



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 07, 2014

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


Re: Permit Modification Approval for API Number 5101736 , Well #: CHARLES YOHO MSH 8
Partial Plug & Sidetrack

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

WW - 6B
(3/13)

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

1) Well Operator: Chesapeake Appalachia, LLC 49447757 51- Marshall 9- Webster Majorsville
Operator ID County District Quadrangle

2) Operator's Well Number: Charles Yoho MSH 8H Well Pad Name: Charles Yoho MSH Pad

3 Elevation, current ground: 1330' Elevation, proposed post-construction: 1332'

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

5) Existing Pad? Yes or No: No *J.I.N. 10/3/14*

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Target formation- Marcellus Target top TVD- 6639' Target base TVD- 6683 Anticipated thickness- 44' Associated Pressure- 4448

7) Proposed Total Vertical Depth: 6,744'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 13,800'

10) Approximate Fresh Water Strata Depths: 443'

11) Method to Determine Fresh Water Depth: From analysis of water wells in the area.

12) Approximate Saltwater Depths: 1,400'

13) Approximate Coal Seam Depths: 875'

14) Approximate Depth to Possible Void (coal mine, karst, other): 875' Possible Void.

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of 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): 10.9

19) Area to be disturbed for well pad only, less access road (acres): 8.7

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Office of Oil and Gas

OCT 03 2014

WW - 6B
(3/13)

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#	925'	925'	850 sx/CTS
Coal	9 5/8"	New	J-55	40#	2,337'	2,337'	890 sx/CTS
Intermediate	7"	New	P-110	20#	If Needed	If Needed	If needed/As Needed
Production	5 1/2"	New	P-110	20#	13,800'	13,800'	<small>Lead 135 or Tail 2315 or 100' Inlets Intermediate</small>
Tubing	2 3/8"	New	N-80	4.7#	Approx. 7,048'	Approx. 7,048'	
Liners							

J.I.N. 10/3/14

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"	0.317	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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Office of Oil and Gas

