



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

November 13, 2013

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-5101669, 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: MND3FHS
Farm Name: CONSOLIDATION COAL COMPA
API Well Number: 47-5101669
Permit Type: Horizontal 6A Well
Date Issued: 11/13/2013

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.

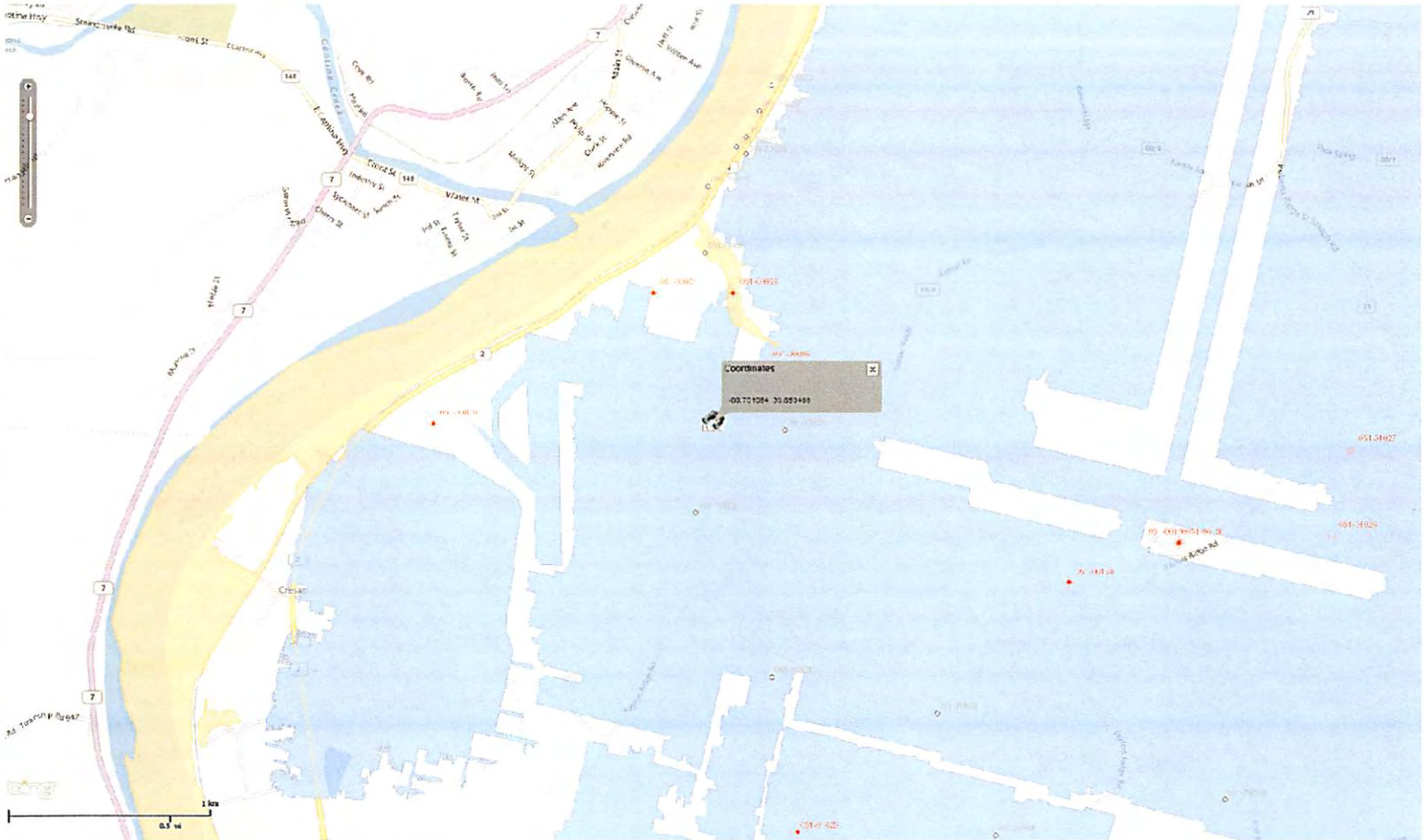
CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

