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

PERMIT MODIFICATION APPROVAL

June 12, 2013

NOBLE ENERGY, INC.
333 TECHNOLOGY DRIVE, SUITE 110
CANONSBURG, PA 15317

Re: Permit Modification Approval for API Number 5101571 , Well #: MND9DHS
extended lateral bore, extended surface casing, and shortened intermediate casing

Oil and Gas Operator:
The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

for

Gene Smith
Regulatory/Compliance Manager
Office of Oil and Gas

west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
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Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

for Gene Smith
Regulatory/Compliance Manager
Office of Oil and Gas

Well is located on topo map 679' feet south of Latitude: 39°50'00"

Well is located on topo map 10,479' feet west of Longitude: 80°45'00"

LEGEND

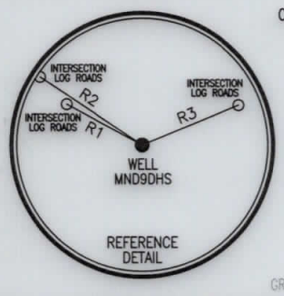
- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED.
- WATER SOURCE
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- PROPOSED HORIZONTAL WELL
- ROAD
- STREAM CENTER LINE

WELLS WITHIN 3000'

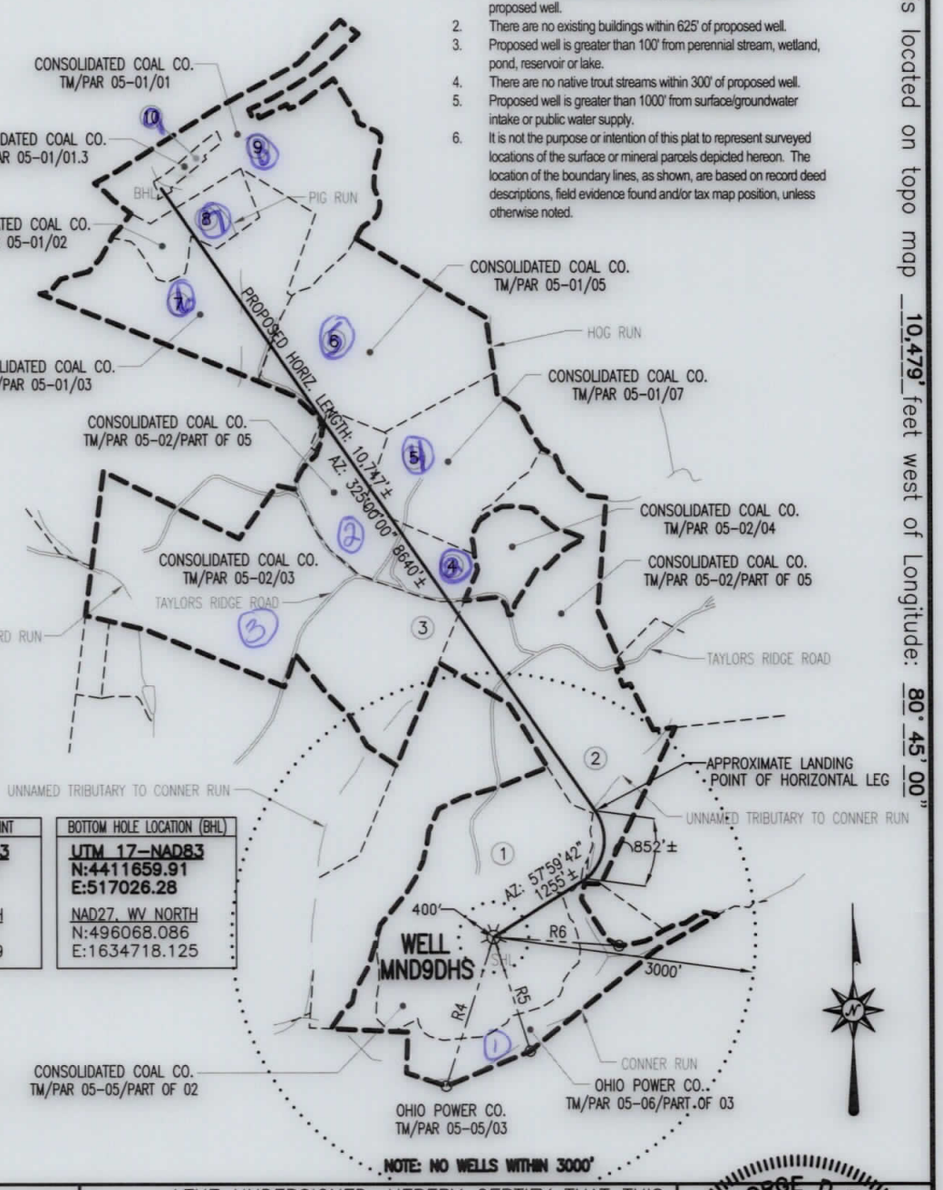
- EXISTING WELLS
- PLUGGED WELLS

NOTES:

1. There are no water wells or developed springs within 250' of proposed well.
2. There are no existing buildings within 625' of proposed well.
3. Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
4. There are no native trout streams within 300' of proposed well.
5. Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
6. It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.



LINE	BEARING	DISTANCE
R1	N 78°44'30" W	198.47'
R2	N 68°07'48" W	277.85'
R3	N 80°35'56" E	218.73'
R4	S 17°52'02" W	1778.71'
R5	S 17°45'09" E	1359.80'
R6	S 86°03'35" E	1438.09'



SURFACE HOLE LOCATION (SHL)	APPROX. LANDING POINT	BOTTOM HOLE LOCATION (BHL)
UTM 17-NAD83	UTM 17-NAD83	UTM 17-NAD83
N:4409082.932	N:4409525.76	N:4411659.91
E:518219.133	E:518567.38	E:517026.28
NAD27, WV NORTH	NAD27, WV NORTH	NAD27, WV NORTH
N:487546.263	N:488980.289	N:496068.086
E:1638491.218	E:1639658.229	E:1634718.125

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

FILE #: MND9DHS

DRAWING #: MND9DHS

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: George D. Six

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: MARCH 6, 2013

OPERATOR'S WELL #: MND9DHS SERIAL No.: WV0510629HS

API WELL #: 47 (STATE) 51 (COUNTY) 1571 H6A (PERMIT)

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

WATERSHED: CONNER RUN ELEVATION: 1221.03'

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

SURFACE OWNER: CONSOLIDATION COAL COMPANY ACREAGE: 123.244±

OIL & GAS ROYALTY OWNER: SEE ATTACHED WW-6A1 ACREAGE: 791.169±

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: 6,600'± TMD: 16,186'±

WELL OPERATOR NOBLE ENERGY INC. DESIGNATED AGENT STEVEN M. GREEN

Address 333 TECHNOLOGY DRIVE Address 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 1001

City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

Well is located on topo map 679 feet south of Latitude: 39° 50' 00"

Well is located on topo map 10,479 feet west of Longitude: 80° 45' 00"

LINE	BEARING	DISTANCE
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R6	S 86°03'35" E	1438.09'

SURFACE HOLE LOCATION (SHL)	APPROX. LANDING POINT	BOTTOM HOLE LOCATION (BHL)
UTM 17-NAD83 N:4409082.932 E:518219.153	UTM 17-NAD83 N:4409552.76 E:518567.38	UTM 17-NAD83 N:4411659.91 E:517026.28
NAD27, WV NORTH N:468946.263 E:1638491.218	NAD27, WV NORTH N:468980.289 E:1639658.229	NAD27, WV NORTH N:469068.086 E:1637418.125

Blue Mountain Engineering
1102 MASON DIXON HIGHWAY
BURTON, WV 26562
PHONE: (304) 662-6486

FILE #: MND9DHS

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Signed:

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: MARCH 6, 2013

OPERATOR'S WELL #: MND9DHS SERIAL No.: WV0510629HS

API WELL #: 47 STATE 51 COUNTY 1521 H6A PERMIT

Well Type: ☐ Oil ☐ Waste Disposal ☒ Production ☒ Deep

☒ Gas ☐ Liquid Injection ☐ Storage ☐ Shallow

WATERSHED: CONNER RUN ELEVATION: 1221.03'

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

SURFACE OWNER: CONSOLIDATION COAL COMPANY ACREAGE: 123.244±

OIL & GAS ROYALTY OWNER: SEE ATTACHED WW-6A1 ACREAGE: 791.169±

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: 6,600'± TMD: 16,186'±

WELL OPERATOR NOBLE ENERGY INC. DESIGNATED AGENT STEVEN M. GREEN

Address 333 TECHNOLOGY DRIVE Address 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 1001

City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

51-01571 MOD2

noble energy

Dee Swiger
Regulatory Analyst

June 10, 2013
West Virginia Department of Environmental Protection
Office of Oil and Gas,
601 57th Street, SE
Charleston, WV 25304

Re: Drilling Permit Modifications – **Well "MNDS9BHS / MNDS9CHS / MND9DHS/ MNDS9EHS /MNDS9FHS"**

Dear Gene and Bill,

Gene per our conversation this morning, Please find modification for the above listed permits. We would like to extend the surface casing to 1200' on each well and the Intermediate casing to 2500' or 100' below the Big Injuin. These wells are located in Marshall County, WV.

If any further information or correspondence is required, please contact me at Office (724)820-3061 Cell 412-310-8967 or Dswiger@nobleenergyinc.com.

Sincerely,

Dee Swiger

DS/

Enclosure(s):

51-01571 MOD2

noble energy

March 18, 2013

WVDEP Office of Oil and Gas
ATTN: Laura Cooper
601 57th Street
Charleston, WV 25304

Re: Proposed Revisions for Well Permit Applications and Permit MNDS 9 AHS / MNDS 9 BHS / MNDS 9 CHS / MNDS 9 DHS/ MNDS 9 EHS / MNDS 9 FHS

Dear Laura:

Please find attached revision requests to extend the lateral well bores for MNDS9AHS, MNDS9BHS, MNDS9CHS, MNDS9EHS and MNDS9FHS. I have also attached a modification request for the permit already issued on this pad for the MNDS9DHS, API number 51-01571 to extend this lateral as well.

I have included copies of leases for the tracts that are in the process of being recorded in Marshall County.

Sincerely,

Laura L. Adkins

Laura Adkins, Regulatory Analyst
Noble Energy, Inc.

Enclosure(s)

RECEIVED
Office of Oil and Gas
MAR 25 2013
WV Department of Environmental Protection

51-01571 MOD2

WW - 6B
(1/12)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

51 03 558

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

2) Operator's Well Number: MND9DHS Well Pad Name: MND9HS

3 Elevation, current ground: 1221.03 Elevation, proposed post-construction: 1223

4) Well Type: (a) Gas ■ Oil _____
Other _____
(b) If Gas: Shallow _____ Deep ■
Horizontal ■

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Target - Marcellus, Depth - 6571', Thickness - 46', Pressure - 2912#

7) Proposed Total Vertical Depth: 6698'
8) Formation at Total Vertical Depth: Marcellus
9) Proposed Total Measured Depth: 16,186'
10) Approximate Fresh Water Strata Depths: 255'
11) Method to Determine Fresh Water Depth: closest well API # 4705100566 - Seneca Technology data base
12) Approximate Saltwater Depths: 1718'
13) Approximate Coal Seam Depths: Sewickley - 667.4' - 670.7 and Pittsburgh - 756.9' - 762.8
14) Approximate Depth to Possible Void (coal mine, karst, other): None expected
15) Does land contain coal seams tributary or adjacent to, active mine? None
16) Describe proposed well work: Drill the vertical depth to the Onondaga, estimated total vertical depth of 6,698 feet. Plugging back from total depth with solid cement to estimated KOP of 5,698 feet. Drill Horizontal Well in Marcellus Formation to an estimated length including the curve of 8,473 feet. Total measured depth of 14,171 feet.

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

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

19) Area to be disturbed for well pad only, less access road (acres): 10.1 acres (no access road using private CONSOL road)

RECEIVED
MAR 25 2013

WW - 6B
(1/12)

API # 47- 051- 01571 MOD2

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	20"	N	LS	52	40'	40'	CTS / 15.6 ppg Yield 1.2
Fresh Water	13 3/8"	N	J55	54.5	1200'	1200'	CTS / 15.6 ppg Yield 1.2
Coal	13 3/8"	N	J55	54.5	1200'	1200'	CTS / 15.6 ppg Yield 1.2
Intermediate	9 5/8"	N	J55	36.0	2500' or 100' below Big Injuin	2500' or 100' below Big Injuin	CTS / 15.6 ppg Yield 1.19
Production	5 1/2"	N	P110	20.0	16186'	16186'	14.8 ppg yield 1.27 TOC 200' above 9.625 shoe
Tubing							
Liners							

We would like to drill through all the freshwater and coal bearing zones before running casing. we plan to drill no more than 100' below the deepest freshwater and/or coal bearing zone(s) and run casing which will be circulated with cement to the surface.

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	26"	.5		Type 1	1.2
Fresh Water	13 3/8"	17 1/2"	.380	2730	Type 1	1.2
Coal	13 3/8"	17 1/2"	.380	2730	Type 1	1.2
Intermediate	9 5/8"	12 3/8"	.352	3520	Class A	1.19
Production	5 1/2"	8 3/4" & 8 1/2"	.361	12,630	Class A	1.27
Tubing						
Liners						

PACKERS

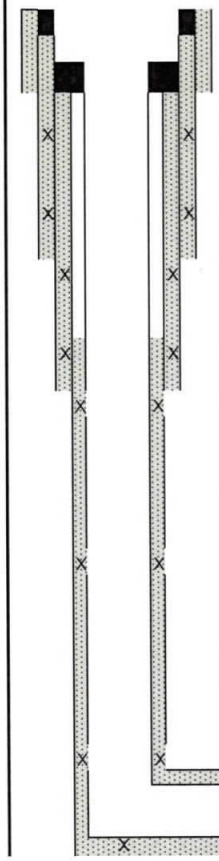
Kind:				
Sizes:				
Depths Set:				

SI-01571 MOD 2

noble energy

DRILLING WELL PLAN
MND-9D-HS
Macellus Shale Horizontal
Marshall County, WV

		MND-9D SHL (Lat/Long)	(487546.263N, 1638491.218E) (NAD27)
Ground Elevation	1213'	MND-9D LP (Lat/Long)	(488980.289N, 1639658.229E) (NAD27)
Azm	324°	MND-9D BHL (Lat/Long)	(496068.086N, 1634718.125E) (NAD27)

WELLBORE DIAGRAM	HOLE	CASING	GEOLOGY	MD	TVD	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS
	26	20" 52# LS	Conductor	40	40	AIR	To Surface	NA	Ensure the hole is clean at TD.	Conductor casing = 0.25" wall thickness
	17 1/2	13 3/8" 54.5# J-55 BTC	Sewickly Coal Seam	673	673	AIR	15.6 ppg Type 1 + 2% CaCl, 0.25# Lost Circ 20% 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.	Conductor casing = 0.25" wall thickness Surface casing = 0.380" wall thickness Burst=2730 psi
			Pittsburgh Coal	763	763					
			Base of Freshwater	756	756					
			Int. Casing	906	906					
	12 3/8	9-5/8" 36# J-55 LTC	Weir Sand	2451	2451	AIR	15.6ppg Class A +0.4% Ret, 0.15% Disp, 0.2% AntiFoam, 0.125#/sk Lost Circ 30% 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.	Intermediate casing = 0.352" wall thickness Burst=3520 psi
			Berea Sand	2644	2644					
			Gordon	2877	2877					
			Speechley	3607	3607					
			Int. Casing	3725	3725					
	8.75" Vertical	5-1/2" 20# HCP-110 TXP BTC	Java		5086	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 15% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every third joint from KOP to TOC	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
			Angola		5294					
			Rheinstreet		5859					
	8.75" Curve		Sonyea		6156	12.0ppg-12.5ppg SOBM		Rigid Bow Spring every joint to KOP		
			Cashaqua		6175					
			Middlesex		6182					
			West River		6227					
			Burkett		6271					
			Tully Limestone		6298					
			Hamilton		6307					
	8.75" - 8.5" Lateral		Marcellus		6327	12.0ppg-12.5ppg SOBM				
			TD	16186	6600					
			Onondaga		6391					

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

+/-8640 ft Lateral

TD @ +/-6600 TVD
+/-16186 MD

X=centralizers

SI-01571 MOD2

noble energy

Laura Adkins
Regulatory Analyst

Laura Cooper
West Virginia Department of Environmental Protection
Office of Oil and Gas
Environmental Resource Specialist
601 57th St. S.E
Charleston, WV 25304

Permit Applications – **MND9AHS, MND9BHS, MND9CHS, MND9DHS, MND9EHS, MND9FHS**

Dear Laura,

Noble Energy, Inc. declares the right to drill, market, and produce from beneath any and all public roads as described on the attached survey plat.