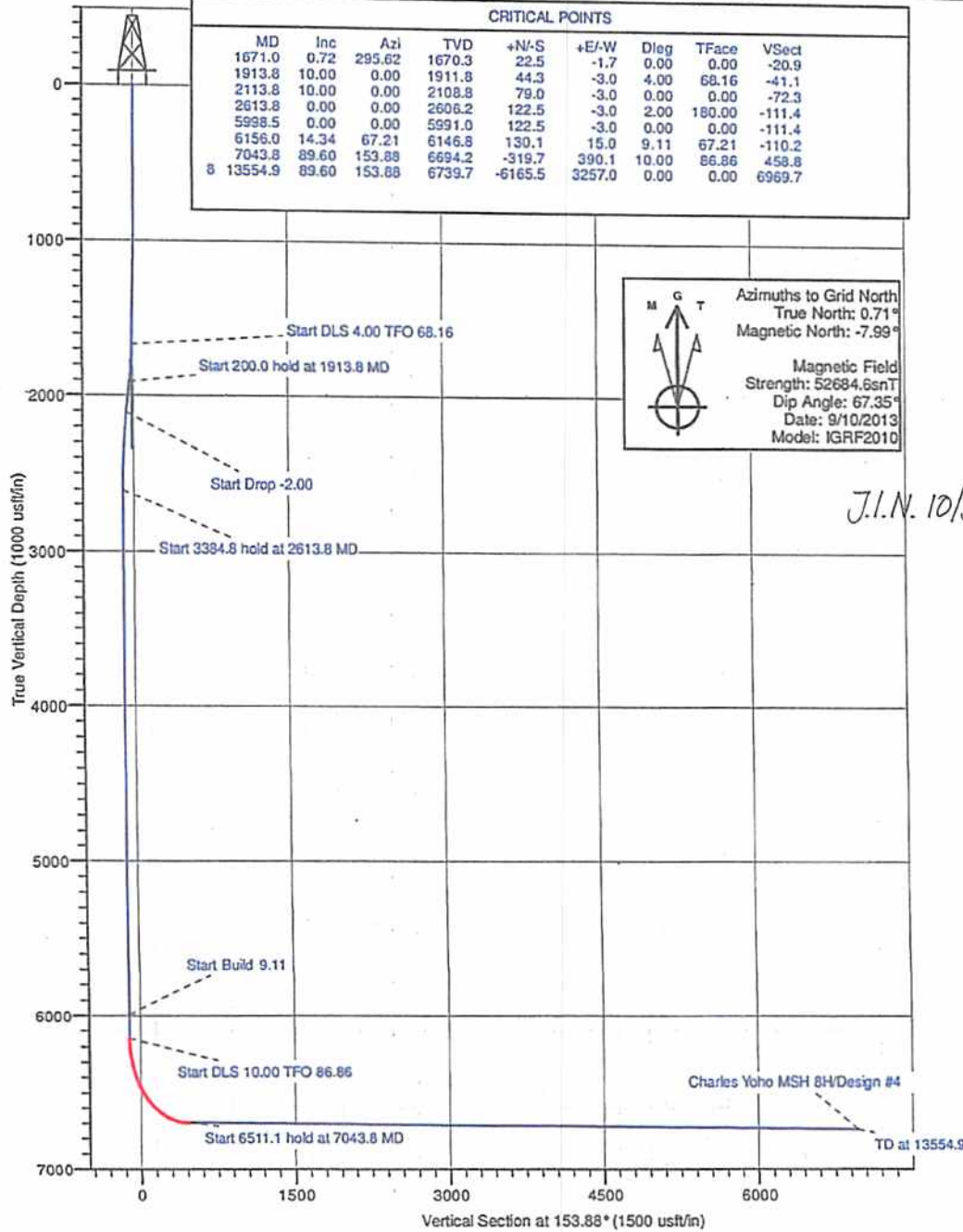
OCT. 03 2014

WV Department of
Environmental Protection

Chesapeake Appalachia LLC



WELL Charles Yoho MSH 8H	FIELD West Virginia - Marshall County	STRUCTURE
US State Plane 1927 (Exact solution) West Virginia North 4701	Surface Location Northing: 518075.40 Easting: 1686645.50 Lat: 39° 55' 1.36649024 N Long: 80° 37' 1.86521588 W	Created By: Ryan Schuyler Date: 11/17, October 03 2014 Plan: Design #2



