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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. Huffinan, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

## PERMIT MODIFICATION APPROVAL

March 21, 2014

CHESAPEAKE APPALACHIA, L.L.C.  
POST OFFICE BOX 6070  
CHARLESTON, WV 25362

Re: Permit Modification Approval for API Number 6900155 , Well #: TIMMY MINCH OHI 3H  
**Modified 13 3/8" 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  
Regulatory/Compliance Manager  
Office of Oil and Gas

69-00155 MOD



Danielle Southall  
Regulatory Analyst II

March 21, 2014

**VIA CERTIFIED MAIL**

Ms. Laura Cooper  
Office of Oil & Gas  
601 57<sup>th</sup> Street  
Charleston, WV 25304

Re: Modification to Timmy Minch OHI 3H API# 47-069-00155

Dear Ms. Cooper:

Enclosed please find a revised WW-6B and wbs for the above captioned well. We would like to modify the 13 3/8" casing because we have found out that we should hit coal around 450' vs. 530'. This well is situated on the Timmy Minch property, in Tridelpia District, Ohio County, West Virginia.

If you have any questions or require additional information, please contact me at 304-517-1416 ext 86024.

Sincerely,

Chesapeake Appalachia, LLC

Danielle Southall

Enclosure(s)

Received

MAR 21 2014

Office of Oil and Gas  
WV Dept. of Environmental Protection

Chesapeake Energy Corporation  
P.O. Box 1300 • 179 Chesapeake Drive • Jane Lew, WV 26378  
304-517-1416 x86024 • fax 304-471-2497 • danielle.southall@chk.com

03/28/2014

WW - 6B  
(3/13)

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

1) Well Operator: Chesapeake Appalachia, LLC 494477557 69- Ohio 7- Triadelphia 674- Wheeling  
Operator ID County District Quadrangle

2) Operator's Well Number: Timmy Minch OHI 3H Well Pad Name: Timmy Minch OHI Pad  
*API # 47-069-00155*

3 Elevation, current ground: 1208' Elevation, proposed post-construction: 1208'

4) Well Type: (a) Gas  Oil  Underground Storage   
Other \_\_\_\_\_  
(b) If Gas: Shallow  Deep   
Horizontal

5) Existing Pad? Yes or No: Yes GJK 3/21/14

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):  
Target Formation- Marcellus, Target Top TVD- 6,062', Target Base TVD-6,137', Anticipated Thickness- 75', Associated Pressure- 3819

7) Proposed Total Vertical Depth: 5,972'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 16,600'

10) Approximate Fresh Water Strata Depths: 390'

11) Method to Determine Fresh Water Depth: From WVDEP Contour Map

12) Approximate Saltwater Depths: 1250'

13) Approximate Coal Seam Depths: 450'

14) Approximate Depth to Possible Void (coal mine, karst, other): 450' Abandoned Mine.

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No.

16) Describe proposed well work: Drill and stimulate any potential zones between and including the Benson to Marcellus. \*\* If we should encounter a void, place basket above and below void area- balance cement to bottom of void and grout from basket to surface. Run casing not less than 20' below void nor more than 50' below void. (If freshwater is encountered deeper than anticipated it must be protected, set casing 50' below and cts.)

17) Describe fracturing/stimulating methods in detail:  
Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This well be performed in stages with the plug and per method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface. The well is produced through surface facilities consisting of high pressure production units, vertical separation units, water and oil storage tanks.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 15.93

19) Area to be disturbed for well pad only, less access road (acres): 5.55

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WV Dept. of Environmental Protection  
**03/28/2014**



WW - 6B  
(3/13)

20)

