west virginia department of environmental protection

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

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

August 19, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-1706542, issued to ANTERO RESOURCES CORPORATION, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: NEW MILTON UNIT 2H
Farm Name: SWISHER, LEOAN
API Well Number: 47-1706542
Permit Type: Horizontal 6A Well
Date Issued: 08/19/2014

Promoting a healthy environment.

API Number: 47-17-06542

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.

2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.

3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.

4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.

5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations,* 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.

6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.

8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

1706542
6/12

WW-6B
(9/13)

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

1) Well Operator: Antero Resources Corporation | 494488557 | 017-Doddridge | New Milton | New Milton
Operator ID | County | District | Quadrangle

2) Operator's Well Number: New Milton Unit 2H Well Pad Name: Swisher Pad (existing)

3) Farm Name/Surface Owner: Leoan Swisher Public Road Access: CR 25

4) Elevation, current ground: 976' Elevation, proposed post-construction: 976'

5) Well Type (a) Gas ■ Oil ____ Underground Storage ____
Other ____
(b)If Gas Shallow ■ Deep ____
Horizontal ■

DCW
6-18-2014

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Marcellus Shale: 7200' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3250#

8) Proposed Total Vertical Depth: 7200' TVD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 18,500' MD

11) Proposed Horizontal Leg Length: 10,754'

12) Approximate Fresh Water Strata Depths: 110'

13) Method to Determine Fresh Water Depths: Josie Unit 2H (API# 47-017-06265) on same pad

14) Approximate Saltwater Depths: 1270', 1460'

15) Approximate Coal Seam Depths: 350', 1480'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes ☐ No ☑

(a) If Yes, provide Mine Info: Name: ____
Depth: ____
Seam: ____
Owner: ____

RECEIVED
Office of Oil and Gas
JUN 23 2014
WV Department of
Environmental Protection

WW-6B
(9/13)

18) **CASING AND TUBING PROGRAM**

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/ 48#	300'	300'	CTS, 417 Cu. Ft
Coal	9-5/8"	New	J-55	36#	2460'	2460'	CTS, 1002 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	18500'	18500'	4692 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

DCN
6-19-2014

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

PACKERS

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

RECEIVED
Office of Oil and Gas
JUN 23 2014
WV Department of
Environmental Protection

RECEIVED
Office of Oil and Gas
JUN 23 2014
WV Department of
Environmental Protection

WW-6B
(9/13)

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."

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 9.53 acres

22) Area to be disturbed for well pad only, less access road (acres): 3.39 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers
Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.
Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.
Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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

Conductor: no additives, Class A cement.
Surface: Class A cement with 2-3% calcium chloride and 1/4 lb flake
Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat
Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51
Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

WW-9
(9/13)

API Number 47 - 017 - _____
Operator's Well No. New Milton Unit 2H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 494488557

Watershed (HUC 10) Meathouse Fork Quadrangle New Milton

Elevation 976' County Doddridge District New Milton

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes ☑ No ☐

Will a pit be used? Yes ☐ No ☑

If so, please describe anticipated pit waste: No pit will be used at this site (Drilling and Flowback Fluids will be stored in tanks. Cuttings will be tanked and hauled off site.)

Will a synthetic liner be used in the pit? Yes ☐ No ☑ If so, what ml.? N/A

DCN 6-18-2014

Proposed Disposal Method For Treated Pit Wastes:

- _____ Land Application
- _____ Underground Injection (UIC Permit Number _____)
- ■ Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34)
- ■ Off Site Disposal (Supply form WW-9 for disposal location) (Meadowfill Landfill Permit #SWF-1032-98)
- _____ Other (Explain _____

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Dust/Stiff Foam, Production - Water Based Mud

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

Additives to be used in drilling medium? Please See Attachment

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

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

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

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

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

Company Official Signature [signature]

Company Official (Typed Name) Cole Kilstrom

Company Official Title Environmental Specialist

Subscribed and sworn before me this 6 day of June, 20 14

Kaitlin Buck Notary Public

My commission expires 4/3/2018

KAITLIN MARIE BUCK
Notary Public
State of Colorado
Notary ID 20144014661
My Commission Expires Apr 3, 2018

Form WW-9

Operator's Well No. New Milton Unit 2H

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 9.53 Prevegetation pH _____

