

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

API 47-069-00175 County Ohio District Triadelphia  
Quad Valley Grove Pad Name Roy Ferrell OHI Field/Pool Name \_\_\_\_\_  
Farm name Roy Ferrell OHI 206H Well Number 838813  
Operator (as registered with the OOG) Chesapeake Appalachia, L.L.C.  
Address P.O. Box 18496 City Oklahoma City State OK Zip 73154-0496

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4432662.18 Easting 540008.68  
Landing Point of Curve Northing 4432302.39 Easting 539440.94  
Bottom Hole Northing 4429864.31 Easting 540416.43

Elevation (ft) 1,196' GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine  
Mud Type(s) and Additive(s)  
SOBM

Date permit issued 9-26-2013 Date drilling commenced 10-11-2013 Date drilling ceased 11-15-2013  
Date completion activities began 5/17/2014 Date completion activities ceased 5/23/2014  
Verbal plugging (Y/N) N Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

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

Freshwater depth(s) ft 340' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 797' Void(s) encountered (Y/N) depths Y 651'  
Coal depth(s) ft 651' Cavern(s) encountered (Y/N) depths N

**APPROVED**  
NAME: Eric Blood  
DATE: 9.23.16

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WV Department of  
Environmental Protection

Reviewed by:

EB

**10/28/2016**

API 47-069 00175

Farm name Roy Ferrell OHI 206H

Well number 838813

| CASING STRINGS            | Hole Size       | Casing Size | Depth   | New or Used | Grade wt/ft | Basket Depth(s) | Did cement circulate (Y/ N)<br>* Provide details below* |
|---------------------------|-----------------|-------------|---------|-------------|-------------|-----------------|---|
| Conductor                 | 24"             | 20"         | 118'    | New         | J-55 94#    |                 |   |
| Surface                   | 17 1/2"         | 13 3/8"     | 740'    | New         | J-55 54.5#  |                 | Y   |
| Coal                      |                 |             |         |             |             |                 |   |
| Intermediate 1            | 12 1/4"         | 9 5/8"      | 2,231'  | New         | J-55 40#    |                 | Y   |
| Intermediate 2            |                 |             |         |             |             |                 |   |
| Intermediate 3            |                 |             |         |             |             |                 |   |
| Production                | 8 3/4" / 8 1/2" | 5 1/2"      | 16,130' | New         | P-110 20#   |                 | Y   |
| Tubing                    |                 |             |         |             |             |                 |   |
| Packer type and depth set |                 |             |         |             |             |                 |   |

Comment Details \_\_\_\_\_

| CEMENT DATA    | Class/Type of Cement | Number of Sacks | Slurry wt (ppg) | Yield (ft <sup>3</sup> /sks) | Volume (ft <sup>3</sup> ) | Cement Top (MD) | WOC (hrs) |
|----------------|----------------------|-----------------|-----------------|------------------------------|---------------------------|-----------------|-----------|
| Conductor      | Class A              | 180             | 15.60           | 1.20                         | 216                       | Surface         | 8         |
| Surface        | Class A              | 527             | 15.60           | 1.20                         | 686.4                     | Surface         | 8         |
| Coal           |                      |                 |                 |                              |                           |                 |           |
| Intermediate 1 | Class A              | 736             | 15.60           | 1.24                         | 912.64                    | Surface         | 8         |
| Intermediate 2 |                      |                 |                 |                              |                           |                 |           |
| Intermediate 3 |                      |                 |                 |                              |                           |                 |           |
| Production     | Class A              | 1,003 / 2,199   | 15.80           | 1.36 / 1.16                  | 3,914.92                  | 739'            | 8         |
| Tubing         |                      |                 |                 |                              |                           |                 |           |

Drillers TD (ft) 16,135'

Loggers TD (ft) 16,135'

Deepest formation penetrated Marcellus

Plug back to (ft) \_\_\_\_\_

Plug back procedure \_\_\_\_\_

Kick off depth (ft) 6,583'

Check all wireline logs run

- caliper    density    deviated/directional    induction  
 neutron    resistivity    gamma ray    temperature    sonic

Well cored  Yes  No

Conventional   Sidewall

Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_

Surface / Coal - Run centralizers in the middle and top of the first joint, top of the third jt and every 4th joint to surface.

Production - Run 1st centralizer 3' from Shoe, 2nd at top of the first joint and then one every 3rd joint to TOC.

