



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

August 12, 2014

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

Re: Permit Modification Approval for API Number 1706409 , Well #: OXFD 11 AHS

Intermediate casing depth changed

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,

for
Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas

4701706409 MOD



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



May 16, 2014

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

RE: OXFD11HS - Modifications (Intermediate Casing Depth Change)

Dear Laura,

Enclosed, please find for your approval and consideration, updated casing modifications where the intermediate casing depths have been changed. The casing modifications are for the following laterals:

WELL NUMBER	API NUMBER
OXFD11AHS	4701706409
OXFD11BHS	4701706410
OXFD11CHS	4701706411
OXFD11DHS	4701706412
OXFD11EHS	4701706413
OXFD11KHS	4701706414

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

Sincerely,

Carolinda Flanagan

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MAY 20 2014

WV Department of
Environmental Protection

08/15/2014

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

1) Well Operator: CNX Gas Company LLC 494458046 Doddridge Southwest Oxford
Operator ID County District Quadrangle

2) Operator's Well Number: OXFD11AHS Well Pad Name: OXFD11HS

3) Farm Name/Surface Owner: I.L. Morris Public Road Access: Co. Rt. 19/11

4) Elevation, current ground: 1340' Elevation, proposed post-construction: 1310'

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 - 6950', Thickness - 60', Pressure - 2500#

8) Proposed Total Vertical Depth: 7110'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 13675'

11) Proposed Horizontal Leg Length: 5500'

12) Approximate Fresh Water Strata Depths: 50', 620'

13) Method to Determine Fresh Water Depths: Offset Well

14) Approximate Saltwater Depths: 1180', 2085'

15) Approximate Coal Seam Depths: 620'

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: _____

*DCW
5-2-2014*

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WW-6B
(9/13)

18) CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
Conductor	20"	N	L.S.	81.3#	100'	100'	Grout to surface w/ Class A type cement
Fresh Water	13 3/8"	N	J-55	54.5#	690'	690'	CTS w/ Class A Type Cement
Coal							
Intermediate	9 5/8"	N	J-55	36#	2800'	2800'	CTS w/ Class A Type Cement
Production	5 1/2"	N	P-110	20#	13675'	13675'	2200 cu. ft. w/ 50/50 POZ Lead & Class A
Tubing	2 3/8"	N	J-55	4.7#	7450'	7450'	
Liners							

*DCW
5-2-2014*

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	26"	0.438	2110	Class A Type	1.18
Fresh Water	13 3/8"	17 1/2"	0.380	2730	Class A Type	1.39
Coal						
Intermediate	9 5/8"	12 3/8"	0.352	3520	Class A Type	1.18
Production	5 1/2"	8 3/4" & 8 1/2"	0.361	12640	Class A Type	1.26
Tubing	2 3/8"	5 1/2" Csg	0.190	7700
Liners						

PACKERS

Kind:	None			
Sizes:	None			RECEIVED Office of Oil and Gas
Depths Set:	None			MAY 20 2014

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Environmental Protection

WW-6B
(9/13)

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 13675'. Well to be drilled to a TVD of 7110', formation at TVD - Onondaga Group. The well bore will not be drilled any deeper than 100' into the Onondaga Group, nor will there be any perforation, stimulation, or production of any formations below the target formation. 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.

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): 24.4 Acres

22) Area to be disturbed for well pad only, less access road (acres): 20.4 Acres

23) Describe centralizer placement for each casing string:

Conductor - No centralizers used. Fresh Water & Coal - Bow spring centralizers on first joint then every fourth joint to 100 feet from surface. Intermediate - Bow spring centralizers one on the first two joints and every fourth joint until inside surface casing. Production - Rigid bow spring centralizer on first joint then every 2 casing joints (free floating) through the lateral and 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. Fresh Water/Coal - 2% CaCl₂. Intermediate - 2% CaCl₂. Production - 2.6% Cement extender, 0.7% Fluid loss additive, 0.5% High Temperature Retarder, 0.2% Friction Reducer

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25) Proposed borehole conditioning procedures:

Conductor - The hole is drilled w/ air and casing ran in air. Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Fresh Water/Coal - The hole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing shoe will be cleared with fresh water and gel prior to cementing. Intermediate - The hole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing shoe will be cleared with fresh water and gel prior to cementing. (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 and once at TD the hole is circulated at a drilling pump rate until 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.