Lime 2-3 Tons/acre or to correct to pH 6.5

Fertilizer type Hay or straw or Wood Fiber (will be used where needed)

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Access Road to Pads and Tank Farm (2.33) + Drill Pad (3.39) + Tank Farm and Spoil Pad (3.81) = 9.53 Acres

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	45	Tall Fescue	45
Perennial Rye Grass	20	Perennial Rye Grass	20
*or type of grass seed requested by surface owner		*or type of grass seed requested by surface owner	

Attach:
Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Douglas Newlon

Comments: Maintain E+S & seed & mulch any disturbed areas

Title: Oil & Gas Inspector Date: 6-18-2014

Field Reviewed? ( ) Yes (✓) No

47 - 1706542

Form WW-9 Additives Attachment

SURFACE INTERVAL

1. Fresh Water
2. Soap –Foamer AC
3. Air

INTERMEDIATE INTERVAL

STIFF FOAM RECIPE:

1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
2) 1 ppb Conqor 404 (11.76 ppg) / Corrosion Inhibitor
3) 4 ppb KLA-Gard (9.17 ppg) / Amine Acid Complex-Shale Stabilizer
4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
5) 12 ppb KCL / Potassium Chloride-inorganic Salt
6) Fresh Water 80 bbls
7) Air

PRODUCTION INTERVAL

1. Alpha 1655
   Salt Inhibitor
2. Mil-Carb
   Calcium Carbonate
3. Cottonseed Hulls
   Cellulose-Cottonseed Pellets – LCM
4. Mil-Seal
   Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
5. Clay-Trol
   Amine Acid Complex – Shale Stabilizer
6. Xan-Plex
   Viscosifier For Water Based Muds
7. Mil-Pac (All Grades)
   Sodium Carboxymethylcellulose – Filtration Control Agent
8. New Drill
   Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
9. Caustic Soda
   Sodium Hydroxide – Alkalinity Control
10. Mil-Lime
    Calcium Hydroxide – Lime
11. LD-9
    Polyether Polyol – Drilling Fluid Defoamer
12. Mil Mica
    Hydro-Biotite Mica – LCM

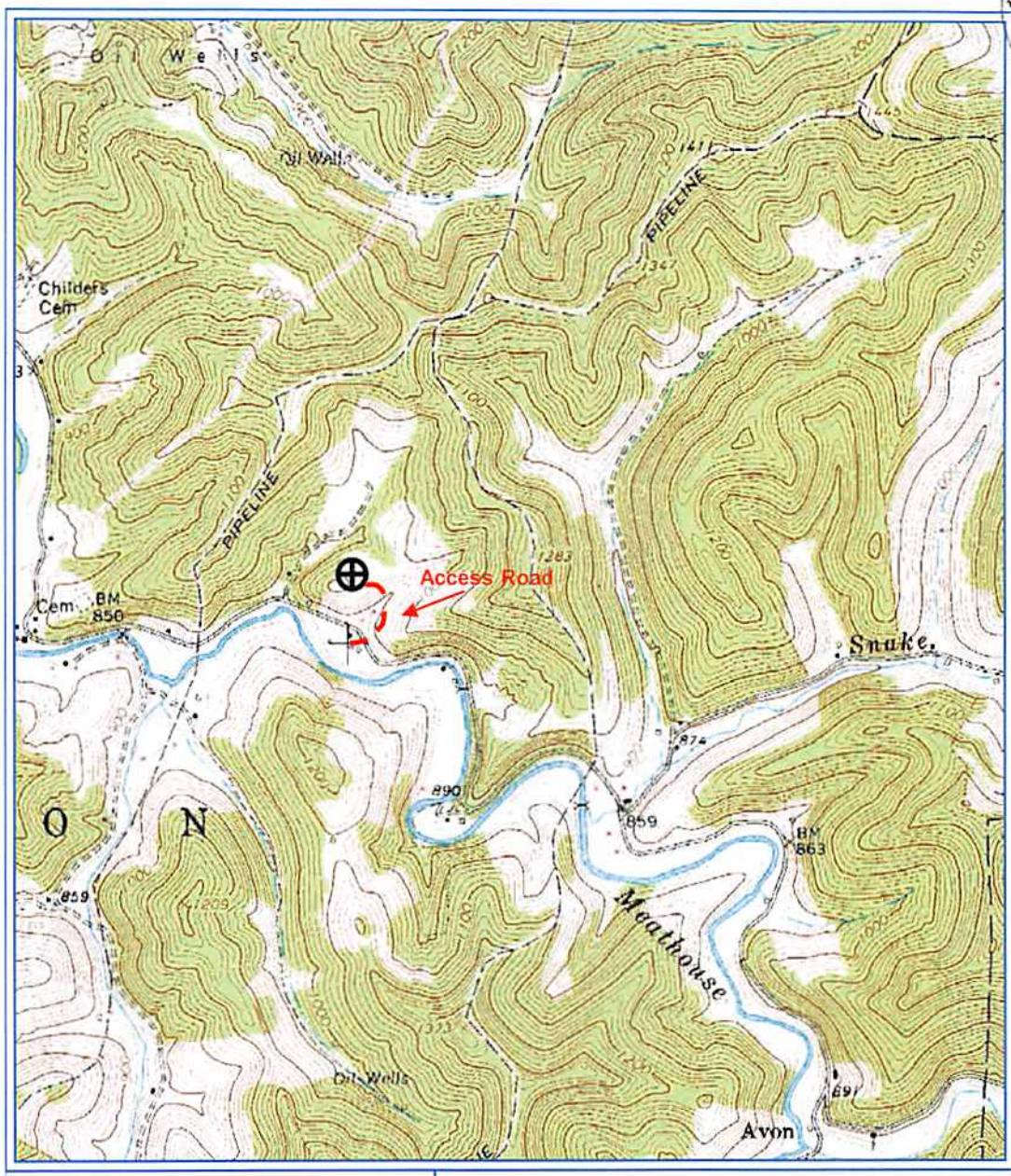
RECEIVED
Office of Oil and Gas
JUN 12 2014
WV Department of
Environmental Protection

