



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

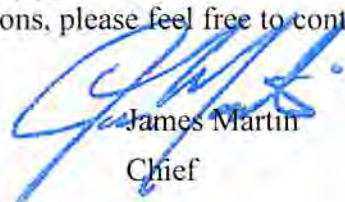
This permit, API Well Number: 47-5101748, issued to CHEVRON APPALACHIA, LLC, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, 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 2H
Farm Name: HART, JOHN J. & RENEE
API Well Number: 47-5101748
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 4944935 Marshall Washington Moundsville
Operator ID County District Quadrangle

2) Operator's Well Number: 2H 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 *JN 5/28/14*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Proposed Target: Marcellus; 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: 15168'

11) Proposed Horizontal Leg Length: 7782'

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
Depth: 829' from proposed pad elevation
Seam: Pittsburgh No. 8 Coal Seam
Owner: Reserve Coal Properties, LLC

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(9/13)

18)

CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
Conductor	30"	New			40'	40'	141.8 CTS
Fresh Water	20"	New	J-55	94.5#	354'	354'	810 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'	2166'	840.0 CTS
Production	5-1/2"	New	P-110	20#	15,168'	15,168'	3678 CTS
Tubing							
Liners							

JN 5/28/14

<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 (cu. ft./k)</u>
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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WV Department of
Environmental Protection

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 15,168' 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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*Note: Attach additional sheets as needed.

Department of
Protection

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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JUN 16 2014

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Environmental Affairs

51-01748

Hart 2H

Marshall Co. WV
March 26, 2014

Casing & Cementing Details

Ground Level Elevation: 1260
Depths are measured from KB 15 ft above GL.

AZM	Casing Formation	DEPTH		Inclination	HOLE SIZE	CASING SPECS	CEMENT INFO	GENERAL INFO
		MD	TVD					
	30.0" Conductor	55'			36"	Conductor	grout to surface Minimum 40 ft from GL or at least 10 ft into bedrock	
	Bow Spring: 1-shoe jt, 1-every 2nd jt 1 on ea 2-3 jts across previous shoe. Rigid: 2-within 100 ft of surface					Fresh Water Casing 20" 94.5# J-55 BTC 0.435" wall Capacity = 0.3503 bbl/ft Annulus = 0.2691 bbl/ft (+ 15.6 bbl for shoe track) Burst = 2110 psi	Cement to surface Class A w/ 3% CaCl ₂ , Salt & Flake Yield = 1.18 cf/sk Weight = 15.6 ppg 144 bbl 686 sks 126 bbl capacity to shoe	30% excess
	20" Casing	354'			26"		72,095 lbs air wt with water Minimum 50 ft past deepest known fresh water	
	Bow Spring: 1-shoe jt, 1-every 2nd jt 1 on ea 2-3 jts across previous shoe. Rigid: 2-within 100 ft of surface					Coal Casing 13-3/8" 54.5# J-55 BTC 0.458" wall Capacity = 0.1508 bbl/ft Annulus = 0.1237 bbl/ft (+ 6 bbl for shoe track) Burst = 2730 psi	Cement to surface Class A w/ 3% CaCl ₂ , Salt & Flake Yield = 1.18 cf/sk Weight = 15.6 ppg 29 bbl 138 sks 142 bbl capacity to shoe 140 bbl 667 sks	shoe 100% excess to basket 30% excess
	13 3/8" Casing	941'			17 1/2"		98,542 lbs air wt with water Minimum 35 ft, Optimum 50 ft, Maximum 100 ft below the bottom of void	
	RED BED 1000' - 1290'					Intermediate Casing 9-5/8" 40# N-80 BTC 8.835" ID - 8.679" DD Capacity = 0.0758 bbl/ft Annulus = 0.0558 bbl/ft (+ 3.1 bbl for shoe track) Burst = 5750 psi Collapse = 3000 psi	Cement to surface Class A w/ 10% CaCl ₂ , Salt & Flake Yield = 1.29 cf/sk Weight = 15.6 ppg 149.5 bbl 650 sks 161 bbl cap to shoe	30% excess
	Bow Spring: 1-shoe jt, 1-every 2nd jt 1 on ea 2-3 jts across previous shoe. Rigid: 2-within 100 ft of surface							
	RED BED 1310' - 1520'							
	RED BED 1720' - 2480'							
	Bureau (Big Inium)	1,891'					1,077 psi lift pressure	
1203 psi test	9 5/8" Casing	2,121'	2,166'		12 1/4"			
BOPE Class for section	Berea	2,481'						
13-5/8" 10K Class III BOPE	Planned WDM TD	5,000'	5,000'					
	Middlesex	6,609'	6,312'	55.85°		Prod. Casing 5-1/2", 20# P-110, New Vam Capacity = 0.021 bbl/ft (+1 bbl for shoe track) Burst = 12,640 psi Collapse = 11,080 psi ID = 4.778" Drift = 4.603"	Class A: 1) LEAD SLURRY 301.5 bbls 1282.5 sacks 15.2 ppg 1.32 cf/sk TOC Lead = 0 ft MD	Lead Length: 6,643' (Surface to 200' above Upper Marcellus plus 10% in open hole)
	Burkett Sh.	6,749'	6,390'				Class A: 2) TAIL SLURRY 383.6 bbls 1337.7 sacks 15.2 ppg 1.61 cf/sk TOC Tail = 6,943 ft MD	Tail Length: 8,525' (200' above Upper Marcellus to Shoe plus 10% in open hole)
	Tully Lm.	6,775'	6,412'	60.24°			Displacement 335.4 bbls	
	S5 (Hamilton Sh.)	6,829'	6,440'	75.01°				
	S4 (Upper Marcellus)	7,075'	6,534'	79.91°				
	Stafford (Cherry Valley) S2b (L. Marcellus)	7,143' 7,154'	6,549' 6,551'	88.65°				
Centralization * 2 Torq glider per jt from shoe to KOP * 1 single bow per 2 jt from KOP to surface	Horizontal Landing Point	7,386'	6,585'					
	S1b (Basal Marcellus)		6,581'	90.0°				
	Onondaga		6,585'	90.0°				
					8 1/2"	Office Gas	45ft Shoe Track 15,165'	

