



west virginia department of environmental protection

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

Jim Justice , Governor
Austin Caperton , Cabinet Secretary
www.dep.wv.gov

Wednesday, April 05, 2017
WELL WORK PERMIT
Horizontal 6A / Re-Work

ANTERO RESOURCES CORPORATION (A)
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit approval for RIKK UNIT 1H
47-017-06228-00-00

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: RIKK UNIT 1H
Farm Name: DAVIDSON, WALTER V. AND LEONARD J.
U.S. WELL NUMBER: 47-017-06228-00-00
Horizontal 6A / Re-Work
Date Issued: 4/5/2017

Promoting a healthy environment.

04/07/2017

PERMIT CONDITIONS

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

CONDITIONS

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

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

1) Well Operator: Antero Resources Corporation 494507062 017 - Doddri Greenbri Salem & Big Isaac
Operator ID County District Quadrangle

2) Operator's Well Number: Rikk Unit 1H Well Pad Name: Existing Leonard Pad

3) Farm Name/Surface Owner: Walter V. Davidson & Leonard J. Davidson Public Road Access: CR 42

4) Elevation, current ground: 1320' Elevation, proposed post-construction: 1320'

5) Well Type (a) Gas Oil Underground Storage

Other _____

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 7423' TVD, Anticipated Thickness- 50 feet, Associated Pressure- 3200#

8) Proposed Total Vertical Depth: 7423' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 17523' MD

11) Proposed Horizontal Leg Length: 7118'

12) Approximate Fresh Water Strata Depths: 107', 212'

13) Method to Determine Fresh Water Depths: Rikk Unit 1H (API# 47-017-06228) & Fuego Unit 2H (API# 47-017-06387) on same pad

14) Approximate Saltwater Depths: 1302', 1911'

15) Approximate Coal Seam Depths: 517', 1077', 2013'

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

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

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

Depth: _____

Seam: _____

Owner: _____

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NOV 28 2016

DAF
11/23/16

WW-6B
(04/15)

API NO. 47- 017 - 06228

OPERATOR WELL NO. Rikk Unit 1H

Well Pad Name: Existing Leonard Pad

18)

CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/48#	350' *See #19	350' *See #19	CTS, 486 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2604'	2604'	CTS, 1060 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	17523'	17523'	4379 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	24"	0.438"	1530	50	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	1000	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12,630	2500	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.

*Antero will be air drilling the fresh water string which makes it difficult to determine when freshwater is encountered, therefore we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

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

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs
Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 19.28 Existing Acres

22) Area to be disturbed for well pad only, less access road (acres): 4.51 Existing Acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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

Conductor: no additives, Class A cement.

Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

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25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

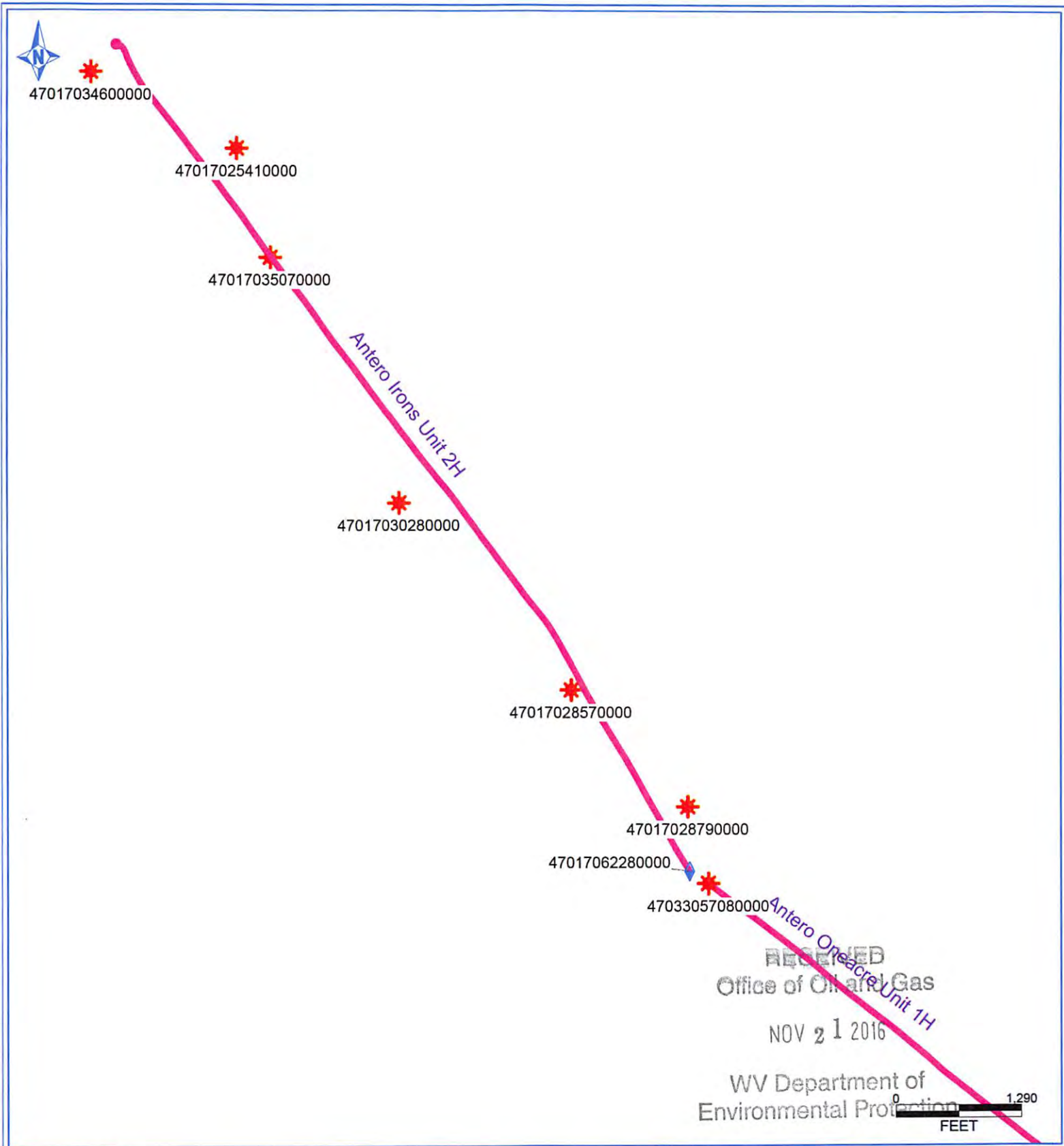
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

DAE
11/23/16

RIKK UNIT 1H (LEONARD PAD) - AREA OF REVIEW 35-8-5.11 PAGE 1



RIKK UNIT 1H (LEONARD PAD) - AREA OF REVIEW 35-8-5.11 PAGE 2

LN# (APD#)	Well Name	Well Number	Operator	Dist Oper	ELEV EB	ELEV GR	TD	TDSSTD	Perforated Formations	Produced, Not Perforated
4705305708000	ONEACRE UNIT	1H	ANTERO RESOURCES CORPORATION		1430		18770	-5993	Marcellus	Big Injun, Gordon, Baltzow, Eley, Benson, Alexander
47017025410000	GARRETT TRACT	1	BROOKME ED INC	CHASE PETROLEUM CO	1077	1087	5634	-4357	Benson, Alexander	Big Injun, Gordon, Baltzow, Eley
47017028790000	BAILEY R & F	2-204	BRANTON OMG CORP	J & J ENTERPRISES	1160	1150	5636	-4504	Big Injun, Baltzow, Eley, Benson, Alexander	Gordon
47017029020000	CASWELL TWA	5-363	ENERVEST OPERATING	SCOTT OIL & GAS	1392	1382	5493	-4211	Benson, Alexander	Big Injun, Gordon, Baltzow, Eley
47017028570000	DAVIS KOSHER 1	5-328	ENERVEST OPERATING	SCOTT OIL & GAS	1041	1031	5459	-4432	Benson, Alexander	Big Injun, Gordon, Baltzow, Eley
47017034800000	GARNER LAVERNA E MEIRS	2	KONROL GAS COMPANY	STONEWALL GAS	1314	1304	5900	-4584	Gordon, Benson, Alexander	Big Injun, Baltzow, Eley
47017035070000	BAKOLF BRK ET AL	1	KONROL GAS COMPANY	STONEWALL GAS	1460	1450	5956	-4504	Benson, Alexander	Big Injun, Gordon, Baltzow, Eley

