

west virginia department of environmental protection

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

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

Friday, May 4, 2018 WELL WORK PERMIT Horizontal 6A / Fracture

HG ENERGY II APPALACHIA, LLC 5260 DUPONT ROAD

PARKERSBURG, WV 26101

Re: Permit approval for MND 1 DHS 47-051-01836-00-00

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	A. Martin
Chief	Complete -

Operator's Well Number: Farm Name: U.S. WELL NUMBER: Horizontal 6A Date Issued: 5/4/2018 MND 1 DHS CONSOLIDATION COAL COM 47-051-01836-00-00 Fracture

Promoting a healthy environment.



API Number: 51-01834

# 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. <u>Failure to adhere to the specified permit</u> conditions may result in enforcement action.

## CONDITIONS

- 1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
- 2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
- 3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
- 4. 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.
- 5. 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.
- 6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
- 7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
- 8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
- 9. 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.
- 10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

API Number: 51-01836

# **PERMIT CONDITIONS**

11. 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.

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WW-6B (04/15) API NO. 47-\_\_\_\_ OPERATOR WELL NO. MND1 DHS

Well Pad Name: MND1

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

1) Well Operator: HG Energy	II Appala	achia, 🛔	494519932	Marshall	Clay	Powhatan Point
.,			Operator ID	County	District	Quadrangle
2) Operator's Well Number: M	ND1 DHS	3	Well Pa	d Name: MN	D1	
3) Farm Name/Surface Owner:	Murray E	Energy C	orp Public Roa	ad Access: Co	ounty Highv	vay 88/8
4) Elevation, current ground:	1150'	Ele	evation, proposed	post-construc	ction: 1150'	(pad constructed)
5) Well Type (a) Gas X Other		Oil	Und	erground Stor	age	
(b)If Gas Sha	allow	Х	Deep			
Но	rizontal	Х		,	X	a
6) Existing Pad: Yes or No Ye	es	_		- 6	1/19/1	D
7) Proposed Target Formation(s			pated Thickness a	and Expected	Pressure(s):	
Marcellus 6130' - 6185', 55' Th	11CK, 4204	psi				
8) Proposed Total Vertical Dept	th: 6175					
9) Formation at Total Vertical I	Depth: M	arcellus				
10) Proposed Total Measured D	epth: 1	5713'				
11) Proposed Horizontal Leg Le	ength: 9	170'				
12) Approximate Fresh Water S	trata Dept	:hs:	538',801',898',9	47'		
13) Method to Determine Fresh	Water De	pths: N	earest offset we	11		
14) Approximate Saltwater Dep	ths: Non	e				
15) Approximate Coal Seam De	pths: 68	7' - 697'				
16) Approximate Depth to Poss	ible Void	(coal mir	ne, karst, other):	None anticip	ated	
17) Does Proposed well location directly overlying or adjacent to				N	lo	RECEIVED Office of Oil and Gas
(a) If Yes, provide Mine Info:	Name:	Wells	are located in a	bandoned are	ea of McElr	oy Mine <sub>JAN</sub> 2 2 2018
	Depth:		o seam base			
	Seam:	Pittsb	urgh #8			WV Department of Environmental Protec
	Owner:	Conso	ol Mining Compa	ny, LLC		

WW-6B (10/14)

# 4705101836

API NO. 47-\_\_\_\_-OPERATOR WELL NO. MND1 DHS Well Pad Name: MND1

18/18

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 Sufface Casing - Now Springs (over solars) on first 3 joints then every third joint to 100' from surface Intermediate Casing - Bow Springs (over colars) on first 12 joints, then every third joint to 100' from surface Prenuetion Casing - Rug 1 solar) contraizer every 5 joints from the top of the curve to surface. Rug 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 - 118 Spg PHE1 + 3% brook CaC140% Excess Yield+120 / CTS\* Intermediate Casing - 148 Spg PHE1 + 2.3% brook CaC140% Excess / Tal: 158 Spg PAE-1 + 2.5% brock CaC1 arro% Excess / CTS CTS\* Productor Casing - 148 Spg POZ.PHE-1 + 0.3% brock Cac1 + 0.75 galvx PP13L + 0.3% brock MPA1701ai: 148 pog PME-1 + 0.35% brock H3 + 0.75 galvx PP13L + 50% brock ASCA1 + 0.5% brock APA17020% ExcessLead Yield\*1.19Tal Yield\*1.94CTS\*

25) Proposed borehole conditioning procedures: Conductor - Once at caring setting depth, ensure hole is dean at 10 Surface Caring - Circulate A condition (2) To Water. All vide caring A fliver Frank Water. Circulate a minimum of 1 hole volume, pus 30 bits of 4% benches Gattard of poy fake, then cear casing vide hole to purping cernit intermediate Caring - Circulate A condition (2) To Water. All vide caring A fliver Frank Water prior to purping cernit intermediate Caring - Circulate A condition (2) To Water. All vide caring A fliver Frank Water prior to purping cernit intermediate Caring - Once on bottom (TD with caring, circulate at minimum of a hole volume prior to purping cernit Bendericon Passing - Once on bottom (TD with caring, circulate at minimum of an hole volume prior to purping cernit Bendericon Passing - Once on bottom (TD with caring, circulate at minimum of an hole volume prior to purping cernit RECEIVED Office of Oil and Gas

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WV Department of Environmental Protection



WW-6B (04/15)

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# CASING AND TUBING PROGRAM

ТҮРЕ	Size (in)	<u>New</u> <u>or</u> <u>Used</u>	Grade	<u>Weight per ft.</u> <u>(lb/ft)</u>	<u>FOOTAGE: For</u> <u>Drilling (ft)</u>	INTERVALS: Left in Well (ft)	CEMENT: <u>Fill-up</u> (Cu. Ft.)/CTS
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			1.00				
Intermediate	9 5/8"	New	J-55	40	2500'	2500'	40% excess, CTS
Production	5 1/2"	New	P-110	23	15713'	15713'	20% excess, lead yield = 1.19, CTS
Tubing							
Liners							

Ju 1/19/18

API NO. 47-\_\_\_

OPERATOR WELL NO. MND1 DHS

Well Pad Name: MND1

ТҮРЕ	Size (in)	<u>Wellbore</u> Diameter (in)	<u>Wall</u> <u>Thickness</u> <u>(in)</u>	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	<u>Cement</u> <u>Type</u>	<u>Cement</u> <u>Yield</u> (cu. ft./k)
Conductor	20"	26"	0.438	2110	1200	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							а <u>т</u> — А.
Intermediate	9 5/8"	12 1/4"	0.395	3950		Type 1, Class A	40% excess, CTS
Production	5 1/2"	8 1/2"	0.361	12640	10000	Type 1, Class A	20% excess, lead yield = 1.19, CTS
Tubing							
Liners							

## PACKERS

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	ENERGY						MND1D Bartment of on Marcellus Shale Horizontal Marshall Protection Marshall County, WV										
				-	N	ND1D SHL			494167.7N 1642185.6E								
und Elevation (RKB)		11	75'			MND1D LP			493647.8N 1642573.94E								
Azm		14	15°			IND1D BHL			486135.9N 1647833.8E								
ELLBORE DIAGRAM	HOLE	CASING	GEOLOGY	тор	BASE	MUD	CEMENT	CENTRAL DEPR	CONDITIONING	COMMENTS							
	HOLL	Chaing	GEOLOGI	TOP	DASE	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS							
	25"	20" - 94# J-55	Conductor	0	40	AIR	*Already Grouted In*	N/A	Once at casing setting depth, ensure hole is clean at TD	Conductor casing = 0.4 wall thickness Burst=2110 psi							
			*Conductor already set*														
			Fresh Water	538', 801',	898', 947'												
	11	13-3/8" 54.5#	Surface Casing	0	1100	15.6 ppg	15.6 ppg PNE-1 + 3% bwoc CaCl	Bow Springs (over	Circulate & condition @ TD w/ Air. RIH w/ casing & fill w/ Fresh Water, Circulate a minimum of 1	Surface casing = 0.380							
×	17.5"	J-55 BTC	Coal(s)		687*697'	AIR	40% Excess Yield=1.20 / CTS	collars) on first 2 joints then every third joint to 100' from surface	hole volume, plus 30 bbls of 6% bentonite Gel/50# of poly flake, then clear casing w/ Fresh Water prior to pumping cement.	thickness Burst=2730 psi							
x x	S		Big Lime / Big Injun	1908 / 2024	2024 / 2137		Lead: 15.4 ppg PNE-1 + 2.5% bwoc			Intermediate casing = 0.3							
		Constant I					CaCl 40% Excess / <u>Tail</u> : 15.9 ppg PNE-1 +	Bow Springs (over collars) on first 12	Circulate & condition @ TD w/ Air. RIH w/ casing & fill w/ Fresh Water. Circulate a minimum of 1								
	12.25"	9-5/8" 40# J-55 BTC		1		AIR	AIR	AIR	AIR	AIR	2.5% bwoc CaCl	joints, then every third	hole volume, plus 30 bbls of 6% bentonite Gel/50#	wall thickness			
x			Price	2137	2652										1		1
			Intermediate Casing	0	2500	1	CTS		prior to puripring community								
XX			Speechley	3254	3300	0.500		Run 1 spiral centralizer every 5 joints from the									
	8.5" Vertical		Java	4805	4900	AIR and/or 9.0ppg											
10000	12.10		Pipe Creek	4900	4987	SOBM					top of the curve to surface.						
			Angola	4987	5569	1.	Lead: 14.5 ppg POZ:PNE-1 + 0.3%	0.0.1000									
10044			Rheinstreet	5569	5890		bwoc R3 + 1% bwoc EC1 + 0.75	1		Section 2.							
and a second		5-1/2"	Cashaqua	5890	5962		gal/sk FP13L + 0.3% bwoc MPA170 Tail: 14.8 ppg PNE-1 + 0.35% bwoc		Once on bottom/TD with casing, circulate at max	Production casing = 0.3							
X	1.2.2.1	23#	Middlesex	5962	5985	11 5000	R3 + 0.75 gal/sk FP13L + 50% bwoc		allowable pump rate for at least 2x bottoms up, or	wall thickness Burst=12640 psi							
	B.5" Curve	P-110 HC CDC HTQ	West River	5985	6046	11.5ppg- 12.5ppg SOBM	ASCA1 + 0.5% bwoc MPA170 20% Excess	Due d'animi a de	until returns and pump pressures indicate the hole is clean. Circulate a minimum of one hole volume	Note:Actual centraliz							
		country	Burkett	6046	6071		Lead Yield=1.19	Run 1 spiral centralizer every 3 joints from the	prior to pumping cement.	schedules may be chan due to hole condition							
			Tully	6071	6095		Tail Yield=1.94 CTS	1st 5.5" long joint to the									
Contract of Contra			Hamilton	6095	6130			top of the curve.									
10000			Marcellus	6130	6185	L. Sector			. / 1	2							
10000	8.5" Lateral		TMD / TVD	15712	6175	11.5ppg- 12.5ppg SOBM			Au all	5							
XXX	1.00		Onondaga	6185	-	- LE OLDA SORM											
122		and the second sec	o lo la	0.00			and the second	and an and the second second		the second s							

