

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

API 47-085-10198 County Ritchie District Clay
Quad Pullman 7.5' Pad Name Mackay Pad Field/Pool Name ---
Farm name Jack D. Mackay et al Well Number McNabb 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 4343239m Easting 508896m
Landing Point of Curve Northing 4343125.46m Easting 509431.75m
Bottom Hole Northing 4339902m Easting 510823m

Elevation (ft) 1100' 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 2/26/2015 Date drilling commenced 6/21/2015 Date drilling ceased 9/7/2015
Date completion activities began 1/31/2016 Date completion activities ceased 9/18/2016
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 granted.

Freshwater depth(s) ft 434' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1966' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 301' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

APPROVED
NAME: Michael Doff
DATE: 5/10/2017

Reviewed by:
AX RBDMS
05/29/2017

RECEIVED
Office of Oil and Gas
MAR 28 2017
WV Department of
Environmental Protection

API 47-085 - 10198 Farm name Jack D. Mackay et al Well number McNabb 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"	40'	New	94#, J-55	N/A	Y
Surface	17- 1/2"	13- 3/8"	565'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2482'	New	36#, K-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	16921'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6920'		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	32 sx	15.6	1.18	38	0	8 Hrs.
Surface	Class A	673 sx	15.6	1.18	392	0	8 Hrs.
Coal							
Intermediate 1	Class A	956 sx	15.6	1.18	777	0	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	933 sx (Lead) 1604 sx (Tail)	13.5 (Lead) 15.2 (Tail)	1.44 (Lead) 1.81 (Tail)	3423	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 19171' MD, 6593' TVD (BHL); 6611' TVD (Deepest point drilled) Loggers TD (ft) 19121' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6362'

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 _____

API 47- 085 - 10198

Farm name Jack D. Mackay et al

Well number McNabb 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**

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)

*** PLEASE SEE ATTACHED EXHIBIT 2**

Please insert additional pages as applicable.

API 47- 085 - 10198 Farm name Jack D. Mackay et al Well number McNabb Unit 3H

PRODUCING FORMATION(S)

DEPTHS

PRODUCING FORMATION(S)	DEPTHS	DEPTH	DEPTH	DEPTH	DEPTH
		TOP	TVD	TOP	MD
Marcellus	6548' (Top)			7014' (Top)	

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 12233 mcfpd Oil 181 bpd NGL --- bpd Water 546 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 ₂ S, ETC)
	0		0		

*** PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company, LP
Address 2640 Reach Road City Williamsport State PA Zip 17701

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

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

Stimulating Company US Well Services
Address 533 Industrial Park Drive City Jane Lew State 26378 Zip ---

Please insert additional pages as applicable.

Completed by Shelby Johnson Telephone (303) 357-7223
Signature _____ Title Permitting Agent Date 3/24/2017

