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 25, 2014

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

Re: Permit Modification Approval for API Number 6900171 , Well #: CARL ROTTER OHI 1H
Casing Plan Modified

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

069 00171
MOD

Danielle Southall
Regulatory Analyst II

December 12, 2013

VIA UPS

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

Re: Modification to Carl Rotter OHI 1H API# 47-069-00171

Dear Ms. Cooper:

Enclosed please find a modification for the above captioned well. We would like to modify the 13 3/8" casing due to updated water depth, and the 5 ½" casing due to directional work. The BHL will remain the same. This well is situated on the Rotter's property, in Liberty District, Ohio 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

Enclosure(s)

Chesapeake Energy Corporation
P.O. Box 1300 • 179 Chesapeake Drive • Jane Lew, WV 26378
304-517-1416 x86024 • fax 304-471-2497 • danielle.southall@chk.com

WW - 6B
(1/12)

069 00171
MOD

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	69-Ohio	3-Liberty	648-Valley Grove
Operator ID	County	District	Quadrangle

API# 47-069-00171

2) Operator's Well Number: Carl Rotter OHI 1H Well Pad Name: Carl Rotter OHI Pad

3 Elevation, current ground: 1340' Elevation, proposed post-construction: 1334'

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

5) Existing Pad? Yes or No: No

MDK 12/11/2013

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Target formation-Marcellus, Target top TVD- 6550', Target base TVD- 6620', Anticipated thickness- 70', Associated Pressure -4038

7) Proposed Total Vertical Depth: 6,492'
8) Formation at Total Vertical Depth: Marcellus
9) Proposed Total Measured Depth: 16,200'
10) Approximate Fresh Water Strata Depths: 622'
11) Method to Determine Fresh Water Depth: Data was gathered from e-logs, drillers logs and from wells within a 2500' radius
12) Approximate Saltwater Depths: 830'
13) Approximate Coal Seam Depths: 742'
14) Approximate Depth to Possible Void (coal mine, karst, other): None that we are aware of.
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): 14.0

19) Area to be disturbed for well pad only, less access road (acres): 9.0

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WW - 6B
(1/12)

069 00171
MOD

20) **CASING AND TUBING PROGRAM**

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	J-55	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	792'	792'	710 SX/CTS
Coal	9 5/8"	New	J-55	40#	2250'	2250'	900 SX/CTS
Intermediate	7"	New	P-110	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	P-110	20#	16,200'	16,200'	Lead 929 sx Tail 2329 sx/100' inside intermediate
Tubing	2 3/8"	New	N-80	4.7#	Approx. 7125'	Approx. 7125'	
Liners							

MJK 12/11/13

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
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'			