WAS WELL COMPLETED AS SHOT HOLE  Yes  No

DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No

DETAILS \_\_\_\_\_

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WERE TRACERS USED  Yes  No

TYPE OF TRACER(S) USED \_\_\_\_\_

JUN 21 2016



API 47- 069 - 00175 Farm name Roy Ferrell OHI 206H Well number 838813

| <u>PRODUCING FORMATION(S)</u> | <u>DEPTHS</u> |     |          |
|-------------------------------|---------------|-----|----------|
| Marcellus                     | 6,622         | TVD | 7,246 MD |
|                               |               |     |          |
|                               |               |     |          |
|                               |               |     |          |

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 1,863 psi Bottom Hole 4,350 psi DURATION OF TEST 120 hrs

OPEN FLOW Gas 3,002 mcfpd Oil 73 bpd NGL bpd Water 253 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

| LITHOLOGY/<br>FORMATION | TOP<br>DEPTH IN FT<br>NAME TVD | BOTTOM<br>DEPTH IN FT<br>TVD | TOP<br>DEPTH IN FT<br>MD | BOTTOM<br>DEPTH IN FT<br>MD | DESCRIBE ROCK TYPE AND RECORD QUANTITY AND<br>TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC) |
|-------------------------|--------------------------------|------------------------------|--------------------------|-----------------------------|--|
|                         | 0                              |                              | 0                        |                             |  |
| Shale/Siltst            | 860                            | 1100                         | 860                      | 1100                        |  |
| Ss/Shale                | 1100                           | 1190                         | 1100                     | 1190                        |  |
| Ss/Siltst               | 1190                           | 1340                         | 1190                     | 1340                        |  |
| Ss                      | 1340                           | 1550                         | 1340                     | 1550                        |  |
| Shale/Ss                | 1550                           | 1670                         | 1550                     | 1670                        |  |
| Shale                   | 1670                           | 1789                         | 1670                     | 1789                        |  |
| Big Injun               | 1789                           | 2078                         | 1789                     | 2078                        |  |
| Shale                   | 2078                           | 6881                         | 2078                     | 6881                        |  |
| Geneseo                 | 6451                           | 6476                         | 6881                     | 6920                        | Gas 190u   |
| Tully                   | 6476                           | 6501                         | 6920                     | 6960                        | Gas 193u   |
| Hamilton                | 6501                           | 6622                         | 6960                     | 7246                        | Gas 471u   |
| Marcellus               | 6622                           | 6634                         | 7246                     | 7302                        | Gas 1613u  |
| TD                      |                                | 6748                         |                          | 16135                       |  |

Please insert additional pages as applicable.

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

Logging Company Nomac Drilling  
Address 171 Locust Ave Extension City Mt. Morris State PA Zip 15349

Cementing Company Schlumberger  
Address 1080 U.S. 33 City Weston State WV Zip 26452

Stimulating Company Weatherford, Artificial Lift Systems  
Address 286 Weatherford BLVD City Buckhannon State WV Zip 26201

Please insert additional pages as applicable.

Completed by Jessica Greathouse  
Signature  Title Manager - Regulatory Operations Date 6/14/2016

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JUN 21 2016  
WV Department of Environmental Protection  
Telephone 304-353-5240

