

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

API 47 - 085 - 10268 County Ritchie District Clay  
Quad Pennsboro 7.5' Pad Name Buck Run Pad Field/Pool Name -----  
Farm name Stephen C. Jackson, et al Well Number Charleston 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 4351837m Easting 504542m  
Landing Point of Curve Northing 4351651.27m Easting 504178.44m  
Bottom Hole Northing 4349050m Easting 505234m

Elevation (ft) 1127' 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 11/30/2015 Date drilling commenced 12/12/2015 Date drilling ceased 4/4/2016  
Date completion activities began 8/14/2016 Date completion activities ceased 10/3/2016  
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 55', 227', 439' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft 1921' Void(s) encountered (Y/N) depths No  
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

RECEIVED  
Office of Oil and Gas  
MAR 20 2017  
WV Department of  
Environmental Protection

**APPROVED**

NAME: Michael Doff  
DATE: 5/10/2017

05/26/2017  
AK  
05/24/17

API 47-085 - 10268 Farm name Stephen C. Jackson, et al Well number Charleston 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"	40'	New	94# K-55	N/A	Y
Surface	17-1/2"	13-3/8"	542'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2580'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	16260'	New	23# P-110	N/A	Y
Tubing		2-3/8"	6751'		4.70# 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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	100 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	641 sx	15.6	1.19	376	0'	8 Hrs.
Coal							
Intermediate 1	Class A	988 sx	15.6	1.19	808	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	813 sx (Lead) 1545 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.84 (Tail)	3249	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16260' MD, 6430' TVD (BHL) & 6432' TVD (Deepest Point Drilled) Loggers TD (ft) 16260' MD

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

Plug back procedure N/A

Kick off depth (ft) 6049'

\*\* This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Jackknife Unit 1H API #47-085-10178). Please reference the wireline logs submitted with Form WR-35 for Jackknife Unit 1H. A Cement Bond Log has been included with this submittal.

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 \_\_\_\_\_

API 47- 085 - 10268 Farm name Stephen C. Jackson, et al Well number Charleston Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
<b>*PLEASE SEE ATTACHED EXHIBIT 1</b>					

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)
<b>*PLEASE SEE ATTACHED EXHIBIT 2</b>								

Please insert additional pages as applicable.

API 47- 085 - 10268 Farm name Stephen C. Jackson, et al Well number Charleston Unit 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6383' (TOP) TVD</u>	<u>6829' (TOP) MD</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 13239 mcfpd Oil 224 bpd NGL --- bpd Water 324 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP</u>		<u>BOTTOM</u>		<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H<sub>2</sub>S, ETC)</u>
	<u>DEPTH IN FT NAME TVD</u>	<u>DEPTH IN FT TVD</u>	<u>DEPTH IN FT MD</u>	<u>DEPTH IN FT MD</u>	

**\*PLEASE SEE ATTACHED EXHIBIT 3**


Please insert additional pages as applicable.

Drilling Contractor Patterson - UTI Drilling Company, LLC  
Address 207 Carlton Dr. City Eighty Four State PA Zip 15330

Logging Company Allied Horizontal Well Services  
Address 381 Colonial Manor Rd. City North Huntington State PA Zip 15642

Cementing Company BJ Services  
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company US Well Services  
Address 533 Industrial Park Dr. City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Samantha Klaas Telephone 303-357-6759  
Signature *Samantha Klaas* Title Permitting Agent Date 3/17/2017

