



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, August 31, 2018
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for JACK UNIT 1H
47-095-02461-00-00

Lateral shift

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number: JACK UNIT 1H
Farm Name: ROGER R. WEESE
U.S. WELL NUMBER: 47-095-02461-00-00
Horizontal 6A New Drill
Date Modification Issued: August 31, 2018

Promoting a healthy environment.

WW-6B
(04/15)

API NO. 47-095 - 02461
OPERATOR WELL NO. Jack Unit 1H
Well Pad Name: Neat Pad

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

1) Well Operator: Antero Resources Corporation 494507062 095 - Tyler Meade Middlebourne 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Jack Unit 1H Well Pad Name: Neat Pad

3) Farm Name/Surface Owner: Roger R. Weese Public Road Access: CR 7

4) Elevation, current ground: 1005' Elevation, proposed post-construction: _____

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

Other _____

(b) If Gas Shallow Deep _____

Horizontal _____

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):

Marcellus Shale: 6600' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2800#

*DMH
7-25-18
GJB
7/25/2018*

8) Proposed Total Vertical Depth: 6600' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18900' MD ✓

11) Proposed Horizontal Leg Length: 11248' ✓ *w/plot*

12) Approximate Fresh Water Strata Depths: 100', 121', 166' ✓

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: None Identified

15) Approximate Coal Seam Depths: 1441' ✓

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: _____

Received

2018

WW-6B
(04/15)

API NO. 47- 095 - 02461
 OPERATOR WELL NO. Jack Unit 1H
 Well Pad Name: Neat Pad

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	80	80 ✓	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	300	300 ✓	CTS, 417 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500 ✓	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	18900	18900 ✓	4789 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

*DMH
9-25-18
GCB
7/25/2018*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead-HIPOZ & Tail-H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

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

Received

SEP 28 2018

WW-6B
(10/14)

API NO. 47- 095 - 02461
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Well Pad Name: Neat Pad

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

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

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

DmH
7-25-18
GCB
7/29/2018

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): 30.47 acres

22) Area to be disturbed for well pad only, less access road (acres): 8.95 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

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

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

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

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

Conductor: no additives, Class A cement.

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

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

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

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

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.

Received
JUL 26 2018

Page 3 of 3

Office of Oil and Gas
WV Dept. of Environmental Protection

4709502461



Jack Unit 1H

47095019710000

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Office of Oil and Gas
JUL 16 2018
WV Department of
Environmental Protection



Antero Resources Corporation

Jack Unit 1H - AOR



WELL SYMBOLS
Gas Well

July 6, 2018

4709502461

UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD
47095019710000	MOORE W M	1	SANCHO OIL & GAS	SANCHO OIL & GAS	5166

JACK UNIT 1H (NEAT PAD) - AREA OF REVIEW 35-8-5.11 PAGE 2

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Office of Oil and Gas

JUL 16 2018

WV Department of
Environmental Protection

LAT 39° 27' 30"

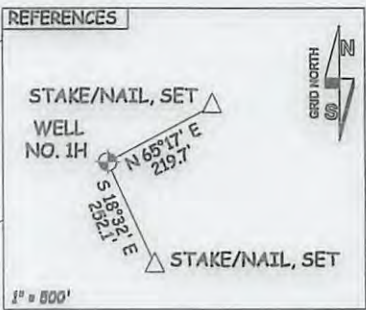
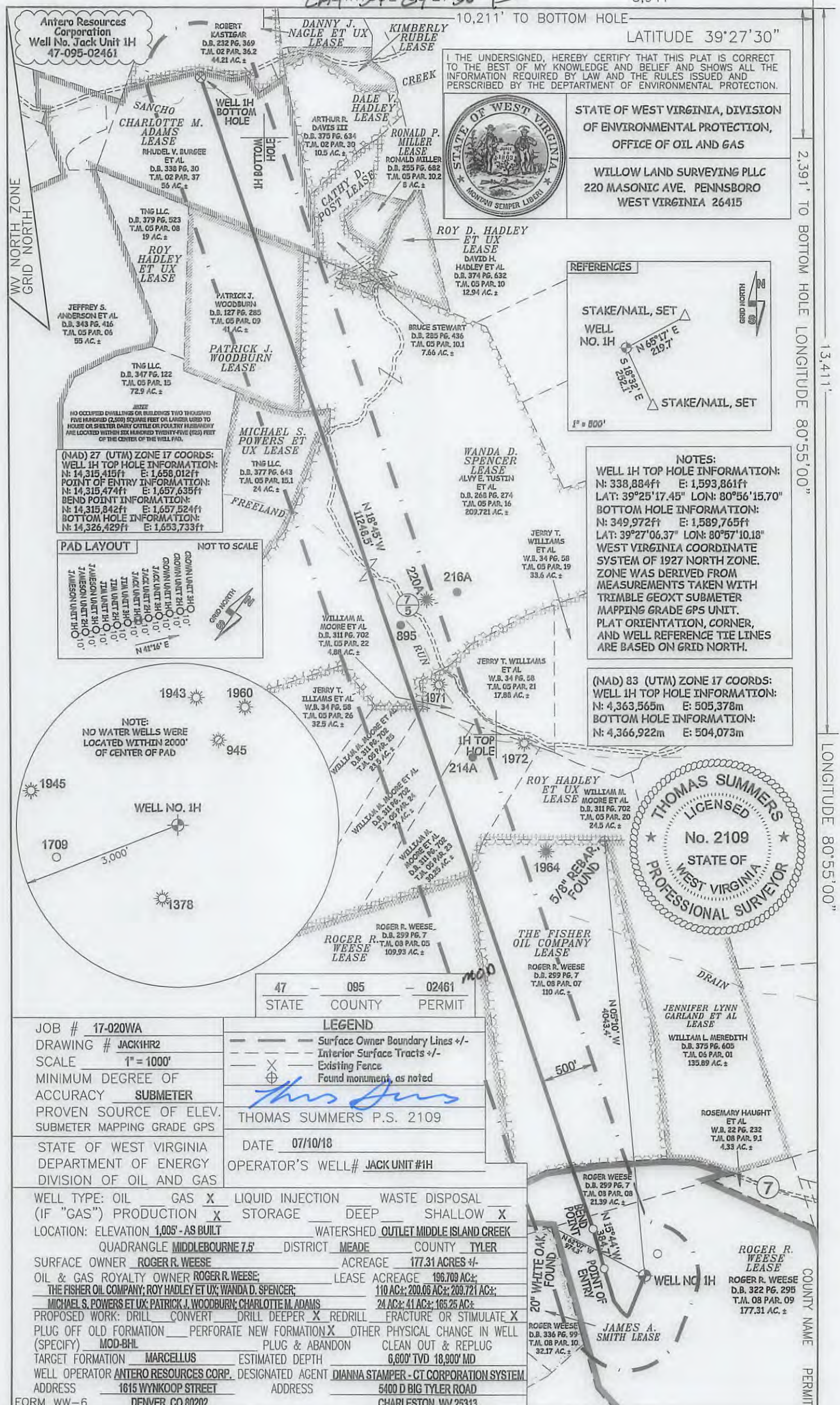
10,211' TO BOTTOM HOLE
 LATITUDE 39° 27' 30"

