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west virginia department of environmental protection

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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

November 19, 2015

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

Re: Permit Modification Approval for API Number 6101689, Well #: KASSAY 13H

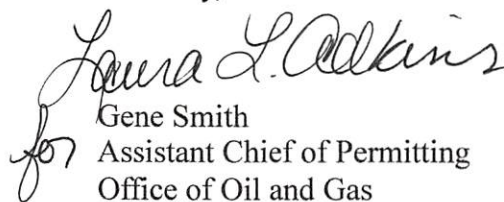
### Modified Lateral Direction and Casing

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,

  
Gene Smith  
Assistant Chief of Permitting  
Office of Oil and Gas

Promoting a healthy environment.

11/20/2015

1

WW-6B  
(04/15)

API NO. 47- 61 - 01689M00  
OPERATOR WELL NO. Kassay 13H  
Well Pad Name: Kassay

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

1) Well Operator: Northeast Natural Energy LLC

|                  |                   |             |                    |
|------------------|-------------------|-------------|--------------------|
| <u>494498281</u> | <u>Monongalia</u> | <u>Clay</u> | <u>Blacksville</u> |
|------------------|-------------------|-------------|--------------------|

  
Operator ID County District Quadrangle

2) Operator's Well Number: Kassay 13H Well Pad Name: Kassay

3) Farm Name/Surface Owner: Nehemiah and Patty A. Kassay Public Road Access: County Route 25/3 (Yank Hollow Road)

4) Elevation, current ground: 1,560' Elevation, proposed post-construction: 1534'

5) Well Type (a) Gas  Oil  Underground Storage

Other \_\_\_\_\_

(b) If Gas Shallow  Deep \_\_\_\_\_

Horizontal  \_\_\_\_\_

6) Existing Pad: Yes or No No MJIC 11/3/2015

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus, 8,289' , 103' , 3,600 psi

8) Proposed Total Vertical Depth: 8,289'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 19,471.32'

11) Proposed Horizontal Leg Length: 10,000'

12) Approximate Fresh Water Strata Depths: 50' , 1,248'

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

14) Approximate Saltwater Depths: 1,946' , 2,696'

15) Approximate Coal Seam Depths: 316' , 1,246'

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: \_\_\_\_\_

Depth: \_\_\_\_\_

Seam: \_\_\_\_\_

Owner: \_\_\_\_\_

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18)

**CASING AND TUBING PROGRAM**

| <b>TYPE</b>  | <b>Size (in)</b> | <b>New or Used</b> | <b>Grade</b> | <b>Weight per ft. (lb/ft)</b> | <b>FOOTAGE: For Drilling (ft)</b> | <b>INTERVALS: Left in Well (ft)</b> | <b>CEMENT: Fill-up (Cu. Ft.)/CTS</b> |
|--------------|------------------|--------------------|--------------|-------------------------------|-----------------------------------|-------------------------------------|--------------------------------------|
| Conductor    | 24"              | New                | NA           | 94.71                         | 40'                               | 40'                                 | GTS                                  |
| Fresh Water  | 13-3/8"          | New                | J-55         | 54.5                          | 1,330'                            | 1,300'                              | CTS                                  |
| Coal         |                  |                    |              |                               |                                   |                                     |                                      |
| Intermediate | 9-5/8"           | New                | J-55         | 40                            | 2,780'                            | 2,750'                              | CTS                                  |
| Production   | 5-1/2"           | New                | P-110        | 20                            | 19,471'                           | 19,441'                             | 4,484 Cu. Ft.                        |
| Tubing       | 2-7/8"           | New                | N-80         | 6.5                           | NA                                | 8,500'                              | NA                                   |
| Liners       |                  |                    |              |                               |                                   |                                     |                                      |

MJK 11/3/2015

| <b>TYPE</b>  | <b>Size (in)</b> | <b>Wellbore Diameter (in)</b> | <b>Wall Thickness (in)</b> | <b>Burst Pressure (psi)</b> | <b>Anticipated Max. Internal Pressure (psi)</b> | <b>Cement Type</b> | <b>Cement Yield (cu. ft./k)</b> |
|--------------|------------------|-------------------------------|----------------------------|-----------------------------|---|--------------------|---------------------------------|
| 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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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 6,420' TVD/MD. The well will then be horizontally drilled on synthetic based mud from the KOP to approximately 8,289' TVD / 19,471.32' MD along a 323 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): 15.85

22) Area to be disturbed for well pad only, less access road (acres): 13.00

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~~ + 15 gal/bbl SS-2 Spacer @ 13.5 ppg prior to cement.

Office of Oil and Gas

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\*Note: Attach additional sheets as needed.



# NORTHEAST NATURAL ENERGY, LLC

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

Slot: Slot #13  
 Well: Kassay 13H  
 Wellbore: Kassay 13H PWB



### Location Information

| Facility Name                                  | Grid East (US ft) | Grid North (US ft) | Latitude       | Longitude      |
|--|-------------------|--------------------|----------------|----------------|
| Kassay Pad                                     | 1772945.670       | 422666.830         | 39°39'30.116"N | 80°11'40.564"W |
| Slot #13                                       | 141.49            | 74.30              | 39°39'31.527"N | 80°11'39.626"W |
| Top Hole (RKB) to Mud line (At Slot: Slot #13) |                   |                    | 16ft           |                |
| Mean Sea Level to Mud line (At Slot: Slot #13) |                   |                    | -1534ft        |                |
| Top Hole (RKB) to Mean Sea Level               |                   |                    | 1550ft         |                |

Tie On: 0.00° Inc, 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, 1300.00ft MD, 1300.00ft TVD, 0.00ft VS

9.625in Casing Intermediate (GL): 0.00° Inc, 2750.00ft MD, 2750.00ft TVD, 0.00ft VS

| Formation       | Depth (KBTVD) |
|-----------------|---------------|
| Tully           | 8040'         |
| Hamilton        | 8090'         |
| Upper Marcellus | 8198'         |
| Lower Marcellus | 8246'         |
| Onondaga        | 8301'         |

| 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             |
|              |           |             |       | 2750'          |

KOP 1: 0.00° Inc, 6419.50ft TVD, 0.00ft VS

10.00°/100ft

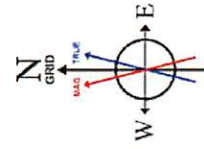
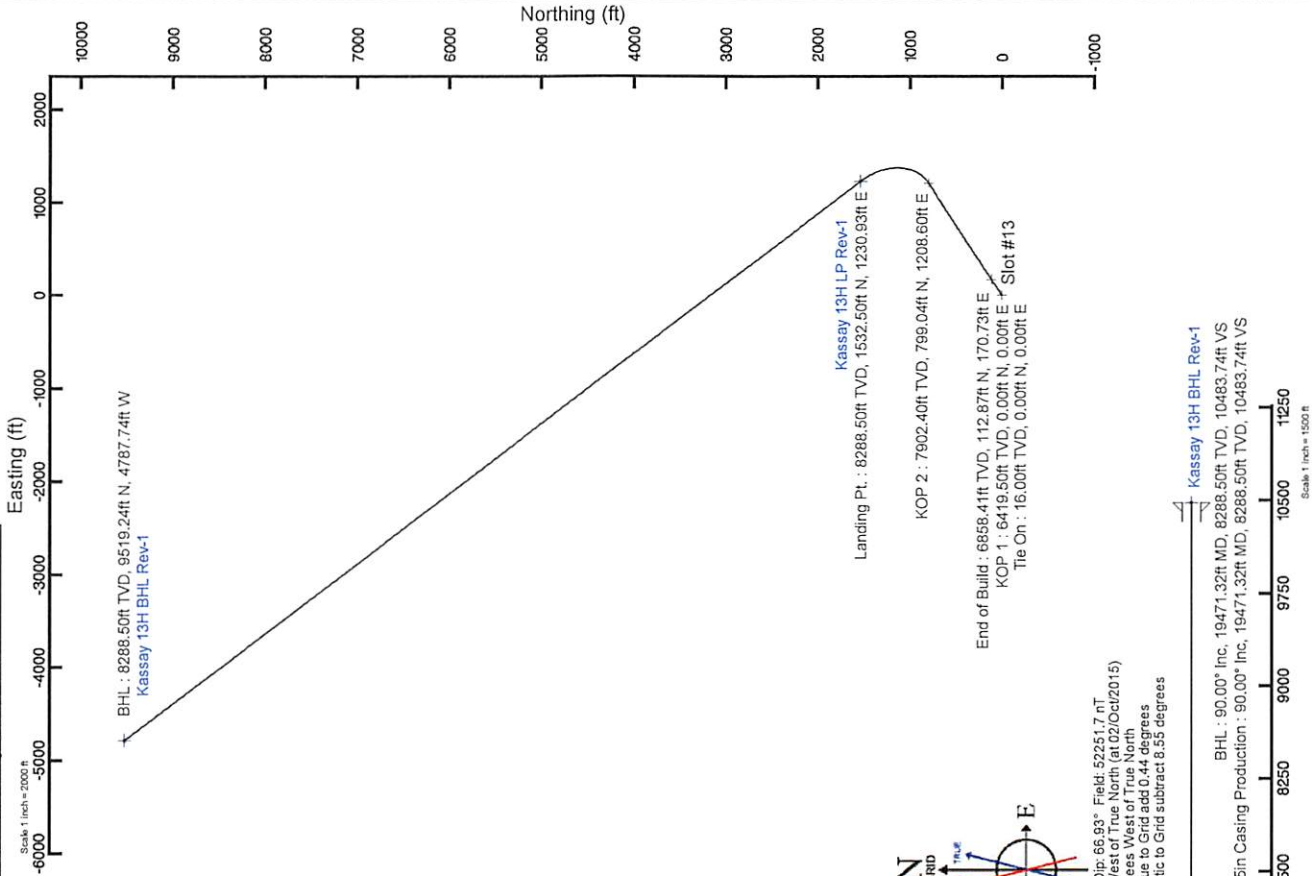
End of Build: 50.00° Inc, 6919.50ft MD, 6858.41ft TVD, -12.60ft VS

