



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 06, 2013

WELL WORK PERMIT
Horizontal 6A Well

This permit, API Well Number: 47-5101599, 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: CONNER 6H
Farm Name: CONNER, HOWARD B. (LIFE)
API Well Number: 47-5101599
Permit Type: Horizontal 6A Well
Date Issued: 06/06/2013



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. 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.
2. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the fill material shall be within plus or minus 2% (unless soil test results show a greater range of moisture content is appropriate and 95% compaction can still be achieved) of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. 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.
3. 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.
4. 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.
5. 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.

06/07/2013



 west virginia department of environmental protection

Oil and Gas Conservation Commission
 601 57th Street, SE Charleston, WV 25304
 (304)926-0499, Ext 1656

Earl Ray Tomblin, Governor
 Randy C. Huffinan, Cabinet Secretary
 dep.wv.org

June 6, 2013

Department of Environmental Protection
 Office of Oil and Gas
 Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-051-01599

COMPANY: Chevron Appalachia, LLC

FARM: Howard B. Conner #6H

COUNTY: Marshall DISTRICT: Clay QUAD: Businessburg

The application for the above company is APPROVED FOR TRENTON FOR POINT PLEASANT COMPLETION ONLY. **If operator wishes to drill deeper than the TRENTON, additional approval must be obtained from the OGCC. *Drill to Trenton, core Utica and Point Pleasant...plug back drill horizontally and produce Point Pleasant***

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners; yes
2. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells, well name, and the name and address of the operator; none
3. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

Cindy Raines
 Executive Assistant

To avoid enforcement action and per 39CSR1.4.6 and 4.10 filing of wells logs and directional surveys are due within 90/60 days of completion of a deep well.

WW - 6B
(1/12)

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: Chevron Appalachia, LLC 49449935 Marshall Clay Businessburg 7.5'
Operator ID County District Quadrangle

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

3 Elevation, current ground: 1,222' Elevation, proposed post-construction: 1,222'

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

5) Existing Pad? Yes or No: Yes

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Conner 6H Target Fm: Point Pleasant; Depth: 10,932' TVD GL; Anticipated Thickness: 80'; Associated Pressure Gradient: 0.69

7) Proposed Total Vertical Depth: 11,167'

8) Formation at Total Vertical Depth: Trenton

9) Proposed Total Measured Depth: 18,633'

10) Approximate Fresh Water Strata Depths: 223'

11) Method to Determine Fresh Water Depth: Determined through analysis of local stream base elevation, and elevation recorded offal water shows from DEP well completion report (attached)

12) Approximate Saltwater Depths: 3,628'

13) Approximate Coal Seam Depths: 752'

14) Approximate Depth to Possible Void (coal mine, karst, other): 752'

15) Does land contain coal seams tributary or adjacent to, active mine? yes

16) Describe proposed well work: Drill 28" hole to 323' then run and cement 24" casing to surface covering the fresh water. Drill 21" hole to 802' then run and cement to surface 18 5/8" casing covering Pittsburgh coal. Drill 17 1/2" hole to 3,362' then run and cement to surface 13 3/8" casing, covering the Lower Warren. Drill 12 1/4" to 8,493' then run and cement to surface 9 5/8" casing, covering the Lockport Limestone. Then drill 8.5" hole to core point and core the Utica and Point Pleasant. Plug Back and drill 8.5" hole for the curve and lateral to 18,633' MD and 10,912' TVD. Then run and cement 5 1/2" production casing to surface. to 11,167' TVD. Then plug back with solid cement plug from TVD at 11,167' to 9500' TVD. KOP is at 9800' TVD. Drill 8.5" hole for the curve and lateral to 18,633' MD and

17) Describe fracturing/stimulating methods in detail: hole for the curve and lateral to 18,633' MD and
Chevron will be utilizing the plug and perf method with 25 stages using 8,571 bbls of fluid and 300,000 lbm sand per stage

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 15.2

19) Area to be disturbed for well pad only, less access road (acres): 13.1

*DMH
1-16-13*

10,912' TVD. Then run and cement 5 1/2" production casing to surface.

51-1599

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	30"	New	Line		40'	40' ✓	129 CTS
Fresh Water	24"	New	J-55		323'	323' ✓	662 CTS
Coal	20"	New	H-40	94#	802'	802' ✓	825 CTS
Intermediate #1	13 3/8"	New	H-40	72#	3,362'	3,362' ✓	4155 CTS
Intermediate #2 Production	9 5/8"	New	P-110	53#	8,493'	8493' ✓	3115 CTS
Production Tubing	5 1/2"	New	P-110	23#	18,633'	18,633' ✓	4643
Liners							

DH 9-19-12

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	30"	36"				
Fresh Water	24"	28"	0.375		Class A ✓	1.18
Coal	20"	23"	0.438	1530	Class A ✓	1.18
Intermediate	13 3/8"	17 1/2"	0.514	5380	Class A ✓	1.18
Production	9 5/8"	12 1/4"	0.545	10,980	Class G ✓	1.18
Tubing	5.5"	8.5"	0.415	13,580	Class G ✓	2.2
Liners						

