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

August 9, 2019

West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street
Charleston, WV 25304

To Whom It May Concern:

Please find enclosed the Well Operator's Report of Well Work, Form WR-35 (including As-Drilled Survey Plat, Directional Survey and FracFocus report), Discharge Monitoring Report Form WR-34 and corresponding logs for the following wells:

- Beem Unit 3H (API # 47-095-02474)—Pyle Run Pad
- Heintzman Unit 1H (API # 47-095-02526)—Pyle Run Pad
- Heintzman Unit 2H (API # 47-095-02527)—Pyle Run Pad
- Heintzman Unit 3H (API # 47-095-02528)—Pyle Run Pad
- Spock Unit 1H (API # 47-095-02478)—Pyle Run Pad
- Spock Unit 2H (API # 47-095-02427)—Pyle Run Pad
- Spock Unit 3H (API # 47-095-02428)—Pyle Run Pad

If you have any questions please feel free to contact me at (303) 357-7223.

Sincerely,

Megan Griffith
Permitting Agent
Antero Resources Corporation

Enclosures

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 095 - 02474 County Tyler District Centerville
Quad Middlebourne 7.5' Pad Name Pyle Run Pad Field/Pool Name -----
Farm name Tyrone L. Beem et al Well Number Beem Unit 3H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4361201m Easting 508281m
Landing Point of Curve Northing 4360792.65m Easting 508322.21m
Bottom Hole Northing 4358139m Easting 509288m

Elevation (ft) 1115' GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas ■ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine ■Gas □ NGL ■ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air □ Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud □ Fresh Water □ Brine

Mud Type(s) and Additive(s)
Air - Foam & 4% KCL
Mud - Polymer

Date permit issued 10/27/2017 Date drilling commenced 9/14/2018 Date drilling ceased 12/13/2018
Date completion activities began 3/2/2019 Date completion activities ceased 4/24/2019
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 301', 332' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 674', 1584' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 811' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

API 47- 095 - 02474 Farm name Tyrone L. Beem et al Well number Beem Unit 3H

| CASING STRINGS | Hole Size | Casing Size | Depth | New or Used | Grade wt/ft | Basket Depth(s) | Did cement circulate (Y/ N) * Provide details below* |
|---|---|---|---|---|---|---|---|
| Conductor | 24" | 20" | 105' | New | 94#, H-40 | N/A | Y |
| Surface | 17-1/2" | 13-3/8" | 427' | New | 48#, H-40 | N/A | Y |
| Coal | | | | | | | |
| Intermediate 1 | 12-1/4" | 9-5/8" | 2569' | New | 36#, J-55 | N/A | Y |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | 8-3/4"/8-1/2" | 5-1/2" | 17152' | New | 23#, P-110 | N/A | Y |
| Tubing | | 2-3/8" | 6719' | | 4.7#, N-80 | | |
| Packer type and depth set | | N/A | | | | | |

Comment Details

| CEMENT DATA | Class/Type of Cement | Number of Sacks | Slurry wt (ppg) | Yield ( ft $^3$/sks) | Volume (ft $^3$) | Cement Top (MD) | WOC (hrs) |
|---|---|---|---|---|---|---|---|
| Conductor | Class A | 204 sx | 15.6 | 1.18 | 120 | 0' | 8 Hrs. |
| Surface | Class A | 426 sx | 15.6 | 1.18 | 826 | 0' | 8 Hrs. |
| Coal | | | | | | | |
| Intermediate 1 | Class A | 880 sx | 15.6 | 1.18 | 1181 | 0' | 8 Hrs. |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | Class H | 820 sx (Lead) 1740 sx (Tail) | 14.5 (Lead), 15.2 (Tail) | 1.40 (Lead), 1.60 (Tail) | | ~500' into Intermediate Casing | 8 Hrs. |
| Tubing | | | | | | | |

Drillers TD (ft) 17172' MD, 6543' TVD (BHL), 6548' (Deepest Point Drilled) Loggers TD (ft) 17172' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5800'

Check all wireline logs run □ caliper □ density □ deviated/directional □ induction
□ neutron □ resistivity □ gamma ray □ temperature □sonic

Well cored □ Yes ■ No Conventional Sidewall Were cuttings collected □ Yes ■ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING

Conductor - 0

Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface

Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface

Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE □ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? □ Yes ■ No DETAILS

WERE TRACERS USED □ Yes ■ No TYPE OF TRACER(S) USED N/A

API 47- 095 - 02474 Farm name Tyrone L. Beem et al Well number Beem Unit 3H

PERFORATION RECORD

| Stage No. | Perforation date | Perforated from MD ft. | Perforated to MD ft. | Number of Perforations | Formation(s) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

# *PLEASE SEE ATTACHED EXHIBIT 1

| | | | | | |
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Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

| Stage No. | Stimulations Date | Ave Pump Rate (BPM) | Ave Treatment Pressure (PSI) | Max Breakdown Pressure (PSI) | ISIP (PSI) | Amount of Proppant (lbs) | Amount of Water (bbls) | Amount of Nitrogen/other (units) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
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# *PLEASE SEE ATTACHED EXHIBIT 2

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Please insert additional pages as applicable.