KOP 2: 50.00° Inc, 8543.66ft MD, 7902.40ft TVD, -69.21ft VS

10.00°/100ft

Landing Pt.: 90.00° Inc, 9470.71ft MD, 8288.50ft TVD, 483.12ft VS

Kassay 13H LP Rev-1



BGGM (1945.0 to 2017.0) Dip: 66.93° Field: 52251.7 nT  
 Magnetic North is 8.89 degrees West of True North (at 02/Oct/2015)  
 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 8.55 degrees

BHL: 90.00° Inc, 19471.32ft MD, 8288.50ft TVD, 10483.74ft VS  
 5.5in Casing Production: 90.00° Inc, 19471.32ft MD, 8288.50ft TVD, 10483.74ft VS

Kassay 13H BHL Rev-1

Scale 1 inch = 1500ft

Vertical Section (ft)

Azimuth 323.00° with reference 0.00 N, 0.00 E

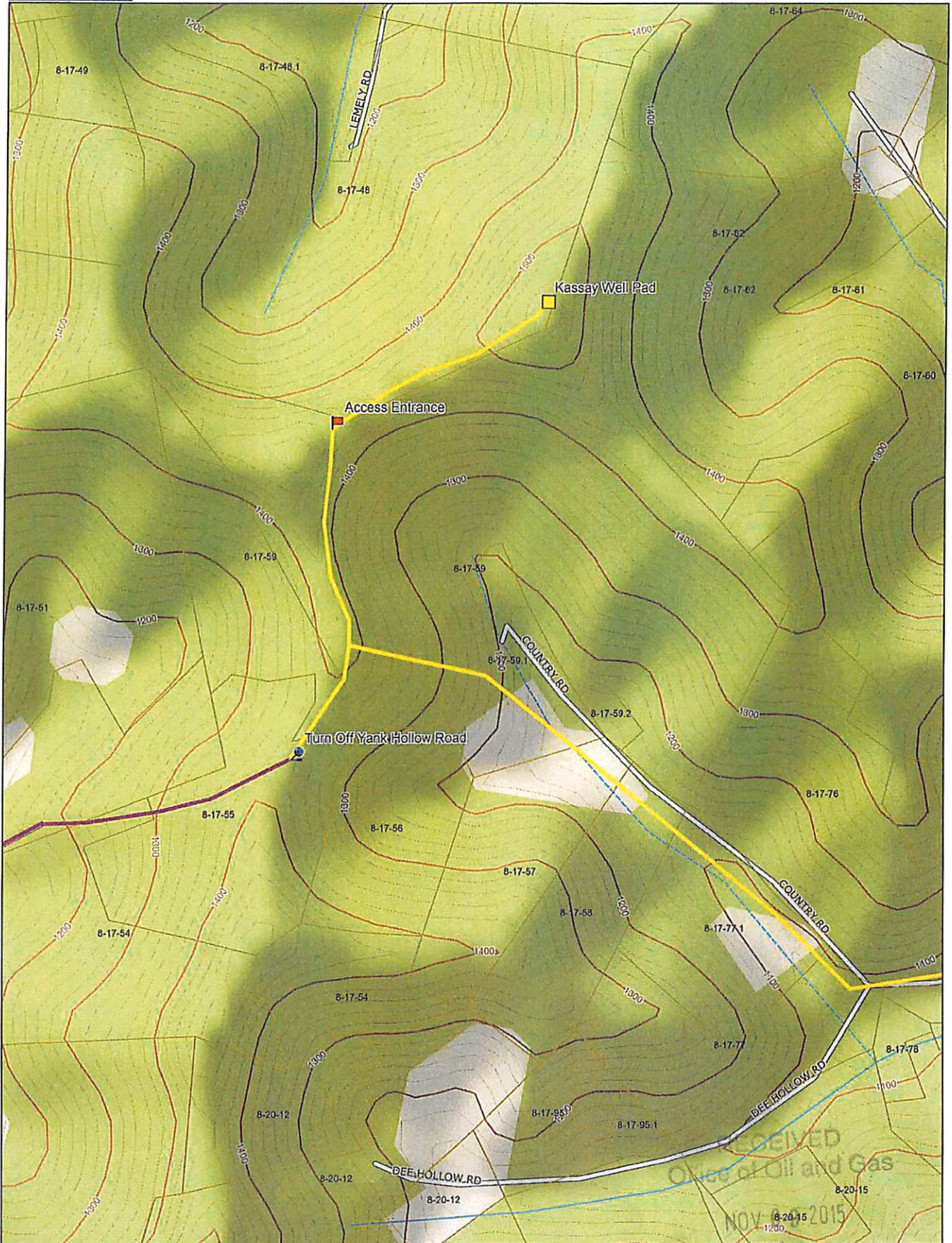
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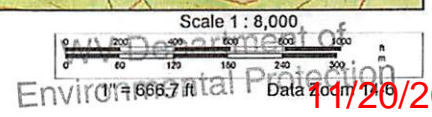
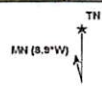
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DELORME

XMap® 7



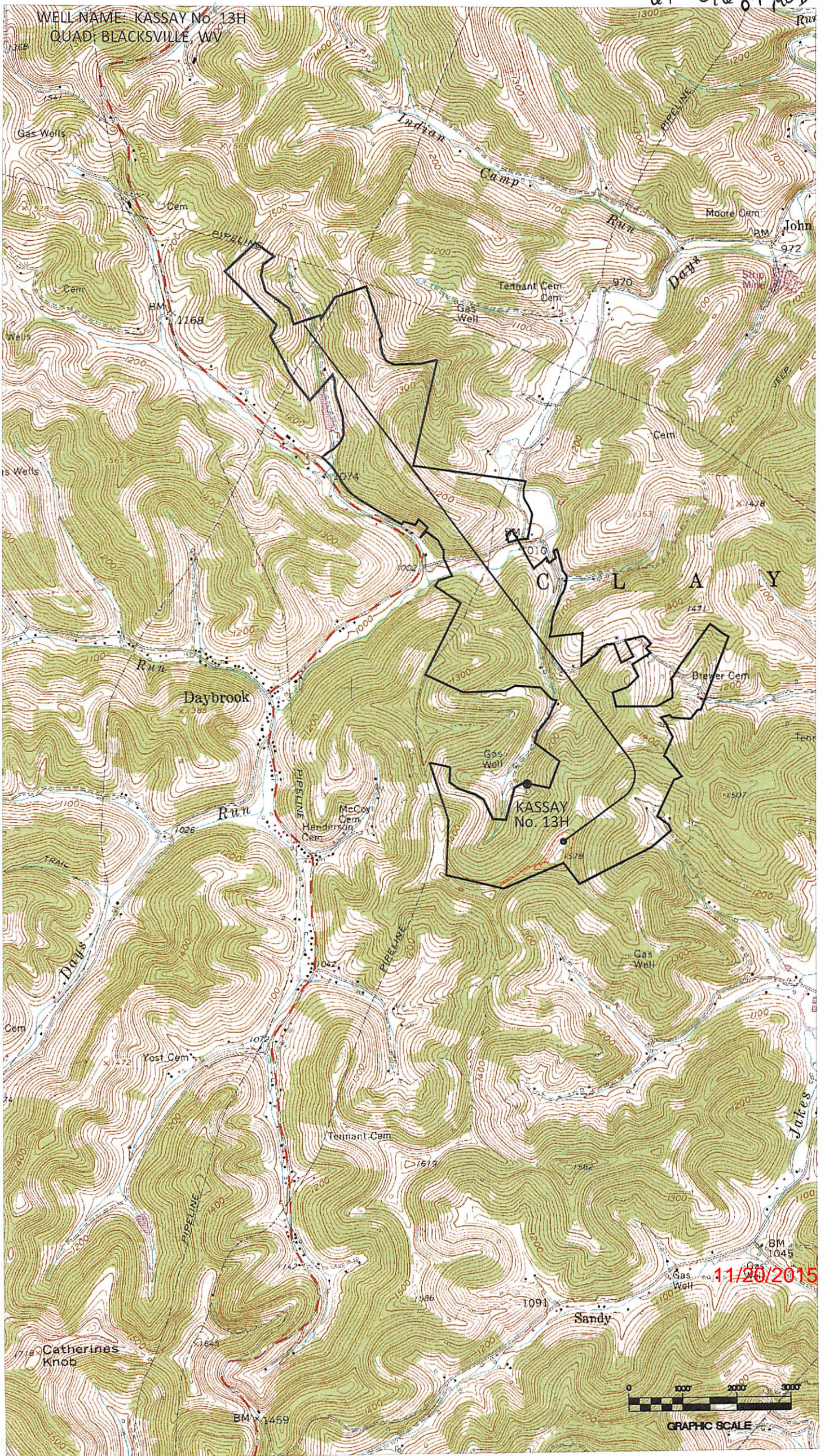
Data use subject to license.  
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 www.delorme.com



