

west virginia department of environmental protection

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

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

Friday, April 12, 2019 WELL WORK PERMIT Horizontal 6A / New Drill

ARSENAL RESOURCES LLC 6031 WALLACE ROAD EXTENSION SUITE 603 WEXFORD, PA 15090

Permit approval for JOSBORN HSOP 16 203 Re:

47-033-05941-00-00

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.

Operator's Well Number: JOSBORN HSOP 16 203

Farm Name:

JUDY M OSBORN (LE) (JUDY

U.S. WELL NUMBER: 47-033-05941-00-00

Horizontal 6A New Drill

Date Issued: 4/12/2019

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API Number	A	PΙ	Νι	ım	ber	•
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PERMIT CONDITIONS

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

CONDITIONS

- 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.

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API Number:	

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.



Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near Arsenal Resources hydraulic fracturing in Harrison County, WV prior to hydraulic fracturing at JOsborn HSOP 16 Well Number 203.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 7,200' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability Benson formations (approximately 4,810' TVD).

The plan is being implemented as an additional safety measure to be utilized in conjunction with best management practices and emergency action plans for this site. These additional measures include pre-notification of conventional well operators of the timing and location of the hydraulic fracturing, establishment of measures conventional well operators should implement, and assurance that the Division of Oil and Gas is notified of the timeline, as well as any issues that may arise during fracturing.

1. Communications with Conventional Operators.

Arsenal Resources, using available data (WV Geological Survey, WVDEP Website, and IHS data service), has identified all known conventional wells and well operators within 500 feet of this pad and the lateral sections. A map showing these wells along with a list of the wells and operators is included in Attachment A.

Upon approval of this plan, Arsenal Resources will notify these operators, via letter, of the hydraulic fracturing schedule for these wells. A copy of this letter is included in Attachment B.

The letter provides recommendations to these conventional operators to 1) increase their monitoring of their wells during that time period, 2) ensure that their well head equipment is sound, and 3) provide immediate notification to Arsenal Resources and the OOG in the event of any changes in their well conditions.

Specifically, the letter recommends that conventional well operators conduct the following activities during and after fracturing operations:

- Inspect their surface equipment prior to fracturing to establish integrity and establish prefrac well conditions.
- 2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas or pressure.
- 3. Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity.
- Wellhead Integrity.
 Notify the OOG and ARSENAL RESOURCES if any changes in water, gas production, pressure ECEIVED or other anomalies are identified.



2. Reporting

Arsenal Resources will provide information relating to the hydraulic fracturing schedule, communication with conventional operators, and ongoing monitoring of the work upon request of OOG or immediately after any event of any noted abnormalities.



B. B.

located located

99 topo map

10,613 feet 2,736 feet

west 9,9

Longitude: Longitude:

80° 10° 80° 12° 30

	SURFACE OWNER	DIST-TM/PAR
1	JUDY M. OSBORN (LE)	15-330/5
	(JUDY M. OSBORN IRREVOCABLE TRUST)	
2	CHARLES THOMAS DAVIS II, ET AL	15-330/4
3	CAROLYN S. HARRON	15-330/3
4	CHARLES E. REED 1/2 INTEREST	15-330/25
	GERALD W. BURNER ET AL 1/2 INTEREST	
5	MICHAEL A. & ROBERTA OSBORN	15-350/4
6	GORDON F. OSBORN (LE)	15-350/3
	(BRIAN MATTHEW OSBORN)	
7	GORDON F. OSBORN (LE)	15-350/3.3
	(BRIAN MATTHEW OSBORN)	
8	GORDON F. & DONNA R. OSBORN	15-350/3.1
	(BRIAN MATTHEW OSBORN)	
9	GORDON F. OSBORN (LE)	15-350/16.1
	(BRIAN MATTHEW OSBORN)	
10	ANNESE FRANK	15-350/16.3
11	MICHAEL DAVID & REBECCA JANE CONLEY	15-350/16
12	JASON J. POTH	15-350/16.9
13	KILI K. PALAÇAT	15-350/23.2
14	KILI K. PALACAT	15-350/23.1
15	BILLY JOE & DEBRA K. WORMAN	15-350/23.4
	C/O TABITHA BENNETT	
16	*PATRICIA L. MOORE	15-350/23.E
17	PATRICIA L. MOORE	15-350/23
18	CHARLES W. CLEVENGER IRR TRUST	15-350/24
	C/O MARY M. TUCKER	1.000
19	CHARLES W. CLEVENGER IRR TRUST	15-370/10
20	CHARLES W. CLEVENGER IRR TRUST	15-370/12
	C/O MARY M. TUCKER	
21	CHARLES W. CLEVENGER IRR TRUST	15-370/13
22	SHAWN R. NEWBROUGH	15-370/21
23	JOHN JAMES JONES	15-370/27
1	C/O ANTHONY JONES	A 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
24	CHARLES A. & JOYCE G. MATHENY	15-370/28.1
25	CHARLES A. & JOYCE G. MATHENY	15-370/28
26	JOHN A. & JULIE A. TURNBULL	15-370/28.2

	LESSOR	DIST-TM/PAR
A	GOBEL OSBORN, ET AL	15-330/5
В	CHARLES THOMAS DAVIS, ET UX	15-330/4
C	GEORGE T. FARIS, ET AL	15-330/3
D	JOHN B. WEBB, ET AL	15-330/25
E	MICHAEL A. OSBORN ET UX	15-350/4
F	XTO ENERGY INC.	15-350/3
		15-350/3.3
		15-350/3.1
G	REBECCA A. COMPTON; JAMES MICHAEL COMPTON &	15-350/16.1
	JENNIFER NORA COMPTON	15-350/16.3
		15-350/16
		15-350/16.9
H	PATRICIA MOORE	15-350/23.2
	1,000,000,000	*15-350/23.6
		15-350/23
	TRACY H. MCDONALD	P/0 15-350/23.1
J	BILLY JOE WORKMAN ET UX	15-350/23.4
K	CHARLES W. CLEVENGER IRR TRUST	15-350/24
	W:10-3(10) 0-3(1) 10-10(1) 10-10(1)	15-370/10
		15-370/12
	W. R. JOHNSON ET AL	15-370/13
М	N. D. PARKS ET AL	15-370/21
N	JOHN JAMES JONES	P/0 15-370/23
P	JOHN JAMES JONES	P/0 15-370/27
	AUDREY U. DAVIS ET UX.	15-370/28.1
	Libral Chancian Co.	15-370/28

SURFACE HOLE LOCATION (SHL) UTM 17-NAD83 N:4346582.31 E:567461.23 NAD83, W NORTH N:279795.329 E:1765216.814 LAT/10N DATUM-NAD83 LAT:39,265958 LON:-80,217997

APPROX. LANDING POINT UTM 17-NAD83 N:4345994.90 E:566887.55 NAD83, W NORTH N:277899.123 E:1763302.307 LAT/LON DATUM-NAD83 LAT:39.260711 LON:-80.224706 BOTTOM HOLE LOCATION (BHL) UTM 17-NAD83 N:4340995.19 E:568707.28 NADB3, WY NORTH N:261393.846 E:1769000.753 LAT:39.215519 LON:-80.204122

Blue Mountain 11023 MASON DIXON HIGHWAY BURTON, WY 25562 PHONE: (304) 562-5486

FOR PLAT LATERAL

ILE#: J OSBORN HSOP 16 201	I,THE UNDERSIGNED PLAT IS CORRECT TO THE B	, HEREBY CERTIFY THAT THIS EST OF MY KNOWLEDGE AND INFORMATION REQUIRED BY
DRAWING #: J OSBORN HSOP 16 201	BELIEF AND SHOWS ALL THE	INFORMATION REQUIRED BY
SCALE: 1" = 2000'	THE DEPARTMENT OF ENVIR	
MINIMUM DEGREE DF ACCURACY: 1/2500	Signed:	ge alsie 18
PROVEN SOURCE U.S.G.S. MONUMENT THOMAS 1498.81	R.P.E.:	L.L.S.: P.S. No. 2000 PL
+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WYDEP DEFICE OF OIL & GAS	A TEST	DATE: DECEMBER 19, 20 OPERATOR'S WELL #: J OSBO

No. 2000
STATE OF VIROLET STATE STANDARD STATE OF STANDARD STANDAR

the management of the	THUMAS 1490.01	1
(+) DENOTES LOC	ATION OF WELL ON	
UNITED STATES T	OPOGRAPHIC MAPS	
WVDEP		
OFFICE OF OIL &	GAS	
601 57TH STREET		
CHARLESTON, W	V 25304	
Well Type: Dil	☐ Waste Disposal	F

018 RN HSOP 16 201 API WELL #: 05941 47 33

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

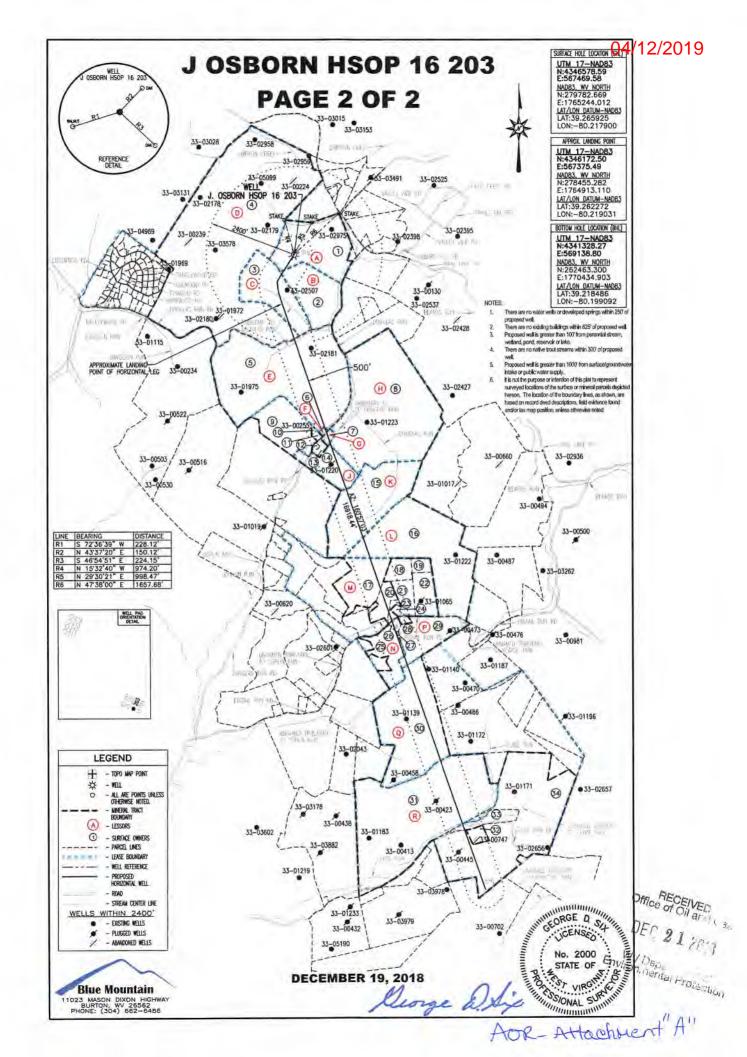
STATE COUNTY PERMIT

WATERSHED: SIMPS	ON CREEK	ELEV.	ATION:	1163.30'±
COUNTY/DISTRICT:_	HARRISON / SIMPSON	QUADRANGLE: _	ROSEMONT,	WV 7.5'
SURFACE OWNER:	JUDY M OSBORN (LE) (JUDY M OSBORN IRREVO	DCABLE TRUST)	ACREAGE:_	70.00±
OIL & GAS ROYALTY	OWNER: GOBEL OSBORN, ET AL		ACREAGE:	1387.201±
	DRILL CONVERT DRILL PLUG OFF OLD FORMATION P CLEAN OUT & REPLUG OTHER	ERFORATE NEW FOR	MATION P	

TARGET FORMATION: MARCELLUS	ESTIMATED DEPTH: (LATERAL)TVD: 7,108.3'± IMD: 25,563.09'±
WELL OPERATOR ARSENAL RESOURCES	DESIGNATED AGENT WILLIAM VEIGEL
Address 6031 WALLACE ROAD EXTENSION, SUITE 300	Address 65 PROFESSIONAL PLACE, SUITE 200
City WEXFORD State PA Zip Code 15090	City BRIDGEPORT State WV Zip Code 26330

Office of Oil and Garage DEC 21 2018 WV Department of Environmental Protection

AOR- Attachment "A"



Area of Review Report - __J Osborn HSOP16_____ Pad, ____203__ Lateral, _____Harrison____County, WV

Well Name	API Number	Operator Name / Address	Well Type	Latitude	Longitude	Total Depth	Perforated Formation(s)	Producing Zones not Perforated
Davis 1	033-02507	Greylock Conventional, LLC	Existing	39.263283	-80.218542	4447	Fifth, Speechley, Balltown, Benson	NA NA
Webb 1	033-02181	Alliance Petroleum Corporation	Existing	39.258957	-80.216168	4353	Speechley, Balltown, Benson	NA
J & W Webb 1	033-00255	Union Carbide, Olefins Division	Existing	39.253151	-80.215981	4500	Berea, Riley	NA
Lantz 1	033-01220	Petroleum Development Corp.	Plugged - 5/4/1978	39.250275	-80.214177	NA	NA	NA
Patton - Lang 2	033-01140	Alliance Petroleum Corporation	Existing	39.234998	-80.204674	4808	Benson	NA
Johnson - Lang 2	033-01139	Alliance Petroleum Corporation	Existing	39.231279	-80.206811	4660	Fifth	NA
ND Parks 2	033-00423	Delta Producing Co.	Plugged - 7/28/1966	39.225129	-80.203928	NA	NA	NA
JJ Horner 2	033-00747	Petroleum Development Corp.	Existing	39.22219	-80.199955	4448	Benson	NA
JJ Horner 1	033-00445	Delta Producing Co.	Plugged - 5/20/1967	39.221272	-80.201714	2551	Fifth	NA



Click or tap to enter a date

Delta Producing Co. Address State

RE: Click or tap here to enter text.

