



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

June 3, 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 **Dawson Pad**:

- Dierkes Unit 1H-2H
- Kirk Hadley Unit 1H
- Treasury Unit 1H-2H
- Weese Unit 1H-2H

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", 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 47-095-02550 County Tyler District Meade
Quad Middlebourne 7.5' Pad Name Kirk Hadley Pad Field/Pool Name -----
Farm name Kirk L. Hadley Well Number Dierkes 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 4368217.102m Easting 505842.565m
Landing Point of Curve Northing 4368121.04m Easting 506243.11m
Bottom Hole Northing 4366029.222m Easting 506983.247m

Elevation (ft) 912' 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 1/30/2019 Date drilling commenced 8/16/2019 Date drilling ceased 9/9/2019
Date completion activities began 2/10/2020 Date completion activities ceased 3/4/2020
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 142', 242', 349' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1225', 1691', 2032' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 527', 681' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

API 47-095 - 02550 Farm name Kirk L. Hadley Well number Dierkes 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"	105'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	477'	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"	14515'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6622'		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	240 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	400 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	913 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	320 sx (Lead) 2105 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.53 (Lead), 1.83 (Tail)		-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14535' MD, 6295' TVD (BHL), 6296' (Deepest Point Drilled) Loggers TD (ft) 14535' MD

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

Plug back procedure N/A

Kick off depth (ft) 5845'

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- 095 - 02550 Farm name Kirk L. Hadley Well number Dierkes Unit 1H

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.

API 47- 095 - 02550 Farm name Kirk L. Hadley Well number Dierkes Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6155' (TOP)</u>	<u>TVD</u>	<u>6679' (TOP)</u> <u>MD</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

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 6187 mcfpd Oil 184 bpd NGL --- bpd Water 588 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, H₂S, 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
Address 1660 Wynkoop Street, Suite 1100 City Denver State CO Zip 80202

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

Cementing Company Halliburton Energy Services
Address 1125 17th Street City Denver State CO Zip 80202

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 6/3/20

API 47-095-02550 Farm Name Kirk L. Hadley Well Number Dierkes Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/10/2020	14382.1	14337.2	60	Marcellus
2	2/11/2020	14299.82632	14134.9579	60	Marcellus
3	2/11/2020	14099.58421	13934.7158	60	Marcellus
4	2/11/2020	13899.34211	13734.4737	60	Marcellus
5	2/11/2020	13699.1	13534.2316	60	Marcellus
6	2/12/2020	13498.85789	13333.9895	60	Marcellus
7	2/12/2020	13298.61579	13133.7474	60	Marcellus
8	2/12/2020	13098.37368	12933.5053	60	Marcellus
9	2/12/2020	12898.13158	12733.2632	60	Marcellus
10	2/13/2020	12697.88947	12533.0211	60	Marcellus
11	2/13/2020	12497.64737	12332.7789	60	Marcellus
12	2/13/2020	12297.40526	12132.5368	60	Marcellus
13	2/13/2020	12097.16316	11932.2947	60	Marcellus
14	2/14/2020	11896.92105	11732.0526	60	Marcellus
15	2/14/2020	11696.67895	11531.8105	60	Marcellus
16	2/14/2020	11496.43684	11331.5684	60	Marcellus
17	2/14/2020	11296.19474	11131.3263	60	Marcellus
18	2/15/2020	11095.95263	10931.0842	60	Marcellus
19	2/16/2020	10895.71053	10730.8421	60	Marcellus
20	2/16/2020	10695.46842	10530.6	60	Marcellus
21	2/16/2020	10495.22632	10330.3579	60	Marcellus
22	2/16/2020	10294.98421	10130.1158	60	Marcellus
23	2/17/2020	10094.74211	9929.87368	60	Marcellus
24	2/17/2020	9894.5	9729.63158	60	Marcellus
25	2/17/2020	9694.257895	9529.38947	60	Marcellus
26	2/17/2020	9494.015789	9329.14737	60	Marcellus
27	2/18/2020	9293.773684	9128.90526	60	Marcellus
28	2/18/2020	9093.531579	8928.66316	60	Marcellus
29	2/18/2020	8893.289474	8728.42105	60	Marcellus
30	2/18/2020	8693.047368	8528.17895	60	Marcellus
31	2/19/2020	8492.805263	8327.93684	60	Marcellus
32	2/19/2020	8292.563158	8127.69474	60	Marcellus
33	2/19/2020	8092.321053	7927.45263	60	Marcellus
34	2/19/2020	7892.078947	7727.21053	60	Marcellus
35	2/20/2020	7691.836842	7526.96842	60	Marcellus
36	2/20/2020	7491.594737	7326.72632	60	Marcellus
37	2/20/2020	7291.352632	7126.48421	60	Marcellus
38	2/20/2020	7091.110526	6926.24211	60	Marcellus
39	2/21/2020	6890.868421	6726	60	Marcellus

