

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

API 47 - 095 - 02455 County Tyler District Meade
Quad Middlebourne 7.5' Pad Name Neat Pad Field/Pool Name ----
Farm name Roger R. Weese Well Number Crown 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 4363577m Easting 505386m
Landing Point of Curve Northing 4362854.43m Easting 505822.43m
Bottom Hole Northing 4360485m Easting 506733m

Elevation (ft) 1005' 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 7/19/2017 Date drilling commenced 11/15/2017 Date drilling ceased 9/24/2018
Date completion activities began 12/18/2018 Date completion activities ceased 3/30/2019
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

RECEIVED
Office of Oil and Gas
JUN 14 2019

Freshwater depth(s) ft 100', 121', 166' Open mine(s) (Y/N) depths No
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths No
Coal depth(s) ft 1441' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed

Reviewed by:
JCB
6/24/2019

API 47-095 - 02455 Farm name Roger R. Weese Well number Crown 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"	95'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	357'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2608'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	17658'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6543'		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	310 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	880 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	675 sx (Lead) 1735 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17677' MD, 6370' TVD (BHL), 6397' (Deepest Point Drilled) Loggers TD (ft) 17677' MD

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

Plug back procedure N/A

Kick off depth (ft) 6200'

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

RECEIVED
Office of Oil and Gas
JUN 14 2019

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WV Department of Environmental Protection

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED N/A

API 47- 095 - 02455 Farm name Roger R. Weese Well number Crown Unit 3H

PRODUCING FORMATION(S)	DEPTHS			
	6295' (TOP)	TVD	N/A (TOP)	MD
Marcellus				

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 8501 mcfpd Oil 119 bpd NGL --- bpd Water 10 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	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 Frontier Drilling LLC
Address 562 Spring Run Road City Pennsboror State WV Zip 26415

Logging Company Allied Horizontal Wireline Services
Address 381 Colonial Manor Road City North Huntington State PA Zip 15642

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

RECEIVED
Office of Oil and Gas
JUN 14 2019

Stimulating Company Baker Hughes
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

WV Department of
Environmental Protection

Please insert additional pages as applicable.

Completed by Megan Griffith Telephone 303-357-7223
Signature  Title Permitting Agent Date 6/10/2019

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

API 47-095-02455 Farm Name Roger R. Weese Well Number Crown Unit 3H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	12/18/2018	17498.8		60	Marcellus
2	12/19/2018	17301.472	17467.912	60	Marcellus
3	12/19/2018	17104.144	17270.584	60	Marcellus
4	12/19/2018	16906.816	17073.256	60	Marcellus
5	12/20/2018	16709.488	16875.928	60	Marcellus
6	12/20/2018	16512.16	16678.6	60	Marcellus
7	12/20/2018	16314.832	16481.272	60	Marcellus
8	12/21/2018	16117.504	16283.944	60	Marcellus
9	12/21/2018	15920.176	16086.616	60	Marcellus
10	12/21/2018	15722.848	15889.288	60	Marcellus
11	12/22/2018	15525.52	15691.96	60	Marcellus
12	12/22/2018	15328.192	15494.632	60	Marcellus
13	12/22/2018	15130.864	15297.304	60	Marcellus
14	12/22/2018	14933.536	15099.976	60	Marcellus
15	12/23/2018	14736.208	14902.648	60	Marcellus
16	12/23/2018	14538.88	14705.32	60	Marcellus
17	12/23/2018	14341.552	14507.992	60	Marcellus
18	12/23/2018	14144.224	14310.664	60	Marcellus
19	12/26/2018	13946.896	14113.336	60	Marcellus
20	12/26/2018	13749.568	13916.008	60	Marcellus
21	12/27/2018	13552.24	13718.68	60	Marcellus
22	12/27/2018	13354.912	13521.352	60	Marcellus
23	12/27/2018	13157.584	13324.024	60	Marcellus
24	12/28/2018	12960.256	13126.696	60	Marcellus
25	12/28/2018	12762.928	12929.368	60	Marcellus
26	12/28/2018	12565.6	12732.04	60	Marcellus
27	12/28/2018	12368.272	12534.712	60	Marcellus
28	12/29/2018	12170.944	12337.384	60	Marcellus
29	12/29/2018	11973.616	12140.056	60	Marcellus
30	12/29/2018	11776.288	11942.728	60	Marcellus
31	12/30/2018	11578.96	11745.4	60	Marcellus
32	12/30/2018	11381.632	11548.072	60	Marcellus
33	12/30/2018	11184.304	11350.744	60	Marcellus
34	12/30/2018	10986.976	11153.416	60	Marcellus
35	12/31/2018	10789.648	10956.088	60	Marcellus
36	12/31/2018	10592.32	10758.76	60	Marcellus
37	12/31/2018	10394.992	10561.432	60	Marcellus
38	12/31/2018	10197.664	10364.104	60	Marcellus
39	1/1/2019	10000.336	10166.776	60	Marcellus
40	1/1/2019	9803.008	9969.448	60	Marcellus
41	1/1/2019	9605.68	9772.12	60	Marcellus
42	1/2/2019	9408.352	9574.792	60	Marcellus
43	1/2/2019	9211.024	9377.464	60	Marcellus
44	1/2/2019	9013.696	9180.136	60	Marcellus
45	1/2/2019	8816.368	8982.808	60	Marcellus
46	1/3/2019	8619.04	8785.48	60	Marcellus
47	1/3/2019	8421.712	8588.152	60	Marcellus
48	1/3/2019	8224.384	8390.824	60	Marcellus
49	1/4/2019	8027.056	8193.496	60	Marcellus
50	1/4/2019	7829.728	7996.168	60	Marcellus
51	1/4/2019	7632.4	7798.84	60	Marcellus
52	1/4/2019	7435.072	7601.512	60	Marcellus
53	1/5/2019	7237.744	7404.184	60	Marcellus
54	1/5/2019	7040.416	7206.856	60	Marcellus
55	1/5/2019	6843.088	7009.528	60	Marcellus
56	1/6/2019	6645.76	6812.2	60	Marcellus

