



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

PERMIT MODIFICATION APPROVAL

March 06, 2015

CNX GAS COMPANY LLC
POST OFFICE BOX 1248
JANE LEW, WV 26378

Re: Permit Modification Approval for API Number 103293 , Well #: AUD5EHS

Extend Lateral

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



47 00 1032 93 MBO

Carolinda Flanagan
Permitting Analyst
P.O. Box 1248
Jane Lew, WV 26378
(304) 884-2057



December 4, 2014

West Virginia Department of Environmental Protection
Office of Oil & Gas
Attn: Laura Cooper
601 57th Street, SE
Charleston, WV 25304-2345

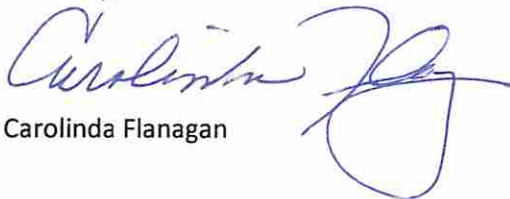
RE: **AUD5BHS - API# 47-001-03295 (Lateral Extension – extending 2840' more)**
AUD5CHS - API# 47-001-03296 (Lateral Extension – extending 2575' more)
AUD5DHS - API# 47-001-03294 (Lateral Extension – extending 2890' more)
AUD5EHS - API# 47-001-03293 (Lateral Extension – extending 2480' more)

Dear Laura,

Enclosed, please find modifications for the AUD5BHS-AUD5EHS to extend the laterals due to additional leasing being obtained. I have attached an updated casing plan, mylar plat, lease breakdown, and road letters where applicable.

Should you need any further information, please contact me at (304) 884-2057 or by email at carolindaflanagan@consolenergy.com. Thank you!

Sincerely,


Carolinda Flanagan

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DEC 05 2014

WV Department of
Environmental Protection

03/06/2015

4700103293^{MOD}



Carolinda Flanagan
Permitting Analyst
P.O. Box 1248
Jane Lew, WV 26378
(304) 884-2057



February 20, 2015

West Virginia Department of Environmental Protection
Office of Oil & Gas
Attn: Melanie Hankins
601 57th Street, SE
Charleston, WV 25304-2345

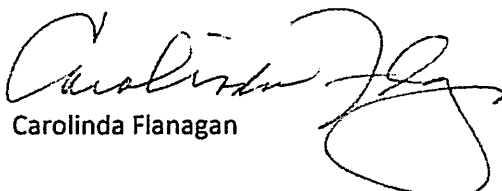
RE: AUD5BHS - API# 47-001-03295 (Lateral Extension – extending 2840' more)
AUD5CHS - API# 47-001-03296 (Lateral Extension – extending 2575' more)
AUD5DHS - API# 47-001-03294 (Lateral Extension – extending 2890' more)
AUD5EHS - API# 47-001-03293 (Lateral Extension – extending 2480' more)

Dear Melanie,

Enclosed, please find, per your request, clarification of the TVD, TMD, formation at TVD, and the cement section on the WW-6B for the modifications sent to you and dated December 4, 2014 for the AUD5BHS-AUD5EHS to extend the laterals due to additional leasing being obtained. I have attached updated casing plans, casing schematics, and mylar plats reflecting these changes.

Should you need any further information, please contact me at (304) 884-2057 or by email at carolindaflanagan@consolenergy.com. Thank you!

Sincerely,


Carolinda Flanagan

Received
Office of Oil & Gas
FEB 23 2015

03/06/2015

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

1) Well Operator: CNX Gas Company LLC

<u>494458046</u>	<u>Barbour</u>	<u>Union</u>	<u>Audra</u>
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Operator ID County District Quadrangle

2) Operator's Well Number: AUD5EHS Well Pad Name: AUD5HS

3) Farm Name/Surface Owner: Dana L. Jenkins Public Road Access: US Rt 119

4) Elevation, current ground: 1621.5' Elevation, proposed post-construction: 1620'

5) Well Type (a) Gas Oil Underground Storage

Other _____

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target - Marcellus, Depth - 7480' (Top), Thickness - 90', Pressure - 5000#

8) Proposed Total Vertical Depth: 7670'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 14579'

11) Proposed Horizontal Leg Length: 5410'

12) Approximate Fresh Water Strata Depths: 72', 165', 505'