Antero Resources Corporation
 Well No. Jack Unit 1H
 47-095-02461

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 PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



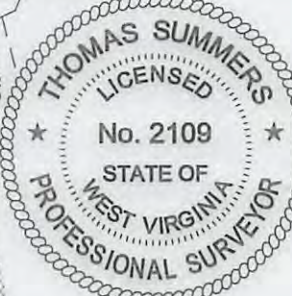
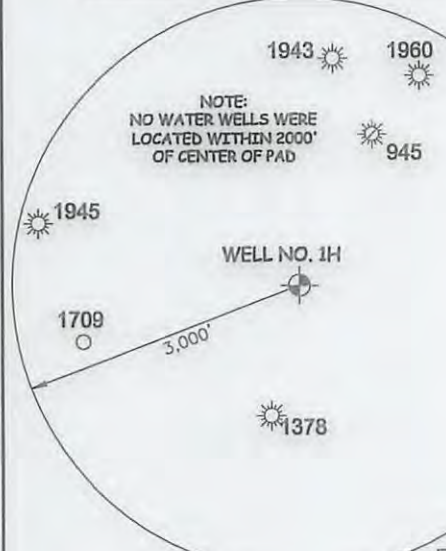
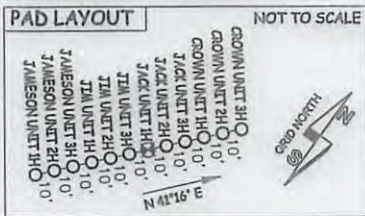
STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
 WILLOW LAND SURVEYING PLLC
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415



(NAD 27 (UTM) ZONE 17 COORDS:
 WELL 1H TOP HOLE INFORMATION:
 N: 14,315,415ft E: 1,658,012ft
 POINT OF ENTRY INFORMATION:
 N: 14,315,474ft E: 1,657,635ft
 BEND POINT INFORMATION:
 N: 14,315,842ft E: 1,657,524ft
 BOTTOM HOLE INFORMATION:
 N: 14,326,429ft E: 1,653,733ft

NOTES:
 WELL 1H TOP HOLE INFORMATION:
 N: 338,884ft E: 1,593,861ft
 LAT: 39° 25' 17.45" LON: 80° 56' 15.70"
 BOTTOM HOLE INFORMATION:
 N: 349,972ft E: 1,589,765ft
 LAT: 39° 27' 06.37" LON: 80° 57' 10.18"
 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: 4,363,565m E: 505,378m
 BOTTOM HOLE INFORMATION:
 N: 4,366,922m E: 504,073m



47 - 095 - 02461
 STATE COUNTY PERMIT

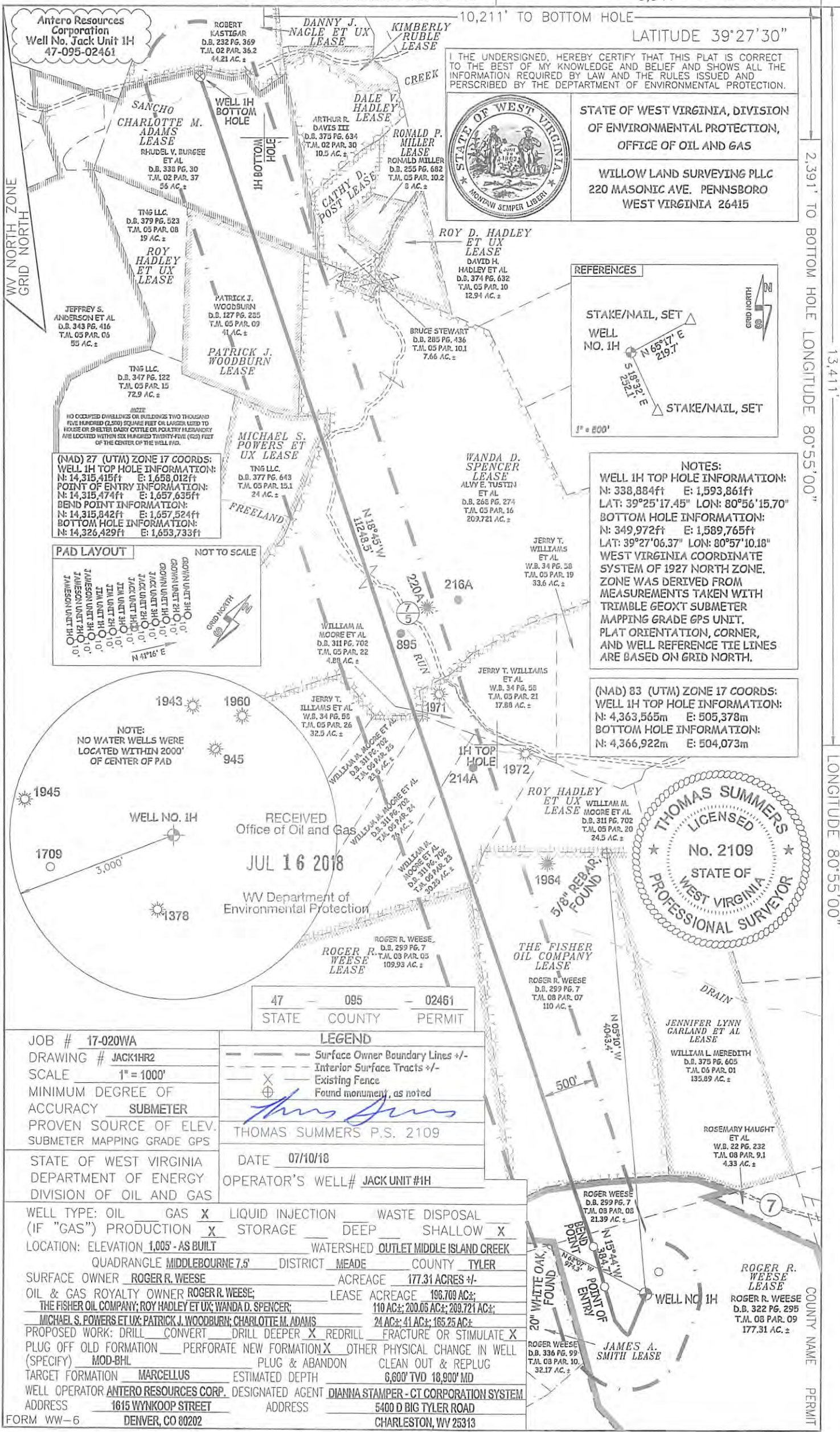
JOB # 17-020WA
 DRAWING # JACK1HR2
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
 STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