API 47-095-02550 Farm Name Kirk L. Hadley Well Number Dierkes Unit 1H

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	2/10/2020	72.54	7915	72.54	4285	158780	4810.31	N/A
2	2/11/2020	78.7	7958	78.7	4572	397720	7130.738	N/A
3	2/11/2020	83.1	8132	83.1	4724	395800	8182.429	N/A
4	2/11/2020	84.79	7943	84.79	4492	407480	7251	N/A
5	2/11/2020	83.99	8044	83.99	4143	399260	7169.262	N/A
6	2/12/2020	85.5	8088	85.5	4001	392480	7195.643	N/A
7	2/12/2020	83.04	7934	83.04	3645	396800	7092.762	N/A
8	2/12/2020	82.33	7984	82.33	3599	403220	7056.452	N/A
9	2/12/2020	84.47	8029	84.47	3454	406100	6975.714	N/A
10	2/13/2020	85.59	8000	85.59	3514	411780	6978.405	N/A
11	2/13/2020	84.06	7758	84.06	3679	404240	7146.952	N/A
12	2/13/2020	85.54	7896	85.54	3361	401740	7009.19	N/A
13	2/13/2020	84.71	8022	84.71	3462	408180	6902.167	N/A
14	2/14/2020	85.16	8023	85.16	3567	408900	7072.857	N/A
15	2/14/2020	78.28	7674	78.28	3303	406040	7069.357	N/A
16	2/14/2020	84.3	7664	84.3	3573	407160	7087	N/A
17	2/14/2020	82.27	8084	82.27	3829	397940	6855.976	N/A
18	2/15/2020	79.25	7925	79.25	4211	282700	8482.643	N/A
19	2/16/2020	85.57	7834	85.57	3726	401540	7176.548	N/A
20	2/16/2020	85.24	7814	85.24	3620	402800	6933.976	N/A
21	2/16/2020	85.1	7813	85.1	3881	407120	6974.238	N/A
22	2/16/2020	78.78	7756	78.78	4060	410400	7114.69	N/A
23	2/17/2020	84.75	7562	84.75	4017	418580	7097.429	N/A
24	2/17/2020	79.94	7511	79.94	4488	403400	6895.19	N/A
25	2/17/2020	84.1	7071	84.1	3919	408780	6949.048	N/A
26	2/17/2020	80.5	7413	80.5	4202	412100	8886.286	N/A
27	2/18/2020	70.89	7579	70.89	3107	412360	8130.833	N/A
28	2/18/2020	85.89	6965	85.89	3780	399420	6894.738	N/A
29	2/18/2020	85.34	6889	85.34	3758	402700	6906.357	N/A
30	2/18/2020	84.51	6836	84.51	3474	401100	6924.905	N/A
31	2/19/2020	84.38	6835	84.38	3793	400780	7114.452	N/A
32	2/19/2020	85.83	7026	85.83	3651	401520	6839.31	N/A
33	2/19/2020	85.52	6816	85.52	3443	401260	6856.405	N/A
34	2/19/2020	85.69	6763	85.69	3382	400600	6911.167	N/A
35	2/20/2020	85.38	6750	85.38	3397	400820	6982.905	N/A
36	2/20/2020	85.81	7262	85.81	3521	402220	6859.333	N/A
37	2/20/2020	85.55	7208	85.55	3495	403060	6880.738	N/A
38	2/20/2020	85.2	7103	85.2	3409	408120	7033.714	N/A
39	2/21/2020	85	6949	85	3405	404560	7083.929	N/A
AVG.		83.2	7,560	83	3,768	15,389,560	276,915	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 Siltstone	120	210	120	210
Silty Shale	210	360	210	360
Sandstone	360	420	360	420
Silty Shale	420	990	420	990
Sandstone	990	1,050	990	1,050
Shaly sandstone	1,050	1,080	1,050	1,080
Silty SHale	1,080	980	1,080	980
Silty Sandstone	980	1,110	980	1,110
Shale	1,110	1,200	1,110	1,200
Sandstone	1,200	1,480	1,200	1,480
Sandy Siltstone	1,480	1,320	1,480	1,320
Silty SHale	1,320	1,440	1,320	1,440
Sandy shale	1,440	1,601	1,440	1,631
Big Lime	1,631	2,205	1,601	2,205
Fifty Foot Sandstone	2,205	2,479	2,175	2,479
Gordon	2,479	2,745	2,449	2,746
Fifth Sandstone	2,745	2,822	2,716	2,822
Bayard	2,822	3,682	2,792	3,694
Speechley	3,682	3,809	3,664	3,829
Balltown	3,809	4,355	3,799	4,392
Bradford	4,355	4,623	4,362	4,668
Benson	4,623	5,005	4,638	5,061
Alexander	5,005	6,013	5,031	6,141
Sycamore	5,917	5,983	6,022	6,111
Middlesex	5,983	6,036	6,111	6,195
Burkett	6,036	6,047	6,195	6,383
Tully	6,047	6,067	6,383	6,484
Marcellus	6,067	NA	6,484	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: 47-095-02550 County: Tyler
District: Meade Well No: Dierkes Unit 1H
Farm Name: Kirk L. Hadley
Discharge Date/s From:(MMDDYY) 04/13/20 To: (MMDDYY) 05/13/20
Discharge Times. From: 0:00 To: 24:00
Total Volume to be Disposed from this facility (gallons): 765,688
Disposal Option(s) Utilized (write volumes in gallons):

