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 26, 2013

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-5101658, 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: SHL26 EHS
Farm Name: BENNETT, RUSSELL LEE AND B.
API Well Number: 47-5101658
Permit Type: Horizontal 6A Well
Date Issued: 06/26/2013

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

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.

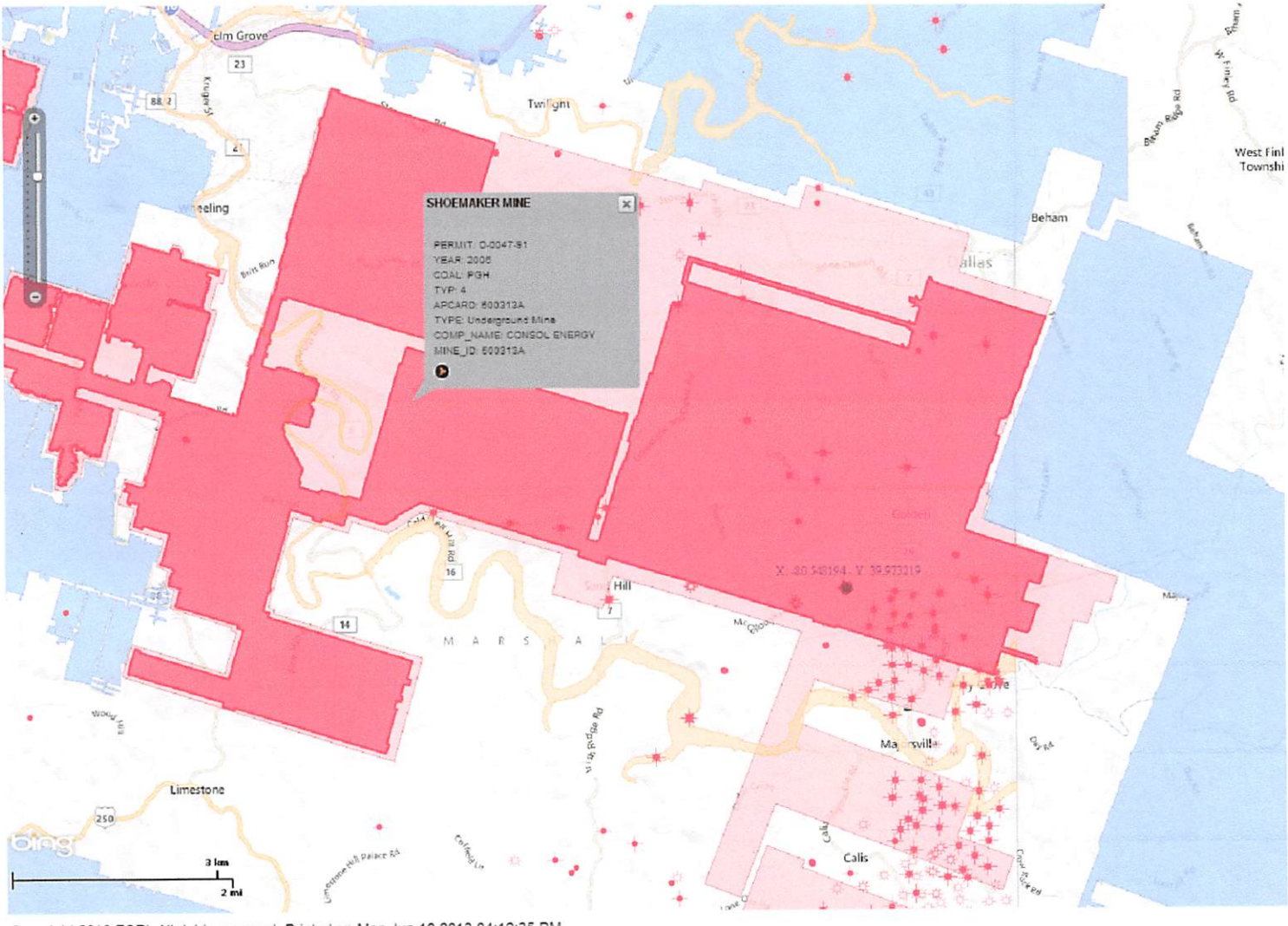
4. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations,* 64 C.S.R. 19. Operator is to contact 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.

51-01658

Map from a Flex Viewer applicatic

Powered by ArcGIS



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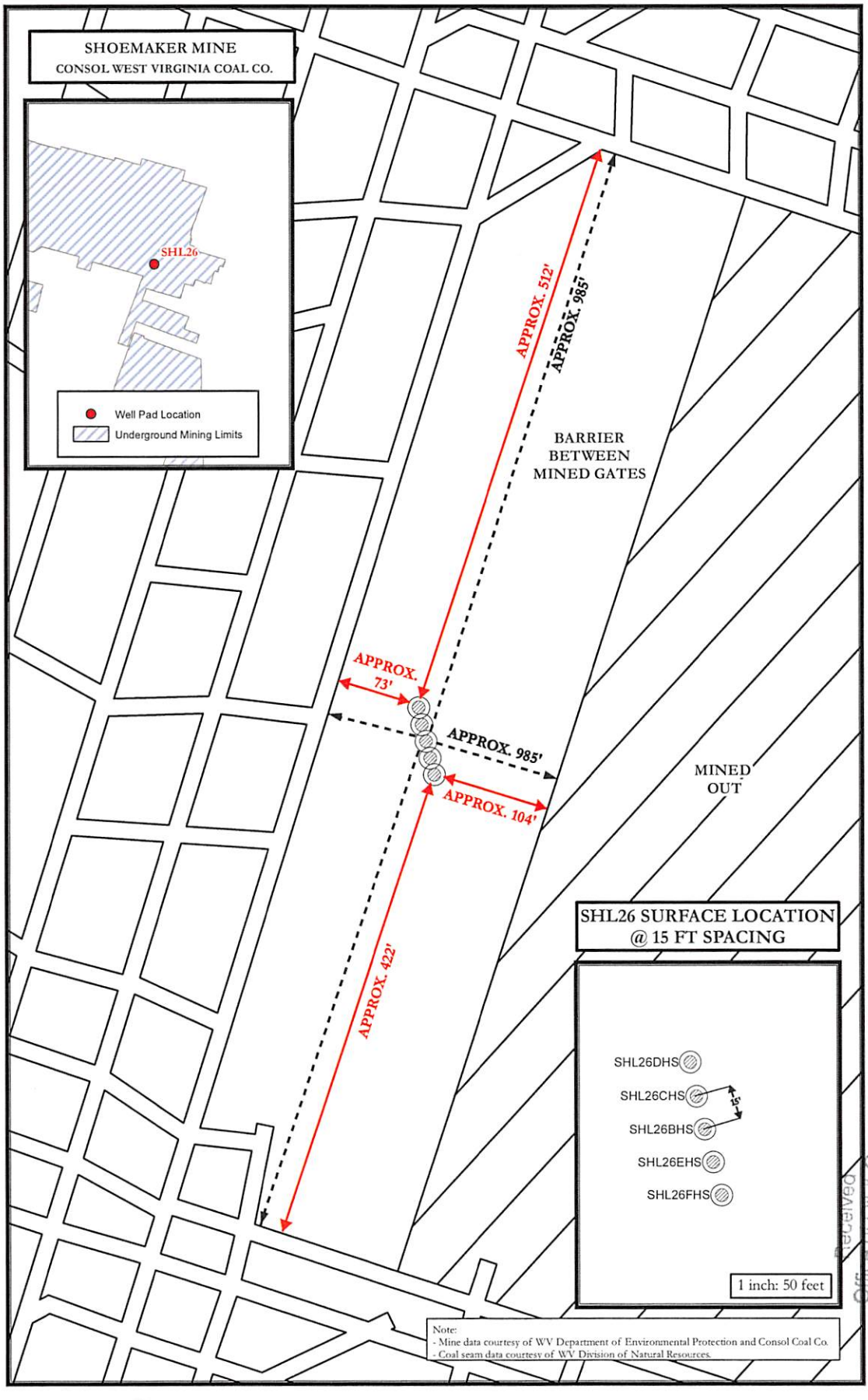
Drilling into Shoemaker mine
- pillar map enclosed

