



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

July 30, 2015

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-900161, issued to SWN PRODUCTION COMPANY, LLC, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: MILDRED MANI BRK 201H
Farm Name: MLDRED MANI & MILES BAUEF
API Well Number: 47-900161
Permit Type: Horizontal 6A Well
Date Issued: 07/30/2015

Promoting a healthy environment.

07/31/2015

PERMIT CONDITIONS 4700900161

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

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.
9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

WW-6B
(10/14)

API NO. 47- 69 -
OPERATOR WELL NO. Mildred Mani BRK 201H
Well Pad Name: Mildred Mani BRK Pad

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

- 1) Well Operator: SWN Production Co., LLC 494512924 009-Brooke 1-Buffalo 620-Stuebenville
Operator ID County District Quadrangle
- 2) Operator's Well Number: Mildred Mani BRK 201H Well Pad Name: Mildred Mani BRK Pad
- 3) Farm Name/Surface Owner: Mildred Mani & Eric Bauer Public Road Access: Bradys Ridge Road
- 4) Elevation, current ground: 1072' Elevation, proposed post-construction: 1072'
- 5) Well Type (a) Gas Oil _____ Underground Storage _____
Other _____
(b) If Gas Shallow Deep _____
Horizontal _____
- 6) Existing Pad: Yes or No yes
- 7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation- Marcellus, Target Top TVD- 5637', Target Base TVD- 5716' Anticipated Thickness- 79', Associated Pressure- 3770
- 8) Proposed Total Vertical Depth: 5677'
- 9) Formation at Total Vertical Depth: Marcellus
- 10) Proposed Total Measured Depth: 13,401'
- 11) Proposed Horizontal Leg Length: 6640'
- 12) Approximate Fresh Water Strata Depths: 300'
- 13) Method to Determine Fresh Water Depths: from log analysis and nearby water wells
- 14) Approximate Saltwater Depths: 1100'
- 15) Approximate Coal Seam Depths: 87', 110'-131'
- 16) Approximate Depth to Possible Void (coal mine, karst, other): 130' Possible coal void
- 17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No
- (a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

*KLK per Eric
Bleum
7/29/15*

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Office of Oil 07/31/2015

JUL 28 2015

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(10/14)

API NO. 47- 69 -
OPERATOR WELL NO. Mildred Mani BRK 201H
Well Pad Name: Mildred Mani BRK Pad

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	161'	161'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	400'	400'	446 sx/CTS
Coal	9 5/8"	New	J-55	40#	1480'	1480'	572 sx/CTS
Intermediate	7"	New	J-55	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	HCP-110	20#	13,401'	13,401'	Load 1110 or 131 1777 sx/100' intervals
Tubing	2 3/8"	New	P-110	4.7#	Approx. 6725'	Approx. 6725'	
Liners							

Handwritten:
Kelt
You
Eric
Blund
7/29/15

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	30"	0.25	2120	81	Class A	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	633	Class A	1.19/50% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Intermediate	7"	8 3/4"	0.317	4360	3250	Class A	1.20/15% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/15% Excess
Tubing	2 3/8"	4.778"	0.190				
Liners							

PACKERS

Kind:	10K Arrowset AS1-X			
Sizes:	5 1/2"			
Depths Set:				

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WV Department of
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WW-6B
(10/14)

API NO. 47- 69 - _____
OPERATOR WELL NO. _____
Well Pad Name: Mildred Mani BRK Pad

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

Drill and stimulate any potential zones between and including the Benson to Marcellus. **If we should encounter a void place basket above and below void area- balance cement to bottom of void and grout from basket to surface. Run casing not less than 20' below void nor more than 50'-75' below void. (*If freshwater is encountered deeper than anticipated it must be protected, set casing 50'-75' below and cts.)

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

Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface. The well is produced through surface facilities consisting of high pressure production units, vertical separation units, water and oil storage tanks. Max press and anticipated max rate- 9000 lbs @ 80 barrels a minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 10

22) Area to be disturbed for well pad only, less access road (acres): 5.6

23) Describe centralizer placement for each casing string:

All casing strings will be ran with a centralizer at a minimum of 1 per every 3 joints of casing.

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

See Attachment ***

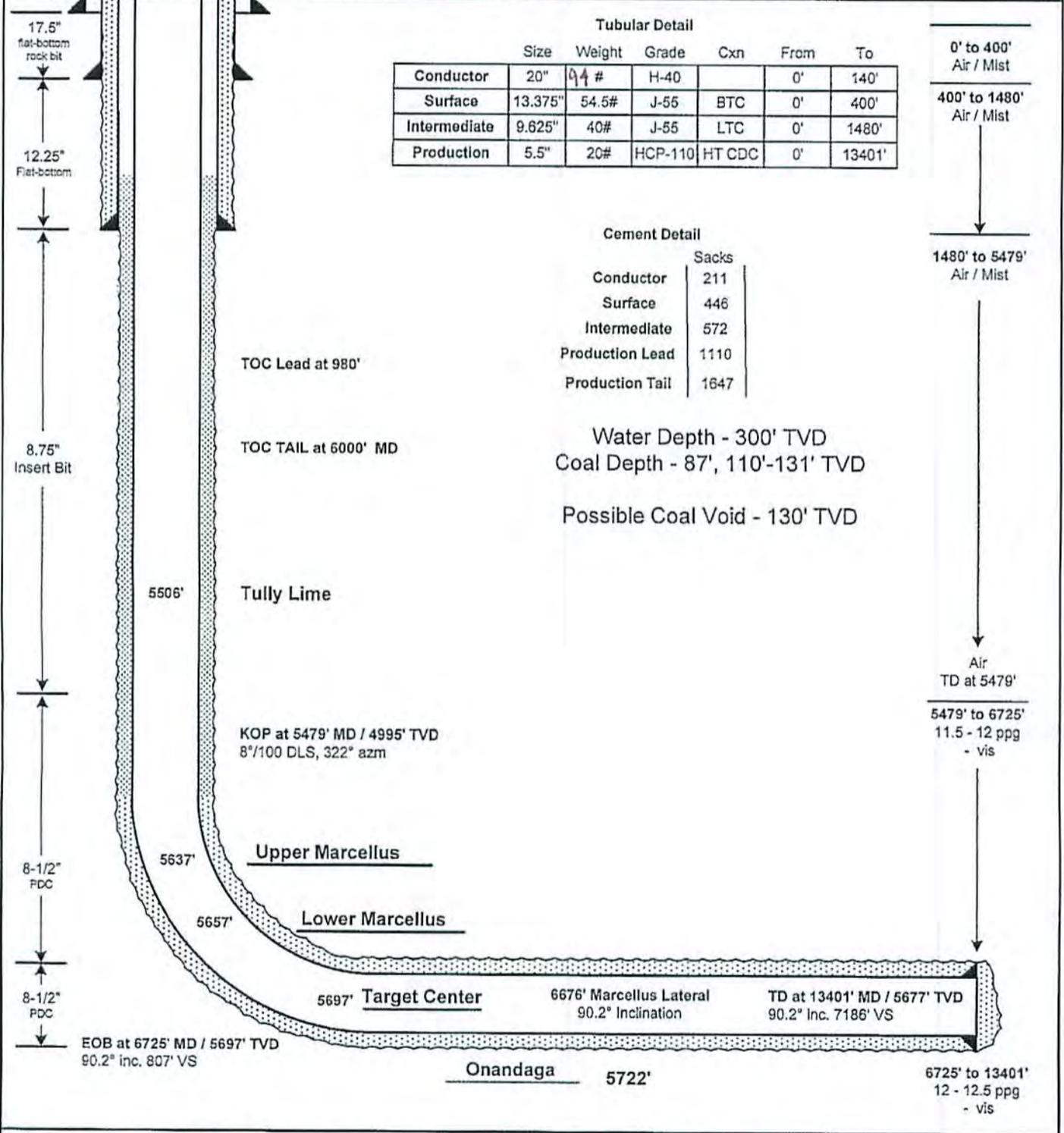
25) Proposed borehole conditioning procedures:

All boreholes will be conditioned with circulation and rotation for a minimum of one bottoms up and continuing until operator is satisfied with borehole conditions.

Received
Office of Oil & Gas
MAY 13 2015

*Note: Attach additional sheets as needed.

Southwestern Energy Company		Proposed Drilling Program	
Well	: MILDRED MANI 201	Re-entry Rig	: TBD
Field	: PANHANDLE FIELD	Prospect	: PANHANDLE
County	: BROOKE	State	: WV
SHL	: 40.25395 Latitude -80.589622 Longitude		
BHL	: 40.26945753 Latitude -80.60554843 Longitude		
KB Elev	: 1116 ft MSL	KB	: 26 ft AGL
		GL Elev	: 1090 ft MSL



Data source: K:\EandPWVD\Team Data\Drilling\Wells\Mildred Mani 201\Drilling Program\Master SWN Well Input Sheet v E-0-1.xlsm

NOTE: This drawing was created for the Reentry Rig. The depths and lengths shown in the plot are referenced to Reentry Rig RKB.

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SLB Cement Additives

***Ref: 2013-78

	Product Name	Product Use	Chemical Name	CAS Number	
Surface	D046	antifoam	Fuller's earth (attapulgit)	8031-18-3	
			Polypropylene glycol	25322-69-4	
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9	
	S001	calcium chloride	calcium chloride	10043-52-4	
		SPACER			
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9	
Intermediate					
	D046	antifoam	Fuller's earth (attapulgit)	8031-18-3	
			Polypropylene glycol	25322-69-4	
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9	
	D044	granulated salt	sodium chloride	7647-14-5	
	D153	Anti-Settling Agent	chrystalline silica	14808-60-7	
		SPACER			
	D020	bentonite extender	bentonite	1302-78-9	
	D130	polyester flake - lcm	polyethylene terephthalate	25038-59-9	
Kick Off Plug					
	D080	cement liquid dispersant	product classified as non-hazardous.		
	D801	mid-temp retarder	product classified as non-hazardous		
	D047	antifoam agent	polypropylene glycol	25322-69-4	
		SPACER			
		B389	MUDPUSH* Express	Carbohydrate	proprietary
		D206	Antifoaming Agent	Silica Organic Polymer	proprietary
		D031	barite	barium sulfate	7727-43-7
				fatty acid amine	proprietary
			ethoxylated alcohol	proprietary	
			glycerol	56-81-5	
	B220	surfactant	2,2'-Iminodiethanol	111-42-2	
	D167	UNIFLAC* S	aliphatic amide polymer	proprietary	

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Production - Lead	D154	low-temperature extender	non-crystalline silica	7831-86-9
	D400	EasyBLOK	boric acid	10043-35-3
	D046	antifoam	Fuller's earth (attapulgate)	8031-18-3
			Polypropylene glycol	25322-69-4
	D201	basic cements enabler	chrystalline silica	14808-60-7
			metal oxide	proprietary
	D202	low-temperature solid dispersant	sulphonated synthetic polymer	proprietary
			formaldehyde (Impurity)	50-00-0
	D046	antifoam	Fuller's earth (attapulgate)	8031-18-3
			Polypropylene glycol	25322-69-4
	D167	UNIFLAC* S	aliphatic amide polymer	proprietary
	D065	TIC* Dispersant	Sodium Polynaphthalene Sulfonate	9008-63-3
			Sodium Sulfate	7757-82-6
	D201	basic cements enabler	chrystalline silica	14808-60-7
			metal oxide	proprietary
	D153	Anti-Settling Agent	chrystalline silica	14808-60-7
		SPACER		
	B389	MUDPUSH* Express	Carbohydrate	proprietary
	D206	Antifoaming Agent	Silica Organic Polymer	proprietary
D031	barite	barium sulfate	7727-43-7	
		fatty acid amine	proprietary	
B220	surfactant	ethoxylated alcohol	proprietary	
		glycerol	56-81-5	
		2,2'-Iminodiethanol	111-42-2	

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<u>% Concentration Used</u>
0.2% BWOC
0.125 lb/sk
2% BWOC
1 lb/bbl
20 lb/bbl
0.2% BWOC
0.125 lb/sk
10% BWOW
0.15% BWOC
20 lb/bbl
1 lb/bbl
0.05 gal/sk
0.01 gal/sk
0.02 gal/sk
1 lb/bbl
0.1 gal/bbl
310 lb/bbl
1 gal/bbl
0.35% BWOC

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6% BWOC
0.8% BWOC
0.2% BWOC
0.2% BWOC
0.3% BWOC
0.2% BWOC
0.35% BWOC
0.25% BWOC
0.2% BWOC
0.2% BWOC
proprietary
proprietary
7727-43-7
proprietary
proprietary
58-81-5
111-42-2

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HOFFMAN ASSOCIATES INC

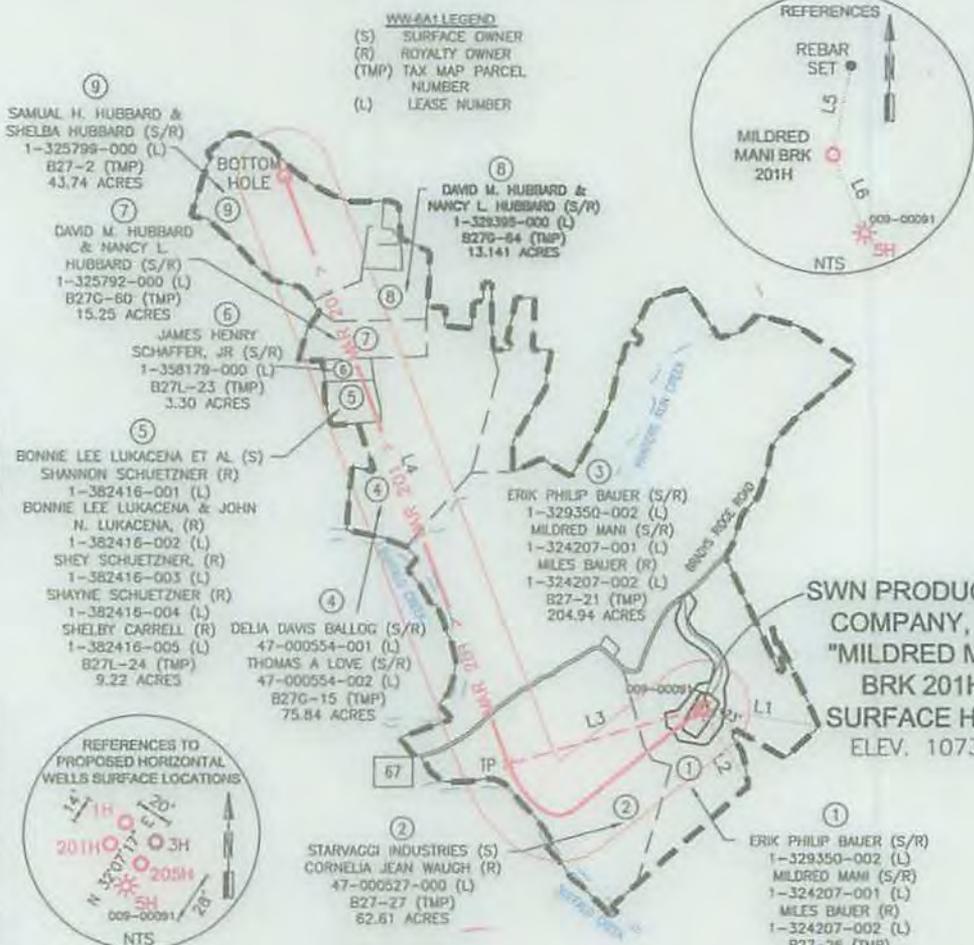
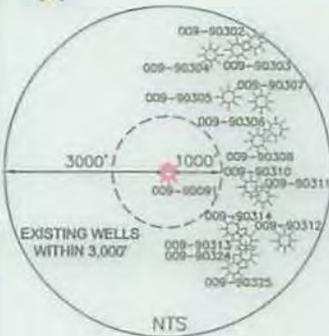
320 O'Bryan Lane • Van Buren, AR 72956
Office: 479.474.7916 • Fax: 479.474.2450
Surveying • handa-inc.com

LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	S 89°05'04" E	1450.05'	SHL TO LANDMARK	FOUND IRON PIPE
L2	S 47°57'10" E	995.08'	SHL TO LANDMARK	FOUND IRON PIPE
L3	S 73°47'11" W	2132.46'	SHL TO TPL	
L4	N 21°15'39" W	6676.88'	TPL TO BHL	
L5	N 11°04'38" E	169.06'	SHL TO REF. PNT.	1/2" REBAR SET
L6	S 23°20'24" E	24.51'	SHL TO REF. PNT.	MILDRED MANI BRK 5H WELL HEAD 009-00091

Latitude: 40°17'30"

Longitude: 80°35'00"

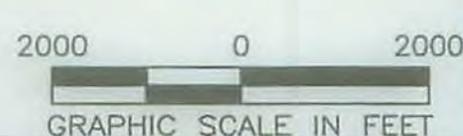
GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT



SURFACE HOLE LOCATION (SHL):	
GEOGRAPHIC (NAD83):	LATITUDE: 40.253950°
	LONGITUDE: -80.589622°
UTM (NAD83, ZONE 17, FEET):	NORTHING: 14,619,473.940
	EASTING: 1,754,918.683
UTM (NAD83, ZONE 17, METERS):	NORTHING: 4,456,024.569
	EASTING: 534,899.675
TURNING POINT LOCATION (TPL):	
GEOGRAPHIC (NAD83):	LATITUDE: 40.252341°
	LONGITUDE: -80.596971°
UTM (NAD83, ZONE 17, FEET):	NORTHING: 14,618,878.518
	EASTING: 1,752,869.037
UTM (NAD83, ZONE 17, METERS):	NORTHING: 4,455,843.084
	EASTING: 534,275.551
BOTTOM HOLE LOCATION (BHL):	
GEOGRAPHIC (NAD83):	LATITUDE: 40.269458°
	LONGITUDE: -80.605548°
UTM (NAD83, ZONE 17, FEET):	NORTHING: 14,625,100.962
	EASTING: 1,750,447.899
UTM (NAD83, ZONE 17, METERS):	NORTHING: 4,457,739.689
	EASTING: 533,537.587

- NOTES ON SURVEY**
- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
 - SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
 - THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
 - NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED OF PAD.
 - NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
 - NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 1000 FEET OF THE LIMITS OF DISTURBANCE.
 - NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

SURVEYED BY TRIPLE H ENTERPRISES, WEST UNION, WV.