(1) Land Application: 0 (Include a topographical map of the Area.)
(2) UIC: 43,505 Permit No. 3400923821; 3416729543; 3412123995; 3410523619
(3) Offsite Disposal: 205 Site Location: Mud Masters
(4) Reuse: 721,978 Alternate Permit Number: _____
(5) Centralized Facility: 0 Permit No. _____
(6) Other method: 0 (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: Sr. Environmental & Regulatory Manager

Date Completed: 05/28/2020

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.

Gretchen Kohler

Digitally signed by Gretchen Kohler
Date: 2020.05.28 17:23:51 -06'00'

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: _____

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/10/2020
Job End Date:	2/21/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02550-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Dierkes 1H
Latitude:	39.46343330
Longitude:	-80.93225270
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,292
Total Base Water Volume (gal):	12,069,521
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
Produced Mixture	Halliburton	Base Fluid					
		Water	Water	7732-18-5	100.00000	86.78009	Density = 8.50
Ingredients	Listed Above	Listed Above					
		Water	Water	7732-18-5	100.00000	0.17359	

Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant											
						Listed Below							
LD-2950	MultiChem	Friction Reducer											
						Listed Below							
MC B-8614	Halliburton	Biocide											
						Listed Below							
WG-36 GELLING AGENT	Halliburton	Gelling Agent											
						Listed Below							
HAI-501	Halliburton	Acid Corrosion Inhibitor											
						Listed Below							
HYDROCHLORI C ACID, 22 BAUME	Halliburton	Solvent											
						Listed Below							
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker											
						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	13.01782					
					Hydrochloric acid	7647-01-0	30.00000	0.04229					
					Complex Amine Compound	Proprietary	60.00000	0.02429					

				Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01215	
				Guar gum	9000-30-0	100.00000	0.01177	
				Glutaraldehyde	111-30-8	30.00000	0.00250	
				Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00042	
				Adipic acid	124-04-9	1.00000	0.00040	
				Poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, branched	69011-36-5	1.00000	0.00040	
				Ethoxylated alcohols	Proprietary	1.00000	0.00040	
				Methanol	67-56-1	100.00000	0.00034	
				Ammonium persulfate	7727-54-0	100.00000	0.00031	
				Oxylated phenolic resin	Proprietary	30.00000	0.00009	
				Ethanol	64-17-5	1.00000	0.00008	
				Modified thiourea polymer	Proprietary	30.00000	0.00008	
				Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00008	
				Ethoxylated alcohols	Proprietary	5.00000	0.00001	
				Propargyl alcohol	107-19-7	5.00000	0.00001	
				Hexadecene	629-73-2	5.00000	0.00001	
				Phosphoric acid	7664-38-2	0.10000	0.00001	
				C.I. pigment Orange 5	3468-63-1	1.00000	0.00000	

* 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)



ANTERO RESOURCES CORPORATION

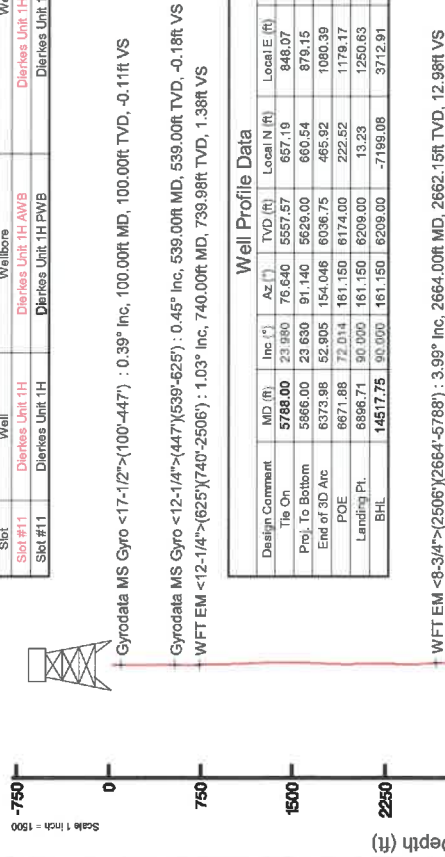
Location: Tyler County, WV
 Field: Tyler
 Facility: Kirk Hadley Pad
 Slot: Slot #11
 Well: Dierkes Unit 1H
 Wellbore: Dierkes Unit 1H PWB



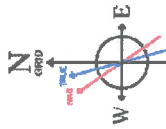
Plan reference wellpath is Dierkes Unit 1H PWB Rev-A.0	
True vertical depths are referenced to Patterson 342 (RKB)	
Measured depths are referenced to Patterson 342 (RKB)	
Patterson 342 (RKB) to Mean Sea Level: 937 feet	
Mean Sea Level to Ground level (At Slot Slot #11): -912 feet	
Coordinates are in feet referenced to Slot	

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Kirk Hadley Pad	1859520.850	14330579.820	80°55'56.326"W
Slot	Local E (ft)	Local N (ft)	Longitude
Slot #11	98.80	18.04	80°55'56.109"W
Patterson 342 (RKB) to Ground level (At Slot Slot #11)	26ft		
Mean Sea Level to Ground level (At Slot Slot #11)	-912ft		
Patterson 342 (RKB) to Mean Sea Level	937ft		

Well Data			
Slot	Well	Wellbore	Wellbath
Slot #11	Dierkes Unit 1H	Dierkes Unit 1H PWB	Dierkes Unit 1H AWP Proj: 14535'
Slot #11	Dierkes Unit 1H	Dierkes Unit 1H PWB	Dierkes Unit 1H PWP Rev-A.0

