



**west virginia** department of environmental protection

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

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
www.dep.wv.gov

May 29, 2015

**WELL WORK PERMIT**

**Horizontal 6A Well**

This permit, API Well Number: 47-1706725, issued to ANTERO RESOURCES CORPORATION, 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 all 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 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.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-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) 926-0499 ext. 1654.

James Martin  
Chief

Operator's Well No: GRAPE UNIT 2H  
Farm Name: COASTAL FOREST RESOURCES  
**API Well Number: 47-1706725**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 05/29/2015

**Promoting a healthy environment.**

**05/29/2015**

## 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.

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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 fifty (50) 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. 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.
8. 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.
9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.



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west virginia department of environmental protection

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WVDEP Office of Oil and Gas  
601 57<sup>th</sup> Street Southeast, Charleston, WV  
(304) 926-0450

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
dep.wv.gov

May 28, 2015

Eric Bernhardt  
151 Chipps Run  
West Union, WV 26456

Re: Permits for Antero Resources Corporation Nova Unit 1H and 2H, Grape Unit 1H and 2H  
API numbers: 17-06724, 17-06725, 17-06726 and 17-06727

Mr. Bernhardt:

The Office of Oil and Gas (OOG) has reviewed your comments concerning Antero Resources Corporation's permits for the above referenced well. The comment was sent to the operator for its response. The operator has responded and the response is enclosed for your records.

After considering your comments, the applicant's response, and the inspector's findings, the OOG has determined that the application meets the requirements set forth in Article 6A Chapter 22 of the West Virginia Code and Legislative Rule Title 35 Series 8. Consequently, the OOG is issuing the permit today. For your information and convenience, I am including with this letter a copy of the permit as issued.

As you may know, surface owners are entitled to compensation for damages to their property resulting from oil and gas drilling activity. Absent an agreement by the parties, such damage compensation may be addressed pursuant to Article 7, Chapter 22 of the West Virginia Code.

Please contact me at (304) 926-0499, if you have any questions.

Sincerely,

Kelly Kees, PE  
WV DEP Office of Oil and Gas  
Permitting Section

April 2, 2015



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

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

RE: Response to Public Comments  
Nova Unit 1H (API# 47-017-06726)  
Nova Unit 2H (API# 47-017-06727)  
Grape Unit 1H (API# 47-017-06724)  
Grape Unit 2H (API# 47-017-06725)  
Doddridge County/Central District, West Virginia

Mr. Martin:

This letter provides Antero Resources Corporation ("Antero") response to the December 30, 2014 letter sent to the West Virginia Department of Environmental Protection Office of Oil & Gas ("DEP") by Eric Bernhardt.

Attached you will find a map reflecting where we believe Mr. Bernhardt's residence to be located. The four Nova Unit and Grape Unit wells Mr. Bernhardt submitted comments on to the DEP are proposed to be drilled on the already constructed Cofor pad. Based on where we believe Mr. Bernhardt to live, it appears he is almost three miles from the surface location of the four subject wells and the property line of his farm would thus not be within 100 feet of the wells as he suggested. The access road to the pad runs to the southwest from the Cofor pad and neither would it approach Mr. Bernhardt's property or residence. As such, we do not believe Antero's operations will have any of the impacts to Mr. Bernhardt and his property that have been indicated in his comments.

In addition, the four Nova Unit and Grape Unit permit applications that were submitted to the DEP have complied with and meet all regulatory requirements as outlined in West Virginia Code Chapter 22, Article 6A and the Code of State Rules Title 35, Series 8. By copy of this response to the DEP, we therefore request that the DEP proceed with permitting the subject wells having given consideration to Mr. Bernhardt's comments.

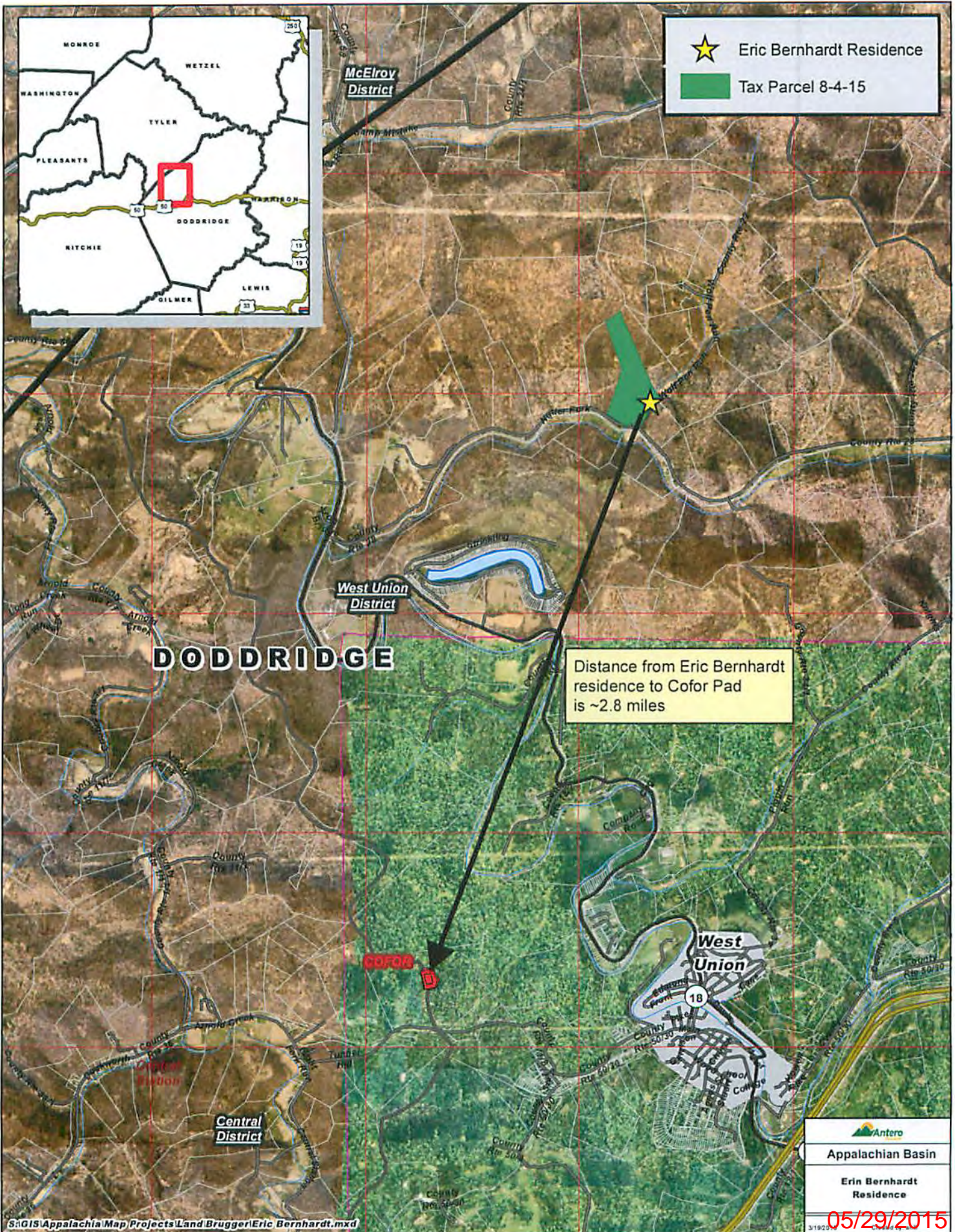
Best regards,

A handwritten signature in blue ink that reads "Ashlie Steele".