-LKC

51-01658



WRH 5-21-13

Received Office of Oil & Gas MAY 24 2013

SHL26 SITE SAFETY PLAN - WELLHEAD TOPHOLE LOCATION -	0 50 100 200 Feet	noble energy	Date: 4/9/2013
SHL26 Tophole Surface Hole Locations	Scale 1" = 100'	Disclaimer: All data is licensed for use by Noble Energy Inc. use only.	Author: ChristopherGlover
	Projection: NAD_1927_StatePlane_West_Virginia_North_FIPS_4701 Units: Foot US		4 / 5

Document Path: G:\Denver\GIS-Denver\Projects\District_30\Appalachia\MXDs\EHSR\Permitting\Sandhill\SHL26\D30_PA_WV_SHL26_Tophole_Mine_Locations.mxd

51-01658

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	494501907	51 Marshall	6 Sandhill	453 Majorsville
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: SHL 26 EHS Well Pad Name: SHL26HS

3 Elevation, current ground: 1314' Elevation, proposed post-construction: 1310'

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-6658', Thickness-50', Pressure-4427#

7) Proposed Total Vertical Depth: 6698'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 13,986'

10) Approximate Fresh Water Strata Depths: 198', 300'

11) Method to Determine Fresh Water Depth: Offset well data

12) Approximate Saltwater Depths: None noted for offsets

13) Approximate Coal Seam Depths: 761' to 771' Pittsburgh

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated, drilling in pillar-see mine maps

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, Shoemaker Mine at approx. 760' ✓

16) Describe proposed well work: Drill the vertical depth to the Marcellus at an estimated total vertical depth of approximately 6,698 feet.

Drill Horizontal leg - stimulate and produce the Marcellus Formation.

If we should encounter an unanticipated void we will install casing at a minimum of 20' below the void but not more than 50' below the void, 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. See attached list.

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MAY 2 1 2013

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 5.42 acres

19) Area to be disturbed for well pad only, less access road (acres): 3.28 acres

WRH 5-21-13

51-01658

WW - 6B
(3/13)

20) **CASING AND TUBING PROGRAM**

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	26"	N	LS	117#	40'	40'	CTS
Fresh Water	20"	N	LS	94#	400'	400'	CTS
Coal	13 3/8"	N	J-55	54.5#	1227'	1227'	CTS
Intermediate	9 5/8"	N	J-55	36#	3188'	3188'	CTS
Production	5 1/2"	N	P110	20#	13,986'	13,986'	TOC 200' above 9.625 shoe
Tubing							
Liners							

WRH
5-21-13

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	26"	30"	0.375		Type 1/Class A	1.2
Fresh Water	20"	26"	.438	2110	Type 1/Class A	1.2
Coal	13 3/8"	17 1/2"	.380	2730	Type 1/Class A	1.2
Intermediate	9 5/8"	12 3/8"	.352	3520	Type 1/Class A	1.19
Production	5 1/2"	8 3/4" & 8 1/2"	.361	12,640	Type 1/Class A	1.27
Tubing						
Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

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51-01658

WW - 6B
(3/13)

21) Describe centralizer placement for each casing string. No centralizers will be used with conductor casing. Surface casing will have bow spring centralizers on first 2 joints then every third joint to 100' from surface. Intermediate casing will have bow spring centralizers on first 2 joints then every third joint to 100' from surface. Production string will have a rigid bow spring every joint to KOP, rigid bow spring every third joint from KOP to top of cement.

22) Describe all cement additives associated with each cement type. Conductor-1.15% CaCl2. Surface-15.6 ppg Type 1 +2% XxL, 0.25# Lost Circ 20% Excess Yield=1.18 Intermediate- 15.6 ppg Class A +0.4% Ret, 0.15% Disp, 0.2% AntiFoam, 0.125#/sk Lost circ 30% Excess Yield=1.19 to surface. Production- 14.8 ppg class A 25:75:0 System +2.6% Cement extender, 0.7% Fluid Loss additive, 0.45% high temp retarder, 0.2% friction reducer 15% Excess Yield=1.27 TOC greater or equal to 200' above 9.625" shoe.

23) Proposed borehole conditioning procedures. Conductor-The hole is drilled w/air and casing is run on air. Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Surface-The hole is drilled w/air and casing is run on air. 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. Coal-The hole is drilled and cased w/air or on Freshwater based mud. 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 or SOBM and filled with KCl water once drilled to TD. Production-The hole is drilled with SOBM and once to TD, circulated at maximum 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.

*Note: Attach additional sheets as needed.

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51-01658

	Product Name	Purpose	Composition	CAS Number
Surface Cement	Calcium Chloride	Accelerator	Calcium Chloride, 96-98%	010043-52-4
	Cello Flake	Lost Circulation Material	No hazardous ingredient	N/A
	Premium NE-1	Cement	Gypsum, 5-10%	13397-24-5
			Calcium derivative (calcium carbonate), 1-5%	1317-65-3
			Calcium oxide, 1-5%	1305-78-8
			Magnesium oxide, 1-5%	1309-48-4
			Crystalline silica: Quartz (SiO2), 0-0.1%	14808-60-7
	Bentonite	Extender	Bentonite, 90-100%	1302-78-9
			Crystalline silica: Quartz (SiO2), 5-10%	14808-60-7
	FP-12L	Anti-foamer	Octamethylcyclotetrasiloxane, 0.1-1.0%	556-67-2
	EC-1	Expansive Additive	Calcium magnesium oxide, 60-100%	37247-91-9
	Granular Sugar	Retarder	Sucrose, 60-100%	57-50-1
	Surebond III-L	Extender	Sodium silicate, 38.3%	1344-09-8

	Product Name	Purpose	Composition	CAS Number
Intermediate Cement	Calcium Chloride	Accelerator	Calcium Chloride, 96-98%	010043-52-4
	Cello Flake	Lost Circulation Material	No hazardous ingredient	N/A
	Premium NE-1	Cement	Gypsum, 5-10%	13397-24-5
			Calcium derivative (calcium carbonate), 1-5%	1317-65-3
			Calcium oxide, 1-5%	1305-78-8
			Magnesium oxide, 1-5%	1309-48-4
			Crystalline silica: Quartz (SiO2), 0-0.1%	14808-60-7
	Bentonite	Extender	Bentonite, 90-100%	1302-78-9
			Crystalline silica: Quartz (SiO2), 5-10%	14808-60-7
	FP-12L	Anti-foamer	Octamethylcyclotetrasiloxane, 0.1-1.0%	556-67-2
	EC-1	Expansive Additive	Calcium magnesium oxide, 60-100%	37247-91-9
	Granular Sugar	Retarder	Sucrose, 60-100%	57-50-1
	Surebond III-L	Extender	Sodium silicate, 38.3%	1344-09-8

