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west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Wednesday, March 07, 2018  
WELL WORK PERMIT  
Horizontal 6A / New Drill

ARSENAL RESOURCES LLC  
6031 WALLACE ROAD EXTENSION SUITE 603

WEXFORD, PA 15090

Re: Permit approval for D'ANNUNZIO HCCP-7 205  
47-033-05914-00-00

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

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

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

James A. Martin  
Chief

Operator's Well Number: D'ANNUNZIO HCCP-7 205  
Farm Name: A. & B. MANAGEMENT, LLC.  
U.S. WELL NUMBER: 47-033-05914-00-00  
Horizontal 6A / New Drill  
Date Issued: 3/7/2018

Promoting a healthy environment.

03/09/2018

**PERMIT CONDITIONS****4703305914**

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.

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**CONDITIONS**

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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.

# PERMIT CONDITIONS **4703305914**

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](mailto:DEPOOGNotify@wv.gov).

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

1) Well Operator: Arsenal Resources      494519412      Harrison      Clark      Clarksburg  
Operator ID      County      District      Quadrangle

2) Operator's Well Number: D'Annunzio HCCP7 205      Well Pad Name: D'Annunzio HCCP7

3) Farm Name/Surface Owner: A&B Management, LLC      Public Road Access: State Route 98

4) Elevation, current ground: 1,118.00'      Elevation, proposed post-construction: 1,117.80'

5) Well Type      (a) Gas            Oil      \_\_\_\_\_      Underground Storage      \_\_\_\_\_  
Other      \_\_\_\_\_

(b) If Gas      Shallow            Deep      \_\_\_\_\_  
Horizontal            \_\_\_\_\_

*SDW  
2/22/2018*

6) Existing Pad: Yes or No      Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale, 7,249' (TVD Heel) - 7,249' (TVD Toe), 100 ft, 0.5 psi/ft

8) Proposed Total Vertical Depth: 7,249'

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 15,864'

11) Proposed Horizontal Leg Length: 8,039.52'

12) Approximate Fresh Water Strata Depths: 65', 69', 149', 289', 421', and 431'.

13) Method to Determine Fresh Water Depths: Offsetting wells water depths (033-00600, 033-04521)

14) Approximate Saltwater Depths: 2500'

15) Approximate Coal Seam Depths: None expected

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

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

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(a) If Yes, provide Mine Info:      Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_  
WV Department of Environmental Protection



WW-6B  
(04/15)

API NO. 47- 033 - 05915  
OPERATOR WELL NO. D'Annunzio HCCP7 206  
Well Pad Name: D'Annunzio HCCP7

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	24	New	H-40	94	80	80	CTS
Fresh Water	13.375	New	J-55	54.5	575	575	CTS
Coal							
Intermediate	9.625	New	J-55	40	2,550	2,550	CTS
Production	5.5	New	P-110	20	15864 KL	16,031	TOC @ 2,400
Tubing							
Liners							

SDW  
2/22/2018

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	24	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	0.361	12,640	9,500	Class A/50.50 Poz	1.29/1.34
Tubing					5,000		
Liners					N/A		

**PACKERS**

Kind:				
Sizes:				
Depths Set:				

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Environmental Protection

WW-6B  
(10/14)

API NO. 47- 033 - 05914  
OPERATOR WELL NO. D'Annunzio HCCP7 205  
Well Pad Name: D'Annunzio HCCP7

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 24" 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 KOP. We will then 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): 17.64

22) Area to be disturbed for well pad only, less access road (acres): 5.77

23) Describe centralizer placement for each casing string:

24"- 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 2,650'; there will be no centralizers from 2,650 to surface.

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

24" 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 2,400' (+/- 150' above the casing shoe for the 9 5/8") with Class A and 50/50 Poz cement retarded (to extend pumpability) cellophane flaked for fluid loss, Bentonite gel as an extender (increased pumpability and fluid loss), a defoaming agent to decrease cement foaming during mixing to insure the cement is of proper weight to placement and possibly gypsum gas blocking additive to aid in blocking/gas migration (in combination with other additive mentioned here, helps cement achieve a "right angle" set) during the plastic phase of the cement set-up.

25) Proposed borehole conditioning procedures:

Top holes will be drilled with fresh water to 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 to 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 stands and load the hole. The weight indicator on the rig will be monitored for any occurrences of drag and if any, additional hole cleaning efforts will be applied to that section of hole.

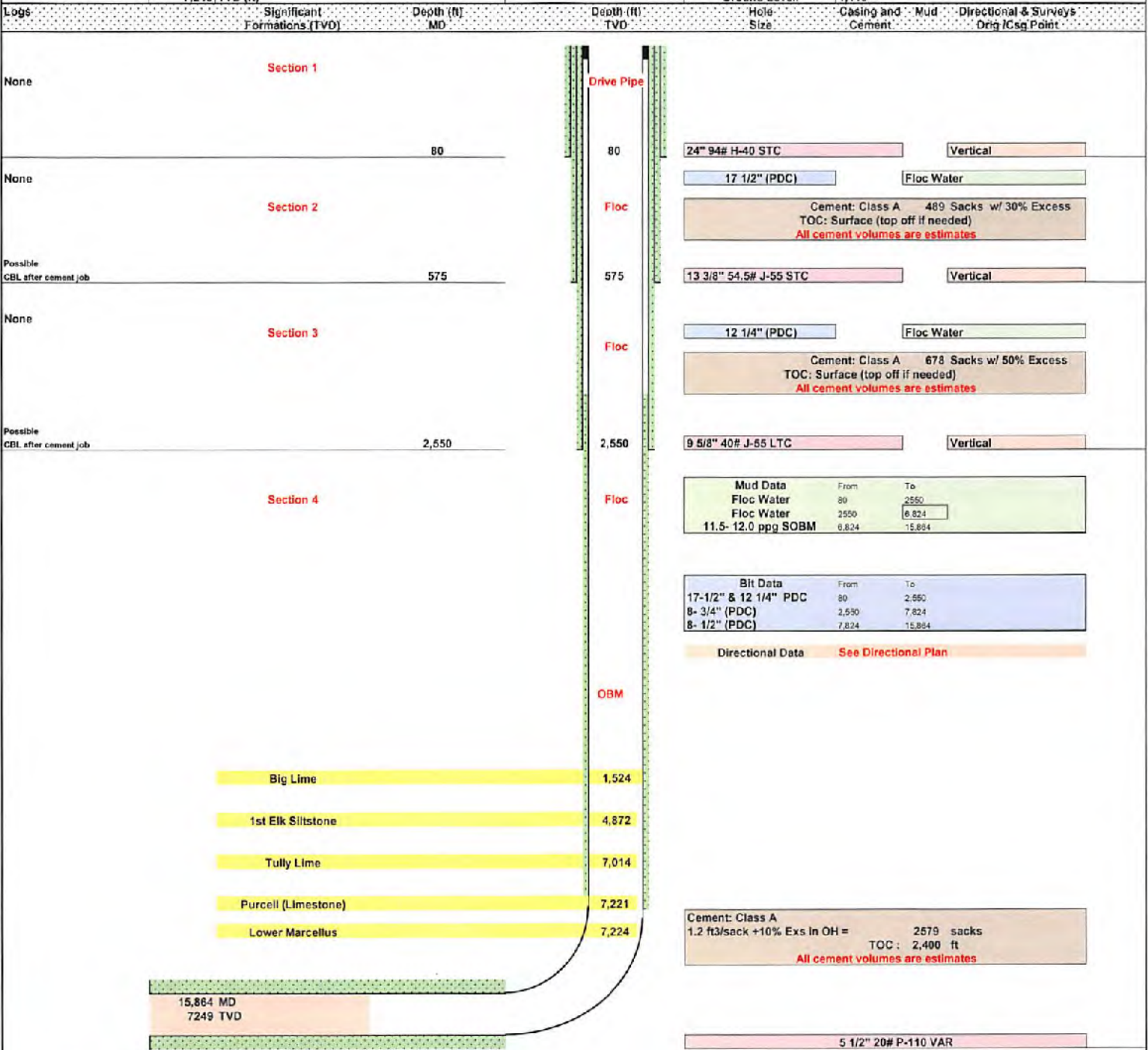
\*Note: Attach additional sheets as needed.





Other Names:	N/A
Surface Location:	TBD
Bottom Hole Location:	TBD
Total Depth:	15,864 MD (ft) 7,249 TVD (ft)

County:	Harrison
State:	West Virginia
AFE #:	XX
RKB:	27
API #:	XX
Ground Level:	1,118



Revision 1  
 Note: Not drawn to scale  
 Cement Outside Casing Seal Assembly in Annulus  
 Date Last Revised: 21-Feb-18  
 Jarrett Toms

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03/09/2018

D'Annunzio HCCP7 #205		
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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Environmental Protection  
03/09/2018





## 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 following ARSENAL RESOURCES wells on the D'Annunzio HCCP7 205 Pad.

