



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

Jim Justice , Governor
Austin Caperton , Cabinet Secretary
www.dep.wv.gov

Monday, March 13, 2017
WELL WORK PERMIT
Horizontal 6A / Fracture

CNX GAS COMPANY LLC (A)
POST OFFICE BOX 1248

JANE LEW, WV 263786506

Re: Permit approval for PEN 20 EHS
47-085-10122-00-00

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: PEN 20 EHS
Farm Name: COKELEY, LAWRENCE & ANGELA
U.S. WELL NUMBER: 47-085-10122-00-00
Horizontal 6A / Fracture
Date Issued: 3/13/2017

Promoting a healthy environment.

03/24/2017

PERMIT CONDITIONS

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. 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.
2. 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.
3. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
4. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
5. 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.
6. 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.

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

1) Well Operator: CNX GAS COMPANY LLC 494458046 085-Ritchie Clay Ellenboro
Operator ID County District Quadrangle

2) Operator's Well Number: PEN20EHS Well Pad Name: PEN20

3) Farm Name/Surface Owner: Lawrence B. and Angela Cokeley Public Road Access: Bonds Creek Rd

4) Elevation, current ground: 1081 Elevation, proposed post-construction: 1081

5) Well Type (a) Gas Oil Underground Storage
Other

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus 6178-6239 / 61' thick / 4118 psi

8) Proposed Total Vertical Depth: 6194'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 14382'

11) Proposed Horizontal Leg Length: 7054.51'

12) Approximate Fresh Water Strata Depths: 398'

13) Method to Determine Fresh Water Depths: nearest offset wells

14) Approximate Saltwater Depths: none noted for offsets

15) Approximate Coal Seam Depths: None

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

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

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

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WW-6B
(04/15)

API NO. 47- 085 - 10122 **P**
 OPERATOR WELL NO. PEN20EHS
 Well Pad Name: PEN20

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	DH-36	94	40'	40'	GTS
Fresh Water	13 3/8"	NEW	J-55	54.5	590.3'	590.3'	636
Coal							
Intermediate	9 5/8"	NEW	HCK-55	36.0	5510.6'	5510.6'	2419.2
Production	5 1/2"	NEW	P-110	20.0	14380'	14380'	3106.6
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"	26"	0.25			GTS	GTS
Fresh Water	13 3/8"	17.5"	.380	2730		PJSM	1.2
Coal							
Intermediate	9 5/8"	12.38"	.352	3520		Class A	Stage (1) 1.62 Stage (2) 1.19
Production	5 1/2"	8.75" & 8.5"	.361	12,640		Class A	Lead 1.62 Tail 1.37
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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

Well previously drilled by Noble Energy. Submitting permit application to complete hydraulic fracturing operations and produce the well.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate: MAC
1/19/17

The completions phase will be multiple stages over the lateral length of the well, stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand water and chemicals. Max Pressure 9,600 PSI, Max Rate 100 BPM

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 0

22) Area to be disturbed for well pad only, less access road (acres): 0

23) Describe centralizer placement for each casing string:

PREVIOUSLY COMPLETED. From original NOBLE ENERGY submittal "Conductor- No centralizers used. Fresh Water/Surface- Bow spring centralizers every 3 joints to surface. Intermediate- Bow spring centralizers on every joint to KOP, one every third joint from KOP to 100' surface. Production - Rigid bow spring every third joint from KOP to TOC, rigid bow spring every joint to KOP"

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

PREVIOUSLY COMPLETED. From original Noble Energy submittal "Conductor - grout to surface 1.15% CaCl₂. Fresh Water - Class A Portland cement with flake and 1.15% CaCl₂, 30% excess yield=1.18. Intermediate - 15.6 ppg Class A +0.4% Ret, 0.15% Disp, 0.2% Anti Foam, 0.125#sk lost circ 20% excess Yield 1.19 to surface. Production: 14.8 ppg Class A 25:75:0 System +2.6% Cement extender, 0.7% fluid loss additive, 0.45% high temp retarder, 0.2% friction reducer 10% excess Yield=1.27 TOC >=200' above 9.625" shoe."

25) Proposed borehole conditioning procedures:

PREVIOUSLY COMPLETED. From original NOBLE ENERGY submittal " Conductor- The hole is drilled w/ air and casing is run in air. apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedure. Fresh Water- The hole is drilled w/air and casing is run with air. Once casing is on bottom, the hole is filled w/ KCl water and a minimum of one hole volume is circulated prior to pumping cement. Coal- The hole is drilled with air and casing is run in air. Once casing is at set depth, the hole is filled w/KCl water and a minimum of one hole volume is circulated prior to pumping cement. Intermediate - Once surface casing is set and cemented intermediate hole is drilled either on air or SOBM and filled w/ KCl water once drilled to TD. The well is conditioned with (KCl) Circulation prior to running casing. Once casing is at setting depth, the well is circulated a minimum of one hole volume prior to pumping cement. Production - the hole is drilled with synthetic oil base mud and once at TD the hole is circulated at a maximum allowable drilling pump rate for at least 6x bottoms up. Once on Bottom with Casing, Circulate a minimum of one hole volume prior to pumping cement.

*Note: Attach additional sheets as needed.

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4708510122F

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

API 47-085-10122 County Ritchie District Ellenboro
Quad Pennsboro Pad Name PEN 20 Field/Pool Name N/A
Farm name Lawrence & Angela Cokeley Well Number PEN 20EHS
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) 1081 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 07/31/2014 Date drilling commenced 11/29/2014 Date drilling ceased 12/18/2014
Date completion activities began Not completed Date completion activities ceased na
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

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

Freshwater depth(s) ft 398' Open mine(s) (Y/N) depths _____
Salt water depth(s) ft none noted for offsets Void(s) encountered (Y/N) depths _____
Coal depth(s) ft NA Cavern(s) encountered (Y/N) depths _____
Is coal being mined in area (Y/N) No

APPROVED

NAME: Michael Hoff
DATE: 1/30/17

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AA
RBBMS
2/2/17

Reviewed by: _____
03/24/2017

API 47-085 - 10122 Farm name Lawrence & Angela Cokeley Well number PEN 20EHS

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"	40'	New	DH-36		
Surface	17.5"	13 3/8"	590.3'	New	J-55		
Coal							Y
Intermediate 1	12.38"	9 5/8"	5510.6'	New	HCK-55		Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5 1/2"	14,380.0'	New	P-110		N
Tubing							
Packer type and depth set							

Comment Details *approved cement variance of 2% accelerator (S001) 0.2% Antifoam (D046) 0.125 lb/sk Polyester Flake (D130)

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	PJSM Cement	530	15.6	1.20	636	0	8
Coal							
Intermediate 1	Type 1 / Class A	stage (1) 1050 stage (2) 330	15.6	Stage (1) 1.62 Stage (2) 1.19	total 2419.2	0	8
Intermediate 2							
Intermediate 3							
Production	Type 1 / Class A	lead 489 tail 1715	14.8	Lead 1.62 tail 1.37	total 3106.6	5100	8
Tubing							

Drillers TD (ft) 14382' Loggers TD (ft) 14323'

Deepest formation penetrated Marcellus Plug back to (ft)

Plug back procedure

Kick off depth (ft) 5459'

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.

6 Centralizers on Surface Casing 66 Centralizers on Intermediate String (Bow string centralizers on first two joints then every third joint to 100' from surface).

232 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

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS

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

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API 47- 085 - 10122 Farm name Lawrence & Angela Cokeley Well number PEN 20EHS

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 (bbbs)	Amount of Nitrogen/other (units)

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Please insert additional pages as applicable.

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01/24/2017

WR-35
Rev. 8/23/13

API 47- 085 - 10122 Farm name Lawrence & Angela Cokeley Well number PEN 20EHS

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 ₂ S, ETC)
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	0		0		

Please insert additional pages as applicable.

Drilling Contractor Nomac 78 Drilling
Address 171 Locust Ave. Ext. City Mt. Morris State PA Zip 15349

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

Stimulating Company _____
Address _____ City _____ State _____ Zip _____

Please insert additional pages as applicable.

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

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOUR Registry
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03/24/2017



Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-HS AWB
Facility	PEN-20 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	Kroschr
Scale	0.999954	Report Generated	12/16/2014 at 1:29:20 PM
Convergence at slot	0.97° West	Database/Source file	WA_NorthEast/PEN-20E-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	-54.54	58.77	1568264.57	305221.04	39°19'40.595"N	81°01'34.547"W
Facility Reference Pt			1568205.80	305275.58	39°19'41.124"N	81°01'35.306"W
Field Reference Pt			0.00	0.00	38°17'12.460"N	86°28'23.077"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Nomac 78 (RKB) to Facility Vertical Datum	1055.00ft
Horizontal Reference Pt	Slot	Nomac 78 (RKB) to Mean Sea Level	1055.00ft
Vertical Reference Pt	Nomac 78 (RKB)	Nomac 78 (RKB) to Mud Line at Slot (Slot E)	26.00ft
MD Reference Pt	Nomac 78 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	320.00°

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Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-HS AWB
Facility	PEN-20 Pad		

WELLPATH DATA (154 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]
0.00†	0.000	197.880	0.00	0.00	0.00	0.00	1568264.57	305221.04	39°19'40.595"N	81°01'34.547"W	0.00	0.000	0.00
26.00	0.000	197.880	26.00	0.00	0.00	0.00	1568264.57	305221.04	39°19'40.595"N	81°01'34.547"W	0.00	0.000	0.00
100.00	0.270	197.880	100.00	-0.09	-0.17	-0.05	1568264.52	305220.87	39°19'40.593"N	81°01'34.547"W	0.17	197.880	0.36
200.00	0.270	239.950	200.00	-0.18	-0.51	-0.33	1568264.24	305220.53	39°19'40.590"N	81°01'34.551"W	0.61	212.985	0.19
300.00	0.050	58.240	300.00	-0.14	-0.60	-0.50	1568264.07	305220.44	39°19'40.589"N	81°01'34.553"W	0.78	219.469	0.32
400.00	0.220	83.160	400.00	-0.25	-0.56	-0.27	1568264.30	305220.48	39°19'40.589"N	81°01'34.550"W	0.62	205.760	0.18
500.00	0.130	142.610	500.00	-0.47	-0.62	-0.01	1568264.56	305220.42	39°19'40.589"N	81°01'34.547"W	0.62	180.866	0.19
515.00	0.060	116.040	515.00	-0.50	-0.64	0.01	1568264.58	305220.40	39°19'40.589"N	81°01'34.547"W	0.64	179.290	0.54
689.00	1.120	321.790	688.99	1.12	0.65	-0.96	1568263.61	305221.69	39°19'40.601"N	81°01'34.559"W	1.16	304.233	0.67
779.00	0.740	62.350	778.98	1.87	1.62	-0.99	1568263.58	305222.66	39°19'40.611"N	81°01'34.560"W	1.90	328.465	1.61
874.00	2.300	78.710	873.94	0.83	2.27	1.42	1568265.99	305223.31	39°19'40.618"N	81°01'34.529"W	2.68	32.017	1.69
970.00	4.540	75.310	969.77	-1.72	3.61	6.99	1568271.56	305224.65	39°19'40.632"N	81°01'34.459"W	7.87	62.647	2.34
1066.00	7.730	62.460	1065.21	-4.74	7.56	16.39	1568280.96	305228.60	39°19'40.672"N	81°01'34.340"W	18.05	65.225	3.60
1161.00	11.880	60.510	1158.80	-7.90	15.34	30.57	1568295.14	305236.37	39°19'40.752"N	81°01'34.161"W	34.20	63.361	4.38
1257.00	15.490	65.210	1252.06	-13.07	25.58	50.82	1568315.39	305246.62	39°19'40.856"N	81°01'33.906"W	56.89	63.283	3.93
1352.00	16.890	68.150	1343.29	-20.70	36.03	75.15	1568339.71	305257.07	39°19'40.964"N	81°01'33.598"W	83.34	64.381	1.71
1448.00	16.770	69.670	1435.18	-29.71	46.04	101.08	1568365.64	305267.07	39°19'41.067"N	81°01'33.271"W	111.07	65.513	0.48
1544.00	17.470	71.590	1526.93	-39.67	55.40	127.74	1568392.30	305276.44	39°19'41.164"N	81°01'32.934"W	139.23	66.554	0.94
1639.00	21.290	74.560	1616.53	-52.09	64.50	157.90	1568422.47	305285.53	39°19'41.259"N	81°01'32.552"W	170.57	67.782	4.15
1735.00	25.010	76.190	1704.79	-68.30	73.99	194.42	1568458.98	305295.02	39°19'41.359"N	81°01'32.089"W	208.02	69.166	3.93
1830.00	24.460	74.450	1791.07	-85.30	84.05	232.87	1568497.43	305305.09	39°19'41.465"N	81°01'31.602"W	247.58	70.154	0.96
1926.00	22.430	72.990	1879.14	-100.68	94.74	269.54	1568534.09	305315.77	39°19'41.576"N	81°01'31.138"W	285.70	70.634	2.20
2022.00	24.010	71.080	1967.37	-114.86	106.43	305.53	1568570.08	305327.46	39°19'41.698"N	81°01'30.682"W	323.54	70.794	1.82
2117.00	28.370	73.900	2052.60	-130.96	118.96	345.52	1568610.07	305340.00	39°19'41.828"N	81°01'30.176"W	365.42	71.001	4.77
2212.00	27.770	71.410	2136.42	-148.19	132.28	388.18	1568652.73	305353.31	39°19'41.967"N	81°01'29.636"W	410.10	71.183	1.39
2307.00	25.420	68.550	2221.37	-162.76	146.79	428.14	1568692.69	305367.82	39°19'42.117"N	81°01'29.131"W	452.61	71.075	2.82
2403.00	22.320	62.070	2309.16	-173.13	162.87	463.44	1568727.99	305383.90	39°19'42.282"N	81°01'28.685"W	491.23	70.636	4.23
2499.00	20.740	59.030	2398.46	-179.61	180.16	494.12	1568758.67	305401.19	39°19'42.458"N	81°01'28.299"W	525.94	69.968	2.01
2594.00	21.830	60.920	2486.98	-185.59	197.40	523.99	1568788.53	305418.43	39°19'42.634"N	81°01'27.922"W	559.93	69.357	1.36
2690.00	20.220	60.670	2576.59	-192.05	214.20	554.05	1568818.59	305435.23	39°19'42.805"N	81°01'27.544"W	594.01	68.863	1.68