API 47- 095 - 02474 Farm name Tyrone L. Beem et al Well number Beem Unit 3H

| PRODUCING FORMATION(S) | DEPTHS | |
|---|---|---|
| Marcellus | 6477' (TOP) TVD | 6800' (TOP) MD |
| | | |
| | | |
| | | |

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 2800 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 1455 mcfpd Oil 35 bpd NGL --- bpd Water 5 bpd GAS MEASURED BY □ Estimated ■ Orifice □ Pilot

| LITHOLOGY/ FORMATION | TOP DEPTH IN FT NAME TVD | BOTTOM DEPTH IN FT TVD | TOP DEPTH IN FT MD | BOTTOM DEPTH IN FT MD | DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, $H_2S$, ETC) |
|---|---|---|---|---|---|
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***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Patterson UTI Drilling Company LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company KLX Energy Services
Address 3040 Post Oak Boulevard City Houston State TX Zip 77056

Cementing Company C&J Energy Services
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Baker Hughes
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Please insert additional pages as applicable.

Completed by Megan Griffith Telephone 303-357-7223
Signature _____ Title Permitting Agent Date _____

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

**API** 47-095-02474 **Farm Name** Tyrone L. Beem et al **Well Number** Beem Unit 3H

## EXHIBIT 1

| Stage No. | Perforation Date | Perforated from MD ft. | Perforated to MD ft. | Number of Perforations | Formations |
|---|---|---|---|---|---|
| 1 | 3/1/2018 | 15600 | 15766 | 60 | Marcellus |
| 2 | 3/2/2018 | 15404 | 15570 | 60 | Marcellus |
| 3 | 3/2/2018 | 15207 | 15373 | 60 | Marcellus |
| 4 | 3/3/2018 | 15011 | 15177 | 60 | Marcellus |
| 5 | 3/3/2018 | 14814 | 14980 | 60 | Marcellus |
| 6 | 3/4/2018 | 14618 | 14784 | 60 | Marcellus |
| 7 | 3/5/2018 | 14421 | 14587 | 60 | Marcellus |
| 8 | 3/5/2018 | 14225 | 14391 | 60 | Marcellus |
| 9 | 3/6/2018 | 14029 | 14194 | 60 | Marcellus |
| 10 | 3/6/2018 | 13832 | 13998 | 60 | Marcellus |
| 11 | 3/7/2018 | 13636 | 13801 | 60 | Marcellus |
| 12 | 3/7/2018 | 13439 | 13605 | 60 | Marcellus |
| 13 | 3/8/2018 | 13243 | 13408 | 60 | Marcellus |
| 14 | 3/8/2018 | 13046 | 13212 | 60 | Marcellus |
| 15 | 3/9/2018 | 12850 | 13015 | 60 | Marcellus |
| 16 | 3/10/2018 | 12653 | 12819 | 60 | Marcellus |
| 17 | 3/10/2018 | 12457 | 12622 | 60 | Marcellus |
| 18 | 3/11/2018 | 12260 | 12426 | 60 | Marcellus |
| 19 | 3/11/2018 | 12064 | 12229 | 60 | Marcellus |
| 20 | 3/12/2018 | 11867 | 12033 | 60 | Marcellus |
| 21 | 3/12/2018 | 11671 | 11836 | 60 | Marcellus |
| 22 | 3/13/2018 | 11474 | 11640 | 60 | Marcellus |
| 23 | 3/14/2018 | 11278 | 11443 | 60 | Marcellus |
| 24 | 3/14/2018 | 11081 | 11247 | 60 | Marcellus |
| 25 | 3/15/2018 | 10885 | 11050 | 60 | Marcellus |
| 26 | 3/15/2018 | 10688 | 10854 | 60 | Marcellus |
| 27 | 3/15/2018 | 10492 | 10657 | 60 | Marcellus |
| 28 | 3/16/2018 | 10295 | 10461 | 60 | Marcellus |
| 29 | 3/17/2018 | 10099 | 10264 | 60 | Marcellus |
| 30 | 3/17/2018 | 9902 | 10068 | 60 | Marcellus |
| 31 | 3/18/2018 | 9706 | 9871 | 60 | Marcellus |
| 32 | 3/18/2018 | 9509 | 9675 | 60 | Marcellus |
| 33 | 3/19/2018 | 9313 | 9478 | 60 | Marcellus |
| 34 | 3/20/2018 | 9116 | 9282 | 60 | Marcellus |
| 35 | 3/21/2018 | 8920 | 9085 | 60 | Marcellus |
| 36 | 3/21/2018 | 8723 | 8889 | 60 | Marcellus |
| 37 | 3/22/2018 | 8527 | 8692 | 60 | Marcellus |
| 38 | 3/23/2018 | 8330 | 8496 | 60 | Marcellus |
| 39 | 3/23/2018 | 8134 | 8299 | 60 | Marcellus |
| 40 | 3/24/2018 | 7937 | 8103 | 60 | Marcellus |
| 41 | 3/24/2018 | 7741 | 7906 | 60 | Marcellus |
| 42 | 3/25/2018 | 7544 | 7710 | 60 | Marcellus |
| 43 | 3/25/2018 | 7348 | 7513 | 60 | Marcellus |
| 44 | 3/25/2018 | 7151 | 7317 | 60 | Marcellus |
| 45 | 3/26/2018 | 6955 | 7120 | 60 | Marcellus |

