



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 - 02551 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 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 4368220.094m Easting 505843.125m
Landing Point of Curve Northing 4368097.84m Easting 506516.45m
Bottom Hole Northing 4366115.456m Easting 507210.458m

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 8/21/2019 Date drilling ceased 9/5/2019
Date completion activities began 2/12/2020 Date completion activities ceased 3/5/2020
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 - 02551 Farm name Kirk L. Hadley Well number Dierkes 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"	105'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	478'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2710'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	14604'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6753'		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	919 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) 14624' MD, 6300' TVD (BHL), 6301' (Deepest Point Drilled) Loggers TD (ft) 14624' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6130'

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 - 02551 Farm name Kirk L. Hadley Well number Dierkes Unit 2H

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 - 02551 Farm name Kirk L. Hadley Well number Dierkes Unit 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6160' (TOP)</u>	<u>TVD</u>	<u>6803' (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 6102 mcfpd Oil 179 bpd NGL --- bpd Water 571 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 47-095-02551 Farm Name Kirk L. Hadley Well Number Dierkes Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/10/2020	14472.4	14427.8	60	Marcellus
2	2/11/2020	14190.59561	14026.0211	60	Marcellus
3	2/12/2020	13990.70614	13826.1316	60	Marcellus
4	2/12/2020	13790.81667	13626.2421	60	Marcellus
5	2/12/2020	13590.92719	13426.3526	60	Marcellus
6	2/12/2020	13391.03772	13226.4632	60	Marcellus
7	2/13/2020	13191.14825	13026.5737	60	Marcellus
8	2/13/2020	12991.25877	12826.6842	60	Marcellus
9	2/13/2020	12791.3693	12626.7947	60	Marcellus
10	2/13/2020	12591.47982	12426.9053	60	Marcellus
11	2/14/2020	12391.59035	12227.0158	60	Marcellus
12	2/14/2020	12191.70088	12027.1263	60	Marcellus
13	2/14/2020	11991.8114	11827.2368	60	Marcellus
14	2/14/2020	11791.92193	11627.3474	60	Marcellus
15	2/15/2020	11592.03246	11427.4579	60	Marcellus
16	2/16/2020	11392.14298	11227.5684	60	Marcellus
17	2/16/2020	11192.25351	11027.6789	60	Marcellus
18	2/16/2020	10992.36404	10827.7895	60	Marcellus
19	2/16/2020	10792.47456	10627.9	60	Marcellus
20	2/16/2020	10592.58509	10428.0105	60	Marcellus
21	2/17/2020	10392.69561	10228.1211	60	Marcellus
22	2/17/2020	10192.80614	10028.2316	60	Marcellus
23	2/17/2020	9992.91667	9828.34211	60	Marcellus
24	2/18/2020	9793.027193	9628.45263	60	Marcellus
25	2/18/2020	9593.137719	9428.56316	60	Marcellus
26	2/18/2020	9393.248246	9228.67368	60	Marcellus
27	2/18/2020	9193.358772	9028.78421	60	Marcellus
28	2/18/2020	8993.469298	8828.89474	60	Marcellus
29	2/19/2020	8793.579825	8629.00526	60	Marcellus
30	2/19/2020	8593.690351	8429.11579	60	Marcellus
31	2/19/2020	8393.800877	8229.22632	60	Marcellus
32	2/19/2020	8193.911404	8029.33684	60	Marcellus
33	2/20/2020	7994.02193	7829.44737	60	Marcellus
34	2/20/2020	7794.132456	7629.55789	60	Marcellus
35	2/20/2020	7594.242982	7429.66842	60	Marcellus
36	2/21/2020	7394.353509	7229.77895	60	Marcellus
37	2/21/2020	7194.464035	7029.88947	60	Marcellus
38	2/21/2020	6994.574561	6830	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	2/10/2020	70.47	8428	8986	3759	156440	4964.667	N/A
