

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

API 47 - 095 - 02461 County Tyler District Meade
Quad Middlebourne 7.5' Pad Name Neat Pad Field/Pool Name -----
Farm name Roger R. Weese Well Number Jack Unit 1H
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 4363565m Easting 505377m
Landing Point of Curve Northing 4363669.12m Easting 505178.44m
Bottom Hole Northing 4366915m Easting 504069m

Elevation (ft) 1005' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
Air - Foam & 4% KCL
Mud - Polymer

Date permit issued 9/8/2017 Date drilling commenced 11/15/2017 Date drilling ceased 10/14/2018
Date completion activities began 12/14/2018 Date completion activities ceased 3/21/2019
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

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

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Reviewed by:
JEB
6/24/2019

API 47-095 - 02461 Farm name Roger R. Weese Well number Jack Unit 1H

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"	361'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2606'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	18185'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6507'		4.7#, N-80		
Packer type and depth set		N/A					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	320 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	870 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	655 sx (Lead) 1835 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 18204' MD, 6223' TVD (BHL), 6339' (Deepest Point Drilled) Loggers TD (ft) 18204' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6200'

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

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

Conductor - 0
 Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface
 Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface
 Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

API 47- 095 - 02461 Farm name Roger R. Weese Well number Jack Unit 1H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6282' (TOP) TVD	6581' (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 7298 mcfpd Oil 156 bpd NGL --- bpd Water 7 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 Allied Horizontal Wireline Services
Address 381 Colonial Manor Road City North Huntington State PA Zip 15642

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

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 6/10/2019

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API 47-095-02461 Farm Name Roger R. Weese Well Number Jack Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	1/7/2019	18030.5		60	Marcellus
2	1/7/2019	17833.85	17999.725	60	Marcellus
3	1/8/2019	17637.2	17803.075	60	Marcellus
4	1/8/2019	17440.55	17606.425	60	Marcellus
5	1/8/2019	17243.9	17409.775	60	Marcellus
6	1/9/2019	17047.25	17213.125	60	Marcellus
7	1/9/2019	16850.6	17016.475	60	Marcellus
8	1/9/2019	16653.95	16819.825	60	Marcellus
9	1/10/2019	16457.3	16623.175	60	Marcellus
10	1/10/2019	16260.65	16426.525	60	Marcellus
11	1/10/2019	16064	16229.875	60	Marcellus
12	1/11/2019	15867.35	16033.225	60	Marcellus
13	1/11/2019	15670.7	15836.575	60	Marcellus
14	1/11/2019	15474.05	15639.925	60	Marcellus
15	1/11/2019	15277.4	15443.275	60	Marcellus
16	1/12/2019	15080.75	15246.625	60	Marcellus
17	1/12/2019	14884.1	15049.975	60	Marcellus
18	1/12/2019	14687.45	14853.325	60	Marcellus
19	1/12/2019	14490.8	14656.675	60	Marcellus
20	1/13/2019	14294.15	14460.025	60	Marcellus
21	1/13/2019	14097.5	14263.375	60	Marcellus
22	1/13/2019	13900.85	14066.725	60	Marcellus
23	1/14/2019	13704.2	13870.075	60	Marcellus
24	1/14/2019	13507.55	13673.425	60	Marcellus
25	1/14/2019	13310.9	13476.775	60	Marcellus
26	1/14/2019	13114.25	13280.125	60	Marcellus
27	1/15/2019	12917.6	13083.475	60	Marcellus
28	1/15/2019	12720.95	12886.825	60	Marcellus
29	1/15/2019	12524.3	12690.175	60	Marcellus
30	1/16/2019	12327.65	12493.525	60	Marcellus
31	1/16/2019	12131	12296.875	60	Marcellus
32	1/16/2019	11934.35	12100.225	60	Marcellus
33	1/17/2019	11737.7	11903.575	60	Marcellus
34	1/17/2019	11541.05	11706.925	60	Marcellus
35	1/17/2019	11344.4	11510.275	60	Marcellus
36	1/18/2019	11147.75	11313.625	60	Marcellus
37	1/18/2019	10951.1	11116.975	60	Marcellus
38	1/18/2019	10754.45	10920.325	60	Marcellus
39	1/18/2019	10557.8	10723.675	60	Marcellus
40	1/19/2019	10361.15	10527.025	60	Marcellus
41	1/19/2019	10164.5	10330.375	60	Marcellus
42	1/19/2019	9967.85	10133.725	60	Marcellus
43	1/20/2019	9771.2	9937.075	60	Marcellus
44	1/20/2019	9574.55	9740.425	60	Marcellus
45	1/20/2019	9377.9	9543.775	60	Marcellus
46	1/21/2019	9181.25	9347.125	60	Marcellus
47	1/21/2019	8984.6	9150.475	60	Marcellus
48	1/21/2019	8787.95	8953.825	60	Marcellus
49	1/22/2019	8591.3	8757.175	60	Marcellus
50	1/22/2019	8394.65	8560.525	60	Marcellus
51	1/22/2019	8198	8363.875	60	Marcellus
52	1/23/2019	8001.35	8167.225	60	Marcellus
53	1/23/2019	7804.7	7970.575	60	Marcellus
54	1/23/2019	7608.05	7773.925	60	Marcellus
55	1/23/2019	7411.4	7577.275	60	Marcellus
56	1/24/2019	7214.75	7380.625	60	Marcellus
57	1/24/2019	7018.1	7183.975	60	Marcellus
58	1/24/2019	6821.45	6987.325	60	Marcellus
59	1/24/2019	6624.8	6790.675	60	Marcellus