Please let me know if you require further information.

Sincerely,

Laura L. Adkins

Laura Adkins

Enclosure(s):

51-01571 MOD2

WW-6A1
(1/12)

Operator's Well No. MND9DHS

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

(1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;

(2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
1.) Margaret Games	CNX Gas Company, LLC	Not less than 1/8	763/441
Elizabeth Patterson	CNX Gas Company, LLC	Not less than 1/8	763/437
Charles J. Wiesner	CNX Gas Company, LLC	Not less than 1/8	763/429
John Wiesner	CNX Gas Company, LLC	Not less than 1/8	763/433
Kenneth Schmitt	CNX Gas Company, LLC	Not less than 1/8	763/421
Mary Ellen Sedon	CNX Gas Company, LLC	Not less than 1/8	763/417

Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Noble Energy, Inc.
By: Laura L. Adkins
Its: Regulatory Analyst

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MAR 25 2013

SI-01571 Mod 2

1. cont) Tract 5-5-2 & Pt 5-6-3			
Lessor/Assignor	**Lessee/Assignee**	**Royalty**	**Book/Page**
Alfred Kaczorowski, Jr., & Sharon M. Kaczorowski, his wife	CNX Gas Company, LLC	Not less than 1/8	763/425
Consolidation Coal Company	CNX Gas Company, LLC	0%	646/493
CNX Gas Company, LLC	Noble Energy, Inc.	0%	752/66
2.) Tract 5-2-5			
Lessor/Assignor	**Lessee/Assignee**	**Royalty**	**Book/Page**
Consolidation Coal Company	CNX Gas Company, LLC	0%	646/493
CNX Gas Company, LLC	Noble Energy, Inc.	0%	752/66
3.) Tract 5-2-3			
Lessor/Assignor	**Lessee/Assignee**	**Royalty**	**Book/Page**
Consolidation Coal Company	CNX Gas Company, LLC	0%	646/493
CNX Gas Company, LLC	Noble Energy, Inc.	0%	752/66
4.) Tract 5-1-7			
Lessor/Assignor	**Lessee/Assignee**	**Royalty**	**Book/Page**
John Alfred Yutzey and Susan Yutzey, both individually and as husband and wife	CNX Gas Company, LLC	Not less than 1/8	781/19
Glen A. Yutzey aka Glen Albert Yutzey, and Mary L. Yutzey, both individually and as husband and wife	CNX Gas Company, LLC	Not less than 1/8	778/264
Yolanda Katherine Anderson and Raymond H. Anderson, both individually and as wife and husband	CNX Gas Company, LLC	Not less than 1/8	778/268
Consolidation Coal Company	CNX Gas Company, LLC	0%	646/493
CNX Gas Company, LLC	Noble Energy, Inc.	0%	752/66
5.) Tract 5-1-5			
Lessor/Assignor	**Lessee/Assignee**	**Royalty**	**Book/Page**
Howard T. Conner, married	CNX Gas Company, LLC	Not less than 1/8	Unrecorded lease, see attachment
Ruth Ann Ferris	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Larry F. Jefferson	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Sarah J. Knabenshue, married	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Mary L. Whittington	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Belinda Eddy fka Belinda Page Hoover, a married woman dealing in her sole and separate property	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Dara Marner and Douglas D. Marner, both individually and as wife and husband	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Jessica McNabb fka Jesica Faye Hoover, a married woman dealing in her sole and separate property	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy

51-01571 MOD2

Cheryl Sullivan, a single woman	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
George H. Wells and Nancy Eklund Wells, both individually and as husband and wife	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
William C.M. Wilson and Hiram C. Wilson, as Trustees of The Nancy L. Wilson Revocable Trust	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Wayland W. Bowser, a married man dealing in his sole and separate property	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Barbara G. Mathews, by Gay L. Mathews, Her Attorney in Fact	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Consolidation Coal Company	CNX Gas Company, LLC	0%	646/493
CNX Gas Company, LLC	Noble Energy, Inc.	0%	752/66
6.) Tract 5-1-3			
Lessor/Assignor	**Lessee/Assignee**	**Royalty**	**Book/Page**
Belinda Eddy fka Belinda Page Hoover, a married woman dealing in her sole and separate property	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Dara Marner and Douglas D. Marner, both individually and as wife and husband	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Jessica McNabb fka Jesica Faye Hoover, a married woman dealing in her sole and separate property	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Cheryl Sullivan, a single woman	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
George H. Wells and Nancy Eklund Wells, both individually and as husband and wife	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
William C.M. Wilson and Hiram C. Wilson, as Trustees of The Nancy L. Wilson Revocable Trust	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Wayland W. Bowser, a married man dealing in his sole and separate property	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Barbara G. Mathews, by Gay L. Mathews, Her Attorney in Fact	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Consolidation Coal Company	CNX Gas Company, LLC	0%	646/493
CNX Gas Company, LLC	Noble Energy, Inc.	0%	752/66
7.) Tract 5-1-2			
Lessor/Assignor	**Lessee/Assignee**	**Royalty**	**Book/Page**
Belinda Eddy fka Belinda Page Hoover, a married woman dealing in her cole and separate property	CNX Gas Company, LLC	Not less than 1/8	Unrecorded lease, see attached
Dara Marner and Douglas D. Marner, both individually and as wife and husband	CNX Gas Company, LLC	Not less than 1/8	Unrecorded lease, see attached
Jessica McNabb fka Jessica Faye Hoover, a married woman dealing in her sole and separate property	CNX Gas Company, LLC	Not less than 1/8	Unrecorded lease, see attached
Cheryl Sullivan, a single woman	CNX Gas Company, LLC	Not less than 1/8	Unrecorded lease, see attached

George H. Wells and Nancy Eklund Wells, both individually and as husband and wife	CNX Gas Company, LLC	Not less than 1/8	Unrecorded lease, see attached
William C.M. Wilson and Hiram C. Wilson, as Trustees of The Nancy L. Wilson Revocable Trust	CNX Gas Company, LLC	Not less than 1/8	Unrecorded lease, see attached
Wayland W. Bowser, a married man dealing in his sole and separate property	CNX Gas Company, LLC	Not less than 1/8	Unrecorded lease, see attached
Darla Jackson, a married woman dealing in her sole and separate property	CNX Gas Company, LLC	Not less than 1/8	787/405
Earnie R. Johnson, a single man	CNX Gas Company, LLC	Not less than 1/8	786/466
Ronald R. Johnson, a married man dealing in his sole and separate property	CNX Gas Company, LLC	Not less than 1/8	786/463
June Morris, a widow	CNX Gas Company, LLC	Not less than 1/8	Unrecorded lease, see attached
Barbara Sue Nice, a married woman dealing in her sole and separate property	CNX Gas Company, LLC	Not less than 1/8	785/589
James Persinger and Tonda J. Persinger, both individually and as husband and wife	CNX Gas Company, LLC	Not less than 1/8	785/596
John Persinger and Debra K. Persinger, both individually and as husband and wife	CNX Gas Company, LLC	Not less than 1/8	786/599
Rodney Persinger, a single man	CNX Gas Company, LLC	Not less than 1/8	786/593
Lisa Schultz, a married woman dealing in her sole and separate property	CNX Gas Company, LLC	Not less than 1/8	787/408
Kathy Wendel, a single woman	CNX Gas Company, LLC	Not less than 1/8	786/608
Barbara G. Mathews, by Gay L. Mathews, Her Attorney in Fact	CNX Gas Company, LLC	Not less than 1/8	Unrecorded Lease, see attached copy
Consolidation Coal Company	CNX Gas Company, LLC	0%	646/493
CNX Gas Company, LLC	Noble Energy, Inc.	0%	752/66
8.) Tract 5-1-1			
Lessor/Assignor	**Lessee/Assignee**	**Royalty**	**Book/Page**
Consolidation Coal Company	CNX Gas Company, LLC	0%	646/493
CNX Gas Company, LLC	Noble Energy, Inc.	0%	752/66
9.) Tract 5-1-1.3			
Lessor/Assignor	**Lessee/Assignee**	**Royalty**	**Book/Page**
Consolidation Coal Company	CNX Gas Company, LLC	0%	646/493
CNX Gas Company, LLC	Noble Energy, Inc.	0%	752/66

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

PERMIT MODIFICATION APPROVAL

November 26, 2012

NOBLE ENERGY, INC.
333 TECHNOLOGY DRIVE, SUITE 110
CANONSBURG, PA 15317

Re: Permit Modification Approval for API Number 5101571 , Well #: MND9DHS
MODIFIED TO ADD FLOWBACK PIT

Oil and Gas Operator:
The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

for Natalie Poynter

Gene Smith
Regulatory/Compliance Manager
Office of Oil and Gas

WW-70

Affidavit of Personal Service

Commonwealth of Pennsylvania
County of __Greene_____

The undersigned, being first duly sworn, says that the undersigned served at true and complete copy of all sides of -- (along with appropriate attachments:)

NOTICE OF SEISMIC ACTIVITY: FORM WW-6A2 _____
NOTICE OF ENTRY FOR PLAT SURVEY: FORM WW-6A3_____
NOTICE OF INTENT TO DRILL: FORM WW-6A4 _____
NOTICE OF PLANNED OPERATION: FORM WW-6A5 _____
NOTICE OF APPLICATION: FORM WW-6A X
NOTICE OF WELL WORK OR SITE PREPARTAION: FORM WW-6A6 _____

--all with respect to operator's IMPOUNDMENT **MND9HS Freshwater Impoundment** Located in **Franklin** District, **Marshall** County, West Virginia, upon the person or organization named – **Consolidation Coal Company** -by delivering the same in **Washington** County, **Commonwealth of Pennsylvania** on the **23rd day of October, 2012** in the manner specified below.

[COMPLETE THE APPRORIATE SECTION]

For an individual:

[ ] Handing it to him___/ her_____/ or, because he _____/ she_____/ refused to take it when offered it, by leaving it in his _____/ her_____/ presence.

[ ] Handing it to a member of his or her family above the age of 16 years named _____ who resides at the usual place of abode of the person to be served, and asking the family member to give it to the person to be served as soon as possible.

For a partnership:

[ ] Handing it to _____, a partner of the partnership or, because the partner refused to take it when I handed it over, by leaving it in the presence of the partner.

For a limited partnership:

[ ] Handing it to the general partner, named _____, or, because the general partner refused to take it when I tried to hand it over, by leaving it in the presence of the general partner.

For a corporation:

[X] Handing it to the corporation's employee _X__/ officer_____/ director_____/ attorney in fact ____/ named **Joe Wilcox.**

Renee Thomas
(Signature of person executing service)

Taken, subscribed and sworn before me this 7th day of November 2012.

My commission expires October 19, 2013

Janice L Davis
Notary Public

(AFFIX SEAL IF NOTARIZED OUTSIDE THE STATE)

NOTARIAL SEAL
JANICE L DAVIS
Notary Public
CECIL TWP., WASHINGTON COUNTY
My Commission Expires Oct 19, 2013

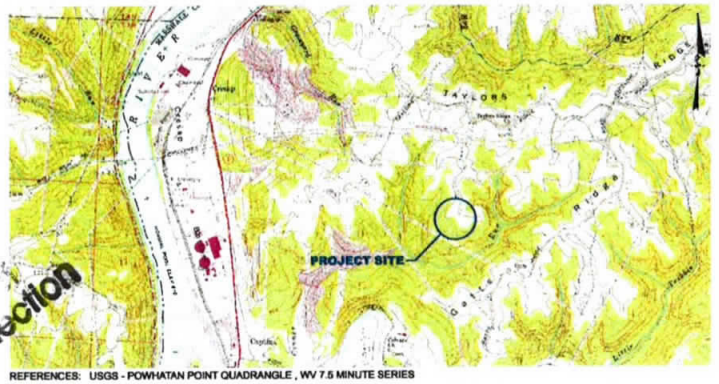
51-1571

EROSION & SEDIMENT CONTROL PLANS
MND9HS FLOWBACK PIT

MARSHALL COUNTY,
WEST VIRGINIA

FOR

NOBLE ENERGY INC.



REFERENCES: USGS - POWHATAN POINT QUADRANGLE , WV 7.5 MINUTE SERIES

LOCATION MAP

1500' 0 2000' 4000'

SCALE

PROJECT NO. 1216058

NOVEMBER 2012

DIEFFENBAUCH & HRITZ, LLC.

BRYAN D. MORRIS
REGISTERED
17733
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER

11/20/12

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6	PROPOSED PLAN & ACCESS ROAD PROFILE
7	PROPOSED SITE PLAN
8	SOILS PLAN
9	IMPOUNDMENT CROSS SECTIONS & TYPICAL SECTIONS
10	IMPOUNDMENT STAGE STORAGE
11	SITE RESTORATION PLAN
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Dieffenbauch & Hritz
Morgantown, WV

NOBLE ENERGY INC.

MND9HS FLOWBACK PIT

TITLE SHEET

1

EROSION AND SEDIMENT CONTROL GENERAL NOTES

UNDERGROUND UTILITIES ARE SHOWN AT APPROXIMATE LOCATIONS. THE EXACT LOCATIONS, DEPTH, AND SIZE OF ALL EXISTING UTILITIES IN THE PROJECT AREA SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR WITH A REPRESENTATIVE OF THE APPROPRIATE UTILITY COMPANY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ALL UTILITY COMPANIES AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO COMMENCING WORK ON THIS PROJECT. THE CONTRACTOR SHALL CONTACT MISS UTILITY OF WEST VIRGINIA, INC. AT 1-800-245-4848 FORTY-EIGHT (48) HOURS PRIOR TO COMMENCING WORK.

THE CONTRACTOR SHALL APPLY A MINIMUM OF SIX INCH (6") DEPTH OF TOP SOIL TO ALL EXCAVATED AND FILLED SURFACES THAT WILL RECEIVE PERMANENT SEEDING AND MULCHING. TOP SOIL SHALL CONSIST OF FRIABLE SURFACE SOIL REASONABLY FREE OF GRASS, ROOTS, WEEDS, STICKS, ROCKS, AND OTHER UNSUITABLE MATERIAL. THE SOURCE OF THE TOP SOIL SHALL BE THE EXISTING STOCKPILED TOP SOIL.

SPREADING SHALL NOT BE CONDUCTED WHEN THE GROUND OR TOP SOIL IS FROZEN, EXCESSIVELY WET, OR OTHERWISE IN A CONDITION DETRIMENTAL TO UNIFORM SPREADING OPERATIONS. SURFACES DESIGNATED TO RECEIVE A TOP SOIL APPLICATION SHALL BE LIGHTLY SCARIFIED JUST BEFORE THE SPREADING OPERATION. WHERE COMPACTED EARTHFILLS ARE TO TOP SOILED, THE TOP SOIL SHALL BE PLACED CONCURRENTLY WITH THE EARTHFILL AND SHALL BE BONDED TO THE COMPACTED FILL WITH THE COMPACTING EQUIPMENT. FOLLOWING THE SPREADING OPERATION, THE TOP SOIL SURFACE SHALL BE LEFT REASONABLY SMOOTH AND WITHOUT RUTS AND SURFACE IRREGULARITIES THAT COULD CONTRIBUTE TO CONCENTRATED WATER FLOW DOWN SLOPE.

THE DRAWINGS IN THIS PLAN SET ARE A REPRESENTATION OF THE PROPOSED IMPOUNDMENT SITE AND ACCESS ROAD. PROPOSED STRUCTURES SUCH AS THE ROADWAY, CULVERTS, SEDIMENT BARRIERS ECT. ARE SHOWN IN THEIR APPROXIMATE PREPLANNING CONFIGURATION. GIVEN UNFORESEEN CIRCUMSTANCES, THE AS-BUILT LOCATION OF THESE STRUCTURES MAY VARY SLIGHTLY FROM THE LOCATIONS SHOWN IN THIS PLAN SET.

ALL ROADS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH THE WVDEP OIL & GAS BMP MANUAL. ALL CULVERTS SHOWN ARE PROPOSED AND WILL BE A MINIMUM OF 12" IN DIAMETER UNLESS OTHERWISE NOTED.