CASING AND TUBING PROGRAM

| TYPE         | Size    | New<br>or<br>Used | Grade | Weight per<br>ft. | FOOTAGE:<br>For Drilling | INTERVALS:<br>Left in Well | CEMENT:<br>Fill -up (Cu. Ft.)                     |
|--------------|---------|-------------------|-------|-------------------|--------------------------|----------------------------|---|
| Conductor    | 20"     | New               | J-55  | 94#               | 100'                     | 100'                       | CTS   |
| Fresh Water  | 13 3/8" | New               | J-55  | 54.5#             | 500'                     | 500'                       | 470 SX/CTS  |
| Coal         | 9 5/8"  | New               | J-55  | 40#               | 2000'                    | 2000'                      | 800 SX/CTS  |
| Intermediate | 7"      | New               | P-110 | 20#               | If Needed                | If Needed                  | If Needed/As Needed                               |
| Production   | 5 1/2"  | New               | P-110 | 20#               | 16,600'                  | 16,600'                    | Lead 838 ex Tail 2478 ex/102' inside Intermediate |
| Tubing       | 2 3/8"  | New               | N-80  | 4.7#              | Approx. 6,427'           | Approx. 6,427'             |   |
| Liners       |         |                   |       |                   |                          |                            |   |

GJK 3/21/14

| TYPE         | Size    | Wellbore<br>Diameter | Wall<br>Thickness | Burst<br>Pressure | Cement<br>Type | Cement Yield    |
|--------------|---------|----------------------|-------------------|-------------------|----------------|-----------------|
| Conductor    | 20"     | 30"                  | 0.25              | 2120              | 15.6 ppg       | 1.19/50% Excess |
| Fresh Water  | 13 3/8" | 17.5"                | 0.380             | 2740              | 15.6 ppg       | 1.19/50% Excess |
| Coal         | 9 5/8"  | 12 1/4"              | 0.395             | 3950              | 15.6 ppg       | 1.19/50% Excess |
| Intermediate | 7"      | 8 3/4"               | .0317             | 4360              | 15.6 ppg       | 1.20/15% Excess |
| Production   | 5 1/2"  | 8 3/4"               | 0.361             | 12360             | 15.6 ppg       | 1.20/15% Excess |
| Tubing       | 2 3/8"  | 4.778"               | 0.190             |                   |                |                 |
| Liners       |         |                      |                   |                   |                |                 |

PACKERS

|             |                    |  |  |  |
|-------------|--------------------|--|--|--|
| Kind:       | 10K Arrowset AS1-X |  |  |  |
| Sizes:      | 5 1/2"             |  |  |  |
| Depths Set: | Approx. 6,197'     |  |  |  |

*[Handwritten Signature]*  
3/21/14

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Office of Oil and Gas  
WW Dept. of Environmental Protection  
03/28/2014

**Chesapeake**

Drilling Engineer: Jeremy Pye  
Superintendent: R. Harless / J. Melville  
Asset Manager: Alex Johnson  
Geologist: Nick Downs  
Land: Monty Mayfield

Well Name: **Timmy Minch OHI 3H**

Formation: Marcellus  
County, State: Ohio, WV  
Surface Latitude: 40.085409  
BH Latitude: 40.110955  
KB Elevation: 1230'

Drilling Rig: **Nomac 337**  
Directional Drilling: Weatherford  
Drilling Mud: MI Sweco  
Cement Surface: Schlumberger  
Cement Longstrings: Schlumberger  
Wellhead: Sweco  
AFE #: 172749 Well #: 836500

| Wellhead Equipment |                          |  |  |  |  |
|--------------------|--------------------------|--|--|--|--|
| Tree Description   | Blanking Cap             |  |  |  |  |
| Tubing Head        | 13 3/8" SM x 13 5/8" SM  |  |  |  |  |
| B' Section         | 13-3/8" SOW x 13-5/8" SM |  |  |  |  |
| A' Section         | 13-3/8" SOW x 13-5/8" SM |  |  |  |  |

\*\* 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' 500'    |
| Interm        | 9.625  | 40 #   | J-55  | LTC   | 0' 2,000'  |
| Prod          | 5.5    | 23 #   | P-110 | TXP   | 0' 16,299' |

Report any Water flows and/or gas flows. Catch liquid sample if possible.