Ashlie Steele  
Permitting Supervisor  
Antero Resources Corporation

05/29/2015

# Eric Bernhardt Residence



★ Eric Bernhardt Residence  
■ Tax Parcel 8-4-15

Distance from Eric Bernhardt residence to Cofor Pad is ~2.8 miles

Antero  
Appalachian Basin  
Eric Bernhardt Residence  
05/29/2015

December 30, 2014

PERMIT Review

Office of Oil and Gas

601 57th Street, SE

Charleston, WV 25304

RE: Horizontal well drilling permit

Well number; N/A Grape Unit 2H

Operator; Antero Natural Resources

County; Doddridge

To whom it may concern,

I am opposed to the issuance of a permit for the above referenced well. This well would be located less than 100 feet from the property line of our farm. Given Antero's record of explosions, fires, spills and leaks, contamination of neighbors drinking water wells, not to mention the noise pollution, light pollution, air pollution, water pollution, degradation and congestion of public roadways, loss of healthy forest and agricultural lands, and reductions of property values I am sure you can understand why I am opposed to this permit being issued. We have seen enough of these projects in this area to realize these projects can last 2 to 4 years and it is too much to ask the local citizens to put up with for the sake of out of state investors. I am counting on you to deny this permit for the sake of the people of West Virginia and their children.

Thank-you for considering my concerns,



Eric Bernhardt

151 Chipps Run

West Union, WV 26456

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JAN 02 2015

WV Department of  
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17 06728

WW-6B  
(9/13)

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

1) Well Operator: Antero Resources Corporation 494488557 017-Doddridge West Union West Union 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Grape Unit 2H Well Pad Name: Cofor Pad

3) Farm Name/Surface Owner: Coastal Forest Resources Company Public Road Access: CR 11/8

4) Elevation, current ground: 1189' Elevation, proposed post-construction: 1189'

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

(b) If Gas Shallow  Deep   
Horizontal

*DCW  
3-26-2015*

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Marcellus Shale: 7900' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3100#

8) Proposed Total Vertical Depth: 7900' TVD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 17,200' MD

11) Proposed Horizontal Leg Length: 8510'

12) Approximate Fresh Water Strata Depths: 120'

13) Method to Determine Fresh Water Depths: Outback Unit 1H (API# 47-17-06518) on same pad.

14) Approximate Saltwater Depths: 764'

15) Approximate Coal Seam Depths: 853'

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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WW-6B  
(9/13)

18)

**CASING AND TUBING PROGRAM**

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</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#	300'	300'	CTS, 417 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2445'	2445'	CTS, 996 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	17200'	17200'	4339 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

*New  
3-26-2015*

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

**PACKERS**

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

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WW-6B  
(9/13)

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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.

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): 50.15 existing acres

22) Area to be disturbed for well pad only, less access road (acres): 3.70 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 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

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.

WW-9  
(2/15)

API Number 47 - 017  
Operator's Well No. Grape Unit 2H

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 494488557

Watershed (HUC 10) Headwaters Middle Island Creek Quadrangle West Union 7.5'

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 \_\_\_\_\_ )
- 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 \_\_\_\_\_)

*1) CW  
3-26-2015*

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/Freshwater, Intermediate - Oil/Sluff Foams, 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)

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

**KARA QUACKENBUSH**  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 20144028297  
MY COMMISSION EXPIRES JULY 21, 2018

Subscribed and sworn before me this 6 day of March, 20 15

Kara Quackenbush

Notary Public

Received  
Office of Oil & Gas

My commission expires July 21, 2018

MAR 27 2015

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**Antero Resources Corporation**

Proposed Revegetation Treatment: Acres Disturbed 50.15 existing acres Prevegetation pH \_\_\_\_\_

Lime 2-3 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

Access Roads (24.12) + Staging Areas (1.39) + Rock Run Well Pad (6.81) + Cofor Well Pad (3.70) + Water Containment Pad (2.27) + Excess/Topsoil Material Stockpiles (11.86) = 50.15 Existing Acres

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Crownvetch	10-15
*See attached Table 3 for additional seed type (Cofor Pad Design Page 19)		*See attached Table 4a for additional seed type (Cofor Pad Design Page 19)	
*or type of grass seed requested by surface owner		*or type of grass seed requested by surface owner	
*No Fescue or Timothy Grass shall be used			

Attach:

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Douglas Aembo

Comments: Seed + mulch any disturbed areas. Maintain ETS to W. Dep regulations

Title: Oil + Gas Inspector Date: 3-26-2015

Field Reviewed? (  ) Yes (  ) No

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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

### **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

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MAR 17 2015

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Environmental Protection

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**911 ADDRESS**  
**770 Tunnel Hill Rd.**  
**West Union, WV 26456**

## **Well Site Safety Plan**

### **Antero Resources**

**Well Name:** Outback Unit 1H, Outback Unit 2H, Morton Unit 1H, Morton Unit 2H, Nova Unit 1H, Nova Unit 2H, Grape Unit 1H, Grape Unit 2H, Rainer Unit 1H, and Rainer Unit 2H