# PERFORATION RECORD ATTACHMENT

Well Name and Number: Roy Ferrell OHI 206H

API No. 47-069-00175

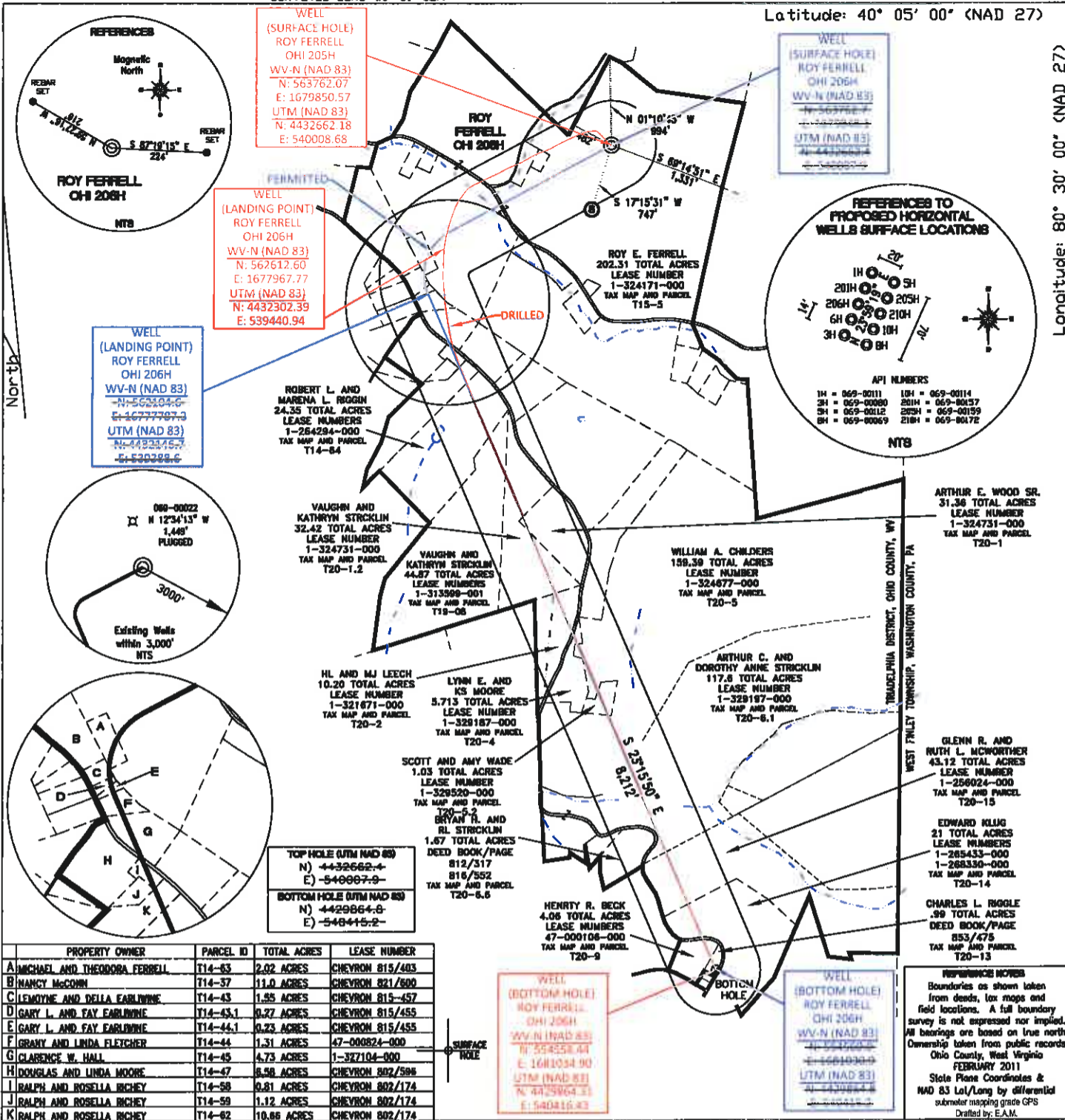
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JUN 21 2016  
WV Department of Environmental Protection

