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**west virginia** department of environmental protection

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Office of Oil and Gas  
601 57th Street SE  
Charleston, WV 25304  
(304) 926-0450  
(304) 926-0452 fax

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
www.dep.wv.gov

March 25, 2014

**WELL WORK PERMIT**  
**Horizontal 6A Well**

This permit, API Well Number: 47-5101739, 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: MND 3 CHS  
Farm Name: CONSOL MINING CO., LLC  
**API Well Number: 47-5101739**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 03/25/2014

**Promoting a healthy environment.**

## PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

### CONDITIONS

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1. 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 fill material shall be within plus or minus 2% 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.
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.

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

51 3 558

1) Well Operator: Noble Energy, Inc. 494501907 Marshall Franklin Powhatan Point  
Operator ID County District Quadrangle

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

3) Farm Name/Surface Owner: Consol Mining Co., LLC Public Road Access: CR 2/1

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

5) Well Type (a) Gas  Oil  Underground Storage

Other

(b) If Gas Shallow  Deep

Horizontal

MJK 1/21/14  
EL 1/21/14

6) Existing Pad: Yes or No yes-building now

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  
Marcellus at 6226' and 53' in thickness, pressure 4427#. Burkett at 6170', 27' in thickness, 3887# pressure. Hamilton at 6205', 21' in thickness, 3909# pressure.

8) Proposed Total Vertical Depth: 6279'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 13,380'

11) Proposed Horizontal Leg Length: 7946'

12) Approximate Fresh Water Strata Depths: 165' and 298'

13) Method to Determine Fresh Water Depths: Offset well data

14) Approximate Saltwater Depths: None noted in offsets

15) Approximate Coal Seam Depths: 612' Pittsburgh Base

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

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes

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(a) If Yes, provide Mine Info: Name: Ireland Mine FEB 18 2014

Depth: Base at 612' at deepest point

Seam: Pittsburgh

Owner: Murray American Energy (Previously Consol)

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Office of Oil and Gas

FEB 18 2014

WV Department of Environmental Protection  
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WW-6B  
(9/13)

18)

**CASING AND TUBING PROGRAM**

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
Conductor	30"	New	LS	117#	40'	40'	CTS
Fresh Water	20"	New	LS	94#	400	400'	CTS
Coal	13 3/8"	New	J-55	54.5#	1062'	1062'	CTS
Intermediate	9 5/8"	New	J-55	36#	2600'	2600'	CTS
Production	5 1/2"	New	P110	20#	13,380'	13,380'	TOC 200' above 9 5/8 casing shoe
Tubing							
Liners							

*MJK 1/21/14*      *JK 1/21/14*

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	36"	0.375		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:				

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WV Department of  
Environmental Protection

WW-6B  
(9/13)

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill the vertical depth to the Marcellus at an estimated total vertical depth of approximately 6279 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 100' below the void, set a basket and grout to surface.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

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. Maximum pressure not to exceed 10,000 lb.

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

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

23) 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.

24) Describe all cement additives associated with each cement type:

Conductor-1.15% CaCl \*Surface and Coal (Intermediate)- Class A Portland Cement CaCl 2%, 2% Accelerator, 0.2% Antifoam and 0.125#/sk Flake. Excess Yield=1.18 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.  
\*Surface and Coal string WVDEP approved variance attached.

25) 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 procedureds. 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 SOBm and filled with KCl water once drilled to TD. Production-The hole is drilled with SOBm and once to TD, circulated at maximum allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.

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\*Note: Attach additional sheets as needed.



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

Ground Elevation		1112'		MND-3C SHL (Lat/Long)			(494467.09N, 1637220.67E) (NAD27)		
Azm		136.508°		MND-3C LP (Lat/Long)			(494917.07N, 1638100.62E) (NAD27)		
WELLSBORE DIAGRAM		136.508°		MND-3C BHL (Lat/Long)			(489657.98N, 1641783.07E) (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	Blow Spring on first 2 joints then every third joint to 100' 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.	Intermediate casing = 0.360" wall thickness Burst=2730 psi
		Int. Casing	1062	1062	AIR	15.6ppg Class A +0.4% Ret, 0.15% Disp, 0.2% AntiFoam, 0.125#/sk Lost Circ 20% Excess Yield=1.19 To Surface	Blow 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
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% AntiFoam, 0.125#/sk Lost Circ 20% Excess Yield=1.19 To Surface	Blow 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	AIR	15.6ppg Class A +0.4% Ret, 0.15% Disp, 0.2% AntiFoam, 0.125#/sk Lost Circ 20% Excess Yield=1.19 To Surface	Blow 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
8.75" Vertical	5-1/2" 20# HCP-110 TXP BTC	Int. Casing	2600	2600	8.0ppg - 9.0ppg SOBM	14.8ppg Class A 25:75:0 System +2.6% Cement extender, 0.7% Fluid Loss additive, 0.45% high temp retarder, 0.2% friction reducer	Rigid Bow Spring every third joint from KOP to TOC	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Speechley	3506	3506	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
8.75" Curve	5-1/2" 20# HCP-110 TXP BTC	Java	4985	4985	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Angola	5193	5193	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
8.75" - 8.5" Lateral	5-1/2" 20# HCP-110 TXP BTC	Rheinstreet	5758	5758	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Sonyea	6055	6055	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
8.75" - 8.5" Lateral	5-1/2" 20# HCP-110 TXP BTC	Cashaqua	6074	6074	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Middlesex	6060.5	6060.5	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
8.75" - 8.5" Lateral	5-1/2" 20# HCP-110 TXP BTC	West River	6126	6126	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Burkett	6170	6170	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
8.75" - 8.5" Lateral	5-1/2" 20# HCP-110 TXP BTC	Tully Limestone	6197	6197	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Hamilton	6206	6206	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
8.75" - 8.5" Lateral	5-1/2" 20# HCP-110 TXP BTC	Marcellus	6226	6226	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		TD	13380	6279	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
8.75" - 8.5" Lateral	5-1/2" 20# HCP-110 TXP BTC	Onondaga	6290	6290	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Onondaga	6290	6290	12.0ppg - 12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions

LP @ 6279' TVD / 6950' MD

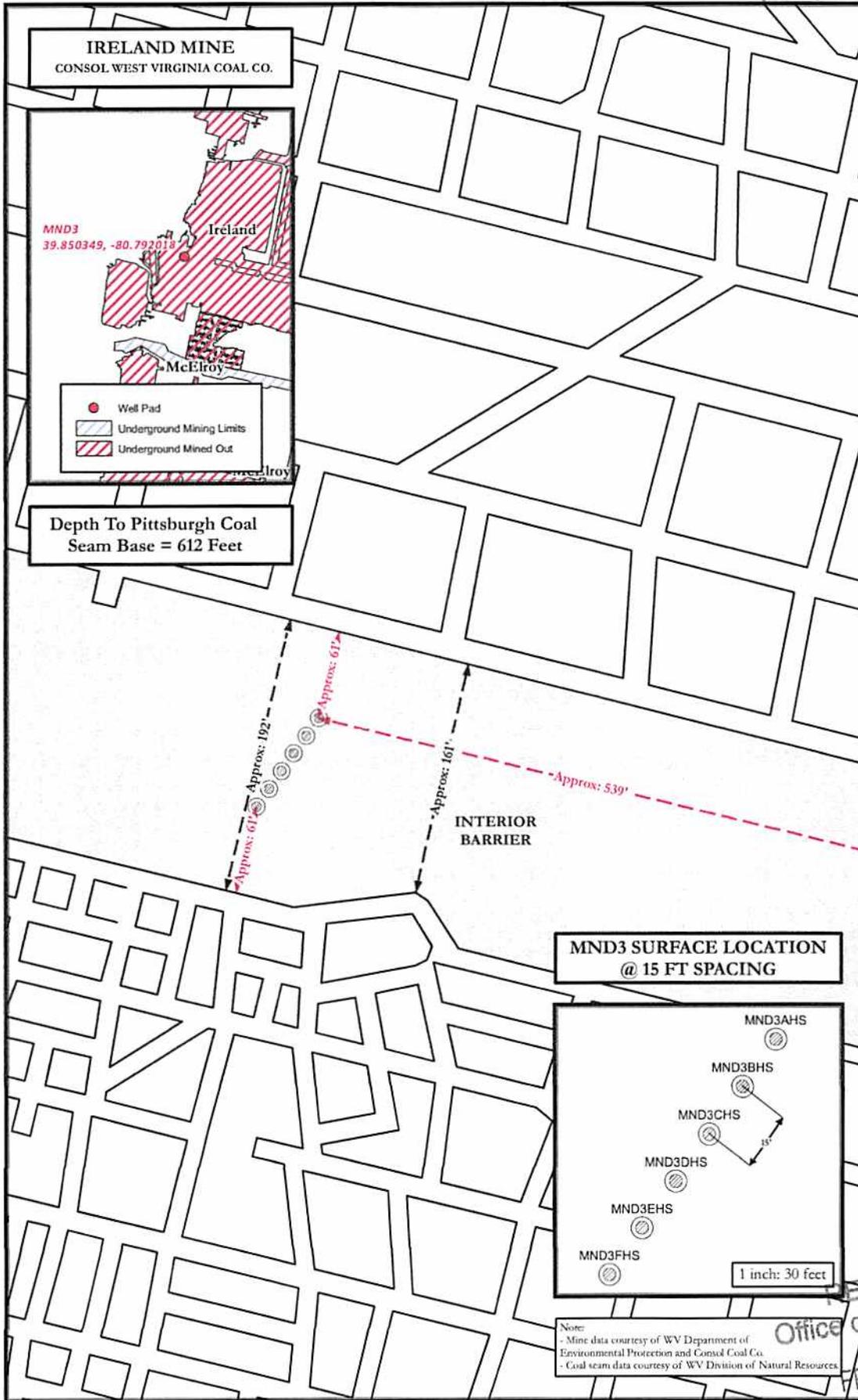
8.75 / 8.5 Hole - Cemented Long String  
 5-1/2" 20# HCP-110 TXP BTC

