



Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

April 30, 2020

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 off of the **Oxford 97 Pad**:

- Oxford 97 AHS
- Oxford 97 BHS
- Oxford 97 CHS
- Oxford 97 DHS
- Oxford 97 EHS
- Oxford 97 FHS
- Oxford 97 GHS
- Oxford 97 HHS

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 "M. Griffith", with a long horizontal flourish extending to the right.

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 - 017 - 06586 County Doddridge District West Union
Quad Oxford 7.5' Pad Name Oxford 97 Pad Field/Pool Name -----
Farm name Haessly Land & Timber LLC Well Number Oxford 97 HHS
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 4342652m Easting 516947m
Landing Point of Curve Northing 4342853.86m Easting 516846.74m
Bottom Hole Northing 4346535m Easting 515307m

Elevation (ft) 1333' 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 3/15/2019 Date drilling commenced 3/26/2019 Date drilling ceased 6/10/2019
Date completion activities began 10/5/2019 Date completion activities ceased 11/19/2019
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 108', 505' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1378', 1544' 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

Reviewed by:

API 47-017 - 06586 Farm name Haessly Land & Timber LLC Well number Oxford 97 HHS

CASING STRINGS	Hole Size	Casing Size	Depth	New or Uscd	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	59'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	905'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2991'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	20465'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6922'		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	214 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	631 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	890 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	675sx (Lead) 2448sx (Tail)	14.5 (Lead), 15.2 (Tail)	1.40 (Lead), 1.26 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 20473' MD ,6999' TVD (BHL), 7000' (Deepest Point Drilled) Loggers TD (ft) 20473' 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 _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

API 47- 017 - 06586 Farm name Haessly Land & Timber LLC Well number Oxford 97 HHS

PRODUCING FORMATION(S)	DEPTHS		
<u>Marcellus</u>	<u>6800' (TOP)</u>	<u>TVD</u>	<u>7007' (TOP)</u> 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 4603 mcfpd Oil 58 bpd NGL --- bpd Water 1 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 Patterson UTI Drilling Company LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company KLX Energy Services
Address 3040 Post Oak Boulevard City Houston State TX Zip 77056

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

Stimulating Company Baker Hughes
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Please insert additional pages as applicable.

Completed by Megan Griffith Telephone 303-357-7223
Signature  Title Permitting Agent Date 4-30-20

