	SITE RESTORATION PLAN

THE DRAWING IS UNLESS OTHERWISE SPECIFIED A TRADE SECRET AND NOT BE LOANED, REPRODUCED, COPIED, REPRODUCED, OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF PENN ENVIRONMENTAL & REMEDIATION, INC. IT IS NOT TO BE USED FOR ANY PURPOSES OTHER THAN THAT FOR WHICH IT WAS PREPARED. ANY REUSE OF THIS DRAWING FOR ANY OTHER PROJECT OR FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF PENN ENVIRONMENTAL & REMEDIATION, INC. IS STRICTLY PROHIBITED. THE DRAWING MUST BE RETURNED TO THE COMPANY.

REVISION	DATE	DESCRIPTION
1	04/30/2018	ADD AST PAD & STOCKPILE



TITLE SHEET
MND1 AST
MARSHALL COUNTY, WEST VIRGINIA
PREPARED FOR
HG ENERGY
PARKERSBURG, WEST VIRGINIA

WEST VIRGINIA **CALL BEFORE YOU DIG!** Dial 811 or 800.245.4848

APPROVED: MEP 04/30/2018
CHECKED: WFR 04/30/2018
DRAWN: EJA 03/12/2018
PROJECT NO: 4000-PA007595

Penn E&R
Environmental & Remediation, Inc.
111 RYAN COURT, PITTSBURGH, PA 15205
412-722-1222

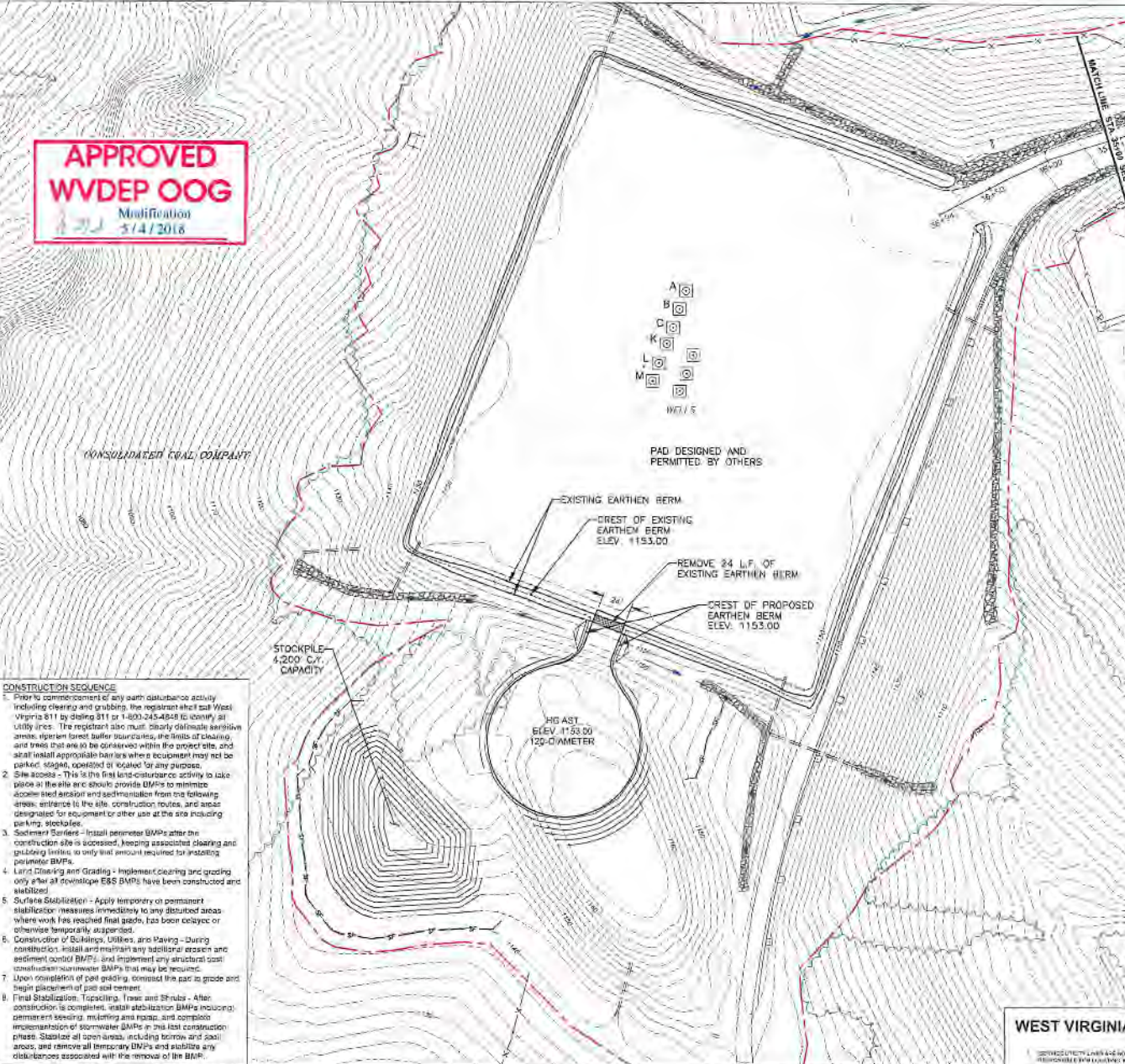
DRAWING NUMBER: PA007595-001
SHEET 1

SEWER/UTILITY LINES ARE NOT SHOWN IN THIS DRAWING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, MAINTAINING AND REPLACING AS NECESSARY TO ENSURE CONTINUOUS SERVICE.