#### MND1 Well Pad Cement Additives

	Material Type		CAS #	%	CAS number
		portland cement with	Portland cement	90 - 100	65997-15-1
		early compressive	Calcium oxide	1-5	1305-78-8
		strength properties.	Magnesium oxide	1-5	1309-48-4
emium NE-1	Portland Cement	Contraction of the second seco	Crystalline silica: Quartz (SIO2)	0.1 - 1	14808-60-7
		Commonly called gel, it is	1	ar .	CAS number
		a clay material used as a	Ingredient name	% 90 - 100	1302-78-9
		cement extender and to	bentonite Crystalline silica: Quartz (SIO2)	5-10	14608-60-7
		control excessive free			
	Extender	water.			
ntonite	Extender				
		A powdered, flaked or			
		pelletized material used	Ingredient name	%	CAS number
		to decrease thickening	Calcium chloride	90 - 100	10043-52-4
		time and increase the rate			
		of strength development			
lcium Chloride	Accelerator				
		and the second	P		
		Graded (3/8 to 3/4 inch)	Ingredient name	%	CAS number
		cellophane flakes used as	No hazardous ingredient		
to the last	Carab Planubartina	a lost circulation material.			
llo Flake	Lost Circulation				
		FP-13L is a clear liquid			
		organic phosphate			
		antifoaming agent used in			
		cementing operations. It	Ingredient name	%	CAS number
		is very effective	Tributyl phosphate	90 - 100	126-73-8
		minimizing air			
		entrapment and			
		preventing foaming			
		tendencies of latex			
		systems.			
-13L	Foam Preventer				
			Ingredient name	%	CAS number
		Used to retard cement	Sucrose	90 - 100	57-50-1
The second se	Retarder	the second se			
anulated Sugar	Retaige	returns at surface.			
anulated Sugar	Retaider	A proprietary product			
anulated Sugar	Netaruer	A proprietary product that provides expansive			
anulated Sugar	Netalde.	A proprietary product that provides expansive properties and improves			
anulated Sugar	Neta Ge	A proprietary product that provides expansive properties and improves bonding at low to	Ingredient name	%	CAS number
anulated Sugar	Netal de l	A proprietary product that provides expansive properties and improves bonding at low to moderate	Ingredient name Calcium magnesium oxide	% 90 - 100	CAS number 37247-91-9
	Netal de l	A proprietary product that provides expansive properties and improves bonding at low to			
	Netal de l	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures.			
	Netal de l	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer	Calcium magnesium oxide	90 - 100	37247-91-9
	Netal de l	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control	Calcium magnesium oxide		
	Neta Jugi	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss,	Calcium magnesium oxide	90 - 100	37247-91-9
-1		A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas	Calcium magnesium oxide	90 - 100	37247-91-9
anulated Sugar 1-1 PA-170	Gas Migration	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss,	Calcium magnesium oxide	90 - 100	37247-91-9
-1		A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas	Calcium magnesium oxide	90 - 100	37247-91-9
-1		A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration.	Calcium magnesium oxide	90 - 100	37247-91-9
1		A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. A synthetic pozzolan,	Calcium magnesium oxide	90 - 100	37247-91-9
1		A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. A synthetic pozzolan, (primarily Silicon Dioxide).	Calcium magnesium oxide Ingredient name No hazardous ingredient	90 - 100	CAS number
1		A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. A synthetic pozzolan, (primarily Silicon Dioxide). When blended with	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name	90 - 100 %	CAS number
1		A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. A synthetic pozzolan, (primarily Silicon Dioxide). When blended with cement, Pozzolan can be used to create lightweight cement	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2)	90 - 100 %	CAS number CAS number 14808-60-7
-1		A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. A synthetic pozzolan, (primarily Silicon Dioxide). When blended with cement, Pozzolan can be used to create lightweight cement slurries used as either a	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name	90 - 100 %	CAS number CAS number 14808-60-7 1305-78-8
1		A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2)	90 - 100 %	CAS number CAS number 14808-60-7 1305-78-8
1		A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2)	90 - 100 %	CAS number CAS number 14808-60-7 1305-78-8
-1 %A-170	Gas Migration	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2)	90 - 100 %	CAS number CAS number 14808-60-7 1305-78-8 RECEIVED Office of Oil and C
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-1 %A-170	Gas Migration	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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. A low temperature retarder used in a wide range of slurry	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2) Calcium oxide	90 - 100 % 5 - 10 1 - 5	CAS number CAS number 14808-60-7 1305-78-8 RECEIVED Office of Oil and G JAN 2 2 201
-1 PA-170	Gas Migration	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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. A low temperature retarder used in a wide range of slurry formulations to extend	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2) Calcium oxide Ingredient name	90 - 100 % 5 - 10 1 - 5	CAS number CAS number 14808-60-7 1305-78-8 RECEIVED Office of Oil and C
-1 24-170 2 (Fly Ash)	Gas Migration	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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. A low temperature retarder used in a wide range of slurry	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2) Calcium oxide Ingredient name	90 - 100 % 5 - 10 1 - 5	CAS number CAS number 14808-60-7 1305-78-8 RECEIVED Office of Oil and G JAN 2 2 201
-1 PA-170 z (Fly Ash)	Gas Migration	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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. A low temperature retarder used in a wide range of slurry formulations to extend	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2) Calcium oxide Ingredient name	90 - 100 % 5 - 10 1 - 5	CAS number CAS number 14808-60-7 1305-78-8 RECEIVED Office of Oil and G JAN 2 2 201
-1	Gas Migration	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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. A low temperature retarder used in a wide range of slurry formulations to extend	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2) Calcium oxide Ingredient name	90 - 100 % 5 - 10 1 - 5	CAS number CAS number 14808-60-7 1305-78-8 RECEIVED Office of Oil and G JAN 2 2 201
-1 PA-170 z (Fly Ash)	Gas Migration	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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. A low temperature retarder used in a wide range of slurry formulations to extend	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2) Calcium oxide Ingredient name Organic acid salt Ingredient name 2-Butoxyethanol	90 - 100 % 5 - 10 1 - 5 % 40 - 50 % 20 - 30	CAS number CAS number 14808-60-7 1305-78-8 RECEIVED Office of Oil and C JAN 2 2 201 CAS number Trad/Secret pertment Environmental Pro- Environmental Pro-
-1 2A-170 2 (Fly Ash)	Gas Migration	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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. A low temperature retarder used in a wide range of slurry formulations to extend	Calcium magnesium oxide         Ingredient name         No hazardous ingredient         Ingredient name         Crystalline silica: Quartz (SiO2)         Calcium oxide         Ingredient name         Organic acid salt         Ingredient name         2-Butoxyethanol         Proprietary surfactant	90 - 100 % 5 - 10 1 - 5 % 40 - 50 % 20 - 30 10 - 20	CAS number 14808-60-7 1305-78-8 RECEIVED Office of Oil and O JAN 2 2 201 CAS number TradeSecret CAS number Trade secret.
-1 PA-170 z (Fly Ash)	Gas Migration	A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures. Multi-purpose polymer additive used to control free fluid, fluid loss, rheology, and gas migration. 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. A low temperature retarder used in a wide range of slurry formulations to extend	Calcium magnesium oxide Ingredient name No hazardous ingredient Ingredient name Crystalline silica: Quartz (SiO2) Calcium oxide Ingredient name Organic acid salt Ingredient name 2-Butoxyethanol	90 - 100 % 5 - 10 1 - 5 % 40 - 50 % 20 - 30	CAS number CAS number 14808-60-7 1305-78-8 RECEIVED Office of Oil and C JAN 2 2 201 CAS number Trad/Secret pertment Environmental Pro- Environmental Pro-

# List of Frac Additives by Chemical Name and CAS #

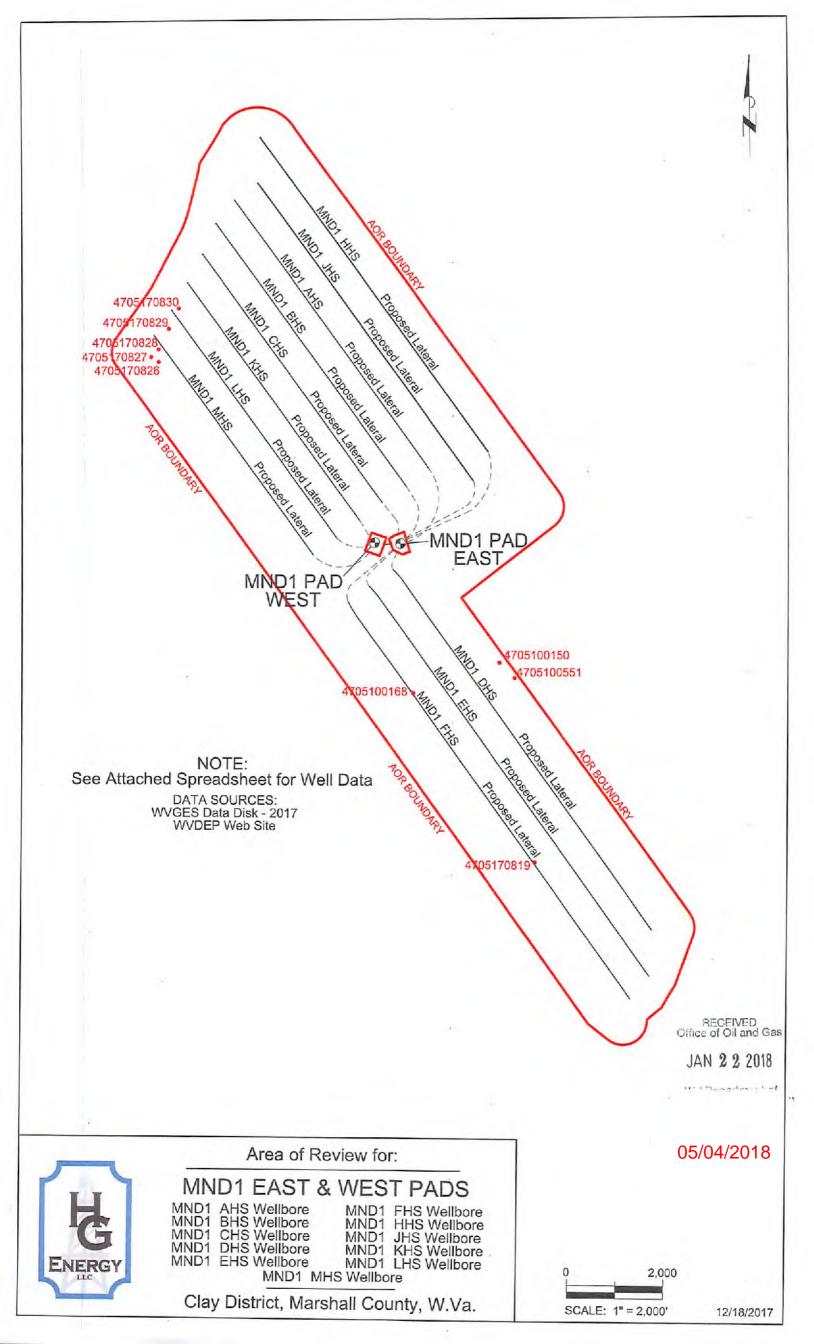
Chemical Name	CAS #	Multiple CAS #'s
Pro Shale Slik 405	Mixture	68551-12-2
		7647-14-5
		12125-02-9
·····		64742-47-8
Pro Hib II	Mixture	68412-54-4
		68607-28-3
		107-21-1
		111-76-2
		67-56-1
		107-19-7
Silica Sand and Ground Sand	Mixture	14808-60-7
		1344-28-1
		1309-37-1
		13463-67-7
Hydrochloric 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	

