



west virginia department of environmental protection

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

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

November 10, 2014

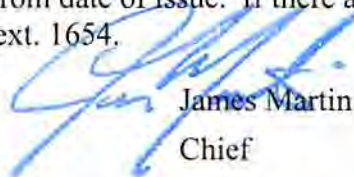
WELL WORK PLUGGING PERMIT

Plugging

This permit, API Well Number: 47-3300058, issued to XTO ENERGY, INC., is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Upon completion of the plugging well work, the above named operator will reclaim the site according to the provisions of WV Code 22-6-30. The above named operator will also file, as required in WV Code 22-6-23, an affidavit on form WR-38 by two experienced persons in the operator's employment and the Oil and Gas inspector that the work authorized under this permit was performed and a description given. Failure to abide by all statutory and regulatory provisions governing all duties and operations here under may result in suspensions or revocation of this permit and in addition may result in civil and/or criminal penalties being imposed upon the operator.

This permit will expire in two (2) years from date of issue. If there are any questions, please free to contact me at (304) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: 1
Farm Name: HELDRETH, TOM
API Well Number: 47-3300058
Permit Type: Plugging
Date Issued: 11/10/2014

Promoting a healthy environment.

11/14/2014

PERMIT CONDITIONS

West Virginia Code §22-6-11 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. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
2. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
3. Well work activities shall not constitute a hazard to the safety of persons.
4. This well is under a consent order and must be plugged under the terms of that agreement.

WW-4B
Rev. 2/01

1) Date August 26, 2014
2) Operator's
Well No. Heldreth, Tom 1
3) API Well No. 47-033-00058

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

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

- 4) Well Type: Oil ___ / Gas X / Liquid injection ___ / Waste disposal ___ /
(If "Gas, Production X or Underground storage ___) Deep ___ / Shallow X
- 5) Location: Elevation 1095.5' Watershed Bingamon Creek
District Eagle County Harrison Quadrangle Shinnston
- 6) Well Operator XTO Energy Inc 7) Designated Agent Gary Beall
Address PO Box 1008 Address PO Box 1008
Jane Lew, WV 26378 Jane Lew, WV 26378
- 8) Oil and Gas Inspector to be notified 9) Plugging Contractor
Name Sam Ward Name _____
Address PO Box 2327 Address _____
Buckhannon, WV 26201

10) Work Order: The work order for the manner of plugging this well is as follows:

RIH with tools to find T.D. and determine casing size, POOH and run 2 3/8 tubing to TD. Well was plugged back to 5th sand back in 1942. By looking at the off-set wells drilled in area close by 5th sand zone should be near 2600', run tubing to TD and circulate 6% gel back to surface, then pump a 500' cement plug up to 2100', pull tubing up to 1900' and wait for cement to set up, RIH thru tubing with small tools to tag top of cement, if cement top is ok, pull tubing out and RIH with CBL tool to find top of cement around casing, find top and shoot apart and pump a 200' cement plug at cut, look at CBL and determine where other strings of casing may be, pump cement plugs as needed and pull any loose casing we can. We would pump an elevation plug at 1200' up to 987', elevation at 1087' and 200' plug at surface. Also will pump a 100' plug over any water, coal or gas bearing strata that is known.

Cement 2600' - 2100' = 500' in 4 1/2" casing, Cement at cut - ? - ? = 200'

Cement - 1200' - 987' = 213' - Elev. @ 1087', Cement - 200' - Surface = 200'

Install well monument

Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Office of Oil and Gas

Work order approved by inspector S. D. Ward

Date 9/8/2014

RECEIVED
OPERATING DIVISION
SEP 18 2014

11/14/2014

WV Department of

330058 P

62 HANCOCK COUNTY, W. VA., WELL RECORDS
HANCOCK COUNTY WELL RECORDS

Hancock County Permit and Map Numbers.

Han-No.	Farm Name and Well No.	Company	District
5	Talbott, Rachel E., No. 1	John T. Galey	Grant
41	Ramsey, Lenora, No. 1	John T. Galey	Clay

Lenora Ramsey No. 1 Well.

Clay District, Hancock County, W. Va.
By John T. Galey.
Permit No. Han-41.
Elevation, 1072' L. (D. F.)
365 M. cu. ft. gas; blew down to 115 M. in three days; oil, 15 gals. per day.
Located 3.41 mi. S. of 40° 35' and 0.92 mi. W. of 80° 35'—SC—Wells-ville Quadrangle.
On east side of northeastern branch of Deep Gut Run.
1.1 mi. W. of Pughtown (Fairview); 1.9 mi. S. E. of Moscow.

	Top.	Bottom.	Thickness.	Elevation (top)
Berea Sand	908	966	58	+ 164
Corniferous Lime	4570	4768	198	-3498
Oriskany Sand	4768	4829	61	-3696

Total depth, 4829'.
Shot twice.

Thickness, Devonian Shales, 3604 feet.
Remarks: Completed Oct. 2, 1942.
Oriskany gas and oil, 4771-74'.
On 54.5 acres.

Rachel E. Talbott No. 1 Well.

Grant District, Hancock County, W. Va.
By John T. Galey.
Permit No. Han-5.
Elevation, 1269.84' L. (ground).
Dry hole; oil show and salt water in Oriskany.
Located 0.18 mi. S. of 40° 35' and 0.5 mi. W. of 80° 35'—SC—Wells-ville Quadrangle.
On headwaters of Mercer Run.
3.4 mi. N. of Pughtown (Fairview); 2.4 mi. S. W. of Chester.

	Top.	Bottom.	Thickness.	Elevation (top)
Berea Sand	1094	1137	43	+ 176
Corniferous Lime	4723	4956	233	-3453
Oriskany Sand	4956	5015	59+	-3686

Total depth, 5015'.

Thickness, Devonian Shales, 3586 feet.
Remarks: Completed May 24, 1937.
Hole full water, 20-26'. Water, 144-145'.
Oil and gas show, (Berea), 1135-49'. Show oil, 1673'.
Salt water, 4968'.

