



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: 47-1706726, 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: NOVA UNIT 1H
Farm Name: COASTAL FOREST RESOURCES
API Well Number: 47-1706726
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.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than 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.



west virginia department of environmental protection

WVDEP Office of Oil and Gas
601 57th 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 57th 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,

Ashlie Steele
Permitting Supervisor
Antero Resources Corporation

05/29/2015

December 30, 2014

4701706726

PERMIT Review
Office of Oil and Gas
601 57th Street, SE
Charleston, WV 25304

RE: Horizontal well drilling permit
Well number; N/A Nova Unit 1H
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 realise 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 thier children.

Thank-you for considering my concerns,

Eric Bernhardt

Eric Bernhardt
151 Chipps Run
West Union, WV 26456

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WV Department of
Environmental Protection

05/29/2015

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1706726
3/17

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: Nova Unit 1H 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

UCW
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: 19,000' MD

11) Proposed Horizontal Leg Length: 9965'

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

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
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#	2450'	2450'	CTS, 998 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	19000'	19000'	4832 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

*DCW
3-26-2015*

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
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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Page 2 of 3

WW-6B
(9/13)

MAY 26 2015

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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. Nova Unit 1H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 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 tanked 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 _____)

*DCW
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 - Drill/Sluff Foam, Production - Water Based Mud

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

Additives to be used in drilling medium? Please See Attachment

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

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

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

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

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

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

Company Official Signature *Cole Kilstrom*

Company Official (Typed Name) Cole Kilstrom

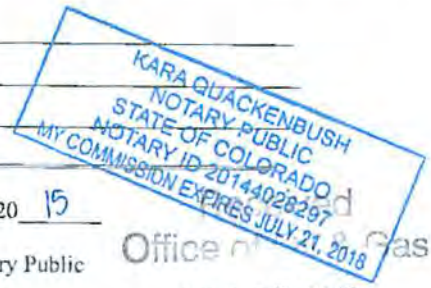
Company Official Title Environmental & Regulatory Manager

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

Kara Quackenbush

Notary Public

My commission expires July 21, 2018



Office of Oil and Gas

MAR 27 2015

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 Newlon

Comments: Proceed w/ Mulch any disturbed area. 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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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

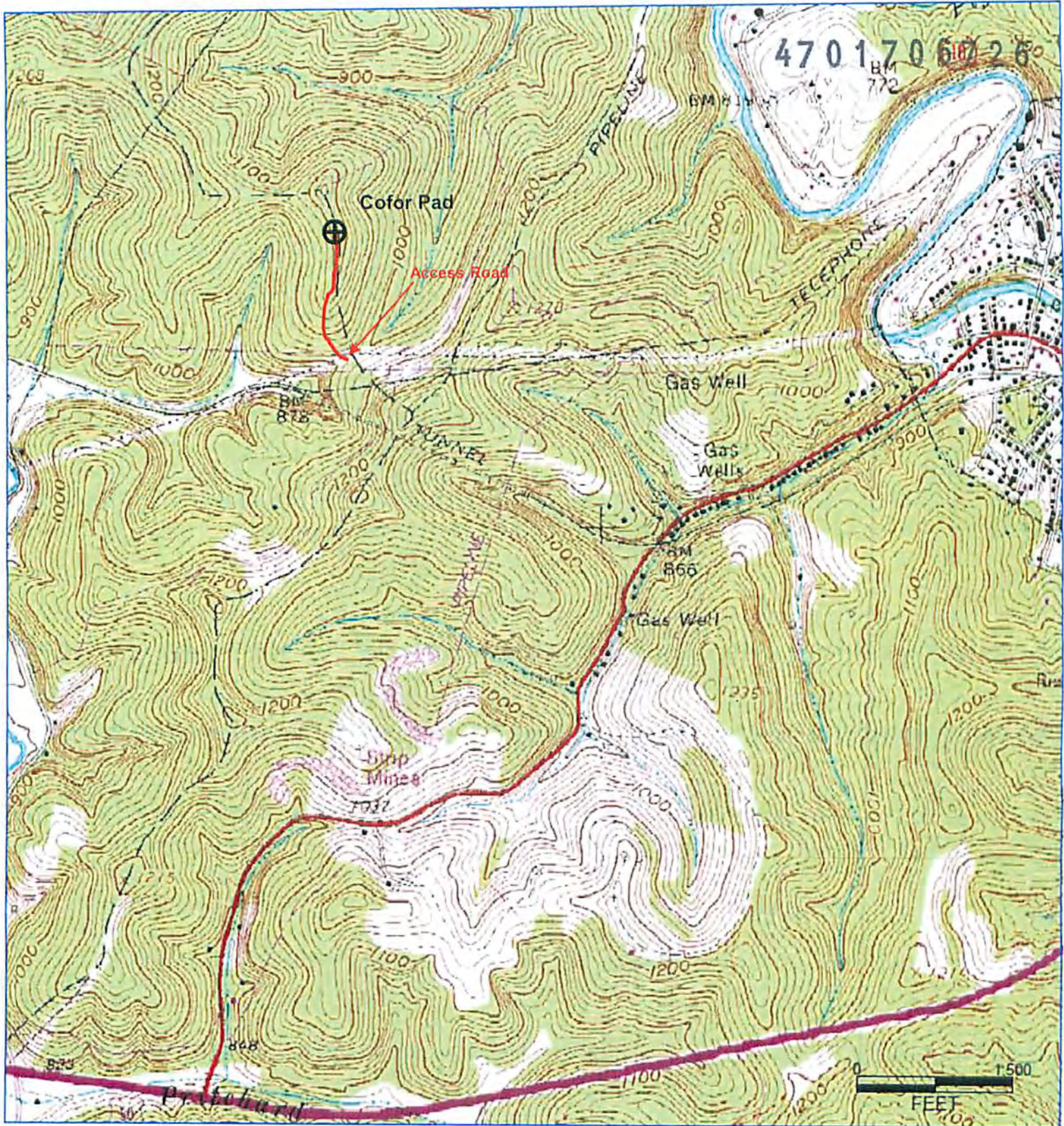
Drive west on HWY 50 W 2.6 miles. Turn Right onto US-50 West 2.6 miles. Turn Right onto Co Rte 11/Arnolds Creek Rd 1.4 miles. Turn Right onto Tunnel Hill Rd 0.75 miles. Turn Left onto access road. Look for rig signs.