## MND1 Well Pad (ASH, BHS, CHS, DHS, EHS, FHS, HHS, JHS, KHS, LHS, MHS)

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8 4705170829 9 4705170830			7 4705170828	6 4705170827	5 4705170826	4 4705170819	3 4705100551	2 4705100168	1 4705100150	CT API		
	30 Marshall	329 Marshall	328 Marshall	27 Marshall	26 Marshall	19 Marshall	51 Marshall	.68 Marshall	.50 Marshall	COUNTY	MND	
	J Nightler Hrs 1	J Nightler Hrs 2	J Nightler Hrs	Adaline Hammond	Adaline Hammond	Wesley Bonar	Ralph Chaplin 1	D H & Genevieve Mason 2	Guy McDowell 1	FARM	1 EAST & MIND1 WEST P	
	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	Kentucky Central & Co.	Tedrow & Moore	Dinsmoore, D. H.	OPERATOR NAME	EXISTING WELLS LOCATED WITHIN THE AREA OF REVIEW FOR: MND1 EAST & MND1 WEST PADS AND PROPOSED WELLS AHS, BHS, CHS, DHS, EHS, FHS, HHS, JHS, KHS, LHS & MHS	
	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	Big Injun (Price&eq)	Allegheny Fm	FORMATION NAME	HIN THE AREA OF REVIEW FOR AHS, BHS, CHS, DHS,	
	not available	not available	not available	not available	not available	not available	not available	Dry	Dry	WELL TYPE	EHS, FHS, HHS,	
	NA	NA	NA	NA	NA	NA	NA	1,947	1,517	TVD	JHS, KH	
	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	P&A	ABANDONED	P&A	STATUS	S, LHS & MI	
	39.865351	39.86419	39.863029	39.862593	39.862303	39.833856	39.844335	39.843465	39.845205	LATITUDE	ភ 04/20	1
	-80.788542	-80.789294	-80.790046	-80.79061	-80.790046	-80.76222	-80.76373	-80.771254	-80.764859	LONGITUDI		

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WW	V-9
(4/1	(6)

WW-9	
(4/16)	API Number 47 Operator's Well No. MND1 DHS
DEPARTMENT O	TE OF WEST VIRGINIA F ENVIRONMENTAL PROTECTION FICE OF OIL AND GAS
FLUIDS/ CUTTING	S DISPOSAL & RECLAMATION PLAN
Operator Name_HG Energy II Appalachia, LLC	OP Code 494519932
Watershed (HUC 10) Short Creek - Ohio River	Quadrangle Powhatan Point
Do you anticipate using more than 5,000 bbls of water to Will a pit be used? Yes No	o complete the proposed well work? 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 Wa	stes:
Land Application	
	Permit Number See Attached List
Reuse (at API Number Atne:     Off Site Disposal (Supply for	rm WW-9 for disposal location)
Other (Explain	
Will closed loop system be used? If so, describe: Yes	
Drilling medium anticipated for this well (vertical and h	orizontal)? Air, freshwater, oil based, etcAir and Freshwater
-If oil based, what type? Synthetic, petroleum,	etc. NA
Additives to be used in drilling medium? Water, soap, K	
Drill cuttings disposal method? Leave in pit, landfill, re	
-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 list
	il and Gas of any load of drill cuttings or associated waste rejected at any rovided within 24 hours of rejection and the permittee shall also disclose
on August 1, 2005, by the Office of Oil and Gas of the V provisions of the permit are enforceable by law. Viola law or regulation can lead to enforcement action. I certify under penalty of law that I have per application form and all attachments thereto and tha	the sand conditions of the GENERAL WATER POLLUTION PERMIT issued West Virginia Department of Environmental Protection. I understand that the tions of any term or condition of the general permit and/or other applicable resonally examined and am familiar with the information submitted on this t, based on my inquiry of those individuals immediately responsible for ion is true, accurate, and complete. I am aware that there are significant possibility of fine or imprisonment.
Company Official Signature Diane Whi	
Company Official (Typed Name) Diane White	
Company Official Title Accountant	WV Department of Environmental Protection
Subscribed and sworn before me this 26th da	y of December , 20 17 Commissioner for West Virginia
muy file	Notary Public No

My commission expires 3/24/2020

Uniontown PA 15401 05/04/2018

Form	<b>WW-9</b>
r orm	

# Operator's Well No. MND1 DHS

HG Energy II Appalachia, LLC	

Ibs/acre ons/acre
ons/acre
<u>Seed Mixtures</u> Permanent
Seed Type lbs/acre
Tall Fescue 40
Ladino Clover 5

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.

** Pre-seed and	I mulch all cut area.	maintain E&S	standards du	rina entire opera	tion.

lan Approved by: Just Caloba	
omments:	
	TOFIVED
	RECEIVED Office of Oil and Gas
	JAN 2 2 2018
tle: Oil + Bes (uspestor Date: 1/1	9/18 WV Department of Environmental Protect
eld Reviewed? ( )Yes ( )No	11-

Field Reviewed?

(

. . .....

# **Cuttings Disposal/Site Water**

## Cuttings --Haul off Company:

Eap Industries, Inc. DOT # 0876278 1575 Smith Two State Rd. Atlasburg, PA 15004 1-888-294-5227

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

Environmental Coordination Services & Recycling (ECS&R) 3237 US Highway 19 Cochranton, PA 16314 814-425-7773

Disposal Locations:

Apex Environnemental, LLC Permit # 06-08438 11 County Road 78 Amsterdam, OH 43903 740-543-4389

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

Sycamore Landfill Inc, Permit #R30-079001 05-2010 4301 Sycamore Ridge Road Hurricane, WV 25526 304-562-2611

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

Max Environnemental 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 (Arnoni) 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

۰.

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

Brooke County Landfill Permit # SWF-103-97 / WV 0109029 Rd 2 Box 410 Colliers, WV 26035 304-748-0014 RECEIVED Office of Oil and Gas

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Wetzel County Landfill Permit # SWF-1021-97 / WV 0109185 Rt 1 Box 156A New Martinsville, WV 26035 304-455-3800

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

Energy Solutions Services, Inc. Permit # R-73006-L24 1560 Bear Creek Road Oak Ridge, TN 37830

Northern A-1 Environnemental Services Permit ID MID020906814 3947 US 131 North, PO Box 1030 Kalkaska, MI 49646 231-258-9961

Water Haul off Companies:

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

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

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

Nuverra Environmental Solutions 11942 Veterans Memorial Highway Masontown, WV 26542

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

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

**Disposal Locations:** 

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

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

Adams #1 (Buckeye Brine, LLC) Permit # 34-031-2-7177 23986 Airport Road Coshocton, OH 43812 740-575-4484 512-478-6545 CMS of Delaware Inc. DBA CMS Olifield Serv 301 Commerce Drive Moorestown, NJ 08057

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

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

Equipment Transport 1 Tyler Court Carlisie, PA 17015

Myers Well Service, ..... 2001 Ballpark Court Export, PA 15632

Burns Drilling & Excavating 618 Crabapple Road P.O. Box Wind Ridge, PA 15380

Nichlos 1-A (SWIW #13) Permit # 3862 300 Cherrington Pkwy, Suite 200 RECEIVED Office of Oil and Gas Coraopolis, PA 15108 412-329-7275 IAN 2 2 2018

Groselle (SWIW #34) Permit # 4096 Rt. 88 Garrettsville, OH 713-275-4816

Kemble 1-D Well Permit # 8780 7675 East Pike Norwich, Oh 48767 614-648-8898 740-796-6495

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ng & Excavating pple Road P.O. Box

5 Ollfleld Serv

51-018360

51-01836

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 2630 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 412-329-7275

SOS D#1 (SWIW #12) Permit # 34-059-2-4202-00-00 Silcor Oilfield Services, Inc. 2939 Hubbard Road Youngstown, PH 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 keye UIC Barnesville 1 & 2 CNX Gas Con.Jany, 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

2

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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WV Department of 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

HG Energy II Appalachia, LLC.