Dear Sir/Madam,

Arsenal Resources has developed a Marcellus pad, JOsborn HSOP16, well #203, located in Harrison County, WV. As an owner or operator of conventional natural gas wells in this area, we are requesting your assistance in this matter.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 7,200 TVD) and existing conventional natural gas wells included in the attached well list for which you are believed to be the operator.

Arsenal Resources anticipates conducting hydraulic fracturing at the JOsborn HSOP16 pad, well #203, during the Quarter of 2018. We have identified conventional natural gas wells operated by your company within 500' (lateral distance) of our newly planned wells. Plats for each well on this pad are attached.

We recommend that conventional well operators conduct the following activities before, during and after fracturing operations:

- 1. Inspect surface equipment, prior to fracturing, to establish integrity and establish well conditions.
- Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas, or pressure.
- Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity.
- Notify the OOG and Arsenal Resources if any changes in water, gas production, pressure or other anomalies are identified.

Please feel free to contact me at 724-940-1218 with any questions or comments. You may also contact the WV Office of Oil and Gas at 304-926-0449.

Sincerely,

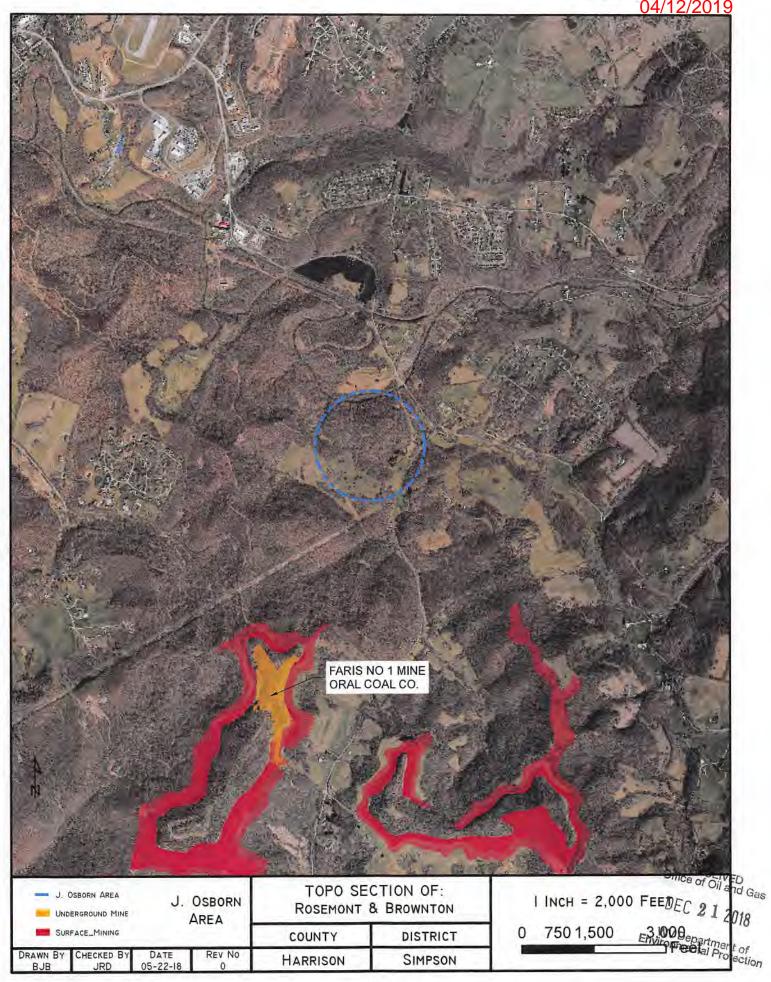
Kelly Davis Permitting Specialist

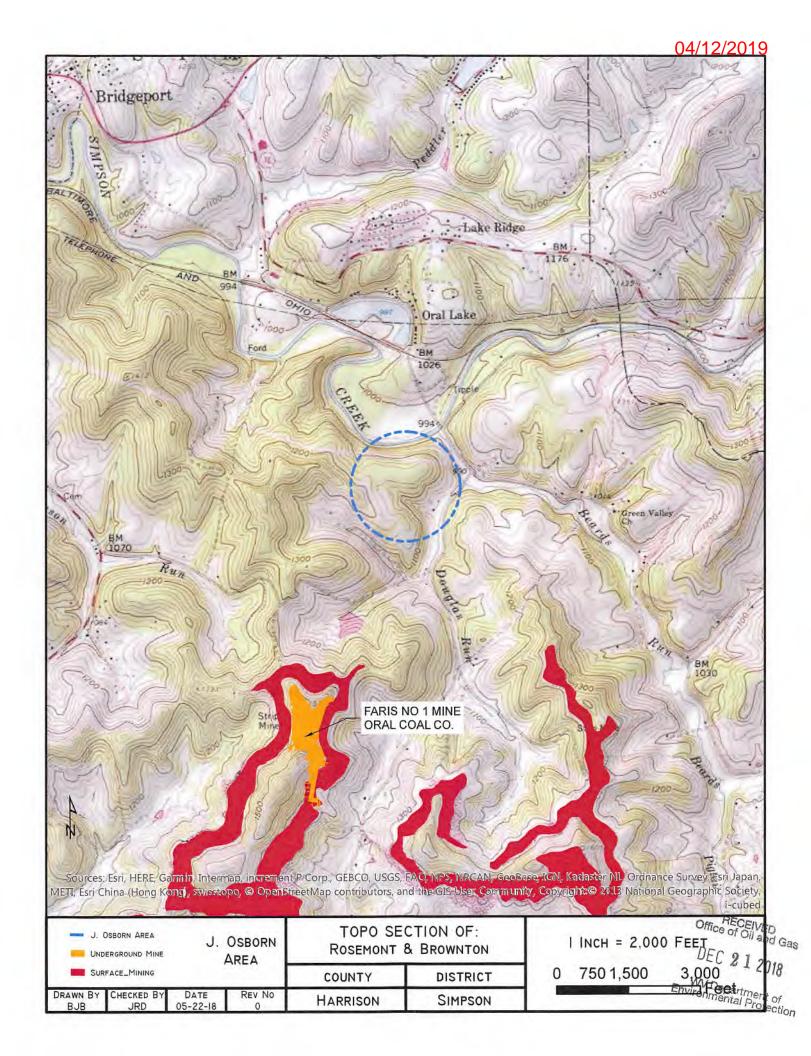
Office of Oil and Gas

DEC 21 2018

Environmental Protection

AOR-Attachment B"







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Flood selections on the map are inferenced to the first in American Venical Datum of 1888. These should elevations must be compressed to withsize and you detection, referenced to the same sential electric for referenced in segarding conversion between the Nacrotal Georgia. Venical Datum of 1920 and the Venical Part of the Indicated Datum of 1986, with the National Conference Country.

NGS latters after Services NGAA NRC292 NSAAN PROCESSE Survey SQUOD - NGC SERVICE 116 East-West Highlian Sheet Spinos, Maryland 20% 0 0002 DD1 (132242

Environmental Protection

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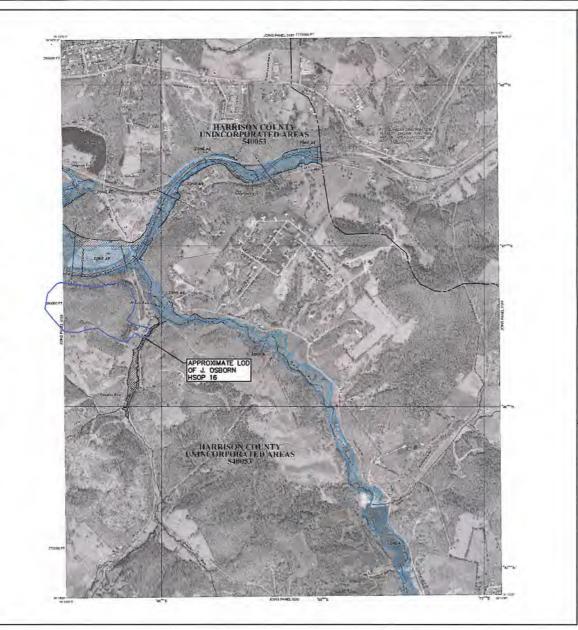
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Prince refer to the reparately prince Map Index for an overview county alreading the layout of more season, occurs who their reposition and a beang of communities total operating featured. Food invariables for an extension of the prince of dates for each community on well as it follows of the prince or

I pur have questions about this map, from to color protects do the harloned fluid inscarces Program in general, please call the PEBA Map Information skindings (PAI) of 1-877-198A-MAP (1-877-396-3937), or with the PEBA weckle at http://www.letria.gov/businesenfig



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COASTAL BARRIER RESOLUCES SYSTEM (CIPAS) ANEAS

OTHERWISE PROTECTED AREAS (CPM)

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NAME OF THE PROPERTY OF THE PERSON. PLOCO HARMA WE MATERIAL COMMITTEE OF DOLLAR PHANES.

