



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

June 16, 2014

WELL WORK PERMIT

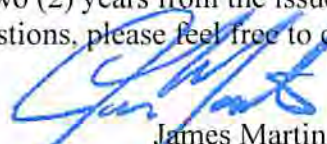
Horizontal 6A Well

This permit, API Well Number: 47-5101752, issued to CHEVRON APPALACHIA, LLC, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: HART 6H
Farm Name: HART, JOHN J. & RENEE
API Well Number: 47-5101752
Permit Type: Horizontal 6A Well
Date Issued: 06/16/2014

Promoting a healthy environment.

06/20/2014

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.
9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

WW-6B
(9/13)

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

1) Well Operator: Chevron Appalachia, LLC 49449935 Marshall Washington Moundsville
Operator ID County District Quadrangle

2) Operator's Well Number: 6H Well Pad Name: Hart

3) Farm Name/Surface Owner: John Hart Public Road Access: Campbells Run Rd - 38

4) Elevation, current ground: 1329' Elevation, proposed post-construction: 1322'

5) Well Type (a) Gas Oil Underground Storage

Other _____

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Proposed Target: Marcellus Shale; TVD: 6534'; anticipated thickness: 47'; associated pressure: 4,247 psi

8) Proposed Total Vertical Depth: 6565'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 14,761'

11) Proposed Horizontal Leg Length: 7,609'

12) Approximate Fresh Water Strata Depths: 247' below final pad grade elevation

13) Method to Determine Fresh Water Depths: offset well data, Hart #1H (P&A) driller's log, USGS local stream base level

14) Approximate Saltwater Depths: 1994' based on offset well data

15) Approximate Coal Seam Depths: 829' from proposed pad elevation

16) Approximate Depth to Possible Void (coal mine, karst, other): 829' mine void possible in Pittsburgh Coal Seam

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: Alexander Mine - Closed & Abandoned
JN 5/28/14 Depth: 829' from proposed pad elevation
Seam: Pittsburgh No. 8 Coal Seam
Owner: Reserve Coal Properties, LLC

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Office of Oil and Gas

MAY 28 2014

WW-6B
(9/13)

18)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	30"	New			40'	40'	141.8 CTS
Fresh Water	20"	New	J-55	94.5#	354'	354'	810.0 CTS
Coal	13-3/8"	New	J-55	54.5#	941'	941'	950.0 CTS
Intermediate	9-5/8"	New	N-80	40#	2,166'	2,166'	840.0 CTS
Production	5-1/2"	New	P-110	20#	14,761'	14,761'	3745.0 CTS
Tubing							
Liners							

JN 5/28/14

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	0.375			
Fresh Water	20"	26"	0.438"	2,110 psi	Class A	1.18
Coal	13-3/8"	17.5"	0.458"	2,730 psi	Class A	1.18
Intermediate	9-5/8"	12.25"	0.395"	5,750 psi	Class A	1.29
Production	5-1/2"	8.5"	0.361"	12,640 psi	Class A	2.2
Tubing						
Liners						

PACKERS

Kind:	None			
Sizes:				
Depths Set:				

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MAY 28 2014

WW-6B
(9/13)

JN 5/28/14

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill 26" hole to 354' MD then set and cement 20" casing to surface covering the fresh water. Drill 17.5" hole to 941' MD then set and cement to surface 13-3/8" casing covering Pittsburgh coal. Drilling of the 17.5" hole will stop and 13 3/8" casing will be set no more than 100' past the void. A basket will be run with the 13 3/8" casing to place 20' above the mine void. Cement will be backfilled to surface using volume necessary to get cement to surface. Drill 12.25" hole to 2,166' MD then set and cement to surface 9-5/8" casing, covering the Burgoon (50' below Big Injun). Drill 8-1/2" hole to KOP. Drill 8-1/2" hole curve and lateral to 14,761' MD/ 6,565' TVD. Set 5-1/2" production casing and cement back to surface.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Complete each stage of the well with #50,000's of 100 mesh and #300,000's of 40/70 along with 300,000 gallons of fresh water. The stages in these wells will be fractured at 90 bpm at an anticipated psi of 8,500 psi.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 11.1 acres

22) Area to be disturbed for well pad only, less access road (acres): 2.27 acres

23) Describe centralizer placement for each casing string:

There will be a bow spring centralizer every two jts on the Water string, Coal string and intermediate. The production string will have two centralizer every jt in the lateral and curve, then one every two jts from KOP to surface.