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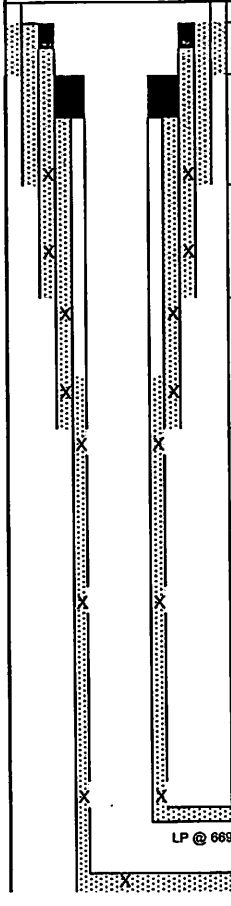
51-01658

noble energy

DRILLING WELL PLAN
SHL-26E-HS (Marcellus HZ)
Macellus Shale Horizontal
Marshall County, WV

		SHL-26E SHL (Lat/Long)	(538259.66N, 1706174.27E) (NAD27)
Ground Elevation	1310'	SHL-26E LP (Lat/Long)	(538719.64N, 1705069.82E) (NAD27)
Azm	325°	SHL-26E BHL (Lat/Long)	(544210.99N, 1701224.73E) (NAD27)



HOLE	CASING	GEOLOGY	MD	TVD	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS
30	20" 94#	Conductor	40	40	AIR	To Surface	N/A	Ensure the hole is clean at TD.	Stabilize surface fill/soil. Conductor casing = 0.25" wall thickness
26	20" 94#	Surface Casing	400	400	AIR	15.6 ppg Type 1 + 2% CaCl, 0.25# Lost Circ 30% Excess Yield = 1.18	Centralized every 3 joints to 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.	Surface casing = 0.438" wall thickness Burst=2730 psi
17 1/2	13-3/8" 54.5# J-55 BTC	Pittsburgh Coal	761	761	AIR	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
		Int. Casing	1227	1227					
12 3/8	9-5/8" 36# J-55 LTC	Big Lime	1795	1795	AIR	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	1875	1875					
		5th Sand Base	2938	2938					
		Int. Casing	3188	3188					
8.75" Vertical	5-1/2" 20# HCP-110 TXP BTC	Warren Sand		4380	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 10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	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 = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Java		5047					
		Angola		5275					
		Rhinestreet		5900					
8.75" Curve		Cashaqua		6316	12.0ppg-12.5ppg SOBM		Rigid Bow Spring every joint to KOP		
		Middlesex		6407					
		West River		6442					
		Burkett		6494					
		Tully Limestone		6517					
		Hamilton		6547					
8.75" - 8.5" Lateral		Marcellus		6658	12.0ppg-12.5ppg SOBM				
		TD	13986	6698					
		Onondaga		6708					

LP @ 6698' TVD / 7282' MD

8.75 / 8.5 Hole - Cemented Long String
5-1/2" 20# HCP-110 TXP BTC

+/-6704' ft Lateral

TD @ +/-6698' TVD
+/-13986' MD

X=centralizers

WRN
5-21-13

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Office of Oil & Gas

WW-9
(3/13)

Page _____ of _____

API Number 47 - 51 - 01658

Operator's Well No. SHL 26 EHS

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) Wheeling Creek Quadrangle Majorsville

Elevation 1314' County Marshall District Sandhill

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: Closed Loop-no pit will be utilized

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

Proposed Disposal Method For Treated Pit Wastes:

_____ Land Application
_____ Underground Injection (UIC Permit Number_____)
■ Reuse (at API Number TBD-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. Air thru intermediate string then SOBM

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

Additives to be used in drilling medium? Please see attached list

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

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

-Landfill or offsite name/permit number? Please see attached list

---

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.

Office of Oil & Gas

Company Official Signature Laura L. Adkins

Company Official (Typed Name) Laura L. Adkins

MAY 2 1 2013

Company Official Title Regulatory Analyst

Subscribed and sworn before me this 13 day of MAY, 20 13

MARIA A. YANNI / Maria A. Yanni Notary Public

My commission expires MAY 10, 2015

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Maria A. Yanni, Notary Public
Cecil Twp., Washington County
My Commission Expires May 10, 2015
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

51-01658

Site Water/Cuttings Disposal

Cuttings

Haul off Company:

Eap Industries, Inc. DOT # 0876278
1575 Smith Twp State Rd. Atlasburg PA 15004
1-888-294-5227

Disposal Locations:

Apex Environmental, LLC Permit # 06-08438
11 County Road 78
Amsterdam, OH 43903
740-543-4389

Westmoreland Waste, LLC Permit # 100277
111 Conner Lane
Belle Vernon, PA 15012
724-929-7694

Sycamore Landfill (Allied Waste) R30-07900105-2010
4301 Sycamore Ridge Road
Hurricane, WV 25526
304-562-2611

Water

Haul off Company:
Dynamic Structures, Clear Creek DOT # 720485
3790 State Route 7
New Waterford, OH 44445
330-892-0164

Disposal Location:

Solidification
Waste Management, Arden Landfill Permit # 100172
200 Rangos Lane
Washington, PA 15301
724-225-1589

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Solidification/Incineration
Soil Remediation, Inc. Permit # 02-20753
6065 Arrel-Smith Road
Lowelville, OH 44436

51-01658

Form WW-9

Operator's Well No. SHL 26 EHS

Noble Energy, Inc

Proposed Revegetation Treatment: Acres Disturbed 8.7 Prevegetation pH _____

Lime 2 to 3 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/acre

Seed Mixtures

Area I		Area II	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	40	Tall Fescue	40
Ladino Clover	5	Ladino Clover	5

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 Hendershot

Comments: _____

Title: Oil and Gas Inspector Date: _____

Field Reviewed? (Conductor-The hole) Yes ( ) No

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Office of Oil & Gas

Water Management Plan:
Primary Water Sources

WMP- 01292	API/ID Number:	047-051-01658	Operator:	Noble Energy, Inc
		SHL26EHS		

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 mutiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interepreted 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.

APPROVED JUN 2 5 2013

Source Summary

WMP-01292	API Number:	047-051-01658	Operator:	Noble Energy, Inc
		SHL26EHS		

Stream/River

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

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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** Owner: **CNX Land Resources, Inc.**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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:

WMP-01292	API Number:	047-051-01658	Operator:	Noble Energy, Inc
		SHL26EHS		

Purchased Water

- Source **West Virginia American Water - Weston Water Treatment Plant** Owner: **West Virginia American Water**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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** Owner: **Bethlehem Water Department**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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** Owner: **Wellsburg Water Department**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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** Owner: **Moundsville Water Treatment Plant**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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** Owner: **Dean's Water Service**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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** Owner: **Wheeling Water Department**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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**

WMP-01292 API Number: 047-051-01658 Operator: Noble Energy, Inc

SHL26EHS

Ground Water

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

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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** Owner: **Consol Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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** Owner: **Consol Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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

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

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
8/1/2013	8/2/2014	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-01292 API/ID Number: 047-051-01658 Operator: Noble Energy, Inc