**API** 47-095-02474 **Farm Name** Tyrone L. Beem et al **Well Number** Beem Unit 3H

## EXHIBIT 2

| Stage No. | Stimulations Date | Avg Pump Rate | Avg Treatment Pressure (PSI) | Max Breakdown Pressure (PSI) | ISIP (PSI) | Amount of Proppant (lbs) | Amount of Water (bbls) | Amount of Nitrogen/ other (units) |
|---|---|---|---|---|---|---|---|---|
| 1 | 3/4/2019 | 69.1271 | 7559.132 | 6449 | 4074 | 18082.1318 | 6439 | N/A |
| 2 | 3/4/2019 | 75.6504 | 8026.292 | 5572 | 4720 | 18318.2915 | 8947 | N/A |
| 3 | 3/5/2019 | 76.7724 | 8375.301 | 5677 | 4838 | 18890.3008 | 8769 | N/A |
| 4 | 3/5/2019 | 77.3848 | 8193.285 | 5133 | 3782 | 17108.2852 | 9077 | N/A |
| 5 | 3/6/2019 | 70.5504 | 8213.551 | 5512 | 3612 | 17337.5508 | 10724 | N/A |
| 6 | 3/6/2019 | 73.7167 | 7891.479 | 5323 | 4168 | 17382.479 | 8693 | N/A |
| 7 | 3/6/2019 | 77.1868 | 7963.897 | 5625 | 4097 | 17685.8965 | 8793 | N/A |
| 8 | 3/6/2019 | 72.5585 | 8171.329 | 5216 | 3394 | 16781.3291 | 8930 | N/A |
| 9 | 3/7/2019 | 71.0218 | 8008.302 | 5344 | 3754 | 17106.3022 | 8753 | N/A |
| 10 | 3/7/2019 | 75.9182 | 8274.378 | 5413 | 3624 | 17311.3779 | 8673 | N/A |
| 11 | 3/8/2019 | 74.5291 | 7931.644 | 5604 | 3873 | 17408.644 | 8853 | N/A |
| 12 | 3/8/2019 | 75.5155 | 7996.364 | 5477 | 4618 | 18091.3638 | 8666 | N/A |
| 13 | 3/9/2019 | 74.667 | 8148.432 | 5600 | 3905 | 17653.4321 | 8889 | N/A |
| 14 | 3/9/2019 | 74.3783 | 7727.846 | 5700 | 4050 | 17477.8457 | 9071 | N/A |
| 15 | 3/9/2019 | 75.5419 | 8109.569 | 5736 | 3934 | 17779.5688 | 8744 | N/A |
| 16 | 3/10/2019 | 73.0683 | 8135.781 | 5594 | 4389 | 18118.7808 | 9841 | N/A |
| 17 | 3/10/2019 | 76.4142 | 8017.888 | 6135 | 4036 | 18188.8877 | 9768 | N/A |
| 18 | 3/10/2019 | 77.7634 | 7666.431 | 5514 | 4687 | 17867.4312 | 8740 | N/A |
| 19 | 3/10/2019 | 71.3394 | 8270.849 | 5580 | 3558 | 17408.8486 | 9545 | N/A |
| 20 | 3/11/2019 | 74.976 | 8352.356 | 5406 | 4333 | 18091.3564 | 10513 | N/A |
| 21 | 3/11/2019 | 74.5722 | 7763.272 | 6127 | 3783 | 17673.272 | 8873 | N/A |
| 22 | 3/11/2019 | 74.4758 | 7655.644 | 5818 | 3616 | 17089.6436 | 8696 | N/A |
| 23 | 3/12/2019 | 74.6153 | 7792.388 | 6255 | 4085 | 18132.3882 | 8574 | N/A |
| 24 | 3/12/2019 | 76.9869 | 8017.897 | 6356 | 3972 | 18345.897 | 8728 | N/A |