LEGEND
 - - - Surface Owner Boundary Lines +/-
 - - - Interior Surface Tracts +/-
 X Existing Fence
 ⊕ Found monument, as noted

THOMAS SUMMERS P.S. 2109
 DATE 07/10/18
 OPERATOR'S WELL# JACK UNIT #1H

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
 LOCATION: ELEVATION 1,005' - AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
 QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT MADE COUNTY TYLER
 SURFACE OWNER ROGER R. WEESE ACREAGE 177.31 ACRES +/-
 OIL & GAS ROYALTY OWNER ROGER R. WEESE; LEASE ACREAGE 196.709 AC +/-
 THE FISHER OIL COMPANY; ROY HADLEY ET UX; WANDA D. SPENCER; 110 AC +/-; 209.06 AC +/-; 209.721 AC +/-
 MICHAEL S. POWERS ET UX; PATRICK J. WOODBURN; CHARLOTTE M. ADAMS 24 AC +/-; 41 AC +/-; 165.25 AC +/-
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER X REDRILL FRACTURE OR STIMULATE X
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL
 (SPECIFY) MOD-BHL PLUG & ABANDON CLEAN OUT & REPLUG
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,600' TVD 10,900' 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

2,391' TO BOTTOM HOLE LONGITUDE 80° 55' 00"
 1,341'
 LONGITUDE 80° 55' 00"
 COUNTY NAME PERMIT



JOB # 17-020WA
DRAWING # JACK1HR2
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS
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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

47 - 095 - 02461
STATE COUNTY PERMIT

LEGEND
- - - Surface Owner Boundary Lines +/-
- - - Interior Surface Tracts +/-
X Existing Fence
⊕ Found monument, as noted

THOMAS SUMMERS P.S. 2109
DATE 07/10/18
OPERATOR'S WELL# JACK UNIT #1H

LEGEND
- - - Surface Owner Boundary Lines +/-
- - - Interior Surface Tracts +/-
X Existing Fence
⊕ Found monument, as noted

THOMAS SUMMERS P.S. 2109
DATE 07/10/18
OPERATOR'S WELL# JACK UNIT #1H

2,391' TO BOTTOM HOLE
13,411'
LONGITUDE 80°55'00"

WW-6A1

Operator's Well Number

Jack Unit 1H **Permit Modification API# 47-095-02461**

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>Roger R. Weese Lease</u>			
Roger R. Weese	Antero Resources Appalachian Corporation	1/8+	0435/0766
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>The Fisher Oil Company Lease</u>			
The Fisher Oil Company	Antero Resources Corporation	1/8+	0516/0627
<u>Roger R. Weese Lease</u>			
Roger R. Weese	Antero Resources Appalachian Corporation	1/8+	0435/0766
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Roy Hadley, et ux Lease</u>			
Roy Hadley, et ux	Antero Resources Corporation	1/8+	0495/0443
<u>Wanda D. Spencer Lease</u>			
Wanda D. Spencer	Antero Resources Corporation	1/8+	0456/0029
<u>Michael S. Powers, et ux Lease</u>			
Michael S. Powers, et ux	Antero Resources Appalachian Corporation	1/8+	0397/0458
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Wanda D. Spencer Lease</u>			
Wanda D. Spencer	Antero Resources Corporation	1/8+	0456/0029
<u>Patrick J. Woodburn Lease</u>			
Patrick J. Woodburn	Antero Resources Corporation	1/8+	0404/0400

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Office of Oil and Gas

JUL 16 2018

WV Department of
Environmental Protection

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

CONTINUED ON NEXT PAGE

WW-6A1
(5/13)

Operator's Well No. Jack Unit 4709502461

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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Charlotte M. Adams Lease</u>	Charlotte M. Adams Blue Shale, LLC	Blue Shale, LLC Antero Resources Corporation	1/8+ Assignment	0402/0254 0436/0274

*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 Corporation
By: Kevin Kilstrom
Its: Senior VP - Production

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Office of Oil and Gas

JUL 16 2018

WV Department of
Environmental Protection

WW-6B
(04/15)

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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: _____
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WW-6B
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Liners							

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Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

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

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WW-6B
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Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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

Conductor: no additives, Class A cement.

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

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

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

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

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.