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

05/26/2017

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	1/31/2016	16710	16837	60	Marcellus
2	3/23/2016	16560	16687	60	Marcellus
3	3/23/2016	16410	16537	60	Marcellus
4	3/23/2016	16259	16387	60	Marcellus
5	3/24/2016	16109	16236	60	Marcellus
6	3/24/2016	15959	16086	60	Marcellus
7	3/24/2016	15809	15936	60	Marcellus
8	3/25/2016	15659	15786	60	Marcellus
9	3/25/2016	15509	15636	60	Marcellus
10	3/25/2016	15359	15486	60	Marcellus
11	3/25/2016	15208	15336	60	Marcellus
12	3/27/2016	15058	15185	60	Marcellus
13	3/27/2016	14908	15035	60	Marcellus
14	3/27/2016	14758	14885	60	Marcellus
15	3/27/2016	14608	14735	60	Marcellus
16	3/28/2016	14458	14585	60	Marcellus
17	3/28/2016	14307	14435	60	Marcellus
18	3/28/2016	14157	14284	60	Marcellus
19	3/28/2016	14007	14134	60	Marcellus
20	3/29/2016	13857	13984	60	Marcellus
21	3/29/2016	13707	13834	60	Marcellus
22	3/29/2016	13557	13684	60	Marcellus
23	3/29/2016	13407	13534	60	Marcellus
24	3/30/2016	13256	13384	60	Marcellus
25	3/30/2016	13106	13233	60	Marcellus
26	3/30/2016	12956	13083	60	Marcellus
27	3/30/2016	12806	12933	60	Marcellus
28	3/30/2016	12656	12783	60	Marcellus
29	3/31/2016	12506	12633	60	Marcellus
30	3/31/2016	12356	12483	60	Marcellus
31	3/31/2016	12205	12333	60	Marcellus
32	3/31/2016	12055	12182	60	Marcellus
33	4/1/2016	11905	12032	60	Marcellus
34	4/1/2016	11755	11882	60	Marcellus
35	4/1/2016	11605	11732	60	Marcellus
36	4/1/2016	11455	11582	60	Marcellus
37	4/1/2016	11304	11432	60	Marcellus
38	4/2/2016	11154	11281	60	Marcellus
39	4/2/2016	11004	11131	60	Marcellus
40	4/2/2016	10854	10981	60	Marcellus
41	4/2/2016	10704	10831	60	Marcellus
42	4/3/2016	10554	10681	60	Marcellus
43	4/3/2016	10404	10531	60	Marcellus
44	4/3/2016	10253	10381	60	Marcellus
45	4/3/2016	10103	10230	60	Marcellus
46	4/3/2016	9953	10080	60	Marcellus
47	4/3/2016	9803	9930	60	Marcellus
48	4/4/2016	9653	9780	60	Marcellus
49	4/4/2016	9503	9630	60	Marcellus
50	4/4/2016	9353	9480	60	Marcellus
51	4/4/2016	9202	9330	60	Marcellus
52	4/4/2016	9052	9179	60	Marcellus
53	4/5/2016	8902	9029	60	Marcellus
54	4/5/2016	8752	8879	60	Marcellus
55	4/5/2016	8602	8729	60	Marcellus
56	4/5/2016	8452	8579	60	Marcellus
57	4/5/2016	8301	8429	60	Marcellus
58	4/6/2016	8151	8278	60	Marcellus
59	4/6/2016	8001	8128	60	Marcellus
60	4/6/2016	7851	7978	60	Marcellus
61	4/6/2016	7701	7828	60	Marcellus
62	4/6/2016	7551	7678	60	Marcellus
63	4/7/2016	7401	7528	60	Marcellus
64	4/7/2016	7250	7378	60	Marcellus
65	4/7/2016	7100	7227	60	Marcellus
66	4/7/2016	6950	7077	60	Marcellus

