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Rev. 8/23/13

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WV GEOLOGICAL SURVEY
MORGANTOWN, WV

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

API 47 - 017 - 06190 County Doddridge District Central
Quad Oxford 7.5' Pad Name Primm Pad Field/Pool Name ----
Farm name Primm, Olin E. & Mary Well Number Ahouse Unit 1H
Operator (as registered with the OOG) Antero Resources Corportion
Address 1615 Wynkoop St. 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 4343587m Easting 512723m
Landing Point of Curve Northing 4343842.14m Easting 512783.28m
Bottom Hole Northing 4345422m Easting 512007m

Elevation (ft) 1008' 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 3/1/2013 Date drilling commenced 8/1/2013 Date drilling ceased 4/13/2014
Date completion activities began 6/4/2014 Date completion activities ceased 8/12/2014
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 225' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 743', 2147' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 437' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

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API 47-017 - 06190

Farm name Primm, Olin E. & Mary

Well number Ahouse 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"	40'	New	94# J-55	N/A	Y
Surface	17- 1/2"	13- 3/8"	379'	New	48# J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2548'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	13071'	New	20# P-110	N/A	Y
Tubing		2-3/8"	6711'		5.95# N-80	N/A	
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 ²)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	200 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	454 sx	15.6	1.18	263	0'	8 Hrs.
Coal							
Intermediate 1	Class A	938 sx	15.6	1.18	798	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	943 sx (Lead) 1040 sx (Tail)	13.5 Lead 15.2 Tail	1.44 Lead 1.8 Tail	2525	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 13071' MD, 6557' TVD (BHL); 6580' TVD (Deepest point drilled)

Loggers TD (ft) 13020'

Deepest formation penetrated Marcellus

Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5851'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Callie Unit 2H API #47-017-06193). Please reference the wireline logs submitted with Form WR-35 for Callie Unit 2H. 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 _____

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PERFORATION RECORD

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

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
*PLEASE SEE ATTACHED EXHIBIT 2								

Please insert additional pages as applicable.

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Farm name Primm, Olin E. & Mary

Well number Ahouse Unit 1H

PRODUCING FORMATION(S)

DEPTHS

Marcellus 6538' (TOP) TVD 6901' (TOP) MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow

OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 9358 mcfpd Oil 56 bpd NGL --- bpd Water 256 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	
	0		0		

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company, LP
Address 2640 Reach Rd. City Williamsport State PA Zip 17701

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Allied Oil & Gas Services, LLC
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 Kara Quackenbush Telephone 303-357-7233
Signature *[Signature]* Title Permit Representative Date 7/27/2015

