



west virginia department of environmental protection

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

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

February 01, 2016

NORTHEAST NATURAL ENERGY LLC
707 VIRGINIA STREET EAST
CHARLESTO, WV 25301

Re: Permit Modification Approval for API Number 6101711, Well #: CAMPBELL 7H

Modified Direction of Lateral

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

for Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas

Promoting a healthy environment.

02/05/2016

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

1) Well Operator: Northeast Natural Energy LLC 494498281 Monongalia Clay Blacksville
Operator ID County District Quadrangle

2) Operator's Well Number: Campbell 7H Well Pad Name: Campbell

3) Farm Name/Surface Owner: Ellen F. Campbell Public Road Access: State Route 218 (Daybrook Road)

4) Elevation, current ground: 1293.6' Elevation, proposed post-construction: 1293.6'

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

6) Existing Pad: Yes or No Yes *MDK 1/26/2016*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus, 8,118' , 103' , 3,600 psi

8) Proposed Total Vertical Depth: 8,118'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18,288.48'

11) Proposed Horizontal Leg Length: 9,291'

12) Approximate Fresh Water Strata Depths: 50' , 1,137'

13) Method to Determine Fresh Water Depths: Driller's Log from Offset Wells

14) Approximate Saltwater Depths: 1,521' , 2,363'

15) Approximate Coal Seam Depths: 316' , 1,135'

16) Approximate Depth to Possible Void (coal mine, karst, other): N/A

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: Adjacent Mine - Federal No. 2
Depth: 1,100'
Seam: Pittsburgh
Owner: Patriot Coal Corporation

18)

CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	24"	New	NA	94.71	40'	40'	GTS
Fresh Water	13-3/8"	New	J-55	54.5	1,280'	1,250'	CTS
Coal							
Intermediate	9-5/8"	New	J-55	40	2,430'	2,400'	CTS
Production	5-1/2"	New	P-110	20	18,289'	18,259'	4,313 Cu. Ft.
Tubing	2-7/8"	New	N-80	6.5	NA	8,500'	NA
Liners							

MGK 1/26/2016

<u>TYPE</u>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	24"	30"	.375	415		4,500 psi Grout	NA
Fresh Water	13-3/8"	17 1/2"	.38"	2,760	2,000	Class A	1.23
Coal							
Intermediate	9-5/8"	12 1/4"	.395"	3,950	3,000	Class A	1.3
Production	5-1/2"	8 3/4"	.361"	12,530	9,700	50:50 Poz	1.21
Tubing	2-7/8"	NA	.217"	10,570	3,600	NA	NA
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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

Drilling and completion of a horizontal Marcellus well. The well will be drilled on air to an approximate depth of 6,478.73' TVD/MD. The well will then be horizontally drilled on synthetic based mud from the KOP to approximately 8,118' TVD / 18,288.48' MD along a 325 degree azimuth.

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

Multi-stage / high-rate slickwater fracture treatment using various size sands as proppant. First stage will be initiated via pressurization against a burst disc ran in the production casing string or perforated with coiled tubing. Subsequent stages will be perforated with pumped down guns ran on wireline. Individual stages will be isolated with composite frac plugs. Maximum pump rate during any stage will be 110 BPM with a maximum allowable surface pressure of 9,500 PSI. Composite bridge plugs will be set at the end of the last stage to isolate the treated formation.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): NA - Existing Pad

22) Area to be disturbed for well pad only, less access road (acres): NA - Existing Pad

23) Describe centralizer placement for each casing string:

Surface and intermediate casing strings will have bow spring centralizers placed every third joint (~120') from the shoe joint to surface. Production casing will have rigid body centralizers placed at a minimum of every fourth joint (~160') from TD to surface.

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

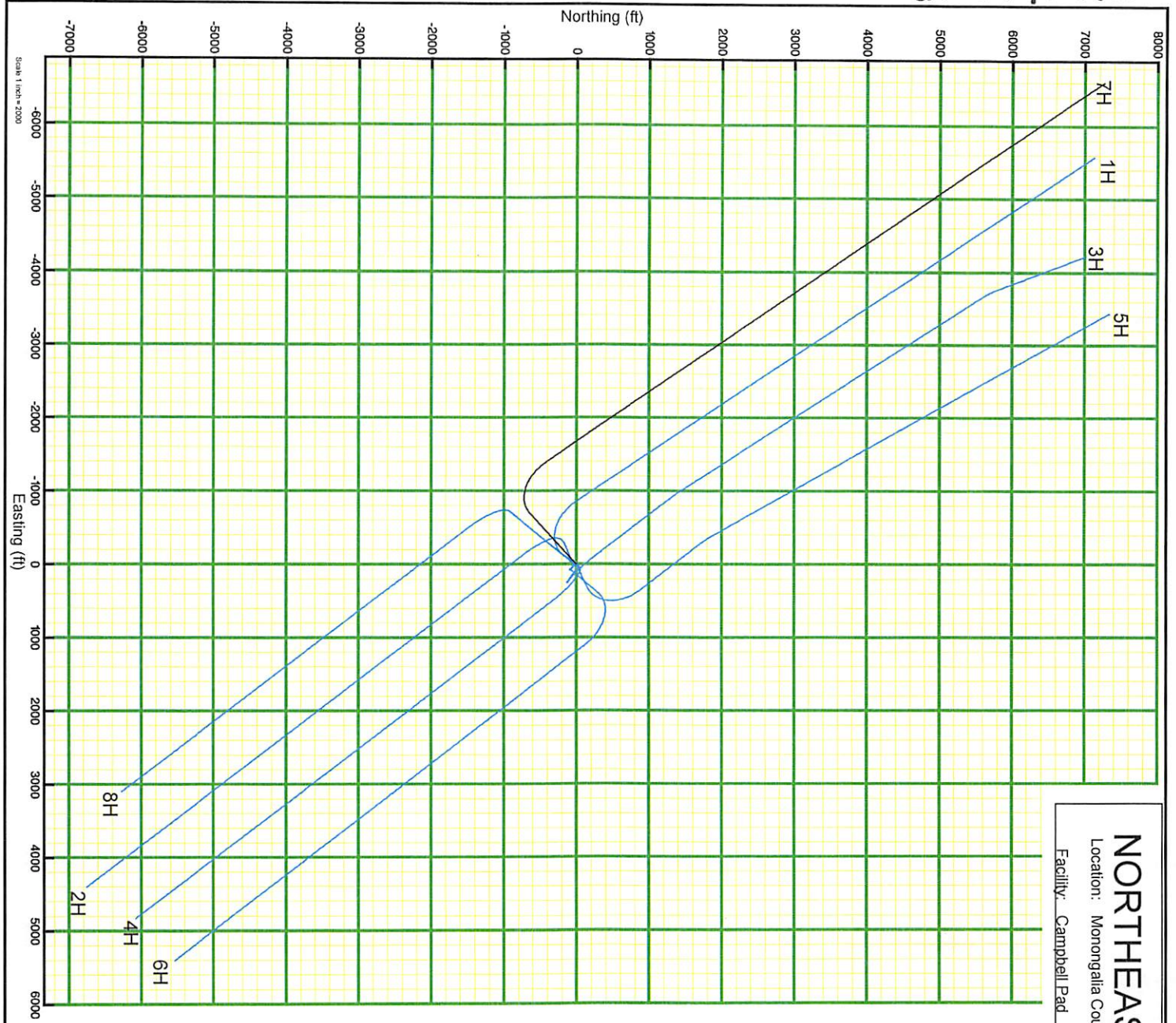
Surface string cement will be a Class A + Max 3% bwoc Calcium Chloride Fresh Water blend. Intermediate string cement will be a Class A Cement + Max 3% bwoc Calcium Chloride + Fresh Water. Production string cement will be (50:50) Poz (Fly Ash): Type I Cement with a gas migration additive.

