west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Monday, July 30, 2018
WELL WORK PERMIT
Horizontal 6A / Fracture

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit approval for OXF97 HHS
47-017-06586-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number:
Farm Name: HAESSLY LAND & TIMBER
U.S. WELL NUMBER: 47-017-06586-00-00
Horizontal 6A Fracture
Date Issued: 7/30/2018

08/03/2018

API Number: _____

PERMIT CONDITIONS 4701706586

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.

2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.

3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.

4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.

5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations,* 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.

6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.

8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.

9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.

10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

08/03/2018

API Number: _____

PERMIT CONDITIONS 4701706586

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.

08/03/2018

FRAC PERMIT API # 47-017-06586

WW-6B
(04/15)

API NO. 47- 017 - 06586
OPERATOR WELL NO. OXF97 HHS
Well Pad Name: Oxford 97 Pad

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator:	Antero Resources Corporat	494507062	017 - Doddri	West Uni	Oxford 7.5'
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: OXF97 HHS Well Pad Name: Oxford 97 Pad

3) Farm Name/Surface Owner: Haessly Land & Timber, LLC Public Road Access: Waco Rd.

4) Elevation, current ground: 1333' Elevation, proposed post-construction: 1333'

5) Well Type (a) Gas X Oil _____ Underground Storage _____
Other _____
(b)If Gas Shallow X Deep _____
Horizontal X

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6996' TVD, Anticipated Thickness- 60 feet, Associated Pressure- 3100#

8) Proposed Total Vertical Depth: 6996' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 20473' MD

11) Proposed Horizontal Leg Length: 13377'

12) Approximate Fresh Water Strata Depths: 266', 503', 810'

13) Method to Determine Fresh Water Depths: OXF97 HHS (API #47-017-06586)

14) Approximate Saltwater Depths: None Identified

15) Approximate Coal Seam Depths: None Identified

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No X

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(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

DAF
6/5/18

08/03/2018

WW-6B
(04/15)

API NO. 47- 017 - 06586
OPERATOR WELL NO. OXF97 HHS
Well Pad Name: Oxford 97 Pad

18) **CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	J-55	94#	59	59	CTS, 56 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	905 KK	905	CTS, 1257 Cu. Ft.
Coal	9-5/8"	New	HCK-55	36#	~~3000~~ 2991	~~3000~~ 2991	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	20465	20465	5220 Cu. Ft
Tubing							
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

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DAF
6/15/18

08/03/2018

FRAC PERMIT API # 47-017-06586

WW-6B
(10/14)

API NO. 47- 017 - 06586
OPERATOR WELL NO. OXF97 HHS
Well Pad Name: Oxford 97 Pad

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

This well has been drilled to TD - 20,473'. Antero is requesting approval to perforate, fracture the existing horizontal shallow well and complete Marcellus Shale.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs
Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 59.26 existing acres

22) Area to be disturbed for well pad only, less access road (acres): 7.04 existing acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers
Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.
Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.
Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

24) Describe all cement additives associated with each cement type:

Conductor: no additives, Class A cement.
Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake
Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat
Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51
Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

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25) Proposed borehole conditioning procedures:

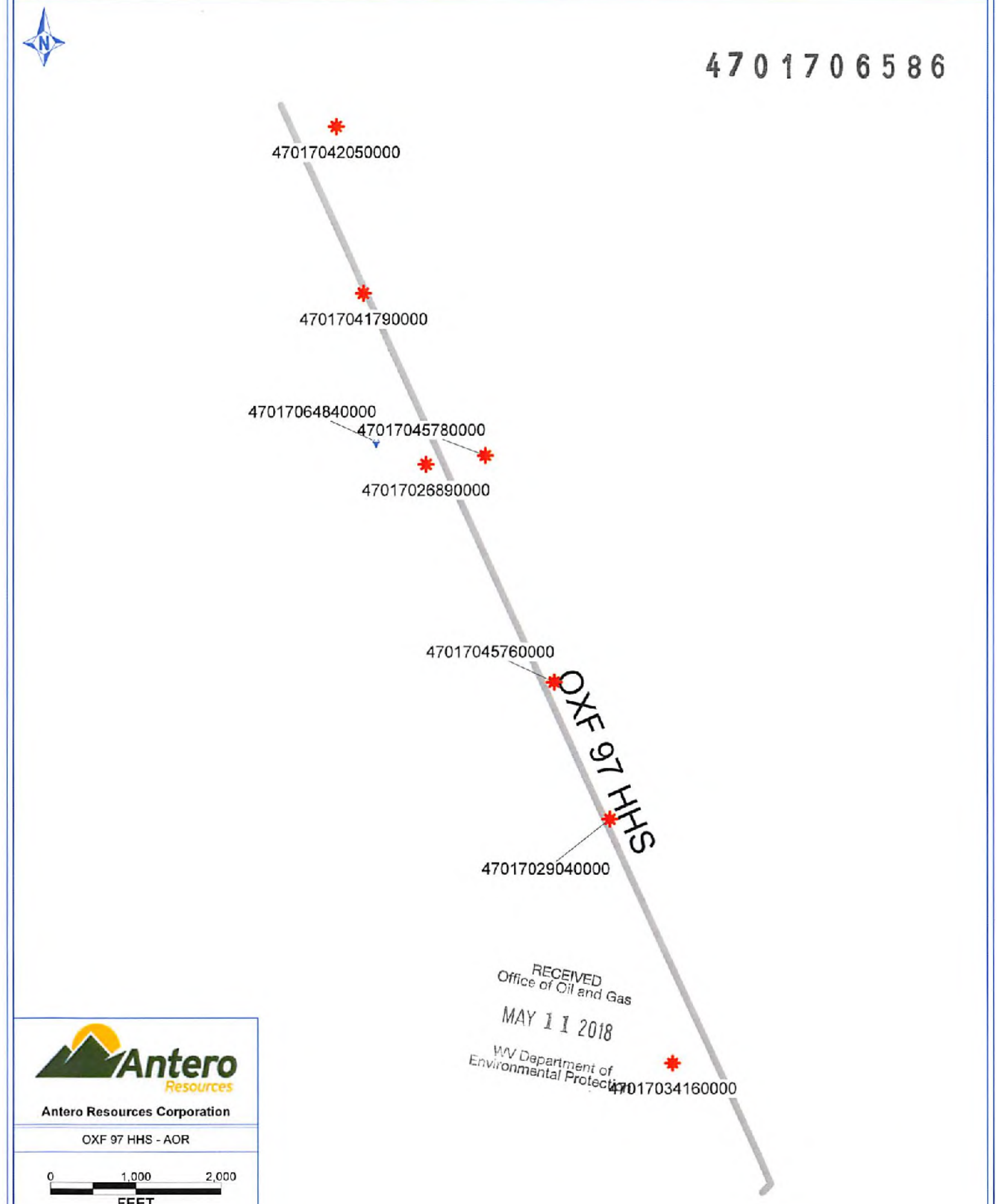
Conductor: blowhole clean with air, run casing, 10 bbls fresh water.
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

AF
6/5/18

08/03/2018

4701706586



Antero Resources

Antero Resources Corporation

OXF 97 HHS - AOR

0 1,000 2,000

FEET

WELL SYMBOLS
At Total Depth
Gas Well

May 7, 2018

08/03/2018

OXF97 HHS (OXFORD 97 PAD) – AREA OF REVIEW 35-8-8.11 PAGE 2

UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
4701704205000(	BEE LIVINGSTON ETAL	9	KEY OIL COMPANY	KEY OIL INCORPORATED	5,488	3952-5357	Baltown, Riley, Benson, Alexander	Big Injun, Weir, Baltown, Bradford
4701704179000(	BEE LIVINGSTON ETAL	4	KEY OIL COMPANY	KEY OIL INCORPORATED	5,370	2856-5241	Baltown, Riley, Benson, Alexander	Big Injun, Weir, Baltown, Bradford
4701706484000(	HAESSLY LAND & TIMBER LLC	OXF97 DHS	ANTERO RESOURCES CORPORATION	CNX GAS CO LLC	17,225	WOC		
4701702589000(	FOXWORTHY EUGENE	J-278	ENERGY CORP OF AMER	J & J ENTERPRISES	5,477	5258-5329	Alexander	Big Injun, Baltown, Bradford
4701704578000(	FRANCIS	4	ENERGY CORP OF AMER	EASTERN AMERICAN ENE	5,428	4000-5371	Baltown, Riley, Benson, Alexander	Big Injun, Weir, Baltown, Bradford
4701704576000(	HEFLIN	3	ENERGY CORP OF AMER	EASTERN AMERICAN ENE	5,154	3615-4986	Baltown, Riley, Misc Sands, Alexander	Big Injun, Weir, Baltown, Bradford
4701702904000(	HEFLIN ADA PEARL	J-110	ENERGY CORP OF AMER	J & J ENTERPRISES	5,121	3027-4962	Warren, Tiona, Baltown, Bradford, Riley, Benson Alexander	Big Injun, Weir, Baltown
4701703416000(	POST M K & R A ETAL	1612	CONSOL GAS COMPANY	CNG DEVELOPMENT CO	5,402	5174-5213	Weir, Alexander	Big Injun, Baltown, Bradford

APPROVED 4706586
NAME: Unl a 24
DATE: 1/23/17

WR-35
Rev. 8/23/13

Page ___ of ___

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

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API 47- 017 - 06586 County Doddridge District West Union
Quad Oxford Pad Name Oxf 97 Field/Pool Name N/A
Farm name Haessly Land & Timber, LLC Well Number Oxf 97 HHS
Operator (as registered with the OOG) Noble Energy, Inc.
Address 1000 Noble Energy Drive City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing as drilled plat to be submitted by CNX Easting
Landing Point of Curve Northing upon completion of the well. Easting
Bottom Hole Northing Easting

Elevation (ft) 1335 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)
Synthetic Oil Based

Date permit issued 11/17/2014 Date drilling commenced 01/14/2015 Date drilling ceased 03/21/2015
Date completion activities began Not completed Date completion activities ceased na
Verbal plugging (Y/N) ___ Date permission granted ___ Granted by ___

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 266',503',810' Open mine(s) (Y/N) depths N
Salt water depth(s) ft none noted for offsets Void(s) encountered (Y/N) depths N
Coal depth(s) ft NA Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) No

Reviewed by:

08/03/2018

4701706586

WR-35
Rev. 8/23/13

Page ___ of ___

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

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	26"	20"	58.5'	New	J-55		
Surface	17.5"	13 3/8"	904.7'	New	J-55		Y
Coal							
Intermediate 1	12.38"	9 5/8"	2991.4'	New	HCK-55		N
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5 1/2"	20,464.9'	New	P-110		Y
Tubing							
Packer type and depth set							

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							
Surface	Type 1 / Class A	830	15.6	1.18	979.4	18.5	8
Coal							
Intermediate 1	Type 1 / Class A	stage (1) 1185	15.6	Stage (1) 1.18	1398.3	18.5	8
Intermediate 2							
Intermediate 3							
Production	Type 1 / Class A	Lead 515 Tail 4273	14.5	lead 1.58 Tail 1.27	Total 6240.41	18.5	8
Tubing							

Drillers TD (ft) 20473' Loggers TD (ft) 20443'

Deepest formation penetrated Marcellus Plug back to (ft)

Plug back procedure

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Kick off depth (ft) 5958'

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 No centralizers used on conductor.
8 Centralizers on Surface Casing 38 Centralizers on Intermediate String (Bow string centralizers on first two joints then every third joint to 100' from surface).
311 Centralizers on Production String (rigid bow string every joint to KOP, rigid bow spring every third joint from KOP 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

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

08/03/2018

4701706586

WR-35
Rev. 8/23/13

Page ___ of ___

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

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	well not complete				

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)

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Please insert additional pages as applicable.

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4701706586

WR-35
Rev. 8/23/13

Page ___ of ___

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

PRODUCING FORMATION(S)	DEPTHS	
	TVD	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ☐ Open Flow OIL TEST ☐ Flow ☐ Pump

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

OPEN FLOW Gas ____ mcfpd Oil ____ bpd NGL ____ bpd Water ____ 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_2S, ETC)
	0		0		

Please insert additional pages as applicable.

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Drilling Contractor Whipstock 23 Top Hole &/ Precision 543 Horizontal Rig
Address 13646 Route 403 Hwy N / 5400D Big Tyler Rd City Clymer / Charleston State PA/WV Zip 15728-7815 / 25313

Logging Company Baker Hughes
Address 400 Technology Drive City Canonsburg State PA Zip 15317

Cementing Company Schlumberger
Address 4600 J. Barry Ct., Suite 200 City Canonsburg State PA Zip 15317

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Stimulating Company ____
Address ____ City ____ State ____ Zip ____
Please insert additional pages as applicable.

Completed by Dee Swiger Telephone 724-820-3061
Signature Dee Swiger Title Regulatory Analyst, III Date 01/09/2017

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

08/03/2018

4701706586

Oxf 97

Formations	Top	Base
Shale and Sandstone	0	2123
Big Lime & Big Injun	2123	2323
Price	2323	2623
Shale and Sandstone	2623	2890
Fourth	2890	2907
Shale and Sandstone	2907	2982
Fifth	2982	2990
Shale and Sandstone	2990	3570
Speechley	3570	3601
Shale	3601	4107
Bailtown A	4107	4132
Shale and Sandstone	4132	4321
Bailtown B	4321	4378
Shale and Sandstone	4378	4366
Bradford	4366	4377
Shale and Sandstone	4377	4625
Riley	4625	4647
Shale and Sandstone	4647	5157
Benson	5157	5189
Shale and Sandstone	5189	5437
Alexander	5437	5484
Shale	5484	6474
Cashaqua	6474	6602
Middlesex	6602	6651
West River	6651	6727
Burkett	6727	6756
Tully Limestone	6756	6759
Hamilton	6759	6790
Marcellus	6790	6840
Onondaga	6840	

NOBLE ENERGY

Location: Doddridge Co., WV
Field: Doddridge
Facility: OXF-97 Pad

Slot: Slot H
Well: OXF-97H-HS
Wellbore: OXF-97H-HS PWB

noble energy

BAKER HUGHES

Plot reference wellpath is OXF-97H-HS PWP RevA.0	
True vertical depths are referenced to Precision 543 (RKB)	Grid System: NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet
Measured depths are referenced to Precision 543 (RKB)	North Reference: Grid north
Precision 543 (RKB) is Mean Sea Level: 1351.41 feet	Scale: True distance
Mean Sea Level is Mud line (At Slot: Slot H): -1333.41 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: ehenyan on 18/May/2015

Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
OXF-97 Pad			1630662.770	229864.280	39°13'58.904"N	80°45'13.980"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot H	-60.02	19.93	1630682.700	229804.260	39°13'58.313"N	80°45'13.716"W
Precision 543 (RKB) to Mud line (At Slot: Slot H)					18ft	
Mean Sea Level to Mud line (At Slot: Slot H)					-1333.41ft	
Precision 543 (RKB) to Mean Sea Level					1351.41ft	