API 47-017-06190 Farm Name Primm, Olin E. & Mary Well Number Ahouse Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	4-Jun-14	12,813	12,984	60	Marcellus
2	11-Jul-14	12,663	12,790	60	Marcellus
3	12-Jul-14	12,512	12,639	60	Marcellus
4	12-Jul-14	12,361	12,489	60	Marcellus
5	12-Jul-14	12,211	12,338	60	Marcellus
6	12-Jul-14	12,060	12,188	60	Marcellus
7	12-Jul-14	11,909	12,037	60	Marcellus
8	13-Jul-14	11,759	11,886	60	Marcellus
9	13-Jul-14	11,608	11,736	60	Marcellus
10	13-Jul-14	11,458	11,585	60	Marcellus
11	13-Jul-14	11,307	11,434	60	Marcellus
12	14-Jul-14	11,156	11,284	60	Marcellus
13	14-Jul-14	11,006	11,133	60	Marcellus
14	14-Jul-14	10,855	10,983	60	Marcellus
15	14-Jul-14	10,704	10,832	60	Marcellus
16	15-Jul-14	70,554	10,681	60	Marcellus
17	15-Jul-14	10,403	10,531	60	Marcellus
18	15-Jul-14	10,252	10,380	60	Marcellus
19	15-Jul-14	10,102	10,229	60	Marcellus
20	15-Jul-14	9,951	10,079	60	Marcellus
21	16-Jul-14	9,801	9,928	60	Marcellus
22	16-Jul-14	9,650	9,777	60	Marcellus
23	16-Jul-14	9,499	9,627	60	Marcellus
24	16-Jul-14	9,349	9,476	60	Marcellus
25	16-Jul-14	9,198	9,326	60	Marcellus
26	16-Jul-14	9,047	9,175	60	Marcellus
27	17-Jul-14	8,897	9,024	60	Marcellus
28	17-Jul-14	8,746	8,874	60	Marcellus
29	17-Jul-14	8,596	8,723	60	Marcellus
30	18-Jul-14	8,445	8,572	60	Marcellus
31	18-Jul-14	8,294	8,422	60	Marcellus
32	18-Jul-14	8,144	8,271	60	Marcellus
33	18-Jul-14	7,993	8,121	60	Marcellus
34	18-Jul-14	7,842	7,970	60	Marcellus
35	18-Jul-14	7,692	7,819	60	Marcellus
36	19-Jul-14	7,541	7,669	60	Marcellus
37	19-Jul-14	7,391	7,518	60	Marcellus
38	19-Jul-14	7,240	7,367	60	Marcellus
39	19-Jul-14	7,089	7,217	60	Marcellus
40	19-Jul-14	6,939	7,066	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	11-Jul-14	81.0	7,335	N/A	4,016	224,100	6,034	N/A
2	11-Jul-14	80.0	7,499	6,162	3,649	225,400	5,994	N/A
3	12-Jul-14	75.0	7,573	6,112	4,649	209,400	6,413	N/A
4	12-Jul-14	77.0	7,276	5,869	3,580	224,000	5,996	N/A
5	12-Jul-14	79.0	7,479	6,133	4,524	211,600	6,136	N/A
6	12-Jul-14	82.0	7,622	5,590	5,193	184,500	6,418	N/A
7	12-Jul-14	82.0	7,595	6,005	3,601	227,300	5,945	N/A
8	13-Jul-14	75.0	7,413	6,123	3,730	224,300	5,741	N/A
9	13-Jul-14	77.0	7,226	5,977	4,511	170,800	6,327	N/A
10	13-Jul-14	77.0	7,444	5,847	4,960	223,850	6,197	N/A
11	13-Jul-14	81.0	7,492	5,647	5,021	198,800	6,360	N/A
12	14-Jul-14	76.0	7,323	5,407	5,128	211,100	5,712	N/A
13	14-Jul-14	79.0	7,141	5,364	5,121	223,000	5,646	N/A
14	14-Jul-14	79.4	7,650	5,350	3,499	221,951	5,856	N/A
15	14-Jul-14	79.7	7,144	5,568	3,741	224,504	5,866	N/A
16	15-Jul-14	80.0	7,173	5,822	3,830	224,600	5,865	N/A
17	15-Jul-14	80.0	6,942	5,432	3,576	224,100	5,906	N/A
18	15-Jul-14	79.0	6,990	5,740	4,070	219,208	5,843	N/A
19	15-Jul-14	79.5	7,410	5,533	3,819	221,100	6,030	N/A
20	15-Jul-14	75.4	7,240	5,450	4,520	150,950	6,008	N/A
21	16-Jul-14	78.0	7,320	5,625	5,307	183,500	6,024	N/A
22	16-Jul-14	74.0	7,265	5,590	3,798	223,700	5,799	N/A
23	16-Jul-14	79.0	7,158	5,879	4,613	221,100	5,773	N/A
24	16-Jul-14	75.0	7,325	5,633	4,674	158,940	6,035	N/A
25	16-Jul-14	79.0	6,673	5,232	4,377	220,800	5,772	N/A
26	16-Jul-14	79.0	6,815	5,425	5,500	222,450	5,733	N/A
27	17-Jul-14	80.0	6,656	5,347	4,138	223,300	5,746	N/A
28	17-Jul-14	80.0	6,663	5,654	4,320	224,450	5,737	N/A
29	17-Jul-14	79.0	6,679	5,375	5,829	222,370	5,731	N/A
30	18-Jul-14	80.0	7,255	5,647	5,525	151,270	6,030	N/A
31	18-Jul-14	80.0	6,927	5,407	5,196	225,600	5,702	N/A
32	18-Jul-14	80.0	6,629	5,250	4,413	224,300	5,691	N/A
33	18-Jul-14	80.0	6,819	5,897	4,263	224,400	5,686	N/A
34	18-Jul-14	79.0	6,912	6,047	3,805	216,550	5,532	N/A
35	18-Jul-14	79.0	6,778	5,651	5,765	218,140	5,516	N/A
36	7/19/204	80.0	6,750	5,490	4,277	199,000	6,061	N/A
37	7/19/204	80.0	6,896	5,572	3,948	225,300	5,655	N/A
38	7/19/204	80.0	6,996	5,744	5,050	208,200	5,627	N/A
39	7/19/204	79.0	6,872	5,472	4,456	216,550	5,507	N/A
40	7/19/204	79.0	6,740	6,648	5,586	154,200	5,437	N/A
AVG=		78.8	7,127	5,685	4,489	8,408,683	235,087	TOTAL