Mar 27 2014

WV Department of Environmental Protection

06/20/2014

WW-9
(9/13)

API Number 47 - 51 - 01748
Operator's Well No. Hart 2H

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 Moundville 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 27

Subscribed and sworn before me this 25 day of February

Thomas Basinger

WV Department of Environmental Protection
2014
Notary Public
COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
THOMAS BASINGER
Notary Public
CONNELLSVILLE CITY, FAYETTE CNTY
My Commission Expires 06/20/2014

My commission expires 9/24/2017

Form WW-9

Operator's Well No. Hart 2H

Chevron Appalachia, LLC

Proposed Revegetation Treatment: Acres Disturbed 13.6 Prevegetation pH 7

Lime 2 Tons/acre or to correct to pH 5.5-7

Fertilizer type Mixed grasses and legumes, legume stands only, grass stands only

Fertilizer amount 1000 lbs/acre

Mulch 2 Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type lbs/acre

Seed Type lbs/acre

Annual Ryegrass See Pg ES104

Kentucky 31 Fescue See Pg ES104

Barley or Oats See Pg ES104

Red Fescue See Pg ES104

Millet See Pg ES104

Crownvetch See Pg ES104

Cereal Rye or Cereal Wheat See Pg ES104, Hard Fescue See Pg ES 104, Annual Ryegrass See Pg ES104

Attach:

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: James Anderson Guy J. King

Comments: DEP Waiver and Permit conditions required for the following well restrictions: Distance to nearest occupied dwelling < 625' from center of pad, and < 100' from LOD to wetlands.

