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west virginia department of environmental protection

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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

## PERMIT MODIFICATION APPROVAL

January 25, 2016

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET  
DENVER, CO 80202

Re: Permit Modification Approval for API Number 1706427, Well #: MICHELLE UNIT 2H

### Extend Lateral

Oil and Gas Operator:

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.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith  
Assistant Chief of Permitting  
Office of Oil and Gas

Promoting a healthy environment.



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

December 22, 2015

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

Ms. Adkins:

Antero Resources Corporation (Antero) would like to submit the following permit modification for one approved well on the existing Misery Pad. We are requesting to extend the lateral length and associated Estimated Measured Depth for the Michelle Unit 2H (API# 47-017-06427).

Attached you will find the following documents:

- REVISED Form WW-6B, which shows the updated BHL and Measured Depth
- REVISED Mylar Plat, which shows the new Lateral Length and Estimated Measured Depth
- REVISED Form WW-6A1, which shows the new leases we will be drilling

If you have any questions please feel free to contact me at (303) 357-7323.

Thank you in advance for your consideration.

Sincerely,

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

Ashlie Steele  
Permitting Supervisor  
Antero Resources Corporation

4701706427 MOD

Enclosures

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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 Grant Smithburg 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Michelle Unit 2H Well Pad Name: Misery Pad

3) Farm Name/Surface Owner: Denzil C. Spencer, et al Public Road Access: CR 24

4) Elevation, current ground: 1001' Elevation, proposed post-construction: 1001'

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: 7100' TVD, Anticipated Thickness- 55 Feet, Associated Pressure- 2950#

8) Proposed Total Vertical Depth: 7100' TVD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 19800' MD

11) Proposed Horizontal Leg Length: 12163'

12) Approximate Fresh Water Strata Depths: 475'

13) Method to Determine Fresh Water Depths: Deano Unit 2H (API# 47-017-06498) on same pad.

14) Approximate Saltwater Depths: 1477', 1675'

15) Approximate Coal Seam Depths: None Identified

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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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#                    | 40'                        | 40'                          | CTS, 38 Cu. Ft.               |
| Fresh Water  | 13-3/8"   | New         | J-55/H-40 | 54.5#/48#              | 553'                       | 553' *See #19                | CTS, 768 Cu. Ft               |
| Coal         | 9-5/8"    | New         | J-55      | 36#                    | 2511'                      | 2511'                        | CTS, 1022 Cu. Ft.             |
| Intermediate |           |             |           |                        |                            |                              |                               |
| Production   | 5-1/2"    | New         | P-110     | 20#                    | 19800'                     | 19800'                       | 5034 Cu. Ft.                  |
| Tubing       | 2-3/8"    | New         | N-80      | 4.7#                   |                            | 7100'                        |                               |
| Liners       |           |             |           |                        |                            |                              |                               |

| 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    | 30"       | 24"                    | 0.438"              | 1530                 | 50                                       | Class A              | 1.18                     |
| Fresh Water  | 13-3/8"   | 17-1/2"                | 0.38"/0.33"         | 2730/1730            | 1000                                     | Class A              | 1.18                     |
| Coal         | 9-5/8"    | 12-1/4"                | 0.352"              | 3520                 | 1500                                     | Class A              | 1.18                     |
| Intermediate |           |                        |                     |                      |                                          |                      |                          |
| Production   | 5-1/2"    | 8-3/4" & 8-1/2"        | 0.361"              | 12,630               | 2500                                     | Lead-HPOZ & Tail - H | H/POZ-1.44 & H-1.8       |
| Tubing       | 2-3/8"    | 4.778"                 | 0.19"               | 11,200               |                                          |                      |                          |
| Liners       |           |                        |                     |                      |                                          |                      |                          |

**PACKERS**

4701706427 MOD

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

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

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

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

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

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

Anticipated Max Pressure - 9300 lbs

Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 18.62 existing acres

22) Area to be disturbed for well pad only, less access road (acres): 5.76 existing acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

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

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

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

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

Conductor: no additives, Class A cement.

Surface: Class A cement with 2-3% calcium chloride

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

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

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

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25) Proposed borehole conditioning procedures:

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

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

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

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

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\*Note: Attach additional sheets as needed.