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	3/22/2016	66	7084	0	4531	211580	7130	N/A
2	3/23/2016	38.7	8730	6691	4812	12900	7101	N/A
3	3/23/2016	65.4	7480	7541	3420	231900	6559	N/A
4	3/23/2016	66	7340	6143	4135	231830	6640	N/A
5	3/24/2016	66.1	7385	6144	3602	232370	6778	N/A
6	3/24/2016	64.5	6938	5897	4787	234510	6532	N/A
7	3/24/2016	65.1	7414	5930	4132	235800	6424	N/A
8	3/25/2016	63	7532	6179	4317	230330	6844	N/A
9	3/25/2016	664.1	7068	6006	4261	232630	6434	N/A
10	3/25/2016	64.7	7451	5719	4328	206370	7105	N/A
11	3/25/2016	60	7436	6180	4727	229460	11437	N/A
12	3/27/2016	65	7007	5711	4943	228870	6406	N/A
13	3/27/2016	64.1	6950	5482	3783	234070	6408	N/A
14	3/27/2016	68	7091	5489	4630	233200	6402	N/A
15	3/27/2016	68.5	7256	5854	4474	232900	6382	N/A
16	3/28/2016	68.8	7259	6102	3486	232290	6413	N/A
17	3/28/2016	66.9	7108	5900	3890	230880	6359	N/A
18	3/28/2016	66.5	7139	5765	3876	231830	6343	N/A
19	3/28/2016	66.2	7275	5792	3744	225870	6513	N/A
20	3/29/2016	59	7712	5780	4120	89170	6330	N/A
21	3/29/2016	65.2	6925	5557	3539	231900	6377	N/A
22	3/29/2016	64.6	6974	5681	3829	231710	6328	N/A
23	3/29/2016	63	7443	5656	4877	193850	7541	N/A
24	3/30/2016	67	6984	5482	4690	233110	6296	N/A
25	3/30/2016	68.5	6870	5723	4146	233700	6285	N/A
26	3/30/2016	67.8	6848	5769	4805	235240	6270	N/A
27	3/30/2016	68	6818	5908	4876	234470	6253	N/A
28	3/30/2016	67	6873	5729	5272	233360	6256	N/A
29	3/31/2016	69	6739	5706	5245	233790	6223	N/A
30	3/31/2016	65.8	6636	5878	4725	234570	6228	N/A
31	3/31/2016	66.1	6625	5832	4837	235960	6243	N/A
32	3/31/2016	67	6828	5807	5249	234150	6273	N/A
33	4/1/2016	67	7317	6144	4007	234000	6528	N/A
34	4/1/2016	66.7	6742	6077	3959	234480	6212	N/A
35	4/1/2016	67.6	6672	5670	5152	235210	6199	N/A
36	4/1/2016	67.1	6671	5589	3704	233750	6232	N/A
37	4/1/2016	66	6833	5706	4655	233320	6752	N/A
38	4/2/2016	67	6741	5838	5282	232960	6219	N/A
39	4/2/2016	65.7	6635	5699	4217	233060	6162	N/A
40	4/2/2016	65.6	6870	5666	4859	233281	6300	N/A
41	4/2/2016	65	6648	5588	4897	234970	6125	N/A
42	4/3/2016	67	7069	5974	4068	234420	6180	N/A
43	4/3/2016	68.9	6862	5444	3670	235020	6116	N/A
44	4/3/2016	67.6	6716	5843	3666	236790	6234	N/A
45	4/3/2016	67.3	6633	5628	3961	233880	6166	N/A
46	4/3/2016	69	6541	5454	4946	233720	6295	N/A
47	4/3/2016	67	6496	5280	4634	233330	6086	N/A
48	4/4/2016	67	6469	5806	5242	232920	6056	N/A
49	4/4/2016	66	6406	5562	5311	233140	6077	N/A
50	4/4/2016	67	6487	5381	4019	235420	5774	N/A
51	4/4/2016	66	6377	5539	5147	234540	6034	N/A
52	4/4/2016	67	6322	5313	5048	234900	6052	N/A
53	4/5/2016	67	6186	5331	5118	234060	6063	N/A
54	4/5/2016	68	6506	5486	4084	233250	6014	N/A
55	4/5/2016	67	6282	5471	4750	232000	5986	N/A
56	4/5/2016	67	6311	5531	5147	235200	6000	N/A
57	4/5/2016	68	6219	5583	4986	233031	6025	N/A
58	4/6/2016	66	6155	5868	4998	235630	5998	N/A
59	4/6/2016	66	6141	5661	4165	236640	5957	N/A
60	4/6/2016	66	6334	5312	3887	237550	6060	N/A
61	4/6/2016	66	6224	5897	5285	234440	5935	N/A
62	4/6/2016	64	6141	6203	5376	233870	5960	N/A
63	4/7/2016	64	6731	6216	5110	234170	5948	N/A
64	4/7/2016	61	7244	6672	4092	221140	6970	N/A
65	4/7/2016	68	6382	5912	5486	232110	5902	N/A
66	4/7/2016	68	5885	7259	3590	234270	5900	N/A
AVG =		74.8	6,840	5,737	4,494	14,945,042	421,630	TOTAL

