



west virginia department of environmental protection

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

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

November 08, 2012

WELL WORK PERMIT

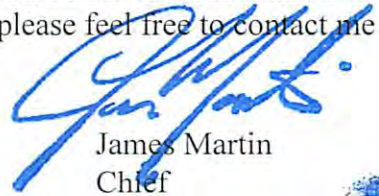
Horizontal 6A Well

This permit, API Well Number: 47-6900153, issued to CHESAPEAKE APPALACHIA, L.L.C., is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, well operators report of well work, is to be submitted to this office within 90 days of completion of drilling, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: TIMMY MINCH OHI 206H
Farm Name: MINCH, TIMMY B. AND AMY L.

API Well Number: 47-6900153

Permit Type: Horizontal 6A Well

Date Issued: 11/08/2012

Promoting a healthy environment.

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
2. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
3. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
4. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
5. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

1) Well Operator: <u>Chesapeake Appalachia, LLC</u>	494477557	69-Ohio	7-Tridelp ⁶⁹ hia	674-Wheeling
	Operator ID	County	District	Quadrangle

2) Operator's Well Number: Timmy Minch OHI 206H Well Pad Name: Timmy Minch OHI Pad

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

4) Well Type: (a) Gas Oil
 Other _____
 (b) If Gas: Shallow Deep
 Horizontal _____

5) Existing Pad? Yes or No: Yes

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Target formation-Marcellus, Target top TVD- 6086', Target base TVD- 6161', Anticipated thickness- 75', Associated Pressure -3834

7) Proposed Total Vertical Depth: 6129'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 15,800'

10) Approximate Fresh Water Strata Depths: 470'

11) Method to Determine Fresh Water Depth: From WVDEP contour map

12) Approximate Saltwater Depths: 989'

13) Approximate Coal Seam Depths: 533'

14) Approximate Depth to Possible Void (coal mine, karst, other): 533' Abandoned mine

15) Does land contain coal seams tributary or adjacent to, active mine? No

16) Describe proposed well work: _____
Drill and stimulate any potential zones between and including the Benson to the 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 will be performed in stages with the plug and perf 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

WPH
8-15-12
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20)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	J-55	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	583'	583'	540 SX/CTS
Coal	9 5/8"	New	J-55	40#	2000'	2000'	750 SX/CTS
Intermediate	7"	New	P-110	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	P-110	20#	15,800'	15,800'	Lead 1130 sx Tail 2000 sx/100' inside intermediate
Tubing	2 3/8"	New	N-80	4.7#	Approx. 7124'	Approx. 7124'	
Liners							

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement 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"	0.317	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'			

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21) Describe centralizer placement for each casing string. _____

All casing strings will be ran with a centralizer at a minimum of 1 per every 3 joints of casing.