| Casing Design |        |        |       |       |      |           |
|---------------|--------|--------|-------|-------|------|-----------|
|               | Size   | ID     | Coll  | Burst | Tens | MAU (org) |
| Surface       | 13.375 | 12.615 | 1190  | 2740  | 514  | 5140      |
| Interm        | 9.625  | 8.835  | 2570  | 3950  | 620  | 5200      |
| Prod          | 5.5    | 4.67   | 16220 | 14520 | 729  | 14420     |

| Directional Drilling Details |         |       |         |                 |           |       |            |          |
|------------------------------|---------|-------|---------|-----------------|-----------|-------|------------|----------|
| Section                      | TMD     | Inc.  | Azimuth | TVD             | BUR       | DLS   | +NAS       | +EAW     |
| Surface                      | 0.00    | 0.00  | 0.00    | 0.00            | 0.00      | 0.00  | 0.0        | 0.0      |
| Hold                         | 250'    | 0.00  | 0.00    | 250'            | 0.00      | 0.00  | 0.0        | 0.0      |
| Surf Casg                    | 500'    | 0.00  | 0.00    | 500'            | 0.00      | 0.00  | 0.0        | 0.0      |
| Hold                         | 800'    | 0.00  | 0.00    | 800'            | 0.00      | 0.00  | 0.0        | 0.0      |
| Hold                         | 900'    | 0.00  | 0.00    | 900'            | 0.00      | 0.00  | 0.0        | 0.0      |
| Hold                         | 1,000'  | 0.00  | 0.00    | 1,000'          | 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      |
| KOP1                         | 5,520'  | 0.00  | 0.00    | 5,520'          | 0.00      | 0.00  | 0.0        | 0.0      |
| Landing Pt                   | 6,427'  | 90.70 | 333.00  | 6,093'          | 10.00     | 10.00 | 925.8      | -245.1   |
| Turn                         | 8,100'  | 90.70 | 333.00  | 8,072'          | 0.00      | 0.00  | 2,041.5    | -852.1   |
| Hold                         | 8,174'  | 90.70 | 333.52  | 6,072'          | 0.00      | 2.00  | 2,103.5    | -854.3   |
| TD                           | 16,299' | 90.70 | 333.52  | 5,972'          | 0.00      | 0.00  | 9,260.5    | -4,806.3 |
| VS Plane                     | 333.52  |       |         |                 |           |       | 10,450.48' |          |
|                              |         |       |         | Vertical Length | 9,872.00' |       |            |          |

| Logging Program |          |                            |
|-----------------|----------|----------------------------|
| Run             | Log Type | Interval                   |
| 1               | None     | Surface                    |
| 2               | None     | Intermediate to Surf. Casg |
| 3               | None     | Over Surface Casing        |
|                 | None     | KOP to Int. Casg           |
|                 | None     | Over Intermediate Casing   |

Permit VS. Actual: 0'

Unmanned mudlogging unit

| Formation Depths (TVD) |        |
|------------------------|--------|
| GENESEO                | 5,911' |
| TULLY                  | 5,931' |
| HAMILTON               | 5,979' |
| MARCELLUS              | 6,085' |
| ONONDAGA               | 6,125' |

Geologic Target: 6,100' TVD @ 0° VS w/ 0.70 degrees Up-dip

8-1/2" SCBM 5,420' - 16,299'

8-1/2" MW: 11.5 - 12.5

8-1/2" Lateral: HTHP 8-8 (SOBM) ES > 600 7 < LGS < 8

Cement: 68° F  
Tall: 470 sx  
15.6 ppg / 1.18 yd  
Top Out: 100 sx  
15.6 ppg / 1.18 yd  
50% Excess

Cement: 61° F  
Tall: 800 sx  
15.6 ppg / 1.24 yd  
Top Out: 100 sx  
15.6 ppg / 1.24 yd  
40% Excess

Cement: 117° F  
Lead: 838 sx  
15.0 ppg / 1.34 yd  
Tall: 2,478 sx  
15.6 ppg / 1.16 yd  
15% Excess  
Pump-time: 6 hours  
Ensure Gas Block Additive is in Lead Slurry  
PBHL 5.5"  
TMD: 16,299'  
TVD: 5,972'  
Inclination: 90.70 deg