MS Gyro <8-3/4"> (100'-5950') : 0.19° Inc, 108.00ft MD, 108.00ft TVD, 0.11ft VS

BHI AT Curve <8-1/2"> (5958')(6025'-20443') : 2.67° Inc, 6025.00ft MD, 6024.01ft TVD, 35.58ft VS

Projected MD at TD: 20473' : 89.45° Inc, 20473.00ft MD, 6998.75ft TVD, 13941.14ft VS

Projected MD at TD: 20473' : 6998.75ft TVD, 12701.48ft N, 5747.13ft W

BHI AT Curve <8-1/2"> (5958')(6025'-20443') : 6024.01ft TVD, 23.24ft N, 34.82ft W
MS Gyro <8-3/4"> (100'-5950') : 108.00ft TVD, 0.14ft N, 0.05ft E

Slot H

API: 47-017-06586-0000
BHI Job #: 7238898
Rig: Precision 543
Duration: 5/10/2015-5/17/2015

User specified (HDGM) Dip: 68.70° Field: 52262 nT
Magnetic North is 7.64 degrees West of True North (at 07/May/2015)
Grid North is 0.83 degrees West of True North
To correct azimuth from True to Grid add 0.83 degrees
To correct azimuth from Magnetic to Grid subtract 6.81 degrees

True Vertical Depth (ft)

Vertical Section (ft)

Azimuth 335.49° with reference 0.00 N, 0.00 E

Easting (ft)

Northing (ft)

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4701706586

noble energy

Actual Wellpath Report

OXF-97H-HS AWP Proj: 20473'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Doddridge Co., WV	Well	OXF-97H-HS
Field	Doddridge	Wellbore	OXF-97H-HS AWB
Facility	OXF-97 Pad		

REPORT SETUP INFORMATION			
Projection System	NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 4.0.1
North Reference	Grid	User	Edsaryar
Scale	0.999964	Report Generated	19/May/2015 at 13:47
Convergence at slot	0.83° West	Database/Source file	WellArchitectEasternDB/OXF-97H-HS_AWB.xml

WELLPATH LOCATION	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-60.02	19.93	1630682.70	269604.26	39°13'58.313"N	80°48'13.716"W
Facility Reference Pt			1630662.77	269664.28	39°13'58.904"N	80°48'13.980"W
Field Reference Pt			609601.22	0.00	38°23'48.753"N	84°21'09.765"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Precision 543 (RKB) to Facility Vertical Datum	1351.41ft
Horizontal Reference Pt	Slot	Precision 543 (RKB) to Mean Sea Level	1351.41ft
Vertical Reference Pt	Precision 543 (RKB)	Precision 543 (RKB) to Mud Line at Slot (Slot H)	18.00ft
MD Reference Pt	Precision 543 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	335.49°

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noble energy

Actual Wellpath Report

OXF-97H-HS AWP Proj: 20473'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Doddridge Co., WV	Well	OXF-97H-HS
Field	Doddridge	Wellbore	OXF-97H-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (224 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	20.000	0.00	0.00	0.00	0.00	1630682.70	269604.26	39°13'58.313"N	80°48'13.716"W	0.00	0.000	0.00	0.00	0.00
18.00	0.000	20.000	18.00	0.00	0.00	0.00	1630682.70	269604.26	39°13'58.313"N	80°48'13.716"W	0.00	0.000	0.00	0.00	0.00
108.00	0.190	20.000	108.00	0.11	0.14	0.05	1630682.75	269604.40	39°13'58.315"N	80°48'13.715"W	0.15	20.000	0.21	0.21	0.00
208.00	0.180	30.650	208.00	0.31	0.43	0.19	1630682.89	269604.69	39°13'58.318"N	80°48'13.714"W	0.47	23.539	0.04	-0.01	10.65
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
408.00	0.070	159.730	408.00	0.22	0.54	0.65	1630683.35	269604.80	39°13'58.319"N	80°48'13.708"W	0.85	50.711	0.20	-0.14	73.89
508.00	0.080	262.700	508.00	0.18	0.47	0.61	1630683.31	269604.73	39°13'58.318"N	80°48'13.708"W	0.77	52.263	0.12	0.01	102.97
608.00	0.010	274.310	608.00	0.20	0.46	0.53	1630683.23	269604.72	39°13'58.318"N	80°48'13.709"W	0.70	48.895	0.07	-0.07	11.61
708.00	0.500	352.040	708.00	0.62	0.89	0.46	1630683.16	269605.15	39°13'58.322"N	80°48'13.710"W	1.01	27.201	0.50	0.49	77.73
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
908.00	0.170	36.240	907.99	1.90	2.26	0.36	1630683.06	269606.52	39°13'58.336"N	80°48'13.712"W	2.28	9.086	0.37	-0.30	45.07
1008.00	0.200	38.580	1007.99	2.05	2.51	0.56	1630683.26	269606.77	39°13'58.338"N	80°48'13.709"W	2.57	12.508	0.03	0.03	2.34
1108.00	0.380	57.360	1107.99	2.18	2.83	0.95	1630683.65	269607.09	39°13'58.341"N	80°48'13.705"W	2.98	18.487	0.20	0.18	18.78
1208.00	0.590	46.450	1207.99	2.40	3.36	1.60	1630684.30	269607.62	39°13'58.347"N	80°48'13.696"W	3.72	25.425	0.23	0.21	-10.91
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1408.00	0.760	38.410	1407.97	3.01	4.79	3.25	1630685.95	269609.05	39°13'58.361"N	80°48'13.676"W	5.79	34.180	0.28	0.17	-19.12
1508.00	0.610	50.700	1507.97	3.45	5.65	4.08	1630686.78	269609.91	39°13'58.370"N	80°48'13.665"W	6.96	35.828	0.21	-0.15	12.29
1608.00	0.970	47.680	1607.96	3.84	6.55	5.11	1630687.81	269610.81	39°13'58.379"N	80°48'13.652"W	8.31	37.969	0.36	0.36	-3.02
1708.00	0.790	39.550	1707.95	4.40	7.65	6.18	1630688.88	269611.91	39°13'58.390"N	80°48'13.639"W	9.84	38.911	0.22	-0.18	-8.13
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1908.00	0.540	43.900	1907.93	4.46	8.62	8.15	1630690.84	269612.88	39°13'58.400"N	80°48'13.614"W	11.86	43.389	0.46	-0.15	-41.63
2008.00	0.540	42.080	2007.93	4.82	9.31	8.79	1630691.49	269613.57	39°13'58.407"N	80°48'13.606"W	12.80	43.361	0.02	0.00	-1.93
2108.00	0.490	38.200	2107.92	5.20	9.99	9.37	1630692.07	269614.25	39°13'58.413"N	80°48'13.599"W	13.70	43.166	0.06	-0.05	-3.52
2208.00	0.340	50.200	2207.92	5.47	10.51	9.87	1630692.57	269614.77	39°13'58.419"N	80°48'13.593"W	14.42	43.187	0.17	-0.15	12.37
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2408.00	0.230	112.120	2407.92	5.70	11.19	10.79	1630693.49	269615.45	39°13'58.426"N	80°48'13.581"W	15.54	43.959	0.26	-0.26	2.80
2508.00	0.180	111.150	2507.92	5.70	11.30	11.05	1630693.75	269615.56	39°13'58.427"N	80°48'13.578"W	15.81	44.345	0.05	0.03	16.03
2608.00	0.340	68.930	2607.92	5.39	11.10	11.35	1630694.05	269615.35	39°13'58.425"N	80°48'13.574"W	15.87	45.655	0.34	0.16	75.78
2708.00	0.210	72.200	2707.92	4.92	10.66	11.53	1630694.23	269614.92	39°13'58.420"N	80°48'13.572"W	15.70	47.246	0.17	-0.13	23.27
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

4701706586

REFERENCE WELLPATH IDENTIFICATION

Operator	**NOBLE ENERGY**	Slot	**Slot H**
Area	**Doddridge Co., WV**	Well	**OXF-97H-HS**
Field	**Doddridge**	Wellbore	**OXF-97H-HS AWB**
Facility	**OXF-97 Pad**		

WELLPATH DATA (224 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
2908.00	0.260	249.420	2907.92	4.86	10.39	11.06	1630693.76	269614.65	39°13'58.418"N	80°48'13.577"W	15.18	46.798	0.12	0.10	-18.87
3008.00	0.240	109.170	3007.91	4.74	10.24	11.05	1630693.75	269614.50	39°13'58.416"N	80°48'13.578"W	15.07	47.171	0.47	-0.02	-140.25
3108.00	0.490	151.060	3107.91	4.16	9.80	11.45	1630694.15	269614.06	39°13'58.412"N	80°48'13.572"W	15.07	49.453	0.35	0.25	41.89
3208.00	0.490	170.600	3207.91	3.32	9.00	11.73	1630694.43	269613.26	39°13'58.404"N	80°48'13.569"W	14.79	52.495	0.17	0.00	19.54
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3408.00	0.340	163.280	3407.90	1.74	7.68	12.64	1630695.34	269611.94	39°13'58.391"N	80°48'13.557"W	14.79	58.728	0.34	-0.22	34.07
3508.00	0.510	163.070	3507.90	1.01	6.97	12.86	1630695.56	269611.23	39°13'58.384"N	80°48'13.554"W	14.62	61.543	0.17	0.17	-0.21
3608.00	0.410	214.330	3607.90	0.38	6.25	12.79	1630695.48	269610.51	39°13'58.377"N	80°48'13.555"W	14.23	63.958	0.41	-0.10	51.26
3708.00	0.400	171.790	3707.89	-0.14	5.61	12.63	1630695.33	269609.87	39°13'58.371"N	80°48'13.557"W	13.82	66.070	0.29	-0.01	-42.54
[illegible]	0.340	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3908.00	0.380	237.620	3907.89	-0.64	4.74	11.92	1630694.62	269609.00	39°13'58.362"N	80°48'13.565"W	12.83	68.327	0.04	0.04	3.28
4008.00	0.360	235.990	4007.89	-0.73	4.38	11.38	1630694.08	269608.64	39°13'58.358"N	80°48'13.572"W	12.20	68.932	0.02	-0.02	-1.63
4108.00	0.260	226.280	4107.89	-0.86	4.05	10.96	1630693.66	269608.31	39°13'58.355"N	80°48'13.578"W	11.68	69.706	0.11	-0.10	-9.71
4208.00	0.450	279.020	4207.89	-0.72	3.96	10.40	1630693.10	269608.22	39°13'58.354"N	80°48'13.585"W	11.13	69.181	0.36	0.19	52.74
4308.00	[illegible]	[illegible]	[illegible]	-0.36	[illegible]	9.51	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4408.00	0.590	256.740	4407.88	-0.13	3.73	8.50	1630691.20	269607.99	39°13'58.352"N	80°48'13.609"W	9.28	66.281	0.04	0.00	-4.01
4508.00	0.880	280.530	4507.87	0.41	3.76	7.24	1630689.94	269608.02	39°13'58.352"N	80°48'13.625"W	8.16	62.587	0.42	0.29	23.79
4608.00	1.010	265.020	4607.85	1.15	3.82	5.61	1630688.31	269608.08	39°13'58.352"N	80°48'13.645"W	6.79	55.746	0.29	0.13	-15.51
4708.00	1.140	270.440	4707.84	1.86	3.75	3.74	1630686.44	269608.01	39°13'58.351"N	80°48'13.669"W	5.30	44.892	0.16	0.13	5.42
[illegible]	[illegible]	[illegible]	[illegible]	3.01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4908.00	[illegible]	291.010	[illegible]	4.56	4.95	-0.14	1630682.56	269609.21	39°13'58.362"N	80°48'13.719"W	4.95	358.323	0.20	0.19	-2.22
5008.00	[illegible]	[illegible]	5007.77	6.30	5.84	-2.37	1630680.33	269610.10	39°13'58.371"N	80°48'13.747"W	6.30	337.857	0.11	0.11	1.27
5108.00	[illegible]	[illegible]	[illegible]	8.19	6.78	-4.86	1630677.84	269611.04	39°13'58.380"N	80°48'13.779"W	8.35	324.379	0.20	0.19	-2.64
5208.00	1.300	290.750	[illegible]	9.98	7.66	-7.25	1630675.45	269611.92	39°13'58.388"N	80°48'13.810"W	10.55	316.568	0.32	-0.32	1.11
[illegible]	1.450	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5408.00	[illegible]	[illegible]	[illegible]	13.61	9.52	-11.93	1630670.77	269613.78	39°13'58.406"N	80°48'13.869"W	15.26	308.585	0.13	0.12	-2.31
5508.00	[illegible]	[illegible]	5507.59	15.69	10.55	-14.68	1630668.03	269614.81	39°13'58.416"N	80°48'13.904"W	18.07	305.714	0.22	0.22	0.32
5608.00	2.080	[illegible]	5607.53	18.15	11.83	-17.80	1630664.90	269616.09	39°13'58.428"N	80°48'13.944"W	21.37	303.603	0.30	0.29	2.75
5708.00	2.390	[illegible]	5707.46	21.05	13.39	-21.37	1630661.33	269617.65	39°13'58.443"N	80°48'13.990"W	25.22	302.059	0.31	0.31	0.12
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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WV Department of
Environmental Protection