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 7,300' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability Marcellus Shale formation (approximately 7,300' 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 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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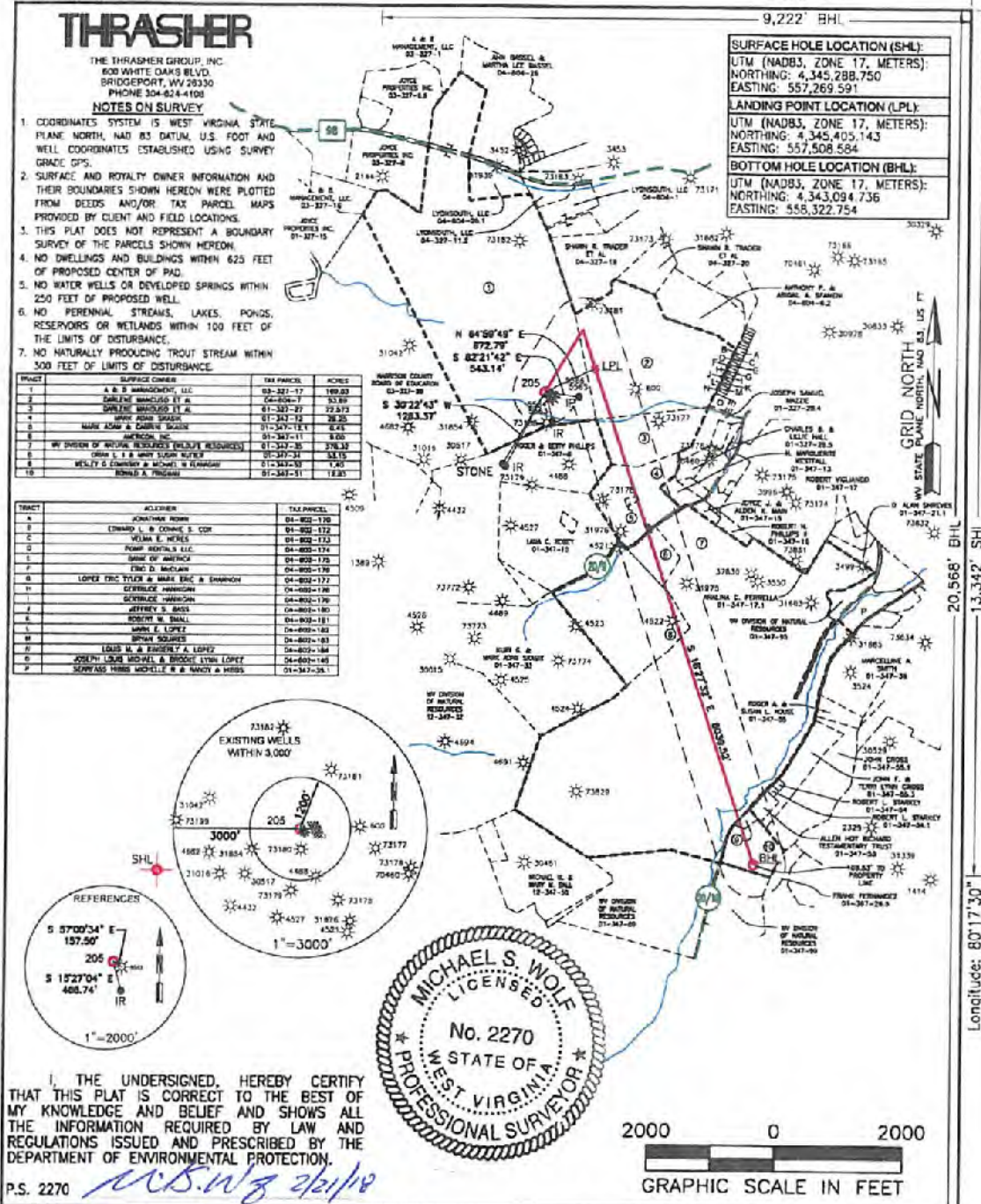
WV Department of  
Environmental Protection



## 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.



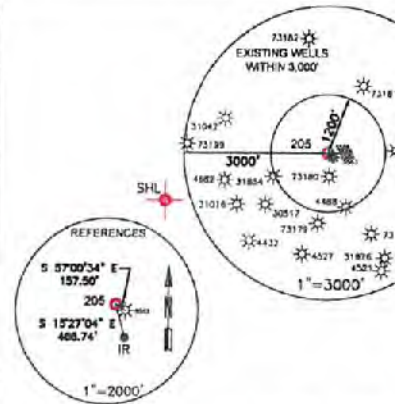


**THRASHER**  
 THE THRASHER GROUP, INC.  
 608 WHITE OAKS BLVD.  
 BRIDGEPORT, WV 26330  
 PHONE 304-624-4100

- NOTES ON SURVEY**
- COORDINATES SYSTEM IS WEST VIRGINIA STATE PLANE NORTH, NAD 83 DATUM, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
  - SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
  - THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
  - NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD.
  - NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
  - NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
  - NO NATURALLY PRODUCING TROUT STREAM WITHIN 500 FEET OF LIMITS OF DISTURBANCE.

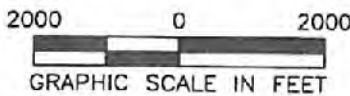
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	A & B MANAGEMENT, LLC	03-327-17	199.03
2	CARLENE WASHINGTON ET AL	06-006-7	52.89
3	SONNIE WASHINGTON ET AL	01-329-27	92.919
4	WENDY ROSE SMITH	01-341-72	78.25
5	MARY AGNE & CHARLES SMITH	01-341-71	84.6
6	WELLS, INC.	01-341-11	8.00
7	BY DIVISION OF NATURAL RESOURCES (WELLS RESOURCES)	01-341-25	276.35
8	WELLS, INC. & WELLS TROUT NURSERY	01-341-26	58.15
9	WELLS, INC. & WELLS TROUT NURSERY	01-341-28	14.85
10	WELLS, INC. & WELLS TROUT NURSERY	01-341-31	18.83

TRACT	ADJACENT	TAX PARCEL
A	JONATHAN ROSS	04-002-170
B	EDWARD L. & CONNIE S. COX	04-002-172
C	WALTER C. WYKE	01-002-173
D	PUMP SERVICE, S.E.C.	04-002-174
E	STATE OF WEST VIRGINIA	04-002-175
F	ERIC D. MCCLAIN	04-002-176
G	LOPER ERIC TYLER & MARIE ERIC S. SHANNON	04-002-177
H	GERTRUDE HARRISON	04-002-178
I	GERTRUDE HARRISON	04-002-179
J	JEFFREY S. BICKS	04-002-180
K	ROBERT W. SMITH	04-002-181
L	WYNN E. LOPEZ	04-002-182
M	SPRING RESOURCES	04-002-183
N	LOUIS H. & EUGENIE T. LOPEZ	04-002-184
O	JOSEPH LOUIS MICHAEL & BRIGIDE LYNN LOPEZ	04-002-185
P	SOPHIA THOMAS MICHELLE B. & NANCY A. HESS	04-047-26.1



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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2270 *M.S.W. 2/21/18*



<p>(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS</p> <p>WVDEP OFFICE OF OIL &amp; GAS 601 57TH STREET CHARLESTON, WV 25034</p>	MINIMUM DEGREE OF ACCURACY: 1/200 PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT) BHL	OPERATOR'S WELL #: 205 API WELL #: 47 33 STATE COUNTY PERMIT
	WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS <input checked="" type="checkbox"/> LIQUID INJECTION STORAGE SHALLOW <input checked="" type="checkbox"/> WATERSHED: WEST FORK DISTRICT: CLARK-CLARKSBURG CORP COUNTY: HARRISON SURFACE OWNER: A. & B. MANAGEMENT, LLC. ELEVATION: 1117.8' (DESIGN) OIL & GAS ROYALTY OWNER: A. & B. MANAGEMENT, LLC. QUADRANGLE: CLARKSBURG/MOUNT CLARE ACREAGE: 199.03 ACREAGE: 199.03	DRILL <input checked="" type="checkbox"/> DRILL DEEPER REDRILL FRACTURE OR STIMULATE <input checked="" type="checkbox"/> PLUG OFF OLD FORMATION PERFORMATE NEW FORMATION CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,249 TWD 15,864 TMD
DESIGNATED AGENT: WILLIAM VEIGEL ADDRESS: 65 PROFESSIONAL PLACE, SUITE 200 CITY: BRIDGEPORT STATE: WV ZIP CODE: 26330	REVISIONS:	DATE: 02-21-2018 DRAWN BY: R.DOERR SCALE: 1" = 2000' DRAWING NO: 030-3250 WELL LOCATION PLAT