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Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-HS AWB
Facility	PEN-20 Pad		

WELLPATH DATA (154 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]
2786.00	18.860	62.990	2667.06	-198.61	229.38	582.34	1568846.88	305450.41	39°19'42.959"N	81°01'27.187"W	625.88	68.501	1.63
2881.00	18.180	70.850	2757.15	-207.33	241.21	610.02	1568874.56	305462.24	39°19'43.081"N	81°01'26.837"W	655.98	68.425	2.72
2976.00	19.210	74.410	2847.14	-219.07	250.28	639.08	1568903.62	305471.30	39°19'43.175"N	81°01'26.469"W	686.34	68.614	1.62
3072.00	19.850	73.200	2937.62	-232.02	259.23	669.90	1568934.43	305480.26	39°19'43.269"N	81°01'26.079"W	718.30	68.845	0.79
3167.00	20.660	71.690	3026.74	-244.57	269.16	701.25	1568965.78	305490.19	39°19'43.372"N	81°01'25.683"W	751.13	69.002	1.01
3263.00	22.130	73.460	3116.13	-258.02	279.63	734.66	1568999.20	305500.65	39°19'43.481"N	81°01'25.260"W	786.08	69.162	1.67
3358.00	25.000	74.950	3203.20	-273.62	289.94	771.21	1569035.74	305510.96	39°19'43.589"N	81°01'24.797"W	823.91	69.396	3.09
3453.00	22.380	73.190	3290.19	-289.21	300.38	807.91	1569072.44	305521.41	39°19'43.699"N	81°01'24.332"W	861.95	69.605	2.86
3549.00	20.930	72.390	3379.41	-302.94	310.85	841.75	1569106.28	305531.88	39°19'43.808"N	81°01'23.904"W	897.32	69.731	1.54
3645.00	19.980	74.400	3469.35	-316.25	320.45	873.90	1569138.42	305541.48	39°19'43.908"N	81°01'23.497"W	930.80	69.862	1.23
3739.00	20.290	74.030	3557.61	-329.52	329.26	905.03	1569169.56	305550.28	39°19'44.000"N	81°01'23.103"W	963.06	70.008	0.36
3835.00	22.160	71.880	3647.10	-343.05	339.47	938.25	1569202.77	305560.49	39°19'44.107"N	81°01'22.682"W	997.77	70.109	2.11
3929.00	23.750	72.680	3733.65	-356.95	350.62	973.17	1569237.69	305571.64	39°19'44.223"N	81°01'22.240"W	1034.40	70.187	1.72
4024.00	22.050	73.500	3821.16	-371.44	361.38	1008.53	1569273.05	305582.40	39°19'44.335"N	81°01'21.793"W	1071.32	70.286	1.82
4119.00	22.160	73.310	3909.18	-385.64	371.59	1042.79	1569307.31	305592.61	39°19'44.442"N	81°01'21.359"W	1107.02	70.387	0.14
4213.00	21.230	72.590	3996.52	-399.19	381.77	1076.01	1569340.53	305602.79	39°19'44.548"N	81°01'20.938"W	1141.73	70.465	1.03
4305.00	22.310	72.810	4081.95	-412.36	391.92	1108.59	1569373.11	305612.94	39°19'44.654"N	81°01'20.526"W	1175.83	70.530	1.18
4399.00	22.750	72.130	4168.78	-426.13	402.77	1142.93	1569407.45	305623.79	39°19'44.767"N	81°01'20.091"W	1211.83	70.588	0.54
4491.00	22.080	71.690	4253.83	-439.22	413.66	1176.28	1569440.80	305634.68	39°19'44.880"N	81°01'19.669"W	1246.90	70.625	0.75
4586.00	20.710	71.050	4342.28	-451.85	424.72	1209.12	1569473.63	305645.74	39°19'44.995"N	81°01'19.254"W	1281.55	70.645	1.46
4681.00	19.140	72.260	4431.59	-463.78	434.93	1239.84	1569504.36	305655.94	39°19'45.101"N	81°01'18.865"W	1313.92	70.670	1.71
4775.00	19.780	78.370	4520.23	-477.18	442.83	1270.10	1569534.61	305663.85	39°19'45.184"N	81°01'18.482"W	1345.09	70.779	2.27
4870.00	19.930	80.050	4609.58	-492.93	448.87	1301.80	1569566.30	305669.88	39°19'45.249"N	81°01'18.080"W	1377.01	70.976	0.62
4965.00	16.700	80.250	4699.76	-507.92	453.98	1331.21	1569595.71	305674.99	39°19'45.304"N	81°01'17.707"W	1406.49	71.169	3.40
5060.00	14.420	79.190	4791.27	-520.56	458.51	1356.28	1569620.79	305679.53	39°19'45.353"N	81°01'17.389"W	1431.69	71.322	2.42
5155.00	11.150	81.160	4883.35	-532.30	462.50	1379.29	1569643.80	305683.52	39°19'45.397"N	81°01'17.097"W	1454.77	71.463	0.64
5250.00	9.690	82.850	4975.17	-545.23	465.87	1403.44	1569667.94	305686.89	39°19'45.434"N	81°01'16.790"W	1478.74	71.636	1.79
5345.00	8.540	84.170	5066.20	-560.24	468.92	1430.42	1569694.93	305689.94	39°19'45.469"N	81°01'16.448"W	1505.32	71.850	1.99
5438.00	7.550	81.350	5155.58	-575.98	472.61	1459.30	1569723.80	305693.63	39°19'45.510"N	81°01'16.081"W	1533.92	72.055	1.42
5497.00	7.260	81.060	5174.55	-579.25	473.58	1465.54	1569730.04	305694.59	39°19'45.520"N	81°01'16.002"W	1540.16	72.092	1.52

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Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-HS AWB
Facility	PEN-20 Pad		

WELLPATH DATA (154 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]
5544.00	15.080	81.110	5255.97	-591.84	477.35	1489.62	1569754.12	305698.37	39°19'45.562"N	81°01'15.696"W	1564.24	72.232	3.74
5639.00	17.830	77.760	5347.07	-605.00	482.35	1516.05	1569780.55	305703.37	39°19'45.616"N	81°01'15.361"W	1590.94	72.351	3.06
5733.00	22.970	69.690	5435.17	-617.89	491.77	1547.35	1569811.84	305712.79	39°19'45.714"N	81°01'14.965"W	1623.61	72.369	6.22
5828.00	32.380	74.580	5519.21	-634.76	505.00	1589.35	1569853.85	305726.02	39°19'45.852"N	81°01'14.433"W	1667.65	72.373	10.18
5923.00	39.280	62.420	5596.29	-651.85	525.74	1640.66	1569905.15	305746.76	39°19'46.065"N	81°01'13.785"W	1722.84	72.232	10.41
6018.00	40.610	44.940	5669.35	-655.61	561.67	1689.31	1569953.80	305782.68	39°19'46.428"N	81°01'13.174"W	1780.23	71.609	11.87
6113.00	40.320	28.780	5741.83	-641.72	610.63	1726.05	1569990.54	305831.64	39°19'46.918"N	81°01'12.717"W	1830.88	70.518	11.02
6207.00	40.680	25.950	5813.31	-618.22	664.83	1754.10	1570018.58	305885.84	39°19'47.459"N	81°01'12.371"W	1875.86	69.242	1.99
6303.00	42.940	21.900	5884.88	-590.06	723.33	1779.99	1570044.48	305944.33	39°19'48.041"N	81°01'12.055"W	1921.35	67.885	3.67
6397.00	49.360	13.550	5950.02	-553.72	787.83	1800.33	1570064.82	306008.83	39°19'48.682"N	81°01'11.810"W	1965.17	66.366	9.35
6491.00	56.110	6.620	6006.95	-505.64	861.40	1813.21	1570077.69	306082.40	39°19'49.411"N	81°01'11.662"W	2007.42	64.589	9.27
6586.00	58.370	1.950	6058.37	-448.45	941.03	1819.14	1570083.62	306162.02	39°19'50.199"N	81°01'11.603"W	2048.12	62.648	4.77
6681.00	62.990	354.980	6104.93	-383.60	1023.73	1816.81	1570081.29	306244.72	39°19'51.016"N	81°01'11.651"W	2085.38	60.600	8.03
6776.00	66.950	347.210	6145.16	-309.93	1108.65	1803.40	1570067.89	306329.64	39°19'51.853"N	81°01'11.840"W	2116.92	58.419	8.50
6871.00	71.950	337.790	6178.56	-227.84	1193.30	1776.59	1570041.07	306414.29	39°19'52.685"N	81°01'12.199"W	2140.15	56.111	10.67
6966.00	76.840	330.640	6204.14	-139.22	1275.58	1736.77	1570001.25	306496.56	39°19'53.491"N	81°01'12.724"W	2154.87	53.704	8.89
7062.00	83.020	323.960	6220.94	-45.56	1355.00	1685.71	1569950.20	306575.98	39°19'54.268"N	81°01'13.390"W	2162.79	51.207	9.40
7157.00	88.000	316.340	6228.38	49.04	1427.62	1625.07	1569889.57	306648.59	39°19'54.975"N	81°01'14.177"W	2163.09	48.701	9.56
7253.00	90.030	311.250	6230.04	144.43	1494.03	1555.81	1569820.31	306714.99	39°19'55.620"N	81°01'15.073"W	2157.01	46.161	5.71
7349.00	90.090	306.670	6229.94	238.63	1554.37	1481.19	1569745.69	306775.34	39°19'56.204"N	81°01'16.036"W	2147.09	43.619	4.77
7445.00	89.970	307.000	6229.89	332.11	1611.93	1404.35	1569668.85	306832.89	39°19'56.760"N	81°01'17.026"W	2137.87	41.063	0.37
7540.00	89.910	310.320	6229.98	425.24	1671.26	1330.18	1569594.69	306892.22	39°19'57.334"N	81°01'17.982"W	2136.00	38.517	3.50
7635.00	89.940	313.690	6230.11	519.30	1734.83	1259.60	1569524.11	306955.78	39°19'57.950"N	81°01'18.894"W	2143.88	35.982	3.55
7730.00	89.030	318.030	6230.13	615.03	1803.70	1192.76	1569457.27	307024.66	39°19'58.619"N	81°01'19.760"W	2162.41	33.476	4.52
7825.00	89.180	317.460	6229.96	709.95	1874.02	1128.88	1569393.39	307094.97	39°19'59.304"N	81°01'20.588"W	2187.76	31.064	0.62
7920.00	89.910	318.890	6229.88	805.90	1945.55	1064.86	1569329.38	307166.50	39°20'00.000"N	81°01'21.418"W	2217.91	28.693	1.52
8015.00	89.400	322.620	6229.63	900.88	2019.11	1004.77	1569269.29	307240.06	39°20'00.717"N	81°01'22.198"W	2255.30	26.456	3.96
8110.00	89.310	328.680	6229.03	996.36	2098.33	950.63	1569215.15	307319.27	39°20'01.491"N	81°01'22.904"W	2303.63	24.372	6.31
8205.00	89.860	334.210	6228.05	1090.41	2182.62	904.76	1569169.29	307403.55	39°20'02.316"N	81°01'23.506"W	2362.71	22.515	5.79
8300.00	90.740	333.060	6226.72	1182.73	2267.73	862.58	1569127.11	307488.66	39°20'03.150"N	81°01'24.061"W	2426.24	20.825	1.22

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Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-HS AWB
Facility	PEN-20 Pad		