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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	1/7/2019	69.14	69.14	7048	4479	186050	6351.095	N/A
2	1/7/2019	69.92	69.92	5627	3826	412260	10309.52	N/A
3	1/8/2019	74.17	74.17	5623	3571	409400	8341.429	N/A
4	1/8/2019	73.82	73.82	5860	3502	408780	8416.262	N/A
5	1/8/2019	74.63	74.63	5834	3572	408440	8387.262	N/A
6	1/9/2019	70.33	70.33	5422	4936	413640	9661.619	N/A
7	1/9/2019	69.58	69.58	5310	5129	407300	8793.238	N/A
8	1/9/2019	69.9	69.9	5576	4019	409060	9539.238	N/A
9	1/10/2019	77.94	77.94	5096	4913	409820	8413.429	N/A
10	1/10/2019	74.18	74.18	5343	3620	407940	8901.976	N/A
11	1/10/2019	67.12	67.12	5441	4614	397580	10193.38	N/A
12	1/11/2019	77.91	77.91	5217	3528	414000	8517.238	N/A
13	1/11/2019	76.45	76.45	5496	4036	396400	8236.286	N/A
14	1/11/2019	72.2	72.2	5546	3326	408800	8280.214	N/A
15	1/11/2019	79.93	79.93	5832	3576	409940	8332.714	N/A
16	1/12/2019	81.04	81.04	5579	3594	404720	9326.095	N/A
17	1/12/2019	79.7	79.7	5499	3560	404420	8216.881	N/A
18	1/12/2019	79.04	79.04	5786	3397	407700	8248.429	N/A
19	1/12/2019	80.46	80.46	5379	3702	401300	8178.595	N/A
20	1/13/2019	79.39	79.39	5470	3783	408600	8377.69	N/A
21	1/13/2019	77.23	77.23	5379	3650	413800	8355.119	N/A
22	1/13/2019	78.42	78.42	5608	3772	405560	8193.048	N/A
23	1/14/2019	80.78	80.78	5383	3870	407340	8189.476	N/A
24	1/14/2019	80.81	80.81	5492	4260	402620	8231.5	N/A
25	1/14/2019	75.03	75.03	5558	4577	406100	9463.286	N/A
26	1/14/2019	75.17	75.17	5626	3269	407180	8122.048	N/A
27	1/15/2019	79.02	79.02	5377	3688	411260	8816.69	N/A
28	1/15/2019	78.03	78.03	5007	3905	403440	8017.905	N/A
29	1/15/2019	77.88	77.88	5414	3819	411080	8096.214	N/A
30	1/16/2019	79.25	79.25	5490	4190	413240	8060.167	N/A
31	1/16/2019	78.62	78.62	5428	3816	405700	7995.429	N/A
32	1/16/2019	81.4	81.4	5200	4622	409100	8916.262	N/A
33	1/17/2019	77.46	77.46	8324	4421	408760	9453.262	N/A
34	1/17/2019	78.4	78.4	5020	3819	404220	7987.357	N/A
35	1/17/2019	76	76	5302	3939	407360	8017.619	N/A
36	1/18/2019	80.31	80.31	5804	4171	407920	8069.857	N/A
37	1/18/2019	78.8	78.8	5382	3634	407960	7974.143	N/A
38	1/18/2019	78.59	78.59	5487	3718	406200	7930.643	N/A
39	1/18/2019	78.86	78.86	5247	4036	407640	8097	N/A
40	1/19/2019	78.08	78.08	5587	4075	409380	8090.762	N/A
41	1/19/2019	76.18	76.18	6085	3852	413980	8021.881	N/A
42	1/19/2019	76.35	76.35	6141	3926	410700	9177.81	N/A
43	1/20/2019	77.25	77.25	5560	3865	407790	7912.738	N/A
44	1/20/2019	71.57	71.57	5256	4414	412500	11159.29	N/A
45	1/20/2019	77.92	77.92	4924	4830	404300	7961	N/A
46	1/21/2019	78.46	78.46	5387	3511	403460	8944.952	N/A
47	1/21/2019	75.03	75.03	4418	4425	409440	7911.595	N/A
48	1/21/2019	77.1	77.1	4645	3985	404860	8943.952	N/A
49	1/22/2019	79.3	79.3	5246	3743	407200	8129.905	N/A
50	1/22/2019	79.1	79.1	5084	3788	406220	7901.667	N/A
51	1/22/2019	80	80	5287	4108	403880	7967.333	N/A
52	1/23/2019	79.15	79.15	5713	4679	396100	8213.262	N/A
53	1/23/2019	75.05	75.05	5892	4440	402840	9106.595	N/A
54	1/23/2019	74.71	74.71	5832	3846	403040	7798.81	N/A
55	1/23/2019	80.14	80.14	5791	3830	400080	7865.976	N/A
56	1/24/2019	79.41	79.41	5575	3800	401400	7904.262	N/A
57	1/24/2019	78.49	78.49	5704	3705	401520	7712.286	N/A
58	1/24/2019	77.11	77.11	6488	3868	400580	7773.976	N/A
59	1/24/2019	80.26	80.26	4926	3864	397900	7574.286	N/A
		76.5	77	5,579	3,974	18,131,280	383,333	TOTAL

