



Antero Resources
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July 26, 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:

- Bill Unit 1H (API # 47-085-10240)—Bison Pad
- Bill Unit 2H (API # 47-085-10241)—Bison Pad
- Bill Unit 3H (API # 47-085-10257)—Bison Pad
- Buffalo Unit 1H (API # 47-085-10249)—Bison Pad
- Buffalo Unit 2H (API # 47-085-10243)—Bison 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 "Megan Griffith", with a long horizontal line extending to the right.

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- _____ - _____ County _____ District _____
Quad _____ Pad Name _____ Field/Pool Name _____
Farm name _____ Well Number _____
Operator (as registered with the OOG) _____
Address _____ City _____ State _____ Zip _____

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing _____ Easting _____
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing _____ Easting _____

Elevation (ft) _____ 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)

Date permit issued _____ Date drilling commenced _____ Date drilling ceased _____
Date completion activities began _____ Date completion activities ceased _____
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

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

Freshwater depth(s) ft _____ Open mine(s) (Y/N) depths _____
Salt water depth(s) ft _____ Void(s) encountered (Y/N) depths _____
Coal depth(s) ft _____ Cavern(s) encountered (Y/N) depths _____
Is coal being mined in area (Y/N) _____

Reviewed by:

API 47- _____ - _____ Farm name _____ Well number _____

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							
Surface							
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production							
Tubing							
Packer type and depth set							

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							
Surface							
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production							
Tubing							

Drillers TD (ft) _____ Loggers TD (ft) _____
 Deepest formation penetrated _____ Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) _____

** This is a subsequent Well. Antero only runs wireline logs on one well on a multi-well pad (Bill Unit 3H API#47-085-10257). A Cement Bond Log has been included with this submittal.

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 _____

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- ____ - ____ Farm name _____ Well number _____

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- _____ - _____ Farm name _____ Well number _____

PRODUCING FORMATION(S)

DEPTHS

_____	_____ TVD	_____ MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

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

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd

GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor _____
Address _____ City _____ State _____ Zip _____

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company _____
Address _____ City _____ State _____ Zip _____

Stimulating Company _____
Address _____ City _____ State _____ Zip _____

Please insert additional pages as applicable.