WELLPATH DATA (154 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]
8400.00	90.650	332.250	6225.56	1276.39	2352.99	818.48	1569083.01	307573.92	39°20'03.985"N	81°01'24.641"W	2491.28	19.180	0.85
8495.00	90.400	329.450	6224.69	1369.67	2435.95	772.22	1569036.75	307656.87	39°20'04.797"N	81°01'25.247"W	2555.42	17.589	2.96
8591.00	90.250	325.820	6224.15	1464.81	2517.02	720.84	1568985.37	307737.94	39°20'05.590"N	81°01'25.918"W	2618.21	15.981	3.78
8686.00	90.430	320.790	6223.58	1559.62	2593.17	664.09	1568928.62	307814.08	39°20'06.333"N	81°01'26.657"W	2676.85	14.364	5.30
8782.00	89.820	313.790	6223.37	1655.45	2663.66	599.01	1568863.55	307884.58	39°20'07.018"N	81°01'27.500"W	2730.19	12.674	7.32
8877.00	89.880	312.240	6223.62	1749.74	2728.47	529.55	1568794.10	307949.38	39°20'07.647"N	81°01'28.398"W	2779.38	10.984	1.63
8972.00	90.150	312.910	6223.60	1843.94	2792.74	459.60	1568724.14	308013.65	39°20'08.271"N	81°01'29.302"W	2830.31	9.345	0.76
9068.00	90.120	313.450	6223.37	1939.26	2858.43	389.59	1568654.14	308079.34	39°20'08.908"N	81°01'30.207"W	2884.86	7.761	0.56
9163.00	89.850	317.160	6223.39	2033.93	2925.95	322.79	1568587.34	308146.85	39°20'09.564"N	81°01'31.072"W	2943.71	6.295	3.92
9259.00	89.970	318.520	6223.54	2129.86	2997.12	258.35	1568522.91	308218.01	39°20'10.256"N	81°01'31.907"W	3008.23	4.927	1.42
9354.00	89.820	318.060	6223.72	2224.81	3068.03	195.14	1568459.71	308288.93	39°20'10.947"N	81°01'32.727"W	3074.23	3.639	0.51
9450.00	89.820	319.230	6224.02	2320.79	3140.09	131.72	1568396.28	308360.98	39°20'11.648"N	81°01'33.550"W	3142.85	2.402	1.22
9546.00	89.940	320.690	6224.22	2416.78	3213.59	69.96	1568334.53	308434.47	39°20'12.364"N	81°01'34.351"W	3214.35	1.247	1.53
9642.00	89.940	320.140	6224.32	2512.78	3287.57	8.79	1568273.36	308508.46	39°20'13.085"N	81°01'35.146"W	3287.59	0.153	0.57
9737.00	90.590	320.110	6223.88	2607.78	3360.48	-52.12	1568212.45	308581.36	39°20'13.795"N	81°01'35.937"W	3360.88	359.111	0.68
9833.00	89.880	318.330	6223.49	2703.76	3433.17	-114.82	1568149.76	308654.04	39°20'14.503"N	81°01'36.750"W	3435.09	358.085	2.00
9928.00	89.880	317.230	6223.69	2798.69	3503.52	-178.65	1568085.92	308724.39	39°20'15.187"N	81°01'37.578"W	3508.07	357.081	1.16
10023.00	90.250	316.950	6223.58	2893.57	3573.10	-243.34	1568021.25	308793.97	39°20'15.864"N	81°01'38.416"W	3581.38	356.104	0.49
10118.00	90.860	320.960	6222.66	2988.53	3644.73	-305.70	1567958.88	308865.60	39°20'16.562"N	81°01'39.225"W	3657.53	355.206	4.27
10214.00	90.220	321.550	6221.75	3084.50	3719.60	-365.78	1567898.81	308940.46	39°20'17.291"N	81°01'40.006"W	3737.54	354.384	0.91
10310.00	90.890	327.930	6220.82	3180.12	3797.94	-421.17	1567843.42	309018.80	39°20'18.056"N	81°01'40.728"W	3821.23	353.672	6.68
10405.00	90.920	327.130	6219.32	3274.28	3878.08	-472.16	1567792.43	309098.94	39°20'18.840"N	81°01'41.394"W	3906.72	353.058	0.84
10501.00	90.250	322.700	6218.34	3369.90	3956.62	-527.33	1567737.27	309177.47	39°20'19.606"N	81°01'42.113"W	3991.60	352.409	4.67
10597.00	90.430	318.100	6217.77	3465.87	4030.56	-588.50	1567676.10	309251.41	39°20'20.327"N	81°01'42.907"W	4073.30	351.693	4.80
10692.00	90.220	314.640	6217.23	3560.67	4099.31	-654.04	1567610.56	309320.16	39°20'20.995"N	81°01'43.756"W	4151.16	350.935	3.65
10788.00	89.750	311.540	6217.26	3655.96	4164.89	-724.14	1567540.47	309385.73	39°20'21.632"N	81°01'44.662"W	4227.37	350.137	3.27
10883.00	90.090	314.310	6217.39	3750.22	4229.58	-793.70	1567470.91	309450.42	39°20'22.259"N	81°01'45.562"W	4303.41	349.372	2.94
10979.00	90.150	317.140	6217.19	3845.95	4298.31	-860.71	1567403.91	309519.14	39°20'22.927"N	81°01'46.429"W	4383.64	348.677	2.95
11074.00	90.310	319.890	6216.81	3940.91	4369.47	-923.63	1567340.98	309590.30	39°20'23.620"N	81°01'47.245"W	4466.02	348.064	2.90
11169.00	90.520	322.610	6216.12	4035.87	4443.55	-983.09	1567281.53	309664.38	39°20'24.342"N	81°01'48.018"W	4551.00	347.525	2.87

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Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-HS AWB
Facility	PEN-20 Pad		

WELLPATH DATA (154 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]
11265.00	90.460	322.300	6215.30	4131.78	4519.66	-1041.58	1567223.04	309740.49	39°20'25.084"N	81°01'48.779"W	4638.13	347.022	0.33
11361.00	90.250	320.320	6214.70	4227.75	4594.59	-1101.59	1567163.03	309815.41	39°20'25.814"N	81°01'49.559"W	4724.80	346.517	2.07
11456.00	89.910	320.440	6214.57	4322.75	4667.77	-1162.17	1567102.45	309888.58	39°20'26.527"N	81°01'50.346"W	4810.27	346.019	0.38
11552.00	89.970	320.610	6214.67	4418.74	4741.87	-1223.20	1567041.43	309962.68	39°20'27.249"N	81°01'51.139"W	4897.10	345.535	0.19
11647.00	89.940	320.060	6214.75	4513.74	4815.00	-1283.84	1566980.79	310035.81	39°20'27.962"N	81°01'51.926"W	4983.22	345.070	0.58
11743.00	90.000	321.300	6214.80	4609.73	4889.26	-1344.67	1566919.97	310110.07	39°20'28.685"N	81°01'52.716"W	5070.80	344.622	1.29
11839.00	90.280	322.030	6214.56	4705.69	4964.57	-1404.21	1566860.42	310185.37	39°20'29.420"N	81°01'53.490"W	5159.33	344.207	0.81
11934.00	90.370	322.610	6214.02	4800.61	5039.75	-1462.28	1566802.36	310260.55	39°20'30.153"N	81°01'54.246"W	5247.60	343.820	0.62
12030.00	90.250	323.010	6213.50	4896.49	5116.23	-1520.31	1566744.33	310337.02	39°20'30.899"N	81°01'55.001"W	5337.33	343.450	0.44
12125.00	90.220	323.280	6213.12	4991.35	5192.24	-1577.29	1566687.36	310413.03	39°20'31.640"N	81°01'55.742"W	5426.53	343.102	0.29
12221.00	90.250	323.120	6212.72	5087.20	5269.11	-1634.79	1566629.85	310489.90	39°20'32.390"N	81°01'56.491"W	5516.89	342.763	0.17
12316.00	90.310	322.900	6212.26	5182.07	5344.99	-1691.95	1566572.70	310565.77	39°20'33.131"N	81°01'57.235"W	5606.39	342.435	0.24
12412.00	90.400	321.940	6211.66	5277.98	5421.07	-1750.50	1566514.16	310641.85	39°20'33.872"N	81°01'57.996"W	5696.68	342.104	1.00
12508.00	90.280	318.700	6211.09	5373.96	5494.94	-1811.78	1566452.87	310715.72	39°20'34.592"N	81°01'58.792"W	5785.92	341.752	3.38
12604.00	90.430	315.590	6210.50	5469.83	5565.31	-1877.07	1566387.59	310786.08	39°20'35.277"N	81°01'59.638"W	5873.33	341.362	3.24
12700.00	90.340	313.850	6209.85	5565.41	5632.85	-1945.28	1566319.38	310853.62	39°20'35.933"N	81°02'00.521"W	5959.29	340.948	1.81
12795.00	90.220	311.810	6209.39	5659.67	5697.43	-2014.94	1566249.72	310918.20	39°20'36.559"N	81°02'01.422"W	6043.24	340.523	2.15
12891.00	90.520	314.560	6208.77	5754.98	5763.12	-2084.93	1566179.74	310983.89	39°20'37.196"N	81°02'02.327"W	6128.66	340.111	2.88
12986.00	88.740	313.810	6209.38	5849.48	5829.33	-2153.05	1566111.62	311050.09	39°20'37.839"N	81°02'03.208"W	6214.23	339.728	2.03
13082.00	90.250	319.340	6210.23	5945.27	5899.02	-2219.01	1566045.66	311119.78	39°20'38.517"N	81°02'04.063"W	6302.58	339.385	5.97
13177.00	90.490	327.110	6209.61	6040.04	5975.05	-2275.84	1565988.84	311195.81	39°20'39.258"N	81°02'04.802"W	6393.80	339.149	8.18
13273.00	90.280	341.410	6208.97	6132.84	6061.30	-2317.43	1565947.26	311282.05	39°20'40.104"N	81°02'05.350"W	6489.21	339.077	14.90
13368.00	90.180	349.630	6208.58	6218.50	6153.21	-2341.16	1565923.52	311373.95	39°20'41.008"N	81°02'05.672"W	6583.54	339.169	8.65
13463.00	90.740	349.550	6207.82	6301.10	6246.64	-2358.32	1565906.36	311467.38	39°20'41.928"N	81°02'05.911"W	6676.99	339.317	0.60
13559.00	91.660	343.210	6205.81	6387.04	6339.87	-2380.91	1565883.77	311560.61	39°20'42.846"N	81°02'06.219"W	6772.20	339.417	6.67
13655.00	90.890	333.400	6203.67	6478.05	6428.94	-2416.35	1565848.34	311649.67	39°20'43.720"N	81°02'06.689"W	6868.04	339.401	10.25
13750.00	90.460	324.570	6202.55	6571.79	6510.27	-2465.25	1565799.44	311731.00	39°20'44.516"N	81°02'07.329"W	6961.40	339.260	9.31
13845.00	90.680	323.000	6201.60	6666.57	6586.91	-2521.37	1565743.32	311807.63	39°20'45.263"N	81°02'08.060"W	7052.99	339.054	1.67
13940.00	91.260	323.900	6199.99	6761.38	6663.21	-2577.94	1565686.76	311883.94	39°20'46.008"N	81°02'08.797"W	7144.52	338.849	1.13
14036.00	90.550	320.320	6198.48	6857.29	6738.95	-2636.88	1565627.82	311959.67	39°20'46.746"N	81°02'09.563"W	7236.48	338.630	3.80

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Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-HS AWB
Facility	PEN-20 Pad		

WELLPATH DATA (154 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]
14132.00	90.830	312.070	6197.32	6952.99	6808.17	-2703.27	1565561.43	312028.89	39°20'47.419"N	81°02'10.423"W	7325.22	338.344	8.60
14227.00	91.010	310.100	6195.79	7046.82	6870.59	-2774.86	1565489.84	312091.30	39°20'48.024"N	81°02'11.348"W	7409.78	338.007	2.08
14323.00	90.430	307.220	6194.59	7140.93	6930.55	-2849.81	1565414.90	312151.26	39°20'48.604"N	81°02'12.315"W	7493.59	337.648	3.06
14382.00	90.430	307.220	6194.14	7198.47	6966.24	-2896.79	1565367.92	312186.95	39°20'48.949"N	81°02'12.921"W	7544.53	337.421	0.00

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Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-HS AWB
Facility	PEN-20 Pad		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
PEN-20E-HS LP Plat		6168.00	1650.00	1382.76	1569647.26	306870.96	39°19'57.132"N	81°01'17.309"W	point
PEN-20E-HS BHL Rev-2		6233.00	6877.48	-3003.63	1565261.08	312098.19	39°20'48.053"N	81°02'14.261"W	point
PEN-20E-HS LP Rev-2		6233.00	1361.97	1624.45	1569888.94	306582.94	39°19'54.326"N	81°01'14.171"W	point
PEN-20 ALT Vertices		6948.00	-16.86	-15.85	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 Cokely Tract 1		6948.00	-16.86	-15.85	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 Cokely Tract 2		6948.00	-16.86	-15.85	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 LL		6948.00	-16.86	-15.85	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 Parcel 3.12-1.2		6948.00	-16.86	-15.85	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: PEN-20E-HS AWB Ref Wellpath: PEN-20E-HS AWP Proj: 14382'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	51.00	Generic gyro - northseeking (Standard)	01_MS Gyro <17-1/2"> (100'-515')	PEN-20E-HS AWB
515.00	545.00	ISCWSA MWD, Rev. 2 (Standard)	02_APS EM <12-1/4"> (515')(689'-5459') Proj:5525'	PEN-20E-HS AWB
5459.00	14323.00	NaviTrak (AT Curve Short Spaced)	03_BHI AT Curve <8-3/4"> (5459')(5544'-14323')	PEN-20E-HS AWB
14323.00	14323.00	Blind Drilling (std)	Projection to bit	PEN-20E-HS AWB

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Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-HS AWB
Facility	PEN-20 Pad		

COMMENTS
<p>Wellpath general comments API: 47-085-10122-0000 BHI Job #: 6697381 Rig: Nomac 78 Duration: 12.01.2014 - 12.14.2014 MS Gyro <17-1/2"> (100'-515') APS EM <12-1/4"> (515')(689'-5459') BHI AT Curve <8-3/4"> (5459')(5544'-14323') Projected MD at TD: 14382'</p>

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 Environmental Protection

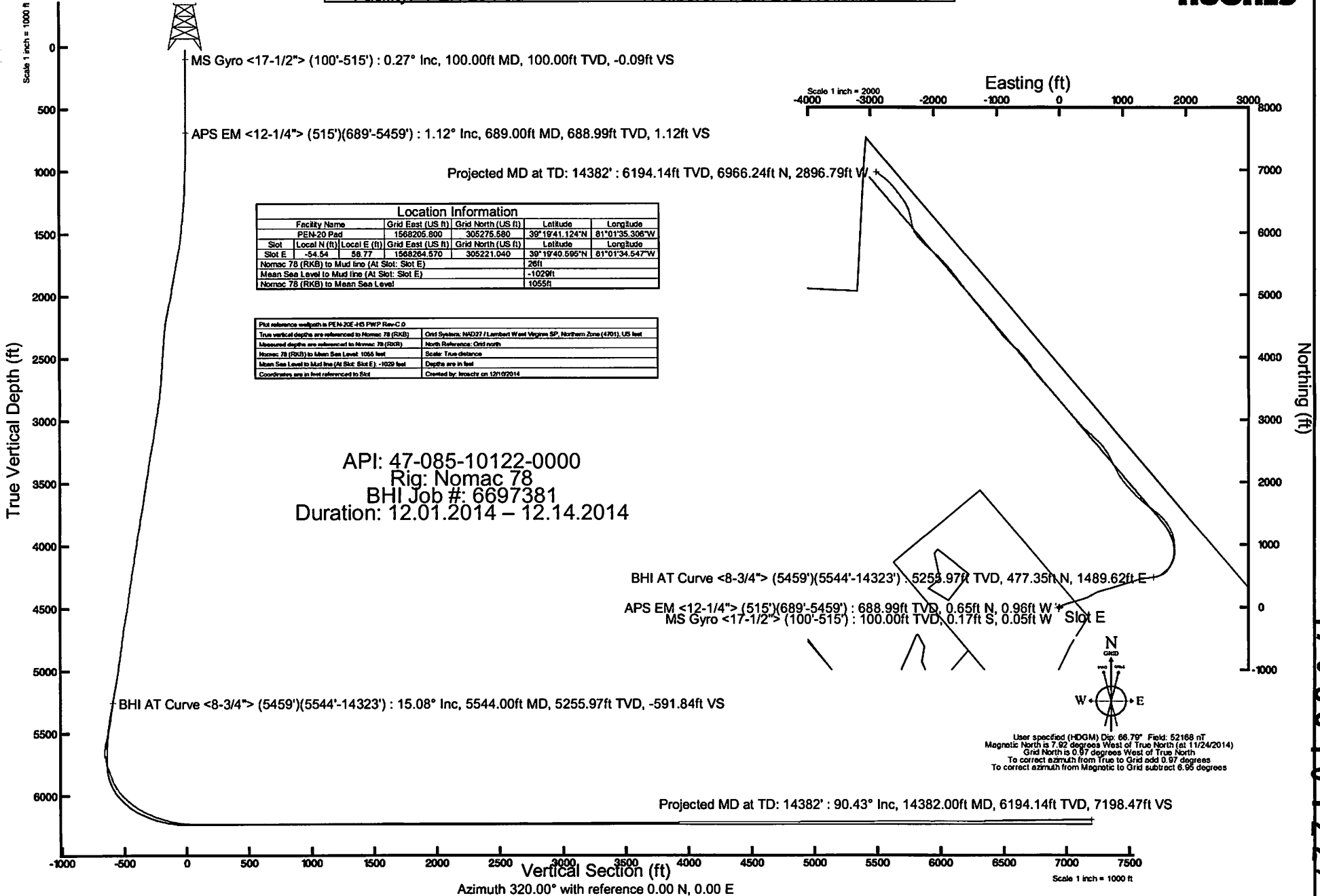
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NOBLE ENERGY