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>Arthur Doak et ux Lease</b>           |                                          |                                           |              |
| Arthur R. Doak et ux                     | CNG Producing Company                    | 1/8                                       | 0129/0626    |
| CNG Producing Company                    | CNG Development Co.                      | Assignment                                | 0132/0564    |
| CNG Development Co.                      | CNX                                      | Assignment                                | DB 0293/0252 |
| CNX                                      | Antero Resources Appalachian Corporation | Assignment                                | 0260/0125    |
| Antero Resources Appalachian Corporation | Antero Resources Corporation             | Name Change                               | Exhibit 1    |
| <b>Wilmer G. Knight et al Lease</b>      |                                          |                                           |              |
| Wilmer G. Knight et ux                   | Allegheny Land & Mineral Company         | 1/8                                       | 0068/0183    |
| Allegheny Land & Mineral Company         | National Producers Inc                   | Assignment                                | 0084/0074    |
| National Producers Inc                   | Jack E. Webber et ux                     | Assignment                                | 0089/0494    |
| Jack E. Webber et ux                     | Jeffry Webber et ux                      | Assignment                                | 0093/0388    |
| Jeffry Webber et ux                      | Aries Petroleum Corp.                    | Assignment                                | 0122/0250    |
| Aries Petroleum Corp.                    | Chesterfield Energy Corp                 | Assignment                                | 0134/0748    |
| Chesterfield Energy Corp                 | John Clevenger                           | Assignment                                | 0160/0038    |
| John Clevenger                           | Dominion Appalachian and Development LLC | Assignment                                | 0176/0095    |
| Dominion Appalachian Development LLC     | Antero Resources Appalachian Corporation | *Partial Assignment of Oil & Gas Leases   | 0230/0113    |
| Antero Resources Appalachian Corporation | Antero Resources Corporation             | Name Change                               | Exhibit 1    |
| <b>Charles N. Costilow Lease</b>         |                                          |                                           |              |
| Charles A. Costilow                      | Antero Resources Appalachian Corporation | 1/8+                                      | 0288/0471    |
| Antero Resources Appalachian Corporation | Antero Resources Corporation             | Name Change                               | Exhibit 1    |
| <b>Dominion Transmission Inc. Lease</b>  |                                          |                                           |              |
| Dominion Transmission, Inc.              | Dominion Exploration & Production, Inc.  | 1/8                                       | 0230/0138    |
| Dominion Exploration & Production, Inc.  | Antero Resources Appalachian Corporation | *Partial Assignment of Oil & Gas Leases   | 0231/0145    |
| Antero Resources Appalachian Corporation | Antero Resources Corporation             | Name Change                               | Exhibit 1    |
| <b>Kenneth R. Mason et ux Lease</b>      |                                          |                                           |              |
| Kenneth R. Mason et ux                   | Drilling Appalachian Corporation         | 1/8                                       | 0181/0659    |
| Drilling Appalachian Corporation         | Antero Resources Appalachian Corporation | Assignment                                | 0282/0407    |
| Antero Resources Appalachian Corporation | Antero Resources Corporation             | Name Change                               | Exhibit 1    |
| <b>Frank Wilcox et ux Lease</b>          |                                          |                                           |              |
| Frank Wilcox, Jr., et ux                 | Drilling Appalachian Corporation         | 1/8                                       | 0175/0458    |
| Drilling Appalachian Corporation         | Antero Resources Appalachian Corporation | *Partial Assignment of Oil and Gas Leases | 0262/0600    |
| Antero Resources Appalachian Corporation | Antero Resources Corporation             | Name Change                               | Exhibit 1    |
| <b>Emory Kimball Lease</b>               |                                          |                                           |              |
| Emory and Gladys Kimball                 | Drilling Appalachian Corporation         | 1/8                                       | 0156/0331    |
| Drilling Appalachian Corporation         | Dominion Exploration & Production, Inc.  | Assignment                                | 0243/0397    |
| Dominion Exploration & Production, Inc.  | CNX Gas Company LLC                      | Assignment                                | DB 0292/0469 |
| CNX Gas Company LLC                      | Antero Resources Appalachian Corporation | Assignment                                | 0260/0125    |
| Antero Resources Appalachian Corporation | Antero Resources Corporation             | Name Change                               | Exhibit 1    |

47-017-06427 MOD

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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)