| Stage | PERFORATION RECORD |                     |       |                       |           |                  |        |         |        |                | STIMULATION RECORD |                        |  |  |  |  |  |  |  |  |
|-------|--------------------|---------------------|-------|-----------------------|-----------|------------------|--------|---------|--------|----------------|--------------------|------------------------|--|--|--|--|--|--|--|--|
|       | Date               | Interval Perforated |       | Total Number Of Shots | Date      | Interval Treated |        | Fluid   |        | Propping Agent |                    | Average Injection Rate |  |  |  |  |  |  |  |  |
|       |                    | From                | To    |                       |           | Type             | Amount | Type    | Amount | Type           | Amount             |                        |  |  |  |  |  |  |  |  |
|       |                    |                     |       |                       |           |                  |        |         |        |                |                    |                        |  |  |  |  |  |  |  |  |
| 1     | 5/17/2014          | 15767               | 15972 | 35                    | 5/17/2014 | 15767            | 15972  | SLK Wtr | 7577   | Sand           | 357680             | 85.1                   |  |  |  |  |  |  |  |  |
| 2     | 5/17/2014          | 15512               | 15717 | 35                    | 5/17/2014 | 15512            | 15717  | SLK Wtr | 7515   | Sand           | 357460             | 79.5                   |  |  |  |  |  |  |  |  |
| 3     | 5/17/2014          | 15257               | 15462 | 35                    | 5/17/2014 | 15257            | 15462  | SLK Wtr | 7549   | Sand           | 357320             | 80.3                   |  |  |  |  |  |  |  |  |
| 4     | 5/17/2014          | 15002               | 15207 | 35                    | 5/17/2014 | 15002            | 15207  | SLK Wtr | 7310   | Sand           | 357200             | 80.7                   |  |  |  |  |  |  |  |  |
| 5     | 5/18/2014          | 14747               | 14952 | 35                    | 5/18/2014 | 14747            | 14952  | SLK Wtr | 7524   | Sand           | 357260             | 85                     |  |  |  |  |  |  |  |  |
| 6     | 5/18/2014          | 14492               | 14697 | 35                    | 5/18/2014 | 14492            | 14697  | SLK Wtr | 7479   | Sand           | 357080             | 85                     |  |  |  |  |  |  |  |  |
| 7     | 5/18/2014          | 14237               | 14442 | 35                    | 5/18/2014 | 14237            | 14442  | SLK Wtr | 7399   | Sand           | 357460             | 84.9                   |  |  |  |  |  |  |  |  |
| 8     | 5/18/2014          | 13982               | 14187 | 35                    | 5/18/2014 | 13982            | 14187  | SLK Wtr | 7379   | Sand           | 357620             | 85.6                   |  |  |  |  |  |  |  |  |
| 9     | 5/18/2014          | 13727               | 13932 | 35                    | 5/18/2014 | 13727            | 13932  | SLK Wtr | 7483   | Sand           | 357620             | 85.1                   |  |  |  |  |  |  |  |  |
| 10    | 5/19/2014          | 13472               | 13677 | 35                    | 5/19/2014 | 13472            | 13677  | SLK Wtr | 7326   | Sand           | 357600             | 84                     |  |  |  |  |  |  |  |  |
| 11    | 5/19/2014          | 13217               | 13422 | 35                    | 5/19/2014 | 13217            | 13422  | SLK Wtr | 7331   | Sand           | 357940             | 85                     |  |  |  |  |  |  |  |  |
| 12    | 5/19/2014          | 12962               | 13167 | 35                    | 5/19/2014 | 12962            | 13167  | SLK Wtr | 7373   | Sand           | 357240             | 84                     |  |  |  |  |  |  |  |  |
| 13    | 5/19/2014          | 12707               | 12912 | 35                    | 5/19/2014 | 12707            | 12912  | SLK Wtr | 7387   | Sand           | 357280             | 85.1                   |  |  |  |  |  |  |  |  |
| 14    | 5/19/2014          | 12452               | 12657 | 35                    | 5/19/2014 | 12452            | 12657  | SLK Wtr | 7402   | Sand           | 356480             | 85                     |  |  |  |  |  |  |  |  |
| 15    | 5/19/2014          | 12197               | 12402 | 35                    | 5/19/2014 | 12197            | 12402  | SLK Wtr | 7471   | Sand           | 358600             | 84.9                   |  |  |  |  |  |  |  |  |
| 16    | 5/20/2014          | 11942               | 12147 | 35                    | 5/20/2014 | 11942            | 12147  | SLK Wtr | 7445   | Sand           | 358340             | 85                     |  |  |  |  |  |  |  |  |
| 17    | 5/20/2014          | 11687               | 11892 | 35                    | 5/20/2014 | 11687            | 11892  | SLK Wtr | 7249   | Sand           | 357020             | 85                     |  |  |  |  |  |  |  |  |
| 18    | 5/20/2014          | 11432               | 11637 | 35                    | 5/20/2014 | 11432            | 11637  | SLK Wtr | 8291   | Sand           | 607960             | 80.1                   |  |  |  |  |  |  |  |  |
| 19    | 5/21/2014          | 11177               | 11382 | 35                    | 5/21/2014 | 11177            | 11382  | SLK Wtr | 7351   | Sand           | 357700             | 85                     |  |  |  |  |  |  |  |  |
| 20    | 5/21/2014          | 10922               | 11127 | 35                    | 5/21/2014 | 10922            | 11127  | SLK Wtr | 7364   | Sand           | 357580             | 84                     |  |  |  |  |  |  |  |  |
| 21    | 5/21/2014          | 10667               | 10872 | 35                    | 5/21/2014 | 10667            | 10872  | SLK Wtr | 7502   | Sand           | 357280             | 83.9                   |  |  |  |  |  |  |  |  |
| 22    | 5/21/2014          | 10412               | 10617 | 35                    | 5/21/2014 | 10412            | 10617  | SLK Wtr | 7450   | Sand           | 357320             | 85.1                   |  |  |  |  |  |  |  |  |
| 23    | 5/21/2014          | 10157               | 10362 | 35                    | 5/21/2014 | 10157            | 10362  | SLK Wtr | 7434   | Sand           | 358000             | 84.5                   |  |  |  |  |  |  |  |  |
| 24    | 5/22/2014          | 9902                | 10107 | 35                    | 5/22/2014 | 9902             | 10107  | SLK Wtr | 7465   | Sand           | 357500             | 79                     |  |  |  |  |  |  |  |  |
| 25    | 5/22/2014          | 9647                | 9852  | 35                    | 5/22/2014 | 9647             | 9852   | SLK Wtr | 7244   | Sand           | 357960             | 85                     |  |  |  |  |  |  |  |  |
| 26    | 5/22/2014          | 9392                | 9597  | 35                    | 5/22/2014 | 9392             | 9597   | SLK Wtr | 7345   | Sand           | 357740             | 85                     |  |  |  |  |  |  |  |  |
| 27    | 5/22/2014          | 9137                | 9342  | 35                    | 5/22/2014 | 9137             | 9342   | SLK Wtr | 7396   | Sand           | 357060             | 84.9                   |  |  |  |  |  |  |  |  |
| 28    | 5/22/2014          | 8882                | 9087  | 35                    | 5/22/2014 | 8882             | 9087   | SLK Wtr | 7423   | Sand           | 357440             | 85                     |  |  |  |  |  |  |  |  |
| 29    | 5/22/2014          | 8627                | 8832  | 35                    | 5/22/2014 | 8627             | 8832   | SLK Wtr | 7506   | Sand           | 358040             | 84.9                   |  |  |  |  |  |  |  |  |