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54033C0189D EFFECTIVE DATE **OCTOBER 2, 2012**

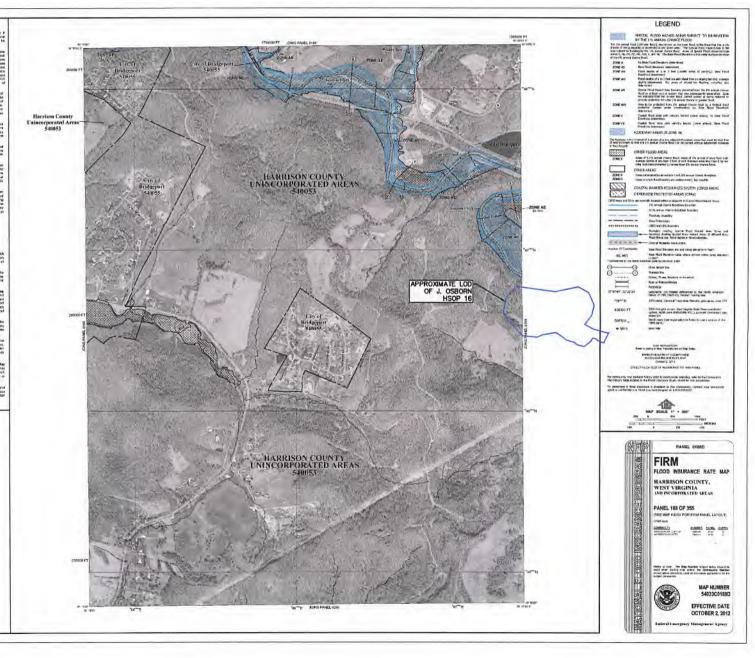


Environmental Protection

DEC

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PECEIVED of Oil and Gas



WW-6B (04/15) 4 7 0 3 3 0 5 9 4 1 API NO. 47-033 - 04/12/2019

OPERATOR WELL NO. JOSborn HSOP 16 203
Well Pad Name: JOSborn HSOP 16

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

1) Well Operator: Arsenal Reso	urces	494519412	Harrison	Simpson	Rosemont
		Operator ID	County	District	Quadrangle
2) Operator's Well Number: J Os	born HSOP 1	6 203 Well Pa	ad Name: J Os	born HSOP	16
3) Farm Name/Surface Owner: Ju	ıdy M. Osborı	n (LE) Public Ro	ad Access: 77	/4 Moss Rui	n (Coplin Run)
4) Elevation, current ground: 11	64.36' E	Elevation, proposed	d post-construct	tion: 1163.3	30'
5) Well Type (a) Gas X Other	Oil _	Une	derground Stora	age	
(b)If Gas Shallo Horiza	ow X X	Deep	-		5DW 10/29/2018
6) Existing Pad: Yes or No No					10/21/210
7) Proposed Target Formation(s), I Target Formation- Marcellus Shale, To					ed Pressure- 0.5 psi/ft
8) Proposed Total Vertical Depth:	7,108.3 ft				
9) Formation at Total Vertical Dep	th: Marcellu	is Shale			
10) Proposed Total Measured Dep	th: 24,486.4	47 ft			
11) Proposed Horizontal Leg Leng	th: 16,918.4	14 ft			
12) Approximate Fresh Water Stra	ta Depths:	43 ft, 258 ft, 35	66 ft, 539 ft, 72	.5 ft	
13) Method to Determine Fresh W	ater Depths:	offsetting wells repo	rted water depths	(033-02179, 0	033-02507, 033-02975)
14) Approximate Saltwater Depths	: None Expe	ected			
15) Approximate Coal Seam Deptl	1S: Harlem - 146, Bakers	town – 227', Brush Creek – 326', Upper Fr	seport – 399', Lower Freeport – 437	7, Upper Kiltanning – 527', M	iddle Kittanning – 590 , Lower Kittanning – 61 t
16) Approximate Depth to Possible	e Void (coal n	nine, karst, other):	None Known		
17) Does Proposed well location codirectly overlying or adjacent to an			N	o X	
(a) If Yes, provide Mine Info:	Name:				RECEIVED Office of Oil and Gas
Į	Depth:				DEC 2 1 2018
	Seam: Owner:				WV Department of Environmental Protection

API NO. 47-033 - 3 3 6 4 12/2019

OPERATOR WELL NO. J Osborn HSOP 16 203
Well Pad Name: J Osborn HSOP 16

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	.26	Used		102.7	100	100	CTS
Fresh Water	13.375	New	J-55	54.5	800	800	CTS
Coal	1.4						
Intermediate	9.625	New	J-55	40	1500	1500	CTS
Production	5.5	New	P-110	23	24,486	24,486	TOC @ 1,350
Tubing							
Liners							

SDW 10/20/2016

ТҮРЕ	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	26	36			0	Class A, 3% CaCl2	1.2
Fresh Water	13.375	17.5	0.38	2,730	900	Class A, 3% CaCl2	1.2
Coal							
Intermediate	9.625	12.25	0.395	3,950	1,500	Class A, 3% CaCl2	1.29
Production	5.5	8.5-8.75	0.415	14,520	9,500	Class A/50:50 Poz	1.29/1.34
Tubing					5,000		
Liners					N/A		

PACKERS

Kind:	RECEIVED Office of Oil and Gas
Sizes:	DEC 2 1 2018
Depths Set:	WV Department of Environmental Protection

WW-6B (10/14) 4703305422019

OPERATOR WELL NO. JOSDOM HSOP 16 203
Well Pad Name: JOSDOM HSOP 16

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

The well will be started with a conductor rig drilling a 36" hole to Conductor programmed depth then running 26" casing and circulate cement back to surface. The conductor rig will move out and the drilling rig will move in and rig up. The drilling rig will then spud a 17 ½" hole and drill to fresh water casing (Surface) to the programmed depth, Run 13- 3/8" casing and cement to surface. The rig will continue drilling a 12- ¼" intermediate hole to the programmed depth, run 9-5/8" casing and cement to surface. The rig with then continue to drill an 8- ¾" hole to a designed pilot hole depth, then trip out of hole to run wireline logs. A cement kick-off plug will then be set from bottom of the pilot hole to the designed KOP. We will then drill off the cement plug and start drilling the curve and lateral section to the programmed total measured depth, run 5 ½" casing and cement according to the program

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

The well will be completed using a plug and perforation method and stimulated with a slickwater and sand slurry. The anticipated maximum rate will be 90 bpm and the maximum pressure will be 9,500 psi.

- 21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 17.26
- 22) Area to be disturbed for well pad only, less access road (acres): 6.63
- 23) Describe centralizer placement for each casing string:

26"- No centralizers 13 3/8" – one bow spring centralizer on every other joint 9 5/8" – one bow spring centralizer every third joint from TD to surface $5 \frac{1}{2}$ " – one semi rigid centralizer on every joint from TD of casing to end of curve. Then every other joint to KOP. Every third joint from KOP to 1,600'; there will be no centralizers from 1,600 to surface.

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

26" will be circulated to surface. The 13 3/8" casing will be cemented to surface with Class A cement and no greater than 3% CaCl (calcium chloride). The 9 5/8" casing will be cemented to surface with Class A cement, & no greater than 3% calcium chloride. The 5 1/2" production string will be cemented back to 1,350' (+/-150' above the casing shoe for the 9 5/8") with Class A and 50/50 Poz cement retarded (to extend pumpability) cellophane flaked for fluid loss, Bentonite gel as an extender (increased pumpability and fluid loss), a defoaming agent to decrease cement foaming during mixing to insure the cement is of proper weight to placement and possibly gypsum gas blocking additive to aid in blocking/gas migration (in combination with other additive mentioned here, helps cement achieve a "right angle" set) during the plastic phase of the cement set-up.

25) Proposed borehole conditioning procedures:

Top holes will be drilled with fresh water KOP. At KOP, the wellbore will be loaded with synthetic oil based mud, barite-weighted mud system with such properties as to build a filter-cake on the face of the bore-hole. This will provide lubricity as well as stabilizing the well bore. We will begin rotating the drill string and mud will be circulated upon reaching TD until no further cuttings are observed coming across the shaker screens. Once clean mud is circulated back to surface, we will pull three stands of drill pipe, load the hole, pull three strands and load the hole. The weight indicator on the rig will be monitored for any occurrences of drag and if any are noticed, we will re-run the previous stand of pipe pulled across and circulate 2x bottoms up while watching shakers for signs of cuttings. Once at the base curve, the string will be continued to the well.

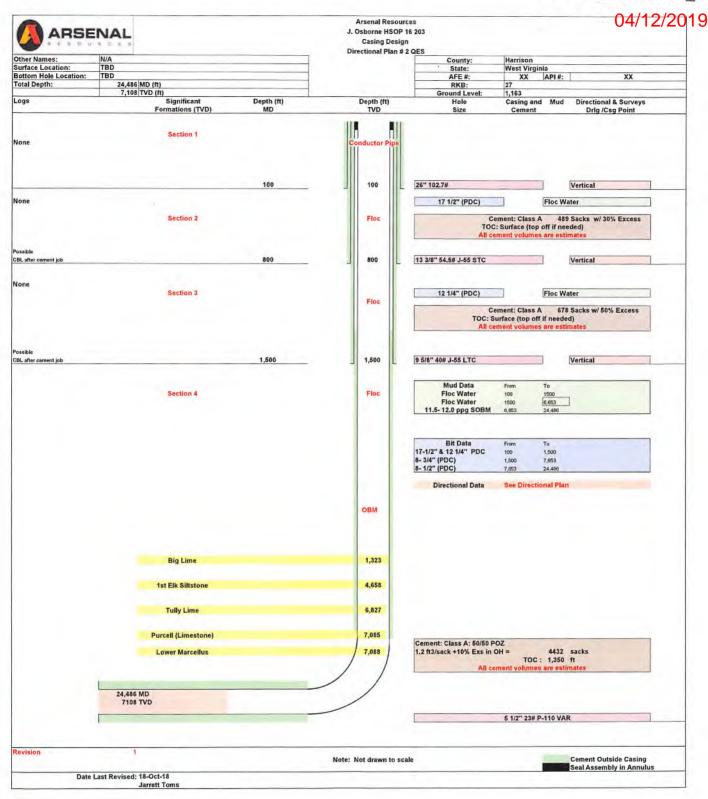
*Note: Attach additional sheets as needed.

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Well Name # J Osborn HSOP16 203							
	CEMENT ADDITIVES						
	Name	Purpose					
Additive #1:	Bentonite	Helping fluid loss, reducing free water					
Additive #2:	Calcium Chloride	Accelerator for low temp application					
Additive #3:	Celloflake	Loss circulation additive					
Additive #4:	Gypsum	Used for thixotropic properties					
Additive #5:	Lignosulfonate	Low temp cement retarder					
Additive #6:	Naphthalene Based	Used to improve rheological properties of cement					
	Dispersant						
Additive #7:	Cellulose	Help with fluid loss					

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API Number 47 -	033	-	
Operator's	Well No	. 1	Oshora HSOP16 203

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Arsenal Resources	OP Code 494519412
Watershed (HUC 10) Simpson Creek	Quadrangle Rosemont
Do you anticipate using more than 5,000 bbls of water to co	omplete the proposed well work? Yes V No
Will a pit be used? Yes V No No	
If so, please describe anticipated pit waste: Proc	duced water
Will a synthetic liner be used in the pit? Yes	No If so, what ml.? 60 ml
Proposed Disposal Method For Treated Pit Wastes	50w 10-28-20
Land Application	10-29-20
Underground Injection (UIC Pe	ermit Number
Reuse (at API Number Various Off Site Disposal (Supply form	WW-9 for disposal location)
Other (Explain	W W > 101 disposal focation)
W- 2 A-3	
Will closed loop system be used? If so, describe: Yes, the close	ad loop system will contain all of the drilling medium and drill cuttings on location and then be taken to a landfill. 🖋
Drilling medium anticipated for this well (vertical and horiz	zontal)? Air, freshwater, oil based, etc. Vertical: Freshwater Horizontal: Oil Based Mud
-If oil based, what type? Synthetic, petroleum, etc	Synthetic
Additives to be used in drilling medium? Bentonite, Soap & Po	olymer Sticks, Soda Ash, Sodium Bicarbonate, Defoamer, Base Oil, Emulsifiers, Lime Barite
Drill cuttings disposal method? Leave in pit, landfill, remo	
-If left in pit and plan to solidify what medium wil	
-Landfill or offsite name/permit number? weadow	fill Landfill/Waste Management, Westmoreland Sanitary Landfill, and Apex Landfill
Permittee shall provide written notice to the Office of Oil at West Virginia solid waste facility. The notice shall be provi where it was properly disposed.	nd Gas of any load of drill cuttings or associated waste rejected at any ided within 24 hours of rejection and the permittee shall also disclose
There is the property anoperous,	
on August 1, 2005, by the Office of Oil and Gas of the Wes provisions of the permit are enforceable by law. Violation law or regulation can lead to enforcement action. I certify under penalty of law that I have person application form and all attachments thereto and that, but the content of the content o	and conditions of the GENERAL WATER POLLUTION PERMIT issued at Virginia Department of Environmental Protection. I understand that the as of any term or condition of the general permit and/or other applicable hally examined and am familiar with the information submitted on this based on my inquiry of those individuals immediately responsible for is true, accurate and complete. I am aware that there are significant submitted on this passed on my inquiry of those individuals immediately responsible for its true, accurate and complete. I am aware that there are significant submitted on this passed on my inquiry of those individuals immediately responsible for its true, accurate and complete. I am aware that there are significant of the protection of the protection.
Company Official Signature	
Company Official (Typed Name) William Veigel	DEC 2 1 2018
Company Official Title	WV Department of Environmental Protection
Subscribed and sworn before me this 29th day o	f October 20 18
Kelly a. Davis My commission expires September 18	OFFICIAL SEAL Public, State Of West Virginia KELLY A DAVIS 2142 Elk City Road Jane Lew, WV 26378 My Commission Expires September 18, 2023