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noble energy

Actual Wellpath Report

OXF-97H-HS AWP Proj: 20473'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Doddridge Co., WV	Well	OXF-97H-HS
Field	Doddridge	Wellbore	OXF-97H-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (224 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
5908.00	3.350	308.790	5907.19	29.90	19.22	-29.93	1630652.77	269623.47	39°13'58.499"N	80°48'14.100"W	35.57	302.702	0.31	0.26	2.87
5958.00	3.300	315.150	5957.10	32.55	21.15	-32.08	1630650.62	269625.41	39°13'58.518"N	80°48'14.128"W	38.43	303.396	0.74	-0.10	12.72
6025.00	2.670	297.670	6024.01	35.59	23.24	-34.82	1630647.88	269627.50	39°13'58.538"N	80°48'14.163"W	41.87	303.720	1.64	-0.94	-26.09
6115.00	3.580	308.850	6113.88	39.76	25.98	-38.87	1630643.83	269630.24	39°13'58.565"N	80°48'14.215"W	46.75	303.757	1.21	1.01	12.42
6204.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6294.00	15.380	328.770	6290.45	66.45	48.00	-54.91	1630627.79	269652.26	39°13'58.780"N	80°48'14.423"W	72.93	311.161	8.17	8.07	6.80
6383.00	21.960	335.910	6374.73	94.85	73.32	-67.83	1630614.87	269677.57	39°13'59.028"N	80°48'14.592"W	99.88	317.224	7.81	7.39	8.02
6473.00	27.080	341.220	6456.60	132.09	108.10	-81.31	1630601.39	269712.36	39°13'59.370"N	80°48'14.769"W	135.27	323.051	6.19	5.69	5.90
6562.00	29.830	343.160	6534.84	174.19	148.48	-94.25	1630588.46	269752.73	39°13'59.767"N	80°48'14.941"W	175.86	327.594	3.26	3.09	2.18
6652.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6741.00	46.190	345.330	6677.60	279.26	252.35	-119.69	1630563.02	269856.60	39°14'00.790"N	80°48'15.283"W	279.29	334.625	11.91	11.73	-3.12
6831.00	56.000	343.230	6734.05	348.40	319.65	-138.72	1630543.98	269923.90	39°14'01.453"N	80°48'15.538"W	348.46	336.540	11.05	10.90	-2.33
6920.00	65.350	345.320	6777.60	424.98	394.27	-159.67	1630523.04	269998.52	39°14'02.187"N	80°48'15.818"W	425.37	337.954	10.70	10.51	2.35
7010.00	68.410	343.620	6812.93	506.73	474.00	-181.84	1630500.87	270078.24	39°14'02.972"N	80°48'16.114"W	507.68	339.012	3.82	3.40	-1.89
7099.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7189.00	85.810	340.660	6855.22	678.80	638.76	-235.25	1630447.46	270243.00	39°14'04.592"N	80°48'16.823"W	680.71	339.782	11.65	11.56	-1.49
7278.00	89.430	332.090	6858.14	767.63	720.16	-270.86	1630411.85	270324.39	39°14'05.392"N	80°48'17.291"W	769.41	339.388	10.93	5.19	-9.63
7368.00	89.880	334.690	6857.90	857.56	800.62	-311.17	1630371.54	270404.85	39°14'06.181"N	80°48'17.818"W	858.96	338.761	2.95	-0.61	2.89
7458.00	89.870	334.370	6858.60	947.55	881.87	-349.87	1630332.84	270486.09	39°14'06.978"N	80°48'18.325"W	948.74	338.360	0.80	-0.72	-0.36
7547.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7637.00	87.720	335.420	6861.57	1126.51	1044.71	-424.09	1630258.63	270648.93	39°14'08.577"N	80°48'19.298"W	1127.51	337.906	2.25	-2.12	-0.76
7726.00	88.890	336.600	6864.20	1215.45	1125.01	-462.37	1630220.35	270729.23	39°14'09.365"N	80°48'19.799"W	1216.32	337.658	2.43	1.31	-2.04
7816.00	89.940	335.670	6865.12	1305.43	1206.32	-500.92	1630181.80	270810.54	39°14'10.163"N	80°48'20.304"W	1306.19	337.450	2.58	1.17	2.30
7905.00	89.970	334.520	6865.19	1394.43	1287.05	-538.40	1630144.32	270891.26	39°14'10.956"N	80°48'20.795"W	1395.12	337.299	1.29	0.03	-1.29
7995.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8085.00	90.280	328.800	6865.34	1573.90	1445.07	-624.44	1630058.29	271049.27	39°14'12.505"N	80°48'21.918"W	1574.21	336.630	2.62	0.56	-2.56
8174.00	89.880	329.810	6865.21	1662.37	1521.55	-669.96	1630012.77	271125.75	39°14'13.254"N	80°48'22.510"W	1662.51	336.236	0.95	-0.45	0.83
8264.00	90.550	330.240	6864.87	1752.24	1601.81	-710.54	1629972.18	271206.01	39°14'14.042"N	80°48'23.041"W	1752.33	336.078	7.96	0.74	7.92
8353.00	90.340	330.670	6864.18	1841.22	1683.58	-745.74	1629936.99	271287.75	39°14'14.844"N	80°48'23.503"W	1841.32	336.109	0.25	-0.24	-0.08
8442.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Doddridge Co., WV	Well	OXF-97H-HS
Field	Doddridge	Wellbore	OXF-97H-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (224 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
8532.00	90.460	340.830	6862.93	2019.84	1850.62	-809.87	1629872.86	271454.81	39°14'16.486"N	80°48'24.349"W	2020.07	336.365	1.77	0.07	1.77
8622.00	90.800	341.210	6861.94	2109.41	1935.72	-839.14	1629843.59	271539.91	39°14'17.323"N	80°48'24.737"W	2109.78	336.563	0.57	0.38	0.42
8711.00	91.020	336.680	6860.53	2198.21	2018.75	-871.10	1629811.63	271622.93	39°14'18.139"N	80°48'25.158"W	2198.67	336.660	5.10	0.25	-5.09
8800.00	91.050	335.520	6858.92	2287.19	2100.10	-907.15	1629775.58	271704.28	39°14'18.938"N	80°48'25.631"W	2287.65	336.638	1.30	0.03	-1.30
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8979.00	91.290	336.130	6855.31	2466.15	2263.44	-980.28	1629702.46	271867.62	39°14'20.542"N	80°48'26.591"W	2466.60	336.583	0.27	0.17	0.21
9069.00	90.280	337.060	6854.08	2556.12	2346.03	-1016.03	1629666.71	271950.20	39°14'21.353"N	80°48'27.060"W	2556.59	336.583	1.53	-1.12	1.03
9158.00	90.800	338.200	6853.24	2645.06	2428.32	-1049.90	1629632.84	272032.49	39°14'22.161"N	80°48'27.506"W	2645.57	336.619	1.41	0.58	1.28
9247.00	90.740	338.560	6852.05	2733.94	2511.06	-1082.68	1629600.06	272115.22	39°14'22.974"N	80°48'27.938"W	2734.52	336.676	0.41	-0.07	0.40
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9426.00	90.740	334.090	6849.69	2912.72	2676.63	-1150.49	1629532.25	272280.79	39°14'24.601"N	80°48'28.830"W	2913.41	336.741	5.65	-0.03	-5.65
9516.00	90.800	334.560	6848.48	3002.69	2757.74	-1189.48	1629493.26	272361.89	39°14'25.397"N	80°48'29.341"W	3003.33	336.668	0.53	0.07	0.52
9606.00	90.710	332.170	6847.29	3092.62	2838.17	-1229.82	1629452.92	272442.32	39°14'26.186"N	80°48'29.869"W	3093.17	336.572	2.66	-0.10	-2.66
9695.00	90.800	331.080	6846.12	3181.41	2916.47	-1272.12	1629410.63	272520.62	39°14'26.953"N	80°48'30.421"W	3181.84	336.434	1.23	0.10	-1.22
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9874.00	90.800	330.150	6843.76	3359.58	3071.56	-1361.46	1629321.29	272675.70	39°14'28.473"N	80°48'31.585"W	3359.77	336.095	0.75	0.10	0.74
9964.00	90.710	333.490	6842.57	3449.37	3150.87	-1403.95	1629278.80	272755.01	39°14'29.251"N	80°48'32.139"W	3449.50	335.983	3.71	-0.10	3.71
10053.00	90.650	332.390	6841.52	3538.28	3230.12	-1444.44	1629238.32	272834.26	39°14'30.028"N	80°48'32.669"W	3538.37	335.907	1.24	-0.07	-1.24
10143.00	90.580	331.170	6840.55	3628.08	3309.42	-1486.99	1629195.76	272913.55	39°14'30.806"N	80°48'33.224"W	3628.14	335.805	1.36	-0.08	-1.36
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10322.00	90.520	335.030	6838.54	3806.95	3469.83	-1566.31	1629116.45	273073.96	39°14'32.380"N	80°48'34.262"W	3806.97	335.705	0.88	-0.24	0.84
10412.00	90.650	336.810	6837.62	3896.94	3551.99	-1603.02	1629079.74	273156.12	39°14'33.186"N	80°48'34.744"W	3896.97	335.710	1.98	0.14	1.98
10501.00	90.710	335.950	6836.56	3985.92	3633.53	-1638.68	1629044.08	273237.65	39°14'33.987"N	80°48'35.212"W	3985.95	335.725	0.97	0.07	-0.97
10590.00	90.580	333.120	6835.56	4074.89	3713.87	-1676.94	1629005.82	273317.99	39°14'34.776"N	80°48'35.713"W	4074.92	335.699	3.18	-0.15	-3.18
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10859.00	90.710	340.620	6832.54	4343.58	3961.49	-1781.51	1628901.25	273565.60	39°14'37.208"N	80°48'37.088"W	4343.64	335.786	2.53	0.05	2.53
10948.00	90.220	334.610	6831.81	4432.48	4043.75	-1815.39	1628867.38	273647.85	39°14'38.016"N	80°48'37.534"W	4432.55	335.823	6.77	-0.55	-6.75
11038.00	90.220	338.640	6831.47	4522.44	4126.34	-1851.09	1628831.68	273730.44	39°14'38.827"N	80°48'38.003"W	4522.52	335.839	4.48	0.00	4.48
11127.00	90.220	341.380	6831.13	4611.15	4209.97	-1881.51	1628801.26	273814.07	39°14'39.649"N	80°48'38.405"W	4611.28	335.919	3.08	0.00	3.08
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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noble energy

Actual Wellpath Report

OXF-97H-HS AWP Proj: 20473'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Doddridge Co., WV	Well	OXF-97H-HS
Field	Doddridge	Wellbore	OXF-97H-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (224 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
11307.00	89.880	337.020	6830.81	4790.38	4379.69	-1941.28	1628741.49	273983.79	39°14'41.318"N	80°48'39.196"W	4790.64	336.095	5.54	-0.30	-5.53
11396.00	89.940	333.190	6830.95	4879.36	4460.41	-1978.74	1628704.04	274064.50	39°14'42.110"N	80°48'39.687"W	4879.61	336.077	4.30	0.07	-4.30
11486.00	89.880	329.650	6831.09	4969.12	4539.43	-2021.79	1628660.99	274143.52	39°14'42.885"N	80°48'40.249"W	4969.31	335.993	3.93	-0.07	-3.93
11576.00	89.850	333.560	6831.31	5058.89	4618.58	-2064.58	1628618.20	274222.67	39°14'43.661"N	80°48'40.807"W	5059.03	335.915	4.34	-0.03	4.34
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11754.00	89.820	332.510	6831.75	5236.70	4776.92	-2145.90	1628536.88	274380.99	39°14'45.214"N	80°48'41.870"W	5236.78	335.809	0.11	-0.07	-0.09
11844.00	89.780	332.930	6832.06	5326.59	4856.90	-2187.16	1628495.63	274460.98	39°14'45.998"N	80°48'42.409"W	5326.65	335.757	0.47	-0.04	0.47
11933.00	89.570	335.450	6832.57	5415.56	4937.02	-2225.90	1628456.88	274541.09	39°14'46.785"N	80°48'42.917"W	5415.61	335.731	2.84	-0.24	2.83
12023.00	89.940	339.530	6832.95	5505.48	5020.14	-2260.35	1628422.44	274624.21	39°14'47.601"N	80°48'43.370"W	5505.54	335.760	4.55	0.41	4.53
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12202.00	89.910	342.630	6833.41	5683.89	5188.32	-2321.55	1628361.24	274792.39	39°14'49.254"N	80°48'44.179"W	5684.04	335.894	4.12	0.14	4.12
12291.00	89.940	343.330	6833.53	5772.13	5273.42	-2347.60	1628335.19	274877.48	39°14'50.092"N	80°48'44.526"W	5772.37	336.003	0.79	0.03	0.79
12381.00	89.970	334.780	6833.60	5861.88	5357.40	-2379.74	1628303.05	274961.46	39°14'50.917"N	80°48'44.950"W	5862.16	336.049	9.50	0.03	-9.50
12471.00	89.780	331.240	6833.80	5951.78	5437.58	-2420.58	1628262.21	275041.64	39°14'51.703"N	80°48'45.484"W	5952.02	336.003	3.94	-0.21	-3.93
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12649.00	89.970	336.270	6834.08	6129.64	5597.14	-2499.36	1628183.44	275201.19	39°14'53.269"N	80°48'46.515"W	6129.82	335.937	2.90	0.03	2.90
12739.00	90.340	333.020	6833.84	6219.61	5678.46	-2537.89	1628144.90	275282.50	39°14'54.067"N	80°48'47.019"W	6219.79	335.919	3.63	0.41	-3.61
12829.00	90.000	331.510	6833.57	6309.47	5758.11	-2579.78	1628103.02	275362.16	39°14'54.848"N	80°48'47.567"W	6309.60	335.866	1.72	-0.38	-1.68
12918.00	90.740	333.620	6833.00	6398.34	5837.10	-2620.78	1628062.02	275441.14	39°14'55.623"N	80°48'48.102"W	6398.45	335.821	2.51	0.83	2.37
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13097.00	90.120	334.580	6832.09	6577.28	5998.01	-2699.18	1627983.62	275602.04	39°14'57.202"N	80°48'49.129"W	6577.36	335.772	0.71	-0.03	0.71
13187.00	89.910	333.270	6832.07	6667.24	6078.85	-2738.74	1627944.07	275682.88	39°14'57.995"N	80°48'49.647"W	6667.31	335.747	1.47	-0.23	-1.46
13276.00	90.000	332.170	6832.14	6756.14	6157.95	-2779.53	1627903.28	275761.97	39°14'58.771"N	80°48'50.180"W	6756.19	335.707	1.24	0.10	-1.24
13366.00	89.660	337.000	6832.40	6846.10	6239.21	-2818.14	1627864.67	275843.24	39°14'59.568"N	80°48'50.686"W	6846.14	335.692	5.38	-0.38	5.37
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13545.00	88.950	333.940	6834.78	7025.04	6402.97	-2890.30	1627792.51	276006.99	39°15'01.176"N	80°48'51.633"W	7025.09	335.706	3.40	-0.25	-3.39
13635.00	88.520	333.960	6836.77	7114.99	6483.81	-2929.82	1627752.99	276087.83	39°15'01.969"N	80°48'52.150"W	7115.03	335.683	0.48	-0.48	0.02
13725.00	88.310	334.900	6839.26	7204.94	6564.96	-2968.65	1627714.17	276168.98	39°15'02.766"N	80°48'52.659"W	7204.97	335.668	1.07	-0.23	1.04
13814.00	88.370	337.830	6841.84	7293.88	6646.46	-3004.31	1627678.50	276250.46	39°15'03.566"N	80°48'53.128"W	7293.92	335.676	3.29	0.07	3.29
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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noble energy

