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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](http://www.dep.wv.gov)

## PERMIT MODIFICATION APPROVAL

May 15, 2015

CHEVRON APPALACHIA, LLC  
POST OFFICE BOX 611  
MOON TOWN, PA 15108

Re: Permit Modification Approval for API Number 5101784, Well #: CURRY 8H

### Casing change

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,

A handwritten signature in blue ink that reads "Gene Smith".

Gene Smith  
Assistant Chief of Permitting  
Office of Oil and Gas

Promoting a healthy environment.

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

1) Well Operator: Chevron Appalachia, LLC 49449935 Marshall Washington Moundsville, WV  
Operator ID County District Quadrangle

2) Operator's Well Number: 8H Well Pad Name: Curry

3) Farm Name/Surface Owner: Curry Public Road Access: Wayman's Ridge Rd/County Rt 38

4) Elevation, current ground: 1317' Elevation, proposed post-construction: 1317'

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

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Point Pleasant, 11381, Thickness 140' - Pressure 0.89 psi/ft

8) Proposed Total Vertical Depth: 11,898'

9) Formation at Total Vertical Depth: Point Pleasant

10) Proposed Total Measured Depth: 17,900'

11) Proposed Horizontal Leg Length: 6,002'

12) Approximate Fresh Water Strata Depths: 355' GL

13) Method to Determine Fresh Water Depths: Curry 2H

14) Approximate Saltwater Depths: 1,890'-3,080'

15) Approximate Coal Seam Depths: 825' GL

16) Approximate Depth to Possible Void (coal mine, karst, other): 825' GL

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: Alexander Mine (abandoned)  
Depth: 825'-833' GL  
Seam: Pittsburgh No. 8 Coal Seam  
Owner: Reserve Coal Properties Company

*Handwritten signature and date: 5/14/15*  
**Received**  
**MAY 14 2015**  
Office of Oil and Gas  
WV Dept. of Environmental Protection

18) CASING AND TUBING PROGRAM

| TYPE           | Size (in) | New or Used | Grade    | Weight per ft. (lb/ft) | FOOTAGE: For Drilling (ft) | INTERVALS: Left in Well (ft) | CEMENT: Fill-up (Cu. Ft.)/CTS |
|----------------|-----------|-------------|----------|------------------------|----------------------------|------------------------------|-------------------------------|
| Conductor      | 30"       | New         |          |                        | 40'                        | 40'                          | CTS                           |
| Surface/Coal   | 20"       | New         | J-55     | 94#                    | 925'                       | 925'                         | CTS                           |
| Intermediate1  | 13-3/8"   | New         | NT-80LHE | 68#                    | 2,296'                     | 2,296'                       | CTS                           |
| Intermediate 2 | 9-5/8"    | New         | P-110    | 40#                    | 8,852'                     | 8,852'                       | CTS                           |
| Production     | 5.5"      | New         | P-110    | 23#                    | 17,868'                    | 17,868'                      | CTS                           |
| Liners         |           |             |          |                        |                            |                              |                               |

| TYPE           | Size (in) | Wellbore Diameter (in) | Wall Thickness (in) | Burst Pressure (psi) | Anticipated Max. Internal Pressure (psi) | Cement Type | Cement Yield (cu. ft./k) |
|----------------|-----------|------------------------|---------------------|----------------------|--|-------------|--------------------------|
| Conductor      | 30"       | 36"                    |                     |                      |  |             |                          |
| Surface/Coal   | 20"       | 26"                    | 0.438"              | 2,110 psi            | 600 psi                                  | Class A     | 1.21                     |
| Intermediate1  | 13-3/8"   | 17-1/2"                | 0.514"              | 4,930 psi            | 2,500 psi                                | Class A     | 1.29                     |
| Intermediate 2 | 9-5/8"    | 12-1/4"                | 0.3952"             | 7,880 psi            | 6,500 psi                                | Class G     | 1.27/1.45                |
| Production     | 5.5"      | 8.5"                   | 0.415"              | 14,515 psi           | 11,500 psi                               | Class G     | 1.28/1.65                |
| Liners         |           |                        |                     |                      |  |             |                          |

*AS 5/14/15*

PACKERS

|             |  |  |  |   |
|-------------|--|--|--|---|
| Kind:       |  |  |  | <b>Received</b><br><br><b>MAY 14 2015</b> |
| Sizes:      |  |  |  |   |
| Depths Set: |  |  |  |   |

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 WV Dept. of Environmental Protection