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 19, 2013

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-5101640, 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: SHL 13DHS
Farm Name: HEMSLEY, PAUL H. & ANNETTE
API Well Number: 47-5101640
Permit Type: Horizontal 6A Well
Date Issued: 06/19/2013

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.

5101640

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	Marshall (51)	Sand Hill (06)	Valley Grove (648)
	Operator ID	County	District	Quadrangle

2) Operator's Well Number: SHL13DHS Well Pad Name: SHL13HS

3 Elevation, current ground: 1288.96 Elevation, proposed post-construction: 1283'

4) Well Type: (a) Gas ■ Oil _____ Underground Storage _____

Other _____

(b) If Gas: Shallow ■ Deep _____

Horizontal ■

5) Existing Pad? Yes or No: Yes

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):

Target - Marcellus, Depth - 6741', Thickness - 50', Pressure - 2912#

7) Proposed Total Vertical Depth: 6781'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 12647'

10) Approximate Fresh Water Strata Depths: 561' 763'

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

12) Approximate Saltwater Depths: 1600'

13) Approximate Coal Seam Depths: Mahoning - 1266.74' - 1269.77', Pittsburgh 763' - 785.04 (drilling into pillar)

14) Approximate Depth to Possible Void (coal mine, karst, other): Pittsburgh 763 - 785.04 (Drilling into Pillar)

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 see attached mine map

16) Describe proposed well work: Drill the vertical depth to the estimated KOP of 6,781 feet. Drill Horizontal Well in Marcellus Formation to an estimated length including the curve of 7577 feet. Total measured depth of 12647feet.

**If a unanticipated void is encountered we will set place baskets at least 30' but not more than 50' below bottom of void 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.

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18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 18.6 acres

19) Area to be disturbed for well pad only, less access road (acres): 10 acres

WRN 4-25-13

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20) **CASING AND TUBING PROGRAM**

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	30"	N	J55	94.0	40'	40'	CTS
Fresh Water	20"	N	J55	94.0	400'	400'	CTS
Coal	13 3/8"	N	J55	54.5	873'	873'	CTS
Intermediate	9 5/8"	N	J55	36.0	3218'	3218'	CTS
Production	5 1/2"	N	P110	20.0	12647'	12647'	TOC 200' above 9.625" shoe
Tubing							
Liners							

LRH
4-25-13

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	30"	36"	.25		Type 1	CTS
Fresh Water	20"	26"	.438	2730	Type 1	1.18
Coal	13 3/8"	17 1/2"	.380	2730	Type 1	1.18
Intermediate	9 5/8"	12 3/8"	.352	3520	Class A	1.19
Production	5 1/2"	8 3/4"	.361	12640	Class A	1.27
Tubing						
Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

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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 one per joint to approximately 200 feel above the gas storage zone, then every third joint to 100 feet from surface. Production - Rigid bow spring centralizer on first joint then every 2 casing joints (free floating) through the lateral and the curve up to approximately 2450 feet.

22) Describe all cement additives associated with each cement type. Conductor - 1.15% CaCl2. Fresh Water - 1.15% CaCl2. Coal - 1.15% CaCl2, 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 - The hole is drilled w/ air and 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 drilled to TD. The well is conditioned with KCl circulation prior to running casing. Once casing is at setting depth, the well is circulated

*Note: Attach additional sheets as needed.

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 cemen

WRH
4-25-13

WW-9
(3/13)

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API Number 47 - 051 - 01640

Operator's Well No. SHL13DHS

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) Turkey Run Quadrangle Valley Grove

Elevation 1288.96 County Marshall District Sand Hill

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

Will a pit be used for drill cuttings? Yes _____ No X

If so, please describe anticipated pit waste: None - Closed Loop System

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

Proposed Disposal Method For Treated Pit Wastes:

_____ Land Application
_____ Underground Injection (UIC Permit Number _____)
■ Reuse (at API Number at 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 and Freshwater / lateral SOBM

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

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

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

Company Official (Typed Name) Dee Swiger

Company Official Title Regulatory Analyst

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MAY 02 2013
WV Department of Environmental Protection

Subscribed and sworn before me this 1 day of May, 20 13

Stacey M. Gratkowski
Notary Public

My commission expires 5-4-15

NOTARIAL SEAL
STACEY M GRATKOWSKI
Notary Public
NORTH STRABANE TWP., WASHINGTON CNTY
My Commission Expires May 4, 2015

5101640

Form WW-9

Operator's Well No. SHL13DHS

Noble Energy, Inc.

Proposed Revegetation Treatment: Acres Disturbed _____ Prevegetation pH _____

Lime 2 to 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	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: [signature]

Comments: _____

Title: Oil and Gas Inspector Date: 4-25-13

Field Reviewed? (✓) Yes ( ) No

Conductor - The hole

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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

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

Solidification/Incineration
Soil Remediation, Inc. Permit # 02-20753
6065 Arrel-Smith Road
Lowelville, OH 44436
330-536-6825

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Chemical List Including CAS#'s

Type: Friction Reducer (DWP-612)
Chemical Component as listed on MSDS: Long Chain Polyacrylamide
CAS: N/A

Type: Biocide (DWP-944)
1st Chemical Component as listed on MSDS: 2,2-Dibromo-3-nitrilopropionamide
CAS: 10222-01-2
2nd Chemical Component as listed on MSDS: Polyethylene Glycol Mixture
CAS: 25322-68-3

Type: Scale Inhibitor (DAP-901)
1st Chemical Component as listed on MSDS: Methanol
CAS: 67-56-1
2nd Chemical Component as listed on MSDS: Phosphoric Acid Ammonium Salt
CAS: Trade Secret
3rd Chemical Component as listed on MSDS: Ammonium Chloride
CAS: 12125-02-9
4th Chemical Component as listed on MSDS: Organic Phosphonate
CAS: Trade Secret
5th Chemical Component as listed on MSDS: Amine Salt
CAS: Trade Secret
6th Chemical Component as listed on MSDS: Oxyalkylated Polyamine
CAS: Trade Secret

Type: Surfactant (DWP-938)
Chemical Component as listed on MSDS: Soap
CAS: N/A

Type: Hydrochloric Acid
Chemical Component as listed on MSDS: Hydrochloric Acid
CAS: 7647-01-0

Type: PA Breaker (DWP-690)
Chemical Component as listed on MSDS: Hydrogen Peroxide
CAS: Trade Secret

Type: Gel Slurry (DWP-111)
Chemical Component as listed on MSDS: Viscosifier
CAS: N/A

Type: Oxidizer Breaker (DWP-901)
Chemical Component as listed on MSDS: Ammonium Persulfate
CAS: 7727-54-0

Type: Buffer (DWP-204)
Chemical Component as listed on MSDS: Formic Acid
CAS: 64-18-6

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Water Management Plan:
Primary Water Sources

WMP-01235	API/ID Number:	047-051-01640	Operator:	Noble Energy, Inc
		SHL13DHS		

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 1 2 2013

Source Summary

WMP- 01235	API Number:	047-051-01640	Operator:	Noble Energy, Inc
		SHL13DHS		

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:
5/20/2013	5/20/2014	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:
5/20/2013	5/20/2014	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- 01235	API Number:	047-051-01640	Operator:	Noble Energy, Inc
		SHL13DHS		

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:
5/20/2013	5/20/2014	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:
5/20/2013	5/20/2014	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:
5/20/2013	5/20/2014	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:
5/20/2013	5/20/2014	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:
5/20/2013	5/20/2014	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:
5/20/2013	5/20/2014	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** Owner: **Ohio county PSD**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
5/28/2013	5/28/2015	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-01235 API Number: 047-051-01640 Operator: Noble Energy, Inc

SHL13DHS

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:
5/20/2013	5/20/2014	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:
5/20/2013	5/20/2014	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:
5/20/2013	5/20/2014	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** Owner: **Consol Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
5/20/2013	5/20/2014	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- 01235 | API/ID Number: 047-051-01640 | Operator: Noble Energy, Inc

SHL13DHS

Source ID: 17982 | 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: 5/20/2013

Anticipated withdrawal end date: 5/20/2014

Total Volume from Source (gal): 288,000

Max. Pump rate (gpm): 800

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

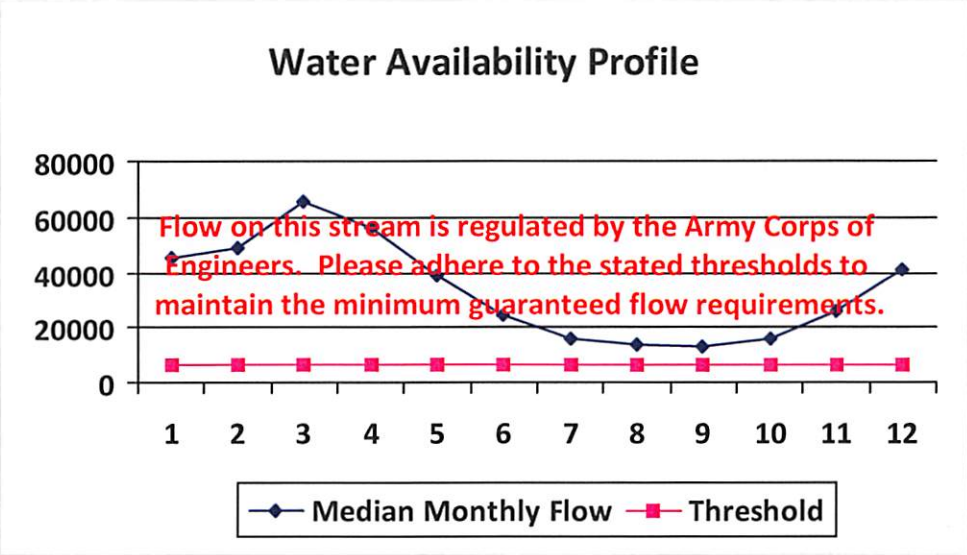
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? — Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] Gauged Stream?

