

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 - 02381 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 2H
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 4363984m Easting 508274m
Landing Point of Curve Northing 4364262.03m Easting 508591.62m
Bottom Hole Northing 4366673m Easting 507736m

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 9/6/20147
Date completion activities began 1/23/2018 Date completion activities ceased 7/11/2018
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 - 02381 Farm name Vera O. Thomas Well number San Juan Unit 2H

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"	729'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2562'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15777'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6927'		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	n/a 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	945 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)	1.53 (Lead), 1.83 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15777' MD, 6551' TVD (BHL), 6594' (Deepest Point Drilled) Loggers TD (ft) 15777' MD

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

Plug back procedure N/A

Kick off depth (ft) 5987'

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 - 02381 Farm name Vera O. Thomas Well number San Juan Unit 2H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	6565' (TOP)	TVD	6986' (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 4259 mcfpd Oil 113 bpd NGL --- bpd Water 55 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 47-095-02381 Farm Name Vera O. Thomas Well Number San Juan Unit 2H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	3/29/2018	15509.01	15675.8	60	Marcellus
2	3/29/2018	15311.262	15478.052	60	Marcellus
3	3/29/2018	15113.514	15280.304	60	Marcellus
4	3/30/2018	14915.766	15082.556	60	Marcellus
5	3/30/2018	14718.018	14884.808	60	Marcellus
6	3/31/2018	14520.27	14687.06	60	Marcellus
7	3/31/2018	14322.522	14489.312	60	Marcellus
8	4/1/2018	14124.774	14291.564	60	Marcellus
9	4/1/2018	13927.026	14093.816	60	Marcellus
10	4/2/2018	13729.278	13896.068	60	Marcellus
11	4/2/2018	13531.53	13698.32	60	Marcellus
12	4/3/2018	13333.782	13500.572	60	Marcellus
13	4/3/2018	13136.034	13302.824	60	Marcellus
14	4/4/2018	12938.286	13105.076	60	Marcellus
15	4/4/2018	12740.538	12907.328	60	Marcellus
16	4/5/2018	12542.79	12709.58	60	Marcellus
17	4/5/2018	12345.042	12511.832	60	Marcellus
18	4/6/2018	12147.294	12314.084	60	Marcellus
19	4/6/2018	11949.546	12116.336	60	Marcellus
20	4/7/2018	11751.798	11918.588	60	Marcellus
21	4/7/2018	11554.05	11720.84	60	Marcellus
22	4/8/2018	11356.302	11523.092	60	Marcellus
23	4/8/2018	11158.554	11325.344	60	Marcellus
24	4/8/2018	10960.806	11127.596	60	Marcellus
25	4/9/2018	10763.058	10929.848	60	Marcellus
26	4/9/2018	10565.31	10732.1	60	Marcellus
27	4/10/2018	10367.562	10534.352	60	Marcellus
28	4/10/2018	10169.814	10336.604	60	Marcellus
29	4/11/2018	9972.066	10138.856	60	Marcellus
30	4/11/2018	9774.318	9941.108	60	Marcellus
31	4/12/2018	9576.57	9743.36	60	Marcellus
32	4/12/2018	9378.822	9545.612	60	Marcellus
33	4/13/2018	9181.074	9347.864	60	Marcellus
34	4/13/2018	8983.326	9150.116	60	Marcellus
35	4/13/2018	8785.578	8952.368	60	Marcellus
36	4/14/2018	8587.83	8754.62	60	Marcellus
37	4/14/2018	8390.082	8556.872	60	Marcellus
38	4/15/2018	8192.334	8359.124	60	Marcellus
39	4/15/2018	7994.586	8161.376	60	Marcellus
40	4/16/2018	7796.838	7963.628	60	Marcellus
41	4/16/2018	7599.09	7765.88	60	Marcellus
42	4/17/2018	7401.342	7568.132	60	Marcellus
43	4/17/2018	7203.594	7370.384	60	Marcellus
44	4/18/2018	7005.846	7172.636	60	Marcellus