Location: Ritchie County, WV
 Field: Ritchie
 Facility: PEN-20 Pad

Slot: Slot E
 Well: PEN-20E-HS
 Wellbore: PEN-20E-HS PWB



Location Information					
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
PEN-20 Pad	1568205.800	305275.580	39°19'41.124"N	81°01'35.308"W	
Slot Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot E	-54.54	1568264.570	305221.040	39°19'40.595"N	81°01'34.547"W
Nomac 78 (RKB) to Mud line (At Slot: Slot E)			28ft		
Mean Sea Level to Mud line (At Slot: Slot E)			-1029ft		
Nomac 78 (RKB) to Mean Sea Level			1055ft		

Plot reference wellpath is PEN-20E-HS PWP Rev-C-D	
True vertical depths are referenced to Nomac 78 (RKB)	Grid System: NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet
Measured depths are referenced to Nomac 78 (RKB)	North Reference: Grid north
Nomac 78 (RKB) to Mean Sea Level: 1055 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot E) : -1029 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: iroctra on 12/10/2014

API: 47-085-10122-0000
 Rig: Nomac 78
 BHI Job #: 6697381
 Duration: 12.01.2014 – 12.14.2014

BHI AT Curve <8-3/4"> (5459')(5544°-14323') : 5255.97ft TVD, 477.35ft N, 1489.62ft E

APS EM <12-1/4"> (515')(689°-5459') : 688.99ft TVD, 0.65ft N, 0.96ft W

MS Gyro <17-1/2"> (100°-515') : 100.00ft TVD, 0.17ft S, 0.05ft W

Slot E

Compass rose showing North (N), South (S), East (E), and West (W).

User specified (HDGM) Dip: 66.79° Field: 52168 nT
 Magnetic North is 7.92 degrees West of True North (at 11/24/2014)
 Grid North is 0.97 degrees West of True North
 To correct azimuth from True to Grid add 0.97 degrees
 To correct azimuth from Magnetic to Grid subtract 6.95 degrees

Projected MD at TD: 14382' : 90.43° Inc, 14382.00ft MD, 6194.14ft TVD, 7198.47ft VS

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Pen 20 Wells

Formations	Top	Base
Shale and Sandstone	0	1222
Sandstone	1222	1346
Shale and Sandstone	1336	1506
Sandstone	1506	1548
Shale and Sandstone	1548	1650
Maxton Sand	1650	1733
Shale and Sandstone	1733	1856
Big Lime	1856	1911
Big Injun	1911	2046
Price	2046	2318
Weir	2318	2357
Shale	2357	2637
Gordon	2637	2654
Shale and Sandstone	2654	2834
5th Sand	2834	2846
Shale	2846	2989
Sandstone	2989	3003
Shale	3003	3411
Warren	3411	3473
Shale	3473	3807
Sandstone	3807	3844
Shale and Sandstone	3844	4838
Benson	4838	4900
Shale	4900	5060
Alexander	5060	5128
Shale	5128	5638
Rheinstreet	5638	5964
Cashaqua	5964	6056
Middlesex	6056	6085
West River	6085	6129
Burkett	6129	6172
Tully Limestone	6172	6173
Hamilton	6173	6174
Marcellus	6174	6233
Onondaga	6233	

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CNX GAS COMPANY LLC

Proposed Revegetation Treatment: Acres Disturbed 0 Prevegetation pH 6.0

Lime 2-3 Tons/acre or to correct to pH _____

Fertilizer type 10-10-20 or equal

Fertilizer amount 500 lbs/acre

Mulch hay or straw at 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	40	Tall Fescue	40
Ladino Clover	5	Ladino Clover	5

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: Michael Duff

Comments: Noble Energy's Original WW-9 attached. Will follow procedures of what was previously permitted.

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Title: Oil & Gas Inspector Date: 1/19/17 FEB 01 2017

Field Reviewed? Yes No

WV Department of Environmental Protection

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WW-9
(9/13)

API Number 47 - 085 - _____
Operator's Well No. PEN 20 685

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Noble Energy, Inc. OP Code 494501907

Watershed (HUC 10) North Fork Hughs River / Bonds Creek Quadrangle Ellenboro

Elevation 1031 County 085-Ritchie District Clay

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: closed loop-no utilization of a pit

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____ at next anticipated well _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Asphalt based mud through intermediate string then SOBH

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

Additives to be used in drilling medium? Please see attached sheet

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfills

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

-Landfill or offsite name/permit number? please see attached sheet

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 penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature _____
Company Official (Typed Name) Dee Swiger
Company Official Title Regulatory Analyst III

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03/24/2017

Subscribed and sworn before me this _____ day of _____, 20 _____

Notary Public

Safety Plan for PEN20 Well Pad

Wells PEN20BHS, PEN20CHS, PEN20DHS, PEN20EHS, PEN20FHS, PEN20GHS,
PEN20HHS

CNX Gas Company LLC



FEB 01 2017

WV Department of
Environmental Protection 03/24/2017 1

4708510122F

Form WW-9

Operator's Well No. PEN 20 61S

Noble Energy, Inc.

Proposed Revegetation Treatment: Acres Disturbed 18.9 Prevegetation pH 6.0

Lime 2-3 Tons/acre or to correct to pH 10-10-20 or equal

Fertilizer type _____

Fertilizer amount 500 lbs/acre

Mulch Hay or Straw at 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	40	Tall Fescue	40
Ladino Clover	5	Ladino Clover	5

**alternative seed mixtures are shown on the Site Design.

Attach: Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: David Wilson

Comments: spread & mulch all cut area maintain all O&G during operation

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WV Department of Environmental Protection
03/24/2017

Title: Oil and Gas Inspector

Date: 2-20-17

Field Reviewed? Yes No

Approval Sheet- PEN20 Well Pad

The Office of Oil and Gas and the Oil and Gas Conservation Commission have set forth minimum requirements for necessary equipment and procedures that must be addressed in a Safety Plan ("Plan") and shall be submitted and approved prior to drilling a deep well. A deep well shall be any well which meets the definition as provided for in Chapter 22C, Article 9 of the West Virginia Code.

A site specific Safety Plan must be submitted with each deep well application or no later than one week prior to spudding. Approved Plans shall be maintained and available at the drilling rig at all times.

The Office of Oil and Gas must approve all changes and modifications to previously approved plans.

This plan has met the requirements of the Policy Statement Deep Well Drilling Procedures and Site Safety Plan Requirements as set forth by:

West Virginia Division of Environmental Protection, Office of Oil and Gas

And

West Virginia Oil and Gas Conservation Commission.

Approved this day ~~17th~~^{19th} of month January, 2017 by

Michael Daff

Date: 1/19/17

Date: _____

BHL is located on topo map 10,196' feet south of Latitude: 39° 22' 30"
 SHL is located on topo map 1,935' feet south of Latitude: 39° 20' 00"

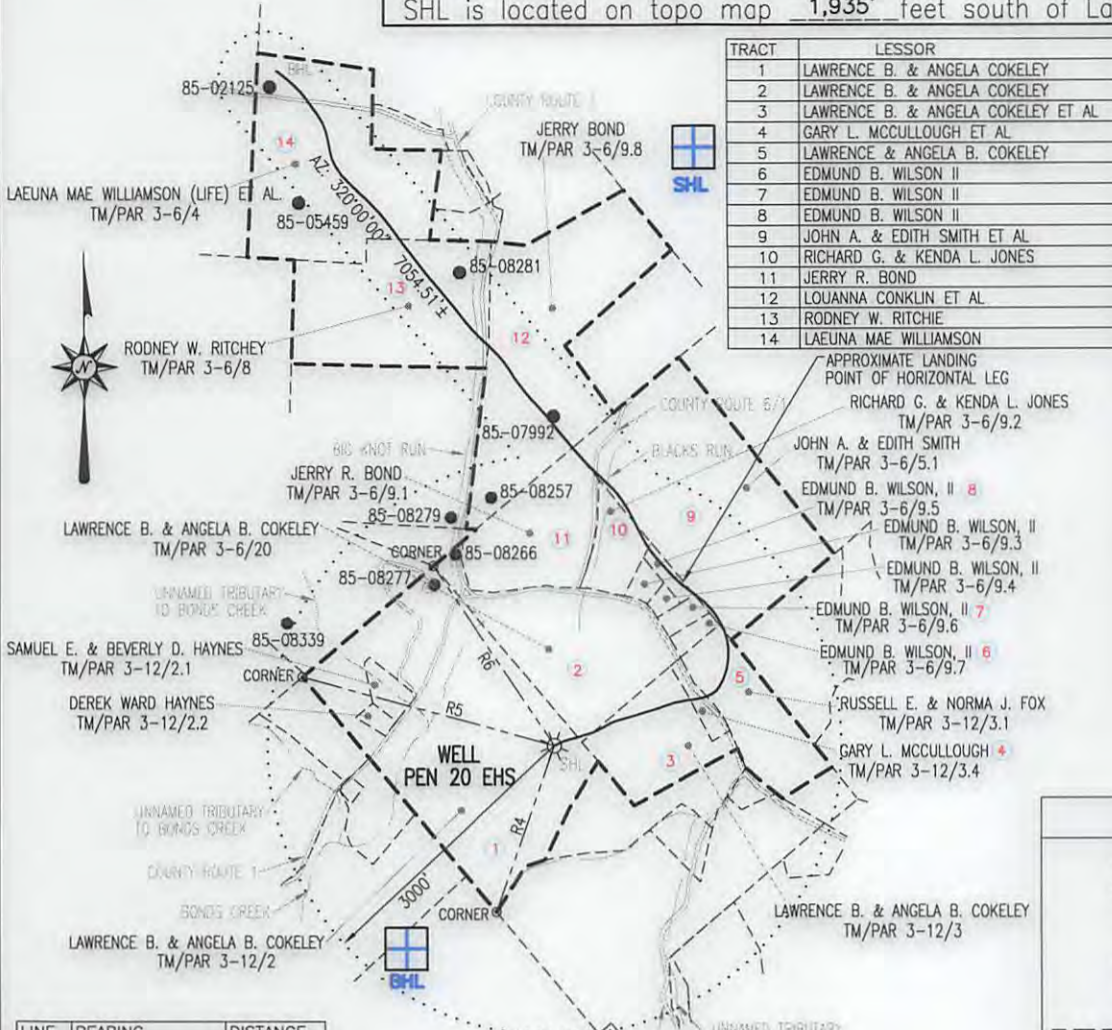
BHL is located on topo map 10,394' feet west of Longitude: 81° 00' 00"
 SHL is located on topo map 7,382' feet west of Longitude: 81° 00' 00"

TRACT	LESSOR
1	LAWRENCE B. & ANGELA COKELEY
2	LAWRENCE B. & ANGELA COKELEY
3	LAWRENCE B. & ANGELA COKELEY ET AL
4	GARY L. MCCULLOUGH ET AL
5	LAWRENCE & ANGELA B. COKELEY
6	EDMUND B. WILSON II
7	EDMUND B. WILSON II
8	EDMUND B. WILSON II
9	JOHN A. & EDITH SMITH ET AL
10	RICHARD G. & KENDA L. JONES
11	JERRY R. BOND
12	LOUANNA CONKLIN ET AL
13	RODNEY W. RITCHEY
14	LAELUNA MAE WILLIAMSON

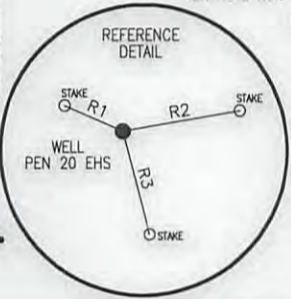
SURFACE HOLE LOCATION (SHL)
UTM 17-NAD83
 N:4353178.80
 E:497750.84
 NAD27, WV NORTH
 N:305221.035
 E:1568264.571
 LAT/LON DATUM-NAD83
 LAT:39.3280213
 LON:-81.0260952

APPROX. LANDING POINT
UTM 17-NAD83
 N:4353694.71
 E:498147.55
 NAD27, WV NORTH
 N:306892.22
 E:1569594.69
 LAT/LON DATUM-NAD83
 LAT:39.332672
 LON:-81.021494

BOTTOM HOLE LOCATION (BHL)
UTM 17-NAD83
 N:4355286.23
 E:496832.94
 NAD27, WV NORTH
 N:312186.95
 E:1565367.92
 LAT/LON DATUM-NAD83
 LAT:39.347008
 LON:-81.036756



LINE	BEARING	DISTANCE
R1	N 66°24'46" W	132.22'
R2	N 80°14'27" E	248.35'
R3	S 14°44'52" E	221.48'
R4	S 19°22'07" W	1814.60'
R5	N 74°52'28" W	2728.33'
R6	N 34°12'51" W	2252.15'



- NOTES:**
- There are no water wells or developed springs within 250' of proposed well.
 - There are no existing buildings within 625' of proposed well.
 - Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
 - There are no native trout streams within 300' of proposed well.
 - Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
 - It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.

