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west virginia department of environmental protection

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

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

PERMIT MODIFICATION APPROVAL  
Horizontal 6A / Horizontal 6A Well - 1

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for JUJUBEE UNIT 2H  
47-095-02336-00-00

Change point of entry, horizontal leg length, TMD, and TVD.

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: JUJUBEE UNIT 2H  
Farm Name: MONROE, EDNA  
U.S. WELL NUMBER: 47-095-02336-00-00  
Horizontal 6A / Horizontal 6A Well - 1  
Date Issued: 8/4/2017

Promoting a healthy environment.

08/04/2017



July 17, 2017

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

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

Mr. Stansberry:

Antero Resources Corporation (Antero) would like to submit the following permit modification for one approved well on the Estlack Pad. We are requesting to change the point of entry which will change the horizontal leg length, Total Measured Depth and Total Vertical Depth of the Jujubee Unit 2H (API# 47-095-02336).

Attached you will find the following documents:

- REVISED Form WW-6B, which shows the revised Horizontal Leg Length, Measured Depth and Production Casing/Cement Program
- REVISED Form WW-6A1, which shows the new lease we will be drilling into
- REVISED Mylar Plats, which shows the new wellbore path

If you have any questions please feel free to contact me at (303) 357-6759.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in blue ink that reads "Samantha Klaas". The signature is fluid and cursive.

Samantha Klaas  
Permitting Agent  
Antero Resources Corporation

Enclosures

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WV Department of  
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08/04/2017



47095007000001  
SANCHO OIL & GAS NOL  
JUBBEE UNIT 2H (ESTLACK PAD) - AREA OF REVIEW 35-8-5.11 PAGE 1



47095018400000  
TKI TALLMAN TIMOTHY 2A



47095023360000



ANTERO JUBBEE UNIT 2H

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Environmental Protection

0 1.127

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**PERMIT MODIFICATION (API# 47-095-02336)**

UWI (API#)	Well Name	Well Number	Operator	Hist Oper
47095007000001	NOLAN	2	SANCHO OIL & GAS	SANCHO OIL & GAS
47095018400000	TALLMAN TIMOTHY	2A	TEXAS KEYSTONE INC	SANCHO OIL & GAS

ELEV_GR	TD	TD(SSTVD)	Perf Interval	Perforated Formations	Producible not perforated
1159	5375	-4216	2202-5127	Big Injun, Benson	Big Lime, Keener, Gordon, Riley
1121	5282	-4161	4676-4679	Riley, Benson	Big Lime, Keener, Gordon

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WW-6B  
(04/15)

API NO. 47-095 - \_\_\_\_\_  
 OPERATOR WELL NO. Jujubee Unit 2H  
 Well Pad Name: Existing Estlack Pad

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

1) Well Operator: Antero Resources Corporation 494488557 095 - Tyler Centerville Middlebourne 7.5'  
 Operator ID County District Quadrangle

2) Operator's Well Number: Jujubee Unit 2H Well Pad Name: Existing Estlack Pad

3) Farm Name/Surface Owner: Edna Monroe Public Road Access: CR 30/1

4) Elevation, current ground: 1142' Elevation, proposed post-construction: 1142'

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: 6800' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 6800' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 17882' MD

11) Proposed Horizontal Leg Length: 11018'

12) Approximate Fresh Water Strata Depths: 131', 161', 208'

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

14) Approximate Saltwater Depths: 772', 847', 1890', 1968'

15) Approximate Coal Seam Depths: 200'

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 -  
OPERATOR WELL NO. Jujubee Unit 2H  
Well Pad Name: Existing Estlack Pad

18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	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#	17882'	17882'	CTS, 4510 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

<b>TYPE</b>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	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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WV Department of  
Environment & Natural Resources  
Page 2 of 3  
08/04/2017

WW-6B  
(10/14)

API NO. 47- 095 -  
OPERATOR WELL NO. Jujubee Unit 2H  
Well Pad Name: Existing Estlack 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.