API 47-095-02381 Farm Name Vera O. Thomas Well Number San Juan Unit 2H

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	75.92	7649	5029	4028	393015	8228.429	N/A
2	3/29/2018	77.5	7247	5095	3134	404660	8497.738	N/A
3	3/29/2018	73.2	7415	5029	3543	405840	10079.9	N/A
4	3/30/2018	76.1	7370	5640	3552	402820	8442.619	N/A
5	3/30/2018	76.93	7461	5813	3799	403000	8677.905	N/A
6	3/31/2018	76.61	7374	5864	3861	403780	8422.69	N/A
7	3/31/2018	77.4	7380	5816	3852	406960	8442.786	N/A
8	4/1/2018	75.6	7409	6222	3681	408120	8450.5	N/A
9	4/1/2018	74.86	7274	5394	3677	406080	8340.119	N/A
10	4/2/2018	76.9	7346	5952	3804	397000	8296.119	N/A
11	4/2/2018	77.67	7760	5322	3732	408220	8434.667	N/A
12	4/3/2018	77.4	7519	5669	3701	399540	8507.833	N/A
13	4/3/2018	76.57	7341	6666	3833	401760	8272.048	N/A
14	4/4/2018	75.9	7505	7265	3608	399900	8646.214	N/A
15	4/4/2018	60.2	7657	5800	3843	399880	8893.286	N/A
16	4/5/2018	76.8	7198	7398	3798	400800	8324.262	N/A
17	4/5/2018	74.11	6969	5132	3799	406040	8061.833	N/A
18	4/6/2018	77.2	7142	6814	3794	407200	8516.714	N/A
19	4/6/2018	78.06	7127	6093	3931	402840	7838.595	N/A
20	4/7/2018	77.1	7146	6900	3732	401980	8293.762	N/A
21	4/7/2018	76.46	6866	5911	3730	402840	8022.357	N/A
22	4/8/2018	77.7	7019	5550	3593	404520	8455.929	N/A
23	4/8/2018	76.69	7028	5949	3781	406580	8035.952	N/A
24	4/8/2018	76.4	7195	6427	3750	396400	8470.143	N/A
25	4/9/2018	74.43	7070	5969	3563	393900	10612.76	N/A
26	4/9/2018	75.9	6979	5652	3686	399060	8451.405	N/A
27	4/10/2018	75.3	7005	5100	3573	400300	8571.214	N/A
28	4/10/2018	76.6	6986	5453	3629	402000	8327.905	N/A
29	4/11/2018	76.8	6978	5851	3672	402380	8198.548	N/A
30	4/11/2018	73.6	7164	5494	3637	408480	9544.571	N/A
31	4/12/2018	76.6	6889	5913	3546	402220	8472.024	N/A
32	4/12/2018	76	6577	5559	3501	402080	8125.476	N/A
33	4/13/2018	76.6	6701	4499	3679	401500	7996.405	N/A
34	4/13/2018	77.1	6511	5118	3805	401220	8226.024	N/A
35	4/13/2018	76	6746	5587	3760	402140	8040.619	N/A
36	4/14/2018	70.4	7241	6025	3744	397660	10427.43	N/A
37	4/14/2018	73.1	7515	5848	4069	401520	8878.548	N/A
38	4/15/2018	78.2	6928	5893	3838	401320	8442.262	N/A
39	4/15/2018	77.1	6996	6258	3730	404730	8048.214	N/A
40	4/16/2018	75.05	6733	5818	3912	405500	8080.405	N/A
41	4/16/2018	73.9	7732	5766	3841	404360	9171.595	N/A
42	4/17/2018	75.66	6756	6042	3734	399480	8066.595	N/A
43	4/17/2018	75.8	6748	5643	3830	398180	7957.524	N/A
44	4/18/2018	76.29	6413	5855	3688	395020	7615.19	N/A
		75.7	7,138	5,820	3,727	17,692,825	373,907	TOTAL

API 47-095-02381 Farm Name Vera O. Thomas Well Number San Juan Unit 2H				
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	2,041	1,905	2,055
Big Lime	2,056	2,199	2,070	2,217
Big Injun	2,199	2,653	2,217	2,686
Gantz Sand	2,653	2,790	2,686	2,827
Fifty Foot Sandstone	2,790	2,937	2,827	2,979
Gordon	2,937	3,072	2,979	3,117
Fifth Sandstone	3,072	3,275	3,117	3,329
Bayard	3,275	3,653	3,329	3,723
Warren	3,653	4,042	3,723	4,127
Speechley	4,042	4,703	4,127	4,815
Balltown	4,512	4,935	4,616	5,058
Bradford	4,703	4,935	4,815	5,058
Benson	4,935	5,287	5,058	5,426
Alexander	5,287	5,914	5,426	6,080
Rhinestreet	5,890	6,213	6,056	6,403
Sycamore	6,213	6,384	6,403	6,625
Middlesex	6,384	6,480	6,625	6,791
Burkett	6,480	6,507	6,791	6,855
Tully	6,507	6,541	6,855	6,962
Marcellus	6,541	NA	6,962	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:	47-095-02381-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	San Juan Unit 2H
Latitude:	39.42526700
Longitude:	-80.90404200
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,551
Total Base Water Volume (gal):	16,084,593
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	88.13886	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.17677	

