

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

API 47-095-02394 County Tyler District Centerville
Quad Middlebourne 7.5' Pad Name Vera Pad Field/Pool Name -----
Farm name Vera O. Thomas Well Number Mysis 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 4364004m Easting 508267m
Landing Point of Curve Northing 4364040.07m Easting 507808.69m
Bottom Hole Northing 4366037m Easting 507115m

Elevation (ft) 1148.1' 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 1/24/2017 Date drilling commenced 3/22/2017 Date drilling ceased 10/9/2017
Date completion activities began 1/21/2018 Date completion activities ceased 6/14/2018
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 65', 215', 261', 399' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 620', 1614', 1974' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 620', 879' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed
JCB 3/14/2019

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Reviewed by:
WV Department of
Environmental Protection

WR-35
Rev. 8/23/13

API 47-095 - 02394 Farm name Vera O. Thomas Well number Mysis 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"	95'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	742'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2564'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	14156'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6848'		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	200 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	630 sx	15.6	1.18	826	0'	8 Hrs.
Coal							
Intermediate 1	Class A	945 sx	15.6	1.18	1181	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	771 sx (Lead) 1318 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.45 (Lead), 1.94 (Tail)		~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14156' MD, 6535' TVD (BHL), 6588' (Deepest Point Drilled) Loggers TD (ft) 14156' MD

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

Plug back procedure N/A

Kick off depth (ft) 6096'

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 _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

FEB 20 2019

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

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
Marcellus	6556' (TOP) TVD	6892' (TOP) 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 9544 mcfpd Oil 189 bpd NGL --- bpd Water 2303 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
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***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

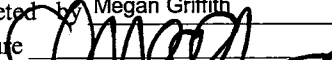
Drilling Contractor Frontier Drilling LLC
Address 562 Spring Run Road City Pennsboro State WV Zip 26415

Logging Company Schlumberger
Address 5599 San Felipe Street 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 2/8/2019
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API 47-095-02394 Farm Name Vera O. Thomas Well Number Mysis Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/1/2018	13885	14054	60	Marcellus
2	2/2/2018	13686	13854	60	Marcellus
3	2/3/2018	13487	13655	60	Marcellus
4	2/3/2018	13288	13456	60	Marcellus
5	2/4/2018	13088	13257	60	Marcellus
6	2/4/2018	12889	13057	60	Marcellus
7	2/5/2018	12690	12858	60	Marcellus
8	2/6/2018	12491	12659	60	Marcellus
9	2/6/2018	12291	12460	60	Marcellus
10	2/7/2018	12092	12260	60	Marcellus
11	2/7/2018	11893	12061	60	Marcellus
12	2/9/2018	11694	11862	60	Marcellus
13	2/11/2018	11494	11663	60	Marcellus
14	2/12/2018	11295	11463	60	Marcellus
15	2/12/2018	11096	11264	60	Marcellus
16	2/13/2018	10897	11065	60	Marcellus
17	2/13/2018	10697	10866	60	Marcellus
18	2/14/2018	10498	10666	60	Marcellus
19	2/14/2018	10299	10467	60	Marcellus
20	2/15/2018	10100	10268	60	Marcellus
21	2/15/2018	9900	10069	60	Marcellus
22	2/16/2017	9701	9869	60	Marcellus
23	2/17/2018	9502	9670	60	Marcellus
24	2/18/2018	9303	9471	60	Marcellus
25	2/19/2018	9104	9272	60	Marcellus
26	2/20/2018	8904	9072	60	Marcellus
27	2/21/2018	8705	8873	60	Marcellus
28	2/21/2018	8506	8674	60	Marcellus
29	2/21/2018	8307	8475	60	Marcellus
30	2/22/2018	8107	8275	60	Marcellus
31	2/23/2018	7908	8076	60	Marcellus
32	2/23/2018	7709	7877	60	Marcellus
33	2/24/2018	7510	7678	60	Marcellus
34	2/24/2018	7310	7478	60	Marcellus
35	2/25/2018	7111	7279	60	Marcellus
36	2/25/2018	6912	7080	60	Marcellus