| 25 | 3/12/2019 | 76.9332 | 7923.045 | 6108 | 3658 | 17689.0449 | 8706 | N/A |
| 26 | 3/12/2019 | 74.9622 | 7840.157 | 6250 | 3678 | 17768.1567 | 8480 | N/A |
| 27 | 3/13/2019 | 78.1471 | 7873.248 | 5856 | 3746 | 17475.2476 | 8278 | N/A |
| 28 | 3/13/2019 | 77.7272 | 7677.524 | 6042 | 4526 | 18245.5244 | 8697 | N/A |
| 29 | 3/14/2019 | 68.1935 | 7549.855 | 6531 | 5122 | 19202.855 | 7974 | N/A |
| 30 | 3/14/2019 | 76.5887 | 7585.309 | 6878 | 4047 | 18510.3086 | 8646 | N/A |
| 31 | 3/15/2019 | 67.0425 | 8120.542 | 6363 | 3656 | 18139.5415 | 9210 | N/A |
| 32 | 3/15/2019 | 77.5796 | 7462.673 | 5883 | 3490 | 16835.6733 | 8310 | N/A |
| 33 | 3/16/2019 | 65.5 | 7913 | 5553 | 3326 | 16792 | 10801 | N/A |
| 34 | 3/16/2019 | 74.1376 | 7481.548 | 5776 | 3708 | 16965.5479 | 9402 | N/A |
| 35 | 3/16/2019 | 75.6023 | 7448.328 | 5843 | 3758 | 17049.3276 | 8497 | N/A |
| 36 | 3/17/2019 | 79.6917 | 7583.421 | 5500 | 4258 | 17341.4214 | 8389 | N/A |
| 37 | 3/17/2019 | 79.6476 | 7338.054 | 5805 | 3878 | 17021.0542 | 8421 | N/A |
| 38 | 3/17/2019 | 77.3863 | 7015.145 | 5854 | 3889 | 16758.145 | 8284 | N/A |
| 39 | 3/17/2019 | 80.7 | 7378 | 5671 | 4654 | 17703 | 9379 | N/A |
| 40 | 3/18/2019 | 79.9698 | 7319.338 | 5696 | 3714 | 16729.3384 | 8450 | N/A |
| 41 | 3/18/2019 | 80.2141 | 7530.048 | 5261 | 3664 | 16455.0483 | 8555 | N/A |
| 42 | 3/18/2019 | 75.4575 | 7316.519 | 5389 | 4390 | 17095.519 | 8438 | N/A |
| 43 | 3/18/2019 | 80.1879 | 7482.32 | 5230 | 3545 | 16257.3203 | 8416 | N/A |
| 44 | 3/19/2019 | 80.5592 | 7529.107 | 5640 | 3557 | 16726.1069 | 8557 | N/A |
| 45 | 3/19/2019 | 79.4221 | 7660.588 | 5727 | 3826 | 17213.5884 | 8527 | N/A |
| 46 | 3/19/2019 | 75.088 | 7063.506 | 5927 | 4400 | 17390.5063 | 8415 | N/A |
| 47 | 3/19/2019 | 78.0312 | 7101.557 | 5243 | 3803 | 16147.5571 | 8454 | N/A |
| 48 | 3/19/2019 | 79.8756 | 7248.754 | 5197 | 4077 | 16522.7544 | 9479 | N/A |
| 49 | 3/20/2019 | 79.7098 | 7196.062 | 5672 | 3756 | 16624.0615 | 8569 | N/A |
| 50 | 3/20/2019 | 80.0757 | 7128.438 | 6385 | 4434 | 17947.4375 | 8046 | N/A |
| 51 | 3/20/2019 | 79.5558 | 6966.471 | 5882 | 3556 | 16404.4707 | 8424 | N/A |
| | **AVG** | **75.4** | **7,806** | **5,756** | **3,978** | **789,305** | **397,716** | TOTAL |