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WW-9
(4/16)

API Number 47 - 017 - 06228

Operator's Well No. Rikk Unit 1H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 4945C7062

Watershed (HUC 10) Headwaters Middle Island Creek Quadrangle Salem & Big Isaac

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: No pit will be used at this site (Drilling and Flowback Fluids will be stored in tanks. Cuttings will be landed and hauled off site.)

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number *UIC Permit # will be provided on Form WR-34)
- Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34)
- Off Site Disposal (Supply form WW-9 for disposal location) (Meadowfill Landfill Permit #SWF-1032-98)
- Other (Explain Northwestern Landfill Permit #SWF-1025/ WV0109410)

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Surface - Air/Fresh water, Stermed etc - Dust/Slit Foam, Production - Water Based Mud

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

Additives to be used in drilling medium? Please See Attachment

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Stored in tanks, removed offsite and taken to landfill.

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

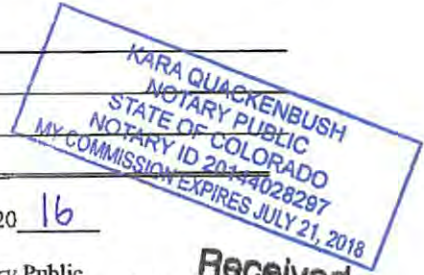
-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98), Northwestern Landfill (Permit # SWF-1025/WV0109410)

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 *Cole Kilstrom*
Company Official (Typed Name) Cole Kilstrom
Company Official Title Environmental & Regulatory Manager



Subscribed and sworn before me this 18 day of November, 20 16

Kara Quackenbush Notary Public

My commission expires July 21, 2018

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Form WW-9

Operator's Well No. Rikk Unit 1H

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 19.28 Existing Acres _____ Prevegetation pH _____

Lime 2-4 Tons/acre or to correct to pH 6.5

Fertilizer type Hay or straw or Wood Fiber (will be used where needed)

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Road A (7.89)+ Road B (2.56) + Drill Pad (4.51) & Tree Brush Storage (0.30) + Water Tank Pad (3.57) + Topsoil/Spoil Pile (0.45) = 19.28 Acres

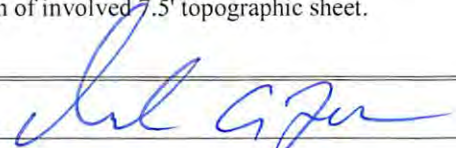
Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	45	Tall Fescue	45
Perennial Rye Grass	20	Perennial Rye Grass	20
*or type of grass seed requested by surface owner		*or type of grass seed requested by surface owner	

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: 

Comments: _____

Title: Oil & Gas Inspector

Date: 11/23/14

Field Reviewed? Yes No

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911 Address
3017 Buffalo Calf Rd.
Salem, WV 26426

Well Site Safety Plan

Antero Resources

Well Name: Blackwood Unit 1H, Blackwood Unit 2H,
Blackwood Unit 3H, Irons Unit 2H, Pratt Unit
1H, Pratt Unit 2H, Rikk Unit 1H, Rikk Unit 2H

Pad Location: LEONARD PAD
Doddridge County/Greenbrier District

GPS Coordinates:

Entrance - Lat 39°15'47.72"/Long -80°35'42.79" (NAD83)

Pad Center - Lat 39°15'55.35"/Long -80°35'47.00" (NAD83)

Driving Directions:

From the intersection of US-50 and I-79 near Bridgeport WV, drive WEST for ~16 miles. Near the town of Salem head SOUTH on Co Route 50/1 for 0.7 miles. Turn RIGHT onto County Rd 50/73/E Main St and continue to follow County Rd 50/73/E Main St for 0.5 miles. Continue onto South St for 0.2 miles. Continue onto Patterson Rd for 0.2 miles. Continue onto Co Route 29/Patterson Fork Rd 0.2 miles. Turn right to follow Buffalo-Calf Rd (Co Route 42) for 2.6 miles, access road will be on the right.

Alternate Route:

From the intersection for Hwy 18 N and US-50E, head east on US 50 E for 5.6 miles. Turn right at Co Rte 50/35 for 0.1 miles. Continue onto Blacklick road for 2.1 miles. Turn right onto Blacklick Rd/Sherwood-Greenbrier Rd for 1.3 miles. Slight left onto Buffalo Calf for 3.1 miles. The access road will be on the left.

EMERGENCY (24 HOUR) CONTACT 1-800-878-1373

Jul 9 7hr
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Form WW-9 Additives Attachment

SURFACE INTERVAL

- 1. Fresh Water
- 2. Soap –Foamer AC
- 3. Air

INTERMEDIATE INTERVAL

STIFF FOAM RECIPE:

- 1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
- 2) 1 ppb Conqor 404 (11.76 ppg) / Corrosion Inhibitor
- 3) 4 ppb KLA-Gard (9.17 ppg) / Amine Acid Complex-Shale Stabilizer
- 4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
- 5) 12 ppb KCL / Potassium Chloride-inorganic Salt
- 6) Fresh Water 80 bbls
- 7) Air

Always chilled

PRODUCTION INTERVAL

- 1. Alpha 1655
Salt Inhibitor
- 2. Mil-Carb
Calcium Carbonate
- 3. Cottonseed Hulls
Cellulose-Cottonseed Pellets – LCM
- 4. Mil-Seal
Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
- 5. Clay-Trol
Amine Acid Complex – Shale Stabilizer
- 6. Xan-Plex
Viscosifier For Water Based Muds
- 7. Mil-Pac (All Grades)
Sodium Carboxymethylcellulose – Filtration Control Agent
- 8. New Drill
Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
- 9. Caustic Soda
Sodium Hydroxide – Alkalinity Control
- 10. Mil-Lime
Calcium Hydroxide – Lime
- 11. LD-9
Polyether Polyol – Drilling Fluid Defoamer
- 12. Mil Mica
Hydro-Biotite Mica – LCM

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13. Escaid 110
Drilling Fluid Solvent – Aliphatic Hydrocarbon
14. Ligco
Highly Oxidized Leonardite – Filtration Control Agent
15. Super Sweep
Polypropylene – Hole Cleaning Agent
16. Sulfatrol K
Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous
Inorganic Salt
18. D-D
Drilling Detergent – Surfactant
19. Terra-Rate
Organic Surfactant Blend
20. W.O. Defoam
Alcohol-Based Defoamer
21. Perma-Lose HT
Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D
Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells
Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite
Natural Graphite – LCM
25. Mil Bar
Barite – Weighting Agent
26. X-Cide 102
Biocide
27. Soda Ash
Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol
Amine Acid complex – Shale Stabilizer
29. Sulfatrol
Sulfonated Asphalt – Shale Control Additive
30. Xanvis
Viscosifier For Water-Based Muds
31. Milstarch
Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube
Drilling Fluid Lubricant