25) Proposed borehole conditioning procedures:

Surface string will use a 25.0 bbls Gel Pill + LCM + 25 lbs Cello Flake + 20 lbs/bbl Bentonite @ 8.4 ppg & 10 bbls fresh water spacer prior to cement. Intermediate string will use a 25.0 bbls Gel Pill + LCM + 25 lbs Cello Flake + 20 lbs/bbl Bentonite @ 8.4 ppg & 10 bbls fresh water spacer prior to cement. Production string will use a 50.0 bbls SealBond 25 + 1 gal/bbl US-40 + 275 lbs/bbl Barite + 1 gal/bbl SS-2 Spacer @ 13.5 ppg prior to cement.

*Note: Attach additional sheets as needed.

61-01711 MOD



NORTHEAST NATURAL ENERGY, LLC
Location: Monongalia County, WV
Facility: Campbell Pad

02/05/2016



NORTHEAST NATURAL ENERGY, LLC

Location: Monongalia County, WV
Field: Monongalia
Facility: Campbell Pad

Slot: Slot 07
Well: Campbell 7H
Wellbore: Campbell 7H PWB



Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Campbell Pad	1776099.874	437747.321	39°41'59.400"N	80°11'01.700"W
Local N (ft)	Local E (ft)	Grid East (US ft)	Latitude	Longitude
1.75	-3.74	437749.070	39°41'59.417"N	80°11'01.748"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
Slot 07	1.75	-3.74	437749.070	16ft
Top Hole (RKB) to Mud line (At Slot: Slot 07)	-129ft			
Mean Sea Level to Mud line (At Slot: Slot 07)	-129ft			
Top Hole (RKB) to Mean Sea Level	1310ft			

Tie On : 0.00° Inc, 16.00ft MD, 16.00ft TVD, 0.00ft VS
24in Conductor (GL) : 0.00° Inc, 40.00ft MD, 40.00ft TVD, 0.00ft VS

13.375in Casing Surface (GL) : 0.00° Inc, 1250.00ft MD, 1250.00ft TVD, 0.00ft VS

9.625in Casing Intermediate (GL) : 0.00° Inc, 2400.00ft MD, 2400.00ft TVD, 0.00ft VS

Formation	Depth (KB TVD)
Tully	7865'
Hamilton	7929'
Upper Marcellus	8036'
Lower Marcellus	8081'
Onondaga	8139'

Type	Hole Size	Casing Size	Grade	GL Depth (Csg)
Conductor	28"	24"	NA	40'
Surface	17-1/2"	13-3/8"	J-55	54.5'
Intermediate	12-1/4"	9-5/8"	J-55	40'

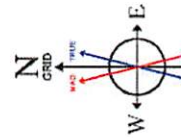
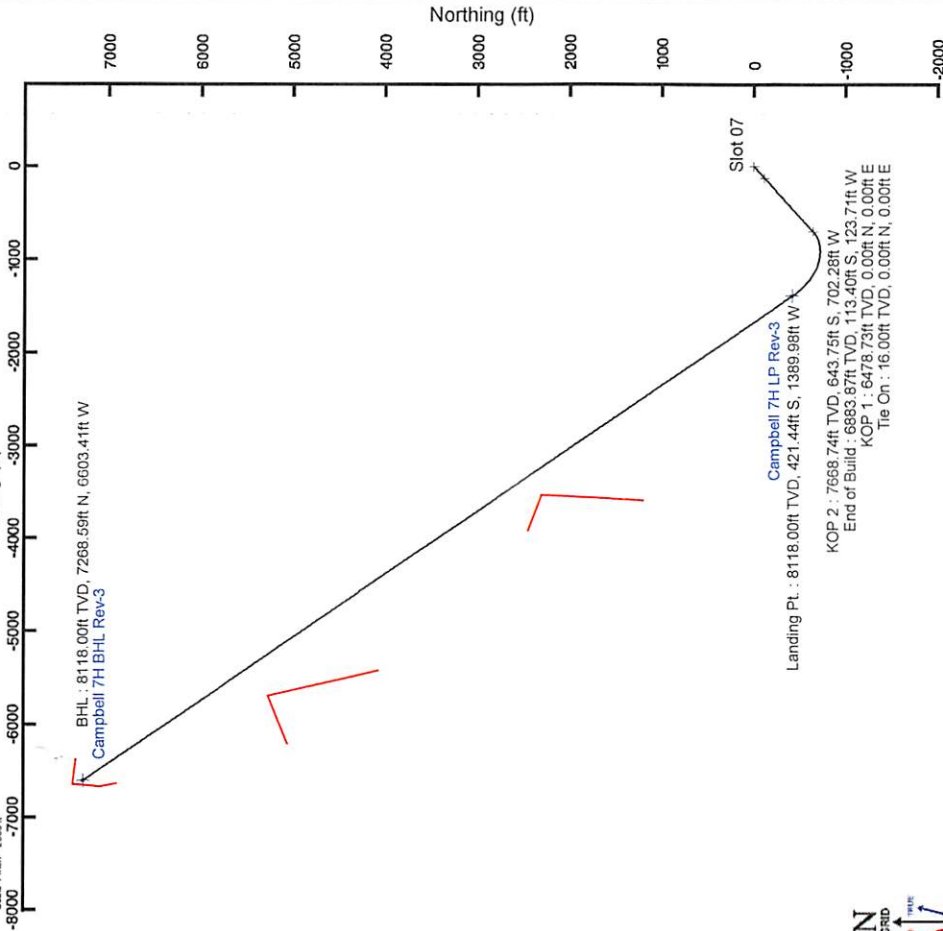
KOP 1 : 0.00° Inc, 6478.73ft MD, 6478.73ft TVD, 0.00ft VS
10.00°/100ft
End of Build : 45.00° Inc, 6928.73ft MD, 6883.87ft TVD, -24.46ft VS