Office of Oil and Gas JAN 2 2 2018 WV Department of Environmental Protection

5260 Dupont Road

Parkersburg, WV 26101



Bottom hole	is located on topo map <u>14,072</u>	feet south of Latitude:	39° 52' 00"
	102       CHAPLIN, RALPH & ELLA         140       CHAPLIN, WAYNER & TINA         141       MILLER ROBERT C. ET. UX.         142       MILLER ROBERT C. ET. UX.         143       CHURCH RALPH E. ET., UX.         144       MORRIS BANDRA ELIFE         145       WHITE, STUART, ET. UX.         146       WORRIS GANDRA ELIFE         147       MCILVAIN WULLMAR & KIMBERLY         148       DURIG RAYMOND CRAIG         149       EBERT JOE SR. ET. UX.         149       GARRISON WARD O. & LORIA         150       MARTIN SAMLEL J. ET. UX.         151       GARRISON WARD O. & LORIA         152       HEREFORD LAWRENGE R. & ALANDA S         153       RECREATION AREA FOR TAYLOR MAND         154       SOUTHERN COUNTRY FARMS INC.         155       GAUNDERS, ELIGENE L         156       BOUTTY, JAMES H. & MELANIE A.         157       SOUTTY, JAMES H. & MELANIE A.         158       SOUTTY, JAMES H. & MELANIE A.         159       GOUTTY, JAMES H. & MELANIE A.         161       UNKROWN         162       OLADONATO, STEPHEN         163       MARTIN SHARK ET. UX.		Well is located on topo map 1,053
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 froat streams within 300° of proposed well.	164     MARTIN SHARK ET, UX.       165     ALLMAN, KYLE MICHAEL       166     WEST WAYNE L. JR. ET. UX.       167     WEST WAYNE L. JR. ET. UX.       168     CNK LAND RESOURCES       169     AEP GENERATION RESOURCES INC.       170     AEP GENERATION RESOURCES INC.       171     AEP GENERATION RESOURCES INC.       172     AEP GENERATION RESOURCES INC.       173     FASOLUETOS ANDRESOURCES INC.       174     GRAY ROBERT WIRLIAM - LIFE       175     CONSOLIDATION COLL COMPANY, ET. TAL       176     TSCHAPPAT ROBERT E. GR. ET. UX.       177     TSCHAPPAT ROBERT E. A. ELT. UX.       178     RINE WENDELL B. & CAROLYN S.       179     ESTEP EUGENE C. & ELIZABETH A       180     CONSOLIDATION COLL COMPANY, ET.       181     MOOLURE CHARLES L. ET. UX.       185     HOWE RUSSELL BLAINE ET. UX LIFE	TAX MAP NO. 04-0014-0006-0000-0000 TAX MAP NO. 04-0014-0005-0001-0000 TAX MAP NO. 04-0014-0007-0000-0000 TAX MAP NO. 04-0013-0002-0000-0000	feet west of Longitude: 80° 45' 00"
<ol> <li>Proposed well is greater than 1000' from autfinee/groundwater intake or public whier supply.</li> <li>It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral purcels 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.</li> <li>The default of the surveyed here the descriptions of the surveyed here the magnetises the surveyed here the position, unless otherwise noted.</li> <li>Provide the surveyed here the position of the surveyed here the descriptions field evidence found and/or tax map position, unless otherwise noted.</li> <li>Provide the surveyed here the position of the survey here the position of the surve</li></ol>	TOPO MAP POINT PROPOSED WELL WATER SOURCE CALARED NUMBER BASED ON ATTACHED WWEAT ALLARE POINTS UNLESS OTHERWISE NOTED MINERAL TRACT PARCEL LINES PROPOSED HORIZONTAL WELL WELL REFERENCE STREAM/WATERWAY READ EXISTING GAS WELL		$\otimes$
LE #: MND 01 DHS RAWING #: MND 01 DHS CALE: 1"=2000' INIMUM DEGREE F ACCURACY: 1/2500 ROVEN SOURCE U.S.G.S. MONUMENT F ELEVATION: H 138: 638.58'	I, THE UNDERSIGNED, HER PLAT IS CORRECT TO THE BEST ( BELIEF AND SHOWS ALL THE INFO LAW AND THE REGULATIONS ISSUE THE DEPARTMENT OF ENVIRONMENT SIGNED: R.P.E.: 18766 L.L.S.: P.	RMATION REQUIRED BY	18760 STATE OF TVIRGING
H) DENOTES LOCATION OF VELL ON UNITED STATES OPOGRAPHIC MAPS VVDEP OFFICE OF OIL & GAS 01 57TH STREET HARLESTON, WV 25304 Vell Type: Oil Wast	e Disposal X Production	DATE: <u>FEBRUARY 12, 2015</u> OPERATOR'S WELL #: <u>MND</u> API WELL # <u>47</u> STATE Deep	
ATERSHED: SHORT CREEK-OHIO RIVER OUNTY/DISTRICT: MARSHALL / CLAY CONSOLIDATION COAL CO URFACE OWNER: MURRAY ENERGY IL & GAS ROYALTY OWNER: CNX GAS COMPA DRILL X CONVERT DRILL	MPANY/ ACREAGE: 128.99	WHATAN POINT, W. VA./OHIO	05/04/2
	ER CHANGE (SPECIFY) EST HIA, LLC DES	IMATED DEPTH: TVD: 6,175' ± TI IGNATED AGENT: DIANE C. WHITE ress: 5260 DUPONT ROAD	MD: 15,713'±

MND1 DH

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

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		RECEIVED Office of Oil and Gas
By:	Diane White	Diane White	Office of one 2018
Its:	Agent		JAN 2 2 2018
			WV Department of Environmental Protection
		P	Environino age 1 of 2

# 5-01836

#### HG Energy II Appalachia, LLC MND1 DHS Lease Chain

HG Lease Number	LIPID	Original Lessor	Original Lessee	Royalty	Book	Page
				Not less than		
L) 623175	04-0014-0010-0000-0000	Consolidation Coal Company, et al	CNX Gas Company, LLC	1/8	646	493
		CNX Gas Company, LLC	Noble Energy, Inc. HG ENERGY II		752	66
		Noble Energy, Inc.	APPALACHIA, LLC		39	1
				Not less than		
2) 623177	04-0014-0009-0000-0000	Consolidation Coal Company, et al	CNX Gas Company, LLC	1/8	646	493
-,		CNX Gas Company, LLC	Noble Energy, Inc. HG ENERGY ()		752	66
		Noble Energy, Inc.	APPALACHIA, LLC		39	1
				Not less than		
3) Q092705000	05-0002-0018-0000-0000	James R. Chaplin	NPAR, LLC	1/8	718	322
37 2032703000	03-0002-0010-0000-0000	NPAR, LLC	Chevron U.S.A. Inc.	2,0	756	332
		Chevron U.S.A. Inc.	Noble Energy, Inc. KG ENERGY II		34	502
		Noble Energy Inc	APPALACHIA, LLC		39	1
	- ·	Noble Energy, Inc. Ralph E. Church and wife, Nancy A.			33	<u> </u>
		Church, Ralph E. Church II, Patricia		N		
		Barnhart and Peggy Sue Sebulsky, f/k/a		Not less than		
4) Q089474000	05-0002-0015-0000-0000	Peggy Sue Hartley	Gastar Exploration, USA		792	97
		Gastar Exploration USA, Inc.	Antinum Marcellus I, LLC		29	157
		Gastar Exploration Inc. and Antinum	Noble Energy Inc. and			
		Marcellus I, LLC	CNX Gas Company, LLC		32	185
		CNX Gas Company, LLC	Noble Energy, Inc. HG ENERGY II		752	66
		Noble Energy, Inc.	APPALACHIA, LLC		39	1
				Not less than		
5) Q08903550	05-0002-0013-0003-0000	Texas Eastern Transmission, LP	Noble Energy, Inc. HG ENERGY II	1/8	859	510
		Noble Energy, Inc.	APPALACHIA, LLC		39	1
		AEP Generation Resources Inc. and		Not less than		
6) Q08344200	05-0004-0002-0000-0000	Kentucky Power Company	Noble Energy, Inc. HG ENERGY II	1/8	829	157
		Noble Energy, Inc.	APPALACHIA, LLC		39	1
				Not less than		
7) Q07617000	05-0004-0003-0000-0000	Southern Country Farms, Inc.	Noble Energy, Inc. HG ENERGY II	1/8	801	79
		Noble Energy, Inc.	APPALACHIA, LLC		39	1
				Not less than		-
8) Q07617000	05-0004-0034-0001-0000	Southern Country Farms, Inc.	Noble Energy, Inc. HG ENERGY II	1/8	801	79
		Noble Energy, Inc.	APPALACHIA, LLC		39	1
			, <b></b>	Not less than		-
9) Q07617000	05-0004-0034-0000-0000	Southern Country Farms, Inc.	Noble Energy, Inc. HG ENERGY II	1/8	801	79
		Noble Energy Inc	APPALACHIA, LLC		39	1
		Noble Energy, Inc.		Not less than	33	-
10) Q07617000	05-0004-0044-0000-0000	Southern Country Farms, Inc.	Noble Energy, Inc.	Not less than 1/8	801	79
			HG ENERGY II			
		Noble Energy, Inc.	APPALACHIA, LLC		39	1

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JAN 2 2 2018

WV Department of Environmental Protection



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

:

January 15, 2017

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

RE: Drilling Under Roads – MND1 DHS 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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## STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS <u>NOTICE CERTIFICATION</u>

Date of Notice Certification: 01/15/2018

API No. 47	
<b>Operator's Well No</b>	MND1 DHS
Well Pad Name: M	IND1

#### 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:	519311.0	_
County:	Marshall	UTIVI NAD 65	Northing:	4411119.0	_
District:	Clay	Public Road Acc	ess:	Country Highway 88/8	_
Quadrangle:	Powhatan Point	Generally used f	arm 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 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	OOG OFFICE USE ONLY
□ 1. NOTICE OF SEISMIC ACTIVITY or ■ NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED	RECEIVED/ NOT REQUIRED
□ 2. NOTICE OF ENTRY FOR PLAT SURVEY or ■ NO PLAT SURVEY WAS CONDUCTED	
3. NOTICE OF INTENT TO DRILL or ONOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or	□ RECEIVED/ NOT REQUIRED
WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)	
4. NOTICE OF PLANNED OPERATION	
5. PUBLIC NOTICE     RECEIVED     Office of Oil and Gai     Office of Oil and Gai	
$\blacksquare 6. \text{ NOTICE OF APPLICATION} \qquad \qquad \text{IN } 2 2^{2010}$	□ RECEIVED
Paquired Attachments: JPAT	Folicar

#### **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.

WW-6AC (1/12)

#### 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:HG Energy II Appalachia, LLCBy:Diane WhiteDiane White	Operator: HG Energy II Appalachia, LLC		5260 Dupont Road	
	Diane White Diane White	Parkersburg, WV 26101		
Its:	Agent	Facsimile:	304-863-3172	
Telephone: 304-420-1119		Email:	dwhite@hgenergyllc.com	
	NOT OFFICIAL SEAL STATE OF WEST VIRGINIA NOTARY PUBLIC CASSIDY A, BOARDMAN		orn before me this 15th day of January, 2018	

My Commission Expires

131/2022

#### **Oil and Gas Privacy Notice:**

5301 13th Ave Vienna, WV 26105

My Commission Expires July 31, 2022

Sand

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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JAN 2 2 2018

WV Department of Environmental Protection

WW-6A
(9-13)

SERVICE

API NO. 47-\_\_\_\_ OPERATOR WELL NO. MND1 DHS Well Pad Name: MND1

#### STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS <u>NOTICE OF APPLICATION</u>

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

Date of Notice: <u>12/28/2017</u> Date Permit Application Filed: <u>1/11/2018</u> Notice of:

MAIL

$\checkmark$	PERMIT FOR A	NY 🗖 CERTIF	ICATE OF APPROVAL FOR THE
	WELL WORK		RUCTION OF AN IMPOUNDMENT OR PIT
Deli	ivery method purs	suant to West Virginia C	Code § 22-6A-10(b)
	PERSONAL	REGISTERED	METHOD OF DELIVERY THAT REOURES A

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.

RECEIPT OR SIGNATURE CONFIRMATION

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

☑ SURFACE OWNER(s)	COAL OWNER OR LESSEE
Name: Murray Energy Corporation	Name: Same as Surface Owner
Address: 46226 National Road	Address:
St. Clairsville, Oh 43950	
Name:	COAL OPERATOR
Address:	Name: Same as Surface Owner
	Address:
□ SURFACE OWNER(s) (Road and/or Other Disturbance)	
Name:	SURFACE OWNER OF WATER WELL
Address:	AND/OR WATER PURVEYOR(s)
	Name: No water sources within 1500'
Name:	Address:
Address:	
and the second se	OPERATOR OF ANY NATURAL GAS STORAGE EHORDED GO
□ SURFACE OWNER(s) (Impoundments or Pits)	OPERATOR OF ANY NATURAL GAS STORAGE Ended /ED Gand Gand Storage of Oil and Storage of Oil and Storage of Oil and Storage of Oi
Name:	Address:
Address:	Address: JAN 2 2 201
	*Please attach additional forms if necessary WV Department Environmental Pro

RECEIVED Office of Oil and Gas

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

## 2 2018 WV Dependent of EnviroDESatal Erotection

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Notice is hereby given: Environmental Protection 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/oiland-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

OPERATOR WELL NO. MND1 DHS Well Pad Name: MND1

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 of the application or construction of the applicant's proposed well work to the Secretary at: Chief, Office of Oil and Gas

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

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.