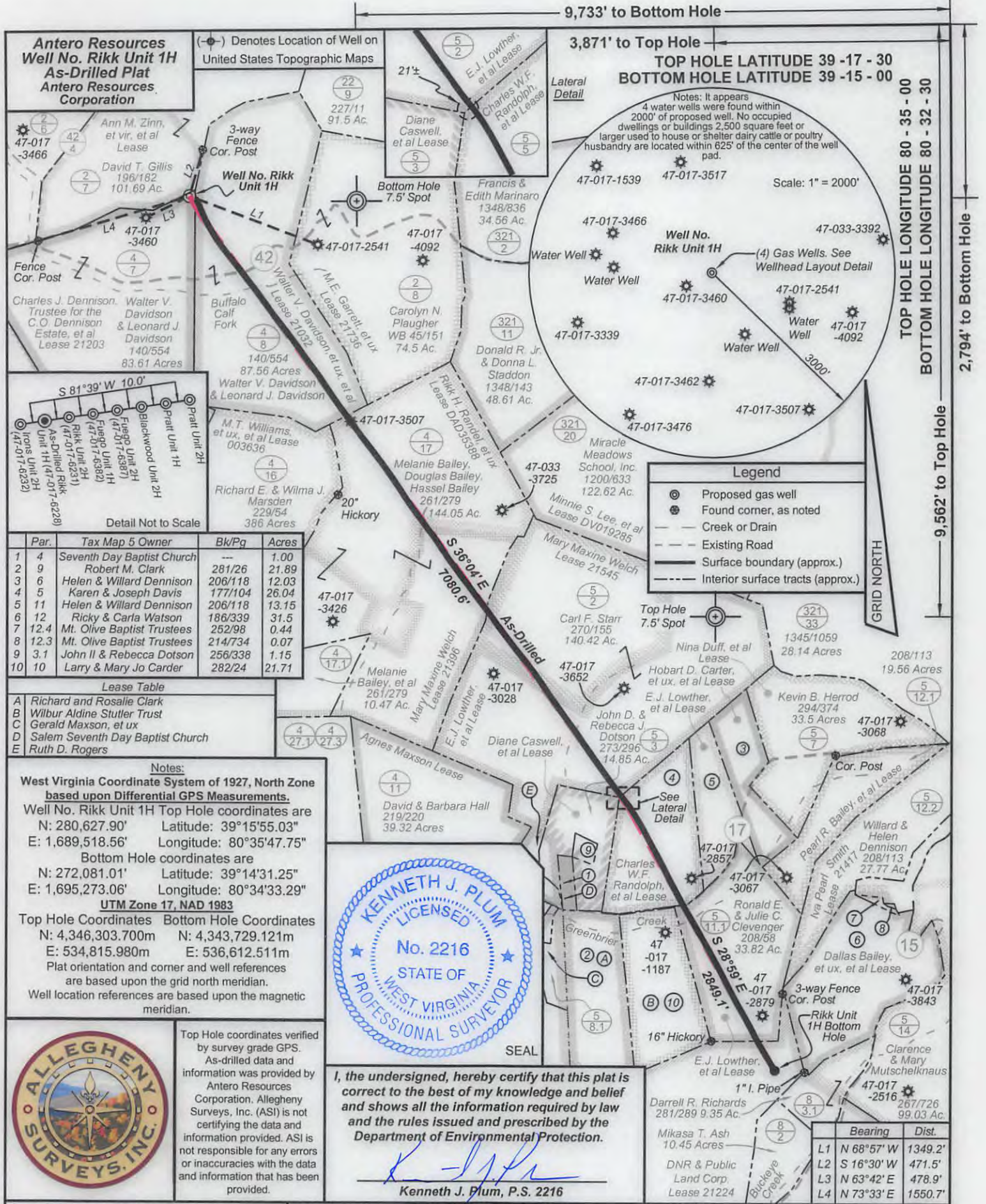
already drilled

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FILE NO: 41-30-GR-13
DRAWING NO: Rikk 1H Well Plat As-Drilled
SCALE: 1" = 1200'
MINIMUM DEGREE OF ACCURACY:
Submeter
PROVEN SOURCE OF ELEVATION:
WVDOT, Bridgeport, WV

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

DATE: March 2 2017
OPERATOR'S WELL NO. Rikk Unit 1H
API WELL NO
47 - 017 - 06228 F
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
LOCATION: ELEVATION: 1320' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: Salem & Big Isaac
DISTRICT: Greenbrier DNR & Public Land Corp.; Rikk H. Randel, et ux; COUNTY: Doddridge 04/07/2017
SURFACE OWNER: Walter V. Davidson & Leonard J. Davidson Charles W.F. Randolph, et al; ACREAGE: 83.61 92; 27; 47
ROYALTY OWNER: Charles J. Dennison, Trustee for the C.O. Dennison Estate, et al LEASE NO: DAD35388; 21545; 21224 ACREAGE: 84; 87; 90; 127; 65
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____ 7,423' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale DEPTH: 17,523' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
Denver, CO 80202 Charleston, WV 25313

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:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Ann M. Zinn, et vir, et al Lease</u>			
Ann Zinn, et vir	Antero Resources Appalachian Corporation	1/8+	0279/0381
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Charles J. Dennison, Trustee for the C.O. Dennison Estate, et al Lease</u>			
Charles J. Dennison, Trustee for the C.O. Dennison Estate	Clarence W. Mutschelknaus	1/8	0133/0134
Clarence W. Mutschelknaus, et al	Antero Resources Appalachian Corporation	Assignment	0262/0074
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Walter V. Davidson, et ux, et al Lease</u>			
Walter V. Davidson, et ux, et al	Clarence W. Mutschelknaus	1/8	0226/0179
Clarence W. Mutschelknaus, et al	Bluestone Energy Partners	Assignment	0243/0219
Bluestone Energy Partners	Antero Resources Bluestone, LLC, a wholly owned subsidiary of Antero Resources Appalachian Corporation	Merger	DB 0288/0001
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Rikk H. Randel, et ux Lease</u>			
Rikk H. Randel, et ux	Stonewall Gas Company	1/8	0144/0665
Stonewall Gas Company	Mountain Gas 86-1	Assignment and Agreement	0147/0411
Mountain Gas 86-1	Dominion Appalachian Development, LLC	Assignment	0177/0559
Dominion Appalachian Development, LLC., DTI, Inc. & DEPI	Antero Resources Appalachian Corporation	*Partial Assignment of Oil & Gas Leases	0230/0113
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Mary M. Welch Lease</u>			
Mary M. Welch	Bluestone Energy Partners	1/8	0239/0726
Bluestone Energy Partners	Antero Resources Bluestone, LLC, a wholly owned subsidiary of Antero Resources Appalachian Corporation	Merger	DB 0288/0001
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Mary M. Welch Lease</u>			
Mary M. Welch	Bluestone Energy Partners	1/8	0265/0224
Bluestone Energy Partners	Antero Resources Bluestone, LLC, a wholly owned subsidiary of Antero Resources Appalachian Corporation	Merger	DB 0288/0001
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