LEGEND

- ⊕ - TOPO MAP POINT
- ☼ - WELL
- - ALL ARE POINTS UNLESS OTHERWISE NOTED.
- ⊙ - WATER SOURCE
- Ⓛ - LEASE NUMBER BASED ON ATTACHED WW-6A1
- - MINERAL TRACT BOUNDARY
- - - - - PARCEL LINES
- - - - - WELL REFERENCE
- - - - - PROPOSED HORIZONTAL WELL
- — — — — ROAD
- — — — — STREAM CENTER LINE
- - EXISTING WELLS
- ⊙ - PLUGGED WELLS

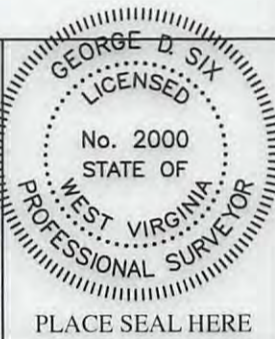
WELLS WITHIN 3000'

Blue Mountain Inc.
 11023 MASON DIXON HIGHWAY
 BURTON, WV 26562
 PHONE: (304) 662-6486

FILE #: PEN 20 EHS
 DRAWING #: PEN 20 EHS
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

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: [Signature]
 R.P.E.: _____ L.L.S.: P.S. No. 2000



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WYDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



DATE: MARCH 8, 2017
 OPERATOR'S WELL #: PEN 20 EHS
 API WELL #: 47 85 10122 F
 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: NORTH FORK HUGHES RIVER ELEVATION: 1081'±

COUNTY/DISTRICT: RITCHEY / CLAY QUADRANGLE: ELLENBORO, WV 7.5'

SURFACE OWNER: LAWRENCE & ANGELA COKELEY ACREAGE: 126.17±

OIL & GAS ROYALTY OWNER: LAWRENCE B. & ANGELA COKELEY ACREAGE: 575.272±

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,194'± TMD: 14,382'±

WELL OPERATOR CNX GAS COMPANY LLC DESIGNATED AGENT CHRIS TURNER
 Address 1000 CONSOL ENERGY DRIVE Address 1 DOMINION DR.
 City CANONSBURG State PA Zip Code 15317 City JANE LEW State WV Zip Code 26378

03/24/2017

WW-6A1
(5/13)

Operator's Well No. PEN20EHS

**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:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
See Attached				

**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.

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MAR 09 2017

Well Operator: CNX GAS COMPANY LLC
 By: Matt Hanley 
 Its: Manager - Permitting

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Attachment - Form WV-GA-1 for PENS20EHS

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
1	3-12-2	281715000	S T & Pearl Weekly F P Weekly J H Wagner J H Wagner J D Israel and Mary E Israel, h/w Harry E Snyder and Lulu Snyder, h/w Nina Virginia Snyder, widow of Roy E Snyder James R Smith and Virginia Smith, h/w Kenneth E Mosser and Lorena D Mosser, h/w Noble Energy, Inc.	J H Wagner J D Israel W E Snyder Kenneth E Mosser and Lorena D Mosser, h/w Noble Energy, Inc. CNX Gas Company, LLC	Not less than 1/8 Assignment Assignment Assignment Assignment Assignment	56/385 91/103 91/104 189/121 272/128 304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
2	3-6-20	Unknown	C C & B H Weekley F P Weekly Henaghan & Hanlon Inc. E L Hanlon Hanlon Oil Company Charles E Reed Chief Drilling Inc. Charles E Reed Chief Drilling Inc. Hi-Lo Investment Company Chief Drilling Inc. Wilbur Williams Mackenzie Products Company James M Burger Edwin Morrill Chester Hillinski Ralph J Hunter Big Knot Oil Company Inc. The Glass Development Co. Inc. Noble Energy, Inc.	Henaghan & Hanlon Inc. E L Hanlon Hanlon Oil Company Charles E Reed Chief Drilling Inc. Wilbur Williams Hi-Lo Investment Company James Burger Edwin Morrill Charles E Reed Chief Drilling Inc. Chester Hillinski The Mackenzie Products Company Ralph J Hunter Big Knot Oil Company Inc. The Glass Development Co. Inc. Noble Energy Inc. CNX Gas Company, LLC	Not less than 1/8 Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment	57/129 76/264 76/488 109/584 109/602 109/606 112/505 158/115 112/623 112/608 112/621 256/781 271/662 304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
3	3-12-3	258040000	Wade Goodwin, et ux The Coastal Corporation Pardee Gas Company Pardee Gas Company Pardee Exploration Company Pardee Minerals LLC Antero Resources Appalachian Corporation Noble Energy, Inc.	The Coastal Corporation Pardee Gas Company Pardee Exploration Company Pardee Exploration Company Pardee Minerals LLC Antero Resources Appalachian Corporation CNX Gas Company LLC Noble Energy, Inc CNX Gas Company LLC	Not less than 1/8 Merger Assignment Assignment Merger Assignment Assignment Assignment	205/714 CR 4/801 208/527 217/610 CR 6/726 256/314 273/115 304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
4	3-12-3.4	258287000	Gary L. McCullough, et ux Noble Energy, Inc.	Noble Energy, Inc. CNX Gas Company LLC	Not less than 1/8 Assignment	270/918 304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
5	3-12-3.1	258041000	Wade Goodwin, et ux The Coastal Corporation Pardee Gas Company Pardee Gas Company Pardee Exploration Company Pardee Minerals LLC Antero Resources Appalachian Corporation Noble Energy, Inc.	The Coastal Corporation Pardee Gas Company Pardee Exploration Company Pardee Exploration Company Pardee Minerals LLC Antero Resources Appalachian Corporation CNX Gas Company LLC Noble Energy, Inc CNX Gas Company LLC	Not less than 1/8 Merger Assignment Assignment Merger Assignment Assignment Assignment	205/714 CR 4/801 208/527 217/610 CR 6/776 256/314 273/115 304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
6	3-6-9.7	Unknown	C C & B H Weekley F P Weekly Henaghan & Hanlon Inc. E L Hanlon Hanlon Oil Company Charles E Reed Chief Drilling Inc. Charles E Reed Chief Drilling Inc. Hi-Lo Investment Company	Henaghan & Hanlon Inc. E L Hanlon Hanlon Oil Company Charles E Reed Chief Drilling Inc. Wilbur Williams Hi-Lo Investment Company James Burger Edwin Morrill Charles E Reed Chief Drilling Inc. Chester Hillinski The Mackenzie Products Company	Not less than 1/8 Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment	57/129 76/264 76/488 109/584 109/602 109/606 112/505 158/115 112/623

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Chief Drilling Inc.
Wilbur Williams
Mackenzie Products Company
James M Burger
Edwin Morrill
Chester Hilinski
Ralph J Hunter
Big Knot Oil Company Inc.
The Glass Development Co. Inc.
Noble Energy, Inc.

Ralph J Hunter

Assignment

112/608

Big Knot Oil Company Inc.
The Glass Development Co. Inc.
Noble Energy Inc.
CNX Gas Company, LLC

Assignment
Assignment
Assignment
Assignment

112/621
256/781
271/662
304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
7	3-6-9.6	Unknown	CC & B H Weekley F P Weekly Henaghan & Hanlon Inc. E L Hanlon Hanlon Oil Company	Henaghan & Hanlon Inc. E L Hanlon Hanlon Oil Company Charles E Reed Chief Drilling Inc. Wilbur Williams Hi-Lo Investment Company James Burger Edwin Morrill	Not less than 1/8 Assignment Assignment Assignment Assignment	57/129 76/264 76/488 109/584 109/602
			Charles E Reed	Chief Drilling Inc. Charles E Reed Chief Drilling Inc. Hi-Lo Investment Company Chief Drilling Inc. Wilbur Williams Mackenzie Products Company James M Burger Edwin Morrill Chester Hilinski Ralph J Hunter	Assignment Assignment Assignment Assignment	109/606 112/505 158/115 112/623
			Chief Drilling Inc. Charles E Reed Chief Drilling Inc. Hi-Lo Investment Company Chief Drilling Inc. Wilbur Williams Mackenzie Products Company James M Burger Edwin Morrill Chester Hilinski Ralph J Hunter Big Knot Oil Company Inc. The Glass Development Co. Inc. Noble Energy, Inc.	Ralph J Hunter Big Knot Oil Company Inc. The Glass Development Co. Inc. Noble Energy Inc. CNX Gas Company, LLC	Assignment Assignment Assignment Assignment	112/608 112/621 256/781 271/662 304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
8	3-6-9.5	Unknown	CC & B H Weekley F P Weekly Henaghan & Hanlon Inc. E L Hanlon Hanlon Oil Company	Henaghan & Hanlon Inc. E L Hanlon Hanlon Oil Company Charles E Reed Chief Drilling Inc. Wilbur Williams Hi-Lo Investment Company James Burger Edwin Morrill	Not less than 1/8 Assignment Assignment Assignment Assignment	57/129 76/264 76/488 109/584 109/602
			Charles E Reed	Chief Drilling Inc. Charles E Reed Chief Drilling Inc. Hi-Lo Investment Company Chief Drilling Inc. Wilbur Williams Mackenzie Products Company James M Burger Edwin Morrill Chester Hilinski Ralph J Hunter	Assignment Assignment Assignment Assignment	109/606 112/505 158/115 112/623
			Chief Drilling Inc. Charles E Reed Chief Drilling Inc. Hi-Lo Investment Company Chief Drilling Inc. Wilbur Williams Mackenzie Products Company James M Burger Edwin Morrill Chester Hilinski Ralph J Hunter Big Knot Oil Company Inc. The Glass Development Co. Inc. Noble Energy, Inc.	Ralph J Hunter Big Knot Oil Company Inc. The Glass Development Co. Inc. Noble Energy Inc. CNX Gas Company, LLC	Assignment Assignment Assignment Assignment	112/608 112/621 256/781 271/662 304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
9	3-6-5.2	258033000	John A Smith, et ux Noble Energy, Inc.	Noble Energy, Inc. CNX Gas Company, LLC	Not less than 1/8 Assignment	263/492 304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
10	3-6-9.2	Unknown	CC & B H Weekley F P Weekly Henaghan & Hanlon Inc. E L Hanlon Hanlon Oil Company	Henaghan & Hanlon Inc. E L Hanlon Hanlon Oil Company Charles E Reed Chief Drilling Inc. Wilbur Williams Hi-Lo Investment Company James Burger Edwin Morrill	Not less than 1/8 Assignment Assignment Assignment Assignment	57/129 76/264 76/488 109/584 109/602
			Charles E Reed	Chief Drilling Inc. Charles E Reed Chief Drilling Inc. Hi-Lo Investment Company Chief Drilling Inc. Wilbur Williams Mackenzie Products Company James M Burger Edwin Morrill Chester Hilinski Ralph J Hunter	Assignment Assignment Assignment Assignment	109/606 112/505 158/115 112/623
			Chief Drilling Inc. Charles E Reed Chief Drilling Inc. Hi-Lo Investment Company Chief Drilling Inc. Wilbur Williams Mackenzie Products Company James M Burger Edwin Morrill Chester Hilinski Ralph J Hunter Big Knot Oil Company Inc.	Ralph J Hunter Big Knot Oil Company Inc. The Glass Development Co. Inc.	Assignment Assignment	112/608 112/621 256/781

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Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
			The Glass Development Co. Inc. Noble Energy, Inc.	Noble Energy Inc. CNX Gas Company, LLC	Assignment Assignment	271/662 304/344
11	3-6-9.1	Unknown	C C & B H Weekley F P Weekley Henaghan & Hanlon Inc. E. I. Hanlon Hanlon Oil Company Charles E Reed Chief Drilling Inc. Charles E Reed Chief Drilling Inc. Hi-Lo Investment Company Chief Drilling Inc. Wilbur Williams Mackenzie Products Company James M Burger Edwin Morrill Chester Hilinski Ralph J Hunter Big Knot Oil Company Inc. The Glass Development Co. Inc. Noble Energy, Inc.	Henaghan & Hanlon Inc. E. I. Hanlon Hanlon Oil Company Charles E Reed Chief Drilling Inc. Wilbur Williams Hi-Lo Investment Company James Burger Edwin Morrill Charles E Reed Chief Drilling Inc. Chester Hilinski The Mackenzie Products Company Ralph J Hunter Big Knot Oil Company Inc. The Glass Development Co., Inc. Noble Energy Inc. CNX Gas Company, LLC	Not less than 1/8 Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment	57/129 76/264 76/488 109/584 109/602 109/606 112/505 158/115 112/623 112/608 112/621 256/781 271/662 304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
12	3-6-9.8	256141000	William Simonton and M. Victoria Simonton, h/w L. J. Murphy E. W. Mallory, Executor of the Estate of J. W. Mallory L. B. Ekas and Bertha Ekas, h/w H. W. Masters, attorney in fact for J. W. Stewart and Olive Stewart, husband and wife James Henaghan and E. I. Hanlon Henaghan & Hanlon, Inc. E. I. Hanlon Hanlon Oil Company Charles E Reed Chief Drilling, Inc. Charles E. Reed Chief Drilling, Inc. Chief Drilling, Inc. Hi-Lo Investment Company Hi-Lo Investment Company Chief Drilling, Inc. Wilbur Williams Mackenzie Products Company James M. Burger Edwin Morrill Chester Hilinski Ralph J. Hunter Big Knot Oil Company, Inc. The Glass Development Co., Inc. Noble Energy, Inc.	L. J. Murphy Mallory Brothers & Stewart L. B. Ekas James Henaghan and E. I. Hanlon James Henaghan and E. I. Hanlon Henaghan & Hanlon, Inc. E. I. Hanlon Hanlon Oil Company Charles E. Reed Chief Drilling, Inc. Wilbur Williams Hi-Lo Investment Company James M. Burger Edwin Morrill Charles E. Reed Chief Drilling, Inc. Chester Hilinski Chester Hilinski The Mackenzie Products Company The Mackenzie Products Company Ralph J. Hunter Big Knot Oil Company, Inc. The Glass Development Co., Inc. Noble Energy, Inc. CNX Gas Company LLC	Not less than 1/8 Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment	12/273 12/274 49/253 49/543 49/561 50/266 76/264 76/488 109/584 109/602 109/606 112/105 156/115 112/108 112/623 112/618 112/608 112/621 256/781 271/662 304/344