2	2/11/2020	83.93	7989	6165	3694	404940	7261.738	N/A
3	2/12/2020	84.3	8087	5978	3828	398760	7172.619	N/A
4	2/12/2020	84.8	7971	5460	4069	407120	7254.167	N/A
5	2/12/2020	82.8	7835	5426	4129	397840	7089.762	N/A
6	2/12/2020	85.9	7931	5513	3608	410440	7303.119	N/A
7	2/13/2020	85.13	7932	5393	3624	405640	6971.119	N/A
8	2/13/2020	83.42	7841	6113	3477	407550	7241.952	N/A
9	2/13/2020	85.45	7746	5765	3625	404540	7113.214	N/A
10	2/13/2020	85.24	8002	5805	3261	408500	7112.238	N/A
11	2/14/2020	85.7	8066	5659	3040	402840	7005.786	N/A
12	2/14/2020	83.53	7978	5614	3180	406840	7027.31	N/A
13	2/14/2020	84.2	7960	6120	3382	410700	7107.929	N/A
14	2/14/2020	84.2	7932	5990	3449	397960	7017.262	N/A
15	2/15/2020	85.4	8071	5601	3265	400440	7165.452	N/A
16	2/16/2020	85.68	7973	6287	3440	399220	7019.524	N/A
17	2/16/2020	85.95	7934	5884	3470	401940	7033.024	N/A
18	2/16/2020	85.97	7679	6236	3454	402280	7040.143	N/A
19	2/16/2020	85.4	7614	6258	3248	407940	7046.81	N/A
20	2/16/2020	85.21	7734	5933	3329	412620	7032.786	N/A
21	2/17/2020	83.34	7611	5194	3291	409220	7272.095	N/A
22	2/17/2020	74.32	7655	5998	5110	407200	8347.095	N/A
23	2/17/2020	83.3	7167	5290	3420	403620	6986.643	N/A
24	2/18/2020	85.65	7278	4922	3065	408260	6924.238	N/A
25	2/18/2020	85.63	7195	5586	3170	408060	6922.19	N/A
26	2/18/2020	85.69	7047	6564	3386	404960	6903.357	N/A
27	2/18/2020	84.37	6944	6402	3320	401340	6935.333	N/A
28	2/18/2020	84.62	6934	6006	3544	402600	7126.119	N/A
29	2/19/2020	85.18	6909	6051	3550	401900	7085	N/A
30	2/19/2020	85.57	6986	6527	3521	400200	6922.833	N/A
31	2/19/2020	85.92	7222	6446	3572	399640	6890.857	N/A
32	2/19/2020	85.5	6934	5886	3460	403900	7004.5	N/A
33	2/20/2020	85.47	6914	5720	3448	404660	7129.929	N/A
34	2/20/2020	85.24	7333	6376	3466	404340	6838.619	N/A
35	2/20/2020	83.15	7336	6846	3626	410280	7190.048	N/A
36	2/21/2020	85.51	7197	5867	3571	409280	7126.167	N/A
37	2/21/2020	84.1	7070	6102	3664	407480	6888.738	N/A
38	2/21/2020	85.63	7072	6180	3530	408360	7084.214	N/A
	AVG.	84.2	7,566	6,004	3,528	15,139,850	267,559	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
Siltstone	75	175	75	175
Silty Sandstone	175	295	175	295
Siltstone	295	455	295	455
Shaly Siltstone	455	555	455	555
Siltstone	555	715	555	715
Sandstone	715	755	715	755
Siltstone	755	985	755	985
Silty Sandstone	985	1,095	985	1,095
Sandstone	1,095	1,255	1,095	1,255
Silty Sandstone	1,255	1,485	1,255	1,485
Sandy Siltstone	1,485	1,555	1,485	1,555
Sandstone	1,555	1,625	1,555	1,625
Siltstone	1,625	1,679	1,625	1,744
Big Lime	1,704	2,257	1,719	2,352
Fifty Foot Sandstone	2,257	2,493	2,327	2,606
Gordon	2,493	2,782	2,581	2,916
Fifth Sandstone	2,782	2,866	2,891	3,008
Bayard	2,866	3,723	2,983	3,934
Speechley	3,723	3,880	3,909	4,103
Balitown	3,880	4,357	4,078	4,618
Bradford	4,357	4,655	4,593	4,947
Benson	4,655	5,099	4,922	5,426
Alexander	5,099	6,058	5,401	6,525
Sycamore	5,933	6,033	6,357	6,500
Middlesex	6,033	6,118	6,500	6,664
Burkett	6,118	6,141	6,664	6,725
Tully	6,141	6,160	6,725	6,803
Marcellus	6,160	NA	6,803	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: 47-095-02551 County: Tyler
District: Meade Well No: Dierkes Unit 2H
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 17:19:40 -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/Bl
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:	47-095-02551-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Dierkes 2H
Latitude:	39.46346110
Longitude:	-80.93224700
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,297
Total Base Water Volume (gal):	11,705,835
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	86.62566	Density = 8.50
Ingredients	Listed Above	Listed Above					
		Water	Water	7732-18-5	100.00000	0.16752	