Map from a Flex Viewer application

5101669

Powered by ArcGIS



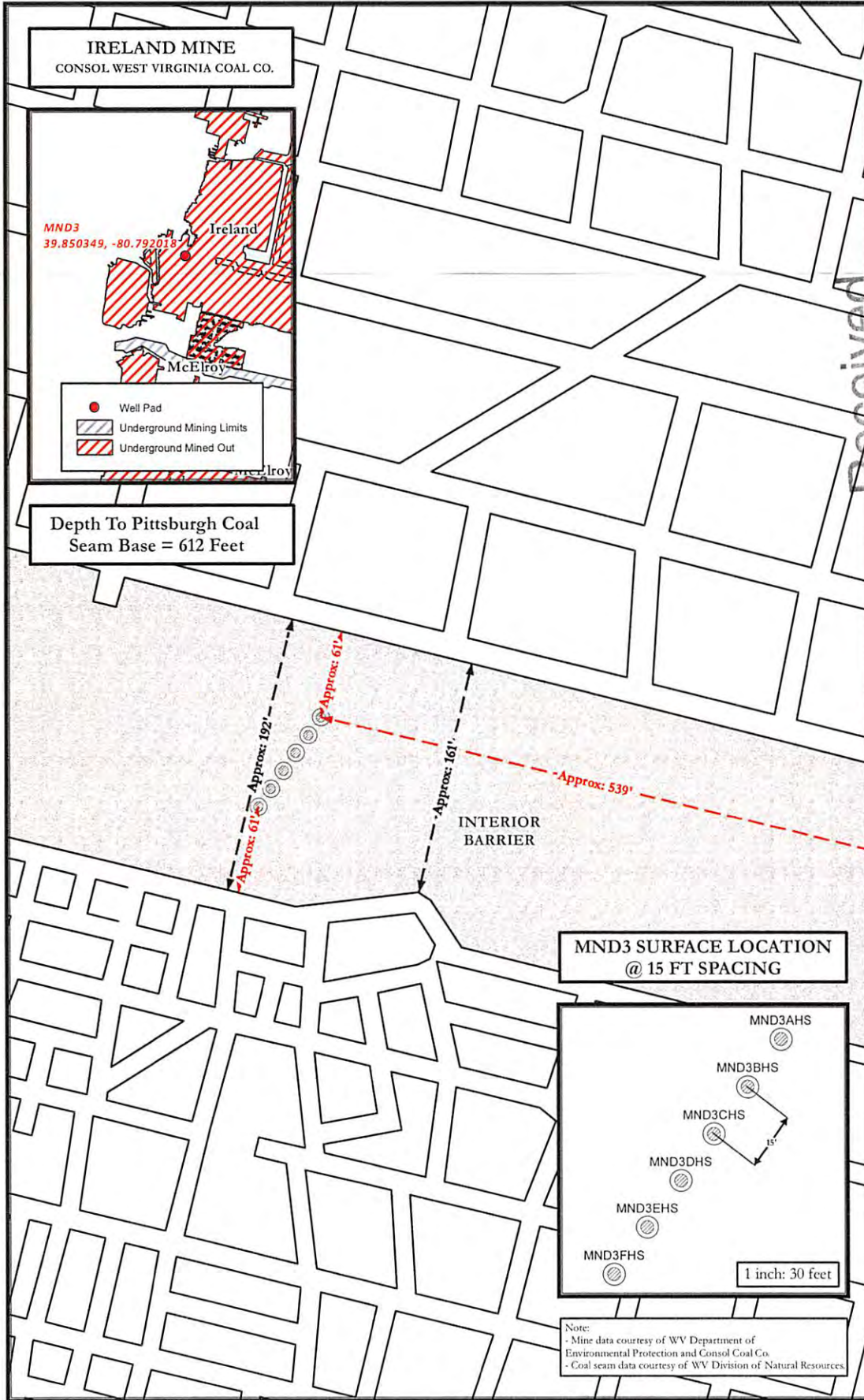
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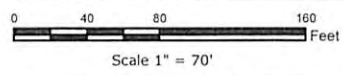
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MND3 SITE SAFETY PLAN
- WELLHEAD TOPHOLE LOCATION -