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| Grantor, lessor, etc.                                                                                                                                                                                                | Grantee, lessee, etc.                                                                                                                                                                                                            | Royalty                                                                                                                   | Book/Page                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Elizabeth Y. Burge Lease</b>                                                                                                                                                                                      |                                                                                                                                                                                                                                  |                                                                                                                           |                                                                                                         |
| Elizabeth Y. Burge<br>Antero Resources Appalachian Corporation                                                                                                                                                       | Antero Resources Appalachian Corporation<br>Antero Resources Corporation                                                                                                                                                         | 1/8+<br>Name Change                                                                                                       | 0269/0299<br>Exhibit 1                                                                                  |
| <b>David E. Boyer Lease</b>                                                                                                                                                                                          |                                                                                                                                                                                                                                  |                                                                                                                           |                                                                                                         |
| David E. Boyer<br>Antero Resources Appalachian Corporation                                                                                                                                                           | Antero Resources Appalachian Corporation<br>Antero Resources Corporation                                                                                                                                                         | 1/8+<br>Name Change                                                                                                       | 0400/0513<br>Exhibit 1                                                                                  |
| <b>S.A. Smith et al Lease</b>                                                                                                                                                                                        |                                                                                                                                                                                                                                  |                                                                                                                           |                                                                                                         |
| Union National Bank of WV T/U/A for S.A. Smith & Burke<br>Morris<br>Stonewall Gas Company<br>Dominion Reserves, Inc.                                                                                                 | Stonewall Gas Company<br>Dominion Reserves, Inc.<br>Consol Gas Reserves                                                                                                                                                          | 1/8<br>Assignment<br>Assignment                                                                                           | 0292/0129<br>DB 0292/0004<br>Doddridge Co. DB<br>0286/0093                                              |
| Consol Gas Reserves<br>CNX Gas Company, LLC<br>Noble Energy, Inc.<br>Antero Resources Appalachian Corporation                                                                                                        | CNX Gas Company, LLC<br>Noble Energy, Inc.<br>Antero Resources Appalachian Corporation<br>Antero Resources Corporation                                                                                                           | Assignment<br>Assignment<br>Assignment<br>Name Change                                                                     | 0293/0252<br>0388/0286<br>0425/0725<br>Exhibit 1                                                        |
| <b>Gwendolyn Coffman Lease</b>                                                                                                                                                                                       |                                                                                                                                                                                                                                  |                                                                                                                           |                                                                                                         |
| Gwendolyn Coffman & L. Brooks Coffman<br>Drilling Appalachian Corporation<br>Antero Resources Appalachian Corporation                                                                                                | Drilling Appalachian Corporation<br>Antero Resources Appalachian Corporation<br>Antero Resources Corporation                                                                                                                     | 1/8<br>Assignment<br>Name Change                                                                                          | 0276/0010<br>0401/0499<br>Exhibit 1                                                                     |
| <b>William Ball Lease</b>                                                                                                                                                                                            |                                                                                                                                                                                                                                  |                                                                                                                           |                                                                                                         |
| William Ball                                                                                                                                                                                                         | Antero Resources Corporation                                                                                                                                                                                                     | 1/8+                                                                                                                      | 0463/0327                                                                                               |
| <b>Lamoyne Sweeney Lease</b>                                                                                                                                                                                         |                                                                                                                                                                                                                                  |                                                                                                                           |                                                                                                         |
| LaMoynne Sweeney<br>Drilling Appalachian Corporation<br>Dominion Appalachian Development, Inc.<br>CONSOL Gas Appalachian Development, LLC<br>CONSOL Gas Reserves, Inc.<br>Consol Gas Company<br>CNX Gas Company, LLC | Drilling Appalachian Corporation<br>Dominion Appalachian Development, Inc.<br>CONSOL Gas Appalachian Development, LLC<br>CONSOL Gas Reserves, Inc.<br>Consol Gas Company<br>CNX Gas Company, LLC<br>Antero Resources Corporation | 1/8<br>Assignment<br>Name Change<br>Certificate of Merger<br>Certificate of Merger<br>Certificate of Merger<br>Assignment | 0288/0095<br>0322/0190<br>COI 0009/0124<br>COI 0009/0144<br>COI 0009/0156<br>COI 0009/0206<br>0425/0725 |

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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)**

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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>Anna Sweeney Lease</u> | Anna Sweeney                             | Four Leaf Land Company                   | 1/8         | 0370/0635 |
|                           | Four Leaf Land Company                   | Antero Resources Appalachian Corporation | Assignment  | 0403/0566 |
|                           | Antero Resources Appalachian Corporation | Antero Resources Corporation             | Name Change | Exhibit 1 |