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): 38.12 acres

22) Area to be disturbed for well pad only, less access road (acres): 13.58 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.

JUL 18 2017

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

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

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

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<b><u>Carl W. Nolan Lease</u></b>			
Carl W. Nolan	Warren R. Haught	1/8	DB 0214/0578
Warren R. Haught	Haught, Inc.	Assignment	DB 0242/0027
Haught, Inc.	Haught Oil Producing Corporation	Merger	Exhibit 2
Haught Oil Producing Corporation	TIG Corporation	Assignment	DB 0265/0158
TIG Corporation	Connoco Oil & Gas Leasing and Redevelopment	Assignment	DB 0274/0269
Connoco Oil & Gas Leasing and Redevelopment	Jay-Bee Oil and Gas Company	Assignment	DB 0275/0161
Jay-Bee Oil and Gas Company	Sancho Oil and Gas Corporation	Assignment	DB 0330/0831
Sancho Oil and Gas Corporation	Trans Energy, Inc.	Assignment	DB 0375/0792
Trans Energy, Inc.	Republic Energy Ventures, LLC	Assignment	DB 0375/0800
Republic Energy Ventures, LLC	Antero Resources Corporation	Assignment	DB 0436/0177
<b><u>Stephanie McGowen Lease</u></b>			
Stephanie McGowen, et al	Dominion Appalachian Development, Inc.	1/8	0330/0454
Dominion Appalachian Development, Inc.	Dominion Appalachian Development, LLC	Name Change	Exhibit 3
Dominion Appalachian Development, LLC	CONSOL Gas Appalachian Development, LLC	Certificate of Amendment	COI 0009/0131
CONSOL Gas Appalachian Development, LLC	CONSOL Gas Reserves Inc.	Certificate of Amendment	COI 0009/0144
CONSOL Gas Reserves Inc.	CONSOL Gas Company	Certificate of Amendment	COI 0009/0156
CONSOL Gas Company	CNX Gas Company, LLC	Name Change and Merger	0384/0191
CNX Gas Company, LLC	Antero Resources Corporation	Notice of Agreement	0487/0048
<b><u>E. Thomas Estlack et ux Lease</u></b>			
E. Thomas Estlack et ux	Sancho Oil and Gas Corporation	1/8	DB 0330/0834
Sancho Oil and Gas Corporation	Antero Resources Corporation	Assignment	DB 0437/0381
<b><u>Phillip Tallman Lease</u></b>			
Phillip Tallman	Sancho Oil and Gas Corporation	1/8	DB 0335/0606
Sancho Oil and Gas Corporation	Antero Resources Corporation	Assignment	DB 0436/0177
<b><u>David Riggs Lease</u></b>			
David Riggs	Antero Resources Corporation	1/8	DB 0429/0610
<b><u>Harry Ash &amp; Jessie D. Ash et al Lease</u></b>			
Harry Ash & Jessie D. Ash et al	J.A. Underwood	1/8	DB 0171/0365
J.A. Underwood	Quaker State Oil Refining Corporation	Assignment	DB 0171/0528
Quaker State Oil Refining Corporation	Petro Mark, Inc., A Corporation	Assignment	DB 0246/0324
Petro Mark, Inc., A Corporation	Sancho Oil and Gas Corporation	Assignment	DB 0268/0194
Sancho Oil and Gas Corporation	Antero Resources Corporation	Assignment	DB 0436/0177
<b><u>David E. Bowyer Lease</u></b>			
David E. Bowyer	Antero Resources Appalachian Corporation	1/8+	0399/0369
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

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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. Jujubee Unit 2H

**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>Larry F. Hadley Lease</u>	Larry F. Hadley, et ux	Antero Resources Corporation	1/8+	0452/0567


\*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: Robert S. Tucker   
 Its: Vice President of Geology RECEIVED  
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JUL 18 2017  
 Page 1 of \_\_\_\_  
 WV Department of  
 Environmental Protection  
 08/04/2017