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61-01089 MOD

WELL NAME: KASSAY No. 13H  
QUAD: BLACKSVILLE, WV



11/20/2015



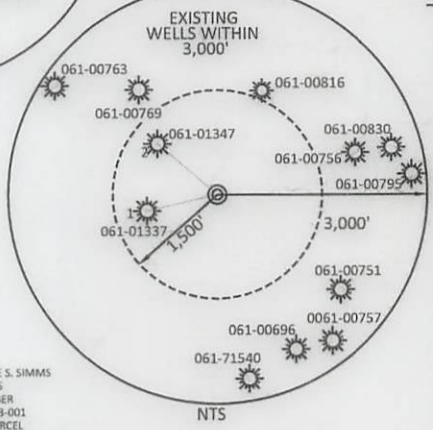
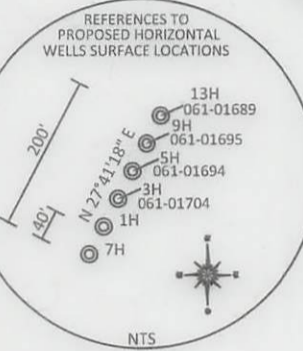
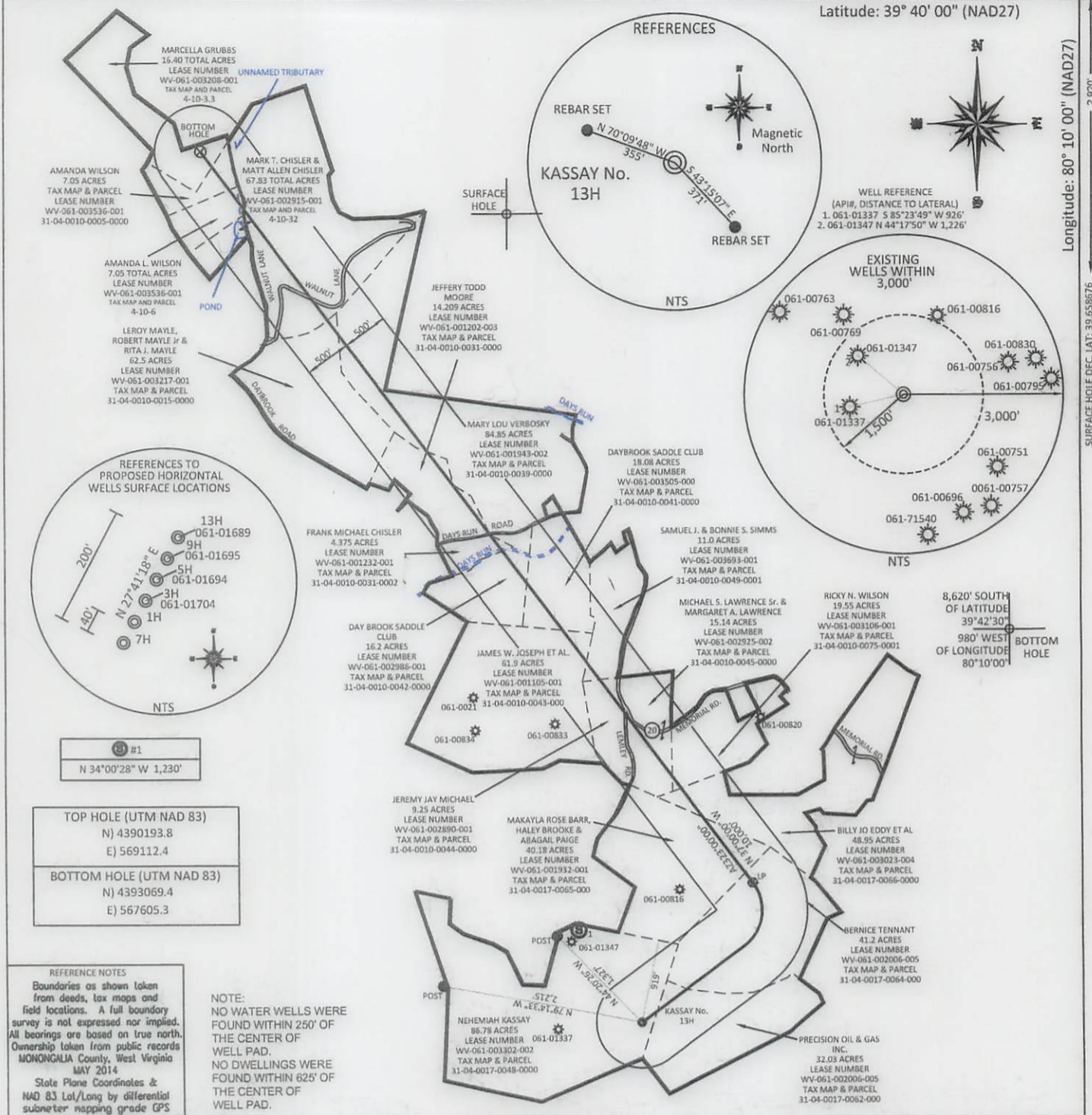
SURFACE HOLE DEC. LONG: 80.194545  
SURVEYED LONG: 80° 11' 40.4"

7,860'

Latitude: 39° 40' 00" (NAD27)

Longitude: 80° 10' 00" (NAD27)

SURFACE HOLE DEC. LAT: 39.668876  
SURVEYED LAT: 39° 39' 31.7"



#1  
N 34°00'28" W 1,230'

TOP HOLE (UTM NAD 83)  
N) 4390193.8  
E) 569112.4

BOTTOM HOLE (UTM NAD 83)  
N) 4393069.4  
E) 567605.3

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 MAY 2014  
State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS  
Drafted by: E.A.H.

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.

FILE #: NNE15

DRAWING #: 2538

SCALE: PLAT: 1" = 1600'  
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: [Signature]

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



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

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: NEHEMIAH KASSAY

OIL & GAS ROYALTY OWNER: \_\_\_\_\_

LEASE NUMBERS: \_\_\_\_\_

DATE: OCTOBER 30, 2015

OPERATOR'S WELL #: KASSAY NO. 13H

API WELL #: 47 61 01689 H&A MOD

STATE COUNTY PERMIT \_\_\_\_\_

PROPOSED ELEVATION: 1,534'

CURRENT ELEVATION: 1,560'

QUADRANGLE: BLACKSVILLE

ACREAGE: 86.78 +/-

ACREAGE: 664.524 +11/20/2015

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

TARGET FORMATION: MARCELLUS

ESTIMATED DEPTH: TVD: 8,289' TMD: 19,471.320'

WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC

DESIGNATED AGENT: JOHN ADAMS

ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200

CITY: CHARLESTON STATE: WV ZIP CODE: 25301



WW-6A1  
(5/13)

Operator's Well No. Kassay 13H

**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: Hollie Medley *Hollie Medley*  
 Its: Regulatory Coordinator

61-01689 MOD

WW-6A1

Operator's Well No.

