



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

October 22, 2013

CNX GAS COMPANY LLC
ONE ENERGY DRIVE
JANE LEW, WV 26378

Re: Permit Modification Approval for API Number 9703794 , Well #: ALT8EHS

Extended Laterals

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

Regulatory/Compliance Manager

Office of Oil and Gas

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: CNX Gas Company LLC 494458046 Upshur Washington Alton
Operator ID County District Quadrangle

2) Operator's Well Number: ALT8EHS Drill Deeper - API# 47-097-3794 Well Pad Name: ALT8HS

3 Elevation, current ground: 2460' Elevation, proposed post-construction: 2460'

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 - Marcellus, Depth - 7490, Thickness - 95', Pressure - 2500#

7) Proposed Total Vertical Depth: 7490'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 19494'

10) Approximate Fresh Water Strata Depths: None Reported

11) Method to Determine Fresh Water Depth: Offset Well (API# 47-097-01608)

12) Approximate Saltwater Depths: None Anticipated

13) Approximate Coal Seam Depths: 105', 305'

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

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

16) Describe proposed well work: Drill & stimulate new horizontal Marcellus well. Well to be drilled to a TMD of 19494'. Well to be drilled to a TVD of 7490', formation @ TVD - Marcellus. Well will be plugged back to an approximate depth of 6800' (approximate due to exact Kick of 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. Well bore will not be drilled any deeper than 100' into the Onondaga Group, nor will there be any production, perforation, or stimulation of any formations below the target formation.

17) Describe fracturing/stimulating methods in detail:
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.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 10 Acres

19) Area to be disturbed for well pad only, less access road (acres): 10 Acres

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20)

CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per 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#	40'	40'	CTS w/ 50sks Class A type cement
Fresh Water	13 3/8"	N	J-55	54.5#	650'	650'	CTS w/ 430sks Class A Type Cement
Coal							
Intermediate	9 5/8"	N	J-55	36#	2000'	2000'	CTS w/ approved Class A Type Cement
Production	5 1/2"	N	P-110	20#	19494'	19494'	2200 cu. ft. w/ 50/50 POZ Lead & Class A Tail
Tubing	2 3/8"	N	J-55	4.7#	7250'	7250'	
Liners							

Ball Half 8/28/13

<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</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			
Depths Set:	None			

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21) 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.)

22) 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

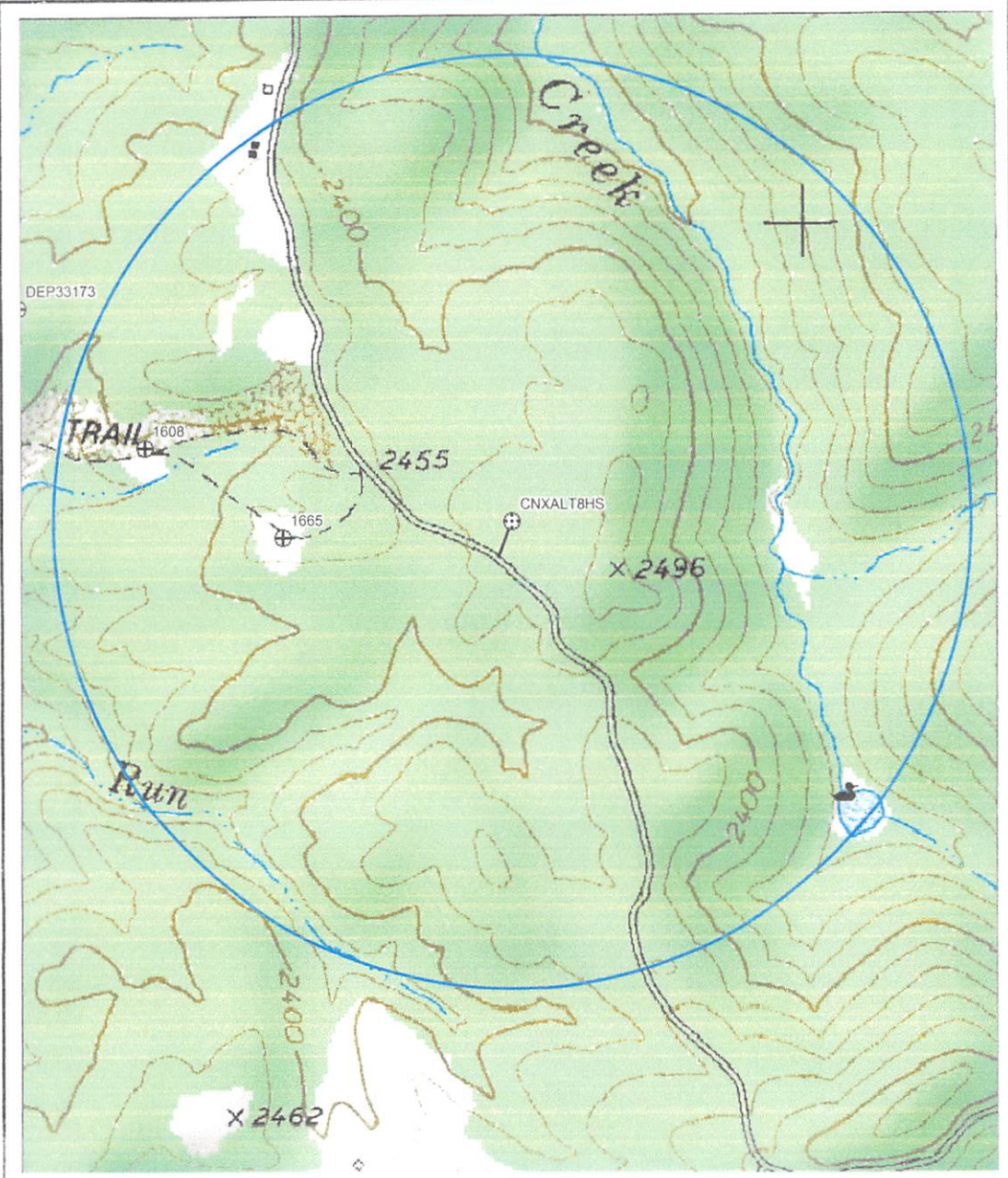
23) Proposed borehole conditioning procedures. Conductor - The hole is drilled w/ air and casing ran in air.
Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Fresh Water/Coal - The hole is drilled w/ air and casing is ran in air. Once casing 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.