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Environmental Protection

*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

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:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>E.J. Lowther, et al Lease</u>			
E.J. Lowther, et al	Clarence W. Mutschelknaus	1/8	0110/0458
Clarence W. Mutschelknaus	Bluestone Energy Partners	Agreement	0232/0021
Bluestone Energy Partners	Antero Resources Bluestone, LLC, a wholly owned subsidiary of Antero Resources Appalachian Corporation	Merger	DB 0288/0001
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Diane Caswell, et al Lease</u>			
Diane Caswell	Antero Resources Appalachian Corporation	1/8+	0291/0479
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Charles W.F. Randolph, et al Lease</u>			
Charles W. F. Randolph, et al	Clarence W. Mutschelknaus	1/8	0110/0452
Clarence W. Mutschelknaus	Antero Resources Appalachian Corporation	Assignment	0272/0513
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Wilbur Aldine Stutler Trust Lease</u>			
Wilbur Aldine Stutler Trust Under Will, JP Morgan Chase Bank, N.A. Trustee	Tenmile Land, LLC	1/8	0243/0523
Tenmile Land, LLC	Bluestone Energy Partners	1/8	0244/0269
Bluestone Energy Partners	Antero Resources Bluestone, LLC, a wholly owned subsidiary of Antero Resources Appalachian Corporation	Merger	DB 0288/0001
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>E.J. Lowther, et al Lease</u>			
E.J. Lowther, et al	Clarence W. Mutschelknaus	1/8	0110/0458
Clarence W. Mutschelknaus	Antero Resources Appalachian Corporation	*Partial Assignment	0268/0671
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

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**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
DNR & Public Land Corp Lease 21224 Lease				
	Department of Natural Resources of the State of West Virginia and the Public Land Corporation of the State of West Virginia	Clarence W. Mutschelknaus	1/8	0145/0029
	Clarence W. Mutschelknaus, Clarence W. Mutschelknaus, Jr. & Helen Suzanne Osborne	Antero Resources Appalachian Corp.	Assignment	0262/0074
	Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

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

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

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

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

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Well Operator: Antero Resources Corporation
 By: Kevin Kilstrom *[Signature]*
 Its: Senior VP of Production
 WV Department of Environmental Protection

**FORM WW-6A1
EXHIBIT 1**

FILED

JUN 10 2013

Natalie E. Tennant
Secretary of State
1900 Kanawha Blvd E
Bldg 1, Suite 157-K
Charleston, WV 25305



Penney Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvsos.com
E-mail: business@wvsos.com

**APPLICATION FOR
AMENDED CERTIFICATE
OF AUTHORITY**

Office Hours: Monday - Friday
8:30 a.m. - 5:00 p.m. ET

FILE ONE ORIGINAL
(Two if you want a filed
stamped copy returned to you)
FEE: \$25.00

**** In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby ****
applies for an Amended Certificate of Authority and submits the following statement:

- 1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- 2. Date Certificate of Authority was issued in West Virginia: 6/25/2008
- 3. Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
- 4. Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
- 5. Other amendments: _____
(attach additional pages if necessary)

6. Name and phone number of contact person. (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alvyn A. Schopp (303) 357-7310
Contact Name Phone Number

7. Signature information (See below **Important Legal Notice Regarding Signature**):

Print Name of Signer: Alvyn A. Schopp Title/Capacity: Authorized Person

Signature: *Alvyn A. Schopp* Date: June 10, 2013

**Important Legal Notice Regarding Signature:* Per West Virginia Code §31D-1-129. Penalty for signing false documents. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

Form CF-4

Issued by the Office of the Secretary of State

WV011 - 04/16/2012 Website: www.wvsos.com

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WV Department of
Environmental Protection

04/07/2017



Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

November 18, 2016

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

RE: Rikk Unit 1H (API# 47-017-06228)
Quadrangle: Salem & Big Isaac
Doddridge County/Greenbrier District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the Rikk Unit 1H horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the Rikk Unit 1H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

A handwritten signature in blue ink, appearing to read "Tim Rady", is written over the word "Sincerely,".

Tim Rady
Director, Land Operations - Marcellus

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

Date of Notice Certification: 11/17/2016

API No. 47- 017 - 06228

Operator's Well No. Rikk Unit 1H

Well Pad Name: Existing Leonard Pad

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>534815.980m</u>
County:	<u>Doddridge</u>		Northing:	<u>4346303.700m</u>
District:	<u>Greenbrier</u>	Public Road Access:		<u>CR 42</u>
Quadrangle:	<u>Salem & Big Isaac</u>	Generally used farm name:		<u>Walter V. Davidson & Leonard J. Davidson</u>
Watershed:	<u>Headwaters Middle Island Creek</u>			

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

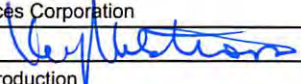
<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><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>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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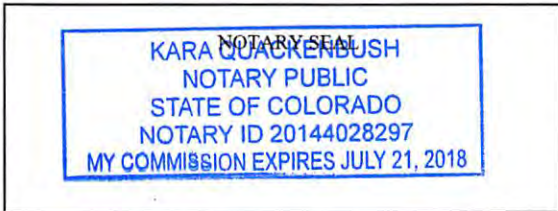
Required Attachments:

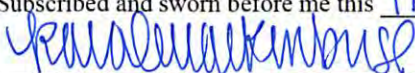
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach only by the Class II Legal Advertisement with publication date 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.

Certification of Notice is hereby given:

THEREFORE, I Kevin Kilstrom, 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>Antero Resources Corporation</u>	Address:	<u>1615 Wynkoop Street</u>
By:	<u>Kevin Kilstrom</u> 		<u>Denver, CO 80202</u>
Its:	<u>Senior VP of Production</u>	Facsimile:	<u>303-357-7315</u>
Telephone:	<u>303-357-7310</u>	Email:	<u>kquackenbush@anteroresources.com</u>



Subscribed and sworn before me this 17 day of November 2016

 _____ Notary Public
 My Commission Expires July 21, 2018

Oil and Gas Privacy Notice:

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

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 Environmental Protection

**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: 11/18/2016 **Date Permit Application Filed:** 11/18/2016

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: PLEASE SEE ATTACHMENT
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: PLEASE SEE ATTACHMENT
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
Name: PLEASE SEE ATTACHMENT
Address: _____

COAL OWNER OR LESSEE
Name: PLEASE SEE ATTACHMENT
Address: _____

COAL OPERATOR
Name: _____
Address: _____

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL,
SPRING OR OTHER WATER SUPPLY SOURCE
Name: PLEASE SEE ATTACHMENT
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

*Please attach additional forms if necessary

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Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

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04/07/2017

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

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04/07/2017

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)

API NO. 47- 017 - 06228

OPERATOR WELL NO. Rikk Unit 1H

Well Pad Name: Existing Leonard Pad

47-017-06228

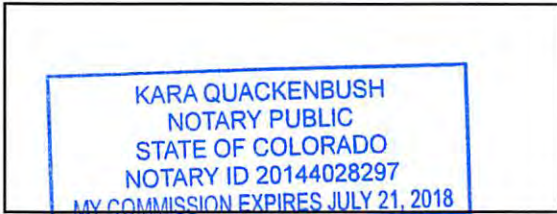
Notice is hereby given by:

Well Operator: Antero Resources Corporation
Telephone: (303) 357-7310
Email: kquackenbush@anteroresources.com

Address: 1615 Wynkoop Street
Denver, CO 80202
Facsimile: 303-357-7315

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 18 day of November 2016

Kara Quackenbush Notary Public

My Commission Expires July 21, 2018

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Environmental Protection
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WW-6A Notice of Application Attachment (LEONARD PAD):**List of Surface Owner(s) with Proposed Disturbance associated with Leonard Well Pad:**

WELL PAD – All owners were notified of all well work permit applications, and have executed signed Surface Use Agreements with Antero Resources Corporation.