- dwelling owner waiver LKC

pre-GA pad, already built, -LKC restriction does not apply

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Title: Oil and Gas Inspector

Date: 3/4/14

Field Reviewed? () Yes () No

Wetland Waiver Request

API Number 5101748Well Number 2HOperator Chevron Appalachia, LLCPad Name Hart Wells 2H-10H

Submit a conclusive demonstration to justify the proposed activity by addressing the following:

1. Demonstrate that there is not a practical alternative to impact the Waters of the U.S. by including other alternatives that were considered but eliminated.
 - a. Include a No-Action Alternative as to show "the future without the project"
 - b. Location Alternatives must be shown
 - c. Must demonstrate why a 100' buffer cannot be maintained

The Hart Well Pad is an existing well pad that has been purchased by Chevron and has been previously constructed by another well operator. In order to add more wells to the existing pad, Chevron is expanding the well pad surface. The Wetland Waiver Request is for a field identified wetland located approximately 46-ft north of the existing well pad. As the well pad is an existing feature, the No-Action Alternative and the proposed project involve an equal amount of disturbance to the wetland. The proposed expansion implements efforts to minimize impact to Waters of the U.S. on site to the greatest extent practicable – the well pad expansion will not be directed in a manner that further encroaches on Waters of the U.S. on site. Additionally, adding wells to the existing pad not only reduces surface area disturbances by reducing the number of well sites, but also results in fewer access driveways being constructed. The 100-ft buffer cannot be maintained due to the pre-existing conditions on site. Please refer to the attached Environmental Exhibit (EX-1).

2. Show that treatment facilities (Erosion and Sediment Control Features) will be located as close as practical to the source(s) with which it is associated.

The edge of the proposed limit of disturbance is shown as close to the E&S control features (access road cross culvert with rip rap apron & rock filter and super silt fence) and the edge of the well pad/cut slope as possible. Runoff from the access road is collected and routed away from the wetland. Please refer to the Erosion and Sediment Control Plan.

3. Demonstrate that all proposed activity will not impact Waters of the U.S. more than is necessary to accommodate the proper construction and operation of the facility.
 - a. Specify and identify wetlands using unique identification and/or perennial streams located within 100' of the pad's limit of disturbance (including erosion and sediment controls).

Received

MAR 31 2014

Wetland Waiver Request

API Number 5101748Well Number 2HOperator Chevron Appalachia, LLCPad Name Hart Wells 2H-10H

b. Is the proposed project the least environmentally damaging practicable alternative to the waters of the United States, so long as the alternative does not have other environmental consequences.

Multiple Unnamed Tributaries to North Fork Middle Grave Creek are located east and south of the existing well pad. No perennial streams are located within 100-ft of the well pad's limit of disturbance. Five (5) field located wetlands (Wetlands 1-6), all Palustrine Emergent (PEM), are located on site. Wetland #6 is located 46-ft north of the well pad. The limit of disturbance has been adjusted to the greatest extent practicable in order to achieve the 100-ft buffer requirement for five out of six (5/6) field located wetlands on site. As the well pad has already been constructed within 100-ft to Wetland #4 by another operator, Chevron is minimizing any further disturbance to the wetlands on site by expanding the well pad in other directions. The proposed well pad expansion will not further encroach on wetland #6. Please refer to the attached Environmental Exhibit (EX-1).

Field Located Wetlands On Site				
Wetland ID	USACE Water Type	NWI Classification	Approximate Size (Acres)	Distance from LOD (feet)
Wetland 1	RPWWD	PEM	0.035	101
Wetland 2	RPWWD	PEM	0.018	156
Wetland 3	ISOLATE	PEM	0.010	100
Wetland 4	ISOLATE	PEM	0.014	100
Wetland 5	ISOLATE	PEM	0.005	149
Wetland 6	ISOLATE	PEM	0.008	46

4. Provide mapping, plans, specifications and design analysis for the preferred alternative to the project.

a. Specify in writing what additional controls, measures, devices, monitoring, etc will be utilized to protect these wetlands and/or perennial streams.