BRUSH AND/OR TIMBER REMOVED BY CLEARING AND GRUBBING ACTIVITIES WILL BE CUT UP AND WINDROWED BELOW THE OUT SLOPE OF CONSTRUCTION AREAS. DITCH LINES AND CULVERTS WILL BE INSTALLED WHENEVER PRACTICAL. HOWEVER, PORTIONS OF THE EXISTING/PROPOSED ROADS WHICH ARE LOCATED IN SOLID ROCK SHALL NOT REQUIRE DITCHES OR CROSS DRAINS, UNLESS OTHERWISE WARRANTED BY FIELD CIRCUMSTANCES.

SUPPLEMENTAL DRAINAGE AND/OR SEDIMENT CONTROL MEASURES IN ADDITION TO THOSE SHOWN ON THE PLANS WILL BE INSTALLED WHEN AND WHERE DEEMED NECESSARY. THE ADDITIONAL MEASURES MAY CONSIST OF STRAW BALES, SILT FENCES, OR OTHER MEASURES AS OUTLINED IN THE EROSION AND SEDIMENT CONTROL FIELD MANUAL.

SEDIMENT BASINS (TRAPS) ARE TO BE CONSTRUCTED AT ALL CULVERTS AND CROSS DRAIN INLETS AS REQUIRED BY THE WVDEP OIL AND GAS BMP MANUAL. FIELD CONDITIONS SUCH AS ROCK OUTCROPS AND BEDROCK MAY PROHIBIT INLET TRAPS FROM BEING INSTALLED. WHEN THESE CONDITIONS EXIST, ADDITIONAL EROSION CONTROL MEASURES SHALL BE EVALUATED AND UTILIZED AS NEEDED.

A SEDIMENT BARRIER OF EITHER BRUSH, STRAW BALES, OR FILTER FENCE WILL BE MAINTAINED BELOW THE OUTFALL OF ALL PROPOSED CULVERTS AND AT ALL OTHER STORMWATER DISCHARGE POINTS FROM EITHER THE ROADWAY OR THE LOCATION.

EARTHWORK CONTRACTORS ARE RESPONSIBLE FOR NOTIFICATION OF THE OPERATOR AND INSPECTOR PRIOR TO ANY DEVIATION OF THIS PLAN.

ENTRANCES AT COUNTY/STATE ROADS SHALL BE MAINTAINED IN ACCORDANCE WITH D.O.T. REGULATIONS. SEPARATE PERMITS MAY BE REQUIRED BY THE WVDOT. A STABILIZED ENTRANCE CONSISTING OF 8" CRUSHED STONE WILL BE INSTALLED FOR A MINIMUM OF 200' FROM THE INGRESS AND EGRESS POINTS OF ALL PUBLIC ROADWAYS IN ACCORDANCE WITH WV DOT REGULATIONS.

CROSS DRAINS AND/OR WATERBARS WILL BE INSTALLED AS AN INTEGRAL PART OF THE RECLAMATION PROCESS AND SHALL BE SPACED IN ACCORDANCE WITH THE AS BUILT ROADWAY SLOPES AND TABLE II-4 OF THE EROSION AND SEDIMENT CONTROL FIELD MANUAL.

ALL STRUCTURES SHOULD BE INSPECTED REGULARLY AND REPAIRS OF ANY DAMAGE SHOULD BE COMPLETED AS PROMPTLY AS POSSIBLE.

SITE PREPARATION

SEEDBED PREPARATION
THE SEEDBED MUST BE LOOSE AT THE TIME OF SEEDING. THE SEEDBED MUST BE LOOSENED BY DISKING ON THE CONTOUR, OR BY BULLDOZER TRACKING UP AND DOWN THE SLOPE. BACKBLADING IS ACCEPTABLE ON GENTLE SLOPES SUCH AS THE BENCH OR ROAD BED.

TEMPORARY SEEDING
TEMPORARY VEGETATIVE COVER MUST BE ESTABLISHED WHERE RUNOFF WILL GO DIRECTLY INTO A STREAM. IMMEDIATELY UPON CONSTRUCTION OF THE SITE, VEGETATION MUST BE ESTABLISHED ON ROAD BANK AND LOCATION SLOPES WHEN RECLAMATION CANNOT BE COMPLETED WITHIN THE PRESCRIBED 6 MONTHS. APPLY SEED BY BROADCASTING, DRILLING, OR HYDRAULIC APPLICATIONS ACCORDING TO THE RATE INDICATED IN THE TABLE BELOW. PERFORM ALL PLANING OPERATIONS AT RIGHT ANGLES TO THE SLOPES.

TEMPORARY SEEDING FOR CRITICAL AREAS

SEED	RATES IN LBS. PER ACRE	RECOMMENDED DATE
ANNUAL RYEGRASS	40	MAR 1 TO JUNE 1 AUG 15 TO SEPT 15
SPRING OATS	96	MAR 1 TO JUNE 15
RYE GRAIN	140	AUG 15 TO SEPT 15
ANNUAL RYEGRASS	28	MAR 1 TO JUNE 15
SPRING OATS	64	MAR 1 TO JUNE 15

IN SITUATIONS WHERE ANOTHER COVER IS DESIRED, CONTACT THE LOCAL SOIL CONSERVATION DISTRICT FOR SEEDING RECOMMENDATIONS. APPROVAL OF THE OIL AND GAS INSPECTOR IS NEEDED.

PERMANENT SEEDING
PLANTING OF PERMANENT VEGETATIVE COVER SHALL BE PERFORMED ON ALL DISTURBED AREAS. LIME AND FERTILIZER RATES SHALL BE APPLIED TO ALL PERMANENT SEEDINGS AT THE TIME OF SEEDBED PREPARATION.

PERMANENT SEEDINGS FOR ALL DISTURBED AREAS

SEED	RATES IN LBS. PER ACRE	RECOMMENDED DATE
TALL FESCUE	40	BEST USED IN WOODED AREA OR PASTURE
LADINO CLOVER	5	
TALL FESCUE	30	WOODED OR PASTURE OVER 1500 ELEVATION
BIRDSFOOT TREFOIL	10	
TALL FESCUE	30	WOODED AREA, STEEP BANKS
CROWNVETCH	10	LOW MAINTENANCE
ORCHARDGRASS	12	MEADOW ELEVATION OVER 1500
BIRDSFOOT TREFOIL	10	
ORCHARDGRASS	12	MEADOW
LADINO	3	
KENTUCKY BLUEGRASS	20	PASTURE
REDTOP	5	
WHITE CLOVER	2	
KENTUCKY BLUEGRASS	20	PASTURE ELEVATION OVER 1500
REDTOP	5	
BIRDSFOOT TREFOIL	10	

IN SITUATIONS WHERE ANOTHER COVER IS DESIRED, CONTACT THE LOCAL SOIL CONSERVATION DISTRICT FOR SEEDING RECOMMENDATIONS. APPROVAL OF THE OIL AND GAS INSPECTOR IS NEEDED.

LIME AND FERTILIZER APPLICATION TABLE

pH OF SOIL	LIME IN TONS PER ACRE	FERTILIZER, LBS/ACRE (10-20-20 OR EQUIVALENT)
ABOVE 6.0	2	500
5.0 TO 6.0	3	500
BELOW 5.0	4	500

THE pH CAN BE DETERMINED WITH A PORTABLE pH TESTING KIT OR BY SENDING THE SOIL SAMPLES TO A SOIL TESTING LABORATORY. WHEN 4 TONS OF LIME PER ACRE ARE APPLIED IT MUST BE INCORPORATED INTO THE SOIL BY DISKING, BACKBLADING OR TRACKING UP AND DOWN THE SLOPE.

MULCHING
DEPENDING ON THE FIELD SITUATION, MULCH IS TO BE ANCHORED MECHANICALLY OR WITH MULCH NETTING.

MECHANICAL ANCHORING
APPLY MULCH AND PULL A MULCH ANCHORING TOOL OVER THE MULCH. WHEN A DISK IS USED, SET THE DISK STRAIGHT AND PULL ACROSS THE SLOPE. MULCH MATERIAL SHOULD BE TUCKED INTO THE SOIL ABOUT THREE INCHES.

MULCH NETTING
FOLLOW MANUFACTURER'S RECOMMENDATIONS WHEN POSITIONING AND STAPLING THE MULCH NETTING TO THE SOIL SURFACE.

MULCH MATERIALS RATES AND USES

MATERIAL	MINIMUM RATES PER ACRE	COVERAGE	REMARKS
HAY OR STRAW	2 TO 3 TONS	75% TO 90%	SUBJECT TO WIND BLOWING OR WASHING UNLESS TIED DOWN FOR HYDROSEEDING
	100 TO 150 BALES		
WOOD FIBER	1000 TO 1500 LBS	ALL DISTURBED AREAS	
PULP FIBER			
WOOD-CELLULOSE			
RECIRCULATED PAPER			

A. CONSTRUCTION SEQUENCE

1. AREAS THAT ARE NOT TO BE DISTURBED DURING CONSTRUCTION ARE TO BE CLEARLY MARKED BEFORE BEGINNING WORK ON THE SITE.
2. EROSION AND SEDIMENT CONTROL DEVICES, AS REQUIRED BY THE EROSION AND SEDIMENT CONTROL PLAN AND DICTATED BY FIELD CONDITIONS, ARE TO BE INSTALLED PRIOR TO CONDUCTING ANY CONSTRUCTION ACTIVITY ON THE SITE.
3. CONSTRUCTION ACTIVITY WILL BEGIN WITH THE CLEARING AND GRUBBING OF THE ACCESS ROAD FROM THE SITE POINT OF ACCESS TO THE IMPOUNDMENT LOCATION.
4. THE REMAINING PROJECT AREA WILL THEN BE CLEARED AND GRUBBED FOLLOWING INSTALLATION OF THE EROSION & SEDIMENT CONTROL DEVICES AT THE IMPOUNDMENT LOCATION.
5. THE IMPOUNDMENT LOCATION WILL THEN BE CONSTRUCTED, FINAL GRADING COMPLETED, GRAVEL WILL BE PLACED ON THE STAGING AREA AND ACCESS ROAD AND SOIL AREAS WILL BE FERTILIZED AND PERMANENTLY SEEDED AND MULCHED.
6. FOLLOWING COMPLETION OF OPERATIONS, THE GRAVEL IMPOUNDMENT SURFACE WILL BE REMOVED SOIL WILL BE SCARIFIED, TOPSOILED REPLACED AND SEEDED.
7. TEMPORARY EROSION CONTROLS SHALL REMAIN IN PLACE UNTIL A UNIFORM 70 PERCENT VEGETATIVE COVER IS ESTABLISHED.

B. TEMPORARY CONTROL MEASURES AND FACILITIES

1. GENERAL - SEE PLANS AND DETAILS FOR PROPOSED LOCATIONS AND CONSTRUCTION DETAILS FOR BMP'S.
2. ROCK CONSTRUCTION ENTRANCE - A ROCK CONSTRUCTION ENTRANCE SHALL BE INSTALLED FOR USE IN ACCESSING THE SITE AT THE INDICATED LOCATION. THE PURPOSE OF THIS ENTRANCE IS TO REDUCE THE AMOUNT OF SEDIMENT DEPOSITED ON THE ROADWAYS.
3. COMPOST FILTER SOCK - SHALL BE PLACED ALONG THE SLOPES OF THE DISTURBED AREAS AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN AND IN ACCORDANCE WITH THE EROSION AND SEDIMENTATION CONTROL PLAN DETAILS.
4. ROCK FILTER OUTLETS - ROCK FILTER OUTLETS ARE TO BE USED AS A REPAIR MEASURE WHERE A COMPOST FILTER SOCK SECTION HAS BEEN UNDERMINED OR OVERTOPPED. SEE PLAN DETAILS FOR CONSTRUCTION REQUIREMENTS.
5. STRAW BALE BARRIERS - SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. SEE PLAN DETAILS FOR CONSTRUCTION REQUIREMENTS.
6. SEDIMENT TRAPS - SHALL BE CONSTRUCTED IN THE LOCATION SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN AND IN ACCORDANCE TO THE EROSION AND SEDIMENT CONTROL PLAN DETAILS.
7. TEMPORARY VEGETATION - USE WHEN EXPOSED SOIL SURFACES ARE NOT TO BE FINE GRADED FOR PERIODS LONGER THAN 21 DAYS SUCH AS SOIL STOCKPILES, DIKES, DAMS, SIDES OF SEDIMENT TRAPS, TEMPORARY ROAD BANKS, ECT. A PERMANENT VEGETATIVE COVER SHALL BE APPLIED TO AREAS LEFT UNWORKED FOR A PERIOD OF MORE THAN SIX (6) MONTHS.

Diefenbauch & Hritz
Morgantown, WV

NOBLE ENERGY INC.

MINORS FLOWBACK PIT

GENERAL NOTES

2

EROSION AND SEDIMENT CONTROL GENERAL NOTES

C. MAINTENANCE OF TEMPORARY CONTROL MEASURES AND FACILITIES

1. GENERAL

A. THE MAINTENANCE FOR THE PROJECT SHALL BE IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTINUOUS MAINTENANCE OF ALL E&S MEASURES AND DEVICES FOR THE DURATION OF THE PROJECT AND UNTIL WHICH TIME THE AREA IS STABILIZED WITH A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER.

B. THE CONTRACTOR SHALL INSPECT ALL DEVICES WEEKLY (MINIMUM) AND AFTER EVERY RAINFALL EVENT AND PERFORM MAINTENANCE AS REQUIRED. ANY DEVICE FOUND TO BE CLOGGED, DAMAGED, HALF-FULL OF SILT OR NOT FULLY OPERATIONAL SHALL BE CLEANED OF ALL DEBRIS. THE SOLID WASTE DISPOSAL IS THE RESPONSIBILITY OF THE CONTRACTOR. ALL DEPOSITED SEDIMENT FROM THE TRAP SHALL BE REMOVED AND SPREAD ACCORDINGLY OR USED AS FILL MATERIAL ON THE PROJECT SITE.

2. ROCK CONSTRUCTION ENTRANCE

A. INSPECT ROCK CONSTRUCTION ENTRANCE INSTALLATION WEEKLY AND AFTER EVERY PRECIPITATION EVENT.

B. THE STRUCTURE THICKNESS SHALL BE MAINTAINED TO THE SPECIFIED DIMENSION BY ADDING ROCK.

C. AT THE END OF EACH CONSTRUCTION DAY, SEDIMENT DEPOSITED ON PUBLIC ROADWAYS SHALL BE IMMEDIATELY REMOVED AND RETURNED TO THE CONSTRUCTION SITE. WASHING OF THE ROADWAY WITH WATER SHALL NOT BE PERMITTED.

3. COMPOST FILTER SOCK

A. INSPECT COMPOST FILTER SOCK AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL EVENT. MAKE ALL REQUIRED REPAIRS IMMEDIATELY.

B. ACCUMULATED SEDIMENTS SHALL BE REMOVED AS REQUIRED TO KEEP THE SOCK FUNCTIONAL. IN ALL CASES REMOVE DEPOSITS WHERE ACCUMULATIONS REACH 1/2 THE ABOVE-GROUND HEIGHT OF THE SOCK.

C. THE REMOVED SEDIMENT SHALL BE USED FOR ON SITE GRADING AND IMMEDIATELY STABILIZED WITH SEED AND AN ANCHORED MULCH.

D. ADHERE TO MANUFACTURER'S RECOMMENDATIONS FOR REPLACING COMPOST FILTER SOCK DUE TO WEATHERING.

E. ALL UNDERCUTTING OR EROSION OF THE TOE OF THE ANCHOR SHALL BE REPAIRED IMMEDIATELY BY ENTRENCHING THE MESH TO PROPER DEPTH. BACKFILL AND COMPACT AS PER DETAIL.

F. ANY SOCK SECTION THAT HAS COLLAPSED OR EXPERIENCED A FAILURE DUE TO CONCENTRATED SURFACE FLOW SHALL BE IMMEDIATELY REPLACED WITH A NEW SECTION OF COMPOST FILTER SOCK OF THE SAME DIAMETER FOR THE LENGTH OF COLLAPSED AREA.

G. AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, REMOVE ALL SOCK MATERIALS AND UNSTABLE SEDIMENT DEPOSITS, BRING THE DISTURBED AREA TO GRADE AND STABILIZE.

4. ROCK FILTER OUTLET

A. INSPECT ROCK FILTER OUTLETS AND COMPOST FILTER SOCK FOR DAMAGE ONCE A WEEK AND AFTER EACH RAINFALL EVENT.

B. ROCK FILTER OUTLETS SHALL BE CLEANED OR REPLACED WHEN CLOGGED WITH SEDIMENTS. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET. STONE MATERIALS SHALL BE WASHED COMPLETELY FREE OF ALL FOREIGN MATERIAL OR NEW ROCK SHALL BE USED TO REBUILD THE FILTER. IF STONES ARE WASHED, ENSURE THAT SEDIMENT-LADEN RUNOFF FROM THE WASHED MATERIAL DOES NOT LEAVE THE SITE.