TM 2 PCL 7

Owner: David T. Gillis
Address: 54 New Quarters Rd.
 Meadowbrook, WV 26404

Owner: David T. Gillis (2nd Address)
Address: RR 2 Box 203
 Meadowbrook, WV 26404

TM 4 PCL 7,8

Owner: Walter V. Davidson & Leonard J. Davidson; C/O Marlene Davidson
Address: RR 1 Box 287
 Salem, WV 26426

Owner: Walter V. Davidson & Leonard J. Davidson; C/O Marlene Davidson (2nd Address)
Address: 246 Buffalo Calf Rd.
 Salem, WV 26426

Owner: David Walter Davidson
Address: PO Box 10
 Salem, WV 26426

Owner: Connie Josephine Wallace & George Wallace
Address: 6519 Devinney Dr.
 Indianapolis, IN 42221

Owner: Diana Marie Maxwell & Kevin Maxwell
Address: 2679 Sardis Rd.
 Clarksburg, WV 26301

Owner: Diana Marie Maxwell & Kevin Maxwell (2nd Address)
Address: RR 4 Box 132
 Clarksburg, WV 26301

WW-6A Notice of Application Attachment (LEONARD PAD):**List of Surface Owner(s) with Proposed Disturbance associated with Leonard Well Pad:**

ROAD AND/OR OTHER DISTURBANCE – All owners have executed signed Surface Use and/or Road Agreements with Antero Resources Corporation. However, they were only notified if their tracts were overlying the oil and gas leasehold being developed by the proposed well work.

TM 2 PCL 8

Owner: Carolyn N. Plaughter
Address: RR 1 Box 407A
 Salem, WV 26426

Owner: Carolyn N. Plaughter (2nd Address)
Address: 2335 Buffalo Calf Rd.
 Salem, WV 26426

COAL OWNER OR LESSEE

Owner: Consolidation Coal Company
 CONSOL Energy, Inc. – CNX Center
 Engineering & Operations Support – Coal, ATTN: Analyst
Address: 1000 CONSOL Energy Dr.
 Canonsburg, PA 15317

WATER SOURCE OWNERS – Within 1500'

*NOTE: On attached water well map 2 other water sources are identified, but they are located greater than 1500' from the subject well pad location.

Owner: Carolyn N. Plaughter
Address: RR 1 Box 407A
 Salem, WV 26426

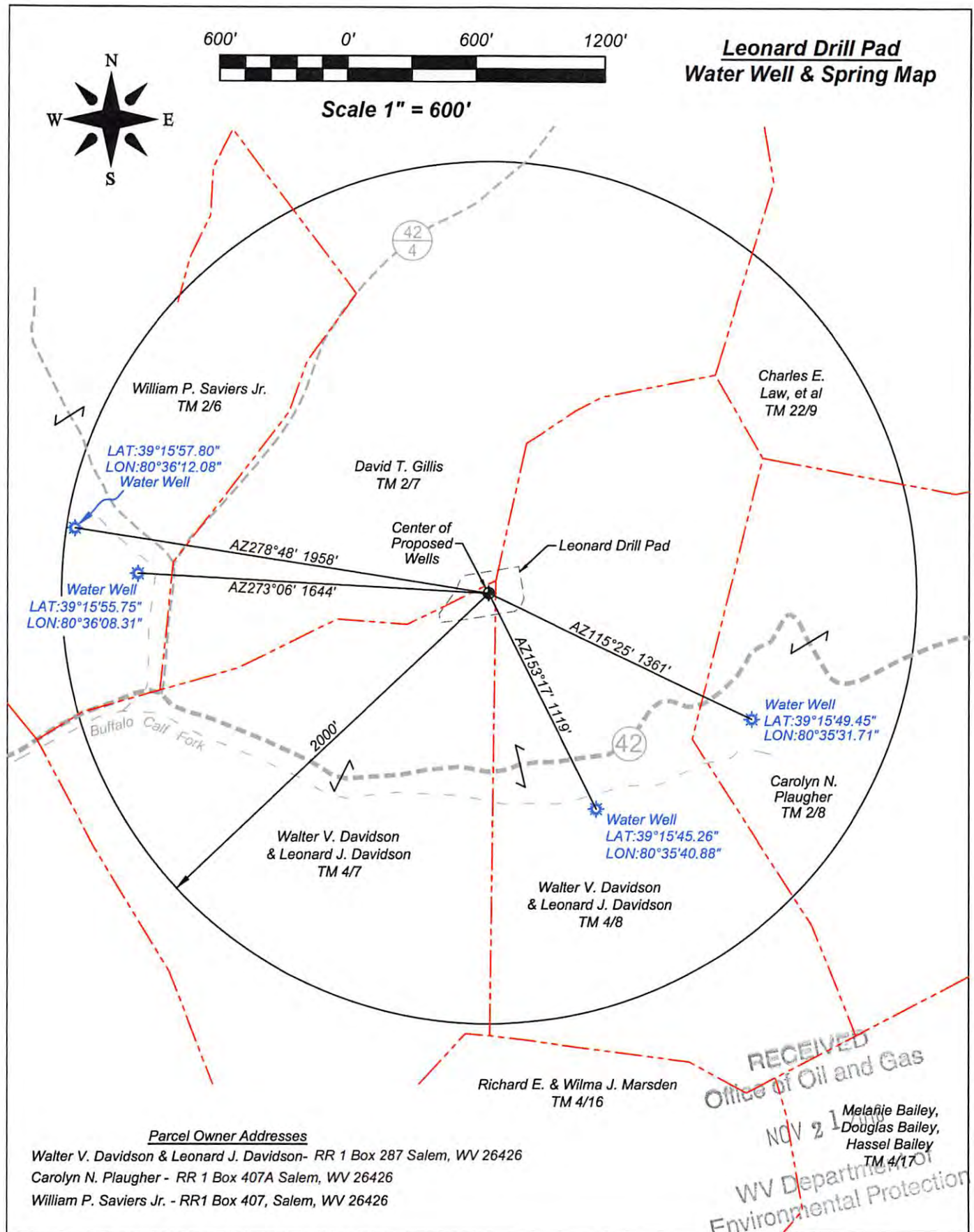
Owner: Carolyn N. Plaughter (2nd Address)
Address: 2335 Buffalo Calf Rd.
 Salem, WV 26426

Owner: Walter V. Davidson & Leonard J. Davidson; C/O Marlene Davidson
Address: RR 1 Box 287
 Salem, WV 26415

Owner: Walter V. Davidson & Leonard J. Davidson; C/O Marlene Davidson (2nd Address)
Address: 246 Buffalo Calf Rd.
 Salem, WV 26415

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

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

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.

Date of Notice: 11/08/2016 **Date Permit Application Filed:** 11/18/2016

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

HAND DELIVERY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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

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

Name: PLEASE SEE ATTACHMENT
Address: _____

Name: _____
Address: _____

Notice is hereby given:

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

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>534818.6m (Approximate Pad Center)</u>
County:	<u>Doddridge</u>		Northing:	<u>4346303.9m (Approximate Pad Center)</u>
District:	<u>Greenbrier</u>	Public Road Access:	<u>Buffalo Calf</u>	
Quadrangle:	<u>Salem 7.5'</u>	Generally used farm name:	<u>Davidson, Water V. & Leonard J. Heirs</u>	
Watershed:	<u>Headwaters Middle Island Creek</u>			

This Notice Shall Include:

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

Notice is hereby given by:

Well Operator: Antero Resources Appalachian Corporation
Address: 1615 Wynkoop St.
Denver, CO 80202
Telephone: 303-357-7323
Email: kquackenbush@anteroresources.com
Facsimile: 303-357-7315

Authorized Representative: Kara Quackenbush
Address: 1615 Wynkoop St.
Denver, CO 80202
Telephone: 303-357-7323
Email: kquackenbush@anteroresources.com
Facsimile: 303-357-7315

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.