The following controls will be utilized to protect the wetland:

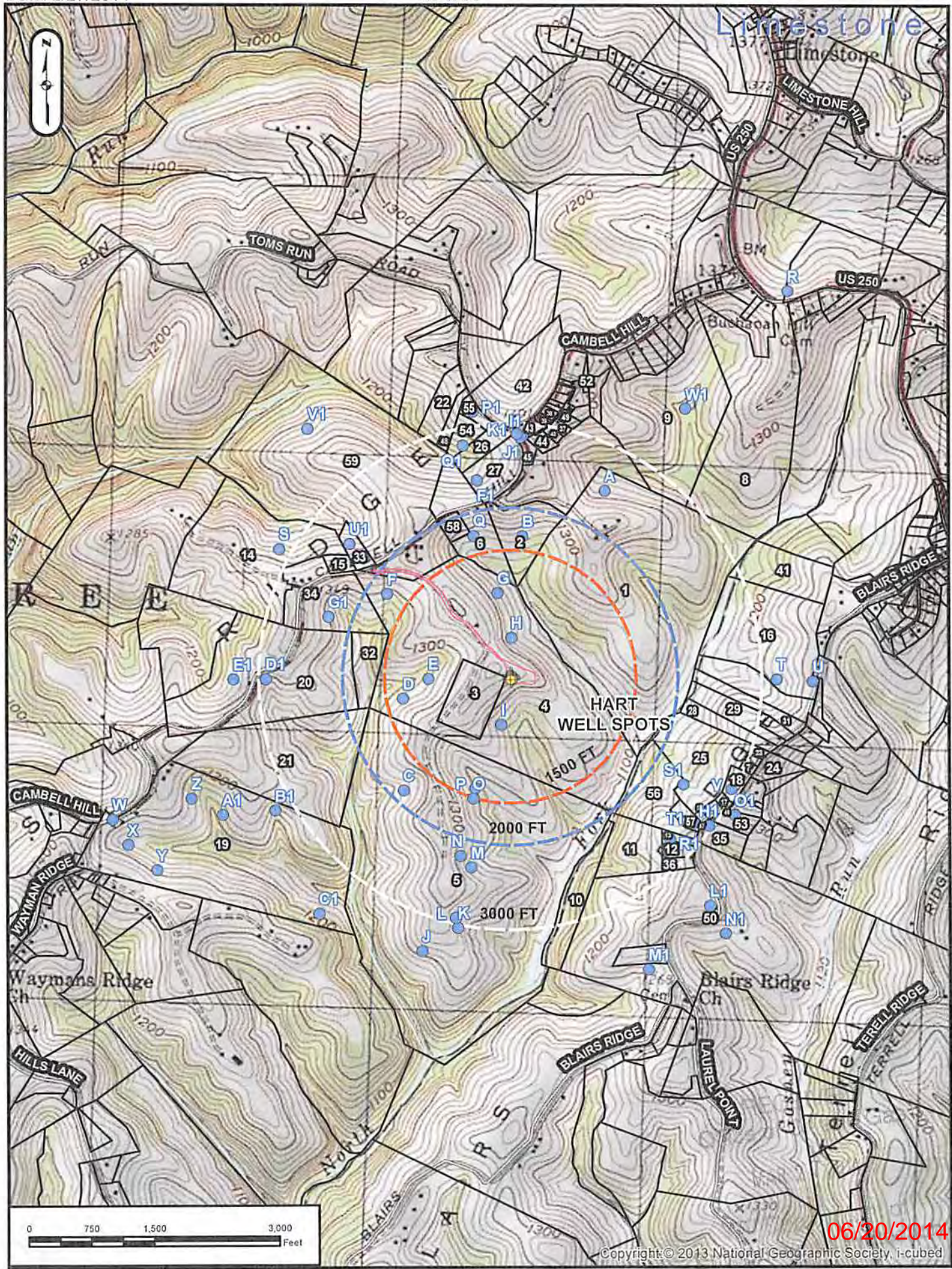
- 1) The upstream grading operations are entirely in cut, no sediment laced runoff will discharge directly to the wetland.*
- 2) Super silt fence will act as a sediment barrier.*
- 3) An endwall with rip rap and rock filter outlet will divert access road flow away from the wetland.*

