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**west virginia** department of environmental protection

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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](http://www.dep.wv.gov)

August 30, 2013

**WELL WORK PERMIT**  
**Replacement Borehole H6A**

This permit, API Well Number: 47-5101676, issued to NOBLE ENERGY, INC., 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: MND9DHS1  
Farm Name: CONSOLIDATION COAL COMPA  
**API Well Number: 47-5101676**  
**Permit Type: Replacement Borehole H6A**  
Date Issued: 08/30/2013

**Promoting a healthy environment.**

# 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

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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.
6. 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.
7. 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.

WW - 6B  
(3/13)

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

1) Well Operator: Noble Energy, Inc.

<u>494501907</u>	<u>051</u>	<u>Franklin</u>	<u>Powhatan Point</u>
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Operator ID County District Quadrangle

2) Operator's Well Number: MND9DHS1 Well Pad Name: MND9

3 Elevation, current ground: 1226.69 Elevation, proposed post-construction: 1223

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

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):  
Target-Marcellus, Depth- 6327 - 6391; Thickness- 64"; Pressure- 2912 # psi

7) Proposed Total Vertical Depth: 6646'

8) Formation at Total Vertical Depth: Huntersville Chert

9) Proposed Total Measured Depth: 16157'

10) Approximate Fresh Water Strata Depths: 255'

11) Method to Determine Fresh Water Depth: Closest well & Seneca Technology data base

12) Approximate Saltwater Depths: 1718'

13) Approximate Coal Seam Depths: Sewickley -667.4 - 670.7 and Pittsburgh 756.9 - 762.8

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated-drilling into a pillar see attached MSHA report

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

16) Describe proposed well work: Drill the vertical depth to the Huntersville Chert at an estimated total vertical depth of approximately 6646 feet. Plug back to the KOP with a solid cement plug. Drill Horizontal leg - stimulate and produce the Marcellus Formation. Should we encounter a unanticipated void we will install a minimum of 20' of casing below the void but not more than 50' set a basket and grout to surface.

17) Describe fracturing/stimulating methods in detail:  
The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 10.1

19) Area to be disturbed for well pad only, less access road (acres): 10.1

AS for WRA 8/30/13

20)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft.</b>	<b>FOOTAGE: For Drilling</b>	<b>INTERVALS: Left in Well</b>	<b>CEMENT: Fill -up (Cu. Ft.)</b>
Conductor	20"	N	LS	94	40'	40'	CTS
Fresh Water	13 3/8"	N	J-55	54.5	1200'	1200'	CTS
Coal							
Intermediate	9 5/8"	N	J-55	36.0	2500' or 100' below the Big Injun	2500' or 100' Below the Big Injun	CTS
Production	5 1/2"	N	HCP-110	20.0	16157'	16157'	200' above 9.625 shoe
Tubing							
Liners							

WRN  
7-25-13

<b>TYPE</b>	<b>Size</b>	<b>Wellbore Diameter</b>	<b>Wall Thickness</b>	<b>Burst Pressure</b>	<b>Cement Type</b>	<b>Cement Yield</b>
Conductor	20"	24"	.438	2730	Type 1	1.2
Fresh Water	13 3/8"	17 1/2"	.380	2730	Type 1	1.18
Coal						
Intermediate	9 5/8"	12 3/8"	.352	3520	Class A	1.19
Production	5 1/2"	8.75"	.361	12,640	Class A	1.27
Tubing						
Liners						

**PACKERS**

Kind:			
Sizes:			
Depths Set:			

Received

JUL 31 2013

- 21) Describe centralizer placement for each casing string. Conductor - No centralizers used. Fresh Water & Coal -  
Bow spring centralizers on first 2 joints then every third joint to 100 feet from surface. Intermediate - Bow spring  
centralizers every third joint to 100' from surface.  
Production - Rigid bow spring every third joint from KOP to TOC, rigid bow spring every joint to KOP.

- 22) Describe all cement additives associated with each cement type. Conductor - 1.15% CaCl<sub>2</sub>.  
Fresh Water - 1.15% CaCl<sub>2</sub>. Coal - 1.15% CaCl<sub>2</sub>, 0.6% Gas migration control additive, 0.5% fluid loss additive,  
0.4% Salt tolerant dispersant, and 0.3% defoamer. Intermediate - 10.0% BWOW NaCl, 0.2% BWOB Anti-foam, 0.3% BWOW Dispersant,  
0.4% BWOB Cement retarder. Production: 2.6% Cement extender, 0.7% Fluid Loss additive, 0.5% high temperature retarder,  
0.2% friction reducer.

- 23) Proposed borehole conditioning procedures. Conductor - The hole is drilled w/ air and casing is run in air. Apart from insuring  
the hole is clean via air circulation at TD, there are no other conditioning procedures. Fresh Water -The hole is drilled w/air and casing  
is run in air. Once casing is on bottom, the hole is filled w/ KCl water and a minimum of one hole volume is circulated prior to pumping  
cement. Coal - The hole is drilled w/air and casing is run in air. Once casing is at setting depth, the hole is filled w/ KCl water and a minimum of one hole volume  
is circulated prior to pumping cement. Intermediate - Once surface casing is set and cemented Intermediate hole is drilled either on air or SOBMs and filled w/ KCl water once  
filled w/ KCl water once drilled to TD. The well is conditioned with KCl circulation prior to running casing. Once casing is at setting depth, the well is circulated  
a minimum of one hole volume prior to pumping cement. Production - The hole is drilled with synthetic oil base mud and once at TD  
the hole is circulated at a drilling pump rate for at least three hours. Once the torque and drag trends indicate the hole is clean the drilling BHA  
is pulled and casing is run. Once on bottom w/ casing the hole is circulated a minimum of one hole volume prior to pumping cement.

\*Note: Attach additional sheets as needed.