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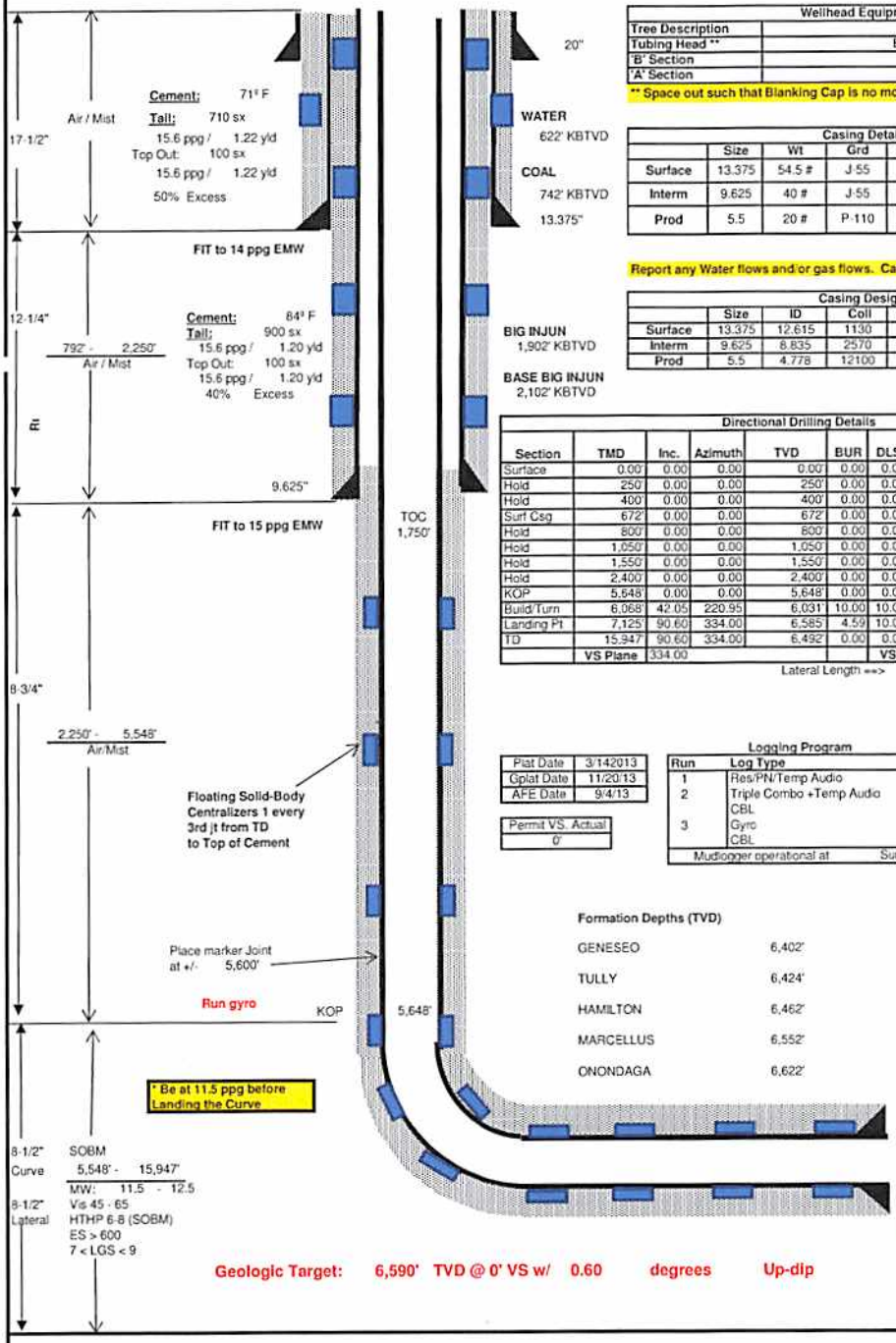
Chesapeake Energy

Well Name:	Carl Rotter OHI 1H			Drilling Rig:	Nomac 337
				Directional Drilling:	Weatherford
Drilling Engineer:	Jeremy Pye	Formation:	Marcellus	Drilling Mud:	NOVA
Superintendent:	R. Harless / J. Melville	County, State:	Ohio, WV	Cement Surface:	BJ
Asset Manager:	Shawn Jackson	Surface Latitude:	40.101504	Surface Longitude: -80.542628	Cement Longstrings: BJ
Geologist:	Nick Downs	BH Latitude:	40.123629	BH Longitude: -80.559509	Wellhead: Sweco
Land:	Bryan Lohoff	KB Elevation:	1362'	Ground Elevation: 1340'	AFE #: 174151 Well #: 837750



Wellhead Equipment	
Tree Description	
Tubing Head **	Blanking Cap
'B' Section	
'A' Section	

** Space out such that Blanking Cap is no more than 30" above grade.

Casing Detail	Size	Wt	Grd	Conn.	From:	To:
Surface	13.375	54.5 #	J-55	STC	0'	792'
Interm	9.625	40 #	J-55	LTC	0'	2,250'
Prod	5.5	20 #	P-110	TXP	0'	15,947'

Report any Water flows and/or gas flows. Catch liquid sample if possible.