Drawn by: Jeremy Pye  
Date: 3/21/14

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

AS

3/21/14

Received

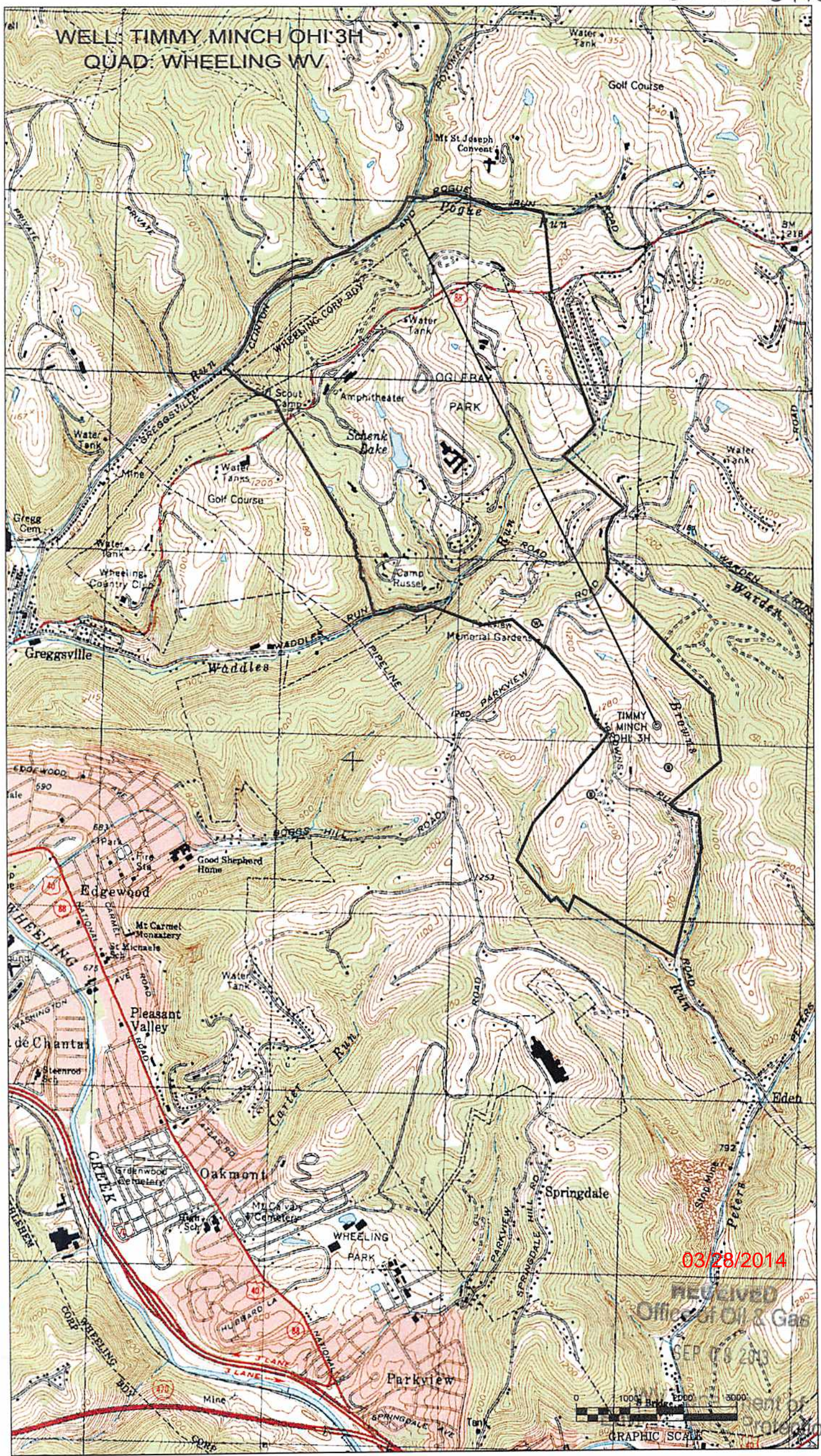
MAR 21 2014

Office of Oil and Gas  
WV Dept of Environmental Protection

03/28/2014



WELL: TIMMY MINCH OHI 3H  
QUAD: WHEELING WV.