Area of Review Report - D'Annunzio HCCP7 Pad, 205 Lateral, Harrison County, WV

Well Name	API Number	Operator Name / Address	Well Type	Latitude	Longitude	Total Depth	Perforated Formation(s)	Producing Zones not Perforated
D'Annunzio 1HM	4703305563	Arsenal Resources	Active	39.254804	-80.335771	7279	Marcellus Shale	NA
D'Annunzio 2HM	4703305564	Arsenal Resources	Active	39.254821	-80.335819	7282	Marcellus Shale	NA
D'Annunzio 3HM	4703305565	Arsenal Resources	Active	39.254838	-80.335867	7264	Marcellus Shale	NA
D'Annunzio 4HM	4703305566	Arsenal Resources	Active	39.254854	-80.335916	7225	Marcellus Shale	NA
AS Nutter Hrs 11091	4703331975	Consolidated Gas Supply Corp.	Plugged - 6/24/1976	39.247042	-80.328187	NA	NA	NA
Harriet M Jarvis 6925	4703373180	Hope Natural Gas Company	Unknown	39.253731	-80.336132	Unknown	Unknown	Unknown
Fowler & White 4546	4703373181	Hope Natural Gas Company	Unknown	39.258811	-80.333706	Unknown	Unknown	Unknown
Bessie Wanstreet 11419	4703300600	Consolidated Gas Supply Corp.	Plugged - 1/08/1972	39.255222	-80.331246	4642	NA	NA
Nutter 2	4703304522	Antero Resources Corporation	Active	39.2454	-80.328964	4200	Fifty-foot, Thirty-foot, Bayard, Riley	NA
Nutter 11092	4703331976	Consolidated Gas Supply Corp.	Plugged - 06/08/1976	39.249219	-80.331915	NA	NA	NA
Fowler & White 2	4703373178	Grasselli - Orphan Well Project	Unknown	39.250538	-80.33292	Unknown	Unknown	Unknown
Nutter 11092	4703304521	Antero Resources Corporation	Active	39.248495	-80.332136	2700	Bayard	NA

AOR - ATTACHMENT "A"

4703305914



**ARSENAL**  
R E S O U R C E S

People Powered. Asset Strong.

Click or tap to enter a date.

Anterro  
Address  
State

RE: Click or tap here to enter text.

Dear Sir/Madam,

Arsenal Resources has developed a Marcellus pad D'Annunzio HCCP7 205, 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 7,300' 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 D'Annunzio HCCP7 205 Pad 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

AOR - ATTACHMENT "B"  
SAMPLE LETTER



WW-9  
(4/16)

API Number 47 - 033 - \_\_\_\_\_  
Operator's Well No. D'Annunzio HCCP7 205 \_\_\_\_\_

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) West Fork Quadrangle Clarksburg

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

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: \_\_\_\_\_

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

Proposed Disposal Method For Treated Pit Wastes:

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

*SDW*  
*11/18/2017*

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? Advanced Disposal Services & Chestnut Valley 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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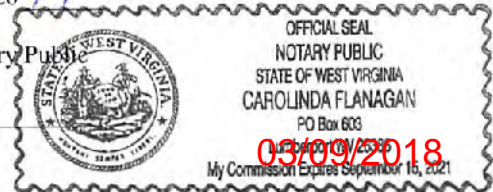
DEC - 1 2017

WV Department of  
Environmental Protection

Subscribed and sworn before me this 16<sup>TH</sup> day of NOV., 20 17

*Carolinda*  
My commission expires *Carolinda* 9/15/2021

Notary Public





**Arsenal Resources**

Proposed Revegetation Treatment: Acres Disturbed 17.64 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	Seed Type	lbs/acre
Orchard Grass	129	Orchard Grass	129
Rye	93	Rye	93
Clover	24	Clover	24
Timothy	45	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: [Signature]

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.

Title: COG Inspector

Date: 11/16/2017

Field Reviewed?  Yes  No

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**ARSENAL**

R E S O U R C E S

## **SITE SAFETY PLAN**

### **D'ANNUNZIO HCCP7 #205 WELL PAD**

**911 Address:**

799 South Bypass Road

Nutterfort, WV 26301

*SDW  
2/21/2018*

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**EMERGENCY CONTACT INFORMATION**

**OPERATOR:**  
 Arsenal Resources  
 6031 Wallace Rd Ext, Suite 300  
 Woburn, PA 15090  
 1-724-608-1100  
 1-801-629-8399 (24 hour contact number)

Office of Oil and Gas  
 1-844-526-8499  
 1-800-642-3074 (WVDEP 24 hour pollution & emergency spills contact number)

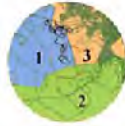
**OIL AND GAS INSPECTOR:**  
 Sam Ward, 1-801-389-7583 (Harrison County)

**LOCAL EMERGENCY RESPONSE UNIT:**  
 National Response Center for Reporting  
 Chemical or Oil Spills: 1-800-424-8802

State Emergency Spill Notification:  
 1-800-642-3074

An Inland, Fire, Law Enforcement:  
 911

**PLAN ID LEGEND**



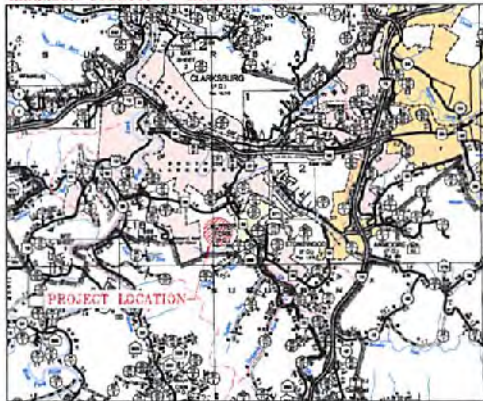
**LEGEND**

- 1500 FT. RADIUS FROM WELL PAD
- PROPOSED WELL PAD AND ACCESS ROAD
- PROPERTY LINE

**COORDINATES**

D'ANNUNZIO HCCP-7 WELL PAD COORDINATES					
Coordinate Label	West Point Center	Southwest Corner	East Point Center	Northwest Corner	Address Road Mark
WV88-N Latitude (20)	N 39.74884	N 39.74844	N 39.74815	N 39.74815	N 39.74815
WV88-N Longitude (20)	W 80.83074	W 80.83074	W 80.83087	W 80.83087	W 80.83087
WV88-N Northing	775026.800 N	775046.800 N	775061.799 N	775061.799 N	775061.818 N
WV88-E Easting	3731763.555 E	3731549.777 E	3731199.433 E	3731199.433 E	3730705.914 E
UM88-E1 Northing	4386277.049 m	4386132.547 m	4386119.433 m	4386119.433 m	4385961.982 m
UM88-E2 Easting	557794.295 m	557786.534 m	557763.299 m	557763.299 m	557718.514 m