FORM WW-6A1  
EXHIBIT 1

FILED

JUN 10 2013

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



Penney Barker, Manager  
Corporations Division  
Tel: (304)558-8000  
Fax: (304)558-8381  
Website: [www.wvros.com](http://www.wvros.com)  
E-mail: [business@wvros.com](mailto:business@wvros.com)

APPLICATION FOR  
AMENDED CERTIFICATE  
OF AUTHORITY

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

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

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

- Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/26/2008
- Corporate name has been changed to: Antero Resources Corporation  
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation  
(due to home state name not being available)
- Other amendments: (attach additional pages if necessary)
- Name and phone number of contact person. (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)  

<u>Alvyn A. Schopp</u>	<u>(303) 367-7310</u>
Contact Name	Phone Number
- Signature information (See below \*Important Legal Notice Regarding Signature\*):  

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

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

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JUL 18 2013



*I, Ken Heckler, Secretary of State of the State of West Virginia, hereby certify that*  
THE FOLLOWING IS A TRUE AND CORRECT COPY OF THE ARTICLES OF MERGER OF:

HAUGHT, INC., A WEST VIRGINIA CORPORATION AND HAUGHT OIL PRODUCING CORP., A UTAH CORPORATION DULY SIGNED AND VERIFIED PURSUANT TO THE PROVISIONS OF SECTION 38, ARTICLE 1, CHAPTER 31 OF THE CODE OF WEST VIRGINIA, 1931, AS AMENDED, HAVE BEEN RECEIVED AND ARE FOUND TO CONFORM TO LAW.

ACCORDINGLY, I HEREBY ISSUE THIS CERTIFICATE OF MERGER, MERGING HAUGHT, INC., WITH AND INTO HAUGHT OIL PRODUCING CORP., THE SURVIVOR AND ATTACH A DUPLICATE ORIGINAL OF SAID ARTICLES OF MERGER AS APPEARS FROM THE RECORDS OF MY SAID OFFICE.

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

TWELFTH day of  
JANUARY 19 87



*Ken Heckler*  
Secretary of State.

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WV Department of Environment  
08/04/2017

AC  
**State of West Virginia**



**Certificate**

*I, Betty Ireland, Secretary of State of the  
State of West Virginia, hereby certify that*

**DOMINION APPALACHIAN DEVELOPMENT, INC.**  
*(a Virginia corporation)*

*filed an application for Conversion in my office as required by the provisions of the West  
Virginia Code and was found to conform to law.*

*Therefore, I issue this*

**CERTIFICATE OF CONVERSION**

*converting the corporation to*

**DOMINION APPALACHIAN DEVELOPMENT, LLC**  
*(a Virginia Limited Liability Company)*

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JUL 18 2017

WV Department of  
Environmental Protection

*Given under my hand and the  
Great Seal of the State of  
West Virginia on*

*February 23, 2006*



*Betty Ireland*

*Secretary of State*

08/04/2017

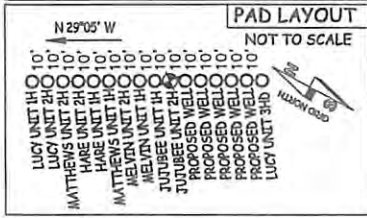
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LONGITUDE 80°52'30"