03/28/2014

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SEP 08 2013

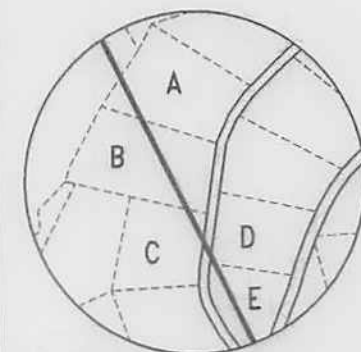
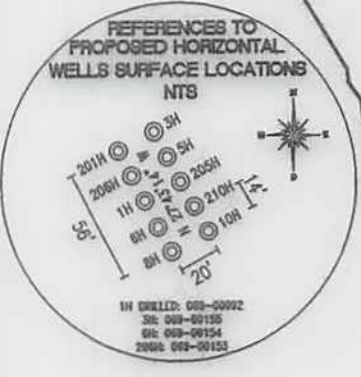


Department of Environmental Protection

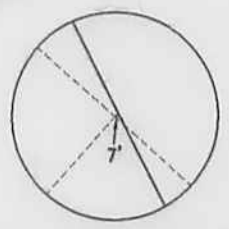
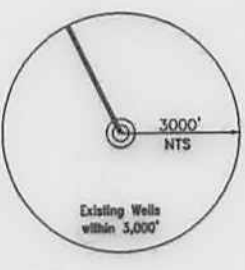
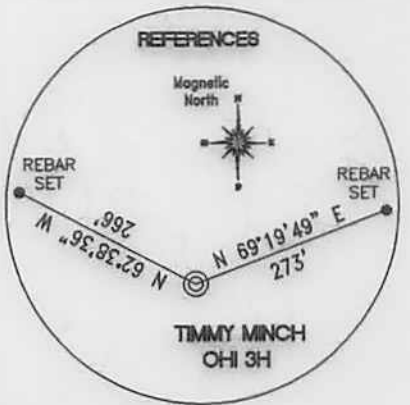
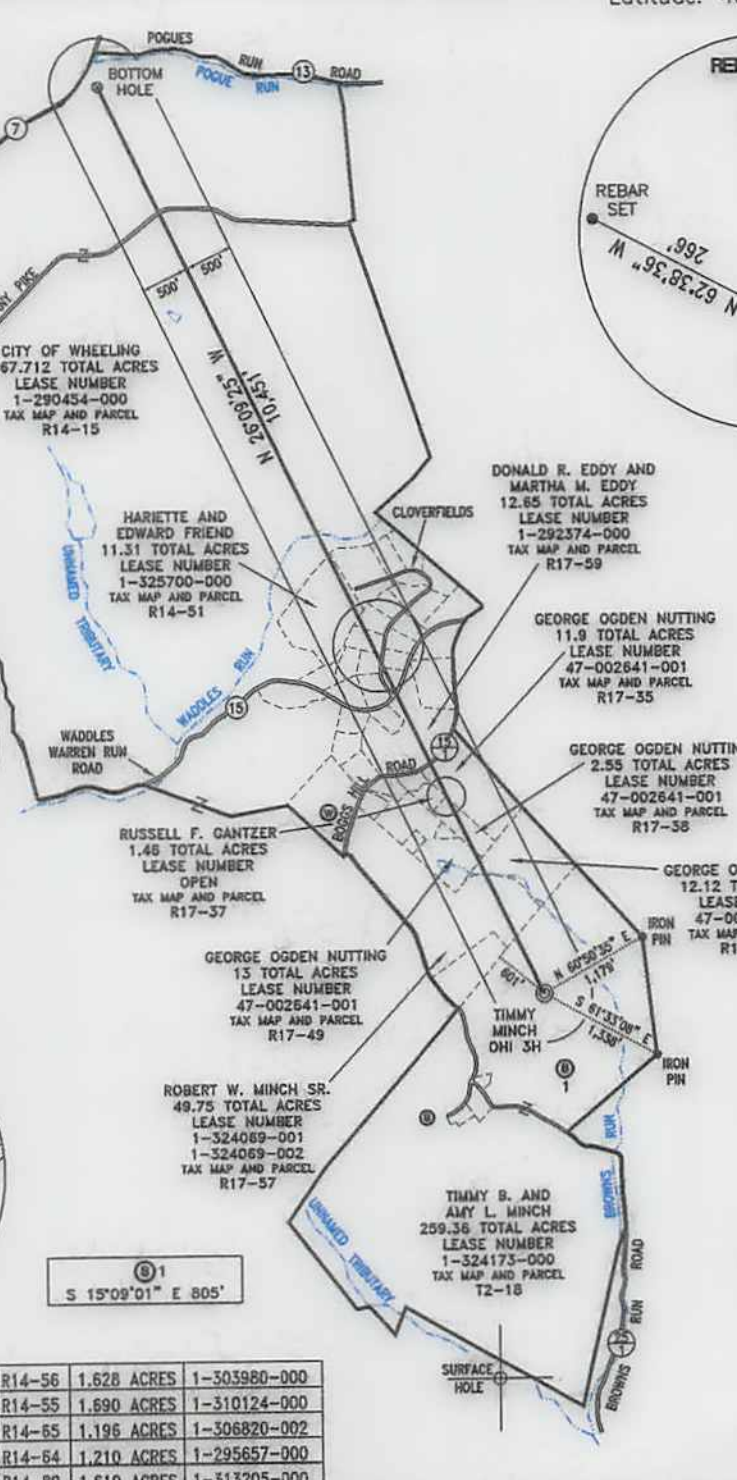