RECEIVED
Office of Oil and Gas

JUL 16 2018

Page 3 of 3

FORM WW-6A1
EXHIBIT 1

FILED

JUN 10 2013

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



Fenny Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvsof.com
E-mail: business@wvsof.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
stamp; copy returned to you)
FEE: \$35.00

**** 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 Appalachia Corporation
- Date Certificate of Authority was issued in West Virginia: 6/25/2008
- Corporation 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.)

<u>Alwyn A. Schopp</u>	<u>(305) 357-7310</u>
Contact Name	Phone Number
- Signature information (See below **Important Legal Notice Regarding Signatures**):

Print Name of Signer: <u>Alwyn A. Schopp</u>	Title/Capacity: <u>Authorized Person</u>
Signature: <u><i>Alwyn A. Schopp</i></u>	Date: <u>June 10, 2013</u>

Important Legal Notice Regarding Signatures For West Virginia Code §31D-1-12b, 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 CP-4

Issued by the Office of the Secretary of State

Revised 4/11

JUL 16 2018



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, August 31, 2018
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for JAMESON UNIT 1H
47-095-02469-00-00

Shift lateral length

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number: JAMESON UNIT 1H
Farm Name: ROGER R. WEESE
U.S. WELL NUMBER: 47-095-02469-00-00
Horizontal 6A New Drill
Date Modification Issued: August 31, 2018

Promoting a healthy environment.

WW-6B
(04/15)

Permit Modification API# 47-095-02469 **7/16**
API NO. 47-095 - 02469
OPERATOR WELL NO. Jameson Unit 1H
Well Pad Name: Neat Pad

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

1) Well Operator: Antero Resources Corporation 494507062 095 - Tyler Meade Middlebourne 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Jameson Unit 1H Well Pad Name: Neat Pad

3) Farm Name/Surface Owner: Roger R. Weese Public Road Access: CR 7

4) Elevation, current ground: 1005' Elevation, proposed post-construction: _____

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

Other _____

(b) If Gas Shallow Deep _____

Horizontal _____

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6600' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2800#

*DMH
7-25-18
GAB
7/25/2018*

8) Proposed Total Vertical Depth: 6600' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 21250' MD ✓

11) Proposed Horizontal Leg Length: 11126' ✓ *w/dent*

12) Approximate Fresh Water Strata Depths: 100', 121', 166' ✓

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: None Identified

15) Approximate Coal Seam Depths: 1441' ✓

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: _____

Received

JUL 26 2018
Page 1 of 3

WW-6B
(04/15)

Permit Modification API# 47-095-02469
 API NO. 47- 095 - 02469
 OPERATOR WELL NO. Jameson Unit 1H
 Well Pad Name: Neat Pad

18)

CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	80	80 ✓	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	300	300 ✓	CTS, 271 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500 ✓	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	21250	21250 ✓	5435 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

DMH 7-25-18 JES 7/25/2018

<u>TYPE</u>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead-HPOZ & Tail-H	H/HPOZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200 ✓			
Liners							

PACKERS

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

Received

JUL 26 2018

WW-6B
(10/14)

API NO. 47-095 - 02469

OPERATOR WELL NO. Jameson Unit 1H

Well Pad Name: Neat Pad

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

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

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

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

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

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

DMH
7-25-18
QEB
7/25/2018

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 30.47 acres

22) Area to be disturbed for well pad only, less access road (acres): 8.95 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

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

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

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

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

Conductor: no additives, Class A cement.

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

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

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

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

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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.

Received

*Note: Attach additional sheets as needed.

JUL 26 2018

Page 3 of 3

Office of Oil and Gas

LATITUDE 39°27'30"

5,974'

498' TO BOTTOM HOLE
LATITUDE 39°27'30"

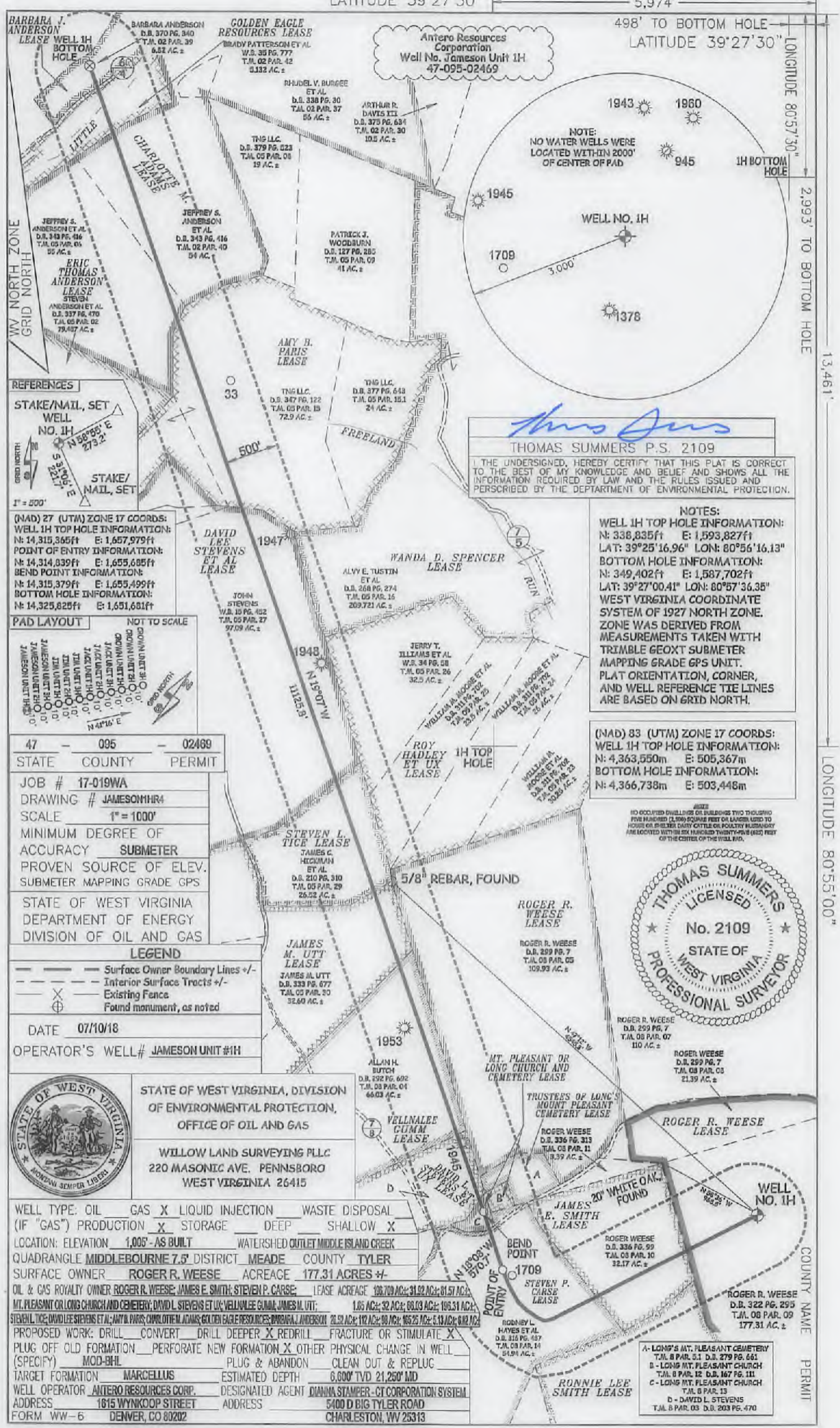
LONGITUDE 80°57'30"