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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 667 *Darrell R. Boice*

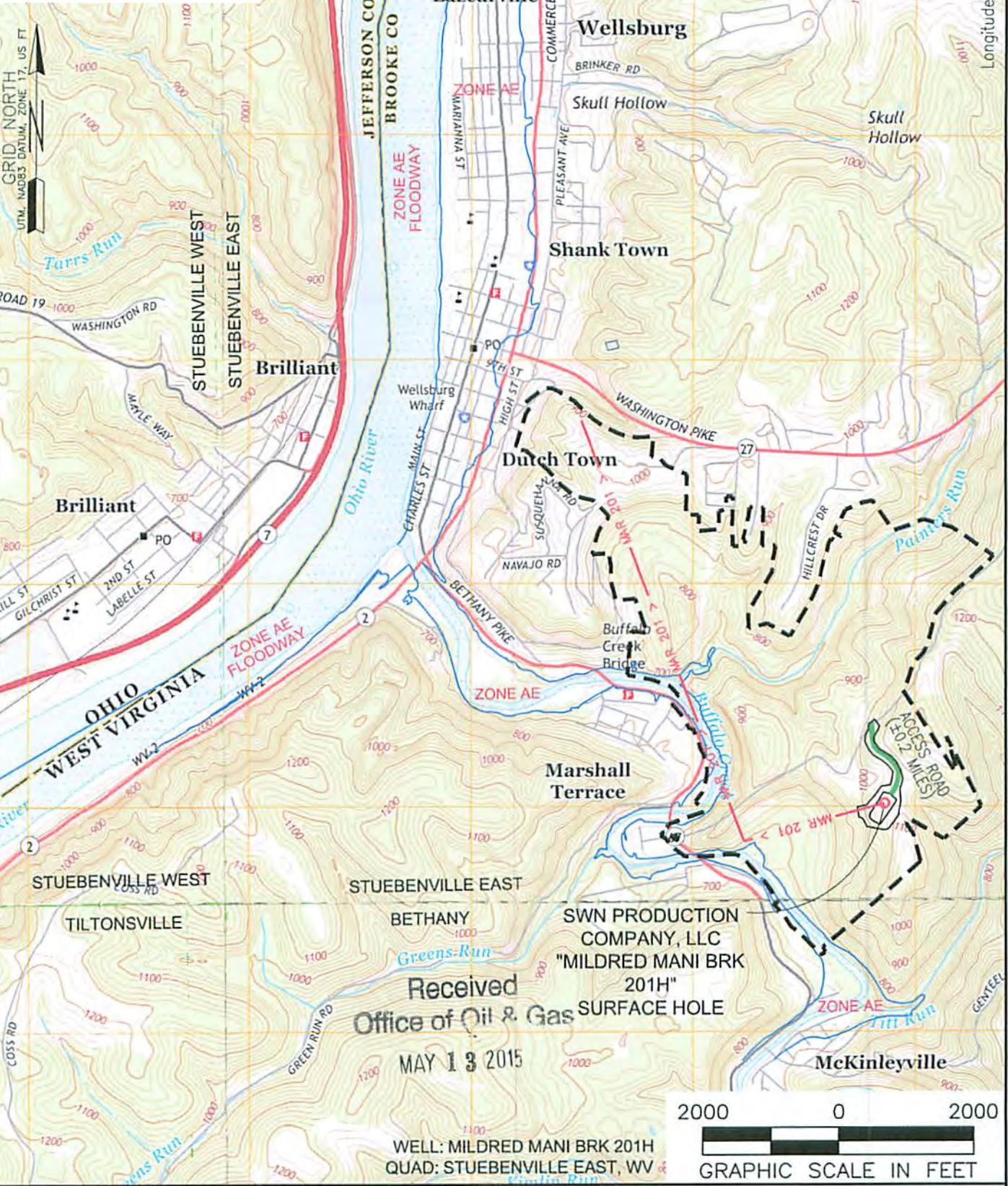
<p>WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034</p>	<p>(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS</p> <p>MINIMUM DEGREE OF ACCURACY: 1/200</p> <p>PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)</p>	<p>OPERATOR'S WELL #: 47</p> <p>API WELL #: 47</p> <p>STATE: WV</p>	<p>MILDRED MANI BRK</p> <p>Office of Oil & Gas 2015 COUNTY: BROOKE</p>
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WELL TYPE: OIL	WASTE DISPOSAL	PRODUCTION	DEEP	GAS <input checked="" type="checkbox"/>	LIQUID INJECTION	STORAGE	SHALLOW <input checked="" type="checkbox"/>
WATERSHED: BUFFALO CREEK				ELEVATION: 1073.1'			
DISTRICT: BUFFALO				COUNTY: BROOKE			
SURFACE OWNER: MILDRED MANI & ERIK PHILIP BAUER				ACREAGE: 95.00±			
OIL & GAS ROYALTY OWNER: MILDRED MANI & ERIK PHILIP BAUER				ACREAGE: 95.00±			
DRILL <input checked="" type="checkbox"/>	DRILL DEEPER	REDRILL	FRACTURE OR STIMULATE <input checked="" type="checkbox"/>	PLUG OFF OLD FORMATION	PERFORATE NEW FORMATION		
CONVERT	PLUG & ABANDON	CLEAN OUT & REPLUG	OTHER CHANGE (SPECIFY)				
TARGET FORMATION: MARCELLUS				ESTIMATED DEPTH: 5,677' TO 07/31/2015			

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC	DESIGNATED AGENT: DEE SOUTHALL
ADDRESS: P.O. BOX 1300	ADDRESS: P.O. BOX 1300
CITY: JANE LEW	CITY: JANE LEW
STATE: WV	STATE: WV
ZIP CODE: 26378	ZIP CODE: 26378

<p>LEGEND:</p> <ul style="list-style-type: none"> ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ⊗ EXISTING / PRODUCING WELLHEAD ⊗ ABANDONED WELL ⊗ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR --- LEASE BOUNDARY --- 500' OHP BUFFER - MAR 1 - MARCELLUS OHP --- ABANDONED PATH 	<p>REVISIONS:</p> <p>Δ REVISED TVD & TMD, 07-22-2015</p> <p>DATE: 04-28-2015</p> <p>DRAWN BY: S. HUTSON</p> <p>SCALE: 1" = 2000'</p> <p>DRAWING NO: 58996</p> <p>WELL LOCATION PLAT</p>
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HOFFMAN ASSOCIATES INC
 320 O'Bryan Lane • Van Buren, AR 72956
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 Surveying • handa-inc.com



NAME AND DISTANCE TO THE NEAREST STREAM: TITT RUN IS LOCATED ±0.31 MILES SOUTHEAST OF THE CENTER OF THE DRILL PAD.		STREAM CROSSING COORDINATES (NAD 83): NO NEW CROSSINGS.		COMPANY: 	
WELL RESTRICTIONS: WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQ FT: >625 FEET		OPERATOR'S MILDRED MANI BRK		WELL #: 201H	
FEMA FLOOD INFORMATION: BY GRAPHIC PLOTTING ONLY FEMA FIRM UNINCORPORATED AREA OF BROOKE COUNTY, WEST VIRGINIA; MAP NUMBERS 54009C0090 D, 54009C0130 D, & 54009C0088 D; EFFECTIVE DATE APRIL, 19, 2010.		LOCATION: BUFFALO DISTRICT, BROOKE COUNTY, WEST VIRGINIA		SURFACE HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.253950° LONGITUDE: -80.589622°	
LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ⊙ EXISTING / PRODUCING WELLHEAD ⊘ ABANDONED WELL ⊙ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR		● EXISTING WATER WELL — ACCESS ROAD — ACCESS ROAD TO PREV. SITE — HIGHWAY/INTERSTATE — COUNTY ROAD		BOTTOM HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.269458° LONGITUDE: -80.605548°	
REVISIONS:		DATE: 04-28-2015		DRAWN BY: S. HUTSON SCALE: 1" = 2000' DRAWING NO: 58517 TOPOGRAPHIC MAP	

07/31/2015

WW-6A1
(5/13)

Operator's Well No. Mildred Mani North 201H

**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:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
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SEE EXHIBIT A

**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

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Office of Oil & Gas
MAY 13 2015

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.

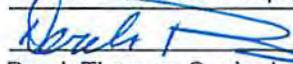
Well Operator: SWN Production Company
By: 
Its: Derek Thomas, Senior Landman

Exhibit "A"

Attached hereto and made part of the State of West Virginia Oil and Gas Permit Form WW-6A1 by, SWN Production Company L.L.C. Operator
 Mildred Mani North 201H
 Brooke County, WV

Tract #	Tax Parcel	Lease Number	Lessor	Lessee	Royalty	BK/PG		
1)	B27-26	1-324207-001	Mildred Mani	Great Lakes Energy Partners L.L.C	14%	9/526		
			Great Lakes Energy Partners L.L.C	Range Resources L.L.C.		20/733		
			Range Resources L.L.C.	Chesapeake Appalachia L.L.C		10/552		
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		30/480		
	1-324207-002	Miles Bauer	Great Lakes Energy Partners L.L.C	Great Lakes Energy Partners L.L.C	14%	9/596		
			Great Lakes Energy Partners L.L.C	Range Resources L.L.C.		20/733		
			Range Resources L.L.C.	Chesapeake Appalachia L.L.C		10/552		
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		30/480		
	1-329350-002	Erik Philip Bauer	Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C	18%	13/713		
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		30/480		
2)	B27-27	47-000527-000	Cornelia Jean Waugh	Chesapeake Appalachia L.L.C	18%	14/595		
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		30/480		
3)	B27-21	1-329350-002	Erik Philip Bauer	Chesapeake Appalachia L.L.C	18%	13/713		
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		30/480		
			1-324207-001	Mildred Mani		Great Lakes Energy Partners L.L.C	14%	9/526
				Great Lakes Energy Partners L.L.C		Range Resources L.L.C.		20/733
	1-324207-002	Miles Bauer	Range Resources L.L.C.	Chesapeake Appalachia L.L.C	14%	9/596		
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		30/480		
			Great Lakes Energy Partners L.L.C	Great Lakes Energy Partners L.L.C		14%	9/596	
			Range Resources L.L.C.	Range Resources L.L.C.			20/733	
	Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C	10/552	10/552				
	SWN Production Company L.L.C.	SWN Production Company L.L.C.		30/480				
4)	B27G-15	47-000554-001	Delia Davis Ballog	Chesapeake Appalachia L.L.C	18%	14/498		
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		30/480		
		47-000554-002	Thomas A. Love	Chesapeake Appalachia L.L.C	18%	14/726		
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		30/480		

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4700900161

Exhibit "A"

Attached hereto and made part of the State of West Virginia Oil and Gas Permit Form WW-6A1 by, SWN Production Company L.L.C. Operator
 Mildred Mani North 201H
 Brooke County, WV

Tract #	Tax Parcel	Lease Number	Lessor	Lessee	Royalty	BK/PG
5)	B27L-24	1-382416-001	Shannon Schuetzner Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	18%	24/443
		1-382416-002	Bonnie Lee Lukacena and John N. Lukacena Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.		24/450
		1-382416-003	Shey Schuetzner Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.		25/177
		1-382416-004	Shayne Schuetzner Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.		30/480
		1-382416-005	Shelby Carrell Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.		25/185
						30/480
6)	B27L-23	1-358179-000	James Henry Schaffer, Jr. Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	18%	22/774 30/480
7)	B27G-60	1-325792-000	David M. Hubbard and Nancy L. Hubbard Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	18%	13/626 30/480
8)	B27G-64	1-329395-000	David M. Hubbard and Nancy L. Hubbard Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	18%	12/641 30/480
9)	B27-2	1-325799-000	Samuel H. Hubbard and Shelba Hubbard Chesapeake Appalachia L.L.C.	Chesapeake Appalachia L.L.C. SWN Production Company L.L.C.	18%	11/720 30/480

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 Office of Oil & Gas
 MAY 13 2015

4700900161



March 17, 2015

Ms. Laura Adkins
WV DEP Office of Oil & Gas
601 57th St., SE
Charleston, WV 25304

RE: SWN's proposed Mildred Mani BRK 201H & Mildred Mani BRK 1H in Brooke County, West Virginia, Drilling under Brady's Ridge Road.

Dear Ms. Adkins:

SWN Production Company, LLC ("SWN") is applying for a drilling permit for the above referenced well. The State of West Virginia has raised some concern as to SWN's right to drill under Brady's Ridge Road. Please be advised that SWN has leased all mineral owners under said route as it relates to the above-referenced well and unit.

Thank you.

Sincerely,

Derek A. Thomas
Senior Landman
Southwestern Energy Production Company, LLC
PO Box 1300
Jane Lew, WV 26378

The Right People doing the Right Things,
wisely Investing from
our underlying Assets, will create Value+
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07/31/2015

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

Date of Notice Certification: 5/8/15

API No. 47- 69 - _____
Operator's Well No. _____
Well Pad Name: Mildred Mani BRK Pad

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State:	<u>WV</u>	UTM NAD 83 Easting:	<u>534899.7</u>
County:	<u>009-Brooke</u>	UTM NAD 83 Northing:	<u>4456024.6</u>
District:	<u>1-Buffalo</u>	Public Road Access:	<u>Battle Run Road</u>
Quadrangle:	<u>620-Stuebenville East</u>	Generally used farm name:	<u>Glenn Didriksen</u>
Watershed:	<u>Buffalo Creek</u>		

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
---	---

Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

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Certification of Notice is hereby given:

THEREFORE, I _____, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator: SWN Production Co., LLC
By: Dee Southall
Its: Regulatory Supervisor
Telephone: 832-796-1614

Address: P.O. Box 12359
Spring, TX 77391-4954
Facsimile: 92816182780@fax.com
Email: Dee_Southall@swn.com



Subscribed and sworn before me this 17th day of March 2015.

Brittany R Woody Notary Public
My Commission Expires 11/27/2022

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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WW-6A
(9-13)

API NO. 47- 69 -
OPERATOR WELL NO. Mildred Mani BRK 201H
Well Pad Name: Mildred Mani BRK Pad

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 5/8/15 Date Permit Application Filed: 5/8/15

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)
Name: Mildred Mani
Address: 1709 Bradys Ridge Road
Wellsburg, WV 26070

Name: Miles Bauer
Address: 1709 Bradys Ridge Road
Wellsburg, WV 26070

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE
Name: Starvaggi Industries, Inc.
Address: 401 Pennsylvania Ave
Weirton, WV 26062

COAL OPERATOR
Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: Mildred Mani
Address: 1709 Bradys Ridge Road
Wellsburg, WV 26070

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

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MAY 13 2015

*Please attach additional forms if necessary

07/31/2015

WW-6A
(9-13)

API NO. 47- 69 -
OPERATOR WELL NO. Mildred Mani BRK 201H
Well Pad Name: Mildred Mani BRK Pad

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 5/8/15 Date Permit Application Filed: 5/8/15

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)
Name: Erik P. Bauer
Address: 136 S. Thomas DR
Port Clinton OH 43452-9447

COAL OWNER OR LESSEE
Name: _____
Address: _____

Name: _____
Address: _____

COAL OPERATOR
Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
Name: _____
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

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Office of Oil & Gas

*Please attach additional forms if necessary

MAY 13 2015

07/31/2015

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2010, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

Received
DATE: 07/31/2015
TIME: 11:53 AM
MAY 11 2015

WW-6A
(8-13)

API NO. 47-69 - _____
OPERATOR WELL NO. _____
Well Pad Name: Mildred Mani BRK Pad

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

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Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

07/31/2015

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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07/31/2015

4700900161

WW-6A
(8-13)

API NO. 47- 69 - _____
OPERATOR WELL NO. _____
Well Pad Name: Mildred Mani BRK Pad

Notice is hereby given by:

Well Operator: SWN Production Co., LLC
Telephone: 832-796-1000
Email: Dee_Southall@swn.com

Address: P.O. Box 12359
Spring, TX 77391-4954
Facsimile: 92816182780@fax.com

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.



Subscribed and sworn before me this 17th day of March 2015.
Brittany R Woody Notary Public
My Commission Expires 11/27/22

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07/31/2015

WW-6A4
(1/12)

Operator Well No. Mildred Mani 201H

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.

Date of Notice: 05/01/2015 **Date Permit Application Filed:** 5/8/15

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

HAND DELIVERY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Erik P. Bauer
Address: 136 S. Thomas Drive
Port Clinton, OH 43452

Name: _____
Address: _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>534899.7</u>
County: <u>Brooke</u>	Northing: <u>4456024.6</u>
District: <u>Buffalo</u>	Public Road Access: <u>Bradys Ridge Road</u>
Quadrangle: <u>Steubenville East</u>	Generally used farm name: <u>Mildred Mani</u>
Watershed: <u>Upper Ohio South</u>	

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: SWN Energy Production Company, LLC
Address: 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-517-6603
Email: steve_perkins@swn.com
Facsimile: 304-461-2497

Authorized Representative: Steve Perkins
Address: 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-517-6603
Email: steve_perkins@swn.com
Facsimile: 304-461-2497

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL**

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.

Date of Notice: 03/17/2015 **Date Permit Application Filed:** 5/8/15

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

HAND DELIVERY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Mildred Mani Name: _____
Address: 1709 Bradys Ridge Road CT Address: _____
Wellsburg, WV 26070

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 534899.7
County: Brooke Northing: 4456024.6
District: Buffalo Public Road Access: Bradys Ridge Road
Quadrangle: Steubenville East Generally used farm name: Mildred Mani
Watershed: Buffalo Creek

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: SWN Energy Production Company, LLC Authorized Representative: Steve Perkins
Address: 179 Innovation Drive Address: 179 Innovation Drive
Jane Lew, WV 26378 Jane Lew, WV 26378
Telephone: 304-517-6603 Telephone: 304-517-6603
Email: steve_perkins@swn.com Email: steve_perkins@swn.com
Facsimile: _____ Facsimile: _____

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of its regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least TEN (10) days prior to filing a permit application.