Tract ID	Tax Map & Parcel	Title Opinion QLS #	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
13	3-6-8	269219000	F. P. Weekley, et al L. J. Murphy George W. Barnes F. E. Mallory and Jennie R. Mallory, husband and wife E. W. Mallory, Executor of the Estate of J. F. Mallory L. B. Ekas and Bertha Ekas, h/w H. W. Masters, attorney in fact for J. W. Stewart and Olive Stewart, husband and wife James Henaghan and E. I. Hanlon Henaghan & Hanlon, Inc. E. I. Hanlon Hanlon Oil Company Charles E Reed Chief Drilling, Inc. Charles E. Reed Chief Drilling, Inc. Chief Drilling, Inc. Hi-Lo Investment Company Hi-Lo Investment Company Chief Drilling, Inc. Wilbur Williams Mackenzie Products Company James M. Burger Edwin Morrill Chester Hilinski	L. J. Murphy Mallory Brothers & Stewart Mallory Bros. & Stewart J. F. Mallory and J. W. Stewart L. B. Ekas James Henaghan and E. I. Hanlon James Henaghan and E. I. Hanlon Henaghan & Hanlon, Inc. E. I. Hanlon Hanlon Oil Company Charles E. Reed Chief Drilling, Inc. Wilbur Williams Hi-Lo Investment Company James M. Burger Edwin Morrill Charles E. Reed Chief Drilling, Inc. Chester Hilinski Chester Hilinski The Mackenzie Products Company The Mackenzie Products Company Ralph J. Hunter	Not less than 1/8 Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment	12/275 12/277 49/460 49/461 49/253 49/543 49/561 50/266 76/264 76/488 109/584 109/602 109/606 112/105 158/115 112/108 112/623 112/618 112/608

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CNX Gas Company LLC
Conventional Operator Notice and Monitoring Plan – Hydraulic Fracturing Activity
PEN20HS Well Pad
Ritchie County, West Virginia



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Purpose:

The purpose of this hydraulic fracturing monitoring plan is to identify and notify any potentially affected conventional well operators near planned CNX hydraulic fracturing activity.

CNX has evaluated the existing geologic conditions in the area, and the potential for communication between the geologic zone being stimulated by CNX and the zone being produced by the conventional wells exists.

This plan is being implemented as an additional safety measure to be utilized in conjunction with the existing best management practices and the site safety/emergency response plans included for the site.

1. Communications with Conventional Well Operators

CNX has identified all known conventional wells and well operators within five hundred feet (500') of this pad and lateral sections pursuant to WV Code 35 CSR 8(5.11). A list and map of these wells and operators is provided as **Attachment A**.

Upon approval of this plan, CNX will notify operators identified in the referenced attachment, via letter, of the anticipated fracturing schedule associated with this pad. A copy of this letter is included as **Attachment B**, and includes the recommended steps a conventional operator can take to ensure safe and compliant operations.

2. Reporting

CNX will provide information relating to the hydraulic fracturing schedule, any communication with conventional operators, and ongoing monitoring of the work upon request of the OOG or immediately in the event of any discovered abnormalities that create additional risk or concern.

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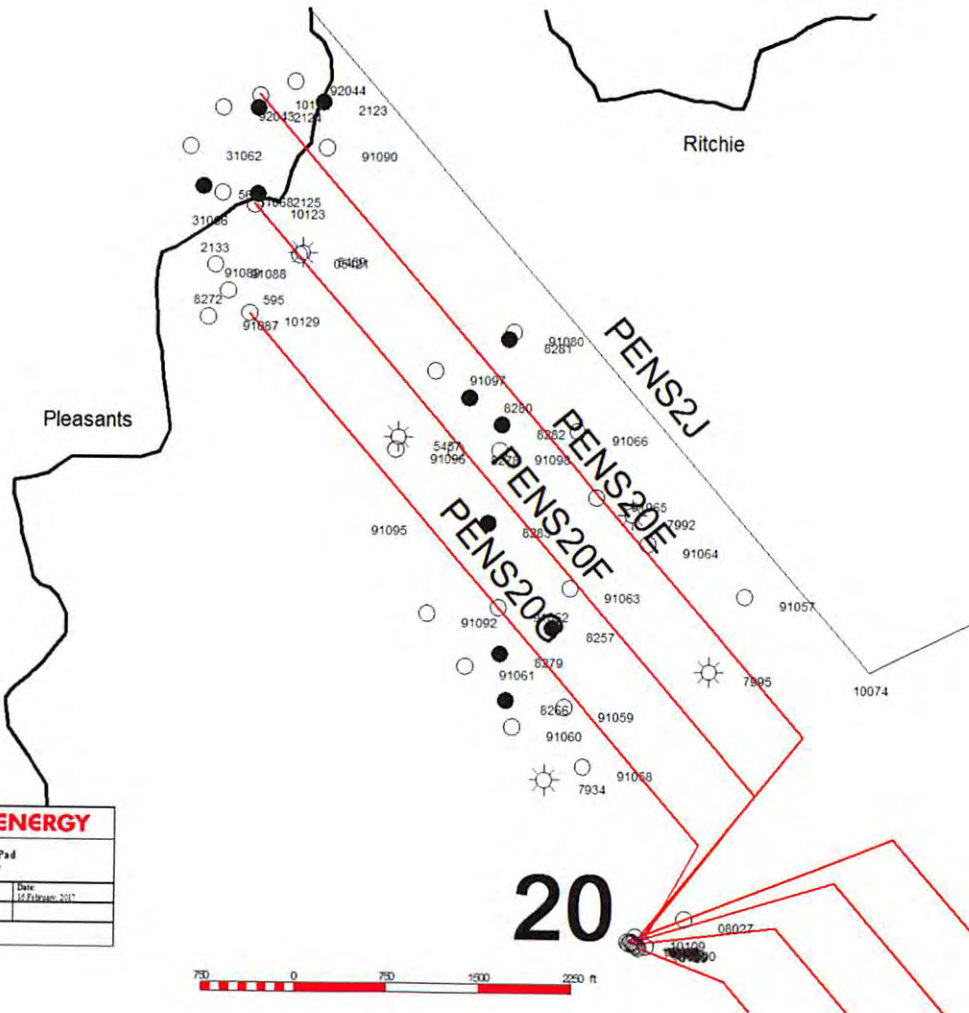
**Attachment A:
Map and List of Conventional Operators in the PEN20 Project Area**

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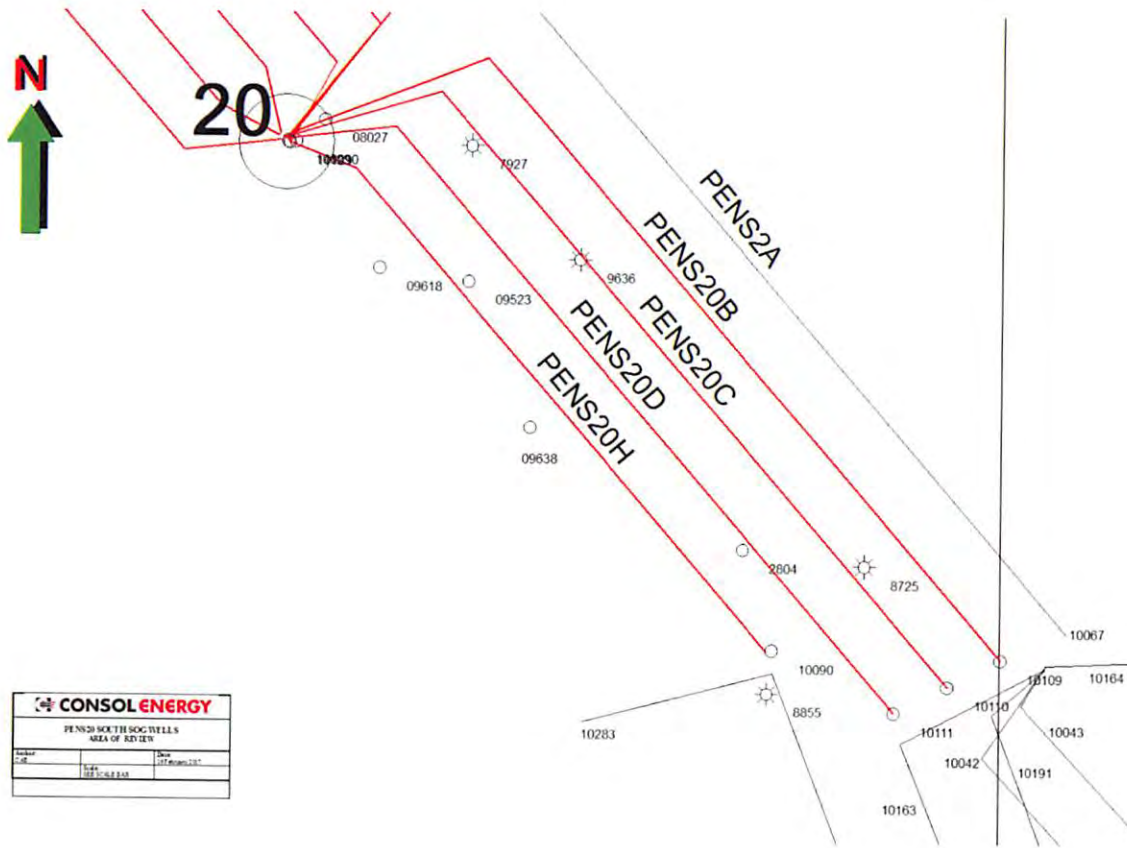
PENS20 North Pad Area of Review	
Author	Date
Scale	Geographic

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API	OPERATOR	WELL NAME	WELL #	TD	PRODUCING FORMATION AT TD	PERMIT DATE	STATUS COMMENTS	DISTANCE FROM LATERAL (2D MAP VIEW)
4708510163	ANTERO RESOURCES CORP	MUSGRAVE UNIT 1H	1H	6391	MARCELLUS	11/25/2014	PRODUCING HORIZONTAL MARCELLUS LATERAL	325
4708509636	HALL DRILLING	FOX RUSSELL E. SR	A. HALL 2	6040	MARCELLUS	10/10/2007	PLUGGED 11-11-14	32
4708508725	KEY OIL	BAKER LEROY	1	5332	ALEXANDER	12/12/2000	GAS	150
4708507927	PARDEE EXPLORATION COMPANY	GOODWIN WADE	1	5225	ALEXANDER	3/21/1990	GAS	118
4708507740	MAY GAS	NICHOLS MICHAEL D.	NICHOLS 1	5201	ALEXANDER	2/22/1988	GAS	320
4708508855	KEY OIL	BAKER LEROY	BAKER 2	5177	BENSON	11/13/2001	GAS	440
4708507924	CONSOL	Bachelor #1, F. L.	3944	5172	BENSON	1/12/1990	GAS	160
4708507982	CONSOL	Baker #2, O. D.	4530	5123	BENSON	7/2/1990	GAS	140
4708509521	KEY OIL	MIDDLETON HERALD	MIDDLETON 2	5005	BENSON	2/8/2007	GAS	20
4708509639	HALL DRILLING	HALL BRYAN	B. HALL 1	4962	BENSON	10/12/2007	GAS	48
4708509618	KEY OIL	MIDDLETON HAROLD B.	MIDDLETON 3R	4927	BENSON	7/23/2007	GAS	130
4708509381	KEY OIL	MIDDLETON HERALD	MIDDLETON 1	4917	BENSON	7/31/2006	GAS	67
4708502804	TRANSCAPITAL INVESTMENT GROUP	BAKER OKEY	1	2806	GORDON	10/11/1963	ABDGAS	104
4708509522	KEY OIL	MIDDLETON HERALD B.	MIDDLETON 3	924	UNKNOWN	7/24/2007	PLG	72
470850335	GLENN F MCBURNEY	BAKER D.L.	1	UNKNOWN	UNKNOWN		PLG	
470850797	MA WILLNER	MORGAN O.E.	1	UNKNOWN	UNKNOWN		ABD	
4708508027	ANVIL OIL	GOODWIN W. ETUX	C. C. WEEKLEY 2		NEVER DRILLED	1/4/1991	CAN	
4708509523	KEY OIL	MIDDLETON HERALD B.	MIDDLETON 4		NEVER DRILLED	2/8/2007	CAN	
4708509638	HALL DRILLING	HALL BRYAN D.	A. HALL 5		NEVER DRILLED	10/10/2007	CAN	
4708510090	CONSOL	PEN 20 HHS	PEN 20 HHS			5/30/2014	DRILLED MARCELLUS LATERAL, BUT NOT YET FRAC'D	
4708510090	CONSOL	PEN 20 HHS	PEN 20 HHS			5/30/2014	DRILLED MARCELLUS LATERAL, BUT NOT YET FRAC'D	
4708510107	CONSOL	PEN 20 KHS	PEN 20 KHS			8/8/2014	DRILLED MARCELLUS LATERAL, BUT NOT YET FRAC'D	
4708510108	CONSOL	PEN 20 LHS	PEN 20 LHS			8/8/2014	DRILLED MARCELLUS LATERAL, BUT NOT YET FRAC'D	
4708510109	CONSOL	PEN 20 BHS	PEN 20 BHS			8/8/2014	DRILLED MARCELLUS LATERAL, BUT NOT YET FRAC'D	
4708510110	CONSOL	PEN 20 CHS	PEN 20 CHS			8/8/2014	DRILLED MARCELLUS LATERAL, BUT NOT YET FRAC'D	
4708510111	CONSOL	PEN 20 DHS	PEN 20 DHS			8/8/2014	DRILLED MARCELLUS LATERAL, BUT NOT YET FRAC'D	
4708510123	CONSOL	PEN 20 FHS	PEN 20 FHS			8/1/2014	DRILLED MARCELLUS LATERAL, BUT NOT YET FRAC'D	
4708510129	CONSOL	PEN 20 GHS	PEN 20 GHS			8/8/2014	DRILLED MARCELLUS LATERAL, BUT NOT YET FRAC'D	
4708591100	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	
4708591101	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	
4708591168	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	NEVER DRILLED	

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**Attachment B:
Conventional Operator Notice Letter - Example**

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CONSOL Energy Inc.

