

09/28/2018



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, September 28, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

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

Re: Permit approval for J OSBORN HSOP 16 204
47-033-05931-00-00

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

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

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

James A. Martin
Chief

A handwritten signature in blue ink, appearing to read 'James A. Martin', is positioned to the right of the printed name and title.

Operator's Well Number: J OSBORN HSOP 16 204
Farm Name: JUDY M OSBORN (LE) (JUDY
U.S. WELL NUMBER: 47-033-05931-00-00
Horizontal 6A New Drill
Date Issued: 9/28/2018

Promoting a healthy environment.

PERMIT CONDITIONS

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

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

API Number:

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4703305931

PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.

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WW-6AW
(1-12)

API NO. 47- 033 -
OPERATOR WELL NO. Wells on Pad
Well Pad Name: J Osborn HSOP16

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
VOLUNTARY STATEMENT OF NO OBJECTION

Instructions to Persons Named on Page WW-6A

The well operator named on page WW-6A is applying for a permit from the State of West Virginia to conduct oil or gas well work. Well work permits are valid for twenty-four (24) months. Please contact the listed well operator and the Office of Oil and Gas if you do not own any interest in the listed surface tract.

Comment and Waiver Provisions

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.

Pursuant to West Virginia Code § 22-6A-8(b) No permit may be issued less than thirty days after the filing date of the application for any well work except plugging or replugging; and no permit for plugging or replugging may be issued less than five days after the filing date of the application except a permit for plugging or replugging a dry hole: *Provided*, That if the applicant certifies that all persons entitled to notice of the application under the provisions of subsection (b), section ten of this article have been served in person or by certified mail, return receipt requested, with a copy of the well work application, including the erosion and sediment control plan, if required, and the well plat, and further files written statements of no objection by all such persons, the secretary may issue the well work permit at any time.

VOLUNTARY STATEMENT OF NO OBJECTION

I, Judy M. Osborn (LE), hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83 Easting:	<u>587444.070</u>
County:	<u>Harrison</u>	UTM NAD 83 Northing:	<u>4348621.027</u>
District:	<u>Simpson - Outside</u>	Public Road Access:	<u>77/4 Moss Run (Coplin Run)</u>
Quadrangle:	<u>Rosemont</u>	Generally used farm name:	<u>Judy M. Osborn</u>
Watershed:	<u>Simpson Creek</u>		

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

<p>*Please check the box that applies</p> <p><input checked="" type="checkbox"/> SURFACE OWNER</p> <p><input checked="" type="checkbox"/> SURFACE OWNER (Road and/or Other Disturbance)</p> <p><input checked="" type="checkbox"/> SURFACE OWNER (Impoundments/Pits)</p> <p><input checked="" type="checkbox"/> COAL OWNER OR LESSEE</p> <p><input type="checkbox"/> COAL OPERATOR</p> <p><input checked="" type="checkbox"/> WATER PURVEYOR</p> <p><input type="checkbox"/> OPERATOR OF ANY NATURAL GAS STORAGE FIELD</p>	<p>FOR EXECUTION BY A NATURAL PERSON</p> <p>Signature: <u>Judy M Osborn</u></p> <p>Print Name: <u>Judy M Osborn</u></p> <p>Date: <u>7/2/18</u></p> <p>FOR EXECUTION BY A CORPORATION, ETC.</p> <p>Company: _____</p> <p>By: _____</p> <p>Its: _____</p> <p>Signature: _____</p> <p>Date: _____</p> <p style="text-align: center;">RECEIVED Office of Oil and Gas</p>
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Oil and Gas Privacy Notice:

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

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WW-6-AW

Arsenal Resources
J Osborn HSOP16 Wells on Pad
Voluntary Statement of No Objection (Attachment)

Operator Well Number: J Osborn HSOP16 201, J Osborn HSOP16 202, J Osborn HSOP16 203,
J Osborn HSOP16 204, J Osborn HSOP16 211, J Osborn HSOP16 212, J Osborn HSOP16 213,
J Osborn HSOP16 214

UTM Coordinate NAD83 Northing: 4346582.31, 4346580.45, 4346578.59, 4346576.73,
4346642.31, 4346646.48, 4346650.66, 4346654.84

UTM Coordinate NAD83 Easting: 567461.23, 567465.40, 567469.58, 567473.75, 567411.35,
567413.20, 567415.06, 567416.91

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

1) Well Operator: Arsenal Resources 494519412 Harrison Simpson Rosemont
Operator ID County District Quadrangle

2) Operator's Well Number: J Osborn HSOP16 204 Well Pad Name: J Osborn HSOP16

3) Farm Name/Surface Owner: Judy M. Osborn (LE) Public Road Access: 77/4 Moss Run (Coplin Run)

4) Elevation, current ground: 1163.14' Elevation, proposed post-construction: 1163.30'

5) Well Type (a) Gas Oil _____ Underground Storage _____

Other _____

(b) If Gas Shallow Deep _____

Horizontal _____

*SDW
6/26/2018*

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation- Marcellus Shale, Top- 7020.3 ft, Bottom- 7120.3 ft, Anticipated Thickness- 100 ft, Associated Pressure- 0.5 psi/ft

8) Proposed Total Vertical Depth: 7219.3 ft (Pilot); 7108.3 ft (Lateral)

9) Formation at Total Vertical Depth: Huntersville Chert (Pilot); Marcellus Shale (Lateral)

10) Proposed Total Measured Depth: 24,574.02 ft

11) Proposed Horizontal Leg Length: 17,098.5 ft

12) Approximate Fresh Water Strata Depths: 43 ft, 258 ft, 356 ft, 539 ft, 725 ft

13) Method to Determine Fresh Water Depths: offsetting wells reported water depths (033-02179, 033-02507, 033-02975)

14) Approximate Saltwater Depths: None Expected

15) Approximate Coal Seam Depths: Harlem - 146', Bakerstown - 227', Brush Creek - 326', Upper Freeport - 399', Lower Freeport - 437', Upper Kittanning - 527', Middle Kittanning - 590', Lower Kittanning - 611'

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

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

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

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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	80	80	CTS
Fresh Water	13.375	New	J-55	54.5	800	800	CTS
Coal							
Intermediate	9.625	New	J-55	40	1,500	1,500	CTS
Production	5.5	New	P-110	23	24,574	24,574	TOC @ 1,350
Tubing							
Liners							

*SDW
6/26/2018*

TYPE	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 JUN 28 2018 WV Department of Environmental Protection
Sizes:				
Depths Set:				

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 1/2" 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- 1/4" intermediate hole to the programmed depth, run 9- 5/8" casing and cement to surface. The rig will then continue to drill an 8- 3/4" 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 1/2" 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 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 to set 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 continuously rotated while pumping 2x bottoms up. We will pull three stands and fill the hole until we reach the vertical section of the well.