Date of Notice: 03/17/2015 **Date Permit Application Filed:** 5/8/15

Delivery method pursuant to West Virginia Code § 22-6A-16(b)

HAND DELIVERY CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Miles Bauer
Address: 1709 Bradys Ridge Road CT
Wellsburg, WV 26070

Name: _____
Address: _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 534899.7
County: Brooke Northing: 4456024.6
District: Buffalo Public Road Access: Bradys Ridge Road
Quadrangle: Steubenville East Generally used farm name: Mildred Mani
Watershed: Buffalo Creek

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: SWN Energy Production Company, LLC
Address: 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-517-6603
Email: steve_perkins@swn.com
Facsimile: _____

Authorized Representative: Steve Perkins
Address: 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-517-6603
Email: steve_perkins@swn.com
Facsimile: _____

Oil and Gas Privacy Notice:

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MAY 13 2015

WW-6A5
(1/12)

Operator Well No. Mildred Mani 201H

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 05/01/2015 **Date Permit Application Filed:** 5/8/15

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

CERTIFIED MAIL **HAND**
RETURN RECEIPT REQUESTED **DELIVERY**

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Erik P. Bauer **Name:** _____
Address: 136 S. Thomas Drive **Address:** _____
Port Clinton, OH 43452 _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>534899.7</u>
County:	<u>Brooke</u>		Northing:	<u>4456024.6</u>
District:	<u>Buffalo</u>	Public Road Access:	<u>Bradys Ridge Road</u>	
Quadrangle:	<u>Steubenville East</u>	Generally used farm name:	<u>Mildred Mani</u>	
Watershed:	<u>Upper Ohio South</u>			

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator:	<u>SWN Energy Production Company, LLC</u>	Address:	<u>179 Innovation Drive</u>
Telephone:	<u>304-517-6603</u>		<u>Jane Lew, WV 26378</u>
Email:	<u>steve_perkins@swn.com</u>	Facsimile:	<u>304-461-2497</u>

Oil and Gas Privacy Notice:

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the fil^d of permit application.
Date of Notice: 03/17/2015 Date Permit Application Filed: 5/18/15

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Miles Bauer Name: _____
Address: 1709 Bradys Ridge Road Address: _____
Wellsburg, WV 26070

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 534899.7
County: Brocke Northing: 4456024.6
District: Buffalo Public Road Access: Bradys Ridge Road
Quadrangle: Steubenville East Generally used farm name: Mildred Mani
Watershed: Buffalo Creek

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: SWN Energy Production Company, LLC Address: 179 Innovation Drive
Telephone: 304-517-6603 Jane Lew, WV 26378
Email: steve_perkins@swn.com Facsimile: _____

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Earl Ray Tomblin
Governor

Paul A. Mattox, Jr., P. E.
Secretary of Transportation/
Commissioner of Highways

April 14, 2015

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the Mildred Mani Pad, Brooke County
Mildred Mani BRK 201H

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #06-2013-0277 for the subject site to Southwestern Energy for access to the State Road for the well site located off of Brooke County Route 27/3 SLS.

The operator has signed an OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office Oil & Gas Coordinator

Cc: Brittany Woody
Southwestern Energy
CH, OM, D-6
File

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Office of Oil & Gas
MAY 13 2015

07/31/2015

Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
NALCO ONESOURCE	EC6110A	Biocide	Ethanol	000064-17-5
			Glutaraldehyde (Pentanediol)	000111-30-8
			Quaternary Ammonium Compounds	N/A-063
	EC6629A	Biocide	No Hazardous Components	NONE
WEATHERFORD	WBK-133 OXIDIZER	Breaker	Ammonium Persulfate	007727-54-0
	WBK-134	Breaker	Ammonium Persulfate	007727-54-0
			Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7
	WCS-631LC	Clay Stabilizer	Proprietary Non Hazardous Salt	N/A-229
			Water	007732-18-5
	WFR-55LA	Friction Reducer	No Hazardous Components	NONE
	WGA-15L	Gel	Petroleum Distillate Hydrotreated Light	064742-47-8
	WPB-584-L	Buffer	Potassium Carbonate	000584-08-7
			Potassium Hydroxide	001310-58-3
	WXL-101LE	Corsslinker	No Hazardous Components	NONE
	WXL-101LM	Crosslinker	Petroleum Distillate Hydrotreated Light	064742-47-8
	WXL-105L	Crosslinker	Water	007732-18-5
Ethylene Glycol			000107-21-1	
Boric Acid			010043-35-3	
Ethanolamine			000141-43-5	
SCHLUMBERGER	B244 Green-Cide 25G	Biocide	Glutaraldehyde	111-30-8
	L071 Temporary Clay Stabilizer	Clay Stabilizer	Cholinium Chloride	67-48-1
	Breaker J218	Breaker	Diammonium Peroxidisulphate	7727-54-0
	EB-Clean* J475 Breaker		Diammonium Peroxidisulphate	7727-54-0
	Friction Reducer B315	Friction Reducer	Distillates (petroleum), Hydrotreated light Aliphatic Alcohol Glycol Ether	64742-47-8 Proprietary
	Friction Reducer J609		Ammonium Sulfate	7783-20-2

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Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
SCHLUMBERGER	Water Gelling Agent J580	Gel	Carbohydrate Polymer	Proprietary
	Scale Inhibitor B317	Scale Inhibitor	Trisodium ortho phosphate Ethane-1, 2-diol	7601-54-9 107-21-1
	Borate Crosslinker J532	Crosslinker	Aliphatic polyol Sodium tetraborate decahydrate	Proprietary 1303 96-4
	Crosslinker J610		Aliphatic polyol Potassium hydroxide	Proprietary 1310 58-3

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Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
BAKER HUGHES	ALPHA 1427	Biocide	Didecyl Dimethyl Ammonium Chloride	007173-51-1
			Ethanol	000064-17-5
			Glutaraldehyde (Pentanediol)	000111-30-8
			Quaternary Ammonium Compound	068424-85-1
			Water	007732-18-5
	BF-7L	Buffer	Potassium Carbonate	000584-08-7
	ClayCare	Clay Stabilizer	Choline Chloride	000067-48-1
			Water	007732-18-5
	Enzyme G-I	Breaker	No Hazardous Components	NONE
	ENZYME G-NE	Breaker	No Hazardous Components	NONE
	FRW-18	Friction Reducer	Petroleum Distillate Hydrotreated Light	064742-47-8
	GW-3LDF	Gel	Petroleum Distillate Blend	N/A-014
			Polysaccharide Blend	N/A-021
	SCALETROL 720	Scale Inhibitor	Diethylene Glycol	000111-46-6
Ethylene Glycol			000107-21-1	
XLW-32	Crosslinker	Boric Acid	010043-35-3	
		Methanol (Methyl Alcohol)	000067-56-1	
FRAC TECH SERVICES	APB01 (AMMONIUM PERSUFATE BREAKER)	Breaker	Ammonium Persulfate	007727-54-0
	B05 (LOW PH BUFFER)	Buffer	Acetic acid	000064-19-7
	BXL03 Borate XL Delayed High Temp	Crosslinker	No Hazardous Components	NONE
	FRW-200	Friction Reducer	No Hazardous Components	NONE
	HVG01 (TURQUOISE-1 BULK)	Gelling Agent	Petroleum Distillate Hydrotreated Light	064742-47-8
	KCLS-4	Clay Stabilizer	No Hazardous Components	NONE
	LTB-1	Breaker	Ammonium Persulfate	N/A

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WELL INFORMATION	
WELL NO.	API NO.
1H	009-00158
3H	009-00143
5H	009-00091
201H	009-00161
205H	009-00159



NOTES:
 WELL NO. 1 & NO. 1 ARE THE SAME AS THE PREVIOUSLY SUBMITTED PLAN, BUT PREVIOUS WELL NO. 1 (API 009-00143) HAS BEEN MOVED TO THE PREVIOUS WELL LOCATION AND HAS A NEW (API 009-00158). THE PREVIOUS WELL HAS BEEN REPLACED BY 201H (API 009-00161) AND THE PREVIOUS WELL NO. 1H HAS BEEN REPLACED BY WELL NO. 205H (API 009-00159).

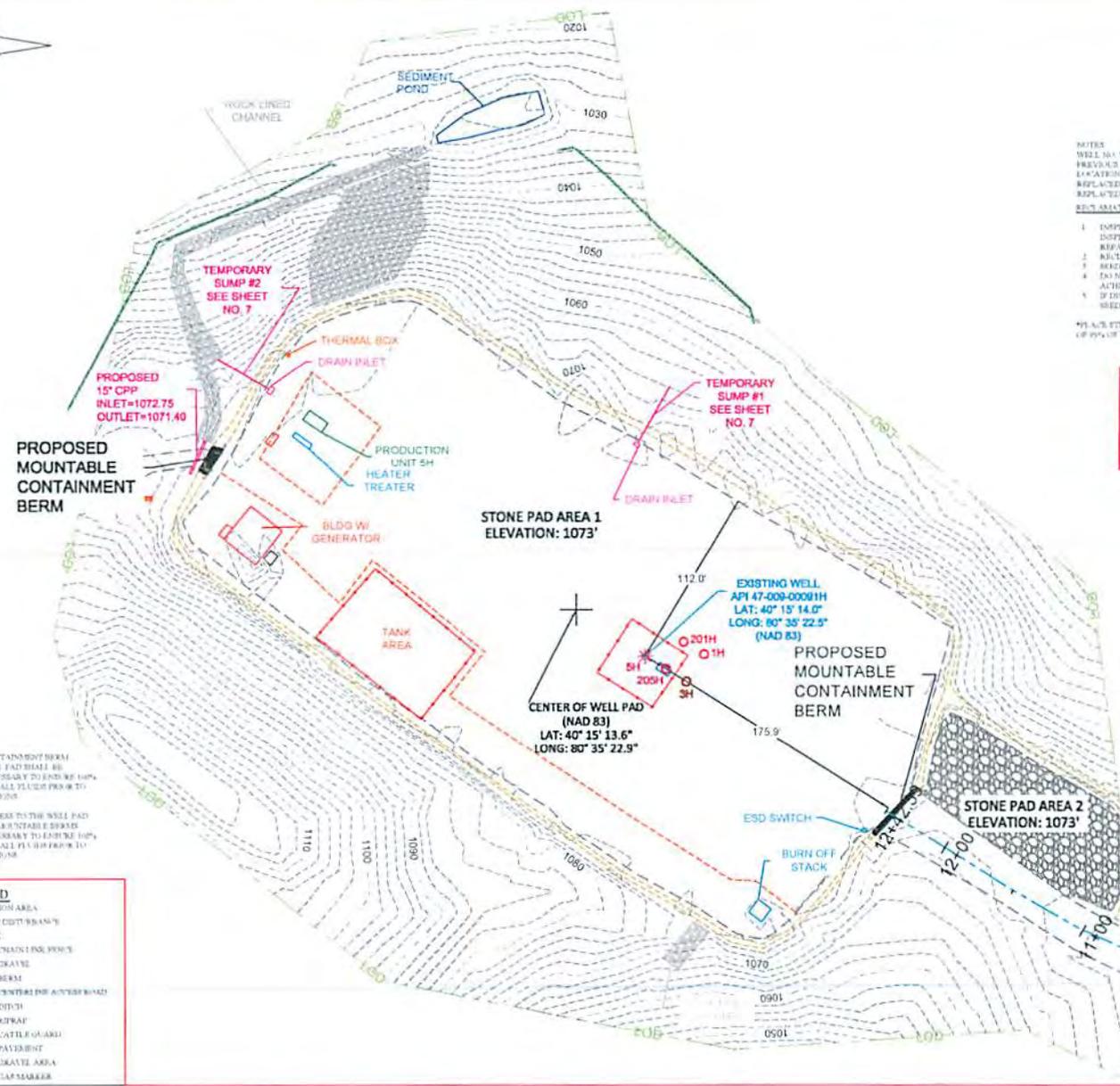
REVISIONS TO CONTRACT:

1. COMPLETE EXISTING EAS PAPERS IN ACCORDANCE WITH MAINTENANCE AND INSPECTION PROCEDURES AS OUTLINED IN EAP CONTRACT, AND SITE PLAN, REPAIR & REPLACE AS NEEDED.
2. RECLAMATION AS PER RECLAMATION PLAN.
3. RECLAIM AND REVEGETATE ALL EXISTING BERM AREAS.
4. DO NOT REMOVE EAS BOUNDS UNTIL 90% UNDERGROUND GROWTH IS AUTHORIZED.
5. IF EXISTING BERM OCCURS IN RECLAMATION OF EAS BOUND DISCONTINUITY, RECLAIM AND REVEGETATE BERM AREAS.

THIS CONTRACT SHALL BE FULLY IN FORCE AND EFFECTIVE UPON CONTACT TO A MEMBER OF 99% OF THE MANAGE MEMBERSHIP.

**WVDEP OOG
 ACCEPTED AS-BUILT**

N/A 7 / 27 / 2015



- NOTES:
1. THE EXISTING CONTAINMENT BERM AROUND THE WELL PAD SHALL BE RECLAIMED AS NECESSARY TO ENSURE THE CONTAINMENT OF ALL FLUIDS FROM TO EXISTING OPERATIONS.
 2. THE EXISTING BERM TO THE WELL PAD SHALL HAVE THE MOUNTABLE BERM RECLAIMED AS NECESSARY TO ENSURE THE CONTAINMENT OF ALL FLUIDS FROM TO EXISTING OPERATIONS.

LEGEND	
	PRODUCTION AREA
	10 FEET OF CONTAINMENT
	SILT SOCK
	EXISTING MOUNTABLE BERM
	EXISTING GRAVE
	EXISTING BERM
	EXISTING CONCRETE DRIVE/ROAD
	EXISTING DITCH
	EXISTING BERM
	EXISTING CATTLE GUARD
	EXISTING PAVED/DIRT
	EXISTING GRAVE AREA
	EXISTING GARAGE

SECTION 17.1

SWN 5-4

MILDRED MOUNTAIN BRK AS-BUILT
 BUFFALO DISTRICT, BROOKS COUNTY
 WEST VIRGINIA

ANTHONY L. BAUMGARD
 REGISTERED PROFESSIONAL ENGINEER
 14048
 STATE OF WEST VIRGINIA
 7/16/15

SCALE AS SHOWN
 SHEET 5 OF 7

WEST VIRGINIA 811

TWO WORKING DAYS PRIOR TO EXCAVATION, THE CONTRACTOR MUST CONTACT THE WV ONE CALL SYSTEM, INC., 1-800-245-4848

MILDRED MANI AS-BUILT & RECL BUFFALO DISTRICT, B MARCH

OWNER



SWN PRODUCTION CO., LLC.
P.O. BOX 1300
JANE LEW, WV 26378
(832)-796-1610

- SHEET
- 1. TITL
- 2-3. EVACUA
- PREVAILI
- 4. AS-BUILT
- 5-6. A
- 7. ACCESS R
- 8. RECLAMATION
- 9-10. RECLA
- 11-12.

TOTAL DISTURBE
PAD DISTURBED
ROAD DISTURBE

ACCESS ROAD
ACCESS ROAD
WELL PAD EL

1H - API#
3H - API#
5H - API#



TITLE SHEET

MILDRED MANI BRK PAD A
BUFFALO DISTRICT, BROOKE COUNTY, WV

07/31/2015

II BRK PAD A AMINATION PLAN ROOKE COUNTY, WV 2015

PLANS PREPARED BY:

BOORD BENCHEK & ASSOCIATES, INC.
 ENGINEERING, SURVEYING, CONSTRUCTION AND MINING SERVICE'S
 SOUTHPOINTE, PA 15317 PHONE: 724-746-1055

INDEX SHEET
ION ROUTE/
G WINDS
OVERVIEW
BUILT
AD PROFILE
PLAN OVERVIEW
ATION PLAN
DETAILS
AREA: 10.0 ACRES
AREA: 5.6 ACRES
AREA: 4.4 ACRES

LENGTH: 1,233'
 AVG. WIDTH: 24'
 PERIMETER: 1072'

09-00142
 09-00143
 09-00091

Received
 Office of Oil & Gas
 MAY 13 2015

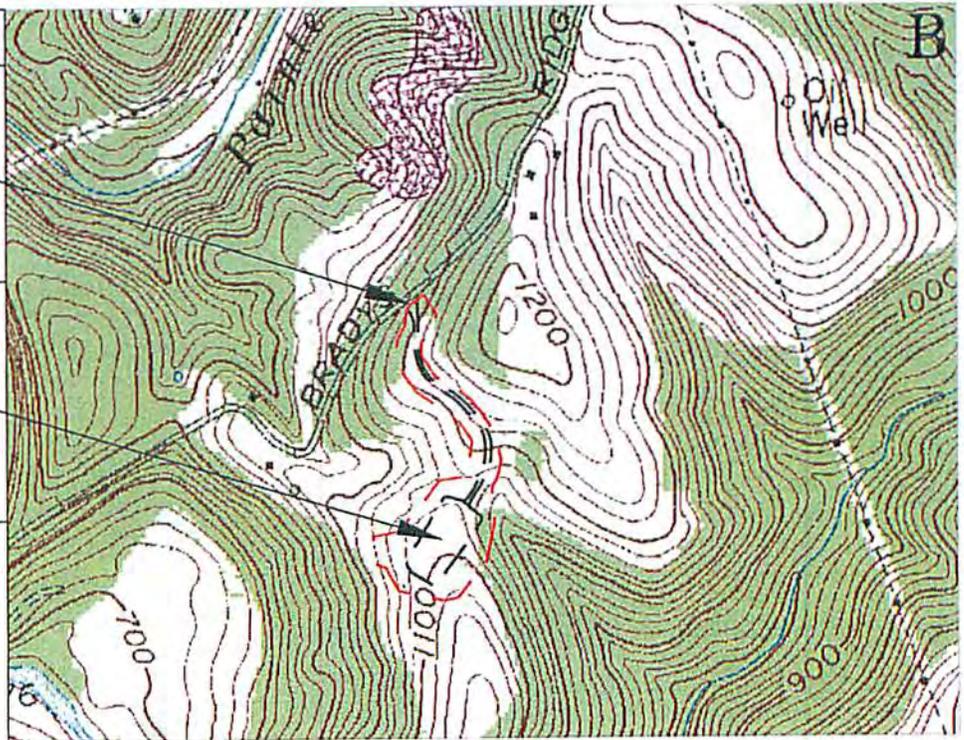


Handwritten signature and date: 4/9/15

Handwritten signature of Andrew Benchek
 ANDREW BENCHEK
 P.E.