C. SEDIMENT ACCUMULATIONS REMOVED FROM BEHIND THE FILTERS SHALL BE USED ON SITE FOR GRADING OR DISPOSED OF AT AN APPROVED FACILITY. IMMEDIATELY STABILIZE MATERIAL WITH SEED AND ANCHORED MULCH.

D. ADD STONE TO THE FILTERS AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION. REPAIR ALL DAMAGE TO ROCK FILTER OUTLETS AND COMPOST FILTER SOCK IMMEDIATELY.

E. AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, REMOVE ALL FILTER MATERIALS, AGGREGATE AND UNSTABLE SEDIMENT DEPOSITS, BRING THE DISTURBED AREA TO GRADE AND ESTABLISH PERMANENT VEGETATIVE COVER.

5. INLET PROTECTION (ROCK FILTER)

A. REMOVE ACCUMULATED SEDIMENT ONCE IT REACHES HALF OF THE DESIGN HEIGHT OF THE INLET. THE ROCK FILTER SHALL REMAIN IN PLACE AND OPERATIONAL UNTIL THE DRAINAGE AREA IS COMPLETELY STABILIZED.

6. SEDIMENT TRAPS

A. SEDIMENT SHALL BE REMOVED FROM THE TRAP BEFORE ITS WET STORAGE VOLUME IS RUDUCED BY ONE-HALF. SEDIMENT REMOVED FROM THE TRAP SHALL BE STORED OR DISPOSED OF IN A MANNER THAT WILL NOT CREATE AN EROSION OR SEDIMENT CONTROL PROBLEM.

B. FILTER STONE SHOULD BE REGULARLY CHECKED TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED. STONE CHOKED WITH SEDIMENT SHOULD BE REMOVED AND CLEANED OR REPLACED.

7. TEMPORARY VEGETATION

A. MAINTAIN GRASS AREAS WITH THE DISTURBED AREA UNTIL THE ENTIRE PROJECT HAS BEEN COMPLETED. CONTROL PROHIBITED AND NOXIOUS WEED GROWTH WITHIN PROJECT SITE WITH HERBICIDE OR CUTTING.

B. IF SLOPE FAILURE OCCURS AFTER THE SEEDING AND SOIL SUPPLEMENT WORK ON THE SLOPE HAS BEEN SATISFACTORILY COMPLETED, THE CONTRACTOR IS TO REDRESS THE SLOPE, REAPPLY SOIL SUPPLEMENTS, AND RESEED AS SPECIFIED IN THE ORIGINAL TREATMENT.

C. INSPECT AND REVEGETATED AREAS WEEKLY AND AFTER EACH RAINFALL EVENT TO DETERMINE IF RILLS AND GULLIES HAVE BEEN FORMED AND FOR THE EXISTENCE OF BARE SOIL. AREAS OD INADEQUATE VEGETATION SHALL BE RESEEDED AND MULCHED. AREAS WHERE RILLS OR GULLIES HAVE FORMED SHALL BE FILLED, SEEDED, AND MULCHED.

F. MAINTENANCE/CONTRACTOR'S RESPONSIBILITIES

1. CONTRACTOR SHALL IMPLEMENT THE EROSION AND SEDIMENT POLLUTION CONTROL PLAN IN ACCORDANCE WITH THE DRAWINGS AND PROJECT NARRATIVE.

2. ALL FACILITIES SHALL BE INSPECTED AND REPAIRED, IF NECESSARY, AFTER EACH RAINFALL EVENT OR AT A PERIOD NOT TO EXCEED ONE WEEK. ALL PREVENTATIVE MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND ANCHORING OF THE MULCH SHALL BE PERFORMED IMMEDIATELY. SEDIMENT COLLECTED FROM THE EROSION CONTROL STRUCTURES SHALL BE PLACED UPSTREAM OF THOSE CONTROLS AND IMMEDIATELY STABILIZED WITH SEED AND AN ANCHORED MULCH OR HAULED OFFSITE TO A DISPOSAL AREA WITH AN APPROVED EROSION AND SEDIMENT POLLUTION CONTROL PLAN.

3. AT NO TIME WILL SEDIMENT-LADEN RUNOFF BE ALLOWED TO LEAVE THE SITE AND ENTER WATERS OF THE STATE WITHOUT FIRST PASSING THROUGH A SEDIMENT FILTERING DEVICE. IF EROSION CONTROL FACILITIES FAIL TO PERFORM AS EXPECTED, ALTERNATIVE FACILITIES OR MODIFICATIONS OF THOSE FACILITIES INSTALLED WILL BE REQUIRED.

4. ALL PERMANENTLY SEEDED AREAS THAT BECOME ERODED SHALL HAVE THE TOPSOIL REPLACED, THE EROSION CONTROL MATTING REPLACED (IF APPLICABLE), THE GRASS RESOWN AND MULCH REAPPLIED AND ANCHORED. IF EROSION PERSISTS, THE AREA SHALL BE EITHER LINED WITH SOD OR STABILIZED WITH ROCK RIPRAP.

5. A COPY OF THE APPROVED EROSION AND SEDIMENT POLLUTION CONTROL PLAN SHALL BE KEPT AVAILABLE FOR INSPECTION ON THE CONSTRUCTION SITE AT ALL TIMES THROUGHOUT THE TERM OF THE PROJECT.

6. THE INTENT OF THIS PLAN/NARRATIVE IS TO INDICATE GENERAL MEANS OF COMPLIANCE WITH THE REQUIREMENTS OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION (AS AUTHORIZED UNDER THE CLEAN STREAMS LAW). IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT THESE METHODS, PLUS ADDITIONAL METHODS, AS MAY BE NECESSARY BECAUSE OF CONDITIONS CREATED BY LOCALIZED SITE CONDITIONS AND/OR CONSTRUCTION PROCEDURES IN ORDER TO ASSURE COMPLIANCE WITH APPLICABLE LAW. IT WILL FURTHER BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL EROSION AND SEDIMENT CONTROL FACILITIES SO THAT THEY PERFORM AS REQUIRED BY APPLICABLE LAW.

7. FINES AND RELATED COSTS RESULTING FROM THE CONTRACTOR'S FAILURE TO PROVIDE ADEQUATE PROTECTION AGAINST SOIL EROSION AND FOR ANY VIOLATIONS OF THE CLEAN STREAMS LAW AND THE RULES AND REGULATIONS PROMULGATED THEREUNDER SHALL BE BORNE BY THE CONTRACTOR.

G. RECYCLING AND DISPOSAL METHODS

1. REMOVE WASTE MATERIALS INCLUDING TRASH AND DEBRIS, AND LEGALLY DISPOSE OF THEM OFF THE SITE TO A DEP APPROVED DUMP SITE. SEPARATE RECYCLABLE MATERIALS PRODUCED DURING SITE CLEARING FROM OTHER NON-RECYCLABLE MATERIALS. STORE OR STOCKPILE WITHOUT INTERMIXING WITH OTHER MATERIALS AND TRANSPORT THEM TO RECYCLING FACILITIES. MATERIAL TO BE REMOVED SHALL BE REMOVED DAILY AND SHALL NOT BE ALLOWED TO ACCUMULATE AT THE SITE.

2. SITE WATER/CUTTINGS DISPOSAL

CUTTINGS

HAUL OFF COMPANY:
Esp Industries, Inc. DOT # 0878278
1575 Smith Twp State Rd. Atlasburg, PA 15004
1-888-294-8227

DISPOSAL LOCATIONS:
Apex Environmental, LLC Permit # 06-08436
11 County Road 78
Amsterdam, OH 43903
740-543-4389

Westmoreland Waste, LLC Permit # 100277
111 Conner Lane
Belle Vernon, PA 15012

WATER

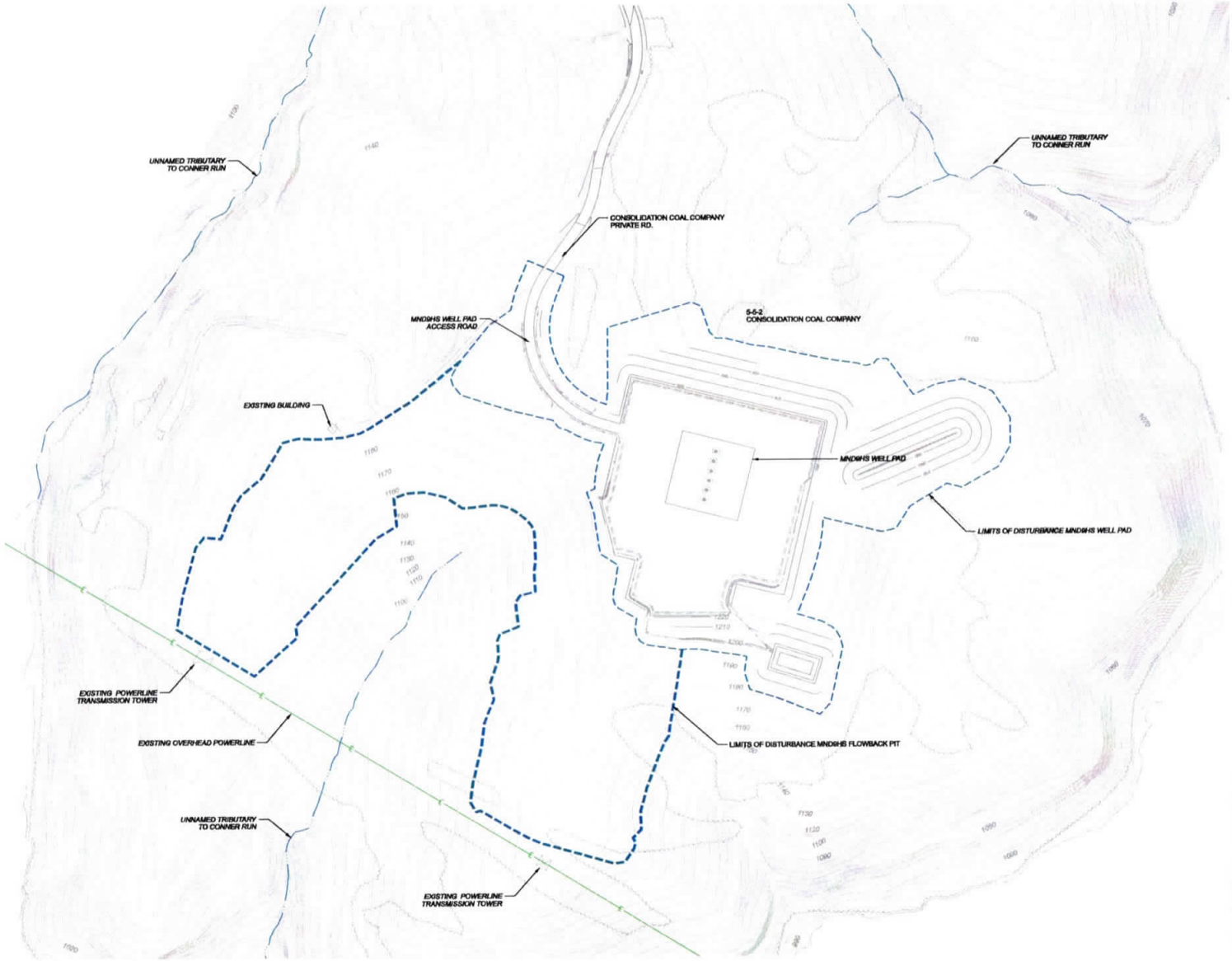
HAUL OFF COMPANY:
Dynamic Structures, Clear Creek DOT # 720485
3790 State Route 7
New Waterford, OH 44445
330-892-0184

DISPOSAL LOCATIONS:
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 Arnal-Smith Road
Lowellville, OH 44436
330-536-8825

Client	NOBLE ENERGY INC.
Project	MINOR'S FLOWBACK PIT
Title	GENERAL NOTES
Sheet No.	3

Dieffenbauch & Hritz
Morgantown, WV



THE PROPERTIES AFFECTED BY THE DEVELOPMENT ARE LOCATED ON FIRM COMMUNITY PANEL NUMBER 5405100135E. THE LIMITS OF DISTURBANCE PROPOSED WITH THE DEVELOPMENT ARE NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE.

REFERENCE:
TOPOGRAPHIC INFORMATION OBTAINED FROM BLUE MOUNTAIN ENGINEERING
DATUM: NAD 27 WVN
RECEIVING STREAMS: THREE UNNAMED TRIBUTARIES TO CONNER RUN AND CONNER RUN

LIMITS OF DISTURBANCE = 9.1 ACRES

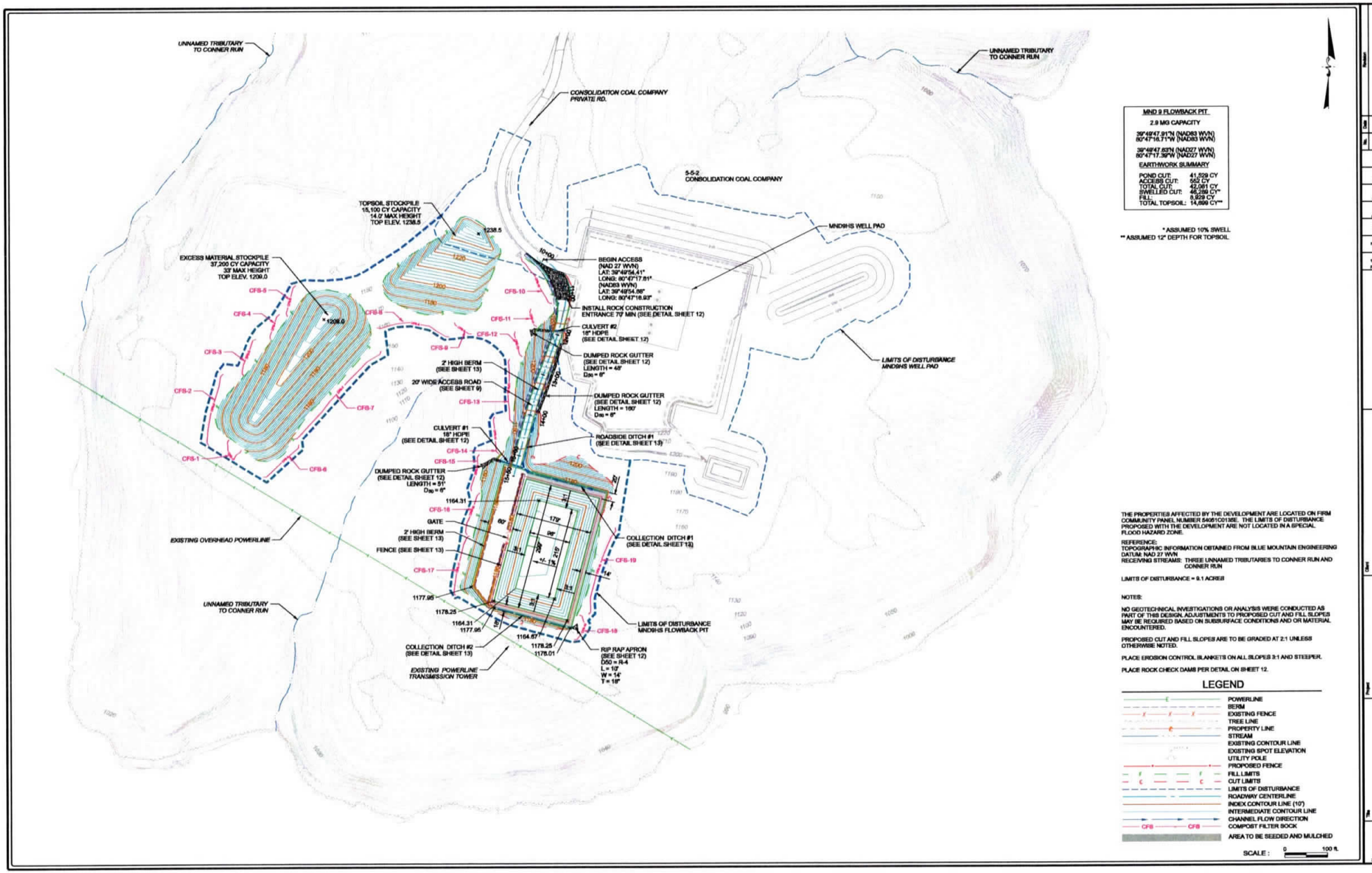
LEGEND

- POWERLINE
- BERM
- EXISTING FENCE
- TREE LINE
- PROPERTY LINE
- STREAM
- EXISTING CONTOUR LINE
- EXISTING SPOT ELEVATION
- UTILITY POLE
- PROPOSED FENCE
- FILL LIMITS
- CUT LIMITS
- LIMITS OF DISTURBANCE
- ROADWAY CENTERLINE
- INDEX CONTOUR LINE (10')
- INTERMEDIATE CONTOUR LINE
- CHANNEL FLOW DIRECTION
- CFS — COMPOST FILTER SOCK
- AREA TO BE SEEDED AND MULCHED

SCALE : 0 100 ft.