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	434'	N/A	434'	N/A
Shale	0	201	0	201
Sandstone	est. 201	281	est. 201	281
Siltstone	est. 281	301	est. 281	301
Coal "Washington Coal"	est. 301	361	est. 301	361
Sandstone	est. 361	581	est. 361	581
Shale	est. 581	1,241	est. 581	1,241
Sandstone	est. 1241	1,321	est. 1241	1,321
Siltstone/ sandstone	est. 1321	1,401	est. 1321	1,401
Sandstone	est. 1401	1,721	est. 1401	1,721
Shale	est. 1721	1,821	est. 1721	1,821
Siltstone	est. 1821	1,981	est. 1821	1,981
Limestone	est. 1981	2,063	est. 1981	2,064
Big Lime	2,063	2,763	2,064	2,764
Fifty Foot Sandstone	2,763	2,843	2,764	2,844
Gordon	2,843	2,763	2,844	2,764
Fifth Sandstone	2,763	3,102	2,764	3,104
Bayard	3,102	3,933	3,104	3,948
Speechley	3,933	4,214	3,948	4,245
Baltown	4,214	4,647	4,245	4,727
Bradford	4,647	5,036	4,727	5,170
Benson	5,036	5,287	5,170	5,452
Alexander	5,287	6,212	5,452	6,473
Sycamore	6,212	6,376	6,473	6,678
Middlesex	6,376	6,487	6,678	6,855
Burkett	6,487	6,522	6,855	6,932
Tully	6,522	6,548	6,932	7,014
Marcellus	6,548	N/A	7,014	N/A

*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:	3/22/2016
Job End Date:	4/7/2016
State:	West Virginia
County:	Ritchie
API Number:	47-085-10198-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	McNabb 3H
Latitude:	39.23841100
Longitude:	-80.89691900
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,611
Total Base Water Volume (gal):	18,551,922
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	Base Fluid	Water	7732-18-5	100.00000	90.75273	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	8.76701	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.18922	
			Hydrogen Chloride	7647-01-0	18.00000	0.04520	
LGC-15	U.S. Well Services	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.06384	
			Petroleum Distillates	64742-47-8	60.00000	0.06046	
			Suspending agent (solid)	14808-60-7	3.00000	0.00976	
			Surfactant	68439-51-0	3.00000	0.00383	
WFRA-405	U.S. Well Services	Friction Reducer	Water	7732-18-5	60.00000	0.04113	
			2-Propenoic acid, polymer with 2 propenamide	9003-06-9	30.00000	0.02056	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01655	

			Ethoxylated alcohol blend	68002-97-1	4.00000	0.00274
SI-1100	U.S. Well Services	Scale Inhibitor				
			Water	7732-18-5	80.00000	0.01017
			Ethylene Glycol	107-21-1	25.00000	0.00359
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00150
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	7.50000	0.00129
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00083
			Hexamethylene triamine penta (methylene phosphonic acid)	34690-00-1	5.00000	0.00083
			Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5	2.00000	0.00033
K-BAC 1020	U.S. Well Services	Anti-Bacterial Agent				
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00411
			Deionized Water	7732-18-5	28.00000	0.00235
AP One	U.S. Well Services	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00151
AI-302	U.S. Well Services	Acid Corrosion Inhibitors				
			Water	7732-18-5	95.00000	0.00041
			2-Propyn-1-ol compound with methyloxirane	38172-91-7	15.00000	0.00007

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)

LATITUDE 39°15'00"