S.W. STOUT LEASE OXFD 11 WELL NO.S AHS-KHS

Gas Well



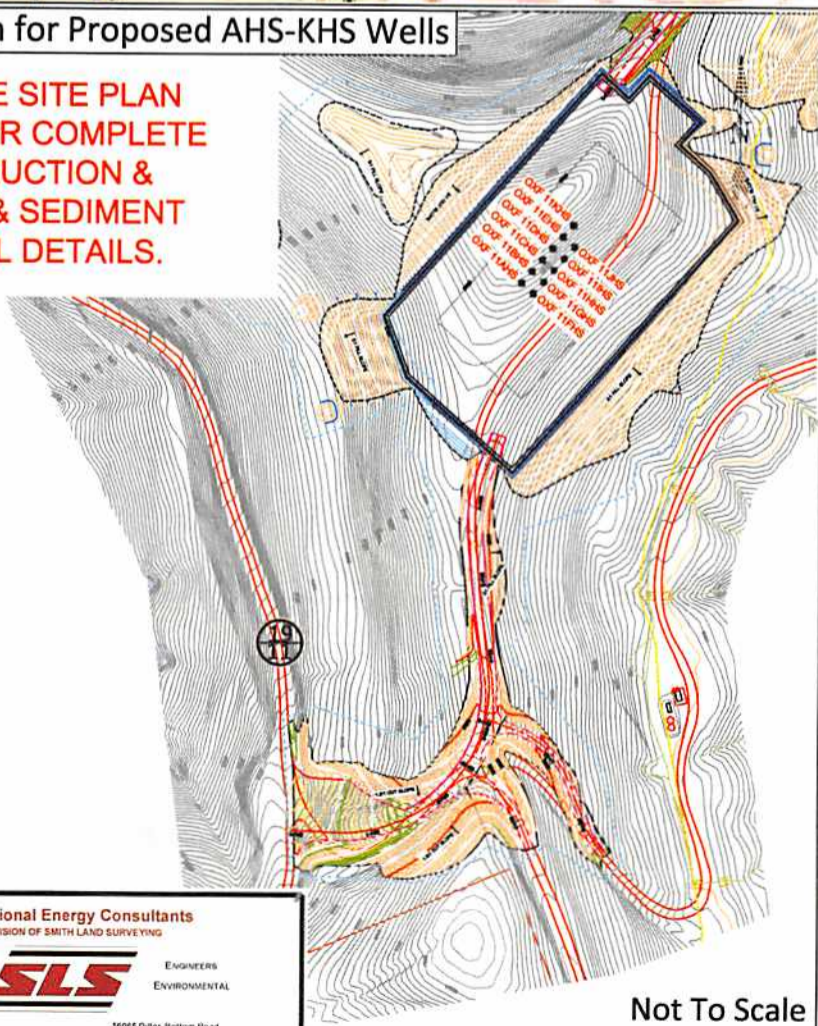
**NOTE: SEE SITE PLAN
OXFD 11 FOR COMPLETE
CONSTRUCTION &
EROSION & SEDIMENT
CONTROL DETAILS.**

*DWC
11-1-13*

Oil Well

Detail Sketch for Proposed AHS-KHS Wells

**NOTE: SEE SITE PLAN
OXFD 11 FOR COMPLETE
CONSTRUCTION &
EROSION & SEDIMENT
CONTROL DETAILS.**



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NOV 06 2013

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08/15/2014

SCALE: 1"=500'



Not To Scale

TOPO SECTION OF OXFORD 7.5'
USGS TOPO QUADRANGLE



Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING

SURVEYORS
PROJECT MGMT.