Kassay 13H

| NNE Lease No.     | Grantor, Lessor, etc.         | Grantee, Lessee, etc.        | Royalty         | Book/Page | Tax Map & Parcel |
|-------------------|-------------------------------|------------------------------|-----------------|-----------|------------------|
| WV-061-003302-002 | KASSAY, NEHEMIAH AND PATTY A. | Northeast Natural Energy LLC | .125 or greater | 1506/143  | 17-48 ✓          |
| WV-061-001109-000 | SHUMAN, INC.                  | *Chesapeake Appalachia, LLC  | .125 or greater | 1439/243  | 17-48 ✓          |
| WV-061-002006-005 | TENNANT, RAYMER               | *Chesapeake Appalachia, LLC  | .125 or greater | 1396/635  | 17-62,64 ✓       |
| WV-061-002006-006 | WILLIAMS, FREDDY W.           | *Chesapeake Appalachia, LLC  | .125 or greater | 1398/282  | 17-62,64 ✓       |
| WV-061-002006-007 | SINE, JR., EVERETT A          | *Chesapeake Appalachia, LLC  | .125 or greater | 1398/285  | 17-62,64 ✓       |
| WV-061-002006-008 | SINE, LYALL A.                | *Chesapeake Appalachia, LLC  | .125 or greater | 1399/599  | 17-62,64 ✓       |
| WV-061-002006-009 | WILLIAMS, NOLA M.             | *Chesapeake Appalachia, LLC  | .125 or greater | 1399/602  | 17-62,64 ✓       |
| WV-061-002006-010 | GALLAGHER, CHERYL LISABETH    | *Chesapeake Appalachia, LLC  | .125 or greater | 1398/519  | 17-62,64 ✓       |
| WV-061-002006-011 | WILLIAMS, W. RICHARD          | *Chesapeake Appalachia, LLC  | .125 or greater | 1398/522  | 17-62,64 ✓       |
| WV-061-002006-012 | SINE, BETTY L.                | *Chesapeake Appalachia, LLC  | .125 or greater | 1399/605  | 17-62,64 ✓       |
| WV-061-002006-013 | BRUMMAGE, KIMBERLY SUE        | *Chesapeake Appalachia, LLC  | .125 or greater | 1399/608  | 17-62,64 ✓       |
| WV-061-002006-014 | SINE, DORIS L.                | *Chesapeake Appalachia, LLC  | .125 or greater | 1404/286  | 17-62,64 ✓       |
| WV-061-002006-015 | MCAFEE, MABEL L.              | *Chesapeake Appalachia, LLC  | .125 or greater | 1399/611  | 17-62,64 ✓       |
| WV-061-002006-016 | VAN TASSELL, PATRICIA         | *Chesapeake Appalachia, LLC  | .125 or greater | 1418/729  | 17-62,64 ✓       |
| WV-061-002006-017 | FRICKLETON, CELESTE M.        | *Chesapeake Appalachia, LLC  | .125 or greater | 1399/614  | 17-62,64 ✓       |
| WV-061-002006-018 | MOORE, VARNER L.              | *Chesapeake Appalachia, LLC  | .125 or greater | 1401/082  | 17-62,64 ✓       |
| WV-061-002006-019 | TANNER, RITA J.               | *Chesapeake Appalachia, LLC  | .125 or greater | 1404/289  | 17-62,64 ✓       |
| WV-061-002006-020 | WILSON, DELILAH M.            | *Chesapeake Appalachia, LLC  | .125 or greater | 1404/292  | 17-62,64 ✓       |
| WV-061-002006-021 | WOODRUFF, ELLEN J.            | *Chesapeake Appalachia, LLC  | .125 or greater | 1404/295  | 17-62,64 ✓       |
| WV-061-002006-022 | CHURCH, GAIL                  | *Chesapeake Appalachia, LLC  | .125 or greater | 1401/085  | 17-62,64 ✓       |
| WV-061-002006-023 | SINE, LARRY K.                | *Chesapeake Appalachia, LLC  | .125 or greater | 1404/298  | 17-62,64 ✓       |
| WV-061-002006-024 | STRICKLAND, SUE ANN           | *Chesapeake Appalachia, LLC  | .125 or greater | 1404/301  | 17-62,64 ✓       |
| WV-061-002006-025 | WILLIAMS, DONALD REX          | *Chesapeake Appalachia, LLC  | .125 or greater | 1401/090  | 17-62,64 ✓       |
| WV-061-002006-026 | WISE, CAROL I.                | *Chesapeake Appalachia, LLC  | .125 or greater | 1403/127  | 17-62,64 ✓       |
| WV-061-002006-027 | MOORE, LEONARD D.             | *Chesapeake Appalachia, LLC  | .125 or greater | 1403/130  | 17-62,64 ✓       |
| WV-061-002006-028 | WILSON, SANDRA FAYE           | *Chesapeake Appalachia, LLC  | .125 or greater | 1405/232  | 17-62,64 ✓       |
| WV-061-002006-029 | HOSTUTLER, PATRICIA ANN       | *Chesapeake Appalachia, LLC  | .125 or greater | 1404/304  | 17-62,64 ✓       |
| WV-061-002006-030 | HALL, PAMELA RENA             | *Chesapeake Appalachia, LLC  | .125 or greater | 1405/877  | 17-62,64 ✓       |
| WV-061-002006-031 | TENNANT, LEONARD L.           | *Chesapeake Appalachia, LLC  | .125 or greater | 1405/880  | 17-62,64 ✓       |
| WV-061-002006-032 | SINE, DONALD R.               | *Chesapeake Appalachia, LLC  | .125 or greater | 1410/572  | 17-62,64 ✓       |
| WV-061-002038-001 | MORRIS, PEGGY A.              | *Chesapeake Appalachia, LLC  | .125 or greater | 1410/569  | 17-62,64 ✓       |
| WV-061-002371-001 | MCCULLOUGH, MARY R.           | *Chesapeake Appalachia, LLC  | .125 or greater | 1421/402  | 17-62,64 ✓       |
| WV-061-002371-002 | LIMING, MARY                  | *Chesapeake Appalachia, LLC  | .125 or greater | 1421/373  | 17-62,64 ✓       |
| WV-061-002371-003 | BUCHANAN, RICKEY JANE         | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/367  | 17-62,64 ✓       |
| WV-061-002371-004 | VEDIS, KRISTIE VIRGIE         | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/327  | 17-62,64 ✓       |
| WV-061-002371-005 | CAIN, KAREN M.                | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/283  | 17-62,64 ✓       |
| WV-061-002371-006 | CHASE, DONNA LYNN             | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/200  | 17-62,64 ✓       |
| WV-061-002371-007 | TENNANT, RICHARD              | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/462  | 17-62,64 ✓       |
| WV-061-002371-008 | TENNANT, LARRY                | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/432  | 17-62,64 ✓       |
| WV-061-002371-009 | FLUHARTY, LORETTA             | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/408  | 17-62,64 ✓       |
| WV-061-002371-010 | PARSONS, EMZA M.              | *Chesapeake Appalachia, LLC  | .125 or greater | 1426/130  | 17-62,64 ✓       |
| WV-061-002371-011 | YURISKO, PAMELA J.            | *Chesapeake Appalachia, LLC  | .125 or greater | 1427/121  | 17-62,64 ✓       |
| WV-061-002371-012 | SINE, MYRTLE L.               | *Chesapeake Appalachia, LLC  | .125 or greater | 1426/122  | 17-62,64 ✓       |
| WV-061-002371-013 | COOK, JR., WALDEN J.          | *Chesapeake Appalachia, LLC  | .125 or greater | 1427/591  | 17-62,64 ✓       |
| WV-061-002371-014 | WISE, ALICE                   | *Chesapeake Appalachia, LLC  | .125 or greater | 1427/171  | 17-62,64 ✓       |
| WV-061-002371-015 | HINDS SNOPPS, TWYLA           | *Chesapeake Appalachia, LLC  | .125 or greater | 1428/185  | 17-62,64 ✓       |
| WV-061-002371-016 | FOLEY, REBECCA GAIL           | *Chesapeake Appalachia, LLC  | .125 or greater | 1427/186  | 17-62,64 ✓       |

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| NNE Lease No.     | Grantor, Lessor, etc.              | Grantee, Lessee, etc.        | Royalty         | Book/Page | Tax Map & Parcel        |
|-------------------|------------------------------------|------------------------------|-----------------|-----------|-------------------------|
| WV-061-002371-017 | SINE, C.W.                         | *Chesapeake Appalachia, LLC  | .125 or greater | 1427/369  | 17-62,64                |
| WV-061-002371-018 | WILSON, SANDRA FAYE AND WILSON L.  | *Chesapeake Appalachia, LLC  | .125 or greater | 1428/740  | 17-62,64                |
| WV-061-002371-019 | ESTLE, GINGER K.                   | *Chesapeake Appalachia, LLC  | .125 or greater | 1438/661  | 17-62,64                |
| WV-061-002371-020 | FLUHARTY, TINA L. AND RICHARD A.   | *Chesapeake Appalachia, LLC  | .125 or greater | 1438/627  | 17-62,64                |
| WV-061-002371-021 | TROUTMAN, LYDIA L.                 | *Chesapeake Appalachia, LLC  | .125 or greater | 1438/643  | 17-62,64                |
| WV-061-002371-022 | JOHNSON, MICHELLE DAWN AND ERIC B. | *Chesapeake Appalachia, LLC  | .125 or greater | 1439/180  | 17-62,64                |
| WV-061-002371-023 | SINE, DONALD R. AND IRMA           | *Chesapeake Appalachia, LLC  | .125 or greater | 1438/671  | 17-62,64                |
| WV-061-002371-024 | THOMAS, DIANE BETH AND CURTIS L.   | *Chesapeake Appalachia, LLC  | .125 or greater | 1442/573  | 17-62,64                |
| WV-061-002371-025 | TENNANT, TROY L. AND ANNA L.       | *Chesapeake Appalachia, LLC  | .125 or greater | 1442/541  | 17-62,64                |
| WV-061-002371-026 | EDDY, DARLENE S.                   | *Chesapeake Appalachia, LLC  | .125 or greater | 1445/158  | 17-62,64                |
| WV-061-002371-027 | VARNER, PAUL                       | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/100  | 17-62,64                |
| WV-061-002371-028 | VARNER, SR., STEVE AND TINA        | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/285  | 17-62,64                |
| WV-061-002371-029 | VARNER, LOUISE                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/095  | 17-62,64                |
| WV-061-002371-030 | VARNER, MARK                       | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/090  | 17-62,64                |
| WV-061-002371-031 | BARBER, ALMEADA J.                 | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/085  | 17-62,64                |
| WV-061-002371-032 | VARNER, JODY L.                    | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/338  | 17-62,64                |
| WV-061-002371-033 | VAN FOSSEN, RUBY E.                | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/080  | 17-62,64                |
| WV-061-002371-034 | BROWN, PAMELA AND CARL             | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/075  | 17-62,64                |
| WV-061-002371-035 | SIMERAL, TAMELA R. AND JERRY       | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/070  | 17-62,64                |
| WV-061-002371-036 | WILLIAMS, JAROD TYLER              | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/066  | 17-62,64                |
| WV-061-002371-037 | SUDDUTH, DEBORA AND SAMUEL         | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/343  | 17-62,64                |
| WV-061-002371-038 | VARNER, JAMES                      | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/370  | 17-62,64                |
| WV-061-002371-039 | VARNER, JANET                      | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/365  | 17-62,64                |
| WV-061-002371-040 | VARNER, CONNIE                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/784  | 17-62,64                |
| WV-061-002371-041 | VARNER, ROBERT                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/779  | 17-62,64                |
| WV-061-002371-042 | MCCAMMON, LISA AND WILLIAM         | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/821  | 17-62,64                |
| WV-061-002371-043 | LYONS, BETTY C.                    | *Chesapeake Appalachia, LLC  | .125 or greater | 1462/541  | 17-62,64                |
| WV-061-002371-044 | EDDY, TOMMY J. AND CAROL A.        | Northeast Natural Energy LLC | .125 or greater | 1517/96   | 17-62,64                |
| WV-061-002371-045 | YURISKO, PAMELA J.                 | Northeast Natural Energy LLC | .125 or greater | 1521/732  | 17-62,64                |
| WV-061-002371-046 | TENNANT, RICHARD DEE AND ONEIDA P. | Northeast Natural Energy LLC | .125 or greater | 1524/265  | 17-62,64                |
| WV-061-002371-047 | LARRY BLAINE TENNANT ESTATE        | Northeast Natural Energy LLC | .125 or greater | 1524/774  | 17-62,64                |
| WV-061-002371-048 | FLUHARTY, LORETTA                  | Northeast Natural Energy LLC | .125 or greater | 1524/780  | 17-62,64                |
| WV-061-002371-049 | BUCHANAN, RICKEY JANE              | Northeast Natural Energy LLC | .125 or greater | 1526/132  | 17-62,64                |
| WV-061-002371-050 | WISE, ALICE                        | Northeast Natural Energy LLC | .125 or greater | 1526/134  | 17-62,64                |
| WV-061-002371-051 | PARSONS, EMZA                      | Northeast Natural Energy LLC | .125 or greater | 1530/21   | 17-62,64                |
| WV-061-002389-001 | JOSEPH, ALMA M.                    | *Chesapeake Appalachia, LLC  | .125 or greater | 1435/165  | 17-62,64;<br>10-43,44 ✓ |
| WV-061-002392-001 | CLEVENGER, ARDELLA J.              | *Chesapeake Appalachia, LLC  | .125 or greater | 1435/178  | 17-62,64;<br>10-44 ✓    |
| WV-061-002392-002 | CUMMINGS, HELEN                    | *Chesapeake Appalachia, LLC  | .125 or greater | 1435/156  | 17-62,64;<br>10-44 ✓    |
| WV-061-002401-001 | PEMBERTON, MARY J.                 | *Chesapeake Appalachia, LLC  | .125 or greater | 1441/724  | 17-62,64 ✓              |
| WV-061-002401-003 | STRAHLER, REBECCA LYNNE            | *Chesapeake Appalachia, LLC  | .125 or greater | 1441/008  | 17-62,64 ✓              |
| WV-061-002401-004 | WILLIAMS, JAMES EVERETT AND LISA   | *Chesapeake Appalachia, LLC  | .125 or greater | 1441/020  | 17-62,64 ✓              |
| WV-061-002401-005 | TAYLOR, KAREN J                    | *Chesapeake Appalachia, LLC  | .125 or greater | 1440/691  | 17-62,64 ✓              |
| WV-061-002401-006 | BERGA, JOYCE ANN AND RONAL         | *Chesapeake Appalachia, LLC  | .125 or greater | 1440/686  | 17-62,64 ✓              |
| WV-061-002401-007 | WILLIAMS, DENNIS KEITH             | *Chesapeake Appalachia, LLC  | .125 or greater | 1443/436  | 17-62,64 ✓              |
| WV-061-002401-008 | MICHAEL, SUSAN L. AND CHESTER L.   | *Chesapeake Appalachia, LLC  | .125 or greater | 1440/680  | 17-62,64 ✓              |
| WV-061-003542-001 | MOORE, VELDA E.                    | Northeast Natural Energy LLC | .125 or greater | 1526/104  | 17-62,64 ✓              |