Completed by _____ Telephone _____
Signature _____ Title _____ Date _____

API 47-085-10240 Farm Name Donald L. Costilow Well Number Bill Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	1/19/2019	13269.2	13224.6	60	Marcellus
2	1/20/2019	13186.41	13023.46	60	Marcellus
3	1/21/2019	12988.47	12825.52	60	Marcellus
4	1/21/2019	12790.53	12627.58	60	Marcellus
5	1/22/2019	12592.59	12429.64	60	Marcellus
6	1/22/2019	12394.65	12231.7	60	Marcellus
7	1/22/2019	12196.71	12033.76	60	Marcellus
8	1/23/2019	11998.77	11835.82	60	Marcellus
9	1/23/2019	11800.83	11637.88	60	Marcellus
10	1/24/2019	11602.89	11439.94	60	Marcellus
11	1/25/2019	11404.95	11242	60	Marcellus
12	1/25/2019	11207.01	11044.06	60	Marcellus
13	1/26/2019	11009.07	10846.12	60	Marcellus
14	1/26/2019	10811.13	10648.18	60	Marcellus
15	1/27/2019	10613.19	10450.24	60	Marcellus
16	1/27/2019	10415.25	10252.3	60	Marcellus
17	1/27/2019	10217.31	10054.36	60	Marcellus
18	1/28/2019	10019.37	9856.42	60	Marcellus
19	1/28/2019	9821.43	9658.48	60	Marcellus
20	1/28/2019	9623.49	9460.54	60	Marcellus
21	1/29/2019	9425.55	9262.6	60	Marcellus
22	1/29/2019	9227.61	9064.66	60	Marcellus
23	1/29/2019	9029.67	8866.72	60	Marcellus
24	1/30/2019	8831.73	8668.78	60	Marcellus
25	1/30/2019	8633.79	8470.84	60	Marcellus
26	1/31/2019	8435.85	8272.9	60	Marcellus
27	2/1/2019	8237.91	8074.96	60	Marcellus
28	2/1/2019	8039.97	7877.02	60	Marcellus
29	2/1/2019	7842.03	7679.08	60	Marcellus
30	2/2/2019	7644.09	7481.14	60	Marcellus
31	2/2/2019	7446.15	7283.2	60	Marcellus
32	2/3/2019	7248.21	7085.26	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	1/19/2019	53	8264	6778	2475	151000	8906	N/A
2	1/20/2019	66.5	7864	6206	2920	393650	8288	N/A
3	1/21/2019	69.2	7340	6967	2339	395010	9450	N/A
4	1/21/2019	74.8	7575	4901	2799	393250	8117	N/A
5	1/22/2019	74.6	7532	7227	2659	394100	8098	N/A
6	1/22/2019	77.2	7730	6276	2869	412400	8039	N/A
7	1/22/2019	80.1	8163	6771	2844	394600	8359	N/A
8	1/23/2019	80.1	7842	5636	2812	361110	7829	N/A
9	1/23/2019	70.3	7596	6420	2877	393450	8015	N/A
10	1/24/2019	70	7456	5764	3350	394590	8251	N/A
11	1/25/2019	78.6	8303	5694	2810	394350	7877	N/A
12	1/25/2019	74.2	7888	5545	2806	387390	8125	N/A
13	1/26/2019	75.1	7981	5889	3209	395450	7952	N/A
14	1/26/2019	80.2	8087	5380	3226	393200	7815	N/A
15	1/27/2019	81.2	7760	5805	4030	398600	10179	N/A
16	1/27/2019	79.6	7394	6281	2987	393920	8000	N/A
17	1/27/2019	81.6	7897	4228	2899	393300	7926	N/A
18	1/28/2019	83.2	7967	6234	2891	397340	7805	N/A
19	1/28/2019	86.5	7764	6189	3050	405490	8010	N/A
20	1/28/2019	88.5	8182	6264	3150	396250	7996	N/A
21	1/29/2019	87.1	7868	6605	2906	394900	7923	N/A
22	1/29/2019	85.3	7640	6193	3049	393230	8012	N/A
23	1/29/2019	80.3	7655	4750	3135	392750	8597	N/A
24	1/30/2019	84.6	7568	5740	3310	395350	8099	N/A
25	1/30/2019	85.5	7371	5698	3025	395250	7949	N/A
26	1/31/2019	70.7	7224	5110	3357	401290	11529	N/A
27	2/1/2019	73.2	6997	5573	3339	394210	8393	N/A
28	2/1/2019	80.8	7088	5675	3119	395900	7718	N/A
29	2/1/2019	81	7318	5875	2863	393840	7928	N/A
30	2/2/2019	74	6674	5615	3879	393550	9625	N/A
31	2/2/2019	83.5	7342	5951	3216	393890	7919	N/A
32	2/3/2019	78.2	6676	6221	2716	404260	8095	N/A
	AVG=	78	7,625	5,921	3,029	12,386,870	266,824	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
Silty Sandstone	0	190	0	190
Sandy siltstone	190	290	190	290
Sandstone	290	600	290	600
Silty Sandstone	600	870	600	870
limey siltstone	870	945	870	945
silty sandstone, tr. coal	945	1,095	945	1,095
silty sandstone	1,095	1,490	1,095	1,490
silty shale	1,490	1,620	1,490	1,620
sandstone, tr coal	1,620	1,630	1,620	1,630
silty sandstone	1,630	1,670	1,630	1,670
sandstone	1,670	1,745	1,670	1,745
sandy shale	1,745	1,770	1,745	1,770
shaly sand	1,770	1,969	1,770	2,006
Big Lime	1,969	2,837	2,006	2,916
Fifty Foot Sandstone	2,837	2,975	2,916	3,062
Gordon	2,975	3,138	3,062	3,235
Fifth Sandstone	3,138	3,393	3,235	3,504
Bayard	3,393	3,860	3,504	3,996
Speechley	3,860	4,096	3,996	4,244
Balltown	4,096	4,615	4,244	4,794
Bradford	4,615	4,978	4,794	5,175
Benson	4,978	5,269	5,175	5,477
Alexander	5,269	6,245	5,477	6,512
Sycamore	6,245	6,354	6,512	6,660
Middlesex	6,354	6,462	6,660	6,858
Burkett	6,462	6,495	6,858	6,942
Tully	6,495	6,523	6,942	7,033
Marcellus	6,523	NA	7,033	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:	1/19/2019
Job End Date:	2/2/2019
State:	West Virginia
County:	Ritchie
API Number:	47-085-10240-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Bill Unit 1H
Latitude:	39.29452000
Longitude:	-80.90545000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,582
Total Base Water Volume (gal):	11,527,246
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	Supplied by Operator	Base Fluid					
			Water	7732-18-5	100.00000	88.28447	
Calcium Chloride	CWS	Additive					
				Listed Below			