CNX Center
1000 CONSOL Energy Drive
Canonsburg, PA 15317-6506

phone: (724) 485 – 4040

e-mail: PCR@consolenergy.com

web: www.consolenergy.com

CNX GAS PRODUCTION TEAM

[Conventional Well Operator]

[Address]

[State]

Re: Ritchie County Hydraulic Fracturing Notice

Dear Sir or Madam,

CNX Gas Company LLC (CNX) has developed a Marcellus pad PEN20HS located in Ritchie County, West Virginia. Through CNX's evaluation pursuant to WV Code 35 CSR 8(5.11), you have been identified as the owner or operator of a well within a 500' radius of the surface location or lateral section of the wellbore. Due to the apparent presence of unique geological conditions, communication between CNX hydraulic fracturing operations and the identified well is a possibility. As an owner or operator of a conventional natural gas well in this area, we are requesting your assistance in monitoring for changes that would indicate communication between your well(s) and our planned operation.

CNX anticipates conducting hydraulic fracturing activity at the PEN20HS during the 2nd Quarter 2017 through 3rd Quarter 2017. Plats for each well being hydraulically fractured on this pad are attached.

We recommend that conventional operators conduct the following activities before, during, and after fracturing operations.

1. Inspect surface equipment prior to fracturing, to establish integrity and confirm well conditions.
2. Observe wells during and after fracturing and monitor for abnormal increases in water, gas, or pressure.
3. Inspect and upgrade master valves or other necessary equipment for wellhead integrity as you see fit.
4. Notify the OOG and CNX if any changes in water, gas production, pressure, or other conditions that cause abnormal risk or concern.

Please feel free to contact CNX's Production Control Room at 724-485-4040 (staffed 24/7) with any questions or comments. You may also contact the West Virginia Office of Oil and Gas at 304-926-0499.

Sincerely,
CNX Production

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Matthew Hanley
Manager – Gas Permitting
CONSOL Energy Inc.
1000 CONSOL Energy Drive
Canonsburg, PA 15317

West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304-2345

RE: Road Letter – PENS 20 Well Pad Rework Applications

To Whom It May Concern:

CNX Gas Company LLC has the right to drill, stimulate and produce wells that are drilled under the County and State Roads as designated on the plats.

Should you have any questions or need additional information, please do not hesitate to contact me at matthanley@consolenergy.com or 724-485-3011.

Sincerely,

A handwritten signature in blue ink that reads 'Matthew Hanley'.

Matthew Hanley
CNX Gas Company LLC

03/24/2017

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

Date of Notice Certification: 1/27/17

API No. 47- 085 - 10122
Operator's Well No. PEN20EHS
Well Pad Name: PEN20

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: <u>West Virginia</u>	UTM NAD 83 Easting: <u>497737.179</u>
County: <u>085-Ritchie</u>	UTM NAD 83 Northing: <u>4353191.046</u>
District: <u>Clay</u>	Public Road Access: <u>Bonds Creek Rd</u>
Quadrangle: <u>Ellenboro</u>	Generally used farm name: <u>Lawrence B. and Angela Cokeley</u>
Watershed: <u>North Fork Hughs River/Bonds Creek</u>	

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.

<p>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:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p align="center">NO DRILLING</p> <p><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
---	---

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.

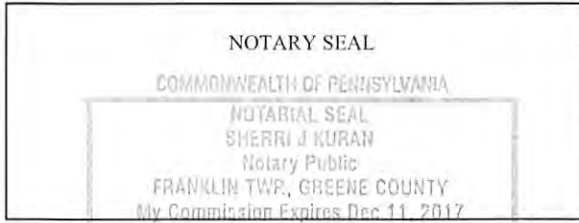
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 OFFICE OF OIL AND GAS
 WEST VIRGINIA
 WV Department of
 Environmental Protection
 03/24/2017

Certification of Notice is hereby given:

THEREFORE, I Matt Hanley, 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: CNX GAS COMPANY LLC
By: Matt Hanley *[Signature]*
Its: Manager - Permitting
Telephone: 724-485-3011

Address: 1000 Consol Energy Dr
Canonsburg, PA 15317
Facsimile: _____
Email: Matthanley@consolenergy.com



Subscribed and sworn before me this 18th day of January 2017.
Sherri J Kuraw Notary Public
My Commission Expires 12-11-17

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 deprivacyofficer@wv.gov.

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: 1/27/17 Date Permit Application Filed: 1/30/17

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: Lawrence B. and Angela Cokelley
Address: 4573 Bonds Creek Road
Pennsboro, WV 26415

Name: _____
Address: _____

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: _____
Address: _____

COAL OPERATOR
Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: Lawrence B. and Angela Cokelley
Address: 4573 Bonds Creek Road
Pennsboro, WV 26415

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

*Please attach additional forms if necessary

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WV Department of Environmental Protection
03/24/2017

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 a regulation to address the items

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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

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 COMMENTS.**

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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.

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Environmental Protection

03/24/2017

WW-6A
(8-13)

API NO. 47- 085 - 10122 **F**
OPERATOR WELL NO. PEN20EHS
Well Pad Name: PEN20

Notice is hereby given by:

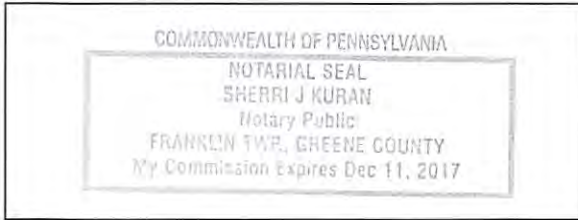
Well Operator: CNX GAS COMPANY LLC
Telephone: 724-485-3011
Email: MattHanley@consolenergy.com



Address: 1000 CONSOL ENERGY DRIVE
Canonsburg, PA 15317
Facsimile: _____

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.



Subscribed and sworn before me this 18th day of January 2017.

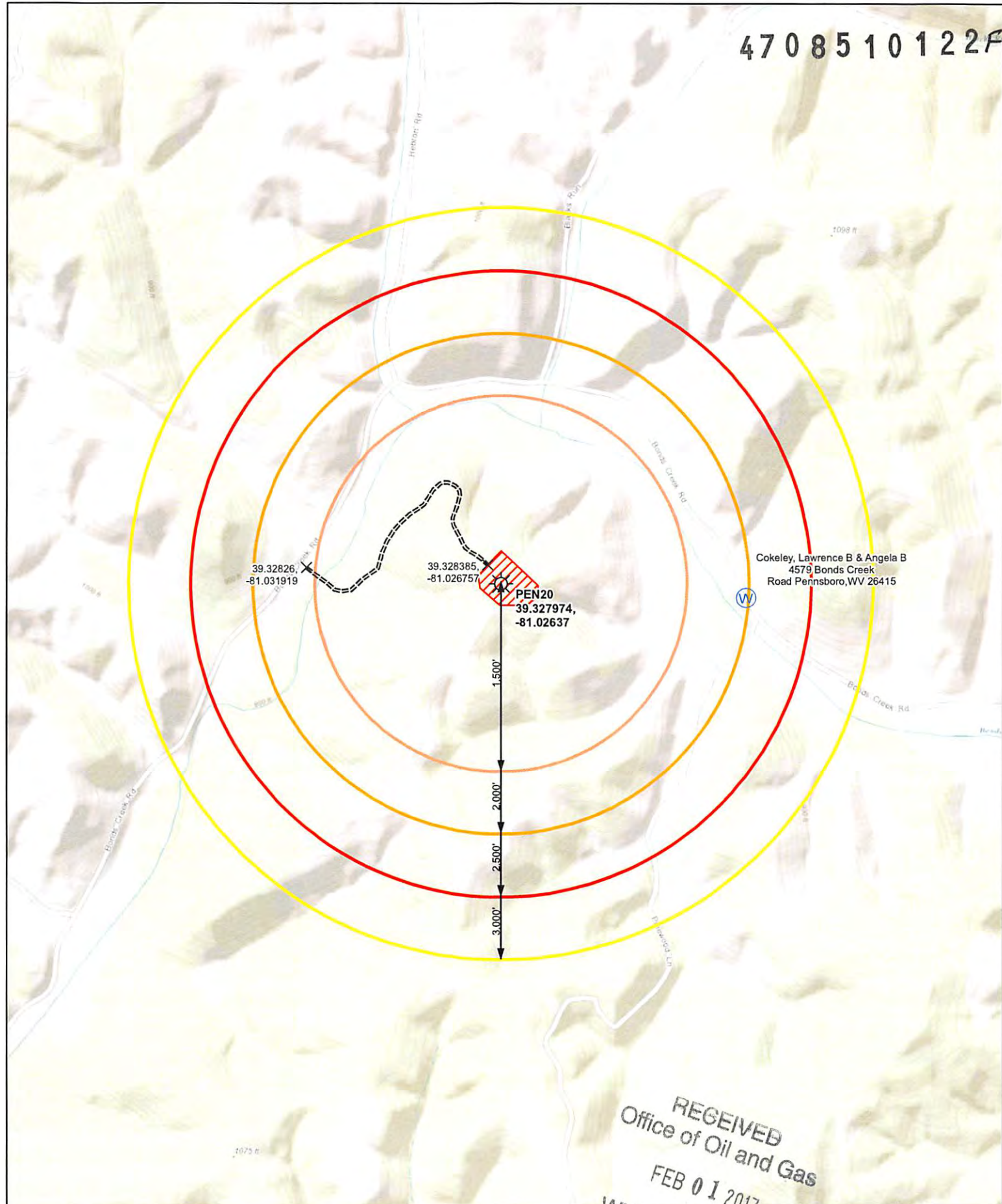
Sherril J. Kuran Notary Public

My Commission Expires 12-11-17

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4708510122F



Cokeley, Lawrence B & Angela B
4579 Bonds Creek
Road Pennsboro, WV 26415



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- Well Site
- Water Wells
- Access Points

- Access Road
- Well Pad

- Buffer Distance**
- 1500 ft
 - 2000 ft
 - 2500 ft
 - 3000 ft



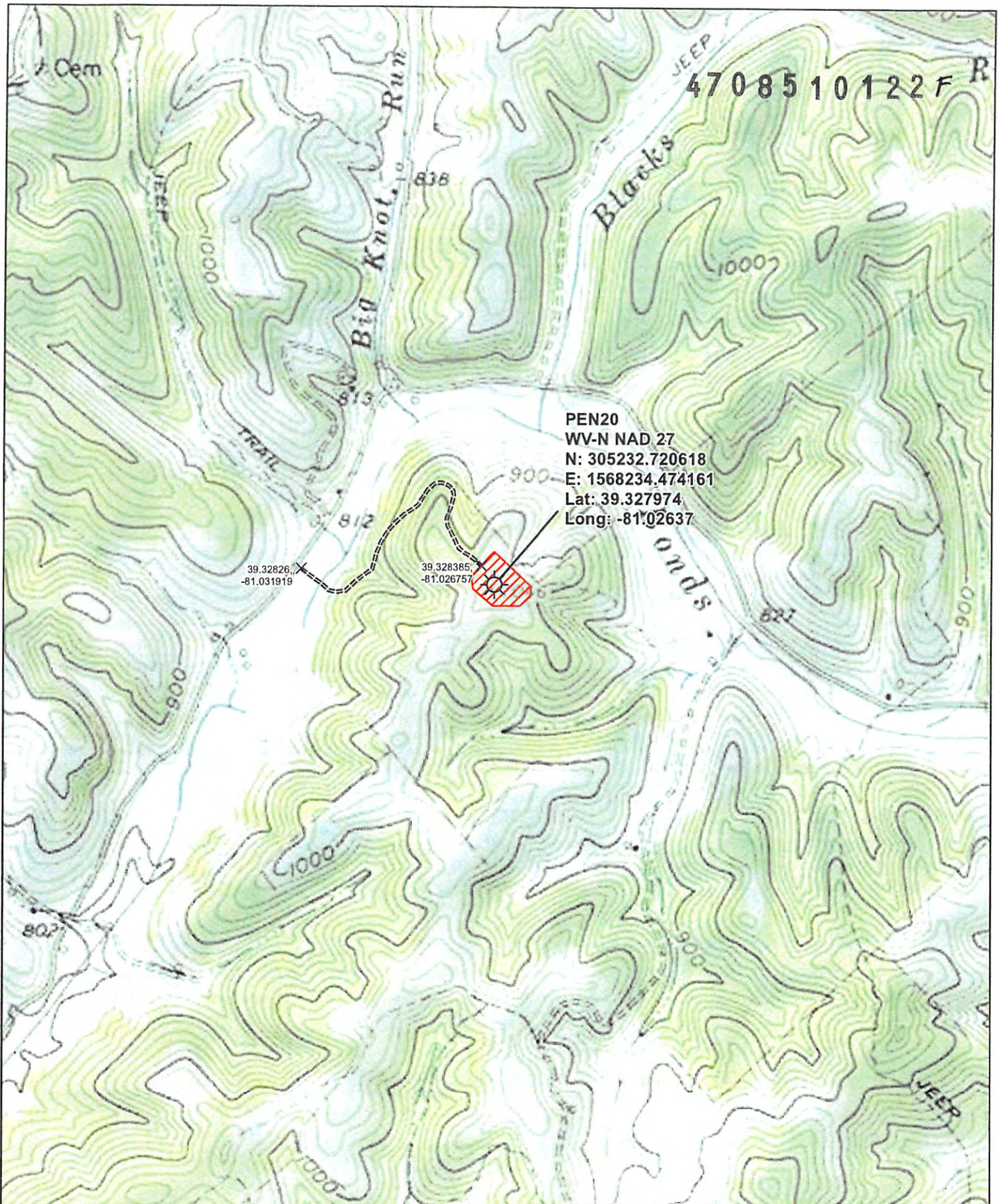
WV Department of Environmental Protection

Date: 1/17/2017	Prepared By: J. Steiner
Revisions: 1	Approved By: R. Hood

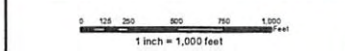
This map is property of CONSOL Energy Inc. and contains information that is proprietary and confidential in nature and may not be copied or reproduced without prior written consent.