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

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	14-Aug-16	15,986	16,157	60	Marcellus
2	15-Aug-16	15,784	15,955	60	Marcellus
3	15-Aug-16	15,581	15,752	60	Marcellus
4	15-Aug-16	15,379	15,550	60	Marcellus
5	16-Aug-16	15,176	15,347	60	Marcellus
6	16-Aug-16	14,974	15,145	60	Marcellus
7	16-Aug-16	14,771	14,942	60	Marcellus
8	16-Aug-16	14,569	14,740	60	Marcellus
9	17-Aug-16	14,366	14,537	60	Marcellus
10	17-Aug-16	14,164	14,335	60	Marcellus
11	17-Aug-16	13,961	14,132	60	Marcellus
12	17-Aug-16	13,759	13,930	60	Marcellus
13	18-Aug-16	13,556	13,727	60	Marcellus
14	18-Aug-16	13,354	13,525	60	Marcellus
15	18-Aug-16	13,151	13,322	60	Marcellus
16	18-Aug-16	12,949	13,120	60	Marcellus
17	19-Aug-16	12,746	12,917	60	Marcellus
18	19-Aug-16	12,544	12,715	60	Marcellus
19	19-Aug-16	12,341	12,512	60	Marcellus
20	20-Aug-16	12,139	12,310	60	Marcellus
21	20-Aug-16	11,936	12,107	60	Marcellus
22	20-Aug-16	11,734	11,905	60	Marcellus
23	20-Aug-16	11,531	11,702	60	Marcellus
24	21-Aug-16	11,329	11,500	60	Marcellus
25	21-Aug-16	11,126	11,297	60	Marcellus
26	21-Aug-16	10,924	11,095	60	Marcellus
27	21-Aug-16	10,721	10,892	60	Marcellus
28	22-Aug-16	10,519	10,690	60	Marcellus
29	22-Aug-16	10,316	10,487	60	Marcellus
30	22-Aug-16	10,114	10,285	60	Marcellus
31	22-Aug-16	9,911	10,082	60	Marcellus
32	22-Aug-16	9,709	9,880	60	Marcellus
33	23-Aug-16	9,506	9,677	60	Marcellus
34	23-Aug-16	9,304	9,475	60	Marcellus
35	23-Aug-16	9,101	9,272	60	Marcellus
36	23-Aug-16	8,899	9,070	60	Marcellus
37	24-Aug-16	8,696	8,867	60	Marcellus
38	24-Aug-16	8,494	8,665	60	Marcellus
39	24-Aug-16	8,291	8,462	60	Marcellus
40	24-Aug-16	8,089	8,260	60	Marcellus
41	24-Aug-16	7,886	8,057	60	Marcellus
42	25-Aug-16	7,684	7,855	60	Marcellus
43	25-Aug-16	7,481	7,652	60	Marcellus
44	25-Aug-16	7,279	7,450	60	Marcellus
45	25-Aug-16	7,076	7,247	60	Marcellus
46	25-Aug-16	6,874	7,045	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	15-Aug-16	65.0	7,404	0	2,925	409,250	9,512	N/A
2	15-Aug-16	75.3	7,255	5,708	3,154	406,595	9,382	N/A
3	15-Aug-16	73.0	6,807	5,909	3,341	407,410	10,286	N/A
4	15-Aug-16	75.0	7,013	6,130	3,269	408,200	10,321	N/A
5	16-Aug-16	76.0	7,267	5,962	3,029	407,600	10,500	N/A
6	16-Aug-16	74.0	7,394	5,574	3,428	401,910	11,165	N/A