HARRISON COUNTY WELL RECORDS.

Harrison County Permit and Map Numbers.

Har-No.	Farm Name and Well No.	Company	District
58	Heldreth, Tom, (E. E.) No. 1	Eagle Gas (L.-S.G.)	Eagle
79	Gribble, C. S. No. 8517	Hope Natural Gas	Grant
A	Goff, Martha, No. 4190	Hope Natural Gas	Simpson
B	Smith, L. L. No. 918	Reserve Gas Co.	Union

XVI p63

Tom (E. E.) Heldreth No. 1 Well.

Eagle District, Harrison County, W. Va.
By Eagle Gas Company (Lumberport-Shinnston Gas Company).
Permit No. Har-58.
Elevation, 1087' L.
Gas well (in shallow sands).
Located 3.81 mi. S. of 39° 30' and 1.48 mi. W. of 80° 20'—NC—Clarksburg Quadrangle.
On east side of northern branch of Bingamon Creek.
0.8 mi. N. W. of Wyatt; 1.94 mi. S. E. of Oakdale.

Total depth, 6900'.

Remarks: Started in 1938.
Three strings of tools in hole and plugged back to Fifth Sand (Nov. 1942).
Record not available.
On 7.3 acres.

C. S. Gribble No. 8517 Well.

Grant District, Harrison County, W. Va.
Permit No. Har-79.
Elevation, 1113' L.
Dry hole.
Located 0.58 mi. S. of 39° 10' and 4.28 mi. W. of 80° 15'—EC—Weston Quadrangle.
On eastern branch of Lost Creek.
1.4 mi. E. of Lost Creek.

	Top.	Bottom.	Thickness.	Elevation (top)
Big Lime	1155	1330	175	- 42
Big Injun Sand	1290?	---	---	- 177?
Berea Sand	1590	1618	28	- 477
Corniferous Lime	7055	7290	235	-5942
Oriskany Sand	7290	7400	110	-6177
Newburg Sand	8633	8638	5	-7520
Keefer? Sand	9198	9207	9	-8085
Sand	9630	9685	55	-8517
Clinton Sand	9747	9996	249	-8634

Thickness, Devonian Shales, 5437 feet. Total depth, 10,018'.
Remarks: Completed April 10, 1941. Shot at 7290-7370'.
Show of gas, 1545-71' and 1797'. Show of gas in Oriskany.
Show of gas at 9650' and 9665-85'.
First rotary test in State.
Deepest well in West Virginia.
On 142 1/2 acres.

3300058 P

	Initials	Date
Prepared By		
Approved By		

E. E. Heldroth Heire Well Elevation 1087
Near Wyatt, W. Va. Eagle district Harrison county

LINE NO.	Formation	Top of Formation	Bottom of Formation	Depth of Gas	Remarks	LINE NO.
1	Pittsburgh Coal.	236				1
2	Gordan.	2412	2442	2432		2
3	4th Sand.	2456	2492	2457		3
4	5th "	2577	2580	2578		4
5	Lime	2620	2839			5
6	Slate and shells.	2839	2882			6
7	Elizabeth Sand	2882	2894			7
8	Lime	2894	3003			8
9	First Warren	3003	3010			9
10	Lime	3010	3053			10
11	Sandy Lime.	3053	3067			11
12	Lime and shells.	3067	3116			12
13	Sand - Second Warren	3116	3158			13
14	Lime	3158	3189			14
15	Slate	3189	3215			15
16	Lime and shells.	3215	3233			16
17	Lime	3233	3282			17
18	Sand - Speckly	3282	3290			18
19	Lime	3290	3357			19
20	Slate and shells.	3357	3422			20
21	Lime	3422	3478			21
22	Sand - Bolltown.	3478	3516	3491-3502 = 1.1M/day		22
23	Lime and shells.	3516	3582			23
24	Slate and shells	3582	3682			24
25	Slate	3682	3729			25
26	Slate and shells	3729	3963			26
27	Brown Sandy shells.	3963	4015	3992 Trace of Oil.		27
28	Lime shells and slate	4015	4230			28
29	Lime	4230	4254		Hard.	29
30	Slate and shells.	4254	4377			30
31	Gritty lime	4377	4423			31
32	Slate and shells.	4423	4457			32
33	Lime	4457	4488			33
34	Benson Sand ??	4488	4495	4488-95 = 906/day		34
35	Lime	4495	4532			35
36	Slate and shells	4532	4554			36
37	Lime	4554	4597			37
38	Slate	4597	4683		11/14/2014	38
39	Lime	4683	4688			39
40	Slate and shells	4688	4730			40
41	Sandy lime	4730	4739		Hard	41
42	Lime	4739	4876			42
43	Slate and shells	4876	4922			43
	Lime	4922	4961			



Prepared By	<i>[Signature]</i>	Date
Approved By		

E. F. Holdroth Hens Well

FORMATION	Formation	Top of Formation	Bottom of Formation	Depth of Gas	Remarks
1	Slate and shells	4961	4983		
2	Lime	4983	5029		
3	Slate and shells	5029	5071		
4	Lime	5071	5104		Hard
5	Slate and shells	5104	5124		
6	Lime	5124	5186		
7	Lime - White	5186	5201		Hard
8	Slate	5201	5218		
9	Brown Shale	5218	5235		
10	Slate and shells	5235	5306		
11	Dark Shale	5306	5333		
12	Slate and shells	5333	5672		
13	Sand Shells and Slate	5672	5700		
14	Slate and shells	5700	6093		
15	limy Slate	6093	6144		
16	Slate and shells	6144	6845		
17	Brown Shale and shells	6845	6892		
18	Black Shale	6892	6947		
19	Slate - Gray	6947	6958		
20	Shale - Brown	6958	6974		
21	Shale	6974	7001		
22	Shale - Brown	7001	7023	7010-20	Blow up
23	Shale - Black	7023	7043		
24	Shale - Brown	7043	7083	7060-70	Blow-up
25				7070-83	Blow-up
26	Shale - Dark Brown	7083	7099	7096	Blow-up
27	Shale - Black	7099	7132	7126-7126	Hard-7130
28	Black-limy	7132	7150		Very Hard 7132
29	Shale - Gritty	7150		7150-51	Blow-up
30					
31	Note Bad blow up @ 7151' - Roared for 20 minutes out of				
32	10" nipple - Blew tools up hole and stuck same 10' off bottom				
33	Whipped cable off @ 6509'. Fished out cable to 7060-70-				
34	Blow-up and stuck tools. Cut cable at 2655' - Fished out				
35	4000' of cable. Fished for cable and got hold. Jarred for				
36	35 days before whipping cable in to at 3292' leaving fishing				
37	tools in hole at 6700'				
38					
39					
40					
41					
42					
43					