RECEIVED
Office of Oil and Gas

JUN 14 2019

WV Department of
Environmental Protection

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	12/18/2018	71.2	8135	7348	4144	179550	4404.595	N/A
2	12/19/2018	75.58	8118	5898	3801	386900	8097.238	N/A
3	12/19/2018	74.59	8010	6108	3533	405580	8319.071	N/A
4	12/19/2018	74.23	7998	5769	3733	414760	8404.929	N/A
5	12/20/2018	77.31	7972	5756	3501	407480	8378.929	N/A
6	12/20/2018	80.26	8142	5662	3774	408440	8304.119	N/A
7	12/20/2018	77.29	8078	5543	3792	400620	8413.214	N/A
8	12/21/2018	74.22	8085	5641	3662	408300	8455.5	N/A
9	12/21/2018	77.97	8163	5667	3689	391280	8172.857	N/A
10	12/21/2018	78.04	7953	5691	3628	409620	8405.857	N/A
11	12/22/2018	75.07	8048	5581	3725	403900	8328.643	N/A
12	12/22/2018	74.56	7907	5807	4050	396820	8289.31	N/A
13	12/22/2018	74.69	8187	5540	3697	404140	8201.857	N/A
14	12/22/2018	78.62	8035	5381	3644	408760	8381.952	N/A
15	12/23/2018	72.07	7882	5246	3703	408700	9155.167	N/A
16	12/23/2018	77.69	7928	5317	3854	405760	8260.762	N/A
17	12/23/2018	76.32	7904	5422	3798	408300	8259.595	N/A
18	12/23/2018	80.54	7958	5586	3834	406340	8217.833	N/A
19	12/26/2018	71.05	7626	5165	3675	398120	8089.071	N/A
20	12/26/2018	78.4	7938	5625	3702	400140	8262.238	N/A
21	12/27/2018	73.76	7871	5757	3493	408100	8218.119	N/A
22	12/27/2018	78.8	7753	5510	3714	401500	8020.762	N/A
23	12/27/2018	72.88	7804	5650	3614	401980	9196	N/A
24	12/28/2018	78.93	7564	5636	3659	401370	8037.643	N/A
25	12/28/2018	80.5	7549	5402	3908	399280	8073.929	N/A
26	12/28/2018	78	7856	5516	3737	411840	8042.714	N/A
27	12/28/2018	80.88	7793	5416	4051	400400	7961.81	N/A
28	12/29/2018	79.4	7818	5309	4429	404980	8061.595	N/A
29	12/29/2018	78.8	7921	5444	4631	418860	8306.262	N/A
30	12/29/2018	64.27	8027	5491	4143	400940	9540.833	N/A
31	12/30/2018	70.73	7836	5645	3527	400860	8004.286	N/A
32	12/30/2018	79.8	7603	5617	3886	410500	8042.714	N/A
33	12/30/2018	78.7	7823	5689	3858	393740	7825.024	N/A
34	12/30/2018	80.4	7718	5735	3880	407260	7936.524	N/A
35	12/31/2018	78.6	7398	5578	3843	418140	8101.19	N/A
36	12/31/2018	78.1	7350	5512	4210	413260	8105.405	N/A
37	12/31/2018	81.01	7878	5412	3781	412220	8047.286	N/A
38	12/31/2018	81.48	7708	5764	3697	411000	8054.119	N/A
39	1/1/2019	79.6	7383	5815	3817	407240	7965.738	N/A
40	1/1/2019	81.5	7522	5759	4414	406700	8022.952	N/A
41	1/1/2019	83.17	7507	5857	3843	408180	7907.476	N/A
42	1/2/2019	81.18	7406	5697	3666	406580	7923.524	N/A
43	1/2/2019	79.24	7276	5579	3708	398820	7887.81	N/A
44	1/2/2019	77.04	7401	5808	3510	407360	8161.143	N/A
45	1/2/2019	81.02	7251	5515	3814	406840	8031.738	N/A
46	1/3/2019	78.52	6975	5913	3626	410920	8083.643	N/A
47	1/3/2019	81.22	7402	6497	3819	404660	7895.071	N/A
48	1/3/2019	82.62	7119	6415	3899	406080	8072.31	N/A
49	1/4/2019	83	7380	6371	3619	406360	8049.738	N/A
50	1/4/2019	78.24	7361	6220	3823	408220	7851.667	N/A
51	1/4/2019	83.73	6885	5630	3765	406940	7924.405	N/A
52	1/4/2019	81.64	7000	6710	3776	407900	7894.286	N/A
53	1/5/2019	80.72	6784	6349	3817	412620	7944.262	N/A
54	1/5/2019	84.43	6828	6436	3853	408960	7800.167	N/A
55	1/5/2019	83.43	7176	6130	3904	403760	7901.643	N/A
56	1/6/2019	83.77	6810	6042	3806	414500	7886.381	N/A
		77.3	7,802	5,641	3,817	18,011,460	366,279	TOTAL

