

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 - 02382 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 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 4363981m Easting 508275m
Landing Point of Curve Northing 4364297.06m Easting 508793.60m
Bottom Hole Northing 4366833m Easting 507897m

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 1/24/2017 Date drilling commenced 3/22/2017 Date drilling ceased 8/31/2017
Date completion activities began 1/23/2018 Date completion activities ceased 6/16/2018
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 - 02382 Farm name Vera O. Thomas Well number San Juan 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"	737'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2611'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	16352'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7214'		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	625 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	928 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	740 sx (Lead)1585 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.45 (Lead), 1.94 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16352' MD, 6554' TVD (BHL), 6595' (Deepest Point Drilled) Loggers TD (ft) 16352' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6182'

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

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API 47- 095 - 02382 Farm name Vera O. Thomas Well number San Juan 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.

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API 47- 095 - 02382 Farm name Vera O. Thomas Well number San Juan Unit 3H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	6566' (TOP)	TVD	7252' (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 2951 mcfpd Oil 76 bpd NGL --- bpd Water 23 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.

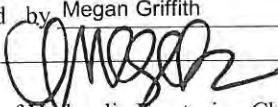
Drilling Contractor Frontier Drilling LLC
Address 562 Spring Run Road City Pennsboro State WV Zip 26415

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 Phillippi 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

API 47-095-02382 Farm Name Vera O. Thomas Well Number San Juan Unit 3H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	3/29/2018	16084.8	16250	60	Marcellus
2	3/30/2018	15888.96	16054.16	60	Marcellus
3	3/30/2018	15693.12	15858.32	60	Marcellus
4	3/30/2018	15497.28	15662.48	60	Marcellus
5	3/31/2018	15301.44	15466.64	60	Marcellus
6	3/31/2018	15105.6	15270.8	60	Marcellus
7	4/1/2018	14909.76	15074.96	60	Marcellus
8	4/2/2018	14713.92	14879.12	60	Marcellus
9	4/2/2018	14518.08	14683.28	60	Marcellus
10	4/2/2018	14322.24	14487.44	60	Marcellus
11	4/3/2018	14126.4	14291.6	60	Marcellus
12	4/3/2018	13930.56	14095.76	60	Marcellus
13	4/4/2018	13734.72	13899.92	60	Marcellus
14	4/4/2018	13538.88	13704.08	60	Marcellus
15	4/5/2018	13343.04	13508.24	60	Marcellus
16	4/5/2018	13147.2	13312.4	60	Marcellus
17	4/6/2018	12951.36	13116.56	60	Marcellus
18	4/6/2018	12755.52	12920.72	60	Marcellus
19	4/7/2018	12559.68	12724.88	60	Marcellus
20	4/7/2018	12363.84	12529.04	60	Marcellus
21	4/8/2018	12168	12333.2	60	Marcellus
22	4/8/2018	11972.16	12137.36	60	Marcellus
23	4/8/2018	11776.32	11941.52	60	Marcellus
24	4/9/2018	11580.48	11745.68	60	Marcellus
25	4/10/2018	11384.64	11549.84	60	Marcellus
26	4/10/2018	11188.8	11354	60	Marcellus
27	4/10/2018	10992.96	11158.16	60	Marcellus
28	4/11/2018	10797.12	10962.32	60	Marcellus
29	4/11/2018	10601.28	10766.48	60	Marcellus
30	4/12/2018	10405.44	10570.64	60	Marcellus
31	4/12/2018	10209.6	10374.8	60	Marcellus
32	4/13/2018	10013.76	10178.96	60	Marcellus
33	4/13/2018	9817.92	9983.12	60	Marcellus
34	4/13/2018	9622.08	9787.28	60	Marcellus
35	4/14/2018	9426.24	9591.44	60	Marcellus
36	4/14/2018	9230.4	9395.6	60	Marcellus
37	4/15/2018	9034.56	9199.76	60	Marcellus
38	4/16/2018	8838.72	9003.92	60	Marcellus
39	4/16/2018	8642.88	8808.08	60	Marcellus
40	4/17/2018	8447.04	8612.24	60	Marcellus
41	4/17/2018	8251.2	8416.4	60	Marcellus
42	4/17/2018	8055.36	8220.56	60	Marcellus
43	4/18/2018	7859.52	8024.72	60	Marcellus
44	4/18/2018	7663.68	7828.88	60	Marcellus
45	4/18/2018	7467.84	7633.04	60	Marcellus
46	4/18/2018	7272	7437.2	60	Marcellus