WW-6A4 Notice of Intent to Drill Attachment:

Surface Owners:

Tax Parcel ID: 4-7 & 8

Owner: Walter V. & Leonard J.
Davidson c/o Marlene Marie
Pratt Davidson
Address: 246 Buffalo Calf Rd.
Salem, WV 26426

Owner: David Walter Davidson
Address: PO Box 10
Salem, WV 26426

Owner: Connie Josephine Wallace &
George Wallace
Address: 6519 Devinney Dr.
Indianapolis, IN 42221

Owner: Diana Marie Maxwell & Kevin
Maxwell
Address: 2679 Sardis Rd.
Clarksburg, WV 26301

Owner: Diana Marie Maxwell & Kevin
Maxwell (2nd Address)
Address: RR 4 Box 132
Clarksburg, WV 26301

Surface Owners:

Tax Parcel ID: 2-7

Owner: David T. Gillis
Address: 54 New Quarters Rd.
Meadowbrook, WV 26404

Owner: David T. Gillis (2nd Address)
Address: RR 2 Box 203
Meadowbrook, WV 26404



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

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

Date of Notice: 11/18/2016 **Date Permit Application Filed:** 11/18/2016

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

- | | |
|--|-------------------------------|
| <input checked="" type="checkbox"/> CERTIFIED MAIL | <input type="checkbox"/> HAND |
| RETURN RECEIPT REQUESTED | DELIVERY |

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

Notice is hereby provided to the SURFACE OWNER(s)

(at the address listed in the records of the sheriff at the time of notice):

Name: <u>PLEASE SEE ATTACHMENT</u>	Name: _____
Address: _____	Address: _____

Notice is hereby given:

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

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>534815.980m</u>
County: <u>Doddridge</u>	Northing: <u>4346303.700m</u>
District: <u>Greenbrier</u>	Public Road Access: <u>CR 42</u>
Quadrangle: <u>Salem & Big Isaac</u>	Generally used farm name: <u>Walter V. Davidson & Leonard J. Davidson</u>
Watershed: <u>Headwaters Middle Island Creek</u>	

This Notice Shall Include:

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

Well Operator: <u>Antero Resources Corporation</u>	Address: <u>1615 Wynkoop Street</u>
Telephone: <u>(303) 357-7310</u>	<u>Denver, CO 80202</u>
Email: <u>kquackenbush@anteroresources.com</u>	Facsimile: <u>303-357-7315</u>

Oil and Gas Privacy Notice:

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

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WW-6A5 Notice of Planned Operations Attachment (HUBERT PAD):**List of Surface Owner(s) with Proposed Disturbance associated with Hubert Well Pad:**

WELL PAD – Owners were notified of all well work permit applications, and have executed a signed Surface Use Agreement with Antero Resources Corporation.

TM 2 PCL 7

Owner: David T. Gillis
Address: 54 New Quarters Rd.
 Meadowbrook, WV 26404

Owner: David T. Gillis (2nd Address)
Address: RR 2 Box 203
 Meadowbrook, WV 26404

TM 4 PCL 7,8

Owner: Walter V. Davidson & Leonard J. Davidson; C/O Marlene Davidson
Address: RR 1 Box 287
 Salem, WV 26426

Owner: Walter V. Davidson & Leonard J. Davidson; C/O Marlene Davidson (2nd Address)
Address: 246 Buffalo Calf Rd.
 Salem, WV 26426

Owner: David Walter Davidson
Address: PO Box 10
 Salem, WV 26426

Owner: Connie Josephine Wallace & George Wallace
Address: 6519 Devinney Dr.
 Indianapolis, IN 42221

Owner: Diana Marie Maxwell & Kevin Maxwell
Address: 2679 Sardis Rd.
 Clarksburg, WV 26301

Owner: Diana Marie Maxwell & Kevin Maxwell (2nd Address)
Address: RR 4 Box 132
 Clarksburg, WV 26301

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WV Department of
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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

Earl Ray Tomblin
 Governor

Paul A. Mattox, Jr., P. E.
 Secretary of Transportation/
 Commissioner of Highways

November 15, 2016

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

Subject: DOH Permit for the Leonard Pad, Doddridge County

Rikk Unit 1H Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #04-2012-0716 which has been issued to Antero Resources Corporation for access to the State Road for a well site located off of Doddridge County Route 42 SLS.

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

Very Truly Yours,

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

Cc: Kara Quackenbush
 Antero Resources Corporation
 CH, OM, D-4
 File

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04/07/2017

List of Anticipated Additives Used for Fracturing or Stimulating Well

Additives	Chemical Abstract Service Number (CAS #)
Fresh Water	7732-18-5
2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
Ammonium Persulfate	7727-54-0
Anionic copolymer	Proprietary
Anionic polymer	Proprietary
BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
Cellulase enzyme	Proprietary
Demulsifier Base	Proprietary
Ethoxylated alcohol blend	Mixture
Ethoxylated Nonylphenol	68412-54-4
Ethoxylated oleylamine	26635-93-8
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
Guar gum	9000-30-0
Hydrogen Chloride	7647-01-0
Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
Isopropyl alcohol	67-63-0
liquid, 2,2-dibromo-3-nitrilopropionamide	10222-01-2
Microparticle	Proprietary
Petroleum Distillates (BTEX Below Detect)	64742-47-8
Polyacrylamide	57-55-6
Propargyl Alcohol	107-19-7
Propylene Glycol	57-55-6
Quartz	14808-60-7
Sillica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7
Solvent Naphtha, petroleum, heavy aliph	64742-96-7
Soybean Oil, Me ester	67784-80-9
Copolymer of Maleic and Acrylic Acid	52255-49-9
DETA phosphonate	15827-60-8
Hexamethylene Triamine Penta	34690-00-1
Phosphino Carboxylic acid polymer	71050-62-9
Hexamethylene Diamine Tetra	23605-75-5
2-Propenoic acid, polymer with 2 propenamide	9003-06-9
Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5
Diethylene Glycol	111-46-6
Methenamine	100-57-0
Polyethylene polyamine	68603-67-8
Coco amine	61791-14-8
2-Propyn-1-olcompound with methyloxirane	38172-91-7