*Note: Attach additional sheets as needed.

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97-3794
 ✓
 CFP



1, 103904.680, 1810138.211, 2272.115, "n end pond"

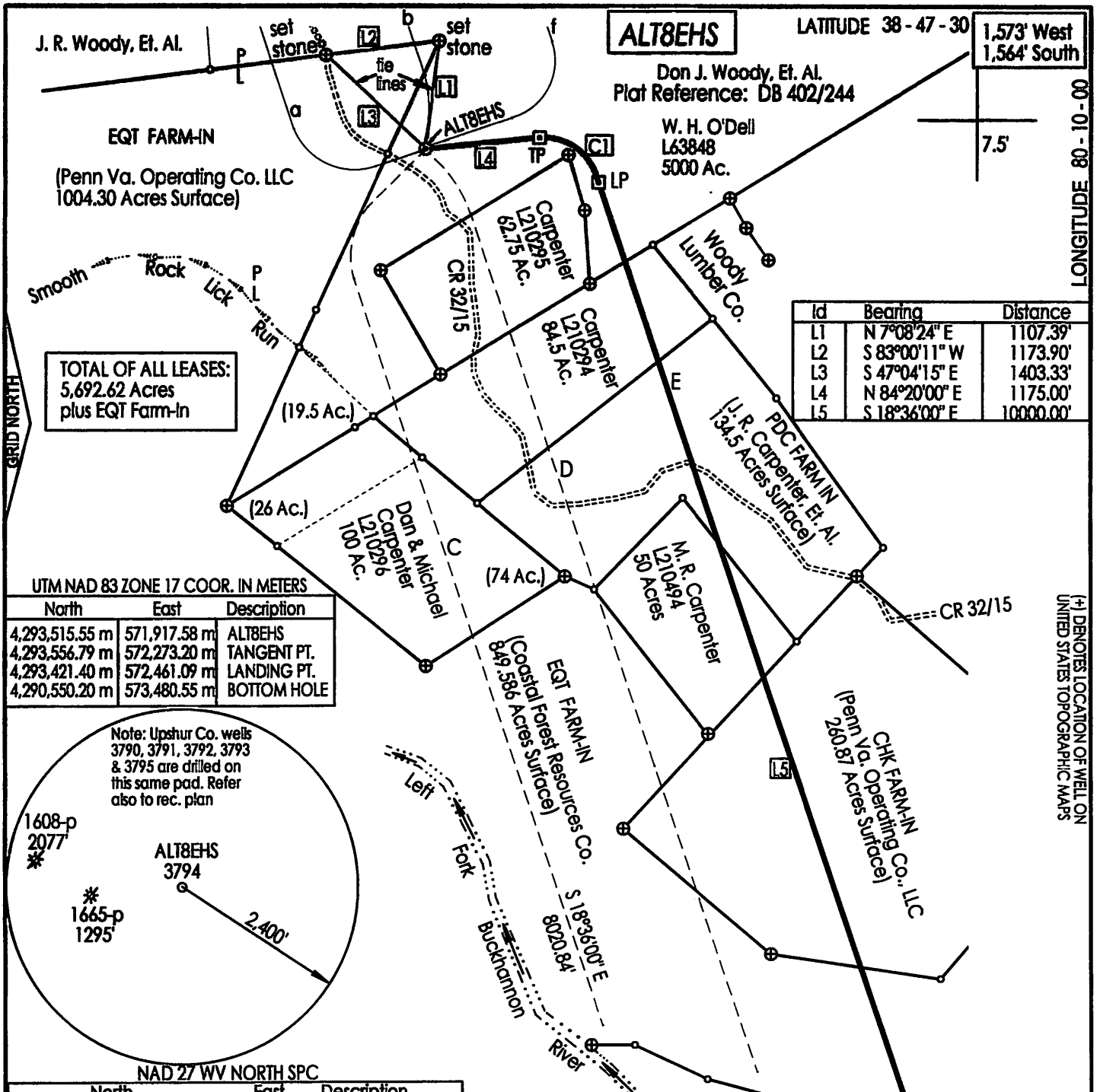
COORDINATE BASIS
 NAD27 WV N STATE PLANE