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

*DCN
3-26-2013*

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MAR 27 2015



Antero Resources Corporation
 Appalachian Basin
 Nova Unit 1H
 Doddridge County
 Quadrangle: West Union 7.5'
 Watershed: Headwaters Middle Island Creek
 District: West Union
 Date: 4-01-2014

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LATITUDE 39°20'00" 2,436'

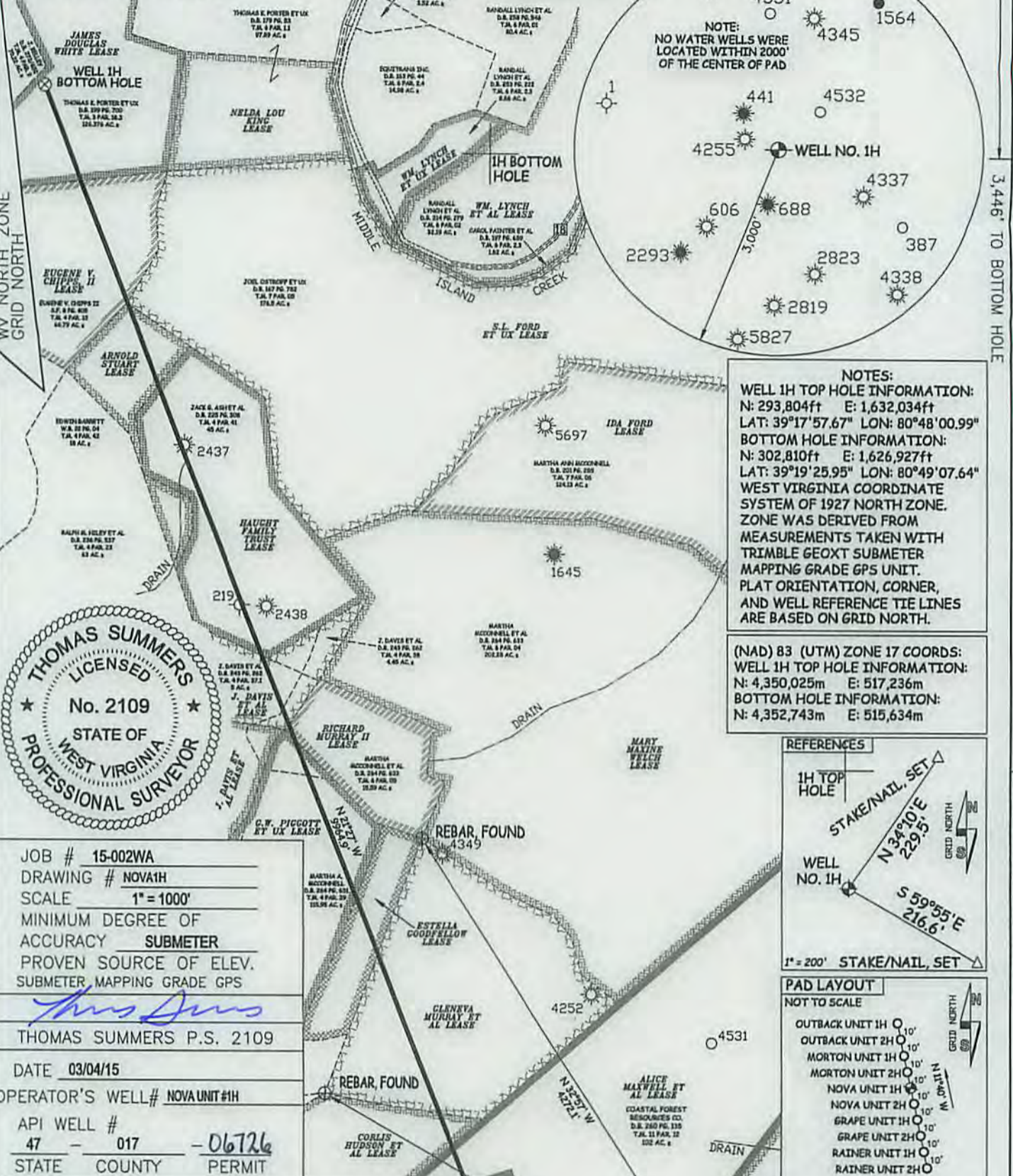
7,673' TO BOTTOM HOLE

3,446' TO BOTTOM HOLE

12,377'

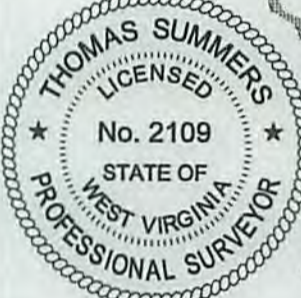
LONGITUDE 80°47'30"

Antero Resources Corporation
Well No. Nova Unit 1H

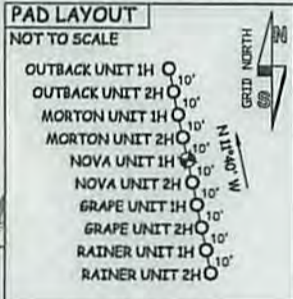
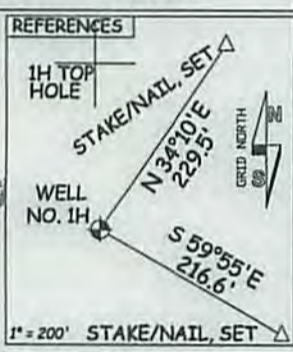


NOTES:
 WELL 1H TOP HOLE INFORMATION:
 N: 293,804ft E: 1,632,034ft
 LAT: 39°17'57.67" LON: 80°48'00.99"
 BOTTOM HOLE INFORMATION:
 N: 302,810ft E: 1,626,927ft
 LAT: 39°19'25.95" LON: 80°49'07.64"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE 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 1H TOP HOLE INFORMATION:
 N: 4,350,025m E: 517,236m
 BOTTOM HOLE INFORMATION:
 N: 4,352,743m E: 515,634m



JOB # 15-002WA
 DRAWING # NOVA1H
 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 # NOVA UNIT #1H
 API WELL # 47 - 017 - 06726
 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 PERSCRIBED 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

C. THOMAS HYATT ET UX LEASE
 COASTAL FOREST RESOURCES CO.
 D.B. 280 PG. 126
 T.A. 7 PAR. 12
 60 AC. ±
 LANDING POINT
 N:293535
 E:1630570

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; C. THOMAS HYATT ET UX; CORLIS HUTSON ET AL; LEASE ACREAGE 420 AC±; 60 AC±; 488.7 AC±;
 GLENEVA MURRAY ET AL; ESTELLA GOODFELLOW; G.W. PIGGOTT ET UX; RICHARD MURRAY II; J. DAVIS ET AL; 125 AC±; 11.621 AC±; 124.5 AC±; 14.5 AC±; 12.6 AC±;
 HAUGHT FAMILY TRUST; ARNOLD STUART; S.L. FORD ET UX; EUGENE V. CHIPPIS II; JAMES DOUGLAS WHITE 45 AC±; 11.6 AC±; 180 AC±; 120 AC±; 150 AC±
 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 19,000' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313