Actual Wellpath Report

OXF-97H-HS AWP Proj: 20473'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Doddridge Co., WV	Well	OXF-97H-HS
Field	Doddridge	Wellbore	OXF-97H-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (224 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
13993.00	87.820	340.530	6847.50	7472.28	6814.27	-3066.27	1627616.55	276418.28	39°15'05.216"N	80°48'53.946"W	7472.37	335.773	0.58	-0.52	0.26
14083.00	87.780	337.710	6850.95	7562.02	6898.29	-3098.32	1627584.50	276502.29	39°15'06.041"N	80°48'54.369"W	7562.14	335.813	3.13	-0.04	-3.13
14172.00	87.780	338.460	6854.40	7650.87	6980.80	-3131.51	1627551.31	276584.80	39°15'06.852"N	80°48'54.806"W	7651.01	335.840	0.84	0.00	0.84
14262.00	88.280	337.280	6857.50	7740.73	7064.12	-3165.39	1627517.43	276668.11	39°15'07.670"N	80°48'55.253"W	7740.90	335.863	1.42	0.56	-1.31
14351.00	89.190	337.830	6859.45	7829.65	7148.36	-3199.36	1627483.46	276750.33	39°15'08.478"N	80°48'55.700"W	7829.84	335.882	1.19	1.13	0.62
14441.00	89.200	337.960	6860.57	7919.57	7229.73	-3233.23	1627449.59	276833.72	39°15'09.297"N	80°48'56.146"W	7919.77	335.905	0.18	-0.10	0.14
14530.00	88.740	335.760	6862.17	8008.52	7311.56	-3268.20	1627414.63	276915.54	39°15'10.101"N	80°48'56.605"W	8008.74	335.916	2.52	-0.52	-2.47
14619.00	89.110	334.620	6863.84	8097.50	7392.33	-3305.53	1627377.29	276996.31	39°15'10.894"N	80°48'57.095"W	8097.72	335.908	1.35	0.42	-1.28
14709.00	88.890	333.470	6865.41	8187.46	7473.23	-3344.92	1627337.91	277077.21	39°15'11.688"N	80°48'57.611"W	8187.66	335.887	1.30	-0.24	-1.28
14798.00	88.710	332.860	6867.25	8276.36	7553.45	-3385.06	1627297.75	277157.43	39°15'12.484"N	80°48'58.144"W	8276.51	335.857	0.72	-0.20	-0.69
14888.00	88.950	336.220	6869.11	8366.31	7633.71	-3424.06	1627258.77	277237.68	39°15'13.262"N	80°48'58.647"W	8366.47	335.842	4.01	0.27	4.00
14978.00	88.830	337.970	6870.86	8456.25	7716.60	-3459.08	1627223.75	277320.57	39°15'14.076"N	80°48'59.107"W	8456.43	335.855	1.95	-0.13	1.94
15067.00	88.770	336.610	6872.72	8545.19	7798.68	-3493.43	1627189.40	277402.64	39°15'14.882"N	80°48'59.559"W	8545.38	335.870	1.53	-0.07	-1.53
15156.00	90.710	336.250	6873.12	8634.17	7880.25	-3529.02	1627153.81	277484.21	39°15'15.683"N	80°49'00.027"W	8634.37	335.876	2.22	2.18	-0.40
15246.00	88.680	333.150	6873.63	8724.12	7961.24	-3568.20	1627114.63	277564.96	39°15'16.477"N	80°49'00.540"W	8724.30	335.858	3.53	-3.42	-3.44
15336.00	88.680	329.510	6875.77	8813.79	8039.79	-3612.07	1627070.77	277643.74	39°15'17.248"N	80°49'01.112"W	8813.92	335.807	2.90	0.07	-2.90
15425.00	88.710	334.950	6877.80	8902.59	8118.49	-3653.51	1627029.33	277722.44	39°15'18.020"N	80°49'01.653"W	8902.70	335.771	6.11	0.03	6.11
15514.00	88.890	338.090	6879.66	8991.54	8200.09	-3688.96	1626993.88	277804.04	39°15'18.821"N	80°49'02.119"W	8991.66	335.779	3.53	0.20	3.53
15604.00	89.200	336.500	6881.16	9081.48	8283.10	-3723.69	1626959.15	277887.05	39°15'19.636"N	80°49'02.576"W	9081.61	335.794	1.80	0.34	-1.77
15694.00	89.110	335.150	6882.45	9171.45	8363.62	-3763.36	1626919.42	277967.58	39°15'20.427"N	80°49'03.102"W	9171.55	335.784	1.51	-0.10	-1.50
15783.00	89.200	335.390	6883.80	9260.42	8444.68	-3800.63	1626882.21	278048.62	39°15'21.222"N	80°49'03.584"W	9260.53	335.769	2.51	0.10	2.51
15872.00	88.860	340.180	6885.31	9349.31	8527.03	-3834.27	1626848.58	278130.97	39°15'22.031"N	80°49'04.027"W	9349.44	335.788	5.39	-0.38	5.38
15962.00	88.890	341.520	6887.08	9438.90	8612.04	-3863.79	1626819.06	278215.97	39°15'22.867"N	80°49'04.418"W	9439.07	335.837	1.49	0.03	1.49
16051.00	88.920	338.570	6888.78	9527.59	8695.67	-3894.15	1626788.70	278299.60	39°15'23.689"N	80°49'04.820"W	9527.80	335.876	3.31	0.03	-3.31
16141.00	89.080	338.780	6890.47	9617.43	8779.55	-3924.72	1626758.13	278383.48	39°15'24.513"N	80°49'05.240"W	9617.64	335.902	0.29	0.17	0.23
16230.00	88.680	335.570	6892.25	9706.35	8861.61	-3961.10	1626721.75	278465.53	39°15'25.319"N	80°49'05.702"W	9706.62	335.916	3.85	-0.34	-3.83
16320.00	88.620	337.720	6894.37	9796.36	8944.21	-3996.77	1626686.09	278548.13	39°15'26.130"N	80°49'06.170"W	9796.58	335.922	2.39	-0.07	2.39
16409.00	88.650	337.350	6896.49	9885.22	9026.45	-4030.76	1626652.09	278630.35	39°15'26.938"N	80°49'06.618"W	9885.52	335.937	0.42	0.03	-0.42
16499.00	88.740	333.380	6898.54	9975.18	9108.20	-4068.26	1626614.59	278712.12	39°15'27.741"N	80°49'07.110"W	9975.47	335.932	4.41	0.10	-4.41
16588.00	88.740	331.360	6900.52	10064.11	9187.25	-4107.11	1626575.74	278791.16	39°15'28.514"N	80°49'07.624"W	10064.31	335.903	2.27	0.00	-2.27

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noble energy

Actual Wellpath Report

OXF-97H-HS AWP Proj: 20473'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Doddridge Co., WV	Well	OXF-97H-HS
Field	Doddridge	Wellbore	OXF-97H-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (224 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
16678.00	88.770	328.290	6902.50	10153.61	9265.25	-4153.92	1626528.93	278869.16	39°15'29.280"N	80°49'08.228"W	10153.82	335.852	4.08	0.07	-4.08
16768.00	88.680	328.110	6904.50	10242.87	9341.72	-4201.34	1626481.52	278945.63	39°15'30.029"N	80°49'08.845"W	10243.00	335.785	0.22	-0.10	-0.20
16857.00	88.770	329.880	6906.48	10331.27	9417.99	-4247.17	1626435.69	279021.89	39°15'30.776"N	80°49'09.442"W	10331.36	335.726	1.99	0.10	1.99
16947.00	88.580	331.670	6908.56	10420.94	9496.51	-4291.10	1626391.76	279100.41	39°15'31.546"N	80°49'10.015"W	10421.00	335.684	2.00	-0.21	1.99
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17126.00	88.610	335.330	6912.77	10599.81	9657.56	-4369.02	1626313.84	279261.46	39°15'33.126"N	80°49'11.036"W	10599.85	335.658	0.54	-0.11	0.53
17216.00	88.770	337.560	6914.83	10689.76	9740.03	-4404.98	1626277.89	279343.93	39°15'33.936"N	80°49'11.508"W	10689.81	335.665	2.48	0.18	2.48
17305.00	88.430	338.400	6917.00	10778.65	9822.52	-4438.34	1626244.53	279426.41	39°15'34.746"N	80°49'11.947"W	10778.71	335.684	1.02	-0.38	0.94
17394.00	88.180	337.800	6919.64	10867.52	9905.06	-4471.52	1626211.35	279508.94	39°15'35.557"N	80°49'12.385"W	10867.60	335.704	0.73	-0.28	-0.67
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17573.00	89.230	332.440	6924.16	11046.39	10067.38	-4546.67	1626136.20	279671.26	39°15'37.151"N	80°49'13.370"W	11046.46	335.695	3.22	0.93	-3.08
17663.00	88.740	332.690	6925.76	11136.26	10147.25	-4588.13	1626094.75	279751.12	39°15'37.934"N	80°49'13.912"W	11136.32	335.670	0.61	-0.54	0.28
17752.00	88.830	335.140	6927.65	11225.20	10227.16	-4627.25	1626055.62	279831.03	39°15'38.718"N	80°49'14.424"W	11225.25	335.656	2.75	0.10	2.75
17842.00	87.570	334.860	6930.47	11315.15	10308.68	-4665.27	1626017.61	279912.55	39°15'39.518"N	80°49'14.923"W	11315.19	335.651	1.43	-1.40	-0.31
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18021.00	89.010	331.220	6934.84	11493.99	10469.45	-4743.75	1625939.13	280073.32	39°15'41.096"N	80°49'15.951"W	11494.02	335.625	4.15	0.10	-4.15
18111.00	87.660	334.720	6937.45	11583.85	10549.57	-4784.63	1625898.26	280153.43	39°15'41.881"N	80°49'16.485"W	11583.87	335.604	4.17	-1.50	3.89
18201.00	88.740	341.040	6940.28	11673.68	10632.86	-4818.48	1625864.40	280236.72	39°15'42.700"N	80°49'16.931"W	11673.71	335.621	7.12	1.20	7.02
18290.00	88.710	336.920	6942.26	11762.47	10715.90	-4850.39	1625832.50	280319.76	39°15'43.516"N	80°49'17.352"W	11762.52	335.647	4.63	-0.03	-4.63
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18470.00	89.110	341.120	6946.00	11942.04	10884.00	-4914.54	1625768.34	280487.84	39°15'45.168"N	80°49'18.199"W	11942.12	335.699	2.18	0.44	2.13
18560.00	88.620	340.510	6947.79	12031.63	10968.98	-4944.11	1625738.77	280572.83	39°15'46.003"N	80°49'18.591"W	12031.74	335.737	0.87	-0.54	-0.68
18649.00	88.150	343.410	6950.29	12120.02	11053.56	-4971.66	1625711.23	280657.40	39°15'46.835"N	80°49'18.957"W	12120.18	335.783	3.30	-0.53	3.26
18739.00	88.460	340.230	6952.96	12209.42	11139.02	-4999.73	1625683.16	280742.86	39°15'47.675"N	80°49'19.330"W	12209.63	335.827	3.55	0.34	-3.53
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18919.00	88.400	333.160	6957.65	12389.23	11303.54	-5072.31	1625610.58	280907.37	39°15'49.291"N	80°49'20.284"W	12389.45	335.832	2.82	-0.20	-2.81
19008.00	88.120	332.410	6960.36	12478.09	11382.65	-5113.00	1625569.90	280986.48	39°15'50.067"N	80°49'20.816"W	12478.28	335.811	0.90	-0.31	-0.84
19098.00	88.120	332.820	6963.31	12567.92	11462.52	-5154.37	1625528.52	281066.35	39°15'50.850"N	80°49'21.356"W	12568.09	335.788	0.46	0.00	0.46
19188.00	88.090	334.120	6966.29	12657.82	11543.00	-5194.55	1625488.35	281146.82	39°15'51.640"N	80°49'21.882"W	12657.97	335.771	1.44	-0.03	1.44
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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noble energy

Actual Wellpath Report

OXF-97H-HS AWP Proj: 20473'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Doddridge Co., WV	Well	OXF-97H-HS
Field	Doddridge	Wellbore	OXF-97H-HS AWB
Facility	OXF-97 Pad		

WELLPATH DATA (224 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
19367.00	88.000	334.870	6972.74	12836.67	11704.44	-5271.59	1625411.31	281308.26	39°15'53.224"N	80°49'22.892"W	12836.81	335.754	0.48	0.20	0.43
19457.00	87.720	336.810	6976.10	12926.60	11786.50	-5308.40	1625374.50	281390.31	39°15'54.029"N	80°49'23.375"W	12926.74	335.754	2.18	-0.31	2.16
19546.00	87.820	336.090	6979.57	13015.52	11868.02	-5343.93	1625338.97	281471.83	39°15'54.830"N	80°49'23.842"W	13015.67	335.759	0.82	0.11	-0.81
19636.00	88.060	333.610	6982.80	13105.45	11949.43	-5382.15	1625300.75	281553.24	39°15'55.629"N	80°49'24.343"W	13105.59	335.753	2.77	0.27	-2.76
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19815.00	88.460	334.170	6988.79	13284.29	12110.26	-5460.51	1625222.40	281714.06	39°15'57.207"N	80°49'25.370"W	13284.41	335.729	0.62	0.62	0.01
19905.00	88.000	332.140	6991.57	13374.17	12190.51	-5501.13	1625181.78	281794.31	39°15'57.994"N	80°49'25.901"W	13374.27	335.712	2.31	-0.51	-2.26
19995.00	88.210	331.050	6994.54	13463.91	12269.63	-5543.92	1625138.99	281873.43	39°15'58.770"N	80°49'26.460"W	13463.99	335.685	1.23	0.23	-1.21
20085.00	88.460	330.670	6997.16	13553.58	12348.21	-5587.73	1625095.19	281952.00	39°15'59.540"N	80°49'27.031"W	13553.63	335.653	0.51	0.28	-0.42
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20264.00	89.380	334.910	7000.81	13732.38	12508.20	-5667.81	1625015.11	282111.99	39°16'01.109"N	80°49'28.080"W	13732.41	335.623	1.22	0.71	0.99
20354.00	92.090	338.080	6999.66	13822.34	12590.71	-5703.69	1624979.23	282194.50	39°16'01.920"N	80°49'28.551"W	13822.38	335.629	4.63	3.01	3.52
20443.00	89.450	338.890	6998.46	13911.20	12673.49	-5736.32	1624946.59	282277.28	39°16'02.733"N	80°49'28.982"W	13911.25	335.647	3.10	-2.97	0.91
20473.00	89.450	338.890	6998.75	13941.14	12701.48	-5747.13	1624935.79	282305.26	39°16'03.008"N	80°49'29.124"W	13941.20	335.654	0.00	0.00	0.00

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noble energy

Actual Wellpath Report

OXF-97H-HS AWP Proj: 20473'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Doddridge Co., WV	Well	OXF-97H-HS
Field	Doddridge	Wellbore	OXF-97H-HS AWB
Facility	OXF-97 Pad		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
OXF-97H-HS LP Rev-2		6863.00	687.88	-269.76	1630412.95	270292.11	39°14'05.073"N	80°48'17.271"W	point
OXF-97H-HS BHL Rev-2		6950.00	12693.86	-5743.73	1624939.19	282297.64	39°16'02.933"N	80°49'29.080"W	point
OXF-97 LL		7198.41	60.02	-19.93	1630662.77	269664.28	39°13'58.904"N	80°48'13.980"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: OXF-97H-HS AWB Ref Wellpath: OXF-97H-HS AWP Proj: 20473'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.00	5958.00	Generic gyro - northseeking (Standard)	01_MS Gyro <8-3/4"> (100'-5950')	OXF-97H-HS AWB
5958.00	20443.00	NaviTrak (AT Curve Short Spaced)	02_BHI AT Curve <8-1/2"> (5958')(6025'-20443')	OXF-97H-HS AWB
20443.00	20473.00	Blind Drilling (std)	Projection to bit	OXF-97H-HS AWB

4701706586

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Doddridge Co., WV	Well	OXF-97H-HS
Field	Doddridge	Wellbore	OXF-97H-HS AWB
Facility	OXF-97 Pad		

COMMENTS

Wellpath general comments
API: 47-017-06586-0000
BHI Job #: 7238898
Rig: Precision 543
Duration: 5/10/2015-5/17/2015
MS Gyro <8-3/4"> (100'-5950')
BHI AT Curve <8-1/2"> (5958')(6025'-20443')
Projected MD at TD: 20473'

FRAC PERMIT API # 47-017-06586

WW-9
(4/16)

API Number 47 - 017 - 06586
Operator's Well No. OXF97 HHS

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 494507062

Watershed (HUC 10) Headwaters Middle Island Creek Quadrangle Oxford 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes ☑ No ☐

Will a pit be used? Yes ☐ No ☑

If so, please describe anticipated pit waste: No pit will be used at this site (Drilling and Flowback Fluids will be stored in tanks. Cuttings will be tanked and hauled off site.)