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|-------------------|--|------------------------------|-----------------|-----------|------------------|
| WV-061-003542-002 | BAILEY, REBECCA H.                           | Northeast Natural Energy LLC | .125 or greater | 1523/694  | 17-62,64 ✓       |
| WV-061-003542-003 | ROBERTSON, LOIS R. AND KENNETH A.            | Northeast Natural Energy LLC | .125 or greater | 1530/224  | 17-62,64 ✓       |
| WV-061-003542-004 | EARL, SHARON G. AND MICHAEL P.               | Northeast Natural Energy LLC | .125 or greater | 1530/756  | 17-62,64 ✓       |
| WV-061-003023-001 | EDDY, ORA C.                                 | *Chesapeake Appalachia, LLC  | .125 or greater | 1427/622  | 17-66 ✓          |
| WV-061-003023-002 | ROUPE, LARRY L.                              | *Chesapeake Appalachia, LLC  | .125 or greater | 1428/895  | 17-66 ✓          |
| WV-061-003023-003 | WOOD, NINA J.                                | *Chesapeake Appalachia, LLC  | .125 or greater | 1431/415  | 17-66 ✓          |
| WV-061-003023-004 | EDDY, BILLY JOE AND JANET                    | *Chesapeake Appalachia, LLC  | .125 or greater | 1428/845  | 17-66 ✓          |
| WV-061-003023-005 | EDDY, DENZIL FAYE AND ROSE MARY              | *Chesapeake Appalachia, LLC  | .125 or greater | 1429/323  | 17-66 ✓          |
| WV-061-003023-006 | HARRIS, JULIA MARCIA                         | *Chesapeake Appalachia, LLC  | .125 or greater | 1430/357  | 17-66 ✓          |
| WV-061-003023-007 | PHILLIPS, REBECCA AND ED                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1430/321  | 17-66 ✓          |
| WV-061-003023-008 | POLANSKY, EMELIA B.                          | *Chesapeake Appalachia, LLC  | .125 or greater | 1430/337  | 17-66 ✓          |
| WV-061-003023-009 | WHITE, TERRY D. AND SHIRLEY                  | *Chesapeake Appalachia, LLC  | .125 or greater | 1430/367  | 17-66 ✓          |
| WV-061-003023-010 | WRIGHT, LENA ANN                             | *Chesapeake Appalachia, LLC  | .125 or greater | 1434/133  | 17-66 ✓          |
| WV-061-003023-011 | EDDY, MELVIN LUTHER AND VADA DAY             | *Chesapeake Appalachia, LLC  | .125 or greater | 1436/446  | 17-66 ✓          |
| WV-061-003023-012 | LIPSCOMB, JUDY AND LARRY                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1431/267  | 17-66 ✓          |
| WV-061-003023-013 | LEMMON, DONNA EILEEN AND WILLIAM             | *Chesapeake Appalachia, LLC  | .125 or greater | 1439/316  | 17-66 ✓          |
| WV-061-003023-014 | EDDY, BILLY JOE AND JANET                    | Northeast Natural Energy LLC | .125 or greater | 1518/25   | 17-66 ✓          |
| WV-061-003023-015 | EDDY, DENZIL FAYE AND ROSE MARY              | Northeast Natural Energy LLC | .125 or greater | 1517/374  | 17-66 ✓          |
| WV-061-003023-016 | EDDY, ORA C. AND VANESSA                     | Northeast Natural Energy LLC | .125 or greater | 1517/0387 | 17-66 ✓          |
| WV-061-003023-017 | WRIGHT, LENA ANN                             | Northeast Natural Energy LLC | .125 or greater | 1521/728  | 17-66 ✓          |
| WV-061-003023-018 | POLANSKY, EMELIA B.                          | Northeast Natural Energy LLC | .125 or greater | 1521/692  | 17-66 ✓          |
| WV-061-003023-019 | EDDY, MELVIN LUTHER AND KAY                  | Northeast Natural Energy LLC | .125 or greater | 1534/118  | 17-66 ✓          |
| WV-061-003106-001 | FLYNN, GERALDINE ANNE ENGLER & PHILLIP DAVID | *Chesapeake Appalachia, LLC  | .125 or greater | 1437/025  | 10-75.1 ✓        |
| WV-061-003106-002 | GRIFFIETH, CATHERINE E.                      | *Chesapeake Appalachia, LLC  | .125 or greater | 1438/647  | 10-75.1 ✓        |
| WV-061-003106-003 | WILDMAN, WINIFRED H.                         | *Chesapeake Appalachia, LLC  | .125 or greater | 1443/442  | 10-75.1 ✓        |
| WV-061-002925-002 | MICHAEL, JR., LAWRENCE C.                    | Northeast Natural Energy LLC | .125 or greater | 1535/845  | 10-45 ✓          |
| WV-061-003693-001 | BROOKOVER, CARMEL G.                         | Northeast Natural Energy LLC | .125 or greater | 1535/847  | 10-49.1 ✓        |
| WV-061-003505-000 | THE DAYBROOK SADDLE CLUB                     | Northeast Natural Energy LLC | .125 or greater | 1523/492  | 10-41 ✓          |
| WV-061-001943-002 | WILLARD, CLARENCE AND ANTOINETTE             | Northeast Natural Energy LLC | .125 or greater | 1523/712  | 10-39 ✓          |
| WV-061-001943-003 | CORLEY, BONNIE N.                            | Northeast Natural Energy LLC | .125 or greater | 1529/59   | 10-39 ✓          |
| WV-061-003211-001 | THE CHARLES LEE THOMAS TRUST                 | *Chesapeake Appalachia, LLC  | .125 or greater | 1451/82   | 10-32 ✓          |
| WV-061-002915-001 | CHISLER, MARK T. AND RITA                    | *West Augusta Resources, LLC | .125 or greater | 1506/414  | 10-32 ✓          |
| WV-061-003247-001 | THOMAS, JAMES H.                             | *Chesapeake Appalachia, LLC  | .125 or greater | 1451/087  | 10-32 ✓          |
| WV-061-003247-005 | HAWKINS, DONALD L. AND BONNIE K.             | Northeast Natural Energy LLC | .125 or greater | 1532/612  | 10-32 ✓          |
| WV-061-003208-001 | KUNKLE, CHARLES                              | *Chesapeake Appalachia, LLC  | .125 or greater | 1445/202  | 10-3.3 ✓         |
| WV-061-003577-001 | TENNANT, JACOB W. AND ELIZABETH B.           | Northeast Natural Energy LLC | .125 or greater | 1533/826  | 10-3.3 ✓         |
| WV-061-003707-000 | SHUMAN, INC.                                 | Northeast Natural Energy LLC | .125 or greater | 1534/330  | 10-5 ✓           |
| WV-061-003536-001 | THE CHARLES LEE THOMAS TRUST                 | Northeast Natural Energy LLC | .125 or greater | 1524/457  | 10-6,5 ✓         |
| WV-061-003537-001 | THE CHARLES LEE THOMAS TRUST                 | Northeast Natural Energy LLC | .125 or greater | 1524/246  | 10-6 ✓           |
| WV-061-003558-001 | KNISELY, JAMES G.                            | Northeast Natural Energy LLC | .125 or greater | 1525/236  | 10-6 ✓           |
| WV-061-003558-002 | SWIGER, JAMES DWIGHT                         | Northeast Natural Energy LLC | .125 or greater | 1528/109  | 10-6 ✓           |
| WV-061-003558-003 | SWIGER, JOHN AVERIL                          | Northeast Natural Energy LLC | .125 or greater | 1529/560  | 10-6 ✓           |
| WV-061-003558-004 | SUMMERS, JANET K.                            | Northeast Natural Energy LLC | .125 or greater | 1529/118  | 10-6 ✓           |
| WV-061-003558-005 | MULLENAX, PRISCILLA R.                       | Northeast Natural Energy LLC | .125 or greater | 1532/561  | 10-6 ✓           |
| WV-061-003378-001 | STRICKLER, PAUL T. AND SHARON                | Northeast Natural Energy LLC | .125 or greater | 1530/128  | 10-15,31.2 ✓     |
| WV-061-003378-002 | JOHN, LOIS MARIE AND ERNEST                  | Northeast Natural Energy LLC | .125 or greater | 1487/383  | 10-15,31.2 ✓     |