Handwritten date: 3-4-15
 DATE

COORDINATES	
SITE ENTRANCE (NAD 83)	
LAT: 40° 15' 25.8"	
LONG: 80° 35' 25.2"	
(NAD 27)	
LAT: 40° 15' 25.6"	
LONG: 80° 35' 25.9"	
CENTER OF WELLS (NAD 83)	
LAT: 40° 15' 14.4"	
LONG: 80° 35' 22.6"	
(NAD 27)	
LAT: 40° 15' 14.1"	
LONG: 80° 35' 23.3"	

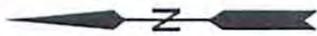


1" = 1000'



SHEET

1
 OF
 12



 = EVACUATION ROUTE

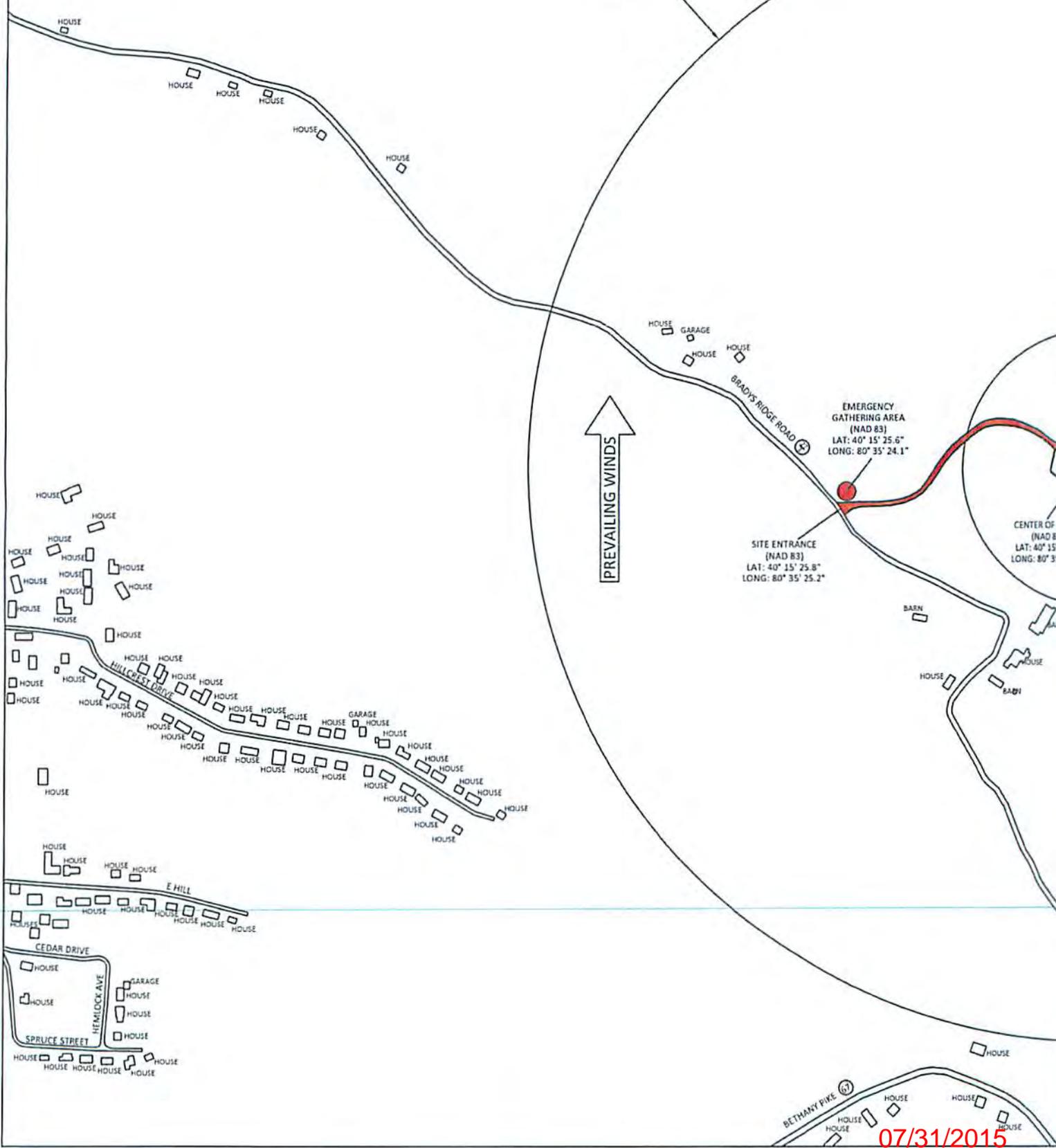
0.5 MILE RADIUS

↑
PREVAILING WINDS

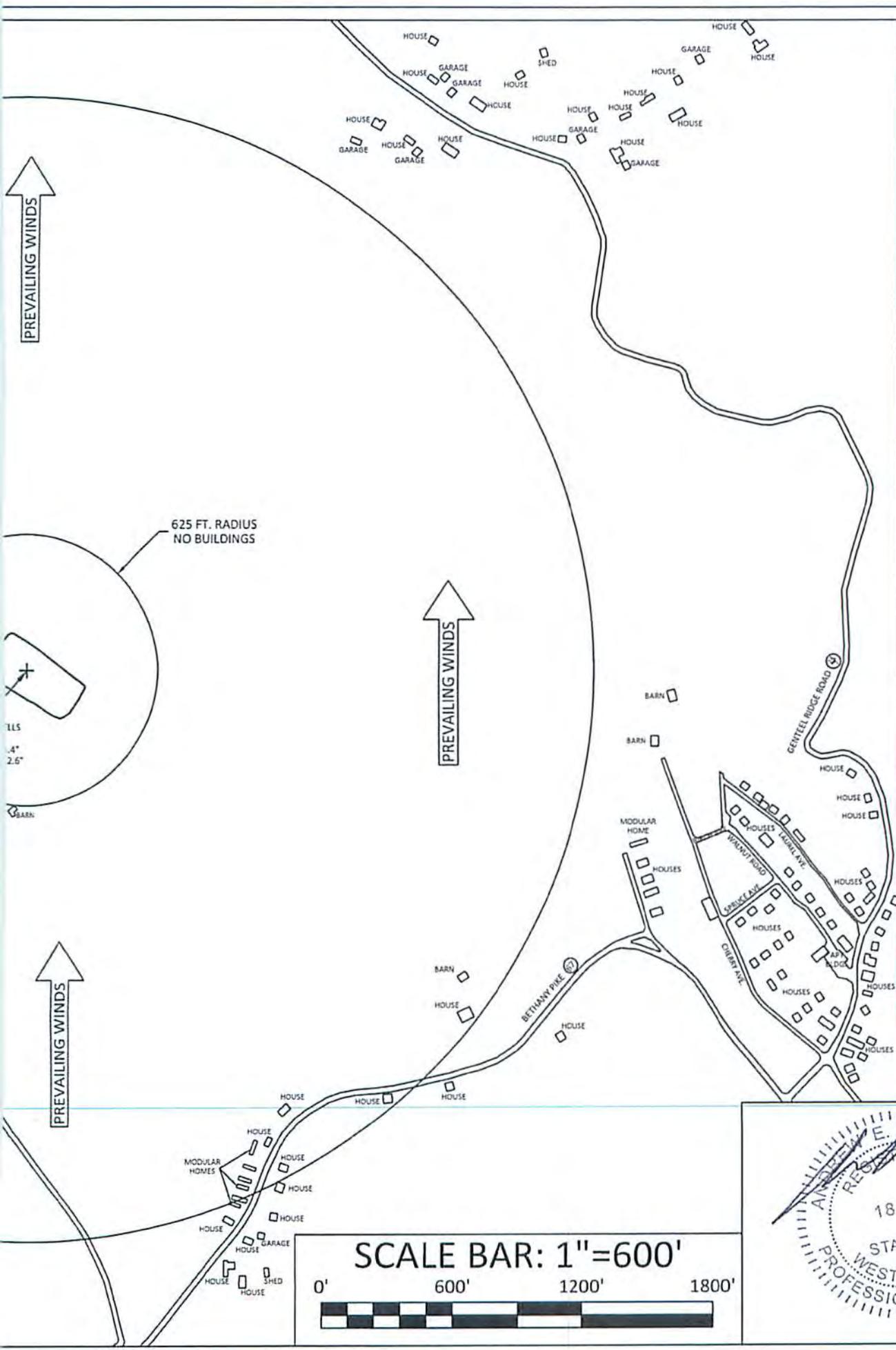
EMERGENCY GATHERING AREA (NAD 83)
LAT: 40° 15' 25.6"
LONG: 80° 35' 24.1"

SITE ENTRANCE (NAD 83)
LAT: 40° 15' 25.8"
LONG: 80° 35' 25.2"

CENTER OF W/ (NAD 83)
LAT: 40° 15' 1"
LONG: 80° 35' 2"



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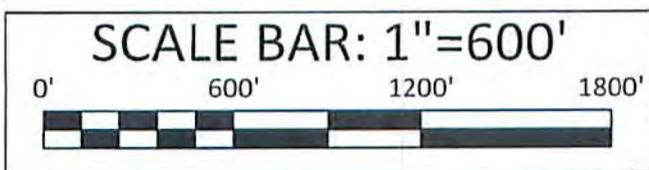
M
4/19/15

**EVACUATION ROUTE/
 PREVAILING WINDS**

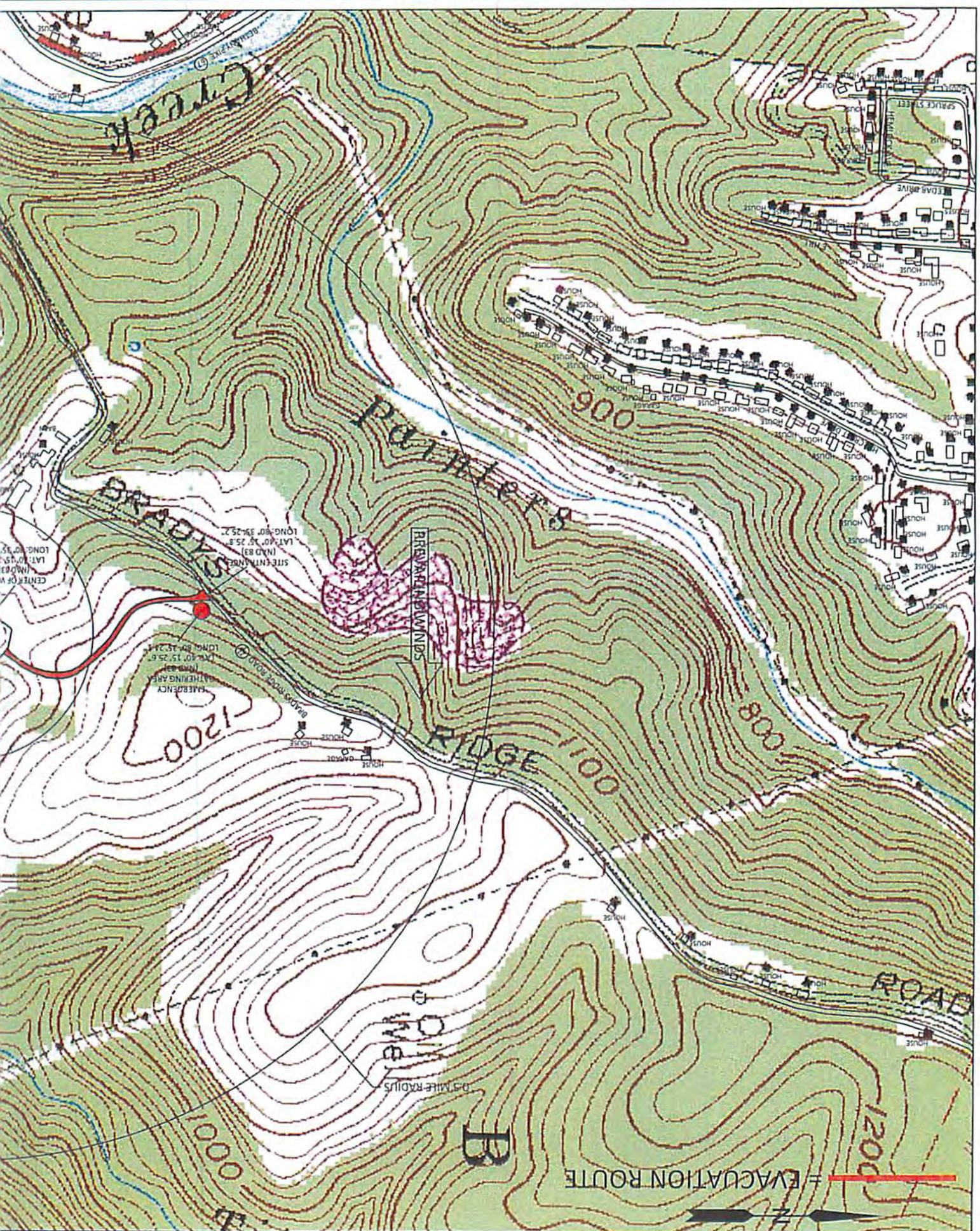
THIS DOCUMENT WAS PREPARED BY:
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 FOR: SWN PRODUCTION CO., LLC.