2,993' TO BOTTOM HOLE

13,461'

LONGITUDE 80°55'00"

COUNTY NAME PERMIT



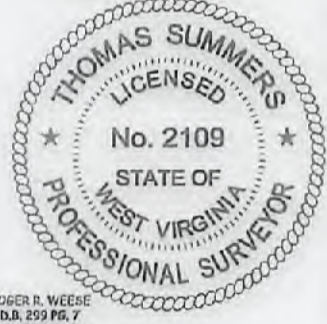
Antero Resources Corporation
Well No. Jameson Unit 1H
47-095-02469

Thomas Summers
THOMAS SUMMERS P.S. 2109
I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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.

NOTES:
WELL 1H TOP HOLE INFORMATION:
N: 338,835ft E: 1,593,827ft
LAT: 39°25'16.96" LON: 80°56'16.13"
BOTTOM HOLE INFORMATION:
N: 349,402ft E: 1,587,702ft
LAT: 39°27'00.41" LON: 80°57'36.35"
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: 4,363,550m E: 505,367m
BOTTOM HOLE INFORMATION:
N: 4,366,738m E: 503,448m

NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER CATTLE OR POLTRY IN ANY MANNER ARE LOCATED WITHIN ONE (1) MILE RADIUS OF THE CENTER OF THE WELL BVD.



REFERENCES
STAKE/NAIL, SET WELL NO. 1H
STAKE/NAIL, SET
1" = 200'

(NAD) 27 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 14,315,365ft E: 1,657,979ft
POINT OF ENTRY INFORMATION:
N: 14,314,939ft E: 1,655,685ft
BEND POINT INFORMATION:
N: 14,315,379ft E: 1,655,499ft
BOTTOM HOLE INFORMATION:
N: 14,325,825ft E: 1,651,681ft

PAD LAYOUT NOT TO SCALE

47	095	02469
STATE	COUNTY	PERMIT
JOB #	17-019WA	
DRAWING #	JAMES01HRA	
SCALE	1" = 1000'	
MINIMUM DEGREE OF ACCURACY	SUBMETER	
PROVEN SOURCE OF ELEV.	SUBMETER MAPPING GRADE GPS	
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS		

LEGEND

---	Surface Owner Boundary Lines +/-
---	Interior Surface Tracts +/-
X	Existing Fence
⊕	Found monument, as noted

DATE 07/10/18
OPERATOR'S WELL# JAMESON UNIT #1H



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

WELL TYPE: OIL GAS <input checked="" type="checkbox"/> LIQUID INJECTION _____ WASTE DISPOSAL _____
(IF "GAS") PRODUCTION _____ STORAGE <input checked="" type="checkbox"/> DEEP _____ SHALLOW <input checked="" type="checkbox"/>
LOCATION: ELEVATION 1,005' AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT MEADE COUNTY TYLER
SURFACE OWNER ROGER R. WEESE ACREAGE 177.31 ACRES +/-
OIL & GAS ROYALTY OWNER ROGER R. WEESE; JAMES E. SMITH; STEVEN P. CARSE; LEASE ACREAGE 190.709 AC.; 31.92 AC.; 81.57 AC.;
MT. PLEASANT OR LONG CHURCH AND CEMETERY; DAVID L. STEVENS ET UX; VELLNALEE GUMMA; JAMES M. UTT; 1.85 AC.; 32 AC.; 88.03 AC.; 106.51 AC.;
STEVEN L. TICE; DAVID LEE STEVENS ET AL; AMY H. PARIS; CHARLOTTE M. ADAMS; GOLDEN EAGLE RESOURCES; BRADY PATTERSON; BARBARA J. ANDERSON 26.52 AC.; 112 AC.; 90 AC.; 165.25 AC.; 6.13 AC.; 6.82 AC.
PROPOSED WORK: DRILL _____ CONVERT _____ DRILL DEEPER <input checked="" type="checkbox"/> REDRILL _____ FRACTURE OR STIMULATE <input checked="" type="checkbox"/>
PLUG OFF OLD FORMATION _____ PERFORATE NEW FORMATION <input checked="" type="checkbox"/> OTHER PHYSICAL CHANGE IN WELL _____
(SPECIFY) MOD-BHL _____ PLUG & ABANDON _____ CLEAN OUT & REPLUG _____
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,600' TVD 21,250' MID
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CIT CORPORATION SYSTEM
ADDRESS 1815 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313
FORM WW-6 DENVER, CO 80202

A - LONG'S MT. PLEASANT CEMETERY T.M. 8 PAR. 5.1 D.B. 279 PG. 661
B - LONG'S MT. PLEASANT CHURCH T.M. 8 PAR. 12 D.B. 167 PG. 111
C - LONG'S MT. PLEASANT CHURCH T.M. 8 PAR. 13
D - DAVID L. STEVENS T.M. 8 PAR. 03 D.B. 203 PG. 470