Revision	
No.	
Date	
NCW	Drawn
BCM	Checked
JHD	Approved
1"=100'	Scale
NOV 2012	Date
1318066	Project No.
Client	NOBLE ENERGY INC.
Project	MND9HS FLOWBACK PIT
Title	EXISTING SITE PLAN
Drawing No.	4

Dieffenbauch & Hritz
Morgantown, WV



MND 9 FLOWBACK PIT

2.9 MG CAPACITY

39°49'47.917N (NAD83 WVN)
80°47'16.71"W (NAD83 WVN)

39°49'47.537N (NAD27 WVN)
80°47'17.39"W (NAD27 WVN)

EARTHWORK SUMMARY

POND CUT:	41,329 CY
ACCESS CUT:	502 CY
TOTAL CUT:	42,061 CY
SWELLED CUT:	46,268 CY*
FILL:	5,929 CY
TOTAL TOPSOIL:	14,699 CY**

* ASSUMED 10% SWELL
** ASSUMED 12" DEPTH FOR TOPSOIL

THE PROPERTIES AFFECTED BY THE DEVELOPMENT ARE LOCATED ON FIRM COMMUNITY PANEL NUMBER 540510D138E. THE LIMITS OF DISTURBANCE PROPOSED WITH THE DEVELOPMENT ARE NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE.

REFERENCE:
TOPOGRAPHIC INFORMATION OBTAINED FROM BLUE MOUNTAIN ENGINEERING
DATUM: NAD 27 WVN
RECEIVING STREAMS: THREE UNNAMED TRIBUTARIES TO CONNER RUN AND CONNER RUN

LIMITS OF DISTURBANCE = 9.1 ACRES

NOTES:

NO GEOTECHNICAL INVESTIGATIONS OR ANALYSIS WERE CONDUCTED AS PART OF THIS DESIGN. ADJUSTMENTS TO PROPOSED CUT AND FILL SLOPES MAY BE REQUIRED BASED ON SUBSURFACE CONDITIONS AND OR MATERIAL ENCOUNTERED.

PROPOSED CUT AND FILL SLOPES ARE TO BE GRADED AT 2:1 UNLESS OTHERWISE NOTED.

PLACE EROSION CONTROL BLANKETS ON ALL SLOPES 3:1 AND STEEPER.

PLACE ROCK CHECK DAMS PER DETAIL ON SHEET 12.

LEGEND

- POWERLINE
- BERM
- EXISTING FENCE
- TREE LINE
- PROPERTY LINE
- STREAM
- EXISTING CONTOUR LINE
- EXISTING SPOT ELEVATION
- UTILITY POLE
- PROPOSED FENCE
- FILL LIMITS
- CUT LIMITS
- LIMITS OF DISTURBANCE
- ROADWAY CENTERLINE
- INDEX CONTOUR LINE (10')
- INTERMEDIATE CONTOUR LINE
- CHANNEL FLOW DIRECTION
- COMPOST FILTER SOCK
- AREA TO BE SEEDED AND MULCHED

SCALE: 0 100 ft.

Revision	
Date	
By	
MDS	Drawn
BDM	Checked
JND	Approved
1"=200'	Scale
NOV 2012	Date
1210008	Project No.

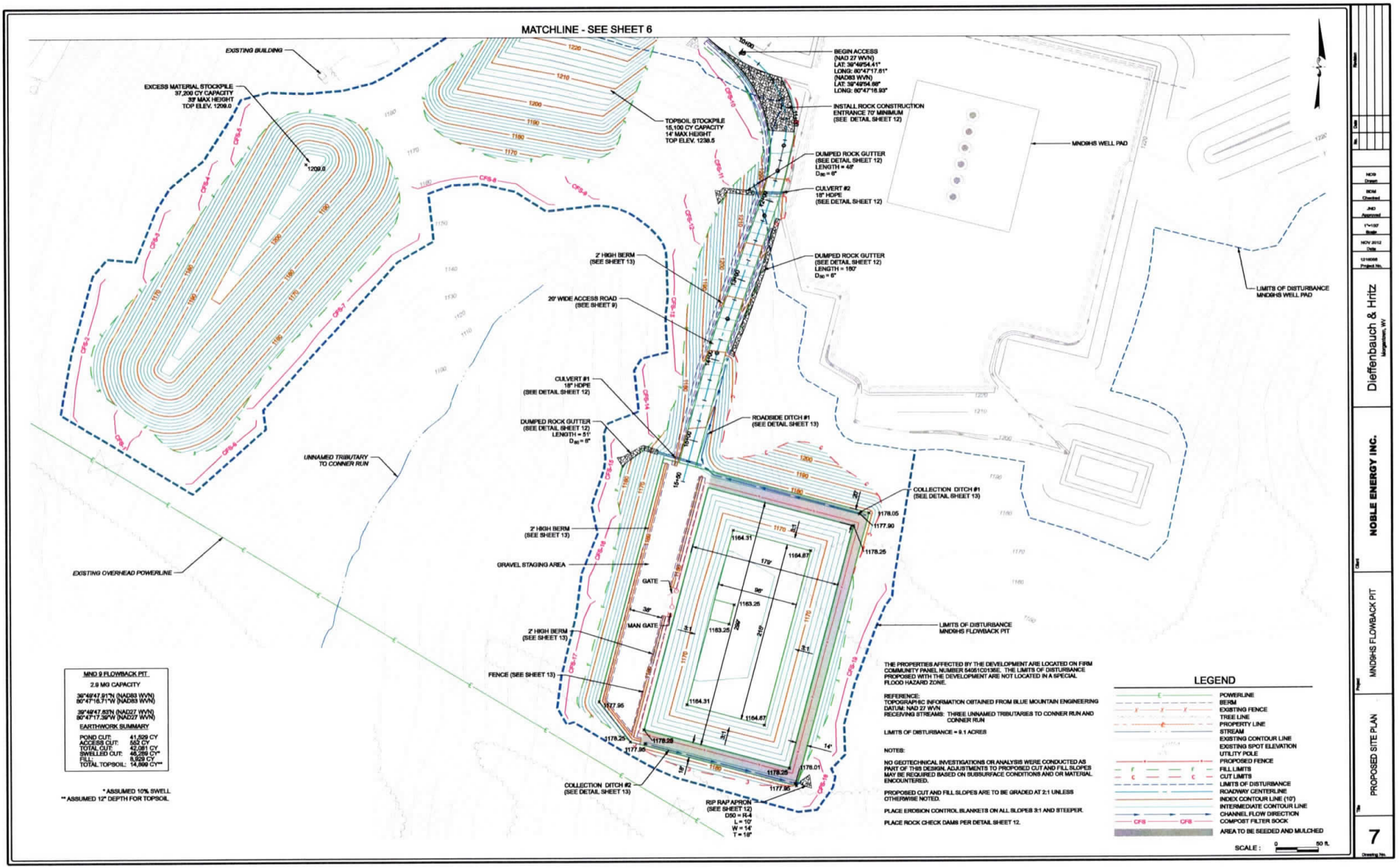
Dieffenbauch & Hritz
Morgantown, WV

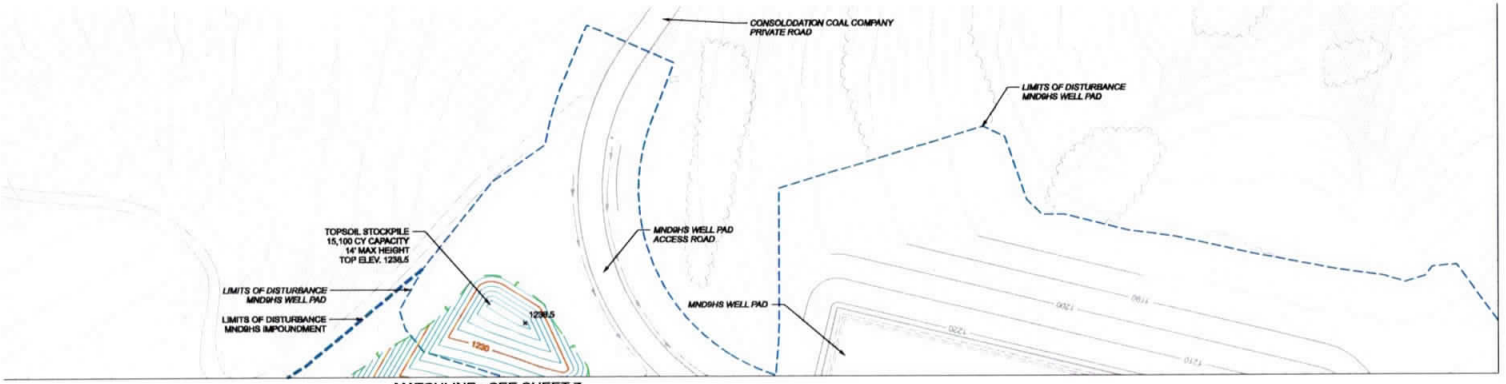
Client: NOBLE ENERGY INC.

Project: MND9HS FLOWBACK PIT

Title: OVERALL SITE PLAN

Drawing No. 5


MATCHLINE - SEE SHEET 6
EXISTING BUILDING
EXCESS MATERIAL STOCKPILE
37,200 CY CAPACITY
33' MAX HEIGHT
TOP ELEV. 1209.0
1209.0
TOPSOIL STOCKPILE
15,100 CY CAPACITY
14' MAX HEIGHT
TOP ELEV. 1238.5
BEGIN ACCESS
(NAD 27 WVN)
LAT: 39°49'54.41"
LONG: 80°47'17.61"
(NAD83 WVN)
LAT: 39°49'54.89"
LONG: 80°47'16.93"
INSTALL ROCK CONSTRUCTION
ENTRANCE 70' MINIMUM
(SEE DETAIL SHEET 12)
MND9HS WELL PAD
DUMPED ROCK GUTTER
(SEE DETAIL SHEET 12)
LENGTH = 48'
D50 = 6"
CULVERT #2
18" HDPE
(SEE DETAIL SHEET 12)
2' HIGH BERM
(SEE SHEET 13)
DUMPED ROCK GUTTER
(SEE DETAIL SHEET 12)
LENGTH = 192'
D50 = 6"
LIMITS OF DISTURBANCE
MND9HS WELL PAD
20' WIDE ACCESS ROAD
(SEE SHEET 9)
CULVERT #1
18" HDPE
(SEE DETAIL SHEET 12)
DUMPED ROCK GUTTER
(SEE DETAIL SHEET 12)
LENGTH = 51'
D50 = 6"
ROADSIDE DITCH #1
(SEE DETAIL SHEET 13)
UNNAMED TRIBUTARY
TO CONNER RUN
COLLECTION DITCH #1
(SEE DETAIL SHEET 13)
2' HIGH BERM
(SEE SHEET 13)
GRAVEL STAGING AREA
EXISTING OVERHEAD POWERLINE
GATE
MAN GATE
2' HIGH BERM
(SEE SHEET 13)
FENCE (SEE SHEET 13)
LIMITS OF DISTURBANCE
MND9HS FLOWBACK PIT
COLLECTION DITCH #2
(SEE DETAIL SHEET 13)
RIP RAP APRON
(SEE SHEET 12)
D50 = R-4
L = 10'
W = 14'
T = 18"
MND 9 FLOWBACK PIT
2.9 MG CAPACITY
39°49'47.91"N (NAD83 WVN)
80°47'16.71"W (NAD83 WVN)
39°49'47.83"N (NAD27 WVN)
80°47'17.39"W (NAD27 WVN)
EARTHWORK SUMMARY
POND CUT: 41,529 CY
ACCESS CUT: 552 CY
TOTAL CUT: 42,081 CY
SWELLED CUT: 46,289 CY*
FILL: 8,929 CY
TOTAL TOPSOIL: 14,899 CY**
* ASSUMED 10% SWELL
** ASSUMED 12" DEPTH FOR TOPSOIL.
THE PROPERTIES AFFECTED BY THE DEVELOPMENT ARE LOCATED ON FIRM COMMUNITY PANEL NUMBER 54061C0135E. THE LIMITS OF DISTURBANCE PROPOSED WITH THE DEVELOPMENT ARE NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE.
REFERENCE:
TOPOGRAPHIC INFORMATION OBTAINED FROM BLUE MOUNTAIN ENGINEERING
DATUM: NAD 27 WVN
RECEIVING STREAMS: THREE UNNAMED TRIBUTARIES TO CONNER RUN AND CONNER RUN
LIMITS OF DISTURBANCE = 9.1 ACRES
NOTES:
NO GEOTECHNICAL INVESTIGATIONS OR ANALYSIS WERE CONDUCTED AS PART OF THIS DESIGN. ADJUSTMENTS TO PROPOSED CUT AND FILL SLOPES MAY BE REQUIRED BASED ON SUBSURFACE CONDITIONS AND OR MATERIAL ENCOUNTERED.
PROPOSED CUT AND FILL SLOPES ARE TO BE GRADED AT 2:1 UNLESS OTHERWISE NOTED.
PLACE EROSION CONTROL BLANKETS ON ALL SLOPES 3:1 AND STEEPER.
PLACE ROCK CHECK DAMS PER DETAIL SHEET 12.
LEGEND
POWERLINE
BERM
EXISTING FENCE
TREE LINE
PROPERTY LINE
STREAM
EXISTING CONTOUR LINE
EXISTING SPOT ELEVATION
UTILITY POLE
PROPOSED FENCE
FILL LIMITS
CUT LIMITS
LIMITS OF DISTURBANCE
ROADWAY CENTERLINE
INDEX CONTOUR LINE (10')
INTERMEDIATE CONTOUR LINE
CHANNEL FLOW DIRECTION
COMPOST FILTER SOCK
AREA TO BE SEEDED AND MULCHED
SCALE : 0 50 ft.
Dieffenbauch & Hritz
Morgantown, WV
NOBLE ENERGY INC.
MND9HS FLOWBACK PIT
PROPOSED SITE PLAN
7



MATCHLINE - SEE SHEET 7

MND 9 FLOWBACK PIT

2.9 MG CAPACITY

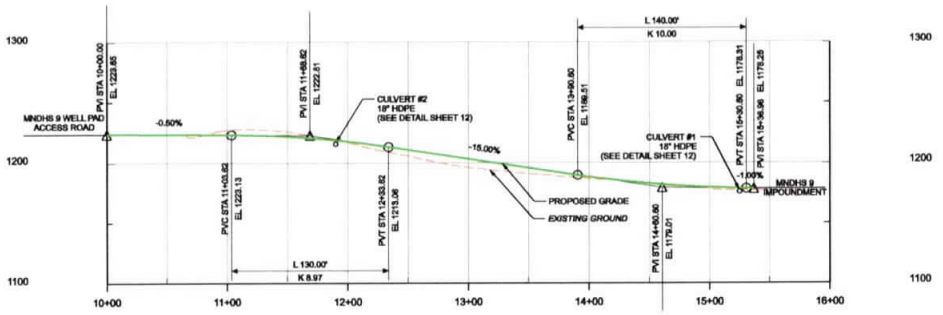
39°49'47.91"N (NAD83 WVN)
80°47'16.71"W (NAD83 WVN)

39°49'47.53"N (NAD27 WVN)
80°47'17.39"W (NAD27 WVN)

EARTHWORK SUMMARY

POND CUT:	41,529 CY
ACCESS CUT:	532 CY
TOTAL CUT:	42,061 CY
SWELLED CUT:	46,267 CY*
FILL:	8,929 CY
TOTAL TOPSOIL:	14,656 CY**

* ASSUMED 10% SWELL
** ASSUMED 12" DEPTH FOR TOPSOIL



MND9HS FLOWBACK PIT ACCESS ROAD
STA 10+00 - 15+37

THE PROPERTIES AFFECTED BY THE DEVELOPMENT ARE LOCATED ON FIRM COMMUNITY PANEL NUMBER 540510D135E. THE LIMITS OF DISTURBANCE PROPOSED WITH THE DEVELOPMENT ARE NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE.