13) Method to Determine Fresh Water Depths: Offset Well Information

14) Approximate Saltwater Depths: None Anticipated

15) Approximate Coal Seam Depths: 165', 505'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

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

<u>TYPE</u>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20	N	J-55	94	60	60	67.7/ CTS
Fresh Water	13.375	N	J-55	54.5	650	600	312.5/ CTS
Coal							
Intermediate	9.675	N	J-55	36	2050	2000	469.7/ CTS
Production	5.5	N	P-110	20	14529	14579	2420.4
Tubing	2.375	N	J-55	4.7		7600	
Liners							

<u>TYPE</u>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Max. Associated Surface Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20	26	0.438	2110	0	Class A	1.18
Fresh Water	13.375	17.5	0.380	2730	0	Class A	1.39
Coal							
Intermediate	9.675	12.25	0.352	3520	1693.8	Class A	1.18
Production	5.5	8.75	0.361	14360	6260.0	Class A	1.26
Tubing	2.375	5.5 csg	0.190	7700			
Liners							

PACKERS

Kind:	None			
Sizes:	None			
Depths Set:	None			

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and stimulate new horizontal Marcellus well. Well to be drilled to a TMD of 14579'. Well to be drilled to a TVD of 7670', formation at TVD - Onondaga. Well will be plugged back to an approximate depth of 6800' (approximate due to exact kick off point being unknown). Plugging back will be done using the displacement method and Class A Type cement. A solid cement plug will be set from TD to KOP. If an unexpected void is encountered, plan will be to set casing at a minimum of 30' past void and cement to surface with approved Class A type cement. There will not be any production, perforation, or stimulation of any formations below the target formation.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals.
Max Pressure - 9500 psi. Max Rate - 100 bbl/min.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.62

22) Area to be disturbed for well pad only, less access road (acres): 11.88

23) Describe centralizer placement for each casing string:

Conductor - No centralizers used.
Surface - Rigid Bow spring centralizers on first joint then every third joint to surface.
Intermediate - Rigid Bow spring centralizers one on the first two joints and every third joint to surface.
Production - Rigid bow spring centralizer on first joint then every casing joint (free floating) through the lateral and every other joint in the curve. (Note: cementing the 5 1/2" casing completely in open hole lateral and curve.)

24) Describe all cement additives associated with each cement type:

Conductor - 2% CaCl2.
Surface - 3% CaCl2 & 1#/sk Celloflake LCM.
Intermediate - 3% CaCl2 & 0.5#/sk Celloflake LCM.
Production - 2.6% Cement extender, 0.7% Fluid loss additive, 0.5% High Temperature Retarder, 0.2% Friction Reducer

25) Proposed borehole conditioning procedures:

Conductor - The hole is auger drilled w/ air and casing ran in air.
Surface - The hole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing string will be circulated w/ fresh water prior to cementing.
Intermediate - The hole is drilled w/ air and casing is ran in air. (Note: Drilling soap may be utilized if the hole gets wet/damp during the drilling of all air holes with the exception of the conductor).
Production - The hole will be drilled with synthetic oil base mud. At TD the hole is circulated at optimum pump rate until shale shaker deem the hole is clean. Once casing is ran the hole is circulated for a minimum of one hole volume prior to pumping cement.

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*Note: Attach additional sheets as needed.