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- 01235	API/ID Number: 047-051-01640	Operator: Noble Energy, Inc

SHL13DHS

Source ID: 17983 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

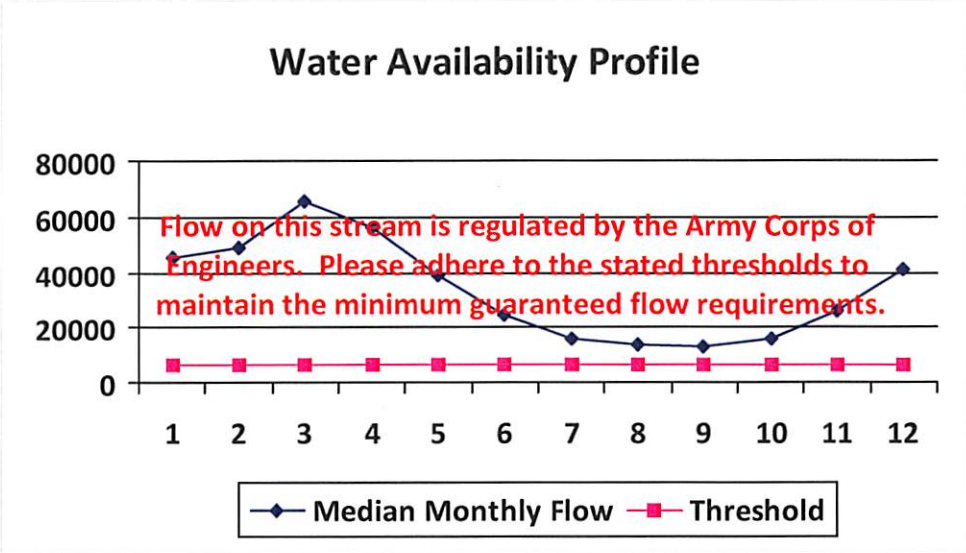
Anticipated withdrawal start date: 5/20/2013
Anticipated withdrawal end date: 5/20/2014
Total Volume from Source (gal): 288,000
Max. Pump rate (gpm): 800
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm)

- [ ] 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-01235 | API/ID Number: 047-051-01640 | Operator: Noble Energy, Inc

SHL13DHS

Source ID: 17984 | 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: 5/20/2013

Anticipated withdrawal end date: 5/20/2014

Total Volume from Source (gal): 288,000

Max. Pump rate (gpm): 800

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

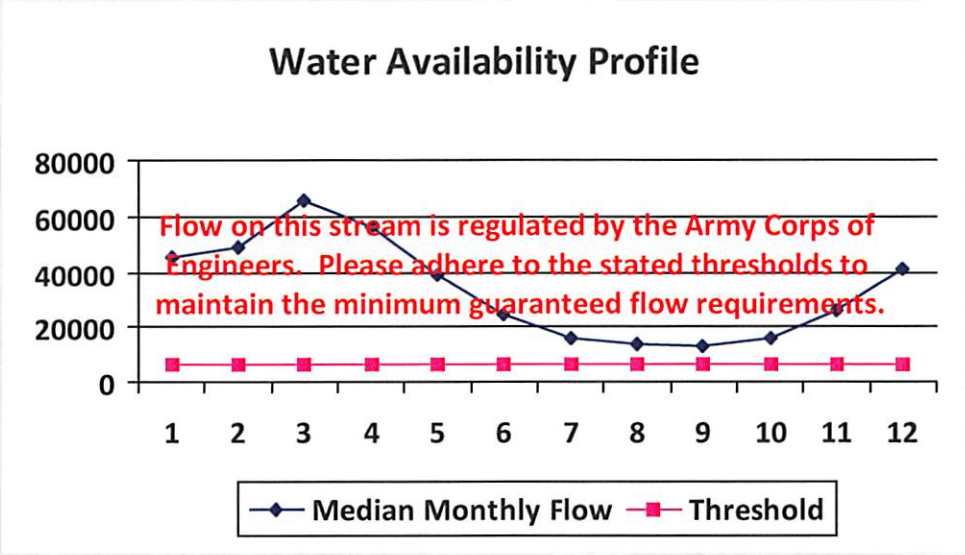
- [ ] Endangered Species?
- [ ] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] Gauged Stream?

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-01235 | API/ID Number: 047-051-01640 | Operator: Noble Energy, Inc

SHL13DHS

Source ID: 17985 | 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: 5/20/2013

Anticipated withdrawal end date: 5/20/2014

Total Volume from Source (gal): 288,000

Max. Pump rate (gpm): 800

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

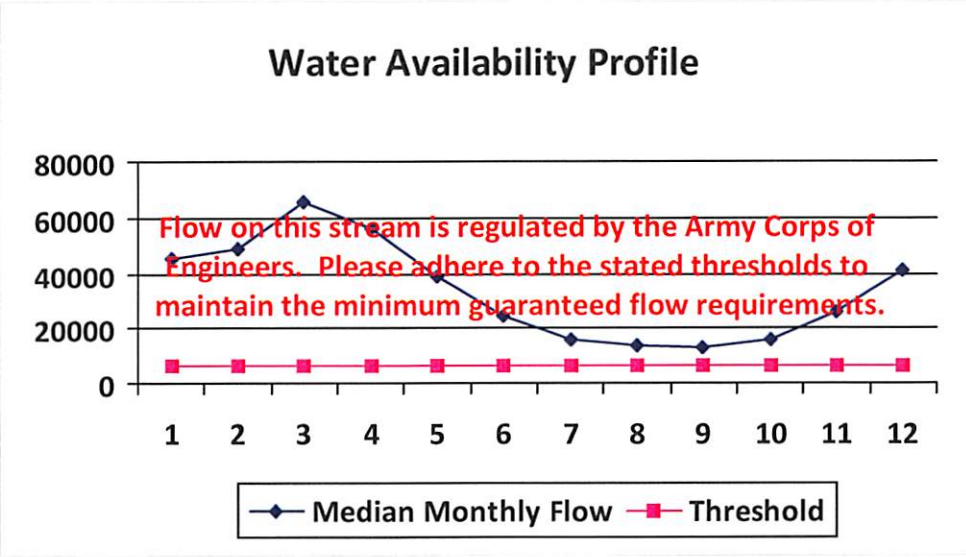
- [ ] Endangered Species?
- [ ] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] Gauged Stream?

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-	01235	API/ID Number:	047-051-01640	Operator:	Noble Energy, Inc
			SHL13DHS		

Source ID: 17986 Source Name: West Virginia American Water - Weston Water Treat
West Virginia American Water

Source Latitude: -
Source Longitude: -

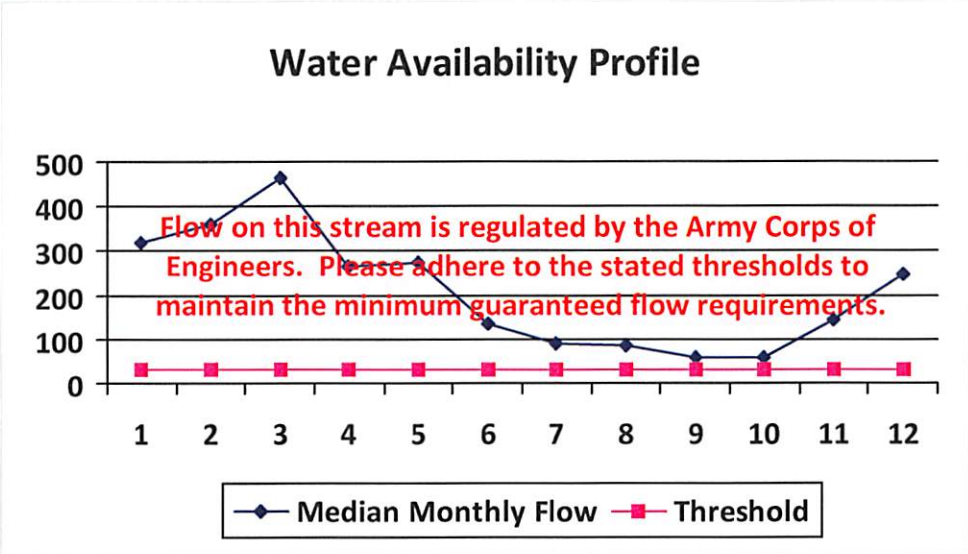
HUC-8 Code: 5020002
Drainage Area (sq. mi.): 104.83 County: Lewis