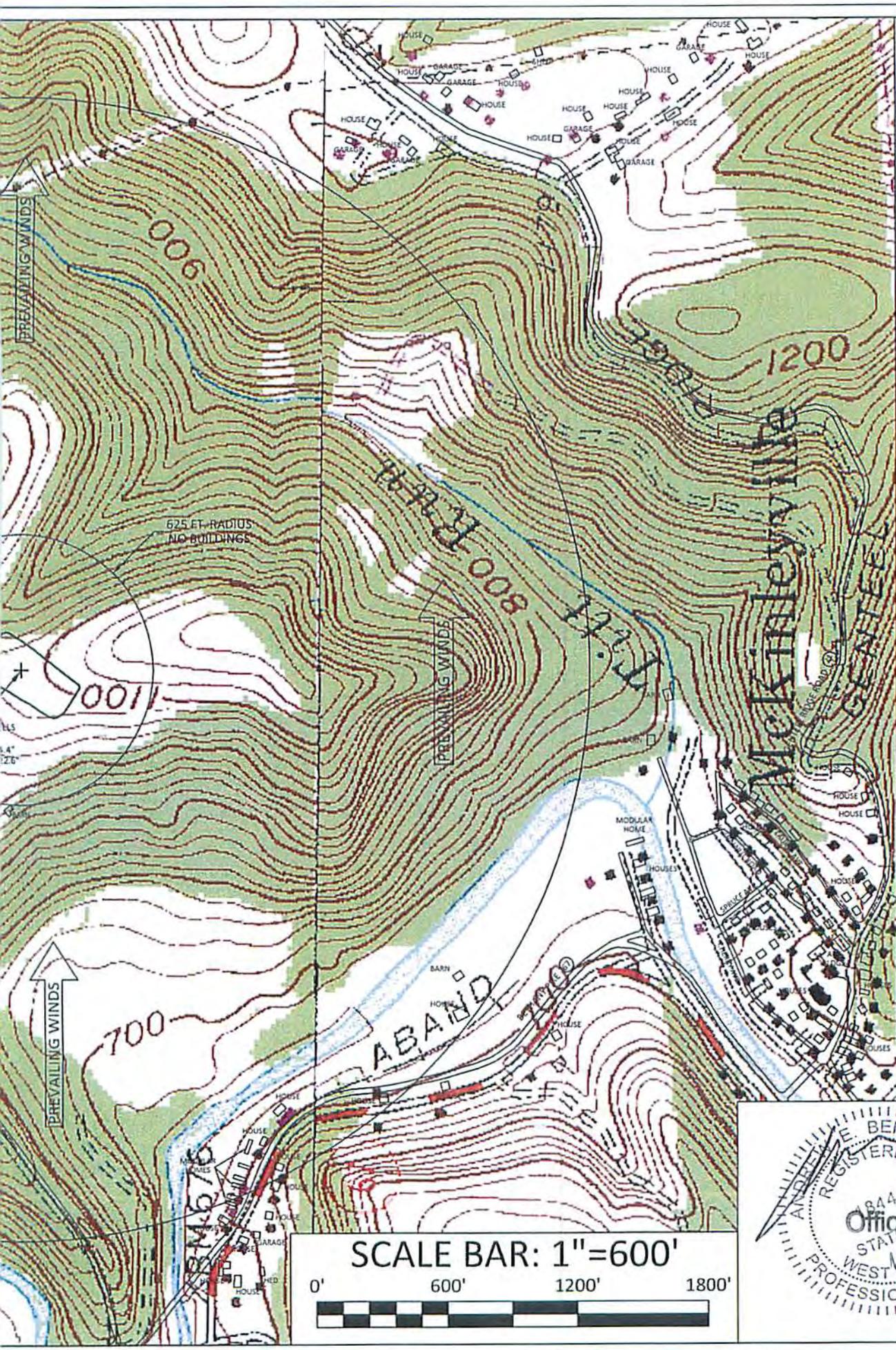
SHEET 2 OF 12

DATE:
 MARCH 2015
 MILDRED MANI
 BRK PAD A
 BUFFALO DISTRICT,
 BROOKE COUNTY,
 WV



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 PREVAILING WINDS**

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SHEET 3 OF 12

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 BROOKE COUNTY,
 WV



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LEGEND
- - - = PROJECT BOUNDARY (10.0 ACRES)
- - - = PROPERTY LINE



MILDRED MAN
MILES BAUER
75.44 TOTAL AC
TAX MAP AND PA
B27-26

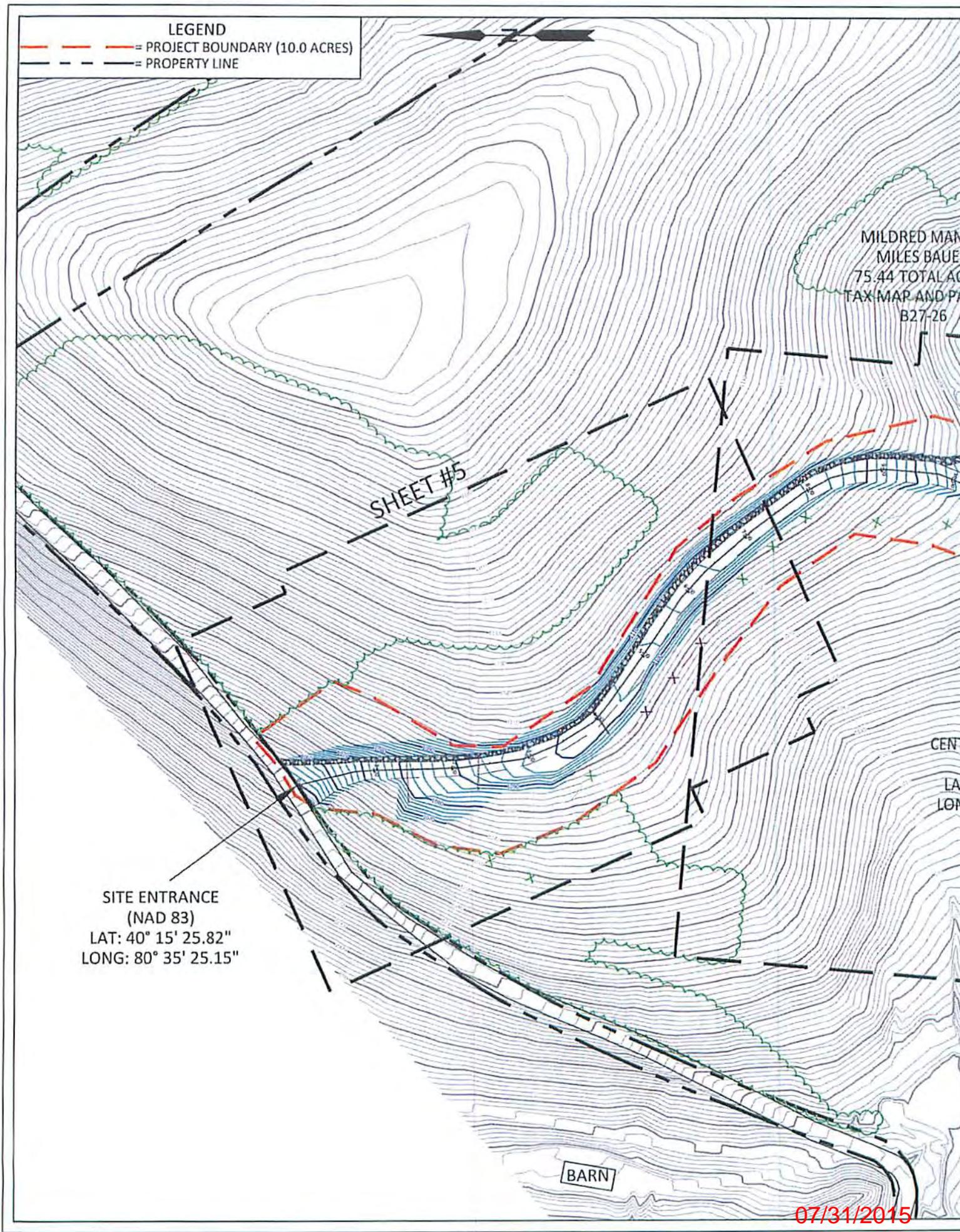
SHEET #5

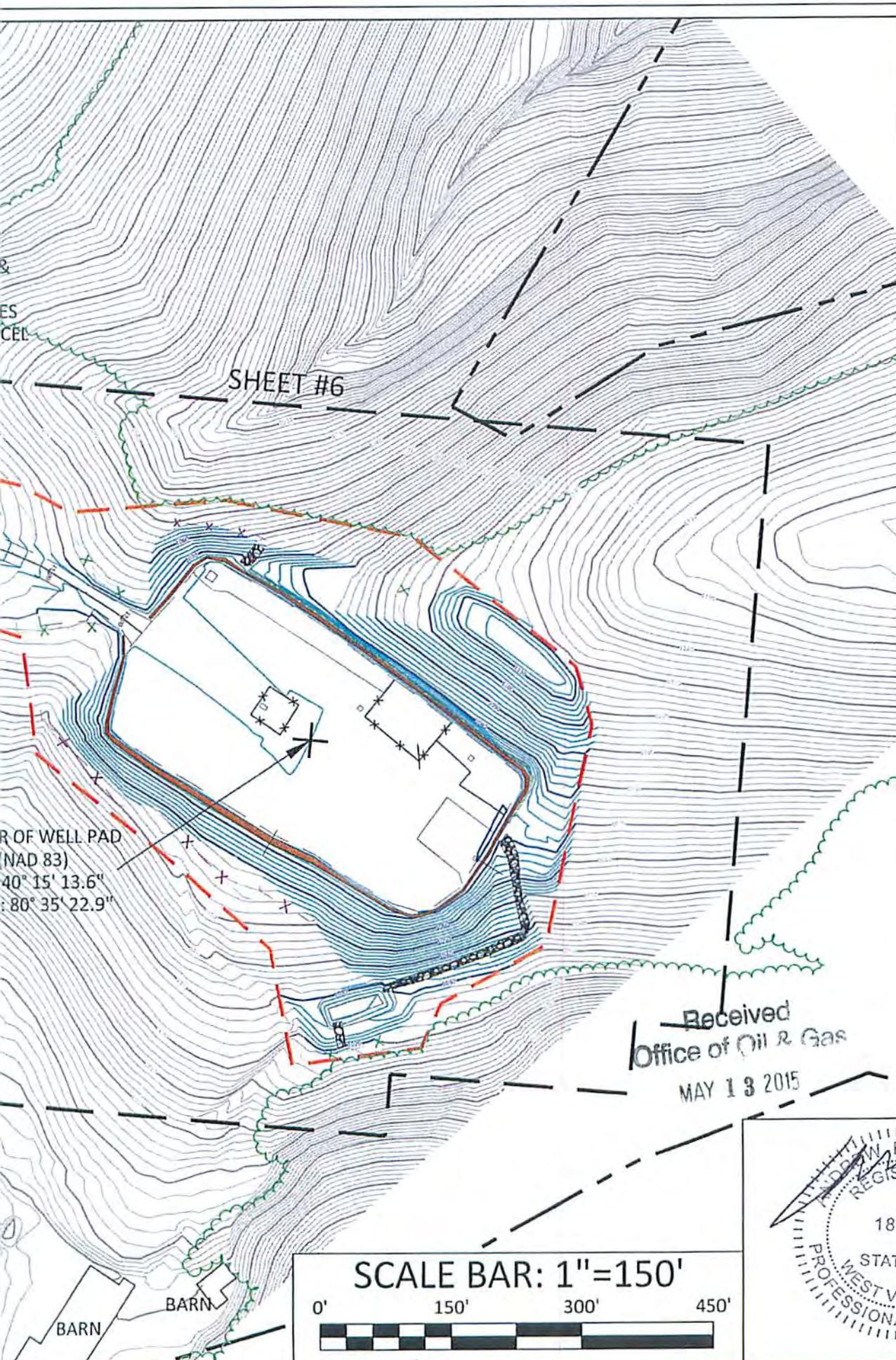
SITE ENTRANCE
(NAD 83)
LAT: 40° 15' 25.82"
LONG: 80° 35' 25.15"

CENT
LAT
LONG

BARN

07/31/2015

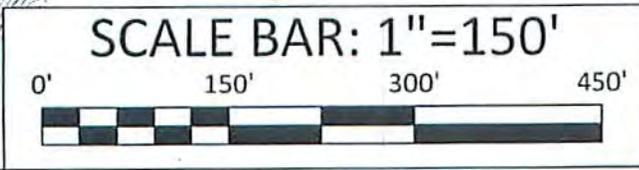




SHEET #6

...R OF WELL PAD
(NAD 83)
40° 15' 13.6"
80° 35' 22.9"

BARN BARN BARN



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AS-BUILT OVERVIEW

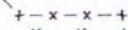
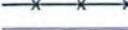
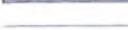
THIS DOCUMENT WAS PREPARED BY:
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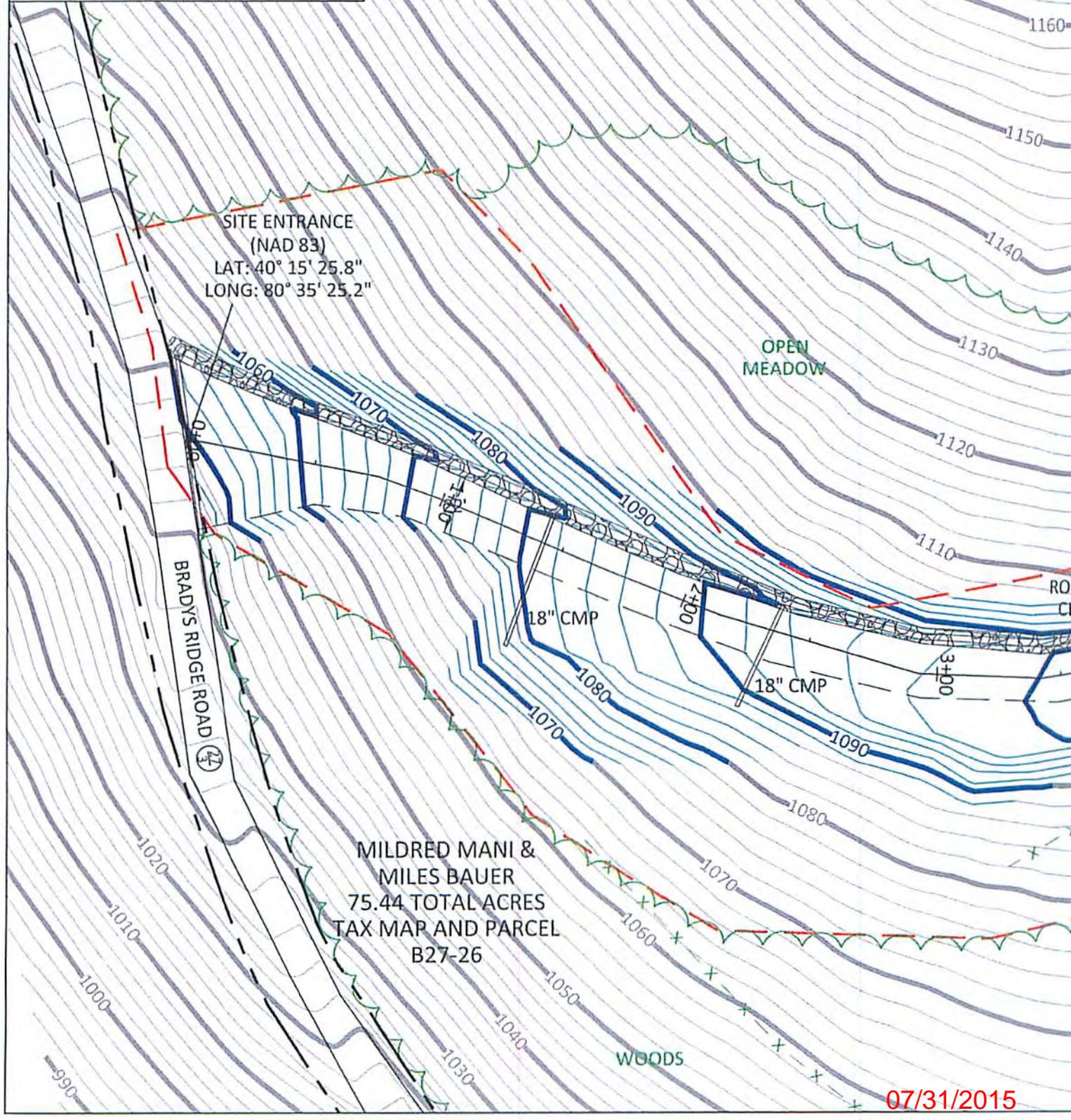
DATE:
MARCH 2015
MILDRED MANI
BRK PAD A
BUFFALO DISTRICT,
BROOKE COUNTY,
WV

SHEET 4 OF 17

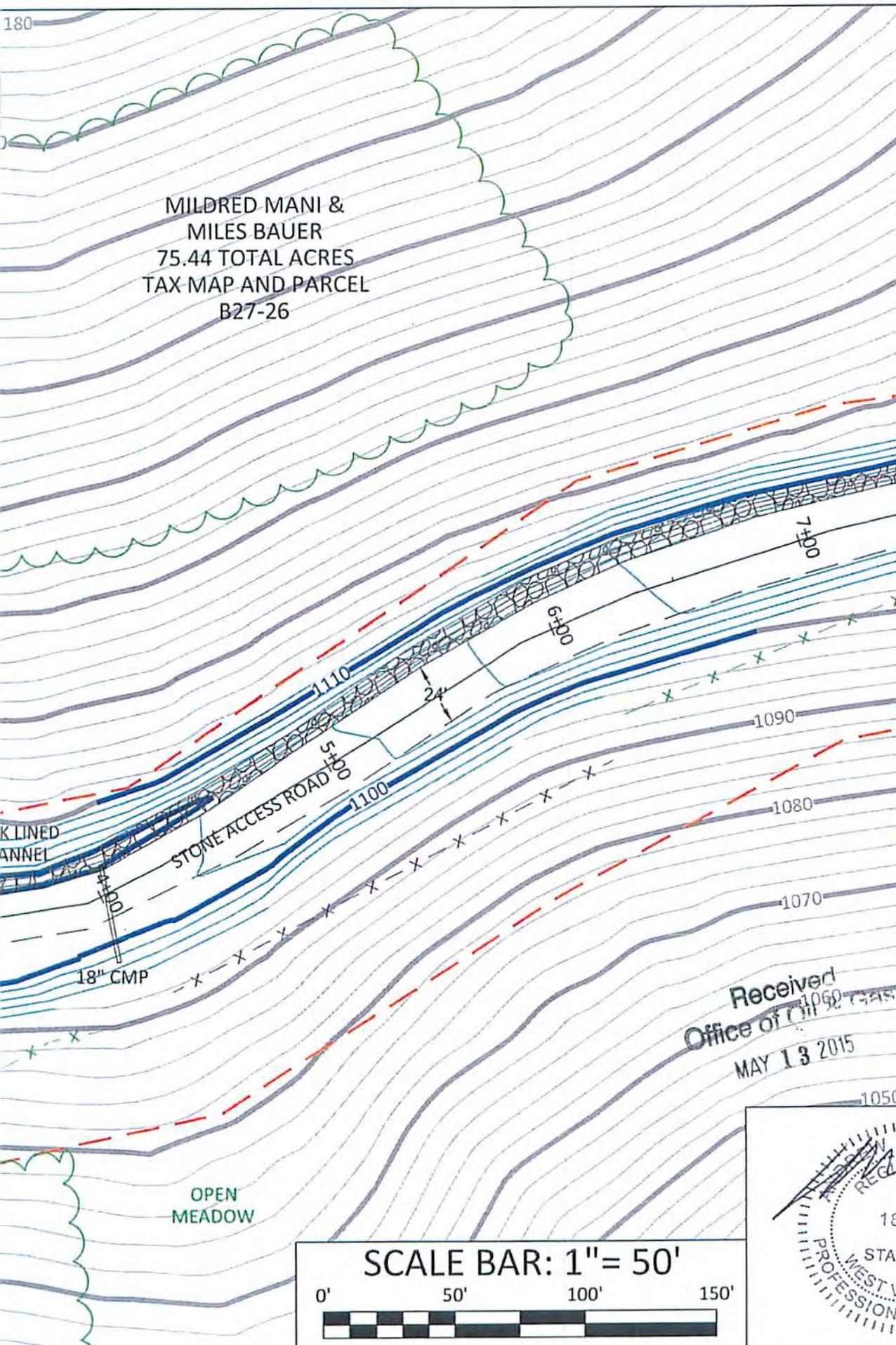
07/31/2015

LEGEND

-  = REINFORCED FILTER FENCE
-  = SUPER SILT FENCE
-  = FENCE LINE
-  = EXISTING 10' CONTOURS
-  = EXISTING 2' CONTOURS
-  = AS-BUILT 10' CONTOURS
-  = AS-BUILT 2' CONTOURS
-  = PROJECT BOUNDARY (10.0 ACRES)
-  = PROPERTY LINE
-  = TREE LINE
-  = DRILLED WELL
-  = PROPOSED WELL



MILDRED MANI &
MILES BAUER
75.44 TOTAL ACRES
TAX MAP AND PARCEL
B27-26



MILDRED MANI &
MILES BAUER
75.44 TOTAL ACRES
TAX MAP AND PARCEL
B27-26

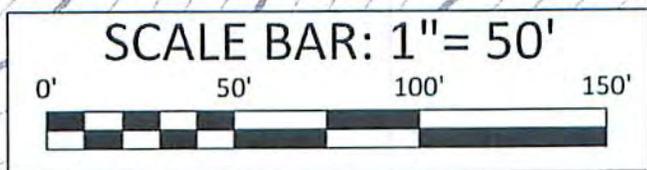
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and Mining Services
Southpointe, PA 15317 Phone: 724-746-1055

AS-BUILT

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FOR: SWN PRODUCTION CO., LLC.

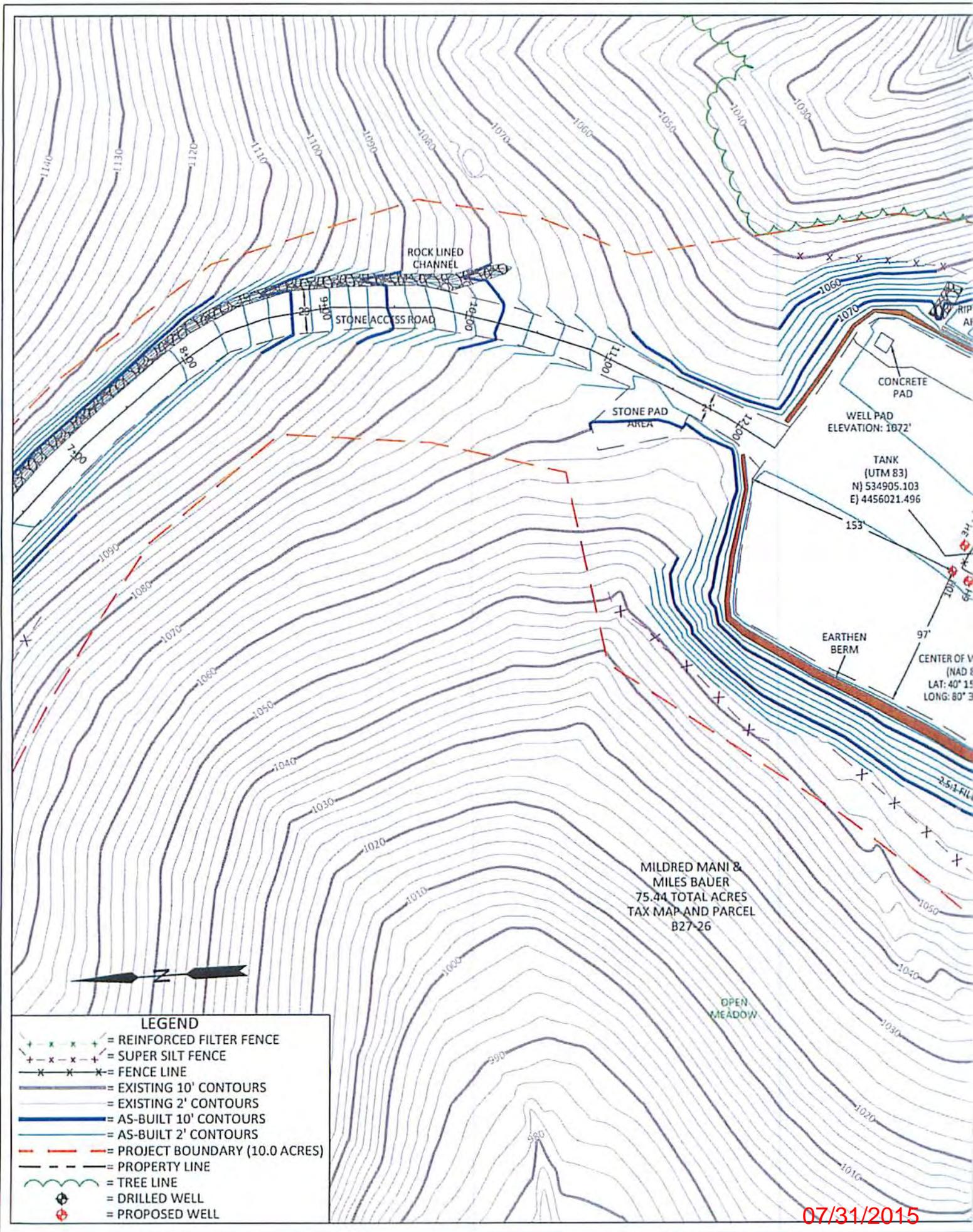
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SHEET 5 OF 12