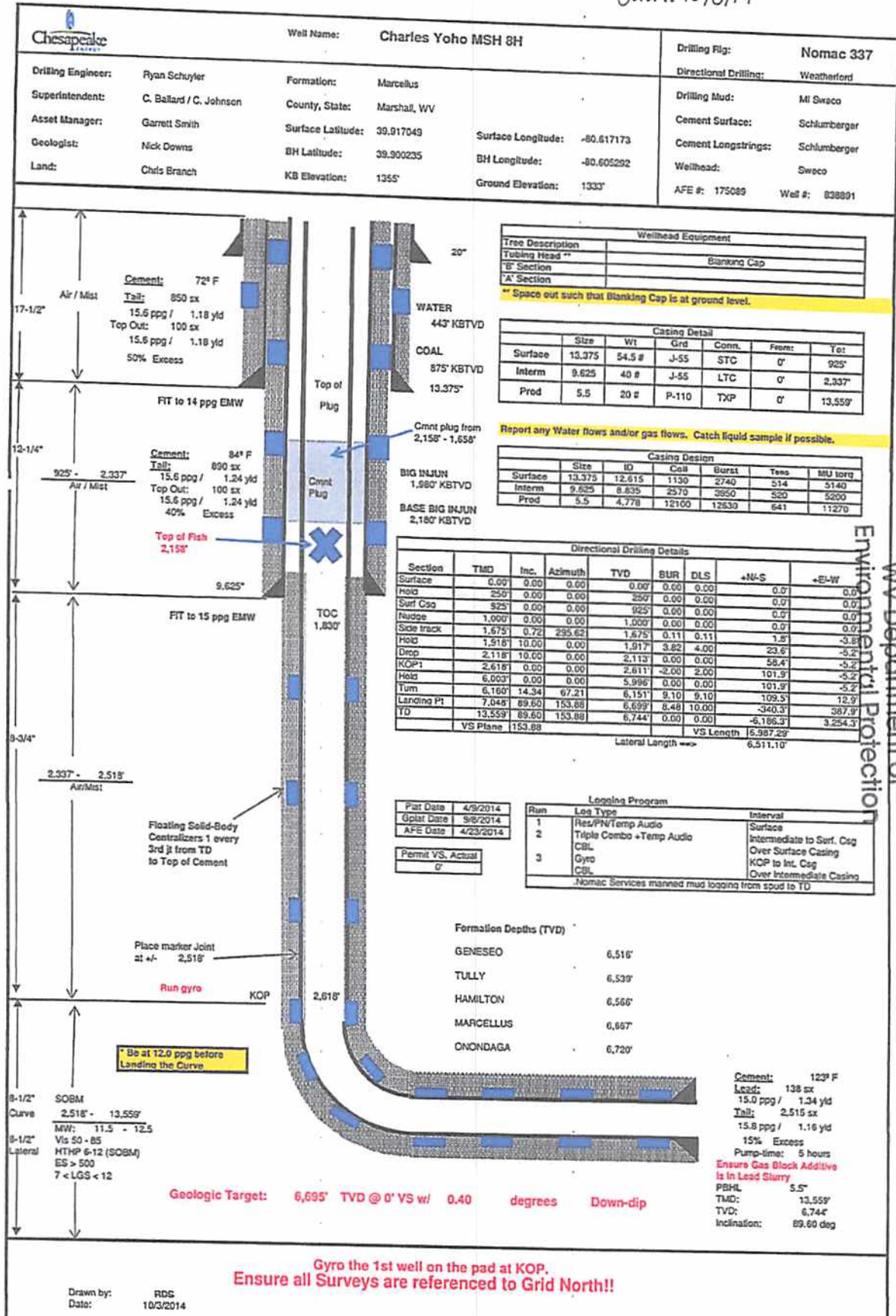
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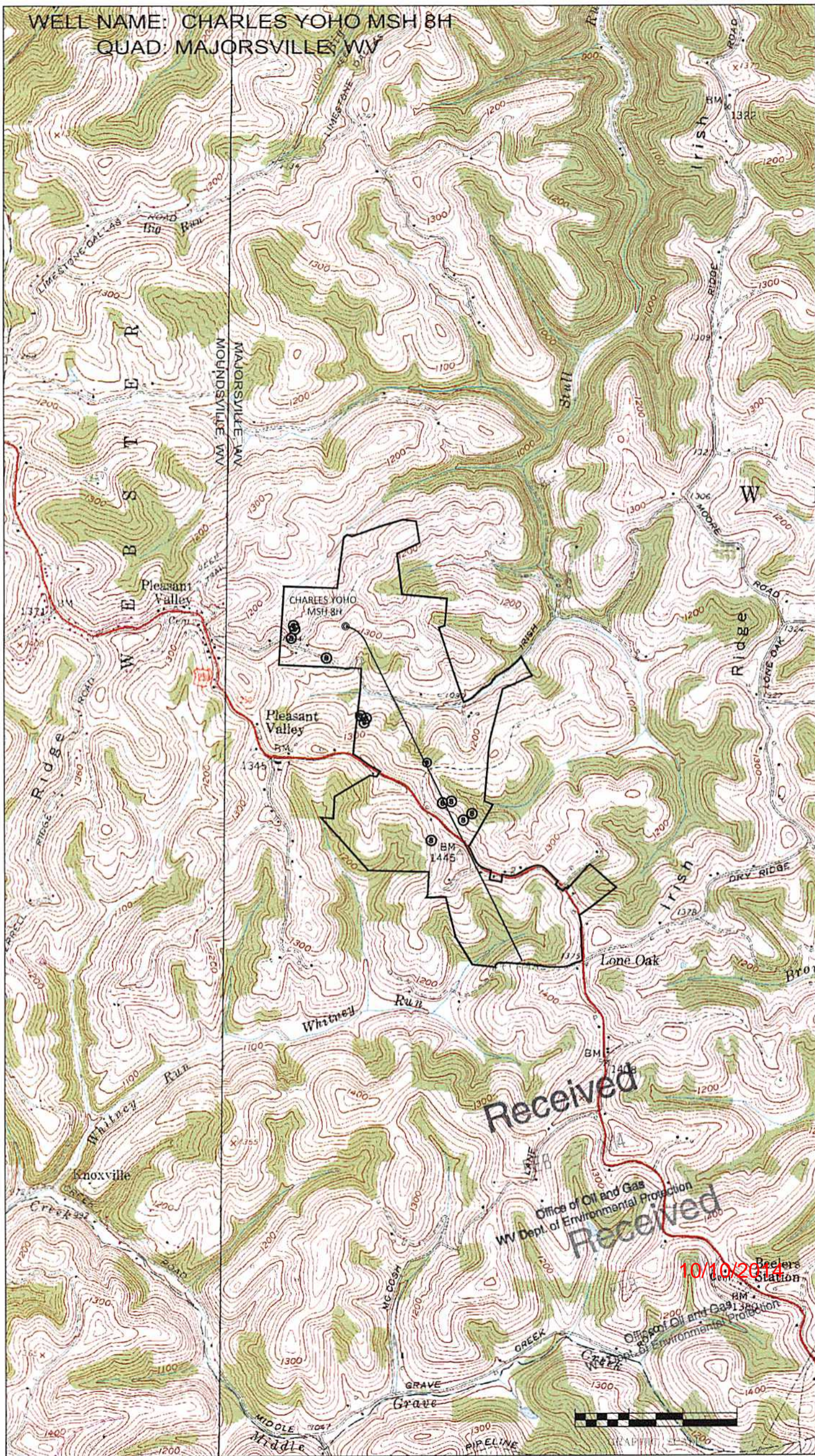
OCT. 03 2014