7	16-Aug-16	77.2	7,307	5,723	3,855	396,350	10,709	N/A
8	16-Aug-16	76.9	7,303	5,937	3,873	408,200	10,379	N/A
9	17-Aug-16	78.3	7,135	5,347	3,623	409,800	10,352	N/A
10	17-Aug-16	76.2	7,254	5,603	3,811	408,925	10,316	N/A
11	17-Aug-16	76.4	7,185	6,344	3,784	409,155	10,308	N/A
12	17-Aug-16	78.5	7,412	6,505	3,433	401,400	11,935	N/A
13	18-Aug-16	78.5	7,097	5,668	3,508	411,900	10,318	N/A
14	18-Aug-16	75.3	7,200	6,008	3,981	408,785	10,276	N/A
15	18-Aug-16	76.9	7,366	6,044	3,902	409,225	10,295	N/A
16	18-Aug-16	76.4	7,181	6,516	4,034	406,800	10,641	N/A
17	19-Aug-16	77.0	7,424	6,133	3,909	407,705	10,140	N/A
18	19-Aug-16	76.9	7,223	6,011	4,295	409,390	10,144	N/A
19	19-Aug-16	79.0	7,114	6,155	3,573	407,050	11,249	N/A
20	20-Aug-16	79.4	7,458	6,069	3,684	408,700	12,194	N/A
21	20-Aug-16	76.4	7,495	5,709	4,077	412,260	11,663	N/A
22	20-Aug-16	77.5	7,324	5,411	3,719	411,095	10,246	N/A
23	20-Aug-16	72.2	7,120	5,976	4,204	407,000	10,225	N/A
24	21-Aug-16	71.1	7,147	5,683	4,227	406,600	10,208	N/A
25	21-Aug-16	75.8	7,451	5,738	4,461	405,765	10,199	N/A
26	21-Aug-16	78.9	7,273	5,509	3,458	409,530	10,228	N/A
27	21-Aug-16	74.2	7,200	5,625	3,619	411,800	10,217	N/A
28	22-Aug-16	73.4	7,035	5,553	3,797	411,700	10,214	N/A
29	22-Aug-16	78.4	7,273	5,605	3,734	410,600	10,191	N/A
30	22-Aug-16	76.2	7,656	6,273	3,480	411,300	12,106	N/A
31	22-Aug-16	76.6	7,057	5,618	3,734	411,450	10,167	N/A
32	22-Aug-16	73.8	7,213	6,145	3,627	410,860	10,206	N/A
33	23-Aug-16	76.2	6,977	5,567	4,024	412,500	10,148	N/A
34	23-Aug-16	76.0	7,360	5,796	3,409	413,900	10,145	N/A
35	23-Aug-16	76.2	7,385	4,364	3,711	414,940	10,134	N/A
36	23-Aug-16	72.2	6,958	5,261	3,604	411,600	10,135	N/A
37	24-Aug-16	75.0	6,990	6,008	3,432	411,800	10,108	N/A
38	24-Aug-16	78.4	7,208	5,588	3,733	413,200	10,109	N/A
39	24-Aug-16	76.3	7,392	6,376	3,556	408,315	10,112	N/A
40	24-Aug-16	72.6	7,096	5,780	3,583	411,200	10,115	N/A
41	24-Aug-16	74.2	7,069	5,762	3,700	409,550	10,093	N/A
42	25-Aug-16	78.5	7,164	6,615	3,475	409,900	10,077	N/A
43	25-Aug-16	75.7	6,925	5,636	3,605	409,500	10,062	N/A
44	25-Aug-16	70.6	7,576	5,744	3,566	408,400	10,944	N/A
45	25-Aug-16	80.1	7,048	6,073	4,048	408,200	10,069	N/A
46	25-Aug-16	73.2	7,149	6,284	4,257	408,150	9,951	N/A
AVG=		75.7	7,225	5,718	3,701	18,815,465	10,402	TOTAL

