



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 31, 2014

CHESAPEAKE APPALACHIA, L.L.C.
POST OFFICE BOX 6070
CHARLESTON, WV 25362

Re: Permit Modification Approval for API Number 5101631 , Well #: VAN ASTON MSH 5H
Extended Freshwater Casing

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, appearing to read 'Gene Smith', is written over a blue horizontal line.

Gene Smith
Regulatory/Compliance Manager
Office of Oil and Gas



05 1 0 1 6 3 1
MOD

Danielle Southall
Regulatory Analyst II

December 19, 2013

VIA UPS

Ms. Laura Adkins
Office of Oil & Gas
601 57th Street
Charleston, WV 25304

Re: Modification to Van Aston MSH 5H API# 47-051-01690

51-01631 (5H)

Dear Laura:

Enclosed please find a revised WW-6B for the above captioned well. We would like to modify the 13 3/8", in order to cover the coal, due to an active mine. This well is situated on the Van Aston property, in Cameron District, Marshall County, West Virginia.

If you have any questions or require additional information, please contact me at 304-517-1416 ext 86024.

Sincerely,

Chesapeake Appalachia, LLC

Dee Southall

DS

Enclosure(s)

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DEC 20 2013
WV Department of
Environmental Protection

04/04/2014

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: Chesapeake Appalachia, LLC 494477557 51- Marshall 1- Cameron 370- Glen Easton
Operator ID County District Quadrangle

2) Operator's Well Number: API # 47-051-01690 Van Aston MSH 5H Well Pad Name: Van Aston MSH Pad

3 Elevation, current ground: 1,152' Elevation, proposed post-construction: 1,152'

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

5) Existing Pad? Yes or No: Yes

Handwritten: JH 12/19/13 MSJK 12/19/2013

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Target formation-Marcellus, Target top TVD- 6535 , Target base TVD- 6595, Anticipated thickness- 59, Associated Pressure 4248

7) Proposed Total Vertical Depth: 6,595'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 16,000'

10) Approximate Fresh Water Strata Depths: 336'

11) Method to Determine Fresh Water Depth: From water wells within 1 mile and also the elevation of nearby creek.

12) Approximate Saltwater Depths: 1,060'

13) Approximate Coal Seam Depths: 770'

14) Approximate Depth to Possible Void (coal mine, karst, other): 770' Active 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): 9.50

19) Area to be disturbed for well pad only, less access road (acres): 6.8

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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"	New	J-55	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	830'	830'	410 sx/CTS
Coal	9 5/8"	New	J-55	40#	2,240'	2,240'	860 sx/CTS
Intermediate	7"	New	P-110	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	P-110	20#	16,000'	16,000'	Lead 1,060' sx Tail 1,670' sx/100' inside intermediate
Tubing	2 3/8"	New	N-80	4.7#	Approx. 7,054'	Approx. 7,054'	
Liners							

MSK 12/19/2013 *SK 12/19/13*

<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"	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"	.0317	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'		