LATITUDE 39°27'30"

5,974'

498' TO BOTTOM HOLE

LATITUDE 39°27'30"

LONGITUDE 80°57'30"

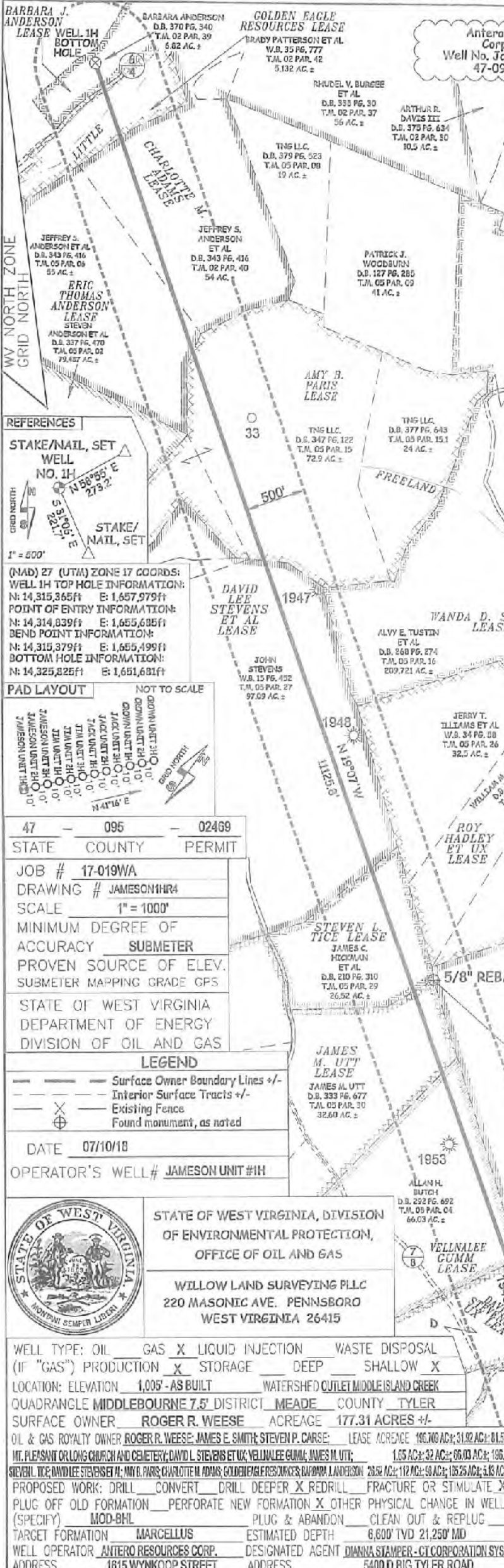
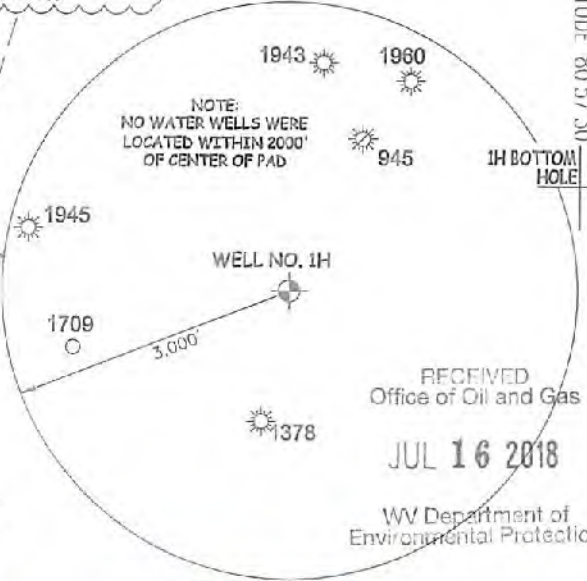
2,993' TO BOTTOM HOLE

13,461'

LONGITUDE 80°55'00"

COUNTY NAME PERMIT

Antera Resources Corporation
Well No. Jameson Unit 1H
47-095-02469

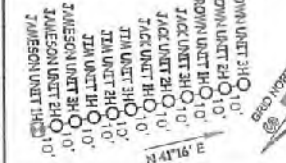


REFERENCES

STAKE/NAIL, SET WELL NO. 1H
N 58°55' E 273.2'
S 51°05' E 51.05'
1" = 500'

(NAD) 27 (UTM) ZONE 17 COORDS:
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N: 14,314,839ft E: 1,655,685ft
BEND POINT INFORMATION:
N: 14,315,379ft E: 1,655,499ft
BOTTOM HOLE INFORMATION:
N: 14,325,825ft E: 1,651,681ft

PAD LAYOUT



47 - 095 - 02469
STATE COUNTY PERMIT

JOB # 17-019WA
DRAWING # JAMESON1HR4
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

LEGEND
--- Surface Owner Boundary Lines +/-
--- Interior Surface Tracts +/-
--- Existing Fence
--- Found monument, as noted

DATE 07/10/18
OPERATOR'S WELL# JAMESON UNIT #1H



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

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
LOCATION: ELEVATION 1,005' - AS BUILT WATERSHED CUTLET MIDDLE ISLAND CREEK
QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT MEADE COUNTY TYLER
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OIL & GAS ROYALTY OWNER ROGER R. WEESE; JAMES E. SMITH; STEVEN P. CARSE LEASE ACREAGE 196.700 AC +/- 31.92 AC +/- 61.37 AC +/-
MT. PLEASANT OR LONG CHURCH AND CEMETERY; DAVID L. STEVENS ET AL; VELLNALEE GUMM; JAMES M. UTT; 1.65 AC +/- 32 AC +/- 66.03 AC +/- 186.31 AC +/-
SIEVELL, TICE, AND LEE STEVENS ET AL; MARY D. PARIS; CHARLOTTE M. ADAMS; GOLDEN EAGLE RESOURCES; BARBARA J. ANDERSON 28.82 AC +/- 112 AC +/- 58 AC +/- 126.25 AC +/- 5.15 AC +/- 6.82 AC +/-
PROPOSED WORK: DRILL CONVERT DRILL DEEPER X REDRILL FRACTURE OR STIMULATE X
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD-BHL PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,800' TUD 21,250' MD
WELL OPERATOR ANTERA RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
FORM WW-8 DENVER, CO 80202 CHARLESTON, WV 25313