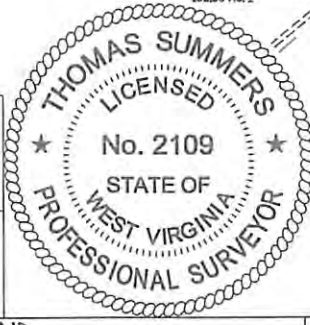
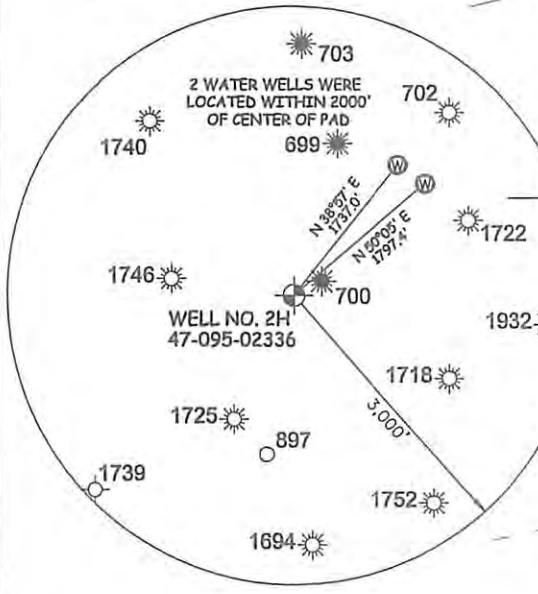
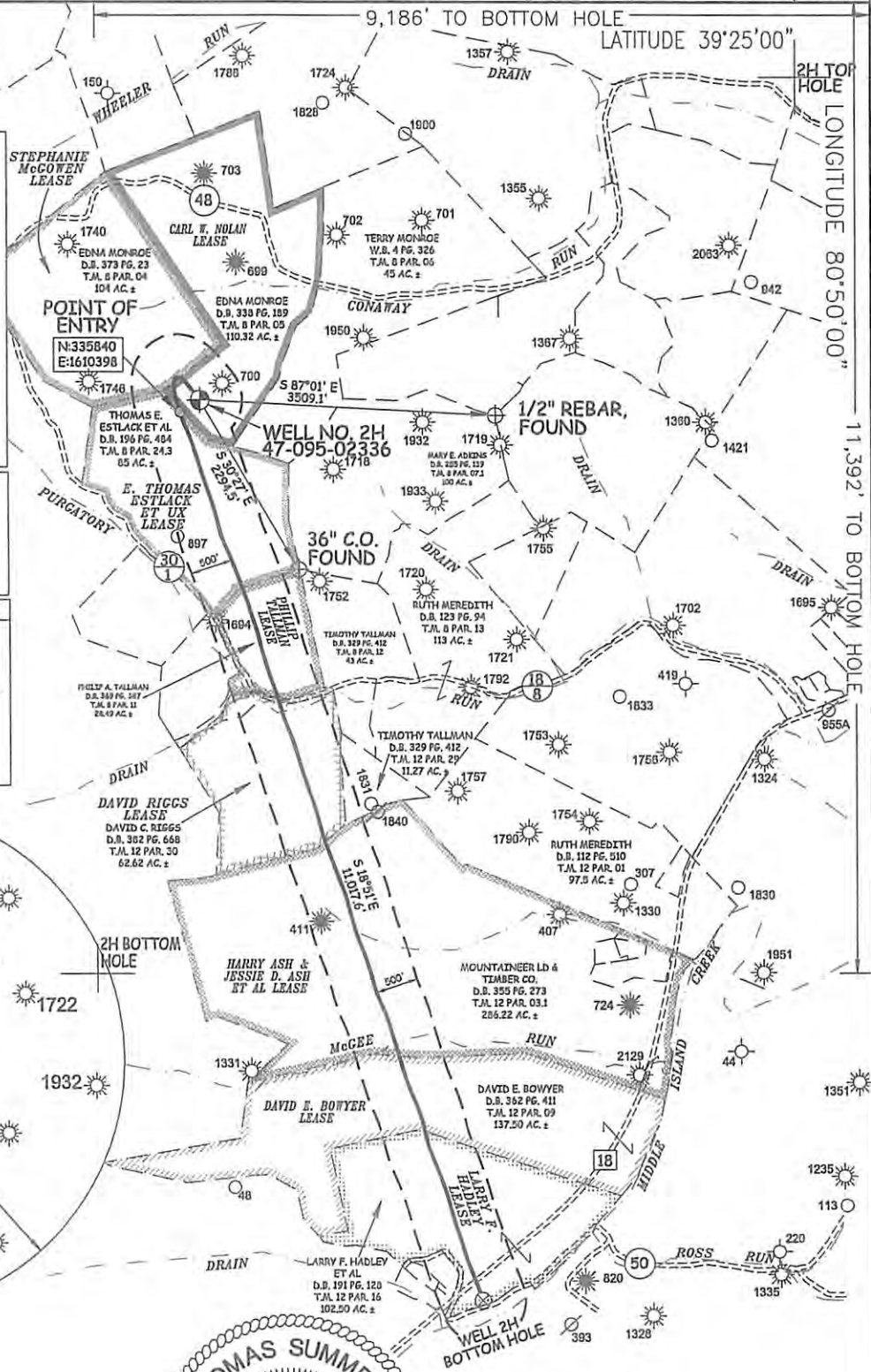
Antero Resources Corporation  
Well No. Jujubee Unit 2H  
47-095-02336 (AS DRILLED)

