

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

API 47-033-05701 County Harrison District Tenmile
Quad Salem Pad Name Hubert Pad Field/Pool Name _____
Farm name Bland, Hubert Jr. and Lorena Well Number Norris 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 4,345,003.901m Easting 537,945.051m
Landing Point of Curve Northing 4,344,722.91m Easting 538,090.08m
Bottom Hole Northing 4,343,193.631m Easting 539,824.814m

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 12/27/2012 Date drilling commenced 5/12/2013 Date drilling ceased 8/19/2013
Date completion activities began 10/2/2013 Date completion activities ceased 1/17/2014
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 367' Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1760' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

APR 27 2015
Reviewed by:
AL 5/26/15
Office of Oil and Gas
WV Dept. of Environmental Protection
W.S. 06/12/2015

API 47-033 - 05701 Farm name Bland, Hubert Jr. and Lorena Well number Norris 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	30"	20"	40'	New	94#/H-40	N/A	Y
Surface	17-1/2"	13-3/8"	457'	New	48#/H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2578'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15,752'	New	20#/P-110	N/A	Y
Tubing		2-3/8"	7493'	New	4.7#/N-80	N/A	N/A
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	200 sx	15.6	1.18	236 Cu. Ft.	0'	8 hrs
Surface	Class A	532 sx	15.6	1.18	628 Cu. Ft.	0'	8 hrs
Coal							
Intermediate 1	Class A	939 sx	15.6	1.18	1108 Cu. Ft.	0'	8 hrs
Intermediate 2							
Intermediate 3							
Production	Class H	1089 sx (Lead), 1460 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.80 (Tail)	3917 Cu. Ft.	~500' into Intermediate Casing	8 hrs
Tubing							

Drillers TD (ft) 15,765' MD, 7428' TVD (BHL), 7475' TVD (Deepest Point Drilled) Loggers TD (ft) 15,718' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6979'

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

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Nellie Unit 2H API# 47-033-05687). Please reference the wireline logs submitted with Form WR-35 for the Nellie Unit 2H. A Cement Bond Log has been included with this submittal.

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 Radioactive and Chemical

Received

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Office of Oil and Gas
West Virginia Dept. of Environmental Protection

06/12/2015

API 47-033-05701 Farm Name Bland, Hubert Jr. & Lorena Well Number Norris Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2-Oct-13	15521'	15692'	60	Marcellus
2	29-Oct-13	15318'	15489'	60	Marcellus
3	29-Oct-13	15115'	15286'	60	Marcellus
4	3-Dec-13	14912'	15083'	60	Marcellus
5	3-Dec-13	14710'	14881'	60	Marcellus
6	4-Dec-13	14507'	14678'	60	Marcellus
7	4-Dec-13	14304'	14475'	60	Marcellus
8	5-Oct-13	14101'	14272'	60	Marcellus
9	5-Dec-13	13899'	14070'	60	Marcellus
10	5-Dec-13	13696'	13867'	60	Marcellus
11	5-Dec-13	13493'	13664'	60	Marcellus
12	5-Dec-13	13291'	13461'	60	Marcellus
13	6-Dec-13	13088'	13,259	60	Marcellus
14	6-Dec-13	12885'	13056'	60	Marcellus
15	7-Dec-13	12682'	12853'	60	Marcellus
16	7-Dec-13	12480'	12650'	60	Marcellus
17	8-Dec-13	12277'	12448'	60	Marcellus
18	8-Dec-13	12074'	12245'	60	Marcellus
19	8-Dec-13	11871'	12042'	60	Marcellus
20	9-Dec-13	11669'	11840'	60	Marcellus
21	9-Dec-13	11466'	11637'	60	Marcellus
22	9-Dec-13	11263'	11434'	60	Marcellus
23	10-Dec-13	11060'	11,231	60	Marcellus
24	10-Dec-13	10858'	11029'	60	Marcellus
25	11-Dec-13	10655'	10826'	60	Marcellus
26	11-Dec-13	10452'	10623'	60	Marcellus
27	11-Dec-13	10249'	10420'	60	Marcellus
28	11-Dec-13	10047'	10218'	60	Marcellus
29	12-Dec-13	9844'	10015'	60	Marcellus
30	12-Dec-13	9641'	9812'	60	Marcellus
31	12-Dec-13	9438'	9609'	60	Marcellus
32	13-Dec-13	9236'	9407'	60	Marcellus
33	13-Dec-13	9033'	9204'	60	Marcellus
34	13-Dec-13	8830'	9001'	60	Marcellus
35	13-Dec-13	8627'	8798'	60	Marcellus
36	13-Dec-13	8425'	8596'	60	Marcellus
37	14-Dec-13	8222'	8393'	60	Marcellus
38	14-Dec-13	8019'	8190'	60	Marcellus
39	14-Dec-13	7817'	7987'	60	Marcellus