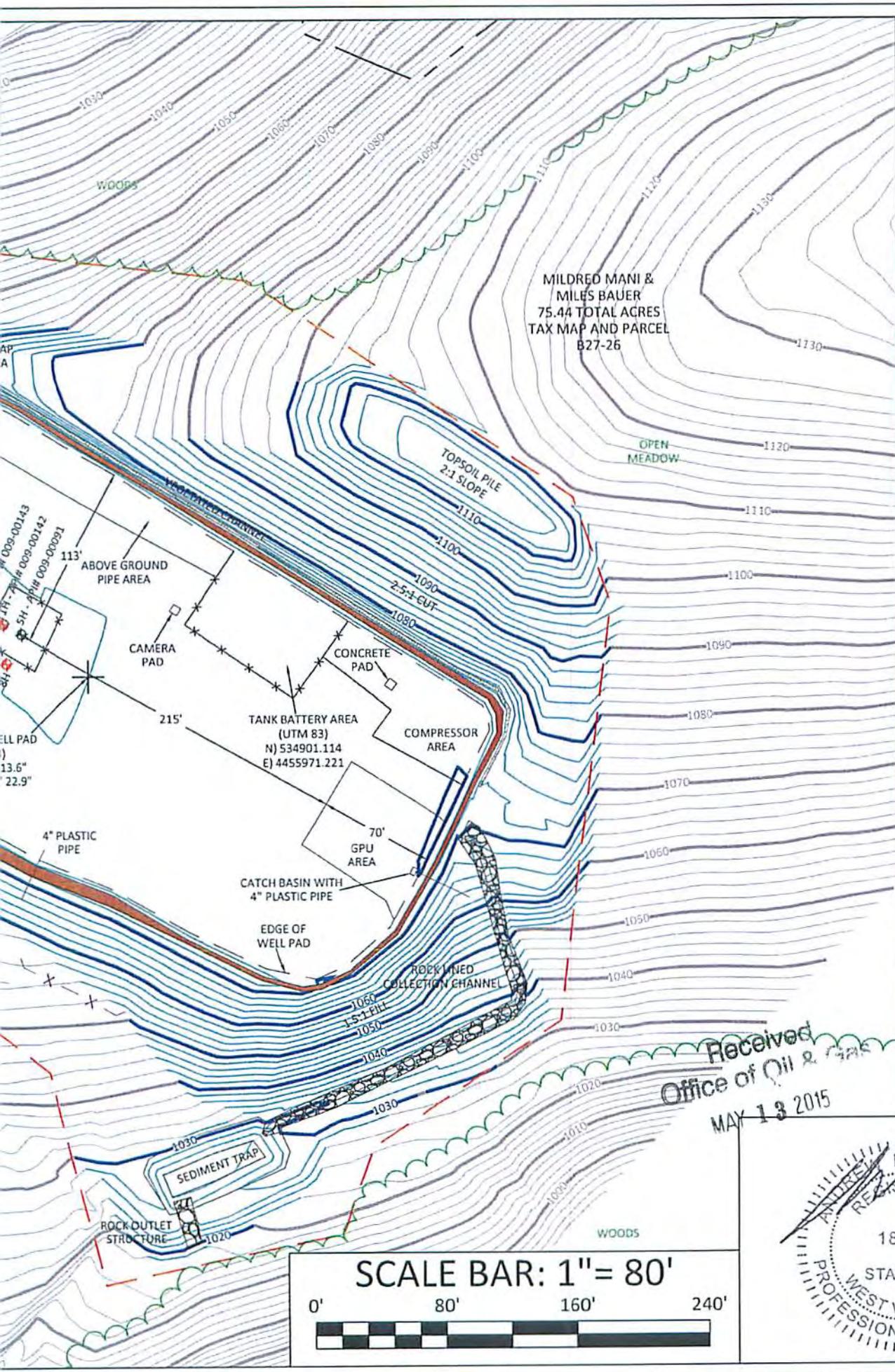


LEGEND

- = REINFORCED FILTER FENCE
- = SUPER SILT FENCE
- = FENCE LINE
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- = AS-BUILT 2' CONTOURS
- = PROJECT BOUNDARY (10.0 ACRES)
- = PROPERTY LINE
- = TREE LINE
- = DRILLED WELL
- = PROPOSED WELL

MILDRED MANI &
MILES BAUER
75.44 TOTAL ACRES
TAX MAP AND PARCEL
B27-26

07/31/2015



MILDRED MANI &
MILES BAUER
75.44 TOTAL ACRES
TAX MAP AND PARCEL
B27-26

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MARCH 2015

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BRK PAD A

BUFFALO DISTRICT,
BROOKE COUNTY,
WV

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MAY 13 2015



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ACCESS ROAD PRO
SCALE: 1" = 50'

1150

1100

1050

1000

1046.00
0+00

1061.47
0+50

1072.90
1+00

1082.20
1+50

1089.13
2+00

1094.62
2+50

1098.00
3+00

1100.00
3+50

M

1150

1100

1050

1108.00
7+00

1108.00
7+50

1107.66
8+00

1103.95
8+50

1097.08
9+00

1089.39
9+50

1082.72
10+00

1077.46
10+50

14.41%

18" CMP #1

18" CMP #2

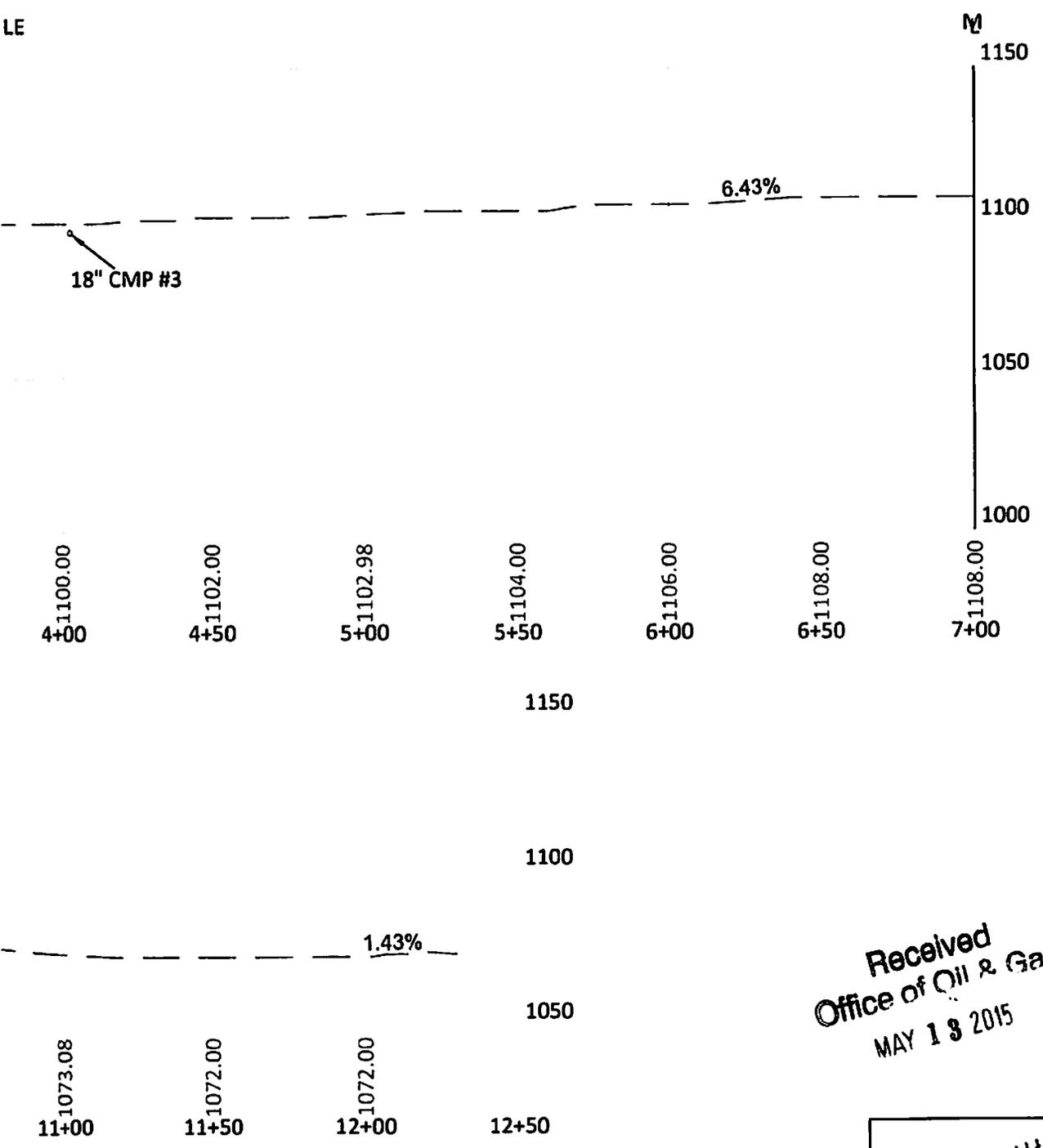
-5.61%

-9.11%

LEGEND
--- = EXISTING GRADE

07/31/2015

LE



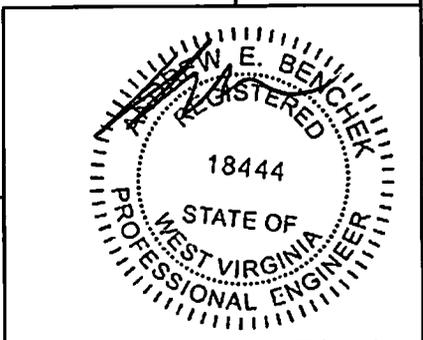
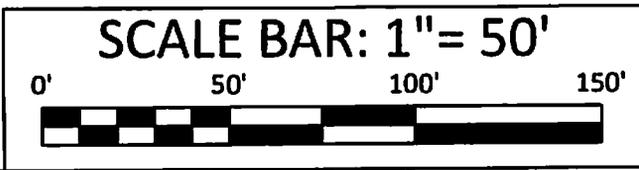
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ACCESS ROAD PROFILE

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 MILDRED MANI
 BRK PAD A
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 BROOKE COUNTY,
 WV



SHEET 7 OF 12

07/31/2015

LEGEND
- - - = PROJECT BOUNDARY (10.0 ACRES)
- - - = PROPERTY LINE

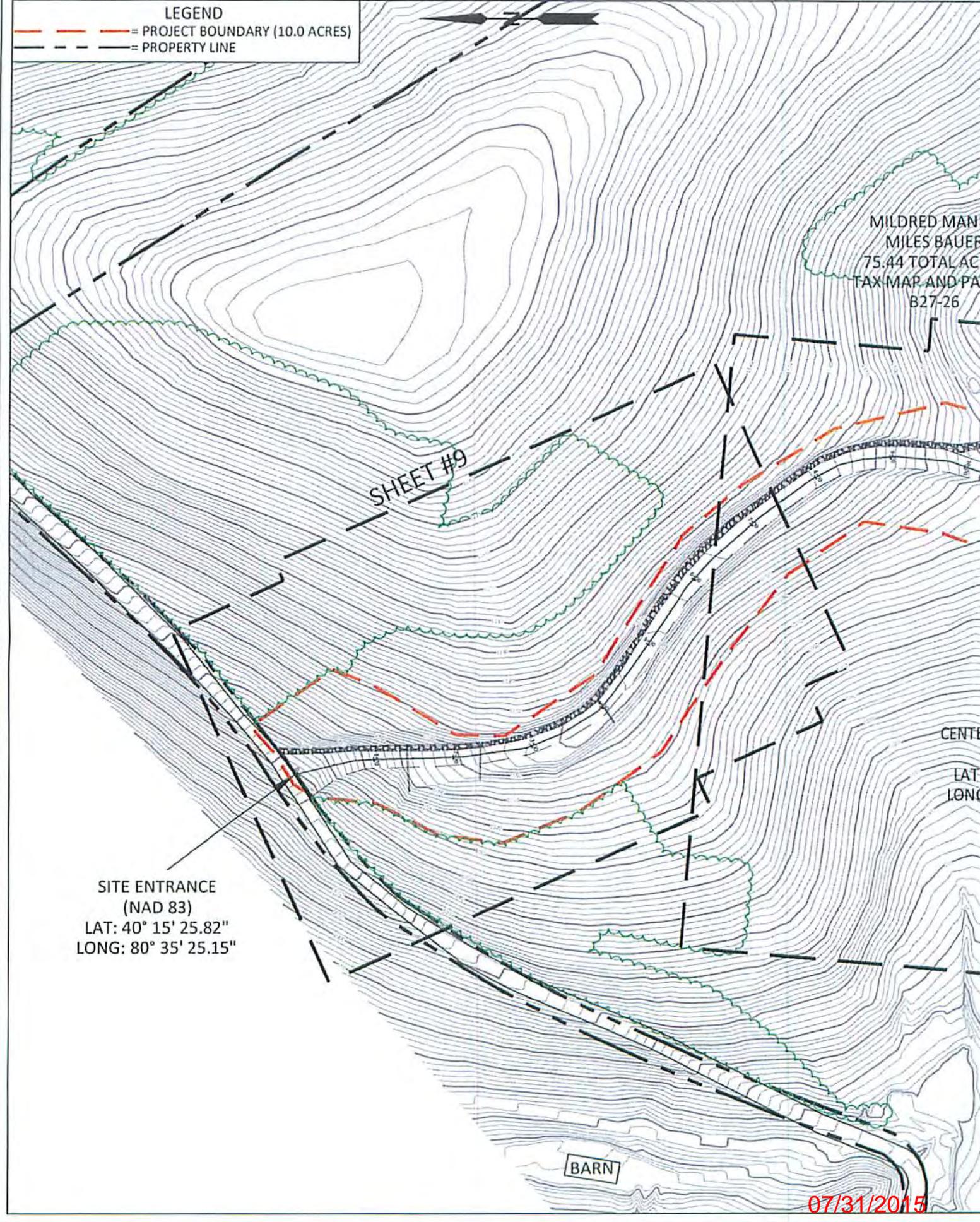
MILDRED MANI
MILES BAUER
75.44 TOTAL ACRES
TAX MAP AND PARCEL
B27-26

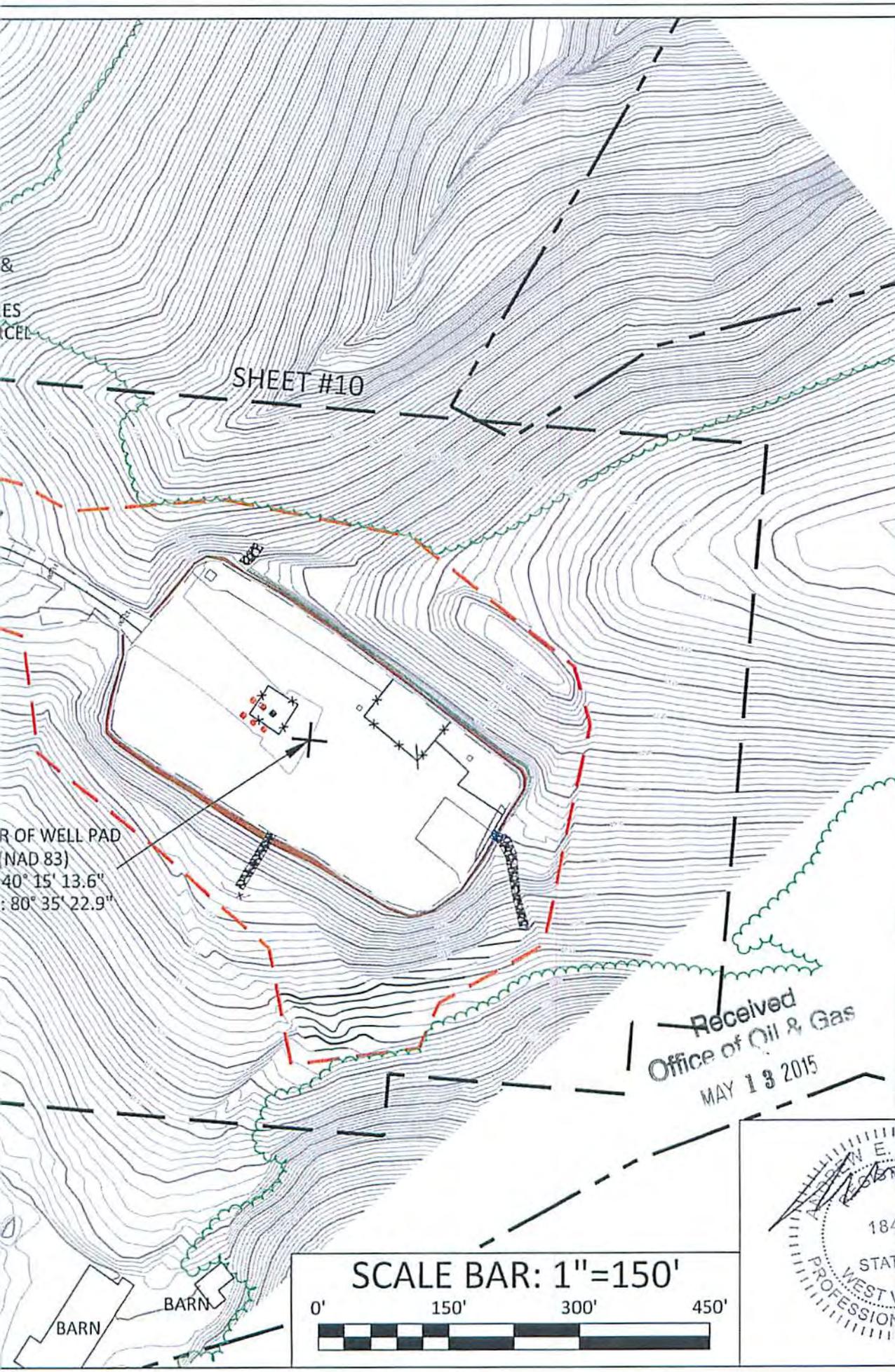
SHEET #9

SITE ENTRANCE
(NAD 83)
LAT: 40° 15' 25.82"
LONG: 80° 35' 25.15"

BARN

07/31/2015





BOORD, BENCHEK and ASSOC., INC.
 Engineering, Surveying, Construction,
 and Mining Services
 Southpointe, PA 15317 Phone: 724-746-1055

RECLAMATION PLAN OVERVIEW

4/18/15

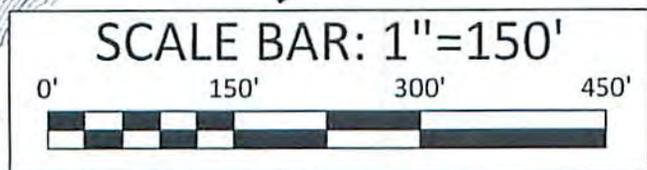
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 FOR: SWN PRODUCTION CO., LLC.