RECEIVED
Office of Oil & Gas

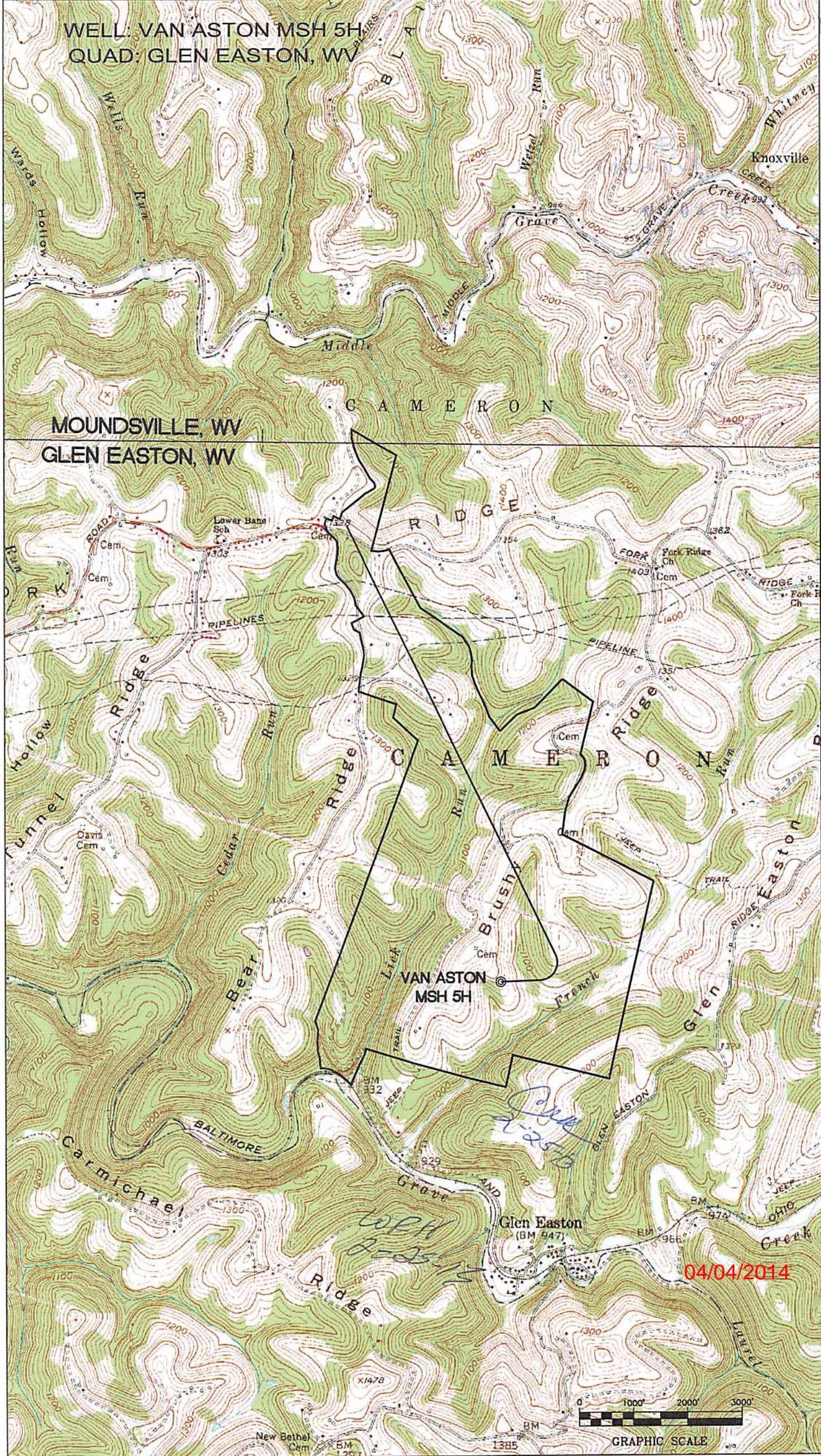
DEC 20 2013

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Environmental Protection

04/04/2014

YK

WELL: VAN ASTON MSH 5H
QUAD: GLEN EASTON, WV



MOUNDSVILLE, WV
GLEN EASTON, WV

C A M E R O N

VAN ASTON
MSH 5H

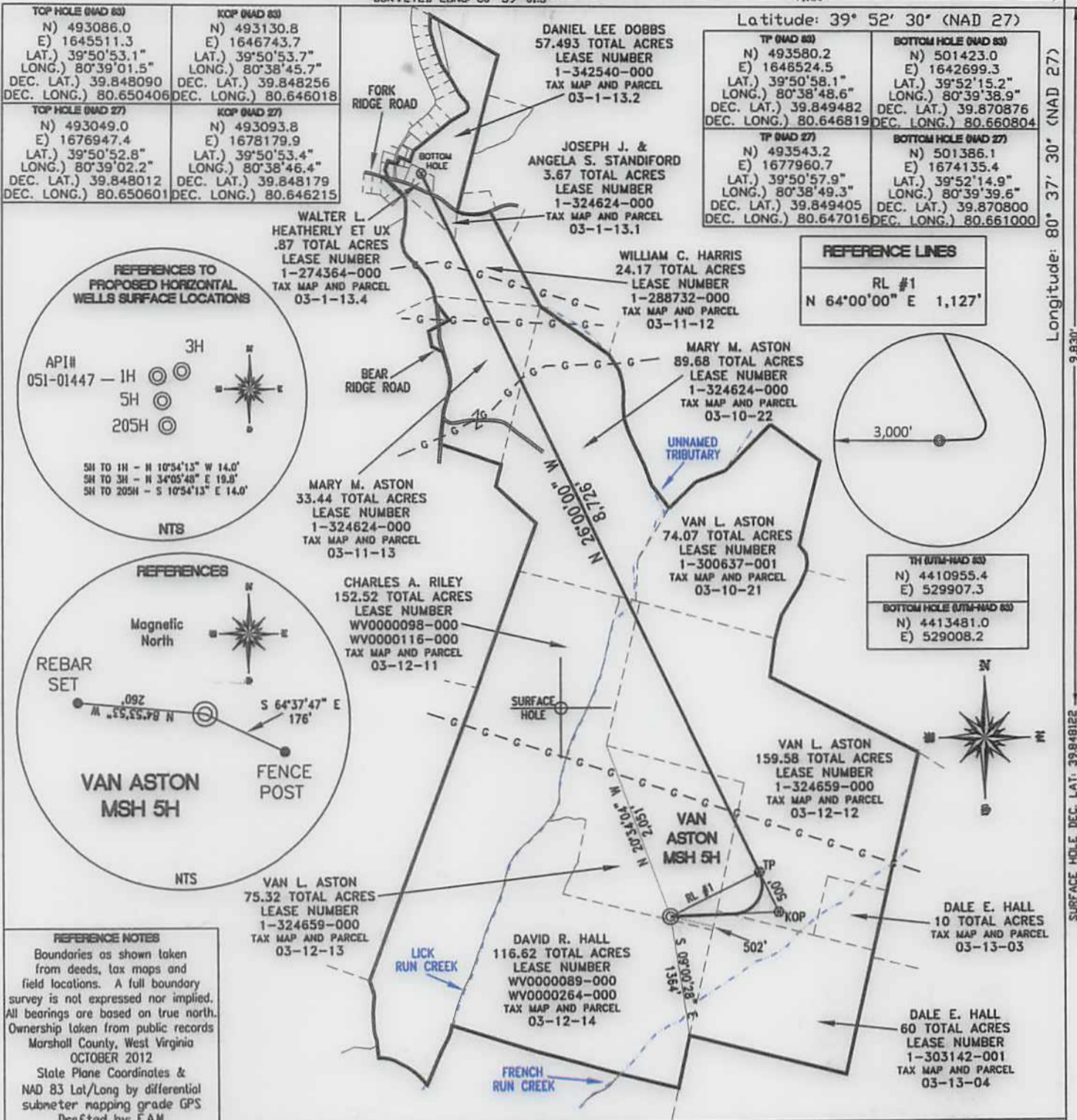
Blue scribbles
2-250

WV 2-250

04/04/2014



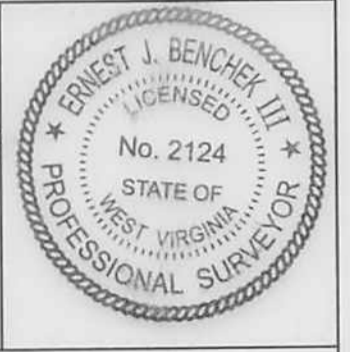
GRAPHIC SCALE



FILE #: CHE 032
DRAWING #: 2124
SCALE: 1" = 1600'
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

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

WATERSHED: UPPER OHIO SOUTH ELEVATION: 1,152'
COUNTY/DISTRICT: MARSHALL / CAMERON QUADRANGLE: GLEN EASTON, WV.
SURFACE OWNER: VAN L. ASTON ACREAGE: 75.32 +/-
OIL & GAS ROYALTY OWNER: VAN L. ASTON ACREAGE: 504.223 +/-

LEASE NUMBERS: 1

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: 6,595' TMD: 15,781'
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

DATE: JANUARY 29, 2013
OPERATOR'S WELL #: VAN ASTON MSH 5H
API WELL #: 47 51 1631H6A
STATE COUNTY PERMIT

04/04/2014