

04/05/2019



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

April 12, 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:

- San Juan Unit 2H (API # 47-095-02381)—Vera Pad
- San Juan Unit 3H (API # 47-095-02382)—Vera Pad
- San Juan Unit 4H (API # 47-095-02383)—Vera Pad
- Ant Unit 1H (API # 47-095-02400)—Vera Pad
- Ant Unit 2H (API # 47-095-02401)—Vera Pad
- Ant Unit 3H (API # 47-095-02402)—Vera Pad
- Emerger Unit 1H (API # 47-095-02412)—Vera 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 stroke extending to the right.

Megan Griffith
Permitting Agent
Antero Resources Corporation

Enclosures

WR-35
Rev. 8/23/13

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

API 47 - 095 - 02383 County Tyler District Centerville
 Quad Middlebourne 7.5' Pad Name Vera Pad Field/Pool Name -----
 Farm name Vera O. Thomas Well Number San Juan Unit 4H
 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 4363978m Easting 508276m
 Landing Point of Curve Northing 4364329.34m Easting 508989.48m
 Bottom Hole Northing 4366759m Easting 508133m

Elevation (ft) 1148.1' 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 10/27/2016 Date drilling commenced 3/22/2017 Date drilling ceased 8/26/2017
 Date completion activities began 1/23/2018 Date completion activities ceased 6/21/2018
 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 65', 215', 261', 399' Open mine(s) (Y/N) depths No
 Salt water depth(s) ft 620', 1614', 1974' Void(s) encountered (Y/N) depths No
 Coal depth(s) ft 620', 879' Cavern(s) encountered (Y/N) depths No
 Is coal being mined in area (Y/N) No

Reviewed by:

WR-35
Rev. 8/23/13

API 47-095 - 02383 Farm name Vera O. Thomas Well number San Juan Unit 4H

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"	730'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2607'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	16133'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7108'		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	368 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	620 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	943 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	840 sx (Lead) 1362 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)		~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16133' MD, 6552' TVD (BHL), 6592' (Deepest Point Drilled) Loggers TD (ft) 16133' MD

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

Plug back procedure N/A

Kick off depth (ft) 6544'

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

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

Conductor - 0

Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface

Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface

Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

WR-35
Rev. 8/23/13

API 47- 095 - 02383 Farm name Vera O. Thomas Well number San Juan Unit 4H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6536' (TOP) TVD	7416' (TOP) MD

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 4341 mcfpd Oil 80 bpd NGL --- bpd Water 51 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)
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***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

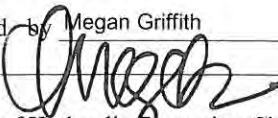
Drilling Contractor Frontier Drilling LLC
Address 562 Spring Run Road City Pennsboro State WV Zip 26415

Logging Company Schlumberger
Address 5599 San Felipe Street City Houston State TX Zip 77056

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

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

Please insert additional pages as applicable.

Completed by Megan Griffith Telephone 303-357-7223
Signature  Title Permitting Agent Date 4/12/2019