+/-6421' ft Lateral

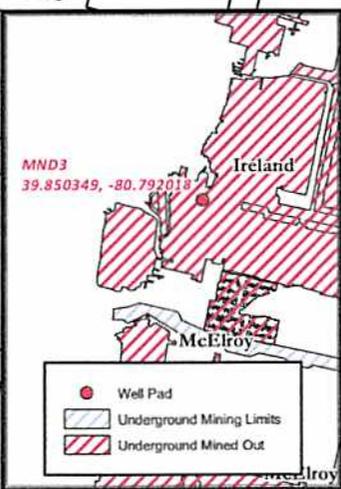
TD @ +/-6279' TVD  
 +/-13380' MD

X=centralizers

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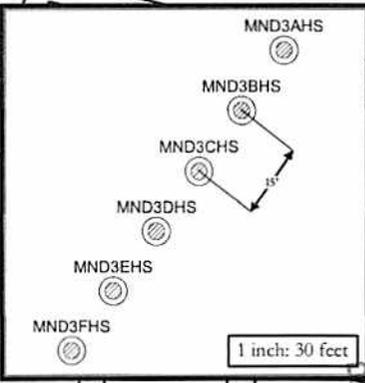


**IRELAND MINE**  
CONSOL WEST VIRGINIA COAL CO.



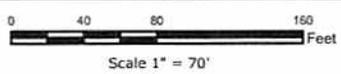
Depth To Pittsburgh Coal  
Seam Base = 612 Feet

**MND3 SURFACE LOCATION  
@ 15 FT SPACING**



Note:  
- Mine data courtesy of WV Department of Environmental Protection and Consol Coal Co.  
- Coal seam data courtesy of WV Division of Natural Resources.

**MND3 SITE SAFETY PLAN**  
- WELLHEAD TOPHOLE LOCATION -



Program: NAD\_1983\_StatePlane\_West\_Virginia\_North\_FIPS\_4701  
Units: Feet US

**noble energy**

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

Date: 2/20/14  
Author: Christopher Glover  
  
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(9/13)

API Number 47 - 4705101739  
Operator's Well No. MND 3 CHS

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' Post Construction 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? 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? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air thru coal string, then SOB M

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

Additives to be used in drilling medium? Please see attached

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

-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

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.

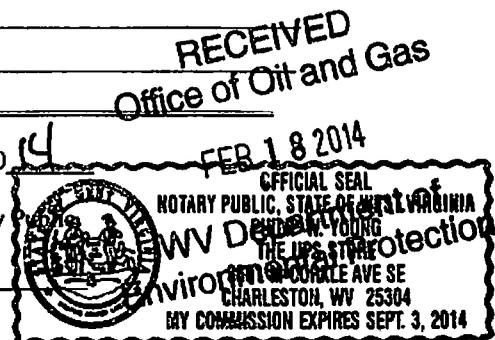
Company Official Signature Laura L. Adkins

Company Official (Typed Name) Laura Adkins

Company Official Title Regulatory Analyst

Subscribed and sworn before me this 17<sup>th</sup> day of FEBRUARY, 2014

My commission expires 9/3/2014



4705101739

Form WW-9

Operator's Well No. MND 3 CHS

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 type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch Hay or straw at 2 Tons/acre

Seed Mixtures

**Temporary**

**Permanent**

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5
See site plans for full list	

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5
See site plans for full list	

Attach:

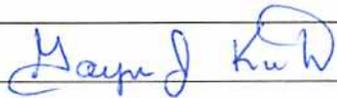
Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Jim Nicholson WVOOG State Inspector