13. Escaid 110
    Drilling Fluild Solvent – Aliphatic Hydrocarbon
14. Ligco
    Highly Oxidized Leonardite – Filteration Control Agent
15. Super Sweep
    Polypropylene – Hole Cleaning Agent
16. Sulfatrol K
    Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous
    Inorganic Salt
18. D-D
    Drilling Detergent – Surfactant
19. Terra-Rate
    Organic Surfactant Blend
20. W.O. Defoam
    Alcohol-Based Defoamer
21. Perma-Lose HT
    Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D
    Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells
    Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite
    Natural Graphite – LCM
25. Mil Bar
    Barite – Weighting Agent
26. X-Cide 102
    Biocide
27. Soda Ash
    Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol
    Amine Acid complex – Shale Stabilizer
29. Sulfatrol
    Sulfonated Asphalt – Shale Control Additive
30. Xanvis
    Viscosifier For Water-Based Muds
31. Milstarch
    Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube
    Drilling Fluid Lubricant

RECEIVED
Office of Oil and Gas
JUN 12 2014
WV Department of
Environmental Protection

47 - 1700542

Plat spotted ICC



PETRA 3/19/2013 1:04:09 PM

Antero Resources

Appalachian Basin

New Milton Unit 2H

Doddridge County

Ratio Scale = 1 : 24,000

0 2,000 4,000

FEET

REMARKS

Quadrangle: New Milton
Watershed: Meathouse Fork
District: New Milton

By: TRO

RECEIVED
Office of Oil and Gas
JUN 10 2014
WV Department of
Environmental Protection