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API 47-095-02394 Farm Name Vera O. Thomas Well Number Mysis Unit 1H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Fresh Water	227'	N/A	227'	N/A
Sandstone	100	N/A	100	N/A
Sandy Siltstone	120	N/A	120	N/A
Sandy Shale	740	N/A	740	N/A
Calcareous Shale	880	N/A	880	N/A
Shaly Sandstone	920	N/A	920	N/A
Shaly Siltstone	1,020	N/A	1,020	N/A
Silty Shale	1,180	N/A	1,180	N/A
Sandstone	1,360	N/A	1,360	N/A
Sandy Shale	1,400	N/A	1,400	N/A
Shaly Sandstone	1,640	N/A	1,640	N/A
Silty Shale	1,700	N/A	1,700	N/A
Sandy Shale	1,780	N/A	1,780	N/A
Sandy Shale/Coal	1,920	N/A	1,920	N/A
Big Lime	2,016	N/A	2,037	N/A
Big Injun	2,156	N/A	2,181	N/A
Gantz Sand	2,619	N/A	2,659	N/A
Fifty Foot Sandstone	2,757	N/A	2,801	N/A
Gordon	2,898	N/A	2,947	N/A
Fifth Sandstone	3,041	N/A	3,094	N/A
Bayard	3,283	N/A	3,346	N/A
Warren	3,624	N/A	3,698	N/A
Speechley	4,012	N/A	4,098	N/A
Balltown	4,491	N/A	4,592	N/A
Bradford	4,674	N/A	4,781	N/A
Benson	4,917	N/A	5,033	N/A
Alexander	5,306	N/A	5,435	N/A
Rhinestreet	5,903	N/A	6,052	N/A
Sycamore	6,269	N/A	6,440	N/A
Middlesex	6,405	N/A	6,607	N/A
Burkett	6,501	N/A	6,756	N/A
Tully	6,528	N/A	6,813	N/A
Marcellus	6,556	N/A	6,892	N/A

*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:	1/29/2018
Job End Date:	2/27/2018
State:	West Virginia
County:	Tyler
API Number:	47-095-02394-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Mysis 1H
Latitude:	39.42168600
Longitude:	-80.90098800
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,588
Total Base Water Volume (gal):	14,324,005
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
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	88.78678	Density = 8.330
	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.34146	

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SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant											
					Listed Below								
FR-76	Halliburton	Friction Reducer											
					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				10.81728			
			Hydrochloric acid	7647-01-0		15.00000				0.04302			
			Guar gum	9000-30-0		100.00000				0.02066			
			Acrylamide acrylate copolymer	Proprietary		30.00000				0.01966			Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt	Proprietary		30.00000				0.01966			
			Hydrotreated light petroleum distillate	64742-47-8		30.00000				0.01966			
			Ethylene glycol	107-21-1		60.00000				0.00816			
			Glutaraldehyde	111-30-8		30.00000				0.00259			
			Telmer	Proprietary		10.00000				0.00136			
			Sodium persulfate	7775-27-1		100.00000				0.00048			
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1		5.00000				0.00043			
			Methanol	67-56-1		60.00000				0.00014			
			Sodium polyacrylate	9003-04-7		1.00000				0.00014			
			Ethanol	64-17-5		1.00000				0.00009			
			Fatty acids, tall oil	Proprietary		30.00000				0.00006			
			Modified thiourea polymer	Proprietary		30.00000				0.00006			
			Ethoxylated alcohols	Proprietary		30.00000				0.00006			

		Olefins	Proprietary	5.00000	0.00003
		Propargyl alcohol	107-19-7	10.00000	0.00002
		Phosphoric acid	7664-38-2	0.10000	0.00001
		Acrylic acid	79-10-7	0.01000	0.00000
		Sodium sulfate	7757-82-6	0.10000	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)

LATITUDE 39°27'30"

8,227'

229' TO BOTTOM HOLE
LATITUDE 39°27'30"

LONGITUDE 80°52'00"

1H BOTTOM HOLE

5,301' TO BOTTOM HOLE

LONGITUDE 80°52'30"

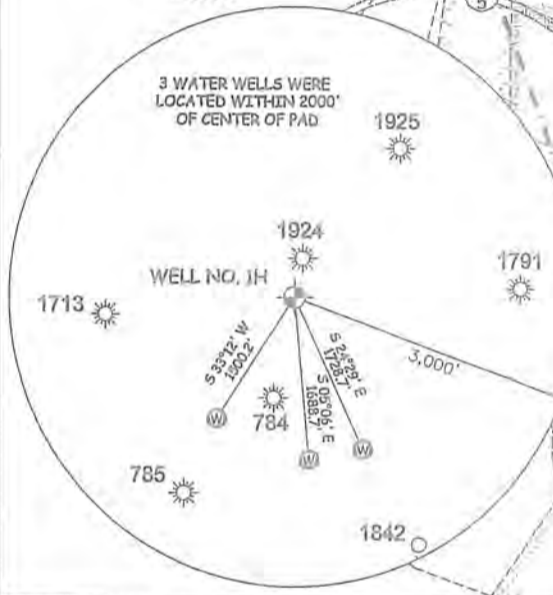
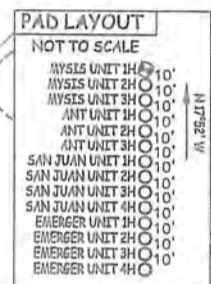
Antero Resources Corporation Well No. Mysis Unit 1H