DAP-103	CWS	Iron Control					
				Listed Below			
Sand (Proppant)	CWS	Propping Agent					
				Listed Below			
CI-9100G	CWS	Corrosion Inhibitor					
				Listed Below			
CalGel 4000	CWS	Gel Slurry					
				Listed Below			
SaniFrac 8844	CWS	Biocide					
				Listed Below			
Calbreak 5501	CWS	Breaker					
				Listed Below			
DWP-641	CWS	Friction Reducer					
				Listed Below			
15% HCl Acid	CWS	Clean Perforations					
				Listed Below			
DAP-902	CWS	Scale Inhibitor					

				Listed Below			
Other Chemical (s)	Listed Above	See Trade Name (s) List					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline silica (Quartz)	14808-60-7	100.00000	11.37077	
			Calcite	471-34-1	1.00000	0.07868	
			Hydrochloric acid	7647-01-0	37.00000	0.06547	
			Illite	12173-60-3	1.00000	0.03500	
			Polymer	26100-47-0	45.00000	0.02724	
			Guar gum	9000-30-0	60.00000	0.02664	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.02664	
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.01816	
			Apatite	64476-38-6	0.10000	0.01137	
			Biotite	1302-27-8	0.10000	0.01137	
			Goethite	1310-14-1	0.10000	0.01137	
			Ammonium chloride	12125-02-9	11.00000	0.00666	
			Polyethylene glycol mixture	25322-68-3	54.50000	0.00664	
			Ilmenite	98072-94-7	0.10000	0.00350	
			2,2-Dibromo-3-Nitrilopropionamide	10222-01-2	20.00000	0.00244	
			Sorbitan monooleate	1338-43-8	4.00000	0.00242	
			Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00222	
			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00182	
			Calcium Chloride	10043-52-4	100.00000	0.00179	
			Sorbitol tetraoleate	61723-83-9	2.00000	0.00121	

			Ammonium Persulfate	7727-54-0	100.00000	0.00082	
			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00067	
			Amines, tallow alkyl, ethoxylated	61791-26-2	1.00000	0.00061	
			Citric acid	77-92-9	60.00000	0.00055	
			Sodium bromide	7647-15-6	4.00000	0.00049	
			Dibromoacetonitrile	3252-43-5	3.00000	0.00037	
			Alkyloxypolyethyleneoxy ethanol	84133-50-6	0.50000	0.00030	
			Vinylidene chloride-methyl acrylate copolymer	25038-72-6	20.00000	0.00016	
			Acrylamide	79-06-1	0.10000	0.00006	
			Ethylene Glycol	107-21-1	40.00000	0.00003	
			Diethylene glycol, monomethyl ether	34590-94-8	20.00000	0.00002	
			Formic acid	64-18-6	10.00000	0.00001	
			Isopropyl alcohol	67-63-0	5.00000	0.00001	
			Cinnamaldehyde	104-55-2	10.00000	0.00001	
			Tar bases, quinolone derivs, benzyl chloride- quatenized	72480-70-7	10.00000	0.00001	
			Ethoxylated Alcohols	68131-39-5	10.00000	0.00001	
			Glycol	57-55-6			Proprietary Additive Concentration
			Organic Acid Salts	9003-04-7			Proprietary Additive Concentration

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)

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: 47-085-10240 County: Ritchie
District: Clay Well No: Bill Unit 1H
Farm Name: Antero Resources Corporation
Discharge Date/s From:(MMDDYY) 05/06/19 To: (MMDDYY) 06/05/19
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 593,873

Disposal Option(s) Utilized (write volumes in gallons):

- (1) Land Application: _____ (Include a topographical map of the Area.)
(2) UIC: 104,515 Permit No. 3416729731, 3400923821
(3) Offsite Disposal: _____ Site Location: _____
(4) Reuse: 489,359 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

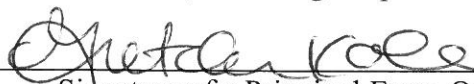
1. Do you have permission to use expedited treatment from the Director or his representative?
(Y/N) n/a If yes, who? _____ and place a four (4) on line 7.
If not go to line 2
2. Was Frac Fluid or flowback put into the pit? (Y/N) n/a If yes, go to line 5. If not, go to line 3.
3. Do you have a chloride 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: 7/12/19

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.