10/28/2016







| PROPERTY OWNER                 | PARCEL ID | TOTAL ACRES | LEASE NUMBER    |
|--------------------------------|-----------|-------------|-----------------|
| A MICHAEL AND THEODORA FERRELL | T14-63    | 2.02 ACRES  | CHEVRON 815/403 |
| B NANCY McCOHN                 | T14-37    | 11.0 ACRES  | CHEVRON 821/600 |
| C LEMOYNE AND DELLA EARLWINE   | T14-43    | 1.55 ACRES  | CHEVRON 815-457 |
| D GARY L. AND FAY EARLWINE     | T14-43.1  | 0.27 ACRES  | CHEVRON 815/455 |
| E GARY L. AND FAY EARLWINE     | T14-44.1  | 0.23 ACRES  | CHEVRON 815/455 |
| F GRANY AND LINDA FLETCHER     | T14-44    | 1.31 ACRES  | 47-000524-000   |
| G CLARENCE W. HALL             | T14-45    | 4.73 ACRES  | 1-327104-000    |
| H DOUGLAS AND LINDA MOORE      | T14-47    | 8.58 ACRES  | CHEVRON 802/598 |
| I RALPH AND ROSELLA RICHEY     | T14-58    | 0.81 ACRES  | CHEVRON 802/174 |
| J RALPH AND ROSELLA RICHEY     | T14-59    | 1.12 ACRES  | CHEVRON 802/174 |
| K RALPH AND ROSELLA RICHEY     | T14-62    | 10.86 ACRES | CHEVRON 802/174 |

TOP HOLE (UTM NAD 83)  
N) -4432662.4  
E) -540667.9

BOTTOM HOLE (UTM NAD 83)  
N) -4429864.8  
E) -548445.2

WELL (BOTTOM HOLE)  
ROY FERRELL  
OHI 206H  
WV-N (NAD 83)  
N: 554258.04  
E: 1681034.90  
UTM (NAD 83)  
N: 4429864.8  
E: 540816.83

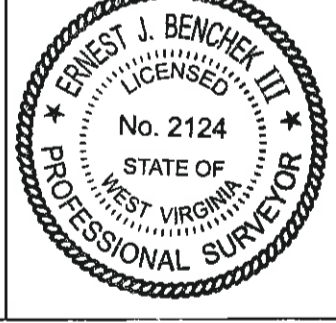
WELL (BOTTOM HOLE)  
ROY FERRELL  
OHI 206H  
WV-N (NAD 83)  
N: 554258.04  
E: 1681034.90  
UTM (NAD 83)  
N: 4429864.8  
E: 540816.83

REFERENCES 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 Ohio County, West Virginia FEBRUARY 2011  
State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS  
Drafted by: E.A.M.

FILE #: CHE 034  
DRAWING #: 1974  
SCALE: PLAT: 1"=1600'  
TICK: 1"=2000'  
MINIMUM DEGREE OF ACCURACY: 1/200  
PROVEN SOURCE SUBMETER MAPPING OF ELEVATION: 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 WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET  
CHARLESTON, WV 25304

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

WATERSHED: WHEELING CREEK

COUNTY/DISTRICT: OHIO/TRIADELPHIA

SURFACE OWNER: ROY E. FERRELL

OIL & GAS ROYALTY OWNER: ROY E. FERRELL

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

DATE: MAY 10, 2016

OPERATOR'S WELL #: ROY FERRELL OHI 206H AS-DRILLED

API WELL #: 47 69 00175  
STATE COUNTY PERMIT

AS-BUILT  
ELEVATION: 1196.0'

QUADRANGLE: VALLEY GROVE WV.

ACREAGE: 202.31 +/-  
ACREAGE: 724.313 +/- **10/28/2016**

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


WELL OPERATOR : CHESAPEAKE APPALACHIA, LLC.