REFERENCE:
TOPOGRAPHIC INFORMATION OBTAINED FROM BLUE MOUNTAIN ENGINEERING
DATUM: NAD 27 WVN
RECEIVING STREAMS: THREE UNNAMED TRIBUTARIES TO CONNER RUN AND CONNER RUN

LIMITS OF DISTURBANCE = 9.1 ACRES

NOTES:

NO GEOTECHNICAL INVESTIGATIONS OR ANALYSIS WERE CONDUCTED AS PART OF THIS DESIGN. ADJUSTMENTS TO PROPOSED CUT AND FILL SLOPES MAY BE REQUIRED BASED ON SUBSURFACE CONDITIONS AND OR MATERIAL ENCOUNTERED.

PROPOSED CUT AND FILL SLOPES ARE TO BE GRADED AT 2:1 UNLESS OTHERWISE NOTED.

PLACE EROSION CONTROL BLANKETS ON ALL SLOPES 3:1 AND STEEPER.

PLACE ROCK CHECK DAMS PER DETAIL ON SHEET 12.

LEGEND

- POWERLINE
- BERM
- EXISTING FENCE
- TREE LINE
- PROPERTY LINE
- STREAM
- EXISTING CONTOUR LINE
- EXISTING SPOT ELEVATION
- UTILITY POLE
- PROPOSED FENCE
- FILL LIMITS
- CUT LIMITS
- LIMITS OF DISTURBANCE
- ROADWAY CENTERLINE
- INDEX CONTOUR LINE (10')
- INTERMEDIATE CONTOUR LINE
- CHANNEL FLOW DIRECTION
- COMPOST FILTER SOCK
- AREA TO BE SEEDED AND MULCHED

SCALE : 0 50 ft.

Revision	
No.	
Date	
NDB Drawn	
BDM Checked	
JHD Approved	
1"=100' Scale	
NOV 2012 Date	
12146068 Project No.	
Dieffenbauch & Hritz Morgantown, WV	
Client: NOBLE ENERGY INC.	
Project: MND9HS FLOWBACK PIT	
Title: PROPOSED SITE PLAN AND ACCESS ROAD PROFILE	
6 Drawing No.	

CpC-Culleoka-Dormont-Peabody complex, 8 to 15 percent slopes, Hydrological Soil Group C

Component: Culleoka (30%)
The Culleoka component has slopes of 8 to 15 percent. This component is on ridges on hills, structuralbenches on hills.The parent material consists of nonacid residuum weathered from shale, siltstone and fine- grained sandstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Component: Dormont
The Dormont component has slopes of 8 to 15 percent. This component is on ridges on hills, structuralbenches on hills.The parent material consists of nonacid residuum weathered from shale and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 40 to 150 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during January, February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Component: Peabody
The Peabody component has slopes of 8 to 15 percent. This component is on ridges on hills, structuralbenches on hills.The parent material consists of residuum weathered from red clay shale and siltstone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low.Available water to a depth of60 inches is low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.from red clay shale and siltstone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained.

CpD--Culleoka-Dormont-Peabody complex, 15 to 25 percent slopes, Hydrological Soil Group B

Component: Culleoka
The Culleoka component has slopes of 15 to 25 percent. This component is on hillslopes on hills, ridges on hills, structural benches on hills. The parent material consists of nonacid residuum weathered from shale, siltstone and fine-grained sandstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component: Dormont
The Dormont component has slopes of 15 to 25 percent. This component is on hillslopes on hills, ridges on hills, structural benches on hills. The parent material consists of nonacid residuum weathered from shale and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 40 to 150 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during January, February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component: Peabody
The Peabody component has slopes of 15 to 25 percent. This component is on hillslopes on hills, ridges on hills, structural benches on hills. The parent material consists of residuum weathered from red clay shale and siltstone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

CpE-Culleoka-Dormont-Peabody complex, 25 to 35 percent slopes, Hydrological Soil Group B

Component: Culleoka
The Culleoka component has slopes of 25 to 35 percent. This component is on hillslopes on hills. The parent material consists of nonacid residuum weathered from shale, siltstone and fine-grained sandstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Dormont
The Dormont component has slopes of 25 to 35 percent. This component is on hillslopes on hills. The parent material consists of nonacid residuum weathered from shale and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 40 to 150 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during January, February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

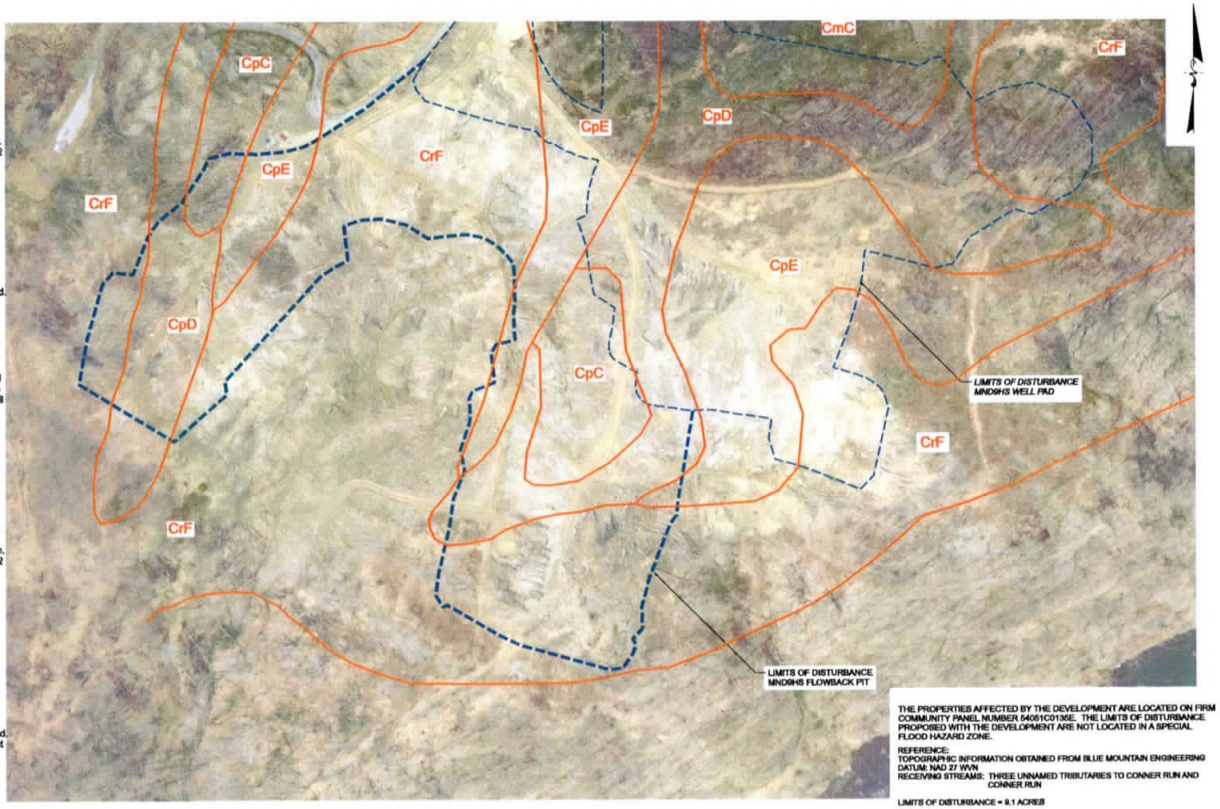
Component: Peabody
The Peabody component has slopes of 25 to 35 percent. This component is on hillslopes on hills. The parent material consists of residuum weathered from red clay shale and siltstone. Depth to a root restrict layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Availa water to a depth of 60 inches is low. Shrink-swell potential is high. This soil is n flooded. It is not ponded. There is no zone of water saturation within a depth of inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

CrF-Culleoka-Donnont-Peabody complex, 35 to 85 percent slopes, very stony, Hydrological Soil Group C

Component: Culleoka, very stony
The Culleoka, very stony component has slopes of 35 to 70 percent. This component is on hillslopes on hills. The parent material consists of nonacid residuum weathered from shale, siltstone and fine-grained sandstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Donnont, very stony The Donnont, very stony component has slopes of 35 to 70 percent. This component is on hillslopes on hills. The parent material consists of nonacid residuum weathered from shale and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 40 to 150 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during January, February, March, April. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Peabody, very stony
The Peabody, very stony component has slopes of 35 to 70 percent. This component is on hillslopes on hills. The parent material consists of residuum weathered Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.



THE PROPERTIES AFFECTED BY THE DEVELOPMENT ARE LOCATED ON FIRM COMMUNITY PANEL NUMBER 540510C0135E. THE LIMITS OF DISTURBANCE PROPOSED WITH THE DEVELOPMENT ARE NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE.

REFERENCE:
TOPOGRAPHIC INFORMATION OBTAINED FROM BLUE MOUNTAIN ENGINEERING
DATUM: NAD 27 WVN
RECEIVING STREAMS: THREE UNNAMED TRIBUTARIES TO CONNER RUN AND CONNER RUN

LIMITS OF DISTURBANCE = 9.1 ACRES

SOIL RESOLUTION METHODS

If these restrictions are encountered in rare situations, the following resolutions will be followed.

Erodible: Use acceptable Erosion Control Blankets and attain 70% vegetative cover on all cut and fill slopes.

Cutbanks Cave: Follow OSHA recommended guidelines concerning trenching and slope work.

Corroslve to Concrete and Steel: If concrete or steel is to come in contact with a corrosive soil, it will be treated and protected or the corrosive soil will be removed and replaced with acceptable material.

High Water Table: All water encountered shall be treated using acceptable E&S BMP's.

Low Strength: Cut and Fill slopes shall be sloped no steeper than 2:1.

Piping: Soils prone to piping or internal erosion problems shall be removed and replaced with acceptable material.

Poor Topsoil: Follow fertilizer, lime, and seed application rates as noted on the plan.

Potentially Hydric: If Hydric soils are encountered, a wetlands study will be performed and wetlands will be avoided.

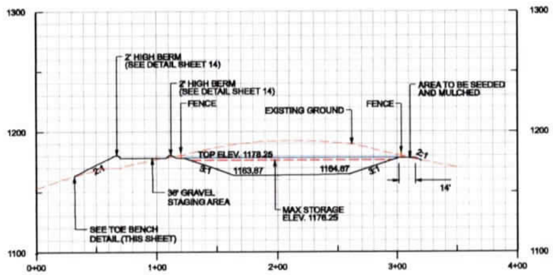
LEGEND

- POWERLINE
- BERM
- EXISTING FENCE
- TREE LINE
- PROPERTY LINE
- STREAM
- EXISTING CONTOUR LINE
- EXISTING SPOT ELEVATION
- UTILITY POLE
- PROPOSED FENCE
- FILL LIMITS
- CUT LIMITS
- LIMITS OF DISTURBANCE
- ROADWAY CENTERLINE
- INDEX CONTOUR LINE (10')
- INTERMEDIATE CONTOUR LINE
- CHANNEL FLOW DIRECTION
- CF8 — CF8 COMPOST FILTER SOCK
- AREA TO BE SEEDED AND MULCHED

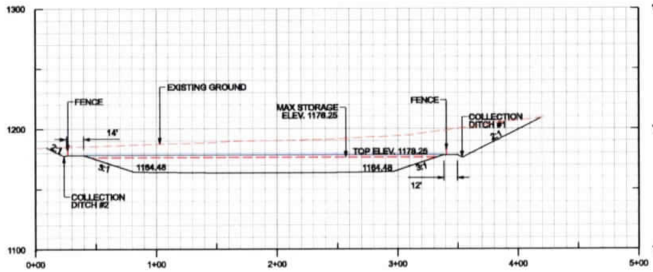
SCALE: 0 100 ft.

No.	
Scale	
Design	NCW
Drawn	BDM
Checked	JHD
Approved	
Date	NOV 2012
Project No.	1210098
Client	NOBLE ENERGY INC.
Project	MND9HS FLOWBACK PIT
Title	SOILS PLAN
Drawing No.	8

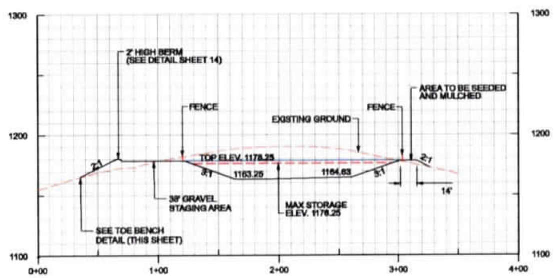
Dieffenbauch & Hritz
Morgantown, WV



BASELINE B 1+50



BASELINE A 0+50



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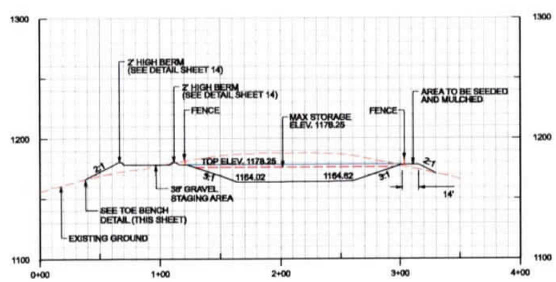

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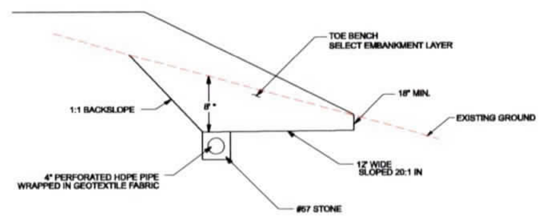


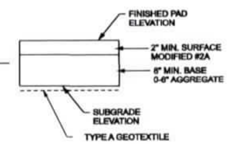
* EXCAVATE BENCH A MINIMUM OF 8'. BENCH MAY BE DEEPER IN ORDER TO REACH SUITABLE MATERIAL.

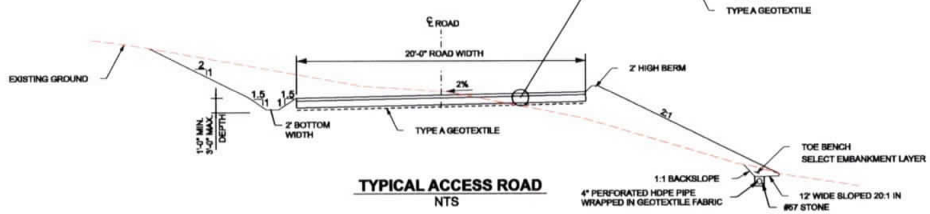
TOE BENCH WITH DRAIN

CROSS SECTION PLAN

SCALE : 0 50 ft.

TYPICAL AGGREGATE SECTION
NTS





TYPICAL ACCESS ROAD
NTS

REFERENCE:
TOPOGRAPHIC INFORMATION OBTAINED FROM BLUE MOUNTAIN ENGINEERING
DATUM: NAD 27 WVN
RECEIVING STREAMS: THREE UNNAMED TRIBUTARIES TO CONNER RUN AND CONNER RUN

LIMITS OF DISTURBANCE = 9.1 ACRES

NOTES:

NO GEOTECHNICAL INVESTIGATIONS OR ANALYSIS WERE CONDUCTED AS PART OF THIS DESIGN. ADJUSTMENTS TO PROPOSED CUT AND FILL SLOPES MAY BE REQUIRED BASED ON SUBSURFACE CONDITIONS AND OR MATERIAL ENCOUNTERED.

PROPOSED CUT AND FILL SLOPES ARE TO BE GRADED AT 2:1 UNLESS OTHERWISE NOTED.

PLACE EROSION CONTROL BLANKETS ON ALL SLOPES 3:1 AND STEEPER.

LEGEND

- POWERLINE
- BERM
- EXISTING FENCE
- TREE LINE
- PROPERTY LINE
- STREAM
- EXISTING CONTOUR LINE
- EXISTING SPOT ELEVATION
- UTILITY POLE
- PROPOSED FENCE
- FILL LIMITS
- CUT LIMITS
- LIMITS OF DISTURBANCE
- ROADWAY CENTERLINE
- INDEX CONTOUR LINE (10')
- INTERMEDIATE CONTOUR LINE
- CHANNEL FLOW DIRECTION
- COMPOST FILTER SOCK (CFS)
- AREA TO BE SEEDED AND MULCHED

SCALE : 0 50 ft.

No.	Date	Revision

NCB Drawn | BDM Checked | JHD Approved | 1"=100' Scale | NOV 2012 Date | 1218098 Project No.