ENGINEERS
ENVIRONMENTAL

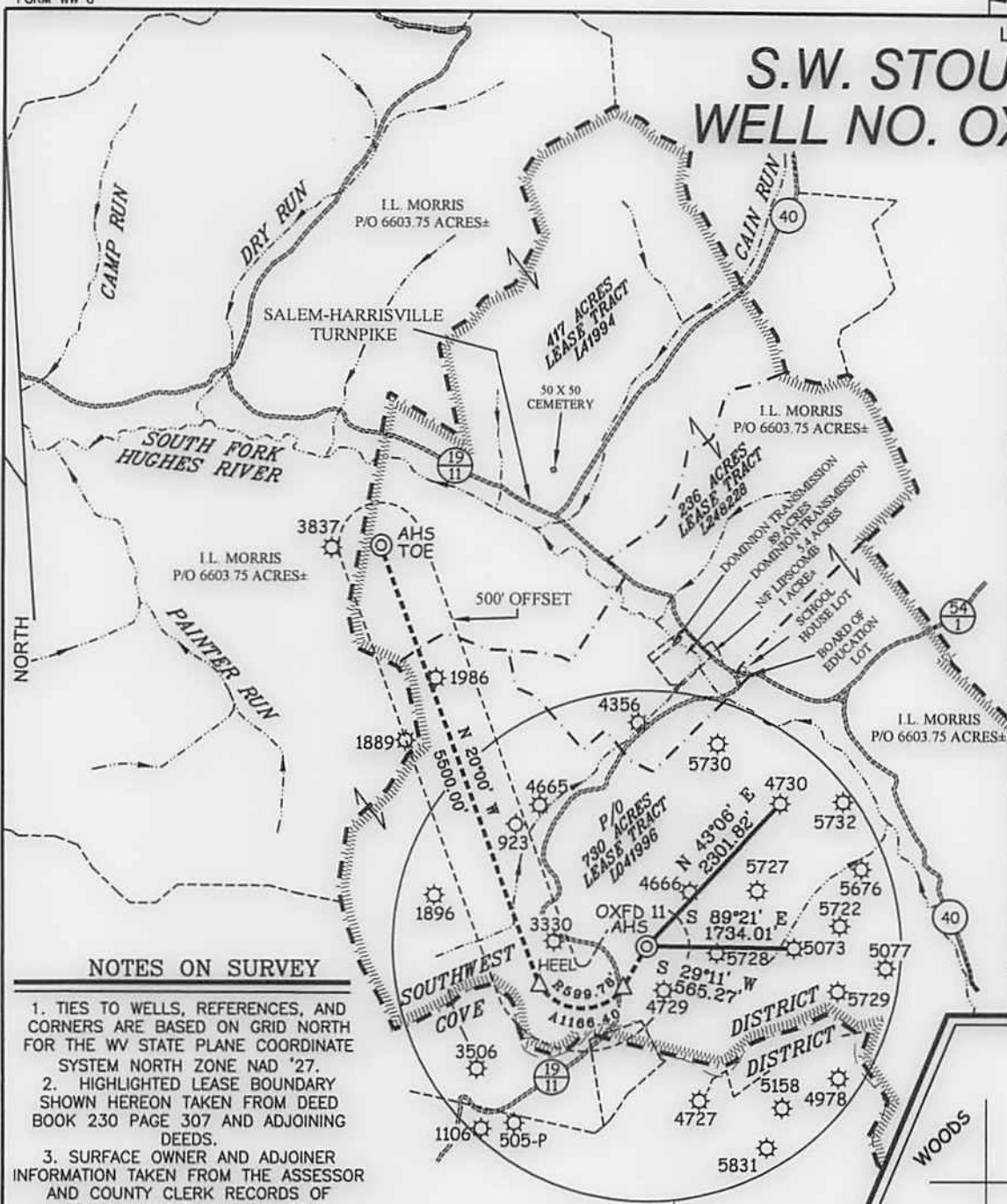
226 West Main St.
P.O. Box 150
Glenville, WV 25351
(304) 462-5834

5605 Dales Bottom Road
Stuyveside, OH 43947
(740) 671-9911

HONESTY. INTEGRITY. QUALITY.