KOP 2 : 45.00° Inc, 8038.70ft MD, 7668.74ft TVD, -138.84ft VS
10.00°/100ft
Landing Pt. : 90.00° Inc, 8997.82ft MD, 8118.00ft TVD, 431.03ft VS

Campbell 7H LP Rev-3

Scale 1 inch = 1500ft

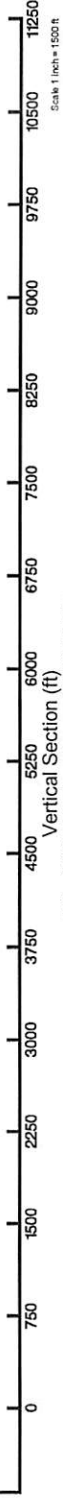
Scale 1 inch = 2000ft



BGGM (1945.0 to 2017.0) Dip: 66.94° Field: 52241 nT
Magnetic North is 9.02 degrees West of True North (at 15/Jan2016)
Grid North is 0.44 degrees West of True North
To correct azimuth from True to Grid add 0.44 degrees
To correct azimuth from Magnetic to Grid subtract 8.58 degrees

BHL : 90.00° Inc, 18288.46ft MD, 8118.00ft TVD, 9721.69ft VS

Campbell 7H BHL Rev-3



Scale 1 inch = 150ft
Azimuth 325.87° with reference 0.00 N, 0.00 E

RECEIVED
Office of Oil and Gas
JAN 27 2016

WV Department of Environmental Protection
02/05/2016

61-01711900

61-0711 mob

WW-6A1
(5/13)

Operator's Well No. Campbell 7H

**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 Attachment	See Attachment	See Attachment	See Attachment	See Attachment

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

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

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

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

Well Operator: Northeast Natural Energy LLC
 By: Holly Meade
 Its: Regulatory Coordinator

RECEIVED
 Office of Oil and Gas
 JAN 27 2016
 Page 1 of 6
 WV Department of Environmental Protection

