

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

RECEIVED
Office of Oil and Gas

OCT 23 2019

WV Department of
Environmental Protection

API 47 - 017 - 06881 County Doddridge District West Union
Quad Smithburg 7.5' Pad Name Deets Pad Field/Pool Name -----
Farm name Mary E. Deets and/or Paul A. Smith Well Number Telstar Unit 2H
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 4351714m Easting 523689m
Landing Point of Curve Northing 4351722.67m Easting 523675.52m
Bottom Hole Northing 4354518m Easting 522836m

Elevation (ft) 1376' 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 4/18/2019 Date drilling commenced 5/4/2019 Date drilling ceased 8/13/2019
Date completion activities began N/A Date completion activities ceased N/A
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 196, 221 Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1381, 1843, 1966 Void(s) encountered (Y/N) depths No
Coal depth(s) ft 583, 755, 891 Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by: _____

Reviewed
[Signature] 1/2/20

API 47- 017 - 06881 Farm name Mary E. Deets and/or Paul A. Smith Well number Telstar Unit 2H

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"	80'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	370'	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"	7122'	New	23#, P-110	N/A	Y
Tubing		2-3/8"			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	905 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	910 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	sx (Lead) sx (Tail)	(Lead), (Tail)	(Lead), (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16872' MD, 7177' TVD (BHL), 7176' (Deepest Point Drilled) Loggers TD (ft) 16872' MD

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

Plug back procedure N/A

Kick off depth (ft) 6863'

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

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>7279' (TOP)</u> TVD	<u>7064' (TOP)</u> MD
_____	_____	_____
_____	_____	_____

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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 Oil NGL Water GAS MEASURED BY
 N/A mcfpd N/A bpd --- bpd N/A bpd 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 ₂ S, 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 10/17/2019

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Shaly Sandstone	75	135	75	135
Sandy Shale	135	195	135	195
Shaly Sandstone	195	275	195	275
Sandstone	275	315	275	315
Shaly Sandstone	315	455	315	455
Sandstone	455	535	455	535
Carbonaceous shale	535	655	535	655
Sandstone	655	875	655	875
Shaly sandstone tr coal	875	1,055	875	1,055
Shaly Siltstone	1,055	1,255	1,055	1,255
Sandstone	1,255	1,455	1,255	1,455
Sandy siltstone	1,455	1,535	1,455	1,535
Sandstone	1,535	-25	1,535	N/A
Big Lime	0	0	0	N/A
Fifty Foot Sandstone	0	0	0	N/A
Gordon	0	0	0	N/A
Fifth Sandstone	0	0	0	N/A
Bayard	0	0	0	N/A
Speechley	0	0	0	N/A
Balltown	0	0	0	N/A
Bradford	0	0	0	N/A
Benson	0	0	0	N/A
Alexander	0	6,907	0	6,847
Sycamore	6,632	6,877	6,600	6,817
Middlesex	6,877	7,081	6,822	6,965
Burkett	7,081	7,131	6,970	6,995
Tully	7,131	7,279	7,000	7,064
Marcellus	7,279	NA	7,064	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.

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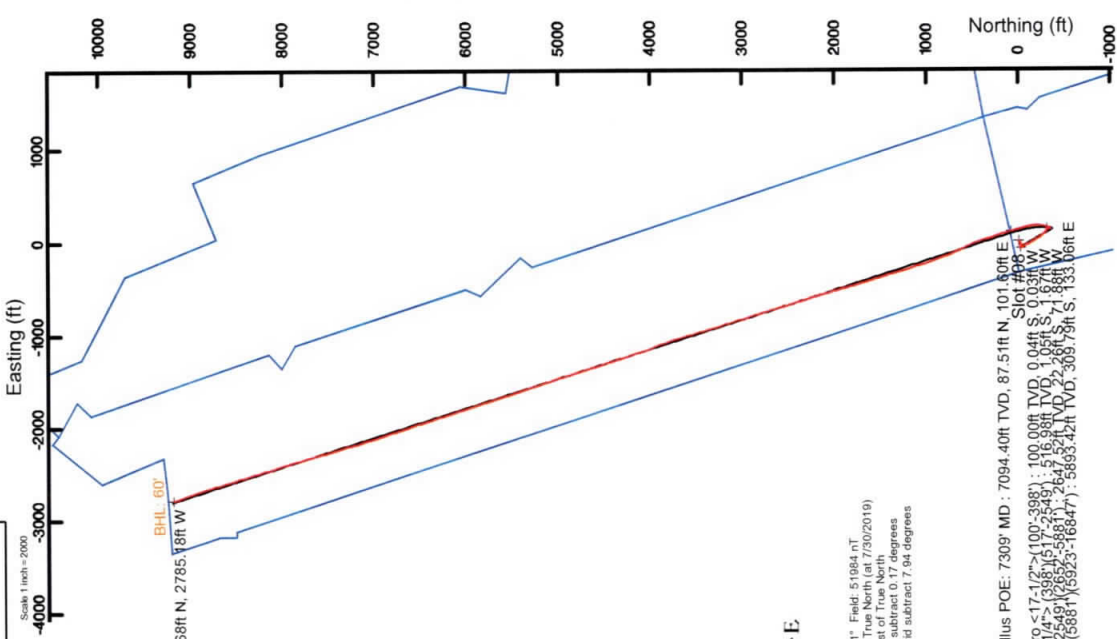
WV Department of
Environmental Protection