51-01676

WPH  
7-25-13



**DRILLING WELL PLAN**  
**MND-9D-HS-1 (Marcellus HZ)**  
**Macellus Shale Horizontal**  
**Marshall County, WV**

Ground Elevation		1223'		MND-9D-HS-1 SHL (Lat/Long)			(487599.68N, 1638504.35E) (NAD27)		
Azm		335.911°		MND-9D-HS-1 LP (Lat/Long)			(488980.29N, 1639658.23E) (NAD27)		
WELLBORE DIAGRAM		335.911°		MND-9D-HS-1 BHL (Lat/Long)			(496068.09N, 1634718.12E) (NAD27)		
HOLE	CASING	GEOLOGY	TOP	BASE	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS
26	20" 94#	Conductor	40	40	AIR	To Surface	N/A	Ensure the hole is clean at TD.	Stabilize surface fill/soil. Conductor casing = 0.438" wall thickness
17 1/2	13-3/8" 54.5# J-55 BTC	Sewickly Coal Seam	673	676	8.33ppg WBM	15.6 ppg Type 1 + 2% CaCl, 0.25# Lost Circ 30% Excess Yield = 1.18	Bow Spring on first 2 joints then every third joint to 100' form surface	Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement.	Intermediate casing = 0.380" wall thickness Burst=2730 psi
		Pittsburgh Coal	763	768					
		Base of Freshwater	756	756					
		Surface Casing	1200	1200					
12 3/8	9-5/8" 36# J-55 LTC	Big Lime	1982	2086	8.0ppg-9.0ppg SOBM	15.6ppg Class A +0.4% Ret, 0.15% Disp, 0.2% AntiFoam, 0.125#/sk Lost Circ 20% Excess Yield=1.19 To Surface	Bow spring centralizers every third joint to 100' feet from surface.	Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement.	Casing to be ran 250' below the 5th Sand. Intermediate casing = 0.352" wall thickness Burst=3520 psi
		Big Injun	2086	2291					
		Price Formation	2291	2660					
		Int. Casing	2500	2500					
8.75" Vertical	5-1/2" 20# HCP-110 TXP BTC	Weir Sand	2451	2522	8.0ppg - 9.0ppg SOBM	14.8ppg Class A 25-75:0 System +2.6% Cement extender, 0.7% Fluid Loss additive, 0.45% high temp retarder, 0.2% friction reducer	Rigid Bow Spring every third joint from KOP to TOC	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.381" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Berea Sand	2644	2660					
		Gordon	2877	2901					
		Rheinstreet	5859	5859					
8.75" Curve	5-1/2" 20# HCP-110 TXP BTC	Sonyea	6156	6175	12.0ppg-12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625' shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.381" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Cashaqua	6175	6246					
		Middlesex	6181.5	6227					
		West River	6227	6271					
8.75" - 8.5" Lateral	5-1/2" 20# HCP-110 TXP BTC	Burkett	6271	6298	12.0ppg-12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625' shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.381" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Tully Limestone	6298	6306.5					
		Hamilton	6306.5	6327					
		Marcellus	6327	6391					
		TD	16157	6380					
		Onondaga	6391	6396					
		Huntersville	6396	6681					
		Pilot Hole TD in the Huntersville	6389	6646					

LP @ 6380' TVD / 7517' MD      8.75 / 8.5 Hole - Cemented Long String      +/-8640' ft Lateral      TD @ +/-6380' TVD +/-16157' MD

X=centralizers

8.75" Pilot	Isolation / Sidetrack Cement plugs	Onondaga	6391	6396	12.0ppg-12.5ppg SOBM	17.5ppg Class H (SLB) from TD to 200' above KOP (2) 800' balanced plugs w/ 2.375" tubing	N/A	Once at TD, circulate at drilling pump rate for at least three hours. TOOH and run OH logs.	OH logs, loggers on location to call TD. Dir. Surveys shoe to TD
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STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Noble Energy, Inc. OP Code 494501907

Watershed (HUC 10) Fish Creek Quadrangle Powhatan Point

Elevation 1226.69 County Marshall District Franklin

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

Will a pit be used for drill cuttings? Yes  No

If so, please describe anticipated pit waste: None - Closed loop system

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

Proposed Disposal Method For Treated Pit Wastes:

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

Will closed loop system be used? Yes

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Top Hole Air, Freshwater/Bottom Hole Synthetic oil based mud

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

Additives to be used in drilling medium? Bactericide, polymers, and weighting agents

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. All cuttings will be taken off site to an approved facility

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

-Landfill or offsite name/permit number? See attachment - Site Water/Cuttings Disposal

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 Dee Swigen

Company Official (Typed Name) Dee Swigen

Company Official Title Regulatory Analyst

Subscribed and sworn before me this 30th day of July, 20 13

Julia A. Di Vecchio Notary Public

My commission expires May 3, 2014

51-01676

Form WW-9

Operator's Well No. MND9DHS1

Noble Energy, Inc.

Proposed Revegetation Treatment: Acres Disturbed \_\_\_\_\_ Prevegetation pH \_\_\_\_\_

Lime 2-3 tons Tons/acre or to correct to pH \_\_\_\_\_

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

Mulch hay or straw at 2 tons Tons/acre

Seed Mixtures

Area I		Area II	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	<u>40</u>	Tall Fescue	<u>40</u>
Ladino Clover	<u>5</u>	Ladino Clover	<u>5</u>
_____	_____	_____	_____
_____	_____	_____	_____

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Bill H. Hinkley

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Title: Oil and Gas Inspector

Date: 7-25-13

Field Reviewed? (  ) Yes (  ) No





## Water Management Plan: Primary Water Sources



WMP- 01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MND59DHS1

### 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](mailto:DEP.water.use@wv.gov).

**APPROVED AUG 02 2013**

## Source Summary

WMP- 01374

API Number:

047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

### Stream/River

● Source **Wheeling Creek Pump Station 1 @ CNX Land Resources** Marshall Owner: **Consol Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	5,000,000		39.95205	-80.56189

Regulated Stream? Ref. Gauge ID: 3111955 Wheeling Creek near Majorsville, WV

Max. Pump rate (gpm): **1,000** Min. Gauge Reading (cfs): **18.23** Min. Passby (cfs) **16.63**

DEP Comments:

● Source **Wheeling Creek Pump Station 2 @ CNX Land Resources** Marshall Owner: **CNX Land Resources, Inc.**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	4,000,000		39.949578	-80.531256

Regulated Stream? Ref. Gauge ID: 3111955 Wheeling Creek near Majorsville, WV

Max. Pump rate (gpm): **1,000** Min. Gauge Reading (cfs): **18.23** Min. Passby (cfs) **16.24**

DEP Comments:

## Source Summary

WMP-01374

API Number:

047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

## Purchased Water

● Source **West Virginia American Water - Weston Water Treatme** Lewis Owner: **West Virginia American Water**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	7,000,000	500,000	-	-

Regulated Stream? Stonewall Jackson Dam Ref. Gauge ID: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Max. Pump rate (gpm): Min. Gauge Reading (cfs): **170.57** Min. Passby (cfs)

DEP Comments:

● Source **Bethlehem Water Department** Ohio Owner: **Bethlehem Water Department**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	3,000,000	200,000	-	-

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

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

DEP Comments: Bethlehem Water Department purchases all its water from the City of Wheeling. Thresholds are set based on the location of the City of Wheeling's raw water intake.