Casing Design	Size	ID	Coll	Burst	Tens	MU torq
Surface	13.375	12.615	1130	2740	514	5140
Interm	9.625	8.835	2570	3950	520	5200
Prod	5.5	4.778	12100	12630	641	11270

Directional Drilling Details

Section	TMD	Inc.	Azimuth	TVD	BUR	DLS	+N/-S	+E/-W
Surface	0.00'	0.00	0.00	0.00'	0.00	0.00	0.0'	0.0'
Hold	250'	0.00	0.00	250'	0.00	0.00	0.0'	0.0'
Hold	400'	0.00	0.00	400'	0.00	0.00	0.0'	0.0'
Surf Csg	672'	0.00	0.00	672'	0.00	0.00	0.0'	0.0'
Hold	800'	0.00	0.00	800'	0.00	0.00	0.0'	0.0'
Hold	1,050'	0.00	0.00	1,050'	0.00	0.00	0.0'	0.0'
Hold	1,550'	0.00	0.00	1,550'	0.00	0.00	0.0'	0.0'
Hold	2,400'	0.00	0.00	2,400'	0.00	0.00	0.0'	0.0'
KOP	5,648'	0.00	0.00	5,648'	0.00	0.00	0.0'	0.0'
Build/Turn	6,068'	42.05	220.95	6,031'	10.00	10.00	-111.4'	-96.7'
Landing Pt	7,125'	90.60	334.00	6,585'	4.59	10.00	185.6'	-759.9'
TD	15,947'	90.60	334.00	6,492'	0.00	0.00	8,114.4'	-4,627.1'
	VS Plane	334.00				VS Length	9,321.54'	
						Lateral Length ==>	8,822.10'	

Plat Date	3/142013
Gplat Date	11/20/13
AFE Date	9/4/13

Permit VS. Actual
0'

Logging Program

Run	Log Type	Interval
1	Res/PN/Temp Audio	Surface
2	Triple Combo +Temp Audio	Intermediate to Surf. Csg
	CBL	Over Surface Casing
3	Gyro	KOP to Int. Csg
	CBL	Over Intermediate Casing
Mudlogger operational at		Surface

Formation Depths (TVD)

GENESEO	6,402'
TULLY	6,424'
HAMILTON	6,462'
MARCELLUS	6,552'
ONONDAGA	6,622'

Cement: 121° F
Lead: 929 sx
14.5 ppg / 1.17 y/d
Tail: 2,329 sx
15.6 ppg / 1.18 y/d
15% Excess
Pump-time: 6 hours
Ensure Gas Block Additive Is In Lead Slurry

PBHL 5.5"
TMD: 15,947'
TVD: 6,492'
Inclination: 90.60 deg

Geologic Target: 6,590' TVD @ 0' VS w/ 0.60 degrees Up-dip

Gyro the 1st well on the pad at KOP.
Ensure all Surveys are referenced to Grid North!!