Surface Hole Locations Target Coal Pillar
Underground Mining Detail



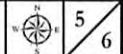
Projection: NAD_1927_StatePlane_West_Virginia_North_FIPS_4701
Units: Feet US



Date: 7/3/2013

Author: Christopher Glover

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



51-01669

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 Franklin Powhatan Point
Operator ID County District Quadrangle

2) Operator's Well Number: MND 3 FHS Well Pad Name: MND 3

3 Elevation, current ground: 1128.39' Elevation, proposed post-construction: 1112'

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):
Targets-Marcellus, Depth-6226', Thickness-53', Pressure-4427#, Burkett, Depth 6170', Thickness-27' Pressure-3887#; Hamilton, Depth-6205, Thickness-21', Pressure-3909#

7) Proposed Total Vertical Depth: 6279'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 12,804'

10) Approximate Fresh Water Strata Depths: 165', 298'

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

12) Approximate Saltwater Depths: None noted for offsets

13) Approximate Coal Seam Depths: 612' Pittsburgh Base

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, McElroy & Ireland Mine at approx. 612'

16) Describe proposed well work: Drill the vertical depth to the Marcellus at an estimated total vertical depth of approximately 6,279 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.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 15.6 acres

19) Area to be disturbed for well pad only, less access road (acres): 9.1 acres

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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	30"	N	LS	117#	40'	40'	CTS
Fresh Water	20"	N	J-55	94#	400'	400'	CTS
Coal	13 3/8"	N	J-55	54.5#	1062'	1062'	CTS
Intermediate	9 5/8"	N	J-55	36#	2600' or 100' past Big Injun	2600' or 100' past Big Injun	CTS
Production	5 1/2"	N	P110	20#	12,804'	12,804'	TOC 200' above 9.625 shoe
Tubing							
Liners							

WRH
7-9-13

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	30"	36"	.374		Type 1/Class A	1.2
Fresh Water	20"	26"	.438	2730	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:				

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-Class A cement with flake and CaCl₂ 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 SOBMs and filled with KCl water once drilled to TD. Production-The hole is drilled with SOBMs 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.

AWS Cement Additives- Noble Energy

	Product Name	Product Use	Chemical Name	CAS Number
Surface & Intermediate	Calcium Chloride Flake	Cement Accelerator	Calcium Chloride Potassium Chloride Water Sodium Chloride	10043-52-4 7447-40-7 7732-18-5 7647-14-5
	C-41L	De-foamer	Methyl Alcohol Tributyl Phosphate	67-56-1 126-73-8
	Pol-E-Flake	LCM	Polyester	Non-Hazardous

Spacer	Bentonite Gel	Viscosifier	Crystalline Silica, Quartz	14808-60-7
	Baro-Seal	LCM	Mixture	Non-Hazardous
	Pol-E-Flake	LCM	Polyester	Non-Hazardous

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DRILLING WELL PLAN
MND-3F-HS (Marcellus HZ)
Macellus Shale Horizontal
Marshall County, WV

Ground Elevation		1112'		MND-3F SHL (Lat/Long)			(494430.54N, 1637194.42E) (NAD27)		
Azm		149.302°		MND-3F LP (Lat/Long)			(493870.57N, 1636999.43E) (NAD27)		
WELLSBORE DIAGRAM		MND-3F BHL (Lat/Long)		(488917.84N, 1640467.38E) (NAD27)					
HOLE	CASING	GEOLOGY	MD	TVD	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS
36	30" 117#	Conductor	40	40	AIR	To Surface	N/A	Ensure the hole is clean at TD.	Stabilize surface fill/soil. Conductor casing = 0.375" wall thickness
		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	602	602	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	1062	1062					
12 3/8	9-5/8" 36# J-55 LTC	Price Formation	2190	2190	AIR	15.6ppg Class A + 0.4% Ret, 0.15% Disp, 0.2% AntiFom, 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
		Weir Sand	2350	2350					
		Int. Casing	2600	2600					
8.75" Vertical	5-1/2" 20# HCP-110 TXP BTC	Speechley		3506	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 retardor, 0.2% friction reducer	Rigid Bow Spring every third joint from KOP to TOC	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note-Actual centralizer schedules may be changed due to hole conditions
		Java		4985					
		Angola		5193					
		Rheinstreet		5758					
		Sonyea		6055					
8.75" Curve	5-1/2" 20# HCP-110 TXP BTC	Cashaqua		6074	12.0ppg- 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP		
		Middlesex		6080.5					
		West River		6126					
		Burkett		6170					
		Tully Limestone		6197					
8.75" - 8.5" Lateral	5-1/2" 20# HCP-110 TXP BTC	Hamilton		6206	12.0ppg- 12.5ppg SOBM				
		Marcellus		6226					
		TD		12804					
		Onondaga		6290					