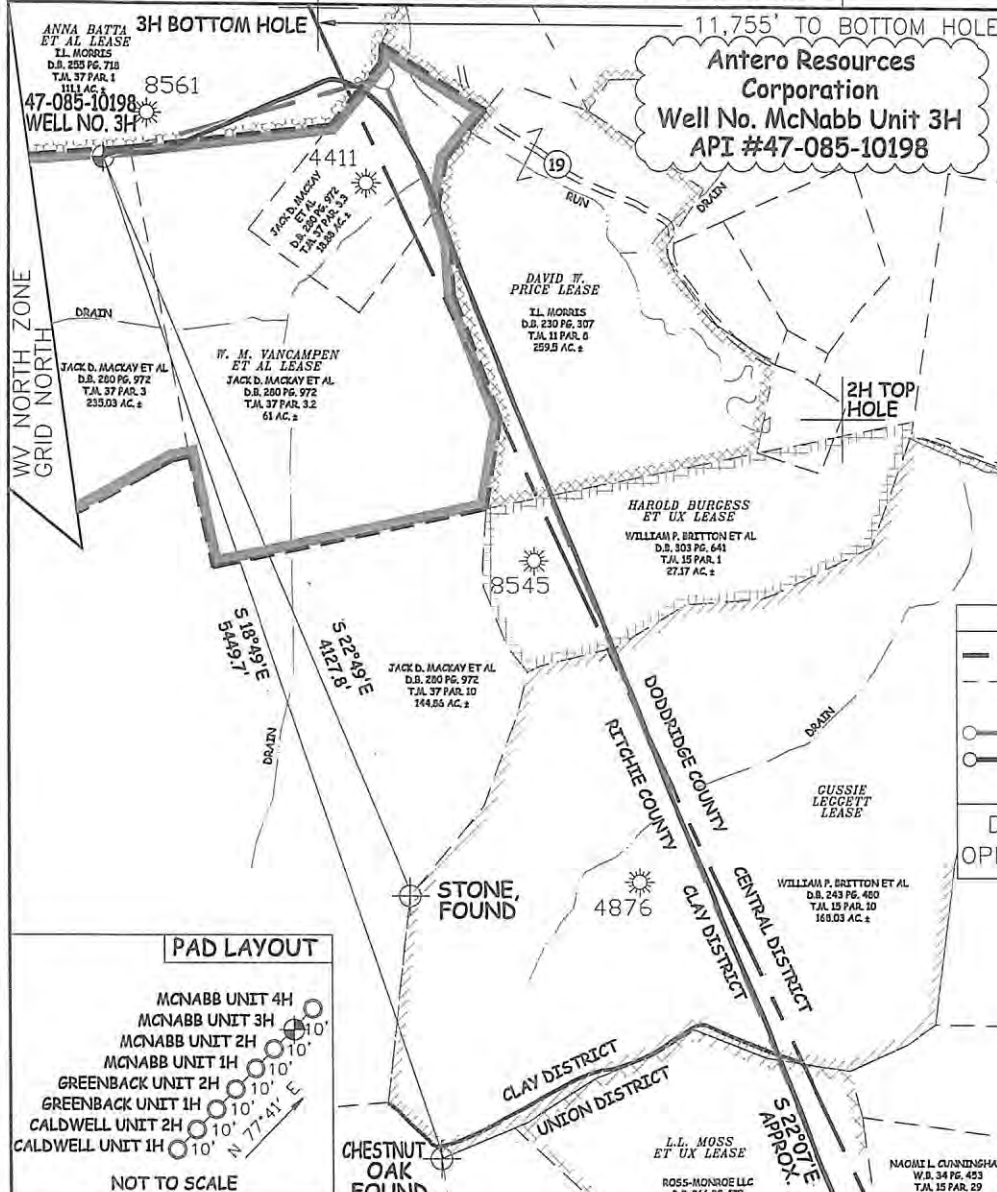
6,258'

LATITUDE 39°12'30"

35' TO BOTTOM HOLE
LONGITUDE 80°50'00"

4,251'

LONGITUDE 80°52'30"