**API** 47-095-02474 **Farm Name** Tyrone L. Beem et al **Well Number** Beem Unit 3H

## EXHIBIT 3

| LITHOLOGY/ FORMATION | TOP DEPTH (TVD) From Surface | BOTTOM DEPTH (TVD) From Surface | TOP DEPTH (MD) From Surface | BOTTOM DEPTH (MD) From Surface |
|---|---|---|---|---|
| Silty Sandstone | 75 | 175 | 75 | 175 |
| Silty Shale | 175 | 335 | 175 | 335 |
| shaly sand | 335 | 425 | 335 | 425 |
| Shale | 425 | 855 | 425 | 855 |
| Dolomitic Shale | 855 | 1,005 | 855 | 1,005 |
| Shaly Siltstone | 1,005 | 1,105 | 1,005 | 1,105 |
| Silty Sandstone | 1,105 | 1,325 | 1,105 | 1,325 |
| Shaly Sand | 1,325 | 1,475 | 1,325 | 1,475 |
| Sandstone | 1,475 | 1,725 | 1,475 | 1,725 |
| Silty, Shaly, Sandstone | 1,725 | 1,765 | 1,725 | 1,765 |
| Sandstone, Tr Shale, Tr Coal | 1,765 | 1,805 | 1,765 | 1,805 |
| Silty Sandstone | 1,805 | 1,885 | 1,805 | 1,885 |
| Shaly Siltstone | 1,885 | 1,947 | 1,885 | 1,947 |
| Big Lime | 1,972 | 2,892 | 1,972 | 2,892 |
| Fifty Foot Sandstone | 2,892 | 3,002 | 2,892 | 3,002 |
| Gordon | 3,001 | 3,171 | 3,002 | 3,171 |
| Fifth Sandstone | 3,170 | 3,447 | 3,171 | 3,447 |
| Bayard | 3,445 | 3,946 | 3,447 | 3,946 |
| Speechley | 3,939 | 4,203 | 3,946 | 4,203 |
| Balltown | 4,193 | 4,721 | 4,203 | 4,721 |
| Bradford | 4,704 | 5,153 | 4,721 | 5,153 |
| Benson | 5,129 | 5,405 | 5,153 | 5,405 |
| Alexander | 5,378 | 6,473 | 5,405 | 6,473 |
| Sycamore | 6,205 | 6,448 | 6,277 | 6,448 |
| Middlesex | 6,323 | 6,622 | 6,448 | 6,622 |
| Burkett | 6,415 | 6,705 | 6,622 | 6,705 |
| Tully | 6,449 | 6,800 | 6,705 | 6,800 |
| Marcellus | 6,477 | NA | 6,800 | NA |

*Please note Antero determines formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

# Hydraulic Fracturing Fluid Product Component Information Disclosure

| | |
|---|---|
| Job Start Date: | 3/4/2019 |
| Job End Date: | 3/20/2019 |
| State: | West Virginia |
| County: | Tyler |
| API Number: | 47-095-02474-00-00 |
| Operator Name: | Antero Resources Corporation |
| Well Name and Number: | Beem 3H |
| Latitude: | 39.40018900 |
| Longitude: | -80.90398900 |
| Datum: | NAD83 |
| Federal Well: | NO |
| Indian Well: | NO |
| True Vertical Depth: | 6,547 |
| Total Base Water Volume (gal): | 19,453,800 |
| Total Base Non Water Volume: | 0 |

## Hydraulic Fracturing Fluid Composition:

| Trade Name | Supplier | Purpose | Ingredients | Chemical Abstract Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by mass)** | Maximum Ingredient Concentration in HF Fluid (% by mass)** | Comments |
|---|---|---|---|---|---|---|---|
| Water | Antero Resources | Carrier/Base Fluid | | | | | |
| | | | Water | 7732-18-5 | 100.00000 | 88.57225 | |
| Sand | U.S. Well Services, LLC | Proppant | | | | | |
| | | | Crystalline Silica, quartz | 14808-60-7 | 100.00000 | 11.18059 | |
| HCL Acid (12.6%-17.5%) | U.S. Well Services, LLC | Bulk Acid | | | | | |
| | | | Water | 7732-18-5 | 87.40000 | 0.11926 | |
| | | | Hydrogen Chloride | 7647-01-0 | 17.50000 | 0.02773 | |
| LGC-15 | U.S. Well Services, LLC | Gelling Agents | | | | | |
| | | | Guar Gum | 9000-30-0 | 50.00000 | 0.01840 | |
| | | | Petroleum Distillates | 64742-47-8 | 60.00000 | 0.01743 | |
| | | | Suspending agent (solid) | 14808-60-7 | 3.00000 | 0.00281 | |
| | | | Surfactant | 68439-51-0 | 3.00000 | 0.00110 | |
| WFRA-405 | U.S. Well Services, LLC | Friction Reducer | | | | | |
| | | | 2-Propenoic acid, polymer with 2-propenamide | 9003-06-9 | 30.00000 | 0.02005 | |
| | | | Hydrated light distillate (petroleum) | 64742-47-8 | 30.00000 | 0.01614 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SI-1200 | U.S. Well Services, LLC | Scale Inhibitor | | | | | |
| | | | Water | 7732-18-5 | 80.00000 | 0.01019 | |
| | | | Ethylene Glycol | 107-21-1 | 40.00000 | 0.00728 | |
| | | | Sodium Salt of Diethylenetriaminepenta (methylenephophonic acid) | 68155-78-2 | 10.00000 | 0.00127 | |
| | | | Sodium Chloride | 7647-14-5 | 10.00000 | 0.00127 | |
| Bioclear 2000 | U.S. Well Services, LLC | Anti-Bacterial Agent | | | | | |
| | | | 2,2-dibromo-3-nitrilopropionamide | 10222-01-2 | 20.00000 | 0.00226 | |
| | | | Deionized Water | 7732-18-5 | 28.00000 | 0.00129 | |
| AP One | U.S. Well Services, LLC | Gel Breakers | | | | | |
| | | | Ammonium Persulfate | 7727-54-0 | 100.00000 | 0.00059 | |
| AI-303 | U.S. Well Services, LLC | Acid Corrosion Inhibitors | | | | | |
| | | | Ethylene glycol | 107-21-1 | 40.00000 | 0.00004 | |
| | | | Formic acid | 64-18-6 | 20.00000 | 0.00001 | |
| | | | Cinnamaldehyde | 104-55-2 | 20.00000 | 0.00001 | |
| | | | Butyl cellosolve | 111-76-2 | 20.00000 | 0.00001 | |
| | | | Polyether | 60828-78-6 | 10.00000 | 0.00001 | |
| | | | Acetophenone,thiourea,formaldehyde polymer | 68527-49-1 | 5.00000 | 0.00000 | |