PACKERS

Kind:	N/A		
Sizes:	N/A		
Depths Set:	N/A		

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21) Describe centralizer placement for each casing string. _____

There will be a bow spring centralizer every other jt on the Water string, Coal String, 1st Intermediate, and 2nd intermediate.
The production string will have a centralizer every jt in the lateral and curve and one every two jts from KOP to surface

22) Describe all cement additives associated with each cement type. _____

For Water String and Coal String the blend will contain class A cement, CaCl₂, and flake.
The 1st intermediate will contain class A cement, CaCl₂, Salt, and flake
The 2nd intermediate will have lead and tail cement. The lead will contain class G cement, Poz Mix, Latex, Friction reducer, defoamer, suspension agent, and CaCl₂. The Tail will contain class G cement and CaCl₂
The production will have a lead and tail cement. The lead will contain Class A cement, KCl, Fluid loss additive, suspension agent, and retarder. The tail will contain Class G cement, Calcium Carbonate, KCl, Fluid loss additive, Suspension Agent, and Retarder.

23) 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.

*Note: Attach additional sheets as needed.

DH
9-19-12

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Cement Additives

- For Water String and Coal String the blend will contain class A cement, CaCl₂, and flake.
- The 1st intermediate will contain class A cement, CaCl₂, Salt, and flake
- The 2nd intermediate will have lead and tail cement. The lead will contain class G cement, Poz Mix, Latex, Friction reducer, defoamer, suspension agent, and CaCl₂.
- The Tail will contain class G cement and CaCl₂.
- The production will have a lead and tail cement
- The lead will contain Class A cement, KCl, Fluid loss additive, suspension agent and retarder.
- The tail will contain Class G cement, Calcium Carbonate, KCl, Fluid loss additive, Suspension Agent, and Retarder.

DAH
9-14-12

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Chevron		Conner 6H Horizontal Schematic				Ground Level Elevation: 1222 ft		
Marshall, WV September 5, 2012		Casing & Cementing Details				Depth measured from KIS: 0 ft		
AZM	Casing Formation	DEPTH		Inclination	HOLE SIZE	CASING SPECS	CEMENT INFO	GENERAL INFO
		MD	TVD			Conductor	Cement to Surface	
	30" Conductor	66'						
	Bow Spring: 1-shoe jt & 1-every joint Rigid: 2-within 40 ft of surface					Water String 24"	Cement with 118 bbls to surface 15.6 ppg 1.18 CuFt/sk	
	Deepest Fresh Water	223'	223'					
	24" Casing	323'	323'	0°				
	Place (1) one Basket 15 - 20 ft above the top of the mine.					Coal String 20" 94# H-40 STC Burst = 630 psi	Cement with 147 bbls to surface 15.6 ppg 1.18 CuFt/sk	
	Bow Spring: 1-shoe jt, 1-every jt Rigid: 2-within 100 ft of surface							
	Estimated Basket Depth Pittsburgh Coal	737' 752'	737' 752'					
	20" Casing	802'	802'	0°				
	Bow Spring: 1-shoe jt & 1-every joint Rigid: 2-within 40 ft of surface					1st Intermediate 13 3/8" 72# N-80 LTC Burst = 5380 psi	Cement with 740 bbls to surface 15.6 ppg 1.18 CuFt/sk	
	Lewer Warren 13 3/8" Casing	3,262' 3,362'	3,262' 3,362'	0°				
	Bow Spring: 1-shoe jt, 1-every 2nd jt 1 on ea 2-3 jts across previous shoe. Double-Bow: 2-within 100 ft of surface					2nd Intermediate 9-5/8" 53# P-110 LTC Burst = 9,500 psi	Cement with 555 bbls to surface 15.6 ppg 1.18 CuFt/sk	
MA SP = 8584	psitest	Lockport Limestone 9-5/8" Casing	8,093' 8,493'	8,093' 8,493'	0°			
	Centralization • 1 Turbokator per joint for 3 joints above and 3 joints below 9-5/8" shoe • 1 double Bow Spring per 2 joints from top Ulica to KOP • 1 SpiraGlider per joint from shoe to top of Ulica	TOP of Plug KOP		9,500' 9,800'	0°			
121° 134°		Ulica Land Curve Point Pleasant Lexington Trenton	10,850' 11,102'	10,807' 10,912' 10,932' 11,012' 11,047'	38° 90°			
134°		Flot TD 5-1/2" Casing	11,167' 18,633'	11,167' 10,912'	90°		Cement with 827 bbls to surface 15.2 ppg 2.2 CuFt/sk	

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name Chevron Appalachia, LLC OP Code 4944935

Watershed Upper Ohio South Quadrangle Businessburg 7.5'

Elevation 1222' County Marshall District Clay

Description of anticipated Pit Waste: This location does not have a pit

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

Will a synthetic liner be used in the pit? n/a. If so, what mil.?