02/05/2016

	WW-6A1		Operator's Well No.	Campbell 7H	
NNE Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page	Tax Map & Parcel
WV-061-003293-000	CAMPBELL, ELLEN FOLEY	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1494/880	4-7-48
WV-061-001093-001	KING, SUSAN H.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1534/124	4-7-48
WV-061-001099-000	CAMPBELL, ELLEN FOLEY	NORTHEAST NATURAL ENERGY LLC	ROW	1510/053	4-7-48
WV-061-003293-000	CAMPBELL, ELLEN FOLEY	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1494/880	4-7-48
WV-061-003293-002	LEWIS, BARRY W.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1520/90	4-7-48
WV-061-003293-003	STANTON, JOSEPH F.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1521/188	4-7-48
WV-061-003293-004	SNYDER, PRISCILLA JANE	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1520/684	4-7-48
WV-061-003293-005	MADDEN, JAMES D.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1520/682	4-7-48
WV-061-003293-006	JOHNSON, MARTHA N.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1523/451	4-7-48
WV-061-003293-007	STANTON, TIMOTHY P.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1521/740	4-7-48
WV-061-003293-008	TENNANT, RICHARD B. AND JUDITH	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1523/437	4-7-48
WV-061-003293-009	NEWSOME, MARTHA AND ROGER	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1521/602	4-7-48
WV-061-003293-010	BODENHAMER, CHARLOTTE	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1524/782	4-7-48
WV-061-003293-011	STANTON, JOHN M. AND ELIZABETH	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1523/409	4-7-48
WV-061-003293-012	STANTON, MATTHEW J. AND TERESA	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1523/407	4-7-48
WV-061-003293-013	ELERMAN, TERESA J. AND JOSEPH	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1523/500	4-7-48
WV-061-003293-014	MADDEN, MICHAEL W.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1523/254	4-7-48
WV-061-003293-015	GARDNER, DAVID	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1528/1	4-7-48
WV-061-003293-016	GRASSIE, MARGARET G.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1530/180	4-7-48
WV-061-003293-017	PUGH, ELIZABETH G.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1528/50	4-7-48
WV-061-003293-018	OPYOKE, JONI A. AND JOSEPH	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1529/578	4-7-48
WV-061-003293-019	HURST, JOHN C.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1529/568	4-7-48
WV-061-003293-020	GARDNER, BROWN L.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1532/88	4-7-48
WV-061-003293-021	HENKINS, ROBERT CURTIS	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1533/187	4-7-48
WV-061-003293-022	HENKINS, E. SCOTT	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1533/189	4-7-48
WV-061-003293-023	CASTAGNARI, RUTH ANN	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1538/569	4-7-48
WV-061-003426-001	CAMPBELL, ELLEN FOLEY	NORTHEAST NATURAL ENERGY LLC	SURFACE	NA	4-7-48
WV-061-001871-002	LEMLEY, SUSAN AND WILLIAM	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1515/745	4-7-47
WV-061-002589-001	WACO OIL & GAS	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1441/0001	4-7-P/O 46
WV-061-002594-001	MOORE, PAULINE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1436/431	4-7-P/O 46
WV-061-002594-002	PIFER, DONNA IRENE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1436/442	4-7-P/O 46
WV-061-002594-003	FLUHARTY, ROGER S.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/577	4-7-P/O 46
WV-061-002594-004	HYDE, LINDA L.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/561	4-7-P/O 46
WV-061-002594-005	SYPLIT, LAURA ELLEN	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1436/439	4-7-P/O 46
WV-061-002594-006	BYARD, SHARON E.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1446/660	4-7-P/O 46
WV-061-002594-007	TOOTHMAN, LORNA D.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/585	4-7-P/O 46
WV-061-002594-008	PARKER, MARY HAUGHT	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1437/28	4-7-P/O 46
WV-061-002594-009	HAUGHT, DAVID M. AND RHONDA S.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1437/31	4-7-P/O 46
WV-061-002594-010	HELDRETH, SANDRA J.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/581	4-7-P/O 46
WV-061-002594-011	DERBY, DIANN	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1436/434	4-7-P/O 46
WV-061-002594-012	DIXON, ANDREA K.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1437/35	4-7-P/O 46
WV-061-002594-013	TOMMASSETTI, GLENDA JOYCE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1438/654	4-7-P/O 46
WV-061-002594-014	HAUGHT, RONALD, J. AND MARLENE G.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/527	4-7-P/O 46
WV-061-002594-015	HAUGHT, ANCEL AND PATRICIA	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1439/333	4-7-P/O 46
WV-061-002594-016	HAUGHT, WARREN P.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1439/312	4-7-P/O 46
WV-061-002594-017	WOODS, LOUELLE K. AND CHARLES E.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1439/320	4-7-P/O 46
WV-061-002594-018	LEARY, CONNIE S.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1439/304	4-7-P/O 46
WV-061-002594-019	HAUGHT, RODNEY L. AND GEORGEANN P.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1439/212	4-7-P/O 46
WV-061-002594-020	HAUGHT, DALE AND NINA F.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1439/216	4-7-P/O 46
WV-061-002594-021	HAUGHT, COLLEEN	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1439/226	4-7-P/O 46
WV-061-002594-022	HAUGHT, WARREN J. AND RHONDA J.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1440/618	4-7-P/O 46
WV-061-002594-023	OHMS, MARY D. AND EUGENE J.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1440/622	4-7-P/O 46
WV-061-002594-024	HAUGHT, JAMES E. AND REBECCA E.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1441/841	4-7-P/O 46
WV-061-002594-025	HAUGHT, ROBERT C. AND KATHY J.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/168	4-7-P/O 46
WV-061-002594-026	FLUHARTY, DONNA LEE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/565	4-7-P/O 46
WV-061-002594-027	HAUGHT, JAMES B.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1443/217	4-7-P/O 46
WV-061-002594-028	HAUGHT, DONALD J. AND PATRICIA L.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1443/209	4-7-P/O 46
WV-061-002594-029	TENNANT, ROBERT N.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1444/288	4-7-P/O 46
WV-061-002594-030	HAUGHT, JASON L.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1444/280	4-7-P/O 46
WV-061-002594-031	HAUGHT, STANLEY L.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1445/167	4-7-P/O 46
WV-061-002594-032	HAUGHT, BELLETTA K.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1447/507	4-7-P/O 46
WV-061-002594-033	MERILLAT, MARY V.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1453/576	4-7-P/O 46
WV-061-03519-001	EBERHART, TERRY	NORTHEAST NATURAL ENERGY LLC	DEED	1530/116	4-7-P/O 46