● Source **Wellsburg Water Department** Brooke Owner: **Wellsburg Water Department**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	3,000,000	200,000	-	-

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

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

DEP Comments: This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>

Source      **Moundsville Water Board**      Marshall      Owner:      **Moundsville Water Treatment Plant**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	3,000,000	2,000,000	-	-

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

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

DEP Comments:      **This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>**

Source      **Dean's Water Service**      Ohio      Owner:      **Dean's Water Service**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	3,000,000	600,000	-	-

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

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

DEP Comments:

Source      **Wheeling Water Department**      Ohio      Owner:      **Wheeling Water Department**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	5,400,000	17,500	-	-

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

**Max. Pump rate (gpm):**      **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>**

Source **Ohio County PSD**

Ohio

Owner:

**Ohio county PSD**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	3,000,000	720,000	-	-

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

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

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

## Source Summary

WMP-01374

API Number:

047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

### Ground Water

● Source **Shoemaker Groundwater Well #3** Marshall Owner: **Consol Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	288,000		40.0222	-80.73389

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

**Max. Pump rate (gpm): 800**      **Min. Gauge Reading (cfs): 6,468.00**      **Min. Passby (cfs)**

DEP Comments: This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>

● Source **Shoemaker Groundwater Well #4** Marshall Owner: **Consol Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	288,000		40.022293	-80.733586

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

**Max. Pump rate (gpm): 800**      **Min. Gauge Reading (cfs): 6,468.00**      **Min. Passby (cfs)**

DEP Comments: This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>

● Source **Shoemaker Groundwater Well #5** Marshall Owner: **Consol Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	288,000		40.021256	-80.734568

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

**Max. Pump rate (gpm): 800**      **Min. Gauge Reading (cfs): 6,468.00**      **Min. Passby (cfs)**

DEP Comments: This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>

Source **Shoemaker Groundwater Well #6** Marshall Owner: **Consol Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
6/1/2013	6/1/2014	288,000		40.02076	-80.73397

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

Max. Pump rate (gpm): **800** Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>

## Source Detail

WMP-01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

Source ID: 22268    Source Name: Shoemaker Groundwater Well #3  
 Consol Energy

Source Latitude: 40.0222

Source Longitude: -80.73389

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000    County: Marshall

Anticipated withdrawal start date: 6/1/2013

Anticipated withdrawal end date: 6/1/2014

- Endangered Species?     Mussel Stream?
- Trout Stream?     Tier 3?
- Regulated Stream?    Ohio River Min. Flow
- Proximate PSD?
- Gauged Stream?

Total Volume from Source (gal): 288,000

Max. Pump rate (gpm): 800

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

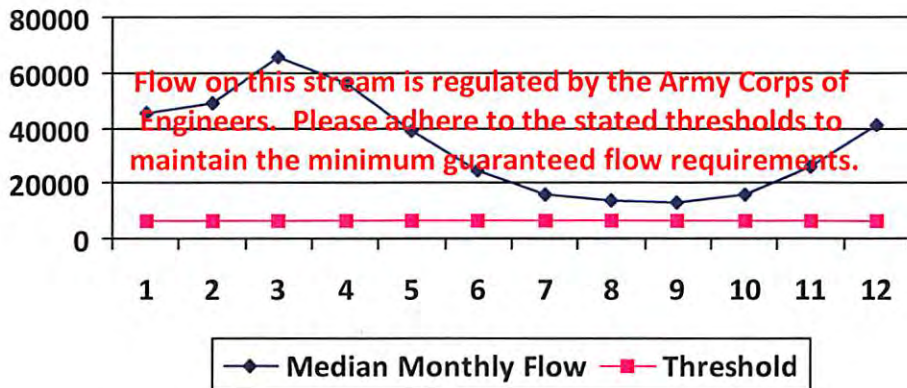
Reference Gaug: 9999999    Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 6468

Month	<u>Median monthly flow</u> (cfs)	<u>Threshold (+ pump)</u>	<u>Estimated Available water</u> (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):	1.78
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
<hr/>	
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.



## Source Detail

WMP-01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

Source ID: 22269    Source Name: Shoemaker Groundwater Well #4  
 Consol Energy

Source Latitude: 40.022293

Source Longitude: -80.733586

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000    County: Marshall

Anticipated withdrawal start date: 6/1/2013

Anticipated withdrawal end date: 6/1/2014

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 288,000

Trout Stream?     Tier 3?

Max. Pump rate (gpm): 800

Regulated Stream?    Ohio River Min. Flow

Max. Simultaneous Trucks:

Proximate PSD?

Max. Truck pump rate (gpm)

Gauged Stream?

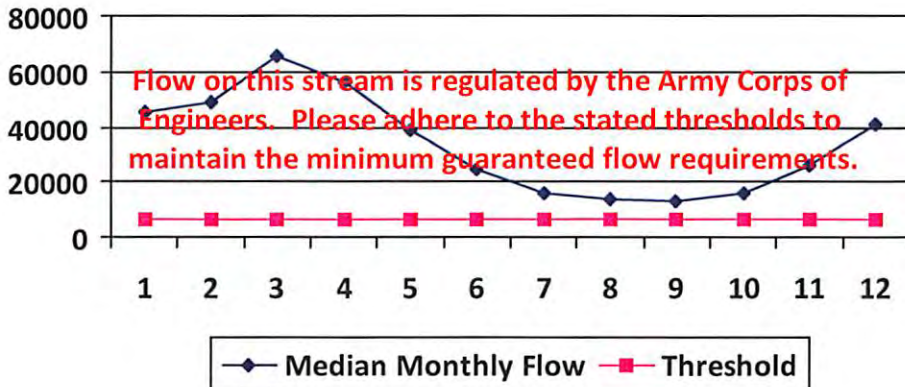
Reference Gaug: 9999999    Ohio River Station: Willow Island Lock & Dam

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):	1.78
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.

## Source Detail

WMP- 01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

Source ID: 22270    Source Name: Shoemaker Groundwater Well #5  
 Consol Energy

Source Latitude: 40.021256

Source Longitude: -80.734568

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000    County: Marshall

Anticipated withdrawal start date: 6/1/2013

Anticipated withdrawal end date: 6/1/2014

- Endangered Species?     Mussel Stream?
- Trout Stream?     Tier 3?
- Regulated Stream?    Ohio River Min. Flow
- Proximate PSD?
- Gauged Stream?