*Note: Attach additional sheets as needed.

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J Osborn HSOP16 #204		
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 Dispersant	Used to improve rheological properties of cement
Additive #7:	Cellulose	Help with fluid loss

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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 the J Osborn HSOP16 Pad, well # 204.

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 formation (approximately 4,900' 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:

1. Inspect their surface equipment prior to fracturing to establish integrity and establish pre-frac 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.
4. Notify the OOG and ARSENAL RESOURCES if any changes in water, gas production, pressure or other anomalies are identified.

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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.

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BHL is located on topo map 8,490 feet south of Latitude: 39°15'00"
 SHL is located on topo map 9,383 feet south of Latitude: 39°10'00"

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BHL is located on topo map 10,894 feet west of Longitude: 80°10'00"
 SHL is located on topo map 2,695 feet west of Longitude: 80°12'30"

	SURFACE OWNER	DIST-TM/PAR
1	JUDY M. OSBORN (LE) (JUDY M. OSBORN IRREVOCABLE TRUST)	15-330/5
2	CHARLES THOMAS DAVIS, II ET AL	15-330/5.1
3	CHARLES E. REED 1/2 INTEREST GERALD W. BURNER ET AL 1/2 INTEREST	15-330/25
4	SCOT S. & LYNN B. DIERINGER	15-330/26
5	GOBEL G. OSBORN, JR. (LE), BRUCE, MICHAEL & JASON OSBORN	15-350/6
6	R. MARK & DIANA I. HACKETT	15-350/18
7	BRIAN J. & ANDREA L. MILLS	15-350/17.6
8	BRIAN J. & ANDREA L. MILLS	15-350/17.7
9	BRIAN J. & ANDREA L. MILLS	15-350/17.5
10	GARY & MARGARET WHEELER	15-350/17.2
11	LEWIS FRANKLIN & PAMELA MULLEN	15-350/27
12	EIP III WEST VIRGINIA LLC	15-370/14
13	EIP III WEST VIRGINIA LLC	15-371/1
14	EIP III WEST VIRGINIA LLC	15-371/13
15	SHAWN R. NEWBROUGH	15-370/21
16	EIP III WEST VIRGINIA LLC	15-371/7
17	EIP III WEST VIRGINIA LLC	15-371/7.1
18	EIP III WEST VIRGINIA LLC	15-370/29

	LESSOR	DIST-TM/PAR
A	GOBEL OSBORN, ET AL	15-330/5
B	J. EARL TETER, WIDOWER, ET AL	15-330/5.1
C	JOHN B. WEBB, ET AL	15-330/25
D	MARY ALICE HAFER	15-330/26
E	ALDERSON BROADBENT COLLEGE & AMP FUND III, LP	15-350/6
F	MARY LANCASTER CASTLOW ET AL	15-350/18
G	REBECCA A. COMPTON; JAMES MICHAEL COMPTON & JENNIFER NORA COMPTON	15-350/17.7 15-350/17.5 15-350/17.2
H	LEWIS FRANKLIN MULLEN	15-350/27
J	W. R. JOHNSON ET AL	15-370/14 15-371/1 15-371/7 15-371/7.1
K	N. D. PARKS ET AL W. R. JOHNSON ET AL	15-370/21 15-371/7



SURFACE HOLE LOCATION (SHL)	APPROX. LANDING POINT	BOTTOM HOLE LOCATION (BHL)
UTM 17-NAD83 N:4346576.73 E:567473.75 NAD83, WV NORTH N:279776.336 E:1765257.611 LAT/LON DATUM=NAD83 LAT:39.265908 LON:-80.217853	UTM 17-NAD83 N:4346403.92 E:567567.39 NAD83, WV NORTH N:279204.187 E:1765555.440 LAT/LON DATUM=NAD83 LAT:39.264342 LON:-80.216783	UTM 17-NAD83 N:4341508.06 E:569349.27 NAD83, WV NORTH N:263041.779 E:1771135.342 LAT/LON DATUM=NAD83 LAT:39.220089 LON:-80.196633



SEE PAGE 2 FOR PLAT DUE TO LENGTH OF LATERAL

FILE #: J OSBORN HSOP 16 204
 DRAWING #: J OSBORN HSOP 16 204
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: *George D. Six*
 R.P.E.: _____ L.L.S.: P.S. No. 2000

DATE: JUNE 8, 2018
 OPERATOR'S WELL #: J OSBORN HSOP 16 204
 API WELL #: 47 33
 STATE COUNTY PERMIT

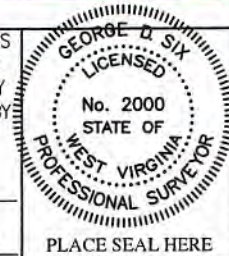
WATERSHED: SIMPSON CREEK ELEVATION: 1163.30'±
 COUNTY/DISTRICT: HARRISON / SIMPSON QUADRANGLE: ROSEMONT, WV 7.5'
 SURFACE OWNER: JUDY M OSBORN (LE) (JUDY M OSBORN IRREVOCABLE TRUST) ACREAGE: 70.00±
 OIL & GAS ROYALTY OWNER: GOBEL OSBORN, ET AL ACREAGE: 1221.003±

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

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

TARGET FORMATION: MARCELLUS (LATERAL), HUNTERSVILLE CHERT (PILOT HOLE) ESTIMATED DEPTH: (PILOT HOLE)TVD: 7,219.3'±
 (LATERAL)TVD: 7,108.3'± TMD: 24,574.02'±

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



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AOR - ATTACHMENT "A"

Area of Review Report - **J Osborn HSOP 16** Pad, **204** Lateral, **Harrison** County, WV

Well Name	API Number	Operator Name / Address	Well Type	Latitude	Longitude	Total Depth	Perforated Formation(s)	Producing Zones not Perforated
Patton-Steele 2	033-01172	Alliance Petroleum Corporation	Existing	39.229628	-80.200574	4690	Fifth, Benson	NA
Patton & Lang 1	033-00470	Alliance Petroleum Corporation	Existing	39.233982	-80.201133	2508	Fifth	NA
Patton - Lang 2	033-01140	Alliance Petroleum Corporation	Existing	39.234998	-80.204674	4808	Benson	NA
MA Hafer et al 1	033-01223	Alliance Petroleum Corporation	Existing	39.253442	-80.210755	4560	Speechley, Benson	NA

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ADR - ATTACHMENT "A"

09/28/2018



ARSENAL 4703305931
R E S O U R C E S

Click or tap to enter a date.

Alliance Petroleum Corporation

Address

State

RE: Click or tap here to enter text.