S:\PROJECT FILES\4000-PA007595 MND1 AST\CAD DRAWINGS\PA007595.TITLE SHEET.DWG, 4/30/2018, 3:56 PM

APPROVED WVDEP OOG
Modification
3/4/2016

S:\PROJECT\216141000\PROJ\216141000\DWG\216141000.DWG 05:18:15 AM 05/11/2016 04:50:54 PM



Estimated Gross Material Balance (Bank/Cut)

Final Development - Quantity	CU	CY	Weight
AST Pit:	2540	143	1,300
Total:	2,540	143	1,300

Detailed:

Est. Stock Pile	1000		800
Est. Stock Pile (Volume)			143
Est. Stock Pile (Weight)			1,300
Est. Stock Pile (Length)			1,000

Notes:

1. Material removed to the extent of low-bulk quantities only.
2. To avoid void, volume based on 12 inches average depth.
3. Material removed into aggregate quantities based on estimated (not exact) weight of material.
4. Estimates do not reflect contractor laydown.

LEGEND

- - - - - SF - - - - - SPLIT FENCE
- - - - - AL - - - - - APPROXIMATE LIMITS OF DISTURBANCE
- - - - - E - - - - - EDGE OF ROAD
- - - - - P - - - - - APPROXIMATE PROPERTY LIMIT
- - - - - G - - - - - EXISTING GAS LINE
- - - - - W - - - - - EXISTING OVERHEAD ELECTRICAL LINES
- - - - - H - - - - - EXISTING POWER POLES
- - - - - X - - - - - EXISTING FENCE
- - - - - □ - - - - - EXISTING GUARDRAIL
- - - - - ○ - - - - - EXISTING INDEX CONTOUR
- - - - - ○ - - - - - EXISTING INTERMEDIATE CONTOUR
- - - - - ○ - - - - - PROPOSED FINAL GRADE INDEX ELEVATION
- - - - - ○ - - - - - PROPOSED FINAL GRADE INTERMEDIATE CONTOUR

NOTES

1. REFERENCE THIS SHEET WITH THE CONSTRUCTION NOTES AND DETAILS.
2. CONSTRUCTION SHALL BE COMPLETED WITHIN THE TIME FRAME OF 30 DAYS FROM THE START DATE OF CONSTRUCTION AND SHALL BE COMPLETED BY THE END OF THE CONTRACT TERM.
3. SITE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION NOTES AND DETAILS AND SHALL BE COMPLETED WITHIN THE TIME FRAME OF 30 DAYS FROM THE START DATE OF CONSTRUCTION AND SHALL BE COMPLETED BY THE END OF THE CONTRACT TERM.
4. NO CONSTRUCTION OF ANY KIND SHALL BE PERMITTED IN ANY AREA DESIGNATED AS A PROTECTED AREA UNLESS IT IS NECESSARY TO MAINTAIN ACCESS TO THE PROTECTED AREA FOR THE PROPOSED CONSTRUCTION.
5. CONSTRUCTION SHALL BE COMPLETED WITHIN THE TIME FRAME OF 30 DAYS FROM THE START DATE OF CONSTRUCTION AND SHALL BE COMPLETED BY THE END OF THE CONTRACT TERM.
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PROVISIONS

NO.	DATE	DESCRIPTION
1	05/11/2016	ADD AST PILE & STOCKPILE

SEAL

SCALE

0' 10' 20'

SITE LAYOUT

MND1 AST

MARSHALL COUNTY, WEST VIRGINIA

HG ENERGY
PARKERSBURG, WEST VIRGINIA

DATE: 05/11/2016
DRAWN: [Name]
CHECKED: [Name]
PROJECT: 16000141000

WEST VIRGINIA **CALL BEFORE YOU DIG!**

Dial 811 or 800.243.4668

PAC07596-001

111 JOHN STREET, PITTSBURGH, PA 15222

412-721-1242

CONSTRUCTION SEQUENCE

1. Prior to commencement of any earth disturbance activity including clearing and grubbing, the registrant shall call West Virginia 811 or 1-800-243-4668 to identify all utility lines. The registrant also must clearly delineate sensitive areas, riparian forest buffer boundaries, the limits of clearing, and areas that are to be preserved within the project site, and shall install appropriate barriers where a containment may not be practical, signed, operated or secured for any purpose.
2. Site access - This is the first earth disturbance activity to take place at the site and shall provide BMP's to minimize associated erosion and sedimentation from the following areas: entrance to the site, construction routes, and areas designated for equipment or other use at the site including parking, stockpiles.
3. Sediment Control - Install perimeter BMP's after the construction site is accessed, keeping associated clearing and grubbing limits to only that amount required for installing perimeter BMP's.
4. Land Clearing and Grubbing - Implement clearing and grubbing only after all downlope ERS BMP's have been constructed and stabilized.
5. Surface Stabilization - Apply temporary or permanent stabilizer measures immediately to any disturbed areas where work has reached final grade, has been delayed or otherwise temporarily suspended.
6. Construction of Driveways, Utilities, and Paving - During construction, install and maintain any additional erosion and sediment control BMP's, and implement any structural soil stabilization measures BMP's that may be required.
7. Upon completion of soil grading, covered the pads to grade and begin placement of pad seal cement.
8. Final Stabilization (Trees and Shrubs) - After construction is completed, install stabilization BMP's (erosion, permanent seeding, mulching, and sod), and complete implementation of stormwater BMP's in the final construction phase. Stabilize all open areas, including borrow and spoil areas, and remove all temporary BMP's and stabilize any disturbances associated with the removal of the BMP's.