Total Volume from Source (gal): 288,000

Max. Pump rate (gpm): 800

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

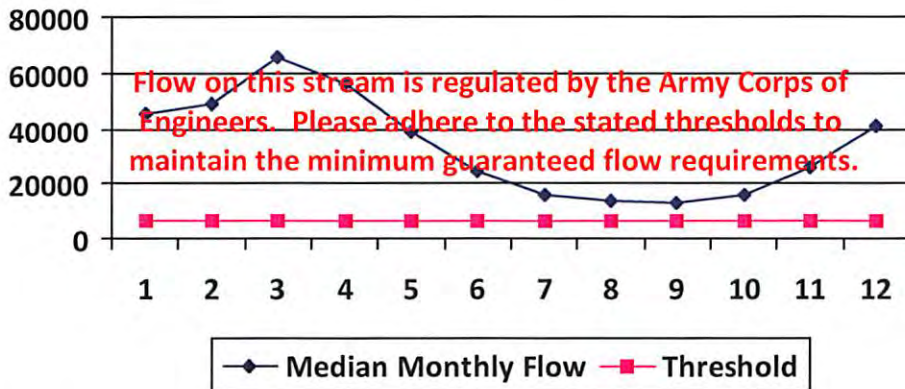
Reference Gaug: 9999999    Ohio River Station: Willow Island Lock & Dam

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):	1.78
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.



## Source Detail

WMP-01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

Source ID: 22272    Source Name: West Virginia American Water - Weston Water Treat  
 West Virginia American Water    Source Latitude: -  
 Source Longitude: -

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 104.83    County: Lewis

Anticipated withdrawal start date: 6/1/2013

Anticipated withdrawal end date: 6/1/2014

Endangered Species?     Mussel Stream?

Trout Stream?     Tier 3?

Regulated Stream?    Stonewall Jackson Dam

Proximate PSD?    Weston WTP

Gauged Stream?

Total Volume from Source (gal): 7,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

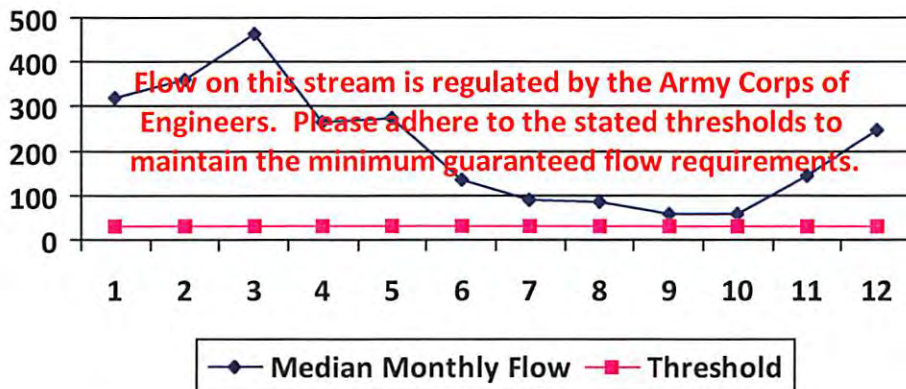
Reference Gaug: 3061000    WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.): 759.00

Gauge Threshold (cfs): 234

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	321.23	-	-
2	361.67	-	-
3	465.85	-	-
4	266.43	-	-
5	273.47	-	-
6	137.03	-	-
7	88.78	-	-
8	84.77	-	-
9	58.98	-	-
10	57.83	-	-
11	145.12	-	-
12	247.76	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -  
 Upstream Demand (cfs): 24.32  
 Downstream Demand (cfs): 0.00  
 Pump rate (cfs):  
 Headwater Safety (cfs): 8.08  
 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.

## Source Detail

WMP- 01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

Source ID: 22273    Source Name: Bethlehem Water Department  
Bethlehem Water Department

Source Latitude: -

Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000    County: Ohio

Anticipated withdrawal start date: 6/1/2013

Anticipated withdrawal end date: 6/1/2014

Total Volume from Source (gal): 3,000,000

Endangered Species?     Mussel Stream?

Trout Stream?     Tier 3?

Regulated Stream?    Ohio River Min. Flow

Proximate PSD?    City of Wheeling

Gauged Stream?

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

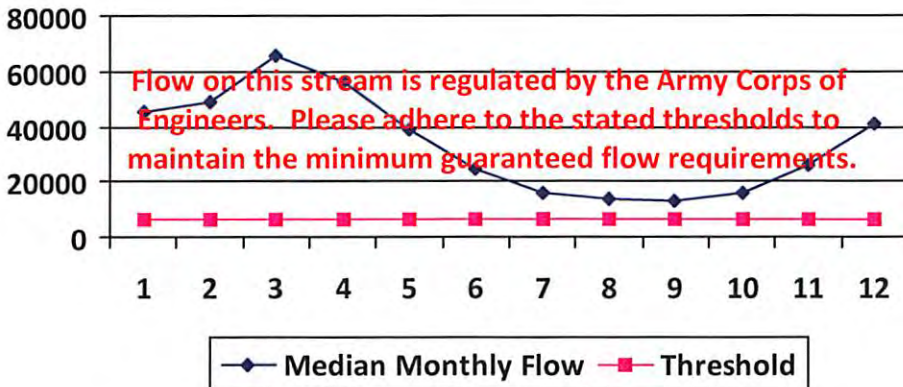
Reference Gaug: 9999999    Ohio River Station: Willow Island Lock & Dam

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):	-
Downstream Demand (cfs):	-
Pump rate (cfs):	-
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.