**EXHIBIT 3**

<b>LITHOLOGY/ FORMATION</b>	<b>TOP DEPTH (TVD) From Surface</b>	<b>BOTTOM DEPTH (TVD) From Surface</b>	<b>TOP DEPTH (MD) From Surface</b>	<b>BOTTOM DEPTH (MD) From Surface</b>
Fresh Water	55'	N/A	55'	N/A
Fresh Water	227'	N/A	227'	N/A
Fresh Water	439'	N/A	439'	N/A
Siltstone	0	567	0	567
Shale	567	627	567	627
Sandstone	627	647	627	647
Siltstone	647	867	647	867
Shale	867	987	867	987
Sandstone	987	1,067	987	1,067
Shale	1,067	1,247	1,067	1,247
Sandstone	1,247	1,387	1,247	1,387
Coaly Sandstone	1,387	1,647	1,387	1,647
Shale	1,647	1,867	1,647	1,867
Sandstone	1,867	1,907	1,867	1,907
Shale	1,907	1,989	1,907	1,991
Big Lime	1,989	2,130	1,991	2,132
Big Injun	2,130	2,502	2,132	2,504
Gantz Sand	2,502	2,882	2,504	2,884
Fifty Foot Sandstone	2,882	2,981	2,884	2,982
Gordon	2,981	2,882	2,982	2,884
Fifth Sandstone	2,882	3,415	2,884	3,416
Bayard	3415	3,558	3416	3,561
Warren	3558	3,955	3561	3,966
Speechley	3955	4,224	3966	4,253
Baltown	4224	4,615	4253	4,682
Bradford	4615	5,001	4682	5,114
Benson	5001	5,240	5114	5,382
Alexander	5240	5,551	5382	5,726
Elk	5551	5,831	5726	6,035
Rhinestreet	5831	6,134	6035	6,385
Sycamore	6134	6,229	6385	6,512
Middlesex	6229	6,335	6512	6,696
Burkett	6335	6,363	6696	6,762
Tully	6363	6,383	6762	6,829
Marcellus	6383	NA	6829	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:	8/15/2016
Job End Date:	8/25/2016
State:	West Virginia
County:	Ritchie
API Number:	47-085-10268-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Charleston 2H
Latitude:	39.31584200
Longitude:	-80.94748200
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,432
Total Base Water Volume (gal):	20,642,975
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	Antero Resources	Base Fluid	Water	7732-18-5	100.00000	90.14714	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	9.52012	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.10116	
			Hydrogen Chloride	7647-01-0	18.00000	0.02416	
WFRA-405	U.S. Well Services	Friction Reducer	Water	7732-18-5	60.00000	0.03567	
			2-Propenoic acid, polymer with 2 propenamide	9003-06-9	30.00000	0.01783	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01436	
			Ethoxylated alcohol blend	68002-97-1	4.00000	0.00238	
HCL Acid (22.6%-28%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	77.40000	0.04520	
			Hydrogen Chloride	7647-01-0	28.00000	0.01899	



LGC-15	U.S. Well Services	Gelling Agents				
			Guar Gum	9000-30-0	50.00000	0.02204
			Petroleum Distillates	64742-47-8	60.00000	0.02087
			Suspending agent (solid)	14808-60-7	3.00000	0.00337
			Surfactant	68439-51-0	3.00000	0.00132
SI-1100s	U.S. Well Services	Scale Inhibitor				
			Water	7732-18-5	80.00000	0.01059
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00156
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	7.50000	0.00134
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00086
			Hexamethylene triamine penta (methylene phosphonic acid)	34690-00-1	5.00000	0.00086
			Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5	2.00000	0.00034
BIOCLEAR 2000	U.S. Well Services	Anti-Bacterial Agent				
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	30.00000	0.00623
			Deionized Water	7732-18-5	28.00000	0.00237
AP One	U.S. Well Services	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00098
AI-302	U.S. Well Services	Acid Corrosion Inhibitors				
			Water	7732-18-5	95.00000	0.00022
			2-Propyn-1-olcompound with methyloxirane	38172-91-7	15.00000	0.00003

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

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

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)

LATITUDE 39°20'00" 8,719'

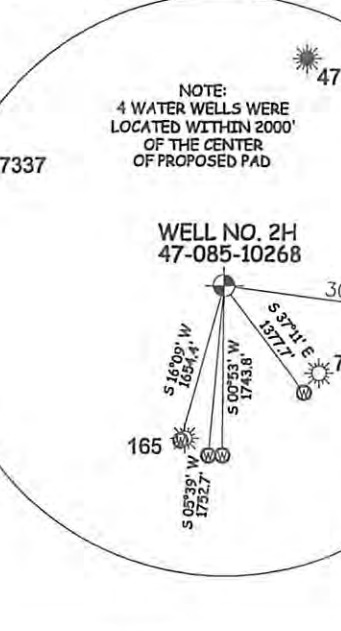
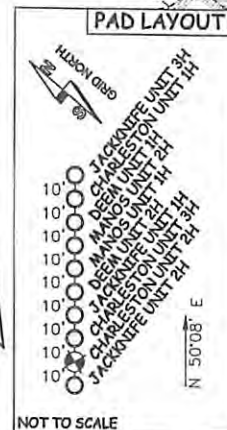
LATITUDE 39°17'30" 344' TO BOTTOM HOLE  
LONGITUDE 80°55'00" 6,372'