**Pad Location:** COFOR PAD  
Doddridge County/ West Union District

**GPS Coordinates:** Lat 39°17'57.92"/Long -80°48'0.20" (NAD83)

#### **Driving Directions:**

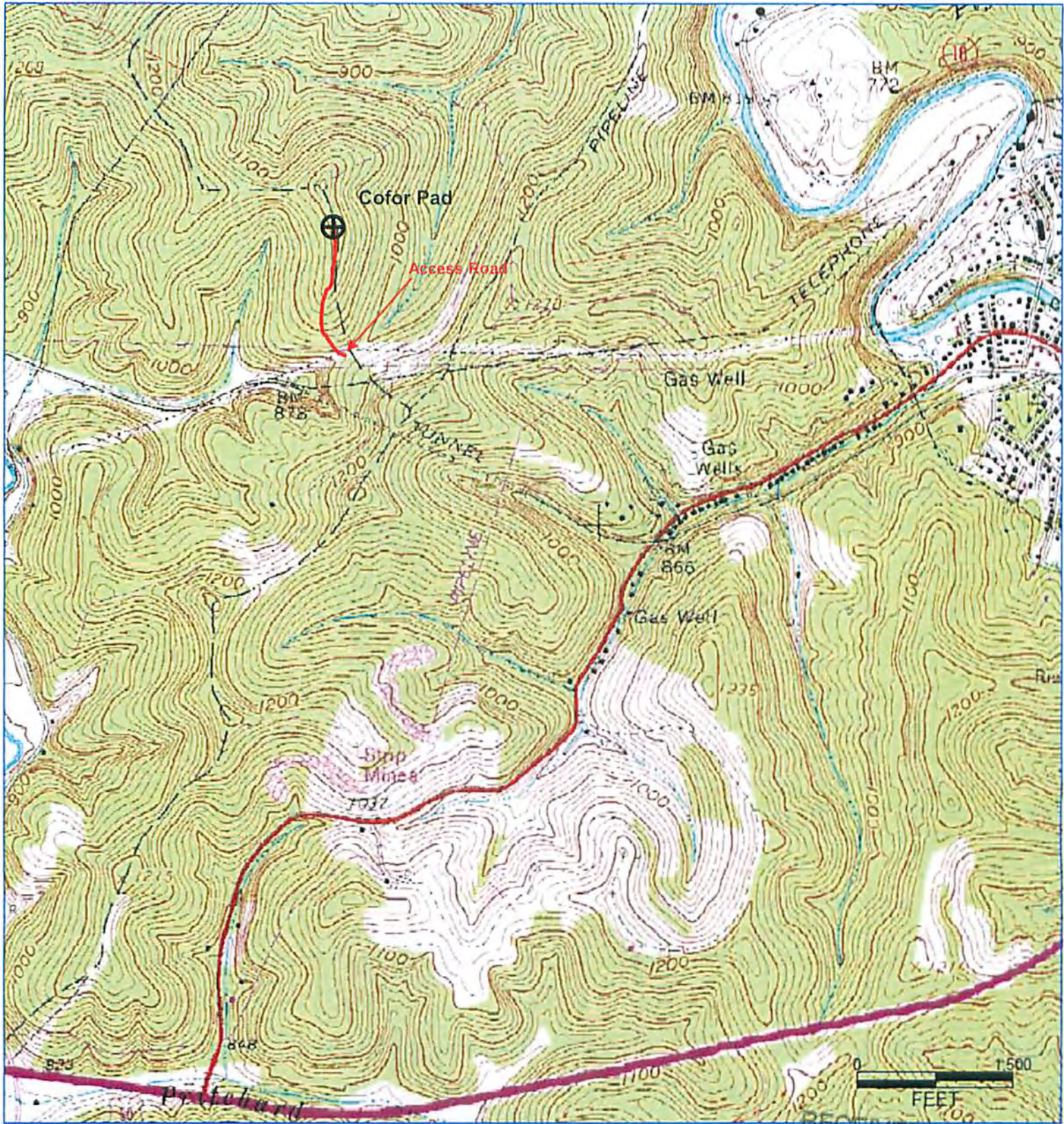
**From West Union, WV**

Drive west on HWY 50 W 2.6 miles. Turn Right onto US-50 West 2.6 miles. Turn Right onto Co Rte 11/Arnolds Creek Rd 1.4 miles. Turn Right onto Tunnel Hill Rd 0.75 miles. Turn Left onto access road. Look for rig signs.

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

*DCW*  
*3-26-2015*

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**Antero Resources Corporation**  
 Appalachian Basin  
 Grape Unit 2H  
 Doddridge County  
 WV Department of  
 Environmental Protection  
 Quadrangle: West Union 7.5'  
 Watershed: Headwaters Middle Island Creek  
 District: West Union  
 Date: 4-01-2014

05/29/2015

LATITUDE 39°20'00" 2,430'

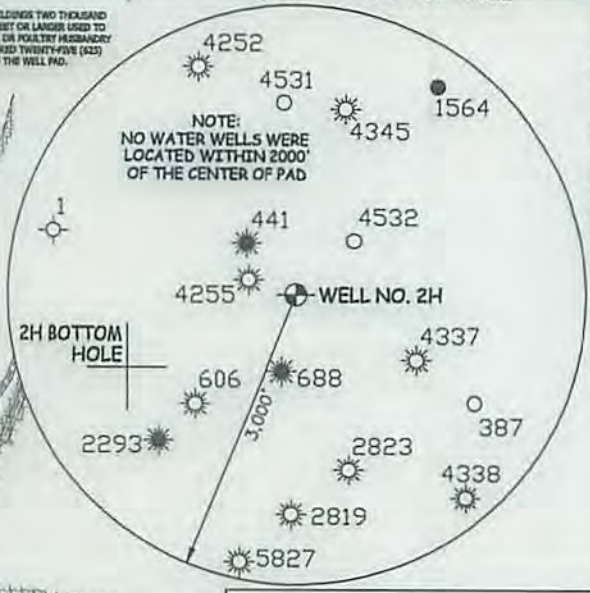
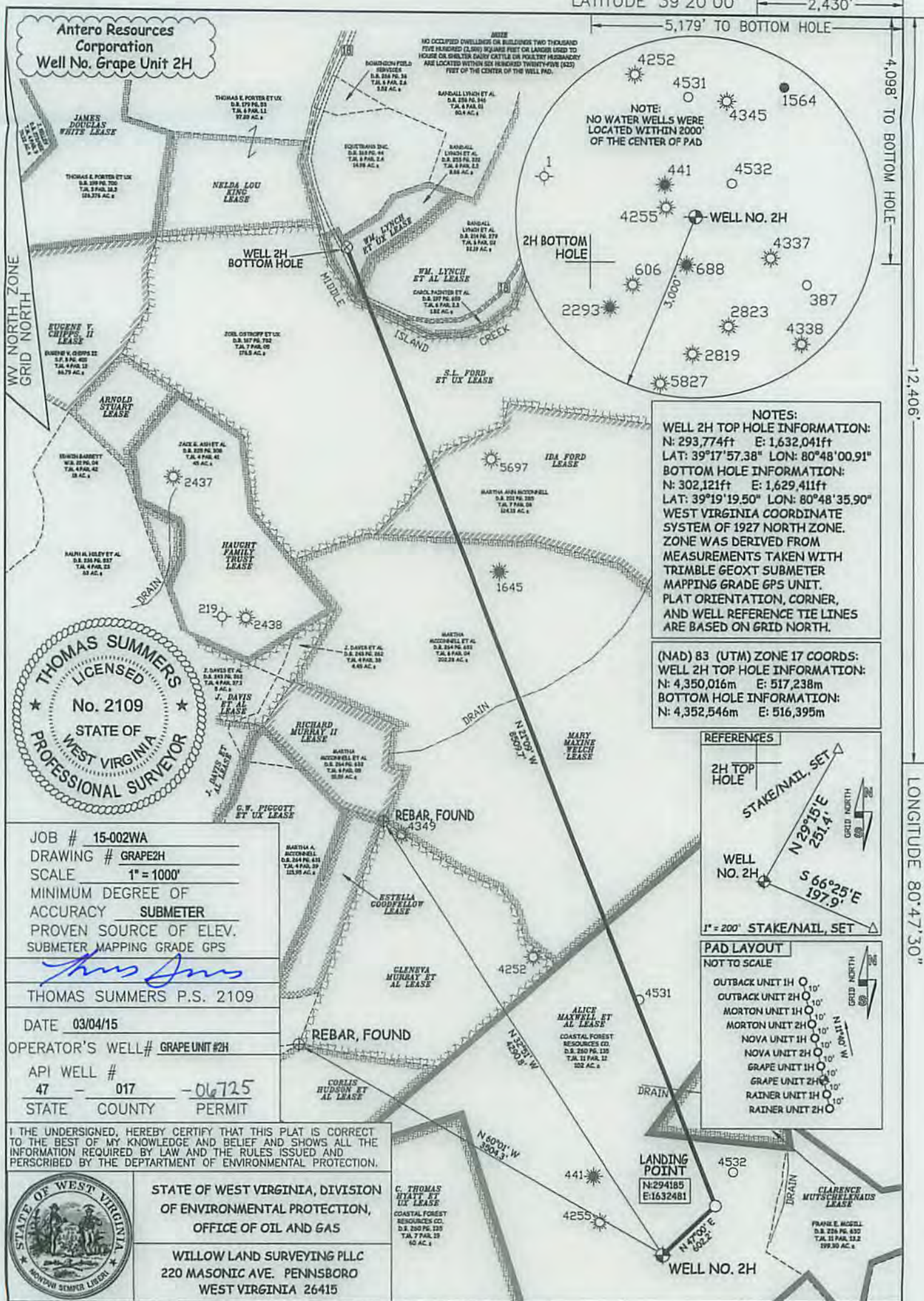
5,179' TO BOTTOM HOLE