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

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

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

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

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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: Vice President of Production

Office of Oil and Gas

JAN 21 2016

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



Penny Barker, Manager  
Corporations Division  
Tel: (304)558-8000  
Fax: (304)558-8381  
Website: [www.wvnet.com](http://www.wvnet.com)  
E-mail: [business@wvnet.com](mailto:business@wvnet.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: \$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 Appalachian Corporation
- Date Certificate of Authority was issued in West Virginia: 6/25/2008
- Corporate name has been changed to: Antero Resources Corporation  
(Attach one Certified Copy of Name Change as filed in home State of Incorporation.)
- Name the corporation elects to use in WV: Antero Resources Corporation  
(due to home state name not being available)
- Other amendments: (attach additional pages if necessary)  
\_\_\_\_\_  
\_\_\_\_\_
- Name and phone number of contact person. (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)  
Alvyn A. Schopp (303) 367-7310  
Contact Name Phone Number

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7. Signature Information (See below *\*Important Legal Notice Regarding Signature\**):  
Print Name of Signer: Alvyn A. Schopp Title/Capacity: Authorized Person  
Signature: [Handwritten Signature] Date: June 10, 2013

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

Form CF-4

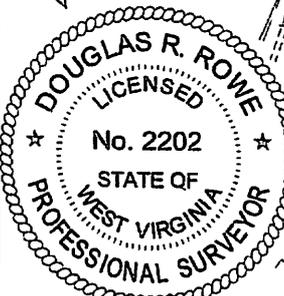
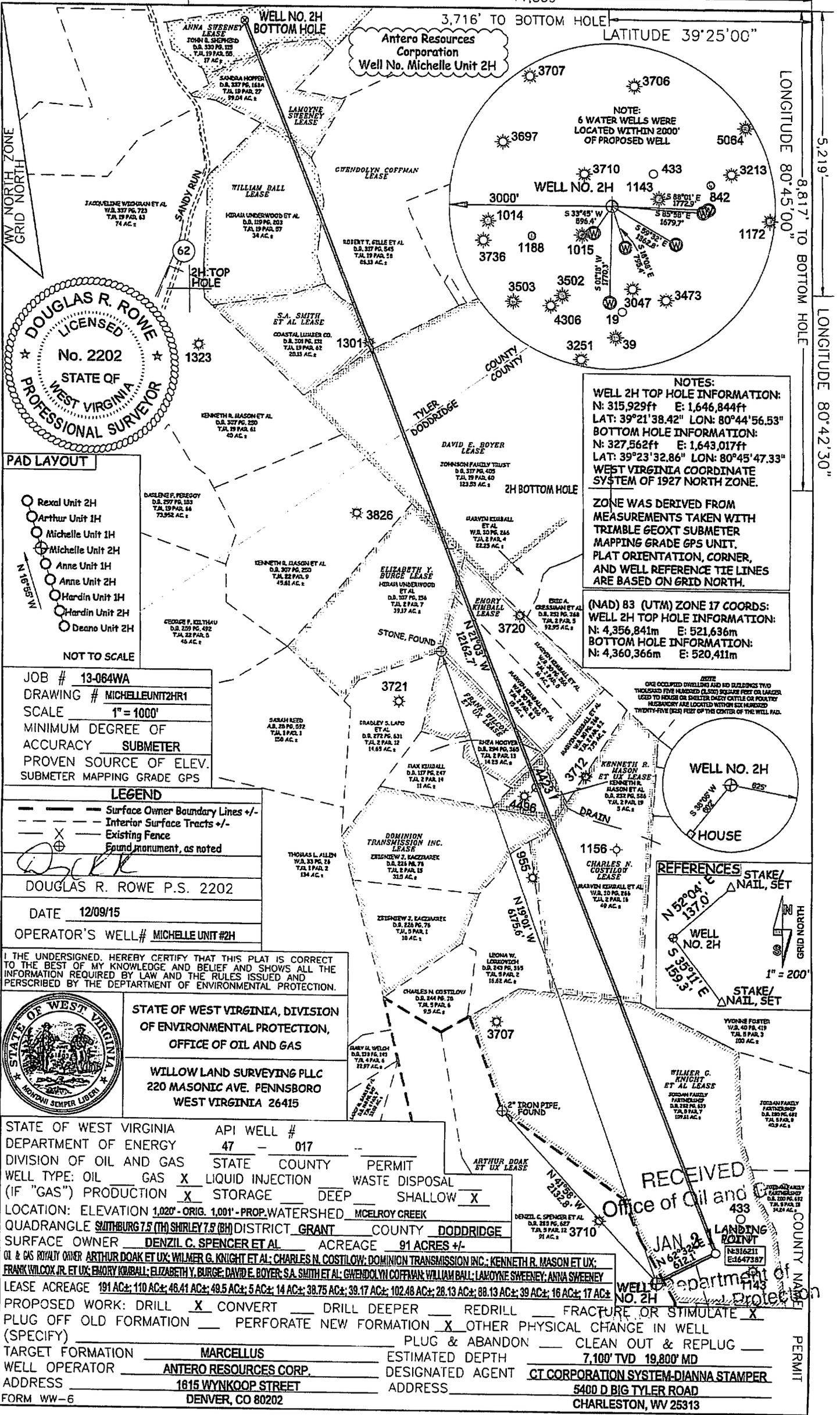
Issued by the Office of the Secretary of State