Dear Sir/Madam,

Arsenal Resources has developed a Marcellus pad, the J Osborn HSOP16 Pad, well #204, 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 J Osborn HSOP16 Pad, well #204 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.
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.
4. 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 724-940-1224 with any questions or comments. You may also contact the WV Office of Oil and Gas at 304-926-0499.

Sincerely,

Carolinda Flanagan
Permitting Specialist

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AOR - ATTACHMENT "B"

WW-9
(4/16)

09/28/2018

API Number 47 - 033 - 05931
Operator's Well No. J Osborn HSOP16 204

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 complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: Produced 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:

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

*SDW
6/26/2018*

Will closed loop system be used? If so, describe: Yes, the closed 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 horizontal)? 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 & Polymer Sticks, Soda Ash, Sodium Bicarbonate, Defoamer, Base Oil, Emulsifiers, Lime Barite

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

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

-Landfill or offsite name/permit number? Meadowfill Landfill/Waste Management, Westmoreland Sanitary Landfill, and Apex Landfill

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

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

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

Company Official Signature *William Veigel*

Company Official (Typed Name) William Veigel

Company Official Title Designated Agent

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Subscribed and sworn before me this 26TH day of JUNE, 20 18

Carolinda
My commission expires 9/15/2021



Arsenal Resources

Proposed Revegetation Treatment: Acres Disturbed 17.26 Prevegetation pH 6.8 Average

Lime 2.67 Tons/acre or to correct to pH 6.4

Fertilizer type 10-20-20

Fertilizer amount 1000 lbs/acre

Mulch 3-4 Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Orchard Grass	129
Rye	93
Clover	24
Timothy	45

Seed Type	lbs/acre
Orchard Grass	129
Rye	93
Clover	24
Timothy	45

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: S. D. Ward

Comments: Re-seed and mulch all disturbed areas as soon as reasonably possible per regulation. Upgrade erosion and sediment control measures where needed per the West Virginia Erosion and Sediment Control Field Manual.

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Title: OOG Inspector Date: 6/26/2018

Field Reviewed? Yes No

09/28/2018

4703305931



ARSENAL

R E S O U R C E S

SITE SAFETY PLAN

LOSORN HSOP16 WELL PAD, #204

911 Address:

**2687 Coplin Run Rd
Bridgeport, WV 26330**

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6/28/2018
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BHL is located on topo map 8,490 feet south of Latitude: 39° 15' 00"
 SHL is located on topo map 9,383 feet south of Latitude: 39° 17' 30"

BHL is located on topo map 10,894 feet west of Longitude: 80° 10' 00"
 SHL is located on topo map 2,695 feet west of Longitude: 80° 12' 30"

09/28/2018

	SURFACE OWNER	DIST-TM/PAR
1	JUDY M. OSBORN (LE) (JUDY M. OSBORN IRREVOCABLE TRUST)	15-330/5
2	CHARLES THOMAS DAVIS, II ET AL	15-330/5.1
3	CHARLES E. REED 1/2 INTEREST GERALD W. BURNER ET AL 1/2 INTEREST	15-330/25
4	SCOT S. & LYNN B. DIERINGER	15-330/26
5	GOBEL G. OSBORN, JR. (LE), BRUCE, MICHAEL & JASON OSBORN	15-350/6
6	R. MARK & DIANA I. HACKETT	15-350/18
7	BRIAN J. & ANDREA L. MILLS	15-350/17.6
8	BRIAN J. & ANDREA L. MILLS	15-350/17.7
9	BRIAN J. & ANDREA L. MILLS	15-350/17.5
10	GARY & MARGARET WHEELER	15-350/17.2
11	LEWIS FRANKLIN & PAMELA MULLEN	15-350/27
12	EIP III WEST VIRGINIA LLC	15-370/14
13	EIP III WEST VIRGINIA LLC	15-371/1
14	EIP III WEST VIRGINIA LLC	15-371/13
15	SHAWN R. NEWBROUGH	15-370/21
16	EIP III WEST VIRGINIA LLC	15-371/7
17	EIP III WEST VIRGINIA LLC	15-371/7.1
18	EIP III WEST VIRGINIA LLC	15-370/29

	LESSOR	DIST-TM/PAR
A	GOBEL OSBORN, ET AL	15-330/5
B	J. EARL TETER, WIDOWER, ET AL	15-330/5.1
C	JOHN B. WEBB, ET AL	15-330/25
D	MARY ALICE HAFER	15-330/26
E	ALDERSON BROADDUS COLLEGE & AMP FUND III, LP	15-350/6
F	MARY LANCASTER CASTLOW ET AL	15-350/18
G	REBECCA A. COMPTON; JAMES MICHAEL COMPTON & JENNIFER NORA COMPTON	15-350/17.7 15-350/17.5 15-350/17.2
H	LEWIS FRANKLIN MULLEN	15-350/27
J	W. R. JOHNSON ET AL	15-370/14 15-371/1 15-371/7 15-371/7.1
K	N. D. PARKS ET AL W. R. JOHNSON ET AL	15-370/21 15-371/7



SURFACE HOLE LOCATION (SHL)
 UTM 17-NAD83
 N:4346576.73
 E:567473.75
 NAD83, WV NORTH
 N:279776.336
 E:1765257.611
 LAT/LON DATUM-NAD83
 LAT:39.265908
 LON:-80.217853

APPROX. LANDING POINT
 UTM 17-NAD83
 N:4346403.92
 E:567567.39
 NAD83, WV NORTH
 N:279204.187
 E:1765555.440
 LAT/LON DATUM-NAD83
 LAT:39.264342
 LON:-80.216783

BOTTOM HOLE LOCATION (BHL)
 UTM 17-NAD83
 N:4341508.06
 E:569349.27
 NAD83, WV NORTH
 N:263041.779
 E:1771135.342
 LAT/LON DATUM-NAD83
 LAT:39.220089
 LON:-80.196633

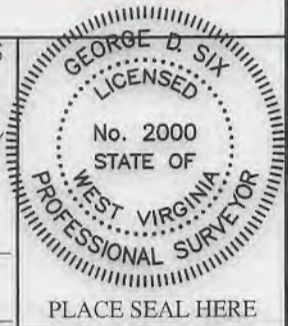


SEE PAGE 2 FOR PLAT DUE TO LENGTH OF LATERAL

FILE #: J OSBORN HSOP 16 204
 DRAWING #: J OSBORN HSOP 16 204
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: George D. Six
 R.P.E.: _____ L.L.S.: P.S. No. 2000