WV Department of Environmental Protection

#### Time Limits and Methods for Filing Comments.

API NO. 47-\_\_\_\_ OPERATOR WELL NO. MND1 DHS Well Pad Name: MND1

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-

<u>Permits/Pages/default.aspx</u> 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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WV Department of Environmental Protection

## 4705101836 API NO. 47-

OPERATOR WELL NO. MND1 DHS Well Pad Name: MND1

#### Notice is hereby given by:

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

Address: 52	60 Dupont Road	
P	arkersburg, WV 26101	
Facsimile:	304-863-3172	

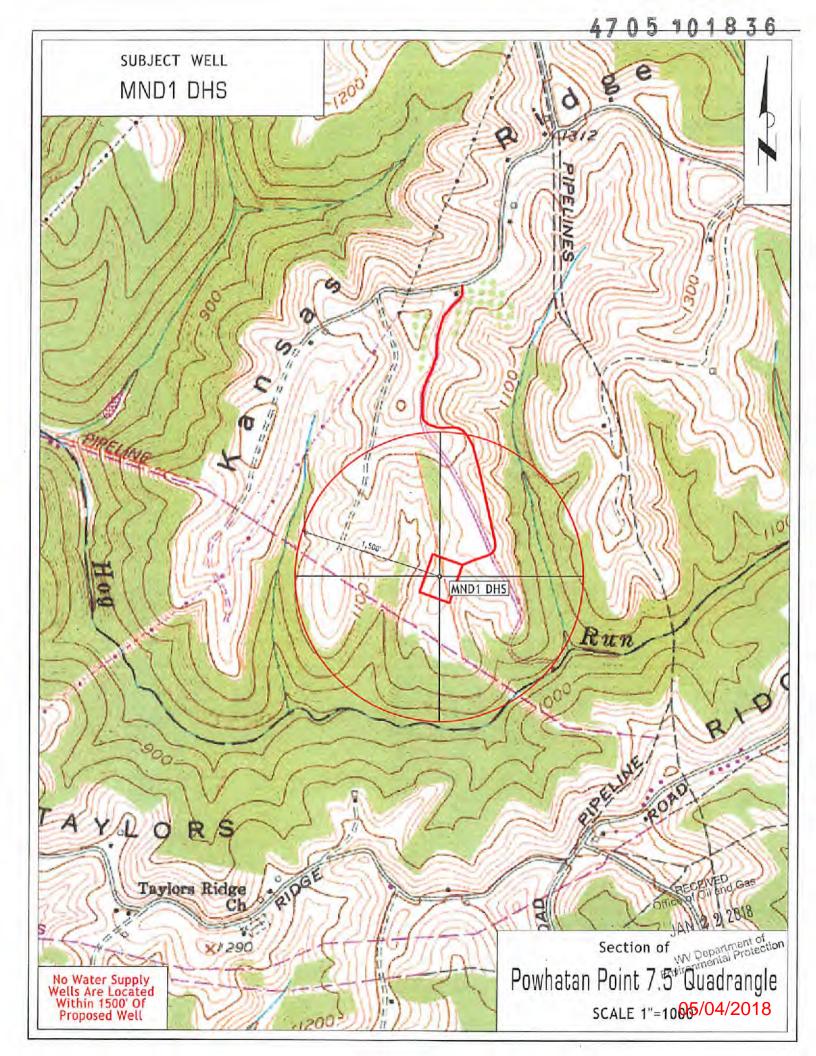
#### **Oil and Gas Privacy Notice:**

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 <u>depprivacyofficer@wv.gov</u>.

Commissioner for West Virginia Barry J. DeWitt 126 Wendy Dr. Uniontown PA 15401

Subscribed and sworn before me this 28th da	ay of December, 2017
hun Mutt	Notary Public
My Commission Expires 3/29/202	20

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## STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS <u>NOTICE OF INTENT TO DRILL</u>

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: 12/28/2017 Date Permit Application Filed: 01/11/2018

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

HAND	CERTIFIED MAIL
DELIVERY	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 - Jason Witt	Name:	
Address:	46226 National Road	Address:	
	Saint Clairsville, OH 43950		

#### 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:	West Virginia	LETA ALAD 02	Easting:	519311.0	
County:	Marshall	UTM NAD 83	Northing:	4411119.0	
District:	Clay	Public Road Ac	cess:	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(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 57<sup>th</sup> 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	Authorized Representative:	Diane White	
Address:	5260 Dupont Road	Address:	5260 Dupont Road	EWED .
	Parkersburg, WV 26101		Parkersburg, WV 26101	RECEIVED Office of Oil and G
Telephone:	304-420-1119	Telephone:	304-420-1119	
Email:	dwhite@hgenergyllc.com	Email:	dwhite@hgenergyllc.com	JAN 2 2 201
Facsimile:	304-863-3172	Facsimile:	304-863-3172	ortmer
				INV Departmen

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#### **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 <u>depprivacyofficer@wv.gov</u>.

#### 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: 12/27/2017 Date Permit Application Filed: 01/11/2018

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

E	CERTIFIED MAIL	HAND
	RETURN RECEIPT REQUESTED	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):

ess:
-

#### 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	LITMANIAD 82	Easting:	519311.0	
County:	Marshall	UTM NAD 83	Northing:	4411119.0	
District:	Clay	Public Road Acce	ess:	County Highway 88/8	
Quadrangle:	Powhatan Point	Generally used fa	rm 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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting <u>www.dep.wv.gov/oil-and-gas/pages/default.aspx</u>.

Well Operator:	HG Energy II Appalachia, LLC	Address:	5260 Dupont Road	
Telephone:	304-420-1119		Parkersburg, WV 26105	
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 ovillast 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.

JAN 2 2 2018 WV 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 57<sup>th</sup> 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,

Dary K. Clayton

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



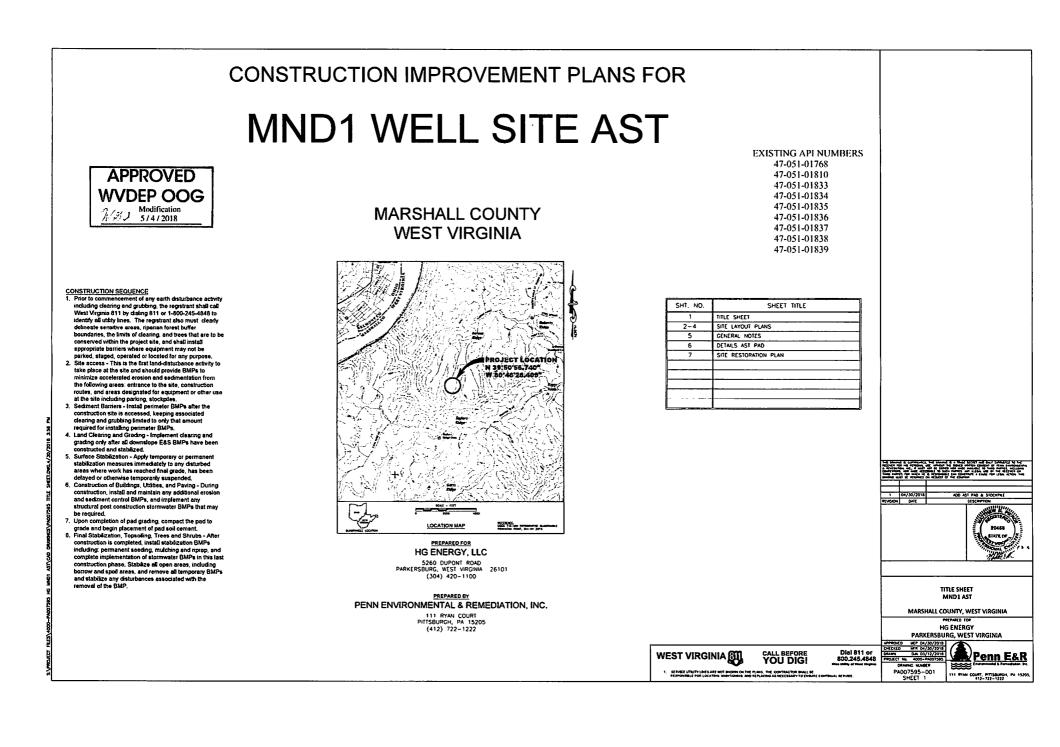
Cc: Diane White H G Energy, LLC CH, OM, D-6 File

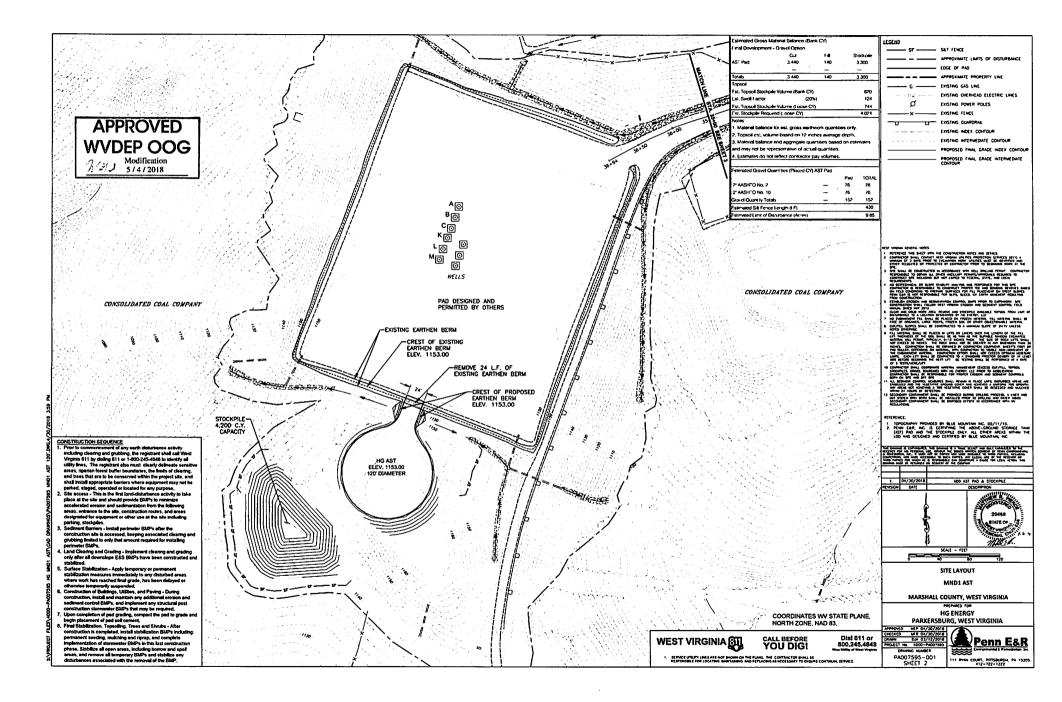
# List of Frac Additives by Chemical Name and CAS #