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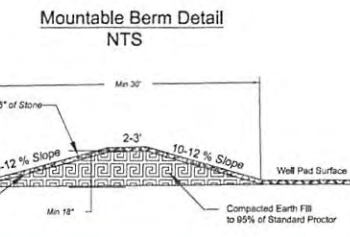
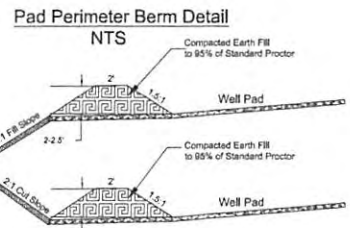
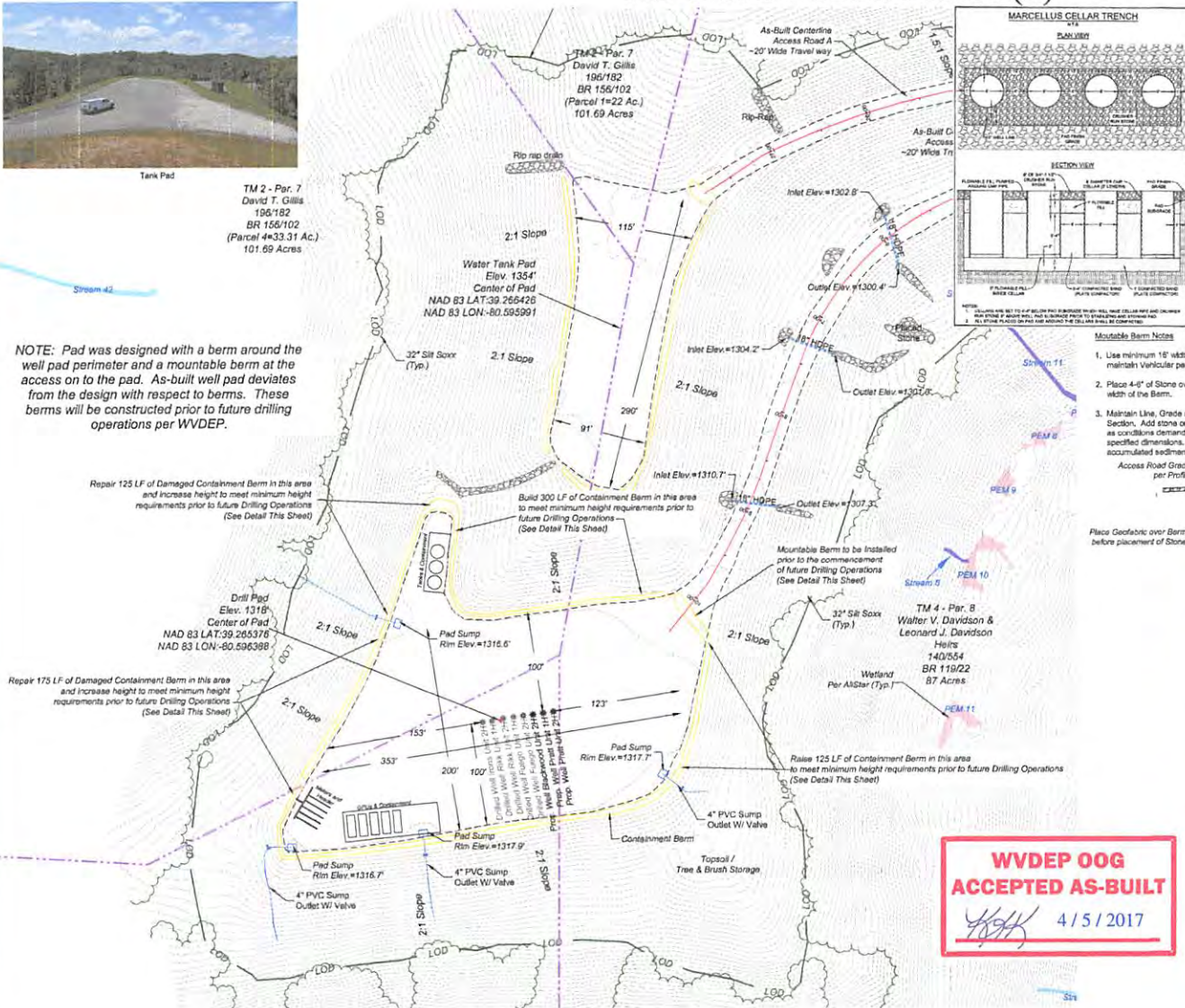
AS-BUILT SITE PLAN (3)



Tank Pad

TM 2 - Par. 7
David T. Gillis
196/182
BR 156/102
(Parcel 4#33.31 Ac.)
101.69 Acres

NOTE: Pad was designed with a berm around the well pad perimeter and a mountable berm at the access on to the pad. As-built well pad deviates from the design with respect to berms. These berms will be constructed prior to future drilling operations per WVDEP.



- Mountable Berm Notes**
1. Use minimum 18" width to maintain vehicular passage
 2. Place 4" of Stone over the width of the Berm.
 3. Maintain Line, Grade and Cross Section. Add stone or make Repairs as conditions demand to maintain specified dimensions. Remove accumulated sediment and debris.



Well Pad

**WVDEP OOG
ACCEPTED AS-BUILT**
[Signature] 4/5/2017

Note: The site has been fully stabilized.

As-Built Certification
This as-built certifies that this Well Pad and access road was constructed in reasonable conformance with the design drawings that were prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection, Office of Oil and Gas § CSR 35-8.

Legend	
As-Built 2' Contour	LOO - Limits of Disturbance
As-Built 10' Contour	SF - Silt Fence
Tree Line	32" Silt Soxx
Surface Owner Property Line	Culvert
Existing Gas Line CL	Guard Rail

DATE	REVISIONS
2-3-17	Revised to Add Cellar Detail

Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 868-5035

PROFESSIONAL ENGINEER
No. 1040
11/15/03

L & W ENTERPRISES, INC.
1000 W. MARKET ST., FLOOR 200
PITTSBURGH, PA 15222
TEL: 412.261.1000 FAX: 412.261.1001

ANTERO RESOURCES
THIS DOCUMENT PREPARED FOR ANTERO RESOURCES CORPORATION

AS-BUILT SITE PLAN (3)
LEONARD PAD
GREENBRIER DISTRICT
DODDRIEGE COUNTY, WV

Date: 5/17/16
Scale: 1" = 50'
Designed by: CKW/CKM
Title No.: Antero 110-12
Page 4 of 6

LEONARD PAD AS-BUILT ANTERO RESOU



Well Table			
Drilled Well: Irons Unit 2H NAD83 UTM Meters: N = 4346523.35 NAD83 UTM Meters: E = 534615.25 WV NAD83 N: 280663.43 WV NAD83 E: 165096.80 LAT NAD83: 39.265371 LON NAD83: -80.594450 API # 017-06232	Drilled Well: Rika Unit 1H NAD83 UTM Meters: N = 4346229.75 NAD83 UTM Meters: E = 534615.98 WV NAD83 N: 280664.52 WV NAD83 E: 165077.79 LAT NAD83: 39.265374 LON NAD83: -80.594418 API # 017-06228	Drilled Well: Rika Unit 2H NAD83 UTM Meters: N = 4346204.98 NAD83 UTM Meters: E = 534619.29 WV NAD83 N: 280667.15 WV NAD83 E: 165088.88 LAT NAD83: 39.265382 LON NAD83: -80.594379 API # 017-06231	Drilled Well: Fuggo Unit 1H NAD83 UTM Meters: N = 4346205.01 NAD83 UTM Meters: E = 534622.39 WV NAD83 N: 280668.47 WV NAD83 E: 165098.88 LAT NAD83: 39.265386 LON NAD83: -80.594344 API # 017-06236
Drilled Well: Fuggo Unit 2H NAD83 UTM Meters: N = 4346245.48 NAD83 UTM Meters: E = 534625.29 WV NAD83 N: 280669.86 WV NAD83 E: 165108.42 LAT NAD83: 39.265389 LON NAD83: -80.594310 API # 017-06287	Prop. Well Blackwood Unit 2H NAD83 UTM Meters: N = 4346235.78 NAD83 UTM Meters: E = 534628.14 WV NAD83 N: 280670.68 WV NAD83 E: 165111.81 LAT NAD83: 39.265392 LON NAD83: -80.594277	Prop. Well Pratt Unit 1H NAD83 UTM Meters: N = 4346236.27 NAD83 UTM Meters: E = 534631.15 WV NAD83 N: 280672.14 WV NAD83 E: 165127.20 LAT NAD83: 39.265397 LON NAD83: -80.594242	Prop. Well Pratt Unit 2H NAD83 UTM Meters: N = 4346236.70 NAD83 UTM Meters: E = 534634.16 WV NAD83 N: 280673.59 WV NAD83 E: 165137.40 LAT NAD83: 39.265400 LON NAD83: -80.594228

Project Contacts

Antero Resources

Conrad Baston, Design and Construction Manager
304-842-4100 Off. 304-476-6200 Cell

Eli Wagoner, Environmental Engineer
304-622-3842, ext 311 Off. 304-476-9770 Cell

John McEvers, Operations Superintendent
304-842-4739 Off., 303-808-2423 Cell

Aaron Kunzler, Construction Supervisor
405-227-8344

Robert Works, Manager WV Design & Survey
304-842-4100 Off. 304-627-7405 Cell

Bob Eddy, Utility Coordinator
304-719-1599 Off.