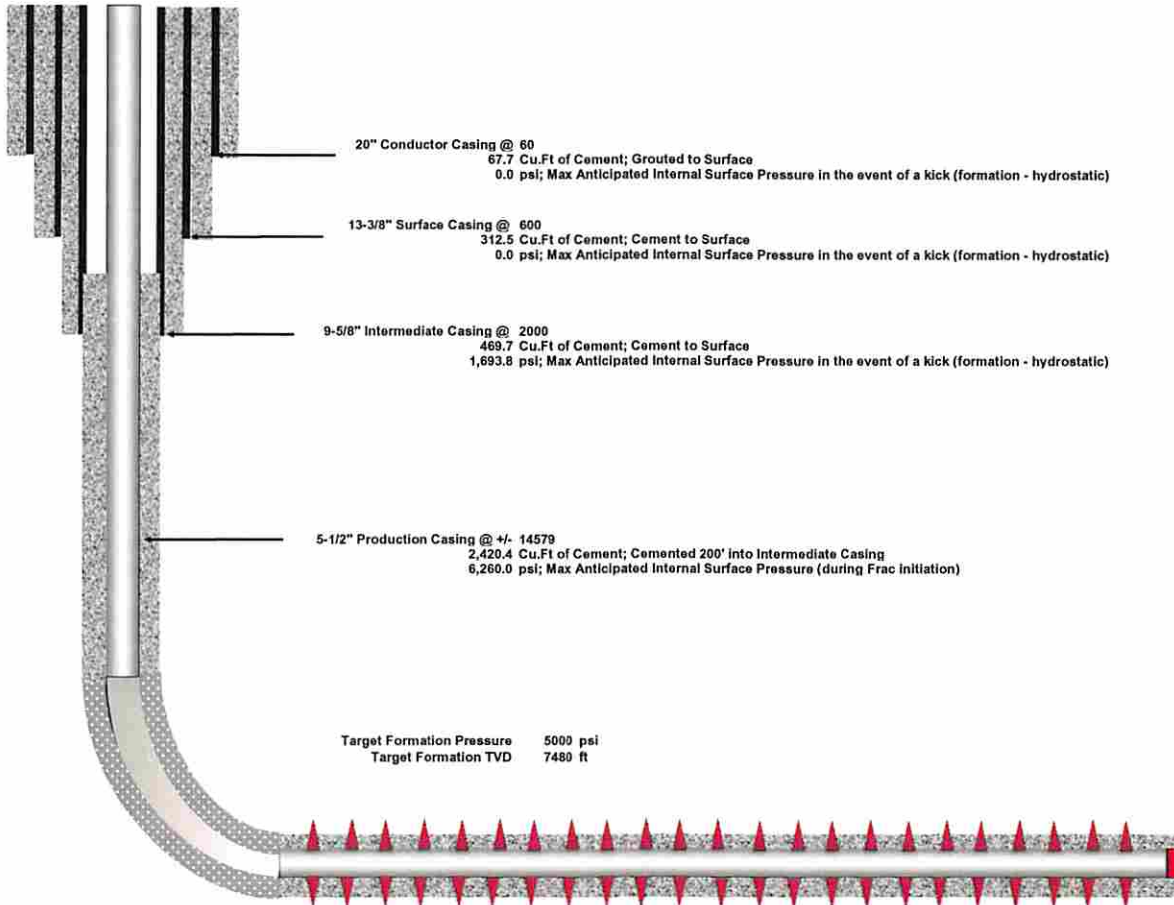
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AUD5EHS