24) Describe all cement additives associated with each cement type:

For the Water String and Coal String the blend will contain class A cement, 3% CaCl₂, and flake. The intermediate will contain class A cement, 10% CaCl₂, Salt, and flake. The Production cement will have a lead and tail cement. The lead will contain class A cement, KCl, dispersant, suspension agent, and retarder. The tail will contain class A cement, Calcium Carbonate, KCl, dispersant, de-foamer, suspension agent, and friction reducer.

25) Proposed borehole conditioning procedures:

Well will be circulated a minimum of 3 bottoms up once casing point has been reached on all hole sections and until uniform mud properties are achieved.

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MAY 28 2014

*Note: Attach additional sheets as needed.

Cement Additives: Hart Unit 2H, 3H, 4H, 5H, 6H, 7H, 8H, 9H

For the Water String and Coal String the blend will contain class A cement, 3% CaCl₂, and flake.

The intermediate will contain class A cement, 10% CaCl₂, Salt, and flake.

The Production cement will have a lead and tail cement.

The lead will contain class A cement, KCl, dispersant, suspension agent, and retarder.

The tail will contain class A cement, Calcium Carbonate, KCl, dispersant, de-foamer, suspension agent, and friction reducer.

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Office of Oil and Gas
MAR 26 2014
WV Department of Environmental Protection

WW-9
(9/13)

API Number 47 - 51 - 01752
Operator's Well No. Hart 6H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Chevron Appalachia, LLC OP Code 4944935

Watershed (HUC 10) Middle Grave Creek- Grave Creek Quadrangle Moundsville WV 7.5'

Elevation 1329.31' County Marshall District Washington

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: N/A

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: Collect and treat drill cuttings at rigsite, then transport in boxes to approved disposal/ land fill location

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Vertical on air, Horizontal on oil based

-If oil based, what type? Synthetic, petroleum, etc. Synthetic

Additives to be used in drilling medium? Fluid loss control, emulsifier, shale stabilizer

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Removed Offsite

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Drill cuttings will be disposed off-site at Waste Management's Arden landfill located in Washington, PA, Permit # PADEP 100172

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature *Branden Weimer*
Company Official (Typed Name) Branden Weimer
Company Official Title Construction Permitting Team Lead

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Office of Oil and Gas
MAR 26 2014
WV Department of
Environmental Protection