Will a synthetic liner be used in the pit? Yes ☐ No ☑ If so, what ml.? N/A

Proposed Disposal Method For Treated Pit Wastes:

- ☐ Land Application
- ■ Underground Injection (UIC Permit Number *UIC Permit # will be provided on Form WR-34)
- ■ Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34)
- ■ Off Site Disposal (Supply form WW-9 for disposal location) (Meadowfill Landfill Permit #SWF-1032-98)
- ☐ Other (Explain Northwestern Landfill Permit #SWF-1025/ WV0109410)

Will closed loop system be used? If so, describe: Yes, fluids stored in tanks, cuttings removed offsite and taken to landfill.

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Dust/Stiff Foam, Production - Water Based Mud

-If oil based, what type? Synthetic, petroleum, etc. Synthetic

Additives to be used in drilling medium? Please See Attachment

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Drill cuttings stored in tanks, removed offsite and taken to landfill.

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98), Northwestern Landfill (Permit # SWF-1025/WV0109410)

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto 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 or imprisonment.

RECEIVED
Office of Oil and Gas
JUN 06 2018
WV Department of
Environmental Protection

Company Official Signature Lisa Cathy, Director Environmental & Reg Compliance on behalf of

Company Official (Typed Name) Gretchen Kohler

Company Official Title Senior Environmental & Regulatory Manager

Subscribed and sworn before me this 10th day of May, 2018

Notary Public

My commission expires 3/13/2022

MEGAN GRIFFITH
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20164011666
MY COMMISSION EXPIRES MARCH 13, 2022

08/03/2018

47-017-0651

Form WW-9

Operator's Well No. OXF97 HHS

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 59.26 acres Prevegetation pH _____

Lime 2-4 Tons/acre or to correct to pH 6.5

Fertilizer type Hay or straw or Wood Fiber (will be used where needed)

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Access Road "A" (24.76 acres) + Access Road "B" (19.90 acres) + Well Pad (7.04 acres) + Water Containment Pad (1.00 acres) + Excess/Topsoil Material Stockpiles (3.79 acres) = 59.26 Total Affected Acres

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Crownvetch	10-15
Field Bromegrass	40	Tall Fescue	30
See attached Table IV-3 for additional seed type (Oxford 97 Pad Design)		See attached Table IV-4A for additional seed type (Oxford 97 Pad Design)	
*or type of grass seed requested by surface owner		*or type of grass seed requested by surface owner	

Attach:
Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [signature]

Comments: _____

Title: Oil + Gas Inspector Date: 6/5/18

Field Reviewed? (✓) Yes ( ) No

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Office of Oil and Gas
JUN 06 2018
WV Department of
Environmental Protection

08/03/2018

4701706586

Form WW-9 Additives Attachment

SURFACE INTERVAL

1. Fresh Water
2. Soap –Foamer AC
3. Air

INTERMEDIATE INTERVAL

STIFF FOAM RECIPE:

1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
2) 1 ppb Conqor 404 (11.76 ppg) / Corrosion Inhibitor
3) 4 ppb KLA-Gard (9.17 ppg) / Amine Acid Complex-Shale Stabilizer
4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
5) 12 ppb KCL / Potassium Chloride-inorganic Salt
6) Fresh Water 80 bbls
7) Air

PRODUCTION INTERVAL

1. Alpha 1655
   Salt Inhibitor
2. Mil-Carb
   Calcium Carbonate
3. Cottonseed Hulls
   Cellulose-Cottonseed Pellets – LCM
4. Mil-Seal
   Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
5. Clay-Trol
   Amine Acid Complex – Shale Stabilizer
6. Xan-Plex
   Viscosifier For Water Based Muds
7. Mil-Pac (All Grades)
   Sodium Carboxymethylcellulose – Filtration Control Agent
8. New Drill
   Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
9. Caustic Soda
   Sodium Hydroxide – Alkalinity Control
10. Mil-Lime
    Calcium Hydroxide – Lime
11. LD-9
    Polyether Polyol – Drilling Fluid Defoamer
12. Mil Mica
    Hydro-Biotite Mica – LCM

4701706586

13. Escaid 110
    Drilling Fluild Solvent – Aliphatic Hydrocarbon
14. Ligco
    Highly Oxidized Leonardite – Filteration Control Agent
15. Super Sweep
    Polypropylene – Hole Cleaning Agent
16. Sulfatrol K
    Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous
    Inorganic Salt
18. D-D
    Drilling Detergent – Surfactant
19. Terra-Rate
    Organic Surfactant Blend
20. W.O. Defoam
    Alcohol-Based Defoamer
21. Perma-Lose HT
    Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D
    Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells
    Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite
    Natural Graphite – LCM
25. Mil Bar
    Barite – Weighting Agent
26. X-Cide 102
    Biocide
27. Soda Ash
    Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol
    Amine Acid complex – Shale Stabilizer
29. Sulfatrol
    Sulfonated Asphalt – Shale Control Additive
30. Xanvis
    Viscosifier For Water-Based Muds
31. Milstarch
    Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube
    Drilling Fluid Lubricant

4701706586

911 Address
965 Waco Rd.
West Union, WV 26456

Well Site Safety Plan
Antero Resources

Well Name: **OXF97 Unit AHS, BHS, CHS, DHS, EHS, FHS, GHS and HHS**

Pad Location: **OXFORD 97 PAD**
Doddridge County/Southwest & West Union District

GPS Coordinates:

Entrance - Lat 39°12'12.6282"/Long -80°47'33.2016" (NAD83)

Pad Center - Lat 39°13'59.6778"/Long -80°48'12.9234" (NAD83)

Driving Directions:

From the intersection of Hwy 50 and Arnolds Creek Rd: Head south on Arnolds Creek Rd/Central Station Rd/Right Fork Rd toward Rte 11/3 for 0.7 miles. Continue straight onto Co Rte 11/4/Left fork Run Rd for 4.4 miles. Lease road will be on your right.

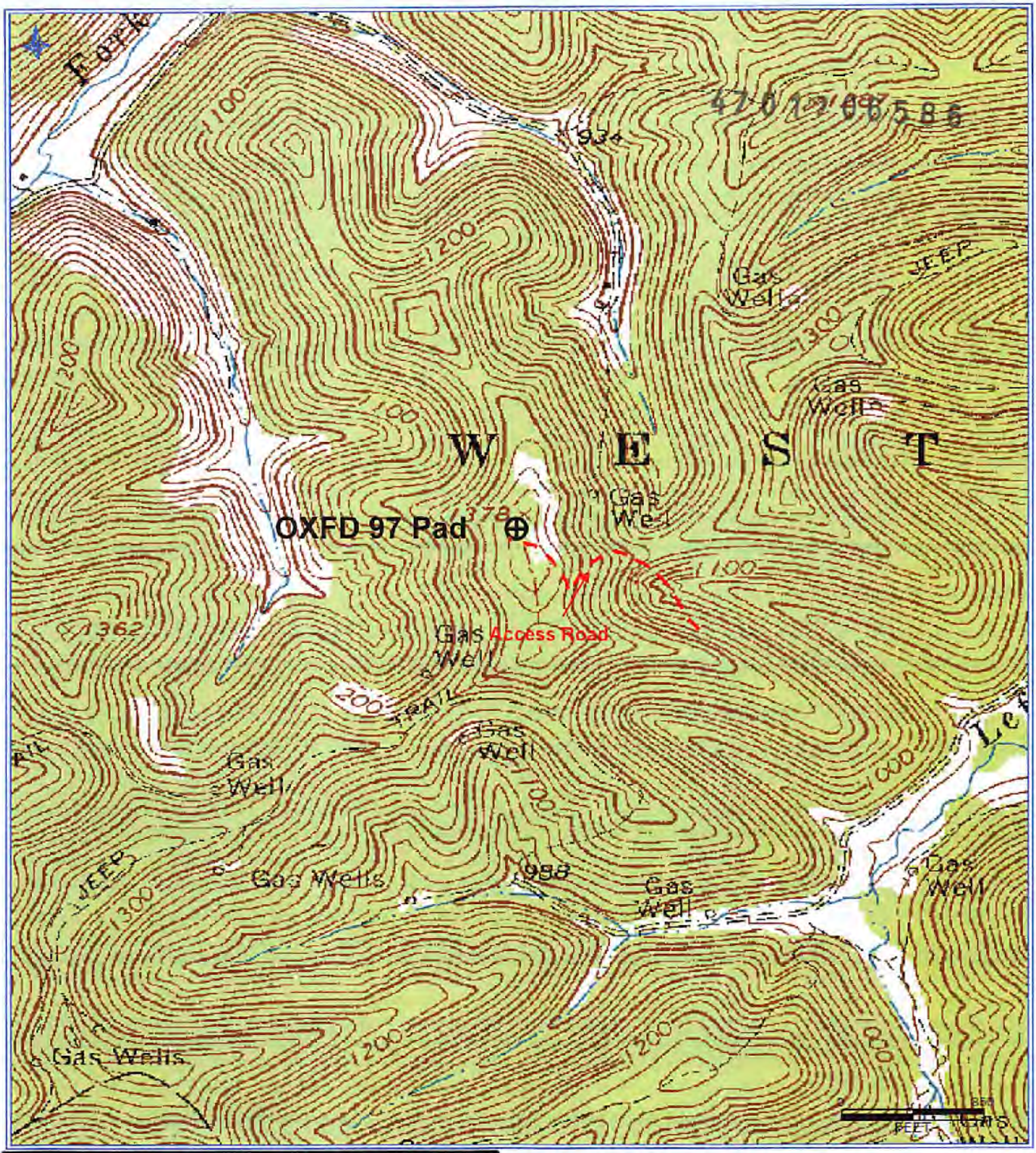
Alternate Route:

From the intersection of Sunnyside Rd and Oxford Rd: Head east on Old U.S 50 W/Sunnyside Rd toward Co Rte/6 for 1.9 miles. Turn right onto US-50 E for 0.5 miles. Turn right at the 1st cross street onto Arnolds Creek Rd/Central Station Rd/Right Fork Rd toward Rte 11/3 for 0.7 miles. Continue straight onto Co Rte 11/4/Left fork Run Rd for 4.4 miles. Lease road will be on your right.

EMERGENCY (24 HOUR) CONTACT 1-800-878-1373

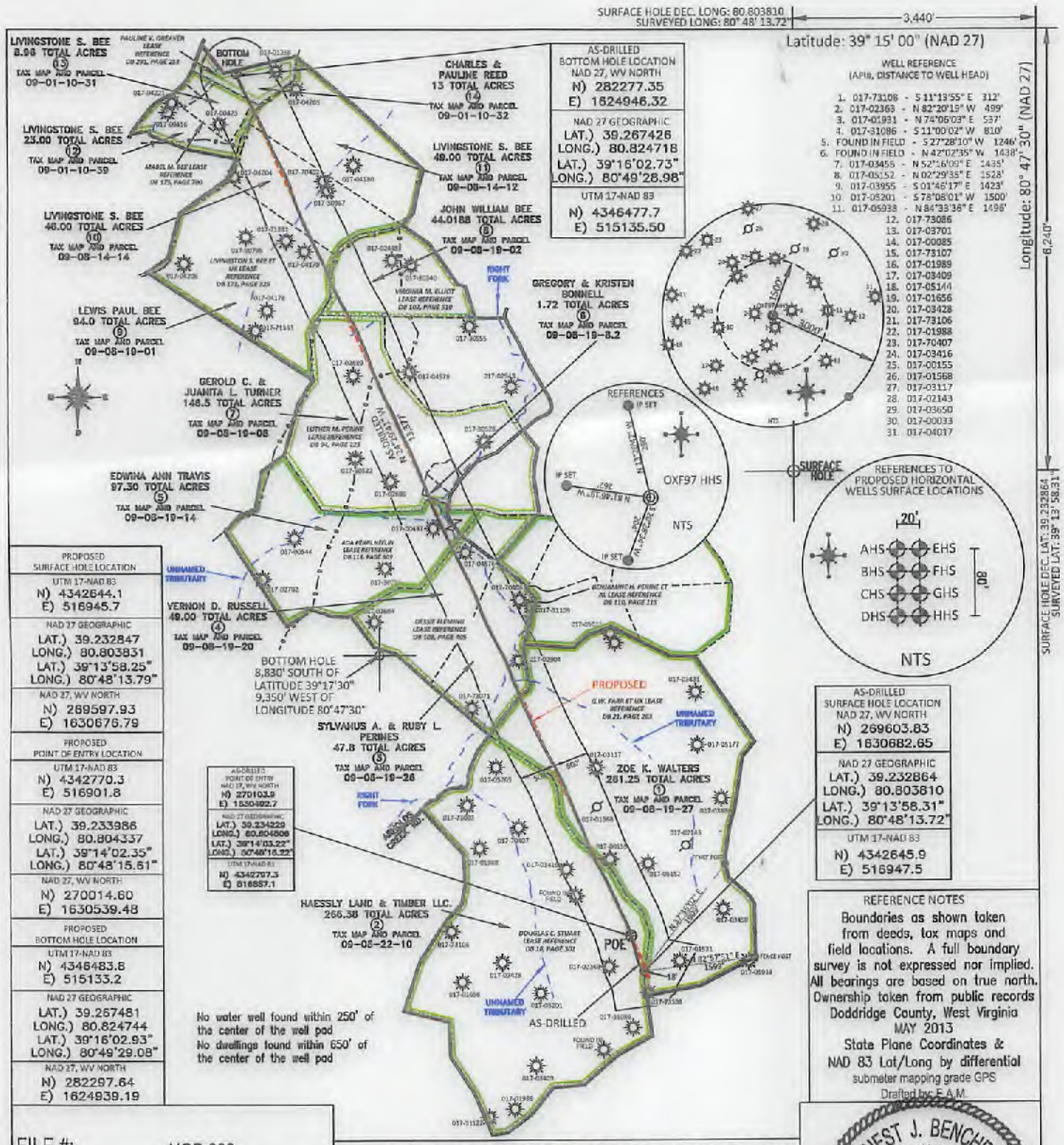
PAF
6/5/18

08/03/2018



Antero Resources Corporation
Appalachian Basin
OXFD 97 Unit
Doddridge County
Quadrangle: Oxford
Watershed: Middle Island Creek
District: West Union
Date: 5-7-2018

08/03/2018



FILE #: NOB 009
DRAWING #: 2354
SCALE: PLAT - 1" = 2000'
TICK MARK - 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: _____

L.L.S. #2124 : Ernest J. Benchek III

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: February 14, 2018

OPERATOR'S WELL #: OXF97 HHS

API WELL #: 47 (STATE) 17 (COUNTY) 06586 (PERMIT)

Well Type: ☐ Oil ☐ Waste Diposal ☒ Production ☐ Deep
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: HEADWATERS MIDDLE ISLAND CREEK

AS-BUILT ELEVATION : 1,333'

COUNTY/DISTRICT: DODDRIDGE / WEST UNION

QUADRANGLE : (SHL) OXFORD WV. (BHL) WEST UNION WV.