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



Title: Oil & Gas Inspector

Date: 1/2/14

Field Reviewed?  Yes  No

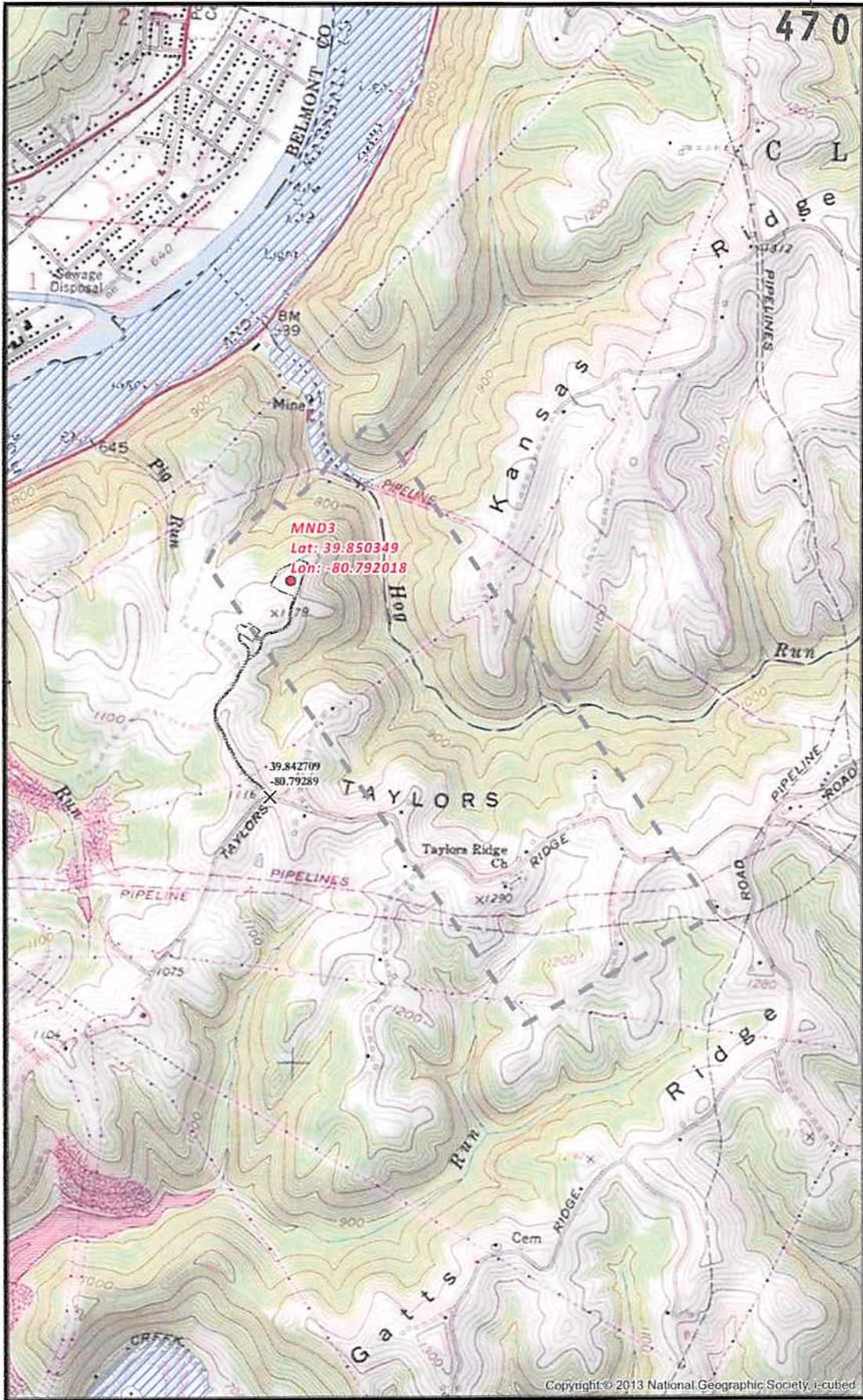
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FEB 18 2014

WV Department of  
Environmental Protection

plat spotted

4705101739



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**MND3 SITE SAFETY PLAN**  
- FLOODPLAIN ZONES -

0 750 1,500 3,000 Feet

Scale 1" = 1,500'

Projection: NAD 1983 StatePlane West Virginia North, FIPS 4703  
Units: Feet US

**noble energy**

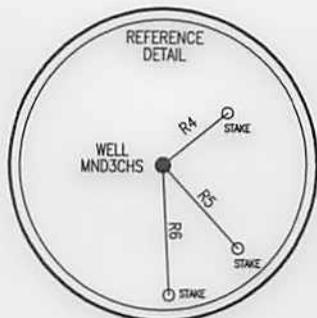
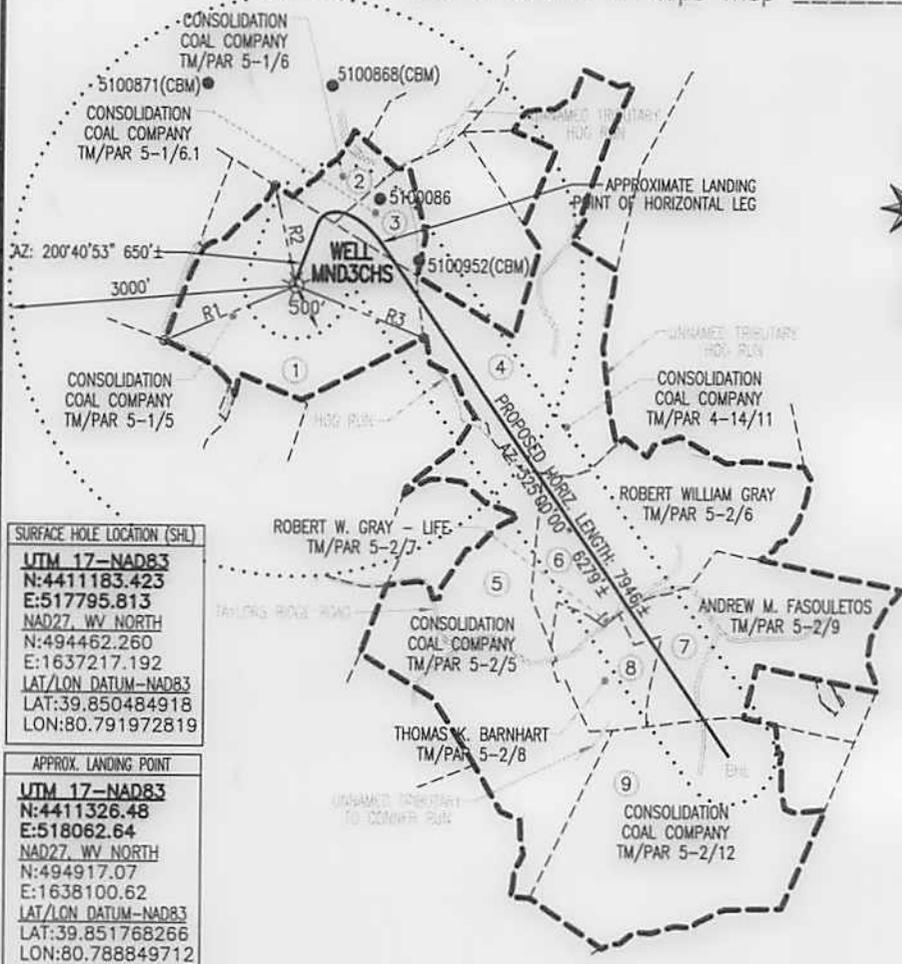
Date: 7/3/2013  
Author: Christopher Glover