11,866' to Top Hole

3,413' to Bottom Hole

LATITUDE 39 - 15 -00

BOTTOM HOLE LONGITUDE 80 - 40 - 00
TOP HOLE LONGITUDE 80 - 37 - 30

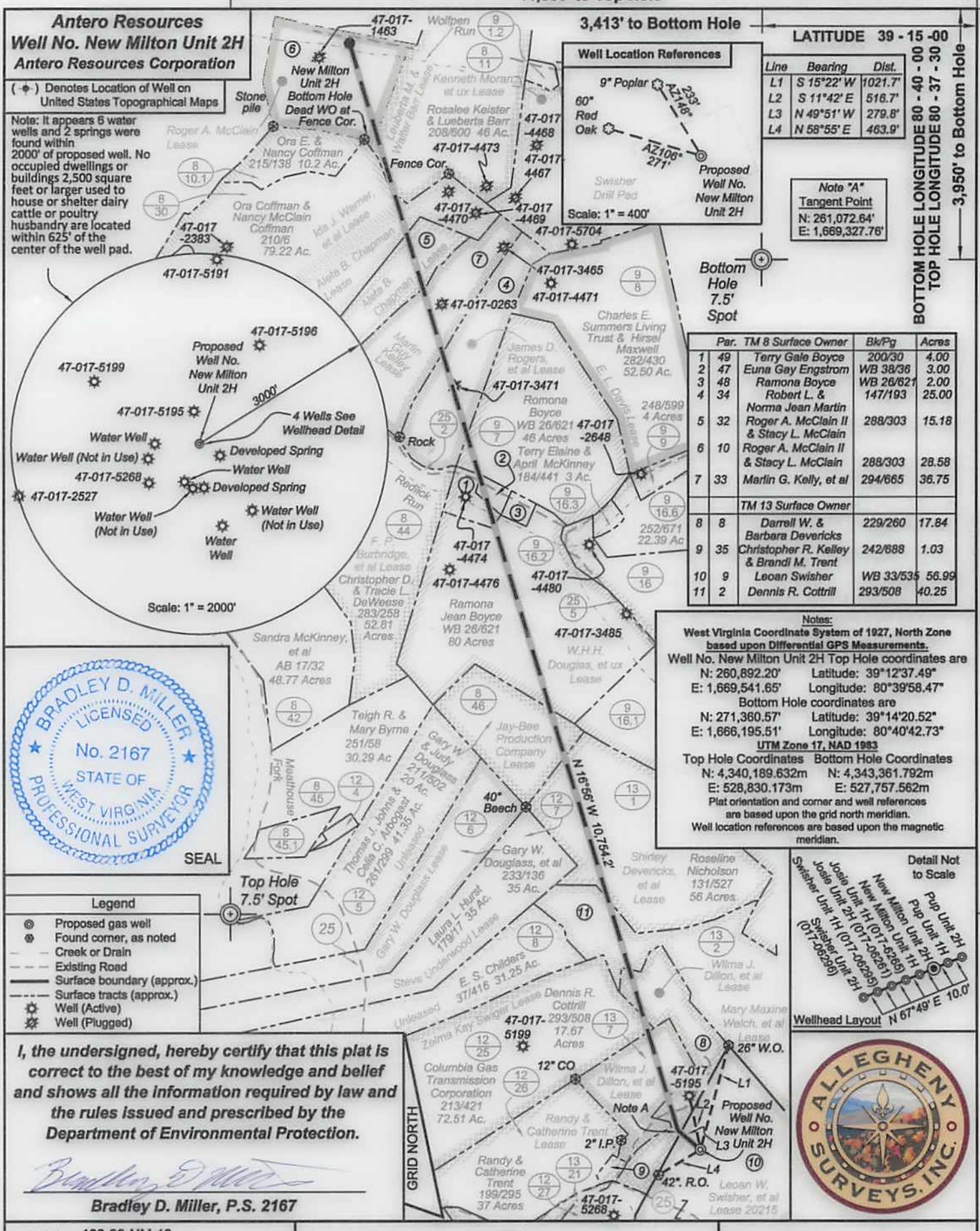
3,950' to Bottom Hole

14,268' to Top Hole

Antero Resources
Well No. New Milton Unit 2H
Antero Resources Corporation

(✦) Denotes Location of Well on United States Topographical Maps

Note: It appears 6 water wells and 2 springs were found within 2000' of proposed well. No occupied dwellings or buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad.