Antero Resources Corporation
Well No. McNabb Unit 3H
API #47-085-10198

AS DRILLED DATA:
WELL 3H TOP HOLE INFORMATION:
 N: 271,991ft E: 1,604,292ft
 LAT: 39°14'17.98" LON: 80°53'49.53"
BOTTOM HOLE INFORMATION:
 N: 260,935ft E: 1,610,434ft
 LAT: 39°12'29.65" LON: 80°52'29.33"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 3H TOP HOLE INFORMATION:
 N: 4,343,239m E: 508,896m
BOTTOM HOLE INFORMATION:
 N: 4,339,902m E: 510,823m

LEGEND

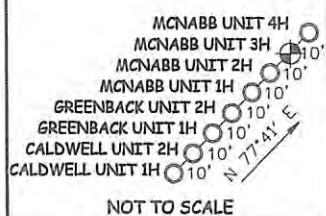
- Surface Owner Boundary Lines +/-
- - - Interior Surface Tracts +/-
- ⊕ Found monument, as noted
- Proposed Well Path
- ⊗ As Drilled Well Path

DATE 01/27/16
 OPERATOR'S WELL# MCNABB UNIT #3H

API WELL #	47	085	10198
STATE	CLAY	CENTRAL	PERMIT

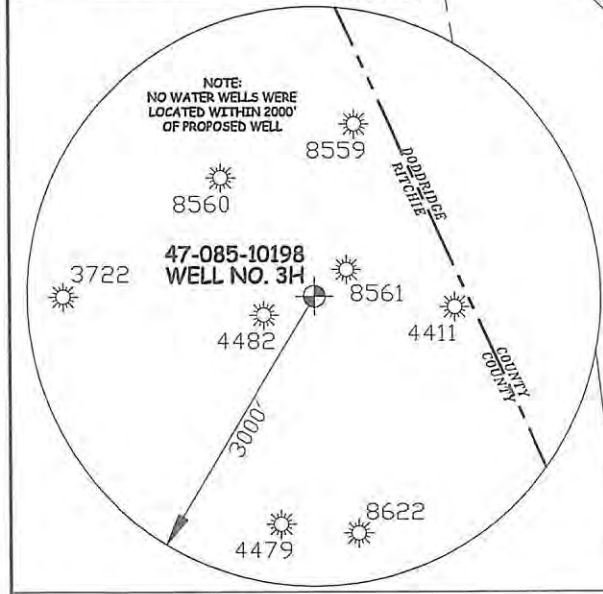
JOB # 14-094WA
 DRAWING # MCNABB3HAD
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
 STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

PAD LAYOUT



NOT TO SCALE

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



- NOTE**
- 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.
 - TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
 - AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 - 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.
 - WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



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

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

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
 LOCATION: ELEVATION 1,100' - AS DRILLED 1,125' - ORIGINAL _____ WATERSHED NORTH FORK HUGHES RIVER
 QUADRANGLE PULLMAN 7.5' (TH); OXFORD 7.5' (BH) DISTRICT CLAY COUNTY RITCHIE
 SURFACE OWNER JACK D. MACKAY ET AL ACREAGE 253.03 ACRES +/-
 OIL & GAS ROYALTY OWNER W.M. VANCAMPEN ET AL/ANNA BATTA ET AL: LEASE ACREAGE 312 AC±; 111 AC±;
 DAVID W PRICE; HAROLD BURGESS ET UX; GUSSIE LEGGETT; 105 AC±; 29 AC±; 169 AC±;
 L.L. MOSS ET UX; PAUL K GOODWIN ET UX; NATHAN PRIMM ET UX; 54 AC±; 50 AC±; 37 AC±;
 JOSEPH E HAUGHT; BRICE M BYHAM ET VIR; RUSSEL GRAY ET AL 66 AC±; 41 AC±; 225 AC±
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL
 (SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,593' TVD 19,171' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER
 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313

05/26/2017

COUNTY NAME PERMIT

AS-DRILLED

LATITUDE 39°15'00"