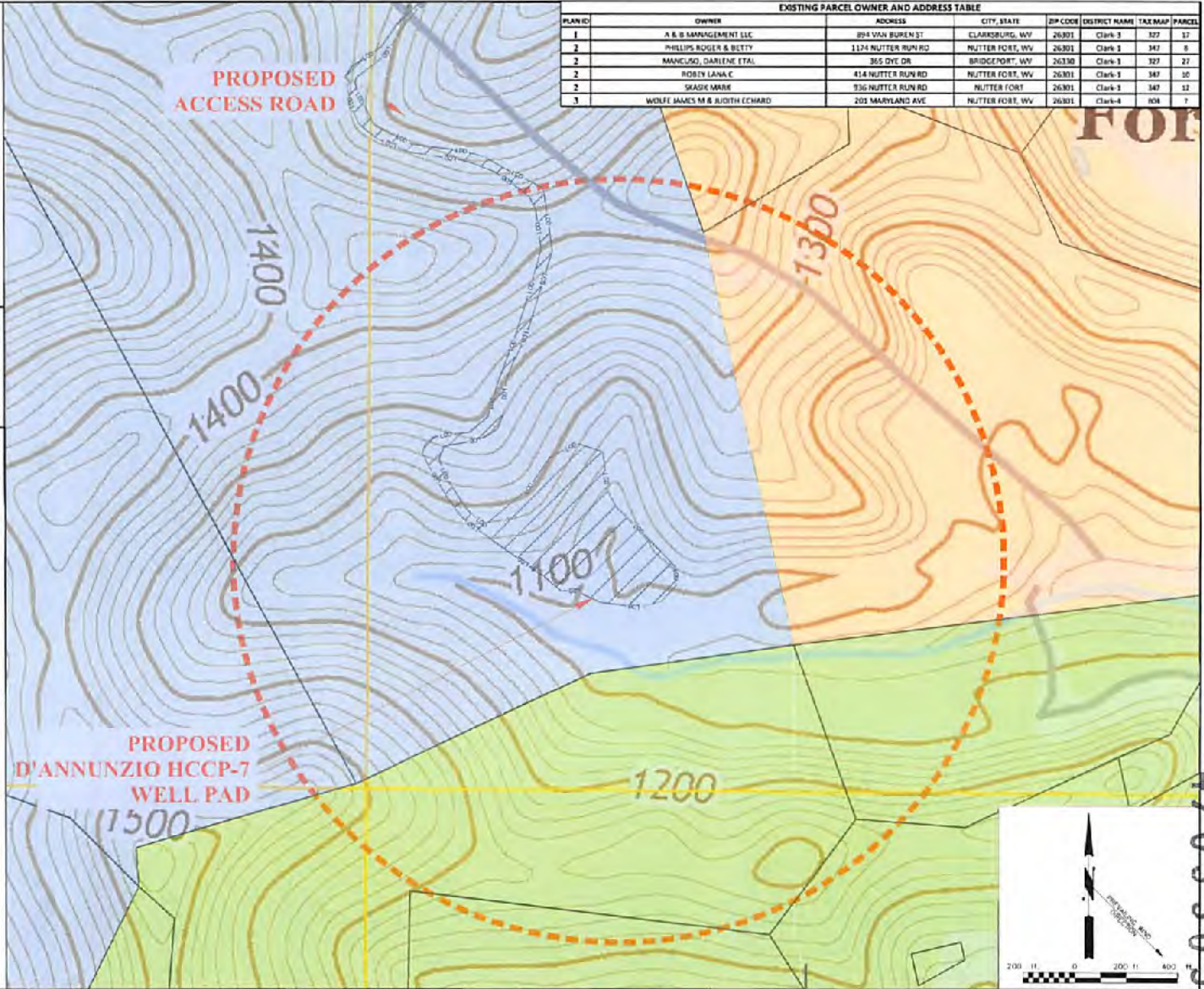
**HARRISON COUNTY, WV HIGHWAY MAP**



0 1 MILE 2 MILES  
 HIGHWAY MAP SCALE

**EXISTING PARCEL OWNER AND ADDRESS TABLE**

PARCEL	OWNER	ADDRESS	CITY, STATE	ZIP CODE	DISTRICT NAME	TAX MAP	PARCEL
1	A & B MANAGEMENT LLC	294 VAN BUREN ST	CLARKSBURG, WV	26301	Clark-3	327	17
2	PHILLIPS ROGER & BETTY	1124 NUTTER RUN RD	NUTTER FORT, WV	26301	Clark-3	347	8
2	MANGISO, DARLENE ETAL	365 OYC DR	BRIDGEFORD, WV	26330	Clark-1	327	27
2	ROBEY LANA C	414 NUTTER RUN RD	NUTTER FORT, WV	26301	Clark-3	347	10
2	SKASK MARK	936 NUTTER RUN RD	NUTTER FORT, WV	26301	Clark-3	347	12
3	WOLF JAMES M & JUDITH ECHARD	205 MARYLAND AVE	NUTTER FORT, WV	26301	Clark-4	308	7



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**ARSENAL RESOURCES**

DATE: \_\_\_\_\_ DESCRIPTION: \_\_\_\_\_

**THRASHER**

THE THRASHER GROUP, INC.  
 CIVIL & ENVIRONMENTAL CONSULTING & FIELD SERVICES  
 600 WEST CAMP ROCK ROAD, BRIDGEFORD, WV 26330  
 PHONE (204) 621-4128 • FAX (204) 621-1931

SCALE	DATE
DRAWN	DATE
CHECKED	DATE
APPROVED	DATE
SURVEY DATE	
SLAVE BY	
FIELD BOOK No.	

PHASE No. \_\_\_\_\_  
 CONTRACT No. \_\_\_\_\_  
 PROJECT No. **101-030-3250**

**ARSENAL RESOURCES**  
 SITE SAFETY PLANS FOR THE  
 D'ANNUNZIO HCCP-7 WELL PAD  
 HARRISON COUNTY, WEST VIRGINIA  
 WATER SAMPLING MAP

SHEET No. **1**

LAYOUT AND WATER MARK: PLT: JAY/PMC 11/20/2016 4:53 PM

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 WV Department of Environmental Protection  
 DEC 1 2017



# THRASHER

THE THRASHER GROUP, INC.  
800 WHITE OAKS BLVD  
BRIDGEPORT, WV 26330  
PHONE 304-824-4108

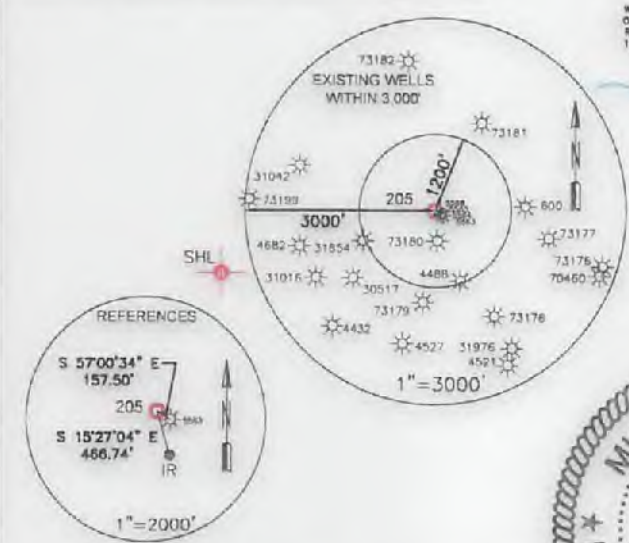
### NOTES ON SURVEY

- COORDINATES SYSTEM IS WEST VIRGINIA STATE PLANE NORTH, NAD 83 DATUM, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

<b>SURFACE HOLE LOCATION (SHL):</b>	
UTM (NAD83, ZONE 17, METERS):	NORTHING: 4,345,288.750
	EASTING: 557,269.591
<b>LANDING POINT LOCATION (LPL):</b>	
UTM (NAD83, ZONE 17, METERS):	NORTHING: 4,345,405.143
	EASTING: 557,508.584
<b>BOTTOM HOLE LOCATION (BHL):</b>	
UTM (NAD83, ZONE 17, METERS):	NORTHING: 4,343,094.736
	EASTING: 558,322.754

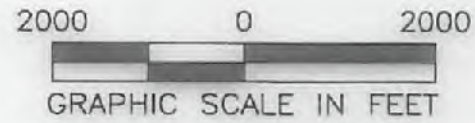
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	A & B MANAGEMENT, LLC	03-327-17	199.03
2	DARLENE MANCUSO ET AL	04-804-7	53.89
3	DARLENE MANCUSO ET AL	01-327-27	72.573
4	MARK ADAM SKASKIN	01-347-12	28.25
5	MARK ADAM & CARRIN SKASKIN	01-347-12.1	0.45
6	AMERSON, INC.	01-347-11	9.05
7	WV DIVISION OF NATURAL RESOURCES (WILDFIRE RESIDUOUS)	01-347-35	378.32
8	ORIAN L J & WAZI SUSAN WUTER	01-347-34	53.15
9	WESLEY G COMINSKY & MICHAEL W FRANKAN	01-347-52	1.40
10	RONALD A FROGMAN	01-347-51	12.83

TRACT	ADJOINER	TAX PARCEL
A	JONATHAN BROWN	04-802-170
B	EDWARD L & CONNIE S COX	04-802-122
C	VELMA E HERES	04-802-123
D	POUP RENTALS LLC	04-802-124
E	BANK OF AMERICA	04-802-125
F	ERIC D McCLAIN	04-802-176
G	LOPEZ ERIC TYLER & MARK ERIC & SHANNON	04-802-177
H	CERTRUCE LANNIGAN	04-082-178
I	CERTRUCE LANNIGAN	04-802-179
J	JEFFREY S BASS	04-802-180
K	ROBERT W SMALL	04-802-181
L	MARK E LOPEZ	04-802-182
M	BRYAN SQUIRES	04-802-183
N	LOUIS M & YVONNE A LOPEZ	04-802-184
O	JOSEPH LOUIS MICHAEL & BROOKE LYNN LOPEZ	04-802-185
P	SEAFARMS HERBS MICHELLE R & RANDY A HERBS	01-347-35.1



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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2270 *Michael S. Wolf* 2/21/18