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

2/6

Well is located on topo map 8,963' feet south of Latitude: 39° 52' 30"

Well is located on topo map 137' feet west of Longitude: 80° 47' 30"



LINE	BEARING	DISTANCE
R1	S 67°26'47" W	1486.20'
R2	N 12°18'54" W	1064.47'
R3	S 68°27'57" E	1438.81'
R4	N 50°47'01" E	172.43'
R5	S 42°37'03" E	232.69'
R6	S 03°07'01" E	269.17'

**SURFACE HOLE LOCATION (SHL)**  
**UTM 17-NAD83**  
 N:4411183.423  
 E:517795.813  
 NAD27, WV NORTH  
 N:494462.260  
 E:1637217.192  
 LAT/LON DATUM-NAD83  
 LAT:39.850484918  
 LON:80.791972819

**APPROX. LANDING POINT**  
**UTM 17-NAD83**  
 N:4411326.48  
 E:518062.64  
 NAD27, WV NORTH  
 N:494917.07  
 E:1638100.62  
 LAT/LON DATUM-NAD83  
 LAT:39.851768266  
 LON:80.788849712

**BOTTOM HOLE LOCATION (BHL)**  
**UTM 17-NAD83**  
 N:4409743.05  
 E:519211.29  
 NAD27, WV NORTH  
 N:489657.98  
 E:1641783.07  
 LAT/LON DATUM-NAD83  
 LAT:39.837476359  
 LON:80.775468755

- NOTES:
- There are no water wells or developed springs within 250' of proposed well.
  - There are no existing buildings within 625' of proposed well.
  - Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
  - There are no native trout streams within 300' of proposed well.
  - Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
  - 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
- EXISTING WELLS
- ⊙ PLUGGED WELLS

**WELLS WITHIN 3000'**

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

FILE #: MND3CHS  
 DRAWING #: MND3CHS  
 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: OCTOBER 29, 2013  
 OPERATOR'S WELL #: MND3CHS  
 API WELL #: 47 51 01739  
 STATE COUNTY PERMIT

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

WATERSHED: SHORT CREEK ELEVATION: 1124.42'

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

SURFACE OWNER: CONSOLIDATION COAL COMPANY / Consol Mining Co. ACREAGE: 180.214±

OIL & GAS ROYALTY OWNER: SEE ATTACHED WW-6A1 ACREAGE: 606.597±

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: 13,380'±

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

# EROSION & SEDIMENT CONTROL PLAN FOR MND 3 WELL PAD FRANKLIN DISTRICT, MARSHALL COUNTY, WV

**RECEIVED**  
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 FEB 18 2014  
 WV Department of Environmental Protection

Page 1/21/14  
 Page 1/21/14

NO.	DATE	REVISION	BY	CHECKED	SCALE	AS SHOWN	1	7	3	9
1	11/11/13	REVISED PER WV DEP COMMENTS								



FOR BETTER ASSOCIATION  
 MANAGER: MICHAEL R. ODDEN  
 DESIGN BY: OAS  
 DRAWN BY: OAS  
 SURV. CHECK/FILED BY: OAS  
 DATE: 02/27/14

CLIENT: NOBLE ENERGY, SUITE 110  
 333 TECHNOLOGY DRIVE  
 CANTONSBURG, PA 15227-3077  
 BEN DEGENS, PE  
 (724) 820-3000

**REVIEW**  
 RETIEW ASSOCIATES, INC.  
 1000 UNIVERSITY BLVD., SUITE 200, PROSPERITY, PA 15239  
 Phone: (412) 448-1728 • Fax: (412) 448-1733  
 Email: info@retiew.com  
 Website: www.retiew.com

COVER SHEET  
 FOR  
**MND 3 WELL PAD**  
 MARSHALL COUNTY, WV  
 DATE: 6/24/13  
 SHEET NO. 1 OF 18  
 DWG. NO. 093842008