TOP HOLE (UTM NAD 83)  
 N) 4437304.9  
 E) 530150.4

BOTTOM HOLE (UTM NAD 83)  
 N) 4440139.1  
 E) 528699.1



|                                       |        |             |              |
|---------------------------------------|--------|-------------|--------------|
| A JOSEPH BARK                         | R14-56 | 1.628 ACRES | 1-303960-000 |
| B MARK AND JODY McGRAIL               | R14-55 | 1.690 ACRES | 1-310124-000 |
| C PATRICIA A. PADDEN ET AL            | R14-65 | 1.196 ACRES | 1-306820-002 |
| D DONALD E. AND LINDA A. HARSHMAN     | R14-64 | 1.210 ACRES | 1-295657-000 |
| E MICHAEL D. AND MICHELLE F. MATTHEWS | R14-89 | 1.610 ACRES | 1-313205-000 |



**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 Ohio County, West Virginia JANUARY 2012  
 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS  
 Drafted by: E.A.M.

①  
 S 15°09'01" E 805'

FILE #: CHE 055  
 DRAWING #: 1999  
 SCALE: PLAT: 1"=2000'  
 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:   
 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 Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: WHEELING CREEK  
 COUNTY/DISTRICT: OHIO/TRIADELPHIA  
 SURFACE OWNER: TIMMY B. AND AMY L. MINCH  
 OIL & GAS ROYALTY OWNER: TIMMY B. AND AMY L. MINCH  
 LEASE NUMBERS:

DATE: AUGUST 23, 2013  
 OPERATOR'S WELL #: TIMMY MINCH OHI 3H  
 API WELL #: 47 69  
 STATE COUNTY PERMIT

WATERSHED: WHEELING CREEK ELEVATION: 1,208' (AS-BUILT)  
 COUNTY/DISTRICT: OHIO/TRIADELPHIA QUADRANGLE: WHEELING, WV  
 SURFACE OWNER: TIMMY B. AND AMY L. MINCH ACREAGE: 259.36 +/-  
 OIL & GAS ROYALTY OWNER: TIMMY B. AND AMY L. MINCH ACREAGE: 1,447.686 +/-  
 LEASE NUMBERS: 03/28/2014

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: 6,075' TMD: 16,321'  
 WELL OPERATOR: CHESAPEAKE APPALACHIA, LLC. DESIGNATED AGENT: ERIC B. GILLESPIE  
 ADDRESS: PO BOX 18496 ADDRESS: PO Box 6070  
 CITY: OKLAHOMA CITY STATE: OK ZIP CODE: 73154-0496 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

SURFACE HOLE DEC. LAT: 40.085408 SURVEYED LAT: 40° 07' 30"