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

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

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

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

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Alice Maxwell, et al Lease</u>			
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
<u>C. Thomas Hyatt, et ux Lease</u>			
C. Thomas Hyatt, et ux	Paul McCutchan & Carl Perkins	1/8	0070/0115
Paul McCutchan & Virginia McCutchan	P.D. Farr II	Assignment	0174/0134
Perkins Oil & Gas, Carl D. Perkins, President, et al	P.D. Farr II	Assignment	0174/0020
P.D. Farr II	Antero Resources Appalachian Corporation	*Partial Assignment of Oil & Gas Leases	0271/0546
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Corlis Hudson, et al Lease</u>			
Corlis P. Hudson, et al	James I. Shearer	1/8	0067/0370
James I. Shearer	Key Oil Company	Assignment	0178/0023
Key Oil Company	Antero Resources Appalachian Corporation	*Partial Assignment of Oil & Gas Leases	0256/0285
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Gleneva Murray, et al Lease</u>			
Gleneva Murray, et al	Murvin Oil Company	1/8	0174/0112
Murvin Oil Company	Murvin & Meier Oil Company	Assignment	0179/0193
Murvin & Meier Oil Company	Tenmile Land, LLC	Assignment	0252/0609
Tenmile Land, LLC	Antero Resources Appalachian Corporation	Assignment	0261/0014
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Estella Goodfellow Lease</u>			
Estella Goodfellow	Antero Resources Corporation	1/8+	0380/0196
<u>G.W. Piggott, et ux Lease</u>			
G.W. Piggott, et ux	The Hope Natural Gas Company	1/8	0023/0113
The Hope Natural Gas Company	W.D. Gribble, et al	Appraisal	FO 0020/0343
P. Douglas Farr, Administratrix of The Estate of W.D. Gribble, deceased	C.O. Travis	Assignment	0057/0085
C.O. Travis	Claude Burl Travis, Betty Lee Senile & Gerald E. Travis	Appraisal	SFR 0005/0501
Claude Burl Travis, Betty Lee Senile	Gerald E. Travis	Agreement & Assignment	0091/0271
Gerald E. Travis	Antero Resources Corporation	*Partial Assignment of Oil & Gas Leases	0346/0249

*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.

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MAY 28 2015

WW-6A1

Operator's Well Number Nova Unit 1H

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)

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

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Richard Murray II Lease</u>			
Richard Patrick Murray, II	Antero Resources Appalachian Corporation	1/8+	0266/0585
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>J. Davis, et al Lease</u>			
Jonathan L. Davis, et al	Antero Resources Appalachian Corporation	1/8+	0283/0130
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Haught Family Trust Lease</u>			
Haught Family Trust (dated April 17, 1989)	Antero Resources Appalachian Corporation	1/8+	0263/0482
Gerald E. Travis	Antero Resources Corporation	*Partial Assignment of Oil & Gas Leases	0346/0249
<u>Arnold Stuart Lease</u>			
Arnold L. Stuart	Antero Resources Appalachian Corporation	1/8+	0263/0702
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>S. L. Ford, et ux Lease</u>			
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
<u>Eugene V. Chipps, II Lease</u>			
Eugene V. Chipps, et ux	Devonian Appalachian Co.	1/8	0161/0214
Devonian Appalachian Co.	New Freedom Energy, LLC	Assignment	0203/0346
New Freedom Energy, LLC	Antero Resources Corporation	*Partial Assignment of Oil & Gas Leases	0336/0127

*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.

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MAR 17 2015

WV Department of
Environmental Protection

CONTINUED ON NEXT PAGE**

05/29/2015

WW-6A1
(5/13)Operator's Well No. Nova Unit 1H

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>James Douglas White Lease</u>	James Douglas White	Antero Resources Corporation	1/8+	0313/0688

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

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

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

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

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

Well Operator: Antero Resources CorporationBy: Kevin KilstromIts: VP of Production

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Page 1 of _____
 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
RECEIVED June 28, 2001
Office of Oil and Gas*

MAR 17 2015
Joe Manchin III
WV Department of
Environmental Protection
Secretary of State

05/29/2015

4701706726



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 57th Street SE
Charleston, WV 25304

RE: Nova Unit 1H
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 Nova Unit 1H horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the Nova Unit 1H horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

A handwritten signature in blue ink, appearing to read "Thomas Kuhn Landman", is written over a horizontal line.