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Office of Oil and Gas  
Revised 4/03  
JAN 21 2016

4701706427 MOD

LATITUDE 39°22'30"

LATITUDE 39°25'00"



- PAD LAYOUT**
- Rexal Unit 2H
  - Arthur Unit 1H
  - Michelle Unit 1H
  - Michelle Unit 2H
  - Anne Unit 1H
  - Anne Unit 2H
  - Hardin Unit 1H
  - Hardin Unit 2H
  - Deano Unit 2H
- NOT TO SCALE

JOB # 13-064WA  
DRAWING # MICHELLEUNIT2HR1  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

**LEGEND**

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

DOUGLAS R. ROWE P.S. 2202  
DATE 12/09/15  
OPERATOR'S WELL # MICHELLE UNIT #2H

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.



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

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY  
DIVISION OF OIL AND GAS

API WELL # 47 - 017

WELL TYPE: OIL GAS  LIQUID INJECTION WASTE DISPOSAL  
(IF "GAS") PRODUCTION  STORAGE DEEP SHALLOW

LOCATION: ELEVATION 1,020' - ORIG. 1,001' - PROP. WATERSHED MCELROY CREEK

QUADRANGLE SMITHBURG 7.5 (TH) SHIRLEY 7.5 (BH) DISTRICT GRANT COUNTY DODDRIDGE

SURFACE OWNER DENZIL C. SPENCER ET AL. ACREAGE 91 ACRES +/-

OIL & GAS ROYALTY OWNER ARTHUR DOAK ET UX; WILMER C. KNIGHT ET AL.; CHARLES N. COSTLOW; DOMINION TRANSMISSION INC.; KENNETH R. MASON ET UX; FRANK WILCOX JR. ET UX; EMORY KIBBALL; ELIZABETH Y. BURGE; DAVID E. BOYER; S.A. SMITH ET AL.; GWENDOLYN COFFMAN; WILLIAM BALL; LAKOYNE SWEENEY; ANNA SWEENEY

LEASE ACREAGE 191 AC±; 110 AC±; 46.41 AC±; 49.5 AC±; 5 AC±; 14 AC±; 38.75 AC±; 39.17 AC±; 102.48 AC±; 28.13 AC±; 88.13 AC±; 39 AC±; 16 AC±; 17 AC±

PROPOSED WORK: DRILL  CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE   
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ PLUG & ABANDON CLEAN OUT & REPLUG

TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,100' TVD 19,800' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT CT CORPORATION SYSTEM-DIANNA STAMPER

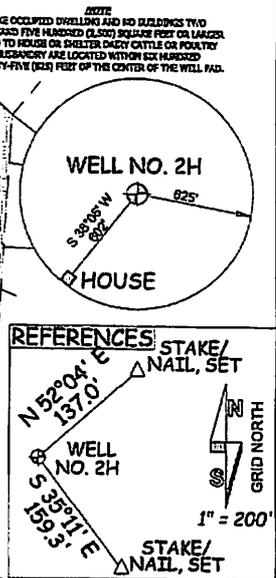
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
DENVER, CO 80202 CHARLESTON, WV 25313