## Source Detail

WMP- 01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

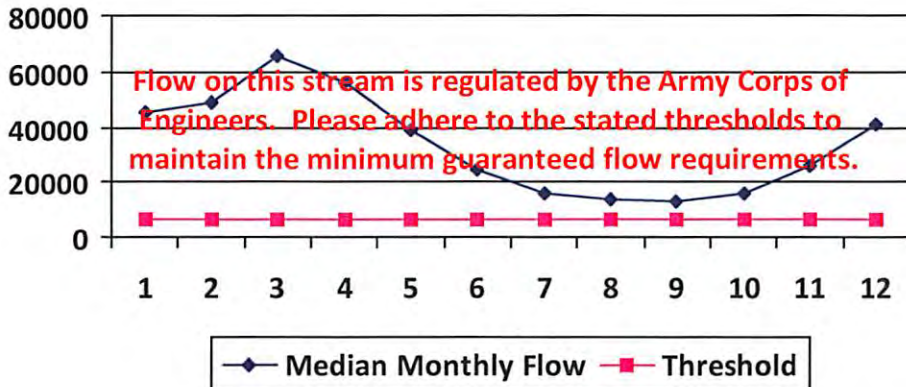
Source ID:	22274	Source Name	Wellsburg Water Department Wellsburg Water Department	Source Latitude:	-
				Source Longitude:	-
HUC-8 Code:	5030106			Anticipated withdrawal start date:	6/1/2013
Drainage Area (sq. mi.):	25000	County:	Brooke	Anticipated withdrawal end date:	6/1/2014
<input type="checkbox"/> Endangered Species?	<input checked="" type="checkbox"/> Mussel Stream?			Total Volume from Source (gal):	3,000,000
<input type="checkbox"/> Trout Stream?	<input type="checkbox"/> Tier 3?			Max. Pump rate (gpm):	
<input checked="" type="checkbox"/> Regulated Stream?	Ohio River Min. Flow			Max. Simultaneous Trucks:	
<input checked="" type="checkbox"/> Proximate PSD?	Wellsburg Water Department			Max. Truck pump rate (gpm):	
<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):	-
Downstream Demand (cfs):	-
Pump rate (cfs):	-
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
<hr/>	
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.

## Source Detail

WMP- 01374

API/ID Number: 047-051-01676

Operator: Noble Energy, Inc

MNDS9DHS1

Source ID: 22275    Source Name: Moundsville Water Board  
Moundsville Water Treatment Plant

Source Latitude: -  
Source Longitude: -

HUC-8 Code: 5030106  
Drainage Area (sq. mi.): 25000    County: Marshall

Anticipated withdrawal start date: 6/1/2013  
Anticipated withdrawal end date: 6/1/2014  
Total Volume from Source (gal): 3,000,000

- Endangered Species?     Mussel Stream?
- Trout Stream?     Tier 3?
- Regulated Stream?    Ohio River Min. Flow
- Proximate PSD?
- Gauged Stream?

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

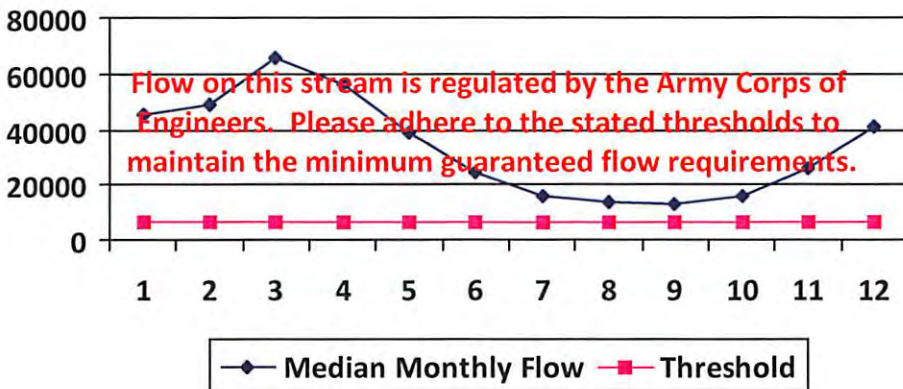
Max. Truck pump rate (gpm)

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):

Downstream Demand (cfs):

Pump rate (cfs):

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.





## Source Detail

WMP-01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

Source ID: 22278    Source Name: Wheeling Water Department  
 Wheeling Water Department

Source Latitude: -  
 Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000    County: Ohio

Anticipated withdrawal start date: 6/1/2013

Anticipated withdrawal end date: 6/1/2014

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 5,400,000

Trout Stream?     Tier 3?

Max. Pump rate (gpm):

Regulated Stream?    Ohio River Min. Flow

Max. Simultaneous Trucks:

Proximate PSD?    Wheeling Water Department

Max. Truck pump rate (gpm)

Gauged Stream?

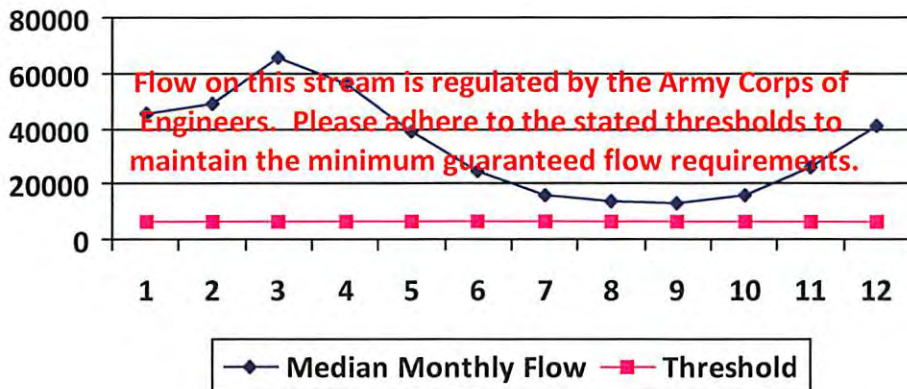
Reference Gaug: 9999999    Ohio River Station: Willow Island Lock & Dam

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):	-
Downstream Demand (cfs):	-
Pump rate (cfs):	-
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.

## Source Detail

WMP- 01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

Source ID: 22279    Source Name: Ohio County PSD  
Ohio county PSD

Source Latitude: -

Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000    County: Ohio

Anticipated withdrawal start date: 6/1/2013

Anticipated withdrawal end date: 6/1/2014

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 3,000,000

Trout Stream?     Tier 3?

Max. Pump rate (gpm):

Regulated Stream?    Ohio River Min. Flow

Max. Simultaneous Trucks:

Proximate PSD?    Wheeling Water Department

Max. Truck pump rate (gpm)

Gauged Stream?

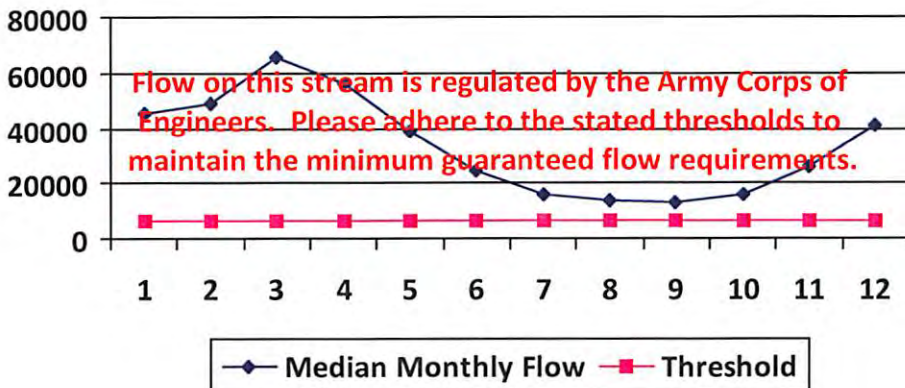
Reference Gaug: 9999999    Ohio River Station: Willow Island Lock & Dam

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):	-
Downstream Demand (cfs):	-
Pump rate (cfs):	-
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.