MC B-8614	Halliburton	Biocide											
					Listed Below								
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker											
					Listed Below								
LD-2950	MultiChem	Friction Reducer											
					Listed Below								
WG-36 GELLING AGENT	Halliburton	Gelling Agent											
					Listed Below								
HYDROCHLORI C ACID, 22 BAUME	Halliburton	Solvent											
					Listed Below								
HAI-501	Halliburton	Acid Corrosion Inhibitor											
					Listed Below								
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant											
					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	13.18098						
				Hydrochloric acid	7647-01-0	30.00000	0.04090						
				Complex Amine Compound	Proprietary	60.00000	0.02282						

				Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01141	
				Guar gum	9000-30-0	100.00000	0.01015	
				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	0.00038	
				Ethoxylated alcohols	Proprietary	1.00000	0.00038	
				Poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, branched	69011-36-5	1.00000	0.00038	
				Methanol	67-56-1	100.00000	0.00033	
				Ammonium persulfate	7727-54-0	100.00000	0.00025	
				Ethanol	64-17-5	1.00000	0.00008	
				Oxylated phenolic resin	Proprietary	30.00000	0.00008	
				Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00007	
				Modified thiourea polymer	Proprietary	30.00000	0.00007	
				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 #12
 Well: Dierkes Unit 2H
 Wellbore: Dierkes Unit 2H PWB



POI reference well: slot is Dierkes Unit 2H PWP Rev-A.0	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to Patterson 342 (RKB)	North Reference: Grid north
Measured depths are referenced to Patterson 342 (RKB)	Scale: True distance
Patterson 342 (RKB) to Mean Sea Level: 837 feet	Depths are in feet
Mean Sea Level to Ground level (AI Slot: Slot #12) - 912 feet	Created by: dalaesat on 2010-09-26
Coordinates are in feet referenced to Slot	Distributors: WA, MP, E, ENERTECH, US, DEIN

Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Kirk Hadley Pad	14330570.820	14330570.820	39°27'47.394"N	80°55'58.326"W
Slot #12	108.41	18.85	39°27'48.455"N	80°55'58.087"W
Patterson 342 (RKB) to Ground level (AI Slot: Slot #12)	1609589.206	14330688.191	28ft	-812ft
Mean Sea Level to Ground level (AI Slot: Slot #12)				837ft

Well Data

Slot	Well	Wellbore	Wellpath
Slot #12	Dierkes Unit 2H	Dierkes Unit 2H PWB	Dierkes Unit 2H AWP Prof: 14624
Slot #12	Dierkes Unit 2H	Dierkes Unit 2H PWB	Dierkes Unit 2H PWP Rev-A.0

Scale 1 inch = 1500

Gyrodata MS Gyro <17-1/2>(100-445) : 0.26° Inc, 100.00ft MD, 100.00ft TVD, 0.12ft VS

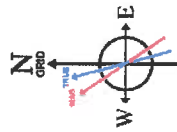
Gyrodata MS Gyro <12-1/4>(445)(535-800) : 1.13° Inc, 535.00ft MD, 534.99ft TVD, 1.44ft VS

WFT EM <8-3/4>(2629)(2758-6071) : 9.89° Inc, 926.00ft MD, 923.07ft TVD, -5.05ft VS

WFT EM <8-3/4>(2629)(2758-6071) : 20.29° Inc, 2758.00ft MD, 2634.55ft TVD, -116.38ft VS