API 47-017-06586 Farm Name Haessly Land & Timber LLC Well Number Oxford 97 HHS

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	11/9/2019	14238.2715	14072.9865	60	Marcellus
2	11/9/2019	14037.5295	13872.2445	60	Marcellus
3	11/9/2019	13836.7875	13671.5025	60	Marcellus
4	11/10/2019	13636.0455	13470.7605	60	Marcellus
5	11/10/2019	13435.3035	13270.0185	60	Marcellus
6	11/11/2019	13234.5615	13069.2765	60	Marcellus
7	11/13/2019	13033.8195	12868.5345	60	Marcellus
8	11/13/2019	12833.0775	12667.7925	60	Marcellus
9	11/13/2019	12632.3355	12467.0505	60	Marcellus
10	11/14/2019	12431.5935	12266.3085	60	Marcellus
11	11/14/2019	12230.8515	12065.5665	60	Marcellus
12	11/15/2019	12030.1095	11864.8245	60	Marcellus
13	11/15/2019	11829.3675	11664.0825	60	Marcellus
14	11/17/2019	11628.6255	11463.3405	60	Marcellus
15	11/17/2019	11427.8835	11262.5985	60	Marcellus
16	11/17/2019	11227.1415	11061.8565	60	Marcellus
17	11/18/2019	11026.3995	10861.1145	60	Marcellus
18	11/18/2019	10825.6575	10660.3725	60	Marcellus
19	11/19/2019	10624.9155	10459.6305	60	Marcellus
20	11/19/2019	10424.1735	10258.8885	60	Marcellus
21	11/19/2019	10223.4315	10058.1465	60	Marcellus
22	11/20/2019	10022.6895	9857.4045	60	Marcellus
23	11/20/2019	9821.9475	9656.6625	60	Marcellus
24	11/21/2019	9621.2055	9455.9205	60	Marcellus
25	11/21/2019	9420.4635	9255.1785	60	Marcellus
26	11/21/2019	9219.7215	9054.4365	60	Marcellus
27	11/22/2019	9018.9795	8853.6945	60	Marcellus
28	11/22/2019	8818.2375	8652.9525	60	Marcellus
29	11/23/2019	8617.4955	8452.2105	60	Marcellus
30	11/23/2019	8416.7535	8251.4685	60	Marcellus
31	11/23/2019	8216.0115	8050.7265	60	Marcellus
32	11/24/2019	8015.2695	7849.9845	60	Marcellus
33	11/24/2019	7814.5275	7649.2425	60	Marcellus
34	11/25/2019	7613.7855	7448.5005	60	Marcellus
35	11/25/2019	7413.0435	7247.7585	60	Marcellus
36	11/25/2019	7212.3015	7047.0165	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	11/9/2019	78.38155	7932.111	5802	4133	402200	7209.04	N/A
2	11/9/2019	84.39637	8036.441	6034	4005	403000	7111.58	N/A
3	11/9/2019	84.46432	8412.119	6385	3712	402350	7072.5	N/A
4	11/10/2019	84.33128	8043.02	5958	3846	402200	7111.95	N/A
5	11/10/2019	81.15992	8159.076	6170	3822	401000	7126.4	N/A
6	11/11/2019	82.98368	8071.504	5454	4174	402600	7162.27	N/A
7	11/13/2019	83.09946	8290.246	4929	4120	402100	7033.16	N/A
8	11/13/2019	83.25071	7996.287	5451	4077	402300	7106.63	N/A
9	11/13/2019	84.20913	8107.809	5727	4050	402500	7040.02	N/A
10	11/14/2019	82.00875	8014.716	5378	4575	402250	7087.84	N/A
11	11/14/2019	83.10624	8335.74	5532	4080	402300	7029.6	N/A
12	11/15/2019	86.29472	7829.992	5504	3913	402000	6985.69	N/A
13	11/15/2019	82.52651	7869.671	5494	3911	402100	7049.69	N/A
14	11/17/2019	86.94754	7887.941	5429	3913	402200	7027.74	N/A
15	11/17/2019	85.44966	7653.731	5301	3835	402300	7073.28	N/A
16	11/17/2019	84.2765	8009.772	5947	4353	402700	6978.15	N/A
17	11/18/2019	84.83756	7431.702	4956	4540	401600	7451	N/A
18	11/18/2019	85.74082	7699.236	5754	3844	402200	6949.72	N/A
19	11/19/2019	82.82217	7829.693	5404	3911	401950	6970.6	N/A
20	11/19/2019	84.53603	7617.038	5661	4297	403100	7020.11	N/A
21	11/19/2019	83.51761	7573.187	5817	4549	402200	6995.59	N/A
22	11/20/2019	82.65564	7298.915	5799	4271	401400	6915.22	N/A
23	11/20/2019	82.86012	7182.667	5506	3892	401750	6947.7	N/A
24	11/21/2019	80.86185	7375.659	5807	4846	402200	6967.63	N/A
25	11/21/2019	82.41123	7212.889	5472	3999	401300	6903.99	N/A
26	11/21/2019	86.93299	7534.84	5867	3625	401830	6961.82	N/A
27	11/22/2019	80.45433	6974.307	6062	4444	402550	6988.93	N/A
28	11/22/2019	83.03841	6957.75	4653	4494	402280	7011.98	N/A
29	11/23/2019	82.96374	7165.79	5890	4739	402500	6983.4	N/A
30	11/23/2019	82.04705	7245.493	6069	4094	402200	6954.94	N/A
31	11/23/2019	86.33705	7397.915	5927	3906	402750	6859.13	N/A
32	11/24/2019	79.43754	7237.664	5661	4415	400400	7664.99	N/A
33	11/24/2019	85.4666	7078.238	5706	3760	402100	6960.31	N/A
34	11/25/2019	84.61592	6995.381	5461	3708	402150	6909.78	N/A
35	11/25/2019	82.35516	6801.488	5369	3576	402110	6702.19	N/A
36	11/25/2019	83.14811	6735.477	5352	3563	402480	6823.51	N/A
	AVG	83.4	7,611	5,630	4,083	14,477,150	253,148	TOTAL

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)		BOTTOM DEPTH (TVD)	
	From Surface	From Surface	From Surface	From Surface
Silty Sandstone	60	160	60	160
Sandstone	160	270	160	270
Silty sandstone tr coal	270	320	270	320
Shaly siltstone tr coal	320	530	320	530
Shaly siltstone	530	640	530	640
Silty Sandstone	640	790	640	790
Silty sandstone	790	860	790	860
Silty Sandstone	860	1,070	860	1,070
Siltstone	1,070	1,260	1,070	1,260
Siltstone tr coal	1,260	1,425	1,260	1,425
Sandstone tr coal	1,425	1,750	1,425	1,750
Shaly siltstone tr coal	1,750	1,790	1,750	1,790
Silty sandstone tr coal	1,790	1,977	1,790	N/A
Big Lime	1,977	2,681	1,978	2,681
Fifty Foot Sandstone	2,681	2,731	2,681	2,731
Gordon	2,731	3,019	2,731	3,019
Fifth Sandstone	3,019	3,088	3,019	3,088
Bayard	3,088	3,870	3,088	3,870
Speechley	3,870	4,135	3,870	4,135
Balltown	4,135	4,572	4,135	4,572
Bradford	4,572	5,021	4,572	5,021
Benson	5,021	5,296	5,021	5,297
Alexander	5,296	6,615	5,297	6,658
Sycamore	6,427	6,597	6,461	6,640
Middlesex	6,597	6,726	6,658	6,834
Burkett	6,726	6,760	6,852	6,903
Tully	6,760	6,800	6,921	7,007
Marcellus	6,800	NA	7,007	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.

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: 47-017-06586 County: Doddridge
District: West Union Well No: OXFD97 HHS
Farm Name: Haessly Land & Timber, LLC
Discharge Date/s From:(MMDDYY) 12/27/19 To: (MMDDYY) 01/26/20
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 1,304,420
Disposal Option(s) Utilized (write volumes in gallons):

- (1) Land Application: _____ (Include a topographical map of the Area.)
(2) UIC: 101,119 Permit No. 3400923821, 3400923823, 3400923824, 3416729731, 3410523652, 3400923619, 4708509721, 3416729543, 3416729464, 3416729445
(3) Offsite Disposal: _____ Site Location: _____
(4) Reuse: 1,203,301 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: 3/16/20

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: _____