API 47-095-02382 Farm Name Vera O. Thomas Well Number San Juan Unit 3H								
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	3/29/2018	76.24	7306	5020	4933	411160	8325	N/A
2	3/30/2018	76.5	7467	5027	3671	399920	8559	N/A
3	3/30/2018	73.4	7323	5453	3360	408680	8132	N/A
4	3/30/2018	77.29	7570	5759	3603	406380	8304	N/A
5	3/31/2018	75.3	7468	6157	3632	405820	8024	N/A
6	3/31/2018	72.92	7428	5425	3660	395900	8133	N/A
7	4/1/2018	75.1	7540	5505	4435	402480	7983	N/A
8	4/2/2018	76.77	7576	5789	3789	403920	8256	N/A
9	4/2/2018	77.3	7505	5363	3728	400020	8023	N/A
10	4/2/2018	77.92	7433	5576	3705	403360	8231	N/A
11	4/3/2018	73.01	7329	5289	3550	401960	8247	N/A
12	4/3/2018	75.6	7472	4620	3832	409540	8281	N/A
13	4/4/2018	75.9	7558	7090	3525	393500	8075	N/A
14	4/4/2018	76.6	7419	5850	3549	401510	7744	N/A
15	4/5/2018	75.29	7426	5885	3925	397920	8146	N/A
16	4/5/2018	76.4	7306	6661	3421	405600	7900	N/A
17	4/6/2018	76.7	7193	7841	3795	403260	8221	N/A
18	4/6/2018	75.8	7186	5573	3771	401320	7777	N/A
19	4/7/2018	77.73	7121	7031	3592	398800	8059	N/A
20	4/7/2018	74.43	7037	5262	3492	398620	7925	N/A
21	4/8/2018	77.3	7200	5421	3518	401700	8061	N/A
22	4/8/2018	78.12	7098	5627	3758	403320	7824	N/A
23	4/8/2018	76.9	7249	5257	3621	397440	8021	N/A
24	4/9/2018	76.28	6999	5244	3690	396840	7720	N/A
25	4/10/2018	76.8	7077	5696	3812	399140	8062	N/A
26	4/10/2018	76	6963	5802	4020	403120	8014	N/A
27	4/10/2018	76.1	7189	5875	4044	403000	7961	N/A
28	4/11/2018	73.6	6848	5301	3838	395360	7882	N/A
29	4/11/2018	75.7	7042	6038	3665	399740	7964	N/A
30	4/12/2018	73.7	7263	5402	3894	402660	7926	N/A
31	4/12/2018	72.8	6603	5427	3932	403640	8962	N/A
32	4/13/2018	74.8	7343	5419	3775	399260	9599	N/A
33	4/13/2018	74.3	6753	5745	3835	402560	7727	N/A
34	4/13/2018	78.8	6657	5783	3621	402840	7795	N/A
35	4/14/2018	75.9	6788	4900	3823	401460	7751	N/A
36	4/14/2018	75.4	7033	5909	3666	403600	7994	N/A
37	4/15/2018	76.4	6969	6144	4972	380420	9020	N/A
38	4/16/2018	60.7	8023	6627	4477	405180	10711	N/A
39	4/16/2018	67.43	7810	6188	4696	341180	8278	N/A
40	4/17/2018	76	6946	5796	3858	404760	7898	N/A
41	4/17/2018	74.53	6862	5306	3888	402900	8025	N/A
42	4/17/2018	77.33	6465	5354	3748	400560	7492	N/A
43	4/18/2018	77.37	6501	5696	3736	398500	7468	N/A
44	4/18/2018	74.92	6545	5439	3851	397060	7766	N/A
45	4/18/2018	75.66	6503	5596	3730	406200	7831	N/A
46	4/18/2018	75.52	6653	5777	3885	403020	7832	N/A
		75.3	7,153	5,716	3,833	18,405,130	373,929	TOTAL

API 47-095-02382 Farm Name Vera O. Thomas Well Number San Juan 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
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	2,040	1,905	2,067
Big Lime	2,055	2,203	2,082	2,239
Big Injun	2,203	2,655	2,239	2,708
Gantz Sand	2,655	2,792	2,708	2,850
Fifty Foot Sandstone	2,792	2,901	2,850	2,967
Gordon	2,901	3,075	2,967	3,153
Fifth Sandstone	3,075	3,343	3,153	3,443
Bayard	3,343	3,653	3,443	3,782
Warren	3,653	4,035	3,782	4,199
Speechley	4,035	4,706	4,199	4,941
Balltown	4,511	4,949	4,726	5,210
Bradford	4,706	4,949	4,941	5,210
Benson	4,949	5,276	5,210	5,573
Alexander	5,276	5,899	5,573	6,258
Rhinestreet	5,875	6,218	6,234	6,611
Sycamore	6,218	6,387	6,611	6,828
Middlesex	6,387	6,482	6,828	7,013
Burkett	6,482	6,508	7,013	7,094
Tully	6,508	6,542	7,094	7,228
Marcellus	6,542	NA	7,228	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:	4/19/2018
Job End Date:	4/19/2018
State:	West Virginia
County:	Tyler
API Number:	47-095-02382-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	San Juan Unit 3H
Latitude:	39.45833333
Longitude:	-80.87500000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,555
Total Base Water Volume (gal):	16,212,326
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	87.90695	Density = 8.330
Ingredients	Listed Above	Listed Above	Water	7732-18-5	100.00000	0.12383	