Dieffenbauch & Hritz
Morgantown, WV

Client: **NOBLE ENERGY, INC.**

Project: MND9HS FLOWBACK PIT

Title: IMPOUNDMENT CROSS SECTIONS & TYPICAL SECTIONS

Drawing No. 9

IMPOUNDMENT CONSTRUCTION STANDARDS

The MNDH8 9 flowback pit was designed using the Design and Construction Standards for Impoundments for oil and gas wells. Daily construction logs will be kept outlining the work completed each day, materials and equipment used on site and site personnel present at the site. Photos of the construction will be taken on a regular basis showing the construction of the impoundment.

A) SITE PREPARATION:
The foundation for all earthen fills will be stripped and grubbed to a depth of two feet prior to the placement of any fill material. A keyway will be constructed at the toe of all fill embankments. The keyway will be excavated a minimum of 18 inches below the existing grade and at a width of 12 ft. The bottom of the keyway will be sloped back towards the cut at a slope of 20:1. The back of the keyway must be sloped back to original ground at a slope of 1:1. A 4 inch perforated HDPE Pipe wrapped in geotextile fabric and placed in a gravel trench filled with AASHTO No. 57 Stone must be placed on the inside side of the bottom of the keyway trench. Outlets for the 4 inch perforated pipe must be supplied every 50 feet.

Site Preparation shall include the following:
I. The foundation for an impoundment embankment must be stripped and grubbed to a depth of two feet prior to any placement & compaction of earthfill.
II. Any encountered springs in the foundation area must be drained to the outside/downstream toe of the embankment with a drain section two foot by two foot in dimension consisting of WV DOT Type A sand, compacted by hand tamper. No geotextiles to be used around sand. The last three feet of this drain at the outside/downstream slope must be AASHTO #6 material.

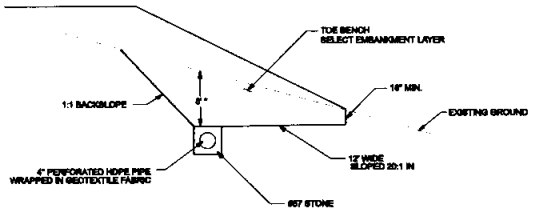
B) SOILS STANDARDS:
The entire boundary of the MNDH8 9 impoundment is not lined. There is no volume of impounded fluids. All the embankment construction will be for the staging area and access road. Soils for embankment construction shall be classified in accordance with ASTMD-2487 (Unified Soils Classification) and shall meet the acceptable soils classifications Soils Standards for centralized pit shall include the following:
I. Soils to be used for embankment construction shall be classified in accordance with ASTMD-2487 (Unified Soils Classification). A minimum of three samples must be classified.
II. Soils acceptable for dam embankment construction are limited to GC, GM, SC, SM, CL or ML. Soils must contain a minimum of 20% of Plus (larger than) No. 200 sieve and be "well graded" material with no cobbles or boulder size material mixed with the clay.

C) SOIL COMPACTION:
Fill shall be placed in lifts of 9 inches or less in thickness with particles not exceeding 6" in diameter. The compaction equipment consisting of a sheepsfoot or pad roller will make a minimum of five passes over the surface of each lift of fill material to achieve a minimum compaction rate of 95% of standard proctor density.

Soil Compaction shall be performed as followed:
I. Compaction for embankments done with a sheepsfoot or pad roller;
II. Lifts must be in horizontal layers and loose lift thickness shall be 9" or less;
III. Maximum particle size must be no greater than 6";
IV. 5 pass minimum of the compaction equipment over the entire surface of each lift;
V. Compaction to visible non-movement of the embankment material, compactive effort shall not exceed optimum moisture limits.

D) EMBANKMENT DESIGN:
The slopes on the embankments and access roads have been designed at 2:1. The interior slope of the pit is designed at 3:1. The staging area on the east side of the pit is 30 feet wide and will be covered in 12 inches of 6 inch diameter limestone rock.

Embankment Design shall include the following:
I. Minimum embankment top width of 12' is required
II. Minimum inside & outside side slopes of 3H:1V are required
1. A slope variance to a maximum of 2:1 may be approved by the Secretary where the operator provides engineering calculations and documentation to demonstrate a factor of safety of 1.5 or greater.
III. Exposed embankment slopes, not covered by compacted rockfill or riprap, must be limed, fertilized seeded and mulched. Permanent vegetative ground covering compliant with the erosion and sediment control plan must be established upon completion of pit construction.



* EXCAVATE BENCH A MINIMUM OF 6'. BENCH MAY BE DEEPER IN ORDER TO REACH SUITABLE MATERIAL.

TOE BENCH WITH DRAIN

Dieffenbauch & Hritz
Morgantown, WV

Client: NOBLE ENERGY INC.

Project: MNDH8 FLOWBACK PIT

Title: IMPOUNDMENT CONSTRUCTION NOTES

Sheet No.: 10

PROJECT: MND9HS Flowback Pit
DATE: 9/20/2012

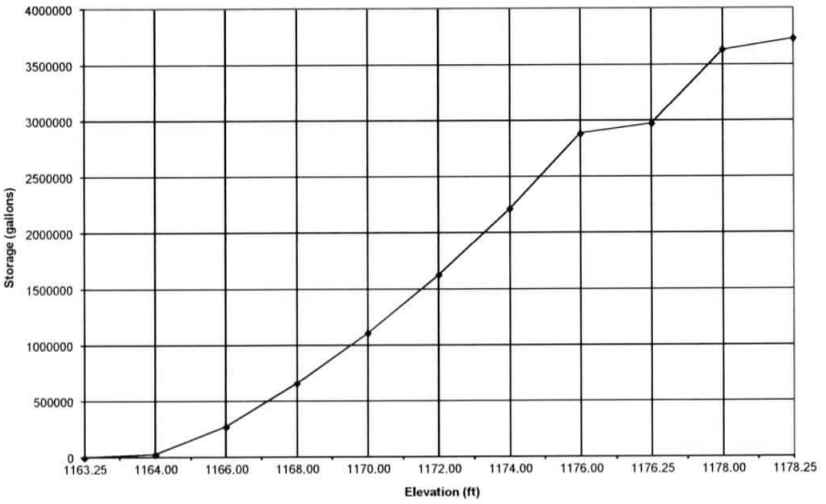
Stage-Storage Curve for Pond

Elevation (ft)	Storage Depth (ft)	Area (sf)	Storage (cf)	Storage (gallons)	Storage (barrels)	Cummulative Storage (gallons)	Cummulative Storage (barrels)	Volume per Foot Depth (gal/ft)	Volume per Foot Depth (barrels/ft)
1163.25	0.0	576	0	0	0	0	0	0	0
1164.00	0.8	9,100	3,629	27,147	646	27,147	646	36,200	860
1166.00	2.8	23,791	32,891	246,042	5,858	273,189	6,504	123,020	2,930
1168.00	4.8	27,867	51,658	386,429	9,201	659,618	15,705	193,210	4,600
1170.00	6.8	32,250	60,117	449,706	10,707	1,109,324	26,412	224,850	5,350
1172.00	8.8	36,941	69,191	517,585	12,323	1,626,909	38,735	258,790	6,160
1174.00	10.8	41,939	78,880	590,063	14,049	2,216,972	52,784	295,030	7,020
1176.00	12.8	47,246	89,185	667,150	15,885	2,884,122	68,669	333,580	7,940
1176.25	13.0	47,991	11,905	89,056	2,120	2,973,178	70,789	356,220	8,480
1178.00	14.8	52,860	88,245	660,118	15,717	3,633,296	86,506	377,210	8,980
1178.25	15.0	53,584	13,306	99,536	2,370	3,732,832	88,876	398,140	9,480

Pond Design Information

- Pond Crest set at elevation 1178.25' with maximum water level of 1176.25' and bottom of 1163.25'
- Pond design provides the required volume with 2 foot of freeboard in the basin.
- Pond Dimensions = 179' x 299' (inside of berm)
- Outside Embankment Upstream Side Slope = 2:1
- Outside Embankment Downstream Side Slope = 2:1
- Cut = 41,529 cubic yards
- Fill = 13,133 cubic yards
- Topsoil Stockpile = 15,058 cubic yards
- Approximate Storage Volume 2,973,178 gallons; 70,789 barrels; 9.1 acre-foot

STAGE STORAGE CURVE



IMPOUNDMENT CONSTRUCTION STANDARDS

The MNDHS 9 Impoundment was designed using the Design and Construction Standards for Impoundments for oil and gas wells. Daily construction logs will be kept outlining the work completed each day, materials and equipment used on site and site personnel present at the site. Photos of the construction will be taken on a regular basis showing the construction of the impoundment.

A) SITE PREPARATION:
The foundation for all earthen fills will be stripped and grubbed to a depth of two feet prior to the placement of any fill material. A keyway will be constructed at the toe of all fill embankments. The keyway will be excavated a minimum of 18 inches below the existing grade and at a width of 12 ft. The bottom of the keyway will be sloped back towards the cut at a slope of 20:1. The back of the keyway must be sloped back to original ground at a slope of 1:1. A 4 inch perforated HDPE Pipe wrapped in geotextile fabric and placed in a gravel trench filled with AASHTO No. 57 Stone must be placed on the inside side of the bottom of the keyway trench. Outlets for the 4 inch perforated pipe must be supplied every 50 feet.

Site Preparation shall include the following:
i. The foundation for an impoundment embankment must be stripped and grubbed to a depth of two feet prior to any placement & compaction of earthfill.
ii. Any encountered springs in the foundation area must be drained to the outside/downstream toe of the embankment with a drain section two foot by two foot in dimension consisting of WV DOT Type A sand, compacted by hand tamper. No geotextiles to be used around sand. The last three feet of this drain at the outside/downstream slope must be AASHTO #8 material.

B) SOILS STANDARDS:
The entire boundary of the MNDHS 9 Impoundment is not lined. There is no volume of impounded fluids. All the embankment construction will be for the staging area and access road. Soils for embankment construction shall be classified in accordance with ASTMD-2487 (Unified Soils Classification) and shall meet the acceptable soils classifications
Soils Standards for centralized pit shall include the following:
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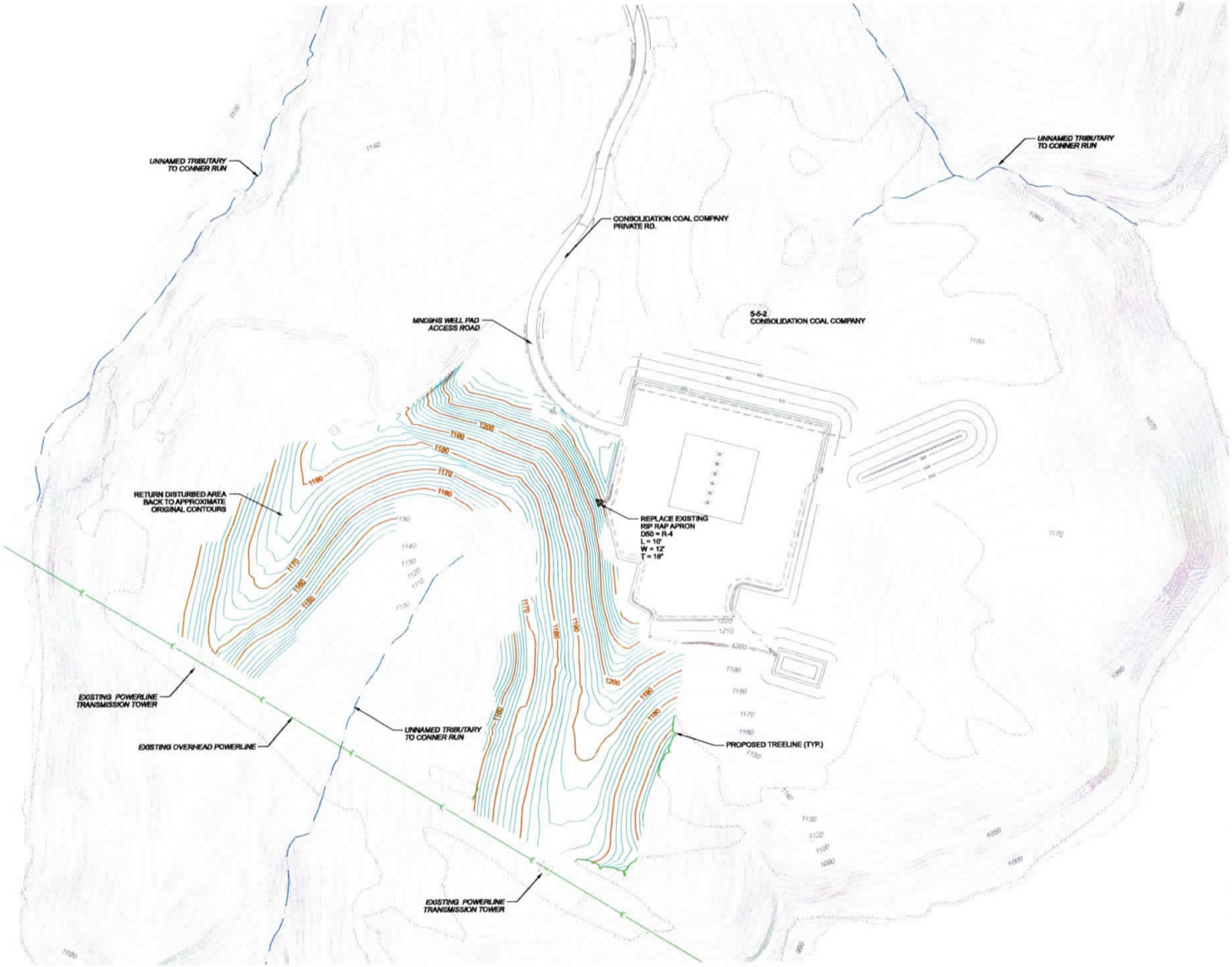
C) SOIL COMPACTION:
Fill shall be placed in lifts of 9 inches or less in thickness with particles not exceeding 6" in diameter. The compaction equipment consisting of a sheepsfoot or pad roller will make a minimum of five passes over the surface of each lift of fill material to achieve a minimum compaction rate of 95% of standard proctor density.

Soil Compaction shall be performed as followed:
i. Compaction for embankments done with a sheepsfoot or pad roller;
ii. Lifts must be in horizontal layers and loose lift thickness shall be 9" or less;
iii. Maximum particle size must be no greater than 6";
iv. 5 pass minimum of the compaction equipment over the entire surface of each lift;
v. Compaction to visible non-movement of the embankment material, compactive effort shall not exceed optimum moisture limits.

D) EMBANKMENT DESIGN:
The slopes on the embankments and access roads have been designed at 2:1. The interior slope of the pit is designed at 3:1. The staging area on the east side of the pit is 38 feet wide and will be covered in 12 inches of 6 inch diameter limestone rock.

Embankment Design shall include the following:
i. Minimum embankment top width of 12' is required
ii. Minimum inside & outside side slopes of 3H:1V are required
1. A slope variance to a maximum of 2:1 may be approved by the Secretary where the operator provides engineering calculations and documentation to demonstrate a factor of safety of 1.5 or greater.
iii. Exposed embankment slopes, not covered by compacted rockfill or riprap, must be limed, fertilized seeded and mulched. Permanent vegetative ground covering compliant with the erosion and sediment control plan must be established upon completion of pit construction.

Dieffenbauch & Hritz, Morgantown, WV
Client: CNX GAS COMPANY LLC.
Project: MND9HS FLOWBACK PIT
Title: IMPOUNDMENT STAGE STORAGE
Drawing No. 10



UPON COMPLETION OF IMPOUNDMENT OPERATIONS, REMOVE ALL GRAVEL SURFACES, RETURN IMPOUNDMENT AREA TO APPROXIMATE ORIGINAL CONTOURS, SPREAD TOPSOIL, AND SEED AND MULCH.

THE PROPERTIES AFFECTED BY THE DEVELOPMENT ARE LOCATED ON FIRM COMMUNITY PANEL NUMBER 540510C0135E. THE LIMITS OF DISTURBANCE PROPOSED WITH THE DEVELOPMENT ARE NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE.