NNE Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Operator's Well No.		Campbell 7H
			Royalty	Book/Page	Tax Map & Parcel
WW-061-03519-002	WV, MINERALS, INC	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1523/811	4-7-P/O 46
WW-061-03519-003	MOORE, ETHAN D.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1529/99	4-7-P/O 46
WW-061-03519-004	ESTATE OF ANNA PEARL JONES	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1530/304	4-7-P/O 46
WW-061-003203-001	MCCOY, CHRISTINE K.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1444/304	4-7-P/O 34
WW-061-003203-002	SHRIVER, SHASTA DILLE AND RICHARD	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1493/201	4-7-P/O 34
WW-061-003203-003	DILLE, CORY AND RISHIRA	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1493/199	4-7-P/O 34
WW-061-003203-004	DILLE, JOSHUA	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1493/275	4-7-P/O 34
WW-061-003533-001	TUCKER, DARLINE H.	NORTHEAST NATURAL ENERGY LLC	DEED	1530/108	4-7-P/O 34
WW-061-003533-002	DILLE, EARNEST P.	NORTHEAST NATURAL ENERGY LLC	DEED	1530/104	4-7-P/O 34
WW-061-003533-003	DILLE, CHRISTINE M.	NORTHEAST NATURAL ENERGY LLC	DEED	1530/100	4-7-P/O 34
WW-061-003533-004	DILLE, DENNIS F.	NORTHEAST NATURAL ENERGY LLC	DEED	1533/713	4-7-P/O 34
WW-061-003533-005	DILLE, ROSE M.	NORTHEAST NATURAL ENERGY LLC	DEED	1529/516	4-7-P/O 34
WW-061-003533-006	MASSEY, PANSY E.	NORTHEAST NATURAL ENERGY LLC	DEED	1530/91	4-7-P/O 34
WW-061-002134-001	TENNANT, RAYMER F.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1396/663	4-7-33, P/O 23
WW-061-002134-002	OLIVE CEMETERY OF PENTRESS	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1396/666	4-7-33, P/O 23
WW-061-002134-003	MONONGALIA HOME CORPORATION	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1397/612	4-7-33, P/O 23
WW-061-002134-004	UNITED OLIVE M.E. CHURCH OF PENTRESS	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1410/522	4-7-33, P/O 23
WW-061-002134-005	RAMSEY, KATHY JO	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1410/551	4-7-33, P/O 23
WW-061-002134-006	WALKER, CHARLENE K.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1410/548	4-7-33, P/O 23
WW-061-002134-007	CONN, JOHN L.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1415/389	4-7-33, P/O 23
WW-061-002134-008	AUSTIN, LINDA	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1415/392	4-7-33, P/O 23
WW-061-002134-009	TUTTLE, JAMES A.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1417/298	4-7-33, P/O 23
WW-061-002134-010	TENNANT, WILLIAM R.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1417/302	4-7-33, P/O 23
WW-061-002134-011	HAINES, ELLEN J.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1417/381	4-7-33, P/O 23
WW-061-002134-012	ORDER, LEORA	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1421/369	4-7-33, P/O 23
WW-061-002134-013	TENNANT, FRANCIS MAHLON	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1418/107	4-7-33, P/O 23
WW-061-002134-014	BURKE, HAROLD E.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1418/103	4-7-33, P/O 23
WW-061-002134-015	MCCULLOUGH, MARY R.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1421/377	4-7-33, P/O 23
WW-061-002134-016	HOSKINS, FRANCES M.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1505/125	4-7-33, P/O 23
WW-061-003466-001	WILLIAMS, NORMA JANE AND FREDDIE	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1518/33	4-7-33, P/O 23
WW-061-000182-001	LEMLEY, MARY LOU	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1431/224	4-7-P/O 23
WW-061-000578-006	SLEETH, LUZETTA	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1439/627	4-7-P/O 23
WW-061-000578-007	AMMONS, VIRGINIA LEMLEY	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1437/822	4-7-P/O 23
WW-061-000578-009	PRATT, ROGER	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1439/625	4-7-P/O 23
WW-061-002489-001	CAMPBELL, FRANCIS M.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1427/373	4-7-P/O 23
WW-061-002489-002	COX, DELORES E.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1427/377	4-7-P/O 23
WW-061-002489-003	PHILLIPS, BETTY RUTH	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1430/324	4-7-P/O 23
WW-061-002489-004	MORRIS, ELMA JEAN	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1430/310	4-7-P/O 23
WW-061-002489-005	FAUST, SHARON	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1430/349	4-7-P/O 23
WW-061-002489-006	GRECO, DENISE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1431/428	4-7-P/O 23
WW-061-002489-007	MORRIS, BARBARA H.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1436/454	4-7-P/O 23
WW-061-002489-008	HINCHEY, MARY LEE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1438/635	4-7-P/O 23
WW-061-002489-009	CREAMER, STEVEN ROSS	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1438/639	4-7-P/O 23
WW-061-002489-010	MOORE, LLOYD HOWARD AND RUTH R.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1449/051	4-7-P/O 23
WW-061-002489-011	STROSNIDER, JAMES MICHAEL	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1441/850	4-7-P/O 23
WW-061-002489-012	FETTY, JENNA	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1441/845	4-7-P/O 23
WW-061-002489-013	CREAMER, KARL WILLIAM AND DARLENE E.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/659	4-7-P/O 23
WW-061-002489-014	BENNETT, PATRICIA	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1454/857	4-7-P/O 23

61-0711

NNE Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Operator's Well No.		Campbell 7H
			Royalty	Book/Page	Tax Map & Parcel
	WW-6A1				
WV-061-002489-015	DUNN, MAX G.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1512/564	4-7-P/O 23
WV-061-002489-016	DUNN, WAYNE H. AND JO ANN	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1513/826	4-7-P/O 23
WV-061-002489-017	BARGER, DAWN AND ALAN	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1517/411	4-7-P/O 23
WV-061-002489-018	LEMLEY, MARY LOU	NORTHEAST NATURAL ENERGY LLC	DEED	1516/844	4-7-P/O 23
WV-061-002489-019	BAPTIST HOMES SOCIETY	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1534/112	4-7-P/O 23
WV-061-002489-020	SHARON STEWART FAUST	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1532/722	4-7-P/O 23
WV-061-003286-001	TRUSTEES OF UNITED OLIVE M.E. CHURCH OR PENTRESS	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1492/567	4-7-P/O 23
WV-061-003286-002	TRUSTEES OF THE OLIVE CEMETERY AT PENTRESS	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1492/830	4-7-P/O 23
WV-061-002619-001	TENNANT, BILLIE JEAN	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1441/293	4-7-16, 20
WV-061-002619-002	DAWSON, MARY SPRAGG	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1441/289	4-7-16, 20
WV-061-002619-003	MATHENY, BECKY SUE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/62	4-7-16, 20
WV-061-002619-004	LEMLEY, LUANNE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/589	4-7-16, 20
WV-061-002619-005	MASON, LUE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1442/593	4-7-16, 20
WV-061-002589-001	WACO OIL & GAS CO INC	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1441/1	4-7-16, 20
WV-061-002621-001	SPRAGG, RANDALL M. AND GARY A.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1441/411	4-7-16, 20
WV-061-001137-001	WILLARD, MARJORIE SIMPSON	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1360/274	4-7-16
WV-061-001163-001	WILLARD, MARJORIE SIMPSON	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1362/10	4-2-20
WV-061-001163-002	SMITH, BESSIE L.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1493/281	4-2-20
WV-061-001163-003	BREWER, RUBY T. AND RAYMOND C.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1496/377	4-2-20
WV-061-001163-004	TENNANT, ELIZABETH A.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1496/383	4-2-20
WV-061-001163-005	TENNANT, NELSON E. AND SUE	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1495/853	4-2-20
WV-061-001163-006	THE MARVIN O TENNANT AND SUE E. TENNANT SPOUSAL REVOCABLE LIVING TRUST	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1498/592	4-2-20
WV-061-001163-007	SIMPSON, BONNIE LOU	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1500/399	4-2-20
WV-061-002589-001	WRIGHT, WILLIS G.	NORTHEAST NATURAL ENERGY LLC	.125 or greater	1441/1	4-2-20
WV-061-002455-001	COPELAND, RAYMOND E.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1418/111	4-2-21, 21.2
WV-061-002455-002	COPELAND, JIMMIE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1421/363	4-2-21, 21.2
WV-061-002455-003	COPELAND, MONA JOY	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1422/505	4-2-21, 21.2
WV-061-002455-004	COPELAND, DANIEL M.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1422/493	4-2-21, 21.2
WV-061-002455-005	COPELAND, ROBERT LYLE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1422/499	4-2-21, 21.2
WV-061-002455-006	SIMPSON, RUBY JANE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1422/511	4-2-21, 21.2
WV-061-002455-007	COPELAND, AMY LYNN	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1431/258	4-2-21, 21.2
WV-061-002455-008	COPELAND, III, JOHN MAX	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1431/819	4-2-21, 21.2
WV-061-002455-009	STOKES, JACQUELINE MAXINE	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1435/218	4-2-21, 21.2
WV-061-002455-010	SINCLAIR, JOAN L.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1439/200	4-2-21, 21.2
WV-061-002455-011	BENNETT, JR. CHARLES E.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1439/196	4-2-21, 21.2
WV-061-002455-012	HAYHURST, DEBORAH S.	*CHESAPEAKE APPALACHIA LLC	.125 or greater	1440/626	4-2-21, 21.2
WV-061-003351-001	EVANS, EDWARD O. *See Attachment	NOVUS EXPLORATION LLC	.125 or greater	1381/674	13-14, 14.1, 14.3

