



Antero Resources
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September 5, 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:

- Winchester Unit 1H (API # 47-095-02515)—Sine Pad
- Winchester Unit 2H (API # 47-095-02534)—Sine Pad
- Orvis Unit 2H (API # 47-095-02532)—Sine Pad
- Remington Unit 1H (API # 47-095-02533)—Sine Pad
- Remington Unit 2H (API # 47-095-02535)—Sine 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", written over a white background.

Megan Griffith
Permitting Agent
Antero Resources Corporation

Enclosures

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

API 47- _____ - _____ County _____ District _____
Quad _____ Pad Name _____ Field/Pool Name _____
Farm name _____ Well Number _____
Operator (as registered with the OOG) _____
Address _____ City _____ State _____ Zip _____

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

Elevation (ft) _____ GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)

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

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

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

Reviewed by:

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

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor							
Surface							
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production							
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface							
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production							
Tubing							

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

Kick off depth (ft) _____

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

Well cored Yes No Conventional Sidewall
 Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>
_____	_____ TVD _____ MD
_____	_____
_____	_____
_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs
 OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY
 Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP 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 _____
 Address _____ City _____ State _____ Zip _____
 Logging Company _____
 Address _____ City _____ State _____ Zip _____
 Cementing Company _____
 Address _____ City _____ State _____ Zip _____
 Stimulating Company _____
 Address _____ City _____ State _____ Zip _____

Please insert additional pages as applicable.

Completed by _____ Telephone _____
 Signature _____ Title _____ Date _____

API 47-095-02532 Farm Name James Sine et al Well Number Orvis Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	4/10/2019	16693.08	16858	60	Marcellus
2	4/10/2019	16497.576	16662.496	60	Marcellus
3	4/10/2019	16302.072	16466.992	60	Marcellus
4	4/11/2019	16106.568	16271.488	60	Marcellus
5	4/11/2019	15911.064	16075.984	60	Marcellus
6	4/12/2019	15715.56	15880.48	60	Marcellus
7	4/12/2019	15520.056	15684.976	60	Marcellus
8	4/12/2019	15324.552	15489.472	60	Marcellus
9	4/13/2019	15129.048	15293.968	60	Marcellus
10	4/13/2019	14933.544	15098.464	60	Marcellus
11	4/13/2019	14738.04	14902.96	60	Marcellus
12	4/14/2019	14542.536	14707.456	60	Marcellus
13	4/14/2019	14347.032	14511.952	60	Marcellus
14	4/14/2019	14151.528	14316.448	60	Marcellus
15	4/15/2019	13956.024	14120.944	60	Marcellus
16	4/15/2019	13760.52	13925.44	60	Marcellus
17	4/15/2019	13565.016	13729.936	60	Marcellus
18	4/15/2019	13369.512	13534.432	60	Marcellus
19	4/16/2019	13174.008	13338.928	60	Marcellus
20	4/16/2019	12978.504	13143.424	60	Marcellus
21	4/16/2019	12783	12947.92	60	Marcellus
22	4/16/2019	12587.496	12752.416	60	Marcellus
23	4/17/2019	12391.992	12556.912	60	Marcellus
24	4/17/2019	12196.488	12361.408	60	Marcellus
25	4/17/2019	12000.984	12165.904	60	Marcellus
26	4/18/2019	11805.48	11970.4	60	Marcellus
27	4/18/2019	11609.976	11774.896	60	Marcellus
28	4/18/2019	11414.472	11579.392	60	Marcellus
29	4/18/2019	11218.968	11383.888	60	Marcellus
30	4/19/2019	11023.464	11188.384	60	Marcellus
31	4/19/2019	10827.96	10992.88	60	Marcellus
32	4/19/2019	10632.456	10797.376	60	Marcellus
33	4/19/2019	10436.952	10601.872	60	Marcellus
34	4/20/2019	10241.448	10406.368	60	Marcellus
35	4/20/2019	10045.944	10210.864	60	Marcellus
36	4/20/2019	9850.44	10015.36	60	Marcellus
37	4/21/2019	9654.936	9819.856	60	Marcellus
38	4/21/2019	9459.432	9624.352	60	Marcellus
39	4/21/2019	9263.928	9428.848	60	Marcellus
40	4/22/2019	9068.424	9233.344	60	Marcellus
41	4/22/2019	8872.92	9037.84	60	Marcellus
42	4/22/2019	8677.416	8842.336	60	Marcellus
43	4/23/2019	8481.912	8646.832	60	Marcellus
44	4/23/2019	8286.408	8451.328	60	Marcellus
45	4/23/2019	8090.904	8255.824	60	Marcellus
46	4/24/2019	7895.4	8060.32	60	Marcellus
47	4/24/2019	7699.896	7864.816	60	Marcellus
48	4/24/2019	7504.392	7669.312	60	Marcellus
49	4/24/2019	7308.888	7473.808	60	Marcellus
50	4/25/2019	7113.384	7278.304	60	Marcellus
51	4/25/2019	6917.88	7082.8	60	Marcellus