**GENERAL NOTES**

1. THE TOPOGRAPHIC SURVEY UTILIZED FOR THIS BASE MAPPING WAS PERFORMED BY RETIEW ASSOCIATES, INC IN MAY 2013.
2. PROPERTY BOUNDARIES, LANDOWNER INFORMATION AND ROAD NETWORKS SHOWN ON THIS PLAN ARE BASED ON AVAILABLE COUNTY GIS PARCEL DATA.
3. EXISTING STRUCTURES, TREE LINES AND ROADWAYS HAVE BEEN LOCATED PER AVAILABLE ONLINE AERIAL PHOTOGRAPHY.
4. THE HORIZONTAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN DATUM 1983 (NAD 83), NORTH ZONE.
5. THE VERTICAL DATUM IS WEST VIRGINIA STATE PLANE, NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
6. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT LOCATION PRIOR TO ANY EXCAVATION BY NOTIFYING THE UTILITY OF WEST VIRGINIA AT 1-800-345-6848.
7. A WETLANDS PRESENCE/ABSENCE SURVEY WAS PERFORMED BY RETIEW ASSOCIATES IN MAY 2013.
8. CONTRACTOR TO PROTECT ALL WETLANDS. NO WETLAND IMPACTS ARE PROPOSED IN THIS PLAN.
9. THE CUT & FILL SUMMARY CALCULATIONS PRESENTED ON THIS PLAN ARE FOR PERMITTING AND INFORMATIONAL PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING GRADES AND TO VERIFY EARTHWORK VOLUMES, METHODS AND PROCEDURES. ANY ISSUES ARE TO BE BROUGHT TO THE ENGINEER'S AND OWNER'S ATTENTION PRIOR TO COMMENCEMENT OF WORK.
10. ALL EXISTING UTILITIES HAVE BEEN SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION.
11. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL ABOVE AND BELOW GROUND UTILITIES AND STRUCTURES AND WILL BE RESPONSIBLE FOR THE PROTECTION OF THESE UTILITIES AND STRUCTURES AT ALL TIMES.
12. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE AND ANY DAMAGE DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE REPAIRED IMMEDIATELY AND COMPLETELY AT HIS EXPENSE.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF DAMAGED OR DESTROYED LANDSCAPE AND LAWNS.
14. CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE PROJECT SITE PRIOR TO THE START OF CONSTRUCTION.
15. CONTRACTOR TO RELOCATE UTILITIES AS REQUIRED.
16. CONTRACTOR MAY WIDEN ACCESS ROAD DUE TO STEEP SLOPES IF DEEMED NECESSARY AND PER APPROVAL BY THE OWNER AND ENGINEER.
17. PROPOSED ROCK CONSTRUCTION ENTRANCE TO BE BUILT SUCH THAT RUNOFF FROM PROPOSED ACCESS WILL NOT SHEET FLOW ON TO PUBLIC ROAD.
18. SEED AND MULCH ALL DISTURBED AREAS PER DETAILS IN THIS PLAN.
19. ALL CLEARED TREE BRANCHES SHALL BE PLACED ON UPHILL SIDE OF COMPOST FILTER SOCKS AND NOT STOCKPILED ON-SITE.
20. CONTRACTOR SHALL STOP WORK IMMEDIATELY AND CONTACT NOBLE ENERGY AND APPROPRIATE RESPONSIBLE AUTHORITIES SHOULD ANY HISTORICAL ARTIFACTS (I.E. BONES, POTTERY, ETC.) BE ENCOUNTERED DURING CONSTRUCTION.
21. NO WORK SHALL BE DONE OUTSIDE THE LIMITS OF DISTURBANCE OR IN PROTECTED AREAS.