Anticipated withdrawal start date: 5/20/2013
Anticipated withdrawal end date: 5/20/2014
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-01235	API/ID Number:	047-051-01640	Operator:	Noble Energy, Inc

SHL13DHS

Source ID: 17987 Source Name: Bethlehem Water Department
Bethlehem Water Department

Source Latitude: -
Source Longitude: -

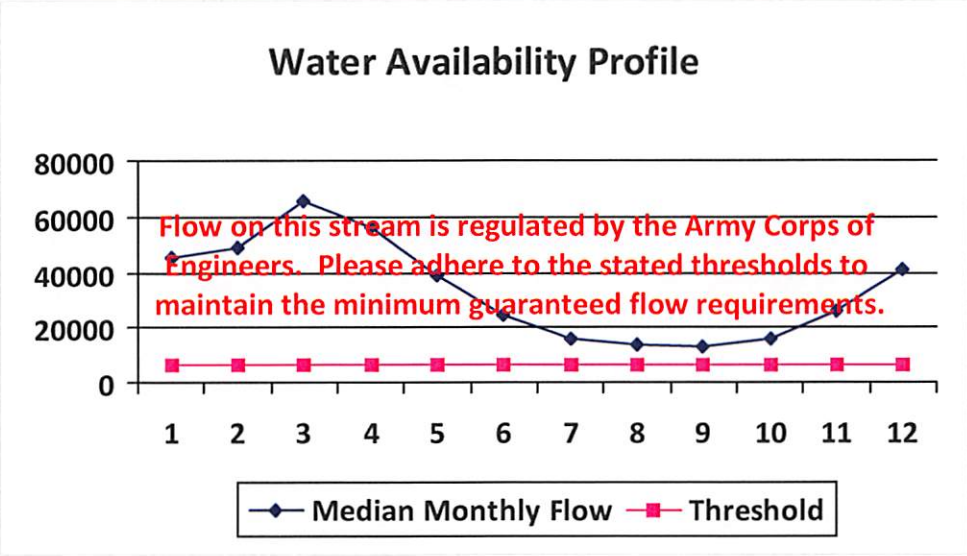
HUC-8 Code: 5030106
Drainage Area (sq. mi.): 25000 County: Ohio

Anticipated withdrawal start date: 5/20/2013
Anticipated withdrawal end date: 5/20/2014
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-01235 API/ID Number: 047-051-01640 Operator: Noble Energy, Inc

SHL13DHS

Source ID: 17988 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: 5/20/2013

Anticipated withdrawal end date: 5/20/2014

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

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

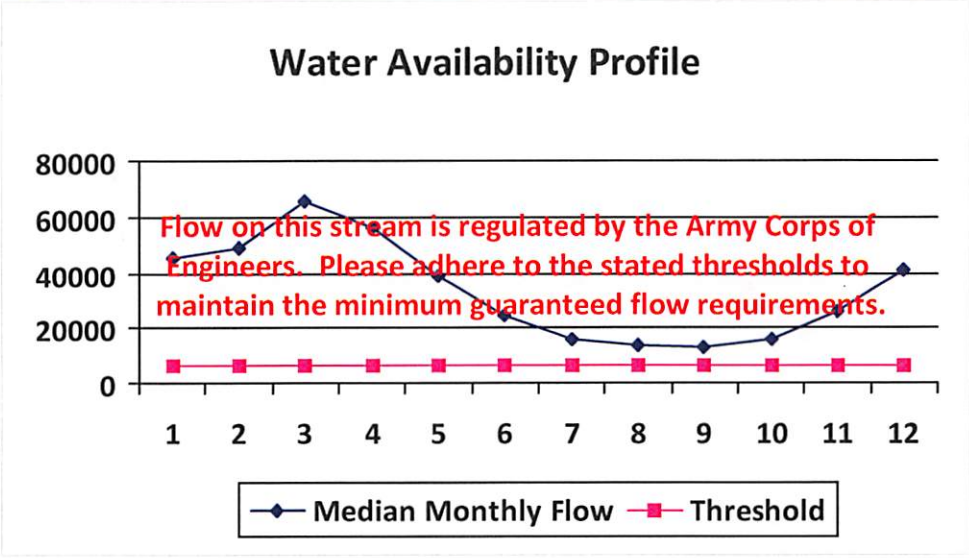
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [x] Proximate PSD? Wellsburg Water Department
- [x] Gauged Stream?

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-01235 API/ID Number: 047-051-01640 Operator: Noble Energy, Inc

SHL13DHS

Source ID: 17989 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: 5/20/2013

Anticipated withdrawal end date: 5/20/2014

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

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

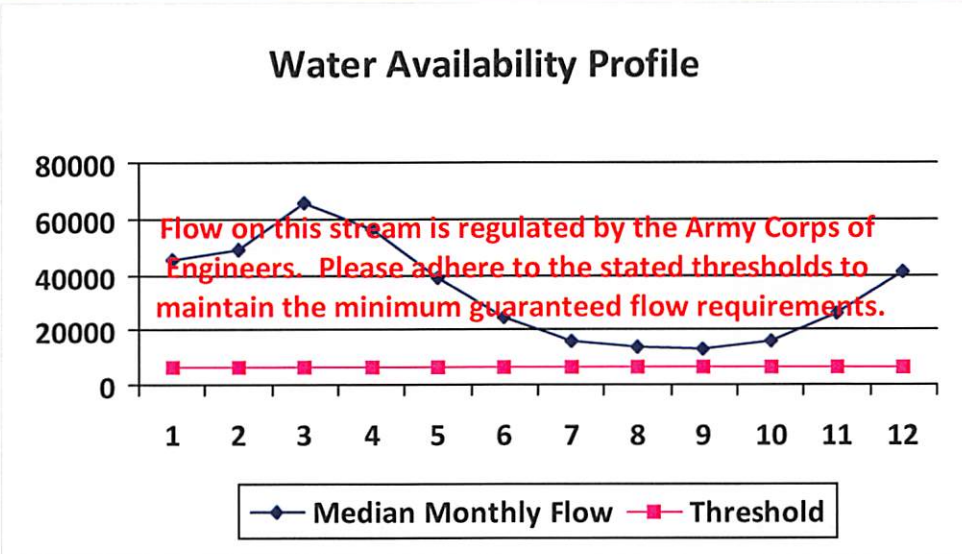
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? Ohio River Min. Flow
- [ ] Proximate PSD?
- [x] Gauged Stream?

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- 01235	API/ID Number:	047-051-01640	Operator:	Noble Energy, Inc

SHL13DHS

Source ID: 17990 Source Name: Dean's Water Service
Dean's Water Service

Source Latitude: -
Source Longitude: -

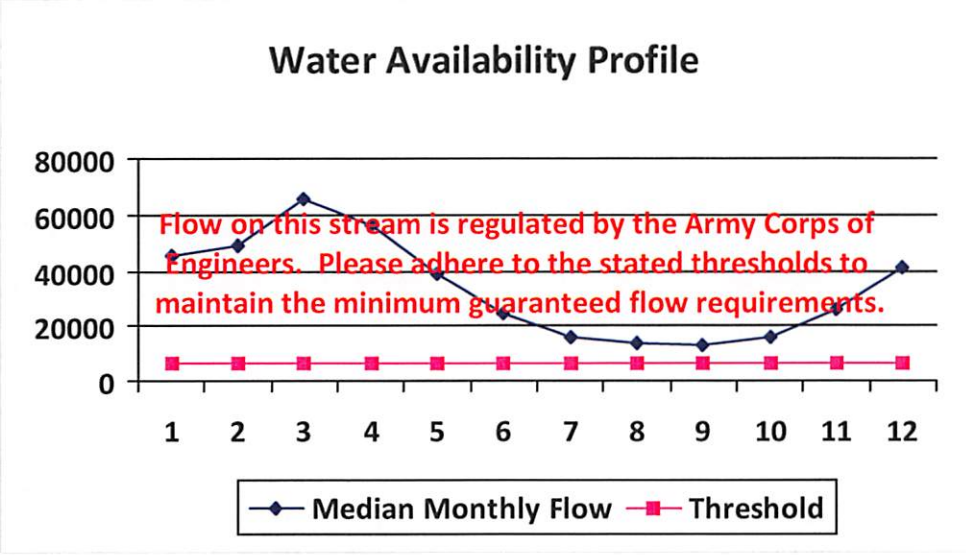
HUC-8 Code: 5030106
Drainage Area (sq. mi.): 25000 County: Ohio

Anticipated withdrawal start date: 5/20/2013
Anticipated withdrawal end date: 5/20/2014
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-01235 | API/ID Number: 047-051-01640 | Operator: Noble Energy, Inc

SHL13DHS

Source ID: 17992 | Source Name: Wheeling Water Department
Wheeling Water Department