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
	7647.01.0	-
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	
	107-21-1	
PROBREAK 4	Mixture	57-50-1
		107-21-1
Sulfamic Acid	5220 14 6	
	5329-14-6	
PRO - Flow - 102-N	Mixture	67-63-0
		68439-45-2
		2687-96-9
PROGEL - 4	9000-30-0	
	1-00-20-0	

## MND1 Well Pad (DHS,EHS,FHS)

RECEIVED Office of Oil and Gas JAN 2 2 2018 WV Department of Environmental Protection







LOCATION MAP NOT TO SCALE



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HG ENERGY II APPALACHIA LLC **5260 DUPONT ROAD** PARKERSBURG, WV 26101 (304) 420-1100 MAIN OFFICE (304) 863-3172 FAX

# MNDI WELL SITE W/ AST PAD

WELL SITE LOCATION NAD 83 - LAT: N 39°50'59.392"; LONG: W 80°46'27.225" NAD 27 - LAT: N 39°50'59.120"; LONG: W 80°46'27.907"

ENTRANCE LOCATION NAD 83 - LAT: N 39°51'02.247"; LONG: W 80°46'19.979" NAD 27 - LAT: 39°51'01.974"; LONG: W 80°46'20.661"

POWHATAN POINT QUADRANGLE MARSHALL COUNTY, WEST VIRGINIA DATE: NOVEMBER 28, 2017



Woman Owned Small Business 11023 Mason Dixon Hwy. Burton, WV 26562-9656 (304) 662-6486

SHEET INDEX		
DRAWING NUMBER	DRAWING NAME	
1	COVER SHEET	
2-3	GENERAL NOTES	
4	OVERALL SITE PLAN	
5	OVERALL SITE PLAN W/ ORTHO	
6	CONSTRUCTION DETAILS	
7	MATERIAL QUANTITIES	

NOTE: DRAWING WAS CREATED ON 22x34 PAPER. 11x17 DRAWINGS ARE HALF SCALE. REFER TO SCALE BAR FOR PROPER SCALING.

LOCATION MAP ATAN FORT 7,5H LIBGS DIMORAND

Scale 1's7000"

ue Mountain Ind

MNDI WELL PAD W/ AST PAD COVER SHEET

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#### General Notes

- This design was performed without a grotechnical investigation; Therefore, Blue Mewninis Inc. shall assume no responsibility for any enforcement site similitions thering or after construction, including any potential slope ar embankment failures due to a surcharge load of other causes.
- The contractor shall be solely responsible for complying with all Federal, State and Lucal sofety requirements including the accurational sofety and health att of 1970. The contractor shall always exercise presention for the protection of persons including employees and property. If shall also be the sole responsibility of the secretarizet to bilitase, maintain and response all safety requirements, presentions and programs in econoccion with the work, including the requirements for confined spaces per CFR 1910.146.
- 3. The connector shall restrict construction activity to the mean shown on the plans unless otherwise authorized by HG Energy.
- 4. The connector shall carefully preserve bandmarks, property common, reference point, stals and other survey sefference monoments or markers. In cases of will do exceeded advection, the contention shall be responsible for restantions. Exerting of markers shall be preferred by an professional reveyor as approved by 100 Eurogy.
- All structures, leadscoping, signs if any or other appartenances disturbed or damaged during construction shall be replaced or repaired to the satisfaction of HO Energy. The must of this work shall be the responsibility of the contractor.
- 5. All trees within the construction area will be preserved except the trees that are to be removed as shown in the plans.
- 7. Contractor shall maintain adequate elearance from all electric lines, if any, in accordance with the national electrical eafery code.
- 4. All neth fishtherets, including charing and probling as well as role and falls shall be done in accordance with the appeared EAS plan. A copy of the project dowing planning training agency that is to project its at all times. The reviewing agency shall be notified of any charges to the approved plan prior to implementation of these charges. The reviewing agency and set dowints of these charges the review and approved in the dowints of these charges. The reviewing agency and sequence and the dowints of these charges.
- 9. Areas to be filled are to be cleared, grabbed, and stripped of topool to remove trees, vegetation, roots and other objectionable material.
- 10 The contractor shall minimize all clearing and disturbance to the exvironment to the maximum extent periods. Clearing, grabbing, and topsoil stripping shall be limited to finer areas described in each stage of the construction sequence.
- Perimeter softwaret beniers shall be implemented as the first step of grading within seven (7) days from the start of clearing and grabbing, and shall biotime to function until the slope development area is restabilized.
- All graded areas shall be permanently axialized innovalizately upon reaching finished gradis. Cut slopes in compensat bedonck and took fills used not be replated. Studed areas within 50 feet of a surface water, or as otherwise shown on the pion derwings, shall be bindered according to the standards of this plan.
- 13. Immediately after each disturbance activities cause in any area or robarce of the project, the operator shall stabilize all distabled areas. During comparating months, much are protective blanketing that he project as described in the plan. Areas not at failched grade, which will be reactivated within 1 year, may be stabilized in accordance with the temporary stabilization operification. These areas which will not be reactivated within 1 year shall be reactivated within 1 year and the accordance with the permanent stabilization operification.
- 14. No told (other than andment) or liquid wate, including hulding materials, shall be discharged in storm water remolf. All non-ordinant pollutants must be disposed at in accentance with the Department's Solid Water Management Regulations. Robbish, track, garbage, litter, or other non-materials shall be disposed for scaled containers. Materials shall be prevented from having the site through the action of wind or storm water discharge into their site water of the results. Materials shall be prevented from having the site through the action of wind or storm water discharge into their site of the start.
- 15. If this attion of vehicles traveling over the stabilized construction rait does not sufficiently remove most of the diet and rand, then the tices must be worked before vehicles renter specific road. Tracking or spilling road, diet or deriva upon stretch or derivating prohibited. Any such commence shall be circused up, immediately by the contractor at no additional zone to BOI Energy. If the contractor fails to remove said crash, diet, debris, us ryblings, any finan levied against HD Energy by local and state regulatory will be charged to contractor.
- 16. Dust control using approved namelals must be performed at all times. The are of motor oils and other persistent based or taxic liquids for dust suppression in periods of the start of the start plate and honore areas shall be protected from resolution and sufficientiation by the use of these management periods. There areas must be hown in the start maps and permitted in ascentations with general permitting and the start plate and argument periods. There areas must be hown in the start maps and permitted in ascentance with general permitting and start protection of the start periods of the periods of the start periods of the s
- 17. All constructions shall be subliced at the ord of each day, this includes backfilling of treaters for stilly construction and photeness of gavel or explain for read construction. The last layer of soil, including top soil should be compared to 50% -80% of the maximum standard protein decay, in access that will movie version. This is apprinted by impacting the pairs includes a maximum standard protein decay is and a the public stall time during construction. All turific heres shall be open to turifie at all times. The construct of the maximum day and its days are stall be used in the state of the start of the open to turifie at all times. The construction shall use ensuing days could be devices its days and phote working in the vicinity of the project ato.
- 18. The contractor shall add additional controls if conditions warrant.
- 19. The contractor shall be callely responsible for ensuring safety of monitoring and pederulus traffic during performance of the work,
- 20. There shall be no discharge from the well pad sompti during chilling operations. Simps are to be resurved and berns are to be breached during reclamation of the size.

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- General Utility Notes
- At least 3 days prior to starting any earth disturbance activities, or expanding into an area previously unmarked, Miss Utility shall be notified by dialing \$31 for the location of aximing underground willifes.
- 2. The identity and locations of existing underground utilities in the construction area have been shown on the plants as accuracity as provided by the ormer of the underground utility. This Maximin has A HG Energy essentiation representatively for the secondry of defaults, and locations of energy most field field in shown in the apparent construction developer. If damage it assumed, the contractor shall be serpemable for reputry of the same and for any reacting contingent factors.
- Location support, protection and restoration of all existing utilities and appartenances, whether shown on the approved construction drawings, shall be the responsibility of the contractor.
- When unknown or incomently located underground utilities are encountered during construction, the contractor shall unmediately notify BG Energy.
- 5. When moking excevations, the contractor shall do the following:
- A. Maintain reasonable clearance between any underground facility and the entiting edge or point of powered equipment.
- B Protect and preserve the markings of approximate locations of underground utility facilities until those markings are no longer sequenced for proper and safe excavations.
- C. When approaching underground utility facilities while excerning with powered requipment, require an individual other than the equipment operator, to look for any sign of underground utility facility.
- D. Conduct for externation in the vicinity of the underground utility facility in a careful and product manner, extension by hand, if moreovery, to determine the provide location of the facility and to prevent damage.
- E. As room as any demage is discovered, including gauges, denk, or breaks to continge, cable shrathers, and esthodie protection modes or wining report the type and location of the damage to the utility and permit the utility a reasonable amount of time to make necessary reports.
- 2. Introductory report to the utility and, if necessary, to the appropriate law enforcement agencies and five department, and damage to an embryound utility facility for the fast in encoding flormodule, curvative, explosive, or taxie liquidate age, and takes reasonable appropriate actions needed to protect persons or property and to maintaine ratiof based and. If here agencies and departments and the utility arise at the scene.
- Contractor shall comply with all provisions of the national clusteric safety code, especially when working near live electric lines.

#### **Construction Sequence**

- Field-mark limits of disturbance and environmentally sensitive areas (including steep slapes, riparian buffars, wetlands, quings, and floodways).
- 2. Construct rack construction entrance.
- 3. Instail BMPs associated with the project.
- 4 Clear and grab entire site.
- 5. Construct mountable berms.
- 6. Ensure all existing sumps and valves are in working order if not repair/vplace
- Occe final grading is complete and the site has reached a minimum vegetation of 70%, and upon DEP impetition. Site EAS controls may be removed.

Grading & Compaction Notes
L it is the empetability of the centracter to perform the pits (in the presence of HO Energy) to locate suitable material prior
to initiating many grading.

Clearing, grabbing, stripping of organic unface soils and the removal of unsuitable/matable rolb and existing uncontrolled fill shall be performed in all structural areas.

3. After stripping has been romapleted, the resulting subgrade should be proof velicit with a fully leaded modern axle dump track prior to structural fill placement. Subgrade soils identified as being unstability or metable, including unstable collevity lead, built be undered to a stable soil structure and hashfulle with controlled compared suil fill or york fill, where indicated on the Plans. All unstable soil containing excessive expanses or don'ts shall be watted.

4. Provide databage measures for springs or parallel varie that we encounteed databage construction. The tractment, which will be determined as the heided springendings and second-links, neural solutions in the structure of entries, interruptor transhes, and/or sumpts to collect the water. All water shall be outleted by gravity solities of the limits of the gaid slopes.