11/14/2014

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CK 180
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WW-4A
Revised 6-07

1) Date: 8/26/14
2) Operator's Well Number
Heldreth, Tom 1
3) API Well No.: 47 - 033 - 00058

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION TO PLUG AND ABANDON A WELL

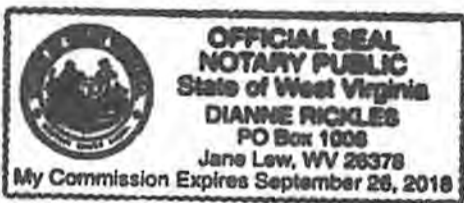
4) Surface Owner(s) to be served:	5) (a) Coal Operator
(a) Name <u>Kathleen Crim Stone</u>	Name <u>Kathleen Crim Stone & Michael Stone</u>
Address <u>5117 New Carlisle Pike</u>	Address <u>5117 New Carlisle Pike</u>
<u>Springfield, OH 45504</u>	<u>Springfield, OH 45504</u>
(b) Name _____	(b) Coal Owner(s) with Declaration
Address _____	Name <u>Consol Mining Company</u>
(c) Name _____	Address <u>1000 Consol Energy Drive</u>
Address _____	<u>Canonsburg, PA 15317</u>
6) Inspector <u>Sam Ward</u>	(c) Coal Lessee with Declaration
Address <u>PO Box 2327</u>	Name _____
<u>Buckhannon, WV 26201</u>	Address _____
Telephone <u>304-389-7583</u>	

TO THE PERSONS NAMED ABOVE: You should have received this Form and the following documents:

- (1) The application to Plug and Abandon a Well on Form WW-4B, which sets out the parties involved in the work and describes the well its and the plugging work order; and
- (2) The plat (surveyor's map) showing the well location on Form WW-6.

The reason you received these documents is that you have rights regarding the application which are summarized in the instructions on the reverses side. However, you are not required to take any action at all.

Take notice that under Chapter 22-6 of the West Virginia Code, the undersigned well operator proposes to file or has filed this Notice and Application and accompanying documents for a permit to plug and abandon a well with the Chief of the Office of Oil and Gas, West Virginia Department of Environmental Protection, with respect to the well at the location described on the attached Application and depicted on the attached Form WW-6. Copies of this Notice, the Application, and the plat have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery to the Chief.



Well Operator XTO Energy Inc.
 By: [Signature]
 Its: Regulatory Compliance Technician
 Address PO Box 1008
Jane Lew, WV 26378
 Telephone 304-884-6000

RECEIVED
 Office of Oil and Gas
 WV Department of Environmental Protection

Subscribed and sworn before me this 26th day of August 2014
[Signature] Notary Public
 My Commission Expires September 26th 2018

Oil and Gas Privacy Notice

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a 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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

11/14/2014

3300058P

7012 1010 0002 5911 7434

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(Domestic Mail Only; No Insurance Coverage Provided)

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OFFICIAL USE

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Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$



Mr. & Mrs. Michael & Kathleen Stone
 5117 New Carlisle Pike
 Springfield, OH 45504

Meldreth, Tom 1 - Plugging Permit App

for Instructions

7012 1010 0002 5911 7427

U.S. Postal Service™
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OFFICIAL USE

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$



Consol Mining Company
 1000 Consol Energy Drive
 Canonsburg, PA 15317

Meldreth, Tom 1 - Plugging Permit App

for Instructions

RECEIVED
 Office of Oil and Gas
 832 28-0000
 Environmental File 11/14/2014

WW-9
Rev. 5/08

Page _____ of _____
API Number 47 - 033 - 00058
Operator's Well No. Heldreth, Tom 1

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

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name XTO Energy Inc. OP Code 494487940

Watershed Bingamon Creek Quadrangle Shinnston

Elevation 334.06m County Harrison District Eagle

Description of anticipated Pit Waste: Fluids from plugging operations.

Will a synthetic liner be used in the pit? Yes 20 ml.

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number 4707302523, 4708505151, 4708509721)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain Meadowbrook Landfill SWF#1032)

*SDW
2/8/2014*

Proposed Work For Which Pit Will Be Used:

- Drilling
- Workover
- Other (Explain _____)
- Swabbing
- Plugging

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

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

Company Official Signature *Tim Sands*

Company Official (Typed Name) Tim Sands

Company Official Title Regulatory Compliance Technician

Subscribed and sworn before me this 26th day of August, 20 14

Dianne Rickles Notary Public

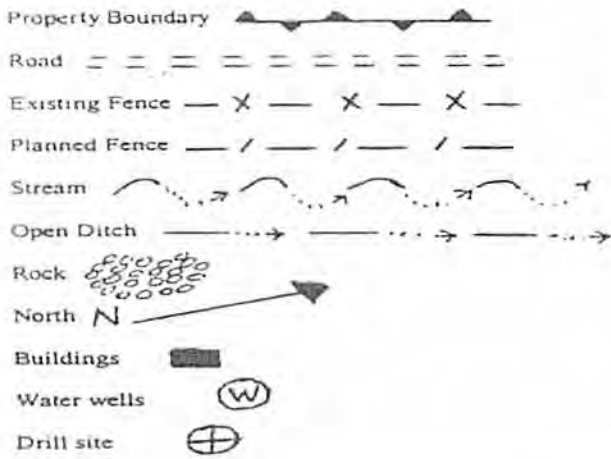
My commission expires September 26, 2018