## Source Detail

WMP-01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

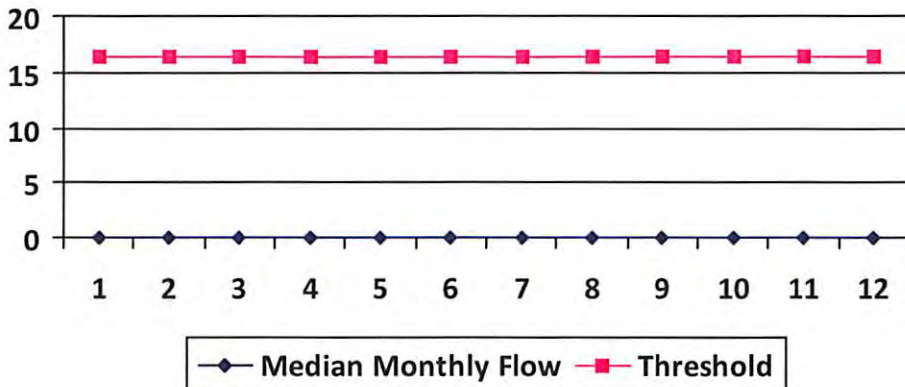
Source ID:	22266	Source Name	Wheeling Creek Pump Station 1 @ CNX Land Resour Consol Energy	Source Latitude:	39.95205	
				Source Longitude:	-80.56189	
HUC-8 Code:	5030106	Drainage Area (sq. mi.):	156.06	County:	Marshall	
<input type="checkbox"/> Endangered Species?	<input checked="" type="checkbox"/> Mussel Stream?	Anticipated withdrawal start date:				6/1/2013
<input type="checkbox"/> Trout Stream?	<input type="checkbox"/> Tier 3?	Anticipated withdrawal end date:				6/1/2014
<input type="checkbox"/> Regulated Stream?		Total Volume from Source (gal):				5,000,000
<input type="checkbox"/> Proximate PSD?		Max. Pump rate (gpm):				1,000
<input checked="" type="checkbox"/> Gauged Stream?		Max. Simultaneous Trucks:				0
		Max. Truck pump rate (gpm)				

Reference Gaug 3111955 Wheeling Creek near Majorville, WV

Drainage Area (sq. mi.) 152.00 Gauge Threshold (cfs): 16

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	0.00	18.66	-
2	0.00	18.66	-
3	0.00	18.66	-
4	0.00	18.66	-
5	0.00	18.66	-
6	0.00	18.66	-
7	0.00	18.66	-
8	0.00	18.66	-
9	0.00	18.66	-
10	0.00	18.66	-
11	0.00	18.66	-
12	0.00	18.66	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	16.43
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	2.23
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
<hr/>	
Min. Gauge Reading (cfs):	18.23
Passby at Location (cfs):	16.43

"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.

## Source Detail

WMP- 01374

API/ID Number: 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

Source ID: 22267    Source Name: Wheeling Creek Pump Station 2 @ CNX Land Resour  
CNX Land Resources, Inc.

Source Latitude: 39.949578

Source Longitude: -80.531256

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 152.4    County: Marshall

Anticipated withdrawal start date: 6/1/2013

Anticipated withdrawal end date: 6/1/2014

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 4,000,000

Trout Stream?     Tier 3?

Max. Pump rate (gpm): 1,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm)

Gauged Stream?

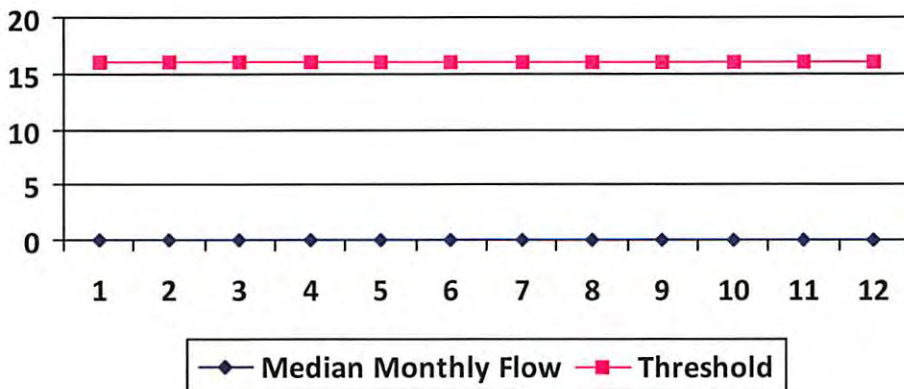
Reference Gaug: 3111955    Wheeling Creek near Majorsville, WV

Drainage Area (sq. mi.): 152.00

Gauge Threshold (cfs): 16

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	0.00	18.27	-
2	0.00	18.27	-
3	0.00	18.27	-
4	0.00	18.27	-
5	0.00	18.27	-
6	0.00	18.27	-
7	0.00	18.27	-
8	0.00	18.27	-
9	0.00	18.27	-
10	0.00	18.27	-
11	0.00	18.27	-
12	0.00	18.27	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	16.04
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	2.23
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	18.23
Passby at Location (cfs):	16.04

"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.