ANTERO RESOURCES CORPORATION

Location: Doddridge Co., WV
 Field: Doddridge
 Facility: Deets Pad
 Slot: Slot #08
 Well: Telstar Unit 2H
 Wellbore: Telstar Unit 2H PWB

API: 47-017-06881-0000
 BHI Job #: 109894768A
 Rig: H&P 317
 Duration: 07/07/2019-08/06/2019



Projected MD at TD: 16872' : 7176.93ft TVD, 9192.68ft N, 2785.18ft W

Grid System: NAD27 UTM Zone 17 North, US feet	
North Reference	Grid north
Scale	True distance
Measured depths are referenced to	H&P 317 (RKB)
Mean Sea Level to Mean Sea Level	1401.5 feet
Mean Sea Level to Ground level (At Slot: Slot #08)	-1376 feet
Coordinates are in feet referenced to Slot	
Database	WA_MPL_Enterprise_Drill

Gyrodata MS Gyro <17-1/2">(100-398) : 0.08° Inc, 100.00ft MD, 100.00ft TVD, -0.03ft VS

APS EM <12-1/4">(388)(517-2549) : 1.76° Inc, 517.00ft MD, 516.98ft TVD, -0.50ft VS

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Deets Pad	1718089.640	14270581.900	80°43'31.400"W
Slot	Local E (ft)	Local N (US ft)	Longitude
Slot #08	-29.31	1718089.210	80°43'31.377"W
H&P 317 (RKB) to Ground level (At Slot: Slot #08)	0.57	14276532.600	25.5ft
Mean Sea Level to Mean Sea Level (At Slot: Slot #08)			-1376ft
H&P 317 (RKB) to Mean Sea Level			1401.5ft

APS EM <8-3/4">(2549)(2652-5881) : 1.08° Inc, 2652.00ft MD, 2647.52ft TVD, 0.40ft VS

Well Profile Data						
Design Comment	MD (ft)	Az (°)	Inc (°)	TVD (ft)	Local N (ft)	Local E (ft)
Tie On	2549.00	0.980	329.430	2544.54	-23.67	-1.74
Proj. To Bottom	2615.00	0.980	329.430	2610.53	-22.70	-1.30
Drill Out Csg	2715.00	0.980	329.430	2710.51	-21.23	-0.20
Hold Vertical	2764.00	0.000	150.101	2759.51	-20.86	1.47
KOP 1	3287.80	0.000	150.101	3283.11	-20.86	1.88
Hold Tangent	3687.80	8.000	150.101	3681.81	-45.03	-58.47
Curve KOP	6292.24	8.000	150.101	6281.10	-350.28	122.22
Avoid No-Go	6922.66	30.000	0.000	6771.40	-255.00	141.29
POE	7360.20	71.128	342.487	7107.00	140.67	60.95
Landing Pt.	7629.80	90.000	342.487	7151.00	393.15	-18.72
BHL	10886.74	90.000	342.487	7151.00	9201.95	-2798.32
						0.00
						9617.50

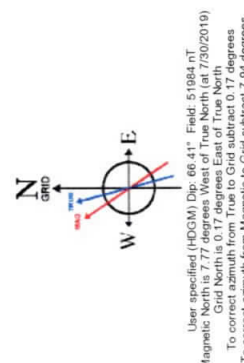
Well Data		
Slot	Well	Wellbore
Slot #08	Telstar Unit 2H	Telstar Unit 2H-AWB
Slot #09	Telstar Unit 2H	Telstar Unit 2H-PWB

BH AT Curve <8-1/2">(5881)(5923-16847) : 6.89° Inc, 5923.00ft MD, 5893.42ft TVD, -335.47ft VS