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(NAD) 83 (UTM) ZONE 17 COORDS:
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N: 4,363,550m E: 505,367m
BOTTOM HOLE INFORMATION:
N: 4,366,738m E: 503,448m

NOTE:
IF AN OCCUPIED DWELLING OR BUILDING TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO STORE OR FEED LIVESTOCK OR CATTLE OR HOLSTEIN HEIFERS ARE LOCATED WITHIN ONE HUNDRED TWENTY-FIVE (125) FEET OF THE CENTER OF THE WELL PAD.



ROGER R. WEESE
D.B. 299 PG. 7
T.M. 08 PAR. 07
110 AC +/-
ROGER WEESE
D.B. 299 PG. 7
T.M. 08 PAR. 08
21.39 AC +/-
ROGER WEESE
D.B. 336 PG. 313
T.M. 08 PAR. 11
3.39 AC +/-
ROGER WEESE
D.B. 336 PG. 99
T.M. 08 PAR. 10
32.17 AC +/-
ROGER R. WEESE
D.B. 322 PG. 295
T.M. 08 PAR. 09
177.31 AC +/-

A - LONG'S MT. PLEASANT CEMETERY
T.M. 8 PAR. 01 D.B. 279 PG. 661
B - LONG MT. PLEASANT CHURCH
T.M. 8 PAR. 12 D.B. 167 PG. 111
C - LONG MT. PLEASANT CHURCH
T.M. 8 PAR. 13
D - DAVID L. STEVENS
T.M. 8 PAR. 03 D.S. 203 PG. 470

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>Roger R. Weese Lease</u>			
Roger R. Weese	Antero Resources Appalachian Corporation	1/8+	0435/0766
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>James A. Smith Lease</u>			
James A. Smith	Antero Resources Appalachian Corporation	1/8+	0420/0406
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Steven P. Carse Lease</u>			
Steven P. Carse	Antero Resources Corporation	1/8+	0449/0036
<u>Mt. Pleasant/Long Church Cemetery Lease</u>			
Mt. Pleasant/Long Church Cemetery	Antero Resources Corporation	1/8+	0541/0564
<u>David L. Stevens, et ux Lease</u>			
David L. Stevens, et ux	Sancho Oil and Gas Corporation	1/8	0349/0757
Sancho Oil and Gas Corporation	Chesapeake Appalachia, LLC	Assignment	0370/0154
Chesapeake Appalachia, LLC	SWN Production Company LLC	Assignment	0465/0463
SWN Production Company	Antero Exchange Properties	Partial Assignment	0544/0242
Antero Exchange Properties	Antero Resources Corporation	Merger	0009/0404
<u>Vellnalee Gumm Lease</u>			
Vellnalee Gumm	Antero Resources Corporation	1/8+	0492/0138
<u>James M. Utt Lease</u>			
James M. Utt	Antero Resources Corporation	1/8+	0457/0156
<u>Steven L. Tice Lease</u>			
Steven L. Tice	Antero Resources Corporation	1/8+	0555/0309
<u>David Lee Stevens, et al Lease</u>			
David Lee Stevens, et al	Sancho Oil and Gas Corporation	1/8	0353/0010
Sancho Oil and Gas Corporation	Chesapeake Appalachia, LLC	Assignment	0370/154
Chesapeake Appalachia, LLC	Antero Resources Corporation	Assignment	0598/0615
<u>Amy B. Paris Lease</u>			
Amy B. Paris	Antero Resources Corporation	1/8+	0529/0590
<u>Charlotte M. Adams Lease</u>			
Charlotte M. Adams	Blue Shale, LLC	1/8+	0402/0254
Blue Shale, LLC	Antero Resources Corporation	Assignment	0436/0274

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

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

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

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

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<u>Golden Eagle Resources Lease</u> Golden Eagle Resources	Antero Resources Corporation	1/8	0597/0790

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*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.

WW-6A1
(5/13)

Operator's Well No. Jameson 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 –

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- (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>Barbara J. Anderson Lease</u>	Barbara J. Anderson	Antero Resources Corporation	1/8+	0429/0594

*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.

Well Operator: Antero Resources Corporation

By: Kevin Kilstrom

Its: Senior VP - Production

**FORM WW-6A1
EXHIBIT 1**

FILED

JUN 10 2013

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



Fenny Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvsof.com
E-mail: business@wvsof.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 Med
stamped copy returned to you)
FEE: \$35.00

*** 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 statements:

1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachia Corporation
2. Date Certificate of Authority was issued in West Virginia: 6/26/2008
3. Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
4. Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
5. Other amendments: _____
(attach additional pages if necessary)