FORM WW-6

**NOTES:**  
WELL 2H TOP HOLE INFORMATION:  
N: 315,929ft E: 1,646,844ft  
LAT: 39°21'38.42" LON: 80°44'56.53"  
BOTTOM HOLE INFORMATION:  
N: 327,562ft E: 1,643,017ft  
LAT: 39°23'32.86" LON: 80°45'47.33"  
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: 4,356,841m E: 521,636m  
BOTTOM HOLE INFORMATION:  
N: 4,360,366m E: 520,411m



RECEIVED  
Office of Oil and Gas

JAN 2 11 06 AM '16  
621

LANDING POINT  
433  
NS1621  
E647387

WELL No. 2H

Department of Environmental Protection

LATITUDE 39°22'30"

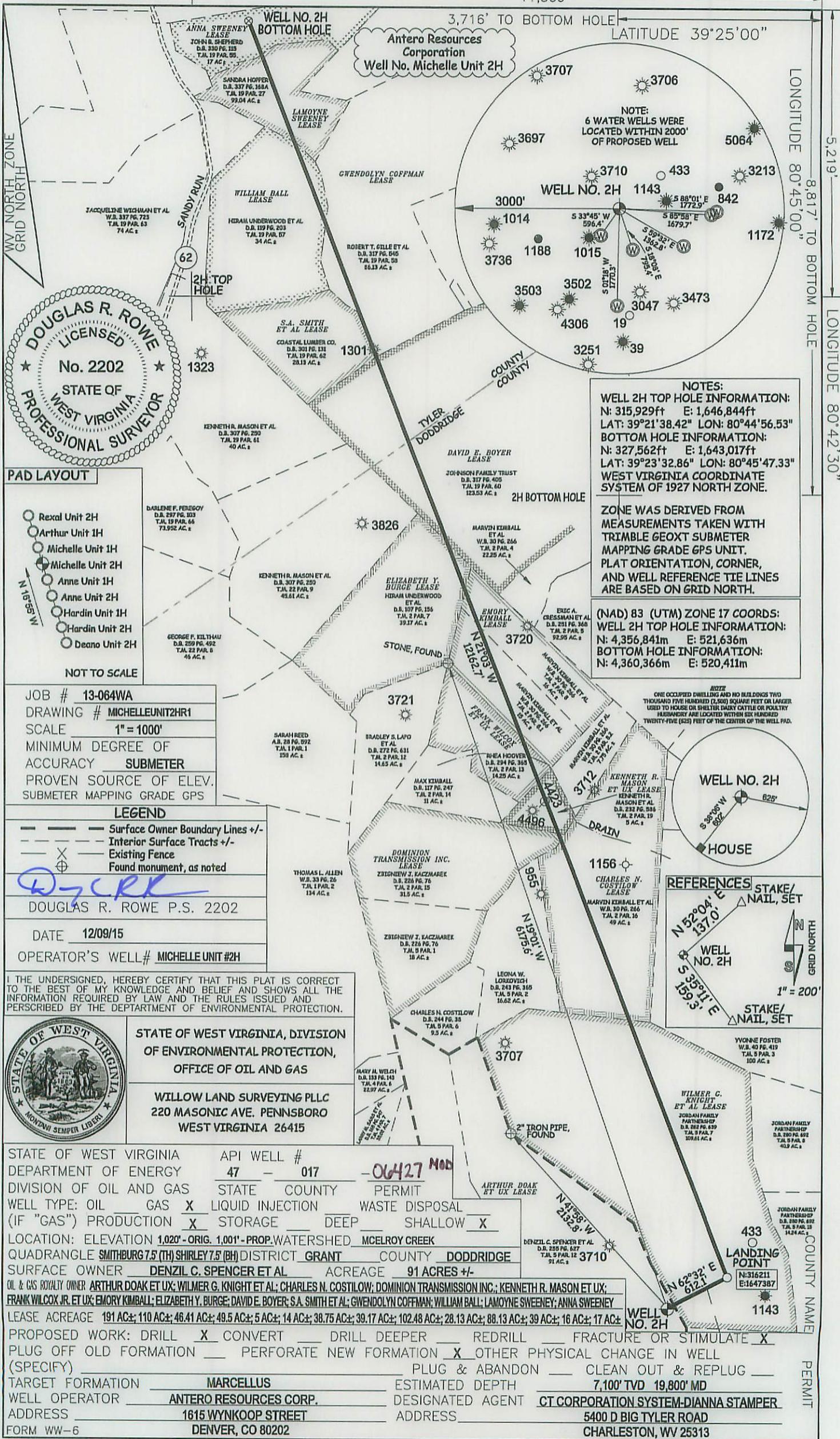
11,509'