AS DRILLED DATA:  
WELL 2H TOP HOLE INFORMATION:  
N: 335,977ft E: 1,610,639ft  
LAT: 39°24'51.32" LON: 80°52'41.35"  
BOTTOM HOLE INFORMATION:  
N: 325,411ft E: 1,613,960ft  
LAT: 39°23'07.40" LON: 80°51'57.00"  
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE 6EOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:  
WELL 2H TOP HOLE INFORMATION:  
N: 4,362,765m E: 510,504m  
BOTTOM HOLE INFORMATION:  
N: 4,359,563m E: 511,569m



WV NORTH ZONE GRID NORTH



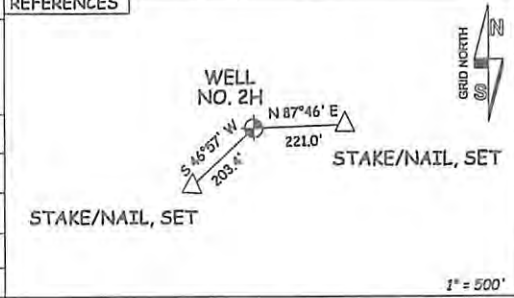
NOTE  
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.



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

JOB # 15-011WA  
DRAWING # JUJUBEE2HADMOD  
SCALE 1" = 2000'  
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 06/30/17  
OPERATOR'S WELL# JUJUBEE UNIT #2H



WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02336 MOD COUNTY NAME  
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT  
LOCATION: ELEVATION 1,142' - AS-DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK 08/04/2017  
QUADRANGLE MIDDLEBOURNE 7.5' (TH) SHIRLEY 7.5' (BH) DISTRICT CENTERVILLE COUNTY TYLER  
SURFACE OWNER EDNA MONROE ACREAGE 110.32 ACRES +/-  
OIL & GAS ROYALTY OWNER CARL W. NOLAN; STEPHENIE MCGOWEN; E. THOMAS ESTLACK ET UX; PHILLIP TALLMAN; EASE ACREAGE 116 AC±; 104 AC±; 85.5 AC±; 28 AC±; DAVID RIGGS; HARRY ASH & JESSIE D. ASH ET AL; DAVID E. BOWYER; LARRY F. HADLEY 65 AC±; 291 AC±; 138 AC±; 102.5 AC±  
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE  
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL  
(SPECIFY) POE MOD PLUG & ABANDON CLEAN OUT & REPLUG  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,652' TVD 17,882' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD  
DENVER, CO 80202 CHARLESTON, WV 25313

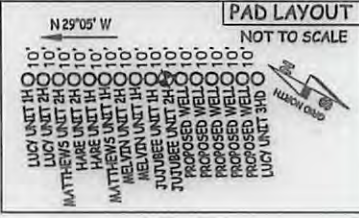
LATITUDE 39°25'00" -891'

LONGITUDE 80°50'00" -878'