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MAR 31 2014

WATER SUPPLY EXHIBIT HART

Date: 2/27/2014



06/20/2014

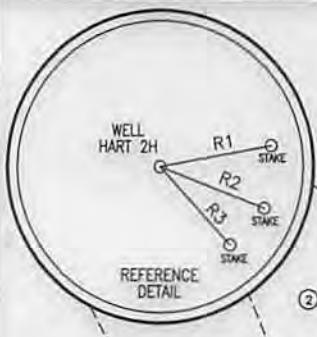
Well is located on topo map 1,120 feet south of Latitude: 39° 55' 00"

SEE PAGE 2 FOR SURFACE OWNERS

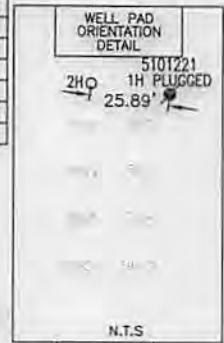
NOTES:

1. There are no water wells or developed springs within 250' of proposed well.
2. Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
3. There are no native trout streams within 300' of proposed well.
4. Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
5. It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted herein. The location of the boundary lines, as shown, are based on record deed descriptions; field evidence found and/or tax map position, unless otherwise noted.

Well is located on topo map 8,391 feet west of Longitude: 80° 37' 30"



LINE	BEARING	DISTANCE
R1	N 79°11'26" E	236.83'
R2	S 69°04'44" E	234.74'
R3	S 42°44'38" E	217.34'
R4	N 23°45'13" W	1500.91'
R5	N 59°26'21" W	1445.38'
R6	S 75°47'40" W	1644.33'

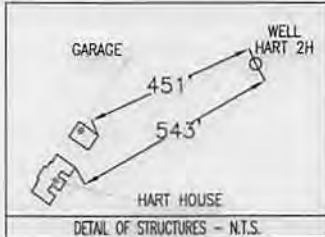


LEGEND

- ⊕ - TOPO MAP POINT
- ☼ - WELL
- - ALL ARE POINTS UNLESS OTHERWISE NOTED.
- (W) - WATER SOURCE
- - MINERAL TRACT BOUNDARY
- - - - - PARCEL LINES
- - - - - WELL REFERENCE
- - - - - PROPOSED HORIZONTAL WELL
- - - - - ROAD
- - - - - STREAM CENTER LINE
- (A) - LESSORS
- (1) - SURFACE OWNERS

WELLS WITHIN 3000'

- - EXISTING WELLS
- ⊙ - PLUGGED WELLS



SURFACE HOLE LOCATION (SHL)
UTM 17-NAD83
N:4418225.70
E:529491.91
NAD83, WV NORTH
N:516966.12
E:1644547.23

APPROX. LANDING POINT
UTM 17-NAD83
N:4418461.87
E:529654.86
NAD83, WV NORTH
N:517732.17
E:1645094.75

BOTTOM HOLE LOCATION (BHL)
UTM 17-NAD83
N:4420236.54
E:528082.33
NAD83, WV NORTH
N:523642.05
E:1640031.87

PARCEL	LESSOR
A	JOHN J. & RENEE A. HART
B	LAURA MAE HARTLEY
C	LAURA MAE HARTLEY
D	CARL W. & BRIDGETT L. YOHO
E	CARL W. & BRIDGETT L. YOHO
F	GARY V. & BONNIE L. SINGER
G	DONN R. & LOIS W. DOWLER
H	DONN R. & LOIS W. DOWLER
J	DONN R. & LOIS W. DOWLER
K*	GARY A. & MICHELE L. STROPE

Blue Mountain Inc.
11023 MASON DIXON HIGHWAY
BURTON, WV 26562
PHONE: (304) 682-6486

FILE #: HART 2H
DRAWING #: HART 2H
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

GEORGE D. SIX
LICENSED
No. 2000
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR

PLACE SEAL HERE

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



DATE: MARCH 13, 2014
OPERATOR'S WELL #: HART 2H
API WELL #: 47 51 017484 6A
STATE COUNTY PERMIT

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

WATERSHED: MIDDLE GRAVE CREEK - GRAVE CREEK ELEVATION: 1329.31'
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: 595.897±