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

API 47-095-02383 Farm Name Vera O. Thomas Well Number San Juan Unit 4H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	4/20/2018	15862.965	16031.7	60	Marcellus
2	4/20/2018	15662.883	15831.618	60	Marcellus
3	4/21/2018	15462.801	15631.536	60	Marcellus
4	4/21/2018	15262.719	15431.454	60	Marcellus
5	4/22/2018	15062.637	15231.372	60	Marcellus
6	4/22/2018	14862.555	15031.29	60	Marcellus
7	4/23/2018	14662.473	14831.208	60	Marcellus
8	4/24/2018	14462.391	14631.126	60	Marcellus
9	4/24/2018	14262.309	14431.044	60	Marcellus
10	4/25/2018	14062.227	14230.962	60	Marcellus
11	4/25/2018	13862.145	14030.88	60	Marcellus
12	4/26/2018	13662.063	13830.798	60	Marcellus
13	4/26/2018	13461.981	13630.716	60	Marcellus
14	4/27/2018	13261.899	13430.634	60	Marcellus
15	4/27/2018	13061.817	13230.552	60	Marcellus
16	4/28/2018	12861.735	13030.47	60	Marcellus
17	4/28/2018	12661.653	12830.388	60	Marcellus
18	4/29/2018	12461.571	12630.306	60	Marcellus
19	4/29/2018	12261.489	12430.224	60	Marcellus
20	4/30/2018	12061.407	12230.142	60	Marcellus
21	5/1/2018	11861.325	12030.06	60	Marcellus
22	5/1/2018	11661.243	11829.978	60	Marcellus
23	5/2/2018	11461.161	11629.896	60	Marcellus
24	5/2/2018	11261.079	11429.814	60	Marcellus
25	5/2/2018	11060.997	11229.732	60	Marcellus
26	5/3/2018	10860.915	11029.65	60	Marcellus
27	5/4/2018	10660.833	10829.568	60	Marcellus
28	5/4/2018	10460.751	10629.486	60	Marcellus
29	5/5/2018	10260.669	10429.404	60	Marcellus
30	5/5/2018	10060.587	10229.322	60	Marcellus
31	5/6/2018	9860.505	10029.24	60	Marcellus
32	5/6/2018	9660.423	9829.158	60	Marcellus
33	5/7/2018	9460.341	9629.076	60	Marcellus
34	5/7/2018	9260.259	9428.994	60	Marcellus
35	5/8/2018	9060.177	9228.912	60	Marcellus
36	5/8/2018	8860.095	9028.83	60	Marcellus
37	5/9/2018	8660.013	8828.748	60	Marcellus
38	5/9/2018	8459.931	8628.666	60	Marcellus
39	5/9/2018	8259.849	8428.584	60	Marcellus
40	5/10/2018	8059.767	8228.502	60	Marcellus
41	5/10/2018	7859.685	8028.42	60	Marcellus
42	5/11/2018	7659.603	7828.338	60	Marcellus
43	5/11/2018	7459.521	7628.256	60	Marcellus