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API 47-033-05701 Farm Name Bland, Hubert Jr. and Lorena Well Number Norris Unit 2H

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	28-Oct-13	73.1	7,469	6,712	4,420	129,000	6,613	N/A
2	29-Oct-13	68.5	8,126	6,261	3,926	86,700	6,510	N/A
3	29-Oct-13	46.9	8,223	6,094	9,358	47,500	3,483	N/A
4	3-Dec-13	69.4	7,903	6,369	4,332	231,400	6,356	N/A
5	3-Dec-13	68.0	7,493	5,127	4,494	150,600	6,587	N/A
6	4-Dec-13	66.2	7,619	6,520	4,555	236,800	6,709	N/A
7	4-Dec-13	67.6	7,615	5,917	4,397	190,700	5,996	N/A
8	5-Dec-13	67.0	7,683	6,110	4,640	186,100	6,646	N/A
9	5-Dec-13	65.3	7,624	6,013	4,253	231,500	6,244	N/A
10	5-Dec-13	64.0	8,398	6,456	4,203	122,400	6,471	N/A
11	5-Dec-13	69.8	7,547	6,290	4,578	234,500	6,154	N/A
12	5-Dec-13	65.6	7,563	6,094	4,465	183,400	6,540	N/A
13	6-Dec-13	51.6	8,213	6,863	4,612	29,000	6,559	N/A
14	6-Dec-13	73.1	7,750	6,303	4,652	233,600	6,097	N/A
15	7-Dec-13	67.3	7,470	6,636	4,736	231,100	5,990	N/A
16	7-Dec-13	70.3	7,405	5,532	4,590	230,800	6,113	N/A
17	8-Dec-13	74.8	7,547	5,642	5,124	231,100	6,050	N/A
18	8-Dec-13	71.5	7,616	5,676	4,873	230,200	6,169	N/A
19	8-Dec-13	65.8	7,814	5,164	5,171	137,300	6,521	N/A
20	9-Dec-13	60.1	7,937	6,487	4,106	107,100	6,531	N/A
21	9-Dec-13	70.5	7,269	6,082	4,608	230,600	5,998	N/A
22	9-Dec-13	70.7	7,504	5,508	4,328	235,000	6,448	N/A
23	10-Dec-13	74.9	7,495	5,946	4,692	233,800	5,921	N/A
24	10-Dec-13	72.3	7,300	5,105	4,746	233,300	6,053	N/A
25	11-Dec-13	71.6	7,493	5,726	5,104	230,800	5,881	N/A
26	11-Dec-13	71.7	7,616	5,823	4,939	235,900	5,879	N/A
27	11-Dec-13	68.8	7,411	6,049	4,365	196,800	6,319	N/A
28	11-Dec-13	72.4	7,716	6,105	4,519	197,600	6,355	N/A
29	12-Dec-13	72.9	7,318	5,794	4,972	233,900	5,845	N/A
30	12-Dec-13	75.2	7,690	6,191	4,873	231,700	5,807	N/A
31	12-Dec-13	68.2	7,268	6,119	4,930	233,000	5,825	N/A
32	13-Dec-13	69.9	7,377	6,029	4,691	232,900	5,801	N/A
33	13-Dec-13	73.5	7,529	5,972	4,635	230,800	5,798	N/A
34	13-Dec-13	67.8	7,782	6,013	5,005	231,200	5,636	N/A
35	13-Dec-13	72.7	7,341	5,454	4,416	234,500	5,760	N/A
36	13-Dec-13	77.4	7,284	5,855	4,877	231,800	5,741	N/A
37	14-Dec-13	64.3	7,335	5,708	4,487	112,800	6,107	N/A
38	14-Dec-13	67.7	7,523	5,698	4,641	222,700	6,211	N/A
39	14-Dec-13	73.8	7,434	5,356	4,212	233,000	5,770	N/A
AVG =		68.8	7,608	5,969	4,731	7,682,900	237,494	=TOTAL

Received

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API 47-033-05701 Farm Name Hubert Jr. & Lorena Bland Well Number Norris Unit 2H