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EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Silty Sandstone	0	190	0	190
Sandy siltstone	190	290	190	290
Sandstone	290	600	290	600
Silty Sandstone	600	870	600	870
limey siltstone	870	945	870	945
silty sandstone, tr. coal	945	1,095	945	1,095
silty sandstone	1,095	1,490	1,095	1,490
silty shale	1,490	1,620	1,490	1,620
sandstone, tr coal	1,620	1,630	1,620	1,630
silty sandstone	1,630	1,670	1,630	1,670
sandstone	1,670	1,745	1,670	1,745
sandy shale	1,745	1,770	1,745	1,770
shaly sand	1,770	1,892	1,770	1,892
Big Lime	1,907	2,623	1,907	2,624
Fifty Foot Sandstone	2,623	2,728	2,624	2,728
Gordon	2,728	3,063	2,728	3,066
Fifth Sandstone	3,063	3,132	3,066	3,135
Bayard	3,132	3,890	3,135	3,901
Speechley	3,890	4,180	3,901	4,195
Balltown	4,180	4,580	4,195	4,600
Bradford	4,580	4,947	4,600	4,973
Benson	4,947	5,181	4,973	5,209
Alexander	5,181	6,187	5,209	6,307
Sycamore	6,039	6,163	6,106	6,283
Middlesex	6,163	6,246	6,283	6,456
Burkett	6,246	6,269	6,456	6,529
Tully	6,269	6,282	6,529	6,581
Marcellus	6,282	NA	6,581	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.