Source Latitude: -
Source Longitude: -

HUC-8 Code: 5030106

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

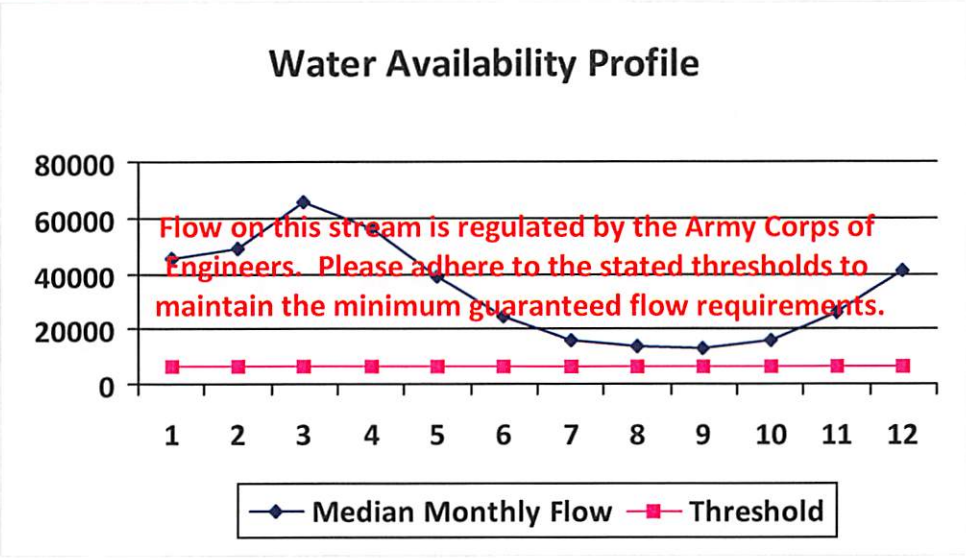
Anticipated withdrawal start date: 5/20/2013
Anticipated withdrawal end date: 5/20/2014
Total Volume from Source (gal): 5,400,000
Max. Pump rate (gpm):
Max. Simultaneous Trucks:
Max. Truck pump rate (gpm)

- [ ] 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-01235 | API/ID Number: 047-051-01640 | Operator: Noble Energy, Inc

SHL13DHS

Source ID: 17993 | 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: 5/28/2013

Anticipated withdrawal end date: 5/28/2015

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

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

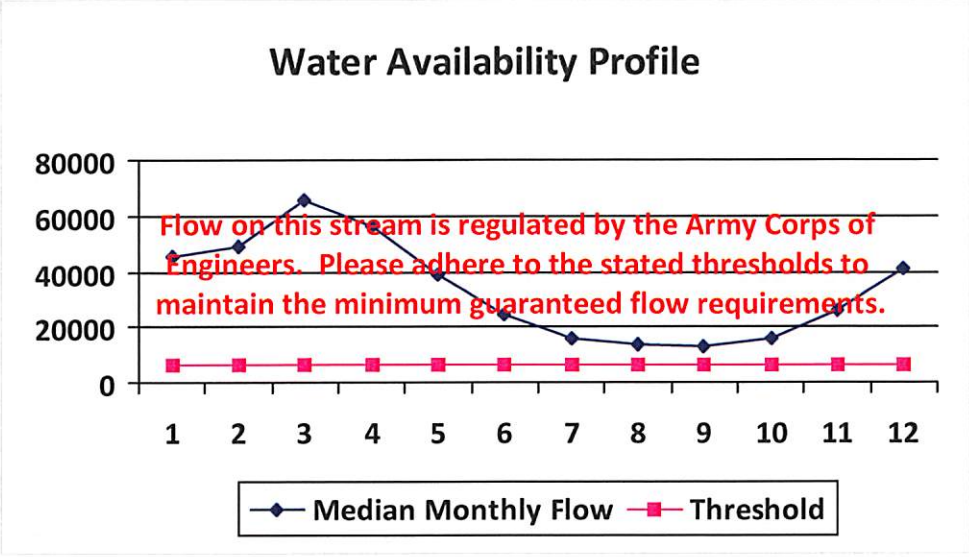
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [x] Regulated Stream? — Ohio River Min. Flow
- [x] Proximate PSD? — Wheeling Water Department
- [x] Gauged Stream?

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-01235 | API/ID Number: 047-051-01640 | Operator: Noble Energy, Inc

SHL13DHS

Source ID: 17980 | 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: 5/20/2013

Anticipated withdrawal end date: 5/20/2014

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

Max. Pump rate (gpm): 1,000

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm)

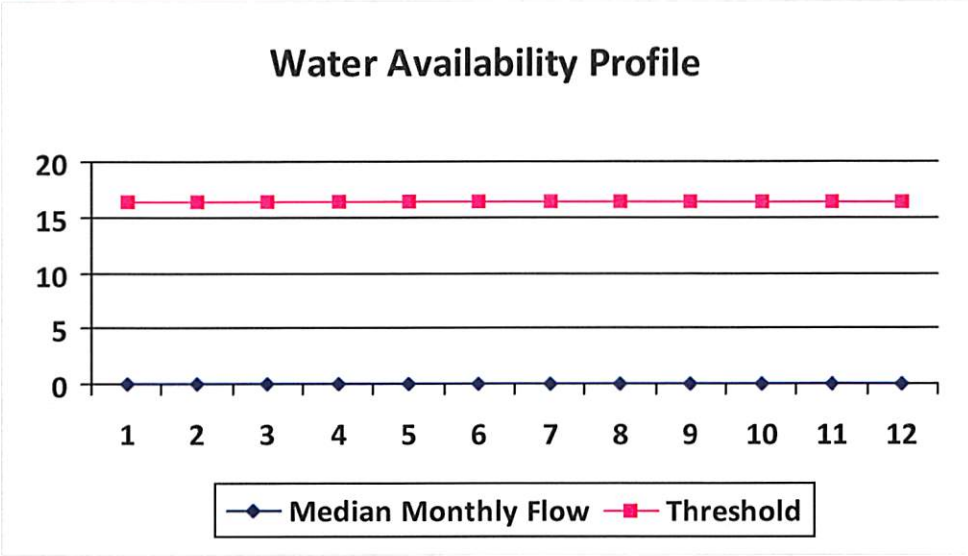
- [ ] Endangered Species?
- [x] Mussel Stream?
- [ ] Trout Stream?
- [ ] Tier 3?
- [ ] Regulated Stream?
- [ ] Proximate PSD?
- [x] Gauged Stream?

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-01235	API/ID Number:	047-051-01640	Operator:	Noble Energy, Inc	
SHL13DHS					

Source ID: 17981 Source Name: Wheeling Creek Pump Station 2 @ CNX Land Resour
CNX Land Resources, Inc.

Source Latitude: 39.949578
Source Longitude: -80.531256

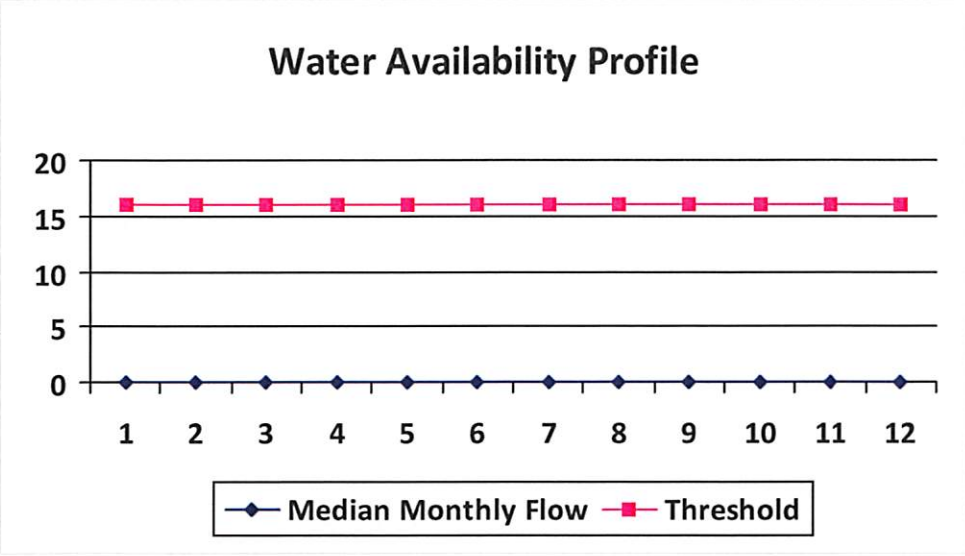
HUC-8 Code: 5030106
Drainage Area (sq. mi.): 152.4 County: Marshall

Anticipated withdrawal start date: 5/20/2013
Anticipated withdrawal end date: 5/20/2014
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-01235	API/ID Number	047-051-01640	Operator:	Noble Energy, Inc
		SHL13DHS		

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:	17994	Source Name	SHL #1 Impoundment	Source start date:	5/20/2013
				Source end date:	5/20/2014
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: 17995 Source Name SHL #2 Impoundment (WV51-WPC-00001)

Source start date: 5/20/2013
Source end date: 5/20/2014

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: 17996 Source Name SHL #3 Impoundment (WV51-WPC-00002)

Source start date: 5/20/2013
Source end date: 5/20/2014

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: 17997 Source Name SHL #4 Impoundment (WV51-WPC-00003)
Source start date: 5/20/2013
Source end date: 5/20/2014
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: 17991 Source Name Bridgeport Ohio Water Department
Public Water Provider
Source start date: 5/20/2013
Source end date: 5/20/2014
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: 17998 Source Name SHL3 Centralized Pit

Source start date: 5/20/2013
Source end date: 5/20/2014

Source Lat: Source Long: County

Max. Daily Purchase (gal) Total Volume from Source (gal): 1,000,000

DEP Comments:

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Site Safety Plan

wrtt 4-25-13

Noble Energy, Inc.
Sandhill 13HS

April 2013: Version 1

For Submission to
West Virginia Department of Environmental Protection,
Office of Oil and Gas

Noble Energy, Inc.
Appalachia Offices
333 Technology Drive, Suite 116
Canonsburg, PA 15317-9504

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Preface

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1. Introduction

Noble Energy, Inc. (Noble) strives to meet all regulatory requirements and follow industry best practices in all of its operations. As such, this Site Safety Plan (SSP) has been developed to meet the requirements set forth by the West Virginia Department of Environmental Protection (hereafter referred to as the "Department"), Office of Oil and Gas (hereafter referred to as the "Office") *Well Site Safety Plan Standards* for sites with three (3) acres or greater of surface disturbance involved in drilling and producing oil or natural gas in the State of West Virginia.