Signature of a Principal Exec. Officer or Authorized agent.

Category 1
Sampling Results
API No : _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
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		Discharge		Units
	Limits	Reported	Limits	Reported	
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		Discharge		Units
	Limits	Reported	Limits	Reported	
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		Discharge		Units
	Limits	Reported	Limits	Reported	
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/Bf
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: _____

LATITUDE 39°20'00"

7,520'

11,162' TO BOTTOM HOLE

LATITUDE 39°20'00"

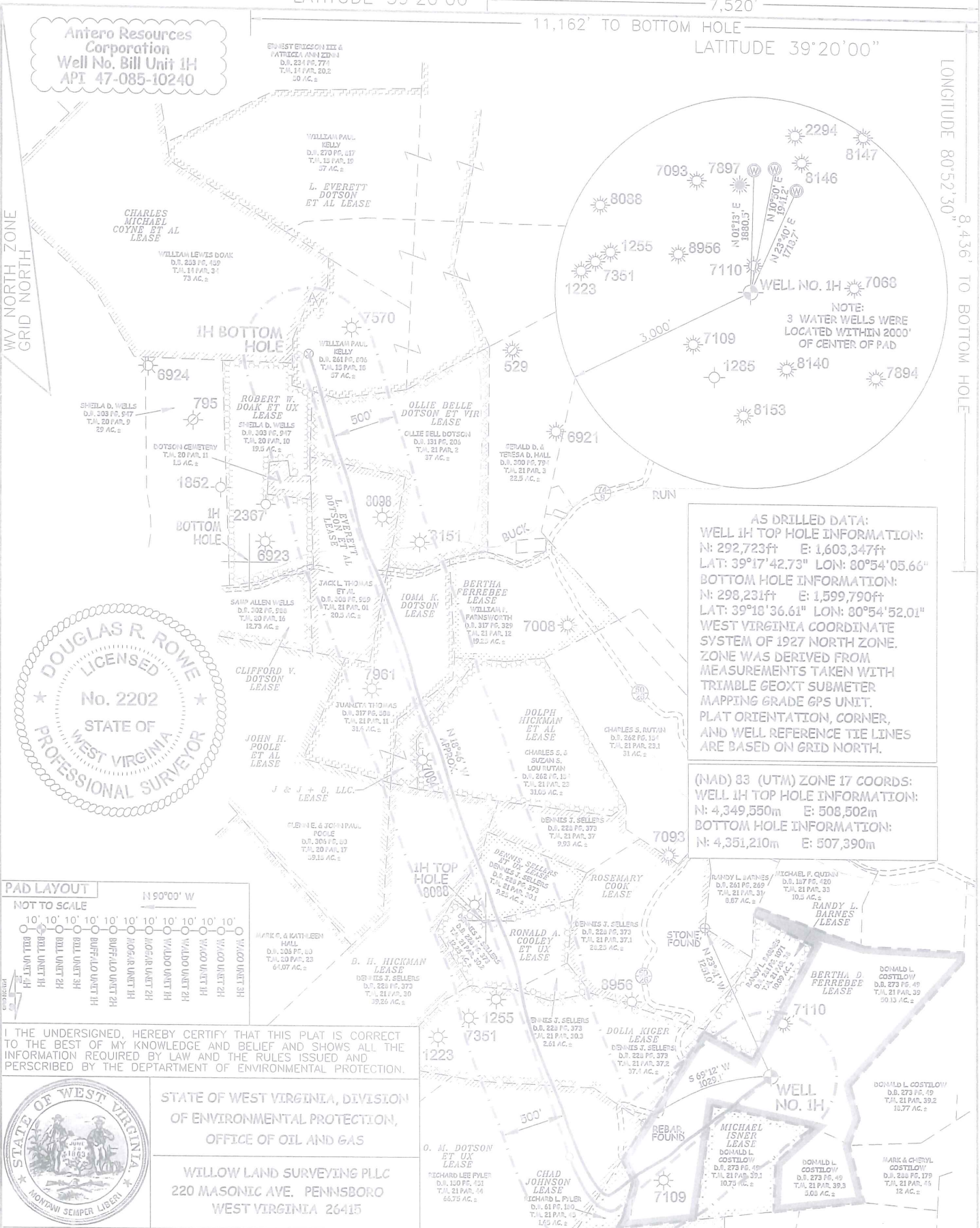
LONGITUDE 80°52'30"