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WV Department of Environmental Protection 02/05/2016

61-0711

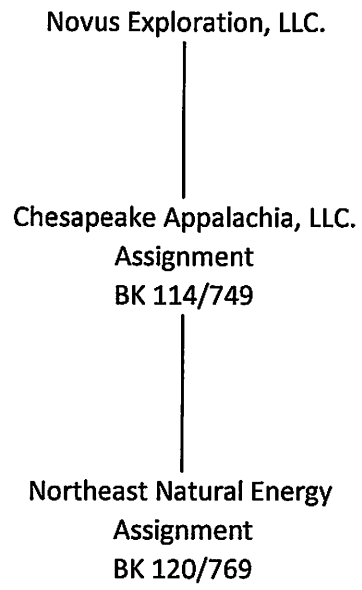
Chesapeake Appalachia, LLC.



Northeast Natural Energy
Assignment
BK 120/769

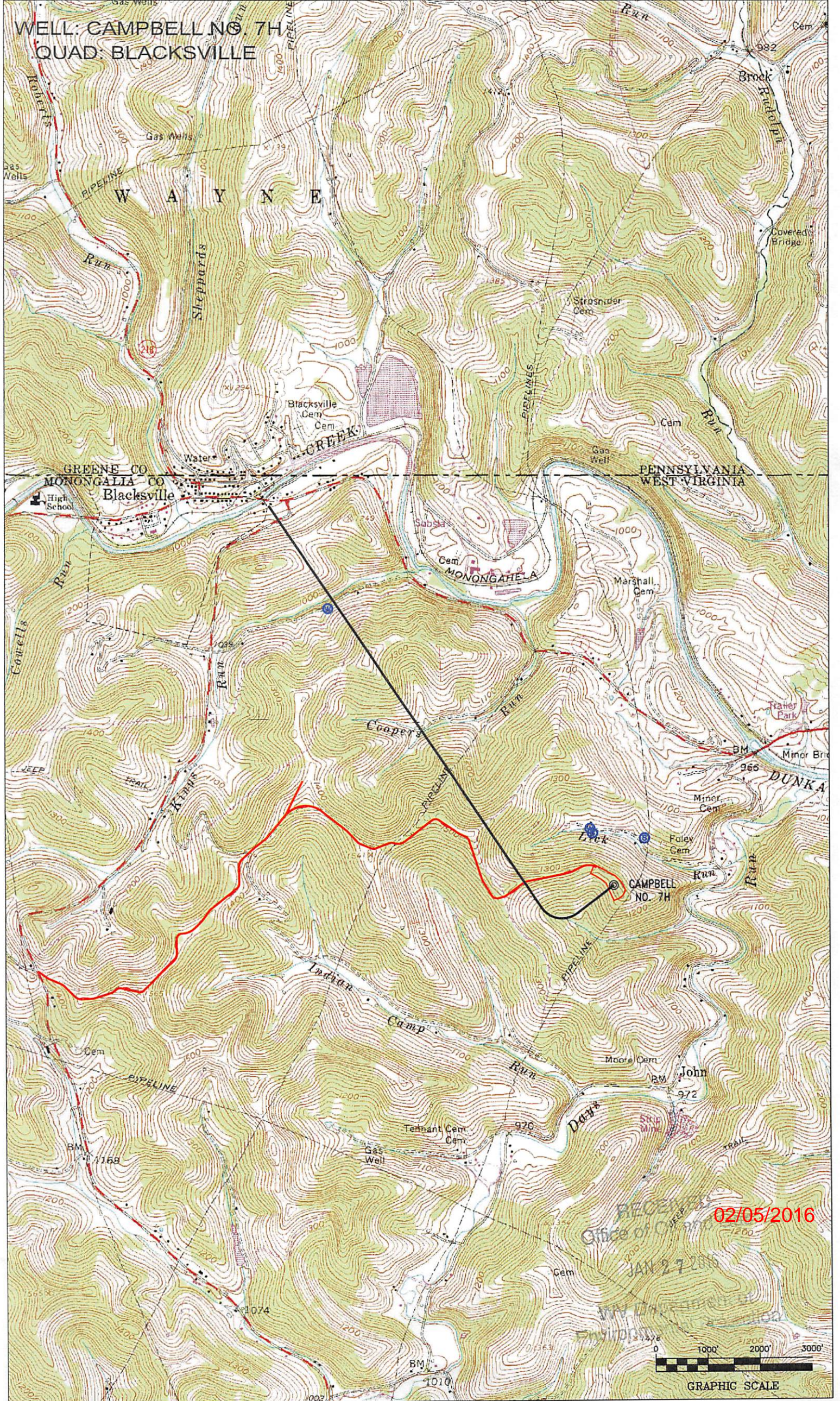
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JAN 27 2016
WV Department of Environmental Protection 02/05/2016