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/7/2019
Job End Date:	1/24/2019
State:	West Virginia
County:	Tyler
API Number:	47-095-02461-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Jack Unit 1H
Latitude:	39.42151400
Longitude:	-80.93769400
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,339
Total Base Water Volume (gal):	20,615,465
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	88.05992	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.11620	

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SP BREAKER	Halliburton	Breaker											
					Listed Below								
HYDROCHLORIC ACID	Halliburton	Solvent											
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		11.77952				
			Hydrochloric acid		7647-01-0		15.00000		0.03910				
			Acrylamide acrylate polymer		Proprietary		30.00000		0.01763				Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Hydrotreated light petroleum distillate		64742-47-8		30.00000		0.01763				
			Inorganic salt		Proprietary		30.00000		0.01763				
			Guar gum		9000-30-0		100.00000		0.01324				
			Ethylene glycol		107-21-1		60.00000		0.00851				
			Glutaraldehyde		111-30-8		30.00000		0.00263				
			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		0.00041				
			Sodium polyacrylate		9003-04-7		1.00000		0.00014				
			Ethanol		64-17-5		1.00000		0.00009				
			Methanol		67-56-1		100.00000		0.00006				
			Modified thiourea polymer		Proprietary		30.00000		0.00001				
			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil		61790-12-3		30.00000		0.00001				

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* Total Water Volume sources may include various types
 ** Information is based on the maximum potential for conc
 *** If you are calculating a percentage of total ingredients
 Note: For Field Development Products (products that beg
 Ingredient information for chemicals subject to 29 CFR 19

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: 47-095-02461 County: Tyler
District: Meade Well No: Jack Unit 1H
Farm Name: Roger R. Weese
Discharge Date/s From:(MMDDYY) 04/07/19 To: (MMDDYY) 05/07/19
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 1,059,013

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

- (1) Land Application: _____ (Include a topographical map of the Area.)
(2) UIC: 87,931 Permit No. 3400923821, 3416729731
(3) Offsite Disposal: _____ Site Location: _____
(4) Reuse: 971,082 Alternate Permit Number: _____
(5) Centralized Facility: _____ Permit No. _____
(6) Other method: _____ (Include an explanation)

Follow Instructions below to determine your treatment category:

Optional Pretreatment test: n/a Cl- mg/l n/a DO mg/l

1. Do you have permission to use expedited treatment from the Director or his representative?
(Y/N) n/a If yes, who? _____ and place a four (4) on line 7.
If not go to line 2
2. Was Frac Fluid or flowback put into the pit? (Y/N) n/a If yes, go to line 5. If not, go to line 3.
3. Do you have a chloride value pretreatment (see above)? (Y/N) n/a If yes, go to line 4
If not, go to line 5.
4. Is the Chloride level less than 5000 mg/l? (Y/N) n/a If yes, then enter a one (1) on line 7.
5. Do you have a pretreatment value for DO? (See above) (Y/N) n/a If yes, go to line 6
If not, enter a three (3) in line 7.
6. Is the DO level greater than 2.5 mg/l?(Y/N) n/a If yes, enter a two (2) on line 7. If not, enter a three (3) on line 7.
7. n/a is the category of your pit. Use the Appropriate section.
8. Comments on Pit condition: n/a No pit on site.

Name of Principal Exec. Officer: Gretchen Kohler

Title of Officer: Senior Environmental And Regulatory Manager

Date Completed: 01/17/19

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



Signature of a Principal Exec. Officer or Authorized agent.

Category 1
Sampling Results
API No : _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	5	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl	5,000	_____	5,000	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**			Monitor	_____	mg/l
Oil and Grease			Monitor	_____	mg/l
Total Al***			Monitor	_____	mg/l
TSS			Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume			Monitor	_____	Gal
Flow			Monitor	_____	Gal/min
Disposal Area			Monitor	_____	Acres

*** Al is only reported if the pH is above 9.0

Category 2
Sampling Results
API No : _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	10	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**			Monitor	_____	mg/l
Oil and Grease			Monitor	_____	mg/l
Total Al***			Monitor	_____	mg/l
TSS			Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume			Monitor	_____	Gal
Flow			Monitor	_____	Gal/min
Disposal Area			Monitor	_____	Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____

Date: _____

** Include a description of your aeration technique.

Aeration Code: _____

*** Al is only reported if the pH is above 9.0

Category 3
Sampling Results
API No : _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	20	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
Total Al***		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Disposal Area		_____	Monitor	_____	Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____