SHL26EHS

Source ID: 19853 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: 8/1/2013

Anticipated withdrawal end date: 8/2/2014

Total Volume from Source (gal): 288,000

Max. Pump rate (gpm): 800

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

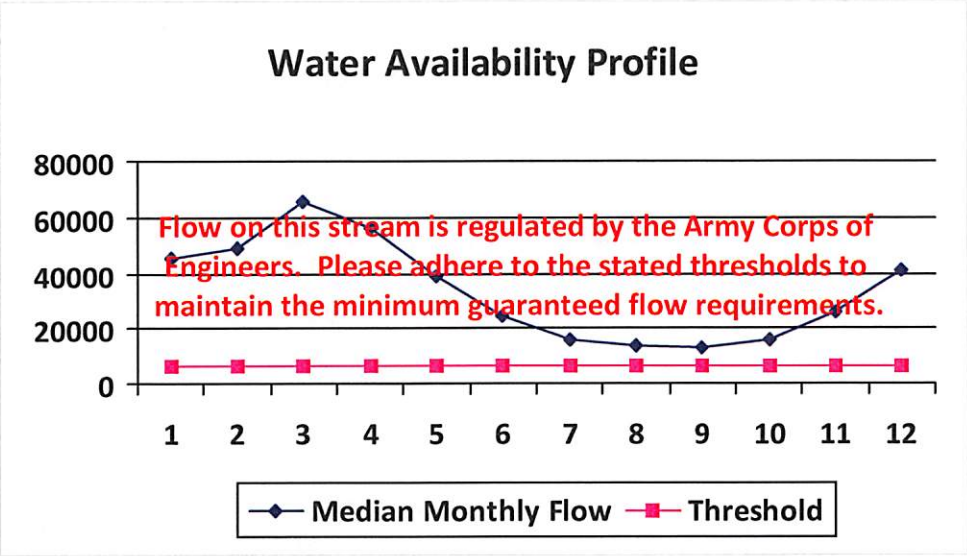
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] Gauged Stream?

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 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- 01292	API/ID Number:	047-051-01658	Operator:	Noble Energy, Inc

SHL26EHS

Source ID: 19854 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

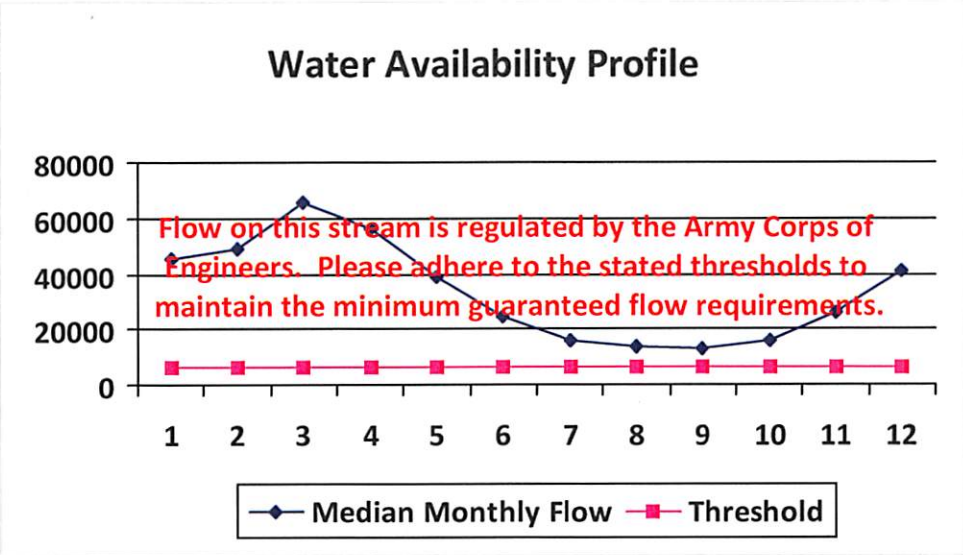
Anticipated withdrawal start date: 8/1/2013
Anticipated withdrawal end date: 8/2/2014
Total Volume from Source (gal): 288,000
Max. Pump rate (gpm): 800
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm)

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] 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 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-01292	API/ID Number:	047-051-01658	Operator:	Noble Energy, Inc

SHL26EHS

Source ID: 19855 Source Name: Shoemaker Groundwater Well #5
Consol Energy

Source Latitude: 40.021256
Source Longitude: -80.734568

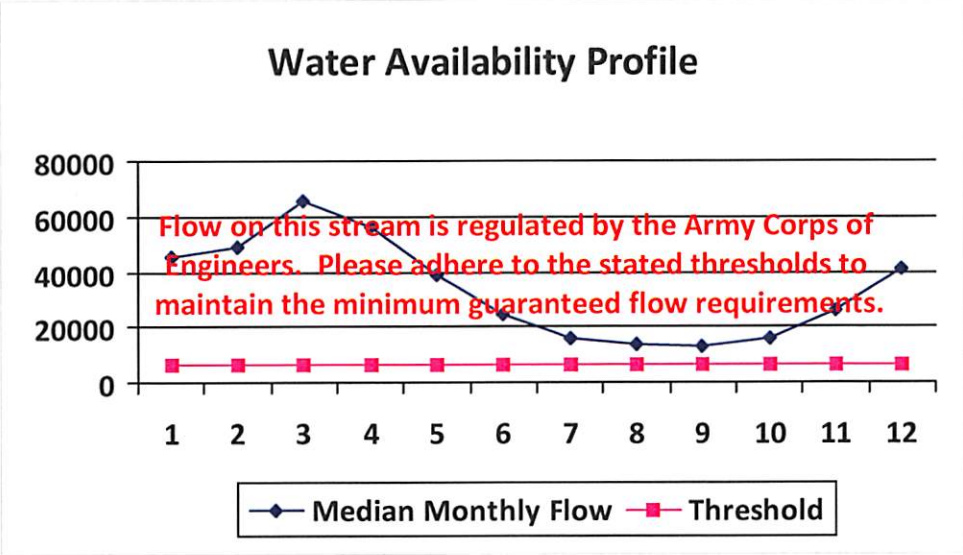
HUC-8 Code: 5030106
Drainage Area (sq. mi.): 25000 County: Marshall

Anticipated withdrawal start date: 8/1/2013
Anticipated withdrawal end date: 8/2/2014
Total Volume from Source (gal): 288,000
Max. Pump rate (gpm): 800
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm)

- [ ] Endangered Species?
- [ ] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] 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 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-01292 API/ID Number: 047-051-01658 Operator: Noble Energy, Inc

SHL26EHS

Source ID: 19856 Source Name: Shoemaker Groundwater Well #6

Consol Energy

Source Latitude: 40.02076

Source Longitude: -80.73397

HUC-8 Code: 5030106

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

Anticipated withdrawal start date: 8/1/2013

Anticipated withdrawal end date: 8/2/2014

Total Volume from Source (gal): 288,000

Max. Pump rate (gpm): 800

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

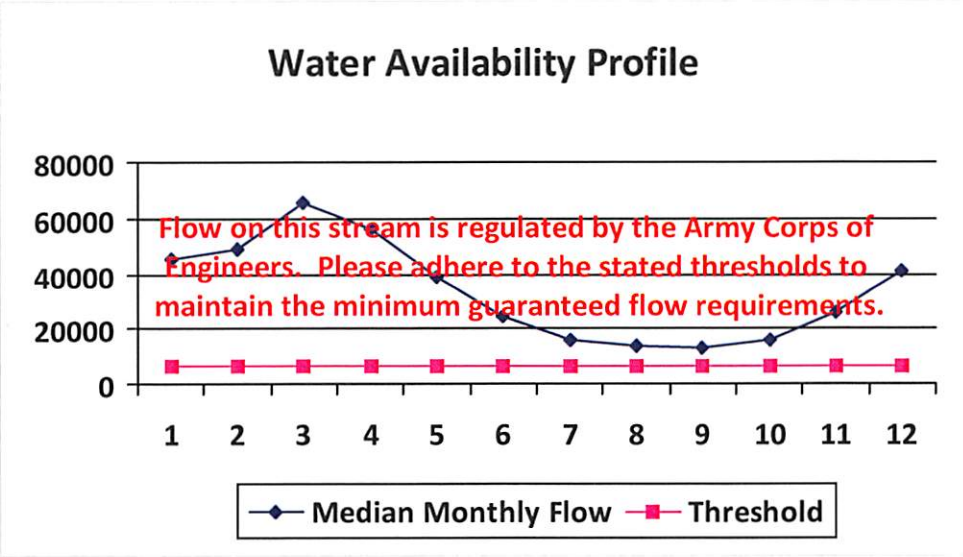
- [ ] Endangered Species?
- [ ] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] Gauged Stream?