4,098' TO BOTTOM HOLE

12,406'

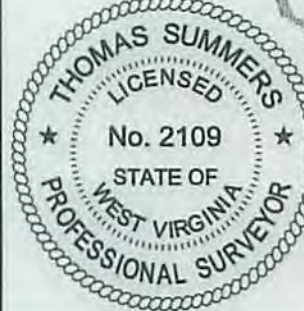
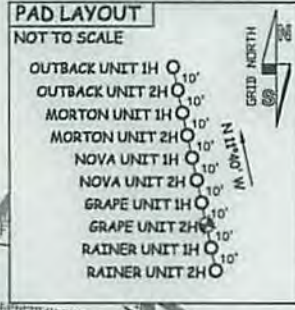
LONGITUDE 80°47'30"

# Antero Resources Corporation Well No. Grape Unit 2H



**NOTES:**  
 WELL 2H TOP HOLE INFORMATION:  
 N: 293,774ft E: 1,632,041ft  
 LAT: 39°17'57.38" LON: 80°48'00.91"  
 BOTTOM HOLE INFORMATION:  
 N: 302,121ft E: 1,629,411ft  
 LAT: 39°19'19.50" LON: 80°48'35.90"  
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:  
 WELL 2H TOP HOLE INFORMATION:  
 N: 4,350,016m E: 517,238m  
 BOTTOM HOLE INFORMATION:  
 N: 4,352,546m E: 516,395m



JOB # 15-002WA  
 DRAWING # GRAPE2H  
 SCALE 1" = 1000'  
 MINIMUM DEGREE OF ACCURACY SUBMETER  
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS  
 THOMAS SUMMERS P.S. 2109  
 DATE 03/04/15  
 OPERATOR'S WELL# GRAPE UNIT #2H  
 API WELL # 47 - 017 - 06725  
 STATE COUNTY PERMIT

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



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
 WILLOW LAND SURVEYING PLLC  
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

STATE OF WEST VIRGINIA DEPT. OF ENERGY DIVISION OF OIL AND GAS  
 WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X  
 LOCATION: ORIGINAL GROUND ELEVATION 1,220' PAD ELEVATION 1,189'  
 WATERSHED HEADWATERS MIDDLE ISLAND CREEK QUADRANGLE WEST UNION 7.5' DISTRICT WEST UNION COUNTY DODDRIDGE  
 SURFACE OWNER COASTAL FOREST RESOURCES COMPANY ACREAGE 102 ACRES +/-  
 OIL & GAS ROYALTY OWNER ALICE MAXWELL ET AL; CLARENCE MUTSCHELKNAUS; LEASE ACREAGE 420 AC±; 108.85 AC±; MARY MAXINE WELCH; IDA FORD; S. L. FORD ET UX; WM. LYNCH ET AL; WM. LYNCH ET UX 202 AC±; 124.5 AC±; 180 AC±; 32.15 AC±; 8.66 AC±

**LEGEND**  
 - - - - - Surface Owner Boundary Lines +/-  
 - - - - - Interior Surface Tracts +/-  
 ⊕ Monument, Found As Specified

PROPOSED WORK: DRILL X CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE X  
 PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_ PLUG & ABANDON \_\_\_ CLEAN OUT & REPLUG  
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,900' TVD 17,200' MD  
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
 FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

05/29/2015

COUNTY NAME PERMIT



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
<b><u>Alice Maxwell, et al Lease</u></b>			
Alice H. Maxwell, et al	Carl D. Perkins & William Paul McCutchan	1/8	0063/0111
Carl D. Perkins & William Paul McCutchan, et al	Justin L. Henderson	Assignment	0104/0689
Justin Henderson	P.D. Farr II	Assignment	0109/0385
P.D. Farr II	Antero Resources Appalachian Corporation	Assignment	0271/0546
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Clarence Mutschelknaus Lease</u></b>			
Clarence Mutschelknaus	Antero Resources Appalachian Corporation	1/8+	0321/0607
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Mary Maxine Welch Lease</u></b>			
Mary Maxine Welch	Antero Resources Appalachian Corporation	1/8+	0271/0060
Mary Maxine Welch	Antero Resources Appalachian Corporation	1/8+	0271/0066
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>Ida Ford Lease</u></b>			
Ida Ford	Clara Ford, Ford Development Company	1/8	0063/0459
Clara Ford, Ford Development Company	Antero Resources Appalachian Corporation	Assignment	0277/0482
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<b><u>S. L. Ford, et ux Lease</u></b>			
S.L. Ford, et x	J.L. Neuman	1/8	0021/0172
J.L. Neuman	The Philadelphia Company	Assignment	0106/0474
The Philadelphia Company	Pittsburgh and West Virginia Gas Company	Assignment	DB 0045/0102
Pittsburgh & West Virginia Gas Company	Equitable Gas Company	Assignment	0121/0257
Equitable Gas Company	Equitrans, Inc.	Assignment	0154/0475
Equitrans, Inc.	Equitrans, L.P.	Merger	Recited in 302/0123
Equitrans, L.P.	Equitable Production-Eastern States, Inc.	Assignment	0192/0019
Equitable Production – Eastern States, Inc.	Equitable Production Company	Merger	Exhibit 2
Equitable Production Company	EQT Production Company	Name Change	DB 0281/0346
EQT Production Company	Antero Resources Corporation	Assignment	0325/0539
<b><u>Wm. Lynch, et al Lease</u></b>			
William R. Lynch & Dixie Craig	Murvin Oil Company	1/8	0172/0544
Murvin Oil Company	Murvin & Meier	Assignment	0179/0193
Murvin & Meier	Antero Resources Appalachian Corporation	Assignment	0267/0467
Antero Resources Appalachian Corporation	Antero Resources Corp.	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.

**\*\*CONTINUED ON NEXT PAGE\*\***

05/29/2015

**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
<u>Wm. Lynch, et ux Lease</u>	William R. Lynch	Antero Resources Corporation	1/8+	0324/0311

\*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

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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.

MAR 17 2015  
WV Department of  
Environmental Protection

Well Operator: Antero Resources Corporation  
 By: Kevin Kilstrom  
 Its: VP of Production

FORM WV-6A1  
EXHIBIT 1

FILED

JUN 10 2013

Natalje 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.wvros.com](http://www.wvros.com)  
E-mail: [business@wvros.com](mailto:business@wvros.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:

- Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/25/2008
- Corporate name has been changed to: Antero Resources Corporation  
(Attach one **Certified Copy of Name Change** as filed in home State of incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation  
(due to home state name not being available)
- Other amendments:  
(attach additional pages if necessary)
- 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.)  
Alwyn A. Schopp (903) 367-7310  
Contact Name Phone Number
- Signature Information (See below **\*Important Legal Notice Regarding Signature\***):  
Print Name of Signer: Alwyn A. Schopp Title/Capacity: Authorized Person  
Signature: [Handwritten Signature] Date: June 10, 2013

**\*Important Legal Notice Regarding Signature:** For West Virginia Code §31D-1-129. Penalty for signing false document. 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

WV611 - 04/16/2017 Webbia Klawns Office

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Office of Oil and Gas

Revised 4/11  
MAR 17 2015

WV Department of  
Environmental Protection

05/29/2015

# State of West Virginia



## Certificate

*I, Joe Manchin III, Secretary of State of the  
State of West Virginia, hereby certify that*

by the provisions of Chapter 31 of the West Virginia Code, Articles of Merger were received and filed  
MERGING EQUITABLE PRODUCTION - EASTERN STATES, INC., A QUALIFIED DE ORGANIZATION, WITH AND INTO  
EQUITABLE PRODUCTION COMPANY, A QUALIFIED ORGANIZATION.