62-05711



66-0711

WELL: CAMPBELL NO. 7H
QUAD: BLACKSVILLE



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JAN 27 2016
02/05/2016



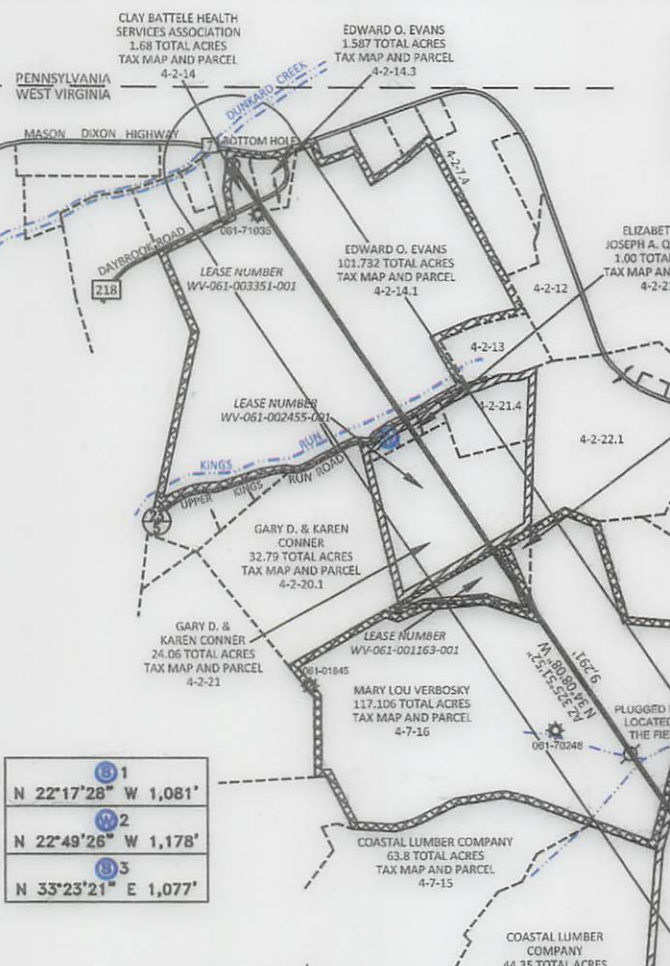
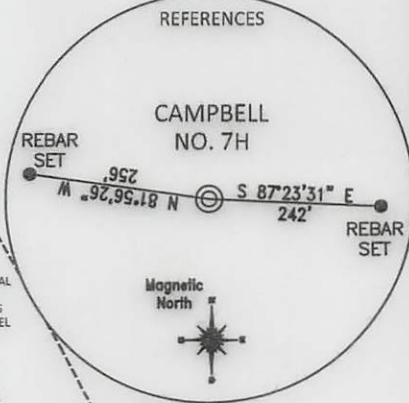
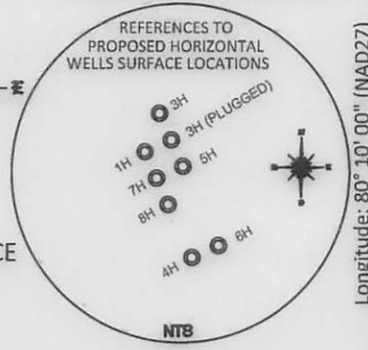
SURFACE HOLE DEC. LONG: 80.184026
SURVEYED LONG: 80° 11' 02.5"

4,890'

Latitude: 39° 42' 30" (NAD27)

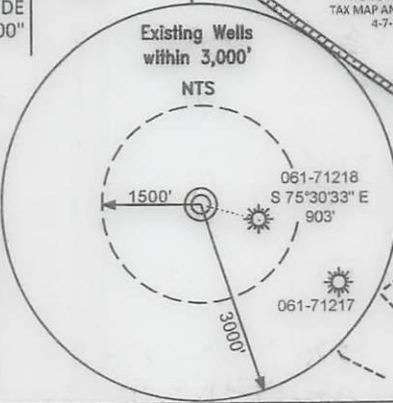
Longitude: 80° 10' 00" (NAD27)

TOP HOLE (UTM NAD 83)
N) 4394761.4
E) 569973.5
BOTTOM HOLE (UTM NAD 83)
N) 4396942.1
E) 567924.7



1
N 22°17'28" W 1,081'
2
N 22°49'26" W 1,178'
3
N 33°23'21" E 1,077'

11,100' SOUTH OF LATITUDE 39°45'00"
11,560' WEST OF LONGITUDE 80°10'00"

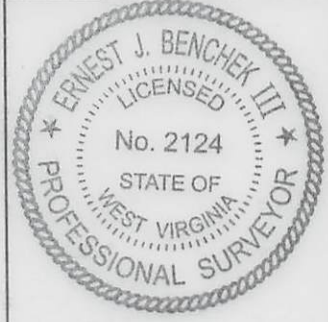


NOTE:
NO WATER WELLS WERE FOUND WITHIN 250' OF THE CENTER OF WELL PAD
NO DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF WELL PAD

REFERENCE NOTES
Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records MONONGALIA County, West Virginia JUNE 2013
State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS
Drafted by: E.A.M.