WV Department of
Environmental Protection 10/10/2014

J.I.N. 10/3/14



WELL NAME: CHARLES YOHO MSH 8H
QUAD: MAJORSVILLE WV



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Office of Oil and Gas
WV Dept. of Environmental Protection

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10/10/2014

Office of Oil and Gas
WV Dept. of Environmental Protection

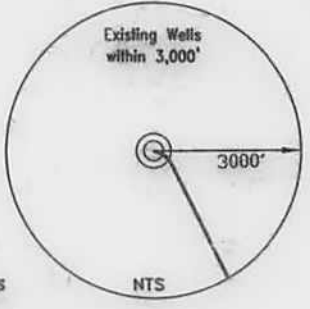
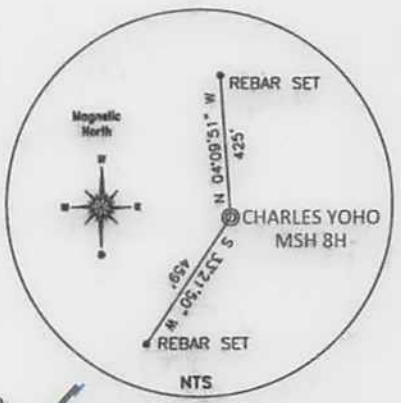
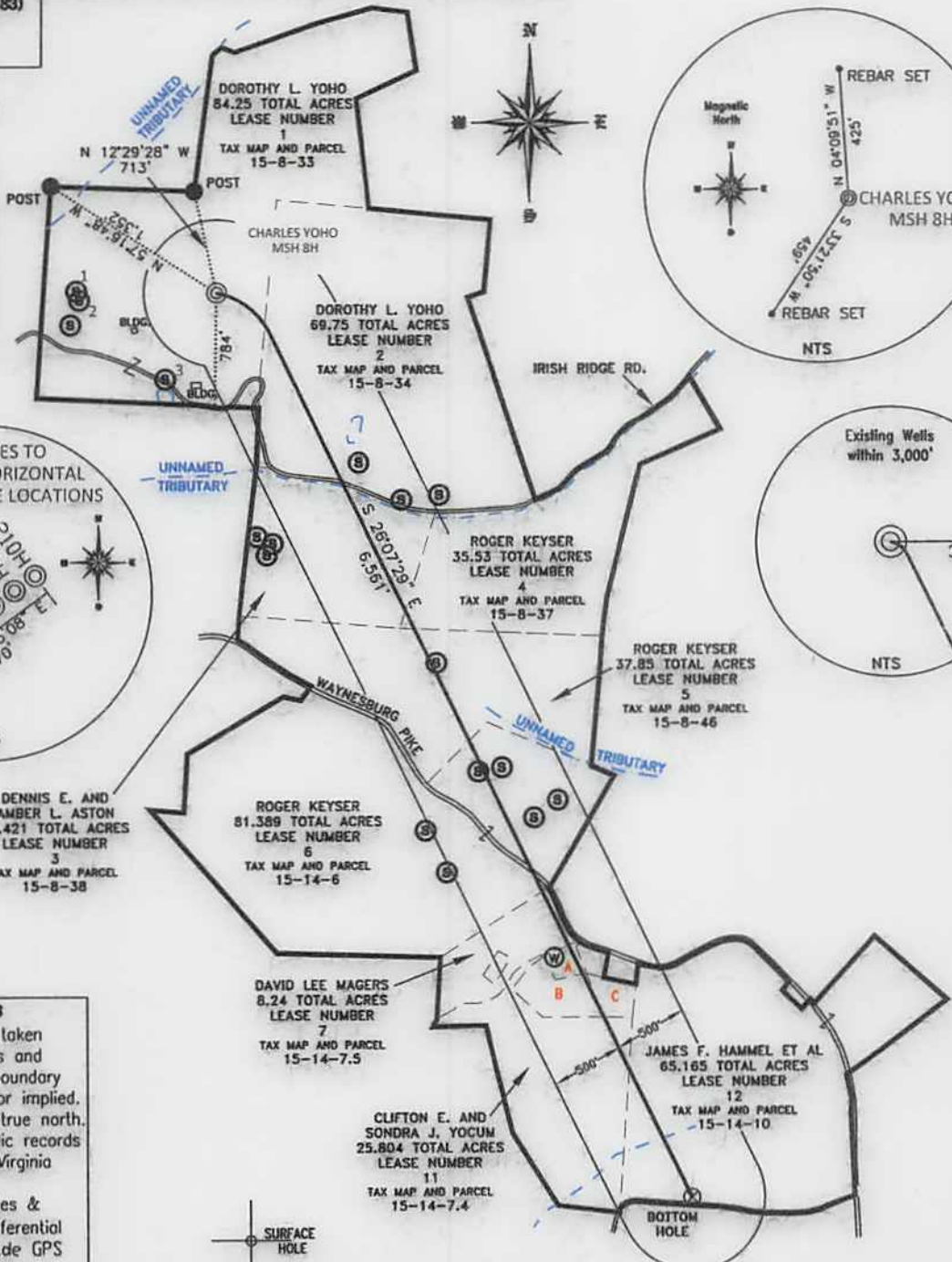
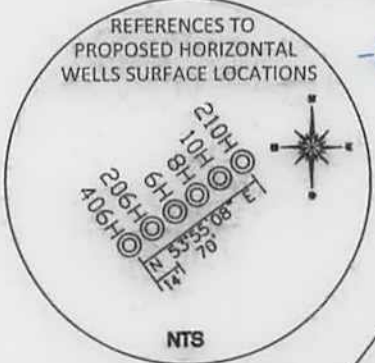