## Water Management Plan: Secondary Water Sources



WMP- 01374

API/ID Number 047-051-01676

Operator:

Noble Energy, Inc

MNDS9DHS1

### 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:	22280	Source Name	SHL #1 Impoundment		Source start date:	6/1/2013
					Source end date:	6/1/2014
Source Lat:	39.979696	Source Long:	-80.579465	County	Marshall	
Max. Daily Purchase (gal)				Total Volume from Source (gal):	3,400,000	

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-200

**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.

Source ID: 22281	Source Name	SHL #2 Impoundment (WV51-WPC-00001)		Source start date:	6/1/2013
				Source end date:	6/1/2014
	Source Lat:	39.966973	Source Long:	-80.561377	County
					Marshall
	Max. Daily Purchase (gal)		Total Volume from Source (gal):		4,100,000

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-201

Source ID: 22282	Source Name	SHL #3 Impoundment (WV51-WPC-00002)		Source start date:	6/1/2013
				Source end date:	6/1/2014
	Source Lat:	39.974133	Source Long:	-80.55527	County
					Marshall
	Max. Daily Purchase (gal)		Total Volume from Source (gal):		4,300,000

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-202

**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.

Source ID: 22283	Source Name	SHL #4 Impoundment (WV51-WPC-00003)		Source start date:	6/1/2013
				Source end date:	6/1/2014
	Source Lat:	39.963284	Source Long:	-80.562743	County
					Marshall
	Max. Daily Purchase (gal)		Total Volume from Source (gal):		4,100,000

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-204

**Purchased Water**

Source ID: 22277	Source Name	Bridgeport Ohio Water Department		Source start date:	6/1/2013
				Source end date:	6/1/2014
	Source Lat:	40.08348	Source Long:	-80.736488	County
	Max. Daily Purchase (gal)	200,000	Total Volume from Source (gal):		3,000,000

DEP Comments: Please ensure that purchases from this source are approved by, and completed in accordance with, requirements set forth by the State of Ohio Department of Environmental Protection.

**Important:**

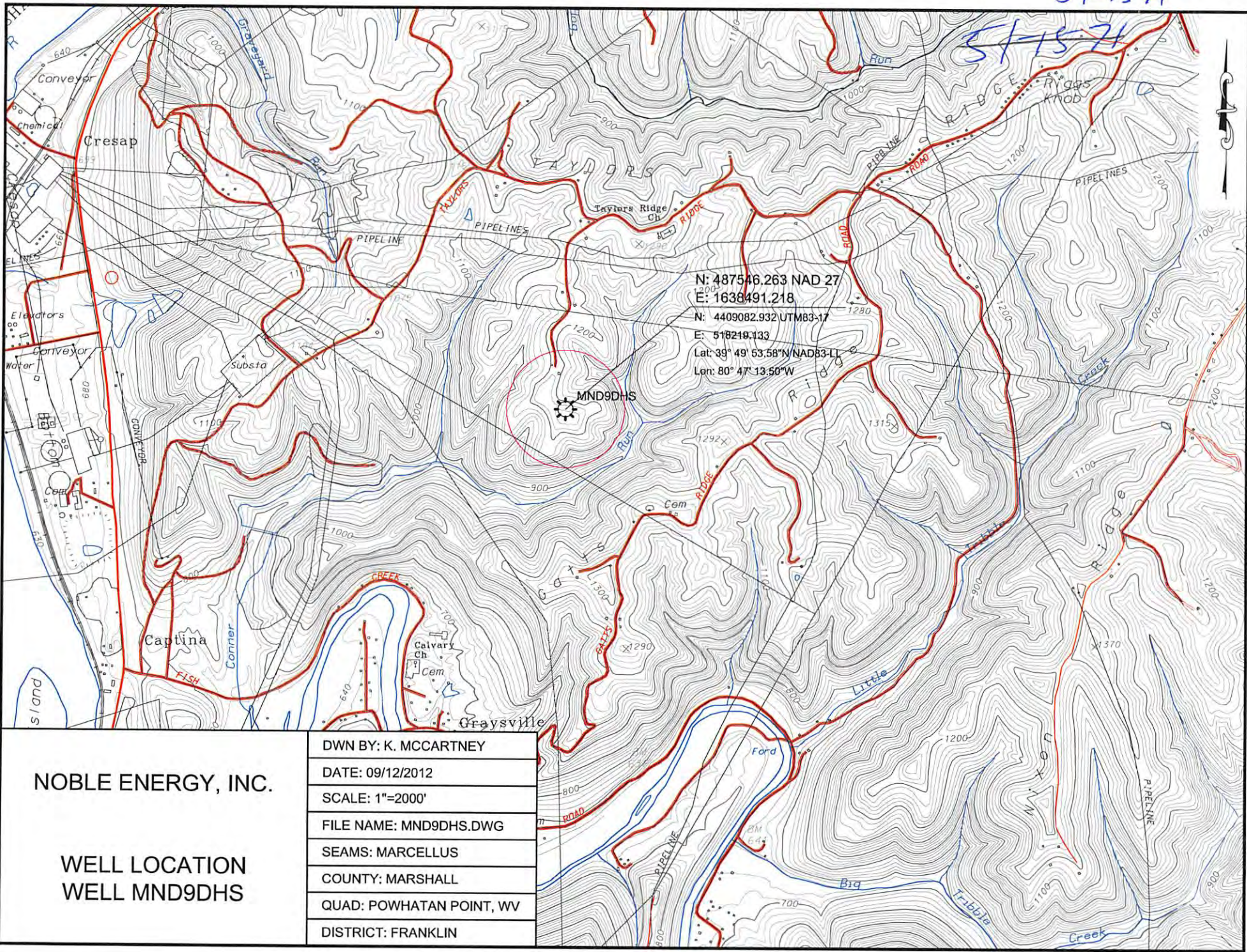
For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies.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

**Recycled Frac Water**

Source ID:	22284	Source Name	MNDS9 Wells	Source start date:	6/1/2013
				Source end date:	6/1/2014
	Source Lat:		Source Long:		County
	Max. Daily Purchase (gal)		Total Volume from Source (gal):		8,000,000
	DEP Comments:				





N: 487546.263 NAD 27  
 E: 1638491.218  
 N: 4409082.932 UTM83-17  
 E: 518210.133  
 Lat: 39° 49' 53.58" N NAD83-LL  
 Lon: 80° 47' 13.50" W

NOBLE ENERGY, INC.

WELL LOCATION  
 WELL MND9DHS

DWN BY: K. MCCARTNEY
DATE: 09/12/2012
SCALE: 1"=2000'
FILE NAME: MND9DHS.DWG
SEAMS: MARCELLUS
COUNTY: MARSHALL
QUAD: POWHATAN POINT, WV
DISTRICT: FRANKLIN

Well is located on topo map 625' feet south of Latitude: 39° 50' 00"

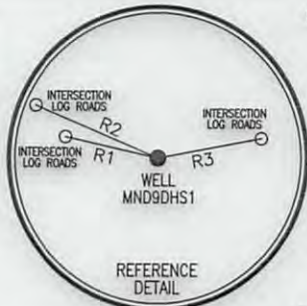
Well is located on topo map 10,466' feet west of Longitude: 80° 45' 00"

**LEGEND**

- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED.
- WATER SOURCE
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- PROPOSED HORIZONTAL WELL
- ROAD
- STREAM CENTER LINE
- WELLS WITHIN 3000'**
- EXISTING WELLS
- PLUGGED WELLS

**NOTES:**

1. There are no water wells or developed springs within 250' of proposed well.
2. There are no existing buildings within 625' of proposed well.
3. Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
4. There are no native trout streams within 300' of proposed well.
5. Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
6. It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. 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.