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	4/10/2019	69.62435	7905.144	6315	4758	403450	10501.18	N/A
2	4/10/2019	72.80559	8109.256	6471	4485	403550	8986.27	N/A
3	4/10/2019	72.5505	7919.442	5853	4640	403300	8993.82	N/A
4	4/11/2019	73.48985	7965.626	6094	4131	404200	8873.99	N/A
5	4/11/2019	77.63836	8282.301	6052	3946	403700	8910.99	N/A
6	4/12/2019	68.10062	8376.631	5906	3878	404600	8773.5	N/A
7	4/12/2019	67.15073	8518.408	6395	3871	403050	9054.79	N/A
8	4/12/2019	71.28505	8346.771	6520	4204	404750	8781.71	N/A
9	4/13/2019	70.94753	8270.999	6248	4122	404400	8844.65	N/A
10	4/13/2019	66.2596	8382.087	6389	4342	404450	8815.18	N/A
11	4/13/2019	54.02277	7864.571	6287	4055	404550	8996.77	N/A
12	4/14/2019	68.96744	7670.625	6369	4071	404200	8700.41	N/A
13	4/14/2019	76.94751	8090.042	6534	4025	404150	8711.44	N/A
14	4/14/2019	81.05722	8219.089	6204	4044	403850	8830.74	N/A
15	4/15/2019	83.90181	8161.423	6435	4243	405050	8685.38	N/A
16	4/15/2019	81.76873	8206.405	6775	4494	403750	8698.3	N/A
17	4/15/2019	85.05812	8363.199	6451	5031	403800	8786.62	N/A
18	4/15/2019	82.87975	8170.705	7158	4437	405450	8829.19	N/A
19	4/16/2019	84.61403	8139.304	6748	4318	403850	8718.44	N/A
20	4/16/2019	85.44593	8133.109	6487	4130	405350	8752.33	N/A
21	4/16/2019	84.4094	8265.951	6638	4604	403550	8790.29	N/A
22	4/16/2019	81.83026	7925.198	6857	4769	404050	9024.61	N/A
23	4/17/2019	78.74306	7940.778	7076	4228	350100	8029.55	N/A
24	4/17/2019	79.10345	8102.515	6832	3869	403850	8786.53	N/A
25	4/17/2019	80.66534	8389.944	6645	4585	405200	8660.31	N/A
26	4/18/2019	80.53289	7945.526	6313	4571	404350	8625.75	N/A
27	4/18/2019	83.33457	8284.084	6554	4138	403250	8884.31	N/A
28	4/18/2019	82.99976	8246.747	6591	4046	403650	8673.34	N/A
29	4/18/2019	61.45487	7939.178	6293	4516	404550	10610	N/A
30	4/19/2019	75.13448	7494.619	6699	4102	404350	8783.69	N/A
31	4/19/2019	85.93941	8128.948	6110	4235	403400	8766.38	N/A
32	4/19/2019	88.23408	8182.757	6669	4392	403400	8570.555	N/A
33	4/19/2019	87.46033	7911.307	6432	4962	405000	8628.3	N/A
34	4/20/2019	88.10485	7879.186	7008	4751	404350	8747.2	N/A
35	4/20/2019	89.0717	7947.206	6822	4234	404150	8732.54	N/A
36	4/20/2019	85.07855	7742.175	7778	4526	404900	8610.36	N/A
37	4/21/2019	88.46744	8219.467	7094	4371	403600	8642.76	N/A
38	4/21/2019	85.95395	8122.666	6752	3931	402950	8607.63	N/A
39	4/21/2019	81.50925	7911.632	6313	4397	404300	8561.79	N/A
40	4/22/2019	88.02439	8043.375	7005	5419	403700	8831.85	N/A
41	4/22/2019	88.04323	7660.087	7188	4339	403200	8632.59	N/A
42	4/22/2019	84.5012	7522.372	7422	4017	404100	8498.03	N/A
43	4/23/2019	81.39138	7352.385	7308	4251	403050	8688.1	N/A
44	4/23/2019	76.9314	7111.49	7833	4812	402700	9563.25	N/A
45	4/23/2019	86.11414	7324.745	7455	4652	404200	8472.21	N/A
46	4/24/2019	86.99346	7372.287	8380	4289	404450	8417.54	N/A
47	4/24/2019	81.46436	7070.994	7814	4682	403000	8640.2	N/A
48	4/24/2019	76.02415	6530.86	6765	4563	402700	10203.54	N/A
49	4/24/2019	86.53176	7224.191	7191	4824	404200	8352.59	N/A
50	4/25/2019	86.11843	7060.318	6288	4909	404100	8424.73	N/A
51	4/25/2019	81.73374	6854.71	6964	3895	404650	8674.57	N/A
	AVG	79.3	8,015	6,653	4,354	18,127,350	397,668	TOTAL