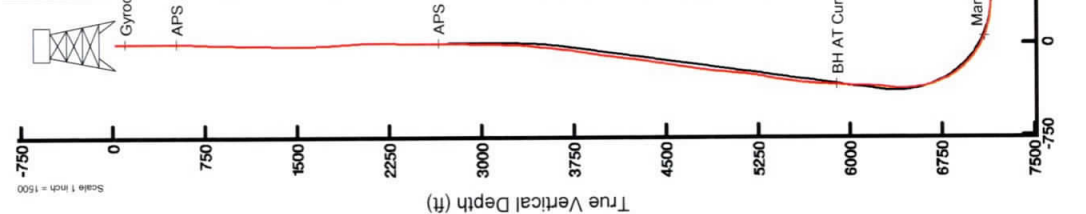
Marcellus POE: 7309° MD : 68.64° Inc, 7309.00ft MD, 7094.40ft TVD, 52.88ft VS

Projected MD at TD: 16872' : 89.05° Inc, 16872.00ft MD, 7176.93ft TVD, 9604.71ft VS

Azimuth 342.49° with reference 0.00 N, 0.00 E



Marcellus POE: 7309° MD : 7094.40ft TVD, 87.51ft N, 101.80ft E
 Slot #08
 Gyrodata MS Gyro <17-1/2">(100-398) : 100.00ft TVD, 0.04ft S, 0.03ft W
 APS EM <12-1/4">(388)(517-2549) : 516.98ft TVD, 1.76ft N, 2785.18ft W
 BH AT Curve <8-1/2">(5881)(5923-16847) : 5893.42ft TVD, 309.79ft S, 133.06ft E



Scale 1 inch = 2000

Scale 1 inch = 1500



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

October 17, 2019

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

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WV Department of
Environmental Protection

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:

- Telstar Unit 2H (API # 47-017-06881)—Deets Pad

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

Sincerely,

A handwritten signature in black ink, appearing to read "M. Griffith", written over a white background.

Megan Griffith
Permitting Agent
Antero Resources Corporation

Enclosures

LATITUDE 39°20'00"

4,824'

7,579' TO BOTTOM HOLE
LATITUDE 39°22'30"

LONGITUDE 80°42'30"

6,891'

TO BOTTOM HOLE

LONGITUDE 80°42'30"

LONGITUDE 80°42'30"

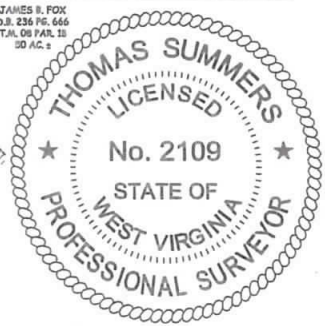
Antero Resources Corporation
Well No. Telstar Unit 2H

WELL NO. 2H
BOTTOM HOLE

AS DRILLED DATA:
WELL 2H TOP HOLE INFORMATION:
N: 298,991ft E: 1,653,302ft
LAT: 39°18'51.90" LON: 80°43'31.38"
BOTTOM HOLE INFORMATION:
N: 308,229ft E: 1,650,670ft
LAT: 39°20'22.84" LON: 80°44'06.47"
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: 4,351,714m E: 523,689m
BOTTOM HOLE INFORMATION:
N: 4,354,515m E: 522,840m

- NOTE**
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
 2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
 5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