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Freshwater	367	NA	NA	NA
Siltstone	0	97	0	97
Sandy Shale	est. 97	317	est. 97	317
Sandstone	est. 317	507	est. 317	507
Silty Sandstone	est. 507	657	est. 507	657
Sandstone	est. 657	1,027	est. 657	1,027
Limestone/Dolomite	est. 1027	1,117	est. 1027	1,117
Siltstone	est. 1117	1,297	est. 1117	1,297
Sandstone	est. 1297	1,327	est. 1297	1,327
Limey Siltstone	est. 1327	1,477	est. 1327	1,477
Sandstone	est. 1477	1,597	est. 1477	1,597
Sandy Siltstone	est. 1597	1,737	est. 1597	1,737
Coal	est. 1737	1,757	est. 1737	1,757
Sandstone	est. 1757	1,797	est. 1757	1,797
Siltstone	est. 1797	1,817	est. 1797	1,817
Sandstone	est. 1817	2,097	est. 1817	2,097
Limey Shale	est. 2097	2,278	est. 2097	2,278
Big Lime	2,278	2,407	2,278	2,407
Big Injun	2,407	2,759	2,407	2,759
Gantz Sand	2,759	2,847	2,759	2,847
Fifty Foot Sandstone	2,847	2,960	2,847	2,960
Gordon	2,960	3,290	2,960	3,290
Fifth Sandstone	3,290	3,322	3,290	3,322
Bayard	3,322	3,665	3,322	3,667
Warren	3,665	3,893	3,667	3,894
Speechley	3,893	4,410	3,894	4,411
Baltown	4,410	4,737	4,411	4,739
Bradford	4,737	5,258	4,739	5,263
Benson	5,258	5,535	5,263	5,539
Alexander	5,535	7,563	5,539	5,768
Elk	7,563	6,368	5,768	6,373
Rhinestreet	6,368	6,880	6,373	6,885
Sycamore	6,880	7,102	6,885	7,115
Middlesex	7,102	7,253	7,115	7,314
Burkett	7,253	7,279	7,314	7,360
Tully	7,279	7,430	7,360	7,774
Marcellus	7,430	NA	7,774	NA

*Please note Antero determines formation tops based on mud and wireline logs that are only run on one well on a multi-well pad (Please reference Ruth Unit 2H API# 47-033-05698). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

Received

APR 27 2015

Office of Oil and Gas
WV Dept. of Environmental Protection

06/12/2015

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/28/2013
Job End Date:	12/14/2013
State:	West Virginia
County:	Harrison
API Number:	47-033-05701-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Norris Unit 2H
Longitude:	-80.56040280
Latitude:	39.25344170
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,600
Total Base Water Volume (gal):	9,974,748
Total Base Non Water Volume:	0



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Office of Oil and Gas
Environmental Protection

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	Water	Water	7732-18-5	100.00000	90.93770	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia	Crystalline Silica, quartz	14808-60-7	99.90000	5.15741	
			Aluminum Oxide	1344-28-1	1.10000	0.05679	
			Iron Oxide	1309-37-1	0.10000	0.00516	
			Titanium Oxide	13463-67-7	0.10000	0.00516	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia	Crystalline Silica, quartz	14808-60-7	99.90000	2.89338	
			Aluminum Oxide	1344-28-1	1.10000	0.03186	
			Titanium Oxide	13463-67-7	0.10000	0.00290	
			Iron Oxide	1309-37-1	0.10000	0.00290	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia	Crystalline Silica, quartz	14808-60-7	99.90000	0.63492	
			Aluminum Oxide	1344-28-1	1.10000	0.00699	