RECEIVED
Office of Oil and Gas

JUN 14 2019

WV Department of
Environmental Protection

API 47-095-02455 Farm Name Roger R. Weese Well Number Crown Unit 3H

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
limy 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	1,893	1,770	1,911
Big Lime	1,908	2,624	1,926	2,656
Fifty Foot Sandstone	2,624	2,735	2,656	2,770
Gordon	2,735	3,067	2,770	3,108
Fifth Sandstone	3,067	3,122	3,108	3,164
Bayard	3,122	3,895	3,164	3,943
Speechley	3,895	4,192	3,943	4,243
Balltown	4,192	4,569	4,243	4,624
Bradford	4,569	4,955	4,624	5,015
Benson	4,955	5,211	5,015	5,274
Alexander	5,211	6,189	5,274	6,333
Sycamore	6,043	6,165	6,140	6,309
Middlesex	6,165	6,256	6,309	6,489
Burkett	6,256	6,279	6,489	6,552
Tully	6,279	6,295	6,552	6,602
Marcellus	6,295	NA	6,602	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.

RECEIVED
Office of Oil and Gas

JUN 14 2019

WV Department of
Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/18/2018
Job End Date:	1/6/2019
State:	West Virginia
County:	Tyler
API Number:	47-095-02455-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Crown Unit 3H
Latitude:	39.42425800
Longitude:	-80.94013800
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,397
Total Base Water Volume (gal):	19,050,482
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
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	87.34799	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.22200	

RECEIVED
Office of Oil and Gas
JUN 14 2019
WV Department of
Environmental Protection

SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant				Listed Below			
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant				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		12.38604		
			Hydrochloric acid	7647-01-0	15.00000		0.10216		
			Hydrotreated light petroleum distillate	64742-47-8	30.00000		0.01787		
			Inorganic salt	Proprietary	30.00000		0.01787		
			Acrylamide acrylate polymer	Proprietary	30.00000		0.01787		Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Guar gum	9000-30-0	100.00000		0.01216		
			Ethylene glycol	107-21-1	60.00000		0.00859		
			Glutaraldehyde	111-30-8	30.00000		0.00270		
			Telmer	Proprietary	10.00000		0.00143		
			Quaternary ammonium compounds, benzyl-C12- 16-alkyldimethyl chlorides	68424-85-1	5.00000		0.00045		
			Sodium persulfate	7775-27-1	100.00000		0.00040		
			Sodium polyacrylate	9003-04-7	1.00000		0.00014		
			Methanol	67-56-1	100.00000		0.00014		
			Ethanol	64-17-5	1.00000		0.00009		

RECEIVED
Office of Oil and Gas
JUN 14 2019
WV Department of
Environmental Protection

			Modified thiourea polymer	Proprietary	30.00000	0.00004			
			Phosphoric acid	7664-38-2	0.10000	0.00001			
			Ethoxylated alcohols	Proprietary	5.00000	0.00001			
			Propargyl alcohols	107-19-7	5.00000	0.00001			
			Acrylic acid	79-10-7	0.01000	0.00000			
			Sodium sulfate	7757-82-6	0.10000	0.00000			

* 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)

RECEIVED
 Office of Oil and Gas
 JUN 14 2019
 WV Department of
 Environmental Protection

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: 47-095-02455 County: Tyler
District: Meade Well No: Crown Unit 3H
Farm Name: Roger R. Weese
Discharge Date/s From:(MMDDYY) 04/07/19 To: (MMDDYY) 05/07/19
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 1,059,013
Disposal Option(s) Utilized (write volumes in gallons):

- (1) Land Application: _____ (Include a topographical map of the Area.)
(2) UIC: 87,931 Permit No. 3400923821, 3416729731
(3) Offsite Disposal: _____ Site Location: _____
(4) Reuse: 971,082 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: 6/7/19

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/B1
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°27'30"

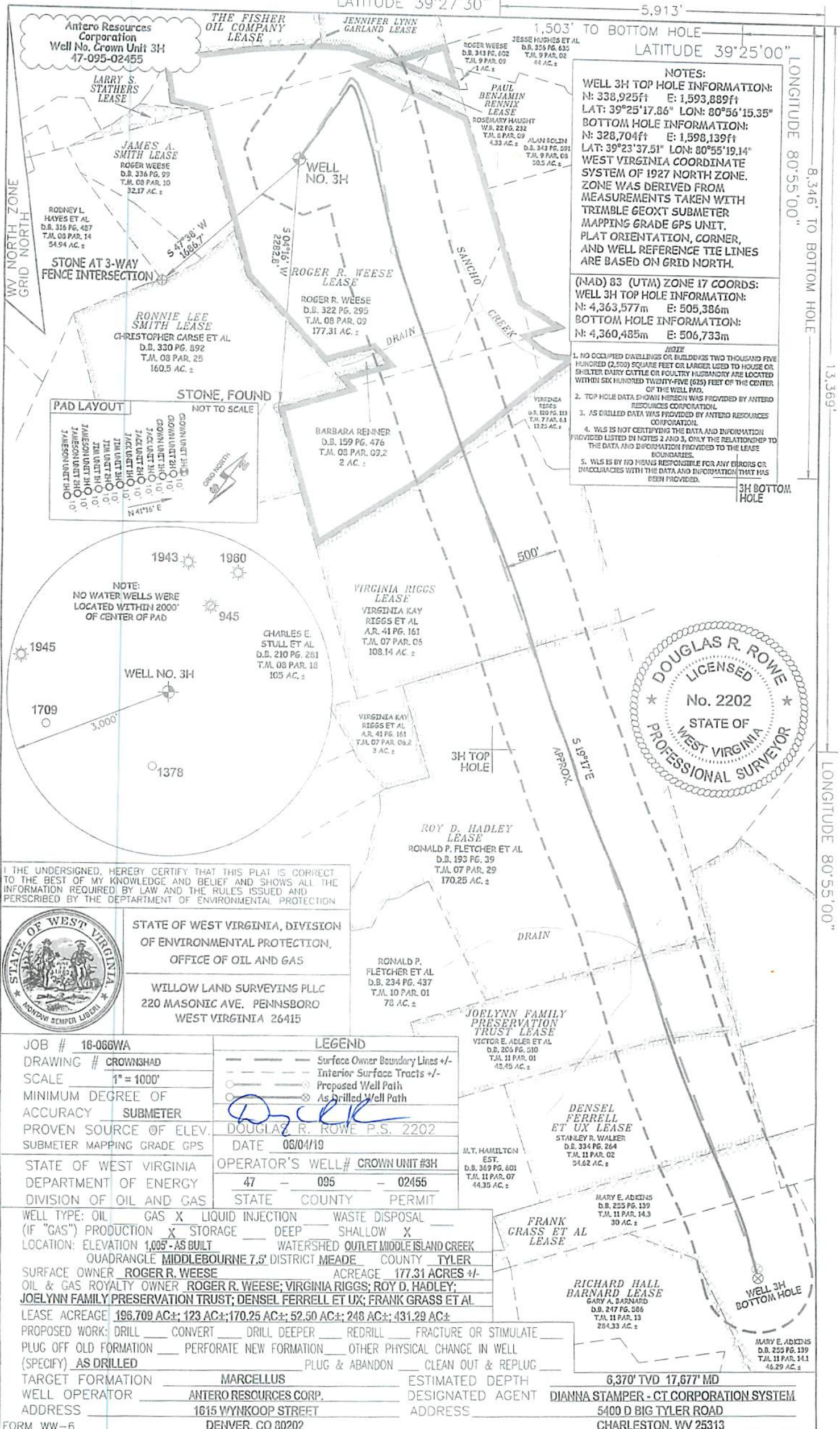
5,913'