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MORGANTOWN, WV

API 47-017-06190 Farm Name Primm, Olin E. & Mary Well Number Ahouse Unit 1H

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	225'	N/A	225'	N/A
Shale	0	227	0	227
Sandstone	est. 227	437	est. 227	437
Coal	est. 437	457	est. 437	457
Sandy shale	est. 457	477	est. 457	477
Shale	est. 477	595	est. 477	595
Sandstone	est. 595	605	est. 595	605
Shale	est. 605	625	est. 605	625
Sandstone	est. 625	638	est. 625	638
Shale	est. 638	659	est. 638	659
Sandstone	est. 659	808	est. 659	808
Shale	est. 808	1175	est. 808	1175
Sandy shale	est. 1175	1235	est. 1175	1235
Trace coal	est. 1235	1257	est. 1235	1257
Shale	est. 1257	1421	est. 1257	1421
Sandstone	est. 1421	1445	est. 1421	1445
Sandy shale	est. 1445	1477	est. 1445	1477
Trace Coal/shale	est. 1477	1542	est. 1477	1542
Sandstone	est. 1542	1683	est. 1542	1683
Sandy shale	est. 1683	2017	est. 1683	2017
Big Lime	2017	2014	2017	2014
Big Injun	2014	2309	2014	2309
Weir	2309	2617	2309	2617
Fifty Foot Sandstone	2617	2771	2617	2771
Gordon	2771	3054	2771	3054
Fifth Sandstone	3054	3074	3054	3074
Bayard	3074	3387	3074	3387
Speechley	3387	4096	3387	4096
Baltown	4096	4542	4096	4542
Bradford	4542	4954	4542	4954
Benson	4954	5220	4954	5220
Alexander	5220	6186	5220	6217
Sycamore	6186	6357	6217	6471
Middlesex	6357	6481	6471	6721
Burkett	6481	6508	6721	6795
Tully	6508	6538	6795	6901
Marcellus	6538	NA	6901	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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MORGANTOWN, WV



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/11/2014
Job End Date:	7/19/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06190-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Ahouse Unit 1H
Longitude:	-80.85256700
Latitude:	39.24150000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,579
Total Base Water Volume (gal):	9,873,654
Total Base Non Water Volume:	422,797

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service Abstract 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	90.44490	
Sand	J.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	9.24115	
HCL Acid (12.6%-18.0%)	J.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.09408	
LGC-15	J.S. Well Services, LLC	Gelling Agents	Hydrogen Chloride	7641-01-1	18.00000	0.02247	
			Guar Gum	9000-30-0	50.00000	0.04405	
			Petroleum Distillates	64742-47-8	60.00000	0.04172	
			Suspending agent (solid)	14808-60-7	3.00000	0.00674	
			Surfactant	88439-51-0	3.00000	0.00264	
WFRA-405	J.S. Well Services, LLC	Friction Reducer	Water	7732-18-5	40.00000	0.02685	
			Anionic Polyacrylamide	Proprietary		0.02685	
			Petroleum Distillates	64742-47-8	22.00000	0.02161	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00336	

SI-1000	J.S. Well Services, LLC	Scale Inhibitor	Crystalline Salt	12125-02-9	5.00000	0.00336
			Anionic Copolymer	Proprietary		0.00424
			Ethylene Glycol	107-21-1	20.00000	0.00383
			Water	7732-18-5	30.00000	0.00319
K-BAC 1020	J.S. Well Services, LLC	Anti-Bacterial Agent				
			2,2-dibromo-3-nitropropionamide	10222-01-2	20.00000	0.00434
			Deionized Water	7732-18-5	28.00000	0.00248
AP One	J.S. Well Services, LLC	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00155
AI-300	J.S. Well Services, LLC	Acid Corrosion Inhibitors				
			Ethylene Glycol	107-21-1	31.00000	0.00025
			N,N-Dimethylformamide	68-12-2	15.00000	0.00008
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	13.00000	0.00007
			Cinnamaldehyde	104-55-2	5.00000	0.00007
			2-Butoxyethanol	111-76-2	7.00000	0.00006
			Water	7732-18-5	20.00000	0.00002
			Ethoxylated Nonylphenol	68412-54-4	5.00000	0.00002
			Isopropyl Alcohol	67-63-0	3.00000	0.00001
			Triethyl Phosphate	78-40-0	3.00000	0.00001

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)

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LATITUDE 39°15'00"