Therefore, I hereby issue this

### CERTIFICATE OF MERGER



*Given under my hand and the  
Great Seal of the State of  
West Virginia on this day of  
June 28, 2001*

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Office of Oil and Gas

*[Signature]*  
MAR 17 2015

*Secretary of State*  
WV Department of  
Environmental Protection

05/29/2015



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

March 6, 2015

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

RE: Grape Unit 2H  
Quadrangle: West Union 7.5'  
Doddridge County/West Union District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the Grape Unit 2H 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 Grape Unit 2H 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 "Thomas Kuhn Landman", with a long horizontal flourish extending to the right.

Thomas Kuhn  
Landman

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MAR 17 2015  
WV Department of  
Environmental Protection

05/29/2015

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

Date of Notice Certification: 03/09/2015

API No. 47- 017 -

Operator's Well No. Grape Unit 2H

Well Pad Name: Cofor 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>517,238m</u>
County:	<u>Doddridge</u>		Northing:	<u>4,350,016m</u>
District:	<u>West Union</u>	Public Road Access:		<u>CR 11/3</u>
Quadrangle:	<u>West Union 7.5'</u>	Generally used farm name:		<u>Coastal Forest Resources Company</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 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: 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><b>OOG OFFICE USE ONLY</b></p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" 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:**

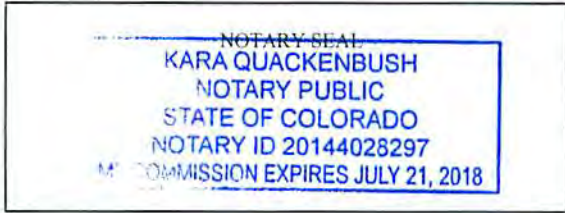
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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 by 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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 Office of Oil and Gas  
 WV Department of  
 Environmental Protection

**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>VP of Production</u>	Facsimile:	<u>303-357-7315</u>
Telephone:	<u>(303) 357-7310</u>	Email:	<u>asteele@anteroresources.com</u>



Subscribed and sworn before me this 9 day of March 2015  
Kara Quackenbush 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 [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

RECEIVED  
Office of Oil and Gas  
MAR 17 2015  
WV Department of  
Environmental Protection  
05/29/2015

**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:** 3/11/2015 **Date Permit Application Filed:** 3/11/2015

**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: Coastal Forest Resources Co.  
Address: P.O. Box 709  
Buckhannon, WV 26201

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

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

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

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

SURFACE OWNER(s) (Impoundments or Pits)

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

COAL OWNER OR LESSEE

Name: NO DECLARATIONS ON RECORD WITH COUNTY  
Address: \_\_\_\_\_

COAL OPERATOR

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

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, SPRING OR OTHER WATER SUPPLY SOURCE

Name: NONE IDENTIFIED WITHIN 1500'  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

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

\*Please attach additional forms if necessary

**RECEIVED**  
**Office of Oil and Gas**

**MAR 17 2015**

**WV Department of Environmental Protection**  
**05/29/2015**



**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 Clear 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 disturbed 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 Department action to address the items

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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

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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)

API NO. 47-017 -  
OPERATOR WELL NO. Grape Unit 2H  
Well Pad Name: Cofor Pad

**Notice is hereby given by:**

Well Operator: Antero Resources Corporation  
Telephone: (303) 357-7310  
Email: asteele@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](mailto:depprivacyofficer@wv.gov).



Subscribed and sworn before me this 11 day of March 2015.  
Kara Quackenbush Notary Public  
My Commission Expires July 21, 2018

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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:** 3/14/2014      **Date of Planned Entry:** 3/24/2014

**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: Coastal Forest Resources Co.  
Address: PO Box 709  
Buckhannon, WV 26201

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

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

COAL OWNER OR LESSEE

Name: NO DECLARATIONS ON RECORD WITH COUNTY  
Address: \_\_\_\_\_

MINERAL OWNER(s)

Name: Maxwell Franklin Heirs Limited Partnership #1 C/O ICG-Bank One  
Address: PO Box 659  
Buckhannon, WV 26201

\*please attach additional forms if necessary

**Notice is hereby given:**

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

State: West Virginia  
County: Doddridge  
District: West Union  
Quadrangle: West Union 7.5'

Approx. Latitude & Longitude: 39.299423, -80.800056 (NAD 83)  
Public Road Access: CR 11/8  
Watershed: Tributary of Arnold Creek  
Generally used farm name: Coastal Forest Resources Company

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: Antero Resources Corporation  
Telephone: (303) 357- 7323  
Email: asteele@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](mailto:depprivacyofficer@wv.gov).

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Tax Map 11, Parcel 12

**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:** 03/11/2015      **Date Permit Application Filed:** 03/11/2015

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

- CERTIFIED MAIL                                       HAND  
RETURN RECEIPT REQUESTED                                      DELIVERY

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

**Notice is hereby provided to the SURFACE OWNER(s)**  
(at the address listed in the records of the sheriff at the time of notice):

Name: <u>Coastal Forest Resources Co.</u>	Name: _____
Address: <u>P.O. Box 709</u>	Address: _____
<u>Buckhannon, WV 26201</u>	_____

**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>517.238m</u>
County: <u>Doddridge</u>		Northing: <u>4.350.016m</u>
District: <u>West Union</u>	Public Road Access: <u>CR 11/B</u>	
Quadrangle: <u>West Union 7.5'</u>	Generally used farm name: <u>Coastal Forest Resources Company</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 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 Operator: <u>Antero Resources Corporation</u>	Address: <u>1615 Wynkoop Street</u>
Telephone: <u>(303) 357-7323</u>	<u>Denver, CO 80202</u>
Email: <u>asteelle@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](mailto:depprivacyofficer@wv.gov).