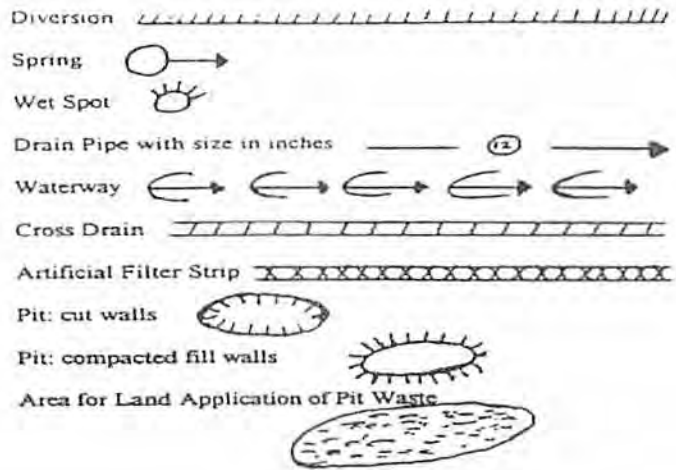
11/14/2014

Form WW-9

Operator's Well No. Heldreth, Tom 1



LEGEND



Proposed Revegetation Treatment: Acres Disturbed .8 Prevegetation pH _____

Lime 3 Tons/acre or to correct to pH _____

Fertilizer (10-20-20 or equivalent) 1000 lbs/acre (500 lbs minimum)

Mulch 3 Tons/acre

Seed Mixtures

Seed Type	Area I	lbs/acre	Seed Type	Area II	lbs/acre
Kentucky Bluegrass		20			
Redtop		3			
Birdsfoot Trefoil		10			

Attach:
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: S. J. D. W. [Signature]

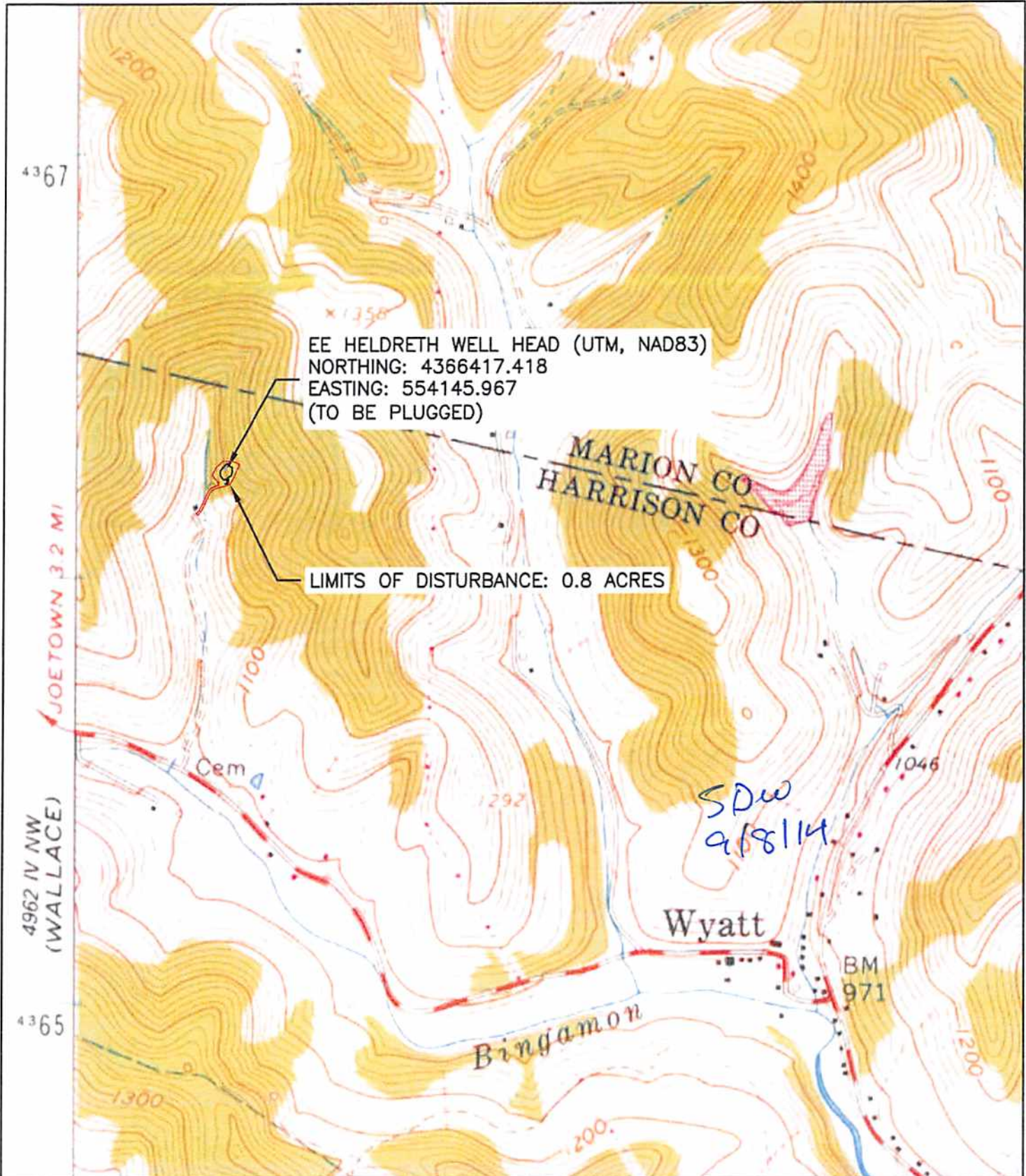
Comments: _____

Title: Oil & Gas Inspector Date: 9/8/2014

Field Reviewed? () Yes () No

11/14/2014

3300058P



EE HELDRETH WELL HEAD (UTM, NAD83)
 NORTHING: 4366417.418
 EASTING: 554145.967
 (TO BE PLUGGED)