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 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-01292	API/ID Number: 047-051-01658	Operator: Noble Energy, Inc

SHL26EHS

Source ID: 19857 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: 8/1/2013

Anticipated withdrawal end date: 8/2/2014

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

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

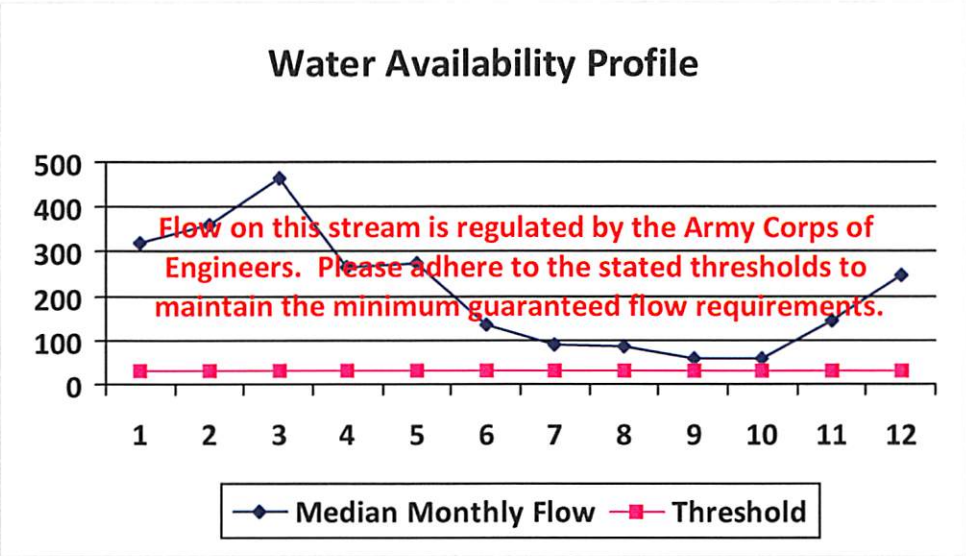
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Stonewall Jackson Dam
- [x] Proximate PSD? Weston WTP
- [x] Gauged Stream?

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 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-01292 | API/ID Number: 047-051-01658 | Operator: Noble Energy, Inc

SHL26EHS

Source ID: 19858 | Source Name: Bethlehem Water Department
Bethlehem Water Department

Source Latitude: -
Source Longitude: -

HUC-8 Code: 5030106

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

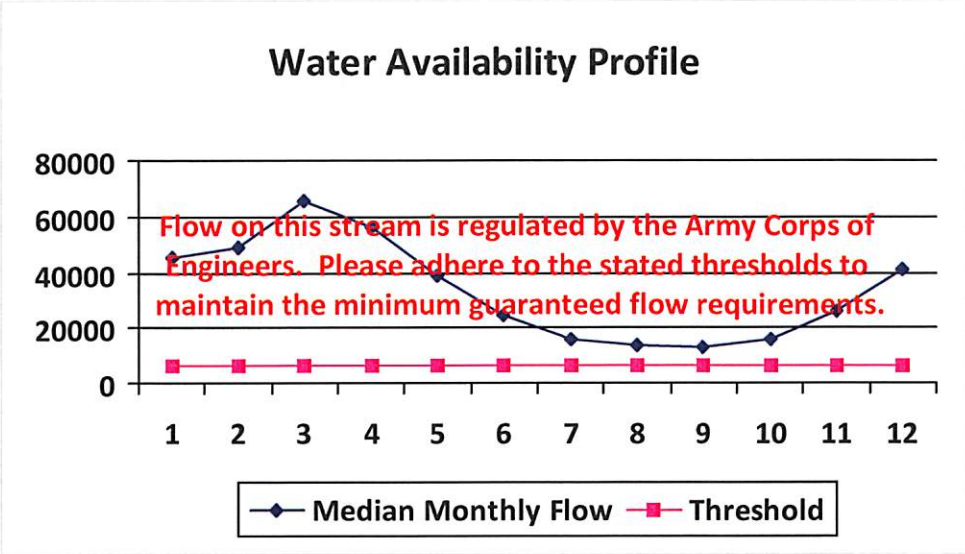
Anticipated withdrawal start date: 8/1/2013
Anticipated withdrawal end date: 8/2/2014
Total Volume from Source (gal): 3,000,000
Max. Pump rate (gpm):
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm)

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [x] Proximate PSD? City of Wheeling
- [x] 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 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-01292	API/ID Number:	047-051-01658	Operator:	Noble Energy, Inc
SHL26EHS				

Source ID: 19859 Source Name: Wellsburg Water Department
Wellsburg Water Department

Source Latitude: -
Source Longitude: -

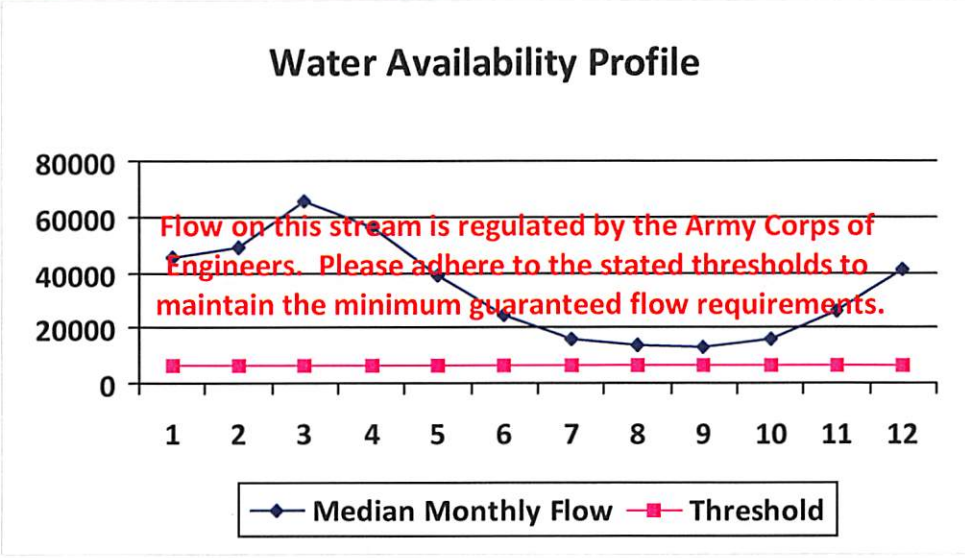
HUC-8 Code: 5030106
Drainage Area (sq. mi.): 25000 County: Brooke

Anticipated withdrawal start date: 8/1/2013
Anticipated withdrawal end date: 8/2/2014
Total Volume from Source (gal): 3,000,000
Max. Pump rate (gpm):
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm)

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [x] Proximate PSD? Wellsburg Water Department
- [x] 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 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-01292 API/ID Number: 047-051-01658 Operator: Noble Energy, Inc