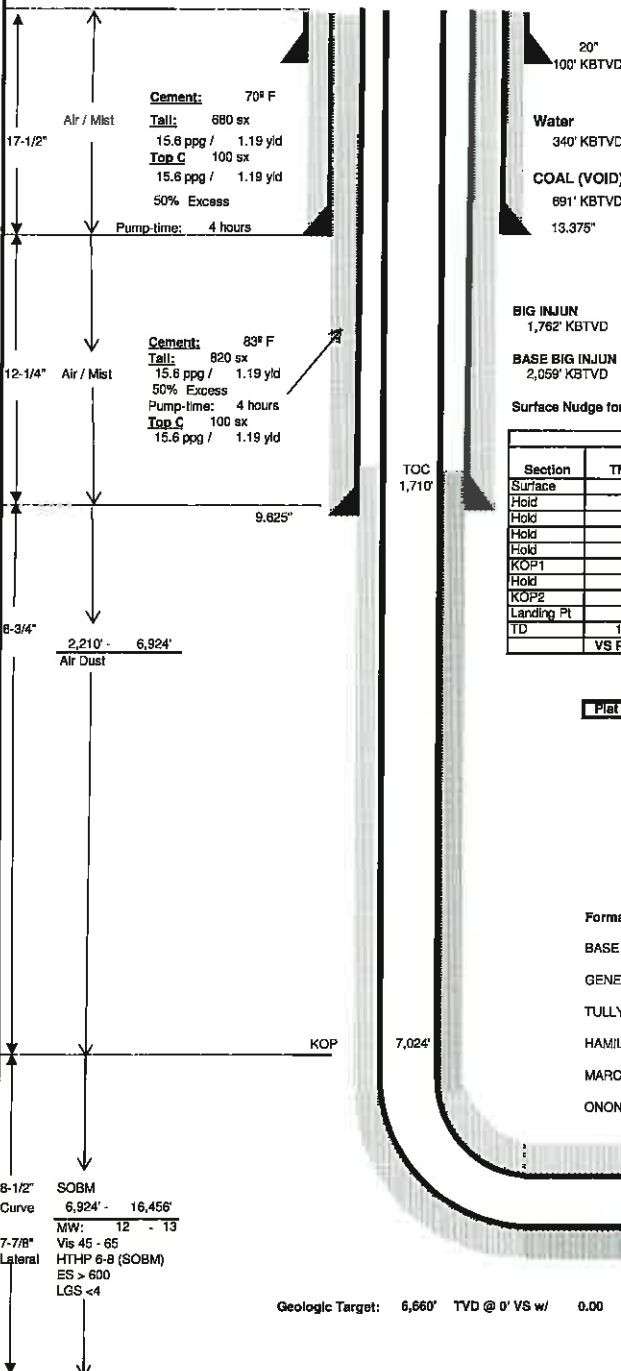
ADDRESS: PO BOX 18496

CITY: OKLAHOMA CITY STATE: OK ZIP CODE: 73154-0496

AS-DRILLED DEPTH: TVD: 6,740.866' TMD: 16.135'  
DESIGNATED AGENT : JESSICA GREATHOUSE  
ADDRESS: Po Box 6070  
CITY: CHARLESTON STATE: WV ZIP CODE: 25301



|   |                                    |  |                                |
|---|------------------------------------|--|--------------------------------|
|  |                                    | <b>Well Name:</b> Roy Ferrell OHI 206H | <b>Drilling Rig:</b> N/A       |
| <b>Drilling Engineer:</b> TBD   | <b>Formation:</b> Marcellus        | <b>Directional Drilling:</b> N/A       | <b>Drilling Mud:</b> N/A       |
| <b>Superintendent:</b> N/A  | <b>County, State:</b> Ohio, WV     | <b>Cement Surface:</b> N/A             | <b>Cement Longstrings:</b> N/A |
| <b>Asset Manager:</b> N/A   | <b>Surface Latitude:</b> 40.043171 | <b>Surface Longitude:</b> -80.531214   | <b>Wellhead:</b> N/A           |
| <b>Geologist:</b> N/A   | <b>BH Latitude:</b> 40.017948      | <b>BH Longitude:</b> -80.526614        | <b>AFE #:</b> N/A              |
| <b>Land:</b> N/A  | <b>KB Elevation:</b> 1230'         | <b>Ground Elevation:</b> 1210'         |                                |



| Wellhead Equipment |                       |
|--------------------|-----------------------|
| Tree Description   |                       |
| Tubing Head **     | Blanking Cap          |
| 'B' Section        | 11" x 5M x 7-1/8" TOM |
| 'A' Section        | 9-5/8" SOW x 11" 5M   |

\*\* Space out such that Blanking Cap is no more than 30' above grade.

| Casing Detail |        |        |       |       |       |         |
|---------------|--------|--------|-------|-------|-------|---------|
|               | Size   | Wt     | Grd   | Conn. | From: | To:     |
| Surface       | 13.375 | 54.5 # | J-55  | STC   | 0'    | 741'    |
| Interm        | 9.625  | 40 #   | J-55  | LTC   | 0'    | 2,210'  |
| Prod          | 5.5    | 20 #   | P-110 | GBCD  | 0'    | 16,456' |

Report any water or gas flows. Catch liquid sample if possible.

| Casing Design |        |        |       |       |      |         |
|---------------|--------|--------|-------|-------|------|---------|
|               | Size   | ID     | Coll  | Burat | Tena | MU torq |
| Surface       | 13.375 | 12.615 | 1130  | 2740  | 514  | 5140    |
| Interm        | 9.625  | 8.835  | 2570  | 3950  | 520  | 5200    |
| Prod          | 5.5    | 4.778  | 12200 | 12360 | 641  | 6530    |

BIG INJUN  
1,762' KBTVD  
BASE BIG INJUN  
2,059' KBTVD

Surface Nudge for Anti-Collision purposes.