Proposed Revegetation Treatn	nent: Acres Disturbed 17.26	Prevegetation p	H 6.8 Average
Lime 2.67	Tons/acre or to correct to pH	6.4	
Fertilizer type 10-2	0-20		
Fertilizer amount 10	000lb	s/acre	
Mulch_ 3-4	Tons/a	acre	
	See	d Mixtures	
Ten	nporary	Perm	anent
Seed Type	lbs/acre	Seed Type	lbs/acre
Orchard Grass	129	Orchard Grass	129
Rye	93	Rye	93
		1.120	E-12
Clover	24	Clover	24
Timothy Attach: Maps(s) of road, location, pit	45 and proposed area for land applic	Timothy eation (unless engineered plans inclu	45 adding this info have been
Timothy Attach: Maps(s) of road, location, pit approvided). If water from the pacreage, of the land application Photocopied section of involve the provided section of involve the provided by:	and proposed area for land applicit will be land applied, include dien area. ed 7.5' topographic sheet.	Timothy eation (unless engineered plans inclumensions (L x W x D) of the pit, and	45 uding this info have been ad dimensions (L x W), and
Timothy Attach: Maps(s) of road, location, pit provided). If water from the pacreage, of the land application Photocopied section of involve Plan Approved by: Comments: PRe-seed a	and proposed area for land applicit will be land applied, include dien area. ed 7.5' topographic sheet. Owwell nd mulch all disturbe	Timothy eation (unless engineered plans inclu	45 uding this info have been ad dimensions (L x W), and
Attach: Maps(s) of road, location, pit provided). If water from the pacreage, of the land application. Photocopied section of involve Plan Approved by: Comments: Re-seed apper regulation. Up	and proposed area for land applicate will be land applied, include distribution area. ed 7.5' topographic sheet. Owwell nd mulch all disturbe grade erosion and see	Timothy Pation (unless engineered plans inclumensions (L x W x D) of the pit, and the pit	45 uding this info have been ad dimensions (L x W), and dimensions (L x W), and assonably possible res where needed
Attach: Maps(s) of road, location, pit provided). If water from the pacreage, of the land application. Photocopied section of involve Plan Approved by: Comments: Re-seed apper regulation. Up	and proposed area for land applicate will be land applied, include distribution area. ed 7.5' topographic sheet. Owwell nd mulch all disturbe grade erosion and see	Timothy Pation (unless engineered plans includent plans inclu	45 uding this info have been ad dimensions (L x W), and dimensions (L x W), and assonably possible res where needed
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Title: OOG Inspector

Date: 10/29/2018

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Field Reviewed?

Yes

) No

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SITE SAFETY PLAN

I OSBORN HSOP16 WELL PAD, #203

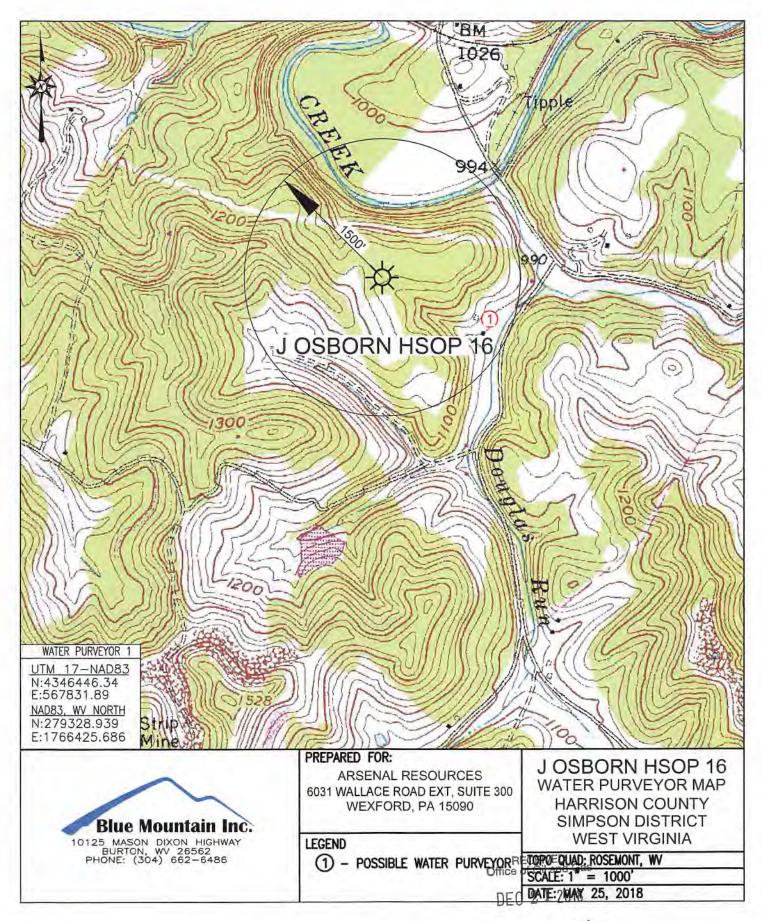
10/29/2018

911 Address:

2687 Coplin Run Rd Bridgeport, WV 26330

> RECEIVED Office of Oil and Gas

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10125 Mason Dixon Hwy | Burton, WV 26562 Ph: (304) 662-6486 | Fax: (304) 662-6501

May 25, 2018

ARSENAL RESOURCES 6031 WALLACE ROAD EXTENSION, SUITE 300 WEXFORD, PA 15090

WATER WELL REPORT

PROJECT:

J OSBORN HSOP 16

DISTRICT: COUNTY:

Simpson

STATE:

Harrison West Virginia

The following surface owners may have water supplies within 1,500 feet of the above location:

NAME ADDRESS CITY, STATE, ZIP

1) Judy M. Osborn (LE) 2665 Coplin Run Rd Bridgeport, WV 26330

(Judy M. Osborn Irrevocable Trust)

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	SURFACE OWNER	DIST-TM/PAR
1	JUDY M. OSBORN (LE)	15-330/5
	(JUDY M. OSBORN IRREVOCABLE TRUST)	
2	CHARLES THOMAS DAVIS II, ET AL	15-330/5.1
3	CHARLES THOMAS DAVIS II, ET AL	15-330/4
4	CAROLYN S. HARRON	15-330/3
5	CHARLES E. REED 1/2 INTEREST	15-330/25
	GERALD W. BURNER ET AL 1/2 INTEREST	
6	PAUL E. BALL	15-330/29
7	MICHAEL A. & ROBERTA OSBORN	15-330/26.1
8	SCOT S. & LYNN B. DIERINGER	15-330/26
9	MICHAEL A. & ROBERTA OSBORN	15-350/4
10	MICHAEL A. & ROBERTA OSBORN	15-350/32
11	MICHAEL A. & ROBERTA OSBORN	15-350/4.2
12	VICKI R. OSBORN	15-350/4.1
13	JASON OSBORN	15-350/4.3
14	RUSSELL E. RUTAN JR. &	15-350/5
	DOROTHY L. & JOHN TIMOTHY BELOTTE	
15	GOBEL G. OSBORN JR. (LE)	15-350/6
-	(MICHAEL BRUCE & JASON OSBORN)	10 000/ 0
16	R. MARK & DIANA L. HACKETT	15-350/18
17	DONALD N. & CYNTHIA J. MCHENRY	15-350/16.2
18	BRIAN J. & ANDREA L. MILLS	15-350/17.7
19	BRIAN J. & ANDREA L. MILLS	15-350/17.6
20	CALEB L. & JENNIFER L. CUTRIGHT	15-350/17.8
21		15-350/17.5
22	GARY & MARGARET WHEELER	15-350/17.2
23	CALEB L. & JENNIFER L. CUTRIGHT	15-350/17.3
24	JASON MICHAEL SLEETH	15-350/17.1
25	CHRISTOPHER F. & PAMELA MULLEN	15-350/25.3
26	JAY D. & TIFFANY BROOKE WILLIAMS	15-350/26.1
27	LEWIS FRANKLIN & PAMELA MULLEN	15-350/25
28	JAY D. & TIFFANY B. WILLAMS	15-350/27.1
29	LEWIS FRANKLIN & PAMELA MULLEN	15-350/27
30	CHARLES W. CLEVENGER IRR TRUST	15-370/13
31	SHAWN R. NEWBROUGH	15-370/21
32	EIP III WEST VIRGINIA LLC	15-370/29
33	EIP III WEST VIRGINIA LLC	15-371/7.1
34	EIP III WEST VIRGINIA LLC	15-371/7

	LESSOR	DIST-TM/PAR
A	GOBEL OSBORN, ET AL	15-330/5
В	J. EARL TETER, WIDOWER, ET AL	1-330-5.1
C	CHARLES THOMAS DAVIS, ET UX	15-330/4
D	GEORGE T. FARIS, ET AL	15-330/3
E	JOHN B. WEBB ET AL	15-330/25
F	THE BOARD OF EDUCATION OF THE COUNTY OF HARRISON	15-330/29
G	MARY ALICE HAFER REV TRUST	15-330/26.1
	MICHAEL A. OSBORN ET UX	
Н	MARY ALICE HAFER	15-330/26
J	NORVIL D. LANTZ	15 350 /5
K	ALDERSON BROADDUS COLLEGE & AMP FUND III, LP	15-3944
L	MARY LANCASTER CASTILOW ET AL	15-350/18
М	REBECCA A, COMPTON; JAMES MICHAEL COMPTON	15-350/16.2
	& JENNIFER NORA COMPTON	15-350/17.7
	A TANDON AND AND AND AND	15-350/17.6
		15-350/17.8
		15-350/17.5
		15-350/17.2
		15-350/17.3
		15-350/17.1
N	GRAFTON COAL COMPANY	P/0 15-350/25.3
		P/0 15-350/26.1
	I have been a second as a seco	15-350/25
P	LEWIS FRANKLIN MULLEN	15-350/25
		15-350/27
		15-350/27.1
à	W. R. JOHNSON ET AL	15-370/13
		15-370/29
		15-371/7
		15-371/7.1
R	N. D. PARKS ET AL	15-370/21

SHL is

located

99

map

west of

Longitude: Longitude:

80° 10° 80° 12°

30





SURFACE HOLE LOCATION (SHL)

UTM 17-NAD83
N:4346578.59
E:567469.58

NAD83, WV NORTH N:279782.669 E:1765244,012 LAT/LON DATUM-NAD83 LAT:39.265925 LON:-80.217900 WTM 17—NAD83 N:4346172.50 E:567375.49 NAD83, WY NORTH N:278455.282 E:1764913.110 LAT/LON DATUM—NAD83 LAT:39.262272 LON:—80.219031

APPROX. LANDING POINT

UTM 17-NAD83 N:4341328.27 E:569138.80 NAD83. WV NORTH N:262463.300 E:1770434.903 LAT/LON DATUM-NAD83 LAT:39.218486 LON:-80.199092

BOTTOM HOLE LOCATION (BHL)