LIMITS OF DISTURBANCE: 0.8 ACRES

SDW
 9/8/14

SCALES HORIZ: 1"=1000' VERT: CONTOUR INT: 20'	DESN BY: SDG DRWN BY: SDG RVWD BY: MML FLD BK: BK PG: DATE: 07/08/14	REV. BY: _____ DATE: _____ DESC: _____ REV. BY: _____ DATE: _____ DESC: _____ REV. BY: _____ DATE: _____ DESC: _____ REV. BY: _____ DATE: _____ DESC: _____
	SHEET NUMBER: 1 OF 1	USGS MAP - SHINNSTON QUADRANGLE EE HELDRETH XTO ENERGY, INC. ROBINSON-WYATT RUN RD, HARRISON COUNTY, WV

2/14/2014
 ISSUED DATE: 07-08-14

3300058 P

WW-7
8-30-06



West Virginia Department of Environmental Protection
Office of Oil and Gas

WELL LOCATION FORM: GPS

API: 47-033-00058 WELL NO.: 1

FARM NAME: Heldreth, Tom

RESPONSIBLE PARTY NAME: Morris Knowles & Assoc., Inc.

COUNTY: Harrison DISTRICT: Eagle 4

QUADRANGLE: Shinnston 606e

SURFACE OWNER: Kathleen E. Krim Stone

ROYALTY OWNER: See Attached

UTM GPS NORTHING: 4366417.418

UTM GPS EASTING: 554145.967 GPS ELEVATION: 334.06 (1096)

The Responsible Party named above has chosen to submit GPS coordinates in lieu of preparing a new well location plat for a plugging permit or assigned API number on the above well. The Office of Oil and Gas will not accept GPS coordinates that do not meet the following requirements:

- Datum: NAD 1983, Zone: 17 North, Coordinate Units: meters, Altitude: height above mean sea level (MSL) – meters.
- Accuracy to Datum – 3.05 meters
- Data Collection Method:
Survey grade GPS : Post Processed Differential
Real-Time Differential
Mapping Grade GPS : Post Processed Differential
Real-Time Differential < 1m
- Letter size copy of the topography map showing the well location.**

I the undersigned, hereby certify this data is correct to the best of my knowledge and belief and shows all the information required by law and the regulations issued and prescribed by the Office of Oil and Gas.

[Signature] Environmental Scientist 08/22/14
Signature Title Date

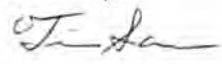


WVDEP
Office of Oil & Gas
601 57th Street, SE
Charleston, WV 25304-2345

Re: Application to Plug and Abandon
Heldreth, Tom 1
Harrison County, WV

To Whom It May Concern:

In accordance with Article 22-6-23 of the West Virginia State Code regarding oil and gas operations, please find the attached application for the plugging and abandonment of the subject well. Notices of our intention to plug this wellbore have been sent to the surface owner, coal owners with declarations recorded, and coal operators associated with this well. Copies of the certified mail receipts are attached for your records. If you have any questions or need additional information, please feel free to contact me at 304-884-6000.

Sincerely,


Tim Sands
PO Box 1008
Jane Lew, WV 26378

RECEIVED
Office of Oil and Gas
SEP 19 2014
WV Department of
Environmental Protection

RECEIVED
Office of Oil and Gas
SEP 19 2014
WV Department of
Environmental Protection

11/14/2014

WW-7 WELL LOCATION FORM: GPS

API: 47-033-00058

ROYALTY OWNERS

Owner: 801030
J. Seward Hardesty Est.
C/O Doris Hardesty Probasco
2075 Quentin Rd
Lebanon, PA 17042

Owner: 801506
Edwin D. and Thelma V. Crim
7056 Chama Trail
Enon, Ohio 45323

Owner: 804478
C. Howard Hardesty Jr.
4815 St. James Ave.
Vero Beach, FL 32967

Owner: 804597
Doris Hardesty Probasco, Agent
2075 Quentin Rd
Lebanon, PA 17042-7441

Owner: 809768
Dora F. Hennen Trust
Thomas B. Bennett, TTEE
3708 Briar Oak Cr.
Mountain Brook, AL 35223

2300000000

EROSION AND SEDIMENT CONTROL PLAN

EE HELDRETH

ROBINSON WYATT RUN RD/ CP 3
HARRISON COUNTY, WEST VIRGINIA
MAY 2014

ENGINEER / SURVEYOR

MORRIS KNOWLES & ASSOCIATES, INC.
A HAMMONTREE COMPANY
443 ATHENA DRIVE
DELMONT, PA 15626

HAMMONTREE & ASSOCIATES, LIMITED
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NORTH CANTON, OH 44720

ATTN- MICHAEL M. VALE PE, CPESC, OPSW
PHONE- 724-468-4622 (PA)
330-499-8817 (OH)