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



DATE: JUNE 8, 2018
 OPERATOR'S WELL #: J OSBORN HSOP 16 204
 API WELL #: 47 33 05931
 STATE COUNTY PERMIT

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

WATERSHED: SIMPSON CREEK ELEVATION: 1163.30'±
 COUNTY/DISTRICT: HARRISON / SIMPSON QUADRANGLE: ROSEMONT, WV 7.5'

SURFACE OWNER: JUDY M OSBORN (LE) (JUDY M OSBORN IRREVOCABLE TRUST) ACREAGE: 70.00±
 OIL & GAS ROYALTY OWNER: GOBEL OSBORN, ET AL ACREAGE: 1221.003±

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

TARGET FORMATION: MARCELLUS (LATERAL), HUNTERSVILLE CHERT (PILOT HOLE) ESTIMATED DEPTH: (LATERAL)TVD: 7,108.3'± TMD: 24,574.02'±
 (PILOT HOLE)TVD: 7,219.3'±

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

J OSBORN HSOP 16 204

PAGE 2 OF 2

SURFACE HOLE LOCATION (SHL)
UTM 17-NAD83
 N:4346576.73
 E:567473.75
 NAD83, WY NORTH
 N:279776.336
 E:1765257.611
 LAT/LON DATUM-NAD83
 LAT:39.265908
 LON:-80.217853

09/28/2018

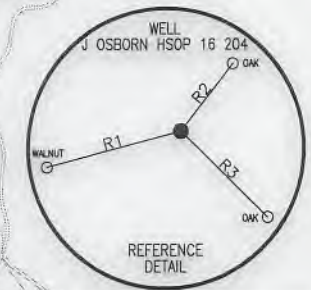
UTM 17-NAD83
 N:4346403.92
 E:567587.39
 NAD83, WY NORTH
 N:279204.187
 E:1765555.440
 LAT/LON DATUM-NAD83
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BOTTOM HOLE LOCATION (BHL)
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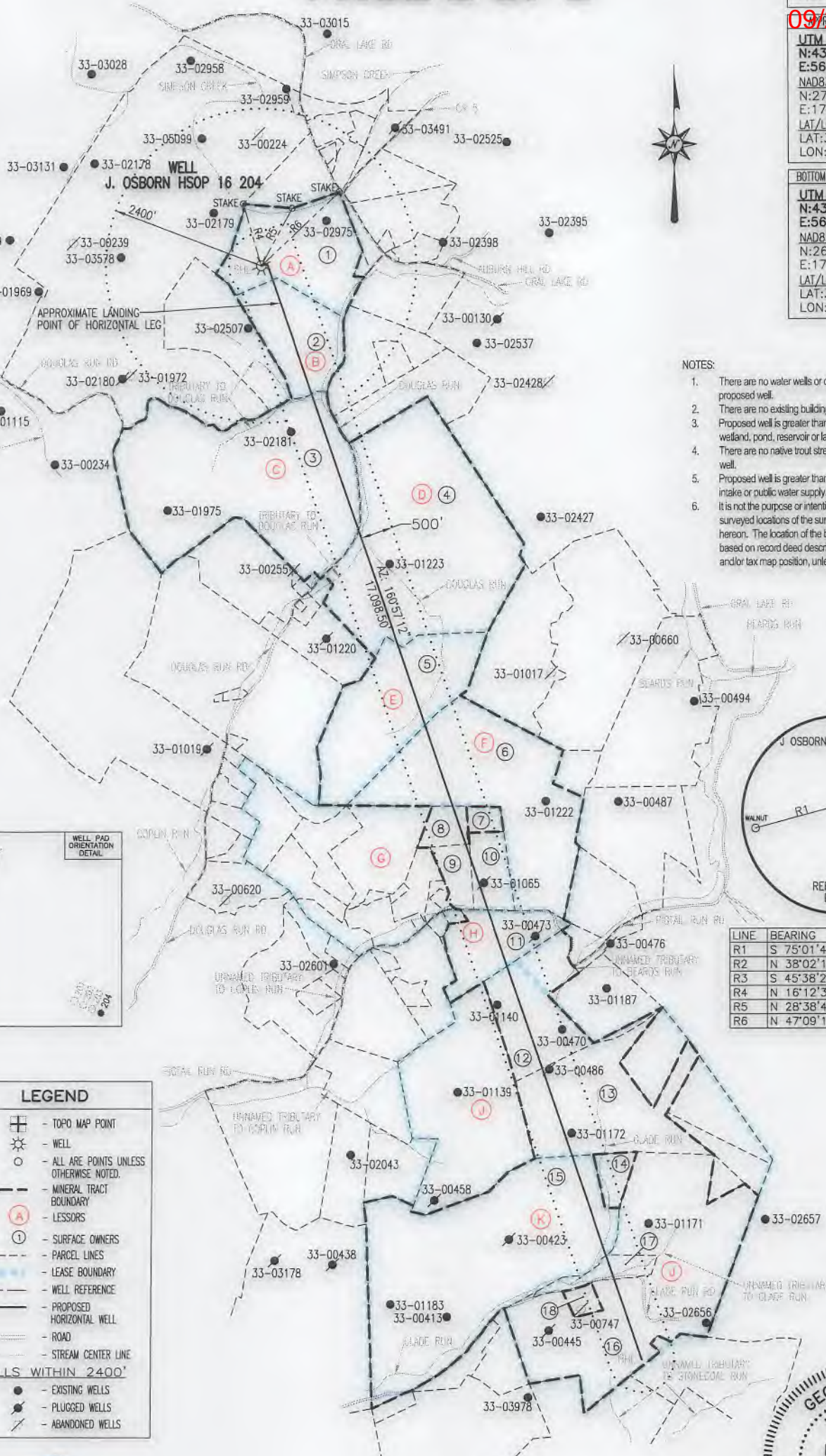


NOTES:

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



LINE	BEARING	DISTANCE
R1	S 75°01'49" W	239.42'
R2	N 38°02'10" E	146.01'
R3	S 45°38'28" E	209.94'
R4	N 16°12'31" W	984.02'
R5	N 28°38'48" E	997.40'
R6	N 47°09'11" E	1651.96'



LEGEND

- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED.
- MINERAL TRACT BOUNDARY
- LESSORS
- SURFACE OWNERS
- PARCEL LINES
- LEASE BOUNDARY
- WELL REFERENCE
- PROPOSED HORIZONTAL WELL
- ROAD
- STREAM CENTER LINE

WELLS WITHIN 2400'

- EXISTING WELLS
- PLUGGED WELLS
- ABANDONED WELLS



JUNE 8, 2018

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

47-033-05931

George D. Six

WW-6A1
(5/13)

Operator's Well No. J Osborn HSOP16 204

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

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

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

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

See Attached

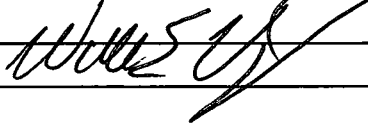
**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