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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Page 1 of 3
Rev. 10-10

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Discharge Monitoring Report
Oil and Gas General Permit

Company Name: Antero Resources Corporation
API No: 47-095-02474 County: Tyler
District: Centerville Well No: Beem Unit 3H
Farm Name: Tyrone L. Beem et al
Discharge Date/s From:(MMDDYY) 05/31/19 To: (MMDDYY) 05/31/19
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 996,304
Disposal Option(s) Utilized (write volumes in gallons):

(1) Land Application: _____ (Include a topographical map of the Area.)
(2) UIC: 130,517 Permit No. 3400923821, 3400923823, 3400923824, 3416729731, 3416729543, 3416729464, 3416729445
(3) Offsite Disposal: _____ Site Location: _____
(4) Reuse: 865,787 Alternate Permit Number: _____
(5) Centralized Facility: _____ Permit No. _____
(6) Other method: _____ (Include an explanation)

Follow Instructions below to determine your treatment category:
Optional Pretreatment test: n/a Cl- mg/l n/a DO mg/l

1. Do you have permission to use expedited treatment from the Director or his representative? (Y/N) n/a If yes, who? _____ and place a four (4) on line 7. If not go to line 2
2. Was Frac Fluid or flowback put into the pit? (Y/N) n/a If yes, go to line 5. If not, go to line 3.
3. Do you have a chloride value pretreatment (see above)? (Y/N) n/a If yes, go to line 4 If not, go to line 5.
4. Is the Chloride level less than 5000 mg/l? (Y/N) n/a If yes, then enter a one (1) on line 7.
5. Do you have a pretreatment value for DO? (See above) (Y/N) n/a If yes, go to line 6 If not, enter a three (3) in line 7.
6. Is the DO level greater than 2.5 mg/l?(Y/N) n/a If yes, enter a two (2) on line 7. If not, enter a three (3) on line 7.
7. n/a is the category of your pit. Use the Appropriate section.
8. Comments on Pit condition: n/a No pit on site.

Name of Principal Exec. Officer: Gretchen Kohler
Title of Officer: Senior Environmental and Regulatory Manager
Date Completed: 8/9/19

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

Gretchen Kohler
Signature of a Principal Exec. Officer or Authorized agent.

Category 1
Sampling Results
API No : _____

| Parameter | Predischarge Limits | Predischarge Reported | Discharge Limits | Discharge Reported | Units |
|---|---|---|---|---|---|
| pH | 6-10 | _____ | 6-10 | _____ | S.U |
| Settling Time | 5 | _____ | N/A | N/A | Days |
| Fe | 6 | _____ | 6 | _____ | mg/l |
| D.O. | 2.5 | _____ | 2.5 | _____ | mg/l |
| Settleable Sol. | 0.5 | _____ | 0.5 | _____ | mg/l |
| Cl | 5,000 | _____ | 5,000 | _____ | mg/l |
| Oil | Trace | _____ | Trace | _____ | Obs. |
| TOC** | | | Monitor | _____ | mg/l |
| Oil and Grease | | | Monitor | _____ | mg/l |
| Total Al*** | | | Monitor | _____ | mg/l |
| TSS | | | Monitor | _____ | mg/l |
| Total Mn | Monitor | _____ | Monitor | _____ | mg/l |
| Volume | | | Monitor | _____ | Gal |
| Flow | | | Monitor | _____ | Gal/min |
| Disposal Area | | | Monitor | _____ | Acres |