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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

May 22, 2014

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 Cofor Pad, Doddridge County  
Grape Unit 2H Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #04-2013-0684 which has been issued to Antero Resources Corporation for access to the State Road for a well site located off of Doddridge County Route 11 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: Lisa Bottinelli  
Antero Resources Corporation  
CH, OM, D-4  
File

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## 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



**LOCATION COORDINATES:**

ACCESS ROAD ENTRANCE  
 LATITUDE: 38.999423 LONGITUDE: -80.769541 (NAD 83)  
 N 4349668.85 E 515285.48 (UTM ZONE 17 METERS)

CENTROID OF COFOR WELL PAD  
 LATITUDE: 39.099423 LONGITUDE: -80.80058 (NAD 83)  
 N 4350023.78 E 517420.30 (UTM ZONE 17 METERS)

CENTER OF WATER CONTAINMENT TANK  
 LATITUDE: 39.030990 LONGITUDE: -80.810664 (NAD 83)  
 N 4350628.67 E 516333.18 (UTM ZONE 17 METERS)

CENTROID OF ROCK RUN WELL PAD  
 LATITUDE: 39.094823 LONGITUDE: -80.81448 (NAD 83)  
 N 4350613.48 E 515890.84 (UTM ZONE 17 METERS)

Well API Numbers for Rock Run & Cofor  
 1706476, 1706494, 1706509  
 1706518, 1706519, 1706559, 1706560

**GENERAL DESCRIPTION:**

THE ACCESS ROAD(S), WELL PADS, AND WATER CONTAINMENT PAD HAVE BEEN CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

**FLOODPLAIN NOTES:**

THE SITE IS LOCATED IN FLOODZONE "X" PER FEMA FLOOD MAPS #54017C0115C & #54017C0120C

**ENVIRONMENTAL NOTES:**

WETLAND DELINEATIONS WERE PERFORMED BETWEEN OCTOBER 2013 & FEBRUARY 2014 BY ALLSTAR ECOLOGY, LLC TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE FEBRUARY 2014 ROCK RUN & COFOR JURISDICTIONAL STREAMS & WETLANDS MAPS WERE PREPARED BY ALLSTAR ECOLOGY, LLC AND SHOWCASE THE RESULTS OF THE FIELD DELINEATION. THIS MAP DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP.

Stream and Impact Cause	FBI (L.F.)	Culvert (L.F.)	Inlets/Outlets Structures (L.F.)	Total Impact (L.F.)
Ephemeral Stream 04 (Access Road "A")	2	NA	NA	2
Ephemeral Stream 05 (Access Road "A")	0	52	14	66

**GEOTECHNICAL NOTES:**

A GEOTECHNICAL INVESTIGATION OF THE SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. BETWEEN JANUARY 15, 2014 & FEBRUARY 5, 2014. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED FEBRUARY 17, 2014, REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS REPORT WAS USED IN THE PREPARATION OF THESE PLANS. PLEASE REFER TO THE GEOTECHNICAL INVESTIGATION REPORT BY PENNSYLVANIA SOIL & ROCK, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

**PROJECT CONTACTS:**

**OPERATOR:**  
 ANTERO RESOURCES CORPORATION  
 530 WHITE OAK BLVD.  
 HUNTSFORD, WV 26033  
 PHONE: (304) 842-4100  
 FAX: (304) 842-4102

**ENGINEER/SURVEYOR:**  
 NAVITUS ENGINEERING, INC.  
 CYNOS & KUMPT, PE - PROJECT  
 MANAGER/ENGINEER  
 OFFICE: (888) 868-4180 CELL: (540) 866-8747

**ELLI WAGNER - ENVIRONMENTAL ENGINEER**  
 OFFICE: (304) 842-4088 CELL: (304) 476-9770

**ENVIRONMENTAL:**  
 PENNSYLVANIA SOIL & ROCK, INC.  
 ALLSTAR ECOLOGY, LLC  
 RYAN L. WARD - ENVIRONMENTAL SCIENTIST  
 (666) 213-2668 CELL: (304) 692-7477

**JOHN KARWAK - OPERATIONS SUPERINTENDENT**  
 CELL: (517) 568-1553

**GEOTECHNICAL:**  
 PENNSYLVANIA SOIL & ROCK, INC.  
 CHRISTOPHER W. SAMOIS-PROJECT ENGINEER  
 (412) 978-6000 CELL: (412) 589-0862

**AARON KUNTLER - CONSTRUCTION SUPERVISOR**  
 CELL: (405) 227-8344

**ANTHONY SMITH - FIELD ENGINEER**  
 OFFICE: (304) 842-4208 CELL: (304) 973-8166

**MARK JOHNSON - SURVEYING COORDINATOR**  
 (304) 842-4182 CELL: (304) 719-6449

**DAVE CAVA - LAND AGENT**  
 (304) 641-5814

**RESTRICTIONS NOTES:**

- THERE ARE NO PERENNIAL STREAMS, WETLANDS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PADS AND LOD.
- THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE WELL PADS AND LOD.
- THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PADS AND LOD.
- THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED.
- THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE WELL PADS.
- THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PADS.

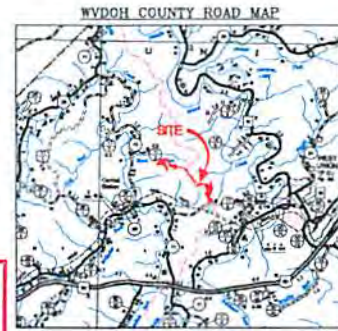
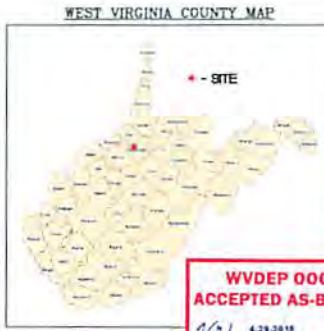
**NOTES:**

- ALL BMP'S MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETE AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RAINOFF EVENT OF EXCESS OF 0.5" AND ON A BIWEEKLY BASIS.
- THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF PERMANENT VEGETATION SHOULD BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-EROSION ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HARD COVER SUCH AS PAVEMENT OR BUILDINGS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT APPLIES TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
- ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP.
- ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEED.

# ROCK RUN & COFOR WELL PADS & WATER CONTAINMENT PAD AS-BUILT AND EROSION & SEDIMENT CONTROL IMPROVEMENT PLAN

CENTRAL & WEST UNION DISTRICTS, DODDRIDGE COUNTY, WEST VIRGINIA  
 NUTTER FORK - MIDDLE ISLAND CREEK & ARNOLD CREEK WATERSHEDS

USGS 7.5 WEST UNION QUAD MAP



**WVDEP OOG  
 ACCEPTED AS-BUILT**  
 2/21 4-29-2015

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!!**

**AS-BUILT CERTIFICATION:**  
 THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS CH 35-6

**SHEET INDEX:**

- COVER SHEET
- GENERAL NOTES
- OVERALL PLAN SHEET INDEX
- ACCESS ROAD & STAGING AREA "A" AS-BUILT PLAN
- ACCESS ROAD & COFOR WELL PAD AS-BUILT PLAN
- ACCESS ROAD AS-BUILT PLAN
- ACCESS ROAD & WATER CONTAINMENT PAD AS-BUILT PLAN
- ACCESS ROAD & ROCK RUN WELL PAD AS-BUILT PLAN
- ACCESS ROAD PROFILE
- COFOR WELL PAD, ROCK RUN WELL PAD, & WATER CONTAINMENT PAD SECTIONS