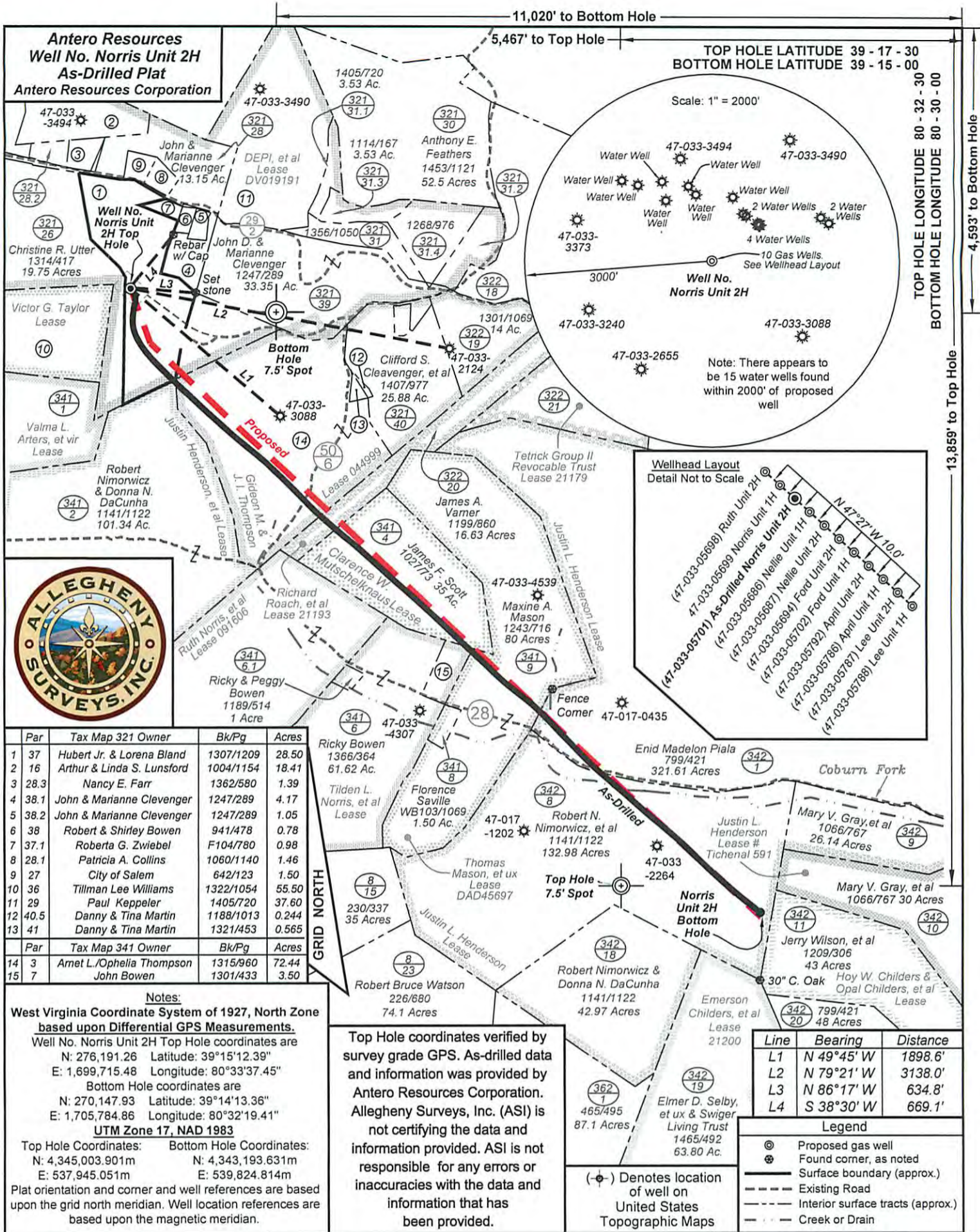
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WV Department of Environmental Protection

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			Iron Oxide	1309-37-1		0.10000	0.00064
			Titanium Oxide	13463-67-7		0.10000	0.00064
HCl Acid (12.5%-18.0%)	Nabors Completion and Production Services	Bulk Acid					
LSG-100L	Nabors Completion and Production Services	Gelling Agents	Hydrogen Chloride	7647-01-0	18.00000		0.03963
WFR-3B	Nabors Completion and Production Services	Friction Reducer	Petroleum Distillates	64742-47-8	70.00000		0.03342
			Hydrotreated light distillates, non-aromatic, BTEX free Ethoxylated alcohols	64742-47-8	30.00000		0.01802
			Ethoxylated oleylamine	68002-97-1	15.00000		0.00901
KR-153SL	Nabors Completion and Production Services	Biocides		26635-93-8	5.00000		0.00300
			Polyethylene-Glycol	25322-68-3	50.00000		0.00634
			2,2-dibromo-3-nitropropionamide	10222-01-2	20.00000		0.00253
OB-2 LT	Nabors Completion and Production Services	Gel Breakers					
			Ammonium Persulfate	7727-54-0	85.00000		0.00590
			Crystalline Silica (in the form of quartz)	14808-60-7	10.00000		0.00070
Super GREEN SOLV	Nabors Completion and Production Services	Paraffin & Scale Additives					
			BTEX Free Aliphatic Hydrocarbon	64742-96-7	100.00000		0.00420
Acid Inhibitor 2 (AI-2)	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Isopropyl Alcohol	67-63-0	40.00000		0.00017
			Propargyl Alcohol	107-19-7	40.00000		0.00017
			Glycol Ethers	111-46-6	40.00000		0.00017
			Ethoxylated Nonylphenol	88412-54-4	13.00000		0.00005
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000		0.00004
EB-4L	Nabors Completion and Production Services	Gel Breakers					
			Ethylene Glycol	107-21-1	40.00000		0.00018
Ingredients shown above are subject to 29 CFR 1910.1200(j) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Other Ingredients	Nabors Completion and Production Services	Other Ingredients					
			Water	7732-18-5	87.50000		0.19265
			Antonic Polyacrylamide	910644-97-2	40.00000		0.02403