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)

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. A combination of air, fresh water, KCl brine base foam and highly refined mineral oil based mud

-If oil based, what type? Synthetic, petroleum, etc. Highly refined mineral oil based mud CAS # 64742-47-8

Additives to be used? emulsifiers, wetting agents, organophillic clays, barite, calcium chloride (for internal phase of invert) gilsonite

Will closed loop system be used? Yes

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,

-Landfill or offsite name/permit number? WM American LF (OH) PTI: 02-5875 & 02-12954; WM Arden LF (PA) PA DEP: 100172; Northwestern LF(WV) WV DEP: 1025; Meadowfill LF (WV) WVDEP 1032

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 Anna Shumaker

Company Official (Typed Name) Anna Shumaker

Company Official Title Permit Coordinator

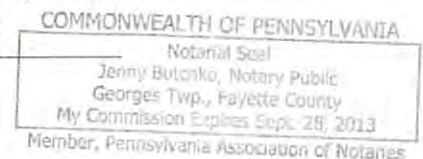
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JAN 31 2013

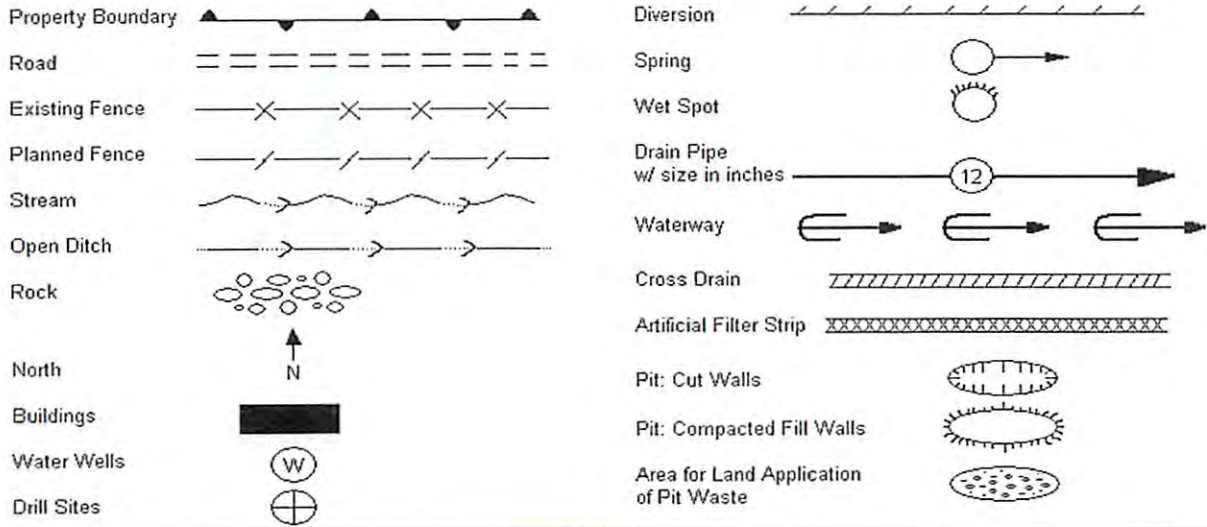
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Subscribed and sworn before me this 25 day of January, 2013

Jenny Butenko Notary Public
My commission expires September 28, 2013



06/07/2013



Proposed Revegetation Treatment: Acres Disturbed 15.2 Prevegetation pH 7.0

Lime 6 Tons/acre or to correct to pH 6.5 to 7.0

Fertilizer (10-20-20 or equivalent) 1000 lbs/acre (500 lbs minimum)

Mulch 3 Tons/acre

Seed Mixtures

Seed Type	Area I	lbs/acre	Seed Type	Area II	lbs/acre
Redtop		5	Kentucky Bluegrass		30
Perennial Rye Grass		30	Redtop		5
Orchard Grass		25	White Clover		5
			Birdsfoot Trefoil		15

Attach:
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: _____

Title: Oil & Gas Inspector

Date: 9-19-12

Field Reviewed? Yes No

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Water Management Plan: Secondary Water Sources



WMP-00828

API/ID Number 047-051-01599

Operator:

Chevron Appalachia, LLC

Conner 6H

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Multi-site impoundment

Source ID: 7364	Source Name	Chaplin Centralized Water Storage Facility	Source start date:	4/1/2013
			Source end date:	10/31/2013
	Max. Daily Purchase (gal)		Total Volume from Source (gal):	5,000,000

DEP Comments:

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-625

APPROVED NOV 19 2012



Water Management Plan: Primary Water Sources



WMP- 00828

API/ID Number: 047-051-01599

Operator: Chevron Appalachia, LLC

Conner 6H

Important:

For each proposed primary water source (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

DEP is aware that some intake points will be used for multiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interpreted as total withdrawal limits for each location over the specified date range regardless of how many wells are supported by that intake.

For all purchased water intakes, determinations of water availability are made at the original source intake location. It is the responsibility of the Oil and Gas Operator, not the seller, to cease withdrawal of water from the seller when flows are less than the minimum gauge reading at the stream gauge referenced by the Water Management Plan in order to protect stream uses.

Note that the determinations made herein are based on the best available data, but it is impossible to predict water availability in the future. While the DEP has carefully established these minimum withdrawal thresholds, it remains the operator's responsibility to protect aquatic life at all times. Approval to withdrawal is contingent upon permission from the land owner. It is the responsibility of the operator to secure and maintain permission prior to any withdrawals.