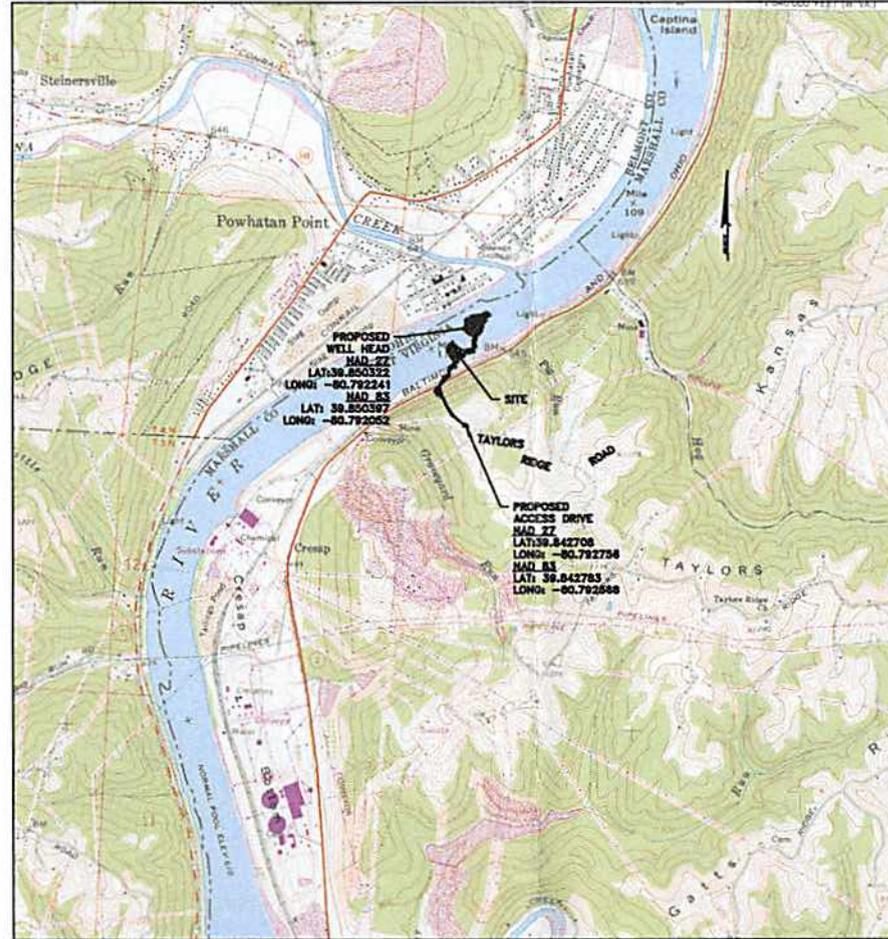
**DIRECTIONS TO THE SITE**

FROM INTERSECTION OF I-470 AND US-25/99A-2:  
 TAKE HWY-2 SOUTH FOR 8.5 MILES. TURN LEFT ON  
 WV-2 ALT AND THEN IMMEDIATELY BEAR LEFT ON  
 ROBERTS RIDGE ST (JOSEPH RD/CR-2) AND FOLLOW  
 FOR 4.8 MILES. TURN RIGHT ON TAYLORS ROAD.  
 ROAD FOLLOW FOR 2.7 MILES EXISTING ACCESS  
 DRIVE WILL BE ON RIGHT.

**CUT & FILL**

	WELL PAD	WELL ACCESS	TANK PAD	TANK ACCESS	TOTAL SITE
CUT	+31,262 C.Y.	+11,349 C.Y.	+5,293 C.Y.	+2,100 C.Y.	+50,004 C.Y.
STONE	+ 4,127 C.Y.	-	+1,227 C.Y.	+ 242 C.Y.	+ 5,600 C.Y.
FILL	-34,794 C.Y.	- 1,282 C.Y.	-8,991 C.Y.	- 194 C.Y.	-43,261 C.Y.
10% COMPACTION	- 3,188 C.Y.	- 868 C.Y.	- 898 C.Y.	- 215 C.Y.	- 5,069 C.Y.
TOTAL	- 3,064 C.Y.	- 3,042 C.Y.	-4,664 C.Y.	- 337 C.Y.	- 8,823 C.Y.
NET	- 7,044 C.Y.	+ 8,066 C.Y.	-2,601 C.Y.	+1,561 C.Y.	+ 9 C.Y.

- NOTES:  
 1. THE ASSUMED TOP SOIL DEPTH IS 7".  
 2. THE CUT & FILL SUMMARY CALCULATIONS PRESENTED ON THIS PLAN ARE FOR INFORMATIONAL PURPOSES ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING GRADES AND TO VERIFY EARTHWORK VOLUMES, METHODS AND PROCEDURES. ANY ISSUES ARE TO BE BROUGHT TO THE ENGINEER'S AND OWNER'S ATTENTION PRIOR TO COMMENCEMENT OF WORK.



7.5 MN. QUADRANGLE MAP: POWHATAN POINT, OH-WV  
**LOCATION MAP**  
SCALE - 1"=2000'

WEST VIRGINIA

CALL BEFORE Dial

AT LEAST 48 HOURS, BUT NOT MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO THE STARTING ANY EARTH DISTURBANCE ACTIVITIES. ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL CONTACT THE UTILITY OF WEST VIRGINIA AT 811 OR 1-800-949-8848.