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|-------------------|--|------------------------------|-----------------|-----------|------------------|
| WV-061-003378-003 | BUTLER, MARY ROSE                      | Northeast Natural Energy LLC | .125 or greater | 1530/132  | 10-15,31.2 ✓     |
| WV-061-003378-004 | STRICKLER, WILBUR RANDOLPH AND DEBORAH | Northeast Natural Energy LLC | .125 or greater | 1530/140  | 10-15,31.2 ✓     |
| WV-061-003378-005 | STRICKLER, DORSEY NEIL AND NANCY E.    | Northeast Natural Energy LLC | .125 or greater | 1530/136  | 10-15,31.2 ✓     |
| WV-061-001334-001 | THOMAS, CHARLES L.                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1378/404  | 10-15 ✓          |
| WV-061-001372-001 | JOHN, LOIS MARIE                       | *Chesapeake Appalachia, LLC  | .125 or greater | 1375/898  | 10-15 ✓          |
| WV-061-001372-002 | STRICKLER, DORSEY NEIL                 | *Chesapeake Appalachia, LLC  | .125 or greater | 1375/868  | 10-15 ✓          |
| WV-061-001372-003 | BUTLER, MARY ROSE                      | *Chesapeake Appalachia, LLC  | .125 or greater | 1376/19   | 10-15 ✓          |
| WV-061-001372-004 | STRICKLER, PAUL T.                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1376/43   | 10-15 ✓          |
| WV-061-001372-005 | STRICKLER, WILBUR RANDOLPH             | *Chesapeake Appalachia, LLC  | .125 or greater | 1375/838  | 10-15 ✓          |
| WV-061-003219-001 | MICHAEL, EMMA REGINA                   | *Chesapeake Appalachia, LLC  | .125 or greater | 1445/121  | 10-15 ✓          |
| WV-061-003217-001 | MAYLE, JR., LEROY ROBERT AND RITA J.   | *Chesapeake Appalachia, LLC  | .125 or greater | 1447/702  | 10-15 ✓          |
| WV-061-003510-001 | THE CHARLES LEE THOMAS TRUST           | Northeast Natural Energy LLC | .125 or greater | 1525/222  | 10-15 ✓          |
| WV-061-001202-003 | MOORE, L. GAYLE                        | *Chesapeake Appalachia, LLC  | .125 or greater | 1370/493  | 10-31 ✓          |
| WV-061-001202-004 | JOHN, LOIS MARIE                       | *Chesapeake Appalachia, LLC  | .125 or greater | 1376/007  | 10-31 ✓          |
| WV-061-001202-007 | STRICKLER, PAUL T.                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1376/055  | 10-31 ✓          |
| WV-061-001202-009 | MICHAEL, EMMA                          | *Chesapeake Appalachia, LLC  | .125 or greater | 1485/672  | 10-31 ✓          |
| WV-061-001232-001 | JOHN, LOIS MARIE                       | *Chesapeake Appalachia, LLC  | .125 or greater | 1375/895  | 10-31.2 ✓        |
| WV-061-001232-006 | STRICKLER, PAUL T.                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1376/046  | 10-31.2 ✓        |
| WV-061-001232-009 | MICHAEL, EMMA REGINA                   | Northeast Natural Energy LLC | .125 or greater | 1526/66   | 10-31.2 ✓        |
| WV-061-001333-001 | MOORE, L. GAYLE                        | *Chesapeake Appalachia, LLC  | .125 or greater | 1370/544  | 10-31.2 ✓        |
| WV-061-002621-001 | REVOCABLE TRUST OF ROBERT M. SPRAGG    | *Chesapeake Appalachia, LLC  | .125 or greater | 1441/411  | 10-42 ✓          |
| WV-061-002986-001 | THE DAYBROOK SADDLE CLUB               | *Chesapeake Appalachia, LLC  | .125 or greater | 1429/504  | 10-42 ✓          |
| WV-061-002986-002 | DAWSON, MARY ANN SPRAGG                | *Chesapeake Appalachia, LLC  | .125 or greater | 1433/564  | 10-42 ✓          |
| WV-061-002986-003 | TENNANT, TERESA LEIGH                  | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/375  | 10-42 ✓          |
| WV-061-002986-004 | TENNANT, NELLIE G.                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1454/826  | 10-42 ✓          |
| WV-061-002986-005 | TENNANT, KENT S.                       | Northeast Natural Energy LLC | .125 or greater | 1514/081  | 10-42 ✓          |
| WV-061-002986-006 | SIMS, DANIEL T.                        | Northeast Natural Energy LLC | .125 or greater | 1515/835  | 10-42 ✓          |
| WV-061-002986-008 | SIMS, JERRY E. AND JOYCE               | Northeast Natural Energy LLC | .125 or greater | 1516/0625 | 10-42 ✓          |
| WV-061-002986-009 | BOHM, JEAN-CLARE BOHM                  | Northeast Natural Energy LLC | .125 or greater | 1515/837  | 10-42 ✓          |
| WV-061-002986-010 | TENNANT, D. RAY AND BARBARA            | Northeast Natural Energy LLC | .125 or greater | 1516/0627 | 10-42 ✓          |
| WV-061-002986-011 | WATKINS, JO ANN                        | Northeast Natural Energy LLC | .125 or greater | 1515/843  | 10-42 ✓          |
| WV-061-002986-012 | WATKINS, DOUG D. AND JEAN              | Northeast Natural Energy LLC | .125 or greater | 1514/061  | 10-42 ✓          |
| WV-061-002986-013 | WILSON, JUDY E. AND ROBERT             | Northeast Natural Energy LLC | .125 or greater | 1514/088  | 10-42 ✓          |
| WV-061-002986-014 | WATKINS, DAVID                         | Northeast Natural Energy LLC | .125 or greater | 1515/849  | 10-42 ✓          |
| WV-061-002986-015 | WATKINS, MACK                          | Northeast Natural Energy LLC | .125 or greater | 1514/075  | 10-42 ✓          |
| WV-061-002986-016 | FRITZ, KIM DAVID AND NANCY             | Northeast Natural Energy LLC | .125 or greater | 1515/839  | 10-42 ✓          |
| WV-061-002986-017 | GEISSINGER, CONNIE AND WAYNE           | Northeast Natural Energy LLC | .125 or greater | 1514/063  | 10-42 ✓          |
| WV-061-002986-018 | WATKINS, ROBERT D. AND JANICE          | Northeast Natural Energy LLC | .125 or greater | 1516/0623 | 10-42 ✓          |
| WV-061-002986-019 | WATKINS, TOMMY D.                      | Northeast Natural Energy LLC | .125 or greater | 1516/223  | 10-42 ✓          |
| WV-061-002986-020 | ELLIS, EVA L. AND ROBERT               | Northeast Natural Energy LLC | .125 or greater | 1516/1    | 10-42 ✓          |
| WV-061-002986-021 | SELL, JOYCE                            | Northeast Natural Energy LLC | .125 or greater | 1514/071  | 10-42 ✓          |
| WV-061-002986-022 | LARRY, RUTH ELLEN                      | Northeast Natural Energy LLC | .125 or greater | 1513/846  | 10-42 ✓          |
| WV-061-002986-023 | TENNANT, STEPHEN A. AND MARCIA         | Northeast Natural Energy LLC | .125 or greater | 1514/079  | 10-42 ✓          |
| WV-061-002986-024 | COLEMAN, JANET                         | Northeast Natural Energy LLC | .125 or greater | 1514/073  | 10-42 ✓          |
| WV-061-002986-026 | TENNANT, JOE S. AND KAREN              | Northeast Natural Energy LLC | .125 or greater | 1516/0548 | 10-42 ✓          |
| WV-061-002986-030 | LUCKEY, CAROL A. AND DAVID M.          | Northeast Natural Energy LLC | .125 or greater | 1518/21   | 10-42 ✓          |