Proposed Well Name	WV North	WV South	UTM (METERS)	UTM Zone 17	ROAD ELEVATION	LONG
Future Well	N 29973.84	N 29978.20	N 432043.20	17T	1170.00	LONG 80-48-52.803
Future Well	N 162781.96	N 162842.28	N 515991.08	17T	1170.00	LONG 80-48-52.803
Future Well	N 29973.29	N 29978.27	N 432043.10	17T	1170.00	LONG 80-48-52.803
Future Well	N 162791.56	N 162832.38	N 515988.03	17T	1170.00	LONG 80-48-52.803
Deviation Unit 2H	N 29973.14	N 29969.27	N 432043.01	17T	1170.00	LONG 80-48-52.803
Deviation Unit 2H	N 162781.57	N 162802.39	N 515984.94	17T	1170.00	LONG 80-48-52.803
Deviation Unit 2H	N 29973.99	N 29978.27	N 432043.91	17T	1170.00	LONG 80-48-52.803
Deviation Unit 2H	N 162791.57	N 162832.38	N 515984.81	17T	1170.00	LONG 80-48-52.803
Deviation Unit 2H (Drilled Well)	N 29973.56	N 29978.27	N 432043.72	17T	1170.00	LONG 80-48-52.803
Deviation Unit 2H (Drilled Well)	N 162791.57	N 162832.38	N 515984.81	17T	1170.00	LONG 80-48-52.803
Deviation Unit 2H (Drilled Well)	N 29973.56	N 29978.27	N 432043.72	17T	1170.00	LONG 80-48-52.803
Deviation Unit 2H (Drilled Well)	N 162791.57	N 162832.38	N 515984.81	17T	1170.00	LONG 80-48-52.803
Well Pad Elevation	1170.3175					

Proposed Well Name	WV North	WV South	UTM (METERS)	UTM Zone 17	ROAD ELEVATION	LONG
Outlook Unit 2H (Drilled Well)	N 29973.84	N 29978.20	N 432043.20	17T	1170.00	LONG 80-48-52.803
Outlook Unit 2H (Drilled Well)	N 162781.96	N 162842.28	N 515991.08	17T	1170.00	LONG 80-48-52.803
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Outlook Unit 2H (Drilled Well)	N 162791.57	N 162832.38	N 515984.81	17T	1170.00	LONG 80-48-52.803
Well Pad Elevation	1184.1189					

WEST VIRGINIA STATE PLANE COORDINATE SYSTEM  
 NORTH ZONE, NAD83  
 HORIZONTAL DISTANCES  
 ESTABLISHED BY SURVEY GRADE OFF & QUITS  
 FOOT-PROCESSED

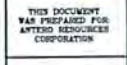
ROCK RUN & COFOR LIMITS OF DISTURBANCE AREA (AC)	Total Area
Access Road "A" (4.792)	16.40
Access Road "B" (1.253)	6.36
Access Road "C" (52.3)	1.36
Staging Area "A"	1.39
Rock Run Well Pad	0.81
Cofor Well Pad	3.70
Water Containment Pad	2.27
Excess/Topsoil Material Stockpiles	11.86
<b>Total Affected Area</b>	<b>50.15</b>
Total Wooded Acres Disturbed	43.63

Impacts to Douglas F. Barr 5 TM 4-3	Area
Access Road "A" (2.18)	1.39
Access Road "B" (5)	0.32
Water Containment Pad	1.03
Excess/Topsoil Material Stockpiles	0.09
<b>Total Affected Area</b>	<b>2.83</b>
Total Wooded Acres Disturbed	2.65

- NOTES:**
- THE AS-BUILT INFORMATION SHOWN HEREON REFLECTS FIELD DATA COLLECTED RELATING TO THE FINAL GRADING OF THE DISTURBED AREA AS OF JANUARY 15, 2015. NAVITUS ENGINEERING IS NOT RESPONSIBLE FOR ANY CHANGES MADE TO THE SITE AFTER THE ABOVE MENTIONED DATE.
  - THE EXISTING CONCRETE BEAMS AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.
  - THE EXISTING EGRESS TO THE WELL PAD SHALL HAVE THE MOUNTABLE BEAMS REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.

**NAVITUS**  
 ENERGY ENGINEERING  
 1500 W. MAIN ST. SUITE 100  
 HUNTSFORD, WV 26033  
 PHONE: (304) 842-4100  
 FAX: (304) 842-4102  
 WWW.NAVITUS-EE.COM

REVISION	DATE



THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

**ROCK RUN & COFOR**  
 WELL PADS & WATER CONTAINMENT PAD  
 CENTRAL & WEST UNION DISTRICTS  
 DODDRIDGE COUNTY, WEST VIRGINIA

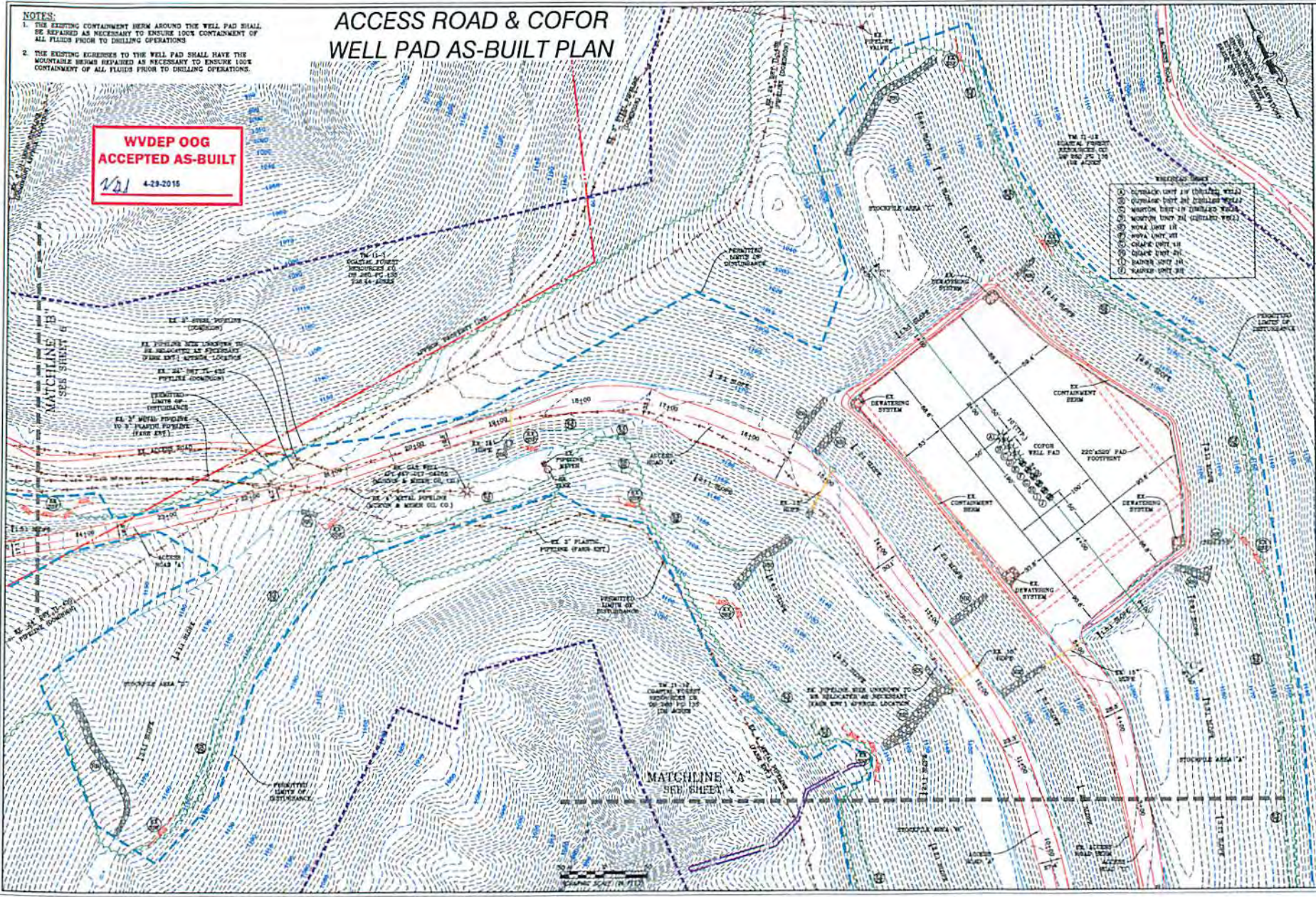


DATE: 02/16/2015  
 SCALE: AS SHOWN  
 SHEET 1 OF 11

- NOTES:**
1. THE EXISTING CONTAINMENT BERM AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO ENSURE LOCK CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.
  2. THE EXISTING EGRESSSES TO THE WELL PAD SHALL HAVE THE MOUNTABLE BERM REPAIRED AS NECESSARY TO ENSURE LOCK CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.