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034	MINIMUM DEGREE OF ACCURACY: 1/200 PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)	OPERATOR'S WELL #: 205 API WELL #: 47 STATE 33 COUNTY 05914 PERMIT
	WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS X LIQUID INJECTION STORAGE SHALLOW X WATERSHED: WEST FORK DISTRICT: CLARK-CLARKSBURG CORP COUNTY: HARRISON SURFACE OWNER: A. & B. MANAGEMENT, LLC. OIL & GAS ROYALTY OWNER: A. & B. MANAGEMENT, LLC.	ELEVATION: 1117.8' (DESIGN) QUADRANGLE: CLARKSBURG/MOUNT CLARE ACREAGE: 199.03 ACREAGE: 199.03

DRILL X DRILL DEEPER REDRILL FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION PERFORATE NEW FORMATION CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)	TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,249 TVD 15,864 TMD
---	--

WELL OPERATOR: ARSENAL RESOURCES ADDRESS: 6031 WALLACE ROAD EXTENSION #300 CITY: WEXFORD STATE: PA ZIP CODE: 15090	DESIGNATED AGENT: WILLIAM VEIGEL ADDRESS: 65 PROFESSIONAL PLACE, SUITE 200 CITY: BRIDGEPORT STATE: WV ZIP CODE: 26330
--	---

<b>LEGEND:</b> (+) PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD LPL LANDING POINT LOCATION * EXISTING WATER WELL * EXISTING SPRING	--- SURVEYED BOUNDARY --- DRILLING UNIT --- LEASE BOUNDARY --- PROPOSED PATH --- 500' BUFFER	<b>REVISIONS:</b> DATE: 02-21-2018 DRAWN BY: R.DOERR SCALE: 1" = 2000' DRAWING NO: 030-3250 WELL LOCATION PLAT
--	--	---



**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:

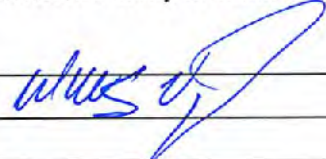
- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

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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, D'Annunzio 205

Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
1 -- (00004630)	Maud Lee Quinn, a married person, and signing in her sole right	PDC Mountaineer, LLC	0.175	1456/1018	247.5
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
1 -- (00004632)	A & B Management, LLC	PDC Mountaineer, LLC	0.175	1455/173	233
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
1 -- (00004636)	Rebecca Ann Jarvis, a widow	XTO Energy, Inc.	0.125	1438/1202	199.03
	XTO Energy, Inc.	PDC Mountaineer, LLC		1479/880	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
2 -- (00004540)	Darlene Mancuso and Anthony J. Mancuso, her husband	PDC Mountaineer, LLC	0.175	1451/149	53.89
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
2 -- (00004541)	Joretta F. Wood and Bill B. Wood, her husband	PDC Mountaineer, LLC	0.175	1451/114	53.89
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
2 -- (00004542)	Jacqueline C. Aylestock and Ronald L. Aylestock, her husband	PDC Mountaineer, LLC	0.175	1451/139	53.89
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
2 -- (00004545)	Richard White and Patricia K. White, his wife	PDC Mountaineer, LLC	0.175	1451/119	53.89
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
2 -- (00004546)	Mary L. Hughes	PDC Mountaineer, LLC	0.175	1451/154	53.89

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## Attachment to WW-6A1, D'Annunzio 205

Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
3-- (00004532)	Darlene Mancuso and Anthony J. Mancuso, her husband	PDC Mountaineer, LLC	0.175	1451/129	72.573
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
3 -- (00004533)	Joretta F. Wood and Bill B. Wood, her husband	PDC Mountaineer, LLC	0.175	1451/99	72.573
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
3 -- (00004534)	Jacqueline C. Aylestock and Ronald L. Aylestock, her husband	PDC Mountaineer, LLC	0.175	1451/104	72.573
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
3 -- (00004537)	Richard White and Patricia K. White, his wife	PDC Mountaineer, LLC	0.175	1451/89	72.573
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
3 -- (00004538)	Mary L. Hughes	PDC Mountaineer, LLC	0.175	1451/124	72.573
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	
4 & 5 -- (00007226)	Pamela Ann Palmer Emch, married dealing with her sole and separate property	Mar Key, LLC	0.15	1577/748	29.7
4 & 5 -- (00007233)	David Scott Palmer	Mar Key, LLC	0.15	1578/1063	29.7
4 & 5 -- (00003692)	Kathleen Nutter and Orian Nutter, her husband	Petroleum Development Corporation	0.125	1246/633	154
	Petroleum Development Corporation	PDC Mountaineer, LLC		1440/364	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		59/1263	

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## Attachment to WW-6A1, D'Annunzio 205

Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
6, 7, 9 & 10 -- (00007775)	Paul S. Horner	PPG Industries, Inc.	0.125	954/739	465.06
	PPG Industries, Inc.	White Shield Oil and Gas Corporation		1005/298	
	White Shield Oil and Gas Corporation	Partnership Properties Co.		1019/416	
	Partnership Properties Co.	Eastern American Energy Corporation		1124/449	
	Eastern American Energy Corporation	Energy Corporation of America		59/832	
	Energy Corporation of America	Antero Resources Appalachian Corporation		1495/314	
	Antero Resources Appalachian Corporation	Antero Resources Corporation		2/914	
	Energy Corporation of America	Antero Resources Corporation		1524/620	
	Antero Resources Corporation	River Ridge Energy, LLC f/k/a PDC Mountaineer, LLC		1586/1196	
8 -- (00007772)	Orian Leon Nutter II and Mary Susan Nutter	Mountain V Oil and Gas, Inc.	12.5	1364/489	107
	Mountain V Oil and Gas, Inc.	North Coast Energy, Eastern, Inc.		1394/756	
	North Coast Energy, Easter, Inc.	EXCO - North Coast Energy Eastern		59/806	
	EXCO - North Coast Energy Eastern	EXCO Resources (WV), LLC			
	EXCO Resources (WV), LLC	EXCO Production Company (WV), LLC			
	EXCO Production Company (WV), LLC	Antero Resources Appalachian Corporation		1512/1090	
	Antero Resources Appalachian Corporation	Antero Resources Corporation		2/914	
	Antero Resources Corporation	River Ridge Energy, LLC f/k/a PDC Mountaineer, LLC		1586/1196	

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Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
8 -- (00007773)	Clayton Nutter and Betty Nutter	Mountain V Oil and Gas, Inc.	12.5	1369/550	107
	Mountain V Oil and Gas, Inc.	North Coast Energy, Eastern, Inc.		1394/756	
	North Coast Energy, Easter, Inc.	EXCO - North Coast Energy Eastern		59/806 and 1448/721	
	EXCO - North Coast Energy Eastern	EXCO Resources (WV), LLC			
	EXCO Resources (WV), LLC	EXCO Production Company (WV), LLC			
	EXCO Production Company (WV), LLC	Antero Resources Appalachian Corporation		1512/1090	
	Antero Resources Appalachian Corporation	Antero Resources Corporation		2/914	
	Antero Resources Corporation	River Ridge Energy, LLC f/k/a PDC Mountaineer, LLC		1586/1196	
8 -- (00007774)	Larry Robey and Lana Robey	Mountain V Oil and Gas, Inc.	12.5	1369/552	107
	Mountain V Oil and Gas, Inc.	North Coast Energy, Eastern, Inc.		1394/756	
	North Coast Energy, Easter, Inc.	EXCO - North Coast Energy Eastern		59/806	
	EXCO - North Coast Energy Eastern	EXCO Resources (WV), LLC			
	EXCO Resources (WV), LLC	EXCO Production Company (WV), LLC			
	EXCO Production Company (WV), LLC	Antero Resources Appalachian		1512/1090	
	Antero Resources Appalachian Corporation	Antero Resources Corporation		2/914	
	Antero Resources Corporation	River Ridge Energy, LLC f/k/a PDC Mountaineer, LLC		1586/1196	

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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**

<b>Organization Information</b>								
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			

<b>Organization Information</b>			
<b>Business Purpose</b>	2111 - Mining, Quarrying, Oil & Gas Extraction - Oil and Gas Extraction - Crude Oil and Natural Gas Extraction		<b>Capital Stock</b>
<b>Charter County</b>		<b>Control Number</b>	99Q1F
<b>Charter State</b>	WV	<b>Excess Acres</b>	
<b>At Will Term</b>	A	<b>Member Managed</b>	MBR
<b>At Will Term Years</b>		<b>Par Value</b>	

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26 2018

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Environmental Protection

03/09/2018

<b>Authorized Shares</b>

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

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

<b>Annual Reports</b>
<b>Date filed</b>

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Environmental Protection

03/09/2018



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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WV Department of  
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03/09/2018

11/28/2017

**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]

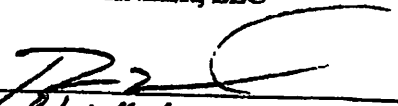


IN WITNESS WHEREOF, Mountaineer Keystone, PDC, and PDC Holdings have caused their duly authorized representatives to execute this Agreement as of the Effective Date.