API 47-095-02383 Farm Name Vera O. Thomas Well Number San Juan Unit 4H								
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 (bbbls)	Amount of Nitrogen/ other (units)
1	4/20/2018	73.38	7424	5095	3712	400180	8178.643	N/A
2	4/20/2018	74.09	7494	5466	3705	399480	8281.571	N/A
3	4/21/2018	77.54	7652	5984	3435	405740	8930.5	N/A
4	4/21/2018	74.69	7472	6062	3777	402340	8399.31	N/A
5	4/22/2018	76.07	7576	5921	3640	405840	9088.429	N/A
6	4/22/2018	73.84	7476	6404	3718	409200	8753.929	N/A
7	4/23/2018	74.61	7571	6198	3805	414490	8758.762	N/A
8	4/24/2018	72.4	7668	6113	3772	401200	8387.952	N/A
9	4/24/2018	72.27	7664	6388	3864	398660	8206.952	N/A
10	4/25/2018	75.28	7875	5999	3917	400660	8466.524	N/A
11	4/25/2018	69.58	7802	5887	3910	402220	8991.69	N/A
12	4/26/2018	75.01	8064	5809	3965	397400	8474.643	N/A
13	4/26/2018	73.57	7645	5932	3700	411970	8280.69	N/A
14	4/27/2018	75.7	7663	5926	3805	400400	8344.69	N/A
15	4/27/2018	72.43	7500	5819	3822	397480	8386.548	N/A
16	4/28/2018	75.3	7630	6121	3737	396280	8305.81	N/A
17	4/28/2018	75.68	7395	5936	3971	398920	8493.952	N/A
18	4/29/2018	72.6	7581	5601	3607	404720	8312.024	N/A
19	4/29/2018	72.82	7535	6027	3722	420250	8676.167	N/A
20	4/30/2018	74.4	7532	5182	3882	420490	8515.214	N/A
21	5/1/2018	76.2	7162	5290	3986	400440	8843.81	N/A
22	5/1/2018	73.9	7302	5943	4023	401220	8427.119	N/A
23	5/2/2018	75.77	7270	5783	3961	405830	8644.143	N/A
24	5/2/2018	73.7	7181	5861	3782	405680	8384.286	N/A
25	5/2/2018	76.19	7431	5413	4162	407880	8960.238	N/A
26	5/3/2018	74.6	7213	4917	4129	400540	8356.024	N/A
27	5/4/2018	74.27	7442	6132	3875	398400	8196.548	N/A
28	5/4/2018	74.1	7332	6018	4069	401260	8306.381	N/A
29	5/5/2018	75	7479	6426	4037	400760	8487.429	N/A
30	5/5/2018	73.1	7181	6227	4077	399800	8785.952	N/A
31	5/6/2018	68.77	7618	4867	4268	399720	8783.81	N/A
32	5/6/2018	72.3	7224	6122	4061	399880	8346.714	N/A
33	5/7/2018	75.28	7248	5885	3877	399700	8170.333	N/A
34	5/7/2018	72.5	7172	6008	4028	401240	8864.024	N/A
35	5/8/2018	76.8	6762	4761	3904	402720	8071.929	N/A
36	5/8/2018	76.35	6923	5087	3997	404500	8143.69	N/A
37	5/9/2018	64.94	7472	6231	3963	403100	10830.55	N/A
38	5/9/2018	77.97	7240	6408	4178	400580	8261.333	N/A
39	5/9/2018	75.81	6844	5681	3971	402420	8183.452	N/A
40	5/10/2018	76.14	6802	5530	4143	400500	8095.548	N/A
41	5/10/2018	75.22	7012	6330	4320	394581	8733.929	N/A
42	5/11/2018	78.29	7051	6040	4042	400780	7799.357	N/A
43	5/11/2018	77.64	6765	6336	3694	401760	8051.571	N/A
		74.3	7,380	5,841	3,907	17,321,211	365,962	TOTAL

API 47-095-02383 Farm Name Vera O. Thomas Well Number San Juan Unit 4H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Sandstone	85	105	85	105
Sandy Siltstone	105	725	105	725
Sandy Shale	725	865	725	865
Calcareous Shale	865	905	865	905
Shaly Sandstone	905	1,005	905	1,005
Shaly Siltstone	1,005	1,165	1,005	1,165
Silty Shale	1,165	1,345	1,165	1,345
Sandstone	1,345	1,385	1,345	1,385
Sandy Shale	1,385	1,625	1,385	1,625
Shaly Sandstone	1,625	1,685	1,625	1,685
Silty Shale	1,685	1,765	1,685	1,765
Sandy Shale	1,765	1,905	1,765	1,905
Sandy Shale/Coal	1,905	2,039	1,905	2,070
Big Lime	2,054	2,203	2,085	2,244
Big Injun	2,203	2,656	2,244	2,726
Gantz Sand	2,656	2,793	2,726	2,871
Fifty Foot Sandstone	2,793	2,934	2,871	3,020
Gordon	2,934	3,079	3,020	3,176
Fifth Sandstone	3,079	3,352	3,176	3,479
Bayard	3,352	3,652	3,479	3,831
Warren	3,652	4,038	3,831	4,289
Speechley	4,038	4,700	4,289	5,073
Balltown	4,506	4,973	4,842	5,353
Bradford	4,700	4,973	5,073	5,353
Benson	4,973	5,287	5,353	5,770
Alexander	5,287	5,888	5,770	6,487
Rhinestreet	5,864	6,210	6,463	6,878
Sycamore	6,210	6,380	6,878	7,106
Middlesex	6,380	6,478	7,106	7,282
Burkett	6,478	6,504	7,282	7,336
Tully	6,504	6,536	7,336	7,416
Marcellus	6,536	NA	7,416	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:	5/13/2018
Job End Date:	5/13/2018
State:	West Virginia
County:	Tyler
API Number:	47-095-02383-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	San Juan Unit 4H
Latitude:	39.42521389
Longitude:	-80.90570556
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,552
Total Base Water Volume (gal):	15,794,352
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	88.13758	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.21873	

SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant								
					Listed Below					
SCALECHEK LP-70	Halliburton	Scale Inhibitor								
					Listed Below					
WG-36 GELLING AGENT	Halliburton	Gelling Agent								
					Listed Below					
MC B-8614	Halliburton	Biocide								
					Listed Below					
FR-76	Halliburton	Friction Reducer								
					Listed Below					
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor								
					Listed Below					
SP BREAKER	Halliburton	Breaker								
					Listed Below					
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant								
					Listed Below					

HYDROCHLORIC ACID	Halliburton	Solvent							
					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	11.60483		
			Hydrochloric acid	7647-01-0		15.00000	0.02566		
			Acrylamide acrylate copolymer	Proprietary		30.00000	0.01592		Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt	Proprietary		30.00000	0.01592		
			Hydrotreated light petroleum distillate	64742-47-8		30.00000	0.01592		
			Guar gum	9000-30-0		100.00000	0.00997		
			Ethylene glycol	107-21-1		60.00000	0.00855		
			Glutaraldehyde	111-30-8		30.00000	0.00264		
			Telmer	Proprietary		10.00000	0.00142		
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1		5.00000	0.00044		
			Sodium persulfate	7775-27-1		100.00000	0.00033		
			Sodium polyacrylate	9003-04-7		1.00000	0.00014		
			Methanol	67-56-1		60.00000	0.00009		
			Ethanol	64-17-5		1.00000	0.00009		
			Fatty acids, tall oil	Proprietary		30.00000	0.00004		
			Ethoxylated alcohols	Proprietary		30.00000	0.00004		
			Modified thiourea polymer	Proprietary		30.00000	0.00004		
			Olefins	Proprietary		5.00000	0.00002		
			Propargyl alcohol	107-19-7		10.00000	0.00001		
			Phosphoric acid	7664-38-2		0.10000	0.00001		
			Acrylic acid	79-10-7		0.01000	0.00000		

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: 47-095-02383 County: Tyler
District: Centerville Well No: San Juan Unit 4H
Farm Name: Vera O. Thomas
Discharge Date/s From:(MMDDYY) 07/23/18 To: (MMDDYY) 08/22/18
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 587,161

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

- (1) Land Application: _____ (Include a topographical map of the Area.)
- (2) UIC: 228,753 Permit No. 3400923821, 3416729543, 3416729464, 3416729445, 4708509721, 3410523619, 3416729731, 3400923761, 3405320968, 3410523268
- (3) Offsite Disposal: 225 Site Location: Mud Masters
- (4) Reuse: 358,183 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: 9/17/18

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

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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"

8,198'

8,654' TO BOTTOM HOLE

LATITUDE 39°27'30"

LONGITUDE 80°52'30"

12,083'

LONGITUDE 80°52'30"