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

SP BREAKER	Halliburton	Breaker								
					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	Proprietary	100.00000	11.92875			
			Acrylamide acrylate copolymer		Proprietary	30.00000	0.01629			Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt		Proprietary	30.00000	0.01629			
			Hydrotreated light petroleum distillate	64742-47-8		30.00000	0.01629			
			Hydrochloric acid	7647-01-0		15.00000	0.01137			
			Guar gum	9000-30-0		100.00000	0.01126			
			Ethylene glycol	107-21-1		60.00000	0.00833			
			Glutaraldehyde	111-30-8		30.00000	0.00256			
			Telmer	Proprietary		10.00000	0.00139			
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1		5.00000	0.00043			
			Sodium persulfate	7775-27-1		100.00000	0.00035			
			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			

		Sodium sulfate	7757-82-6	0.10000	0.00000
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* 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: 47-095-02382 County: Tyler
District: Centerville Well No: San Juan Unit 3H
Farm Name: Vera O. Thomas
Discharge Date/s From:(MMDDYY) 07/25/18 To: (MMDDYY) 08/24/18
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 519,224

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

- (1) Land Application: _____ (Include a topographical map of the Area.)
- (2) UIC: 199,388 Permit No. 3400923821, 3416729543, 3416729464, 3416729445, 4708509721, 3410523619, 3416729731, 3400923761, 3405320968, 3410523268
- (3) Offsite Disposal: 225 Site Location: Mud Masters
- (4) Reuse: 319,610 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.

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Page 2 of 3

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/l
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"

8,201'

9,233' TO BOTTOM HOLE

LATITUDE 39°27'30"

LONGITUDE 80°52'30"

12,053'

LONGITUDE 80°52'30"

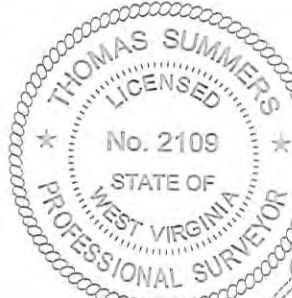
Antero Resources Corporation Well No. San Juan Unit 3H

- 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 (SOUTH HOLE) WAS PROVIDED BY ALBERTSON SURVEY, INC.
 3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
 4. WVS 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. WVS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR DISCREPANCIES WITH THE DATA AND INFORMATION THAT WAS BEEN PROVIDED.

AS DRILLED DATA:
WELL 3H TOP HOLE INFORMATION:
 N: 340,091ft E: 1,603,391ft
 LAT: 39°25'30.87" LON: 80°54'14.51"
BOTTOM HOLE INFORMATION:
 N: 348,832ft E: 1,602,493ft
 LAT: 39°26'57.12" LON: 80°54'27.71"
 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 3H TOP HOLE INFORMATION:
 N: 4,363,981m E: 508,275m
BOTTOM HOLE INFORMATION:
 N: 4,366,639m E: 507,957m

WW NORTH ZONE GRID NORTH



3 WATER WELLS WERE LOCATED WITHIN 2000' OF CENTER OF PAD



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
 - MYSTIS UNIT 2H
 - MYSTIS UNIT 3H
 - ANT UNIT 1H
 - ANT UNIT 2H
 - ANT UNIT 3H
 - SAN JUAN UNIT 1H
 - SAN JUAN UNIT 2H
 - SAN JUAN UNIT 3H
 - SAN JUAN UNIT 4H
 - EMERGER UNIT 1H
 - EMERGER UNIT 2H
 - EMERGER UNIT 3H
 - EMERGER UNIT 4H

JOB # 16-042WA
 DRAWING # SAN JUAN 3HAD
 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 +/-
 O - - - - - Proposed Well Path
 O - - - - - As Drilled Well Path

THOMAS SUMMERS P.S. 2109
 DATE 10/12/18
 OPERATOR'S WELL # SAN JUAN UNIT 3H

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL 47 - 095 - 02302
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW STATE COUNTY PERMIT
 LOCATION: ELEVATION 1,148.1' AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK DISTRICT CENTERVILLE COUNTY TYLER
 QUADRANGLE MIDDLEBOURNE 7.5'
 SURFACE OWNER VERA O. THOMAS ACREAGE 51.11 ACRES +/-
 OIL & GAS ROYALTY OWNER NORMAN H. THOMAS ET UX; PEGGY E. WINCE; PATRICIA A. RACER; CATHY JO ASH; MELVIN WILEY ET UX; LARRY D. MCMULLEN; RAY E. ADKINS ET UX; CATHY J. ASH; LARRY D. MCMULLEN; JOHNSTON R. CROMER; REGINA BUCK; MIDDLEBOURNE CHURCH OF CHRIST 100 AC +/- 137.30 AC +/- 118.14 AC +/- 32.2 AC +/- 24.5 AC +/- 110.75 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 6,559' TVD 15,686' 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