LATITUDE 39°25'00"

LONGITUDE 80°55'00"

13,369'

LONGITUDE 80°55'00"



NOTES:
WELL 3H TOP HOLE INFORMATION:
 N: 338,925ft E: 1,593,889ft
 LAT: 39°25'17.86" LON: 80°56'15.35"
BOTTOM HOLE INFORMATION:
 N: 328,704ft E: 1,598,139ft
 LAT: 39°23'37.51" LON: 80°55'19.14"
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.

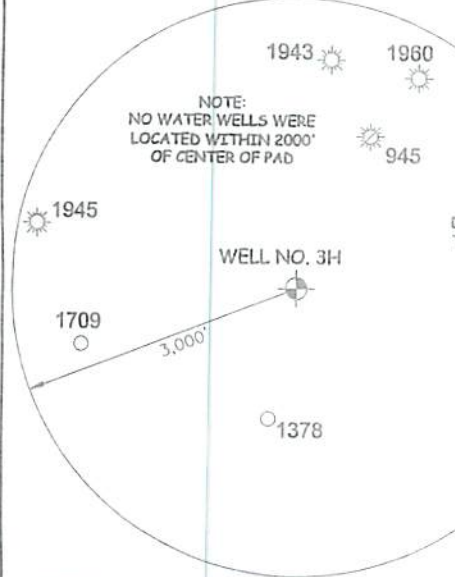
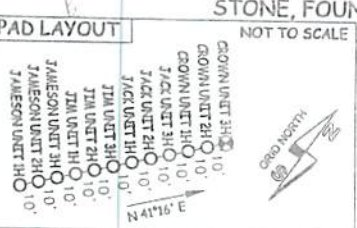
(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 3H TOP HOLE INFORMATION:
 N: 4,363,577m E: 505,386m
BOTTOM HOLE INFORMATION:
 N: 4,360,485m E: 506,733m

- 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.

3H BOTTOM HOLE



Antero Resources Corporation
 Well No. Crown Unit 3H
 47-095-02455



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 # 16-066WA
 DRAWING # CROWN3HAD
 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
 ⊗ - - - - - As Drilled Well Path

DOUGLAS R. ROWE P.S. 2202
 DATE 06/04/19

OPERATOR'S WELL# CROWN UNIT #3H
 47 - 095 - 02455
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
 LOCATION: ELEVATION 1,005'-AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
 QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT MEADE COUNTY TYLER
 SURFACE OWNER ROGER R. WEESE ACREAGE 177.31 ACRES +/-
 OIL & GAS ROYALTY OWNER ROGER R. WEESE; VIRGINIA RIGGS; ROY D. HADLEY;
 JOELYNN FAMILY PRESERVATION TRUST; DENSEL FERRELL ET UX; FRANK GRASS ET AL
 LEASE ACREAGE 196.709 AC±; 123 AC±; 170.25 AC±; 52.50 AC±; 248 AC±; 431.29 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 6,370' TVD 17,677' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
 ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313