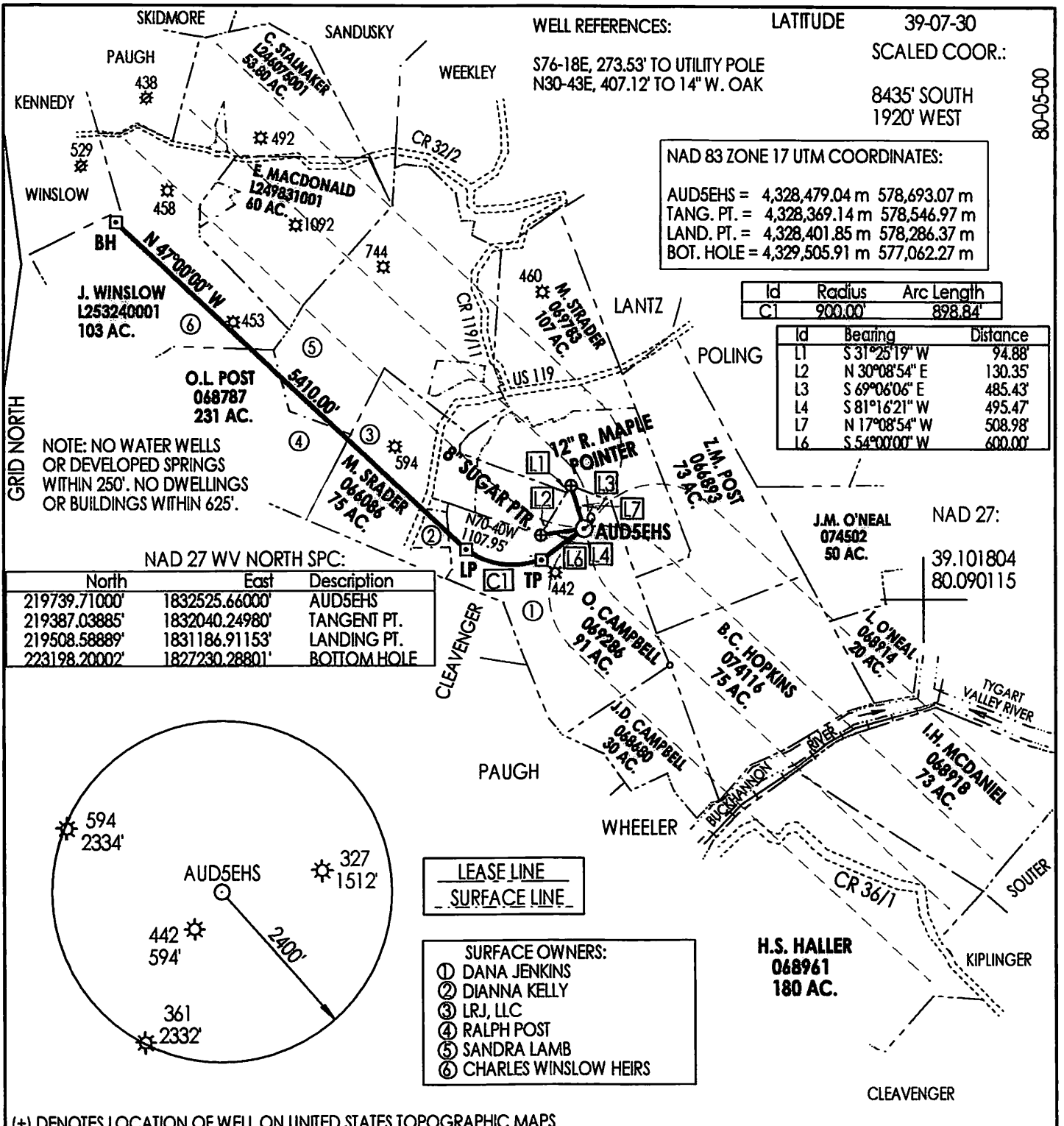
Casing Schematic

SCHMATIC NOT TO SCALE



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03/06/2015



WELL REFERENCES:
 S76-18E, 273.53' TO UTILITY POLE
 N30-43E, 407.12' TO 14" W. OAK

LATITUDE 39-07-30
 SCALED COOR.:
 8435' SOUTH
 1920' WEST

NAD 83 ZONE 17 UTM COORDINATES:

Id	Radius	Arc Length
C1	900.00'	898.84'

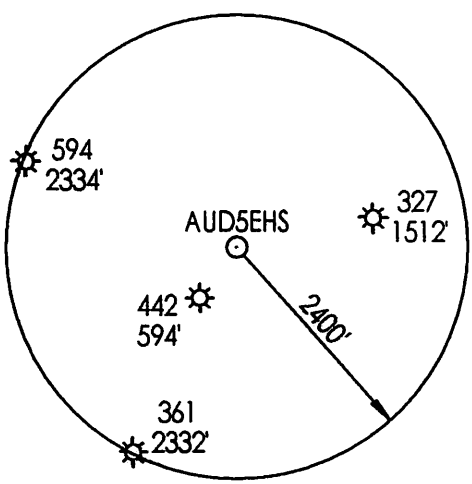
Id	Bearing	Distance
L1	S 31°25'19" W	94.88'
L2	N 30°08'54" E	130.35'
L3	S 69°06'06" E	485.43'
L4	S 81°16'21" W	495.47'
L7	N 17°08'54" W	508.98'
L6	S 54°00'00" W	600.00'

NOTE: NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250'. NO DWELLINGS OR BUILDINGS WITHIN 625'.