LP @ 6279' TVD / 6758' MD

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

+/-6046' ft Lateral

TD @ +/-6279' TVD
 +/-12804' MD

X=centralizers

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Noble Energy, Inc OP Code 494501907

Watershed (HUC 10) Short Creek-Ohio River HUC 10 Quadrangle Powhatan Point

Elevation 1112' County Marshall District Franklin

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

Will a pit be used for drill cuttings? Yes No

If so, please describe anticipated pit waste: 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/water based mud thru intermediate string then SOB

-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.

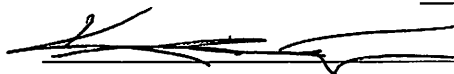
I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature Laura L. Adkins

Company Official (Typed Name) Laura L. Adkins

Company Official Title Regulatory Analyst

Subscribed and sworn before me this 3rd day of July, 2009



Office of Oil and Gas
WV Dept. of Environmental Protection
COMMISSIONER FOR WEST VIRGINIA
Notary Public **Kevin Swiger**
332 V. Avenue
Jan. 14, 2010 26378
My Commission Expires January 14, 2020

My commission expires Jan. 14, 2020

My Commission Expires January 14, 2020

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Office of Oil and Gas
WV Dept. of Environmental Protection

Form WW-9

Operator's Well No. MND 3 FHS

Noble Energy, Inc

Proposed Revegetation Treatment: Acres Disturbed 15.6 acres 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 *[Signature]*

Comments: _____

Title: Oil and Gas Inspector Date: 7-9-13

Field Reviewed? Yes No

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

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

7/8



Water Management Plan: Secondary Water Sources



WMP- 01427

API/ID Number: 047-051-01669

Operator:

Noble Energy, Inc

MNDS3FHS

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:	23938	Source Name	Moundsville 3 Tank Pad	Source start date:	10/1/2013
				Source end date:	10/1/2014
Source Lat:	39.8486	Source Long:	-80.793695	County	Marshall
Max. Daily Purchase (gal)		Total Volume from Source (gal):			9,000,000

DEP Comments:

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

Reference: WMP-1426

APPROVED SEP 10 2013

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: 23939 Source Name: Various

Source start date: 10/1/2013

Source end date: 10/1/2014

Source Lat:

Source Long:

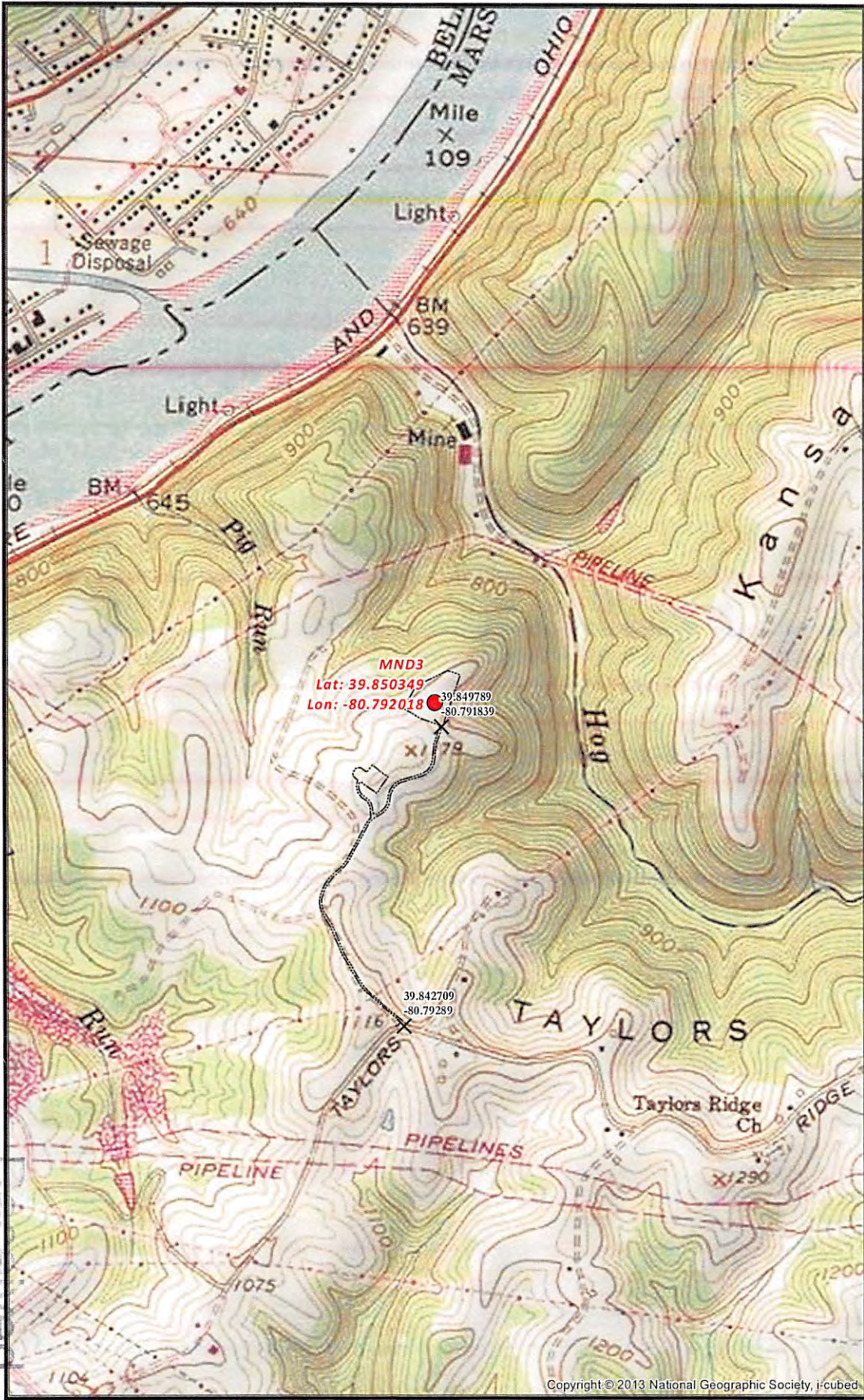
County

Max. Daily Purchase (gal)

Total Volume from Source (gal): 6,000,000

DEP Comments: Sources include, but are not limited to, MNDS3 and WEB22 well pads.

SI-01669



✓

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MND3 SITE SAFETY PLAN
- SITE WELL LOCATION -

X Access Road Intersection ● Well Pad Center
--- PROPOSED

0 500 1,000 2,000 Feet

Scale 1" = 1,000'