- 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.
 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.
 5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
 N: 340,167ft E: 1,603,367ft
 LAT: 39°25'31.62" LON: 80°54'14.84"
BOTTOM HOLE INFORMATION:
 N: 346,902ft E: 1,599,700ft
 LAT: 39°26'37.60" LON: 80°55'02.92"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH 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:
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 N: 4,364,004m E: 508,267m
BOTTOM HOLE INFORMATION:
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04/05/2019



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 PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC
220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

JOB # 16-048WA
DRAWING # MYSIS1HAD
SCALE 1" = 1000'
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

LEGEND

- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Proposed Well Path
- As Drilled Well Path

THOMAS SUMMERS P.S. 2109

DATE 10/12/18
OPERATOR'S WELL# MYSIS UNIT #1H

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW
 LOCATION: ELEVATION 1,148.1' - AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK
 QUADRANGLE MIDDLEBOURNE 7.5' DISTRICT CENTERVILLE COUNTY TYLER COUNTY PERMIT STATE 02394
 SURFACE OWNER VERA O. THOMAS ACREAGE 51.11 ACRES +/-
 OIL & GAS ROYALTY OWNER NORMAN H. THOMAS ET UX; KATHLEEN L. LOUGH; RUSSELL PAUL STACKPOLE; LEASE ACREAGE 125 AC.±; 40.27 AC.±; 27.5 AC.±; CHARLES C. FAIRBEE; EDWIN K. LIVINGSTON; LARRY D. McMULLEN; ROBERT GOODE; 24.5 AC.±; 24.41 AC.±; 118.14 AC.±; 53.13 AC.±; GLENN R. McMULLEN; LEMUEL MOORE ET UX 70 AC.±; 73 AC.±

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AS DRILLED
 TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,535' TVD 14,156' MD
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
 ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
 DENVER, CO 80202 CHARLESTON, WV 25313

LATITUDE 39°27'30"

8,227'

229' TO BOTTOM HOLE
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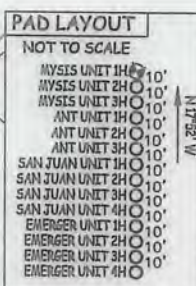
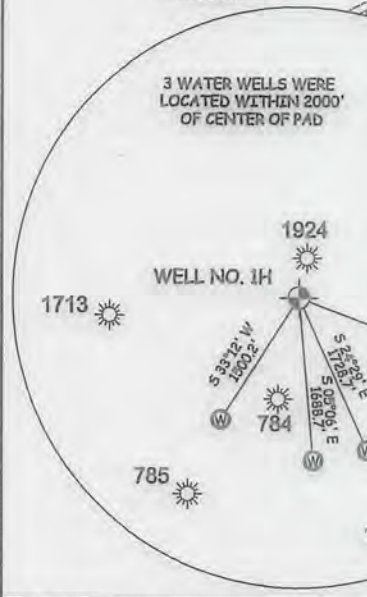
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WV NORTH ZONE
GRID NORTH



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ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

CHARLESTON, WV 25313 5400 D BIG TYLER ROAD DIANNA STAMPER - CT CORPORATION SYSTEM

DESIGNATED AGENT ESTIMATED DEPTH 835 TPD 14 150 MD CLEAN OUT & REPLUG

PLUG & ABANDON OTHER PHYSICAL CHANGE IN WELL PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE

GLORIA R. MC MULLEN; LEMUEL MOORE ET UX CHARLES C. FAIRBEE; EDWIN KLINGENSTON; LARRY D. MC MULLEN; ROBERT GOODE; 24.5 AC ±; 24.41 AC ±; 118.14 AC ±; 23.13 AC ±; 10 AC ±; 13 AC ±

SURFACE OWNER VERA O. THOMAS ACREAGE 51.11 ACRES ± COUNTY PERMIT STATE 03394

LOCATION: ELEVATION 1184.1 - AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK QUADRANGLE MIDDLEBORNE T3, DISTRICT CENTERVILLE COUNTY TYLER

DIVISION OF OIL AND GAS DEPARTMENT OF ENERGY STATE OF WEST VIRGINIA

SMETTER MAPPING GRADE GPS PROVEN SOURCE OF ELEV. THOMAS SUMMERS P.S. 2109

ACCURACY SUBMETER MINIMUM DEGREE OF SCALE 1" = 1000'

DRAWING # M54184D JOB # 16-046WA

OPERATOR'S WELL # MYSIS UNIT 1H11 DATE 10/25/18

STATE OF WEST VIRGINIA OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC 520 WYSONG AV. PENNINGBORO WEST VIRGINIA 26415

STATE OF ENVIRONMENTAL PROTECTION DIVISION OF ENVIRONMENTAL PROTECTION

STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION

TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND

PERSCIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT

3 WATER WELLS WERE LOCATED WITHIN 500' OF CENTER OF PAD

WELL NO. 1H11

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