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Silty Sandstone	75	195	75	195
Silty Shale	195	245	195	245
shaly sand	245	415	245	415
Shale	415	475	415	475
Dolomitic Shale	475	755	475	755
Shaly Siltstone	755	875	755	875
Silty Sandstone	875	915	875	915
Shaly Sand	915	985	915	985
Sandstone	985	1,125	985	1,125
Silty, Shaly, Sandstone	1,125	1,185	1,125	1,185
Sandstone, Tr Shale, Tr Coal	1,185	1,235	1,185	1,235
Silty Sandstone	1,235	1,515	1,235	1,515
Shaly Siltstone	1,515	1,611	1,515	1,650
Big Lime	1,636	2,465	1,675	2,599
Fifty Foot Sandstone	2,465	2,547	2,599	2,692
Gordon	2,547	2,909	2,692	3,102
Fifth Sandstone	2,909	3,200	3,102	3,438
Bayard	3,200	3,773	3,438	4,083
Speechley	3,773	4,107	4,083	4,459
Balltown	4,107	4,287	4,459	4,664
Bradford	4,287	4,557	4,664	4,970
Benson	4,557	4,716	4,970	5,150
Alexander	4,716	5,948	5,150	6,604
Sycamore	5,802	5,923	6,397	6,579
Middlesex	5,923	6,011	6,579	6,765
Burkett	6,011	6,035	6,765	6,835
Tully	6,035	6,046	6,835	6,873
Marcellus	6,046	NA	6,873	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:	4/10/2019
Job End Date:	4/25/2019
State:	West Virginia
County:	Tyler
API Number:	47-095-02532-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Orvis Unit 2H
Latitude:	39.41504400
Longitude:	-80.95640800
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,157
Total Base Water Volume (gal):	19,491,687
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Supplied by Operator	Base Fluid					
			Water	7732-18-5	100.00000	88.49040	
CalGel 4000	CWS	Gel Slurry					
				Listed Below			

DynaRate 6524	CWS	Friction Reducer					
				Listed Below			
Sand (Proppant)	CWS	Propping Agent					
				Listed Below			
DWP-641	CWS	Friction Reducer					
				Listed Below			
DAP-103	CWS	Iron Control					
				Listed Below			
DAP-901	CWS	Scale Inhibitor					
				Listed Below			
Hydrochloric Acid	CWS	Clean Perforations					
				Listed Below			
DAP-902	CWS	Scale Inhibitor					
				Listed Below			
SaniFrac 8844	CWS	Biocide					
				Listed Below			
Calbreak 5501	CWS	Breaker					