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

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

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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

Attachment to WW-6A1, J Osborn HSOP16 204

4703305931

Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
A (00003704)	Gobel Osborn and Audrey Osborn, his wife & 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	
B (00003703)	J. Earl Teter, Widower, Irvin D. Teter and Vera Teter, his wife	Petro-Lewis Corp.	12.50%	1062/405	116
	Petro-Lewis Corp.	Partnership Properties Co.		1072/213	
	Partnership Properties Co.	Eastern American Energy Corporation		1124/449	
	Eastern American Energy Corporation	Petroleum Development Corporation		1134/83	
	Petroleum Development Corporation	PDC Mountaineer, LLC		1440/364	
	PDC Mountaineer, LLC	River Ridge Energy LLC		59/1263	
C (00008340)	John B. Webb and Tensie Webb, his wife & William W. Webb and Opal Webb, his wife	Delaware Gas company	12.50%	820/19	188
	Delaware Gas company	Union Carbide Corporation		845/221	
	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	
	Delta Producing Corporation	Petroleum Corporation of America		977/168	

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Attachment to WW-6A1, J Osborn HSOP16 204

Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
	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	
D (00004022)	Mary Alice Hafer	Petroleum Development Corporation	12.50%	1048/294	250
	Petroleum Development Corporation	PDC Mountaineer, LLC		1440/364	
	PDC Mountaineer, LLC	River Ridge Energy LLC		59/1263	
D (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	
E (00006680)	DWG Oil & Gas Acquisitions, LLC	Mar Key, LLC	15%	1561/493	86
E (00008356)	Trustees for Alderson Broaddus University, f/k/a Alderson Broaddus College	Mar Key LLC	13%	1616/1169	86
F (00004366)	John Lancaster Heirs, Mary Lancaster Costilow, widow Lena L. Winters, widow	Petroleum Development Corporation	12.50%	1060/292	136
	Petroleum Development Corporation	PDC Mountaineer, LLC		1474/612	
	PDC Mountaineer, LLC	River Ridge Energy LLC		59/1263	
G (00008178)	Rebecca A. Compton	Mar Key, LLC	14%	1610/832	164.48

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Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
G (00008179)	James Michael Compton	Mar Key, LLC	14%	1610/834	164.48
G (00008180)	Jennifer Nora Corton, fka Jennifer Nora Compton	Mar Key, LLC	14%	1610/836	164.48
H (00007203)	Lewis Franklin Mullen, widower	Mar Key, LLC	15%	1576/217	35.5
J (00004238)	W. R. Johnson and Audra 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	
	Delta Producing Corporation	Petroleum Corporation of America		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	
K (00004299)	N. D. Parks and Olive V. Parks, his wife, and James C. Parks and Abbie G. 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	
	Petroleum Corporation of America	Petroleum Development Corporation		1081/1096	
	Petroleum Development Corporation	PDC Mountaineer, LLC		1440/364	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	

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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

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					

Organization Information			
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	WV	Excess Acres	
At Will Term	A	Member Managed	MBR
At Will Term Years		Par Value	

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Authorized Shares

Addresses	
Type	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
Type	Address

Officers	
Type	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
Type	Name/Address

Annual Reports	
Date filed	

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JUN 28 2018
WV Department of
Environmental Protection

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

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

Tuesday, November 28, 2017 — 9:44 AM

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4703305931

Agreement to Drill, Complete and Operate Oil & Gas Wells

This Agreement to Drill, Complete and Operate Oil & Gas Wells (this "Agreement"), by and among Mountaineer Keystone LLC, a West Virginia limited liability company ("Mountaineer Keystone"), PDC Mountaineer, LLC, a Delaware limited liability company ("PDC"), and PDC Mountaineer Holdings, LLC, a Delaware limited liability company ("PDC Holdings"), is effective as of October 15, 2014. (the "Effective Date") and sets forth the terms pursuant to which Mountaineer Keystone will drill, complete and operate the Wells (as defined below) on behalf of PDC and PDC Holdings. Mountaineer Keystone, PDC, and PDC 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 Mountaineer Keystone on the one hand or PDC and PDC Holdings on the other hand with 30 days' written notice to the other Party or Parties, as applicable (the "Term").
2. **Authorization to Operate:** PDC and PDC Holdings authorize Mountaineer Keystone to undertake and perform, on PDC and PDC 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 PDC or PDC Holdings. PDC, PDC Holdings and Mountaineer Keystone are affiliates with a common parent. Mountaineer Keystone was formed to operate oil and gas leasehold acreage held by PDC, PDC Holdings and certain other affiliates. Mountaineer Keystone 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 PDC or PDC Holdings from time to time as directed by PDC or PDC 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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JUN 28 2018
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IN WITNESS WHEREOF, Mountaineer Keystone, PDC, and PDC Holdings have caused their duly authorized representatives to execute this Agreement as of the Effective Date.


MOUNTAINEER KEYSTONE LLC

By: 
Name: Robert Kessel
Title: CEO

PDC MOUNTAINEER, LLC

By: 
Name: Robert Kessel
Title: CEO

PDC MOUNTAINEER HOLDINGS, LLC

By: 
Name: Robert Kessel
Title: CEO

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").
2. **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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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

By: Joel E. Symonds
Name: Joel E. Symonds
Title: Vice President - Land

RIVER RIDGE ENERGY, LLC

By: Joel E. Symonds
Name: Joel E. Symonds
Title: Vice President - Land

RIVER RIDGE HOLDINGS, LLC

By: Joel E. Symonds
Name: Joel E. Symonds
Title: Vice President - Land

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4703305931 09/28/2018



People Powered. Asset Strong.

June 18, 2018

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

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,

A handwritten signature in blue ink, appearing to read 'Hillary N. Priebel'.