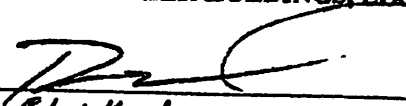
**MOUNTAINEER KEYSTONE LLC**

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

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**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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**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.*

**EXCO RESOURCES (PA), LLC**

<b>Organization Information</b>									
Org Type	Effective Date	Established Date	Filing Date	Charter	Class	Sec Type	Termination Date	Termination Reason	
LLC   Limited Liability Company	2/25/1997		2/25/1997	Foreign	Profit				

<b>Organization Information</b>			
<b>Business Purpose</b>	2111 - Mining, Quarrying, Oil & Gas Extraction - Oil and Gas Extraction - Crude Oil and Natural Gas Extraction		<b>Capital Stock</b>
<b>Charter County</b>	Kanawha	<b>Control Number</b>	0
<b>Charter State</b>	DE	<b>Excess Acres</b>	0
<b>At Will Term</b>	A	<b>Member Managed</b>	MBR
<b>At Will Term Years</b>		<b>Par Value</b>	
<b>Authorized Shares</b>			

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<b>Addresses</b>	
Type	Address
<b>Designated Office Address</b>	5400 D BIG TYLER ROAD CHARLESTON, WV, 25313
<b>Mailing Address</b>	12377 MERIT DRIVE SUITE 1700 DALLAS, TX, 75251 USA
<b>Notice of Process Address</b>	CT CORPORATION SYSTEM 5400 D BIG TYLER ROAD CHARLESTON, WV, 25313
<b>Principal Office Address</b>	12377 MERIT DRIVE SUITE 1700 DALLAS, TX, 75251 USA
Type	Address

<b>Officers</b>	
Type	Name/Address
<b>Member</b>	EXCO HOLDING (PA), INC. 12377 MERIT DRIVE SUITE 1700 DALLAS, TX, 75251
<b>Member</b>	BG US PRODUCTION COMPANY, LLC 5444 WESTHEIMER ROAD HOUSTON, TX, 77056
Type	Name/Address

<b>Name Changes</b>	
Date	Old Name
7/1/2010	EXCO RESOURCES (PA) , INC.
12/2/2009	EXCO - NORTH COAST ENERGY, INC.
	NORTH COAST ENERGY, INC.

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<b>7/14/2008</b>	
<b>Date</b>	<b>Old Name</b>

<b>Mergers</b>				
<b>Merger Date</b>	<b>Merged</b>	<b>Merged State</b>	<b>Survived</b>	<b>Survived State</b>
6/23/2008	EXCO APPALACHIA, INC.	DE	NORTH COAST ENERGY, INC.	DE
7/14/2008	POWER GAS MARKETING & TRANSMISSION, INC.	DE	NORTH COAST ENERGY, INC.	DE
<b>Merger Date</b>	<b>Merged</b>	<b>Merged State</b>	<b>Survived</b>	<b>Survived State</b>

<b>Subsidiaries</b>	
<b>Name</b>	<b>Address</b>
	EXCO RESOURCES 12377 MERIT DRIVE, SUITE 1700 DALLAS, TX, 75251 USA
	NORTH COAST ENERGY EASTERN ONE GOJO PLAZA SUITE 325 AKRON, OH, 44311 USA
<b>Name</b>	<b>Address</b>

<b>Date</b>	<b>Amendment</b>
<b>7/1/2010</b>	CONVERSION: FROM EXCO RESOURCES (PA) , INC. TO EXCO RESOURCES (PA), LLC
<b>7/1/2010</b>	MERGING EXCO RSORCES (PA), LLC, A QUALIFIED TX ORGANIZATION WITH EXCO RESOURCES (WV), LLC, A QUALIFIED TX ORGANIZATION, AS SURVIVORS AND CREATING THE FOLLOWING NON-QUALIFIED TX ORGANIZATIONS: BG NATURAL GAS PRODUCTION COMPANY (PA), LLC, APPALACHIA MIDSTREAM, LLC, EXCO RSORCES (XA), LLC, BG NATURAL GAS PRODUCTION COMPANY (WV), LLC AND EXCO PRODUCTION COMPANY (PA), LLC. IN THE MERGER EXCO RESOURCES (WV), LLC CHANGED ITS NAME TO EXCO PRODUCTION COMPANY (WV), LLC.

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<b>12/2/2009</b>	NAME CHANGE: FROM EXCO - NORTH COAST ENERGY, INC.
<b>7/14/2008</b>	MERGER: MERGING POWER GAS MARKETING & TRANSMISSION, INC., A QUALIFIED DE CORPORATION WITH AND INTO NORTH COAST ENERGY, INC., A QUALIFIED DE CORPORATION, THE SURVIVOR, WHICH THEN CHANGED ITS NAME TO EXCO - NORTH COAST ENERGY, INC.
<b>6/23/2008</b>	MERGER: MERGING EXCO APPALACHIA, INC., A QUALIFIED DE CORPORATION WITH AND INTO NORTH COAST ENERGY, INC., A QUALIFIED DE CORPORATION, THE SURVIVOR
<b>Date</b>	<b>Amendment</b>

<b>Annual Reports</b>	
<b>Date</b>	<b>Filed For</b>
<b>6/9/2016</b>	2016
<b>6/17/2015</b>	2015
<b>6/6/2014</b>	2014
<b>4/25/2013</b>	2013
<b>2/7/2012</b>	2012
<b>8/2/2011</b>	2011
<b>6/8/2009</b>	2010
<b>9/9/2008</b>	2009
<b>10/10/2007</b>	2008
<b>10/20/2005</b>	2006
<b>3/28/2005</b>	2005
<b>6/14/2004</b>	2004
<b>5/15/2003</b>	2003
<b>11/15/2001</b>	2002
<b>12/4/2000</b>	2001
	1998
	1997

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Date

Filed For

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

Wednesday, August 17, 2016 — 2:39 PM

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People Powered. Asset Strong.

November 29, 2017

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

RE: Ownership of Roadways – D'Annunzio HCCP-7 Unit (Wells 205, 206, and 207)

Mr. Martin:

In preparation of filing permit applications for the above referenced wells, 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 wells in the proposed unit. The findings of the title examination show that the roadways crossed by wells in the proposed unit are rights-of-way, with the oil and gas being owned and 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 that reads 'Jonathan B. Bompiani'.

Jonathan B. Bompiani  
Senior Title Attorney

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

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

Date of Notice Certification: 11/30/17

API No. 47- \_\_\_\_\_ - \_\_\_\_\_  
Operator's Well No. D'Annunzio HCCP7 205  
Well Pad Name: D'Annunzio HCCP7

**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>557,289.591</u>
County: <u>Harrison</u>	Northing: <u>4,345,288.750</u>
District: <u>Clark</u>	Public Road Access: <u>State Route 98</u>
Quadrangle: <u>Clarksburg</u>	Generally used farm name: <u>A&amp;B Management, LLC</u>
Watershed: <u>West Fork</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.

<p>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:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p><b>OOG OFFICE USE ONLY</b></p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
--	---

**Required Attachments:**

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

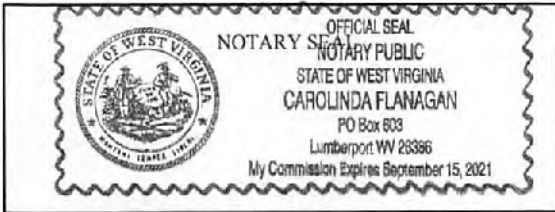
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**Certification of Notice is hereby given:**

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>		<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 30<sup>th</sup> day of NOV. 2017  
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](mailto:depprivacyofficer@wv.gov).

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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:** 11/30/17 **Date Permit Application Filed:** 11/30/17

**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: A & B Management, LLC  
 Address: 894 Van Buren Street  
Clarksburg, WV 26301  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
 Name: Lyonsouth, LLC  
 Address: P.O. Box 6698  
Clarksburg, WV 26301

COAL OPERATOR  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)  
 Name: Lyonsouth, LLC  
 Address: P.O. Box 6698  
Clarksburg, WV 26301  
 Name: A & B Management, LLC  
 Address: 894 Van Buren Street  
Clarksburg, WV 26301

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)  
 Name: See Attached  
 Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

\*Please attach additional forms if necessary

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WW-6A  
(8-13)

DEC 1 2017

API NO. 47-  
OPERATOR WELL NO. D'Annunzio HCCPT 205  
Well Pad Name: D'Annunzio HCCPTWV Department of  
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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

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

03/09/2018



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 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

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

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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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WW-6A  
(8-13)

4703305914  
API NO. 47-  
OPERATOR WELL NO. D'Annunzio HCCP7 205  
Well Pad Name: D'Annunzio HCCP7

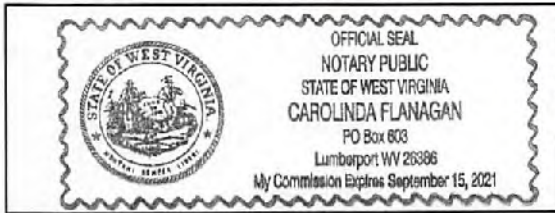
Notice is hereby given by:

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](mailto:depprivacyofficer@wv.gov).