DRAWN BY K.D.W.	FILE NO. 7981	DATE 10-17-13	CADD FILE: 7981REC-AHS.dwg
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S.W. STOUT LEASE WELL NO. OXFD 11 AHS



WELL NO. AHS TOP HOLE STATE PLANE COORDINATES (NORTH ZONE NAD '27) N. 246,757 E. 1,641,688 TOP HOLE (NAD 27) LAT=(N) 39°10'14.1" LONG=(W) 80°45'49.8" TOP HOLE (NAD 83) LAT=(N) 39°10'14.4" LONG=(W) 80°45'49.1" TOP HOLE UTM (NAD 83) (N) 4,335,742 (E) 520,416
WELL NO. AHS HEEL POINT STATE PLANE COORDINATES (NORTH ZONE NAD '27) N. 246,292 E. 1,640,422 HEEL POINT (NAD 27) LAT=(N) 39°10'09.3" LONG=(W) 80°46'05.8" HEEL POINT (NAD 83) LAT=(N) 39°10'09.6" LONG=(W) 80°46'05.1" HEEL POINT UTM (NAD 83) (N) 4,335,594 (E) 520,033
WELL NO. AHS TOE POINT STATE PLANE COORDINATES (NORTH ZONE NAD '27) N. 251,460 E. 1,638,541 TOE POINT (NAD 27) LAT=(N) 39°11'00.1" LONG=(W) 80°46'30.6" TOE POINT (NAD 83) LAT=(N) 39°11'00.4" LONG=(W) 80°46'30.0" TOE POINT UTM (NAD 83) (N) 4,337,159 (E) 519,434

REFERENCES



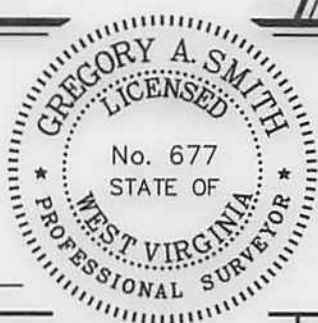
NOTES ON SURVEY

1. TIES TO WELLS, REFERENCES, AND CORNERS ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD '27.
2. HIGHLIGHTED LEASE BOUNDARY SHOWN HEREON TAKEN FROM DEED BOOK 230 PAGE 307 AND ADJOINING DEEDS.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF HARRISON COUNTY IN JULY, 2013.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE).
5. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250'. NO APPLICABLE DWELLINGS OR BUILDINGS WITHIN 625'.



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 DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677 *Gregory A. Smith*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE NOVEMBER 1, 20 13
 OPERATORS WELL NO. OXFD 11 AHS
 API WELL NO. 47-017-06409 H6A
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7981PAHSR1(457-21)
 PROVEN SOURCE OF ELEVATION DGPS (SUBMETER MAPPING GRADE) SCALE 1" = 2,000'

STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 1,340' WATERSHED SOUTH FORK HUGHES RIVER
 DISTRICT SOUTHWEST COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'

SURFACE OWNER I.L. MORRIS ACREAGE 6603.75±
 ROYALTY OWNER LINDSAY A EDMONDSON, ETAL ACREAGE 730 & 418

PROPOSED WORK: LEASE NO. L041996 & L41994
 DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD
 FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER
 PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
 ESTIMATED DEPTH 7,110' TVD / TMD 13,675'

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

08/15/2014