In the case of a horizontal well, the SSP will be submitted with each well application. The approved SSP will be maintained and available on location at all times. The SSP will also be provided to the local emergency planning committee (LEPC) for the emergency planning district in which the well work will occur or to the county office of emergency services at least seven (7) days prior to commencement of well work or site preparation work that involves any disturbance of land. In all cases, the SSP, once approved, may only be modified upon the approval of the Office.

2. Siting

Mapping and plot diagrams demonstrating the well location, access road, pits, flare lines, dwellings, and noting the north and prevailing wind directions, as well as a topographical map showing the well site location, can be found in Appendix A, *Mapping, Plots, and Siting*.

3. Safety Plan

3.1 Safety Meetings

Safety meetings will be held onsite weekly, at a minimum. Safety meetings will specifically be held at the beginning of drilling, completion, and workover operations. Meeting attendance will be logged. A sample attendance log can be found in Appendix B, *Forms*.

3.2 Pre-Spud Safety Meeting

A pre-spud safety meeting must be held prior to beginning drilling operations and include personnel to be employed and involved in the drilling operations. The pre-spud safety meeting should also include the district oil and gas inspector or other designated Office of Oil and Gas representative. All personnel in attendance at the pre-spud meeting will be listed. This list will be filled out on the appropriate page of Appendix B, *Forms* at the time of the pre-spud safety meeting.

3.3 Personnel Accountability

A check-in and check-out list of all personnel will be maintained during the drilling and completion phases of the operation. During drilling operations check-in and check-out will be handled at the guard shack upon arrival to and departure from the site. This procedure ensures an accurate headcount of personnel onsite at all times.

3.4 Evacuation Plan

3.4.1 Onsite Personnel:

The Drilling Supervisor will establish two muster points at which all persons will assemble for personnel safety and verification that all personnel are accounted for. The muster points will be located a sufficient distance from the well so that all personnel assembling there are out

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of immediate danger. They will also be located sufficiently distant from each other, and presumably in opposite directions from the well, to facilitate evacuation to a safe location in any situation regardless of wind or weather conditions.

3.4.2 Residents of Surrounding Area

In the event that local residents from the surrounding area have the potential to be affected by an emergency at the site, they will be notified according to Section 9 of this SSP. Upon notification they will be informed of the potential hazards and evacuated to a safe distance along with onsite personnel. When possible, local first responder agencies will coordinate the evacuation of residents.

3.5 Contact Information

Contact information for the operator, contractors of the operator, the Department, the Office, the local oil and gas inspector, and local emergency response units can be found in Appendix C, *Contacts* of this SSP.

3.6 Schools and Public Facilities

A list of all schools and public facilities within a one (1) mile radius of the site can be found in Appendix C, *Contacts* of this SSP.

3.7 Material Safety Data Sheets

Material Safety Data Sheets (MSDS) for all materials and chemicals will be readily available and maintained in the operations trailer on the well site. It is the responsibility of onsite safety personnel to ensure that the MSDS for each material that is delivered to the facility is on file at the location. Should a material for which there is not an MSDS on file be brought onto the site a copy of the MSDS that accompanies the shipment will be filed with the rest of the sites MSDS.

MSDS may additionally be sourced through Noble's subscription to the 3E Company's online database. The URL and login for this database can be found in the table below:

3E COMPANY ONLINE MSDS DATABASE	
URL	https://3eonline.com
Login	nobleenergy
Password	houston

Additionally, the 3E company may be contacted at 1 (800) 360-3220.

3.7 Relationship with Local First Responders

Noble will work closely with local first responders to familiarize them with potential incidents that are related to oil and gas development so that those agencies have the capability to provide the support necessary for the implementation of this SSP. This may include:

- Providing first responder agencies with a copy of this SSP
- Arranging tours of sites in the area
- Hosting or facilitating outreach events to educate first responders on the operations at a drilling site
- Remaining available at all times to answer questions from first responders

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4. Wellbore Casing and Cementing

4.1 Anticipated Depths

A list of anticipated freshwater, saltwater, oil and gas, hydrogen sulfide, thief zones, and high pressure and high volume zones and their expected depths can be found Appendix D, *Wellbore Casing and Cementing Program*.

4.2 Casing and Cementing Program

A detailed casing and cementing program is provided in Appendix D, Wellbore *Casing and Cementing program.*

While the cement may not meet the appropriate API standard, it meets the industry standard as an approved alternate in common use across the exploration and production field. Casing and cement will at all times be of sufficient weight, quantity, and quality to ensure well control and integrity. Furthermore, casing setting depths and cement quantities will be sufficient to address all zones identified in Section 4.1, *Anticipated Depths*

5. Well Control and Blow-Out Preventer (BOP)

5.1 BOP Equipment

A list of all BOP equipment and casing heads, including the relevant specifications for each, utilized and available during drilling, completion, and workover can be found in the table below:

DRILLING BOP EQUIPMENT AND CASING HEADS			
Item	Type	Size	Rating
Whip stock 24			
Wellhead	MBU	13 5/8"	5,000 lbs
Double BOP	Shaffer	13 5/8"	3,000 lbs
DRILLING BOP EQUIPMENT AND CASING HEADS (Continued)			
Item	Type	Size	Rating
Whip stock 24 (Continued)			
Annular	GK	13 5/8"	3,000 lbs
Choke Manifold	Cameron	2"	3,000 lbs
Nabors M59			
Wellhead	MBU	13 5/8"	5,000 lbs
Double BOP	Cameron Type U	11"	5,000 lbs
Annular	Hydrill Type VK	11"	5,000 lbs
Choke Manifold	Cameron	4 1/16"	5,000 lbs
COMPLETIONS AND WORKOVER BOP EQUIPMENT AND CASING HEADS			
Item	Type	Size	Rating
Wellhead	Weatherford	7 1/16"	10,000 lbs
Double BOP	TBD	7 1/16"	5,000 lbs
Frac Valves	TBD	5 1/8"	10,000 lbs
Frac Valves	TBD	7 1/16"	10,000 lbs
Choke Manifold	TBD	2"	10,000 lbs

5.2 BOP Testing

All BOP testing will be conducted in accordance with the American Petroleum Institute's (API) Recommended Practice 53 (RP 53), *Recommended Practices for Blowout Prevention Equipment*

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Systems for Drilling Wells. This is the industry standard for the installation and testing of BOP systems on land and marine drilling rigs.

5.3 BOP Equipment Installation Schedule

The BOP will be installed after running the intermediate casing. It will be installed on the innermost casing string.

5.4 Well Control Training

The following personnel will have approved well control training and current certification recognized by the International Association of Drilling Contractors (IADC):

PERSONNEL WITH WELL CONTROL TRAINING
Drilling
Drilling Manager (Operator)
Drilling Engineer (Operator)
Drilling Superintendent (Operator)
Operator Representatives (Well site supervisors)
Rig Manager (Contractor tool pusher)
Completions and Workover
Completions Superintendent
Rig Supervisor

5.5 Record of Significant Events

A detailed record of significant events including, but not limited to, lost circulation, the presence of hydrogen sulfide gas, fluid entry, kicks, and abnormal pressures, will be maintained through the use of a daily log. This log will be kept in the "doghouse" of the drilling platform. These records are periodically uploaded and retained electronically at Noble's offices in Canonsburg, PA.