SHL26EHS

Source ID: 19860 Source Name Moundsville Water Board
Moundsville Water Treatment Plant

Source Latitude: -
Source Longitude: -

HUC-8 Code: 5030106

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

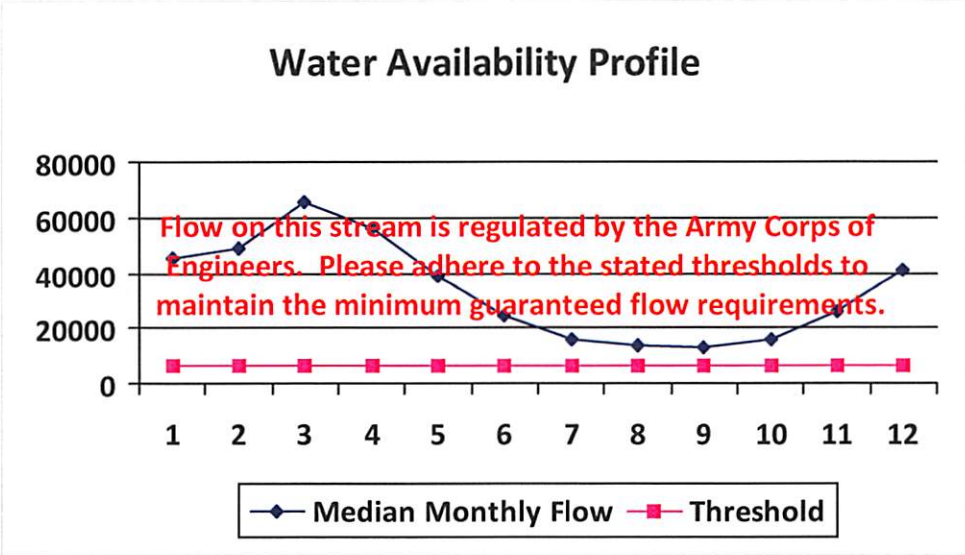
Anticipated withdrawal start date: 8/1/2013
Anticipated withdrawal end date: 8/2/2014
Total Volume from Source (gal): 3,000,000
Max. Pump rate (gpm):
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm)

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] 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 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-01292	API/ID Number: 047-051-01658	Operator: Noble Energy, Inc

SHL26EHS

Source ID: 19861 Source Name: Dean's Water Service
Dean's Water Service

Source Latitude: -
Source Longitude: -

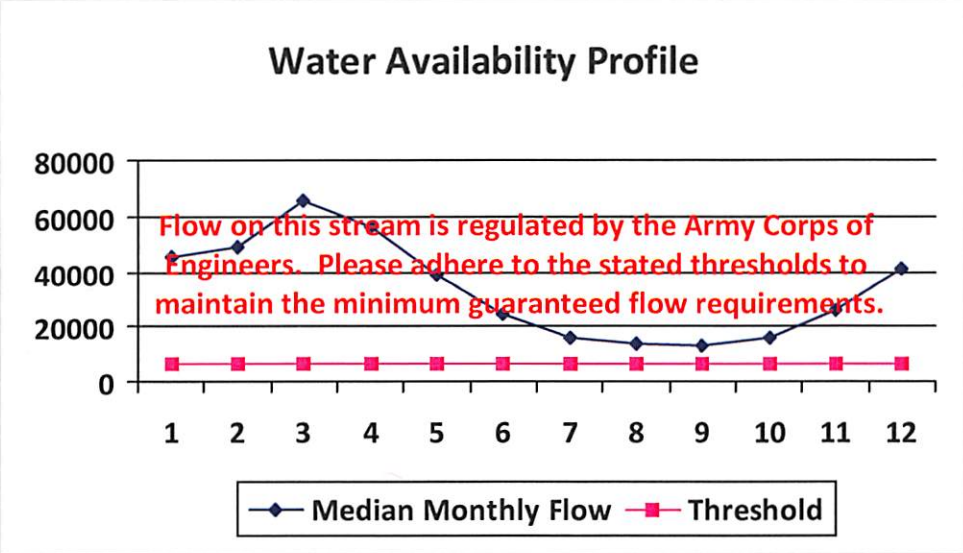
HUC-8 Code: 5030106
Drainage Area (sq. mi.): 25000 County: Ohio

Anticipated withdrawal start date: 8/1/2013
Anticipated withdrawal end date: 8/2/2014
Total Volume from Source (gal): 3,000,000
Max. Pump rate (gpm):
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm)

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] 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 Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
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-01292 | API/ID Number: 047-051-01658 | Operator: Noble Energy, Inc

SHL26EHS

Source ID: 19863 | Source Name: Wheeling Water Department
Wheeling Water Department

Source Latitude: -
Source Longitude: -

HUC-8 Code: 5030106

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

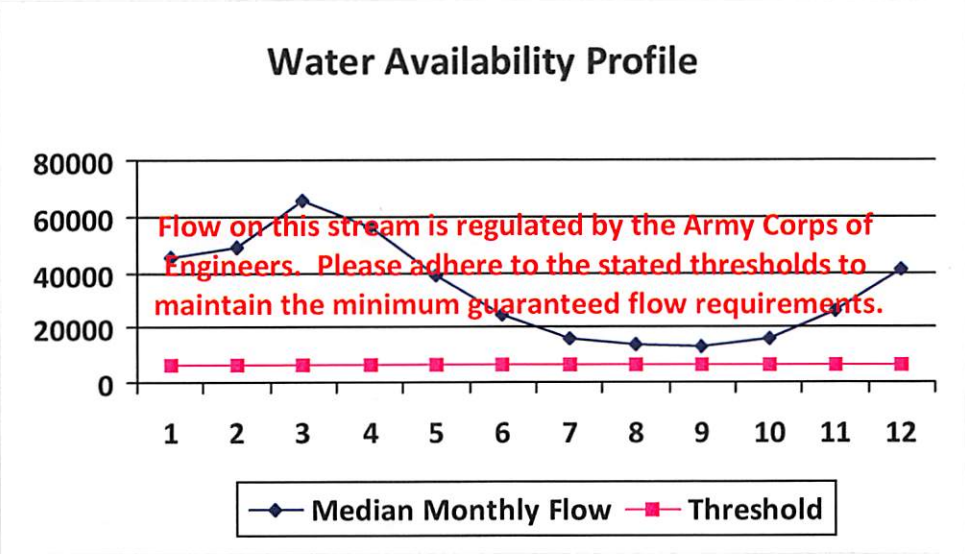
Anticipated withdrawal start date: 8/1/2013
Anticipated withdrawal end date: 8/2/2014
Total Volume from Source (gal): 5,400,000
Max. Pump rate (gpm):
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm)

- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [x] Proximate PSD? Wheeling Water Department
- [x] 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 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-01292 API/ID Number: 047-051-01658 Operator: Noble Energy, Inc

SHL26EHS

Source ID: 19851 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

Anticipated withdrawal start date: 8/1/2013

Anticipated withdrawal end date: 8/2/2014

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

Max. Pump rate (gpm): 1,000

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm)