# ACCESS ROAD & COFOR WELL PAD AS-BUILT PLAN

**WVDEP OOG  
ACCEPTED AS-BUILT**  
4-29-2016



- WATERWAY SYMBOLS**
- ① OUTBACK UNIT 1W (DRAINAGE WELL)
  - ② OUTBACK UNIT 2W (DRAINAGE WELL)
  - ③ MOUNTAIN UNIT 1W (DRAINAGE WELL)
  - ④ MOUNTAIN UNIT 2W (DRAINAGE WELL)
  - ⑤ MOUNTAIN UNIT 3W (DRAINAGE WELL)
  - ⑥ MOUNTAIN UNIT 4W (DRAINAGE WELL)
  - ⑦ MOUNTAIN UNIT 5W (DRAINAGE WELL)
  - ⑧ MOUNTAIN UNIT 6W (DRAINAGE WELL)
  - ⑨ MOUNTAIN UNIT 7W (DRAINAGE WELL)
  - ⑩ MOUNTAIN UNIT 8W (DRAINAGE WELL)
  - ⑪ MOUNTAIN UNIT 9W (DRAINAGE WELL)
  - ⑫ MOUNTAIN UNIT 10W (DRAINAGE WELL)

**NAVITUS  
ENERGY ENGINEERING**

REVISION	DATE

**Antero**  
THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

**ACCESS ROAD & COFOR WELL PAD AS-BUILT PLAN**  
**ROCK RUN & COFOR**  
WELL PADS & WATER CONTAINMENT PAD  
CENTRAL & WEST UNION DISTRICTS  
DODDRIIDGE COUNTY, WEST VIRGINIA



DATE: 02/16/2015  
SCALE: 1" = 50'  
SHEET 5 OF 11

**LOCATION COORDINATES:**

ACCESS ROAD ENTRANCE  
LATITUDE: 39.298222 LONGITUDE: -80.799541 (NAD 83)  
N 4349688.65 E 517285.49 (UTM ZONE 17 METERS)

CENTROID OF COFOR WELL PAD  
LATITUDE: 39.299423 LONGITUDE: -80.800056 (NAD 83)  
N 4350023.78 E 517240.30 (UTM ZONE 17 METERS)

CENTER OF WATER CONTAINMENT TANK  
LATITUDE: 39.303990 LONGITUDE: -80.810564 (NAD 83)  
N 4350528.67 E 516333.19 (UTM ZONE 17 METERS)

CENTROID OF ROCK RUN WELL PAD  
LATITUDE: 39.304923 LONGITUDE: -80.814648 (NAD 83)  
N 4350631.48 E 515980.84 (UTM ZONE 17 METERS)

*Douglas  
Hawthorn  
7-26-2015*

**GENERAL DESCRIPTION:**

THE ACCESS ROAD(S), WELL PADS, AND WATER CONTAINMENT PAD HAVE BEEN CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

**FLOODPLAIN NOTES:**

THE SITE IS LOCATED IN FLOODZONE "X" PER FEMA FLOOD MAPS #54017C0115C & #54017C0120C

**ENVIRONMENTAL NOTES:**

WETLAND DELINEATIONS WERE PERFORMED BETWEEN OCTOBER, 2013 & FEBRUARY, 2014 BY ALLSTAR ECOLOGY, LLC TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE FEBRUARY 08, 2013 ROCK RUN & COFOR JURISDICTIONAL STREAMS & WETLANDS MAPS WERE PREPARED BY ALLSTAR ECOLOGY, LLC AND SUMMARIZE THE RESULTS OF THE FIELD DELINEATION. THE MAPS DO NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP.

ROCK RUN & COFOR EPHEMERAL STREAM IMPACT (LINEAR FEET)				
Stream and Impact Cause	FRI (LF)	Culvert (LF)	Inlets/Outlets Structures (LF)	Total Impact (LF)
Ephemeral Stream 04 (Access Road "A")	2	N/A	N/A	2
Ephemeral Stream 05 (Access Road "A")	0	52	14	66

**GEOTECHNICAL NOTES:**

A GEOTECHNICAL INVESTIGATION OF THE SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. BETWEEN JANUARY 15, 2014 & FEBRUARY 5, 2014. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED FEBRUARY 17, 2014, REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS REPORT WAS USED IN THE PREPARATION OF THESE PLANS. PLEASE REFER TO THE GEOTECHNICAL INVESTIGATION REPORT BY PENNSYLVANIA SOIL & ROCK, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

**PROJECT CONTACTS:**

**OPERATOR:**

ANTERO RESOURCES CORPORATION  
535 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE: (304) 842-4100  
FAX: (304) 842-4102

ELI WAGONER - ENVIRONMENTAL ENGINEER  
OFFICE: (304) 842-4088 CELL: (304) 476-9770

JOHN KAWCAK - OPERATIONS SUPERINTENDENT  
CELL: (817) 368-1553

AARON KUNZLER - CONSTRUCTION SUPERVISOR  
CELL: (406) 227-8344

ANTHONY SMITH - FIELD ENGINEER  
OFFICE: (304) 842-4208 CELL: (304) 673-6198

MARK JOHNSON - SURVEYING COORDINATOR  
(304) 842-4162 CELL: (304) 719-6449

DAVE CAVA - LAND AGENT  
(304) 641-5814

**ENGINEER/SURVEYOR:**

NAVITUS ENGINEERING, INC.  
CYRUS S. KUMP, PE - PROJECT  
MANAGER/ENGINEER  
OFFICE: (888) 682-4185 CELL: (540) 686-8747

**ENVIRONMENTAL:**

ALLSTAR ECOLOGY, LLC  
RYAN L. WARD - ENVIRONMENTAL SCIENTIST  
(888) 213-2686 CELL: (304) 692-7477

**GEOTECHNICAL:**

PENNSYLVANIA SOIL & ROCK, INC.  
CHRISTOPHER W. SAMIOS-PROJECT ENGINEER  
(412) 372-4000 CELL: (412) 569-0662

**RESTRICTIONS NOTES:**

1. THERE ARE NO PERENNIAL STREAMS, WETLANDS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PADS AND LOD.
2. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE WELL PADS AND LOD.
3. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PADS AND LOD.
4. THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED.
5. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE WELL PADS.
6. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PADS.

**NOTES:**

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# ROCK RUN & COFOR WELL PADS & WATER CONTAINMENT AS-BUILT AND EROSION CONTROL IMPROVEMENT PLAN

CENTRAL & WEST UNION DISTRICTS, DODDRIEGER NUTTER FORK - MIDDLE ISLAND CREEK & AFFILIATED

USGS 7.5 WEST UNION QUAD



**WEST VIRGINIA COUNTY MAP**



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