Well Location References

9" Poplar AZ 293° 46'
60" Red Oak AZ 106° 271'
Proposed Well No. New Milton Unit 2H
Swisher Drill Pad
Scale: 1" = 400'

Line	Bearing	Dist.
L1	S 15°22' W	1021.7'
L2	S 11°42' E	516.7'
L3	N 49°51' W	279.8'
L4	N 58°55' E	463.9'

Note "A"
Tangent Point
N: 261,072.64'
E: 1,669,327.76'

	Par.	TM 8 Surface Owner	Bk/Pg	Acres
1	49	Terry Gale Boyce	200/30	4.00
2	47	Euna Gay Engstrom	WB 38/36	3.00
3	48	Ramona Boyce	WB 26/621	2.00
4	34	Robert L. & Norma Jean Martin	147/193	25.00
5	32	Roger A. McClain II & Stacy L. McClain	288/303	15.18
6	10	Roger A. McClain II & Stacy L. McClain	288/303	28.58
7	33	Marlin G. Kelly, et al	294/665	36.75
		TM 13 Surface Owner		
8	8	Darrell W. & Barbara Devericks	229/260	17.84
9	35	Christopher R. Kelley & Brandi M. Trent	242/688	1.03
10	9	Leoan Swisher	WB 33/535	56.99
11	2	Dennis R. Cottrill	293/508	40.25

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. New Milton Unit 2H Top Hole coordinates are
N: 260,892.20' Latitude: 39°12'37.49"
E: 1,669,541.65' Longitude: 80°39'58.47"
Bottom Hole coordinates are
N: 271,360.57' Latitude: 39°14'20.52"
E: 1,666,195.51' Longitude: 80°40'42.73"
UTM Zone 17, NAD 1983
Top Hole Coordinates: N: 4,340,189.632m E: 528,830.173m
Bottom Hole Coordinates: N: 4,343,361.792m E: 527,757.562m
Plat orientation and corner and well references are based upon the grid north meridian.
Well location references are based upon the magnetic meridian.

BRADLEY D. MILLER LICENSED No. 2167 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR
SEAL

Legend
- Proposed gas well
- Found corner, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Surface tracts (approx.)
- Well (Active)
- Well (Plugged)

Detail Not to Scale
Wellhead Layout
Swisher Unit 2H (017-06296) Swisher Unit 1H (017-06295) Josie Unit 2H (017-06281) Josie Unit 1H (017-6265) New Milton Unit 1H New Milton Unit 2H Pup Unit 1H Pup Unit 2H
N 67°49' E 10.0'

I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Department of Environmental Protection.

Bradley D. Miller
Bradley D. Miller, P.S. 2167

ALLEGHENY SURVEYS, INC.

FILE NO: 138-30-NM-13
DRAWING NO: 138-13 New Milton 2H Well
SCALE: 1" = 1200'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

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

DATE: June 4 2014
Operator's Well No. New Milton Unit 2H
API WELL NO
47 - 017 - 06542 H6A
STATE COUNTY PERMIT

WELL TYPE: ☐ OIL ☒ GAS ☐ LIQUID INJECTION ☐ WASTE DISPOSAL
(IF GAS) PRODUCTION: ☐ STORAGE ☐ DEEP ☒ SHALLOW
LOCATION: ELEVATION: 976' WATERSHED: Meathouse Fork QUADRANGLE: New Milton
DISTRICT: New Milton COUNTY: Doddridge
SURFACE OWNER: Leoan Swisher; Shirley Devericks, et al; Leoan W. Swisher, et al; Jay-Bee Production Company; Wilma J. Dillon, et al (2); Marlin Guy Kelley; Roger A. McClain; Mary Maxine Welch, et al; W. H. H. Douglas, et ux; Leuberta M. & Walter Barr ACREAGE: 56.99
ROYALTY OWNER: Ida J. Warner, et al; Aleta B. Chapman (2); James D. Rogers, et al; Zelma Kay Swiger LEASE NO: 20215 ACREAGE: 60; 31; 15.5; 60.75; 51; 36; 28.5; 72.29; 17.84; 46; 17.67; 56; 56.99; 218; 20
PROPOSED WORK: ☒ DRILL ☐ CONVERT ☐ DRILL DEEPER ☒ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION
☒ PERFORATE NEW FORMATION ☐ OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
☐ PLUG AND ABANDON ☐ CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,200' TVD 18,500' MD

WELL OPERATOR: Antero Resources Corporation
ADDRESS: 1615 Wynkoop Street, Denver, CO 80202
DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 5400 D Big Tyler Road, Charleston, WV 25313