Subscribed and sworn before me this 30<sup>th</sup> day of NOV, 2017.

Carolinda Flanagan Notary Public

My Commission Expires 9/15/2021

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**Arsenal Resources  
D'Annunzio HCCP7 Pad  
Notice of Application Attachment**

**Drill Site (Surface)**

A & B Management, LLC.  
894 Van Buren Street  
Clarksburg, WV 26301

**Road (Surface)**

Lyonsouth, LLC (47-033-04-204-26.1, 47-033-03-327-11.2 & 47-033-04-804-1)  
P.O. Box 6698  
Clarksburg, WV 26301

A & B Management, LLC. (47-033-03-327-17)  
894 Van Buren Street  
Clarksburg, WV 26301

**Drill Site – Coal**

Lyonsouth, LLC (Pittsburgh Coal Seam)  
P.O. Box 6698  
Clarksburg, WV 26301

**Drill Site – Oil & Gas**

M.L. Quinn  
908 Duff Avenue  
Clarksburg, WV 26301

Jarvis Family LLC  
c/o Brian M. Jarvis Esq  
193 OakRidge Drive  
Mount Clare, WV 26408

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A & B Management, LLC. ✓  
894 Van Buren Street  
Clarksburg, WV 26301

**Water Purveyors**

A & B Management, LLC. ✓  
894 Van Buren Street  
Clarksburg, WV 26301

Darlene Mancuso etal ✓  
365 Dye Drive  
Bridgeport, WV 26330

*WV OK*

James M. & Judith Echard Wolfe ✓  
201 Maryland Avenue  
Nutter Fort, WV 26301

Roger & Betty Phillips ✓  
1174 Nutter Run Road  
Nutter Fort, WV 26301

Lana C. Robey ✓  
414 Nutter Run Road  
Nutter Fort, WV 26301

Mark Skasik ✓  
936 Nutter Run Road  
Nutter Fort, WV 26301

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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:** 08/14/2017      **Date of Planned Entry:** 08/21/2017

**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: A&B Management, Inc.

Address: 694 Van Buren Street  
Clarksburg, WV 26301

Name: Lyonsouth, LLC

Address: P.O. Box 6698  
Clarksburg, WV 26301

Name: \_\_\_\_\_

Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: Lyonsouth, LLC

Address: P.O. Box 6698  
Clarksburg, WV 26301

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: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.254896, -80.336137</u>
County: <u>Harrison</u>	Public Road Access: <u>State Route 98</u>
District: <u>Clark</u>	Watershed: <u>West Fork</u>
Quadrangle: <u>Clarksburg</u>	Generally used farm name: <u>A&amp;B Management, Inc.</u>

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 57<sup>th</sup> 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](http://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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**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 of your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).



**Arsenal Resources  
D'Annunzio HCCP7 Pad  
Notice of Plat Survey Attachment**

**Mineral Owner**

M.L. Quinn  
908 Duff Avenue  
Clarksburg, WV 26301

Rebecca Jarvis  
RR1, Box 258F  
Clarksburg, WV 26301

A & B Management, Inc.  
894 Van Buren Street  
Clarksburg, WV 26301

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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

Jim Justice  
Governor

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

November 15, 2017

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

Subject: DOH Permit for the D'Annunzio HCCP 7 Pad, Harrison County  
D'Annunzio HCCP 7 205 Well Site

Dear Mr. Martin,

The West Virginia Division of Highways has issued Permit #07-2017-0978 to Arsenal Resources for access to the well site located off of WV Route 98 in Harrison County. The operator has signed an OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton  
Regional Maintenance Engineer  
Central Office O&G Coordinator

Cc: Kelly Davis  
Arsenal Resources  
CH, OM, D-4

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<b>D'Annunzio HCCP7 - 205</b>			
<b>FRACTURING ADDITIVES</b>			
	<b>PURPOSE</b>	<b>TRADE NAME</b>	<b>CAS #</b>
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

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HARRISON COUNTY, WV HIGHWAY MAP



1" = 1 MILE  
HIGHWAY MAP SCALE

CLARKSBURG, WV QUAD MAP



1" = 200 FEET  
VICINITY MAP SCALE

FOR A CALL TO THE UTILITY SYSTEMS MAINLINE CENTER



THE INFORMATION HEREIN IS FOR YOUR INFORMATION ONLY. IT IS NOT A CONTRACT. THE USER OF THIS INFORMATION SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES AND AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES AND AGENCIES.

# ARSENAL RESOURCES

## CONSTRUCTION PLANS FOR THE

### D'ANNUNZIO HCCP-7 WELL PAD

#### CLARK DISTRICT, HARRISON COUNTY, WV

#### NOVEMBER 2017



PROPOSED WELL PAD LOCATION FROM CLARKSBURG, WV

1. PROPOSED WELL PAD LOCATION
2. EXISTING TANK PAD
3. EXISTING TANK PAD
4. EXISTING TANK PAD

WELL PAD COORDINATES

WELL NUMBER	WELL COORDINATES
201	2109.0700 N
202	2109.0700 N
203	2109.0700 N
204	2109.0700 N

SITE COORDINATES

Coordinate Label	BEGINNING ACCESS ROAD	TANK PAD CENTER	WELL PAD CENTER
WV83-N Latitude	N 39.214774°	N 39.272515°	N 39.254884°
WV83-N Longitude	W 80.339872°	W 80.315457°	W 80.335554°
WV83-N Northing	276572.581 m	276887.218 m	276953.809 m
WV83-N Easting	1727208.041 m	1732519.843 m	1731761.559 m
UTM 83-17 Northing	4346156.390 m	4348139.013 m	4348272.054 m
UTM 83-17 Easting	550488.475 m	557382.724 m	557204.826 m

SURFACE ELEVATION COORDINATES

Well Number	201	202	203	204	205	206	207
WV83-N Latitude	N 39.255102°	N 39.255086°	N 39.255067°	N 39.255051°	N 39.255036°	N 39.255019°	N 39.255003°
WV83-N Longitude	W 80.336553°	W 80.336325°	W 80.335297°	W 80.334269°	W 80.333241°	W 80.332213°	W 80.331185°
WV83-N Northing	2763671.142 m	2761675.087 m	2759679.032 m	2757683.977 m	2755687.922 m	2753691.867 m	2751695.812 m
WV83-N Easting	2761312.266 m	276125.164 m	276110.111 m	276113.035 m	276106.967 m	276100.899 m	276094.831 m
UTM 83-17 Northing	4345298.026 m	4343284.244 m	4341270.462 m	4339256.680 m	4337242.898 m	4335229.116 m	4333215.334 m
UTM 83-17 Easting	557259.210 m	557262.129 m	557265.048 m	557267.967 m	557270.886 m	557273.805 m	557276.724 m

ENVIRONMENTAL IMPACTS

Feature ID	Environmental Impacts
201	0.117
TOTAL	0.234

DISTURBANCE SUMMARY

Project's Change	Disturbance (Ac)	Total Disturbance (Ac)
EXISTING - 1st Reg. Forest	0.72	14.92
P.A. RENEWABLES (21.122.11)	0.00	0.00
SPRINGFIELD (1404.76.1)	0.00	0.00
SPRINGFIELD (1404.77.1)	0.00	0.00
SPRINGFIELD (1404.78.1)	0.00	0.00
TOTAL DISTURBANCE	0.72	14.92



CONTACT INFORMATION:

THRASHER ENGINEERING & CONSULTING  
 1000 S. MAIN ST.  
 CHARLOTTE, NC 28202  
 PHONE: 704.366.1111  
 FAX: 704.366.1112  
 EMAIL: info@thrasher.com

SHORT INDEX

NO.	DESCRIPTION
01	EXISTING TANK PAD
02	EXISTING TANK PAD
03	EXISTING TANK PAD
04	EXISTING TANK PAD
05	EXISTING TANK PAD
06	EXISTING TANK PAD
07	EXISTING TANK PAD
08	EXISTING TANK PAD
09	EXISTING TANK PAD
10	EXISTING TANK PAD
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47	EXISTING TANK PAD
48	EXISTING TANK PAD
49	EXISTING TANK PAD
50	EXISTING TANK PAD