| Directional Drilling Details |         |       |         |        |      |       |                             |           |
|------------------------------|---------|-------|---------|--------|------|-------|-----------------------------|-----------|
| Section                      | TMD     | Inc.  | Azimuth | TVD    | BUR  | DLS   | +N-S                        | +E-W      |
| Surface                      | 0.00    | 0.00  | 0.00    | 0.00   | 0.00 | 0.00  | 0.0                         | 0.0       |
| Hold                         | 800'    | 0.00  | 0.00    | 800'   | 0.00 | 0.00  | 0.0                         | 0.0       |
| Hold                         | 1,200'  | 0.00  | 0.00    | 1,200' | 0.00 | 0.00  | 0.0                         | 0.0       |
| Hold                         | 1,800'  | 0.00  | 0.00    | 1,800' | 0.00 | 0.00  | 0.0                         | 0.0       |
| Hold                         | 2,200'  | 0.00  | 0.00    | 2,200' | 0.00 | 0.00  | 0.0                         | 0.0       |
| KOP1                         | 2,310'  | 0.00  | 0.00    | 2,310' | 0.00 | 0.00  | 0.0                         | 0.0       |
| Hold                         | 4,188'  | 37.58 | 240.87  | 4,058' | 2.00 | 2.00  | -289.1'                     | -518.7'   |
| KOP2                         | 7,024'  | 37.56 | 240.87  | 6,304' | 0.00 | 0.00  | -1,130.8'                   | -2,028.8' |
| Landing Pt                   | 7,744'  | 90.00 | 158.74  | 6,860' | 7.28 | 12.00 | -1,675.8'                   | -2,090.5' |
| TD                           | 16,456' | 90.00 | 158.74  | 6,860' | 0.00 | 0.00  | -9,680.0'                   | 1,350.0'  |
| VS Plane                     | 158.74  |       |         |        |      |       | VS Length 19,426.36'        |           |
|                              |         |       |         |        |      |       | Lateral Length => 8,712.30' |           |

Plot Date 7/25/13

| Logging Program |          |          |
|-----------------|----------|----------|
| Run             | Log Type | Interval |
| 1               | TBD      | TBD      |
| 2               | TBD      | TBD      |

Mudlogger operational at Surface

| Formation Depths (TVD) |        |
|------------------------|--------|
| BASE BIG INJUN         | 2,059' |
| GENESE0                | 6,454' |
| TULLY                  | 6,484' |
| HAMILTON               | 6,512' |
| MARCELLUS              | 6,630' |
| ONONDAGA               | 6,690' |

Cement: 122° F  
Lead: 1,260 sx  
15.6 ppg / 1.20 yld  
Tall: 2,120 sx  
15.6 ppg / 1.20 yld  
15% Excess  
Pump-time: 6 hours

Geologic Target: 6,660' TVD @ 0° VS w/ 0.00 degrees/100 ft Up-dip

PBHL: 5.5"  
TMD: 16,456'  
TVD: 6,860'  
Inclination: 90.00 deg

Drawn by: TBD  
Date: 7/28/2013

**Gyro the 1st well on the pad at KOP.  
Ensure all Surveys are referenced to Grid North!!**

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

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|                            |                              |
|----------------------------|------------------------------|
| Fracture Date:             | 5/17/2014                    |
| State:                     | WEST VIRGINIA                |
| County:                    | OHIO                         |
| API Number:                | 4706900175                   |
| Operator Name:             | CHESAPEAKE<br>APPALACHIA LLC |
| Well Name and Number:      | ROY FERRELL<br>OHI 206H      |
| Longitude:                 | -80.531214                   |
| Latitude:                  | 40.043171                    |
| Long/Lat Projection:       | NAD27                        |
| Production Type:           | GAS                          |
| True Vertical Depth (TVD): | 6,745                        |
| Total Water Volume (gal):  | 12,611,928                   |