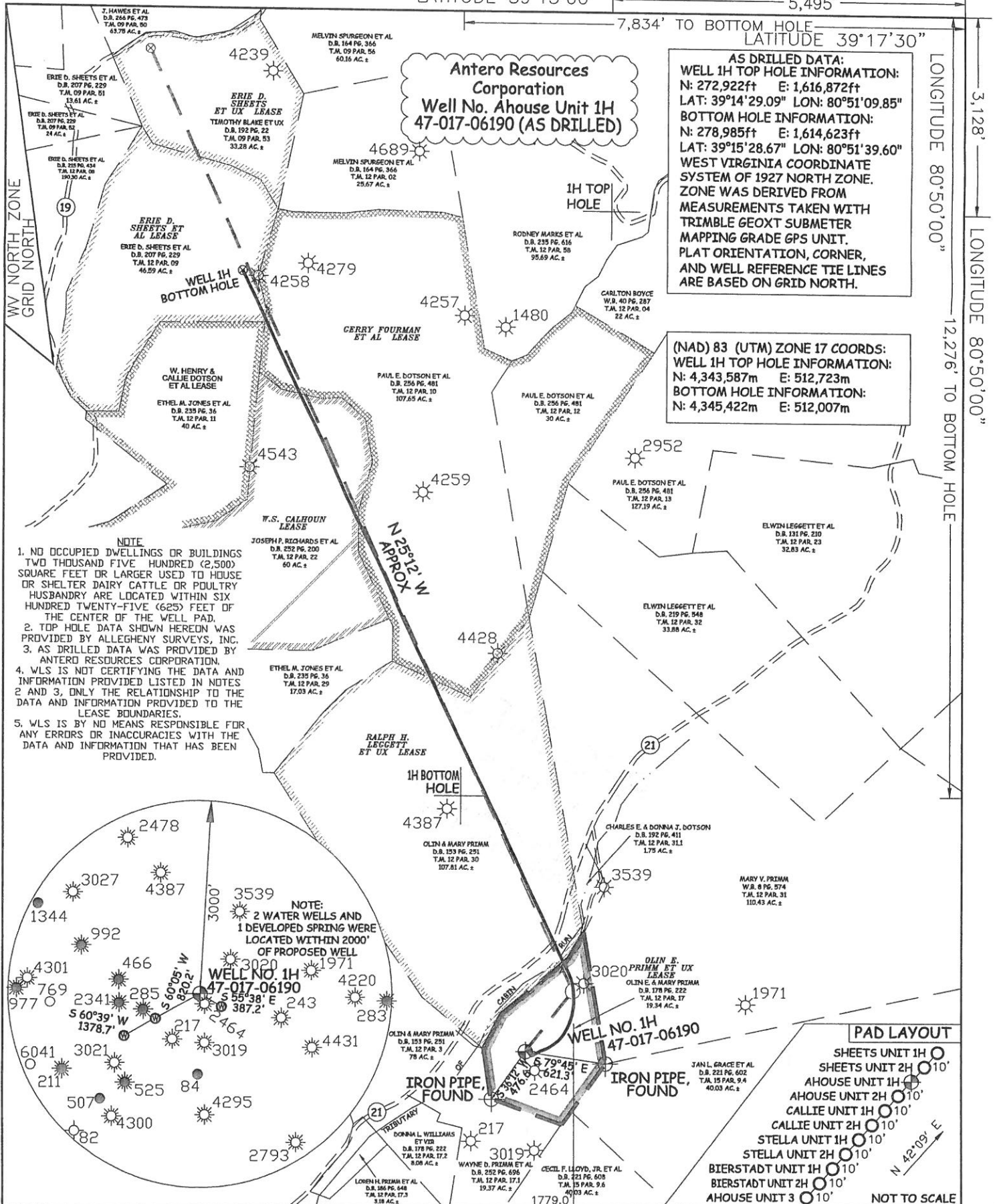
5,495'

7,834' TO BOTTOM HOLE

LATITUDE 39°17'30"

LONGITUDE 80°50'00"

LONGITUDE 80°50'00"



JOB # 12-061WA
DRAWING # AHOUSE1HAD
SCALE 1" = 1000'
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
220 MASONIC AVE. PENNSBORO
WEST VIRGINIA 26415

LEGEND
— Surface Owner Boundary Lines +/-
- - - Interior Surface Tracts +/-
X Existing Fence
⊕ Found monument, as noted
○ Proposed Well Path
⊗ As Drilled Well Path

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
LOCATION: ELEVATION 1,030' ORIGINAL - 1,008' AS DRILLED WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE OXFORD 7.5 DISTRICT CENTRAL COUNTY DODDRIDGE

OPERATOR'S WELL# AHOUSE UNIT #1H
API WELL # 47 - 017 - 06190
STATE COUNTY PERMIT

DATE 05/26/15
COUNTY NAME PERMIT

SURFACE OWNER OLIN E. & MARY PRIMM
OIL & GAS ROYALTY OWNER OLIN E. PRIMM ET UX; RALPH H. LEGGETT ET UX;
GERRY FOURMAN ET AL; W.S. CALHOUN; ERIE D. SHEETS ET AL
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
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,557' TVD 13,071' MD
WELL OPERATOR ANTERO RESOURCES CORP.
ADDRESS 1615 WYNKOOP STREET DENVER, CO 80202

ACREAGE 19.34 ACRES +/-
LEASE ACREAGE 19.34 ACRES±; 108 ACRES±;
137.65 ACRES±; 63 ACRES±; 47 ACRES±
DESIGNATED AGENT DIANNA STAMPER
ADDRESS CT CORPORATION SYSTEM
5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

FORM WW-6