Drawn by: Jeremy Pye
Date: 12/5/13

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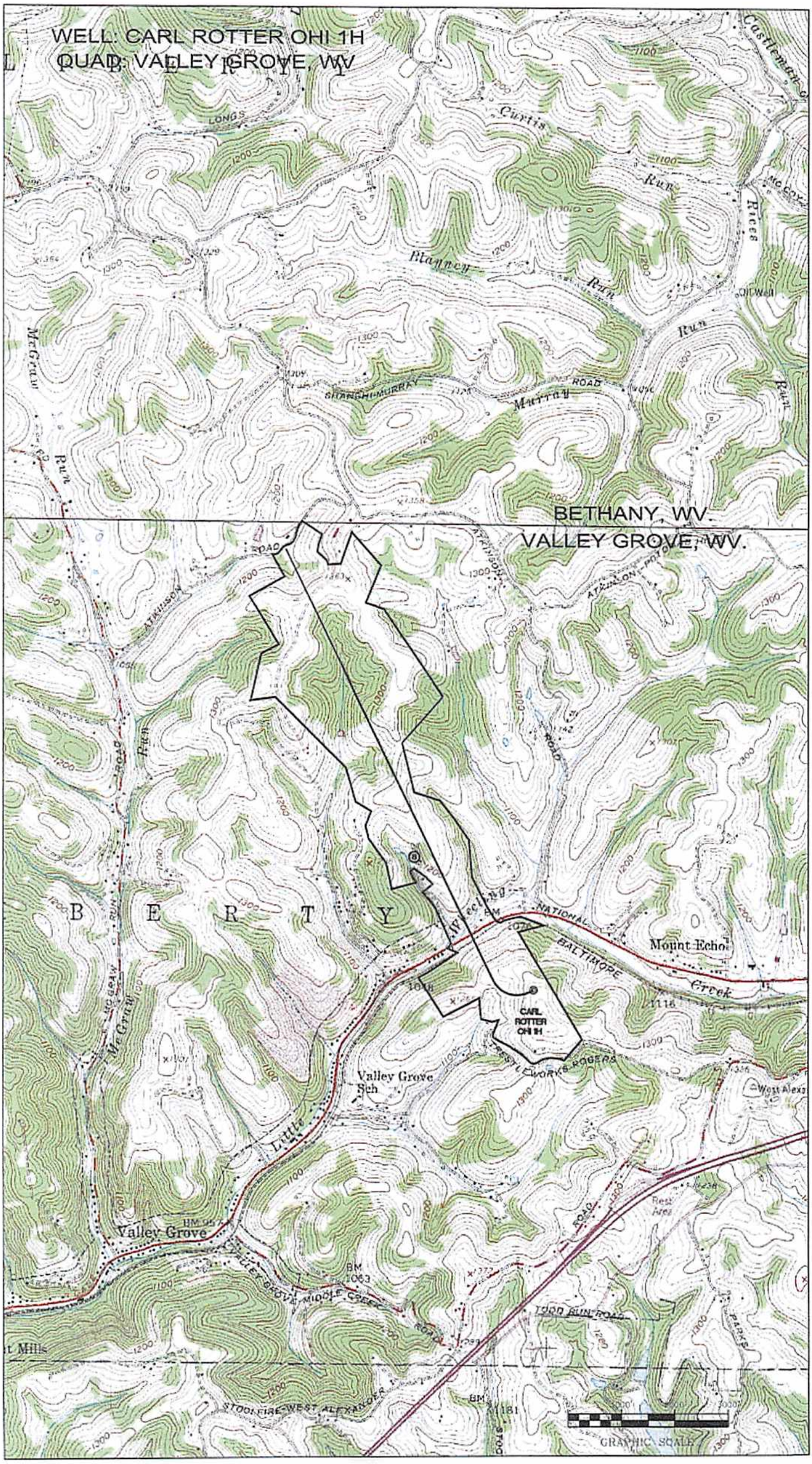
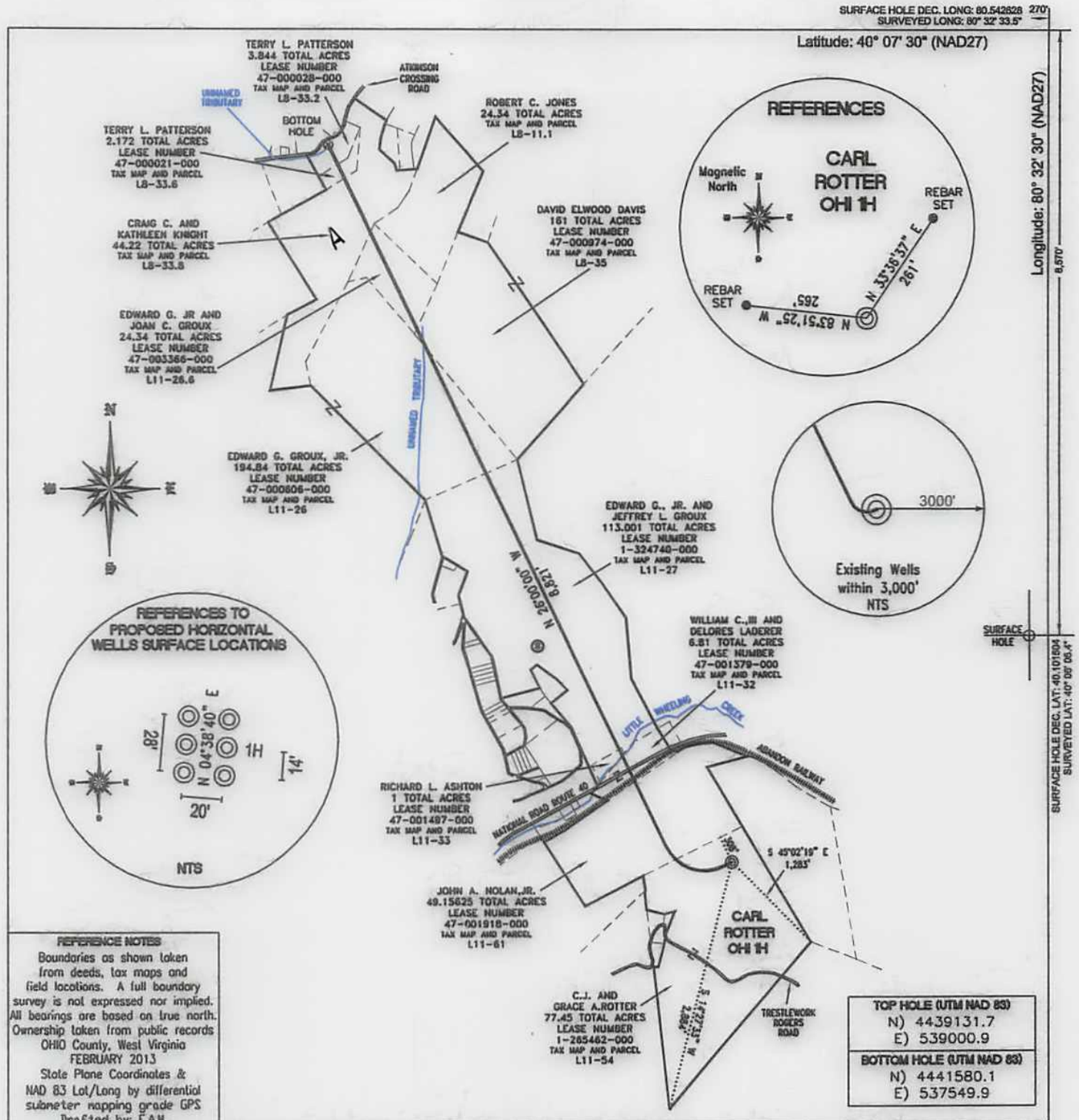