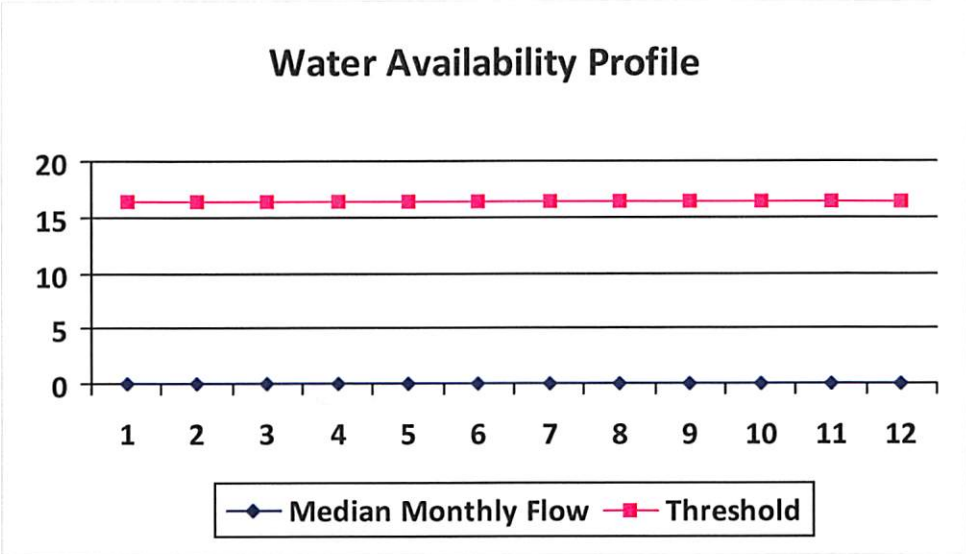
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [ ] Regulated Stream?
- [ ] Proximate PSD?
- [x] Gauged Stream?

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	18.66	-
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 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
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-01292	API/ID Number:	047-051-01658	Operator:	Noble Energy, Inc	
SHL26EHS					

Source ID: 19852 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: 8/1/2013
Anticipated withdrawal end date: 8/2/2014
Total Volume from Source (gal): 4,000,000
Max. Pump rate (gpm): 1,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm)

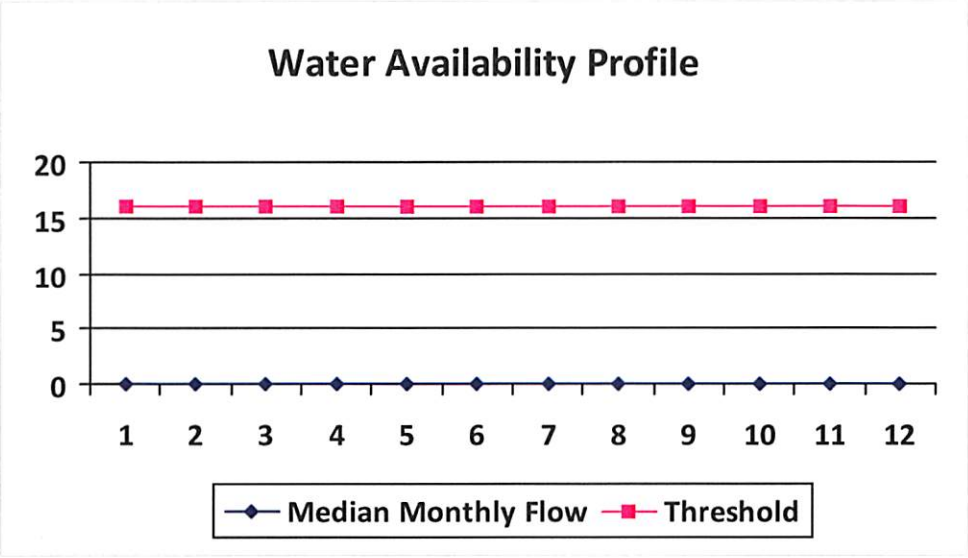
- [ ] Endangered Species?
- [ ] Trout Stream?
- [ ] Regulated Stream?
- [ ] Proximate PSD?
- [x] Gauged Stream?
- [x] Mussel Stream?
- [ ] Tier 3?

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 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-01292	API/ID Number	047-051-01658	Operator:	Noble Energy, Inc
		SHL26EHS		

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:	19864	Source Name	SHL #1 Impoundment	Source start date:	8/1/2013
				Source end date:	8/2/2014
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: 19865 Source Name SHL #2 Impoundment (WV51-WPC-00001)
Source start date: 8/1/2013
Source end date: 8/2/2014
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: 19866 Source Name SHL #3 Impoundment (WV51-WPC-00002)
Source start date: 8/1/2013
Source end date: 8/2/2014
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: 19867 Source Name SHL #4 Impoundment (WV51-WPC-00003) Source start date: 8/1/2013
Source end date: 8/2/2014

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: 19862 Source Name Bridgeport Ohio Water Department Source start date: 8/1/2013
Public Water Provider Source end date: 8/2/2014

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: 19868 Source Name Various

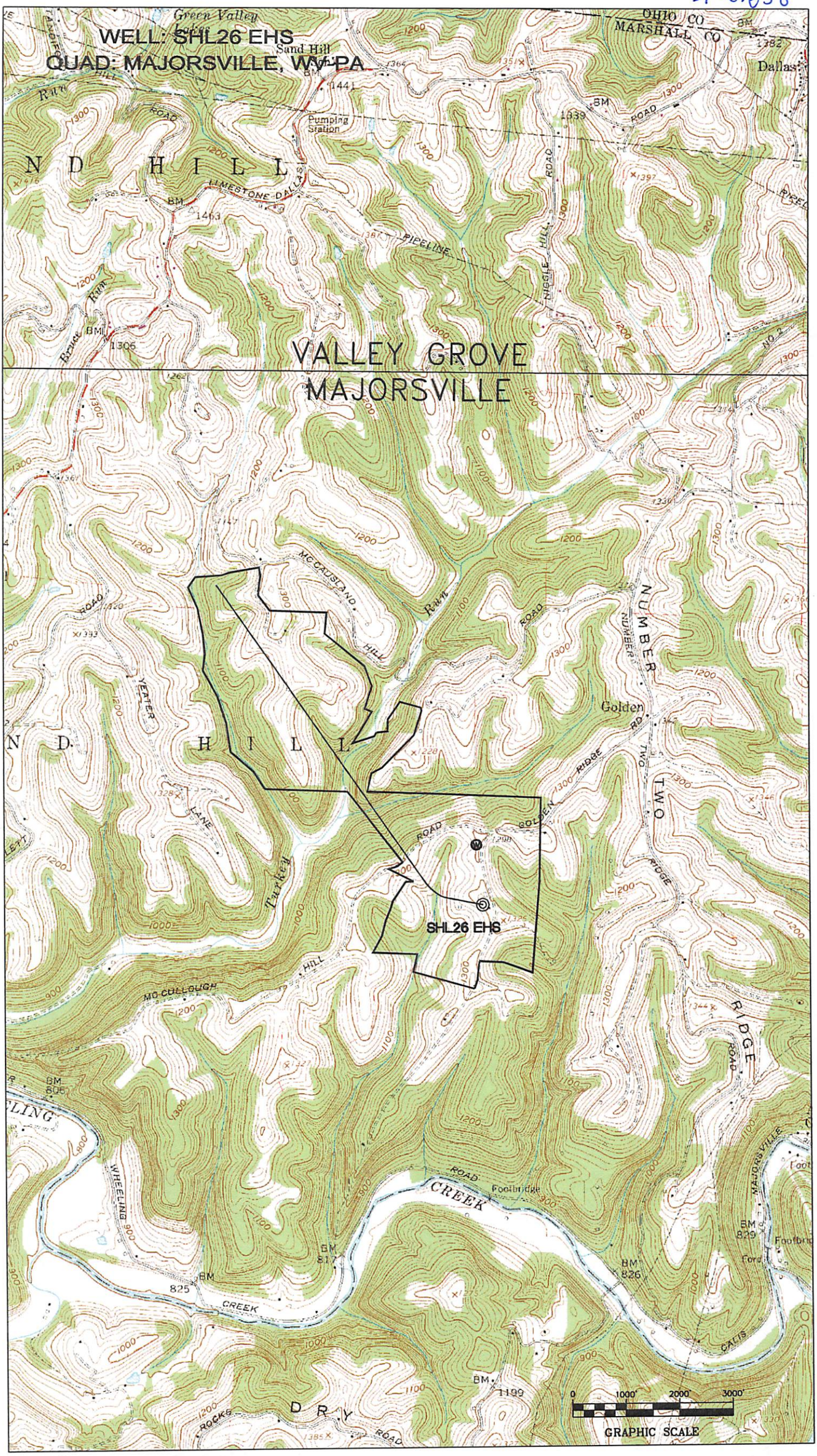
Source start date: 8/1/2013
Source end date: 8/2/2014