The operator is reminded that 24-48 hours prior to withdrawing (or purchasing) water, DEP must be notified by email at DEP.water.use@wv.gov.

MODIFICATION Effective: 5/8/2013

APPROVED MAY 08 2013

06/07/2013

Source Summary

MODIFICATION

Effective: 5/8/2013

WMP-00828

API Number:

047-051-01599

Operator:

Chevron Appalachia, LLC

Conner 6H

Stream/River

● Source **Grave Creek @ Cochran-Pearson Withdrawal Site** Owner: **Diana Lynn Cochran**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/1/2014	10,000,000		39.905103	-80.757019

Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): **1,200** Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: Refer to the specified sation on the National Weather Service's Ohio River forecasts at the following website: <http://www.erh.noaa.gov/ohrfc//flows.shtml>

06/07/2013

Source Detail

MODIFICATION Effective: 5/8/2013

WMP- 00828

API/ID Number: 047-051-01599

Operator: Chevron Appalachia, LLC

Conner 6H

Source ID: 15988	Source Name: Grave Creek @ Cochran-Pearson Withdrawal Site Diana Lynn Cochran	Source Latitude: 39.905103	Source Longitude: -80.757019
HUC-8 Code: 5030106	Drainage Area (sq. mi.): 25000	County: Marshall	Anticipated withdrawal start date: 8/1/2013
<input type="checkbox"/> Endangered Species?	<input checked="" type="checkbox"/> Mussel Stream?	Anticipated withdrawal end date: 8/1/2014	Total Volume from Source (gal): 10,000,000
<input type="checkbox"/> Trout Stream?	<input type="checkbox"/> Tier 3?	Max. Pump rate (gpm): 1,200	Max. Simultaneous Trucks: 0
<input checked="" type="checkbox"/> Regulated Stream?	Ohio River Min. Flow	Max. Truck pump rate (gpm): 0	
<input type="checkbox"/> Proximate PSD?			
<input checked="" type="checkbox"/> Gauged Stream?			

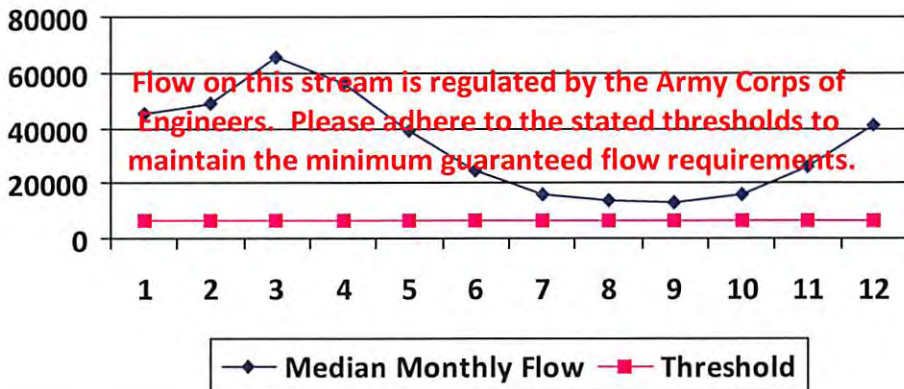
Reference Gaug 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	2.67
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00

Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

06/07/2013



west virginia department of environmental protection
 601 57th Street SE
 Charleston, WV 25304-2345

**WATER MANAGEMENT PLAN/
 WATER ADDENDUM**
For Horizontal Oil and Gas Well Permits
 Office of Oil and Gas
 Phone: (304) 926-0450

DEP Office Use only	
Date Received by Oil & Gas:	
Administratively Complete – Oil & Gas:	<input type="checkbox"/> Yes <input type="checkbox"/> No:
Date Received by Water Use:	
Complete – Water Use:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No JH

Section I - Operator Information

API: 47 - 51 - 01599 Modification? ✓
County Permit

Operator Name: <u>Chevron Appalachia, LLC</u>	
Operator ID: <u>49449935</u>	*Registered in the Frac Water Reporting Website? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Mailing Address: <u>Westpointe Corporate Center One 1550 Coraopolis Heights Road Moon Township, PA 15108</u>	Contact Name/Title (Water Resources Manager): <u>Ken Martz, Water Acquisition Team Lead</u>
Contact Phone: <u>(412) 518-1107</u>	Contact Email: <u>kmartz@chevron.com</u>

Received

APR 12 2013

WVDEP
Water Use Section

*If no, the operator will be required to register with the WVDEP Water Use Section; contact dep.water.use@wv.gov

Section II - Well Overview

Operator's Well Number: <u>Conner - 6H</u> ✓			
Anticipated Frac Date: <u>08/28/2013</u> ✓	Location (decimal degrees, NAD 83)		
	Latitude: <u>505336.870</u>	Longitude: <u>1617524.506</u>	County: <u>Marshall</u>

Section III – Source Water Overview (check all that apply)