				Listed Below			
CI-9100G	CWS	Corrosion Inhibitor					
				Listed Below			
Other Chemical (s)	Listed Above	See Trade Name (s) List					
				Listed Below			

Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

			Crystalline silica (Quartz)	14808-60-7	100.00000	11.18289	
			Calcite	471-34-1	1.00000	0.07812	
			Hydrochloric acid	7647-01-0	37.00000	0.05325	
			Illite	12173-60-3	1.00000	0.03369	
			Guar gum	9000-30-0	60.00000	0.02975	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.02975	
			Polymer	26100-47-0	45.00000	0.02154	
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.01436	
			Goethite	1310-14-1	0.10000	0.01118	
			Apatite	64476-38-6	0.10000	0.01118	
			Biotite	1302-27-8	0.10000	0.01118	
			Polyethylene glycol mixture	Proprietary	54.50000	0.00595	Proprietary CAS
			Ammonium chloride	12125-02-9	11.00000	0.00548	
			Ilmenite	98072-94-7	0.10000	0.00337	
			Quaternary ammonium compounds, bis (hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00248	
			2,2-Dibromo-3-Nitrilopropionamide	10222-01-2	20.00000	0.00218	
			Sorbitan monooleate	1338-43-8	4.00000	0.00191	

			Hydrotreated Kerosene	64742-47-8	30.00000	0.00180	
			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00144	
			Ammonium Persulfate	7727-54-0	100.00000	0.00105	
			Sorbitol tetraoleate	61723-83-9	2.00000	0.00096	
			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00074	
			Methanol	67-56-1	19.00000	0.00059	
			Citric acid	77-92-9	60.00000	0.00048	
			Amines, tallow alkyl, ethoxylated	Proprietary	1.00000	0.00048	Proprietary CAS
			Sodium bromide	7647-15-6	4.00000	0.00044	
			Dibromoacetonitrile	3252-43-5	3.00000	0.00033	
			9-Octadecenamide, N,N-bis(2-hydroxyethyl)-, (9Z)-	93-83-4	5.00000	0.00030	
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00030	
			Alkyloxypolyethyleneoxy ethanol	84133-50-6	0.50000	0.00024	
			Vinylidene chloride-methyl acrylate copolymer	25038-72-6	20.00000	0.00021	
			Acrylamide	79-06-1	0.10000	0.00005	
			Ethylene Glycol	107-21-1	40.00000	0.00003	
			Acetic acid	64-19-7	1.00000	0.00003	
			formaldehyde	50-00-0	1.00000	0.00003	
			Ethoxylated Alcohols	68131-39-5	10.00000	0.00001	
			Diethylene glycol, monomethyl ether	34590-94-8	20.00000	0.00001	
			Isopropyl alcohol	67-63-0	5.00000	0.00001	
			Formic acid	64-18-6	10.00000	0.00001	
			Tar bases, quinolone derivs, benzyl chloride- quatenized	72480-70-7	10.00000	0.00001	
			Cinnamaldehyde	104-55-2	10.00000	0.00001	

			Organic Acid Salts	9003-04-7			Proprietary Additive Concentration
			Oxyalkylated polyamine	Proprietary			Proprietary CAS & Additive Concentration
			Glycol	57-55-6			Proprietary Additive Concentration
			Amine Salt	Proprietary			Proprietary CAS & Additive Concentration
			Organic Phosphonate 1	Proprietary			Proprietary CAS & Additive Concentration
			Organic Phosphonate 2	Proprietary			Proprietary CAS & Additive Concentration

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

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

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

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Discharge Monitoring Report
Oil and Gas General Permit

Company Name: Antero Resources Corporation
API No: 47-095-02532 County: Tyler
District: Meade Well No: Orvis Unit 2H
Farm Name: James Sine et al
Discharge Date/s From:(MMDDYY) 06/19/19 To: (MMDDYY) 07/19/19
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 941,306