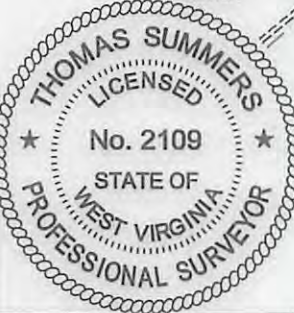
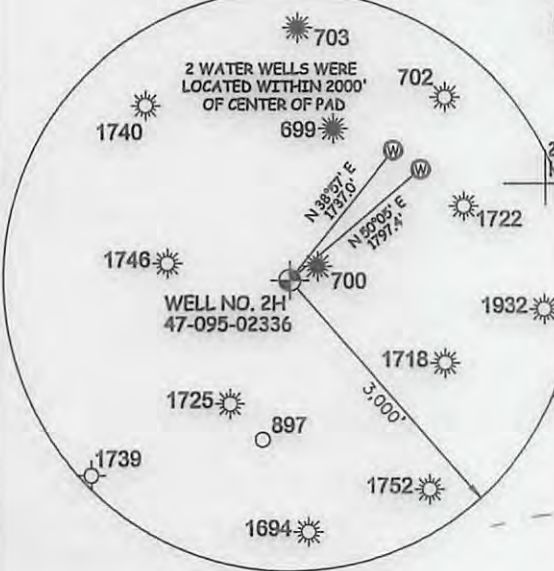
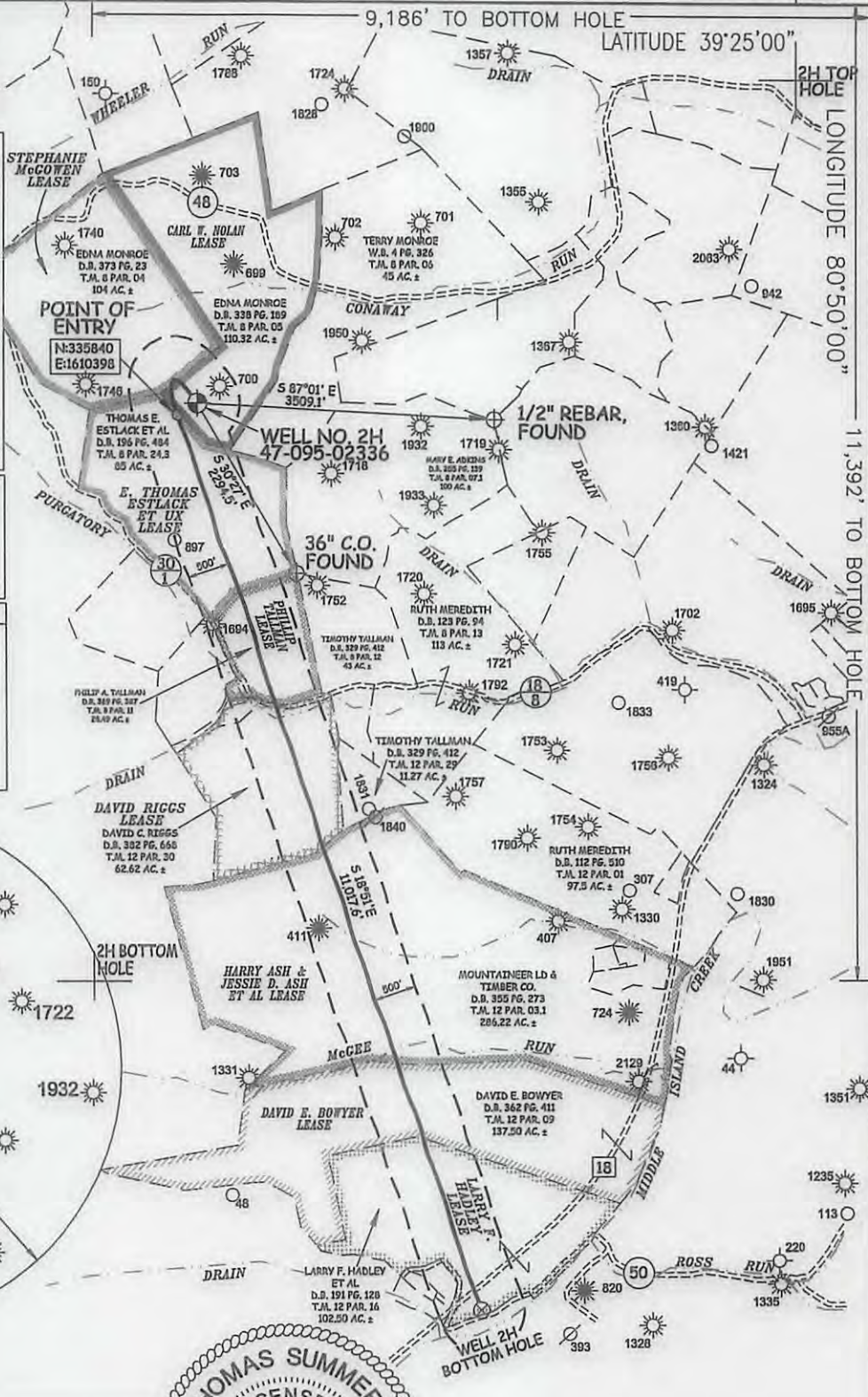
Antero Resources Corporation  
Well No. Jujubee Unit 2H  
47-095-02336 (AS DRILLED)