Date: _____

** Include a description of your aeration technique.

Aeration Code: _____

*** Al is only reported if the pH is above 9.0.

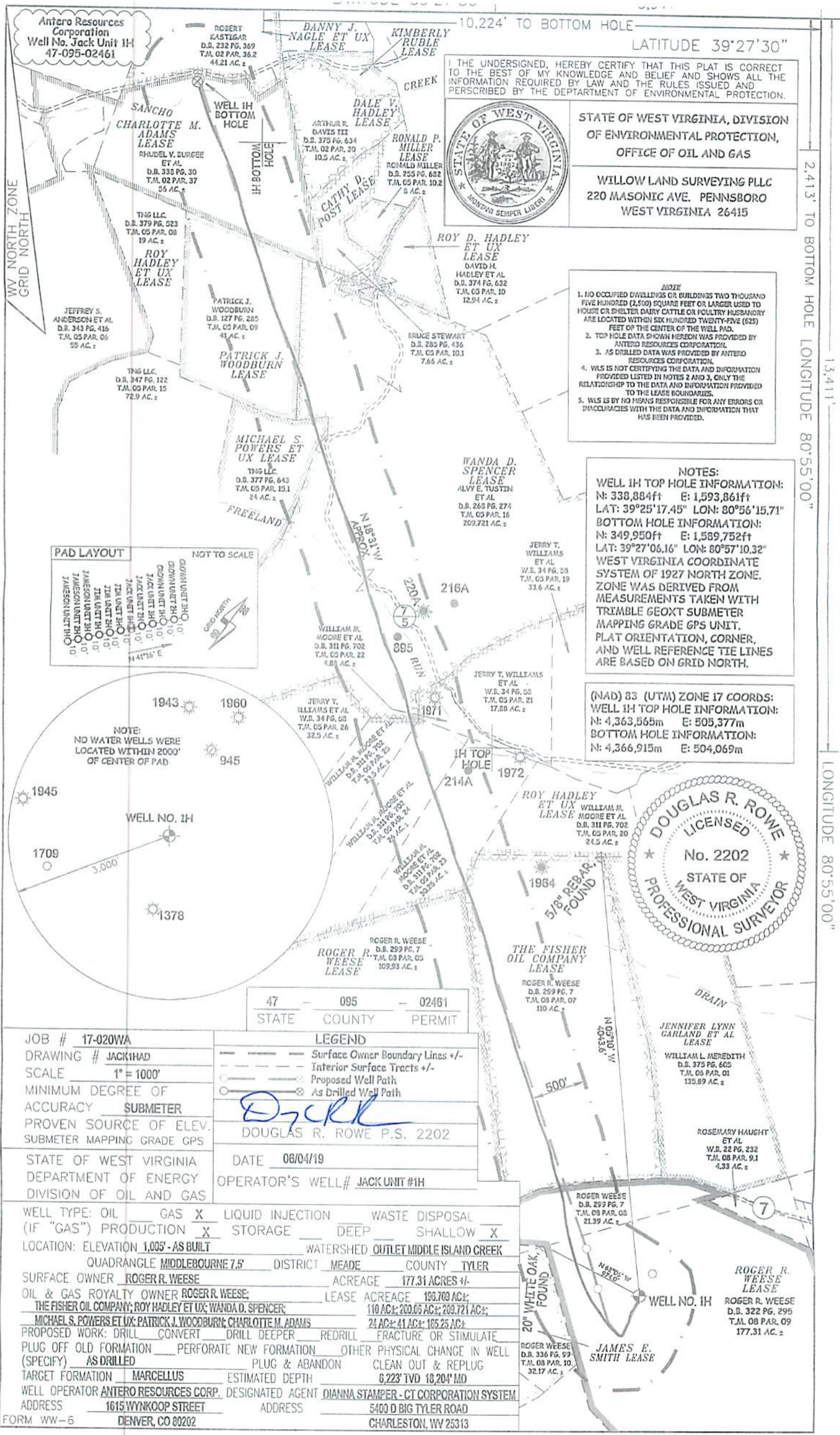
Category 4
Sampling Results
API No: _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	1	_____	N/A	N/A	Days
Fe	Monitor	_____	Monitor	_____	mg/l
D.O.	Monitor	_____	Monitor	_____	mg/l
Settleable Sol.	Monitor	_____	Monitor	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Activated Carbon (0.175)		_____	N/A	N/A	lb/B1
Date Site Reclaimed	N/A	N/A			10 days from dis.
Disposal Area		_____	Monitor	_____	Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____

Date: _____



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.