Streams/Rivers <input checked="" type="checkbox"/>	Lakes/Reservoirs <input type="checkbox"/>	Ground Water <input type="checkbox"/>	Purchased Water (PSD) <input type="checkbox"/>
Purchased Water (Private) <input type="checkbox"/>	Recycled Frac Water <input type="checkbox"/>	Multi-Site Impoundment <input type="checkbox"/>	
Other (describe):			
Total anticipated water volume to be used (gal): <u>10,000,000 gallons</u>			

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Section III(a) - Surface Water Source (to be completed for each surface water withdrawal location, print additional pages as necessary)

Source Name: Grave Creek			
Location (decimal degrees, NAD 83)			
Latitude: 39.905103	Longitude: -80.757019	County: Marshall	
Landowner name and address: Diana Lynn Cochran 16 Zitko Terrace Glen Dale, WV 26038		Deborah Ann Pearson 29 - 21st Street McMechen, WV 26040	
Phone: 304-845-1725 Cochran 304-233-0116 Pearson			
Obtained Landowner Permission? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			

Proposed Withdrawal Details

Start Date: 08/01/2013	End Date: 03/01/2014	Total Withdrawal from Source (gal): 10,000,000 gallons	Max. Pump Rate (gpm): 1,200
No. of Pump Trucks: N/A (See Attachment VI)	Max. Pump Rate per Truck (gpm): NA	No. Trucks Simultaneously Pumping: NA	

Determination that sufficient flow is available downstream from proposed intake point

Allow passby to be calculated by the DEP (Preferred)? Yes No
(If no, advance written authorization by DEP is required. Attach authorization and details.)

Aquatic Life Protection

Describe Entrainment and Impingement Prevention Plan:

See Attachment 1, Section 1.0.

Describe Invasive Species Transfer Prevention Plan:

See Attachment 1, Section 2.0.

Stream details

DEP Office Use Only			
Contact Recreation <input type="checkbox"/>	Aquatic Life-Trout Water <input type="checkbox"/>	Aquatic Life-Warm Water <input type="checkbox"/>	Drinking Water Supply <input type="checkbox"/>
Industrial <input type="checkbox"/>	Agriculture <input type="checkbox"/>	Irrigation <input type="checkbox"/>	Reference Gauge: <input type="checkbox"/>
Gauged Stream : <input type="checkbox"/>	Stream Final Code: <input type="checkbox"/>	Regulated by: <input type="checkbox"/>	
Trout? <input type="checkbox"/>	Sensitive Aquatic Species? <input type="checkbox"/>	Tier 3 Stream? <input type="checkbox"/>	Within 1 mile upstream of a PSD? Yes <input type="checkbox"/> No <input type="checkbox"/>
Mussels? <input type="checkbox"/>	Upstream Drainage Area? <input type="checkbox"/>		

Section III(b) - Ground Water Source (to be completed for each groundwater withdrawal location, print additional pages as necessary)

Well Permit #:		Well name:	
Location (decimal degrees, NAD 83)			
Latitude:	Longitude:	County:	
Aquifer: (if known)			
Landowner name and address:		Phone:	
Obtained Landowner Permission? Yes <input type="checkbox"/> No <input type="checkbox"/>		<input type="checkbox"/> *New well (Drill date: _____) <input type="checkbox"/> Existing well	

*If drilling a new well, please submit well logs to DEP's Water Use Section; Wells must be drilled and plugged in accordance with DHHR regulations

Total Depth:	Type of Casing:	Casing Diameter:	Screen Interval:	Screen Size:
Static Water Elevation:	Top of Casing Elevation:	Surface Elevation:	Type of Well Cap:	
Withdrawal Details				
Start Date:	End Date:	Total Withdrawal from Source (gal):	Max. Pump Rate (gpm):	

Analysis of potential groundwater impacts

Static Water Level Prior to Test: _____ feet below grade
Drawdown (Water Level/Elevation During Pump Test): _____ feet
Duration of Pump Test: _____ hours
Gallons Per Minute During Pump Test: _____ gpm
Time to Return to Static Water Level After Pump Test: _____ hours

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Section III(c) - Purchased Water Source (to be completed for each water supplier, print additional pages as necessary)

Supplier Name and Contact Information:			
Location(decimal degrees, NAD 83)			
Latitude:	Longitude:	County:	
Public Water Provider <input type="checkbox"/>	Waste Water Treatment Plant <input type="checkbox"/>	Industrial (intake locations must be provided) <input type="checkbox"/>	
Commercial Supplier (intake locations must be provided) <input type="checkbox"/>		Private (intake locations must be provided) <input type="checkbox"/>	
Purchase Details			
Start Date:	End Date:	Total Purchase from Source (gal):	Max. daily purchase (gal):
Supplier intake details:			

Section III(d) - Lake/Reservoir Water Source (to be completed for each lake/reservoir)

Lake/Reservoir Name:			
Location (decimal degrees, NAD 83)			
Latitude:	Longitude	County:	
Landowner name and address:			
Permission to withdraw obtained from owner: Yes <input type="checkbox"/> No <input type="checkbox"/>		Minimum release (cfs):	
Withdrawal Details			
Start Date:	End Date:	Total Withdrawal from Source (gal):	Max. Pump Rate (gpm):