SCALECHEK LP-70	Halliburton	Scale Inhibitor							
					Listed Below				
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant							
					Listed Below				
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor							
					Listed Below				
HYDROCHLORIC ACID	Halliburton	Solvent							
					Listed Below				
WG-36 GELLING AGENT	Halliburton	Gelling Agent							
					Listed Below				
FR-76	Halliburton	Friction Reducer							
					Listed Below				
MC B-8614	Halliburton	Biocide							
					Listed Below				
SP BREAKER	Halliburton	Breaker							
					Listed Below				

SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	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	11.64524		
				Hydrochloric acid	7647-01-0	15.00000	0.01919		
				Inorganic salt	Proprietary	30.00000	0.01660		
				Acrylamide acrylate copolymer	Proprietary	30.00000	0.01660		Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
				Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01660		
				Guar gum	9000-30-0	100.00000	0.00933		
				Ethylene glycol	107-21-1	60.00000	0.00846		
				Glutaraldehyde	111-30-8	30.00000	0.00260		
				Telmer	Proprietary	10.00000	0.00141		
				Quaternary ammonium compounds, benzyl-C12-16-alkylimethyl chlorides	68424-85-1	5.00000	0.00043		
				Sodium persulfate	7775-27-1	100.00000	0.00031		
				Methanol	67-56-1	60.00000	0.00015		
				Sodium polyacrylate	9003-04-7	1.00000	0.00014		
				Ethanol	64-17-5	1.00000	0.00009		
				Fatty acids, tall oil	Proprietary	30.00000	0.00007		
				Modified thiourea polymer	Proprietary	30.00000	0.00007		
				Ethoxylated alcohols	Proprietary	30.00000	0.00007		
				Olefins	Proprietary	5.00000	0.00003		
				Propargyl alcohol	107-19-7	10.00000	0.00002		
				Phosphoric acid	7664-38-2	0.10000	0.00001		

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: 47-095-02381 County: Tyler
District: Centerville Well No: San Juan Unit 2H
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.

Gretchen Kohler
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"

8,205'

LATITUDE 39°27'30"

LONGITUDE 80°52'30"

12,044'

LONGITUDE 80°52'30"

Antero Resources Corporation
Well No. San Juan Unit 2H

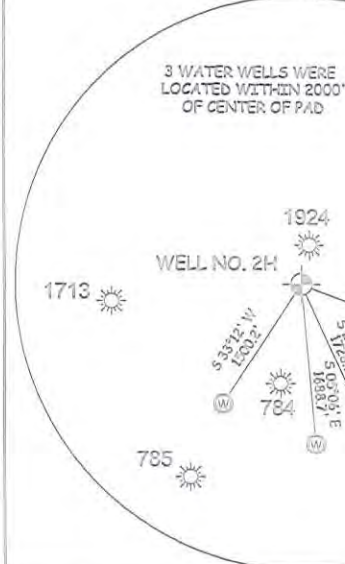
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER BURNY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, 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.

AS DRILLED DATA:
WELL 2H TOP HOLE INFORMATION:
N: 340,101ft E: 1,603,388ft
LAT: 39°25'30.97" LON: 80°54'14.56"
BOTTOM HOLE INFORMATION:
N: 349,012ft E: 1,601,785ft
LAT: 39°26'58.78" LON: 80°54'36.76"
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 2H TOP HOLE INFORMATION:
N: 4,363,984m E: 508,274m
BOTTOM HOLE INFORMATION:
N: 4,366,690m E: 507,740m

04/05/2019

WV NORTH ZONE GRID NORTH



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

INVEST UNIT 1H	10'
INVEST UNIT 2H	10'
INVEST 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 JUAN2HAD
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 #2H

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ 47 - 095 - 02361
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X STATE COUNTY PERMIT
LOCATION: ELEVATION 1,148.1' AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT CENTERVILLE COUNTY TYLER COUNTY NAME
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; CATHY JO ASH ET UX; LEASE ACREAGE 125 AC.; 74.71 AC.; 36.59 AC.; 30 AC.; 137.36 AC.;
LARRY D. McMULLEN; LARRY D. McMULLEN; CHARLES O. CONAWAY; JOHNSTON R. CROMER; RALPH HALL; MIDDLEBOURNE CHURCH OF CHRIST 03 AC.; 118.14 AC.; 77.88 AC.; 32.2 AC.; 41 AC.; 118.75 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 6,551' TVD 15,777' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM PERMIT
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313