11/20/2015

61-01689/101

WW-6A1

Operator's Well No. Kassay 13H

| NNE Lease No.     | Grantor, Lessor, etc.                | Grantee, Lessee, etc.        | Royalty         | Book/Page | Tax Map & Parcel |
|-------------------|--------------------------------------|------------------------------|-----------------|-----------|------------------|
| WV-061-002986-035 | TENNANT, JR., JOSEPH B.              | Northeast Natural Energy LLC | .125 or greater | 1518/5    | 10-42 ✓          |
| WV-061-002986-036 | HARRISON, SHERRY L.                  | Northeast Natural Energy LLC | .125 or greater | 1521/574  | 10-42 ✓          |
| WV-061-002986-037 | HALBROOK, JACQUELYN M. AND DONALD R. | Northeast Natural Energy LLC | .125 or greater | 1520/686  | 10-42 ✓          |
| WV-061-002986-039 | THE DAYBROOK SADDLE CLUB             | Northeast Natural Energy LLC | .125 or greater | 1521/647  | 10-42 ✓          |
| WV-061-002986-040 | MAIN, DONLEY CARR                    | Northeast Natural Energy LLC | .125 or greater | 1524/271  | 10-42 ✓          |
| WV-061-002986-041 | TENNANT, SUE                         | Northeast Natural Energy LLC | .125 or greater | 1524/349  | 10-42 ✓          |
| WV-061-002986-042 | TENNANT, MARION LAVERN AND GINGER J. | Northeast Natural Energy LLC | .125 or greater | 1521/180  | 10-42 ✓          |
| WV-061-002986-043 | KRIDER, SANDRA K. AND WILLIAM S.     | Northeast Natural Energy LLC | .125 or greater | 1524/784  | 10-42 ✓          |
| WV-061-002986-044 | WILSON, JANET AND BRIAN              | Northeast Natural Energy LLC | .125 or greater | 1528/148  | 10-42 ✓          |
| WV-061-002986-045 | SWARTZ, CARL E. AND CHEVELLE L.      | Northeast Natural Energy LLC | .125 or greater | 1524/342  | 10-42 ✓          |
| WV-061-002986-047 | CARROLL, CHANNING CARROLL            | Northeast Natural Energy LLC | .125 or greater | 1529/53   | 10-42 ✓          |
| WV-061-002986-048 | LAW, MARY JOYCE                      | Northeast Natural Energy LLC | .125 or greater | 1526/116  | 10-42 ✓          |
| WV-061-002986-049 | GRAVES, LORA ANN                     | Northeast Natural Energy LLC | .125 or greater | 1529/24   | 10-42 ✓          |
| WV-061-002986-050 | MOORE, JUANITA                       | Northeast Natural Energy LLC | .125 or greater | 1530/754  | 10-42 ✓          |
| WV-061-003271-001 | CHESAPEAKE APPALACHIA, LLC.          | *Chesapeake Appalachia, LLC  | .125 or greater | 1491/334  | 10-42 ✓          |
| WV-061-003492-001 | TENNANT, JAN L. AND RICHARD COOPER   | Northeast Natural Energy LLC | .125 or greater | 1522/337  | 10-42 ✓          |
| WV-061-003503-001 | MOORE, LORETTA GAYLE                 | Northeast Natural Energy LLC | .125 or greater | 1525/220  | 10-42 ✓          |
| WV-061-003535-001 | WATKINS, ROBERT D. AND JANICE        | Northeast Natural Energy LLC | .125 or greater | 1532/384  | 10-42 ✓          |
| WV-061-001105-001 | LEMLEY, LAURA E.                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1382/818  | 10-43 ✓          |
| WV-061-001105-002 | MCCORD, KENNETH JAS                  | *Chesapeake Appalachia, LLC  | .125 or greater | 1379/162  | 10-43 ✓          |
| WV-061-001105-003 | MINOR, JUNE LEMLEY                   | *Chesapeake Appalachia, LLC  | .125 or greater | 1379/159  | 10-43 ✓          |
| WV-061-001105-004 | SANDERS, BETTY JANE                  | Northeast Natural Energy LLC | .125 or greater | 1490/751  | 10-43 ✓          |
| WV-061-001105-005 | HOWARD, WILLA R. & DAVID N.          | Northeast Natural Energy LLC | .125 or greater | 1524/250  | 10-43 ✓          |
| WV-061-001105-006 | MCCORD, RONNIE L. & SHARON           | Northeast Natural Energy LLC | .125 or greater | 1524/293  | 10-43 ✓          |
| WV-061-001105-007 | MCCORD, LAWERANCE L. & JANET         | Northeast Natural Energy LLC | .125 or greater | 1523/494  | 10-43 ✓          |
| WV-061-001105-008 | FLUHARTY, TINA L. AND RICHARD A.     | Northeast Natural Energy LLC | .125 or greater | 1524/267  | 10-43 ✓          |
| WV-061-001105-009 | ESTLE, GINGER K.                     | Northeast Natural Energy LLC | .125 or greater | 1524/236  | 10-43 ✓          |
| WV-061-001105-010 | TENNANT, RICHARD DEE AND ONEIDA P.   | Northeast Natural Energy LLC | .125 or greater | 1524/273  | 10-43 ✓          |
| WV-061-001105-012 | LARRY BLAINE TENNANT ESTATE          | Northeast Natural Energy LLC | .125 or greater | 1524/772  | 10-43 ✓          |
| WV-061-001105-013 | BONNELL, DIANA LYNN AND ORVAL        | Northeast Natural Energy LLC | .125 or greater | 1530/752  | 10-43 ✓          |
| WV-061-001105-014 | BRUMMAGE, E. JACK AND JANET D.       | Northeast Natural Energy LLC | .125 or greater | 1533/681  | 10-43 ✓          |
| WV-061-001105-015 | BRUMMAGE, TIMOTHY L.                 | Northeast Natural Energy LLC | .125 or greater | 1533/677  | 10-43 ✓          |
| WV-061-001105-016 | SILVA, MARY A.                       | Northeast Natural Energy LLC | .125 or greater | 1530/178  | 10-43 ✓          |
| WV-061-001105-017 | MOORE, BONNIE JEAN                   | Northeast Natural Energy LLC | .125 or greater | 1531/63   | 10-43 ✓          |
| WV-061-001105-019 | BROOKOVER, SR., CARMEL G.            | Northeast Natural Energy LLC | .125 or greater | 1530/230  | 10-43 ✓          |
| WV-061-001105-022 | ROGERS, ALBERT LEE AND KRISTEN       | Northeast Natural Energy LLC | .125 or greater | 1531/47   | 10-43 ✓          |
| WV-061-001105-023 | ALLEN, APRIL                         | Northeast Natural Energy LLC | .125 or greater | 1529/849  | 10-43 ✓          |
| WV-061-001105-025 | ROGERS, ALAN J. AND MELISSA          | Northeast Natural Energy LLC | .125 or greater | 1531/45   | 10-43 ✓          |
| WV-061-001105-026 | NICHOLS, PATRICIA AND BILLY F.       | Northeast Natural Energy LLC | .125 or greater | 1532/86   | 10-43 ✓          |
| WV-061-001105-027 | JOHNSON, GLENDORA F.                 | Northeast Natural Energy LLC | .125 or greater | 1530/355  | 10-43 ✓          |
| WV-061-001105-028 | ASKEW, CELIA P. AND ROBERT L.        | Northeast Natural Energy LLC | .125 or greater | 1532/52   | 10-43 ✓          |
| WV-061-001105-029 | PRICE, SR., GARY MICHAEL             | Northeast Natural Energy LLC | .125 or greater | 1530/146  | 10-43 ✓          |
| WV-061-001105-030 | BRUMMAGE, JAMIE A.                   | Northeast Natural Energy LLC | .125 or greater | 1532/96   | 10-43 ✓          |
| WV-061-001105-031 | RUSH, RUBY AND RONALD                | Northeast Natural Energy LLC | .125 or greater | 1532/68   | 10-43 ✓          |
| WV-061-001105-032 | TENNANT, BRENDA K. AND BILLY RAY     | Northeast Natural Energy LLC | .125 or greater | 1530/148  | 10-43 ✓          |
| WV-061-001105-033 | MILLIRON, ETTA L.                    | Northeast Natural Energy LLC | .125 or greater | 1530/353  | 10-43 ✓          |
| WV-061-001105-034 | LEWIS, PEARL G. AND CLYDE H.         | Northeast Natural Energy LLC | .125 or greater | 1530/357  | 10-43 ✓          |

11/20/2015

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Operator's Well No.