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Section III(e) - Multi-Site impoundment (to be completed for each source, print additional pages as necessary)

Impoundment Name and Owner:			
Referenced WMP#: WMP-00625			
Location (decimal degrees, NAD83)			
Latitude:	Longitude:	County:	Registered LQU? Yes <input type="checkbox"/> No <input type="checkbox"/>
Landowner name and address:			
Permission to Withdraw Obtained from Owner: Yes <input type="checkbox"/> No <input type="checkbox"/>		Intake type: Permanent Structure <input type="checkbox"/> or Temporary Structure <input type="checkbox"/>	
Withdrawal Details from Impoundment to well-site			
Start Date:	End Date:	Total Withdrawal from Source (gal):	

Impoundment filling details – source

Source Name:		
Location of intake (decimal degrees, NAD 83)		
Latitude:	Longitude:	County:

Section III(f) - Reused Frac Water (to be completed for each source, print additional pages as necessary)

API # of Previous Well (where water was obtained from):	Total withdrawal from source (gal):
Date of Water Transfer	
Start Date:	End Date:

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Section IV – Planned Disposal Method

			<i>Estimate % each facility is to receive</i>			
	Name	Location (decimal degrees, NAD 83)	Permit #	Fracturing	Stimulation	Production
UIC		Lat: Long:				
NPDES (Treatment Plant)		Lat: Long:				
Re-Use	Berger Well Pad	Lat: 39.874280 Long: -80.754960	TBD	100%		
Other		Lat: Long:				

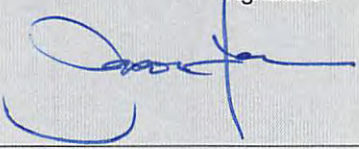
Section V - Planned Additives to be used in Fracturing or Stimulations (attach list to form)

Section VI - Operator Comments

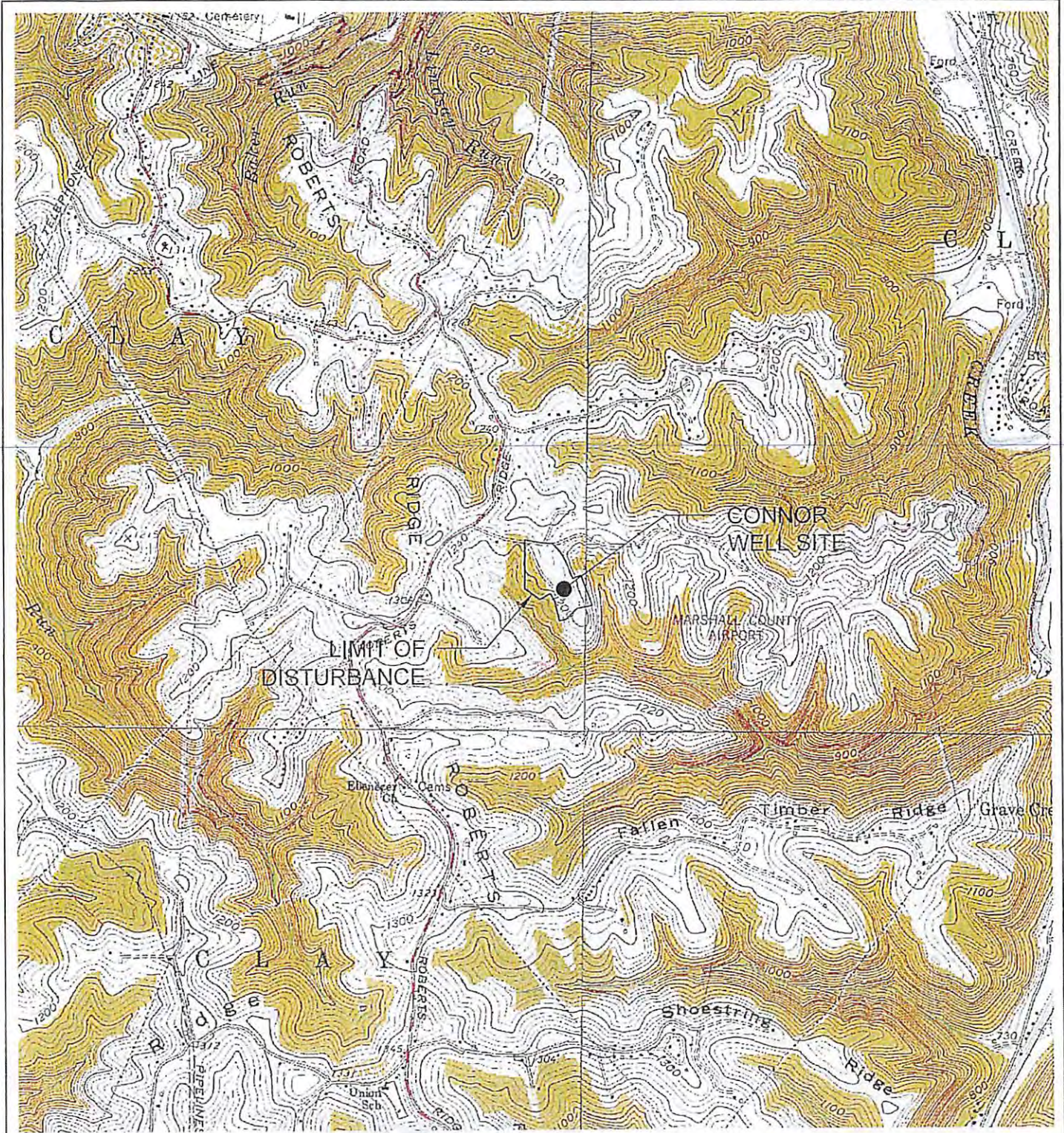
Water to be used for hydraulic fracturing will be piped to the Conner Well Pad directly from Grave Creek through 2.5 miles of pipeline.