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

- (1) Land Application: _____ (Include a topographical map of the Area.)
(2) UIC: 92,477 Permit No. 3400923821, 3400923823, 3400923824, 3416729731, 3416729543, 3416729464, 3416729445
(3) Offsite Disposal: _____ Site Location: _____
(4) Reuse: 848,829 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: 8/28/19

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/Bl
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°25'00"

11,228'

5,405' TO BOTTOM HOLE

LATITUDE 39°25'00"

590' LONGITUDE 80°55'00"

9,478' TO BOTTOM HOLE

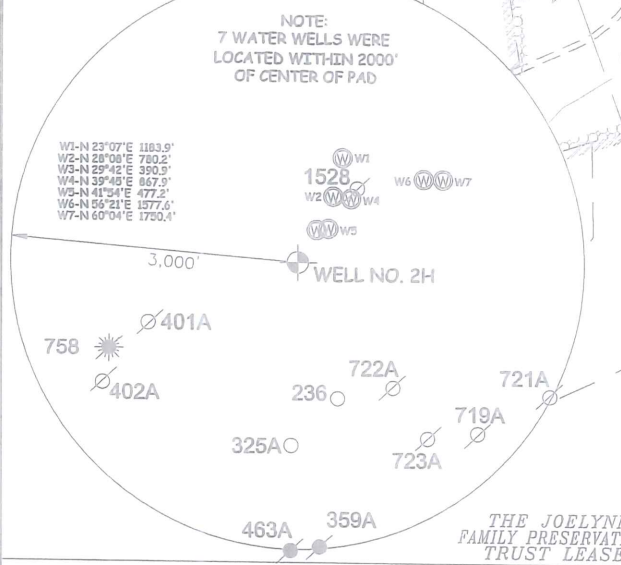
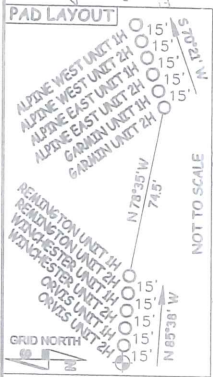
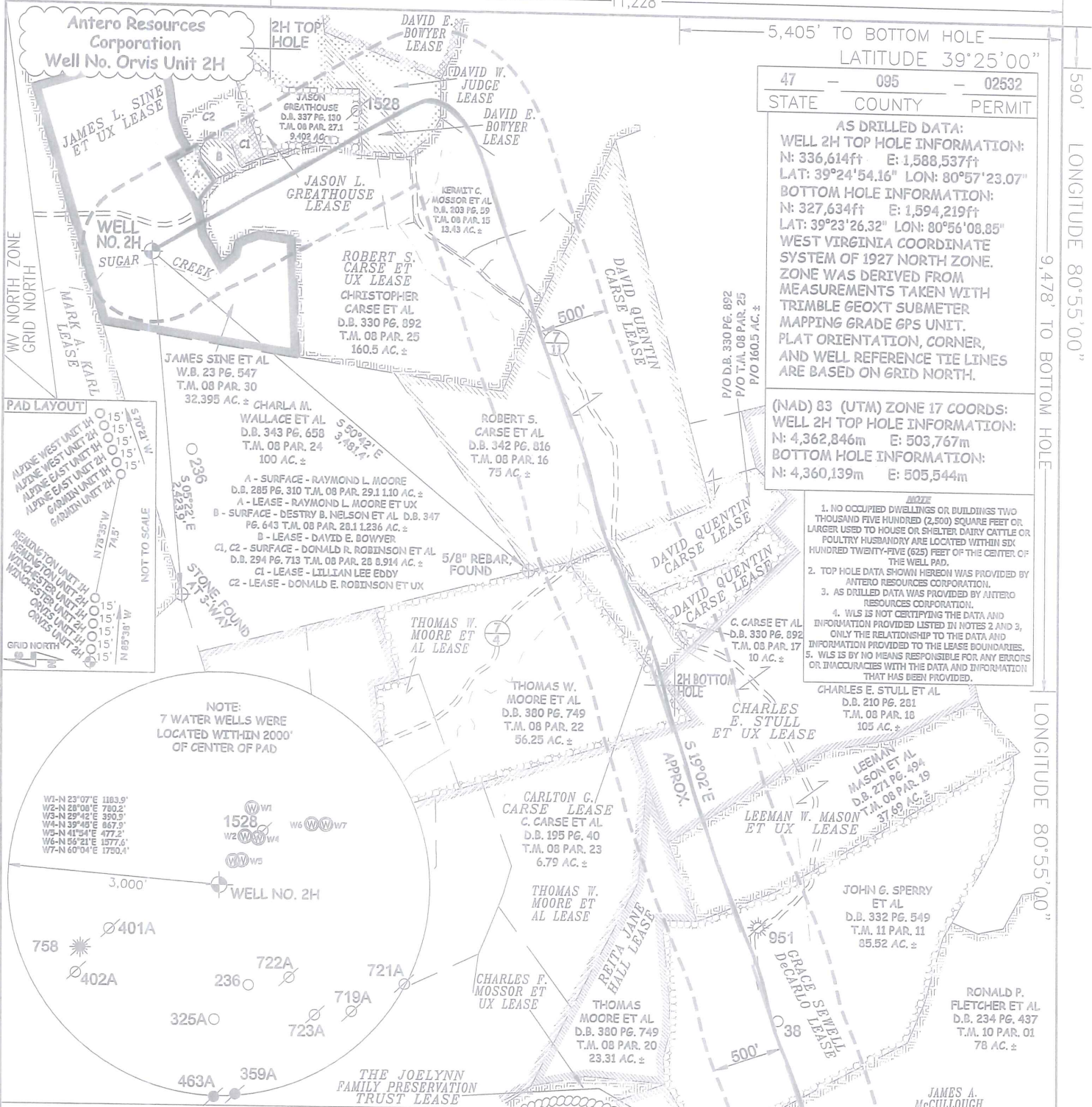
LONGITUDE 80°55'00"