Subscribed and sworn before me this 25 day of February, 2014

Thomas Basinger Notary Public

My commission expires 9/24/2017

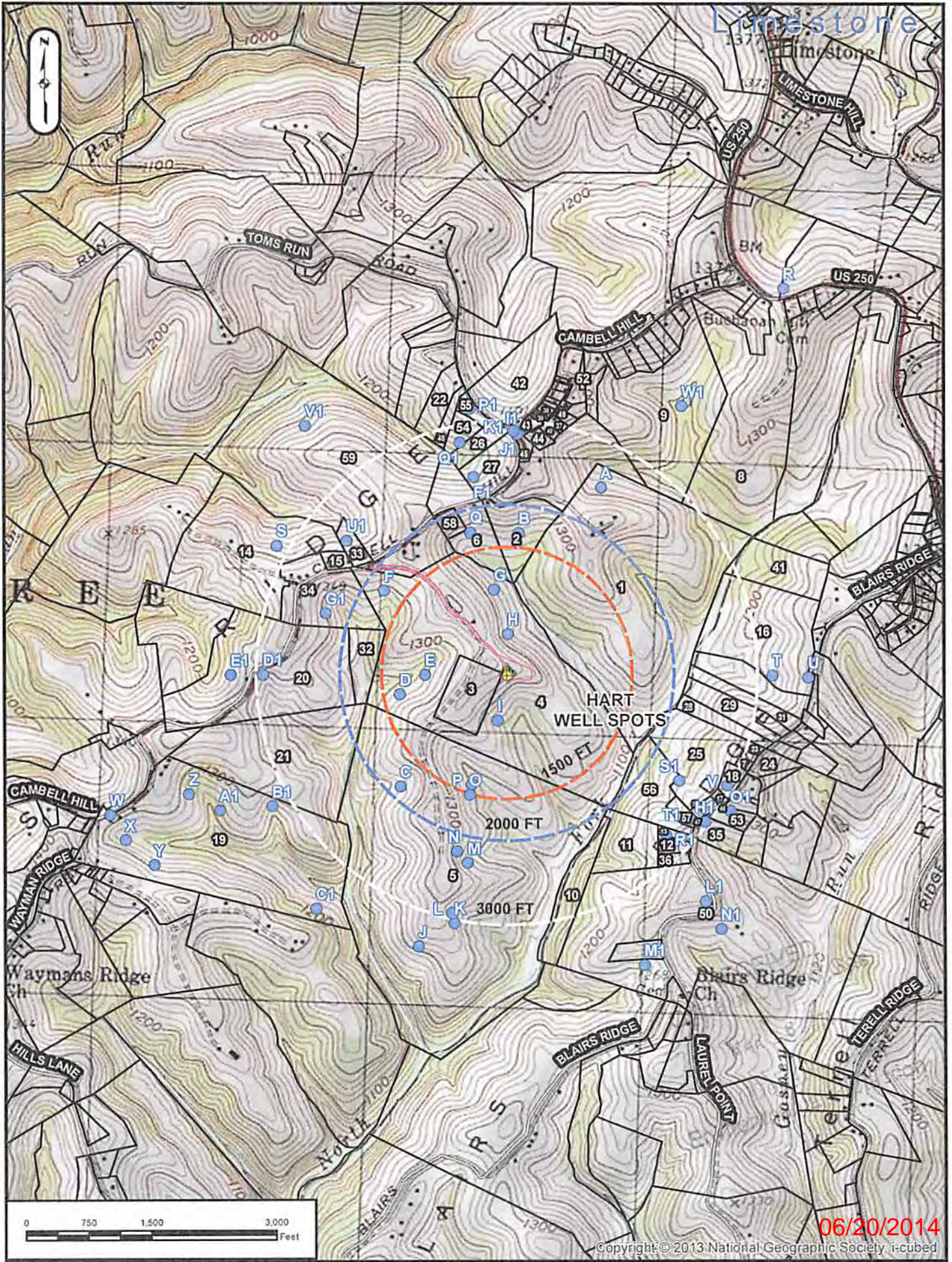
COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
THOMAS BASINGER
Notary Public
CONNELLSVILLE CITY, PENNSYLVANIA
My Commission Expires Sep 24, 2017

06/20/2014

WATER SUPPLY EXHIBIT
HART

SI-01752
Blue Mountain Inc.