Blue Mountain

11023 MASON DIXON HIGHWAY
BURTON, WV 26562
PHONE: (304) 662-6486

WEXFORD

City

State PA

Zip Code 15090

SEE PAGE 2 FOR PLAT DUE TO LENGTH OF LATERAL

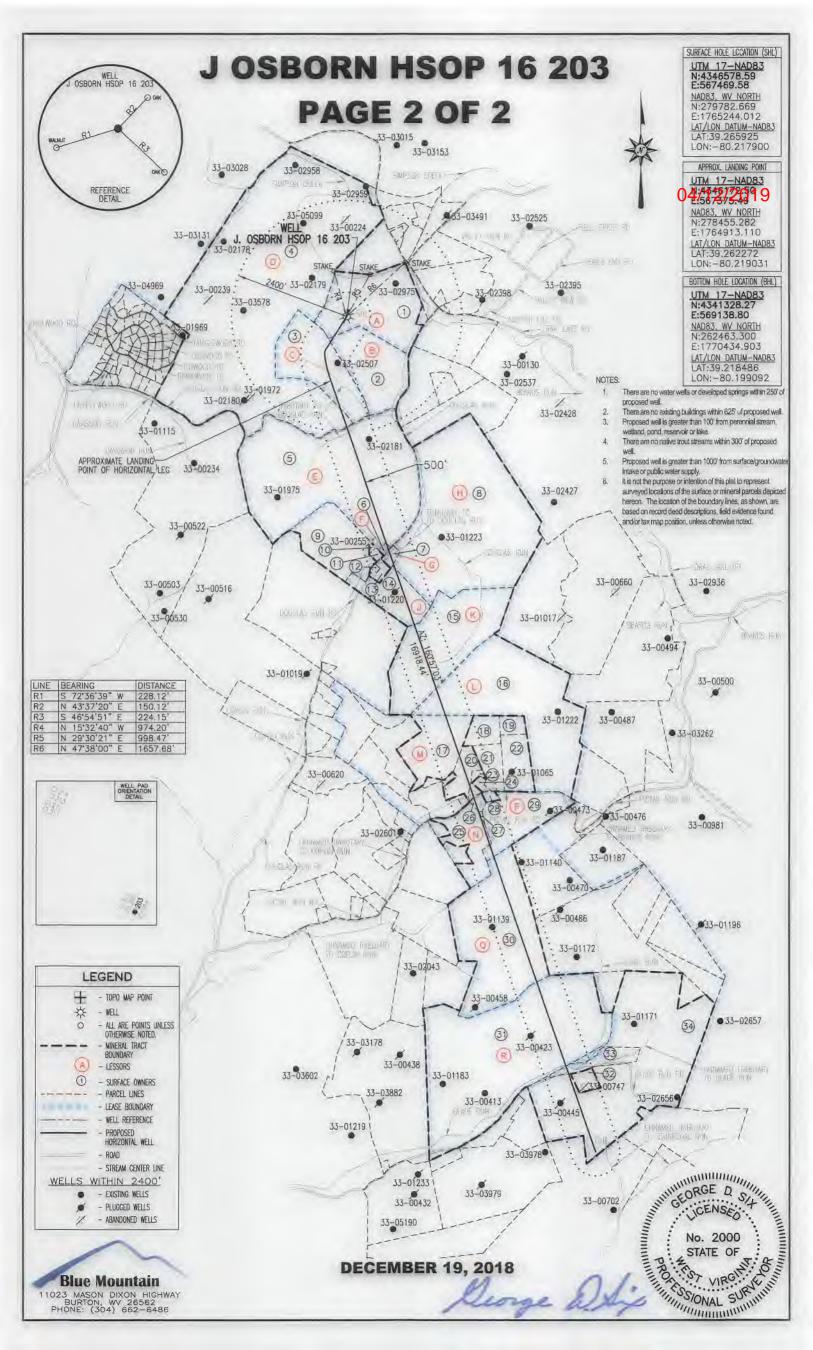
BRIDGEPORT

City

State WV

Zip Code 26330

FILE#: J OSBORN HSOP 16 203	I,THE UNDERSIGNED,	HEREBY CERTIFY THAT THIS	ORGE D
DRAWING #: J OSBORN HSOP 16 203	BELIEF AND SHOWS ALL THE	INFORMATION REQUIRED BY	CENSE THE
SCALE: 1" = 2000'	LAW AND THE REGULATIONS IS	SSUED AND PRESCRIBED BY	No. 2000
MINIMUM DEGREE OF ACCURACY: 1/2500	Signed:	e Delic	STATE OF
PROVEN SOURCE U.S.G.S. MONUMENT THOMAS 1498.81'	I,THE UNDERSIGNED, PLAT IS CORRECT TO THE BES BELIEF AND SHOWS ALL THE LAW AND THE REGULATIONS IS THE DEPARTMENT OF ENVIRO Signed: R.P.E.:	L.L.S.: P.S. No. 2000	PLANTE STATINGERE
(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25304 Well Type: Oil Waste Disposal Gas Liquid Injection WATERSHED: SIMPSON CREEK COUNTY/DISTRICT: HARRISON / S	Storage Shallow		OSBORN HSOP 16 203 33 COUNTY PERMIT 1163.30'±
SURFACE OWNER: JUDY M OSBORN (LE			
OIL & GAS ROYALTY OWNER: 60 DRILL X CO		ACREAGE REDRILL FRACTION TE NEW FORMATION	: 1690,279± URE OR STIMULATE X
TARGET FORMATION: MARCELLU	JS ESTIM	ATED DEPTH: (LATERAL)TVD: 7,	108.3'± TMD: 24,486.47'±
WELL OPERATOR ARSENAL RESOURCE	ES DESIG	NATED AGENT WILLIAM	/ VEIGEL
Address 6031 WALLACE ROAD EXTENSION, S	GUITE 300 Addres	s 65 PROFESSIONAL PLACE, S	SUITE 200



WW-6A1 (5/13)

Operator's Well No. J Osborn HSOP16 203

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:

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

See Attached

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: Arsenal Resources

By: William Veigel

Its: Designated Agent

Page 1 of

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Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
A, B (00003703)	J. Earl Teter, Widower; Irvin D. Teter and Vera Teter, his wife	Petro-Lewis Corp.	12.50%	1062/405	116
1,000000	Petro-Lewis Corp.	Partnership Properties Co.	l	1072/213	
	Partnership Properties Co.	Eastern American Energy Corporation		1124/449	
	Eastern American Energy Corporation	Energy Corporation of America		59/879	
	Energy Corporation of America	Greylock Production, LLC		1603/1121	
	Greylock Production, LLC	Mar Key, LLC		1607/855	<u> </u>
A (00003704)	Gobel Osborn and Audrey Osborn, his wife and Judy Nicholson and Gary Nicholson, her husband	Petroleum Development Corporation	12.50%	1074/420	72
	Petroleum Development Corporation	PDC Mountaineer, LLC		1440/364	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
C (00008233)	Charles Thomas Davis and Deborah A. Davis, husband and wife	NRM Petroleum Corporation	12.50%	1097/75	47
	NRM Petroleum Corporation	Natural Resources Management Corporation		Unrecorded (WV Secretary of State)	
	Natural Resources Management Corporation	Edisto Resources Corporation		Unrecorded (WV Secretary of State)	
	NRM Operating Company, LP, Edisto Resources, NRM 1984-B Income, Ltd., and NRM 1984-D Income, Ltd.	Eastern American Energy Corporation		1216/558	
DI Enviror	Eastern American Energy Corporation	Energy Corporation of America		1441/1003 (also 59/879)	
DEC	Energy Corporation of America	Greylock Production, LLC		1603/1121	<u> </u>
nto &	Greylock Production, LLC	Mar Key, LLC		1607/855	
C (00008232)	G. Lester Douglas and Mariellen Douglas, husband and wife	NRM Petroleum Corporation	12.50%	1097/77	47

	NRM Petroleum Corporation	Natural Resources Management Corporation		Unrecorded (WV Secretary of State)	
	Natural Resources Management Corporation	Edisto Resources Corporation		Unrecorded (WV Secretary of State)	
	NRM Operating Company, LP, Edisto Resources, NRM 1984-B Income, Ltd., and NRM 1984-D Income, Ltd.	Eastern American Energy Corporation		1216/558	
	Eastern American Energy Corporation	Energy Corporation of America		1441/1003 (also 59/879)	
	Energy Corporation of America	Greylock Production, LLC		1603/1121	
	Greylock Production, LLC	Mar Key, LLC		1607/855	
D (00008352)	George T. Faris and Nell Steele Faris, his wife, Rachel F. Shuttleworth, widow, Florence Faris, single, and Nell Faris Shinn, widow	Delaware Gas Company	12.50%	820/128	1562
	Delaware Gas Company	Union Carbide Corporation		845/221	
	Union Carbide Corporation	Creslenn Oil Company		897/286 898/258	
	Creslenn Oil Company	Deminex Oil Corporation		Delaware Secretary of State	
	Deminex Oil Corporation	Deminex U.S. Oil Company		Delaware Secretary of State	
	Deminex U.S. Oil Company	Southwest Exploration and Acquisition Company		Delaware Secretary of State	
	Southwest Exploration and Acquisition Company	Southwest Royalties		Delaware Secretary of State	
	Southwest Royalties	HG Energy II Appalachia, LLC		1605/194	
	HG Energy II Appalachia, LLC	Mar Key, LLC		1611/595	
E (00 <u>0</u> 08340)	John B. Webb and Tensie Webb, his wife & William W. Webb and Opal Webb, his wife	Delaware Gas Company	12.50%	820/19	188
<u> </u>	Delaware Gas Company	Union Carbide Corporation		845/221	
Office of DEC 2	Union Carbide Corporation	Creslenn Oil Company		897/286 898/258	

RECEIVED Gas
Oil and Gas
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	Attacini	ient to ww-bal, J Osborn 16 203			
	Creslenn Oil Company	Deminex Oil Corporation		Delaware Secretary of State	
	Deminex Oil Corporation	Deminex U.S. Oil Company		Delaware Secretary of State	
	Deminex U.S. Oil Company	Southwest Exploration and Acquisition Company		Delaware Secretary of State	
	Southwest Exploration and Acquisition Company	Southwest Royalties		Delaware Secretary of State	
	Southwest Royalties	HG Energy II Appalachia, LLC		1605/194	
	HG Energy II Appalachia, LLC	Mar Key, LLC		1611/595	
F (0008535)	The Board of Education of Harrison County	Mar Key, LLC	15.50%	1626/1254	0.5
G (00007965)	Michael A. Osborn and Roberta Osborn, husband and wife	Mar Key, LLC	14.00%	1602/945	2.406875
G, H (00004022)	Mary Alice Hafer	Petroleum Development Corporation	12.50%	1048/294	250
	Petroleum Development Corporation	PDC Mountaineer, LLC	1	1440/364	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
H (00004023)	William D. Courtney, a married man and Margaret D. Courtney, widow	Petroleum Development Corporation	12.50%	1064/1090	167
	Petroleum Development Corporation	PDC Mountaineer, LLC		1440/364	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
J (00008141)	Norvil D. Lantz, single	Mar Key, LLC	12.50%	1609/139	23.75
J (00008155)	April L. Strickland, married	Mar Key, LLC	12.50%	1610/723	23.75
J (00008152)	Kelly Klepaldo, married	Mar Key, LLC	12.50%	1610/717	23.75
J (00008153)	June Medina, widow	Mar Key, LLC	12.50%	1610/719	23.75
J 	Tammy Carson, married	Mar Key, LLC	12.50%	1609/131	23.75
(m)	Judy M. Osborn	Mar Key, LLC	12.50%	1621/919	23.75

J					
(00008150)	Michal W. Goforth, widow	Mar Key, LLC	12.50%	1610/713	23.75
J (00008416)	Karen Sue Whtye	Mar Key, LLC	12.50%	1624/1091	23.75
J (00008131)	Terry J. Kelly, married	Mar Key, LLC	12.50%	1609/133	23.75
J (00008151)	Clifford Aaron Harris, married	Mar Key, LLC	12.50%	1610/715	23.75
J (00008142)	Donna Smith, married	Mar Key, LLC	12.50%	1609/141	23.75
J (00008154)	Stanley Moore, married	Mar Key, LLC	12.50%	1610/721	23.75
j (00008540)	Ernest Osborn	Mar Key, LLC	12.50%	1626/1150	23.75
J (00008474)	Gordon F. Osborn	Mar Key, LLC	12.50%	1624/1094	23.75
K (00008356)	Trustees of Alderson Broaddus University, f/k/a Alderson Broaddus College	Mar Key, LLC	13.00%	1616/1169	86
K (00006680)	DWG Oil and Gas Acquisitions, LLC	Mar Key, LLC	15.00%	1561/493	86
L (00004366)	John Lancaster heirs; widow Mary Lancaster Costilow widow Lena L. Winters	Petroleum Development Corporation	12.50%	1060/292	136
	Petroleum Development Corporation	PDC Mountaineer, LLC		1440/364	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
M (0008180)	Jennifer Nora Corton, fka Jennifer Nora Compton	Mar Key, LLC	14.00%	1610/836	164.48
M (00008178)	Rebecca A. Compton	Mar Key, LLC	14.00%	1610/832	164.48
M (00008179)	James Michael Compton	Mar Key, LLC	14.00%	1610/834	164.48
N, Q (00008183)	Grafton Coal Company	Mar Key, LLC	14.00%	1610/838	29
P (##00007203)	Lewis Franklin Mullen, widower	Mar Key, LLC	15.00%	1576/217	35.5
	(00008416) J (00008131) J (00008151) J (00008142) J (00008540) J (00008474) K (00008356) K (00006680) L (00004366) M (00008180) M (00008178) M (00008179) N, Q (00008183)	(00008416) J (00008131) J (00008151) J (00008151) J (00008142) Stanley Moore, married (00008540) J (00008474) K (00008356) K (00008356) K (00006680) L (00004366) L (00004366) M (00008180) M (00008178) M (00008179) N, Q (00008183) P Lewis Franklin Mullen, widower, married Terry J. Kelly, married Clifford Aaron Harris, married Clifford Aaron Harris Donna Smith, married Clifford Aaron Harris Forall Air Stanley Moules A Compton A	(00008416) J (00008131) J (00008131) Clifford Aaron Harris, married Mar Key, LLC J (00008142) Donna Smith, married Mar Key, LLC Mar Key, LLC	Condonserve Company Condonserve Condon	Content Cont