SURFACE OWNER: HAESSLY LAND & TIMBER LLC.

ACREAGE: 266.38 +/-

OIL & GAS ROYALTY OWNER: G.W. FARR et ux, DOUGLAS C. STUART, DESSIE FLEMING,ADA PEARL HEFLIN, LUTHER M. PERINE,VIRGINIA M. ELLIOT, LIVINGSTON S. BEE et ux, PAULINE V. GREAVER, MABEL M. BEE

ACREAGE: 262.00+/-,266.00+/-,96.80+/-,97.30 +/- 146.50+/-,97.30+/-,44.0+/-,49.00+/-,49.00+/-

LEASE NUMBERS:

08/03/2018

DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒
PLUG OFF FORMATION ☐ PERFORATE NEW FORMATION ☐ PLUG & ABANDON ☐
CLEAN OUT & REPLUG ☐ OTHER CHANGE ☐ (SPECIFY):

TARGET FORMATION: MARCELLUS

ESTIMATED DEPTH: TVD: 5,996' TMD: 20,473'

WELL OPERATOR : ANTERO RESOURCES CORPORATION

DESIGNATED AGENT : DIANNA STAMPER - CT CORPORATION SYSTEM

ADDRESS: 1615 WYNKOOP STREET

ADDRESS: 5400 D BIG TYLER ROAD

CITY: DENVER STATE: CO ZIP CODE: 80202

CITY: CHARLESTON STATE: WV ZIP CODE: 25313

WW-6A1

Operator's Well Number OXF97 HHS
FRAC PERMIT API #47-017-06586

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

(1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;

(2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
Douglas C. Stuart Lease			
Douglas C. Stuart	The Carter Oil Co.	1/8	0016/0301
The Carter Oil Co.	Hope Natural Gas Company	Assignment	0042/0410
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Merger	0143/0345
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Certificate of Authority	0051/0795
CNG Transmission Corporation	Dominion Transmission, Inc.	Certificate of Authority	0058/0362
Dominion Transmission, Inc.	Consol Energy Holdings LLC XVI	Assignment	0245/0001
Consol Energy Holdings LLC XVI	CNX Gas Company	Corp Book	1472/0295
CNX Gas Company	**Antero Resources Corporation**	**Assignment**	**0387/0216**
G.W. Farr et ux Lease			
G.W. Farr et ux	Hope Natural Gas Company	1/8	021/0263
Hope Natural Gas Company	Consolidated Gas Supply Corporation	Merger	0413/0345
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	0135/0583
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Certificate of Authority	051/0795
CNG Transmission Corporation	Dominion Transmission, Inc.	Certificate of Authority	058/0362
Dominion Transmission, Inc.	Consol Energy Holdings LLC XVI	Assignment	0245/01
Consol Energy Holdings LLC XVI	CNX Gas Company	Corp Book	01472/0295
CNX Gas Company	**Antero Resources Corporation**	**Assignment**	**0387/0216**
Dessie Fleming Lease			
Dessie Fleming	Key Oil Company	1/8	0108/0405
Key Oil Company	J&J Enterprises	Assignment	0141/090
J&J Enterprises	Eastern American Energy Corporation	Assignment	0159/0139
Eastern American Energy Corporation	Eastern Corporation of America	Assignment	0240/0498
Eastern Corporation of America	Antero Resources Appalachian Corporation	Assignment	0307/0321
Antero Resources Appalachian Corporaiton	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Ada Pearl Heflin			
Ada Pearl Heflin	Justin L. Henderson	1/8	0173/0325
Justin L. Henderson	Antero Resources Appalachian Corporation	Assignment	0289/0490
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**

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Office of Oil and Gas
MAY 11 2018
WV Department of
Environmental Protection

***Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.**

****CONTINUED ON NEXT PAGE****

08/03/2018

WW-6A1

Operator's Well Number OXF97 HHS
FRAC PERMIT API #47-017-06586

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

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(2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
Luther M. Perine Lease			
Luther M. Perine	Ole Colony Development Co.	1/8	094/0223
Ole Colony Development Co.	Penn Resources Inc.	Assignment	0111/0553
Penn Resources Inc.	Justin L. Henderson	Assignment	0105/0496
Justin L. Henderson	Antero Resources Appalachian Corporation	Assignment	0289/0490
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Virginia M. Elliot Lease			
Virginia M. Elliot	Justin M. Henderson	1/8	0102/0510
Justin M. Henderson	W.B. Berry	Assignment	0110/0533
W.B. Berry	J&J Enterprises	Assignment	0111/0718
J&J Enterprises	Eastern American Energy Corporation	Assignment	0211/0137
Eastern American Energy Corporation	Eastern Corporation of America	Assignment	0240/0498
Eastern Corporation of America	Antero Resources Appalachian Corporation	Assignment	0307/0321
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Livingston S. Bee et ux Lease			
Livingston S. Bee et ux	Key Oil Co.	1/8	0173/0325
Key Oil Co.	Antero Resources Appalachian Corporation	Assignment	0256/0285
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Mabel M. Bee Lease			
Mabel M. Bee	Key Oil Co.	1/8	0175/0700
Key Oil Co.	Antero Resources Appalachian Corporation	Assignment	0256/0285
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**

08/03/2018

WW-6A1
(5/13)

Operator's Well No. OXF97 HHS

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

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(2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Pauline V. Greaver Lease				
	Pauline V. Greaver	Antero Resources Appalachian Corporation	1/8+	0291/0253
	Antero Resources Appalachian Corporation	Antero Resources Corporation	Assignment	Exhibit 1

*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Antero Resources Corporation
By: Kevin Kilstrom
Its: Senior Vice President - Production

08/03/2018

FORM WW-6A1
EXHIBIT 1

4701706586

FILED

JUN 10 2013

IN THE OFFICE OF SECRETARY OF STATE

Natalie E. Tennant
Secretary of State
1900 Kanawha Blvd E
Bldg 1, Suite 157-K
Charleston, WV 25305

Penney Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvsos.com
E-mail: business@wvsos.com

Office Hours: Monday – Friday
8:30 a.m. – 5:00 p.m. ET

FILE ONE ORIGINAL
(Two if you want a filed stamped copy returned to you)
FEE: $25.00

APPLICATION FOR AMENDED CERTIFICATE OF AUTHORITY

**** In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby **** applies for an Amended Certificate of Authority and submits the following statement:

1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation

2. Date Certificate of Authority was issued in West Virginia: 6/26/2008

3. Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)

4. Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)

5. Other amendments:
(attach additional pages if necessary)

6. Name and phone number of contact person. (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alvyn A. Schopp — (303) 357-7310
Contact Name — Phone Number

7. Signature information (See below *Important Legal Notice Regarding Signature):

Print Name of Signer: Alvyn A. Schopp — Title/Capacity: Authorized Person

Signature: [signature] — Date: June 10, 2013

*Important Legal Notice Regarding Signature: Per West Virginia Code §31D-1-129, Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

08/03/2018

4701706586

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

May 10, 2018

West Virginia Department of Environmental Protection
Chief, Office of Oil and Gas
Attn: Mr. James Martin
601 57th Street SE
Charleston, WV 25304

RE: OXF97 HHS
Quadrangle: Oxford 7.5'
Doddridge County/West Union District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the OXF97 HHS horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the OXF97 HHS horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,

Tyler Adams
Landman

FRAC PERMIT API # 47-017-06586

WW-6AC
(1/12)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

Date of Notice Certification: 05/08/2018

API No. 47- 017 - 06586
Operator's Well No. OXF97 HHS
Well Pad Name: Oxford 97 Pad

Notice has been given:
Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State:	West Virginia	UTM NAD 83 Easting:	516947.5m
County:	Doddridge	Northing:	4342645.9m
District:	West Union	Public Road Access:	Waco Rd.
Quadrangle:	Oxford 7.5'	Generally used farm name:	Haessly Land & Timber, LLC
Watershed:	Headwaters Middle Island Creek		

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:

*PLEASE CHECK ALL THAT APPLY

	OOG OFFICE USE ONLY
☐ 1. NOTICE OF SEISMIC ACTIVITY or ☒ NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED	☐ RECEIVED/ NOT REQUIRED
☐ 2. NOTICE OF ENTRY FOR PLAT SURVEY or ☒ NO PLAT SURVEY WAS CONDUCTED	☐ RECEIVED
☒ 3. NOTICE OF INTENT TO DRILL or ☐ NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or ☐ WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)	☑ RECEIVED/ NOT REQUIRED
☒ 4. NOTICE OF PLANNED OPERATION	☑ RECEIVED
☒ 5. PUBLIC NOTICE	☑ RECEIVED
☒ 6. NOTICE OF APPLICATION	☑ RECEIVED

RECEIVED
Office of Oil and Gas
MAY 11 2018
WV Department of
Environmental Protection

Required Attachments:
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

08/03/2018

WW-6AC
(1/12)

Certification of Notice is hereby given:

THEREFORE, I Kevin Kilstrom, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all 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.

Well Operator:	Antero Resources Corporation	Address:	1615 Wynkoop Street
By:	Kevin Kilstrom		Denver, CO 80202
Its:	Senior Vice President - Production	Facsimile:	303-357-7315
Telephone:	303-357-7182	Email:	mstanton@anteroresources.com

NOTARY SEAL
MEGAN GRIFFITH
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20184011665
MY COMMISSION EXPIRES MARCH 13, 2022

Subscribed and sworn before me this 10th day of May 2018.

Notary Public

My Commission Expires 3/13/2022

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

RECEIVED
Office of Oil and Gas
MAY 11 2018
WV Department of
Environmental Protection

08/03/2018

FRAC PERMIT API # 47-017-06586

WW-6A
(9-13)

API NO. 47- 017 - 06586
OPERATOR WELL NO. OXF97 HHS
Well Pad Name: Oxford 97 Pad

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 5/9/2018 **Date Permit Application Filed:** 5/9/2018

Notice of:

☑ PERMIT FOR ANY WELL WORK ☐ CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

☐ PERSONAL SERVICE ☐ REGISTERED MAIL ☑ METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

☑ Application Notice ☑ WSSP Notice ☑ E&S Plan Notice ☑ Well Plat Notice is hereby provided to:

☑ SURFACE OWNER(s)
Name: Zoe Katryn Waters
Address: 9407 Scratch Court
Wilmington, NC 28412
Name: Haessly Land & Timber LLC
Address: 25 Sheets Run Road
Marietta, OH 45750

☐ SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: _____
Address: _____
Name: _____
Address: _____

☐ SURFACE OWNER(s) (Impoundments or Pits)
Name: _____
Address: _____

☐ COAL OWNER OR LESSEE
Name: NO DECLARATIONS ON RECORD WITH COUNTY
Address: _____

☐ COAL OPERATOR
Name: NO DECLARATIONS ON RECORD WITH COUNTY
Address: _____

☐ WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, SPRING OR OTHER WATER SUPPLY SOURCE
Name: NONE IDENTIFIED WITHIN 1500'
Address: _____

☐ OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

*Please attach additional forms if necessary

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Office of Oil and Gas
MAY 11 2018
WV Department of
Environmental Protection

08/03/2018

WW-6A
(8-13)

API NO. 47- 017 - 06586
OPERATOR WELL NO. OXF97 HHS
Well Pad Name: Oxford 97 Pad

Notice is hereby given:
Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:
Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions
Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:
Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:
Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:
Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

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WV Department of
Environmental Protection

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

08/03/2018

WW-6A
(8-13)

API NO. 47- 017 - 06586
OPERATOR WELL NO. OXF97 HHS
Well Pad Name: Oxford 97 Pad

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

(1) The proposed well work will constitute a hazard to the safety of persons;
(2) The plan for soil erosion and sediment control is not adequate or effective;
(3) Damage would occur to publicly owned lands or resources; or
(4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

FRAC PERMIT API # 47-017-06586

WW-6A
(8-13)

API NO. 47- 017 - 06586
OPERATOR WELL NO. OXF97 HHS
Well Pad Name: Oxford 97 Pad

Notice is hereby given by:

Well Operator: Antero Resources Corporation
Telephone: (303) 357-7310
Email: mstanton@anteroresources.com

Address: 1615 Wynkoop Street
Denver, CO 80202
Facsimile: 303-357-7315

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

MEGAN GRIFFITH
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20184011666
MY COMMISSION EXPIRES MARCH 13, 2022

Subscribed and sworn before me this 10th day of May 2018.

Notary Public

My Commission Expires 3/13/2022

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MAY 11 2018
WV Department of
Environmental Protection

08/03/2018

WW-6A Notice of Application Attachment (OXFORD 97 PAD):

List of Surface Owner(s) with Proposed Disturbance associated with Oxford 97 Well Pad:

WELL PAD – These owners were notified of all well work permit applications, and have executed signed Surface Use Agreements with Antero Resources Corporation.

09-08-22-10
Owner: Haessley Land & Timber, LLC
Address: 25 Sheets Run Rd.
Marietta, OH 45750

09-08-19-27
Owner: Zoe K. Walters
Address: 9407 Scratch Ct.
Wilmington, NC 28412

ROAD AND/OR OTHER DISTURBANCE – These owners were only notified if their tract is overlying the oil and gas leasehold being developed by the proposed well work as outlined in WV Code 22-6A-10(b)(2).

9-8-22-10 &14 and 7-5-4 (ON LEASE)
Owner: Haessley Land & Timber, LLC
Address: 25 Sheets Run Rd.
Marietta, OH 45750

09-08-19-27 (ON LEASE)
Owner: Zoe K. Walters
Address: 9407 Scratch Ct.
Wilmington, NC 28412

9-8-23-3 (OFF LEASE)
Owner: Lucy E. Harper
Address: 511 Boca Ciega Point
St. Petersburg, FL 33708

9-8-23-3.1 (OFF LEASE)
Owner: Gary Stephenson
Address: PO Box 71
West Union, WV 26456

FRAC PERMIT API # 47-017-06586

WW-6A4
(1/12)

Operator Well No. OXF97 HHS
Multiple Wells on Oxford 97 Pad

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.
Date of Notice: 01/08/2017 **Date Permit Application Filed:** 05/10/2018

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

☐ HAND DELIVERY ☒ CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided,* That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however,* That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Haessly Land & Timber, LLC
Address: 25 Sheets Run Rd.
Marietta, OH 45750

Name: Zoe Kathryn Waters
Address: 9407 Scratch Court
Wilmington, NC 28412

Notice is hereby given:
Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia
County: Doddridge
District: West Union
Quadrangle: Oxford 7.5'
Watershed: Headwaters Middle Island Creek

UTM NAD 83 Easting: 516947.5m
Northing: 4342645.9m
Public Road Access: Waco Rd.
Generally used farm name: Haessly Land & Timber, LLC.