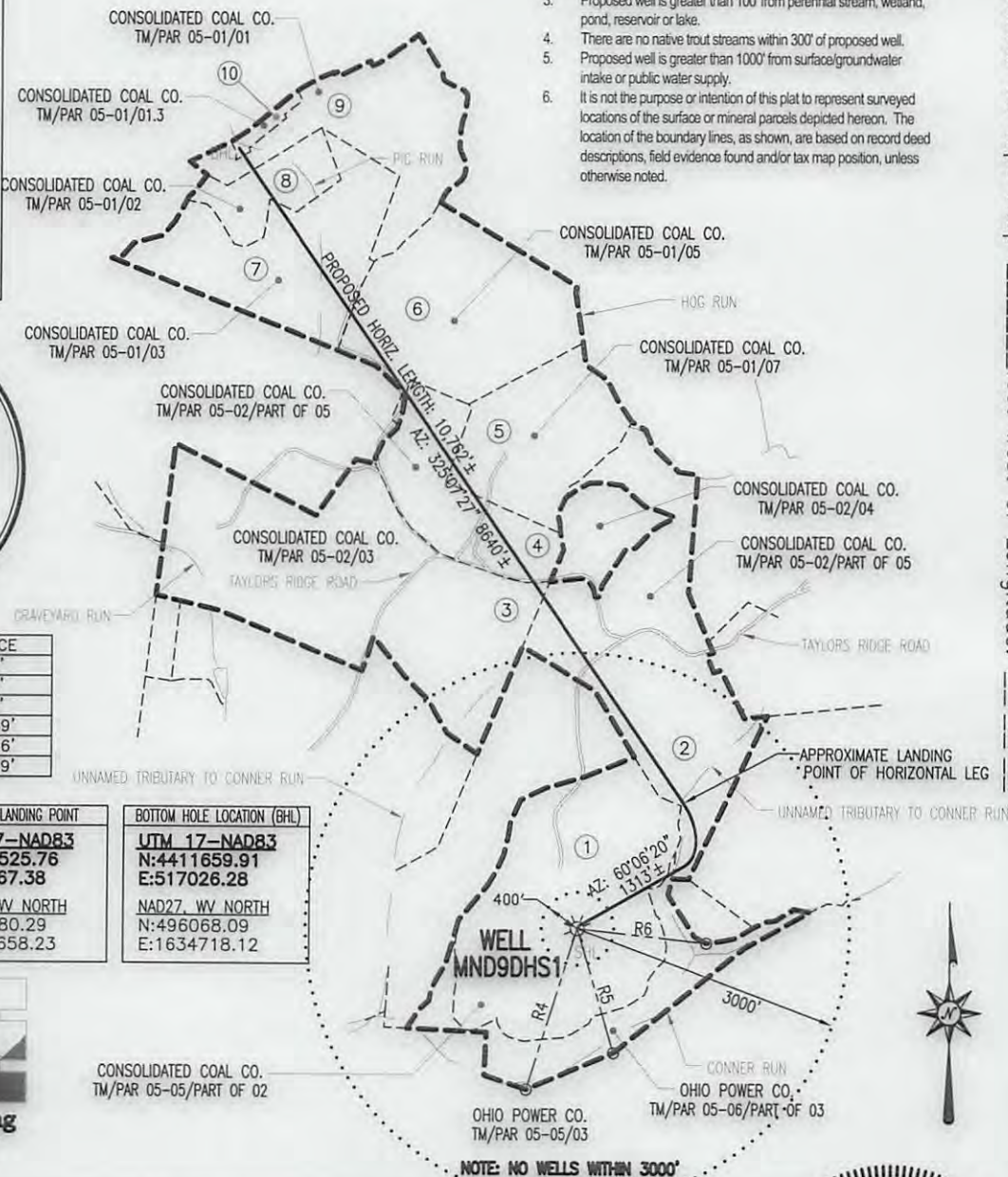


LINE	BEARING	DISTANCE
R1	N 77°18'40" W	198.22'
R2	N 67°07'03" W	278.50'
R3	N 79°25'33" E	220.82'
R4	S 17°44'45" W	1833.59'
R5	S 16°34'47" E	1406.96'
R6	S 83°53'15" E	1429.69'

SURFACE HOLE LOCATION (SHL)	APPROX. LANDING POINT	BOTTOM HOLE LOCATION (BHL)
UTM 17-NAD83 N:4409099.273 E:518222.862	UTM 17-NAD83 N:4409525.76 E:518567.38	UTM 17-NAD83 N:4411659.91 E:517026.28
NAD27, WV NORTH N:487599.68 E:1638504.35	NAD27, WV NORTH N:488980.29 E:1639658.23	NAD27, WV NORTH N:496068.09 E:1634718.12



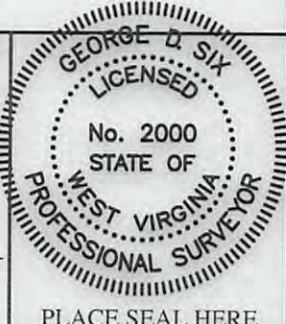
**Blue Mountain Engineering**  
11023 MASON DIXON HIGHWAY  
BURTON, WV 26562  
PHONE: (304) 662-6486



FILE #: MND9DHS1  
DRAWING #: MND9DHS1  
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: *[Signature]*  
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: AUGUST 27, 2013  
OPERATOR'S WELL #: MND9DHS1  
SERIAL No.: WV0510629HS  
API WELL #: 47 51 1676 H6A

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

STATE COUNTY PERMIT  
*Replacement for 51-1571 H6A*

WATERSHED: FISH CREEK ELEVATION: 1226.69'  
COUNTY/DISTRICT: MARSHALL / FRANKLIN QUADRANGLE: POWHATAN POINT, WV-OH 7.5'  
SURFACE OWNER: CONSOLIDATION COAL COMPANY ACREAGE: 123.244±  
OIL & GAS ROYALTY OWNER: SEE ATTACHED WW-6A1 ACREAGE: 771.489±

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: 6,599'± TMD: 16,157'±  
WELL OPERATOR NOBLE ENERGY INC. DESIGNATED AGENT STEVEN M. GREEN  
Address 333 TECHNOLOGY DRIVE, SUITE 116 Address 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 1001  
City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301