Antero Resources Corporation  
Well No. Charleston Unit 2H  
A.P.I. 47-085-10268

**AS DRILLED DATA:**  
WELL 2H TOP HOLE INFORMATION:  
N: 300,445ft E: 1,590,476ft  
LAT: 39°18'57.03" LON: 80°56'50.94"  
BOTTOM HOLE INFORMATION:  
N: 291,261ft E: 1,592,596ft  
LAT: 39°17'26.60" LON: 80°56'22.10"  
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: 4,351,837m E: 504,542m  
BOTTOM HOLE INFORMATION:  
N: 4,349,050m E: 505,234m

- NOTE**
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO 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 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.
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**LEGEND**

- Surface Owner Boundary Lines +/-
- - - Interior Surface Tracts +/-
- ⊕ Found monument, as noted
- Proposed Well Path
- ⊗ As Drilled Well Path

DATE 02/09/17  
OPERATOR'S WELL# CHARLESTON UNIT #2H

JOB # 15-037WA  
DRAWING # CHARLESTON2HAD  
SCALE 1" = 1000'

API WELL # 47 - 085 - 10268  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WILLOW LAND SURVEYING PLLC  
P.O. BOX 17 PENNSBORO WEST VIRGINIA 26415

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 1,162' ORIGINAL - 1,127' AS-DRILLED WATERSHED NORTH FORK HUGHES RIVER

QUADRANGLE PENNSBORO 7.5' DISTRICT CLAY COUNTY RITCHIE

SURFACE OWNER STEPHEN C. JACKSON ET AL ACREAGE 40.835 ACRES +/-

OIL & GAS ROYALTY OWNER HARVEY WEIGLE HEIRS; STEVE JACKSON; CONSTANCE K. GRIFFITH; BARBARA EPPLEY; LEASE ACREAGE 51 ACRES +/- 117 ACRES +/- 31 AC +/- 200 ACRES +/-  
ORMA M. WILSON JOHNSON; LEWIS B. HUFF ET UX; EDWARD J. JONES ET AL; J.M. WILSON ET UX; CARLTON BOYCE ET UX 42 ACRES +/- 52 ACRES +/- 73 ACRES +/- 217 ACRES +/- 201 ACRES +/-

PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_ PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_

OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (X) AS DRILLED

PLUG & ABANDON \_\_\_ CLEAN OUT & REPLUG \_\_\_ ESTIMATED DEPTH 6,430' TVD 16,260' MD

TARGET FORMATION MARCELLUS

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
DENVER, CO 80202 CHARLESTON, WV 25313

05/26/2017

AS-DRILLED

LATITUDE 39°20'00"