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (1/100ft)	VS (ft)
Tile On	6071.00	28.590	110.200	5701.07	897.53	1685.56	10.16	-301.51
Pro. To Bottom	6151.00	31.530	122.560	5770.37	879.64	1721.20	8.55	-273.02
End of 3D Arc	6436.15	44.766	149.502	5695.65	751.56	1836.29	7.37	-114.50
POE	6783.14	71.793	181.049	6177.00	484.88	1854.27	8.25	176.03
Landing Pl.	7004.57	90.000	161.049	6212.00	278.99	2024.97	8.25	393.72
BHL	14623.00	90.000	161.049	6212.00	-6926.47	4490.18	0.00	8012.15



User specified (HDGM) Dip: 66.51° Field: 61751 nT
 Magnetic North is 7.64 degrees West of True North (at 8/28/2019)
 Grid North is 0.04 degrees East of True North
 To correct azimuth from True to Grid subtract 0.04 degrees
 To correct azimuth from Magnetic to Grid subtract 7.66 degrees

BH AT Curve <8-1/2> (6071)(6130-14599) : 32.70° Inc, 6130.00ft MD, 5751.84ft TVD, -281.12ft VS

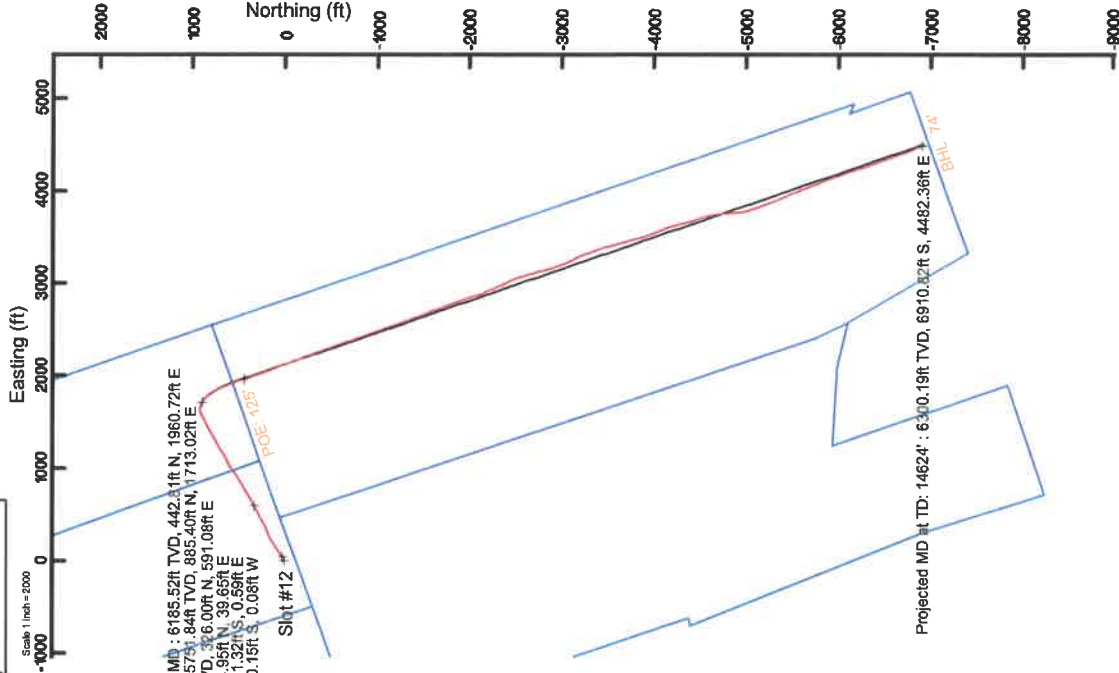
Marcellus POE: 6828' MD : 77.69° Inc, 6828.00ft MD, 6185.52ft TVD, 217.91ft VS

Projected MD at TD: 14624 : 89.20° Inc, 14624.00ft MD, 6300.19ft TVD, 7991.88ft VS