Hillary N. Priebel
Senior Title Reviewer

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6031 Wallace Road Ext, Suite 300
Wexford, PA 15090
P: 724-940-1100
F: 800-428-0981
www.arsenalresources.com

4703305931

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

Date of Notice Certification: 6/26/18

API No. 47- 033 -
Operator's Well No. J Osborn HSOP16 204
Well Pad Name: J Osborn HSOP16

Notice has been given:

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

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>567,473.75</u>
County:	<u>Harrison</u>		Northing:	<u>4,346,576.73</u>
District:	<u>Simpson - Outside</u>	Public Road Access:	<u>77/4 Moss Run (Coplin Run)</u>	
Quadrangle:	<u>Rosemont</u>	Generally used farm name:	<u>Judy Osborn</u>	
Watershed:	<u>Simpson Creek</u>			

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

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:

*PLEASE CHECK ALL THAT APPLY

- 1. NOTICE OF SEISMIC ACTIVITY or NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED
- 2. NOTICE OF ENTRY FOR PLAT SURVEY or NO PLAT SURVEY WAS CONDUCTED
- 3. NOTICE OF INTENT TO DRILL or NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or
 WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)
- 4. NOTICE OF PLANNED OPERATION
- 5. PUBLIC NOTICE
- 6. NOTICE OF APPLICATION

OOG OFFICE USE ONLY

- RECEIVED/ NOT REQUIRED
- RECEIVED
- RECEIVED/ NOT REQUIRED

RECEIVED
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 Office of Oil and Gas
 WV Department of Environmental Protection

Required Attachments:

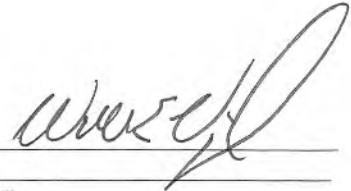
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

WW-6A
(8-13)

API NO. 4703305931
OPERATOR WELL NO. J Osborn HSOP16 204
Well Pad Name: J Osborn HSOP16

Notice is hereby given by:

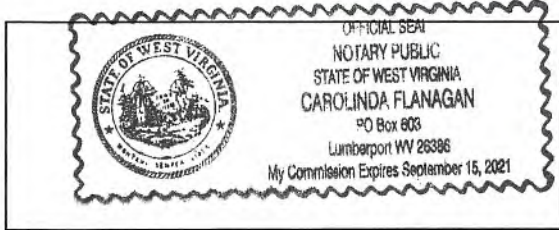
Well Operator: Arsenal Resources
Telephone: 724-940-1224
Email: cflanagan@arsenalresources.com



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.



Subscribed and sworn before me this 26TH day of JUNE 2018.

Carolinda Flanagan Notary Public

My Commission Expires 9/15/2021

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WW-6A
(9-13)

API NO. 47-033 - 09/28/2018
OPERATOR WELL NO. J Osborn HSOP16 204
Well Pad Name: J Osborn HSOP16

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

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

Date of Notice: 9/26/18 Date Permit Application Filed: 6/26/18

Notice of:

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

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

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

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

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

SURFACE OWNER(s)

Name: See Attached
Address: _____

Name: _____
Address: _____

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

Name: See Attached
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: See Attached
Address: _____

COAL OWNER OR LESSEE

Name: See Attached
Address: _____

COAL OPERATOR

Name: _____
Address: _____

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

Name: See Attached
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

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Environmental Protection

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

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Well Location Restrictions

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

WV Department of
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WW-6A
(8-13)

API NO. 47-033 **4703305931**
OPERATOR WELL NO. **09/28/2018**
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.**

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Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

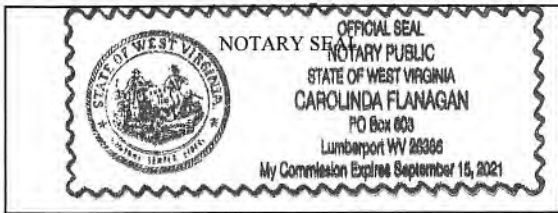
Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the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

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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:	<u>Arsenal Resources</u>	Address:	<u>6031 Wallace Road Extension, Suite 300</u>
By:	<u>William Veigel</u> <i>WV Veigel</i>		<u>Wexford, PA 15090</u>
Its:	<u>Designated Agent</u>	Facsimile:	<u>304-848-9134</u>
Telephone:	<u>724-940-1224</u>	Email:	<u>cflanagan@arsenalresources.com</u>



Subscribed and sworn before me this 26TH day of JUNE 2018.
Carolinda Flanagan Notary Public
 My Commission Expires 9/15/2021

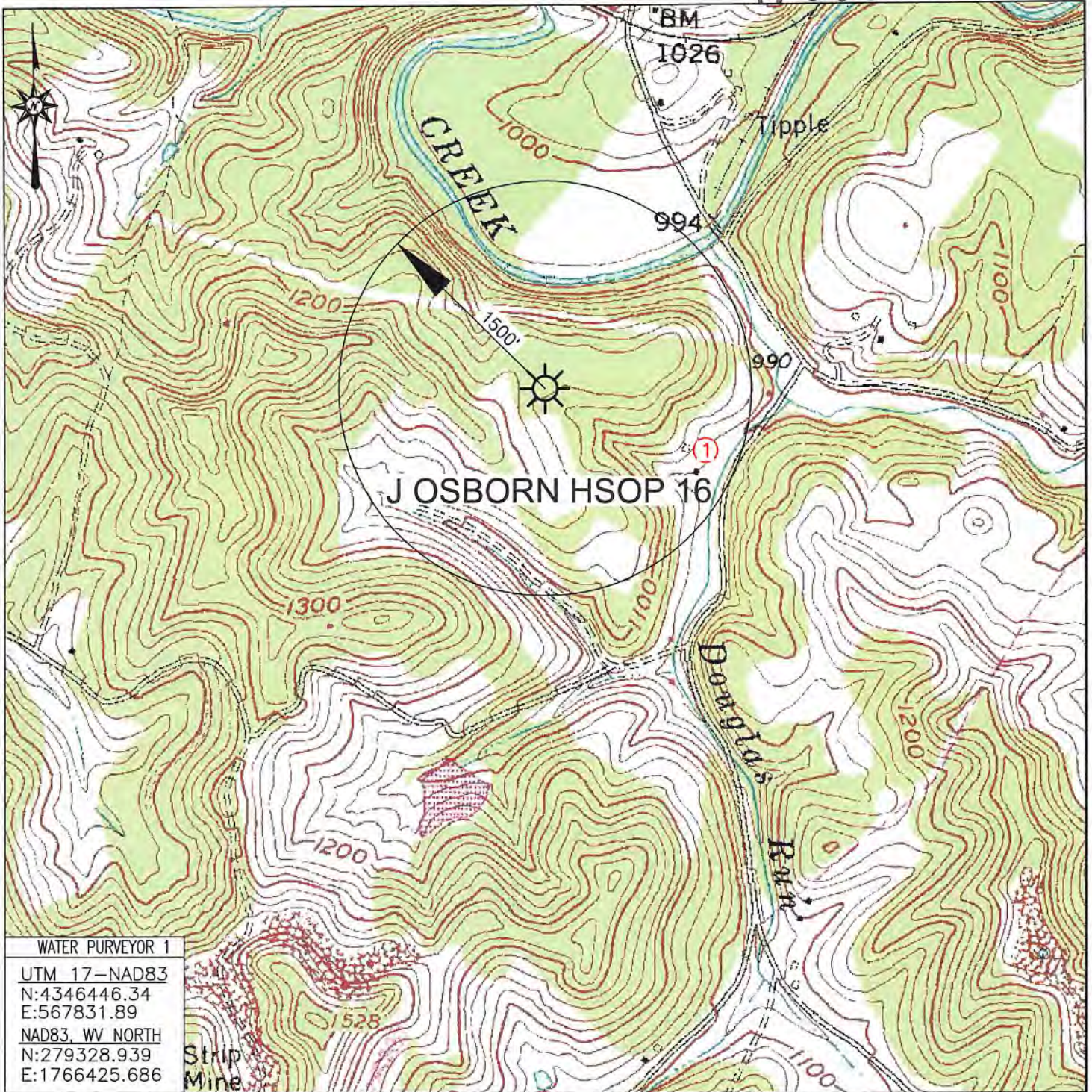
Oil and Gas Privacy Notice:

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

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09/28/2018

4703305931



WATER PURVEYOR 1
 UTM 17-NAD83
 N:4346446.34
 E:567831.89
 NAD83, WV NORTH
 N:279328.939
 E:1766425.686



Blue Mountain Inc.
 10125 MASON DIXON HIGHWAY
 BURTON, WV 26562
 PHONE: (304) 662-6486

PREPARED FOR:
 ARSENAL RESOURCES
 6031 WALLACE ROAD EXT, SUITE 300
 WEXFORD, PA 15090

LEGEND
 ① - POSSIBLE WATER PURVEYOR

J OSBORN HSOP 16
 WATER PURVEYOR MAP
 HARRISON COUNTY
 SIMPSON DISTRICT
 WEST VIRGINIA

RECEIVED
 Office of Oil and Gas
 MAY 28 2018
 WV Department of Environmental Protection

TOPO QUAD: ROSEMONT, WV
 SCALE: 1" = 1000'
 DATE: MAY 25, 2018

09/28/2018
4703305931



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:

<u>NAME</u>	<u>ADDRESS</u>	<u>CITY, STATE, ZIP</u>
1) Judy M. Osborn (LE) (Judy M. Osborn Irrevocable Trust)	2665 Coplin Run Rd	Bridgeport, WV 26330

RECEIVED
Office of Oil and Gas
JUN 28 2018
WV Department of
Environmental Protection

**Arsenal Resources
J Osborn HSOP16
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

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

Notice Time Requirement: Notice shall be provided at least SEVEN (7) days but no more than FORTY-FIVE (45) days prior to entry

Date of Notice: 04/19/2018 **Date of Planned Entry:** 04/26/2018

Delivery method pursuant to West Virginia Code § 22-6A-10a

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

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

SURFACE OWNER(s)

Name: See Attached
 Address: _____

 Name: _____
 Address: _____

 Name: _____
 Address: _____

COAL OWNER OR LESSEE

Name: See Attached
 Address: _____

MINERAL OWNER(s)

Name: See Attached
 Address: _____

*please attach additional forms if necessary

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: West Virginia	Approx. Latitude & Longitude: 39.266273, -80.217475
County: Harrison	Public Road Access: 77/4 Moss Run (Coplin Run)
District: Simpson - Outside	Watershed: Simpson Creek
Quadrangle: Rosemont	Generally used farm name: Judy Osborn

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production 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). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: Arsenal Resources
 Telephone: 724-940-1224
 Email: cflanagan@arsenalresources.com

Address: 6031 Wallace Road Extension, Suite 300
 Wexford, PA 15090
 Facsimile: 304-848-9134

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WV Department of
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Oil and Gas Privacy Notice:

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

Arsenal Resources
JOsborn HSOP16
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

*Same for 6A
6A3
6A5*

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

RECEIVED
Office of Oil and Gas

JUN 28 2018

WV Department of
Environmental Protection

09/28/2018

4703305931

**Arsenal Resources
J Osborn HSOP16
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

RECEIVED
Office of Oil and Gas
JUN 28 2018
WV Department of
Environmental Protection

09/28/2018

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

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

September 25, 2018

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 - 204 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.

Very Truly Yours,

A handwritten signature in blue ink that reads "Gary K. Clayton".

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

Cc: Kelly Davis
ARSENAL Resources
CH, OM, D-4
File

J Osborn HSOP16 #204			
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	AI-300	111-76-2
Additive #6:	Gel Breaker	AP-One	7727-54-0
Additive #7:	Acid	HCl - 7.5%	7647-01-0

COORDINATES			
DESCRIPTION	NAD 83	NAD 27	UTM (METERS)
201	LAT: 39.265958 LONG: -80.217997	LAT: 39.265867 LONG: -80.218189	N: 4346582.31 E: 567461.23
202	LAT: 39.265942 LONG: -80.217947	LAT: 39.265851 LONG: -80.218139	N: 4346580.45 E: 567465.40
203	LAT: 39.265925 LONG: -80.217900	LAT: 39.265834 LONG: -80.218092	N: 4346578.59 E: 567469.58
204	LAT: 39.265908 LONG: -80.217853	LAT: 39.265817 LONG: -80.218045	N: 4346576.73 E: 567473.75
211	LAT: 39.266503 LONG: -80.218569	LAT: 39.266412 LONG: -80.218761	N: 4346642.31 E: 567411.35
212	LAT: 39.266539 LONG: -80.218547	LAT: 39.266448 LONG: -80.218739	N: 4346644.48 E: 567415.20
213	LAT: 39.266578 LONG: -80.218525	LAT: 39.266487 LONG: -80.218717	N: 4346650.66 E: 567415.06
214	LAT: 39.266614 LONG: -80.218503	LAT: 39.266523 LONG: -80.218695	N: 4346654.84 E: 567416.91