LATITUDE 39°25'00"

LONGITUDE 80°45'00"

5,219'

LONGITUDE 80°42'30"



Antero Resources Corporation  
Well No. Michelle Unit 2H

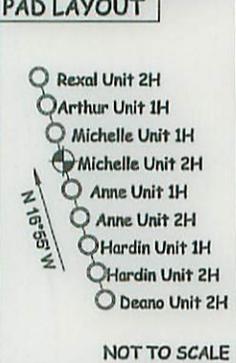
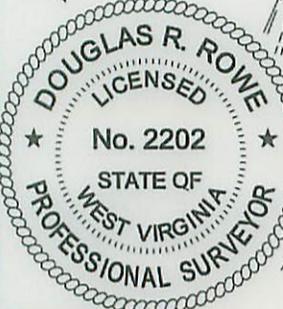
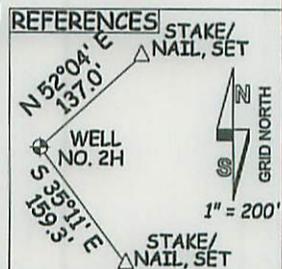
NOTE:  
6 WATER WELLS WERE  
LOCATED WITHIN 2000'  
OF PROPOSED WELL

NOTES:  
WELL 2H TOP HOLE INFORMATION:  
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N: 4,360,366m E: 520,411m

NOTE  
ONE OCCUPIED DWELLINGS AND NO BUILDINGS TWO  
THOUSAND FIVE HUNDRED (2,000) 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.



JOB # 13-064WA  
DRAWING # MICHELLEUNIT2HR1  
SCALE 1" = 1000'  
MINIMUM DEGREE OF  
ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV.  
SUBMETER MAPPING GRADE GPS

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

DOUGLAS R. ROWE P.S. 2202  
DATE 12/09/15  
OPERATOR'S WELL# MICHELLE UNIT #2H

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

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY  
DIVISION OF OIL AND GAS

API WELL # 47 - 017 - 06427 MOD

WELL TYPE: OIL GAS  LIQUID INJECTION WASTE DISPOSAL  
(IF "GAS") PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION 1,020' - ORIG. 1,001' - PROP. WATERSHED MCELROY CREEK