22) Describe all cement additives associated with each cement type. _____

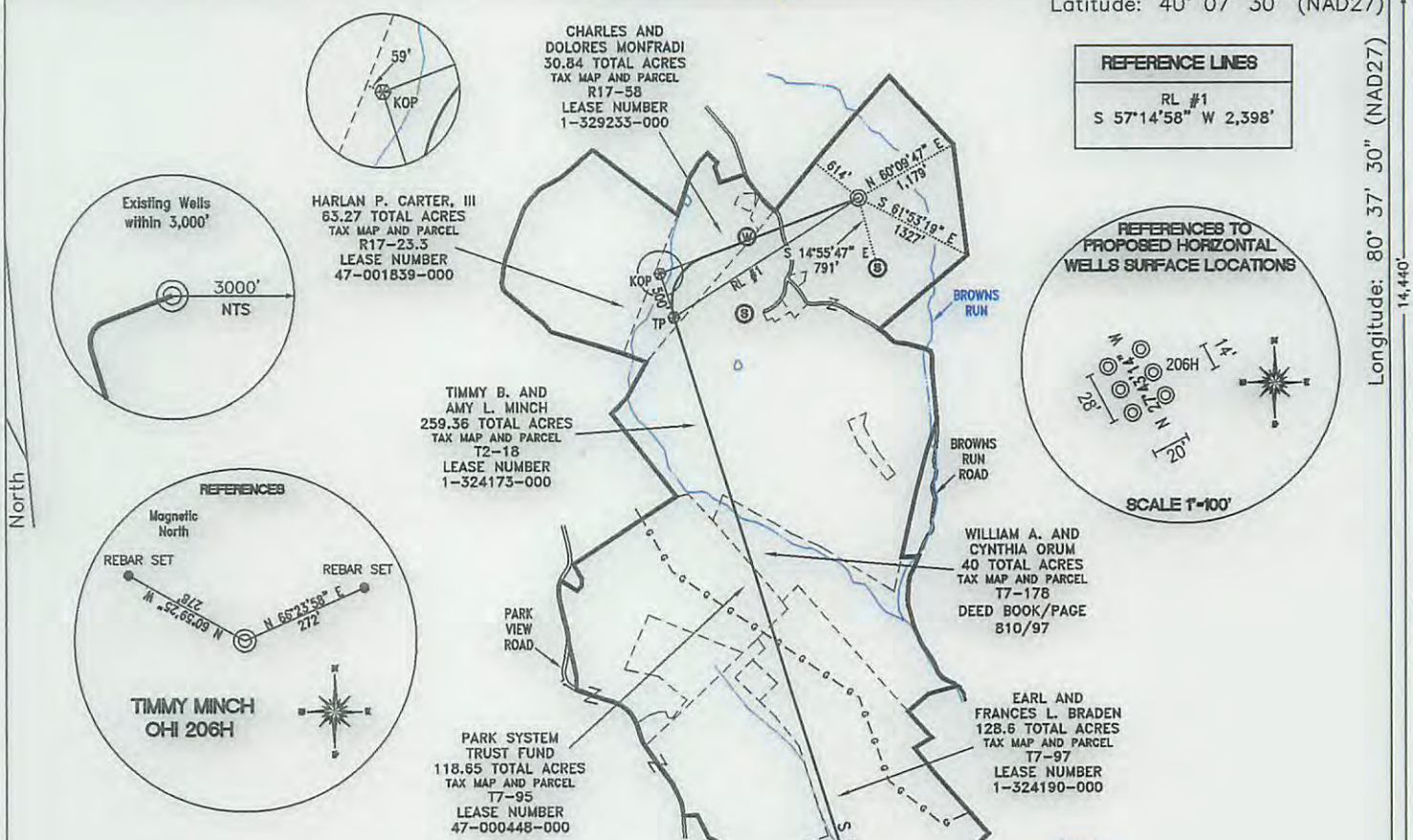
**Please see attached sheets for Chemical Listing of Cement & Additives for Chesapeake Energy wells.

23) Proposed borehole conditioning procedures. _____

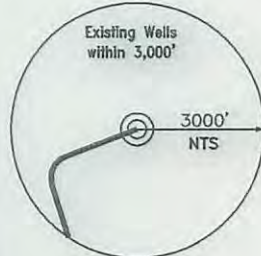
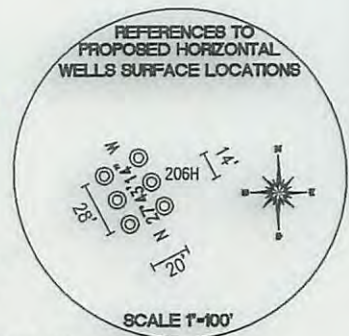
All boreholes will be conditioned with circulation and rotation for a minimum of one bottoms up and continuing until operator is satisfied with borehole conditions.

*Note: Attach additional sheets as needed.