*** Al is only reported if the pH is above 9.0

Category 2
Sampling Results
API No : _____

| Parameter | Predischarge Limits | Predischarge Reported | Discharge Limits | Discharge Reported | Units |
|---|---|---|---|---|---|
| pH | 6-10 | _____ | 6-10 | _____ | S.U |
| Settling Time | 10 | _____ | N/A | N/A | Days |
| Fe | 6 | _____ | 6 | _____ | mg/l |
| D.O. | 2.5 | _____ | 2.5 | _____ | mg/l |
| Settleable Sol. | 0.5 | _____ | 0.5 | _____ | mg/l |
| Cl* | 12,500 | _____ | 12,500 | _____ | mg/l |
| Oil | Trace | _____ | Trace | _____ | Obs. |
| TOC** | | | Monitor | _____ | mg/l |
| Oil and Grease | | | Monitor | _____ | mg/l |
| Total Al*** | | | Monitor | _____ | mg/l |
| TSS | | | Monitor | _____ | mg/l |
| Total Mn | Monitor | _____ | Monitor | _____ | mg/l |
| Volume | | | Monitor | _____ | Gal |
| Flow | | | Monitor | _____ | Gal/min |
| Disposal Area | | | Monitor | _____ | Acres |

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____ Date: _____
** Include a description of your aeration technique. Aeration Code: _____
*** Al is only reported if the pH is above 9.0

Category 3
Sampling Results
API No : _____

| Parameter | Predischarge Limits | Predischarge Reported | Discharge Limits | Discharge Reported | Units |
|---|---|---|---|---|---|
| pH | 6-10 | _____ | 6-10 | _____ | S.U |
| Settling Time | 20 | _____ | N/A | N/A | Days |
| Fe | 6 | _____ | 6 | _____ | mg/l |
| D.O. | 2.5 | _____ | 2.5 | _____ | mg/l |
| Settleable Sol. | 0.5 | _____ | 0.5 | _____ | mg/l |
| Cl* | 12,500 | _____ | 12,500 | _____ | mg/l |
| Oil | Trace | _____ | Trace | _____ | Obs. |
| TOC** | | | Monitor | _____ | mg/l |
| Oil and Grease | | | Monitor | _____ | mg/l |
| Total Al*** | | | Monitor | _____ | mg/l |
| TSS | | | Monitor | _____ | mg/l |
| Total Mn | Monitor | _____ | Monitor | _____ | mg/l |
| Volume | | | Monitor | _____ | Gal |
| Flow | | | Monitor | _____ | Gal/min |
| Disposal Area | | | Monitor | _____ | Acres |

* Can be 25,000 with inspector's approval,

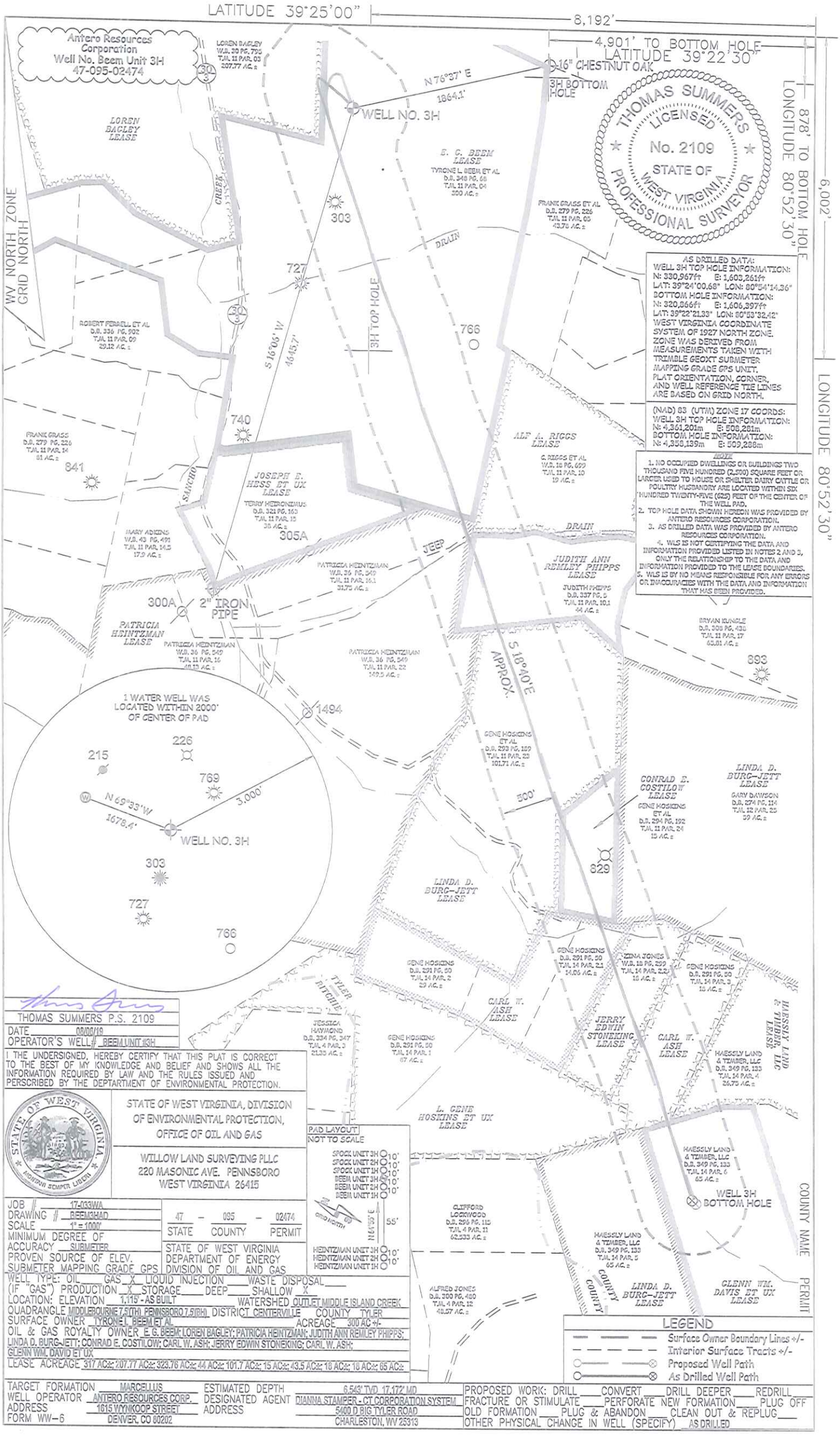
(Inspector's signature): _____ Date: _____
** Include a description of your aeration technique. Aeration Code: _____
*** Al is only reported if the pH is above 9.0.