QUADRANGLE SMITHBURG 7.5 (TH) SHIRLEY 7.5 (BH) DISTRICT GRANT COUNTY DODDRIDGE

SURFACE OWNER DENZIL C. SPENCER ET AL ACREAGE 91 ACRES +/-

OIL & GAS ROYALTY OWNER ARTHUR DOAK ET UX; WILMER G. KNIGHT ET AL; CHARLES N. COSTILOW; DOMINION TRANSMISSION INC.; KENNETH R. MASON ET UX;  
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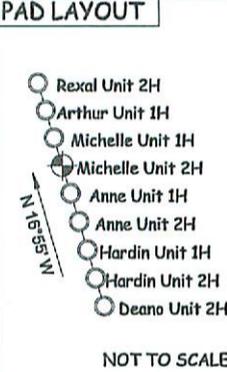
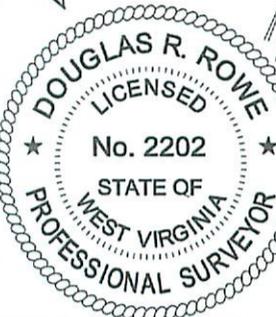
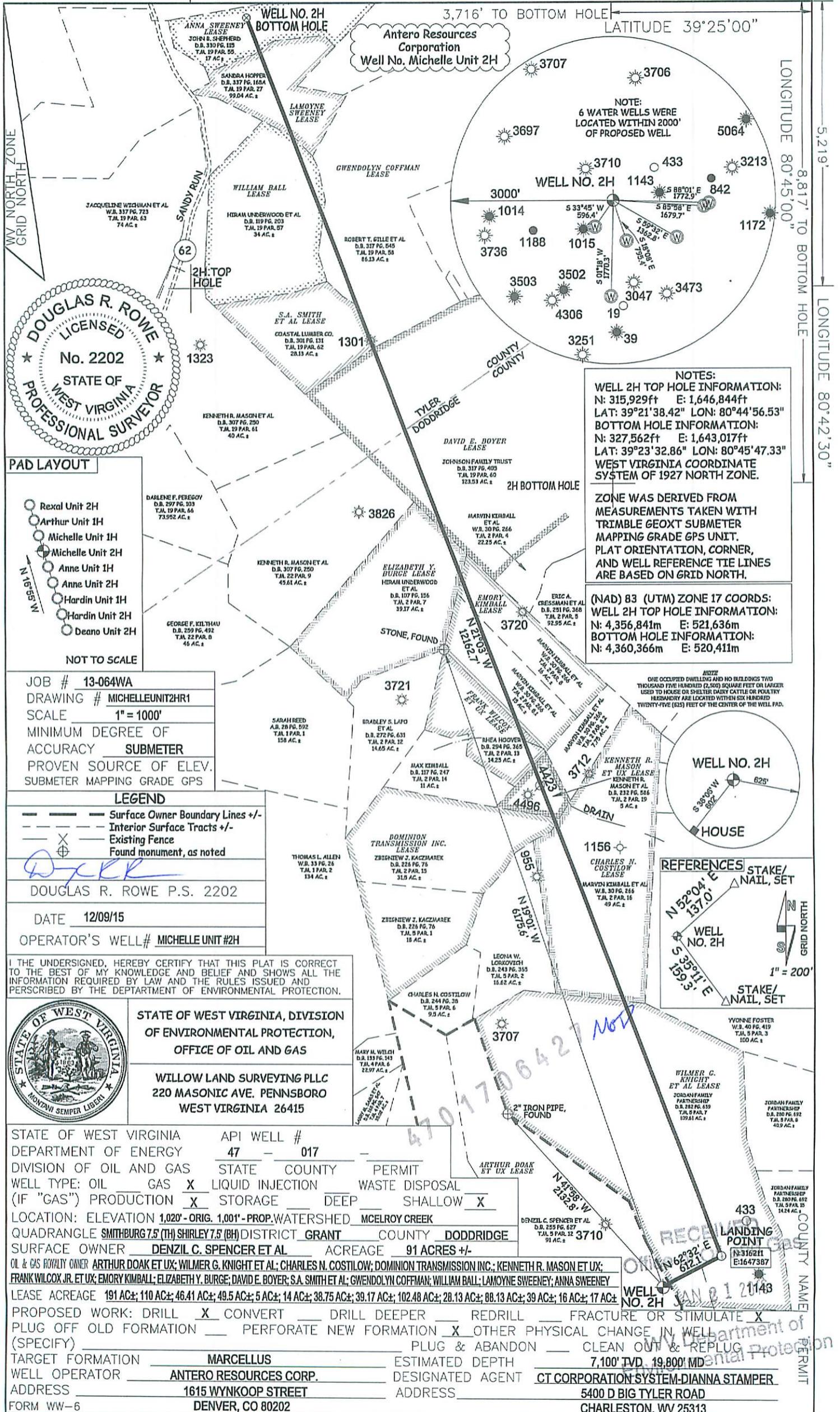
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PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL  
(SPECIFY) \_\_\_\_\_ PLUG & ABANDON  CLEAN OUT & REPLUG   
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,100' TVD 19,800' MD  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT CT CORPORATION SYSTEM-DIANNA STAMPER  
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FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

LATITUDE 39°22'30"

11,509'

LATITUDE 39°25'00"



JOB # 13-064WA  
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 SCALE 1" = 1000'  
 MINIMUM DEGREE OF ACCURACY SUBMETER  
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

**LEGEND**

- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Existing Fence
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 WILLOW LAND SURVEYING PLLC  
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

API WELL # 47 - 017

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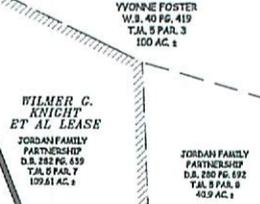
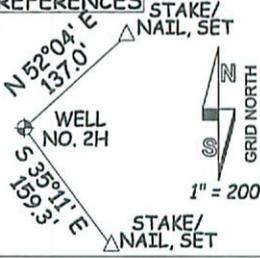
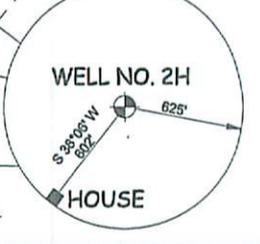
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RECEIVED  
 JAN 8 1 21 143  
 PERMIT