NAD 27 WV NORTH SPC:

North	East	Description
219739.71000'	1832525.66000'	AUD5EHS
219387.03885'	1832040.24980'	TANGENT PT.
219508.58889'	1831186.91153'	LANDING PT.
223198.20002'	1827230.28801'	BOTTOM HOLE

NAD 27:
 39.101804
 80.090115



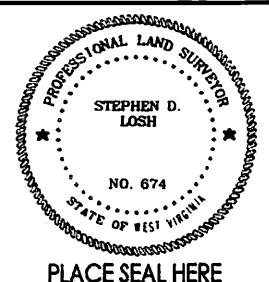
LEASE LINE
 SURFACE LINE

- SURFACE OWNERS:
- ① DANA JENKINS
 - ② DIANNA KELLY
 - ③ LRJ, LLC
 - ④ RALPH POST
 - ⑤ SANDRA LAMB
 - ⑥ CHARLES WINSLOW HEIRS

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

FILE NUMBER: _____
 DRAWING NUMBER: CNXAUD5EHSR4.PCS
 SCALE: 1" = 1600'
 MINIMUM DEGREE OF ACCURACY: SUBMETER
 PROVEN SOURCE OF ELEVATION: RTK GPS SURVEY
CENTIMETER SYSTEM

I THE UNDERSIGNED, HEREBY STATE 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 ENERGY.



(SIGNED) _____
 STEPHEN D. LOSH, P.S. #674

STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS
 #10 McJUNKIN ROAD
 NITRO, WV 25143-2506

LAND SURVEYING SERVICES
 21 CEDAR LANE, BRIDGEPORT, WV 26330
 PHONE: 304-842-2018 OR 842-5762

DATE: FEBRUARY 11, 2015

WELL TYPE: OIL ___ GAS ___ X LIQUID INJECTION ___ WASTE DISPOSAL ___ CBM ___
 (IF "GAS") PRODUCTION ___ X STORAGE ___ DEEP ___ SHALLOW X

OPERATORS WELL NO.: AUD5EHS
 API WELL NO. 47-001-03293 MOD
 STATE COUNTY PERMIT

LOCATION: ELEVATION 1621.50' (494.24 m) WATERSHED BUCKHANNON RIVER
 DISTRICT UNION COUNTY BARBOUR

QUADRANGLE AUDRA LEASE NUMBER SEE ABOVE

SURFACE OWNER DANA L. JENKINS ACREAGE 50.00 (10-42)
 OIL & GAS ROYALTY OWNER O. CAMPBELL, ET. AL. LEASE ACREAGE 1221.80

PROPOSED WORK: DRILL ___ X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
 PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) HORIZONTAL

TARGET FORMATION MARCELLUS PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
 ESTIMATED DEPTH TVD = 7670' TMD = 14579'

WELL OPERATOR CNX GAS COMPANY LLC DESIGNATED AGENT MATTHEW IMRICH
 ADDRESS P. O. BOX 1248 JANE LEW, WV 26378 ADDRESS P. O. BOX 1248 JANE LEW, WV 26378

00-50-08

COUNTY NAME PERMIT

03/06/2015

Attachment - Form WW-6A-1 for AUD5EHS:

Lease No.	Grantor, Lessor, etc	Grantee, Lessee, etc	Royalty	Book/Page
✓ 069286	Orville Campbell, et al Hope Natural Gas Company Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings LLC XVI Consol Gas Company	Hope Natural Gas Company Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings LLC XVI Consol Gas Company CNX Gas Company, LLC	\$75.00/Gas Well; 1/8 Oil Assignment Assignment Merger/Name Change Merger/Name Change Assignment Merger/Name Change Merger/Name Change	42/46 53/261 99/481 Aol 51/795 Harrison Aol 58/362 Harrison 151/423 Col 16/577 Col 17/1
✓ 066086	Martha Dyer Strader, et al Hope Natural Gas Company Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC Consol Gas Company	Hope Natural Gas Company Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC Consol Gas Company CNX Gas Company LLC	1/8 Merger/Name Change Assignment Merger/Name Change Merger/Name Change Assignment Merger/Name Change Merger/Name Change	53/321 53/261 99/481 Aol 51/795 Harrison Aol 58/362 Harrison 151/423 Col 16/577 Col 17/1
✓ 068787	O.L. Post, et al Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC Consol Gas Company	Consolidated Gas Supply Corp Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC Consol Gas Company CNX Gas Company LLC	1/8 Assignment Merger/Name Change Merger/Name Change Assignment Merger/Name Change Merger/Name Change	66/504 99/481 Aol 51/795 Harrison Aol 58/362 Harrison 151/423 Col 16/577 Col 17/1
✓ L253240001	Joshua D. Winslow Natasha R. Winslow John Stephen Winslow	CNX Gas Company LLC CNX Gas Company LLC CNX Gas Company LLC	1/8 1/8 1/8	166/68 166/72 166/76

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