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Section VII – Plan Reviewed By

DEP Office Use only		
API # 47-051-01599		
Name: Jason Harm	Signature: 	Date: 5/8/13
Comments		

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SITE LOCATION MAP
CLARKSBURG QUAD
SCALE: 1" = 2000'

Dmit
9-19-10



USGS SITE LOCATION MAP
 Project Number: 17544-0204
 Drawing Scale: 1"=2000'
 Date Issued: AUG 23 2012
 Index Number: _____
 Drawn By: JCB
 Checked By: RJS
 Project Manager: JCV
USGS

CONNOR WELL SITE
 KULL LANE
 CLAY DISTRICT, MARSHALL COUNTY, WV
 PREPARED FOR:
CHEVRON APPALACHIA, LLC
 800 MOUNTAIN VIEW DRIVE
 SMITHFIELD, PA 15478

Date	No	REVISION RECORD
-	01	
-	02	
-	03	
-	04	
-	05	
-	06	
-	07	
-	08	

GATEWAY
 Consulting Engineers & Surveyors
 400 Holiday Drive, Suite 300 Pittsburgh, PA 15220
 Phone (412) 921-4030 • Fax (412) 921-9950
 • Butler, PA (724) 281-1555 • Wheeling, PA (724) 229-3362
 HQ: www.gatewayinc.com

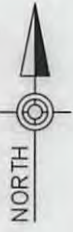
06/07/2013

250'

LATITUDE 39° 55' 00"

LONGITUDE 80° 45' 00"

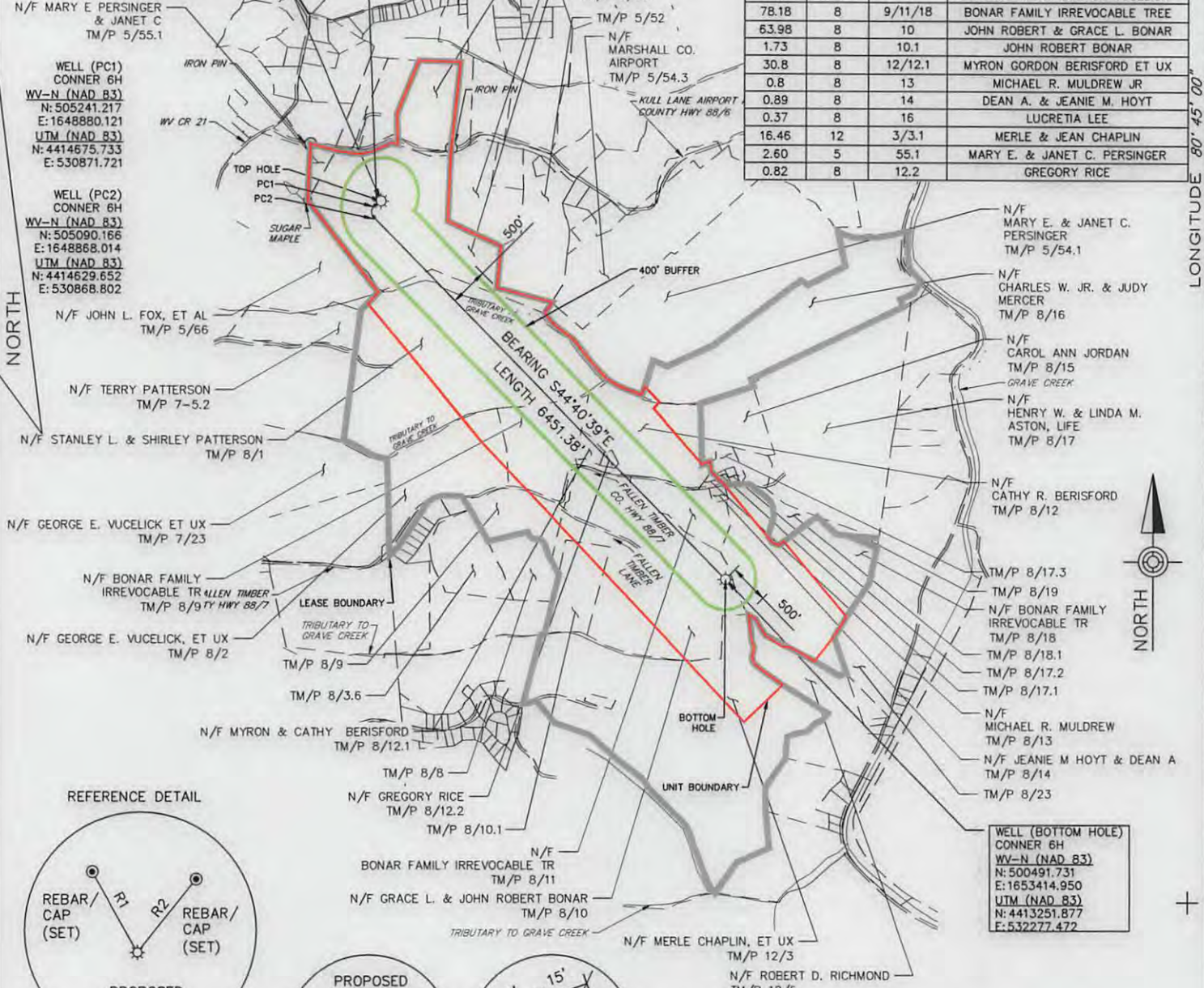
13118'