47 - 095 - 02532
STATE COUNTY PERMIT

AS DRILLED DATA:
WELL 2H TOP HOLE INFORMATION:
N: 336,614ft E: 1,588,537ft
LAT: 39°24'54.16" LON: 80°57'23.07"
BOTTOM HOLE INFORMATION:
N: 327,634ft E: 1,594,219ft
LAT: 39°23'26.32" LON: 80°56'08.85"
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 2H TOP HOLE INFORMATION:
N: 4,362,846m E: 503,767m
BOTTOM HOLE INFORMATION:
N: 4,360,139m E: 505,544m

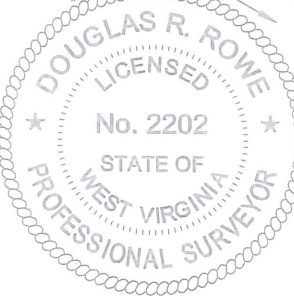
- NOTE
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
 2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ANTERO RESOURCES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



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 # 17-002WA
DRAWING # ORVIS2HAD
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 08/19/19
OPERATOR'S WELL# ORVIS UNIT #2H

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
LOCATION: ELEVATION 799' - AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT MEADE COUNTY TYLER

SURFACE OWNER JAMES SINE ET AL ACREAGE 32.395 ACRES +/-
OIL & GAS ROYALTY OWNER JAMES L. SINE ET UX; ROBERT S. CARSE ET UX; JASON L. GREATHOUSE; LEASE ACREAGE 54.74 AC±; 140 AC±; 9.402 AC±; DAVID E. BOWYER; DAVID W. JUDGE; DAVID QUENTIN CARSE; DAVID QUENTIN CARSE; CARLTON G. CARSE; THOMAS W. MOORE ET AL; CHARLES E. STULL ET UX; LEEMAN W. MASON ET UX; GRACE SEWELL DeCARLO; JAMES A. McCULLOUGH ET UX; ALMA A. BARNARD 3.29 AC±; 13.15 AC±; 75 AC±; 14.022 AC±; 56.25 AC±; 6.79 AC±; 105 AC±; 37.67 AC±; 85.52 AC±; 78 AC±; 148.252 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 6,158' TVD 17,111' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313