The Office will be immediately notified of the presence of hydrogen sulfide gas, as well as the occurrence of any blowout or significant kick. The contact information for the Office can be found in Appendix C, *Contacts.*

5.6 Wellhead Assembly

Below is a diagram of the wellhead to be installed upon completion of fracturing operations:

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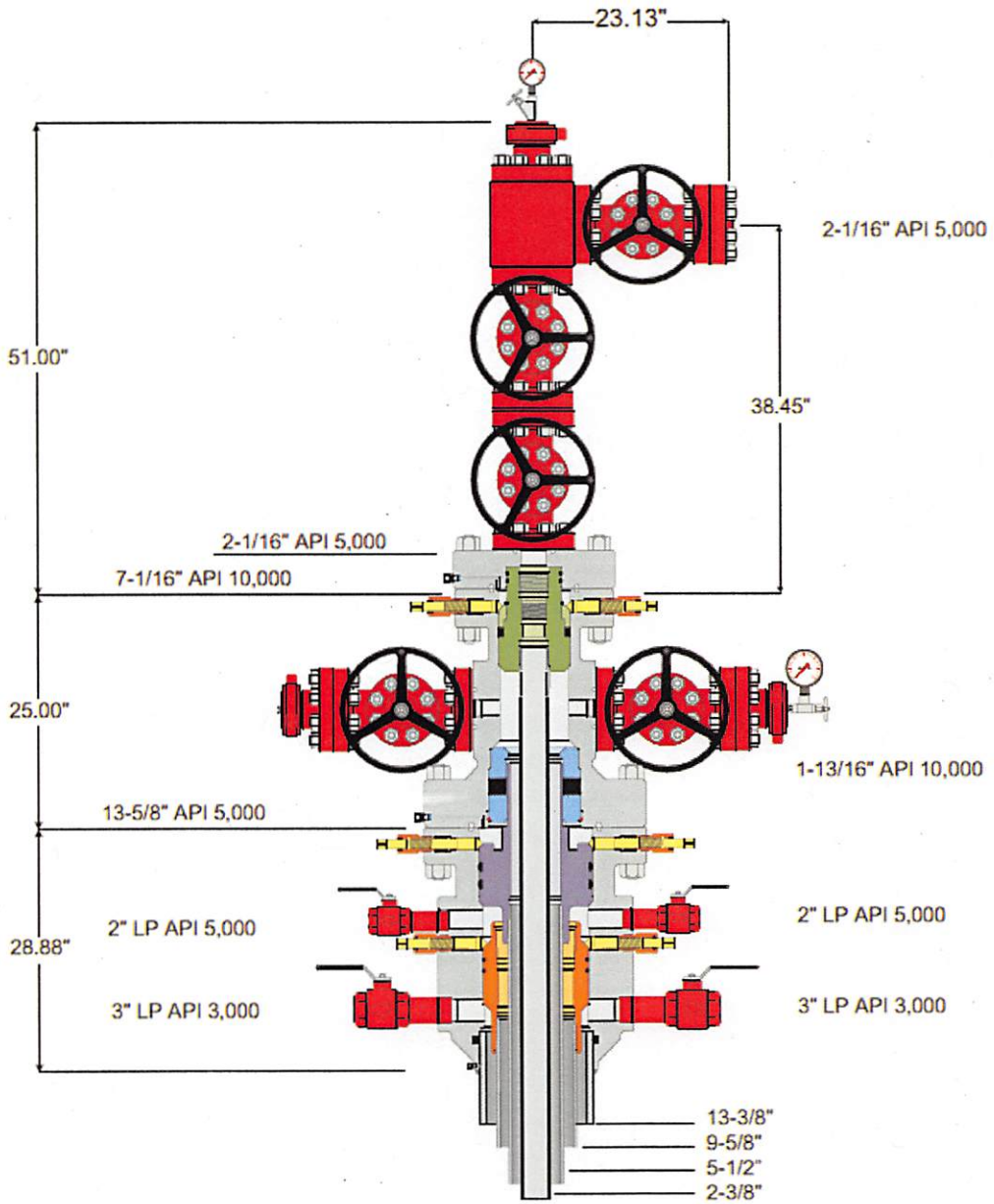
NOTE: THIS DRAWING IS NOT TO SCALE. THE DIMENSIONS REFLECTED ON THE DRAWING ARE ESTIMATED MEASUREMENTS AND FOR REFERENCE ONLY.



Weatherford

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Customer: NOBLE ENERGY	Project: 52871	Quote: 120623
Tender, Project or Well: MARCELLUS – WFT MBU SYSTEM-2012	Date: 02-13-2012	Drawn By: RL

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6. Well Flaring Operations

6.1 Size, Construction and Length of Flare Line

The flare line will be a minimum of a 2" diameter steel line that extends a minimum of 100' from the well. The end of the kill line will also be at the terminus of the flow line. The flare stack will be stationed at least 100' from any well head and/or equipment at all times.

The line may be anchored in a variety of ways, depending on conditions at the site. This could include, but is not limited to, metal staking topped with safety cones, cross pinning, concrete weights, or any combination therein.

6.2 Flare Lighting

The system for lighting the flare will be an electronic igniter. Notification to the local fire department prior to lighting the flare will be given immediately if practicable and as soon as possible thereafter.

6.3 Flaring Operations

All gas diverted through the manifold will be burned. The local fire department will be notified immediately prior to lighting the flare if at all possible. In the rare circumstance that such notification is not possible, the local fire department will be notified as soon after lighting the flare as is reasonably possible.

6.4 Minimum Clear Distance

All flammable material beyond the end of the flare line will be cleared to a minimum distance of 50 feet.

6.5 Flaring Duration

Upon ignition, flaring operations will last approximately 14 continuous days per well.

7. Well Kill

7.1 Mud Inventory

A contracted drilling mud service will maintain all required components for the mixing of mud for well kill operations in compliance with API RP 53. The contractor will keep the appropriate inventory of those components, and a copy of the inventory will be kept in an onsite office.

7.2 Mixing Units

The contracted drilling mud service that maintains the components named in Section 7.1, *Mud Inventory*, will maintain the appropriate number and type of mixing units for the mixing of drilling mud in sufficient quantities for well kill operations at the site.

7.3 Kill Procedures

In the event that the BOP must be activated, a hard closure method will be utilized. Should this not be sufficient, an IADC preferred methodology will be utilized. These include the following:

- Wait and Weight Method
- Driller's Method
- Volumetric Control
- Lubricate and Bleed

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8. Hydrogen Sulfide Operations

8.1 Monitoring Equipment

Depending on the known threat of the presence of hydrogen sulfide, monitors may be utilized onsite. Should a basic monitoring system be utilized, it will be positioned in the shaker area.

Areas that have a known threat for the presence of hydrogen sulfide will be monitored according to a separate contingency plan specific to hydrogen sulfide operations.

8.2 Training

Personnel on all Noble sites will be trained on the sites alarm system, evacuation procedures, and awareness of the basic hazards associated with hydrogen sulfide gas.

In the event that operations are being conducted in an area known to hold the threat of hydrogen sulfide, or if there is reason to believe that the threat is present, all personnel onsite will have additional training on personal protective equipment (PPE), respiratory protection, and will be fit tested. In all circumstances a portion of the personnel onsite will have hydrogen sulfide training.

8.3 Personal Protective Equipment

In the event that operations involve a known threat of hydrogen sulfide release or exposure, the following PPE will be maintained on the wellsite:

- Personal hydrogen sulfide monitors
- A full rig hydrogen sulfide monitoring system
- SCBA escape packs

Additional consideration may be given to the use of supplied working air if the situation warrants.

8.4 Notification of the Presence of Hydrogen Sulfide

In the event that the presence of hydrogen sulfide is detected on the wellsite, the Office will be notified by calling the Pollution and Emergency Spills hotline and/or the appropriate District Inspector. Numbers for each can be found in Appendix C, *Contacts*.

8.5 Access Control

In the event that the presence of hydrogen sulfide is detected on the wellsite, site personnel, local residents, and other personnel affected by the incident will assemble according to Section 3, *Safety Plan*, at the upwind, uphill muster point. Each muster point will be established outside of the potential hazard zone.

Should access need to be further limited, local law enforcement personnel may be utilized to limit or prevent roadway traffic from entering a hazard zone.

9. Notification and Protection Zones

9.1 Notification Method

Should an event occur, including but not limited to the presence of hydrogen sulfide, blowouts, and flaring occur, residents and/or emergency response personnel must be notified. In the event that they must be notified the preferred method is by telephone. Contact information for the various residents, agencies, and emergency response personnel can be found in Appendix C, *Contacts*.

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9.2 Protection Zones

Should the need for designated protection zones arise as a result of certain events, they will be established as appropriate. These protection zones will be established by evaluating the hazard, conditions, circumstances, potential impacts, and available guidance (such as the DOT Emergency Response Guidebook, available MSDS, etc.) to determine the best course of action.