Category 4
Sampling Results
API No: _____

| Parameter | Predischarge Limits | Predischarge Reported | Discharge Limits | Discharge Reported | Units |
|---|---|---|---|---|---|
| pH | 6-10 | _____ | 6-10 | _____ | S.U |
| Settling Time | 1 | _____ | N/A | N/A | Days |
| Fe | Monitor | _____ | Monitor | _____ | mg/l |
| D.O. | Monitor | _____ | Monitor | _____ | mg/l |
| Settleable Sol. | Monitor | _____ | Monitor | _____ | mg/l |
| Cl* | 12,500 | _____ | 12,500 | _____ | mg/l |
| Oil | Trace | _____ | Trace | _____ | Obs. |
| TOC** | | | Monitor | _____ | mg/l |
| Oil and Grease | | | Monitor | _____ | mg/l |
| TSS | | | Monitor | _____ | mg/l |
| Total Mn | Monitor | _____ | Monitor | _____ | mg/l |
| Volume | | | Monitor | _____ | Gal |
| Flow | | | Monitor | _____ | Gal/min |
| Activated Carbon (0.175) | | _____ | N/A | N/A | lb/Bl |
| Date Site Reclaimed | N/A | N/A | | _____ | 10 days from dis. |
| Disposal Area | | | Monitor | _____ | Acres |

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____ Date: _____




THOMAS SUMMERS P.S. 2109

DATE 08/06/18

OPERATOR'S WELL # BEEM UNIT 3H

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 DEPTARTMENT 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

PAD LAYOUT
NOT TO SCALE

SPOCK UNIT 3H 10'
SPOCK UNIT 2H 10'
SPOCK UNIT 1H 10'
BEEM UNIT 3H 10'
BEEM UNIT 2H 10'
BEEM UNIT 1H 10'
20' 60' grid North
N 16°15' E 55'
HEINTZMAN UNIT 3H 10'
HEINTZMAN UNIT 2H 10'
HEINTZMAN UNIT 1H 10'

JOB # 17-033WA
DRAWING # BEEM3HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

47 – 095 – 02474
STATE COUNTY PERMIT

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

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,115' - AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
QUADRANGLE MIDDLEBOURNE 7.5(TH) PENNSBORO 7.5(RH) DISTRICT CENTERVILLE COUNTY TYLER
SURFACE OWNER TYRONE L. BEEM ET AL ACREAGE 300 AC +/-
OIL & GAS ROYALTY OWNER E. G. BEEM; LOREN BAGLEY; PATRICIA HEINTZMAN; JUDITH ANN REMLEY PHIPPS; LINDA D. BURG-JETT; CONRAD E. COSTILOW; CARL W. ASH; JERRY EDWIN STONEKING; CARL W. ASH; GLENN WM. DAVID ET UX
LEASE ACREAGE 317 AC±; 207.77 AC±; 323.76 AC±; 44 AC±; 101.7 AC±; 15 AC±; 43.5 AC±; 18 AC±; 16 AC±; 65 AC±

TARGET FORMATION MARCELLUS
WELL OPERATOR ANTERO RESOURCES CORP.
ADDRESS 1615 WYNKOOP STREET
DENVER, CO 80202
FORM WW-6

ESTIMATED DEPTH 6,543' TVD, 17,172' MD
DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

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