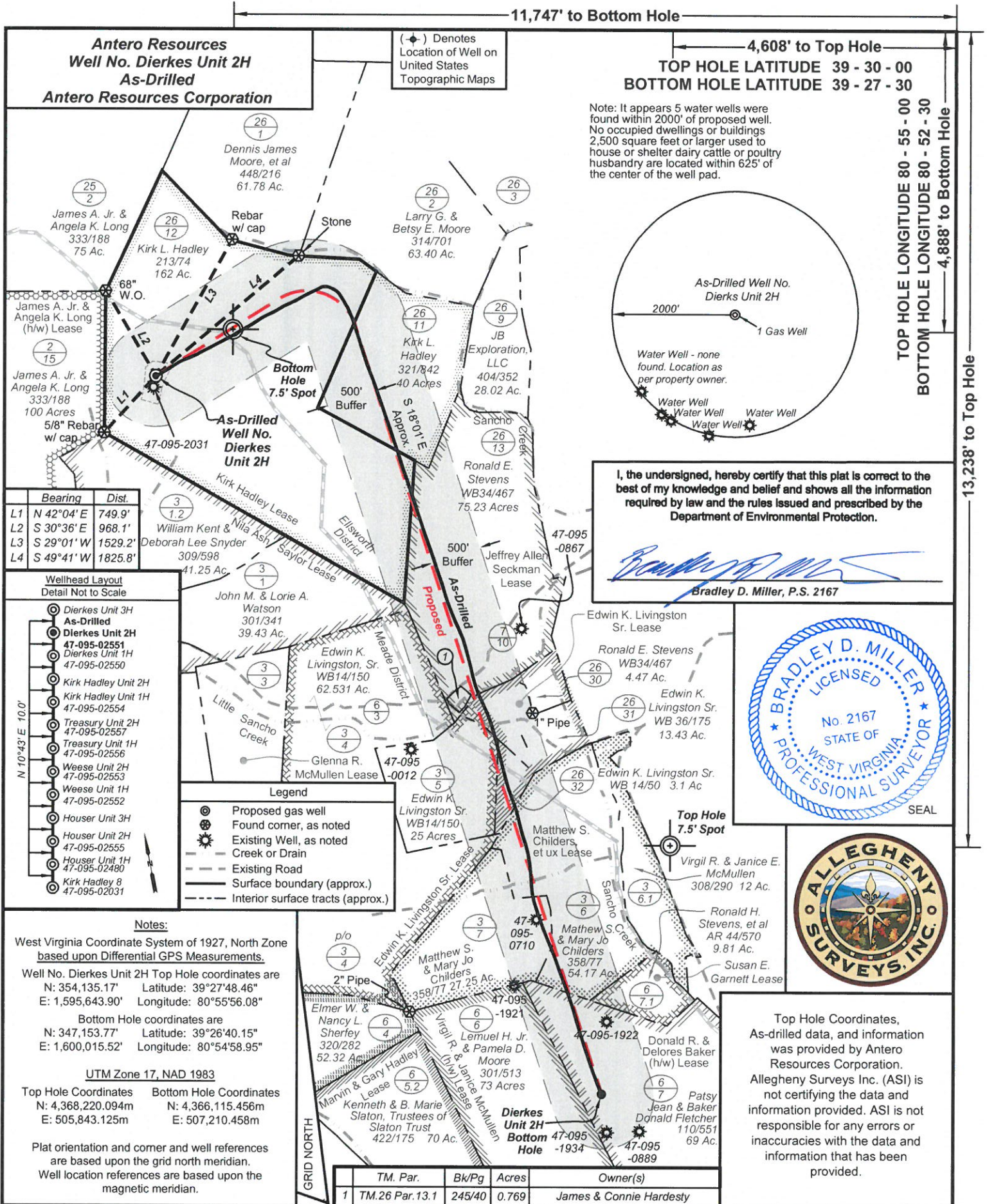
Vertical Section (ft)

Azimuth 161.05° with reference 0.00 N, 0.00 E

Scale 1 inch = 1600



API: 47-095-02551-0000
 BHI Job #: 109970386A
 Rig: Patterson 342
 Duration: 08/30/2019-09/03/2019



FILE NO: 216-54-M-16
DRAWING NO: Dierkes 2H As-Drilled
SCALE: 1" = 1200'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: April 23 2020
OPERATOR'S WELL NO. Dierkes Unit 2H
API WELL NO
47 - 095 - 02551
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 Donald R. & Delores Baker (h/w); Jeffrey Allen Seckman; ACREAGE: 162 202; 79; 69;
ROYALTY OWNER: Kirk Hadley; Edwin K. Livingston Sr.(2); Matthew S. Childers, et ux; LEASE NO: ACREAGE: 89.49375; 21; 172.101;
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: 6,300' TVD 14,624' 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