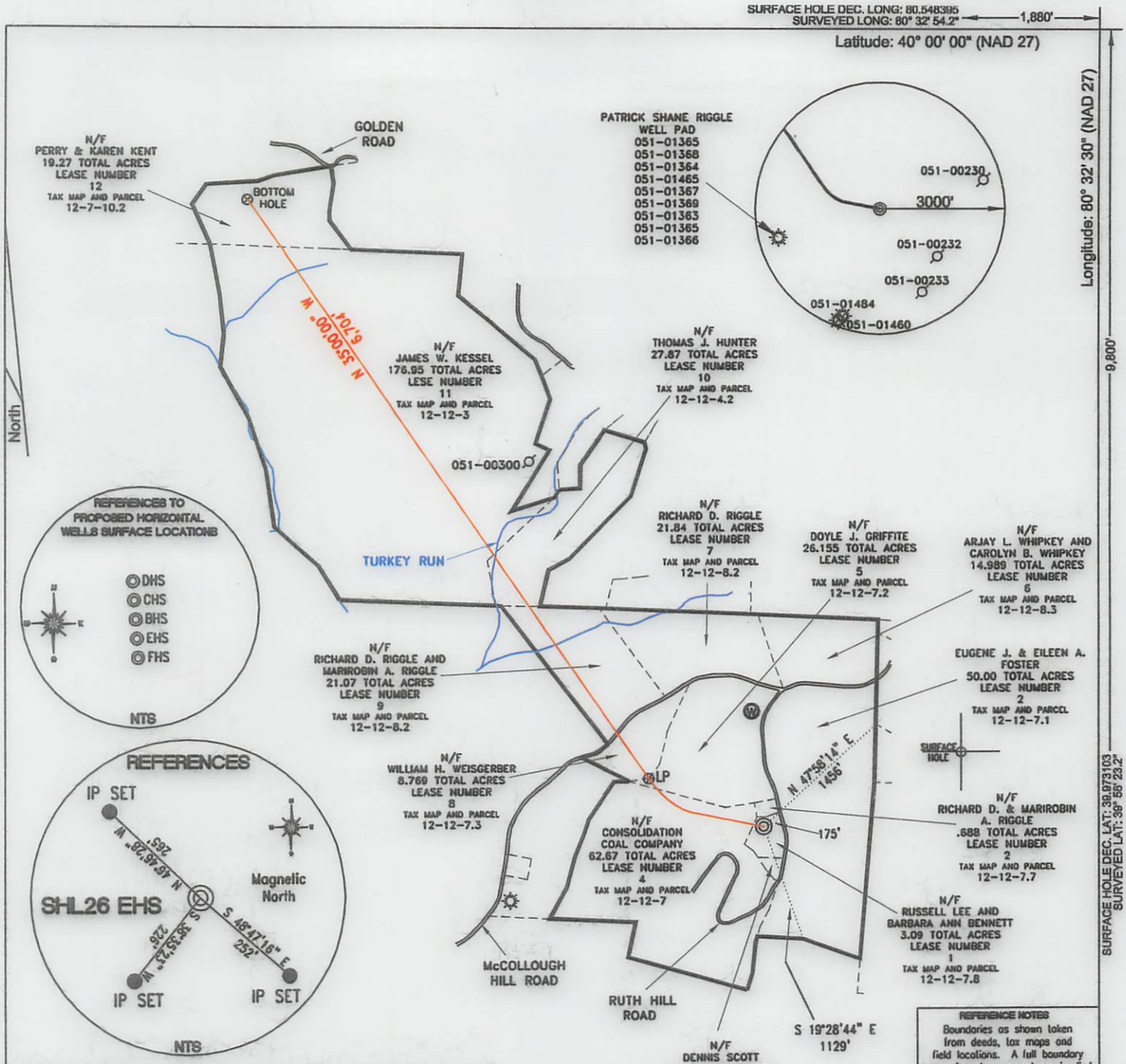
Source Lat: Source Long: County

Max. Daily Purchase (gal) Total Volume from Source (gal): 8,000,000

DEP Comments:

51-01658


WELL: SHL26 EHS
QUAD: MAJORSVILLE, WV-PA
VALLEY GROVE
MAJORSVILLE
SHL26 EHS
GRAPHIC SCALE
0 1000' 2000' 3000'



SURFACE HOLE LOCATION	LANDING POINT LOCATION	BOTTOM HOLE LOCATION
UTM 17-NAD 83	UTM 17-NAD 83	UTM 17-NAD 83
N) 4424878.0	N) 4425012.5	N) 4426665.8
E) 538581.6	E) 538242.7	E) 537043.3
NAD 27, WV NORTH	NAD 27, WV NORTH	NAD 27, WV NORTH
N) 538259.47	N) 538719.64	N) 544210.99
E) 1706174.38	E) 1705069.82	E) 1701224.73

REFERENCE NOTES

Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records Ohio County, West Virginia MAY 2013 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS Drafted by: E.A.M.

FILE #: NOB 002

DRAWING #: 2216

SCALE: PLAT - 1" = 1400' TICK MARK - 1" = 2000'

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed:

L.L.S. #2124 : Ernest J. Benchek III

ERNEST J. BENCHEK III
LICENSED
No. 2124
STATE OF WEST VIRGINIA
PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: MAY 22, 2013

OPERATOR'S WELL #: SHL26 EHS

API WELL #: 47 (STATE) 51 (COUNTY) 1658 H6A (PERMIT)

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

WATERSHED: WHEELING CREEK

ELEVATION: 1,320'

COUNTY/DISTRICT: MARSHALL / SAND HILL

QUADRANGLE: MAJORSVILLE WV-PA

SURFACE OWNER: RUSSELL LEE AND BARBARA ANN BENNETT

ACREAGE: 3.09 +/-

OIL & GAS ROYALTY OWNER: RUSSELL LEE AND BARBARA ANN BENNETT

ACREAGE: 326.574 +/-

LEASE NUMBERS:

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

TARGET FORMATION: MARCELLUS

ESTIMATED DEPTH: TVD: 6,698' TMD: 13,986'

WELL OPERATOR: NOBLE ENERGY, INC.

DESIGNATED AGENT: STEVEN M. GREEN

ADDRESS: 333 TECHNOLOGY DRIVE SUITE 116

ADDRESS: 500 VIRGINIA STREET EAST

CITY: CANONSBURG STATE: PA ZIP CODE: 15317

CITY: CHARLESTON STATE: WV ZIP CODE: 25301