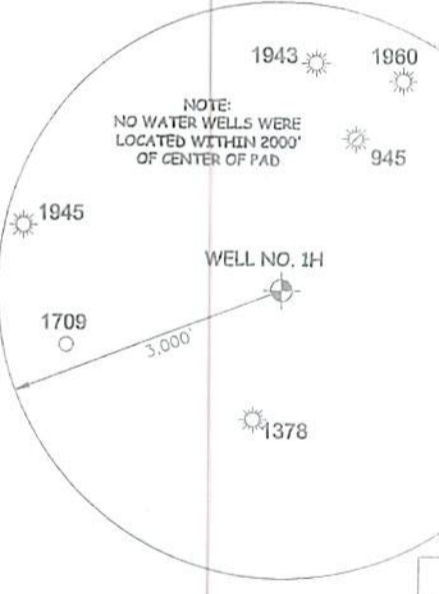
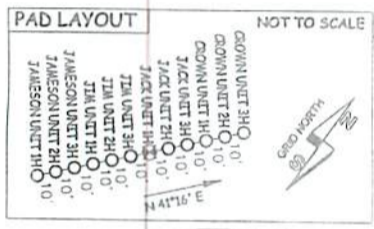


STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
 WILLOW LAND SURVEYING PLLC
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

- 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.

NOTES:
 WELL 1H TOP HOLE INFORMATION:
 N: 338,884ft E: 1,593,861ft
 LAT: 39°25'17.45" LON: 80°56'15.71"
 BOTTOM HOLE INFORMATION:
 N: 349,950ft E: 1,589,752ft
 LAT: 39°27'06.16" LON: 80°57'10.32"
 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 1H TOP HOLE INFORMATION:
 N: 4,363,565m E: 505,377m
 BOTTOM HOLE INFORMATION:
 N: 4,366,915m E: 504,069m



47	095	02461
STATE	COUNTY	PERMIT

LEGEND
 - - - Surface Owner Boundary Lines +/-
 - - - Interior Surface Tracts +/-
 ○ Proposed Well Path
 ⊗ As Drilled Well Path