mval@hammontree-engineers.com

OWNER / DEVELOPER

XTO ENERGY, INC.
400 INDUSTRIAL PARK ROAD
JANE LEW, WV 26370

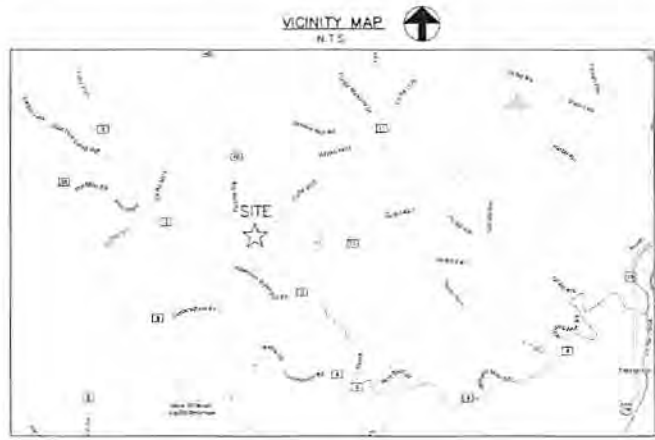
ATTN- TIM SANDS
PHONE- 304-884-6042

Tim.Sands@xtoenergy.com

LEGEND			
□	EX. MONUMENT BOX	-G-	GAS LINE
■	PROP. MONUMENT BOX	■	GAS LINE MARKER
○	EX. MONUMENT (AS NOTED)	⊞	GAS METER
●	5/8" BAR W/ H&A CAP (SET)	▲	GAS VALVE
•	BENCHMARK (AS NOTED)	⊞	GAS TANK
—	BOUNDARY LINE	⊞	GAS WELL
—	CENTER LINE	—S—	SANITARY SEWER LINE
—	LOT LINE	—S—	SANITARY SEWER LINE MARKER
—	PROPERTY LINE	○	SANITARY M.H./ C.O.
R/W	RIGHT OF WAY	M/H	MANHOLE
[]	RECORD BEARINGS & DIST.	C.O.	CLEAN OUT
E.O.P.	EDGE OF PAVEMENT	-ST-	STORM SEWER LINE
F.F.	FINISH FLOOR	■	STORM SEWER LINE MARKER
---	EX. CONTOUR LINE	□	STORM CATCH BASIN
---	PROP. CONTOUR LINE	□	STORM CURB INLET
---	CONTOUR LABEL	○	STORM MANHOLE
□	BOLLARD	—	STORM DOWNSPOUT
---	FENCE (AS NOTED)	—	STORM HEADWALL
—	GUARDRAIL	C.B.	CATCH BASIN
□	MAILBOX	⊞	CURB INLET
+++++	RAIL ROAD	T/O	TOP OF GRATE
—	SOB	T/C	TOP OF COVER
○	H.C. PARKING SPACE	T/OB	TOP OF CURB
⊞	DECIDUOUS TREE (AS NOTED)	—	FLOWLINE
⊞	EVERGREEN TREE (AS NOTED)	Y.D.	YARD DRAIN
⊞	BUSH (AS NOTED)	D.S.	DOWNSPOUT
⊞	SOIL BORING	—	OVERHEAD TELEPHONE LINE
+	POLE ANCHOR	—	UNDERGROUND TELEPHONE LINE
○	GUY POLE	—	TELEPHONE LINE MARKER
○	GENERAL POLE	—	TELEPHONE BOX
⊞	FLAG POLE	—	TELEPHONE MANHOLE
⊞	LIGHT POLE	-OTV-	OVERHEAD TV LINE
⊞	LIGHT & POWER POLE	-OTV-	UNDERGROUND TV LINE
⊞	LIGHT, POWER, TELE POLE	⊞	TV LINE MARKER
⊞	LIGHT, POWER, TELE, TV POLE	⊞	TV/CABLE BOX
⊞	POWER POLE	⊞	TV/CABLE MANHOLE
⊞	TELEPHONE POLE	-W-	WATER LINE
⊞	TELEPHONE, LIGHT POLE	⊞	WATER LINE MARKER
⊞	TELEPHONE, POWER POLE	⊞	WATER MANHOLE
⊞	PULL BOX	⊞	WATER METER
⊞	TRAFFIC CONTROL BOX	▲	WATER VALVE
⊞	POLE W/ PED. SIGNAL	▲	WATER SPRINKLER
⊞	POLE W/ TRAFFIC SIGNAL	⊞	FIRE HYDRANT
-E-	OVERHEAD ELECTRIC LINE	⊞	MONITORING WELL
-U-	UNDERGROUND ELECTRIC LINE		
—	ELECTRIC LINE MARKER		
□	ELECTRIC BOX		
⊞	ELECTRIC MANHOLE		
⊞	ELECTRIC METER		
⊞	FIBER OPTIC LINE		
⊞	FIBER OPTIC LINE MARKER		

REQUIRED PERMIT LIST

PERMIT	DATE RECEIVED



NOTES:

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THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ANY CHANGES IN DESIGN PLANS UNLESS WRITTEN CONSENT IS GIVEN BY THE ENGINEER. THE CONTRACTOR AND/OR THE OWNER WILL BE HELD RESPONSIBLE FOR ANY FIELD MODIFICATIONS MADE WITHOUT THE WRITTEN CONSENT OF THE ENGINEER AND NECESSARY APPROVALS BY PERMITTING AGENCIES.

THE LOCATION OF EXISTING UTILITIES WERE TAKEN FROM RECORDS AND MARKING PROVIDED BY OTHERS AND OBSERVED EVIDENCE. THE LOCATIONS SHOWN MAY BE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS, SIZES AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE CARE TO AVOID DAMAGE TO ALL EXISTING UTILITIES.