This Notice Shall Include:
Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: Antero Resources Appalachian Corporation
Address: 1615 Wynkoop St.
Denver, CO 80202
Telephone: 303-357-7310
Email: mstanton@anteroresources.com
Facsimile: 303-357-7315

Authorized Representative: Mallory Stanton
Address: 1615 Wynkoop St.
Denver, CO 80202
Telephone: 303-357-7182
Email: mstanton@anteroresources.com
Facsimile: 303-357-7315

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Office of Oil and Gas
MAY 11 2018
WV Department of
Environmental Protection

Oil and Gas Privacy Notice:
The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

08/03/2018

FRAC PERMIT API # 47-017-06586

WW-6A5
(1/12)

Operator Well No. OXF97 HHS
4701706586

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**
Date of Notice: 05/10/2018 **Date Permit Application Filed:** 05/10/2018

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

☒ CERTIFIED MAIL RETURN RECEIPT REQUESTED ☐ HAND DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Haessley Land & Timber, LLC
Address: 25 Sheets Run Rd.
Marietta, OH 45750

Name: Zoe K. Waters
Address: 9407 Scratch Ct.
Wilmington, NC 28412

Notice is hereby given:
Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia
County: Doddridge
District: West Union
Quadrangle: Oxford 7.5'
Watershed: Headwaters Middle Island Creek

UTM NAD 83 Easting: 516947.5m
Northing: 4342645.9m
Public Road Access: Waco Rd.
Generally used farm name: Haessly Land & Timber, LLC

This Notice Shall Include:
Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1)A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

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WV Departm
Environmental

Well Operator: Antero Resources Corporation
Telephone: (303) 357-7310
Email: mstanton@anteroresources.com

Address: 1615 Wynkoop Street
Denver, CO 80202
Facsimile: 303-357-7315

Oil and Gas Privacy Notice:
The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

08/03/2018

4701706586

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Thomas J. Smith, P. E.
Secretary of Transportation/
Commissioner of Highways

Jill M. Newman
Deputy Commissioner

May 10, 2018

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the OXF97 Pad, Doddridge County
OXF97 HHS Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #04-2014-0912 which has been transferred to Antero Resources Corporation for access to the State Road for a well site located off of Doddridge County Route 23/2 SLS.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office O&G Coordinator

Cc: Megan Griffith
Antero Resources Corporation
CH, OM, D-4
File

List of Anticipated Additives Used for Fracturing or Stimulating Well

47017065 86

Additives	Chemical Abstract Service Number (CAS #)
Fresh Water	7732-18-5
2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
Ammonium Persulfate	7727-54-0
Anionic copolymer	Proprietary
Anionic polymer	Proprietary
BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
Cellulase enzyme	Proprietary
Demulsifier Base	Proprietary
Ethoxylated alcohol blend	Mixture
Ethoxylated Nonylphenol	68412-54-4
Ethoxylated oleylamine	26635-93-8
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
Guar gum	9000-30-0
Hydrogen Chloride	7647-01-0
Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
Isopropyl alcohol	67-63-0
liquid, 2,2-dibromo-3-nitrilopropionamide	10222-01-2
Microparticle	Proprietary
Petroleum Distillates (BTEX Below Detect)	64742-47-8
Polyacrylamide	57-55-6
Propargyl Alcohol	107-19-7
Propylene Glycol	57-55-6
Quartz	14808-60-7
Sillica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7
Solvent Naphtha, petroleum, heavy aliph	64742-96-7
Soybean Oil, Me ester	67784-80-9
Copolymer of Maleic and Acrylic Acid	52255-49-9
DETA phosphonate	15827-60-8
Hexamthylene Triamine Penta	34690-00-1
Phosphino Carboxylic acid polymer	71050-62-9
Hexamethylene Diamine Tetra	23605-75-5
2-Propenoic acid, polymer with 2 propenamide	9003-06-9
Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5
Diethylene Glycol	111-46-6
Methenamine	100-97-0
Polyethylene polyamine	68603-67-8
Coco amine	61791-14-8
2-Propyn-1-olcompound with methyloxirane	38172-91-7

08/03/2018

OXFORD 97 WELL PAD & WATER CONTAINMENT PAD

AS-BUILT AND EROSION & SEDIMENT CONTROL IMPROVEMENT PLAN

SOUTHWEST & WEST UNION DISTRICTS, DODDRIDGE COUNTY, WEST VIRGINIA
WHITE OAK CREEK-SOUTH FORK HUGHES RIVER & ARNOLD CREEK WATERSHED

SHEET INDEX:

LOCATION COORDINATES:

ACCESS ROAD ENTRANCE
LATITUDE 39.[illegible] LONGITUDE -80.[illegible] (NAD 83)
N [illegible] E [illegible] (UTM ZONE 17 METERS)

CENTER OF TANK
LATITUDE 39.232036 LONGITUDE -80.803546 (NAD 83)
N 4342550.19 E 518965.56 (UTM ZONE 17 METERS)

CENTROID OF PAD
LATITUDE 39.232244 LONGITUDE -80.803[illegible] (NAD 83)
N 4342578.[illegible] E 5[illegible] (UTM ZONE 17 METERS)

APPROVED
WVDEP OOG
Modification
7/23/2018

GENERAL DESCRIPTION:

THE ACCESS ROAD(S) AND WELL PAD ARE BEING UPGRADED AND THE WATER CONTAINMENT PAD IS BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

FLOODPLAIN NOTES:

THE SITE IS LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP [illegible].

MISS UTILITY STATEMENT:

ANTERO RESOURCES CORPORATION HAS NOTIFIED MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

ENTRANCE PERMIT:

ANTERO RESOURCES CORPORATION HAS OBTAINED AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

ENVIRONMENTAL NOTES:

STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN NOVEMBER, 2017 BY ALLSTAR ECOLOGY TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE NOVEMBER 16, 2017 STREAM AND WETLAND DELINEATION INDEX MAP WAS PREPARED BY ALLSTAR ECOLOGY AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE MAP DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP.

PROJECT CONTACTS:

OPERATOR:
ANTERO RESOURCES CORPORATION
535 WHITE OAKS BLVD
BRIDGEPORT, WV 26330
PHONE: (304) 842-4100
FAX: (304) 842-4102

ELI WAGONER – ENVIRONMENTAL ENGINEER
OFFICE: (304) 842-4068 CELL: (304) 476-9770

JON MCEVERS – OPERATIONS SUPERINTENDENT
OFFICE: (303) 357-6799 CELL: (303) 808-2423

AARON KUNZLER – CONSTRUCTION SUPERVISOR
CELL: (405) 227-8344

ROBERT R. WIRKS – FIELD ENGINEER
OFFICE: (304) 842-4100 CELL: (304) 627-7405

MARK HUTSON – LAND AGENT
CELL: (304) [illegible]

CHARLES E. COMPTON, III – SURVEYING COORDINATOR
CELL: (304) 719-6449

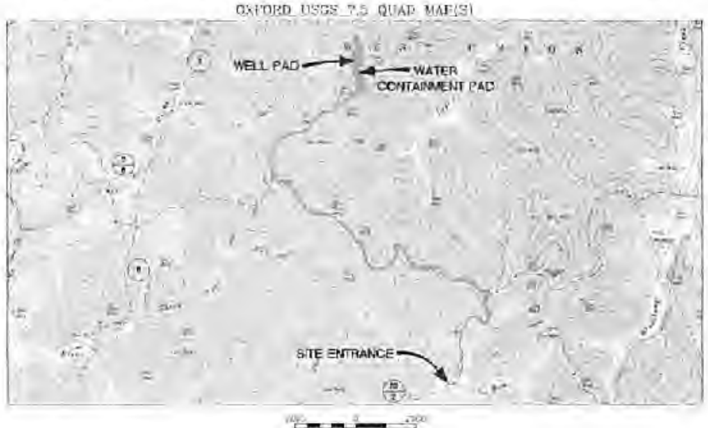
ENGINEER/SURVEYOR:
NAVITUS ENGINEERING, INC
CYRUS S. KUMP, PE – PROJECT MANAGER/ENGINEER
OFFICE: (888) 662-4185 CELL: (540) 686-6747

ENVIRONMENTAL:
ALLSTAR ECOLOGY, LLC
RYAN L. WARD – ENVIRONMENTAL SCIENTIST
OFFICE: (888) 213-2666 CELL: (304) 692-7477

RESTRICTIONS NOTES:

1. THERE ARE NO LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE WELL PAD AND LOD. THERE ARE 2 WETLANDS AND 1 PERENNIAL STREAM ADJACENT TO THE EXISTING ACCESS ROAD THAT HAVE REMAINED UNDISTURBED.
2. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE WELL PAD AND LOD.
3. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PAD AND LOD.
4. THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED.
5. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.
6. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.

OXFORD USGS 7.5 QUAD MAP(S)



WEST VIRGINIA STATE PLANE COORDINATE SYSTEM NORTH ZONE, NAD83
ELEVATIONS BASED ON NAVD88
ESTABLISHED BY SURVEY GRADE GPS & OPUS POST-PROCESSING

WEST VIRGINIA COUNTY MAP

(NOT TO SCALE)

WVDOH COUNTY ROAD MAP

AS-BUILT CERTIFICATIONS:

THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS CSR 35-8.

MISS Utility of West Virginia
1-800-245-4848
West Virginia State Law
(Section XIV: Chapter 24-C)
Requires that you call two business days before you dig in the state of West Virginia.
IT'S THE LAW!

OXFORD 97 LIMITS OF DISTURBANCE AREA (AC)			
Total Site	**Permitted**	**Modification**	**Total**
OXF 149 Access Road "A" (10,808')	24.48	0.28	24.76
Oxford 97 Access Road "B" (6,580')	19.60	0.30	19.90
Well Pad	7.04	0.00	7.04
Water Containment Pad	1.00	0.00	1.00
Excess/Topsoil Material Stockpiles	2.77	3.79	6.56
Total Affected Area	**54.89**	**4.37**	**59.26**
Total Wooded Acres Disturbed	15.89	4.31	20.20
Impacts to L.L. Morris			
OXF 149 Access Road "A" (3,555')	8.16	0.24	8.40
Total Affected Area	**8.16**	**0.24**	**8.40**
Total Wooded Acres Disturbed	n/a	0.24	0.24
Impacts to Lucy Harper 09-08-22-3			
OXF 149 Access Road "A" (8,152')	16.32	0.04	16.36
Oxford 97 Access Road "B" (307')	0.51	0.00	0.51
Total Affected Area	**16.83**	**0.04**	**16.87**
Total Wooded Acres Disturbed	0.31	0.04	0.35
Impacts to Hammsley Land & Timber LLC, 09-07-05-04			
Oxford 97 Access Road "B" (263')	2.06	0.00	2.06
Total Affected Area	**2.06**	**0.00**	**2.06**
Total Wooded Acres Disturbed	0.84	0.00	0.84
Impacts to Hammsley Land & Timber LLC, 09-08-22-14			
Oxford 97 Access Road "B" (300')	1.44	0.00	1.44
Total Affected Area	**1.44**	**0.00**	**1.44**
Total Wooded Acres Disturbed	0.20	0.00	0.20
Impacts to William Randall Hammett 09-08-23-3.1			
Oxford 97 Access Road "B" (6,065')	12.61	0.07	12.68
Excess/Topsoil Material Stockpiles	0.49	3.63	4.12
Total Affected Area	**13.10**	**3.70**	**16.80**
Total Wooded Acres Disturbed	4.76	3.73	8.49
Impacts to Hammsley Land & Timber LLC, 09-08-22-10			
Oxford 97 Access Road "B" (1,024')	2.98	0.23	3.21
Well Pad	3.68	0.00	3.68
Water Containment Pad	0.41	0.00	0.41
Excess/Topsoil Material Stockpiles	1.23	0.16	1.39
Total Affected Area	**8.30**	**0.39**	**8.69**
Total Wooded Acres Disturbed	6.03	0.30	6.33
Impacts to Zoe K. Walters 09-08-19-27			
Well Pad	3.36	0.00	3.36
Water Containment Pad	0.59	0.00	0.59
Excess/Topsoil Material Stockpiles	1.05	0.00	1.05
Total Affected Area	**5.00**	**0.00**	**5.00**
Total Wooded Acres Disturbed	3.95	0.00	3.95

Well Name	WV North NAD 27	WV North NAD 83	UTM (METERS) Zone 17	NAD 83 Lat & Long
	Permitted Location			
OXF97 Unit AHS (Drilled) API# 47-017-06481	N 269558.02 E 1630[illegible]	N 269593.16 E 1599215.23	N 4342862.38 E 518938.20	LAT 39-13-58.[illegible] LONG -80-48-13.[illegible]
OXF97 Unit BHS (Drilled) API# 47-017-06482	N 269538.00 E 1630[illegible]	N 269573.14 E 1599215.23	N 4342856.20 E 518939.36	LAT 39-13-58.5484 LONG -80-48-13.[illegible]
OXF97 Unit CHS (Drilled) API# 47-017-06483	N 269518.29 E 1630[illegible]	N 269553.46 E 1599215.29	N 4342850.18 E 518939.36	LAT 39-13-58.[illegible] LONG -80-48-13.[illegible]
OXF97 Unit DHS (Drilled) API# 47-017-06484	N 269498.25 E 1630[illegible]	N 269533.40 E 1599215.[illegible]	N 4342844.10 E 518939.[illegible]	LAT 39-13-58.[illegible] LONG -80-48-13.[illegible]
OXF97 Unit EHS (Drilled) API# 47-017-06583	N 269558.02 E 1630[illegible]	N 269593.16 E 1599235.25	N 4342862.40 E 518945.38	LAT 39-13-58.[illegible] LONG -80-48-13.1647
OXF97 Unit FHS (Drilled) API# 47-017-06584	N 269537.99 E 1630076.[illegible]	N 269573.16 E 1599225.25	N 4342856.[illegible] E 518946.46	LAT 39-13-58.5484 LONG -80-48-13.1613
OXF97 Unit GHS (Drilled) API# 47-017-06585	N 269518.33 E 1630076.[illegible]	N 269553.44 E 1599225.25	N 4342850.38 E 518945.50	LAT 39-13-58.[illegible] LONG -80-48-13.1114
OXF97 Unit HHS (Drilled) API# 47-017-06586	N 269498.28 E 1630076.38	N 269533.42 E 1599225.24	N 4342844.20 E 518945.60	LAT 39-13-58.[illegible] LONG -80-48-13.1739