Thomas Kuhn
Landman

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Office of Oil and Gas
MAR 17 2015
WV Department of
Environmental Protection

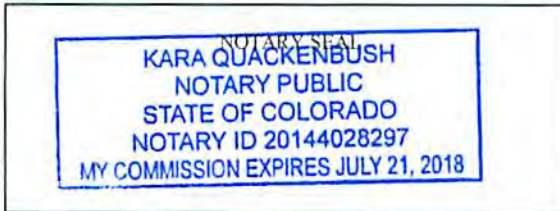
05/29/2015

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: Antero Resources Corporation
By: Kevin Kilstrom
Its: VP of Production
Telephone: (303) 357-7310

Address: 1615 Wynkoop Street
Denver, CO 80202
Facsimile: 303-357-7315
Email: asteele@anteroresources.com



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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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WV Department of
Environmental Protection

05/29/2015

WW-6A
(9-13)

API NO. 47- 017 -
OPERATOR WELL NO. Nova Unit 1H
Well Pad Name: Color Pad

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

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 MAR 27 2015
 WV Department of Environmental Protection

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

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WW-6A
(8-13)

API NO. 47-017
OPERATOR WELL NO. Nova Unit 1H
Well Pad Name: Color Pad

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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MAR 17 2015
WV Department of
Environmental Protection

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.**

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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WV Department of
Environmental Protection

4701706726

WW-6A
(8-13)

API NO. 47-017 -
OPERATOR WELL NO. Nova Unit 1H
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.

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

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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05/29/2015

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: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.299423, -80.800056 (NAD 83)</u>
County: <u>Doddridge</u>	Public Road Access: <u>CR 11/8</u>
District: <u>West Union</u>	Watershed: <u>Tributary of Arnold Creek</u>
Quadrangle: <u>West Union 7.5'</u>	Generally used farm name: <u>Coastal Forest Resources Company</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: Antero Resources Corporation
 Telephone: (303) 357- 7323
 Email: asteelle@anteroresources.com

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

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Oil and Gas Privacy Notice:

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

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>517,236m</u>
County: <u>Doddridge</u>	Northing: <u>4,350,025m</u>
District: <u>West Union</u>	Public Road Access: <u>CR 11/8</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 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: <u>Antero Resources Corporation</u>	Address: <u>1615 Wynkoop Street</u>
Telephone: <u>(303) 357-7323</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.

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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 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the Cofor Pad, Doddridge County
Nova Unit 1H 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

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05/29/2015

LOCATION COORDINATES:
 ACCESS ROAD ENTRANCE
 LATITUDE: 38.56622 LONGITUDE: -80.76941 (NAD 83)
 N 4349466.65 E 512706.49 (UTM ZONE 17 METERS)
 CENTER OF COFOR WELL PAD
 LATITUDE: 38.59443 LONGITUDE: -80.80056 (NAD 83)
 N 4350023.78 E 517249.30 (UTM ZONE 17 METERS)
 CENTER OF WATER CONTAINMENT TANK
 LATITUDE: 38.50590 LONGITUDE: -80.81064 (NAD 83)
 N 4350528.87 E 516333.18 (UTM ZONE 17 METERS)
 CENTER OF ROCK RUN WELL PAD
 LATITUDE: 38.50482 LONGITUDE: -80.81458 (NAD 83)
 N 4350631.48 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 AN 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 06, 2013 ROCK RUN & COFOR JURISDICTIONAL STREAMS & WETLANDS MAPS WERE PREPARED BY ALLSTAR ECOLOGY, LLC AND DEMONSTRATE THE RESULTS OF THIS 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.

Stream and Impact Cause	Fill (LF)	Culvert (LF)	Inlets/Outlets Structures (LF)	Total Impact (LF)
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 SUBSEQUENT 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 OAKS BLVD
 BRIDGEPORT, WV 26330
 PHONE: (304) 842-4100
 FAX: (304) 842-4102

ELI WAGOKER - ENVIRONMENTAL ENGINEER
 OFFICE: (304) 842-4068 CELL: (304) 476-8770
JOHN KARCAK - OPERATIONS SUPERINTENDENT
 CELL: (817) 368-1553

AARON KUNZLER - CONSTRUCTION SUPERVISOR
 CELL: (405) 227-8344
ANTHONY SMITH - FIELD ENGINEER
 OFFICE: (304) 842-4208 CELL: (304) 673-8168

MARK JOHNSON - SURVEYING COORDINATOR
 (304) 842-4152 CELL: (304) 718-6449
DAVE CAVA - LAND AGENT
 (304) 641-5814

RESTRICTIONS NOTES:
 1. THERE ARE NO FEDERAL 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 200 FEET OF THE WELLS BEING DRILLED.

5. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 840 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:
 1. ALL TWP'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 RAINY EVENT IN EXCESS OF 0.2" AND ON A WEEKLY BASIS.

2. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING 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 HAND CROWN SUCH AS PAVEMENT OR BLENDED. IT SHOULD BE NOTED THAT THE TOP REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.

3. ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP.

4. ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDED.