Charles F. Hammontree
CHARLES F. HAMMONTREE, REGISTERED PROFESSIONAL ENGINEER
August 8, 2014
DATE

INDEX OF SHEETS

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ESTIMATED QUANTITIES

	UNITS	ESTIM. QUANTITY	BO QUANTITY	UNIT PRICE	TOTAL COST
CLEARING & GRUBBING					
CLEARING & GRUBBING	AC	0.4			
EROSION & SEDIMENT CONTROL					
ROCK CONSTRUCTION ENTRANCE	EA	1			
12" COMPOST FILTER SOCK	LF	80			
18" COMPOST FILTER SOCK	LF	150			
EROSION CONTROL BLANKETING/ HYDRO-SEEDING	Sy	690			
PERMANENT SEEDING	Sy	2,130			
EARTHWORK					
TOPSOIL STRIPPED AND STOCKPILED/RESPREAD	CY	380			
TOTAL CUT/FILL	CY	940			
ACCESS ROAD/PAD					
ROAD SURFACING/TURNAROUND AREA	Sy	50			
WELL PAD	Sy	850			

50w
9/8/2014

811
CALL BEFORE YOU DIG
IN WEST VIRGINIA
1-800-245-4848

WV STATE LAW REQUIRES
2 WORKING DAYS NOTICE

KNOW WHAT'S BELOW
CALL BEFORE YOU DIG

THE GENERAL CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES INVOLVED IN THE SITE NO MORE THAN TEN DAYS AND NO LESS THAN 48 HOURS IN ADVANCE OF EXCAVATION.
(WV CHAPTER 24C-1-5, UNDERGROUND FACILITY DAMAGE PREVENTION ACT)



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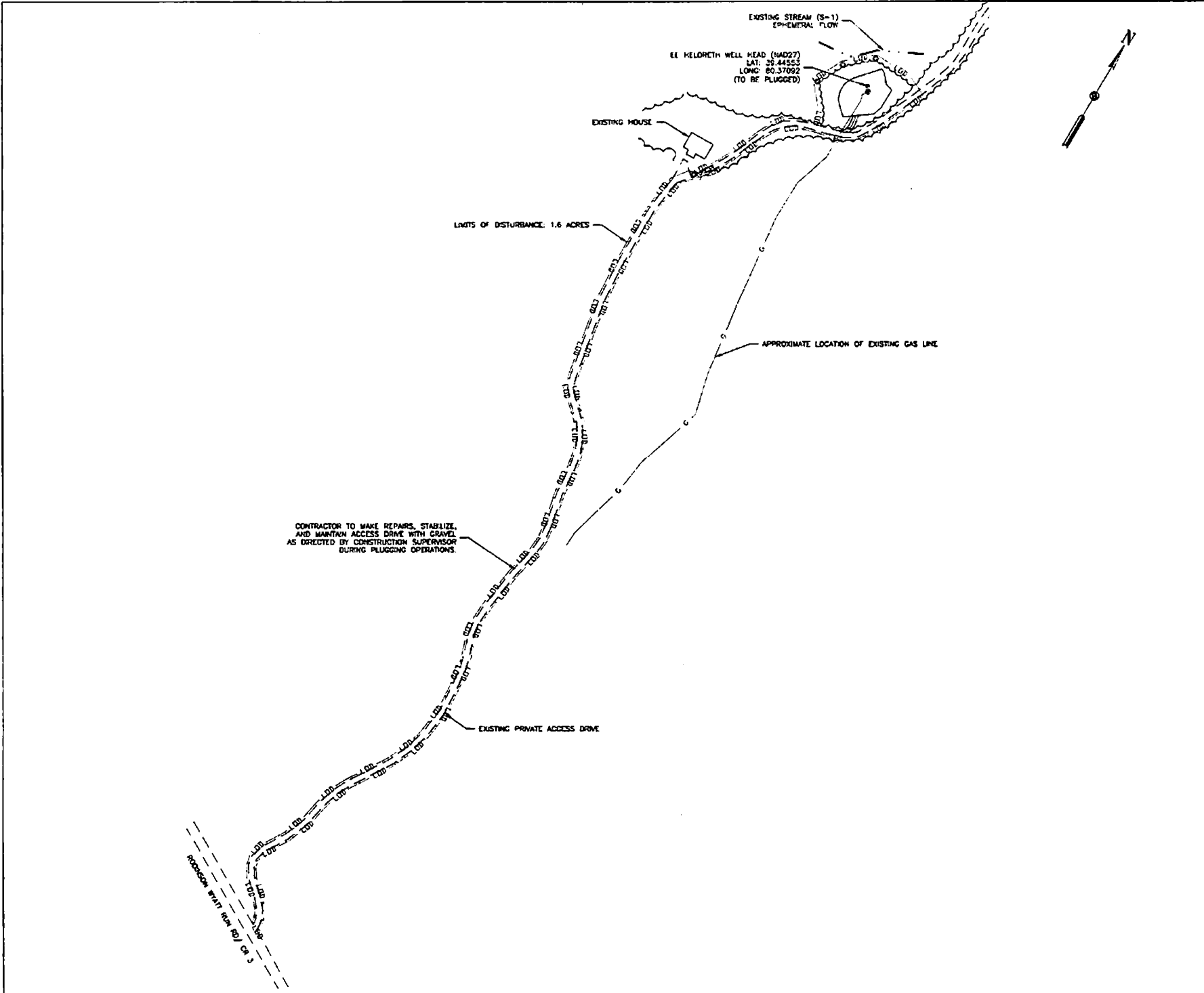
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PROJECT NO.: [] REV. BY: [] DATE: []
FILE NO.: [] REV. BY: [] DATE: []
BK. NO.: [] REV. BY: [] DATE: []
DATE: 8/22/14

EROSION & SEDIMENT CONTROL TITLE SHEET
EE HELDRETH
XTO ENERGY, INC.
ROBINSON WYATT RUN RD/ CP 3
HARRISON COUNTY, WEST VIRGINIA

ES-1

ISSUED DATE: 08-08-14

330008P



ZONING:
NO ZONING

WETLANDS:
NO WETLANDS ON SITE PER WETLAND DELINEATION.