Environmental Pro

R (00004238)	W.R. Johnson and Andra Johnson, his wife and Hursey R. Lang and Hazel M. Lang, his wife	Union Carbide Corporation	12.50%	852/587	466
	Union Carbide Corporation	Creslenn Oil Company		897/286	
	Creslenn Oil Company	Delta Producing Corporation		925/522	
	Delta Producing Corporation	Petroleum Corporation of America		967/575 (977/168)	
	Petroleum Corporation of America	Petroleum Development Corporation		977/153	
	Petroleum Development Corporation	PDC Mountaineer, LLC		1440/364	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
R (00004299)	ND Parks and Oliva Parks, his wife, James C. Parks and Abbie Y. Parks, his wife	Union Carbide Corporation	12.50%	852/563	250
	Union Carbide Corporation	Creslenn Oil Company		897/286	
	Creslenn Oil Company	Delta Producing Corporation		919/740	
	Delta Producing Corporation	Petroleum Corporation of America		967/575 (977/168)	
	Petroleum Corporation of America	Petroleum Development Corporation		977/153	
	Petroleum Development Corporation	PDC Mountaineer, LLC		1440/364	

Gas

West Virginia Secretary of State — Online Data Services

Business and Licensing

Online Data Services Help

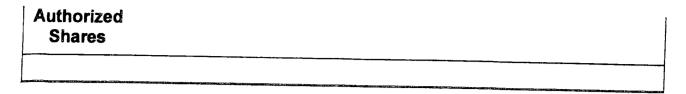
Business Organization Detail

NOTICE: The West Virginia Secretary of State's Office makes every reasonable effort to ensure the accuracy of information. However, we make no representation or warranty as to the correctness or completeness of the information. If information is missing from this page, it is not in the The West Virginia Secretary of State's database.

MAR KEY LLC

Organiz	Organization Information							
Org Type	Effective Date	Established Date	Filing Date	Charter	Class	Sec Type	Termination Date	Termination Reason
LLC Limited Liability Company	7/11/2011		7/11/2011	Domestic	Profit			

Business Purpose	2111 - Mining, Quarrying, Oil & Gas Extraction - Oil and Gas Extraction - Crude Oil and Natural Gas Extraction	Capital Stock			
Charter County		Control Number	99Q1F		
Charter State	w	Excess Acres			
At Will Term	Α	Member Managed	MBR		
At Will Term Years		Par Value		Office	RECEIVED of Oil and G



Addresses		
Туре	Address	
Designated Office Address	65 PROFESSIONAL PLACE SUITE 200 BRIDGEPORT, WV, 26330	
Mailing Address	6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090 USA	
Notice of Process Address	CORPORATION SERVICE COMPANY 209 WEST WASHINGTON STREET CHARLESTON, WV, 25302	
Principal Office Address	6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090 USA	
Гуре	Address	

Officers	
Туре	Name/Address
Member	ARSENAL RESOURCES ENERGY LLC 6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090
Organizer	PAUL M HERZING 560 EPSILON DR. PITTSBURGH, PA, 15238 USA
Туре	Name/Address

	RECEIVED Office of Oil and Gas
Annual Reports	DEC 2 1 2018
Date filed	WV Department of Environmental Protection

Date filed	
5/8/2012	
6/28/2013	
4/28/2014	
6/30/2015	
6/20/2016	
3/30/2017	

For more information, please contact the Secretary of State's Office at 304-558-8000.

Tuesday, November 28, 2017 — 9:44 AM

© 2017 State of West Virginia

Agreement to Drill, Complete and Operate Oil & Gas Wells

This Agreement to Drill, Complete and Operate Oil & Gas Wells (this "Agreement"), by and among Arsenal Resources LLC, a West Virginia limited liability company ("Arsenal"), River Ridge Energy, LLC, a Delaware limited liability company ("River Ridge"), and River Ridge Energy, Holdings, LLC, a Delaware limited liability company ("River Ridge Holdings"), is effective as of March 1, 2017. (the "Effective Date") and sets forth the terms pursuant to which Arsenal will drill, complete and operate the Wells (as defined below) on behalf of River Ridge and River Ridge Holdings. Arsenal, River Ridge, and River Ridge Holdings are each a "Party" and are collectively the "Parties". In consideration of the foregoing and the respective agreements hereinafter set forth and the mutual benefits to be derived therefrom, the Parties, intending to be legally bound, hereby agree as follows:

- 1. Term: This Agreement is effective from the Effective Date until terminated by Arsenal on the one hand or River Ridge and River Ridge Holdings on the other hand with 30 days' written notice to the other Party or Parties, as applicable (the "Term").
- Authorization to Operate: River Ridge and River Holdings authorize Arsenal to undertake and perform, on River Ridge and River Ridge Holdings behalf, all operations, including without limitation permit applications, well pad preparation, drilling and completing wells, and marketing gas, oil and other hydrocarbons therefrom with respect to all oil and gas wells to be drilled on oil and gas leasehold acreage held by River Ridge or River Ridge Holdings. River Ridge, River Ridge Holdings and Arsenal are affiliates with a common parent. Arsenal was formed to operate oil and gas leasehold acreage held by River Ridge, River Ridge Holdings and certain other affiliates. Arsenal agrees that it shall, in a good and workmanlike manner and in accordance with industry standards as they prevail in the area, drill, complete and operate oil and gas wells on leasehold acreage owned by River Ridge or River Ridge Holdings from time to time as directed by River Ridge or River Ridge Holdings (collectively, the "Wells").
- 3. No Third Party Beneficiary: This Agreement is for the benefit of the Parties and is not for the benefit of any third party.
- 4. Counterparts: This Agreement may be simultaneously executed in several counterparts and via facsimile or similar electronic transmittal, each of which shall be deemed to be an original and taken together shall constitute one and the same instrument.

[Signature Page Follows]

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Office of Oil and Gas

DEC 2 1 2018

IN WITNESS WHEREOF, Arsenal, River Ridge, and River Ridge Holdings have caused their duly authorized representatives to execute this Agreement as of the Effective Date.

ARSENAL RESOURCES LLC

Name: Joel E. Symonds

Title: Vice President - Land

RIVER RIDGE ENERGY, LLC

Name: Joel E. Symonds

Title: Vice President - Land

RIVER RIDGE HOLDINGS, LLC

Name: Joel E. Symonds

Title: Vice President - Land





December 19, 2018

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

Fribel

RE: Ownership of Roadways; J OSBORN HSOP 16

Dear Mr. Martin:

In preparation of filing a permit application for the above referenced well, the Title Department of Arsenal Resources has conducted a thorough title examination in order to determine the ownership of the oil and gas underlying all roadways crossed by the proposed wells. The findings of the title examination show that some of the roadways crossed by the proposed wells are owned in fee by the West Virginia Department of Transportation, Division of Highways and that some are only right of ways. If owned in fee by the West Virginia Department of Transportation, Division of Highways, a lease covering its interest in the roadway or roadways has been properly obtained and provided in the application materials. If a right of way only, the oil and gas underlying such roadway or roadways is owned by the adjoining landowners and is also covered by the leaseholds provided in the application materials.

If you have any questions, concerns or need further information, please do not hesitate to contact me at the address listed below.

Sincerely,

Hillary N. Priebel
Senior Title Reviewer

Office of Oil and Gas

DEC 2 1 2018

6031 Walace Road Ext, Suite 300V Department of Wexford, PA 15090
P: 724-940-1100
P: 800-428-0981
www.arsenalresources.com

04/12/2019

WW-6AC (1/12)

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

Date of Notice Certification: 12-20-18 API No. 47- 033 - Operator's Well No. J Osborn	HSOP16 203
Well Pad Name: J Osborn HS	
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:	1 D15 3 1 B11 K C C C 1111 D C C C C C C C C C C C C C
States West Virginia E67450 59	
County: Harrison UTM NAD 83 Pasting. 3074093.88 Northing: 4346578.59	
District: Simpson Public Road Access: 77/4 Moss Run (Cop)	lin Run)
Quadrangle: Rosemont Generally used farm name: Judy Osborn	
Watershed: Simpson Creek	
it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was de of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice red of this article have been completed by the applicant.	emed satisfied as a result six-a; or (iii) the notice er; and Pursuant to West
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:	OOC OFFICE USE
*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	RECEIVED
3. NOTICE OF INTENT TO DRILL or NOTICE 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 []	RECEIVED
■ 5. PUBLIC NOTICE	
	RECEIVED

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-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.

Certification of Notice is hereby given:

THEREFORE, I William Veigel , 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: Arsenal Resources

By: William Veigel

Its: Designated Agent

Telephone: 724-940-1218

Address: 6031 Wallace Road Extension, Suite 300

Wexford, PA 15090

Facsimile: 304-848-9134

Email: kdavis@arsenalresources.com

Subscribed and sworn before me this day of

Notary Public

My Commission Expires September 18, 2023

Notary Public, State Of West Virginia
KELLY A DAVIS
2142 Elk City Road
Jane Lew, WV 26378
My Commission Expires September 18, 2023

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 deprivacyofficer@wv.gov.

RECEIVED Office of Oil and Gas

DEC 2 1 2018

WW-6A (9-13) 4703305941
API NO. 47-033 - 04/12/2019
OPERATOR WELL NO. JOSHOM HSOP16 203
Well Pad Name: JOSHOM HSOP16

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

Not	ice Time Require	ment; notice shall be prov	ded no later than the filing date of permit application.
Dat	e of Notice: 🖳 🍳	Date Permit Applica	tion Filed: 12-20-18
Not	ice of:		
	PERMIT FOR A	NY D CERTIE	ICATE OF APPROVAL FOR THE
_	WELL WORK		RUCTION OF AN IMPOUNDMENT OR PIT
Deli	ivery method pur	suant to West Virginia C	ode § 22-6A-10(b)
	PERSONAL	☐ REGISTERED	✓ METHOD OF DELIVERY THAT REQUIRES A
	SERVICE	MAIL	RECEIPT OR SIGNATURE CONFIRMATION
sedi the so oil a desc oper mor well impo have prov prop subs reco prov Cod	ment control plan resurface of the tract and gas leasehold be bribed in the erosion rator or lessee, in the e coal seams; (4) The work, if the surface oundment or pit as a water well, springide water for construction (b) of this serds of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a resurface of the sheriff revision of this article e R. § 35-8-5,7,a results are the sheriff revision of this article e R. § 35-8-5,7,a results are the sheriff revision of this article e R. § 35-8-5,7,a results are the sheriff revision of this article e R. § 35-8-5,7,a results are the sheriff revision of the sheriff revision of this article e R. § 35-8-5,7,a results are the sheriff revision of the s	equired by section seven of on which the well is or is pre- eing developed by the propo- n and sediment control plan- ne event the tract of land on whe owners of record of the si- te tract is to be used for the pro- described in section nine of any or water supply source load amption by humans or dome- divity is to take place. (c)(1) ection hold interests in the languired to be maintained pur- te to the contrary, notice to a languires, in part, that the ope-	quires a receipt or signature confirmation, copies of the application, the erosion and this article, and the well plat to each of the following persons: (1) The owners of record of posed to be located; (2) The owners of record of the surface tract or tracts overlying the sed well work, if the surface tract is to be used for roads or other land disturbance as submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, which the well proposed to be drilled is located [sic] is known to be underlain by one or urface tract or tracts overlying the oil and gas leasehold being developed by the proposed dacement, construction, enlargement, alteration, repair, removal or abandonment of any this article; (5) Any surface owner or water purveyor who is known to the applicant to cated within one thousand five hundred feet of the center of the well pad which is used to stic animals; and (6) The operator of any natural gas storage field within which the if more than three tenants in common or other co-owners of interests described in nds, the applicant may serve the documents required upon the person described in the suant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any ien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. rator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any nd water testing as provided in section 15 of this rule.
	Application Notic	e ☑ WSSP Notice ☑ E&	èS Plan Notice ☑ Well Plat Notice is hereby provided to:
	URFACE OWNE	R(s)	☐ COAL OWNER OR LESSEE
	ne: See Attached		Name: See Attached
Add	lress:		Address:
Nan	ne:		COAL OPERATOR
6777	-		Address:
		R(s) (Road and/or Other D	sturbance)
		2 4 100 to 100 t	
Add	lress:		AND/OR WATER PURVEYOR(s)
			Name: See Attached
Nar	ne:		Address:
Add	iress:		OPERATOR OF ANY NATURAL GAS STORAGE FIELD
MS	URFACE OWNE	R(s) (Impoundments or Pit	
Nar	ne: See Attached		Address:
Add	iress:		*Please attach additional forms if necessary
			Trease attach additional forms it necessary

04/12/2019

OPERATOR WELL NO. JOSDOM HSOP16 203

Well Pad Name: J Osborn HSOP16

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

04/12/2019

OPERATOR WELL NO. J Osbom HSOP18 203

Well Pad Name: J Osborn HSOP16

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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.