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: 15,168±

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 2H

	SURFACE OWNER	DIST-TM/PAR
1	WILLIAM H. III & LINDA BARDALL	14-7/42
2	WILLIAM H. III & LINDA BARDALL	14-7/41
3	MARSHALL COUNTY 4-H LEADERS	14-7/40
4	JOHN R. REGAN & CONNIE L. THOMAS	14-6/1
5	JEFFREY L. & JANET L. ALLEN	14-6/40
6	JEFFREY L. & JANET L. ALLEN	14-6/38
7	JOHN R. REGAN & CONNIE THOMAS	14-6/2
8	DANIEL R. WOOD - SHAWN ALLMAN	14-6/2.1
9	JOHN R. REGAN & CONNIE L. THOMAS	14-6/3
10	ROBERT R. & KATHY D. BROWN	14-6/3.4
11	JOHN R. REGAN & CONNIE L. THOMAS	14-6/3.3
12	JEFFREY L. & JANET L. ALLEN	14-6/39
13	BERRIDGE L. ALLEN ET UX	14-6/38.1
14	BERRIDGE L. ALLEN ET UX	14-6/38.3
15	MARC A. MOLOSKI ET UX	14-6/3.1
16	BERRIDGE L. ALLEN ET UX	14-6/38.2
17	JEFFREY L. & JANET L. ALLEN	14-6/37
18	MARC MOLOSKI	14-6/34.4
19	GARY V. SINGER ET UX	14-6/34.7
20	GARY V. SINGER ET UX	14-6/34.9
21	CARL W. & BRIDGETT L. YOHO	14-6/35
22	JOHN W. & MARY A. MILLER	14-6/41
23	DENNIS BLAKE ET UX	14-10/10
24	JOHN J. II & JENNA E. HART	14-10/11
25	DENNIS & MICHELLE S. BLAKE	14-10/11.3
26	BONNIE L. & GARY V. SINGER	14-6/34.8
27	GARY A. STROPE	14-6/34.10
28	JAMES D. & DONNA J. DRAKE	14-6/34
29	JENNIFER B. READ	14-6/34.5
30	JERRY S. WHORTON ET UX	14-6/29.1
31	JAMES E. BLAKE	14-10/11.1
32	JOHN J. HART ET UX	14-6/36
33	CARL W. YOHO ET AL	14-6/35.1
34	RODNEY J. & CARRIE L. FONNER	14-6/29
35	MARTIN D. FONNER JR. ET UX	14-6/29.2
36	CARL W. & BRIDGETT L. YOHO	14-6/28.1
37	JAMES E. CURRY	14-10/13
38	JOHN J. HART ET UX	14-10/14
39	JOHN J. & RENEE HART	14-10/19.1
40	CARL W. & BRIDGETT L. YOHO	14-6/28
41	JEFFREY D. & DENISE A. CRAMER	14-6/27
42	JOHN J. & RENEE HART	14-10/19
43	JOHN J. HART ET UX	14-10/18
44	ANNE E. MORRIS	14-6/26
45	JEFFREY D. & DENISE A. CRAMER	14-10/20
46	JOHN A. BIERCE ET UX	14-6/18.4
47	LEROY E. MEADOWS ET UX	15-8/4
48	LEROY E. MEADOWS ET UX	15-8/5.10
49	STEVE M. BONAR II	15-8/5.1
50	REX W. & JANET L. GARRISON	15-8/5
51	REX W. & JANET L. GARRISON	15-8/5.8
52	REX W. GARRISON	15-8/5.6
53	REX W. & JANET L. GARRISON	15-8/5.9
54	EDWARD D. & MALLORY J. FORDYCE	15-8/5.5
55	JOHN E. DRAKE ET UX	15-15/8.16
56	HEIKKI & TRISHA YEAGER	15-15/8.6
57	JOHN A. BIERCE II ET UX	15-15/3

06/20/2014

MARCH 13, 2014