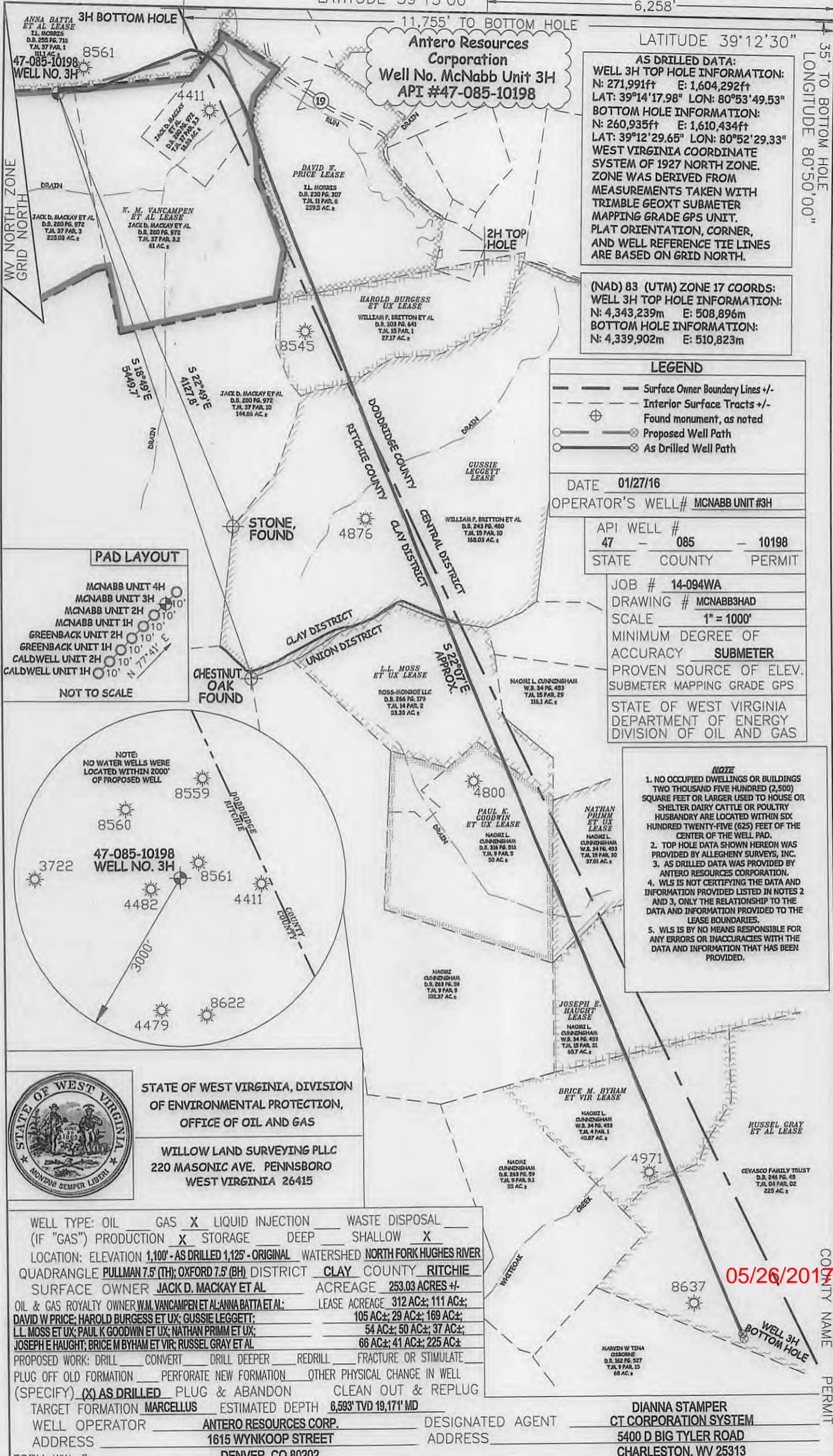
6,258'