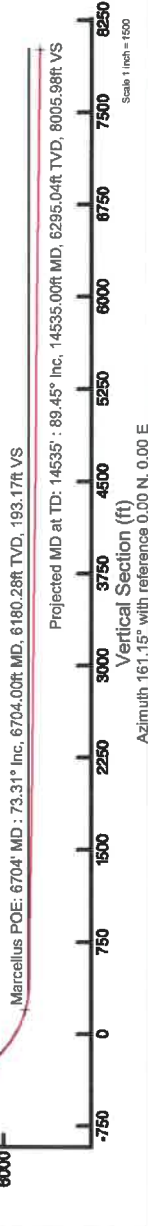


Well Profile Data						
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)
The On	5788.00	23.980	76.640	5557.57	657.19	848.07
Proj. To Bottom	5966.00	23.630	91.140	5629.00	680.54	879.15
End of 3D Arc	6373.98	52.905	154.046	6036.75	465.92	1080.39
POE	6871.88	72.014	181.150	6174.00	222.52	1179.17
Landing Pt.	8998.71	90.090	181.150	6208.00	13.23	1250.63
BHL	14517.75	90.000	181.150	6209.00	-7196.08	3712.91
					0.00	802.59

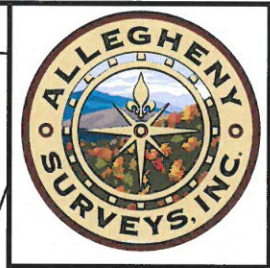


User specified (+DGM) Dip: 88.60° Field: 51750 nT
 Magnetic North is 7.64 degrees West of True North (at 9/2/2019)
 Grid North is 0.04 degrees East of True North
 To convert azimuth from Magnetic to Grid subtract 7.68 degrees

API: 47-095-02550-0000
 BHI Job #: 109983823A
 Rig: Patterson 342
 Duration: 09/05/2019-09/07/2019



Antero Resources
Well No. Dierkes Unit 1H
As-Drilled
Antero Resources Corporation



4,610' to Top Hole
 747' to Bottom Hole
TOP HOLE LATITUDE 39 - 30 - 00
BOTTOM HOLE LATITUDE 39 - 27 - 30

Note: It appears 5 water wells were found within 2000' of proposed well. No occupied dwellings or buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad.

LONGITUDE 80 - 55 - 00

13,247' to Top Hole

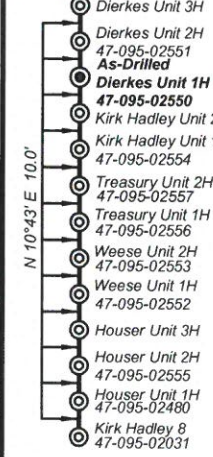
- Legend**
- ⊙ Proposed gas well
 - ⊙ Found corner, as noted
 - ⊙ Existing Well, as noted
 - - - Creek or Drain
 - - - Existing Road
 - - - Surface boundary (approx.)
 - - - Interior surface tracts (approx.)