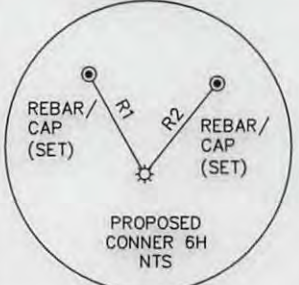
WELL (SURFACE HOLE)
CONNER 6H
WV-N (NAD 83)
N: 505336.870
E: 1617524.506
UTM (NAD 83)
N: 4414694.207
E: 530896.135

BEARING S53°50'35"W
LENGTH 100.48'

GAS LEASE INFORMATION			
UNIT ACREAGE	TAX MAP	PARCEL	GAS ROYALTY OWNER
85.62	5	55/56	HOWARD BONAR CONNER ET AL
75.41	8	1	STANLEY L. & SHIRLEY L. PATTERSON
4.81	8	2	GEORGE E. & REBECCA VUCELICK
78.18	8	9/11/18	BONAR FAMILY IRREVOCABLE TREE
63.98	8	10	JOHN ROBERT & GRACE L. BONAR
1.73	8	10.1	JOHN ROBERT BONAR
30.8	8	12/12.1	MYRON GORDON BERISFORD ET UX
0.8	8	13	MICHAEL R. MULDREW JR
0.89	8	14	DEAN A. & JEANIE M. HOYT
0.37	8	16	LUCRETIA LEE
16.46	12	3/3.1	MERLE & JEAN CHAPLIN
2.60	5	55.1	MARY E. & JANET C. PERSINGER
0.82	8	12.2	GREGORY RICE



REFERENCE DETAIL



NOTES:

1. THERE ARE NO DWELLINGS WITHIN 625' OF PROPOSED WELL.
 2. PROPOSED WELL IS GREATER THAN 400' FROM THE MINERAL LINE.
 3. THE LOCATION OF BOUNDARY LINES ARE BASED ON RECORDED DEED DESCRIPTIONS AND NOT BASED ON AN ACTUAL FIELD SURVEY.
 4. THERE ARE NO EXISTING DEEP WELLS WITHIN A 2 MILE RADIUS OF PROPOSED WELL.
- (+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

LINE	BEARING	DIST.
R1	N30°30'28"W	252.50'
R2	N26°12'20"E	239.15'



829 Fairmont Road, Suite 201
Morgantown, WV 26501
(304) 284-9222
Fax (304) 284-9223
hr@hr-g-inc.com
www.hr-g-inc.com

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) Samer Petro
R.P.E. 15710 L.L.S.



FILE NO. R006239.0443
DRAWING NO. CONNER 6H PLAT
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY 1 : 2500
PROVEN SOURCE OF ELEVATION GPS (Survey Grade)

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



DATE APRIL 29, 2013 Rev.
OPERATOR'S WELL NO. Conner 6H
API WELL NO.

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF "GAS,") PRODUCTION STORAGE DEEP SHALLOW
LOCATION: ELEVATION 1222' WATERSHED: Upper Ohio South
DISTRICT: Clay COUNTY: Marshall
QUADRANGLE: Businessburg 7.5'

47 - 51 - 01599
STATE COUNTY PERMIT

06/07/2013

SURFACE OWNER: Howard B. Conner (Life) ACREAGE: 81.72
OIL & GAS ROYALTY OWNER: See Table Above LEASE ACREAGE: 363.51
LEASE NO. _____
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON
CLEAN OUT AND REPLUG OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____

TARGET FORMATION: Utica Shale ESTIMATED DEPTH: 11,167'
WELL OPERATOR: Chevron Appalachia, LLC DESIGNATED AGENT: KENNETH E. TAWNEY
ADDRESS: 800 Mountain View Drive ADDRESS: 500 LEE STREET, EAST SUITE 1600
Smithfield, PA 15478 CHARLESTON, WV 25301-3202

FORM WV-6

MARSHALL COUNTY

PERMIT