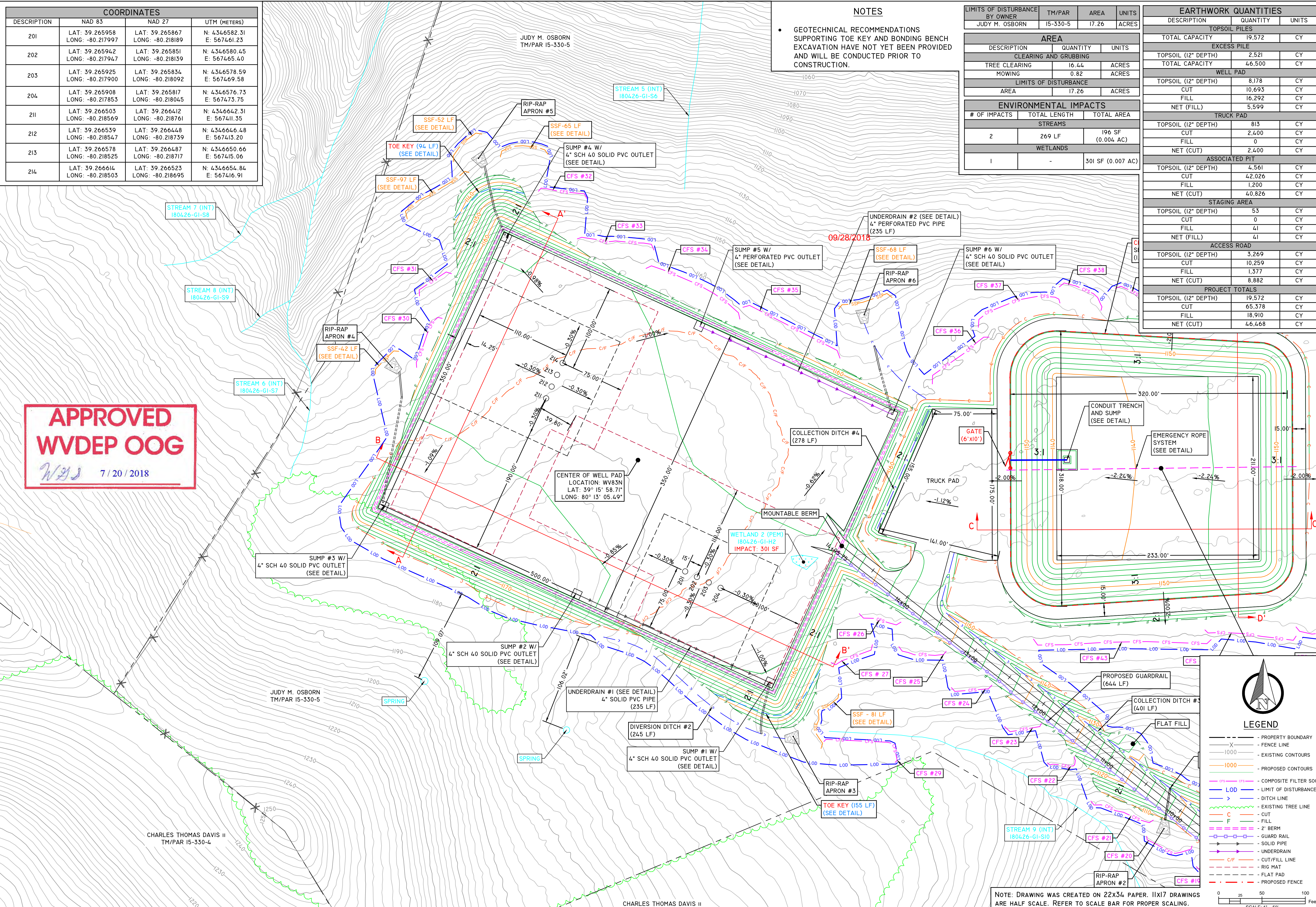
NOTES

- GEOTECHNICAL RECOMMENDATIONS SUPPORTING TOE KEY AND BONDING BENCH EXCAVATION HAVE NOT YET BEEN PROVIDED AND WILL BE CONDUCTED PRIOR TO CONSTRUCTION.

LIMITS OF DISTURBANCE BY OWNER			
JUDY M. OSBORN	TM/PAR 15-330-5	17.26	ACRES
AREA			
DESCRIPTION	QUANTITY	UNITS	
CLEARING AND GRUBBING	16.44	ACRES	
TREE CLEARING	16.44	ACRES	
MOWING	0.82	ACRES	
LIMITS OF DISTURBANCE			
AREA	17.26	ACRES	
ENVIRONMENTAL IMPACTS			
# OF IMPACTS	TOTAL LENGTH	TOTAL AREA	
STREAMS			
2	269 LF	196 SF (0.004 AC)	
WETLANDS			
1	-	301 SF (0.007 AC)	

EARTHWORK QUANTITIES		
DESCRIPTION	QUANTITY	UNITS
TOPSOIL PILES		
TOTAL CAPACITY	19,572	CY
EXCESS PILE		
TOPSOIL (12" DEPTH)	2,521	CY
TOTAL CAPACITY	46,500	CY
WELL PAD		
TOPSOIL (12" DEPTH)	8,178	CY
CUT	10,693	CY
FILL	16,292	CY
NET (FILL)	5,599	CY
TRUCK PAD		
TOPSOIL (12" DEPTH)	813	CY
CUT	2,400	CY
FILL	0	CY
NET (CUT)	2,400	CY
ASSOCIATED PIT		
TOPSOIL (12" DEPTH)	4,561	CY
CUT	42,026	CY
FILL	1,200	CY
NET (CUT)	40,826	CY
STAGING AREA		
TOPSOIL (12" DEPTH)	53	CY
CUT	0	CY
FILL	41	CY
NET (FILL)	41	CY
ACCESS ROAD		
TOPSOIL (12" DEPTH)	3,269	CY
CUT	10,259	CY
FILL	1,377	CY
NET (CUT)	8,882	CY
PROJECT TOTALS		
TOPSOIL (12" DEPTH)	19,572	CY
CUT	65,378	CY
FILL	18,910	CY
NET (CUT)	46,468	CY

APPROVED WVDEP OOG
7/20/2018



Blue Mountain Inc.
Engineers and Land Surveyors
Woman Owned Small Business
11023 Mason Dixon Hwy.
Barlow, WV 26562-9656
(304) 662-6686

ARSENAL RESOURCES
6031 WALLACE ROAD EXT.
WEXFORD, PA 15090

ARSENAL RESOURCES

**J. OSBORN HSOP 16 WELL SITE
DETAILED PROPOSED SITE PLAN (3 OF 3)**

REVISIONS	
DATE	TYPE
07/19/2018	REVISIONS PER DEP COMMENTS (1)

DRAWN BY: LLF
CHECKED BY: WPF
DATE: 06/25/2018
SCALE: 1"=50'
JOB NO.
DRAWING NAME: J. OSBORN HSOP 16
SHEET NO. 10

LEGEND

- - - PROPERTY BOUNDARY
- X FENCE LINE
- 1000 EXISTING CONTOURS
- 1000 PROPOSED CONTOURS
- CFS COMPOSITE FILTER SOCK
- LOD LIMIT OF DISTURBANCE
- > DITCH LINE
- C EXISTING TREE LINE
- F FILL
- 2' BERM
- GUARD RAIL
- SOLID PIPE
- UNDERDRAIN
- C/F CUT/FILL LINE
- RIG MAT
- FLAT PAD
- - - PROPOSED FENCE

NOTE: DRAWING WAS CREATED ON 22X34 PAPER. 11X17 DRAWINGS ARE HALF SCALE. REFER TO SCALE BAR FOR PROPER SCALING.

0 25 50 100 Feet
SCALE: 1"=50'