LATITUDE 39°12'30"

LONGITUDE 80°50'00"

4,251'

LONGITUDE 80°52'30"



AS DRILLED DATA:
WELL 3H TOP HOLE INFORMATION:
 N: 271,991ft E: 1,604,292ft
 LAT: 39°14'17.98" LON: 80°53'49.53"
BOTTOM HOLE INFORMATION:
 N: 260,935ft E: 1,610,434ft
 LAT: 39°12'29.65" LON: 80°52'29.33"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 3H TOP HOLE INFORMATION:
 N: 4,343,239m E: 508,896m
BOTTOM HOLE INFORMATION:
 N: 4,339,902m E: 510,823m

LEGEND

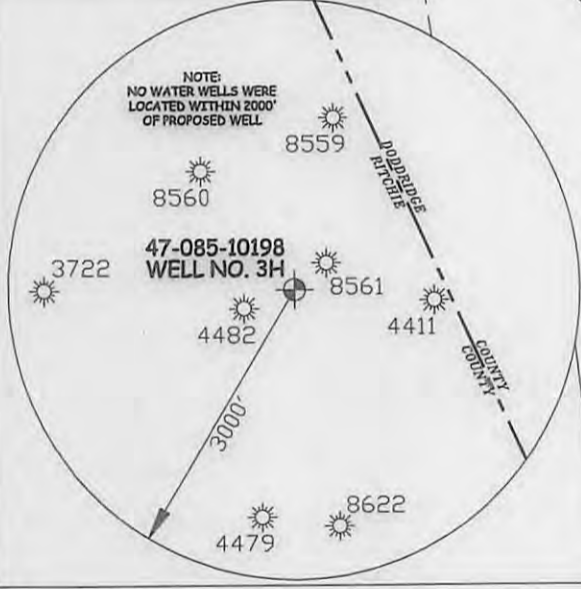
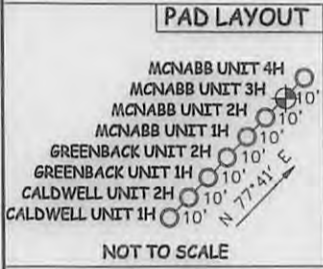
- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Found monument, as noted
- Proposed Well Path
- As Drilled Well Path

DATE 01/27/16
 OPERATOR'S WELL# MCNABB UNIT #3H

API WELL #	47	085	10198
STATE		COUNTY	PERMIT

JOB # 14-094WA
 DRAWING # MCNABB3HAD
 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



- NOTE**
- 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.
 - TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
 - AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 - 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.
 - WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



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

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

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
 LOCATION: ELEVATION 1,100' - AS DRILLED 1,125' - ORIGINAL _____ WATERSHED NORTH FORK HUGHES RIVER
 QUADRANGLE PULLMAN 7.5' (TH); OXFORD 7.5' (BH) DISTRICT CLAY COUNTY RITCHIE
 SURFACE OWNER JACK D. MACKAY ET AL ACREAGE 253.03 ACRES +/-
 OIL & GAS ROYALTY OWNER W.M. VANCAMPEN ET AL; ANNA BATTA ET AL; LEASE ACREAGE 312 AC±; 111 AC±;
 DAVID W PRICE; HAROLD BURGESS ET UX; GUSSIE LEGGETT; 105 AC±; 29 AC±; 169 AC±;
 L.L. MOSS ET UX; PAUL K GOODWIN ET UX; NATHAN PRIMM ET UX; 54 AC±; 50 AC±; 37 AC±;
 JOSEPH E HAUGHT; BRICE M BYHAM ET VIR; RUSSEL GRAY ET AL 66 AC±; 41 AC±; 225 AC±
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL
 (SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,593' TVD 19,171' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER
 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
 FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

05/26/2017

COUNTY NAME PERMIT