## Hydraulic Fracturing Fluid Composition:

| Trade Name              | Supplier          | Purpose              | Ingredients  | Chemical Abstract Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by Mass)** | Maximum Ingredient Concentration in HF Fluid (% by Mass)** | Comments |
|-------------------------|-------------------|----------------------|--|--|--|--|----------|
| Fresh Water             | CHESAPEAKE ENERGY | Carrier/Base Fluid   | Water  | 007732-18-5                              | 100.00%  | 84.98181%  |          |
| Recycled Produced Water | CHESAPEAKE ENERGY | Carrier/Base Fluid   | Water  | 007732-18-5                              | 100.00%  | 3.40012%   |          |
| EC6110A                 | NALCO             | Anti-Bacterial Agent | Ethanol<br>Glutaraldehyde (Pentanediol)<br>Quaternary Ammonium Compounds | 000064-17-5<br>000111-30-8<br>NA         | 5.00%<br>60.00%<br>10.00%                                  | 0.00121%<br>0.01451%<br>0.00242%                           |          |
| EC6629A                 | NALCO             | Scale Inhibitor      | No Hazardous Components  | NONE                                     |  | 0.00000%   |          |
| Northern White Sand     | WEATHERFORD       | Proppant - Natural   | Crystalline Silica (Quartz Sand, Silicon Dioxide)                        | 014808-60-7                              | 100.00%  | 7.32700%   |          |
| 100 Mesh Sand           | WEATHERFORD       | Proppant - Natural   | Crystalline Silica (Quartz Sand, Silicon Dioxide)                        | 014808-60-7                              | 100.00%  | 3.04963%   |          |
| ACID 16                 | WEATHERFORD       | Acid                 | Hydrochloric Acid  | 007647-01-0                              | 15.00%   | 0.06917%   |          |
| HYDROCHLORIC, 16        | WEATHERFORD       | Acid                 | Water  | 007732-18-5                              | 85.00%   | 0.39195%   |          |
| ACID 18                 | WEATHERFORD       | Acid                 | Hydrochloric Acid  | 007647-01-0                              | 8.00%  | 0.02354%   |          |
| HYDROCHLORIC, 18        | WEATHERFORD       | Acid                 | Water  | 007732-18-5                              | 93.00%   | 0.29032%   |          |
| WFR 16                  | WEATHERFORD       | Friction Reducer     | Ammonium Acetate<br>Petroleum Distillate Hydrotreated Light              | 000631-61-8<br>064742-47-8               | 5.00%<br>40.00%  | 0.00363%<br>0.02903%                                       |          |
| WIC-641L                | WEATHERFORD       | Iron Control Agent   | Citric Acid  | 000077-92-9                              | 70.00%   | 0.00130%   |          |
| WPB-584L                | WEATHERFORD       | pH Adjusting Agent   | Potassium Carbonate  | 000584-08-7                              | 60.00%   | 0.00002%   |          |

|           |             |                     |  |             |        |          |
|-----------|-------------|---------------------|--|-------------|--------|----------|
| WAI-251LC | WEATHERFORD | Corrosion Inhibitor | Potassium Hydroxide  | 001310-58-3 | 40.00% | 0.00002% |
|           |             |                     | 2-Butoxyethanol (Ethylene Glycol Monobutyl Ether)                    | 000111-76-2 | 7.00%  | 0.00002% |
|           |             |                     | Branched-Ethoxylated Nonyl Phenol (Branched-Nonyl Phenol Ethoxylate) | 068412-54-4 | 10.00% | 0.00003% |
|           |             |                     | Cinnamaldehyde   | 000104-55-2 | 10.00% | 0.00003% |
|           |             |                     | Dimethyl Formamide   | 000068-12-2 | 40.00% | 0.00013% |
|           |             |                     | Ethylene Glycol  | 000107-21-1 | 60.00% | 0.00020% |
|           |             |                     | Isopropanol (Isopropyl Alcohol, Propan-2-ol)                         | 000067-63-0 | 7.00%  | 0.00002% |
|           |             |                     | Tar bases, quinoline derivs, benzyl chloride-qaufertized             | 072480-70-7 | 13.00% | 0.00004% |
|           |             |                     | Triethyl Phosphate   | 000078-40-0 | 7.00%  | 0.00002% |

**Additional Ingredients Not Listed on MSDS**

|   |             |   |                                       |              |  |          |
|---|-------------|---|---------------------------------------|--------------|--|----------|
| EC6110A,<br>EC6629A                     | NALCO       | Anti-Bacterial Agent, Scale Inhibitor   | Methanol (Methyl Alcohol)             | 000067-56-1  |  | 0.00517% |
|   |             |   | Proprietary Acrylate Polymer          | TRADE SECRET |  | 0.00517% |
|   |             |   | Proprietary Quaternary Ammonium Salt  | TRADE SECRET |  | 0.00517% |
|   |             |   | Water                                 | 007732-18-5  |  | 0.02244% |
|   |             |   | Potassium Carbonate                   | 000584-08-7  |  | 0.00003% |
|   |             |   | Proprietary Alcohol                   | TRADE SECRET |  | 0.00011% |
|   |             |   | Proprietary Ethoxylated Nonylphenol   | TRADE SECRET |  | 0.00011% |
|   |             |   | Proprietary Friction Reducer Additive | TRADE SECRET |  | 0.06721% |
|   |             |   | Water                                 | 007732-18-5  |  | 0.00124% |
| WAI-251LC, WFR-65LA, WIC-641L, WPB-584L | WEATHERFORD | Corrosion Inhibitor, Friction Reducer, Iron Control Agent, pH Adjusting Agent |                                       |              |  |          |

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water  
 \*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

"Additional Ingredients Not Listed on MSDS" component information were obtained directly from the supplier. As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of this information should be directed to the supplier who provided it.

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