FILE #: NNE12
DRAWING #: 2360
SCALE: PLAT: 1" = 1400'
TICK: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
Signed:
L.L.S. #2124: Ernest J. Benchek III



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304
Well Type: Oil Waste Diposal Production Deep
 Gas Liquid Injection Storage Shallow
WATERSHED: DUNKARD CREEK
COUNTY/DISTRICT: MONONGALIA / CLAY
SURFACE OWNER: ELLEN F. CAMPBELL
OIL & GAS ROYALTY OWNER: ELLEN FOLEY CAMPBELL, ET AL
LEASE NUMBERS: _____
DATE: JANUARY 22, 2016
OPERATOR'S WELL #: CAMPBELL NO. 7H
API WELL #: 47 61 01711MCP
STATE COUNTY PERMIT HGA
ELEVATION: 1,293.6'
QUADRANGLE: BLACKSVILLE
ACREAGE: 7.05 +/- 02/05/2016
ACREAGE: 494.674 +/-
JAN 27 2016
TARGET FORMATION: MARCELLUS
WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC
ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
CITY: CHARLESTON STATE: WV ZIP CODE: 25301
ESTIMATED DEPTH: TVD: 8,118' TMD: 18,288.48'
DESIGNATED AGENT: JOHN ADAMS
ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
CITY: CHARLESTON STATE: WV ZIP CODE: 25301



northeast
NATURAL ENERGY

61-01711 Mon

January 26, 2016

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

Re: Campbell 1H and 7H Permit Modifications
API # 061-01710, 061-01711

Dear Permit Reviewer,

Northeast Natural Energy LLC ("NNE") would like to request modifications to its existing Campbell 1H and 7H Permits (061-01710, 061-01711). NNE has adjusted the horizontal well bores to allow for more efficient development of the permitted Campbell Well Pad.

Please find enclosed with this request revised WW-6B Forms, WW-6A1 Forms and Attachments, Well Bore Schematics, Mylar Plats and SSP Overview Maps for all four wells.

Should you have any questions please contact me at 304.241.5752 Ext. 7108 or by email at hmedley@nne-llc.com.

Sincerely,

Hollie M. Medley
Regulatory Coordinator

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WV Department of
Environmental Protection

WW-6B
(04/15)

API NO. 47- _____
 OPERATOR WELL NO. Campbell 7H
 Well Pad Name: Campbell

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

1) Well Operator: Northeast Natural Energy LLC 494498281 Monongalia Clay Blacksville
 Operator ID County District Quadrangle

2) Operator's Well Number: Campbell 7H Well Pad Name: Campbell

3) Farm Name/Surface Owner: Ellen F. Campbell Public Road Access: State Route 218 (Daybrook Road)

4) Elevation, current ground: 1293.6' Elevation, proposed post-construction: 1293.6'

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, 8,118' , 103' , 3,600 psi

8) Proposed Total Vertical Depth: 8,118'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18,288.48'

11) Proposed Horizontal Leg Length: 9,291'

12) Approximate Fresh Water Strata Depths: 50' , 1,137'

13) Method to Determine Fresh Water Depths: Driller's Log from Offset Wells

14) Approximate Saltwater Depths: 1,521' , 2,363'

15) Approximate Coal Seam Depths: 316' , 1,135'

16) Approximate Depth to Possible Void (coal mine, karst, other): N/A

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: Adjacent Mine - Federal No. 2
 Depth: 1,100'
 Seam: Pittsburgh
 Owner: Patriot Coal Corporation

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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	24"	New	NA	94.71	40'	40'	GTS
Fresh Water	13-3/8"	New	J-55	54.5	1,280'	1,250'	CTS
Coal							
Intermediate	9-5/8"	New	J-55	40	2,430'	2,400'	CTS
Production	5-1/2"	New	P-110	20	18,289'	18,259'	4,313 Cu. Ft.
Tubing	2-7/8"	New	N-80	6.5	NA	8,500'	NA
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	24"	30"	.375	415		4,500 psi Grout	NA
Fresh Water	13-3/8"	17 1/2"	.38"	2,760	2,000	Class A	1.23
Coal							
Intermediate	9-5/8"	12 1/4"	.395"	3,950	3,000	Class A	1.3
Production	5-1/2"	8 3/4"	.361"	12,530	9,700	50:50 Poz	1.21
Tubing	2-7/8"	NA	.217"	10,570	3,600	NA	NA
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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Page 2 of 3
 WV Department of Environmental Protection
 02/05/2016

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

Drilling and completion of a horizontal Marcellus well. The well will be drilled on air to an approximate depth of 6,478.73' TVD/MD. The well will then be horizontally drilled on synthetic based mud from the KOP to approximately 8,118' TVD / 18,288.48' MD along a 325 degree azimuth.

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

Multi-stage / high-rate slickwater fracture treatment using various size sands as proppant. First stage will be initiated via pressurization against a burst disc ran in the production casing string or perforated with coiled tubing. Subsequent stages will be perforated with pumped down guns ran on wireline. Individual stages will be isolated with composite frac plugs. Maximum pump rate during any stage will be 110 BPM with a maximum allowable surface pressure of 9,500 PSI. Composite bridge plugs will be set at the end of the last stage to isolate the treated formation.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): NA - Existing Pad

22) Area to be disturbed for well pad only, less access road (acres): NA - Existing Pad

23) Describe centralizer placement for each casing string:

Surface and intermediate casing strings will have bow spring centralizers placed every third joint (~120') from the shoe joint to surface. Production casing will have rigid body centralizers placed at a minimum of every fourth joint (~160') from TD to surface.

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

Surface string cement will be a Class A + Max 3% bwoc Calcium Chloride Fresh Water blend. Intermediate string cement will be a Class A Cement + Max 3% bwoc Calcium Chloride + Fresh Water. Production string cement will be (50:50) Poz (Fly Ash):Type I Cement with a gas migration additive.

25) Proposed borehole conditioning procedures:

Surface string will use a 25.0 bbls Gel Pill + LCM + 25 lbs Cello Flake + 20 lbs/bbl Bentonite @ 8.4 ppg & 10 bbls fresh water spacer prior to cement. Intermediate string will use a 25.0 bbls Gel Pill + LCM + 25 lbs Cello Flake + 20 lbs/bbl Bentonite @ 8.4 ppg & 10 bbls fresh water spacer prior to cement. Production string will use a 50.0 bbls SealBond 25 + 1 gal/bbl US-40 + 275 lbs/bbl Barite + 1 gal/bbl SS-2 Spacer @ 13.5 ppg prior to cement.

Office of Oil and Gas

JAN 27 2016

*Note: Attach additional sheets as needed.