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



WEST VIRGINIA COUNTY MAP



**WVDEP OOG
 ACCEPTED AS-BUILT**
 2/21 4-29-2014

WVDOH COUNTY ROAD MAP



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 CAS 35-8

SHEET INDEX:
 1 - COVER SHEET
 2 - LEGEND
 3 - OVERALL PLAN SHEET INDEX
 4 - ACCESS ROAD & STAGING AREA "A" AS-BUILT PLAN
 5 - ACCESS ROAD & COFOR WELL PAD AS-BUILT PLAN
 6 - ACCESS ROAD AS-BUILT PLAN
 7 - ACCESS ROAD & WATER CONTAINMENT PAD AS-BUILT PLAN
 8 - ACCESS ROAD & ROCK RUN WELL PAD AS-BUILT PLAN
 9 - ACCESS ROAD PROFILES
 10 - COFOR WELL PAD, ROCK RUN WELL PAD, & WATER CONTAINMENT PAD SECTIONS

Proposed Well Name	WV North NAD 83	WV North NAD 83	UTM Zone 17	NAD 83 Lat & Long
Future Well	N 25972.44	N 25938.52	N 430005.20	LAT 38-18-17.9403 LONG 80-48-52.3093
Future Well	N 25973.29	N 25938.27	N 430005.10	LAT 38-18-17.8000 LONG 80-48-52.4309
Deviation Unit 2H	N 25973.14	N 25938.22	N 430005.01	LAT 38-18-17.8370 LONG 80-48-52.2698
Deviation Unit 2H	N 25972.39	N 25938.27	N 430004.81	LAT 38-18-17.9341 LONG 80-48-52.8888
Deviation Unit 3H	N 25972.83	N 25937.82	N 430004.81	LAT 38-18-17.8311 LONG 80-48-52.8143
Wells Unit 2H (Drilled Well) AP# 47-017-06476	N 25972.68	N 25937.78	N 430004.72	LAT 38-18-17.8232 LONG 80-48-52.9411
Wells Unit 2H (Drilled Well) AP# 47-017-06478	N 25973.53	N 25937.67	N 430004.62	LAT 38-18-17.6232 LONG 80-48-53.0893
Twisted Unit 2H (Drilled Well) AP# 47-017-06422	N 25972.36	N 25937.48	N 430004.52	LAT 38-18-17.6232 LONG 80-48-53.1954
Well Pad Elevation	N 12761.57	N 106470.29	N 515849.19	

Proposed Well Name	WV North NAD 83	WV North NAD 83	UTM Zone 17	NAD 83 Lat & Long
Outback Unit 1H (Drilled Well) AP# 47-017-06478	N 25972.71	N 25937.71	N 430003.79	LAT 38-17-58.7863 LONG 80-48-50.4763
Outback Unit 2H (Drilled Well) AP# 47-017-06479	N 25972.31	N 25938.12	N 430003.18	LAT 38-17-58.2506 LONG 80-48-50.4608
Marble Unit 1H (Drilled Well) AP# 47-017-06525	N 25972.34	N 25938.33	N 430003.19	LAT 38-17-58.1933 LONG 80-48-50.4233
Marble Unit 2H (Drilled Well) AP# 47-017-06526	N 25971.35	N 25938.33	N 430003.21	LAT 38-17-58.0965 LONG 80-48-50.3653
Kiva Unit 1H	N 25972.44	N 25938.14	N 430003.24	LAT 38-17-57.8753 LONG 80-48-50.3662
Kiva Unit 2H	N 25972.44	N 25938.14	N 430003.24	LAT 38-17-57.8753 LONG 80-48-50.3662
Grape Unit 1H	N 25972.51	N 25938.14	N 430003.24	LAT 38-17-57.7773 LONG 80-48-50.3151
Grape Unit 2H	N 25972.51	N 25938.14	N 430003.24	LAT 38-17-57.7773 LONG 80-48-50.3151
Rainier Unit 1H	N 25972.58	N 25938.15	N 430003.25	LAT 38-17-57.5843 LONG 80-48-50.2383
Rainier Unit 2H	N 25972.58	N 25938.15	N 430003.25	LAT 38-17-57.5843 LONG 80-48-50.2383
Well Pad Elevation	N 12761.57	N 106470.29	N 515849.19	