(+) Denotes Location of Well on United States Topographic Maps

As-Drilled Well No. Dierkes Unit 1H

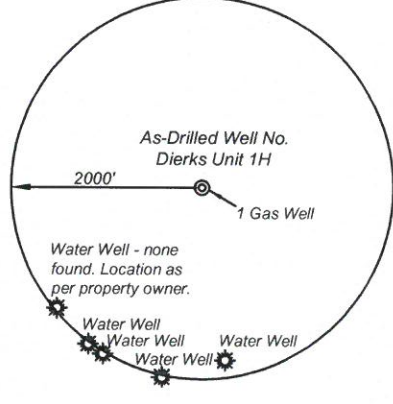
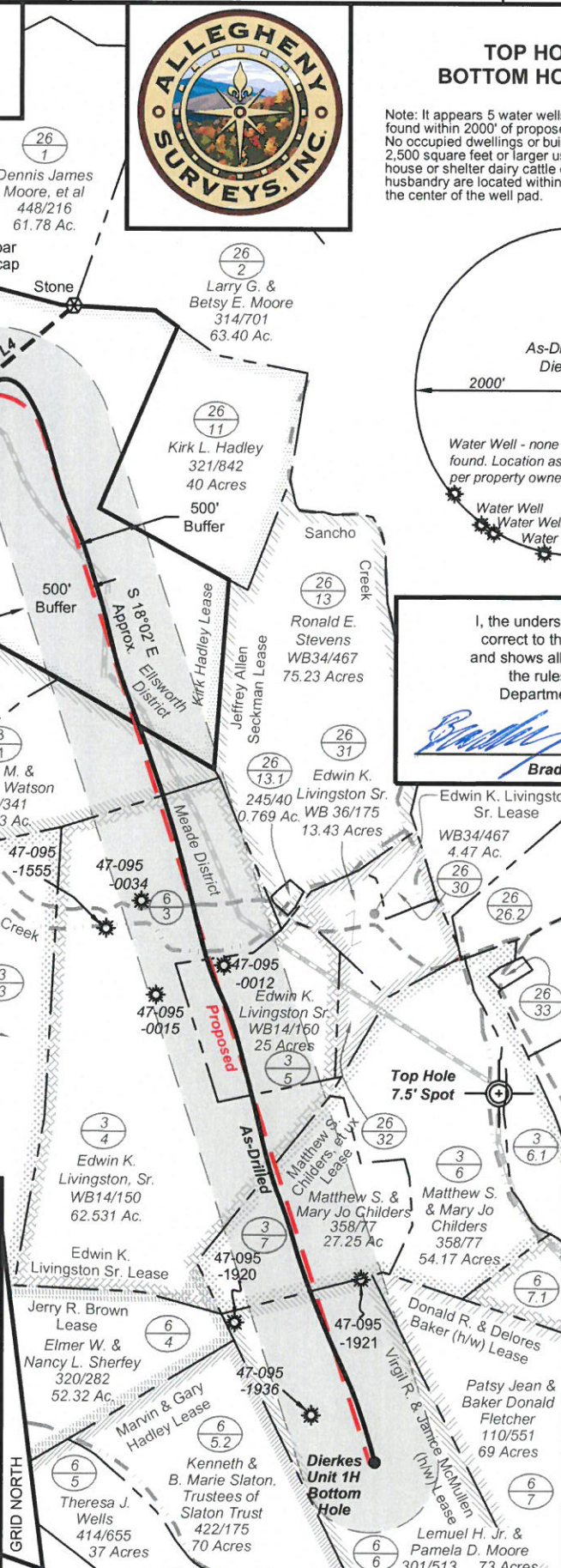
Bearing	Dist.
L1 N 42°28' E	741.5'
L2 S 30°13' E	975.6'
L3 S 28°54' W	1538.5'
L4 S 49°30' W	1833.5'

Wellhead Layout Detail Not to Scale



Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Dierkes Unit 1H Top Hole coordinates are
 N: 354,125.38' Latitude: 39°27'48.36"
 E: 1,595,641.90' Longitude: 80°55'56.11"
 Bottom Hole coordinates are
 N: 346,883.26' Latitude: 39°26'37.35"
 E: 1,599,265.20' Longitude: 80°55'08.45"
UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,368,217.102m N: 4,366,029.222m
 E: 505,842.565m E: 506,983.247m
 Plat orientation and corner and well references are based upon the grid north meridian.
 Well location references are based upon the magnetic meridian.

FILE NO: 216-54-M-16
 DRAWING NO: Dierkes 1H Well Plat
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV



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 prescribed by the Department of Environmental Protection.

Bradley D. Miller
Bradley D. Miller, P.S. 2167



Top Hole Coordinates, As-drilled data, and information was provided by Antero Resources Corporation. Allegheny Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: April 23 20 20
 OPERATOR'S WELL NO. Dierkes Unit 1H
 API WELL NO
 47 - 095 - 02550
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: As-Built 912' WATERSHED: Outlet Middle Island Creek QUADRANGLE: Middlebourne
 DISTRICT: Meade & Ellsworth COUNTY: Tyler
 SURFACE OWNER: Kirk L. Hadley Nila Ash Saylor; Virgil R. & Janice McMullen (h/w) ACREAGE: 162 202; 125.93;
 ROYALTY OWNER: Kirk Hadley; Edwin K. Livingston Sr.; Matthew S. Childers, et ux; LEASE NO: ACREAGE: 89.49375; 172.101; 73;
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 6,295' TVD 14,535' MD

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
 ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
 Denver, CO 80202 Charleston, WV 25313