WV NORTH ZONE
GRID NORTH

ROBERT A. DEIGHT ET AL.
D.B. 249 PG. 249
T.M. 08 PAR. 22
40.9 AC. ±

JINMAR E. SANCHEZ ET AL.
D.B. 262 PG. 490
T.M. 05 PAR. 08
70.56 AC. ±

C. HOWARD KNIGHT ET AL.
LEASE

SAMUEL HAMMETT ET AL.
D.B. 263 PG. 99
T.M. 08 PAR. 02.1
379.58 AC. ±

GEORGE BENTON WHITE LEASE

TONY L. MULLINIX ET AL.
D.B. 258 PG. 179
T.M. 05 PAR. 08.1
9.44 AC. ±

CLEN L. MURPHY ET AL.
D.B. 204 PG. 474
T.M. 05 PAR. 09
18.2 AC. ±

RANOMA L. MURPHY ET AL.
W.B. 30 PG. 317
T.M. 05 PAR. 14
35.61 AC. ±

EDGAR DAVISSON ET AL.
D.B. 272 PG. 425
T.M. 05 PAR. 13
27.33 AC. ±

JERRY A. CHOO ET AL.
D.B. 256 PG. 354
T.M. 05 PAR. 13
27.33 AC. ±

MICHAEL J. KOZAREWICH ET AL.
D.B. 272 PG. 425
T.M. 05 PAR. 13
27.33 AC. ±

PAHOLA A. HESSENGROTHAM
W.B. 41 PG. 67
T.M. 08 PAR. 05
142.44 AC. ±

DOMINION EXPLORATION AND PRODUCTION LEASE

JOHN MCKINNEY ET AL. LEASE

GREATHOUSE FAMILY TRUST
D.B. 270 PG. 397
T.M. 08 PAR. 10
41.73 AC. ±

EDWARD J. CUTRIGHT
U.S. 10 PG. 217
T.M. 08 PAR. 14
20 AC. ±

JAMES B. FOX ET AL.
D.B. 177 PG. 33
T.M. 05 PAR. 19
36.1 AC. ±

EDWARD J. CUTRIGHT
U.S. 10 PG. 217
T.M. 08 PAR. 14
20 AC. ±

JAMES B. FOX ET AL.
D.B. 236 PG. 666
T.M. 08 PAR. 13
50 AC. ±

JAMES B. FOX ET AL.
D.B. 236 PG. 666
T.M. 12 PAR. 01
28 AC. ±

JAMES B. FOX ET AL.
D.B. 236 PG. 666
T.M. 12 PAR. 02
29.73 AC. ±

DORIS L. CLEVELAND LEASE

JAMES B. FOX ET AL.
D.B. 236 PG. 666
T.M. 12 PAR. 01
28 AC. ±

JAMES B. FOX ET AL.
D.B. 236 PG. 666
T.M. 12 PAR. 02
29.73 AC. ±

P.B. McCLAIN ET AL. LEASE

GARY L. STEPHENS
W.B. 34 PG. 505
T.M. 08 PAR. 23.1
100.41 AC. ±

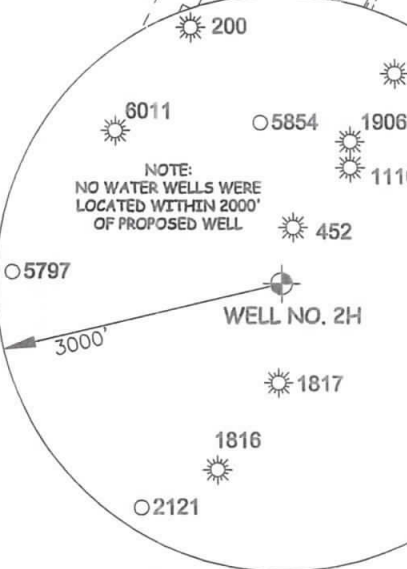
T.C. BAKER ET AL. LEASE

MARY E. DEETS
D.B. 235 PG. 103
T.M. 08 PAR. 38
33.29 AC. ±

JOHNSON B. SMITH ET AL. LEASE

PAULA A. SMITH
D.B. 235 PG. 417
T.M. 08 PAR. 36
175.78 AC. ±

FANNIE A. COULERN LEASE



NOTE:
NO WATER WELLS WERE
LOCATED WITHIN 2000'
OF PROPOSED WELL

LEGEND

- Surface Owner Boundary Lines +/-
- - - Interior Surface Tracts +/-
- Proposed Well Path
- ⊗ As Drilled Well Path

THOMAS SUMMERS P.S. 2109

DATE 10/10/19

OPERATOR'S WELL# TELSTAR UNIT #2H

API WELL # 47 - 017 - 06881

STATE COUNTY PERMIT

JOB # 17-026WA

DRAWING # TELSTAR2HAD

SCALE 1" = 1000'

MINIMUM DEGREE OF ACCURACY SUBMETER

PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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

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

LOCATION: ELEVATION 1,376' -AS BUILT WATERSHED HEADWATERS MIDDLE ISLAND CREEK QUADRANGLE SMITHBURG 7.5' DISTRICT WEST UNION COUNTY DODDRIDGE

SURFACE OWNER MARY E. DEETS AND/OR PAULA A. SMITH ACREAGE 53.29 ACRES +/- AND/OR 175.78 ACRES +/-

OIL & GAS ROYALTY OWNER T.G. BAKER ET AL.; JOHNSON B. SMITH ET AL.; P.B. McCLAIN ET AL.; LEASE ACREAGE 54 ACRES±; 180 ACRES±; 200 ACRES±; JOHNSON WILLIAMS; EDGAR DAVISSON ET AL.; JOHN MCKINNEY ET AL.; GEORGE BENTON WHITE; C. HOWARD KNIGHT ET AL. 105.5 ACRES±; 230 ACRES±; 73 ACRES±; 75 ACRES±; 54 ACRES±

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

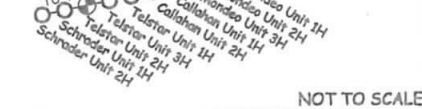
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,177' TVD 16,872' MD

WELL OPERATOR ANTERO RESOURCES CORP. ADDRESS 1615 WYNKOOP STREET DENVER, CO 80202

DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313



GRID NORTH



NOT TO SCALE



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC
220 MASONIC AVE. PENNSBORO
WEST VIRGINIA 26415

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.