5. The exact of a constraint what it is relatly proposable for evaluating the excervition effect repaired for the height workshow its compresent rock that and to also material that compliant with #72-007 Constraints how and 2003, Service 207, Proch Embosithem, and has a maximum particle size and infl thistones of 6 isothem. Provide easily easily easily and the excertaints are also a service that the excertaints are also and the excertaints and the excertaints are also and the excertaint of the excertaints are also and the excertaints are also and the excertaints are also as a second provide the excertaints are also as

6. On-the veils meeting UGOS designations of CL, ML, or more genuine with a maximum particle for d rice holds and the used an soli fill. If available, note are not filled and to end of a co-ting grandler solar metrics for UGOS characteristication of SQ. SN, CQ, and ML or more granular should be willing in the too benches. Unstatistic materials with materials with a second structure of the second structure of

 Place all fill in a stable, nearly level subgrade. Compaction equipment shall consist of large (20 the minimum) vibratory, all-propelled sheepfoot rollars for coherine softs and amouth-dram rollars for granular softs. Sensets-dram rollers are not permitted for the minil compaction of cherine nois.

8. Compact structural fill to the following minimum specifications.

 sicil GB below the upper two first of put subgrade — maximum twelve inch losse lifts compared to 53% of max dry density and within three percentage points of the optimism moisture content as determined by ASTM D-698. (Nothing frontes)

Soli EII within the upper two feet of pad subgrade — maximum twelve inch loose lifts comparied to 98% of max dry
density and within two percentage points of the optimum moleture content at determined by ASTM D-698. (Nothing
from a)

+ Rock fill -+ maximum 36 inch loose fifts compacted to non-movement under compaction equipment.

It is not recommended to use and Hill that is more than three percentage points above the optimum moleture content or relia that classify as far view (CH) or classical B(O,H). If the effort decides to use three soits the following measures shall be provided to measure stabilizet.

- Compaction shall be controlled by determining the maximum achievable compaction from a control strip.

 These suits shall not be placed in embandment sloper, within the opper three feet of the post surface, or under areas of the gad that will support rig loads.

· Ensure the maximum recommended lift dickness is maintained to allow for maximum achieveb is compaction.

· Dry suits by mixing with drive soft and/or rock.

- Statie compaction methods may be specified to reduce instability.

- Sequence construction to allow for some moisture reduction by natural drying to seraling.

Provide mass grading observation and terting to make sure that the contractor is controlling material placement and
compaction in the most effective macner.

 Reslamation Soil fill — maximum 24" loose lifts compared to 90% of Standard Process Density as determined by ASTRI D-698.

- 9. Still slopes constructed in a memory to ensure adequate compaction to fine edge of the TiR, which may negater constructing the slope wider data presences and then enabled back to the required grade. Upon completion of the first grading, the slopes shall be tracked down with metabed explorement prior to playing metagement prior to playing metagement prior to playing metagement.
- 10. To brackes as required for each full slope in eccendance with the Bracking and Transition Detail. Different brench dimensions and configurations require hereast as a distant by submittee condition, such as we do untable collibrial soft. Might platicity clerx, or clay energy benerously as distant by submittee condition, such as we do untable collibrial soft. Might platicity clerx, or clay errors benefor which the short hereast for the Constraint or proceeding for an order of the collibrial soft. The Constraint is reproceeded for gravitation of the start of the star
- 11. Construct bending braches to the crest of embanament where slopes are placed over existing slopes 5H:1V or steeper. Bonding benches shall be in accordance with the Benching and Transition Detail.
- 12. The rules of temporary exercutions shall be adequately aloped or shore-Proceed to provide stable sides and safe working conditions for operators, laborers and engineering impresent to prove rule for started engineering interplanal States and its interplanation (OSCI). Alory states and any for force rule plana. All applicable Deeparticities States and its interplanation (OSCI). All approximations (SSCI) and the followed by the constraint.
- 43. Proof roll the final packasis surface with a loaded triaxic damp track to identify any areas of unstable soils. Unstable scills shall be removed by over-extension and replacement with cataloid compared soil or note 111. Provide a catalil, transition zone and place substration doing at the transition zone withm sected.
- 14. The subgrade shall be sealed on a daily basis to minimize disturbance and muisture intrusion

15. Each sorth operations shall be observed and tested on a full-time basis by a sails technician under the supervision of a protectation of complexity of the star of the

Blue Mountain Inc. Equence ad Service Regime Adverses Regime Provide Jan 60 cont

# IN A NOTES (I OF Z)

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SHEET NO 2

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#### General Erosion And Sediment Control Methods / Procedures

- Erosion and sectment control facilities shall be constructed, stabilized, and functional before any site disturbance begins within the trabutary arms of those facilities.
- 2. In all cases, the smallest practical area of stable land surface will be dismrbed.
- 3. Also due veil adjunct labor proof the allowed to lawy the site and enter biber value, without final passing through exploring different diverse different diverse different diverse different and the spectra different diverse obtained and the spectra different diverse obtained and the set obtained bibling activities and filtered before it leaves the site, additional enseme control filteralities are to be implemented.
- Although the tagging of earthmoving activities has been distributed within certain areas, the work may accuse over the estim project area simultaneously. Measures shall be implemented as necessary to contasse the integrity of the errors and endomentation control plan.
- 5. Each distributer articles, including movement of construction whicles, shall be avoided / minimized below the location of the perimeter evaluae control facilities. Shauld each distributes some below the perimeter evaluation entrol facilities, permanent stabilization is that his investigative perpired to have durated each.
- 6. Waste and excess materials shall be stockpiled or disposed of in a lawful manner on site or at an approved facility.
- All offsite borrow array, waste disposal areas, and/or storage areas shall have an approved erasion and sediment pollution control plan prior to the start of any earthmoving activities in these offsite areas.
- 8. Toped and excess metrical stephysics shall be useded and makehold if they are to excess for more than 4 days. Reachysics are to be placed an a location where they will not include we show so will man which are not to be located within the flow path of a natural or constrained waterway. Stochysics areas are to have side alogue of 2013 V or flatter.
- 9. Pirmasent stabilization is required as usen as a distability acts as becapite to grade or fixed earth proving has been exempleted. Where its net possible the permissionily stabilizer a distributed are immediately after this fixed earth and the stability and the fixed are interdistributed and the implementately panetting.
- 10. Arear which are to be topsialled thall be readiled to a minimum depite of 3 to 5 inches -6 to 12 inches an sompastist spits -prior to plasment of topsoil. Areas to be vegetated shall have a minimum 4 inches of topsoil in place prior to seeding and mulking. Fill editions shall have a minimum of 2 inches of topsoil.
- 11. Any review and sedimentation convertioning required or necessary to protect any from erusion during the multification period that be maintained until permanent multification of the completing durings area in completed. Upon completion of permanent within that in a sumerarray or untable necessary multiple control measures and facility a shall be removed. The disturbed areas created by this activity shall be brought to fand grade and the scale shall be immediately stabilized.
- 12. Schedule construction so that grading operations can begin and end as quickly as possible.
- 13. Clearly mark areas that are not to be dimethed by flags, signs, etc.

#### General Maintenance / Contractor Responsibilities

- 1. The ensistences for the project shall be in accordance with the approved costs or ad acclassistion control pixe. The contrast shall be arriganable for the measurementation access of all continue and defined measure and devices for the duration of the project and well which there the news is stabilized with a minimum confirme 70% percential vegetative conce.
- All facilities that its imported and repaired, if measures are not examined in minfall event and a period not to screed one week. All preventative maintenance work, including clean ext, repair, replacement, repairing, screeding, repairing and an analysis of the match shall be performed insuciatively. Sensitive calculated from the sension reacted screenses shall be placed operation of flower reactives and immediately arabitized with sensitive placement plants, and the distribution of the sensitive in a disposal environment of the reactive in an analysis of the placed operation of the sensitive sensitive plants around plant.
- At no time will rediment loten randf be allowed to have the site and enter State waters without first parsing through as element filtering device. If would evolve first finities full to parferm as expected, alumnative facilities on modifications of floor finities institutes will be required.
- All permanently sended areas that become ended shall have the topsoil replaced, the exame council mutting replaced (B'appliable), the grass resures and mulch rapplied and anchored. If ended permitte, the area shall be either line with soil erabilized with root (repre-
- A copy of the approved anotion and rediment control plus shall be kept available for impection on the construction size at all times throughout the term of the project.
- 6. The interst of this plate rearrants is to indicate general means of compliance with the requirements of the relation and preparation of Commonstrain Proteins. It had be for a proposability of the contrader to implement these methods, as any be necessary because of conditions methods by localized the conditions and/or constraints operational is for some recompliance with applicable base. It will further be the responsibility of the contrastent operations in the context one proceeding to the source complexes with applicable base. It will further be the responsibility of the contrastent operations and redirement coursel facilities as that they perform as required by applicable base.
- First and related costs resulting from the contrastor's believe to provide adequate protection against soil erasion and for any violations of the rules and regulations promolysised thereards shall be keene by the contractor.

Diffice of Oil and Gas JAN 2 2 2018 WV Department of Environmental Protection

#### Temporary Control Measures and Facilities

- 1. General see plans and details for proposed locations and construction details for BhiPs.
- Temporary vegetation a vegetative nover, annual or presential, but typically rapid growing senses, small grains or legamen. Used to provide creation protection to a disturbed reat useful active cartinoming senses or promount protection is provided.
- Compost filter socks Compost filter socks shall be placed at existing level grade. Both each of the sock shall be extended at least 5 fest up slope at 45 degrees to the main sock sligtment.
- 4. Book filter Bock filters may be used to constrait prooff within constructed charactis at the downtream red of the character during a transportary distribution usil the protoctive limits in installed we during a transportary distribution with the character. They may also be used before constructions work, within an existing stream charact within the index distribution of the work area. In such cases, the They should be bound between the work area and do discharge from the bypes wydere. Look filters may not be used index of an adoptive protective filting in sectionment basis emergency spillerys. This can make the effective discharge expands of the spillwry and, in so doing, interact the resource filter.
- Reek construction entrance Shall be installed prior to estimate the shall be avoid excessive tracking of mud onto a highway. Access to the size should be limited to the stabilized entrance(t).
- 6. Compart Sock Sciences Traps Shall be constructed in the location shown on the crosses and sedement entrul plus in account with the oration and welcame county plus criticit. Consideration should be given to how the location of any proposed trap will be accessed. If a proposed location is not cally accessible, special standard should be given to any access maintain sensit that will most the sections and, accessible, special standard should be given to any access maintain sensit that will most the be centerins and.

#### Erosion & Sediment Control Structure Maintenance Procedures

Compost Sock Sediment Trap

All sediment trops shall be inspected at least workly and after each

runoff event. Access for sudiment removal and other required

minimum ethnics and the provided. Dispose of materials removed from the trup in the manner described in the E&S plan. Covic embeddements, spillways, and outlies for environ, piping and retilment. Clogged ar damged spillways and/or embeddements shall

Erosion Control Blanket

Bindoned areas shall be inspected weekly and after each ranoff event until peremital vegetation is oxiabilitied to a minimum uniform 70% coverage drengshost the binaized area. Demayed or displaced binaires shall be restored or replaced within 4 minuter days.

Rissae Aeron

All aprons shall be inspected at least weekly and after each sunoff

event. Displaced riprap within the aprox shall be replace:

be immediately restored to the dealers execifications.