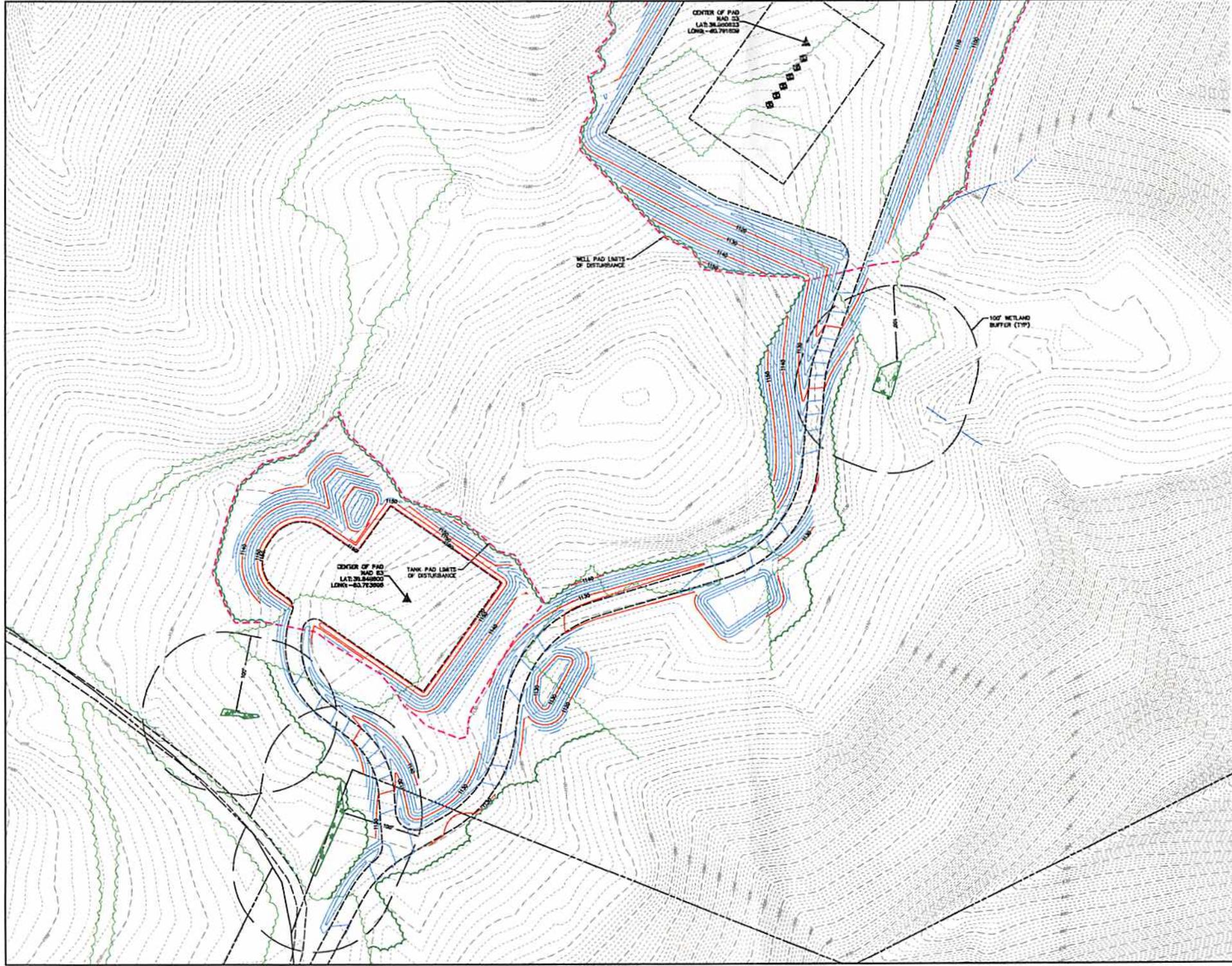
**SOILS CLASSIFICATION**

OaG CALLEGA-CORNING COMPLEX, 8% TO 15% SLOPES  
 OaG CALLEGA-CORNING COMPLEX, 15% TO 25% SLOPES  
 OaG CALLEGA-CORNING-PEABODY COMPLEX, 8% TO 15% SLOPES  
 OaG CALLEGA-CORNING-PEABODY COMPLEX, 15% TO 25% SLOPES  
 OaG CORNING-CALLEGA COMPLEX, 30% TO 70% SLOPES, VERY STONY  
 OaG CALLEGA-CORNING-PEABODY COMPLEX, 8% TO 15% SLOPES

- LIST OF DRAWINGS**
- 1 OF 18 ..... COVER SHEET
  - 2 OF 18 ..... ENVIRONMENTAL RESOURCES BUFFER PLAN
  - 3 OF 18 ..... OVERALL SITE PLAN
  - 4 OF 18 ..... AREAS "A" & "B" LAYOUT PLAN
  - 5 OF 18 ..... AREA "C" LAYOUT PLAN
  - 6 OF 18 ..... AREA "D" LAYOUT PLAN
  - 7 OF 18 ..... AREAS "A" & "B" EROSION & SEDIMENT CONTROL PLAN
  - 8 OF 18 ..... AREA "C" EROSION & SEDIMENT CONTROL PLAN
  - 9 OF 18 ..... AREA "D" EROSION & SEDIMENT CONTROL PLAN
  - 10 OF 18 ..... ACCESS DRIVE PROFILES
  - 11 OF 18 ..... ACCESS DRIVE PROFILES
  - 12 OF 18 ..... CROSS SECTIONS PLAN VIEW
  - 13 OF 18 ..... CROSS SECTIONS
  - 14 OF 18 ..... CROSS SECTIONS
  - 15 OF 18 ..... WELL PAD RECLAMATION PLAN
  - 16 OF 18 ..... TANK PAD RECLAMATION PLAN
  - 17 OF 18 ..... NOTES & DETAILS
  - 18 OF 18 ..... DETAILS

**DISTURBANCE SUMMARY**

TOTAL LIMITS OF DISTURBANCE	= 15.8 ACRES
CLEARING REQUIRED	= 11.1 ACRES
PAD DISTURBANCE	= 8.1 ACRES



APPROVED  
 WVDEP  
 11/13/13

RECEIVED  
 Office of Oil and Gas

ENVIRONMENTAL RESOURCES BUFFER PLAN FOR <b>MND 3 WELL PAD</b> FRANKLIN DISTRICT MARSHALL COUNTY, WV		<b>RETTEW</b> <small>INCORPORATED IN WV</small> 1000 UNIVERSITY BLVD. NO. TOWER, 403 BROADWAY, 7th Fl. 205, Pittsburgh, PA 15208 Phone (412) 444-1778 • Fax (412) 444-1733 Website: www.retrew.com <small>Engineers • Surveyors • Geologists • Environmental Scientists</small>		CLIENT <b>noble energy</b> NOBLE ENERGY SUITE 116 333 TECHWOOD DRIVE CANNONBURG, PA 15117-3077 BEN PEREJINE, PE (724) 820-3000		MANAGER MICHAEL R. OGDEN DESIGNER ASH DRAWN BY ASH SURV. CHECK MEG WILCOX		CHECKED BY ASL CHECKED BY ASL FIELDWORK BY MEG WILCOX		FOR REVIEW ASSOCIATED BY FEB 18 2014 DEPARTMENT OF <b>Environmental Protection</b>	
DATE:	8/24/13										
SHEET NO.	2 of 18										
DWG. NO.	023842008										