D. Rowe
 DOUGLAS R. ROWE P.S. 2202
 DATE 06/04/19
 OPERATOR'S WELL# JACK UNIT #1H

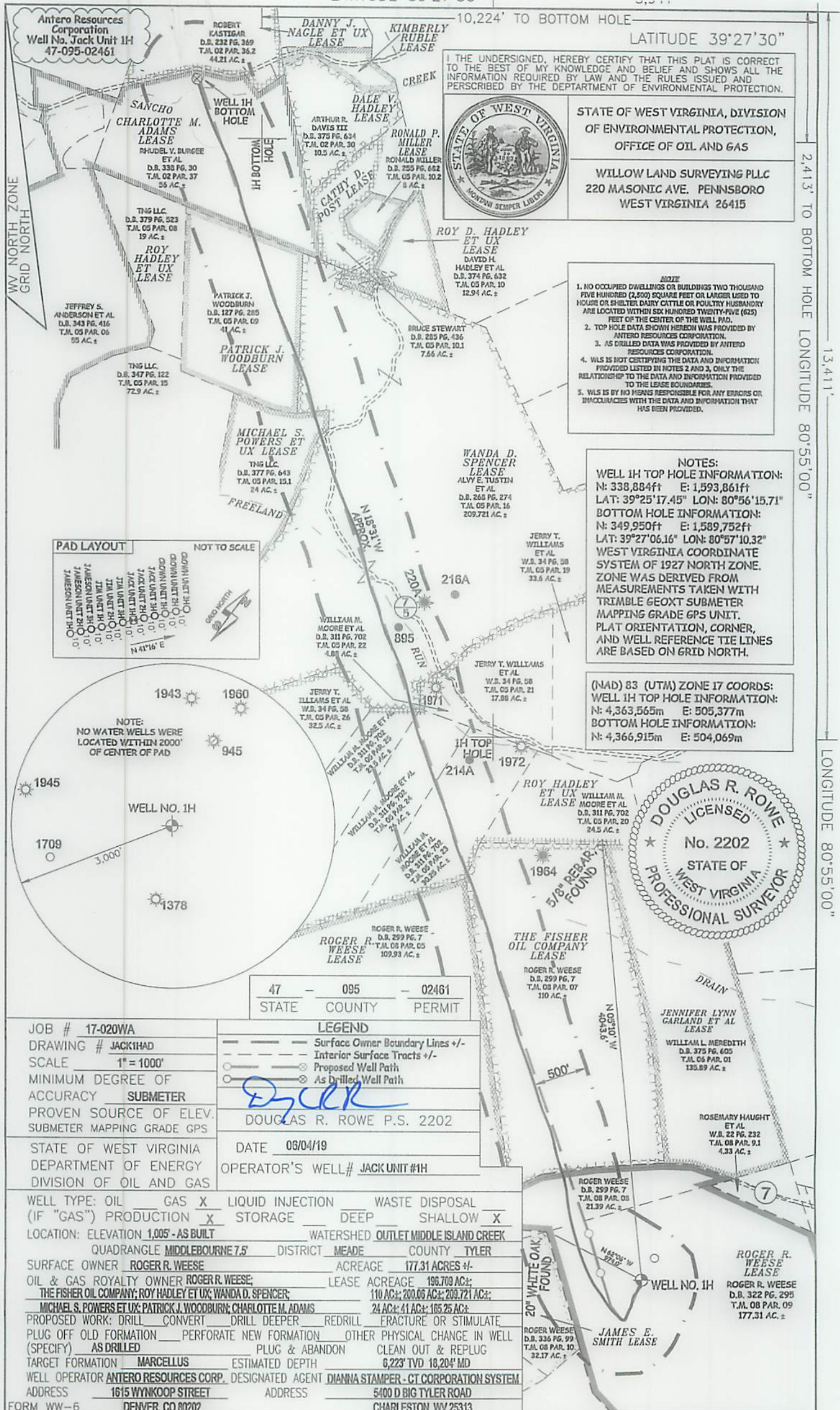
JOB # 17-020WA
 DRAWING # JACK1HAD
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
 STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
 LOCATION: ELEVATION 1,005' - AS BUILT WATERSHED MIDDLE ISLAND CREEK
 QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT MEADE COUNTY TYLER
 SURFACE OWNER ROGER R. WEESE ACREAGE 177.31 ACRES +/-
 OIL & GAS ROYALTY OWNER ROGER R. WEESE; LEASE ACREAGE 196.709 AC +/-
THE FISHER OIL COMPANY; ROY HADLEY ET UX; WANDA D. SPENCER;
MICHAEL S. POWERS ET UX; PATRICK J. WOODBURN; CHARLOTTE M. ADAMS
 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 6,223' TVD 10,204' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
 ADDRESS 1615 WYKHOOP STREET ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313

2,413' TO BOTTOM HOLE LONGITUDE 80°55'00"

1,341'

LONGITUDE 80°55'00"



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.

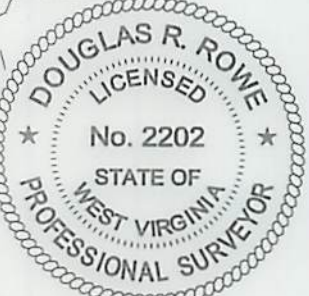
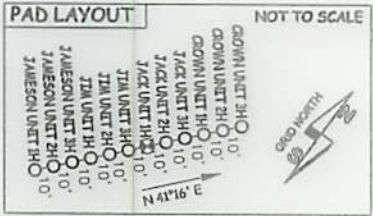


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47 - 095 - 02461
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 STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

LEGEND
 - - - Surface Owner Boundary Lines +/-
 - - - Interior Surface Tracts +/-
 - - - Proposed Well Path
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 THE FISHER OIL COMPANY; ROY HADLEY ET UX; WANDA D. SPENCER; 110 AC +/-; 200.06 AC +/-; 209,721 AC +/-
 MICHAEL S. POWERS ET UX; PATRICK J. WOODBURN; CHARLOTTE M. ADAMS 24 AC +/-; 41 AC +/-; 165.25 AC +/-
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
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