Kassay 13H

| NNE Lease No.     | Grantor, Lessor, etc.                      | Grantee, Lessee, etc.        | Royalty         | Book/Page | Tax Map & Parcel |
|-------------------|--|------------------------------|-----------------|-----------|------------------|
| WV-061-001105-035 | TENNANT, JUDY                              | Northeast Natural Energy LLC | .125 or greater | 1533/105  | 10-43 ✓          |
| WV-061-001105-036 | BRUMMAGE, BRITTANY M.                      | Northeast Natural Energy LLC | .125 or greater | 1533/195  | 10-43 ✓          |
| WV-061-001105-040 | CHILTON, J. MICHELLE AND CHARLES J.        | Northeast Natural Energy LLC | .125 or greater | 1534/80   | 10-43 ✓          |
| WV-061-001458-002 | SIMPSON, VERNON L.                         | *Chesapeake Appalachia, LLC  | .125 or greater | 1379/168  | 10-43 ✓          |
| WV-061-001458-003 | SIMPSON, DAVID C.                          | *Chesapeake Appalachia, LLC  | .125 or greater | 1379/171  | 10-43 ✓          |
| WV-061-001458-004 | SIMPSON, ALLEN L.                          | *Chesapeake Appalachia, LLC  | .125 or greater | 1383/491  | 10-43 ✓          |
| WV-061-001458-005 | SIMPSON, JR. IRA J.                        | *Chesapeake Appalachia, LLC  | .125 or greater | 1383/494  | 10-43 ✓          |
| WV-061-001458-006 | TENNANT, TROY                              | *Chesapeake Appalachia, LLC  | .125 or greater | 1407/201  | 10-43 ✓          |
| WV-061-002800-001 | WHARTON, JOSEPH THOMAS                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1434/228  | 10-43 ✓          |
| WV-061-002800-002 | LEMLEY, KYLE AND PAULA                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1431/436  | 10-43 ✓          |
| WV-061-002800-003 | CALVERT, CHARLES W.                        | *Chesapeake Appalachia, LLC  | .125 or greater | 1431/800  | 10-43 ✓          |
| WV-061-002840-001 | VEDIS, KRISTIE VIRGIE                      | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/359  | 10-43 ✓          |
| WV-061-002840-002 | CAIN, KAREN                                | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/215  | 10-43 ✓          |
| WV-061-002840-005 | LEMLEY, DENZIL                             | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/399  | 10-43 ✓          |
| WV-061-002840-007 | CHASE, DONNA LYNN                          | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/303  | 10-43 ✓          |
| WV-061-002840-011 | TROUTMAN, LYDIA L.                         | *Chesapeake Appalachia, LLC  | .125 or greater | 1437/071  | 10-43 ✓          |
| WV-061-002840-012 | SNOPPS, TWYLA HINDS                        | *Chesapeake Appalachia, LLC  | .125 or greater | 1427/587  | 10-43 ✓          |
| WV-061-002840-013 | GEE, PAULINE                               | *Chesapeake Appalachia, LLC  | .125 or greater | 1426/126  | 10-43 ✓          |
| WV-061-002840-014 | MERRIFIELD, ALBERTA                        | *Chesapeake Appalachia, LLC  | .125 or greater | 1427/625  | 10-43 ✓          |
| WV-061-002840-015 | FLUHARTY, LORETTA                          | Northeast Natural Energy LLC | .125 or greater | 1524/295  | 10-43 ✓          |
| WV-061-002890-001 | HOSUTLER, PATRICIA ANN                     | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/246  | 10-44 ✓          |
| WV-061-002890-002 | WILSON, SANDRA FAYE                        | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/346  | 10-44 ✓          |
| WV-061-002890-003 | TENNANT, LEONARD L.                        | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/254  | 10-44 ✓          |
| WV-061-002890-004 | HALL, PAMELA RENA                          | *Chesapeake Appalachia, LLC  | .125 or greater | 1425/258  | 10-44 ✓          |
| WV-061-002890-005 | TENNANT, RAYMER F.                         | *Chesapeake Appalachia, LLC  | .125 or greater | 1434/125  | 10-44 ✓          |
| WV-061-002890-006 | WISE, ALICE                                | *Chesapeake Appalachia, LLC  | .125 or greater | 1433/557  | 10-44 ✓          |
| WV-061-002890-007 | TENNANT, HAZEL MARIE                       | *Chesapeake Appalachia, LLC  | .125 or greater | 1433/530  | 10-44 ✓          |
| WV-061-002890-008 | PIERCEFIELD, TERRY LYNN                    | *Chesapeake Appalachia, LLC  | .125 or greater | 1443/205  | 10-44 ✓          |
| WV-061-002890-009 | PIERCEFIELD, GENE LEE AND LANA L.          | *Chesapeake Appalachia, LLC  | .125 or greater | 1443/197  | 10-44 ✓          |
| WV-061-002890-010 | CLARK, JANICE A. AND JOHN R.               | *Chesapeake Appalachia, LLC  | .125 or greater | 1443/193  | 10-44 ✓          |
| WV-061-002890-011 | PRATT, JIM ARVIN AND BRENDA SUE            | *Chesapeake Appalachia, LLC  | .125 or greater | 1443/201  | 10-44 ✓          |
| WV-061-002890-012 | BRUTTO, DONNA M. AND ANTHONY               | *Chesapeake Appalachia, LLC  | .125 or greater | 1443/180  | 10-44 ✓          |
| WV-061-002890-013 | MONTGOMERY, MELVIN DOUG AND PATRICIA MAY   | *Chesapeake Appalachia, LLC  | .125 or greater | 1444/284  | 10-44 ✓          |
| WV-061-002890-014 | FERGUSON, TAMMY LYNN                       | *Chesapeake Appalachia, LLC  | .125 or greater | 1444/276  | 10-44 ✓          |
| WV-061-002890-015 | SMITH, CYNTHIA K. AND PHILLIP W.           | *Chesapeake Appalachia, LLC  | .125 or greater | 1444/355  | 10-44 ✓          |
| WV-061-002890-016 | MONTGOMERY, LEROY THOMAS AND VIOLET RACHEL | *Chesapeake Appalachia, LLC  | .125 or greater | 1445/459  | 10-44 ✓          |
| WV-061-002890-017 | PRATT, CHRISTOPHER AND AMANDA              | *Chesapeake Appalachia, LLC  | .125 or greater | 1446/247  | 10-44 ✓          |
| WV-061-002890-018 | AHLHEIM, RONALD WILLIAM                    | *Chesapeake Appalachia, LLC  | .125 or greater | 1446/251  | 10-44 ✓          |
| WV-061-002890-019 | PRATT, BRANDY NICOLE                       | *Chesapeake Appalachia, LLC  | .125 or greater | 1446/646  | 10-44 ✓          |
| WV-061-002890-020 | HERRING, BETTY LOU STILES                  | *Chesapeake Appalachia, LLC  | .125 or greater | 1447/791  | 10-44 ✓          |
| WV-061-002890-021 | STILES, KIMBERLY                           | *Chesapeake Appalachia, LLC  | .125 or greater | 1449/363  | 10-44 ✓          |
| WV-061-002890-022 | STILES, TEDDY AND GLORIA                   | *Chesapeake Appalachia, LLC  | .125 or greater | 1451/462  | 10-44 ✓          |
| WV-061-002890-023 | STILES, ALLEN                              | *Chesapeake Appalachia, LLC  | .125 or greater | 1453/568  | 10-44 ✓          |
| WV-061-002890-024 | STILES, KATINA LIMING                      | *Chesapeake Appalachia, LLC  | .125 or greater | 1453/580  | 10-44 ✓          |
| WV-061-002890-025 | STILES, DUSTIN                             | *Chesapeake Appalachia, LLC  | .125 or greater | 1453/633  | 10-44 ✓          |
| WV-061-002890-026 | DAVIS, SONYA & MIKE                        | Northeast Natural Energy LLC | .125 or greater | 1524/279  | 10-44 ✓          |
| WV-061-002890-027 | FLUHARTY, LORETTA                          | Northeast Natural Energy LLC | .125 or greater | 1524/281  | 10-44 ✓          |

11/20/2015

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Operator's Well No. Kassay 13H

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|-------------------|----------------------------------|------------------------------|-----------------|-----------|------------------|
| WV-061-002890-028 | VEDIS, KRISTIE VIRGIE            | Northeast Natural Energy LLC | .125 or greater | 1524/789  | 10-44 ✓          |
| WV-061-002890-029 | TENNANT, TROY & ANA              | Northeast Natural Energy LLC | .125 or greater | 1524/776  | 10-44 ✓          |
| WV-061-002890-030 | FLUHARTY, TINA L. AND RICHARD A. | Northeast Natural Energy LLC | .125 or greater | 1524/311  | 10-44 ✓          |
| WV-061-002890-031 | LARRY BLAINE TENNANT ESTATE      | Northeast Natural Energy LLC | .125 or greater | 1524/778  | 10-44 ✓          |
| WV-061-002890-032 | TENNANT, RICHARD AND ONEIDA P.   | Northeast Natural Energy LLC | .125 or greater | 1524/287  | 10-44 ✓          |
| WV-061-002890-033 | ESTLE, GINGER K.                 | Northeast Natural Energy LLC | .125 or greater | 1523/816  | 10-44 ✓          |
| WV-061-002890-034 | ROBINSON, LYDIA                  | Northeast Natural Energy LLC | .125 or greater | 1528/157  | 10-44 ✓          |
| WV-061-002890-035 | CAIN, KAREN MARIE AND RICHARD L. | Northeast Natural Energy LLC | .125 or greater | 1524/453  | 10-44 ✓          |
| WV-061-002890-036 | CHASE, DONNA LYNN AND BRIAN D.   | Northeast Natural Energy LLC | .125 or greater | 1532/72   | 10-44 ✓          |
| WV-061-002389-001 | JOSEPH, ALMA M.                  | *Chesapeake Appalachia, LLC  | .125 or greater | 1435/165  | 10-44 ✓          |
| WV-061-001932-001 | EDDY-BARR, BARBARA               | *Chesapeake Appalachia, LLC  | .125 or greater | 1393/729  | 17-65 ✓          |

\*See Attachment

11/20/2015



Chesapeake Appalachia, LLC.



Northeast Natural Energy  
Assignment  
BK 120/769

West Augusta Resources LLC



Chesapeake Appalachia, LLC.

Assignment  
BK 113/PG 134



Northeast Natural Energy

Assignment  
BK 120/PG 769

61-01689 1015



November 6, 2015

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

Re: Kassay 3H, 5H, 9H and 13H Permit Modifications  
API # 061-01740, 061-01694, 061-01695, 061-01689

Dear Permit Reviewer,

Northeast Natural Energy LLC ("NNE") would like to request modifications to its existing Kassay 3H, 5H, 9H and 13H Permits (061-01740, 061-01694, 061-01695, 061-01689). NNE has adjusted and lengthened the horizontal well bores to allow for more efficient development of the permitted Kassay Well Pad.

Please find enclosed with this request revised WW-6B Forms, WW-6A1 Forms and Attachments, Site Safety Plans, Well Bore Schematics and Mylar Plats 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](mailto:hmedley@nne-llc.com).

Sincerely,

A handwritten signature in blue ink that reads 'Hollie M. Medley'.

Hollie M. Medley  
Regulatory Coordinator

RECEIVED  
Office of Oil and Gas  
NOV 09 2015  
WV Department of  
Environmental Protection



**northeast**  
NATURAL ENERGY

November 6, 2015

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

Re: Kassay 3H, 5H, 9H and 13H Permit Modifications  
API # 061-01740, 061-01694, 061-01695, 061-01689

3H 5H 9H 13H

Dear Permit Reviewer,

Northeast Natural Energy LLC ("NNE") would like to request modifications to its existing Kassay 3H, 5H, 9H and 13H Permits (061-01740, 061-01694, 061-01695, 061-01689). NNE has adjusted and lengthened the horizontal well bores to allow for more efficient development of the permitted Kassay Well Pad.

Please find enclosed with this request revised WW-6B Forms, WW-6A1 Forms and Attachments, Site Safety Plans, Well Bore Schematics and Mylar Plats 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](mailto:hmedley@nne-llc.com).

Sincerely,

Hollie M. Medley  
Regulatory Coordinator

RECEIVED  
Office of Oil and Gas  
NOV 09 2015  
WV Department of  
Environmental Protection