NORTH
 APR 04 2013

LAND SURVEYING SERVICES
 21 Cedar Lane
 Bridgeport, WV 26330
 304-842-2018

CNX Gas Company LLC P. O. Box 1248 Jane Lew, WV 26378		
PLAT SHOWING WATER PURVEYORS WITHIN 2,500 FEET OF THE ALT8HS PAD CENTER		
DISTRICT	COUNTY	STATE
Washington	Upshur	WV
DATE	SCALE	DWG NO.
Oct. 22, 2012	1" = 733.33 ft.	alt8wtrpur

10/25/2013

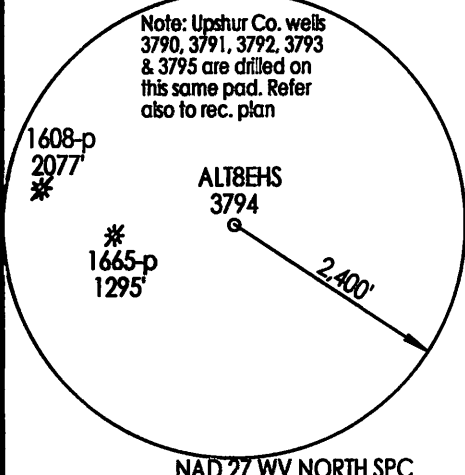


TOTAL OF ALL LEASES:
5,692.62 Acres
plus EQT Farm-In

Id	Bearing	Distance
L1	N 7°08'24" E	1107.39'
L2	S 83°00'11" W	1173.90'
L3	S 47°04'15" E	1403.33'
L4	N 84°20'00" E	1175.00'
L5	S 18°36'00" E	10000.00'

UTM NAD 83 ZONE 17 COOR. IN METERS

North	East	Description
4,293,515.55 m	571,917.58 m	ALT8EHS
4,293,556.79 m	572,273.20 m	TANGENT PT.
4,293,421.40 m	572,461.09 m	LANDING PT.
4,290,550.20 m	573,480.55 m	BOTTOM HOLE



North	East	Description
105374.92000'	1808390.08000'	ALT8EHS
105490.94048'	1809559.33799'	TANGENT POINT
105036.43373'	1810168.57235'	LANDING POINT
95558.75000'	1813358.16000'	BOTTOM HOLE

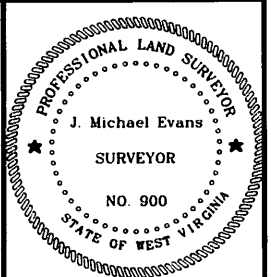
Curve Data

Id	Radius	Arc Length
C1	580.97'	828.55'

FILE NUMBER: M 6-Q P 10
 DRAWING NUMBER: cnxalt8ehsr4.pcs
 SCALE: 1" = 1,500
 MINIMUM DEGREE OF ACCURACY: Centimeter
 PROVEN SOURCE OF ELEVATION: DGPS Survey
RTK Centimeter System

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 ENERGY.

(SIGNED) J. Michael Evans
 J. Michael Evans, P. S. #900



STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS
 #10 McJUNKIN ROAD
 NITRO, WV 25143-2506
 FORM WW-6

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

LOCATION: ELEVATION 2,459.5' (749.66 m) WATERSHED Panther Creek
 DISTRICT Washington COUNTY Upshur
 QUADRANGLE Alton 7.5' LEASE NUMBER 63848 ... Refer Above

SURFACE OWNER Don J. Woody, Et. Al. ACREAGE 2,534.80
 OIL & GAS ROYALTY OWNER W. H. O'Dell 5000. Ac., Et. Al. (refer above) LEASE ACREAGE Refer Above

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

TARGET FORMATION Marcellus ESTIMATED DEPTH TVD 7,490' / TMD 19,494'

WELL OPERATOR CNX Gas Company LLC DESIGNATED AGENT Jeremy Jones, Gen. Manager WV Operations
 ADDRESS P. O. Box 1248, Jane Lew, WV 26378 ADDRESS P. O. Box 1248, Jane Lew, WV 26378

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

DATE: August 1, 2013
 OPERATORS WELL NO.: ALT8EHS
 API WELL NO. 47 - 097 - 03794 H6A
 STATE COUNTY PERMIT

PLUG & ABANDON CLEAN OUT & REPLUG

COUNTY NAME UPSHUR
 PERMIT 10/25/2013