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Appendix A: Mapping, Plots, and Siting

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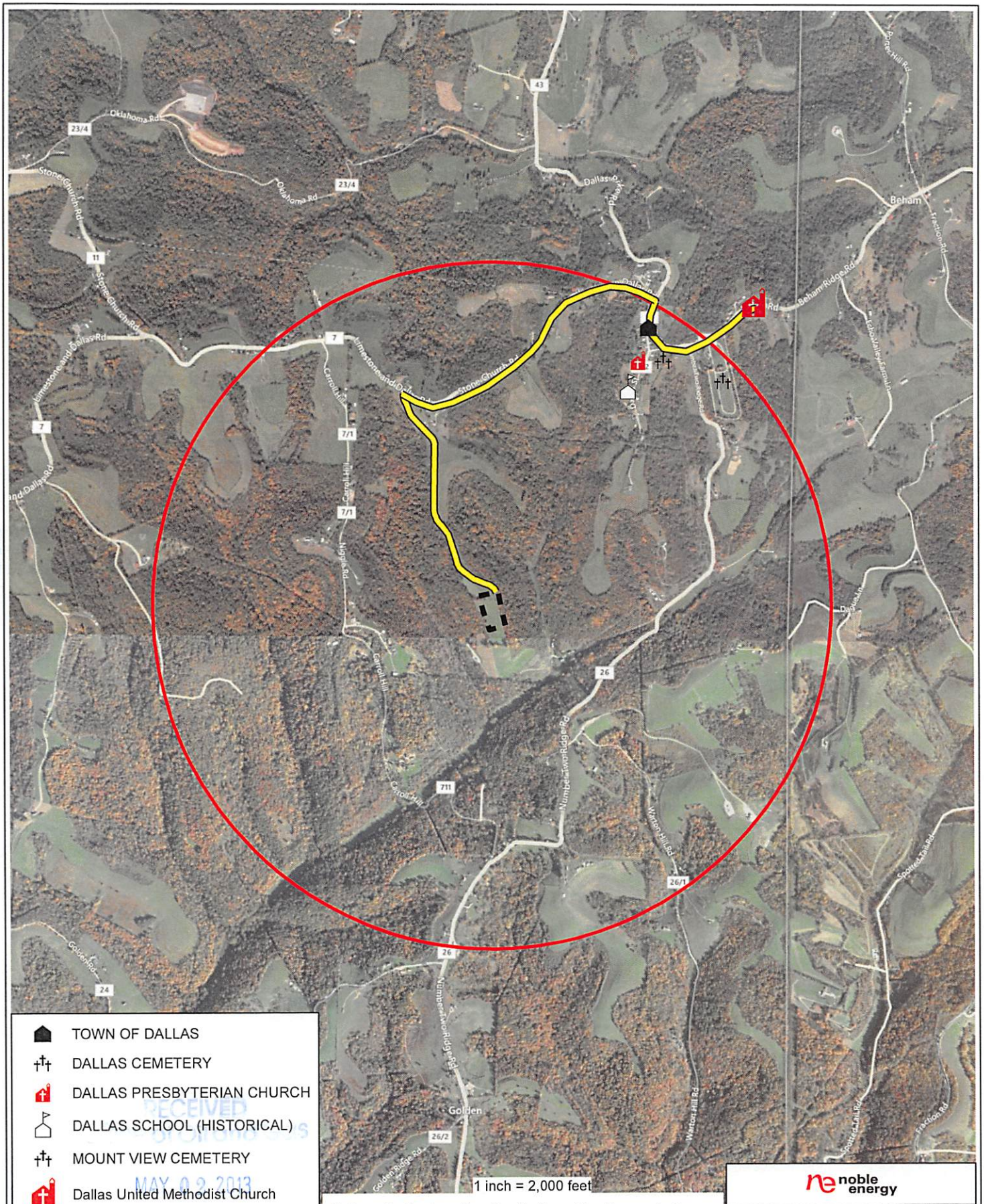

TOWN OF DALLAS

DALLAS CEMETERY

DALLAS PRESBYTERIAN CHURCH

DALLAS SCHOOL (HISTORICAL)

MOUNT VIEW CEMETERY

Dallas United Methodist Church

SHL13 Evacuation Route

1 Mile Radius Buffer Zone

SHL13 Pad

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Exit well site heading North from the the pad site on the access road. Turn right at intersection of Limestone & Dallas Rd / Stone Church Rd. Head East ~1.1Mi to the Dallas Rd intersection. Turn Right and proceed ~1/4Mi to Dallas United Methodist Church.

noble energy

SHL17 Site Evacuation
NOBLE - CONSOL JV

Author: DOC	Date: 9/4/2012

Projection: NAD_1927_StatePlane_West_Virginia_North_FIPS_4701
Units: Foot US

\\gis\noble\AppalachiaBU\Marcellus\Maps\Majorsville\SHL13_Site_Evacuation_DC

Disclaimer: All data is licensed for use by Noble Energy Inc. use only

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*Flare Layout is typical

\\gis\noble\AppalachiaBU\Marcellus\Maps\Majorsville\SHL13_Site_Location_DC

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Google

Directions to Limestone and Dallas Rd/Stone Church Rd
36.1 mi – about **50 mins**

333 Technology Dr, Canonsburg, PA 15317

	1. Head **southwest** on **Technology Dr** toward **Hillpointe Dr**	go 407 ft total 407 ft
	2. Turn left to stay on **Technology Dr** About 48 secs	go 0.3 mi total 0.4 mi
	3. Turn right onto **Town Center Blvd** About 2 mins	go 0.6 mi total 0.9 mi
	4. At the traffic circle, take the **2nd** exit onto **Town Center Way**	go 0.1 mi total 1.1 mi
	5. Turn right onto **Southpointe Blvd**	go 0.2 mi total 1.3 mi
	6. Turn right onto **Morganza Rd** About 2 mins	go 1.0 mi total 2.3 mi
	7. Turn left onto **Weavertown Rd** About 48 secs	go 0.2 mi total 2.5 mi
	8. Turn right to merge onto **I-79 S** toward **Washington Pa** About 9 mins	go 6.8 mi total 9.3 mi
	9. Take exit **38** to merge onto **I-70 W** toward **Wheeling** Entering West Virginia About 22 mins	go 20.7 mi total 30.0 mi
	10. Take exit **11** for **County Highway 41/Dallas Pike**	go 0.1 mi total 30.2 mi
	11. Turn left onto **Dallas Pike** About 4 mins	go 1.8 mi total 32.0 mi
	12. Slight left onto **Middle Wheeling Creek Rd/Old Co 39** About 1 min	go 0.4 mi total 32.4 mi
	13. Continue onto **Dallas Pike** About 5 mins	go 2.8 mi total 35.2 mi
	14. Turn right onto **Dallas Rd/Stone Church Rd** Continue to follow Stone Church Rd Destination will be on the left About 2 mins	go 0.9 mi total 36.1 mi

Limestone and Dallas Rd/Stone Church Rd

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2012 Google

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

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Appendix B: Forms

B.1 Sample Pre-Spud Safety Meeting Attendance Log

PRE-SPUD SAFETY MEETING ATTENDANCE LOG		
Print Name	Company/Title	Signature

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This document shall be turned into the EHS Safety Person and the original shall be kept for department records and review. These documents should be retained for 1 year. A copy of this document shall be maintained with the Site Safety Plan.

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B.2 Sample Safety Meeting Sign-in

noble energy

DAILY PRE-SHIFT SAFETY MEETING

RIG NUMBER: _____ DATE: _____ TIME: _____

COMPLETED BY: _____ (please print clearly)

SAFETY TOPICS	DISCUSSION LEADERS	COMMENTS or SIGNIFICANT POINTS DISCUSSED
1. Introduction and Opening		
2. Third Party Contractors (Current or Expected at Worksite)		
3. Review of Inspections, Visits, Assessments or Audits		
4. Review of Safety Alerts, Technical Advisories or Weather Warnings		
5. Review and Discussion of the Last 24 hrs. of Operations (what has been done)		
6. Work that has been Completed		
7. Review of Near Misses, Incidents, Accidents or Illnesses		
8. Review of Equipment that is Inoperable, out of Service, Locked Out, or By-passed		
9. Discussion of Operations for this Shift		
10. Prepare and Complete JSA/JRA For all Significant Tasks (List) _____ _____ _____ _____		
11. Discuss Operations Currently Underway, Issues, Concerns, etc (as the shift begins)		
12. Planned Equipment Maintenance		
13. Key Work Planned (work critical to operations)		
14. Upcoming Training, Weekly Safety Meetings, ect.		
15. Wrap up and Feedback (group discussion everyone must participate)		
16. Ask everyone to share the Main Focus for the shift		

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This document shall be turned into the EHS Safety Person and the original shall be kept for department records and review
These documents should be retained for 1 year

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Sign In	
Name	**Title**

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This document shall be turned into the EHS Safety Person and the original shall be kept for department records and review
These documents should be retained for 1 year

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B.3 Sample Site Log-in/Log-Out

noble energy

MUST HAVE: Current Noble Orientation and SafeLand training Prior to Entering NEI Property

MININMUM PPE REQUIREMENTS: HARDHAT, STEELTOE BOOTS w/ Metatarsal guards, ANSI Z87.1 EYEWEAR

Date	Print Name	Company	Current year Noble Orientation Yes / No	Safe land Certified Yes / No	Reason for Visit	Time in	Time out

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Appendix C: Contacts

C.1 Public Facility Notifications

SCHOOLS AND PUBLIC FACILITIES WITHIN ONE MILE OF SITE				
Name	Address	Phone	Distance from Site	
Dallas Presbyterian Church	704 Provance lane Dallas, WV	304-547-4479	Approx. 9/10 mile	
Dallas Historical School	Calis Majorville Road/Co. Hwy 15	304-845-3692 Marshall County Historical Society	Approx. 9/10 mile	
Mount View Cemetery	Number Two Ridge Road, Dallas, WV	304-845-3692 Marshall County Historical Society	Approx. 9/10 mile	
Dallas Cemetery	State Route 3019 Dallas, WV	304-845-3692 Marshall County Historical Society	Approx. 9/10 mile	