03/24/2017
Water Purveyor Map



-  Well Site
-  Access Points
-  Access Road
-  Well Pad



Date: 1/17/2017	Prepared By: J Steiner
Revisions: 1	Approved By: R Hoon

03/24/2017

PEN20

Topo Well Map

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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: 1/27/17 Date Permit Application Filed: 1/30/17

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

- CERTIFIED MAIL HAND
- RETURN RECEIPT REQUESTED 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: <u>Lawrence B. and Angela Cokeley</u>	Name: _____
Address: <u>4573 Bonds Creek Road</u>	Address: _____
<u>Pennsboro, WV 26415</u>	

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: <u>West Virginia</u>	UTM NAD 83 Easting: <u>497737.179</u>
County: <u>085-Ritchie</u>	Northing: <u>4353191.046</u>
District: <u>Clay</u>	Public Road Access: <u>Bonds Creek Rd</u>
Quadrangle: <u>Ellenboro</u>	Generally used farm name: <u>Lawrence B. and Angela Cokeley</u>
Watershed: <u>North Fork Hughs River/Bonds Creek</u>	

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.

Well Operator: <u>CNX GAS COMPANY LLC</u>	Address: <u>1000 Consol Energy Dr</u>
Telephone: <u>724-485-3011</u>	<u>Canonsburg, PA 15317</u>
Email: <u>Matthanley@consolenergy.com</u>	Facsimile: _____

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.

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Office of Oil and Gas
FEB 01 2017
WV Department of
Environmental Protection

03/24/2017



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Jim Justice
Governor

Gregory L. Bailey, P. E.
Acting Commissioner of Highways

January 24, 2017

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 PEN-20 Well Pad, Ritchie County
PEN20BHS PEN20CHS PEN20DHS PEN20EHS
PEN20FHs PEN20FHS PEN20GHS PEN20HHS

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #03-2014-0091 for the subject site to CNX Gas for access to the State Road for the well site located off of Ritchie County Route 1 SLS.

The operator has signed an 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
Regional Maintenance Engineer
Central Office Oil & Gas Coordinator
Office of Oil & Gas

FEB 01 2017

WV Department of
Environmental Protection

Cc: Ray Hoon
CNX Gas
CH, OM, D-3
File

03/24/2017

Section V – Proposed Additives to be used in Fracturing or Stimulations

Type: Water CAS: 7732-18-5

Type: Silica CAS: 14808-60-7

Type: Hydrochloric Acid CAS: 7647-01-0

Type: Copolymer of Two Propenamide CAS: 69418-26-4

Type: Petroleum distillate CAS: 64742-47-8

Type: Glutaraldehyde CAS: 111-30-8

Type: Ethylene glycol CAS: 107-21-1

Type: Diethylene glycol mono n-butyl ether CAS: 112-34-5

Type: Oleic acid diethanolamide CAS: 93-83-4

Type: Alcohols, C12-16, ethoxylated CAS: 68551-12-2

Type: Quaternary ammonium compound CAS: 68424-85-1

Type: Ammonium chloride CAS: 12125-02-9

Type: Short chained glycol ether CAS: 112-34-5

Type: Ethoxylated (C10-16) alcohols CAS: 68002-97-1

Type: Metanol CAS: 67-56-1

Type: Formaldehyde CAS: 50-00-0

Type: Thiourea CAS: 62-56-6

Type: Acetophenone CAS: 98-86-2

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WV Department of
Environmental Protection 03/24/2017

API#8510090

EROSION & SEDIMENT CONTROL PLAN FOR PEN 20 WELL PAD CLAY DISTRICT, RITCHIE COUNTY, WV

APPROVED
WVDEP OOG
5/23/2014



WEST VIRGINIA 811
CALL BEFORE YOU DIG!
Dial 811 or 800.245.4848
State Office of Work Location

AT LEAST 48 HOURS, BUT NOT MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS), PRIOR TO STARTING ANY EARTH EXCAVATION ACTIVITIES, ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL CONTACT 811 TO GET A WELL NUMBER AT 811 OR 800-245-4848. TICKET # 13308640. DATE: 11/20/2013

SOILS CLASSIFICATION

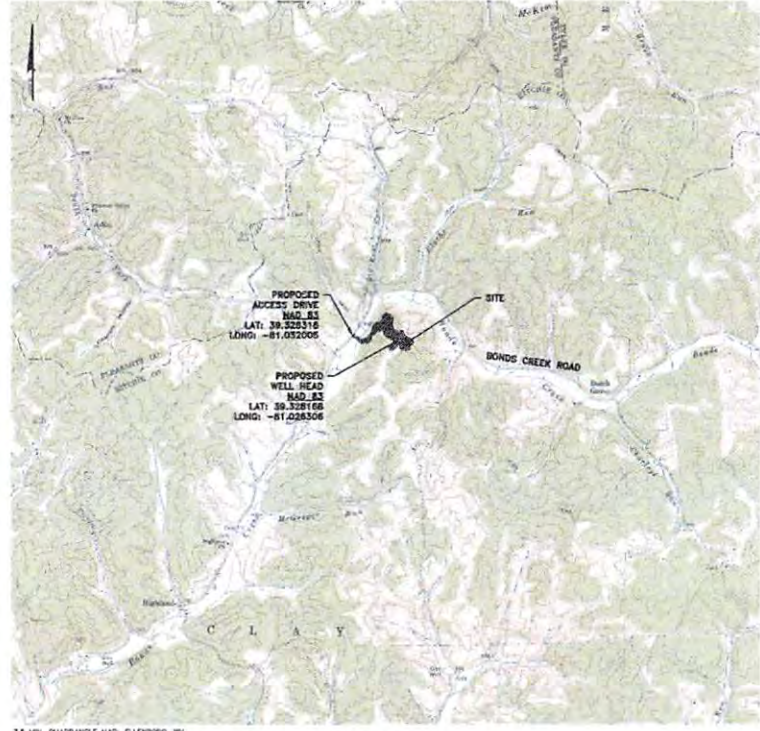
SOIL: UPPER-GLUPIN COMPLEX, 20% TO 30% SLOPES
SOIL: UPPER-GLUPIN COMPLEX, 40% TO 50% SLOPES
SOIL: MORGANTOWN Silt Loam
SOIL: UPPER-GLUPIN COMPLEX, 10% TO 20% SLOPES
SOIL: UPPER-GLUPIN COMPLEX, 20% TO 30% SLOPES, SEVERELY ERODED
SOIL: UPPER-GLUPIN COMPLEX, 20% TO 30% SLOPES, SEVERELY ERODED

LIST OF DRAWINGS

- 1 OF 14 COVER SHEET
- 2 OF 14 ENVIRONMENTAL RESOURCE BUFFER PLAN
- 3 OF 14 OVERALL SITE PLAN
- 4 OF 14 AREA "A" LAYOUT PLAN
- 5 OF 14 AREA "B" LAYOUT PLAN
- 6 OF 14 AREA "A" EROSION & SEDIMENT CONTROL PLAN
- 7 OF 14 AREA "B" EROSION & SEDIMENT CONTROL PLAN
- 8 OF 14 ACCESS DRIVE PROFILES
- 9 OF 14 CROSS SECTIONS PLAN VIEW
- 10 OF 14 CROSS SECTIONS
- 11 OF 14 WELL PAD INFORMATION PLAN
- 12 OF 14 NOTES & DETAILS
- 14 OF 14 DETAILS

DISTURBANCE SUMMARY

TOTAL LIMITS OF DISTURBANCE = 10.8 ACRES
CLEARING REQUIRED = 7.2 ACRES
P&C DISTURBANCE = 3.6 ACRES



GENERAL NOTES

1. THE TOPOGRAPHIC SURVEY UTILIZED FOR THIS BASE MAPPING WAS PERFORMED BY RETTEW ASSOCIATES, INC. IN OCTOBER 2013.
2. PROPERTY BOUNDARIES, LANDOWNER INFORMATION AND ROAD NETWORKS SHOWN ON THIS PLAN ARE BASED ON AVAILABLE COUNTY GIS PARCEL DATA.
3. EXISTING STRUCTURES, TIEE LINES AND ROADWAYS HAVE BEEN LOCATED PER AVAILABLE ONLINE AERIAL PHOTOGRAPHY.
4. THE HORIZONTAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN DATUM 1983 (NAD 83), NORTH 70N.
5. THE VERTICAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
6. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT LOCATION PRIOR TO ANY EXCAVATION BY NOTICING AND UTILITY OF WEST VIRGINIA AT 1-800-245-4848.
7. A METEOROLOGICAL PRESENCE/ABSENCE SURVEY WAS PERFORMED BY RETTEW ASSOCIATES IN OCTOBER 2013 AND JANUARY 2014.
8. THE CUT & FILL SUMMARY CALCULATIONS PRESENTED ON THIS PLAN ARE FOR PERMITTING AND INFORMATIONAL PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING GRADES AND TO VERIFY EARTHWORK VOLUMES, METHODS AND PROCEDURES. ANY ISSUES ARE TO BE BROUGHT TO THE ENGINEER'S AND OWNER'S ATTENTION PRIOR TO COMMENCEMENT OF WORK.
9. ALL EXISTING UTILITIES HAVE BEEN SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION.
10. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL ABOVE AND BELOW GROUND UTILITIES AND STRUCTURES AND WILL BE RESPONSIBLE FOR THE PROTECTION OF THESE UTILITIES AND STRUCTURES AT ALL TIMES.
11. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE AND ANY DAMAGE DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE REPAIRED IMMEDIATELY AND COMPLETELY AT HIS EXPENSE.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF DAMAGED OR DESTROYED LANDSCAPE AND LAWN.
13. CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE PROJECT SITE PRIOR TO THE START OF CONSTRUCTION.
14. CONTRACTOR TO RELOCATE UTILITIES AS REQUIRED.
15. CONTRACTOR MAY WASH ACCESS ROAD DUE TO 5% SLOPES IF DEEMED NECESSARY AND PER APPROVAL BY THE OWNER AND ENGINEER.
16. PROPOSED ROOF CONSTRUCTION ENTRANCE TO BE BUILT S.W. THAT RUNOFF FROM PROPOSED ACCESS WILL NOT SPILL FLOW INTO PUBLIC ROAD.
17. SEED AND MULCH ALL DISTURBED AREAS PER DETAILS IN THIS PLAN.
18. ALL CLEARED TREE BRANCHES SHALL BE PLACED ON UPHILL SIDE OF COMFORT FILTER SOCKS AND NOT STOCKPILED ON-SITE.
19. CONTRACTOR SHALL STOP WORK IMMEDIATELY AND CONTACT NOBLE ENERGY AND APPROPRIATE RESPONSIBLE AUTHORITIES SHOULD ANY HISTORICAL ARTIFACTS (I.E. BONES, UTILITY, ETC.) BE ENCOUNTERED DURING CONSTRUCTION.
20. NO WORK SHALL BE DONE OUTSIDE THE LIMITS OF DISTURBANCE OR IN PROTECTED AREAS.

DIRECTIONS TO THE SITE

FROM ELLENBORO WV TAKE W-18 N FOR 2.2 MILES
TURN RIGHT ON OLD US 50 HIGHWAY AND GO 0.75 MILES
AND FOLLOW FOR 1.4 MILES TURN LEFT ON MIDCOCK
HIGHWAY (R) AND FOLLOW FOR 2.1 MILES TURN RIGHT TO
STAY ON BONDS CREEK (L) AND PROPOSED ACCESS
DRIVE WILL BE ON RIGHT IN APPROXIMATELY 21 MILES

CUT & FILL

	WELL PAD	WELL ACCESS	PILE	TOTAL SITE
CUT	+1782 C.Y.	+2637 C.Y.	+ 0 C.Y.	+4419 C.Y.
STONE	+ 4798 C.Y.	+1816 C.Y.	+ 0 C.Y.	+6614 C.Y.
FILL	-1643 C.Y.	-6308 C.Y.	-10708 C.Y.	-43559 C.Y.
10% COMPACTION	- 1787 C.Y.	- 3384 C.Y.	- 0 C.Y.	- 5171 C.Y.
TOTAL	- 6536 C.Y.	- 7287 C.Y.	- 0 C.Y.	-13823 C.Y.
NET	+ 829 C.Y.	+1847 C.Y.	-10708 C.Y.	+ 0 C.Y.

NOTES:
1. THE ASSUMED TOP SOIL DEPTH IS 4".
2. THE CUT & FILL SUMMARY CALCULATIONS PRESENTED ON THIS PLAN ARE FOR INFORMATIONAL PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING GRADES AND VERIFY EARTHWORK VOLUMES, METHODS AND PROCEDURES. ANY ISSUES ARE TO BE BROUGHT TO THE ENGINEER'S AND OWNER'S ATTENTION PRIOR TO COMMENCEMENT OF WORK.

SCALE AS SHOWN DATE _____ REVISION _____	PROJECT NO. _____ SHEET NO. _____ OF _____ DATE _____
--	---

TOP REVIEW ASSOCIATES BY:

REVIEWED BY: [Signature]

DATE: 2-1-14

MANAGER	MICHAEL R. OGDEN	DATE BY	ASBY
DESIGNER	ASH	CHECKED BY	ASH
DRAWN BY	ASH	DATE	11/20/13
DATE	11/20/13	SCALE	AS SHOWN

CLIENT

NOBLE ENERGY, SUITE 116
333 TECHNOLOGY DRIVE, SUITE 116
CANONSBURG, PA 15317-3077
BEN BERKOWITZ, PE
(724) 832-0380
ben.berkowitz@nobleenergy.com

noble energy

REVIEW

NOBLE ENERGY, SUITE 116
333 TECHNOLOGY DRIVE, SUITE 116
CANONSBURG, PA 15317-3077
BEN BERKOWITZ, PE
(724) 832-0380
ben.berkowitz@nobleenergy.com

COVER SHEET
FOR
PEN 20 WELL PAD
CLAY DISTRICT
RITCHIE COUNTY, WV

DATE	2/19/2014
SHEET NO.	1 OF 14
DWG. NO.	09.3842025

Electronic Version of These Plans May Be Viewed at: Q:\OIL GAS\SAY FILES\REVIEWS