WW-6A (8-13)

API NO. 47-033

04/12/2019

OPERATOR WELL NO. JOSEPH HSOP18 203

Well Pad Name: J Osborn HSOP16

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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



API NO. 47-033

04/12/2019

OPERATOR WELL NO. J Osborn HSOP16 203

Well Pad Name: J Osborn HSOP16

Notice is hereby given by:

Well Operator: Arsenal Resources

Telephone: 724-940-1218

Email: kdavis@arsenalresources.com

Address: 6031 Wallace Road Extension, Suite 300

Wexford, PA 15090

Facsimile: 304-848-9134

Oil and Gas Privacy Notice:

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

OFFICIAL SEAL
Notary Public, State Of West Virginia
KELLY A DAVIS
2142 Elk City Road
Jane Lew, WV 26378
My Commission Expires September 18, 2023

Subscribed and sworn before me this 20th day of December 2018

Notary Public

My Commission Expires September 18, 2023

Office of Oil and Gas

DEC 2 1 2018

Arsenal Resources J Osborn HSOP16 203 WW-6A – Notice of Application, Attachment

Surface Owner(s):

Judy M. Osborn (LE) 2665 Coplin Run Rd Bridgeport, WV 26330

Kevin T. Kimble and Rodney C. Kimble (LT), Co-Trustees of the Judy M. Osborn Irrevocable Trust 2665 Coplin Run Road Bridgeport, WV, 26330

Surface Owner(s) (Road and/or Other Disturbance):

Judy M. Osborn (LE) 2665 Coplin Run Rd Bridgeport, WV 26330

Kevin T. Kimble and Rodney C. Kimble (LT), Co-Trustees of the Judy M. Osborn Irrevocable Trust 2665 Coplin Run Road Bridgeport, WV, 26330

Surface Owner(s) (Impoundments or Pits):

Judy M. Osborn (LE) 2665 Coplin Run Rd Bridgeport, WV 26330

Kevin T. Kimble and Rodney C. Kimble (LT), Co-Trustees of the Judy M. Osborn Irrevocable Trust 2665 Coplin Run Road Bridgeport, WV, 26330

Coal Owner or Lessee:

Judy M. Osborn (LE) 2665 Coplin Run Road Bridgeport, WV, 26330

Kevin T. Kimble and Rodney C. Kimble (LT), Co-Trustees of the Judy M. Osborn Irrevocable Trust 2665 Coplin Run Road Bridgeport, WV, 26330

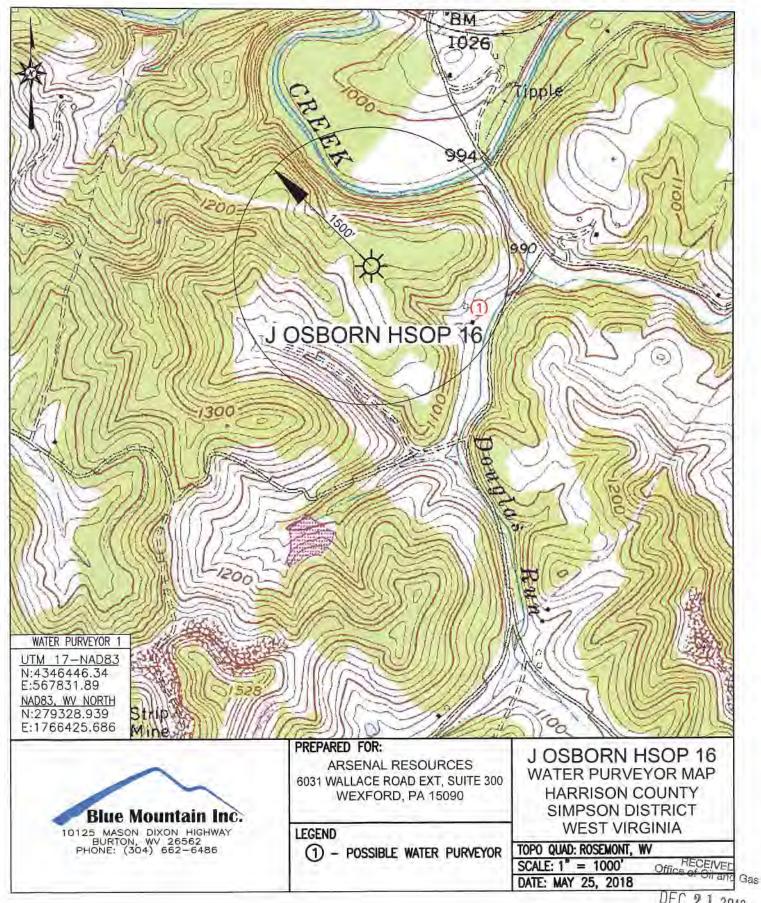
Surface Owner of Water Well and/or Water Purveyors(s):

Judy M. Osborn (LE) 2665 Coplin Run Rd Bridgeport, WV 26330

Kevin T. Kimble and Rodney C. Kimble (LT), Co-Trustees of the Judy M. Osborn Irrevocable Trust 2665 Coplin Run Road Bridgeport, WV, 26330 Office of Oil and Gas

DEC 2 1 2018

WV Department of Environmental Protection



DEC 2 1 2018



10125 Mason Dixon Hwy | Burton, WV 26562 Ph: (304) 662-6486 | Fax: (304) 662-6501

May 25, 2018

ARSENAL RESOURCES 6031 WALLACE ROAD EXTENSION, SUITE 300 WEXFORD, PA 15090

WATER WELL REPORT

PROJECT: J OSBORN HSOP 16

DISTRICT: Simpson COUNTY: Harrison STATE: West Virginia

The following surface owners may have water supplies within 1,500 feet of the above location:

NAME ADDRESS CITY, STATE, ZIP

1) Judy M. Osborn (LE) 2665 Coplin Run Rd Bridgeport, WV 26330

(Judy M. Osborn Irrevocable Trust)

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WV Department of Environmental Protection WW-6A3 (1/12)

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS NOTICE OF ENTRY FOR PLAT SURVEY

Secretary and the second	Water to the same to be to	*** . *** * * *	1.000 (1.10			
Delivery met	thod pursuant to	West Virginia C	ode § 22-6A-10a			
□ PERSONAL □ REGISTERED □		■ METHOD OF DEL	■ METHOD OF DELIVERY THAT REQUIRES A			
SERVIC		MAIL	RECEIPT OR SIGN	ATURE CONFIR	MATION	
on to the surf but no more to beneath such bowner of min and Sediment Secretary, when able the sur	ace tract to condo han forty-five da tract that has file erals underlying t Control Manual nich statement sho rface owner to ob	uct any plat surveys ys prior to such ent ed a declaration pur such tract in the co and the statutes an all include contact otain copies from the	s required pursuant to this as try to: (1) The surface owne suant to section thirty-six, a unty tax records. The notic of rules related to oil and ga- information, including the a	ticle. Such notice s r of such tract; (2) t rticle six, chapter to e shall include a sta s exploration and p	shall provide notice of planned entry shall be provided at least seven days to any owner or lessee of coal seams wenty-two of this code; and (3) any attement that copies of the state Erosion roduction may be obtained from the age on the Secretary's web site, to	
Votice is her	eby provided to	16				
SURFA	CE OWNER(s)		■ COA	LOWNER OR LE	SSEE	
	The Control of the Co		Name: Se	Attached		
Address:			Address:			
Name:						
Name: Address:		■ MINI	MINERAL OWNER(s) Name: See Attached			
		_ Name: Se				
Name:			_ Address:			
Address:			*please attac	h additional forms if ne	cessary	
Pursuant to V	on the tract of la		Approx. Latie	ude & Longitude:	operator is planning entry to conduct 39.266273, -80.217475 77/4 Moss Run (Coplin Run)	
	4.2. 400 100 100		NYT 4 1 4		Simpson Creek	
County:	Rosemont		Generally use	d farm name:	Judy Osborn	
County: District:			Department of Environment	I Protection headq	il and gas exploration and production uarters, located at 601 57 th Street, SE, elated to horizontal drilling may be	
may be obtai Charleston, V obtained fron	ned from the Sec VV 25304 (304-	926-0450). Copies y visiting <u>www.der</u>	o.wv.gov/oil-and-gas/pages/	default,aspx.		
County: District: Quadrangle: Copies of the may be obtai Charleston, V obtained from	ned from the Sec VV 25304 (304- in the Secretary bereby given by:	926-0450). Copies y visiting <u>www.de</u> g	o.wv.gov/oil-and-gas/pages/	default, aspx. 6031 Wallace Road Ext		
County: District: Quadrangle: Copies of the may be obtai Charleston, V	ned from the Sec VV 25304 (304- in the Secretary bereby given by:	926-0450). Copies y visiting <u>www.de</u> g	o.wv.gov/oil-and-gas/pages/	default,aspx.		

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 of the needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office wanted Gas 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.

WV Department of Environmental Protection

Arsenal Resources J Osborn HSOP16 203 WW-6A3 – Notice of Entry for Plat Survey

Surface Owner(s):

Judy M. Osborn (LE) 2665 Coplin Run Rd Bridgeport, WV 26330

Kevin T Kimble and Rodney C. Kimble (LT), Co-Trustees of the Judy M. Osborn Irrevocable Trust 2665 Coplin Run Road Bridgeport, WV, 26330

Coal Owner of Lessee:

Judy M. Osborn (LE) 2665 Coplin Run Road Bridgeport, WV, 26330

Kevin T Kimble and Rodney C. Kimble (LT), Co-Trustees of the Judy M. Osborn Irrevocable Trust 2665 Coplin Run Road Bridgeport, WV, 26330

Mineral Owner(s):

Judy M. Osborn (LE) 2665 Coplin Run Road Bridgeport, WV, 26330

Kevin T Kimble and Rodney C. Kimble (LT), Co-Trustees of the Judy M. Osborn Irrevocable Trust 2665 Coplin Run Road Bridgeport, WV, 26330