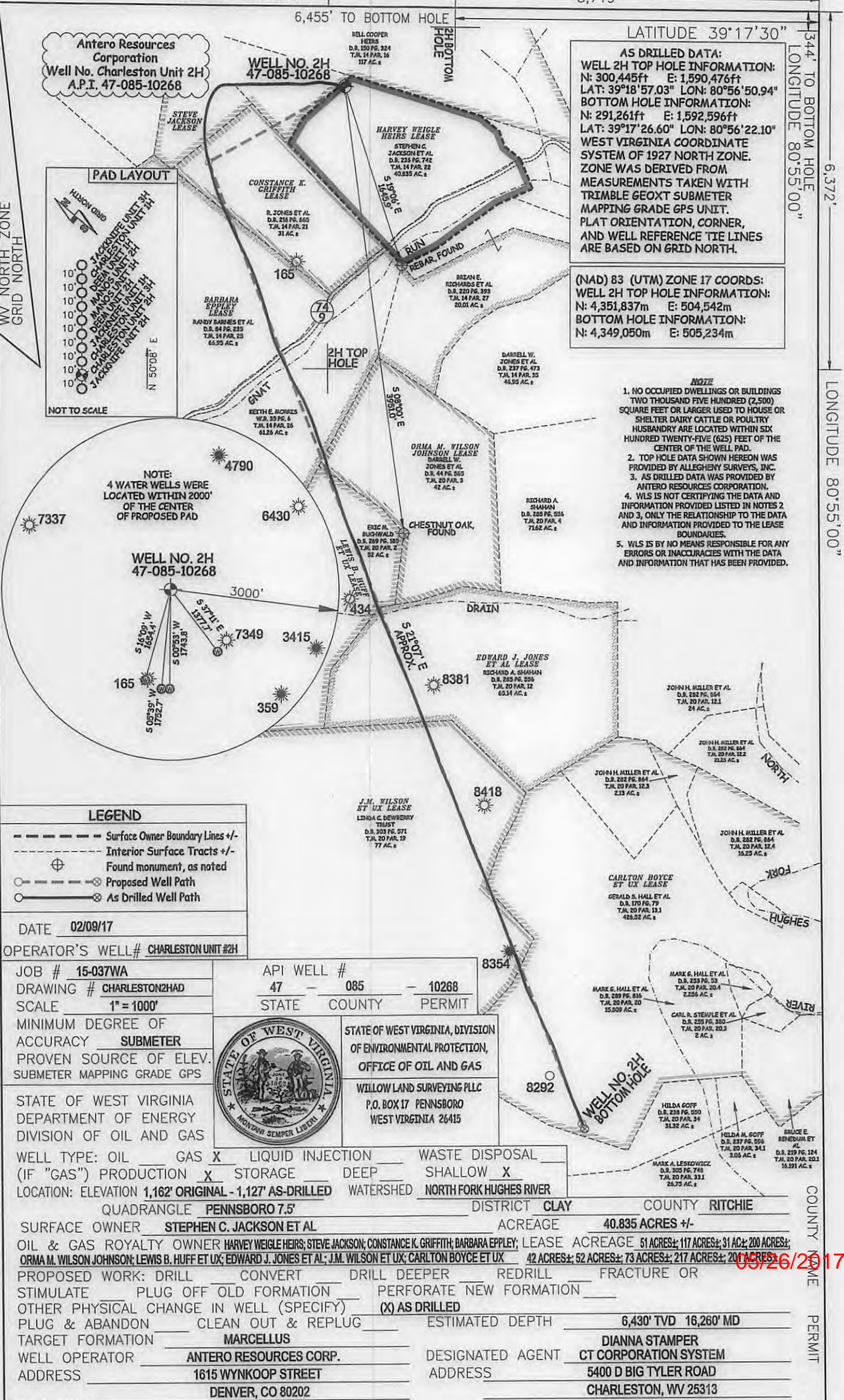
8,719'

LATITUDE 39°17'30"

LONGITUDE 80°55'00"

6,372'

LONGITUDE 80°55'00"



**AS DRILLED DATA:**  
**WELL 2H TOP HOLE INFORMATION:**  
 N: 300,445ft E: 1,590,476ft  
 LAT: 39°18'57.03" LON: 80°56'50.94"  
**BOTTOM HOLE INFORMATION:**  
 N: 291,261ft E: 1,592,596ft  
 LAT: 39°17'26.60" LON: 80°56'22.10"  
 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: 4,351,837m E: 504,542m  
**BOTTOM HOLE INFORMATION:**  
 N: 4,349,050m E: 505,234m

- 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.
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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 X LIQUID INJECTION WASTE DISPOSAL (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X

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PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (X) AS DRILLED

PLUG & ABANDON CLEAN OUT & REPLUG ESTIMATED DEPTH 6,430' TVD 16,260' MD

TARGET FORMATION MARCELLUS

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

DENVER, CO 80202

05/26/2017