TOP HOLE (UTM NAD 83)
N) 4418629.2
E) 532734.6
BOTTOM HOLE (UTM NAD 83)
N) 4416767.5
E) 533758.2

A	MICHAEL R. MAGERS ET UX	15-14-7.2	LEASE NUMBER 8	1.05 AC
B	MICHAEL R. AND DANA S. MAGERS	15-14-7.3	LEASE NUMBER 9	3.389 AC
C	CINDY KAY MCNIER	15-14-13.3	LEASE NUMBER 10	1.816 AC

NO WATER WELLS WERE FOUND WITHIN 250' OF THE CENTER OF WELL PAD

1	N 89°17'42" W 962'
2	S 86°57'13" W 942'
3	S 30°49'59" W 685'



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 Marshall County, West Virginia JUNE 2013
 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS
 Drafted by: E.A.M.

FILE #: CHE 119
 DRAWING #: 2276
 SCALE: PLAT - 1" = 1200'
 TICK MARK - 1" = 2000'
 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



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304

DATE: OCTOBER 16, 2013
 OPERATOR'S WELL #: CHARLES YOHO MSH 8H
 API WELL #: 47 51 01736 H6A
 STATE COUNTY PERMIT

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

WATERSHED: WHEELING CREEK
 COUNTY/DISTRICT: MARSHALL/WEBSTER
 SURFACE OWNER: DOROTHY L. YOHO
 OIL & GAS ROYALTY OWNER: DOROTHY L. YOHO
 LEASE NUMBERS:

ASBUILT ELEVATION: 1330'
 QUADRANGLE: MAJORSVILLE, WV
 ACREAGE: 84.25 +/-
 ACREAGE: 439.65 10/10/2014

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: 6,663' TMD: 13,448'
 WELL OPERATOR: CHESAPEAKE APPALACHIA, LLC
 ADDRESS: PO BOX 18496
 CITY: OKLAHOMA CITY STATE: OK ZIP CODE: 73154-0496
 DESIGNATED AGENT: ERIC GILLESPIE
 ADDRESS: PO BOX 6070
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

SURFACE HOLE DEC. LAT: 39.917049
 SURVEYED LAT: 39° 55' 01.4"