Surveyor & Engineer

Bill Yetzer, PS, EI, - Allegheny Surveys Inc.
304-848-5035 Off. 304-619-4937 Cell

Kirk Wilson, PE - L&W Enterprises, Inc
304-257-4818 Off. 304-668-0365 Cell

FLOODPLAIN CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN:	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	NO
HEC-RAS STUDY COMPLETED:	N / A
FLOODPLAIN SHOWN ON DRAWINGS:	N / A
FIRM MAP NUMBER(S) FOR SITE:	54017C0165C
ACREAGES OF CONSTRUCTION IN FLOODPLAIN:	N / A

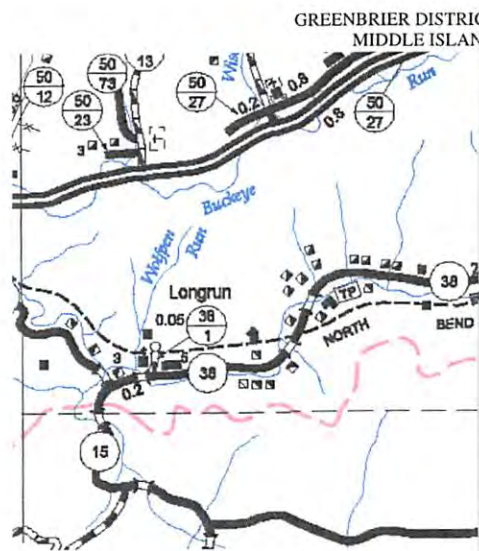
MISS Utility of West Virginia
1-800-245-4848
West Virginia State Law
(Section XIV: Chapter 24-C)
Requires that you call two business
days before you dig in the state of
West Virginia.
IT'S THE LAW!!



**Know what's below.
Call before you dig.**

Scale: 1000 0

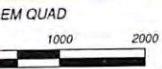
SITE	
Center of Pad (UTM Meters)	N/A
Center of Water Tank Pad (UTM Meters)	N/A
Begin Access Road (UTM Meters)	N/A
Center of Pad	
Center of Water Tank Pad	
Begin Access Road	



T & RECLAMATION PLAN ANTERO RESOURCES CORPORATION

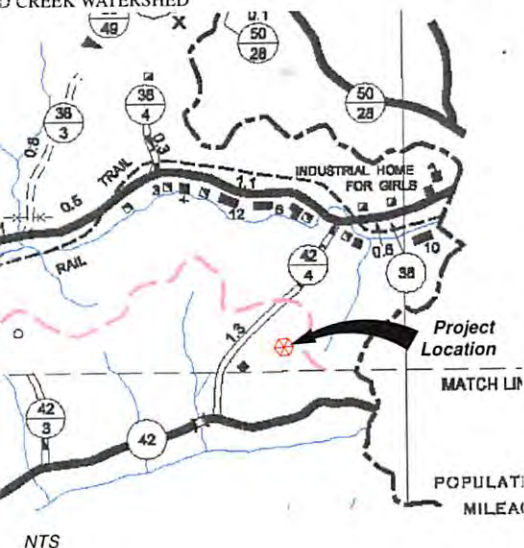


West Virginia State Plane Coordinate System
North Zone, NAD83
Elevations Based on NAVD88
Established By Survey Grade GPS & OPUS Post-Processing



LOCATIONS	NAD 83	Easting	Northing
1346303.9 m	E=534818.6 m	9265376	-80596388
1346420.6 m	E=534852.3 m	9266426	-80595991
1346068.9 m	E=534920.5 m	9263254	-80595219

T, DODDRIDGE COUNTY, WV
D CREEK WATERSHED



Owner Information					
Owner	TM/Parcel	Deed/Page	Total Acres	Type of Disturbance	Acres
David T. Gillis	2/7	196/182	101.69	Drill Pad	1.23
				Water Tank Pad	2.27
				Spoil Pad	0.45
				Total	3.95
Carolyn N. Plaugher C/o Randy Plaugher	2/8	WB 45/151 DB 173/335	74.5	Road A	0.16
				Total	0.16
				Walter V. Davidson & Leonard J. Davidson Heirs	4/7
Total	1.66				
Walter V. Davidson & Leonard J. Davidson Heirs	4/8	140/554 119/72	87		
				Road A	7.73
				Road B	2.56
				Water Tank Pad	1.30
				Tree and Topsoil Storage	0.30
				Total	13.51
Grand Total	19.28				

LOD Area (ac)	
Road A (2,745 feet)	7.89
Road B (1,064 feet)	2.56
Drill Pad & Tree Brush Storage	4.81
Water Tank Pad	3.57
Topsoil / Spoil Pile	0.45
Total Affected Area	19.28
Total Wooded Acres Disturbed	16.04
Total Linear Feet of Access Road	3,809

- Notes:
- This map is based on the Grid North meridian. Its coordinate base is derived from the West Virginia Coordinate System of 1983, North Zone, based upon OPUS GPS observations taken at the site. Elevations shown hereon are based on NAVD88 datum.
 - The purpose of this map is to show existing topographic features of an as-built gas well drill pad.
 - This map is not a boundary survey. Surface tract lines shown hereon are based upon deeds of record found in the Office of the Clerk of Doddridge County, West Virginia and boundary evidence (shown hereon) found at the time of survey.

As-Built Certification

This as-built certifies that this Well Pad and access road was constructed in reasonable conformance with the design drawings that were prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection, Office of Oil and Gas § CSR 35-8.

NOTE: Pad was designed with a berm around the well pad perimeter and a mountable berm at the access on to the pad. As-built well pad deviates from the design with respect to berms. These berms will be constructed prior to future drilling operations per WVDEP.

Antero obtained an Encroachment Permit (Form MM-109) from the West Virginia Department of Transportation Division of Highways, prior to commencement of construction activities.

DRAWING INDEX

- COVER SHEET/LOCATION MAP
- 2-4 AS-BUILT SITE PLANS AND PROFILES
- OVERALL SITE RECLAMATION PLAN
- WELL AND TANK PAD RECLAMATION PLAN

DATE	REVISIONS



Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-5035



L&W ENTERPRISES, INC.

PH: 304-257-4818
PO BOX 628
100 S. CENTER STREET
PETTUSBURG, WV 26047 EMAIL: SBR@LWENTR.COM



THIS DOCUMENT
PREPARED FOR
ANTERO RESOURCES
CORPORATION

COVER SHEET/LOCATION MAP

LEONARD PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Received
Office of Oil & Gas

Date: 5/18/2016
Scale: N/A
Designed By: CKWCKM
File No.: Antero 110-12
Page 1 of 6

Handwritten: Leonard C. Jones
11/23/16