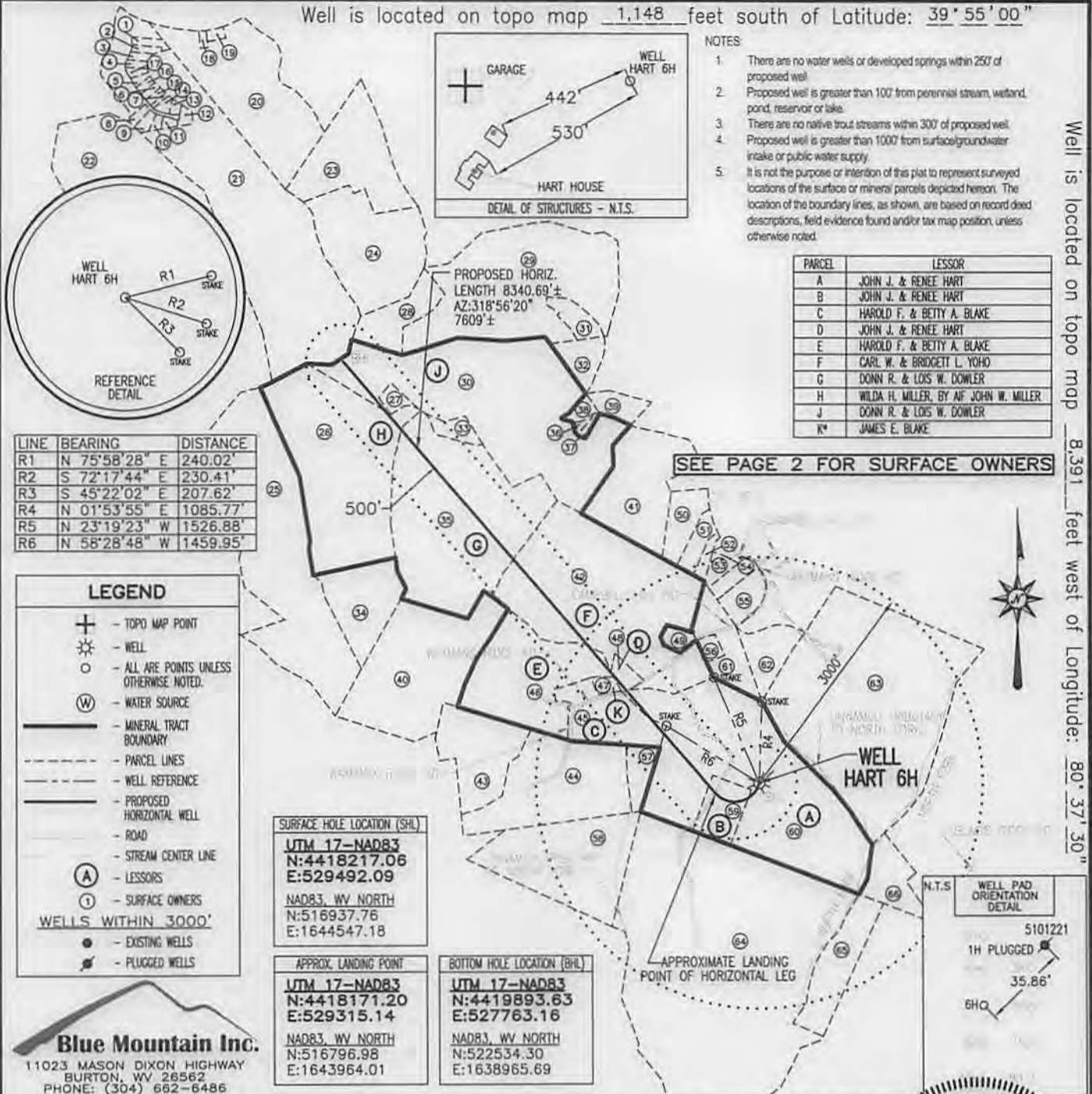
Date: 2/27/2014



06/20/2014

Well is located on topo map 1.148 feet south of Latitude: 39° 55' 00"

Well is located on topo map 8.391 feet west of Longitude: 80° 37' 30"



Blue Mountain Inc.
11023 MASON DIXON HIGHWAY
BURTON, WV 26562
PHONE: (304) 662-6486

FILE #: HART 6H
DRAWING #: HART 6H
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1/2500
PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

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: *George D. Six*
R.P.E.: _____ L.L.S.: P.S. No. 2000



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



DATE: FEBRUARY 12, 2014
OPERATOR'S WELL #: HART 6H
API WELL #: 47 51 01752 HWA
STATE COUNTY PERMIT

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

WATERSHED: MIDDLE GRAVE CREEK - GRAVE CREEK ELEVATION: 1329.18'
COUNTY/DISTRICT: MARSHALL / WASHINGTON QUADRANGLE: MOUNDSVILLE, WV 7.5'
SURFACE OWNER: JOHN J. & RENEE HART ACREAGE: 108.550±
OIL & GAS ROYALTY OWNER: JOHN J. & RENEE HART ACREAGE: 541.741±

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,565' ± TMD: 14,761' ±

WELL OPERATOR: CHEVRON APPALACHIA, LLC DESIGNATED AGENT: KENNETH E. TAWNEY
Address: 800 MOUNTAIN VIEW DRIVE Address: 500 LEE STREET, EAST SUITE 1600
City: SMITHFIELD State: PA Zip Code: 15478 City: CHARLESTON State: WV Zip Code: 25301-3202