REFERENCE:
TOPOGRAPHIC INFORMATION OBTAINED FROM BLUE MOUNTAIN ENGINEERING
DATUM: NAD 27 WVN
RECEIVING STREAMS: THREE UNNAMED TRIBUTARIES TO CONNER RUN AND CONNER RUN

LIMITS OF DISTURBANCE = 9.1 ACRES

LEGEND

- POWERLINE
- BERM
- EXISTING FENCE
- TREE LINE
- PROPERTY LINE
- STREAM
- EXISTING CONTOUR LINE
- EXISTING SPOT ELEVATION
- UTILITY POLE
- PROPOSED FENCE
- FILL LIMITS
- CUT LIMITS
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- INDEX CONTOUR LINE (10')
- INTERMEDIATE CONTOUR LINE
- CHANNEL FLOW DIRECTION
- COMPOST FILTER SOCK
- AREA TO BE SEEDED AND MULCHED

SCALE : 0 100 ft.

Revision	
No.	
Date	
NDS Drawn	
BDM Checked	
JHD Approved	
1"=200' Scale	
NOV 2012 Date	
1316098 Project No.	

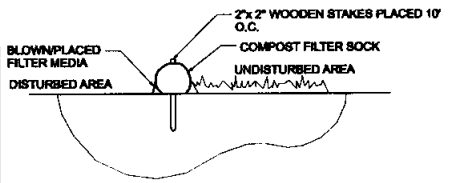
Dieffenbauch & Hritz
Morgantown, WV

Client: NOBLE ENERGY INC.

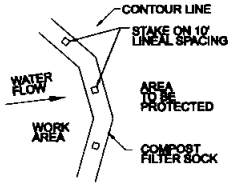
Project: MND9HS FLOWBACK PIT

Title: SITE RESTORATION PLAN

Drawing No. 11



COMPOST FILTER SOCK DETAIL

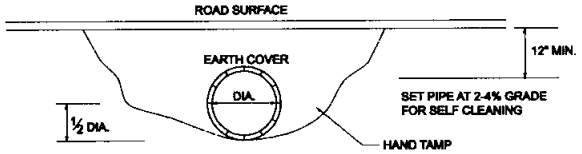


PLAN VIEW

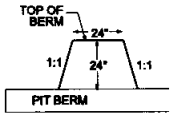
SOCK #	SIZE	% SLOPE	ACTUAL SLOPE LENGTH (FT)	MAX SLOPE LENGTH (FT)	SOCK LENGTH (FT)	LOCATION
CFS-1	24	30%	100	100	86	EXCESS STOCKPILE
CFS-2	24	30%	95	100	178	EXCESS STOCKPILE
CFS-3	32	40%	100	100	97	EXCESS STOCKPILE
CFS-4	32	40%	90	90	66	EXCESS STOCKPILE
CFS-5	32	40%	89	90	60	EXCESS STOCKPILE
CFS-6	18	20%	113	140	118	EXCESS STOCKPILE
CFS-7	24	22%	144	160	299	EXCESS STOCKPILE
CFS-8	32	40%	90	90	181	TOPSOIL STOCKPILE #1
CFS-9	24	35%	88	90	52	TOPSOIL STOCKPILE #1
CFS-10	12	24%	25	65	133	ROAD FILL
CFS-11	18	40%	55	70	48	ROAD FILL
CFS-12	18	43%	65	70	66	FILL AND DITCH OUTFALL
CFS-13	32	43%	80	90	154	ROAD FILL
CFS-14	18	29%	70	70	91	ROAD FILL
CFS-15	18	43%	65	70	91	FILL AND DITCH OUTFALL
CFS-16	18	38%	54	70	109	IMPOUNDMENT FILL
CFS-17	18	42%	44	70	150	IMPOUNDMENT FILL
CFS-18	12	16%	31	90	78	FILL AND DITCH OUTFALL
CFS-19	12	20%	46	70	221	IMPOUNDMENT FILL

COMPOST FILTER SOCK SIZE CHART

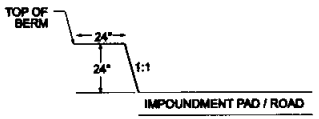
NOTE: SLOPE LENGTH MEASURED FROM FURTHEST POINT OF CONTRIBUTING DRAINAGE AREA UTILIZE EXISTING SILT SOCK AND REPLACE IF NEEDED.



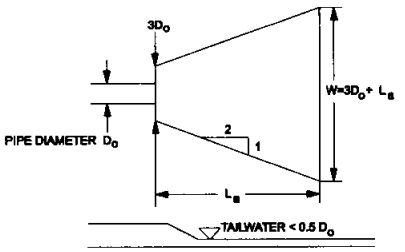
TYPICAL CROSS DRAIN CULVERT



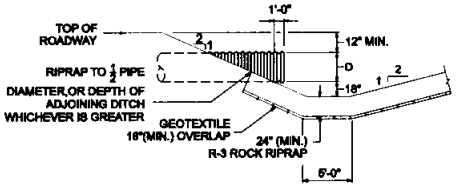
PIT BERM DETAIL



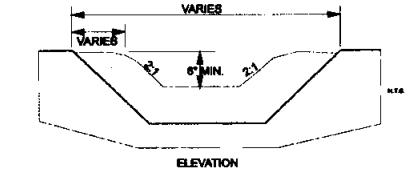
IMPOUNDMENT / ROAD BERM DETAIL



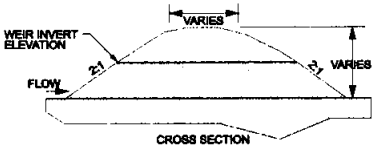
RIP RAP APRON OUTLET PROTECTION MINIMUM TAILWATER CONDITION



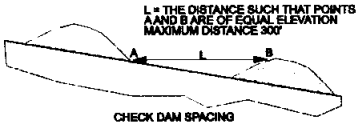
PIPE INLET TYPICAL



ELEVATION

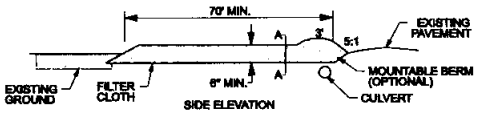


CROSS SECTION

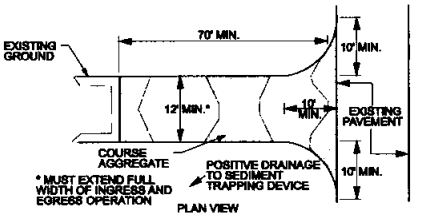


CHECK DAM SPACING

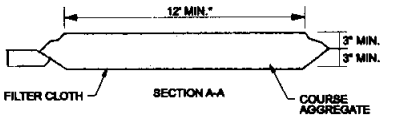
ROCK CHECK DAM



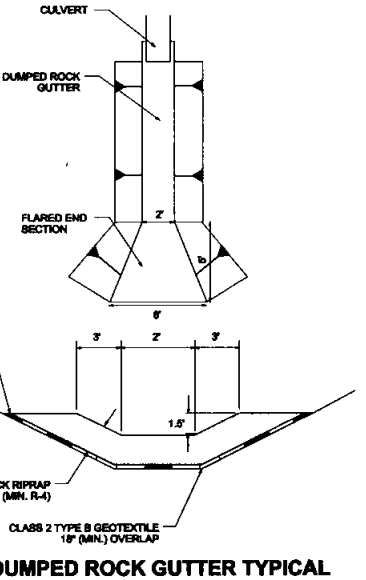
SIDE ELEVATION



PLAN VIEW



ROCK CONSTRUCTION ENTRANCE



DUMPED ROCK GUTTER TYPICAL

Dieffenbauch & Hritz
Morgantown, WV

NOBLE ENERGY INC.

MINOR'S FLOWBACK PIT

E&S DETAILS

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QUANTITY SUMMARY

DESCRIPTION	UNITS	QUANTITY
1. CLEARING AND GRUBBING		
1A.) TREE CLEARING	AC	0.3
1B.) MOWING	AC	8.8
2. COMPOST FILTER SOCK		
2A.) 12"	LF	432
2B.) 18"	LF	673
2C.) 24"	LF	615
2D.) 32"	LF	578
3. AGGREGATE SURFACING		
3A.) IMPOUNDMENT STAGING AREA 0"-6" AGGREGATE (10" LIFT COMPACTED TO 8")	TON	733
3B.) IMPOUNDMENT STAGING AREA MODIFIED 2a (4" LIFT COMPACTED TO 2")	TON	294
3C.) ACCESS ROADS 0"-6" AGGREGATE (10" LIFT COMPACTED TO 8")	TON	735
3D.) ACCESS ROADS 3/4" MODIFIED 2a (4" LIFT COMPACTED TO 2")	TON	294
3E.) GEOTEXTILE	SY	2,975
4. PIT LINER		
4A.) 60 MIL	SY	7,896
4B.) 10oz NON-WOVEN GEOTEXTILE	SY	7,896
5. SLOPE MATTING	SY	7,994
6. SEED & MULCH		
6A.) IMPOUNDMENT BERMS	AC	0.4
6B.) SITE RESTORATION	AC	9.1
7. DITCH LINING		
7A.) DITCH FABRIC	SY	263
7B.) R-4	TON	244
8. EXCAVATION		
8A.) IMPOUNDMENT (CUT W/ NO SWELL)	CY	41,529
8B.) ACCESS ROAD (CUT W/ NO SWELL)	CY	552
8C.) TOPSOIL (ASSUME 12" THICK)	CY	14,699
8D.) KEYWAY EXCAVATION (TOE LENGTH X 12' WIDTH X 8' DEPTH)	CY	7,748
8E.) KEYWAY DRAIN	LF	2,179
9. CULVERTS		
9A.) 18"	LF	90
10. DITCH LENGTH	LF	396
11. RIP RAP APRON	EA	2
12. DUMPED ROCK GUTTER	LF	279
13. PIT FENCE	LF	968
13A.) GATE	EA	3

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MNDRHS FLOWBACK PIT

QUANTITY SUMMARY

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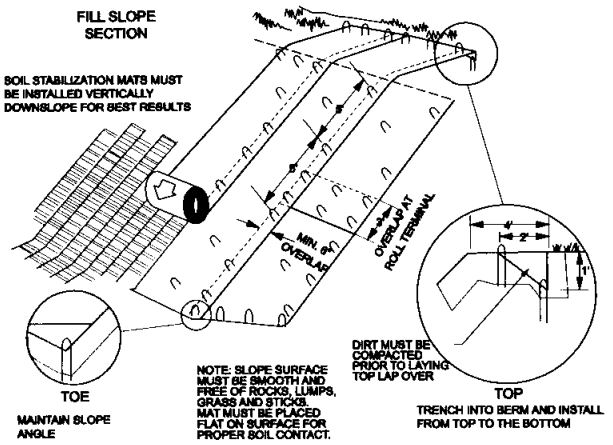
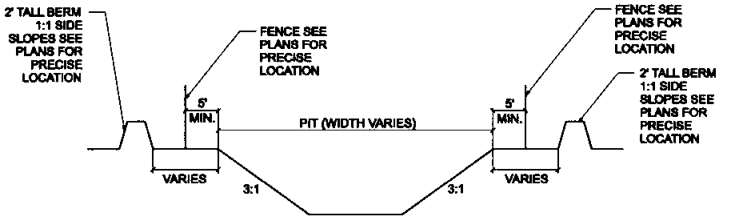


RIPRAP GRADATION, FILTER BLANKET REQUIREMENTS, MAXIMUM VELOCITIES

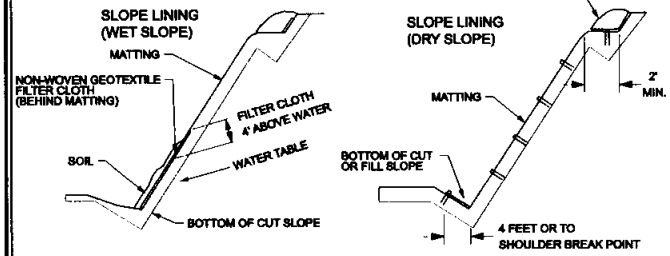
PERCENT PASSING (SQUARE OPENINGS)						
CLASS SIZE NO. / ROCK SIZE (INCHES)	R-8	R-7	R-6	R-5	R-4	R-3
42	100					
30		100				
24	15-50		100			
18		15-50		100		
15	0-15		15-50			
12		0-15		15-50	100	
9			0-15			
6				0-15	15-50	100
4						
3					0-15	15-50
2						0-15
NOMINAL PLACEMENT THICKNESS (INCHES)	63	45	36	27	18	9
FILTER STONE	AASHTO #1	AASHTO #1	AASHTO #1	AASHTO #3	AASHTO #3	AASHTO #57
Vmax (ft/sec)	17.0	14.5	13.0	11.5	9.0	6.5

COMPARISON OF VARIOUS GRADATIONS OF COARSE AGGREGATES
TOTAL PERCENT PASSING

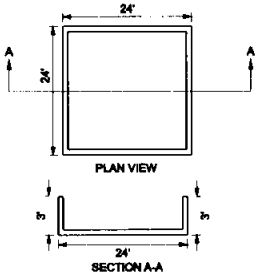
AASHTO NUMBER	6 ½"	4"	3 ½"	2 ½"	2"	1 ½"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#100
1		100	90-100	25-60			0-5							
3				100	90-100	0-15		0-5						
5						90-100	20-55	0-10	0-5					
57						90-100		25-60		0-10	0-5			
67						100	90-100		20-55	0-10	0-5			
7							100	90-100	40-70	0-15	0-5			
8								100	85-100	10-30	0-10	0-5		
10									100	75-100				10-30



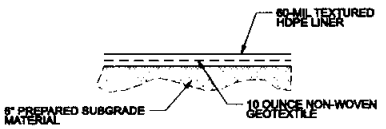
TYPICAL FENCE & BERM DETAIL FOR PITS



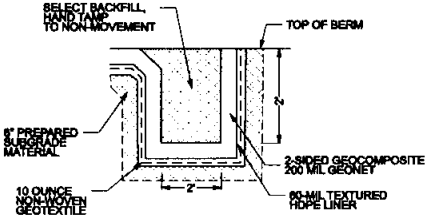
ROLLED EROSION CONTROL PRODUCTS



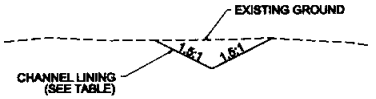
SUMP TYPICAL



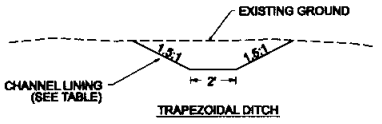
LINER SYSTEM DETAIL
N.T.S.



ANCHOR TRENCH DETAIL
N.T.S.



V DITCH

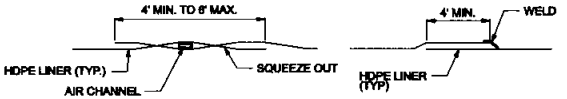


TRAPEZOIDAL DITCH

DITCH TYPICALS

NOTES:

1. LOCATION AND EXTENT OF THE STRUCTURES ON THESE SHEETS MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS.
2. IN AREAS WHERE THE DEPTH TO BEDROCK IS SHALLOW, IT MAY BE MORE ECONOMICAL TO CONSTRUCT THE DITCHES BY EXCAVATING INTO BEDROCK. THE DITCHES SHALL BE OF SUFFICIENT CAPACITY TO CONVEY THE ESTIMATED DISCHARGE RATES. WHERE ROCK RIPRAP PROTECTION IS REQUIRED IN DITCHES BECAUSE OF HIGH FLOW VELOCITY, THE RIPRAP MUST ADHERE TO THE CONTRACT ITEM SPECIFICATION REQUIREMENTS.



LINER WELDING DETAIL
N.T.S.

NOTE: PEAK DESIGN FLOW HAS BEEN CALCULATED USING 2.75 CFS / ACRE

ITEM	CONTRIBUTING AREA (AC)	CHANNEL LENGTH (FT)	MIN. CHANNEL DEPTH (FT)	TYPE OF CHANNEL	BOTTOM WIDTH (FT)	PEAK DESIGN FLOW (CFS)	DESIGN SLOPE (%)	FLOW DEPTH (FT)	VELOCITY (FPS)	CHANNEL LINING (NSA NO.)	SHEER STRESS (PSF)
COLLECTION DITCH #1	0.34	202	1.0	TRAPEZOIDAL	2.0	0.94	0.50	0.29	1.19	DITCH FABRIC	N/A
COLLECTION DITCH #2	0.13	192	1.0	V	N/A	0.36	0.50	0.30	2.54	DITCH FABRIC	N/A
ROADSIDE DITCH #1	0.81	135	1.0	TRAPEZOIDAL	2.0	2.17	13.00	0.19	5.12	R-4	1.54

DITCH DESIGN PARAMETERS

Dieffenbauch & Hritz
Morgantown, WV
NOBLE ENERGY INC.
MNDNHS FLOWBACK PIT
EMERGENCY SHEET
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