AS DRILLED DATA:  
WELL 2H TOP HOLE INFORMATION:  
N: 335,977ft E: 1,610,639ft  
LAT: 39°24'51.32" LON: 80°52'41.35"  
BOTTOM HOLE INFORMATION:  
N: 325,411ft E: 1,613,960ft  
LAT: 39°23'07.40" LON: 80°51'57.00"  
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:  
WELL 2H TOP HOLE INFORMATION:  
N: 4,362,765m E: 510,504m  
BOTTOM HOLE INFORMATION:  
N: 4,359,563m E: 511,569m



WV NORTH ZONE GRID NORTH



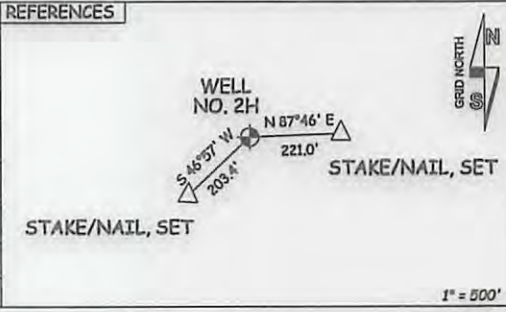
NOTE  
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.



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

JOB # 15-011WA  
DRAWING # JUJUBEE2HADMOD  
SCALE 1" = 2000'  
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  
X Found monument, as noted  
THOMAS SUMMERS P.S. 2109  
DATE 06/30/17  
OPERATOR'S WELL# JUJUBEE UNIT #2H



WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_ 47 - 095 - 02336 MOD  
(IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X STATE COUNTY PERMIT  
LOCATION: ELEVATION 1,142' - AS-DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK COUNTY TYLER  
QUADRANGLE MIDDLEBOURNE 7.5' (TH) SHIRLEY 7.5' (BH) DISTRICT CENTERVILLE COUNTY TYLER  
SURFACE OWNER EDNA MONROE ACREAGE 110.32 ACRES +/-  
OIL & GAS ROYALTY OWNER CARL W. NOLAN; STEPHENIE MCGOWEN; E. THOMAS ESTLACK ET UX; PHILLIP TALLMAN; EASE ACREAGE 116 AC±; 104 AC±; 85.5 AC±; 28 AC±  
DAVID RIGGS; HARRY ASH & JESSIE D. ASH ET AL; DAVID E. BOWYER; LARRY F. HADLEY 85 AC±; 291 AC±; 138 AC±; 102.5 AC±  
PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_  
PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL  
(SPECIFY) POE MOD PLUG & ABANDON CLEAN OUT & REPLUG  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,652' TVD 17,882' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD  
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

08/04/2017