8,436' TO BOTTOM HOLE

13,888'

LONGITUDE 80°52'30"

COUNTY NAME PERMIT



Antero Resources Corporation
 Well No. Bill Unit 1H
 API 47-085-10240

FRANK BRISON III & PATRICIA ANN ZIMM
 D.R. 234 PG. 771
 T.M. 21 PAR. 202
 30 AC.±

WILLIAM PAUL KELLY
 D.R. 570 PG. 817
 T.M. 15 PAR. 15
 37 AC.±

CHARLES MICHAEL COYNE ET AL
 LEASE

WILLIAM LEWIS DOAK
 D.R. 233 PG. 439
 T.M. 11 PAR. 91
 73 AC.±

1H BOTTOM HOLE

WILLIAM PAUL KELLY
 D.R. 541 PG. 006
 T.M. 10 PAR. 10
 37 AC.±

ROBERT W. DOAK ET UX
 LEASE

SHEILA D. WELLS
 D.R. 203 PG. 517
 T.M. 20 PAR. 9
 29 AC.±

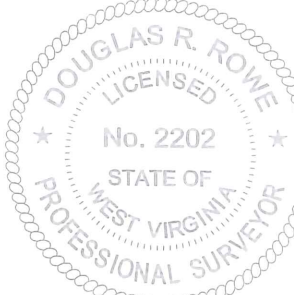
DOTSON CEMETERY
 T.M. 20 PAR. 13
 13 AC.±

1H BOTTOM HOLE

OLIE BELLE DOTSON ET VIR
 LEASE

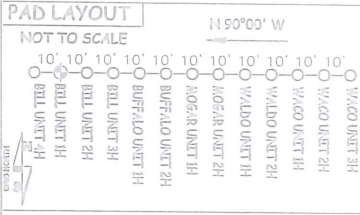
OLIE BELLE DOTSON
 D.R. 131 PG. 206
 T.M. 21 PAR. 2
 37 AC.±

GERALD D. & TERESA D. HALL
 D.R. 300 PG. 791
 T.M. 21 PAR. 3
 22.5 AC.±



AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
 N: 292,723ft E: 1,603,347ft
 LAT: 39°17'42.73" LON: 80°54'05.66"
BOTTOM HOLE INFORMATION:
 N: 298,231ft E: 1,599,790ft
 LAT: 39°18'36.61" LON: 80°54'52.01"
 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 1H TOP HOLE INFORMATION:
 N: 4,349,550m E: 508,502m
BOTTOM HOLE INFORMATION:
 N: 4,351,210m E: 507,390m



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.



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

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

JOB # 15-029WA
 DRAWING # BILL1HAD
 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

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

DOUGLAS R. ROWE P.S. 2202
 DATE 06/26/19
 OPERATOR'S WELL # BILL UNIT 1H

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
 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.

WELL TYPE: OIL ___ GAS LIQUID INJECTION ___ WASTE DISPOSAL ___ 47 - 085 - 10240
 (IF "GAS") PRODUCTION STORAGE ___ DEEP ___ SHALLOW STATE COUNTY PERMIT
 LOCATION: ELEVATION 1,221' - AS BUILT WATERSHED NORTH FORK HUGHES RIVER
 QUADRANGLE PENNSBORO 7.5' DISTRICT CLAY COUNTY RITCHIE
 SURFACE OWNER DONALD L. COSTILOW ACREAGE 50.13 ACRES +/-
 OIL & GAS ROYALTY OWNER BERTHA D. FERREBEE; MICHAEL ISNER; CHAD JOHNSON; O. M. DOTSON ET UX; LEASE ACREAGE 67 AC.±; 10.75 AC.±; 13.99 AC.±; 1.65 AC.±;
 DOLIA KIGER; RONALD A. COOLEY ET UX; DENNIS SELLERS ET UX; B. H. HICKMAN; DOLPH HICKMAN ET AL; J & J + Q, LLC.; 40 AC.±; 13.99 AC.±; 9.25 AC.±; 400 AC.±; 26.52 AC.±; 4.59 AC.±;
 IOMA K. DOTSON; L. EVERETT DOTSON ET AL; OLLIE BELLE DOTSON ET VIR; L. EVERETT DOTSON ET AL. 27 AC.±; 21 AC.±; 37 AC.±; 75 AC.±

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 6,580' TVD 13,368' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
 ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313