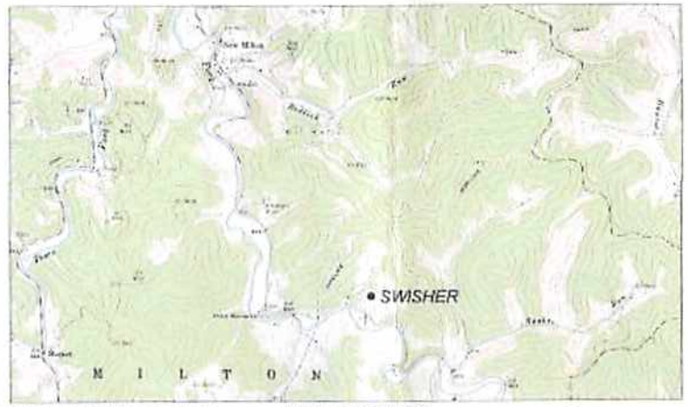
API#1706261
API#1706265

SWISHER DRILL PAD SITE
FINAL SITE DESIGN, CONSTRUCTION PLAN, AND EROSION & SEDIMENT CONTROL PLANS

ANTERO RESOURCES APPALACHIAN CORPORATION

APPROVED
WVDEP OOG
5/29/2013

PROJECT LOCATION



WATERSHED (HUC): LITTLE MUSKINGUM MIDDLE ISLAND NEW MILTON 7.5 QUAD

PROJECT LOCATION
SCALE 1" = 2000'

DRILL PAD ELEVATION RPC

WELL HEAD LAYOUT (STATE PLANE NAD83 (WV NORTH ZONE))	NORTH	EAST	LATITUDE	LONGITUDE
SWISHER UNIT 3H	[illegible]	[illegible]	[illegible]	[illegible]
SWISHER UNIT 1H	[illegible]	[illegible]	[illegible]	[illegible]
JONES UNIT 2H	[illegible]	[illegible]	[illegible]	[illegible]
JONES UNIT 1H	[illegible]	[illegible]	[illegible]	[illegible]
LYN ON UNIT 1H	[illegible]	[illegible]	[illegible]	[illegible]
UNASSIGNED	[illegible]	[illegible]	[illegible]	[illegible]
UNASSIGNED	[illegible]	[illegible]	[illegible]	[illegible]

WELL LOCATION RESTRICTIONS

THE PAD COMPLIES WITH THE FOLLOWING RESTRICTIONS:

- 200' FROM AN EXISTING WELL OR DEVELOPED SPRING USED FOR HUMAN OR DOMESTIC ANIMAL USE
- 625' FROM AN OCCUPIED DWELLING OR BARN GREATER THAN 2,500 SF USED FOR POULTRY OR DAIRY MEASURED FROM THE CENTER OF THE PAD
- 100' FROM EDGE OF DISTURBANCE TO WETLANDS, PERENNIAL STREAMS, NATURAL OR ARTIFICIAL LAKES, PONDS OR RESERVOIRS
- 300' FROM EDGE OF DISTURBANCE TO NATURALLY REPRODUCING TROUT STREAMS
- 1000' OF SURFACE OR GROUND WATER INTAKE TO A PUBLIC WATER SUPPLY

AFFECTED TAX PARCELS: 17-04-0A WISHER
MS 33 PG 535
TM 11 PARCEL 9
NEW MILTON DISTRICT

PROJECT CONTACTS:

ANTERO RESOURCES
ANTHONY SMITH, FIELD ENGINEER
304.669.5405 OFFICE
304.873.6106 CELL

ELI WAGONER, ENVIRONMENTAL ENGINEER
304.622.3842 EXT. 311
OFFICE: 304.624.9710

JOHN KIRKER, ENGINEER
717-268-4853

AARON KUNZLER, CONSTRUCTION SUPERVISOR
[illegible]

SURVEYOR & ENGINEER
WHITE BROTHERS CONSULTING, LLC
LEE SWITZER, P.S.
304.652.4404
TIMOTHY T. WHITE, PE
304.681.4877

SITE LOCATIONS (STATE PLANE NAD 83 (WV NORTH ZONE))	LATITUDE	LONGITUDE
CENTER OF PAD	39-12-37.7283	-80-30-56.0840
BEGIN ACCESS ROAD	39-12-31.8078	-80-30-47.7749
CENTER OF ROAD (UTM 83-17M)	N 4348107.231	E 528524.906
CENTER OF TANK	39-12-28.8109	-80-29-51.1610