ROCK RUN & COFOR LIMITS OF DISTURBANCE AREA (ACS)	AREA (ACS)
Total Site	16.40
Access Road "A" (4,782')	6.38
Access Road "B" (1,253')	1.39
Access Road "C" (523')	0.81
Staging Area "A"	0.81
Rock Run Well Pad	3.70
Cofor Well Pad	2.27
Water Containment Pad	11.80
Erosion/Topsoil Material Stockpiles	56.15
Total Affected Area	43.52
Total Wooded Acres Disturbed	43.52
Impacts to Coalbed Gas Resources Co. TM 11-12	7.75
Access Road "A" (2,356')	1.39
Access Road "C" (523')	1.39
Staging Area "A"	3.70
Cofor Well Pad	7.93
Erosion/Topsoil Material Stockpiles	22.13
Total Affected Area	19.00
Total Wooded Acres Disturbed	19.00
Impacts to Coalbed Gas Resources Co. TM 11-11	6.55
Access Road "A" (1,402')	5.55
Total Affected Area	4.72
Total Wooded Acres Disturbed	4.72

Impacts to Douglas P. Farm 2 TM 7-6	AREA (ACS)
Access Road "A" (218')	1.39
Access Road "B" (0')	0.33
Water Containment Pad	1.03
Erosion/Topsoil Material Stockpiles	0.09
Total Affected Area	2.83
Total Wooded Acres Disturbed	2.83
Impacts to Martha A. McConner TM 4-29	1.71
Access Road "A" (158')	1.71
Access Road "B" (1,293')	0.53
Rock Run Well Pad	1.24
Water Containment Pad	0.50
Erosion/Topsoil Material Stockpiles	8.77
Total Affected Area	6.62
Total Wooded Acres Disturbed	6.62
Impacts to George O. Lambard TM 4-33	0.25
Access Road "B" (0')	4.06
Rock Run Well Pad	3.34
Erosion/Topsoil Material Stockpiles	7.85
Total Affected Area	0.17
Total Wooded Acres Disturbed	2.10
Impacts to Jonathan L. & Jeffrey W. Davis TM 4-35	0.12
Access Road "B" (0')	0.12
Rock Run Well Pad	0.11
Erosion/Topsoil Material Stockpiles	0.11
Total Affected Area	0.11
Total Wooded Acres Disturbed	0.11

NOTES:
 1. THE AS-BUILT INFORMATION SHOWN HEREON REFLECTS FIELD DATA COLLECTED RELATING TO THE FINAL CHALING OF THE DISTURBED AREA AS OF JANUARY 15, 2014. NAVITUS ENGINEERING IS NOT RESPONSIBLE FOR ANY CHANGES MADE TO THE SITE AFTER THE ABOVE MENTIONED DATE.
 2. THE EXISTING CONTAINMENT BEEM SHOULD BE REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.
 3. THE EXISTING EGRESSORS TO THE WELL PAD SHALL HAVE THE MOUNTAIN BEAMS REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.

NAVITUS
 ENERGY ENGINEERING
 1000 WEST VIRGINIA AVENUE
 MARTINSBURG, WV 26151
 PHONE: (304) 827-4115 | WWW.NAVITUS-EE.COM