Well Name	WV North NAD 27	WV North NAD 83	UTM (METERS) Zone 17	NAD 83 Lat & Long
	As Drilled Location			
OXF97 Unit AHS (Drilled) API# 47-017-06481	N 269564.07 E 1630082.66	N 269599.21 E 1599221.79	N 4342864.17 E 518941.13	LAT 39-13-59.2042 LONG -80-48-13.[illegible]
OXF97 Unit BHS (Drilled) API# 47-017-06482	N 269544.06 E 1630082.68	N 269579.23 E 1599221.52	N 4342858.08 E 518941.19	LAT 39-13-59.0084 LONG -80-48-13.[illegible]
OXF97 Unit CHS (Drilled) API# 47-017-06483	N 269521.[illegible] E 1630082.73	N 269556.[illegible] E 1599221.59	N 4342851.91 E 518941.31	LAT 39-13-58.[illegible] LONG -80-48-13.[illegible]
OXF97 Unit DHS (Drilled) API# 47-017-06484	N 269503.62 E 1630082.80	N 269538.[illegible] E 1599221.74	N 4342845.[illegible] E 518941.48	LAT 39-13-58.[illegible] LONG -80-48-13.[illegible]
OXF97 Unit EHS (Drilled) API# 47-017-06583	N 269564.[illegible] E 1630102.46	N 269599.[illegible] E 1599241.52	N 4342864.[illegible] E 518947.19	LAT 39-13-59.[illegible] LONG -80-48-13.1[illegible]
OXF97 Unit FHS (Drilled) API# 47-017-06584	N 269543.73 E 1630102.22	N 269578.91 E 1599241.09	N 4342858.09 E 518947.15	LAT 39-13-59.0081 LONG -80-48-13.1[illegible]
OXF97 Unit GHS (Drilled) API# 47-017-06585	N 269523.97 E 1630102.48	N 269558.11 E 1599241.33	N 4342852.05 E 518947.32	LAT 39-13-58.[illegible] LONG -80-48-13.1[illegible]
OXF97 Unit HHS (Drilled) API# 47-017-06586	N 269503.65 E 1630102.65	N 269538.97 E 1599241.52	N 4342845.92 E 518947.43	LAT 39-13-58.6[illegible] LONG -80-48-13.0[illegible]
Well Pad Elevation	1,331.9			

NAVITUS ENERGY ENGINEERING

DATE	REVISION
05/30/2018	REVISED PER EXISTING GAS LINES
05/15/2018	REVISED PER LOD

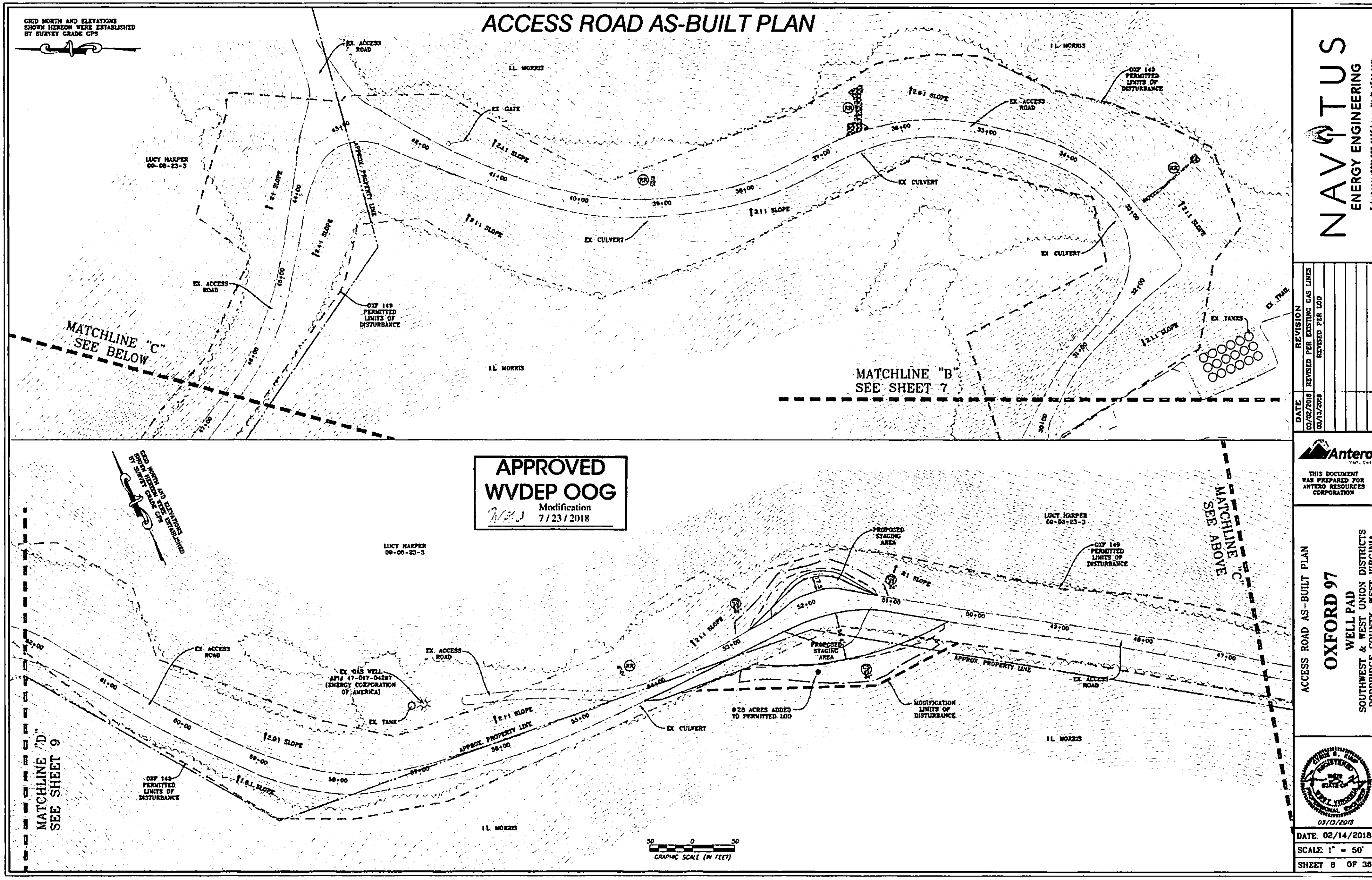
Antero

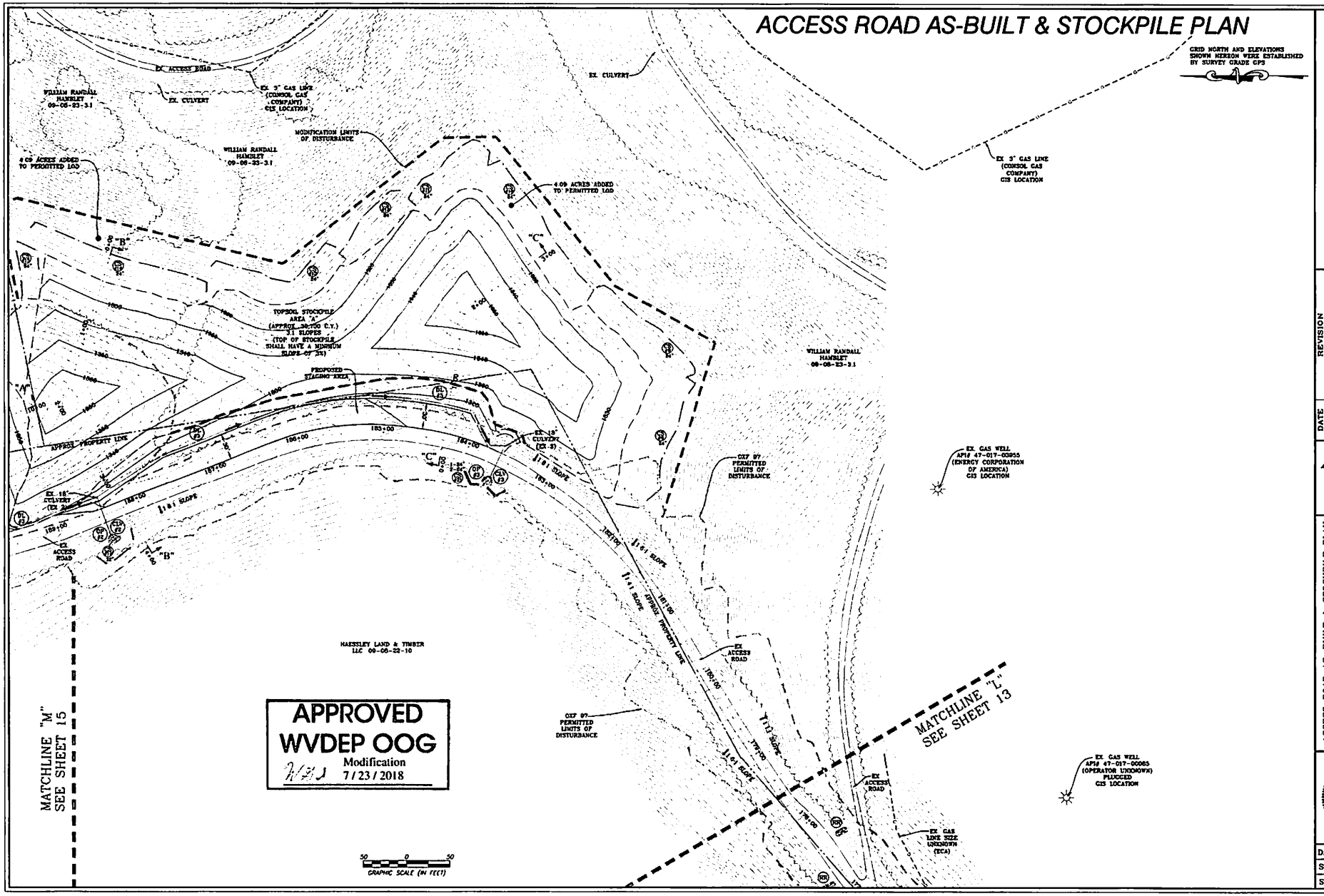
THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

COVER SHEET
OXFORD 97
WELL PAD
SOUTHWEST & WEST UNION DISTRICTS
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 02/14/2018
SCALE: AS SHOWN
SHEET 1 OF 36

ACCESS ROAD AS-BUILT PLAN





NAVITUS ENERGY ENGINEERING
Telephone: (833) 682-4185 | www.NavitusEng.com

REVISION	DATE
REVISED PER EXISTING GAS LINES	03/02/2018
REVISED PER LOD	03/13/2018

Antero

THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

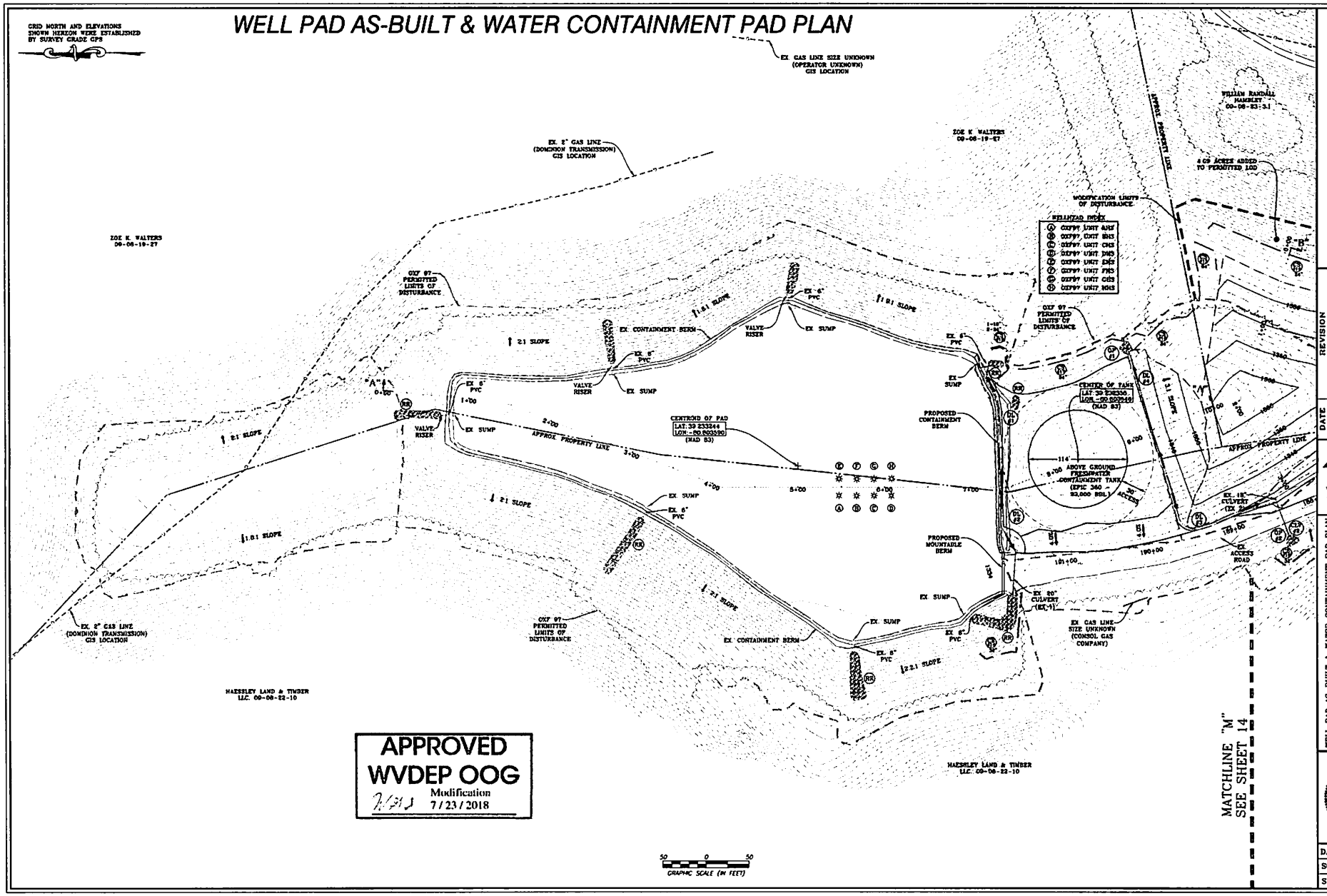
ACCESS ROAD AS-BUILT & STOCKPILE PLAN

OXFORD 97
WELL PAD
SOUTHWEST & WEST UNION DISTRICTS
DODDRIDGE COUNTY, WEST VIRGINIA

CHAD A. [illegible] REGISTERED PROFESSIONAL ENGINEER STATE OF WEST VIRGINIA
05/09/2018

DATE: 02/14/2018
SCALE: 1" = 50'
SHEET 14 OF 36

WELL PAD AS-BUILT & WATER CONTAINMENT PAD PLAN



NAVITUS ENERGY ENGINEERING
Telephone: (888) 882-4185 | www.NavitusEng.com

REVISION	DATE
REVISED PER EXISTING GAS LINES	03/02/2018
REVISED PER LOD	03/13/2018

Antero

THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

WELL PAD AS-BUILT & WATER CONTAINMENT PAD PLAN

OXFORD 97
WELL PAD
SOUTHWEST & WEST UNION DISTRICTS
DODDRIDGE COUNTY, WEST VIRGINIA

CHARLES E. [illegible] REGISTERED PROFESSIONAL ENGINEER STATE OF WEST VIRGINIA
03/12/2018

DATE: 02/14/2018
SCALE 1" = 50'
SHEET 15 OF 36