LOD AREAS (ACRES)	
DESCRIPTION	AREA
MAIN ACCESS ROAD TO PADS AND TANK FARM	0.24
DRILL PAD	5.39
TANK FARM AND SPOIL PAD	5.81
TOTAL	6.44
TOTAL WOODED AREA	2.69

LENGTH (FEET)	
DESCRIPTION	FEET
COUNTY ROUTE TO DRILL PAD	975
MAIN ROUTE TO SPOIL PAD	1,022
DRILL PAD TO TANK FARM	257
TOTAL	2,254

STREAM IMPACTS (LINEAR FEET)	
DESCRIPTION	LINEAR FEET
STREAM 1-NON PERENNIAL	112
STREAM 2-NON PERENNIAL	60
TOTAL	172

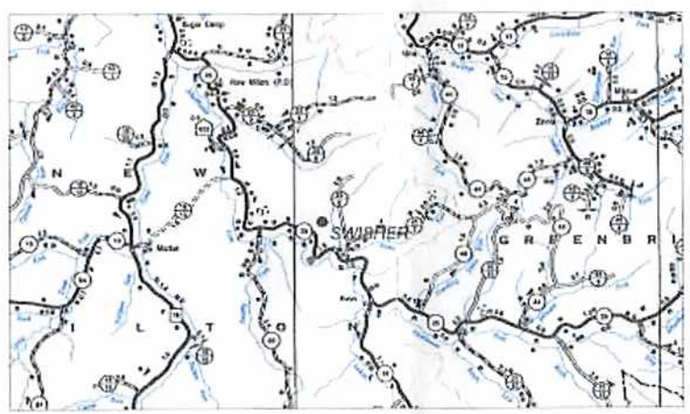
FLOODPLAIN CONDITIONS

DO ANY CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN	NO
PERMIT RECEIVED FROM COUNTY FLOODPLAIN COORDINATOR	NO
HEC-RAS STUDY COMPLETED	N/A
FLOODPLAIN SHOWN ON DRAWINGS	N/A
FIRM MAP NUMBER(S) FOR SITE: 54017C0215C	
DEGREE OF CONSTRUCTION IN FLOODPLAIN	N/A

Electronic Version of Plans Can Be Viewed at: Q\OIL GAS\SAY FILES\REVIEWS

MISS UTILITY OF WEST VIRGINIA
1-800-245-4848
WEST VIRGINIA STATE LAW REQUIRES THAT YOU CALL TWO BUSINESS DAYS BEFORE YOU DIG IN THE STATE OF WEST VIRGINIA. IT'S THE LAW!!

811
Know what's below.
Call before you dig.



SHEET INDEX

COVER PAGE & LOCATION MAP	1
SCHEDULE OF QUANTITIES	2
GENERAL NOTES	3
EXISTING CONDITIONS PLAN	4
OVERALL SITE PLAN	5
EROSION & SEDIMENT CONTROL PLAN	6
FINAL SITE DESIGN	7
DRILL PAD PROFILE & CROSS-SECTIONS	8
PAD ROAD AND TANK FARM ROAD PROFILES	9
PAD ROAD CROSS-SECTIONS	10-11
TANK FARM ROAD CROSS-SECTIONS	12
CONSTRUCTION DETAILS	13-14
RECLAMATION PLAN	15

DESIGN CERTIFICATION
THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERE TO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS §35-4-21.

MM-108 PERMIT
ANTERO RESOURCES WILL OBTAIN AN ENCROACHMENT PERMIT (MM-108) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

DATE	SHEET NO.	TOTAL SHEETS
4/9/2013	1	15

TEAM Surface Consulting, LLC
ENGINEERING AND SURVEYING
1000 CHARLES STREET
CHARLESTON, WV 25312
304-925-6400
www.teamsurface.com

TIMOTHY T. WHITE
REGISTERED
14275
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER

ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP.

FINAL SITE DESIGN, QUANTITIES AND CONSTRUCTION SEQUENCE
SWISHER DRILL PAD SITE
NEW MILTON DISTRICT
DODDRIDGE COUNTY, WV

REVISION