06/20/2014

HART

6H

	SURFACE OWNER	DIST-TM/PAR
1	KENNETH C. FAST ET UX	14-7A/29
2	KENNETH C. FAST ET UX	14-7A/28
3	STEVEN S. ANDERSON ET UX	14-7A/27
4	BETH A. MCCLELLAN	14-7A/26
5	DAVID A. HOSKINS ET UX	14-7A/24
6	TERRY R. REYNOLDS ET UX	14-7A/22
7	JANET D. S. TAN	14-7A/20
8	DANIEL G. MELCHIORI ET UX	14-7A/13
9	DANIEL G. MELCHIORI ET UX	14-7A/14
10	JANET D. S. TAN	14-7A/15
11	JANET D. S. TAN	14-7A/16
12	JANET D. S. TAN	14-7A/17
13	JANET D. S. TAN	14-7A/18
14	JANET D. S. TAN	14-7A/19
15	VERONICA KRAMPE - LIFE	14-7A/21
16	DAVID A. HOSKINS ET UX	14-7A/23
17	MARK A. KARL	14-7A/25
18	MARY L. HANLEY	14-7/38.2
19	RICHARD F. LAMBIE JR.	14-7/38.1
20	RICHARD F. LAMBIE JR.	14-7/38.3
21	WILLIAM H. III & LINDA BARDALL	14-7/41
22	WILLIAM H. III & LINDA BARDALL	14-7/42
23	JERRY E. SCHWING ET UX	14-7/39
24	MARSHALL COUNTY 4-H LEADERS	14-7/40
25	JOHN W. & MARY A. MILLER	14-10/3
26	JOHN W. & MARY A. MILLER	14-6/41
27	JEFFREY L. & JANET L. ALLEN	14-6/40
28	JOHN R. REGAN & CONNIE L. THOMAS	14-6/1
29	JOHN R. REGAN & CONNIE THOMAS	14-6/2
30	JEFFREY L. & JANET L. ALLEN	14-6/38
31	DANIEL R. WOOD - SHAWN ALLMAN	14-6/2.1
32	JOHN R. REGAN & CONNIE L. THOMAS	14-6/3.3
33	JEFFREY L. & JANET L. ALLEN	14-6/39
34	MARY LOU RUBINI	14-6/41.1
35	JEFFREY L. & JANET L. ALLEN	14-6/37
36	BERRIDGE L. ALLEN ET UX	14-6/38.1
37	BERRIDGE L. ALLEN ET UX	14-6/38.2
38	BERRIDGE L. ALLEN ET UX	14-6/38.3
39	MARC A. MOLOSKI ET UX	14-6/3.1
40	DENNIS BLAKE ET UX	14-10/10
41	GARY V. SINGER ET UX	14-6/34.7
42	CARL W. & BRIDGETT L. YOHO	14-6/35
43	DENNIS BLAKE ET UX	14-10/12
44	JAMES E. CURRY	14-10/13
45	JOHN J. II & JENNA E. HART	14-10/11
46	DENNIS & MICHELLE S. BLAKE	14-10/11.3
47	JAMES E. BLAKE	14-10/11.1
48	JOHN J. HART ET UX	14-6/36
49	CARL W. YOHO ET AL	14-6/35.1
50	GARY A. STROPE	14-6/34.10
51	JAMES D. & DONNA J. DRAKE	14-6/34
52	JENNIFER B. READ	14-6/34.5
53	JERRY S. WHORTON ET UX	14-6/29.1
54	RODNEY J. & CARRIE L. FONNER	14-6/29
55	MARTIN D. FONNER JR. ET UX	14-6/29.2
56	CARL W. & BRIDGETT L. YOHO	14-6/28.1
57	JOHN J. HART ET UX	14-10/14
58	JAMES E. CURRY	14-10/15
59	JOHN J. & RENEE HART	14-10/19
60	JOHN J. & RENEE HART	14-10/19.1
61	CARL W. & BRIDGETT L. YOHO	14-6/28
62	JEFFREY D. & DENISE A. CRAMER	14-6/27
63	JEFFREY D. & DENISE A. CRAMER	14-10/20
64	JOHN J. HART ET UX	14-10/18
65	JOHN A. BIERCE II ET UX	15-15/3
66	HEIKKI & TRISHA YEAGER	15-15/8.6

06/20/2014