#### Rock Construction Entrance

The entrance shall be residuated in a 'couldon that will prevent tracking or Howing of the demont ratio public right-of-twoy. This may require periodic top facturing with additional states as conditions demond and regime and/or cleanoot of any measures task to rep solitomer, All could cleanoot of any measures task to rep solitomer, All columnet splitch, dropped, washed by tracked could public right-of-way must be removed immediately. Whether on all webbies shall be cleaned to remove seminant prior to entrance onto public right-of-way. If washing in required, it shall be done on an sear additional with states and which drains into approved sediment's trapping device. If the prevent is weaking prevantions must be taken to prove madely washer from rounding into waraways or storm servers.

#### Compost Filter Sock

Bocks shall be imported weakly and after such suboff event. Descripted secks that he replated according to seamfacture's specifications or replaced with an explanate LSG contain meaning within 3/2 hours of important. Accoundings selfment shall be removed when it reaches shall has devergential height of the rede and disposed in De manuer described according to instructured recommendations. Upon subhilitations of the area tributary in the sock, ration shall be removed. The sock must be the in splate and vegetated or enserved, in the latter uses, the neeth shall be even after the spectra is a solid superiment.

#### **Permanent Control Measures and Facilities**

1. Vegetative cover - The permanent steeding rates are listed on the standard construction detail abort #6

- 2. Provide hering rates as recommended by the soli last result. Furthiner shall be applied per details in Detail Sherei 6. Work soli rapplements into and as apply with hydromeeting. Makis area with stave or have rated with a 3 loss per stere. Inspect sees shall have types in Bylack 4, see shore y and the per stere harpest and anchored. Urrowing persise, the area will be either liner with year or stabilized with rock rippa.
- 3. Moth or strave or kay Adults hash is a spinion over sected areas no harr shows that section. Spirits multitumilarity, is a combiness black as a minimum and of 3 ten per area. Fullsh my by spiral by hash at with an acceptable mechanical blower. Machines which out muld: if no door pieces will not be permitted. Match aball be archiverable your of charming, anning, apphalice or anonzybait in emphasism makh blowirs investidatiy Blowing makh specifing. If any apphalic erronearphalic environments function and the spiral blow moth and a spiral research and by the down of the spinion spiral blow moths function and the spiral blow moth and a spiral blow moth and a spiral research and you are down of the spiral spiral blow moths and blow moth and and and a spiral blow moth and and a spiral research and you have a strave and there sparse with maximum applied blow not accending 10 pitting per LOO Sep 7-.
- Evolve tendence blackets Environ endersh blackets sheadd to used an all stops that are still. Y of straper and where
  particular citize for sectionary particular citizen areas, to diagon is compared to strategize and
  particular citizen areas and and and and and and and and areas within 50 fast of a surface water. 100
  first of a special protecting water repredence of logon.
- 4. Inclosed Readwary.— Out and fül idepet shall be intelligated immediately appen completion or readwary grading. These areas what be blacked whene zwer they are located which to let of a surface watch. A fits of mosting composed of head, detailed intelligate that the particle for another watch are manifer. Reading includes a start fills may way from the mostle area, Adorgately galance larverst to end to have been detailed or an area watch and have larver to a start fills may way from the mostle area. Adorgately galance larverst or other unitable cross starts shall be provided with soluble provided with a start start of most shall be provided with soluble provided at larver, prints, and draining exercise. Diction testific conference to the start base of the hier with a start and area are mostles at larver, to restore and the mild in the mild be provided at the start start and the st

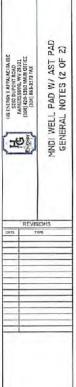
immed ate'v.

- Readside ditches Strang and spacing of ditch neisef subverts should be seconding to plan drawings. Rock (Diers are not required where readways surface is subditced, ditches are provided with protective liness, and task are sub-lined. Builable outst protection should be provided at each caster and/dil.
- 6. Ripton Apron Riptop appear may be used to prevent scour at pipe or channel cutfulls where analoipated tircharge velocities do not execut 17.0 feet per scoul, there is sufficient mone to construct the sprea, and where the spreae can be installed as a level grade, in cansa where discharge velocities second 17.0 feet per scenael a subble memory of velocity reduction (e.g. drup structure) should be used pite to discharging injulneant flows cate inputs grade.



Know what's below. Call before you dig.





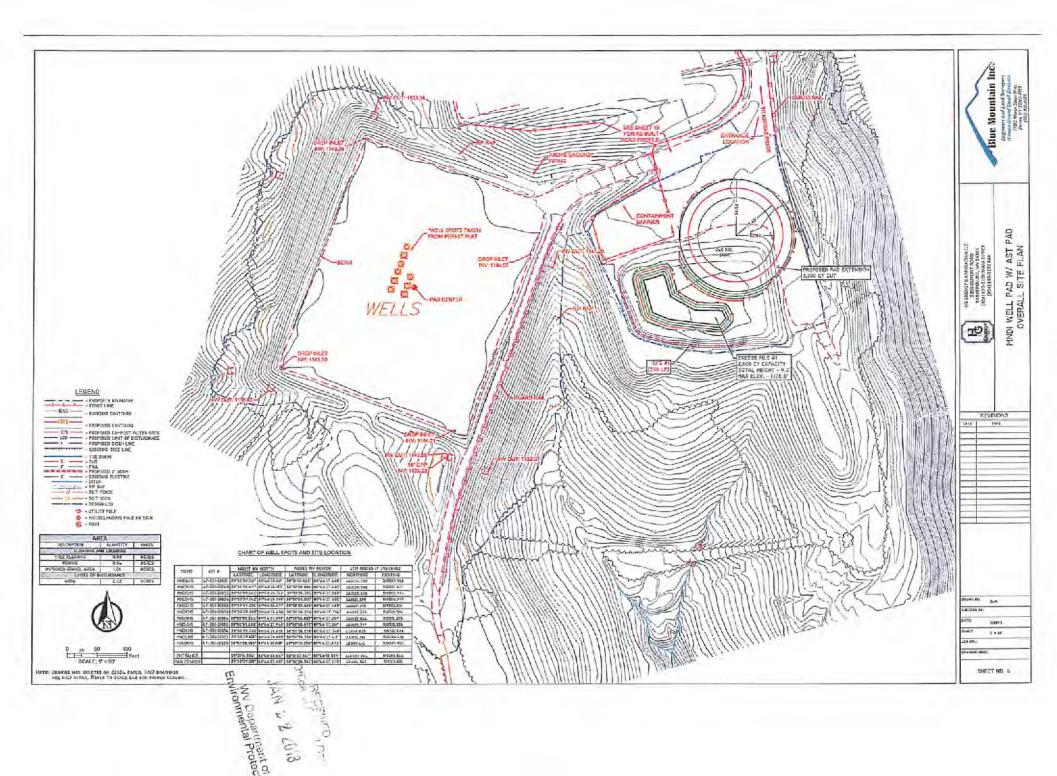
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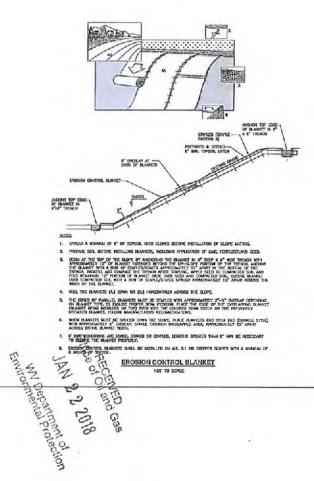
DATE

SCALE





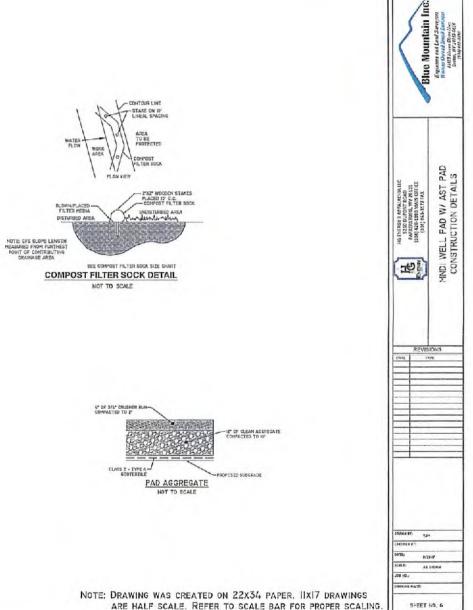
	NARM SEAS	2002	
HEXTLIRE MEMBER	SEKSON	SPECES	G RATE
ı	COOL	TALL FEECUE, DR FINE FESCUE, FLUS REDTOP, DR FERENAL RTECHASS FLUS BRDFDUT TREFOIL	754 P.
z	COOL	BIRDSFOOT TREFOIL, PLUS TALL FESCLE	40
3	COOL	ORDHARDURASS, DR SHOOTH RECHFERASS, PLUS BIRDSFOOT TREFDIL	20 35 8
4	WARM	FLATPLA, PLUS TALL FEBOLE, OR PERFORMAL RYFORMAS	27
5	WARH	DEERTONQUE, PLUS BIADSFOOT TREEFOR	21
	WARM	SHITCHGRASS, OR DIG BLUESTEH, PLUS BIRDEFOOT TREACE	15
SITE CONDITION	1	SEED MARTINE	
CLT SUPER AND PELS NOW HOWED) THE DAMAGE VARIABLE DAMAGE UT SUPER AND PELS (CANTERNACE CLT SUPER AND PELS (CANTERNACE CLT SUPER AND PELS (CANTERNACE) GUIDER AND DECEMBER BODGEN CONFICE, BPPS DIAMAGE DECEMBER CLT CANTER CLT CANTERNACE CLT CANTE		8 PG 4.5	
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EROSION CONTROL BLANKET

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and Gas



QUANTITY SUMMARY		
DESCRIPTION	UNITS	QUANTITY
I.) CLEARING AND GRUBBING		
IA.) TREE CLEARING	ACRES	0.00
IB.) MOWING	ACRES	0.84
IC.) IMPROVED GRAVEL AREA	ACRES	1.38
2.) COMPOST FILTER SOCK		
28.) 12*	LF	306
2c.) 18*	LF	
2p.) 24*	LF	
2E.) STACKED	LF	
3.) AGGREGATE SURFACING (PROPOSED PAD EXTENSION)	A	Martin Mart
3A.) PADS - 0"-6" AGGREGATE (12")	TONS	1,854
38.) PADS - 5" CRUSHER RUN (4")	TONS	585
4.) SLOPE MATTING	2	and a second second
4A.) SLOPE MATTING	SY	1,507
4B.) HYDRO-SEEDING (DURING GROWING SEASON ONLY)	AC	0.04
5.) SEED & MULCH	-1. C. C. S.	
5A.) SEED & MULCH	AC	0.84
6.) EXCAVATION	Service and	A STATISTICS
6A.) CUT-PAD (NO SWELL)	CY	2,000

office of Gil and Gas JAN 2 2018 JAN 2 2018



Blue Mountain InC: Engluers and Land Burgur Transis Oracle Balances Transis Oracle Balances Prov. Problem

NOTE: DRAWING WAS CREATED ON 22X34 PAPER. IIXI7 DRAWINGS ARE HALF SCALE. REFER TO SCALE BAR FOR PROPER SCALING.