Antero Resources Corporation
Well No. San Juan Unit 4H

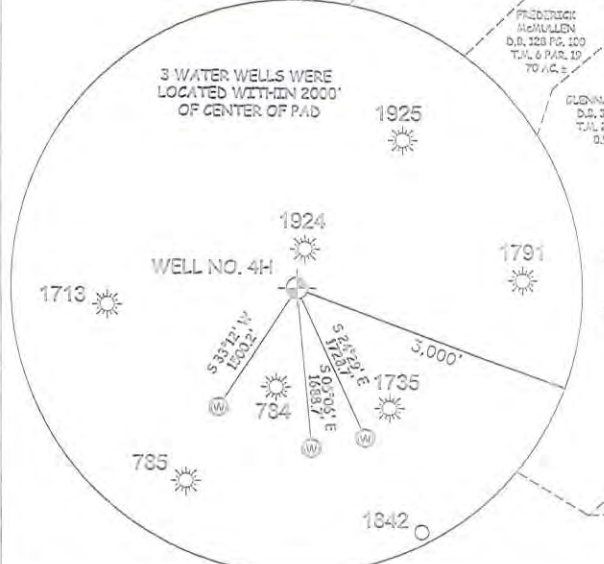
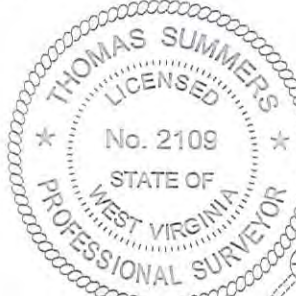
AS DRILLED DATA:
WELL 4H TOP HOLE INFORMATION:
N: 340,082ft E: 1,603,394ft
LAT: 39°25'30.78" LON: 80°54'14.48"
BOTTOM HOLE INFORMATION:
N: 349,215ft E: 1,603,078ft
LAT: 39°27'00.99" LON: 80°54'20.32"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT 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 4H TOP HOLE INFORMATION:
N: 4,363,978m E: 508,276m
BOTTOM HOLE INFORMATION:
N: 4,366,759m E: 508,133m

04/05/2019

WV NORTH ZONE GRID NORTH

1. NO OCCUPIED DWELLINGS OR BUILDINGS THIRTY THOUSAND FIVE HUNDRED (30,000) SQUARE FEET OR LARGER USED TO HOUSE OR SHEDDERS DAIRY CATTLE OR POULTRY (EXCLUDING AND LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEN GUY SURVEYING, INC.
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.



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

PAD LAYOUT
NOT TO SCALE

MYSTIS UNIT 1H	10'
MYSTIS UNIT 2H	10'
MYSTIS UNIT 3H	10'
ANT UNIT 1H	10'
ANT UNIT 2H	10'
ANT UNIT 3H	10'
SAN JUAN UNIT 1H	10'
SAN JUAN UNIT 2H	10'
SAN JUAN UNIT 3H	10'
SAN JUAN UNIT 4H	10'
EMERGER UNIT 1H	10'
EMERGER UNIT 2H	10'
EMERGER UNIT 3H	10'
EMERGER UNIT 4H	10'

JOB # 16-042WA
DRAWING # SAN JUAN MHAD
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

THOMAS SUMMERS P.S. 2109
DATE 10/12/18
OPERATOR'S WELL# SAN JUAN UNIT #4H

WELL TYPE: OIL ___ GAS LIQUID INJECTION ___ WASTE DISPOSAL ___ 47 - 095 - 02383
(IF "GAS") PRODUCTION STORAGE ___ DEEP ___ SHALLOW STATE COUNTY PERMIT
LOCATION: ELEVATION 1,148.1' AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT CENTERVILLE COUNTY TYLER
SURFACE OWNER VERA O. THOMAS ACREAGE 51.11 ACRES +/-
OIL & GAS ROYALTY OWNER NORMAN H. THOMAS ET UX; PEGGY E. WINCE; PATRICIA A. RAGER; CATHY JO ASH; MELVIN WILEY ET UX; LARRY D. WILCOX LEASE ACREAGE 125 AC +/- 70.71 AC +/- 30.50 AC +/- 30 AC +/- 370 AC +/- 03 AC +/-
MCMULLEN; RAY E. ADKINS ET UX; CATHY J. ASH; JOHN FOUT ET UX; JANICE B. WHITE; REGINA BUCK; MIDDLEBOURNE CHURCH OF CHRIST; CAROLYN F. SHOCKEY 100 AC +/- 137.35 AC +/- 30.03 AC +/- 48.5 AC +/- 34.5 AC +/- 118.75 AC +/- 23 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 6,552' TVD 16,133' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

COUNTY NAME PERMIT