WELL: CARL ROTTER OHI 1H
QUAD: VALLEY GROVE, WV
BETHANY, WV.
VALLEY GROVE, WV.
CARL ROTTER OHI 1H
Mount Echo
Valley Grove Sch
Valley Grove
B E R T Y
Curtis Run
Blanney Run
Murray Run
Rices Run
McGraw Run
Little Wheeling Creek
Wheeling
NATIONAL BALTIMORE
TRESTLEWORKS ROGERS
VALLEY GROVE MIDDLE CREEK ROAD
TODD RUN ROAD
STOOLFIRE-WEST ALEXANDER
GRAPHIC SCALE

SURFACE HOLE DEC. LONG: 80.542628 270'
SURVEYED LONG: 80° 32' 33.5"

Latitude: 40° 07' 30" (NAD27)

Longitude: 80° 32' 30" (NAD27) 8,570'



REFERENCE NOTES

Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records OHIO County, West Virginia FEBRUARY 2013 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS Drafted by: E.A.H.

TOP HOLE (UTM NAD 83)
N) 4439131.7
E) 539000.9
BOTTOM HOLE (UTM NAD 83)
N) 4441580.1
E) 537549.9

FILE #: CHE 113

DRAWING #: 2159

SCALE: 1" = 1,600'

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING 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

ERNEST J. BENCHEK III LICENSED No. 2124 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

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

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: MARCH 19, 2013

OPERATOR'S WELL #: CARL ROTTER OHI 1H

API WELL #: 47 (STATE) 69 (COUNTY) 00171 HGA (PERMIT)

Well Type: ☐ Oil ☐ Waste Diposal ☐ Production ☐ Deep
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: UPPER OHIO SOUTH

ELEVATION: 1,340'

COUNTY/DISTRICT: OHIO / LIBERTY

QUADRANGLE: VALLEY GROVE, WV

SURFACE OWNER: CARL J. AND GRACE A. ROTTER

ACREAGE: 77.45 +/-

OIL & GAS ROYALTY OWNER: CARL J. AND GRACE A. ROTTER

ACREAGE: 733.136 +/-

LEASE NUMBERS:

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: 6,580' TMD: 15,787'

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