REVISION	DATE	DESCRIPTION

THIS DOCUMENT HAS BEEN 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

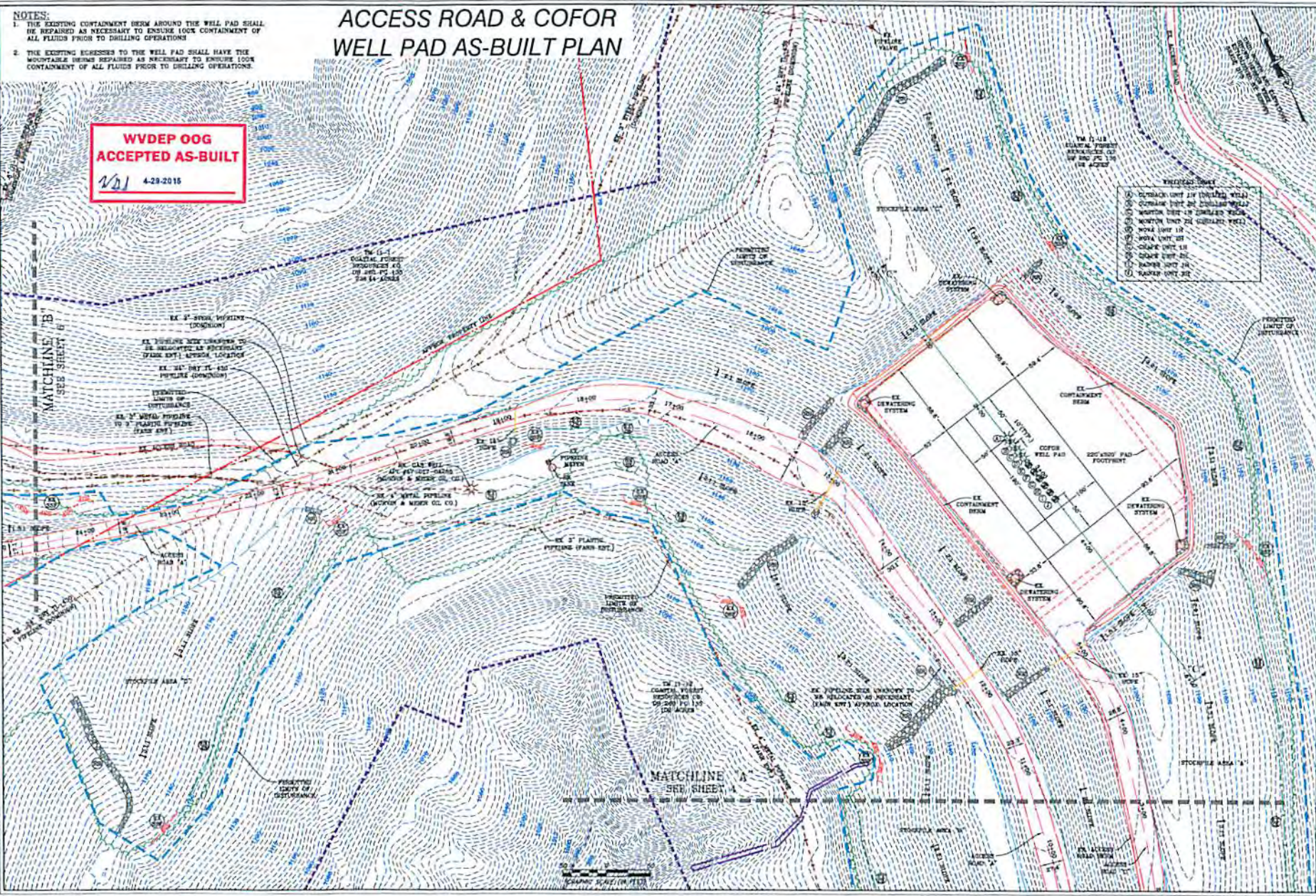
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NOTES:
 1. THE EXISTING CONTAINMENT BERM AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.
 2. THE EXISTING EGRESSSES TO THE WELL PAD SHALL HAVE THE MOUNTABLE BERM REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.

ACCESS ROAD & COFOR WELL PAD AS-BUILT PLAN

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



NAVITUS
ENERGY ENGINEERING

REVISION	DATE



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

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

LOCATION COORDINATES:

ACCESS ROAD ENTRANCE
LATITUDE: 39.296222 LONGITUDE: -80.799541 (NAD 83)
N 4349689.65 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: -80.810584 (NAD 83)
N 4350528.67 E 516333.18 (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
Nash
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	Fill (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
635 WHITE OAKS BLVD.
BRIDGEPORT, WV 28330
PHONE: (304) 842-4100
FAX: (304) 842-4102

ENGINEER/SURVEYOR:

NAVITUS ENGINEERING, INC.
CYRUS S. KUMP, PE - PROJECT
MANAGER/ENGINEER
OFFICE: (888) 662-4185 CELL: (640) 666-8747

ELI WAGONER - ENVIRONMENTAL ENGINEER
OFFICE: (304) 842-4068 CELL: (304) 476-9770

ENVIRONMENTAL:

ALLSTAR ECOLOGY, LLC
RYAN L. WARD - ENVIRONMENTAL SCIENTIST
(888) 213-2866 CELL: (304) 692-7477

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

AARON KUNZLER - CONSTRUCTION SUPERVISOR
CELL: (405) 227-8344

GEOTECHNICAL:

PENNSYLVANIA SOIL & ROCK, INC.
CHRISTOPHER W. SAMIOS-PROJECT ENGINEER
(412) 372-4000 CELL: (412) 559-0682

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

MARK JOHNSON - SURVEYING COORDINATOR
(304) 842-4152 CELL: (304) 718-6449

DAVE CAVA - LAND AGENT
(304) 641-6814

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:

1. 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 RUNOFF EVENT IN EXCESS OF 0.5" AND ON A BIWEEKLY BASIS.
2. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING 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 REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
3. ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP.
4. ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDED.

ROCK RUN & COFOR WELL PADS & WATER CONTAINMENT PADS AS-BUILT AND EROSION CONTROL IMPROVEMENTS

CENTRAL & WEST UNION DISTRICTS, DODD RIVER, NUTTER FORK - MIDDLE ISLAND CREEK & ALLEY CREEK

USGS 7.5 WEST UNION



WEST VIRGINIA COUNTY MAP



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!!