Par	Tax Map	321 Owner	Bk/Pg	Acres
1	37	Hubert Jr. & Lorena Bland	1307/1209	28.50
2	16	Arthur & Linda S. Lunsford	1004/1154	18.41
3	28.3	Nancy E. Farr	1362/580	1.39
4	38.1	John & Marianne Clevenger	1247/289	4.17
5	38.2	John & Marianne Clevenger	1247/289	1.05
6	38	Robert & Shirley Bowen	941/478	0.78
7	37.1	Roberta G. Zwiebel	F104/780	0.98
8	28.1	Patricia A. Collins	1060/1140	1.46
9	27	City of Salem	642/123	1.50
10	36	Tillman Lee Williams	1322/1054	55.50
11	29	Paul Keppeler	1405/720	37.60
12	40.5	Danny & Tina Martin	1188/1013	0.244
13	41	Danny & Tina Martin	1321/453	0.565
14	3	Amet L./Ophelia Thompson	1315/960	72.44
15	7	John Bowen	1301/433	3.50

Par	Tax Map	341 Owner	Bk/Pg	Acres
14	3	Amet L./Ophelia Thompson	1315/960	72.44
15	7	John Bowen	1301/433	3.50

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Norris Unit 2H Top Hole coordinates are
 N: 276,191.26 Latitude: 39°15'12.39"
 E: 1,699,715.48 Longitude: 80°33'37.45"
 Bottom Hole coordinates are
 N: 270,147.93 Latitude: 39°14'13.36"
 E: 1,705,784.86 Longitude: 80°32'19.41"
UTM Zone 17, NAD 1983
 Top Hole Coordinates: Bottom Hole Coordinates:
 N: 4,345,003.901m N: 4,343,193.631m
 E: 537,945.051m E: 539,824.814m
 Plat orientation and corner and well references are based upon the grid north meridian. Well location references are based upon the magnetic meridian.

Top Hole coordinates verified by survey grade GPS. As-drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys, Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

Line	Bearing	Distance
L1	N 49°45' W	1898.6'
L2	N 79°21' W	3138.0'
L3	N 86°17' W	634.8'
L4	S 38°30' W	669.1'

- Legend**
- ☉ Proposed gas well
 - ⊙ Found corner, as noted
 - Surface boundary (approx.)
 - - - Existing Road
 - - - Interior surface tracts (approx.)
 - - - Creek or Drain

FILE NO: 254-36-TM-12
 DRAWING NO: Norris 2H As-Drilled Plat
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

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

DATE: April 14 2015
 OPERATOR'S WELL NO. Norris Unit 2H
 API WELL NO:
 47 - 033 - 05701
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 Original Grade - 1400'
 LOCATION: ELEVATION: Existing Grade - 1376' WATERSHED: Tenmile Creek QUADRANGLE: Salem & Big Isaac
 DISTRICT: Tenmile COUNTY: Harrison
 SURFACE OWNER: Hubert Jr. & Lorena Bland Richard Roach, et al; Justin Henderson, et al; Justin L. Henderson ACREAGE: 28.50 1026.936;
 Clarence W. Mutschelknaus; Thomas Mason, et ux DV019191; 21193; 1012; 66.12;
 ROYALTY OWNER: DEPI, et al; Gideon M. & J. I. Thompson; Tiden L. Norris, et al LEASE NO: DAD45697; 044999 ACREAGE: 283; 144; 17.50
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled TVD 7,428'
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale DEPTH: MD 15,765'

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

06/12/2015