SHEET 8 OF 17

...R OF WELL PAD
 (NAD 83)
 40° 15' 13.6"
 : 80° 35' 22.9"

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 MAY 13 2015

DATE:
 MARCH 2015
 MILDRED MANI
 BRK PAD A
 BUFFALO DISTRICT,
 BROOKE COUNTY,
 WV



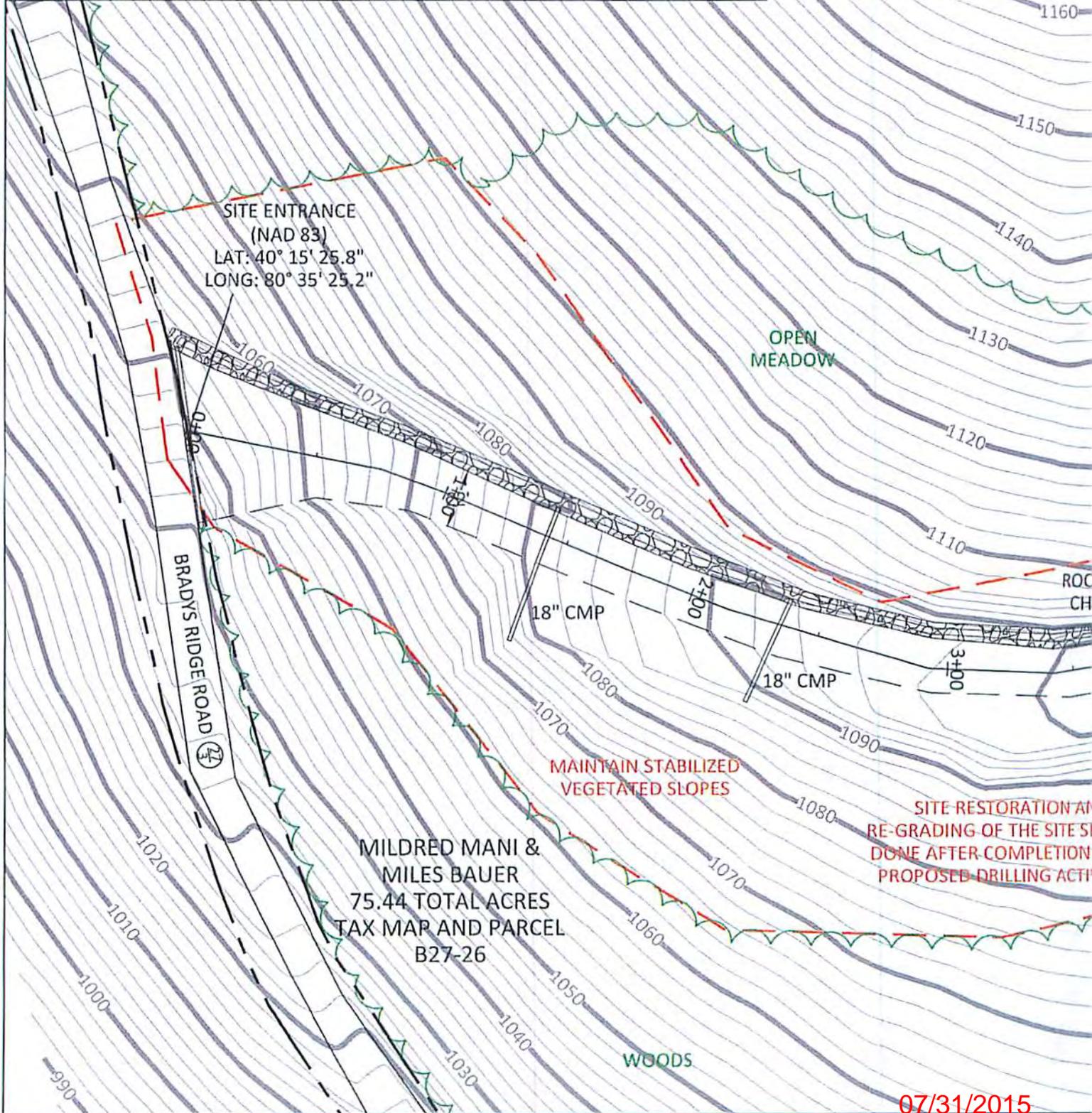
07/31/2015

LEGEND	
	= SUPER SILT FENCE (SSF)
	= FENCE LINE
	= EXISTING 10' CONTOURS
	= EXISTING 2' CONTOURS
	= PROPOSED 10' CONTOURS
	= PROPOSED 2' CONTOURS
	= RECLAIMED 10' CONTOURS
	= RECLAIMED 2' CONTOURS
	= PROJECT BOUNDARY (10.0 ACRES)
	= PROPERTY LINE
	= TREE LINE
	= DRILLED WELL
	= PROPOSED WELL

RECLAMATION SEQUENCE:

1. INSPECT EXISTING E&S BMP'S IN ACCORDANCE WITH MAINTENANCE AND INSPECTION PROCEDURES AS OUTLINED IN E&S CONTROL AND SITE PLAN. REPAIR & REPLACE AS NEEDED.
2. INSTALL SUPER SILT FENCE #1 & #2 ALONG WITH DISCHARGE CHANNELS #1 & #2.
3. RECLAIM SITE AS PER RECLAMATION PLAN.
4. SEED AND MULCH ALL DISTURBED AREAS.
5. DO NOT REMOVE E&S BMP'S UNTIL 70% UNIFORM PERENNIAL GROWTH IS ACHIEVED.
6. IF DISTURBANCE OCCURS DURING REMOVAL OF E&S BMP'S IMMEDIATELY SEED AND MULCH DISTURBED AREAS.

*PLACE STRUCTURAL SOIL FILL IN 9 INCH LOOSE LIFTS. COMPACT TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY.



180

MILDRED MANI &
MILES BAUER
75.44 TOTAL ACRES
TAX MAP AND PARCEL
B27-26

BOARD, BENCHEK and ASSOC., INC.
Engineering, Surveying, Construction,
and Mining Services

Southpointe, PA 15317 Phone: 724-746-1055

8/24/15
4/9/15

RECLAMATION PLAN

THIS DOCUMENT WAS PREPARED BY:
BOARD, BENCHEK AND ASSOC., INC.
FOR: SWN PRODUCTION CO., LLC.

DATE:
MARCH 2015
MILDRED MANI
BRK PAD A
BUFFALO DISTRICT,
BROOKE COUNTY,
WV

K LINED
CHANNEL

STONE ACCESS ROAD

18" CMP

3:1 OR GREATER CUT/FILL SLOPES
STABILIZED WITH SEED AND
EROSION BLANKETS

D
ALL BE
OF ALL
ITIES.

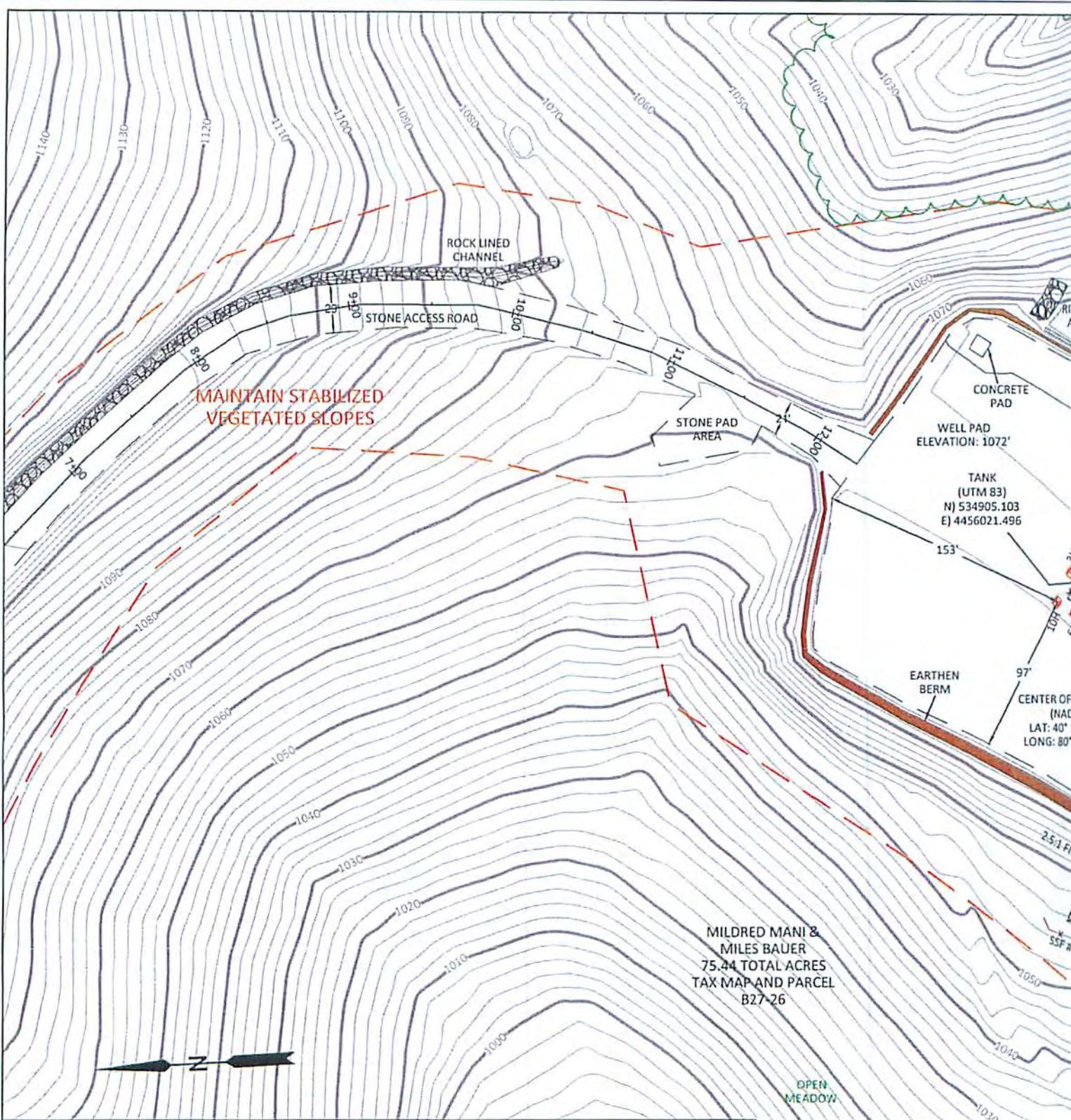
OPEN
MEADOW

Received
Office of Oil & Gas
1060
MAY 18 2015



SHEET 9 OF 12

07/31/2015



**MAINTAIN STABILIZED
VEGETATED SLOPES**

MILDRED MANI &
MILES BAUER
75.44 TOTAL ACRES
TAX MAP AND PARCEL
B27-26

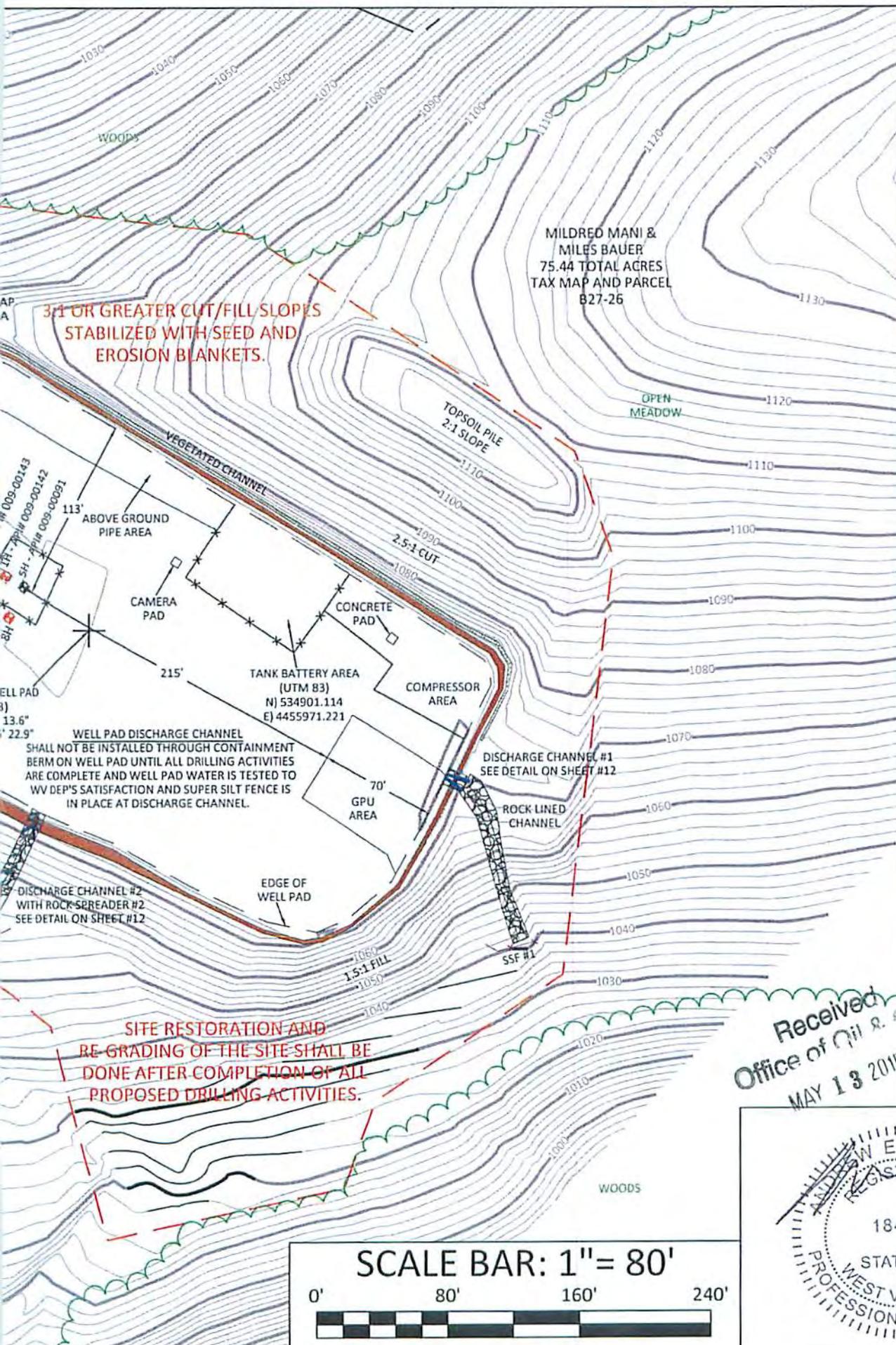
LEGEND

- = SUPER SILT FENCE (SSF)
- = FENCE LINE
- = EXISTING 10' CONTOURS
- = EXISTING 2' CONTOURS
- = PROPOSED 10' CONTOURS
- = PROPOSED 2' CONTOURS
- = RECLAIMED 10' CONTOURS
- = RECLAIMED 2' CONTOURS
- = PROJECT BOUNDARY (10.0 ACRES)
- = PROPERTY LINE
- = TREE LINE
- = DRILLED WELL
- = PROPOSED WELL

RECLAMATION SEQUENCE:

1. INSPECT EXISTING E&S BMP'S IN ACCORDANCE WITH MAINTENANCE AND INSPECTION PROCEDURES AS OUTLINED IN E&S CONTROL AND SITE PLAN. REPAIR & REPLACE AS NEEDED.
 2. INSTALL SUPER SILT FENCE #1 & #2 ALONG WITH DISCHARGE CHANNELS #1 & #2.
 3. RECLAIM SITE AS PER RECLAMATION PLAN.
 4. SEED AND MULCH ALL DISTURBED AREAS.
 5. DO NOT REMOVE E&S BMP'S UNTIL 70% UNIFORM PERENNIAL GROWTH IS ACHIEVED.
 6. IF DISTURBANCE OCCURS DURING REMOVAL OF E&S BMP'S IMMEDIATELY SEED AND MULCH DISTURBED AREAS.
- *PLACE STRUCTURAL SOIL FILL IN 9 INCH LOOSE LIFTS. COMPACT TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY.

07/31/2015



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RECLAMATION PLAN

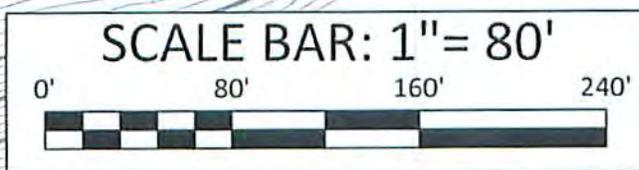
THIS DOCUMENT WAS PREPARED BY:
BOORD, BENCHEK AND ASSOC., INC.
FOR: SWN PRODUCTION CO., LLC.

DATE:
MARCH 2015

MILDRED MANI
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BUFFALO DISTRICT,
BROOKE COUNTY,
WV

Received
Office of Oil & Gas
MAY 13 2015

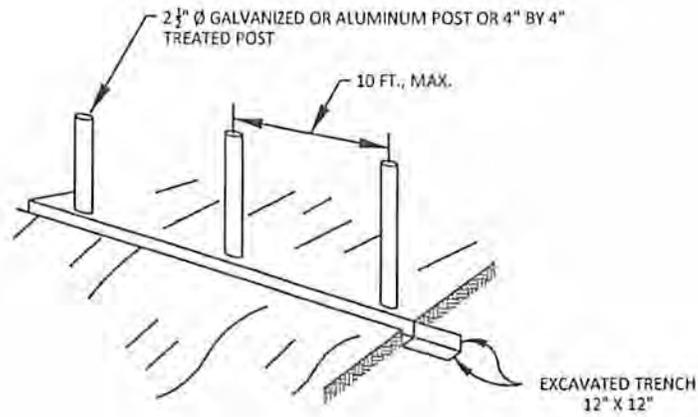


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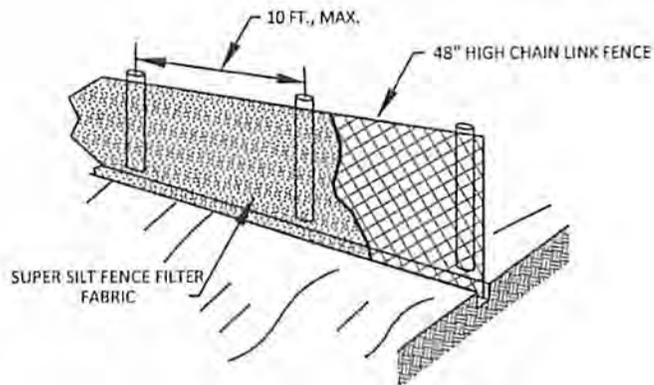
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4/9/15

SHEET 10 OF 12

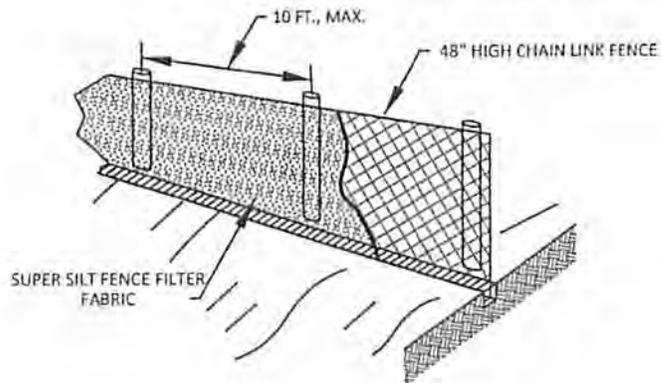
1. SET POSTS ALONG CONTOUR OF THE LAND AND EXCAVATE TRENCH UPSLOPE ALONG THE LINE OF POSTS.