WVDEP OOG  
 ACCEPTED AS-BUILT  
 2/28/2018



APPROVED FOR PERMITS: DATE: 11/15/17 BY: RBS  
 APPROVED FOR BID: DATE: BY:  
 APPROVED FOR CONSTRUCTION: DATE: BY:

REVISION NUMBER	REVISED SHEET	BY	DATE	DESCRIPTION
1	124.010	JAK	12/19/17	REVISED TANK DESCRIPTION, ADDED TANK COORDINATES, AND ADDED WELL PAD SLUMP LABELS

THRASHER  
 1000 S. MAIN ST.  
 CHARLOTTE, NC 28202  
 PHONE: (704) 366-1111 FAX: (704) 366-1112

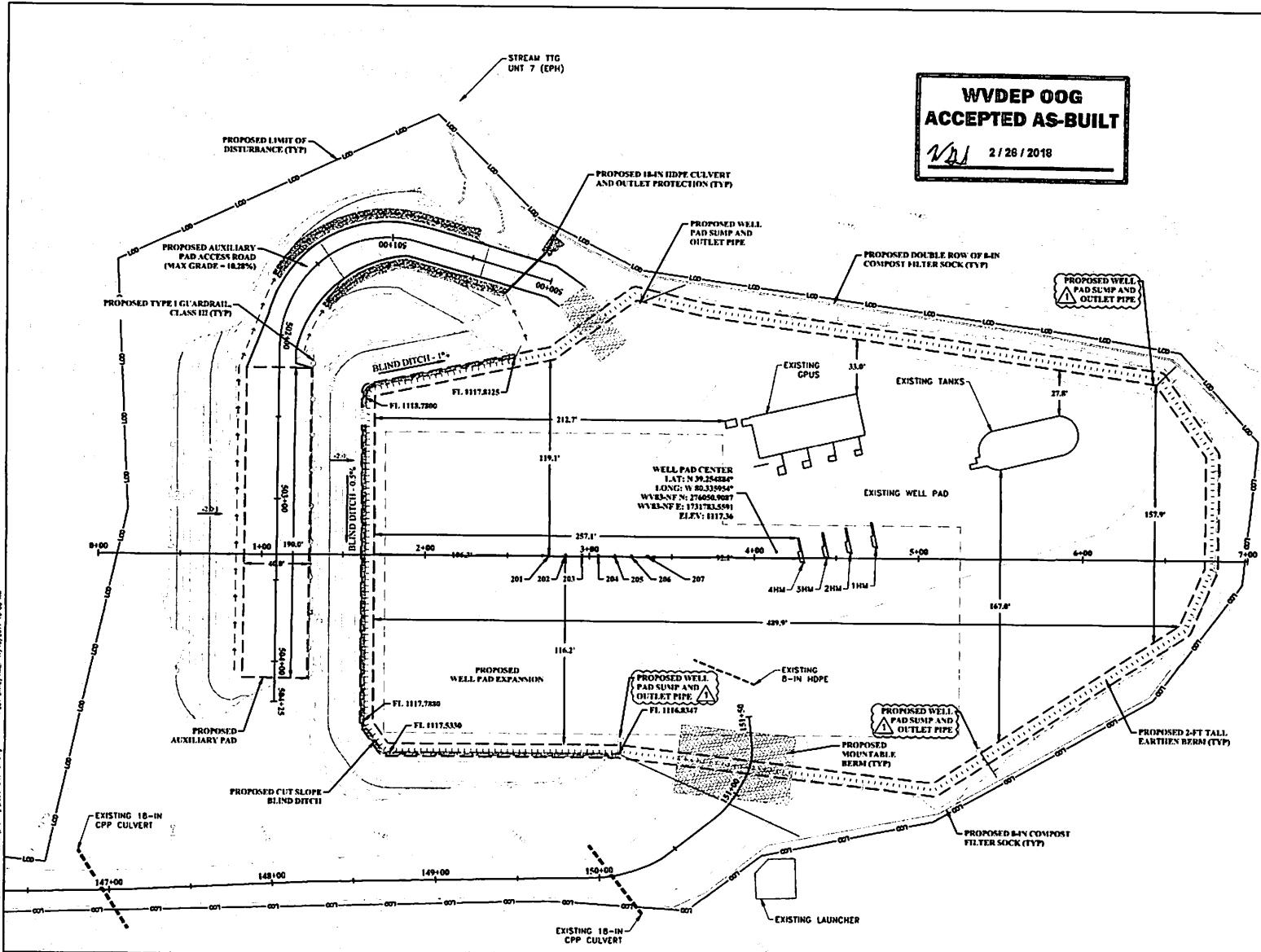
4703305914

**WVDEP 00G**  
**ACCEPTED AS-BUILT**  
*WJ* 2/26/2018

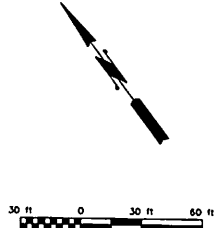
**PLAN LEGEND**

---	ENVIRONMENTAL DELINEATION AREA OF INTEREST
---	PROPERTY LINE
---	EXISTING CONTOURS
---	EXISTING UNPAVED ROAD EDGE
---	EXISTING CULVERT
---	EXISTING FENCE
---	EXISTING OVERHEAD UTILITY LINE AND POLE
---	EXISTING TREE LINE
---	DELINEATED STREAM - PERENNIAL
---	DELINEATED STREAM - INTERMITTENT
---	DELINEATED WETLAND - PALMTRINE EMERGENCY (PEM)
---	DELINEATED WETLAND - PALMTRINE OPEN WATER (POW)
---	DELINEATED WETLAND - PALMTRINE FORESTED (PFD)
---	DELINEATED WETLAND - PALMTRINE SCRB/SHRUB (PSB)
---	LIMIT OF DISTURBANCE
---	PROPOSED CONTOUR
---	PROPOSED CUT LIMIT
---	PROPOSED FILL LIMIT
---	APPROXIMATE CUT-FILL INTERFACE - ZERO CUT LINE
---	PROPOSED EDGE OF STAGING AREA
---	PROPOSED EDGE OF TASK PAD
---	PROPOSED EDGE OF WELL PAD
---	PROPOSED SOIL TO BE KEV (SEE DETAILS)
---	PROPOSED WELL PAD BEAM
---	PROPOSED EDGE OF ACCESS ROAD
---	PROPOSED EDGE OF TPO/SLOP STOCKPILE
---	PROPOSED 8-IN COMPOST FILTER SOCK (CFS)
---	PROPOSED 18-IN COMPOST FILTER SOCK (CFS)
---	PROPOSED 18-IN COMPOST FILTER SOCK (CFS)
---	PROPOSED VEGETATED DETIC
---	PROPOSED ROCK LINED DETIC
---	PROPOSED OUTLET PROTECTION

- NOTES**
- EXISTING CONTOURS AND EXISTING EQUIPMENT LOCATIONS ARE BASED UPON A COMBINATION OF FIELD SURVEY, GIS DATA, AND AERIAL DAUGHTERY FLYING BY PHOTO IN AUGUST 21, 2017.
  - ENVIRONMENTAL DELINEATIONS WERE PERFORMED BY TIG IN AUGUST 2017.
  - THE CONTRACTOR SHALL MAINTAIN ALL EXISTING ACCESS ROADS THROUGHOUT CONSTRUCTION.
  - IN THE EVENT MAINTENANCE AND/OR REPAIRS TO THE EXISTING ACCESS ROADS REQUIRE EARTH DISTURBANCE, THE CONTRACTOR SHALL INSTALL PROPERLY SIZED EROSION AND SEDIMENT CONTROL BMP'S BASED UPON FIELD CONDITIONS AND IN ACCORDANCE WITH THE WVDEP OFFICE OF OIL AND GAS EROSION AND SEDIMENT CONTROL FIELD MANUAL.



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NO.	REV.	DATE	DESCRIPTION
1	JCA	12/19/17	ADDED SHUMP LABELS
2	RWN	11/15/17	ISSUED FOR PERMITS

**ARSENAL RESOURCES**

SCALE: DRAWING DATE: CHECKED DATE: APPROVED DATE: SURVEY DATE: SURVEY BY: FIELD BOOK NO.:

**THRASHER**

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PHASE No. CONTRACT No. PROJECT No. 101-050-3250

ARSENAL RESOURCES  
 CONSTRUCTION PLANS FOR THE  
 D'ANNUNZIO HCCP-7 WELL PAD  
 HARRISON COUNTY, WEST VIRGINIA  
 WELL PAD PLAN

SHEET No. 14