Projection: NAD_1927_StatePlane_West_Virginia_North_FIPS_4701
Units: Foot US

noble energy

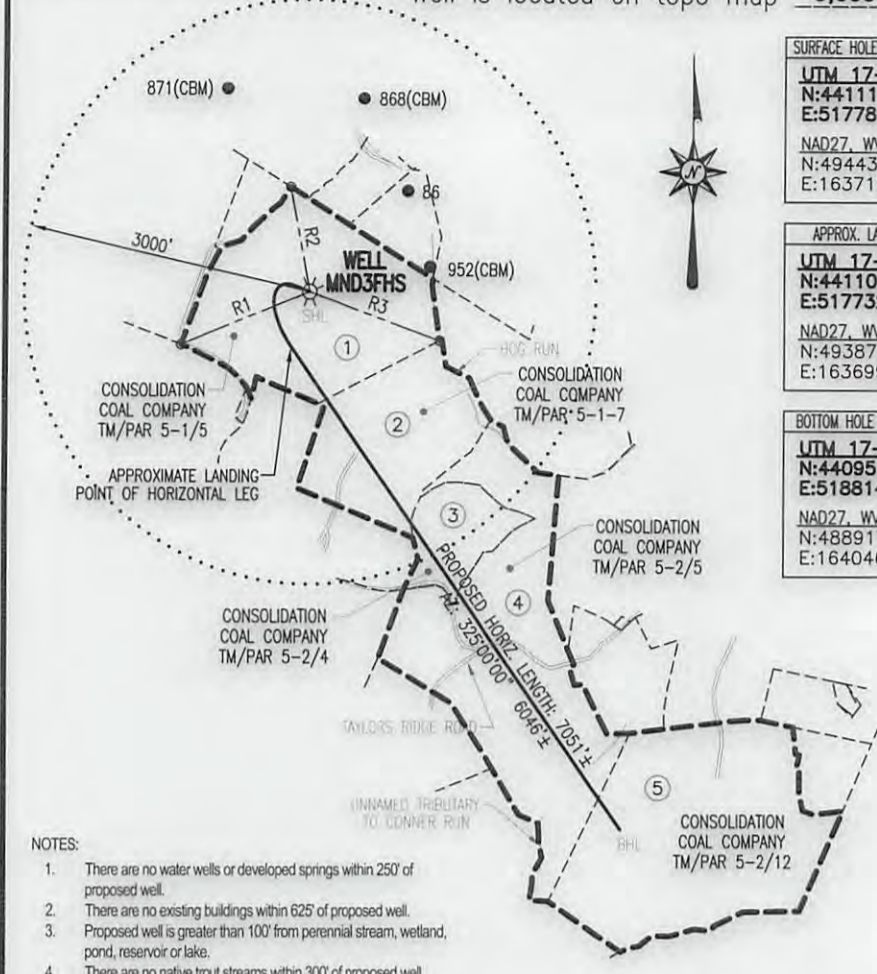
Date: 7/3/2013
Author: Christopher Glover

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

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Well is located on topo map 9,000' feet south of Latitude: 39° 52' 30"

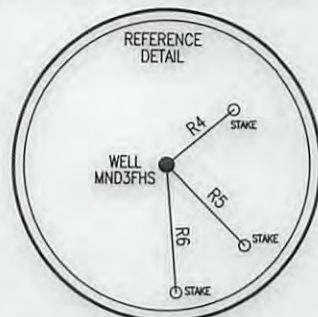
Well is located on topo map 163' feet west of Longitude: 80° 47' 30"



SURFACE HOLE LOCATION (SHL)
UTM 17-NAD83
N:4411173.644
E:517789.037
 NAD27, WV NORTH
 N:494430.543
 E:1637194.421

APPROX. LANDING POINT
UTM 17-NAD83
N:4411002.05
E:517732.48
 NAD27, WV NORTH
 N:493870.57
 E:1636999.43

BOTTOM HOLE LOCATION (BHL)
UTM 17-NAD83
N:4409510.86
E:518814.22
 NAD27, WV NORTH
 N:488917.84
 E:1640467.38



LINE	BEARING	DISTANCE
R1	S 68°15'25" W	1453.15'
R2	N 10°47'28" W	1090.98'
R3	S 69°57'48" E	1448.84'
R4	S 50°29'36" W	180.96'
R5	S 44°43'46" E	232.44'
R6	N 04°29'51" W	263.48'

- 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
- ⓪ - 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 #: MND3FHS
 DRAWING #: MND3FHS
 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



DATE: JUNE 18, 2013
 OPERATOR'S WELL #: MND3FHS
 API WELL #: 47 51 01669
 STATE COUNTY PERMIT

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

WATERSHED: HOG RUN Shortcreek HUC10 ELEVATION: 1128.39'

COUNTY/DISTRICT: MARSHALL / FRANKLIN QUADRANGLE: POWHATAN POINT, OH-WV 7.5'

SURFACE OWNER: CONSOLIDATION COAL COMPANY ACREAGE: 180.214±

OIL & GAS ROYALTY OWNER: SEE ATTACHED WW-6A1 ACREAGE: 380.911±

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,279± TMD: 12,804±

WELL OPERATOR NOBLE ENERGY, INC. DESIGNATED AGENT STEVEN M. GREEN
 Address 333 TECHNOLOGY DRIVE, SUITE 116 Address 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 590
 City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301