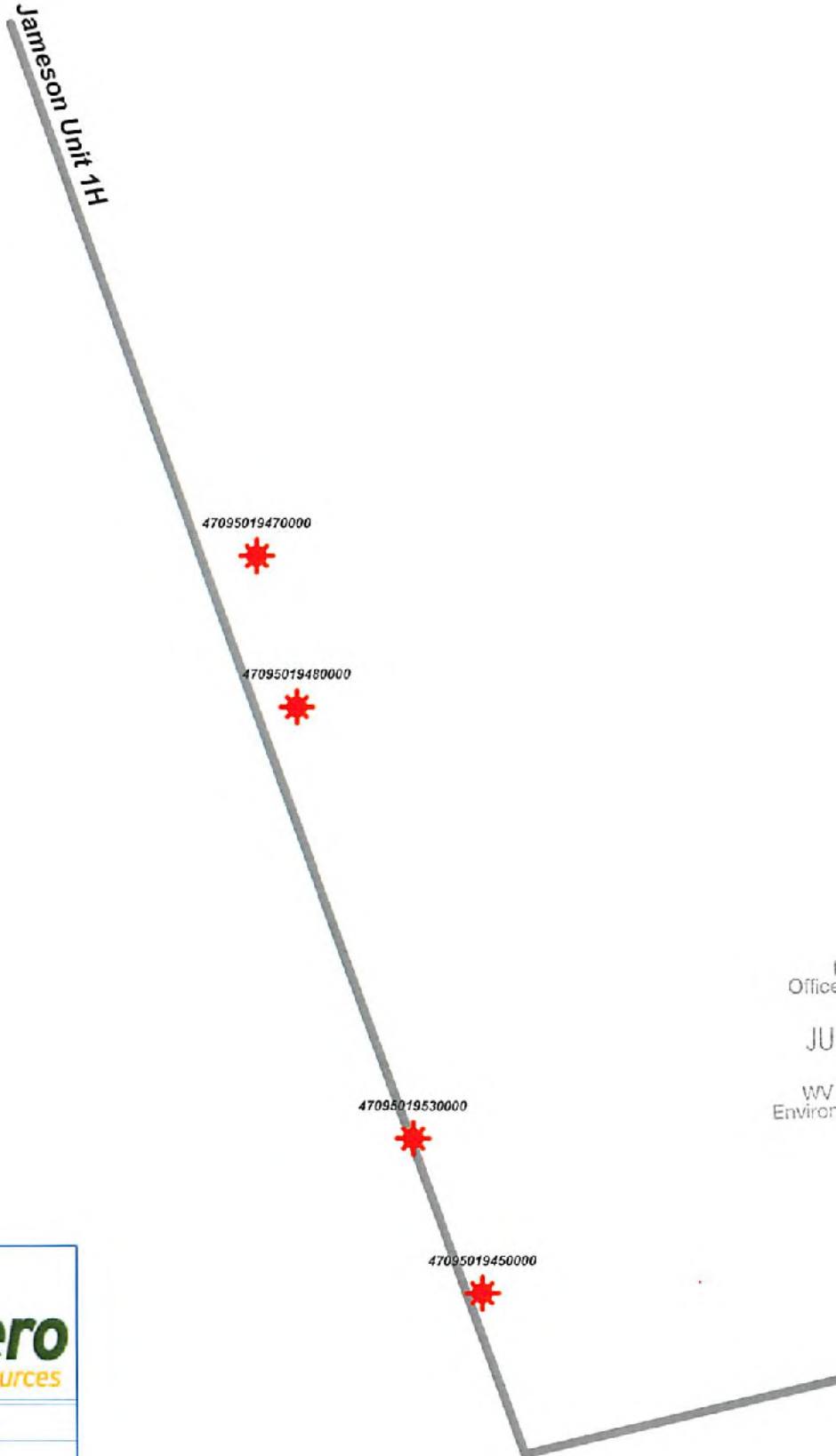
6. Name and phone number of contact person. (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alwyn A. Schopp (305) 357-7310
Contact Name Phone Number

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

Print Name of Signer: Alwyn A. Schopp Title/Capacity: Authorized Person
Signature: *Alwyn A. Schopp* Date: June 10, 2013

Important Legal Notice Regarding Signatures For West Virginia Code §31D-1-12b, 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.




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Jameson Unit 1H - AOR



 WELL SYMBOLS
Gas Well

June 26, 2017

UWI (API Num)	Well Name	Well Number	Operator	Historical Operator	TD
47095019450000	STEVENS D	1	SANCHO OIL & GAS	SANCHO OIL & GAS	5361
47095019530000	OWEN DAILEY HEIRS	1	SANCHO OIL & GAS	SANCHO OIL & GAS	5410
47095019480000	STEVENS J F	3	SANCHO OIL & GAS	SANCHO OIL & GAS	5361
47095019470000	STEVENS J F	2	SANCHO OIL & GAS	SANCHO OIL & GAS	5444
ELEV_GR	TD (SSTVD)	Approx Distance to well (ft)	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Productible Formation(s) not perf'd
950	-4411	114	1832-5097	Keener, Riley, Benson, Alexander, Elk	Fifth, Riley
1016	-4394	18	3342-5190	Warren, Benson, Alexander	Weir, Fifth, Riley, Elk
1069	-4292	299	4900-5183	Benson, Brallier	Weir, Fifth, Warren, Riley, Elk
1249	-4195	393	5108-5330	Benson, Elk	Weir, Fifth, Warren, Alexander

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WW-6B
(04/15)

API NO. 47-095 - 02469
OPERATOR WELL NO. Jameson Unit 1H
Well Pad Name: Neat Pad

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

1) Well Operator: Antero Resources Corporation 494507062 095 - Tyler Meade Middlebourne 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Jameson Unit 1H Well Pad Name: Neat Pad

3) Farm Name/Surface Owner: Roger R. Weese Public Road Access: CR 7

4) Elevation, current ground: 1005' Elevation, proposed post-construction: _____

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

(b) If Gas Shallow Deep _____
Horizontal _____

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6600' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 6600' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 21250' MD

11) Proposed Horizontal Leg Length: 11126'

12) Approximate Fresh Water Strata Depths: 100', 121', 166'

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: None Identified

15) Approximate Coal Seam Depths: 1441'

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
(04/15)

API NO. 47- 095 - 02469
OPERATOR WELL NO. Jameson Unit 1H
Well Pad Name: Neal Pad

18) **CASING AND TUBING PROGRAM**

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	80	80	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	300	300	CTS, 271 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	21250	21250	5435 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

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

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Environmental Protection

WW-6B
(10/14)

API NO. 47- 095 - 02469

OPERATOR WELL NO. Jameson Unit 1H

Well Pad Name: Neat Pad

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

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

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

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

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

Anticipated Max Pressure - 9300 lbs

Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 30.47 acres

22) Area to be disturbed for well pad only, less access road (acres): 8.95 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

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

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

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

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

Conductor: no additives, Class A cement.

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

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

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

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

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.

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*Note: Attach additional sheets as needed.

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