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WV Department of
Environmental Protection



REFERENCE LINES
 RL #1
 S 57°14'58" W 2,398'



HARLAN P. CARTER, III
 63.27 TOTAL ACRES
 TAX MAP AND PARCEL
 R17-23.3
 LEASE NUMBER
 47-001839-000

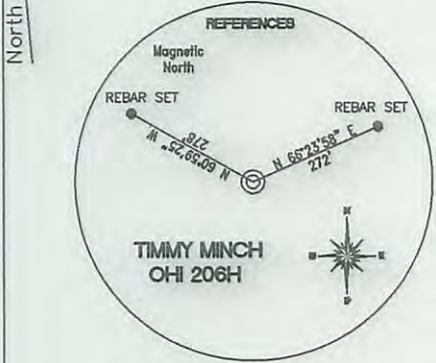
TIMMY B. AND
 AMY L. MINCH
 259.36 TOTAL ACRES
 TAX MAP AND PARCEL
 T2-18
 LEASE NUMBER
 1-324173-000

WILLIAM A. AND
 CYNTHIA ORUM
 40 TOTAL ACRES
 TAX MAP AND PARCEL
 T7-178
 DEED BOOK/PAGE
 810/97

EARL AND
 FRANCES L. BRADEN
 128.6 TOTAL ACRES
 TAX MAP AND PARCEL
 T7-97
 LEASE NUMBER
 1-324190-000

A.D. BAKER HOMES, INC.
 71.21 TOTAL ACRES
 TAX MAP AND PARCEL
 T7-117
 LEASE NUMBER
 1-292597-000

PARK SYSTEM
 TRUST FUND
 118.65 TOTAL ACRES
 TAX MAP AND PARCEL
 T7-95
 LEASE NUMBER
 47-000448-000



TOP HOLE (NAD 83) N) 579526.4 E) 1647761.9 LAT.) 40°05'07.6" LONG.) 80°38'46.7" DEC. LAT.) 40.085448 DEC. LONG.) 80.646319	TOP HOLE (NAD 27) N) 579489.7 E) 1679197.0 LAT.) 40°05'07.4" LONG.) 80°38'47.5" DEC. LAT.) 40.085375 DEC. LONG.) 80.646520
KOP (NAD 83) N) 578706.1 E) 1645595.0 LAT.) 40°04'59.2" LONG.) 80°39'14.5" DEC. LAT.) 40.083120 DEC. LONG.) 80.654025	KOP (NAD 27) N) 578669.3 E) 1677030.2 LAT.) 40°04'59.0" LONG.) 80°39'15.2" DEC. LAT.) 40.083048 DEC. LONG.) 80.654225
TP (NAD 83) N) 578229.1 E) 1645745.0 LAT.) 40°04'54.5" LONG.) 80°39'12.5" DEC. LAT.) 40.081816 DEC. LONG.) 80.653467	TP (NAD 27) N) 578192.4 E) 1677180.2 LAT.) 40°04'54.3" LONG.) 80°39'13.2" DEC. LAT.) 40.081744 DEC. LONG.) 80.653667
BOTTOM HOLE (NAD 83) N) 570131.5 E) 1648292.3 LAT.) 40°03'34.8" LONG.) 80°38'38.4" DEC. LAT.) 40.059678 DEC. LONG.) 80.643996	BOTTOM HOLE (NAD 27) N) 570094.7 E) 1679727.4 LAT.) 40°03'34.6" LONG.) 80°38'39.1" DEC. LAT.) 40.059605 DEC. LONG.) 80.644196
TOP HOLE (UTM NAD 83) N) 4437301.1 E) 530152.5	
BOTTOM HOLE (UTM NAD 83) N) 4434441.7 E) 530362.0	

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 JUNE 2012
 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS
 Drafted by: E.A.M.

FILE #: CHE 055
 DRAWING #: 2076
 SCALE: 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

DATE: JUNE 15, 2012
 OPERATOR'S WELL #: TIMMY MINCH OHI 206H
 API WELL #: 47 69 00153 H6A
 STATE COUNTY PERMIT

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

WATERSHED: UPPER OHIO SOUTH ELEVATION: 1,225'

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: 648.66 +/-
 LEASE NUMBERS: _____

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: 6,277' TMD: 15,613'
 WELL OPERATOR: CHESAPEAKE APPALACHIA, LLC. DESIGNATED AGENT: ERIC 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: 40.085375
 SURVEYED LAT: 40° 05' 07.4"