EIGG Land Limited P.O. Box 31 New Philadelphia, OH, 44663

Black Gold Group Limited P.O. Box 85 Strasburg, OH 46680

Office of Oil and Gas

DEC 2 1 2018

WV Department of Environmental Protection

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

Date of Notic				
Delivery met	hod pursuant to West Virginia C	Code §	22-6A-16(c)	
■ CERTU	FIED MAIL	П	HAND	
2,777	RN RECEIPT REQUESTED	_	DELIVERY	
return receipt the planned of required to be drilling of a l damages to th (d) The notice of notice.	requested or hand delivery, give to operation. The notice required by provided by subsection (b), section norizontal well; and (3) A propos- se surface affected by oil and gas of es required by this section shall be	he surface this son ten of ed surface peration given	ace owner whose land will be used to ubsection shall include: (1) A copy of this article to a surface owner who ace use and compensation agreements to the extent the damages are conto to the surface owner at the address li	ication, an operator shall, by certified mail for the drilling of a horizontal well notice of of this code section; (2) The information se land will be used in conjunction with the nt containing an offer of compensation for appensable under article six-b of this chapter, isted in the records of the sheriff at the time
	eby provided to the SURFACE (s listed in the records of the sheriff			
Name: See Atta		at me	Name:	
Address:			Address:	
Notice is her Pursuant to W	/est Virginia Code § 22-6A-16(c),	notice	is hereby given that the undersigned	well operator has developed a planned act of land as follows:
Pursuant to W operation on State: County:	/est Virginia Code § 22-6A-16(c),	notice arpose	is hereby given that the undersigned of drilling a horizontal well on the tr UTM NAD 83 Easting: Northing: Public Road Access:	well operator has developed a planned act of land as follows: 567469.58 4346578.59 77/4 Moss Run (Coplin Run)
Pursuant to Wooperation on	/est Virginia Code § 22-6A-16(c), the surface owner's land for the pu West Virginia Harrison	notice arpose	of drilling a horizontal well on the tr UTM NAD 83 Rorthing: Northing:	act of land as follows: 567469.58 4346578.59
Pursuant to Wooperation on State: County: District:	/est Virginia Code § 22-6A-16(c), the surface owner's land for the pu West Virginia Harrison Simpson	notice urpose	of drilling a horizontal well on the tr UTM NAD 83 Rorthing: Public Road Access:	act of land as follows: 567469.58 4346578.59 77/4 Moss Run (Coplin Run)
Pursuant to Woperation on State: County: District: Quadrangle: Watershed: This Notice S Pursuant to Wood to be provide horizontal we surface affect information in	Vest Virginia Code § 22-6A-16(c), the surface owner's land for the put West Virginia Harrison Simpson Rosemont Simpson Creek Shall Include: Vest Virginia Code § 22-6A-16(c), ed by W. Va. Code § 22-6A-10(b) ell; and (3) A proposed surface use ted by oil and gas operations to the lated to horizontal drilling may located at 601 57th Street, SE,	this no	of drilling a horizontal well on the treatment of tre	act of land as follows: 567469.58 4346578.59 77/4 Moss Run (Coplin Run)
Pursuant to Woperation on State: County: District: Quadrangle: Watershed: This Notice S Pursuant to Wood to be provide horizontal we surface affect information to headquarters, gas/pages/det	Vest Virginia Code § 22-6A-16(c), the surface owner's land for the provided by West Virginia Harrison Simpson Rosemont Simpson Creek Shall Include: Vest Virginia Code § 22-6A-16(c), and by W. Va. Code § 22-6A-10(b) and (3) A proposed surface used by oil and gas operations to the lated to horizontal drilling may located at 601 57th Street, SE, fault.aspx.	this no	Of drilling a horizontal well on the transport of drilling a horizontal well on the transport of the surface owner whose land will be compensation agreement containing a nt the damages are compensable unained from the Secretary, at the Wileston, WV 25304 (304-926-0450)	act of land as follows: 567469.58 4346578.59 77/4 Moss Run (Coplin Run) Judy Osborn a code section: (2) The information required used in conjunction with the drilling of a un offer of compensation for damages to the der article six-b of this chapter. Additional V Department of Environmental Protection
Pursuant to Woperation on State: County: District: Quadrangle: Watershed: This Notice S Pursuant to Wood be provide horizontal we surface affect information in headquarters, gas/pages/def	Vest Virginia Code § 22-6A-16(c), the surface owner's land for the put West Virginia Harrison Simpson Rosemont Simpson Creek Shall Include: Vest Virginia Code § 22-6A-16(c), ed by W. Va. Code § 22-6A-10(bell; and (3) A proposed surface use ted by oil and gas operations to the lated to horizontal drilling may located at 601 57th Street, SE, fault.aspx. Arsenal Resources	this no	of drilling a horizontal well on the transport of drilling a horizontal well on the transport of the surface owner whose land will be compensation agreement containing a not the damages are compensable unained from the Secretary, at the Wileston, WV 25304 (304-926-0450)	act of land as follows: 567469.58 4346578.59 77/4 Moss Run (Coplin Run) Judy Osborn s code section; (2) The information required used in conjunction with the drilling of a un offer of compensation for damages to the der article six-b of this chapter. Additional V Department of Environmental Protection or by visiting www.dep.wv.gov/oil-and-dextension, Suite 300
Pursuant to Woperation on State: County: District: Quadrangle: Watershed: This Notice S Pursuant to Wood to be provide horizontal we surface affect information theadquarters, gas/pages/det	Vest Virginia Code § 22-6A-16(c), the surface owner's land for the provided by West Virginia Harrison Simpson Rosemont Simpson Creek Shall Include: Vest Virginia Code § 22-6A-16(c), and by W. Va. Code § 22-6A-10(b) and (3) A proposed surface used by oil and gas operations to the lated to horizontal drilling may located at 601 57th Street, SE, fault.aspx.	this no	of drilling a horizontal well on the tree Leasting: Output NAD 83 Easting: Northing: Public Road Access: Generally used farm name: Detice shall include: (1)A copy of this surface owner whose land will be compensation agreement containing a number of the damages are compensable unained from the Secretary, at the Willeston, WV 25304 (304-926-0450) Address: 6031 Wallace Road	act of land as follows: 567469.58 4346578.59 77/4 Moss Run (Coplin Run) Judy Osborn s code section; (2) The information required used in conjunction with the drilling of a un offer of compensation for damages to the der article six-b of this chapter. Additional V Department of Environmental Protection or by visiting www.dep.wv.gov/oil-and-dextension, Suite 300

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 deprivacyofficer@wv.gov.

Office of Oil and Gas

DEC 2 1 2018

WV Department of Environmental Protection

Arsenal Resources J Osborn HSOP16 203 WW-6A5 – Notice of Planned Operation, Attachment

Surface Owner(s):

Judy M. Osborn (LE) 2665 Coplin Run Rd Bridgeport, WV 26330

Kevin T. Kimble and Rodney C. Kimble (LT), Co-Trustees of the Judy M. Osborn Irrevocable Trust 2665 Coplin Run Road Bridgeport, WV, 26330



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION **Division of Highways**

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

September 25, 2018

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

Jill M. Newman **Deputy Commissioner**

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

Subject: DOH Permit for the J. Osborn Pad, Harrison County

J. Osborn HSOP 16 - 203 Well Site

Dear Mr. Martin,

The West Virginia Division of Highways has issued Permits #04-2018-0869 for the subject site to ARSENAL Resources for access to the State Road for the well site located off of Harrison County 77/4 SLS.

The operator has signed a DISTRICT WIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT for DOH District 4 and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Say K. Clay tow

Gary K. Clayton

Regional Maintenance Engineer

Central Office Oil &Gas Coordinator

Kelly Davis Cc:

ARSENAL Resources

CH, OM, D-4

File

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WV Department of Environmental Protection

WellName # J Osborn HSOP16 203					
	FRACTURING ADDITIVES				
	PURPOSE	TRADE NAME	CAS#		
Additive #1:	Friction Reducer	WFRA-405	Proprietary		
Additive #2:	Scale Inhibitor	SI-1000	7440-21-3		
Additive #3:	Biocide	BIOCLEAR 2000	25314-61-8		
Additive #4:	Gelling Agent	LGC-15	9000-30-0		
Additive #5:	Corrosion Inhibitor	Al-300	111-76-2		
Additive #6:	· Gel Breaker	AP-One	7727-54-0		
Additive #7:	Acid	HCI - 7.5%	7647-01-0		

Office of Oil and Gas

DEC 2 1 2018

WW Department of Environmental Protection



LOCATION MAP

PROPERTY OWNERS

I. JUDY M. OSBORN

ENTRANCE PERMIT

ARSENAL RESOURCES WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION

MISS UTILITY

MISS UTILITY OF WEST VIRGINIA WAS NOTIFIED FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN (TICKET No. 181543745). IN ADDITION, MISS UTILITY WILL BE CONTACTED PRIOR TO THE START OF THE PBB.IFPT.

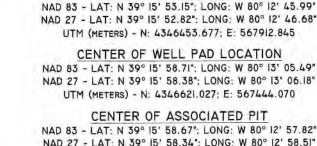
FLOODPLAIN NOTE

THE PROPOSED LIMITS OF DISTURBANCE FOR THIS PROJECT ARE NOT LOCATED IN A FLOOD ZONE, PER THE FLOOD INSURANCE RATE MAP (FIRM) NUMBERS 54033C0188D & 54033C0189D.

SITE LOCATION

STARTING ON CR 23/9 (PHILIPPI PIKE MF 0.0) HEAD SOUTHEAST FOR APPROXIMATELY 4.70 MILES. TURN LEFT HEADING NORTHEAST ON TO CR 23/4 (MOSS RUN) FOR 0.5 MILES. THEN STAY LEFT ON CR 77/4 AND THE SITE ENTRANCE WILL BE ON THE RIGHT ROUGHLY 2.7 MILES FROM INTERSECTION CR 77/4 & CR 23/4.

SHEET INDEX			
DWG #	DRAWING NAME		
	COVER SHEET		
2	GENERAL NOTES (I OF 2)		
3	GENERAL NOTES (2 OF 2)		
4	HALF-MILE BOUNDARY MAP		
5	EXISTING CONDITIONS		
6	OVERALL PROPOSED SITE PLAN		
7	OVERALL PROPOSED SITE PLAN W/ ORTHO		
8	DETAILED PROPOSED SITE PLAN (I OF 3)		
9	DETAILED PROPOSED SITE PLAN (2 OF 3)		
10	DETAILED PROPOSED SITE PLAN (3 OF 3)		
- 11	ACCESS ROAD PROFILES		
12	ACCESS ROAD TYPICAL SECTIONS		
13	ACCESS ROAD CROSS SECTIONS (I OF 3)		
14	ACCESS ROAD CROSS SECTIONS (2 OF 3)		
15	ACCESS ROAD CROSS SECTIONS (3 OF 3)		



SHEET INDEX

DRAWING NAME

WELL PAD & ASSOCIATED PIT SECTIONS

STOCKPILE SECTIONS

RECLAMATION SITE PLAN

LEAK DETECTION SYSTEM DETAILS

SUMP & UNDERDRAIN DETAILS

CONSTRUCTION DETAILS (I OF 4)

CONSTRUCTION DETAILS (2 OF 4)

CONSTRUCTION DETAILS (3 OF 4)

CONSTRUCTION DETAILS (4 OF 4)

MATERIAL QUANTITIES

DWG #

16

18

19

20

21

22

23

24

25

NAD 83 - LAT: N 39° 15' 58.67"; LONG: W 80° 12' 57.82" NAD 27 - LAT: N 39° 15' 58.34"; LONG: W 80° 12' 58.51" UTM (METERS) - N: 4346621.384; E: 567627.879

ARSENAL

ARSENAL RESOURCES 6031 WALLACE ROAD EXT. WEXFORD, PA 15090

J. OSBORN HSOP 16 WELL SITE

ENTRANCE LOCATION

SIMPSON DISTRICT. HARRISON COUNTY, WEST VIRGINIA

DATE: JUNE 25, 2018



Engineers and Land Surveyors 11023 Mason Dixon Hwy. Burton, WV 26562-9656 (304) 662-6486



NOTE: DRAWING WAS CREATED ON 22x34 PAPER. IIXI7 DRAWINGS ARE HALF SCALE. REFER TO SCALE BAR FOR PROPER SCALING.





LOCATION MAP

ENVIRONMENTAL NOTES

A WETI AND DELINEATION WAS PERFORMED ON THE DATES OF APRIL 26, 2018 & MAY 30, 2018 BY BLUE MOUNTAIN INC. TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, THE JUNE 28, 2018 REPORT FOR THE J. OSBORN HSOP 16 WELL SITE, WHICH WAS PREPARED BY BLUE MOUNTAIN INC. SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE REPORT DOES NOT. IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR WYDEP. IT IS STRONGLY RECOMMENDED THAT THE AFOREMENTIONED AGENCIES BE CONSULTED IN AN FEFORT TO GAIN CONFIRMATION OF THE DELINEATION DESCRIBED BY THE REPORT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPED SHALL ORTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CROSSINGS

GEOTECHNICAL NOTES

TO BE CONDUCTED

RESTRICTIONS

- 1. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300' OF THE PAD & LOD.
- 2. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000' OF THE PAD AND LOD
- 3. THERE ARE NO EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' OF THE WELLS BEING DRILLED 4. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625' OF THE
- 5. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FFET WITHIN 625' OF THE CENTER OF THE PAR

I DO HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF. THAT THE EROSION AND SEDIMENT CONTROL PLAN AND SITE RESTORATION PLAN AND POST CONSTRUCTION BMPS ARE TRUE AND CORRECT, REPRESENT ACTUAL FIELD CONDITIONS AND ARE IN ACCORDANCE WITH THE WEST VIRGINIA CODE AND THE DEPARTMENT'S RULES AND REGULATIONS. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBHITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT.

William 820 DATE: 06/25/2018 **Blue Mountain**

OSBORN HSOP 16 WELL SITE COVER SHEET



REVISION

SHEET NO. I