2. ATTACH THE CHAIN LINK FENCE AND FILTER FABRIC TO THE FENCE POSTS AND EXTEND THEM 12", MIN., INTO THE DITCH.



3. BACKFILL AND COMPACT THE TRENCH WITH EXCAVATED SOILS.

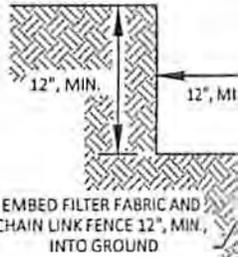


2 1/2" Ø GALVANIZED ALUMINUM POST OR 4" BY 4" TREATED POST

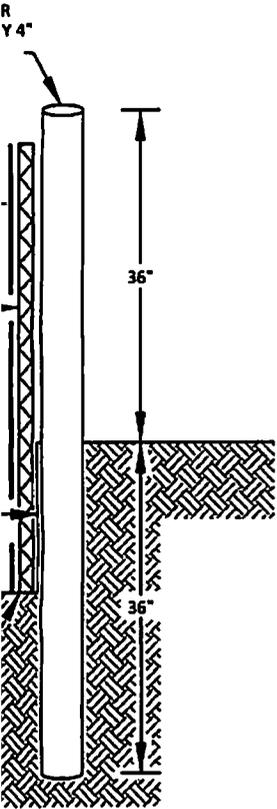
SUPER SILT FENCE FILTER FABRIC

48" HIGH CHAIN LINK FENCE

FLOW →



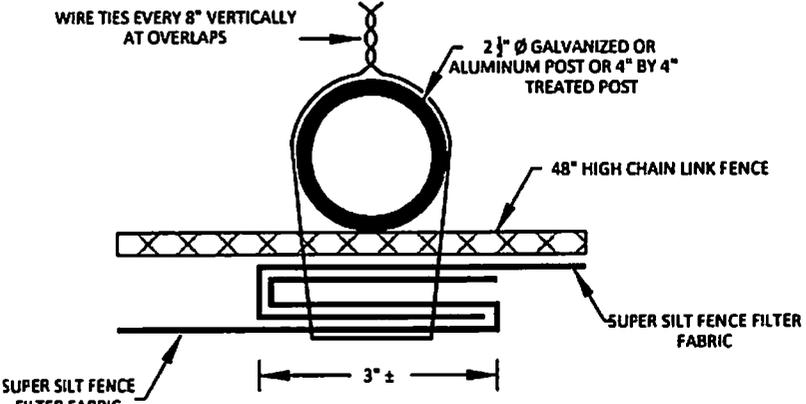
SUPER SILT FENCE
NTS



SIDE VIEW
NTS

SUPER SILT FENCE NOTES:

1. CHAIN LINK FENCE SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 608 OF THE WVDOH SPECIFICATIONS. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE POSTS WITH WIRE TIES OR STAPLES.
2. POSTS NEED NOT BE SET IN CONCRETE.
3. THE FILTER FABRIC SHALL BE FASTENED TO THE CHAIN LINK FENCE WITH TIES EVERY 24" AT THE TOP AND MID SECTION.
4. FABRIC AND FENCE SHALL BE EMBEDDED 12", MINIMUM, INTO THE GROUND.
5. A 6", MINIMUM, OVERLAP SHALL BE PROVIDED WHERE TWO SECTIONS OF FABRIC ADJOIN. THE OVERLAPPED FABRIC SHALL BE FOLDED TOGETHER AND ATTACHED TO THE CHAIN LINK FENCE.
6. 4" BY 4" PRESSURE TREATED POSTS MAY BE SUBSTITUTED FOR METAL FENCE POSTS WITH THE APPROVAL OF THE ENGINEER.
7. THE LENGTH OF SLOPE ABOVE THE FENCE SHALL NOT EXCEED 400 FEET IN STEEP TERRAIN. IN FLATTER AREAS THE LENGTH CAN BE EXTENDED WITH THE APPROVAL OF THE ENGINEER.



END LAP TOP VIEW
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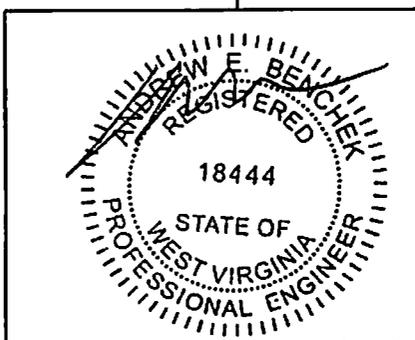
DETAILS

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FOR: SWN PRODUCTION CO., LLC.

SHEET 11 OF 12

Received
Office of Oil & Gas
MAY 13 2015

DATE:
MARCH 2015
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BUFFALO DISTRICT,
BROOKE COUNTY,
WV



07/31/2015

Table 4a. Permanent seeding mixtures suitable for establishment in WV.

Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage Preference	pH Range
Crownvetch/ Tall Fescue	10 - 15	Well - Mod. Well	5.0 - 7.5
Crownvetch/ Perennial Ryegrass	10 - 15	Well - Mod. Well	5.0 - 7.5
Flatpea or Perennial Pea/ Tall Fescue	20	Well - Mod. Well	4.0 - 8.0
Ladino Clover/ Sericea Lespedeza/ Tall Fescue	25	Well - Mod. Well	4.5 - 7.5
Tall Fescue/ Ladino Clover/ Redtop	30	Well - Mod. Well	5.0 - 7.5
Crownvetch/ Tall Fescue/ Redtop	40	Well - Mod. Well	5.0 - 7.5
Tall Fescue/ Birdsfoot Trefoil	10	Well - Mod. Well	5.0 - 7.5
Redtop	3		
Sericea Lespedeza/ Tall Fescue/ Redtop	25	Well - Mod. Well	4.5 - 7.5
Redtop	30		
Tall Fescue/ Creeping Red	50	Well - Mod. Well	5.0 - 7.5
Tall Fescue	50	Well - Poorly	4.5 - 7.5
Perennial Ryegrass/ Tall Fescue/ Lathco Flatpea*	20	Well - Poorly	5.0 - 8.0

Table IV-1-4 taken from Natural Resources Conservation Service Manual Critical Area Planting

Table 4b. Mixtures in the table below are more wildlife and farm friendly.

Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage Preference	pH Range
KY Bluegrass/ Redtop	20	Well - Mod. Well	5.5 - 7.5
Ladino Clover or Birdsfoot Trefoil	2/10		
Timothy/ Alfalfa	5	Well - Mod. Well	6.5 - 8.0
Timothy/ Birdsfoot Trefoil	8	Well - Poorly	5.5 - 7.5
Orchardgrass/ Ladino Clover/ Redtop	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Ladino Clover	20	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Perennial Ryegrass	10	Well - Mod. Well	5.5 - 7.5
Creeping Red Fescue/ Perennial Ryegrass	18	Well - Mod. Well	5.5 - 7.5
Orchardgrass or Kentucky Bluegrass	20	Well - Mod. Well	6.0 - 7.5
Birdsfoot Trefoil/ Redtop	5	Well - Mod. Well	5.5 - 7.5
Orchardgrass	20		
Lathco Flat Pea/ Perennial Ryegrass	20	Well - Mod. Well	5.5 - 7.5
Lathco Flat Pea/ Orchardgrass	30	Well - Mod. Well	5.5 - 7.5

Mixtures listed in bold are suitable for use in shaded woodland settings. Those in italics are suitable for use in filter strips.
* Lathco Flatpea is primarily poisonous to some wildlife. All legumes should be planted with proper inoculants prior to seeding.
For unimproved pastures or seeding outside the optimum timeframes, add 50% more seed to the specified rate.

Table IV-5 Lime and Fertilizer Application Table

pH of Soil	Lime in Tons Per Acre	Fertilizer, Lbs. per 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 a lot of lime per acre are applied it may be incorporated into the soil by plowing, tilling, or treading it into the soil.

Table IV-6 Mulch Materials Rates and Uses

Material	Minimum Rates Per Acre	Coverage	Remarks
Hay or Straw	2 to 3 Tons 100 to 150 Bales	Cover 75% to 90% of Surface	Subject to Wind blowing or washing unless bed down
Wood Fiber	1000 to 1500 lbs	Cover all	For Hydroseeding
Pulp Fiber		Disturbed Areas	
Wood-Cellulose			
Recycled Paper			

Table IV-1 Recommended seeding dates for permanent and temporary cover unless otherwise specified.

Planting Dates	Suitability
March 1 - April 15 and August 1 - October 1	Best seeding periods
April 15 - August 1	HIGH RISK - moisture stress likely
October 1 - Dec. 1	HIGH RISK - Freeze damage to young seedlings
Dec. 1 - March 1	Good seeding period. Dormant seeding.

Table 2. Acceptable fertilization recommendation in absence of a soil test.

Species	N (lbs/ac)	P2O5 (lbs/ac)	K2O(lbs/ac)	Example Rec. (per acre)
Cool Season Grass	40	80	80	400 lbs. 10-20-20
CS Grass & Legume	30	60	60	300 lbs. 10-20-20
Temporary Cover	40	40	40	200 lbs. 18-18-18

Table 3. Temporary cover suitable for establishment in West Virginia.

Species	Seeding Rate (lbs/acre)	Optimum Seeding Dates	Drainage	pH
Annual Ryegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Poorly	5.5 - 7.5
Field Bromegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Mod. Well	6.0 - 7.5
Spring Oats	96	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Sudangrass	40	5/15 - 8/15	Well - Poorly	5.5 - 7.5
Winter Rye	168	8/15 - 10/15	Well - Poorly	5.5 - 7.5
Winter Wheat	180	8/15 - 11/15	Well - Mod. Well	5.5 - 7.5
Japanese Millet	30	6/15 - 8/15	Well	4.5 - 7.5
Redtop	5	3/1 - 6/15	Well	4.5 - 7.5
Annual Ryegrass	26	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Spring Oats	64	3/1 - 6/15	Well - Poorly	5.5 - 7.5

NOTE: These rates should be increased by 50% if planted April 15 - August 1 and October 1 - March 1.

Mulching

1. General Organic Mulches

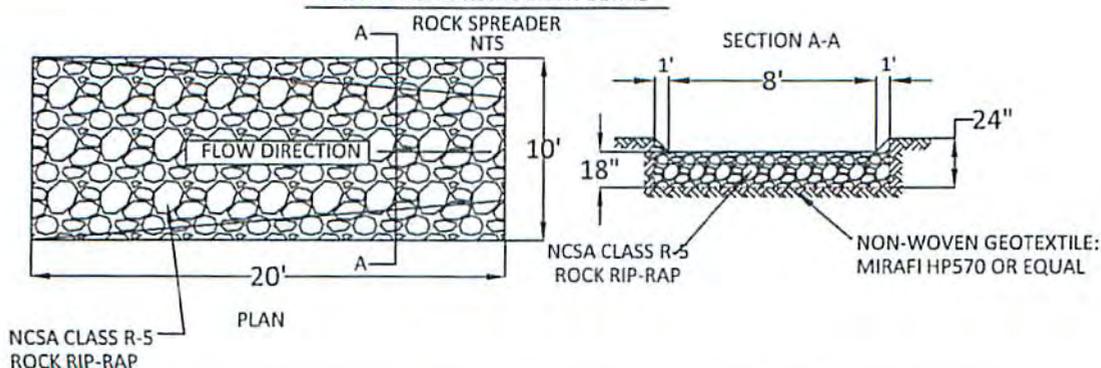
The application of straw, hay or other suitable materials to the soil surface to prevent erosion. Straw made of wheat or oats is the preferred mulch, the use of hay is permissible, but not encouraged due to the risk of spreading invasive species. Mulch must be applied to all temporary and permanent seeding on all disturbed areas. Depending on site conditions, in critical areas such as waterways, or steep slopes, additional or substitute soil protection measures may be used if deemed necessary. Examples include jute mesh, and soil stabilization blankets or erosion control matting.

Areas that have been temporarily or permanently seeded should be mulched immediately following seeding. Mulches conserve desirable soil properties, reduce soil moisture loss, prevent crusting and sealing of the soil surface and provide a suitable microclimate for seed germination.

Areas that cannot be seeded because of the season should be mulched to provide some protection to the soil surface. An organic mulch, straw or hay, should be used and the area then seeded as soon as weather or season conditions permit. Do not use fiber mulch (cellulose-hydroseed) alone for this practice; at normal application rates it will not give the soil protection of other types of mulch.

Wood cellulose fiber mulch, is used in hydroseeding operations and applied as part of the slurry. It creates the best seed-soil contact when applied over top of (as a separate operation) newly seeded areas. Fiber mulch does not alone provide sufficient protection on highly erodible soils, or during less than favorable growing conditions. Fiber mulch should not be used alone during the dry summer months or when used for late fall mulch cover straw mulch during these periods, and fiber mulch may be used to tack (anchor) the straw mulch. Fiber mulch is well suited for steep slopes, critical areas, and areas susceptible to wind.

STANDARD CONSTRUCTION DETAIL



INSTALLATION

Strictly comply with equipment manufacturer's installation instructions and recommendations. Use approved hydro-spraying machines with fan-type nozzle (50-degree tip). To achieve optimum soil surface coverage, apply HP-FGM from opposing directions to soil surface. Rough surfaces (rocky terrain, cat tracks and ripped soils) may require higher application rates to achieve 100% cover. Slope interruption devices or water diversion techniques are recommended when slope lengths exceed 100 feet (30m). Maximum slope length is for product applications on a 3H:1V slope. For application on steeper slopes, slope interruption lengths may need to be decreased based on actual site conditions. Not recommended for channels or areas with concentrated water flow. No chemical additives with the exception of fertilizer, liming and biostimulant materials should be added to this product. To ensure proper application rates, measure and stake area. For maximum performance, apply HP-FGM in a two-step process as follows:

1. Step One: Apply fertilizer with specified prescriptive agronomic formulations and 50% of seed with a small amount of HP-FGM for visual metering.
2. Step Two: Mix balance of seed and apply HP-FGM at a rate of 50 lb per 125 gallons (23kg/475 liters) of water over freshly seeded surfaces. Confirm loading rates with equipment manufacturer. Do not leave seeded surfaces unprotected, especially if precipitation is imminent.

APPLICATION RATES: These application rates are for standard conditions. Designers may wish to reduce rates to encourage faster vegetation establishment or may need to increase application rates on rough surfaces. Consult application and loading charts to determine number of bags to be added for desired area and application rate.

Loading Chart for Profile's SMMA, BFMs, HP-FGMs and ET-FGM												
Tank Size (gal)	# of 50-lb bags	Displacement (cu ft)	2,500 lb/acre		3,000 lb/acre		3,500 lb/acre		4,000 lb/acre		4,500 lb/acre	
			Sq Ft	Acres								
250	5	190	290	0.004	1,452	0.033	1,243	0.029	1,089	0.025	968	0.022
500	9	380	580	0.008	2,904	0.067	2,486	0.057	2,178	0.050	1,936	0.044
750	13	570	870	0.012	4,356	0.100	3,729	0.086	3,267	0.075	2,904	0.067
1,000	17	760	1,160	0.016	5,808	0.133	4,975	0.114	4,356	0.100	3,872	0.089
1,500	25	1,140	1,740	0.024	8,712	0.200	7,467	0.171	6,534	0.150	5,808	0.133
2,000	33	1,520	2,320	0.032	11,616	0.267	9,957	0.229	8,712	0.200	7,744	0.178
2,500	41	1,900	2,900	0.040	15,520	0.353	13,248	0.303	11,616	0.267	10,368	0.237
3,000	49	2,280	3,400	0.048	19,424	0.440	16,352	0.373	14,208	0.323	12,576	0.287
3,500	57	2,660	3,980	0.056	23,328	0.527	19,456	0.440	17,016	0.387	15,132	0.341
4,000	65	3,040	4,560	0.064	27,232	0.613	23,360	0.527	20,320	0.460	18,144	0.413

Additional Notes:

- For hose applications, 35 gal/100 gal is recommended.
- Rough surfaces (rocky terrain, cat tracks, ripped soils, etc.) may require additional product to achieve 100% coverage.
- Be sure to allow for residual material in tank on subsequent applications.

Application Rates			Slope Interruption Limits*		
Slope Condition	English	M	Product Category	Length (ft)	Length (m)
≤ 4H to 1V	2500 Bags/acre	2800 kg/hectare	SMMA	50	15
> 4H to 1V and ≤ 2H to 1V	3000 Bags/acre	3400 kg/hectare	BFM	75	23
> 2H to 1V and ≤ 1H to 1V	3500 Bags/acre	3900 kg/hectare	HP-FGM	100	30
> 1H to 1V	4000 Bags/acre	4500 kg/hectare	ET-FGM	125	38
Below 1:2 or 1:1	1500 Bags/acre	1700 kg/hectare			
As noted for 750*	3500 Bags/acre	3900 kg/hectare			

*SMMA not recommended for slopes greater than 2H:1V.
 *BFM not recommended for slopes greater than 1H:1V.
 *HP-FGM or ET-FGM recommended for slopes greater than 1H:1V.
 *Use only approved and tested TMAs to create the GreenArmor System.

Visual Key for Proper Application
 (Hexterra HP-FGM shown below)

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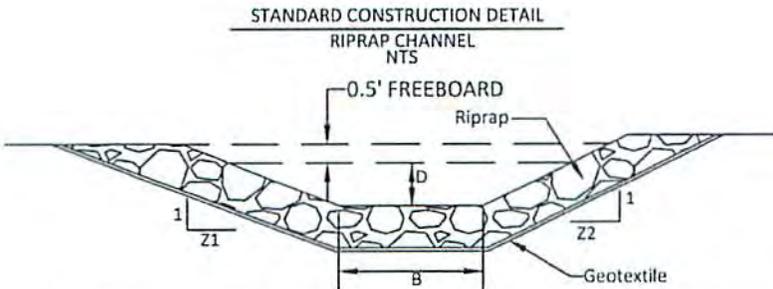
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SHEET 17 OF 17

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CHANNEL NO.	TOTAL LENGTH (FT.)	BOTTOM WIDTH B (FT.)	DEPTH D (FT.)	Z1 (FT.)	Z2 (FT.)	LINING
DISCHARGE CHANNEL #1	13	2	1	2	2	18" THICK R-5 RIPRAP
DISCHARGE CHANNEL #2	51	2	1	2	2	18" THICK R-5 RIPRAP



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