C.2 First Responder Notifications

FIRST RESPONDER AGENCIES			
Agency	Location	Phone	24 Hour Contact
Powhatan Point Volunteer Fire Department	Powhatan Point, OH	(740) 795-4750	9-1-1 OR (304) 843-1500 (Dispatch Center for all of Marshall County, WV)
Washington Lands Volunteer Fire Department	Moundsville, WV	(304) 845-6644	
Moundsville Fire Department	Moundsville, WV	(304) 845-2050	
Marshall County Sheriff	Moundsville, WV	(304) 843-1500	
Moundsville Police Department	Moundsville, WV	(304) 845-1611	
Tri-State Ambulance	Moundsville, WV	(304) 845-1141	9-1-1
West Virginia State Police	Moundsville, WV	(304) 843-4100	
Reynolds Memorial Hospital	Glen Dale, WV	(304) 845-3211	
Belmont Community Hospital	Bellaire, OH	(740) 671-1200	
Wetzel County Hospital	New Martinsville, WV	(304) 455-8000	

C.3 Agency Notifications

REGULATORY AGENCIES			
Agency	Location	Phone	24 Hour Contact
West Virginia Department of Environmental Protection (WV DEP)	601 57th Street SE Charleston, WV 25304	(304) 926-0440	
Office of Oil and Gas	601 57th Street, SE Charleston, WV 25304-2345	(304) 926-0499	1 (800) 642-3074 (To Report Pollution and Emergency Spills)

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Bill Hendershot Oil and Gas Inspector – Marshall and Marion Counties	403 James Street Mannington, WV 26582	(304) 206-7750	(304) 206-7750 (24 Hour Voicemail)
National Response Center (NRC)	c/o US Coast Guard (CG-5335) - Stop 7581 2100 2nd Street, SW Washington, DC 2059#	1 (800) 424-8802	1 (800) 424-8802

C.4 Internal Notifications

OPERATOR			
Name	Location	Phone	24 Hour Contact
Noble Energy, Inc.	333 Technology Drive Suite 116 Canonsburg, PA 15317	1 (888) 634-7928 (Noble Energy Incident Reporting Answering Service)	1 (888) 634-7928 (Noble Energy Incident Reporting Answering Service)

CONTRACTORS			
Company	Location	Phone	24 Hour Contact
Whipstock Natural Gas Services	1020 Franklin Street Clymer, PA 15728	(724) 254-0500	
Nabors	515 W. Greens Rd Suite 1200 Houston, TX 77067	(281) 874-0035	
Weavertown Environmental	2 Dorrington Rd. Carnegie, PA 15106	(724) 746-4850	
Boots & Coots	79008 N. Sam Houston Pkwy Houston, TX 77064	(724) 743-8100	
Cudd Pressure Control	2828 Technology Forrest Blvd The Woodlands, TX 77381	(713) 849-2769	
Wild Well Control	2202 Oil Center Court Houston, TX 77073	(281) 784-4700	

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Appendix D: Wellbore Casing and Cementing Program

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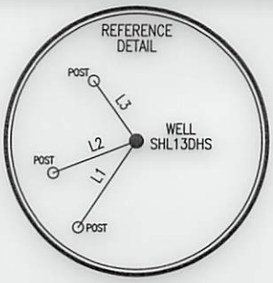
Camp Giscowhego
Laidley Run
Gillespie Run
Stone Church
Oklahoma Road
Green Valley Lakes
Sand Hill Sch
Pumping Station
OHIO CO
MARSHALL CO
Dallas
Mount View Cem
WASHINGTON CO
WEST FINLEY
Beham
N D HILL
Limestone Dallas
Pipeline
Bruce Run
Turkey Run
Gas Well
Nigle Hill Road
McCausland Hill
Golden
Golden Ridge Road
Two Ridge Road
Whetstone Run
Whorton Hill
WEST VIRGINIA
PENNSYLVANIA
Spottedtail Run
Radio Tower
Turkey Hill
McCullough Hill
Majorsville
Alley Grove
Enlow
Footbridge
Salem Ch
Robinson Fork
WASHINGTON CO
GREENE CO

Well is located on topo map 13,675' feet south of Latitude: 40° 02' 30"

Well is located on topo map 10,043' feet west of Longitude: 80° 30' 00"



SURFACE HOLE LOCATION (SHL)	APPROX. LANDING POINT	BOTTOM HOLE LOCATION (BHL)
UTM 17-NAD83	UTM 17-NAD83	UTM 17-NAD83
N:4428324.28	N:4427968.45	N:4426723.72
E:539635.59	E:539374.61	E:540277.62
NAD27, WV NORTH	NAD27, WV NORTH	NAD27, WV NORTH
N:549510.71	N:548357.42	N:544223.16
E:1709822.16	E:1708946.25	E:1711841.08

LINE	BEARING	DISTANCE
L1	S 34°17'06" W	245.16'
L2	S 69°05'51" W	211.83'
L3	N 35°56'16" W	174.88'

NOTES:

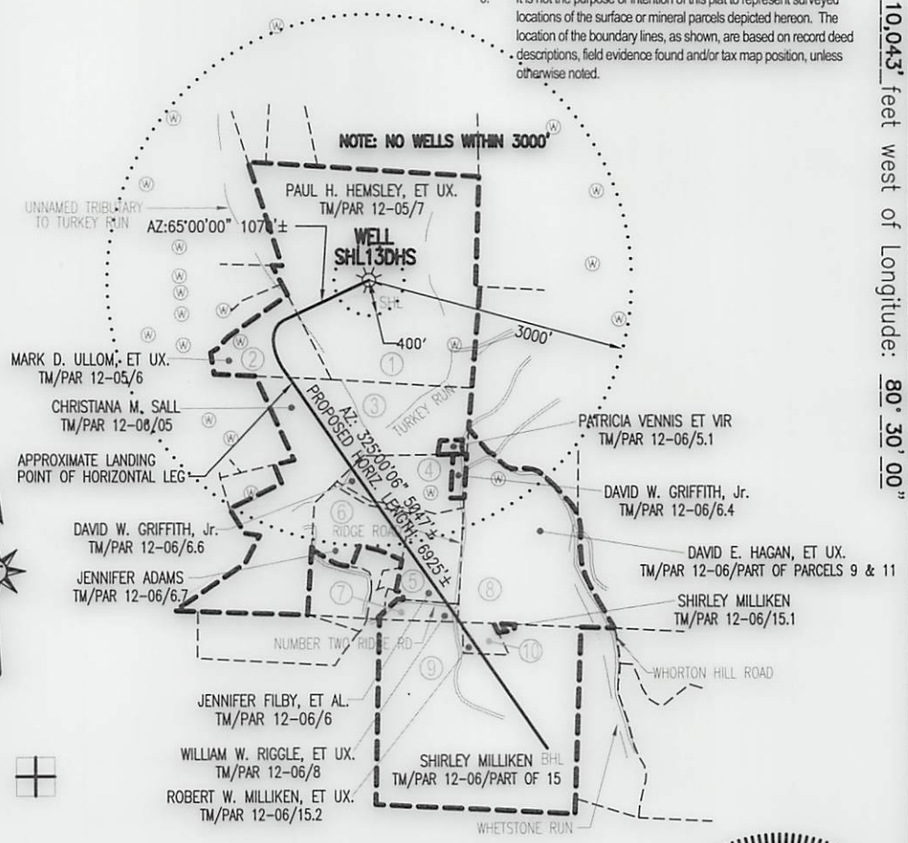
1. There are no water wells or developed springs within 250' of proposed well.
2. There are no existing buildings within 625' of proposed well.
3. Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
4. There are no native trout streams within 300' of proposed well.
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.

LEGEND

- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED.
- WATER SOURCE
- LEASE NUMBER BASED ON ATTACHED WW-6A1
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- PROPOSED HORIZONTAL WELL
- ROAD
- STREAM CENTER LINE

WELLS WITHIN 3000'

- EXISTING WELLS
- PLUGGED WELLS



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

FILE #: SHL13DHS

DRAWING #: SHL13DHS

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

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

PLACE SEAL HERE

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

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

STATE OF WEST VIRGINIA

DATE: APRIL 17, 2013

OPERATOR'S WELL #: SHL13DHS

API WELL #: 47 (STATE) 51 (COUNTY) 01640H6A (PERMIT)

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

WATERSHED: TURKEY RUN ELEVATION: 1288.96'

COUNTY/DISTRICT: MARSHALL / SAND HILL QUADRANGLE: VALLEY GROVE, WV 7.5'

SURFACE OWNER: PAUL H. & ANNETTE A. HEMSLEY ACREAGE: 121.65±

OIL & GAS ROYALTY OWNER: SEE ATTACHED WW-6A1 ACREAGE: 435.703±

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: 6781'± TMD: 12647'±

WELL OPERATOR NOBLE ENERGY INC.
Address 333 TECHNOLOGY DRIVE, SUITE 116
City CANONSBURG State PA Zip Code 15317

DESIGNATED AGENT STEVEN M. GREEN
Address 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 590
City CHARLESTON State WV Zip Code 25301