FLOOD_ZONE:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, MAP NUMBER 5445X0003D, EFFECTIVE DATE, OCTOBER 2, 2012, THE SUBJECT PROPERTIES LIES WITHIN ZONE X WHICH IS DEFINED ON SAID MAP AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN"

- NOTES:**
1. ASSUME UNIFORM 6" OF TOPSOIL PER WETLAND DELINEATION REPORT.
 2. EROSION CONTROL BLANKETS OR FLEXITERRA TO BE INSTALLED ON ALL CUT AND FILL SLOPES OF 3:1 OR STEEPER.
 3. WHEREVER SEED AND MULCH IS APPLIED BY HYDROSEEDING METHODS, THE SEED AND MULCH SHOULD BE APPLIED IN SEPARATE APPLICATIONS WITH THE SEED BEING APPLIED FIRST AND THE MULCH SPRAYED ON TOP OF THE SEED. THIS IS TO ENSURE THAT THE SEED MAKES CONTACT WITH THE UNDERLYING SOIL. SOIL PREPARATION SHOULD BE COMPLETED PRIOR TO ADDING SEED TO THE HYDROSEEDING EQUIPMENT. PUMPING SEED THROUGH THE PUMPING SYSTEM CAN RESULT IN EXCESSIVE ABRASION OF THE SEED AND REDUCE THE PERCENTAGE OF PURE LAW SEED IN THE APPLICATION. THEREFORE ALL SITE PREPARATION SHOULD BE COMPLETED PRIOR TO THE ARRIVAL OF THE HYDROSEEDER.

LEGEND

(PF)	PILE PROTECTION
(SC)	STONE CONSTRUCTION ENTRANCE
(RF)	ROCK FILTER
(RO)	ROCK CHANNEL OUTLET PROTECTION
(PC)	PERMANENT CHANNEL
(TC)	TEMPORARY CHANNEL
(12S)	12" COMPOST FILTER SOCK
(18S)	18" COMPOST FILTER SOCK
(24S)	24" COMPOST FILTER SOCK
(32S)	32" COMPOST FILTER SOCK
(32P)	COMPOST FILTER SOCK PYRAMID (3) 18" OR (2) 24" W/ (1) 18"

DESIGN BY: JSD	DATE: 08/17/15	DESC: 11320
DRAWN BY: JSD	DATE: 08/17/15	DESC: 11320
FIELD BY: JSD	DATE: 08/17/15	DESC: 11320
BR PLOT: JSD	DATE: 08/17/15	DESC: 11320

SCALES:
HORIZ: 1" = 100'
VERT: 1" = 100'
CONTOUR INT: 2'

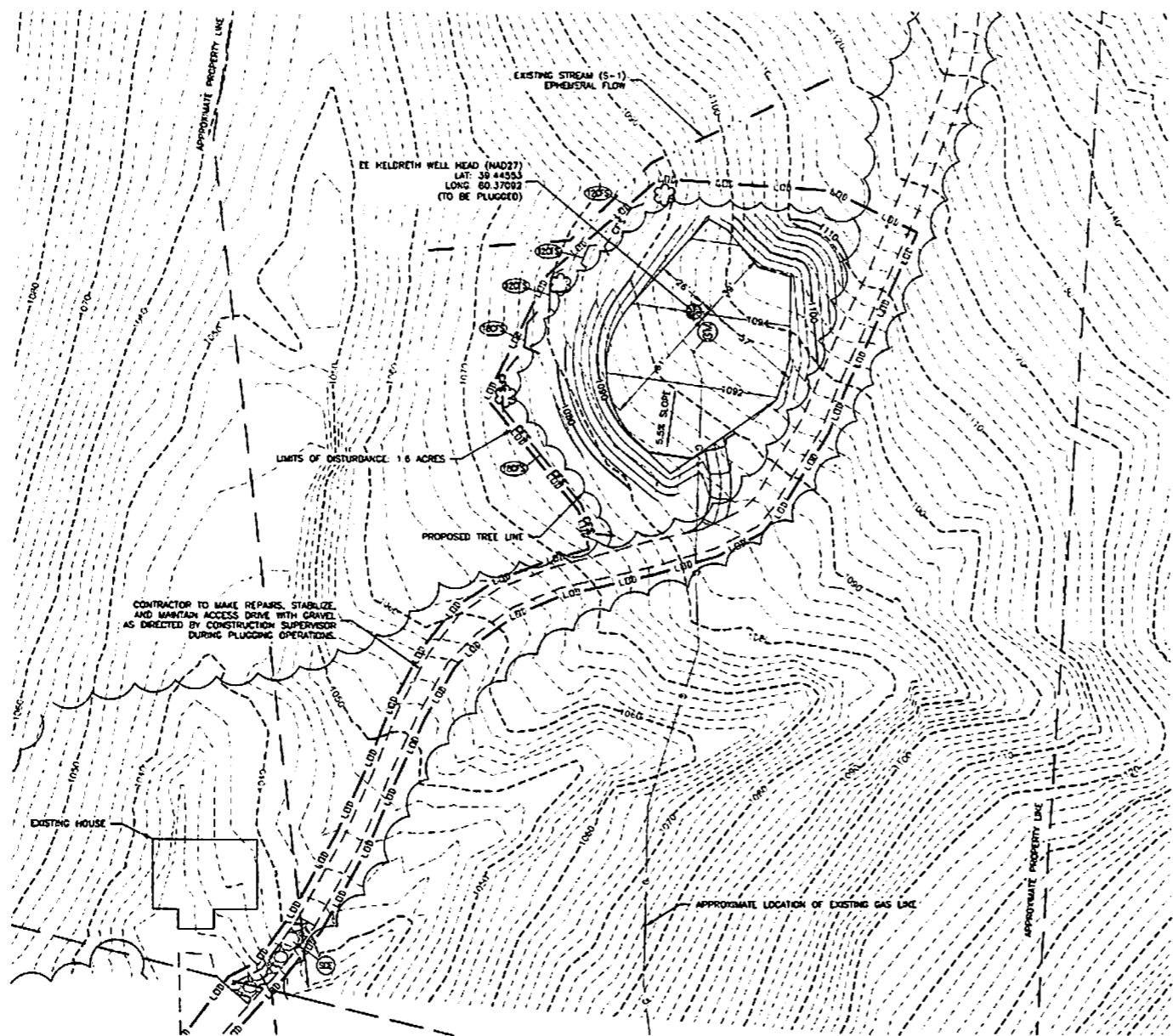
EROSION & SEDIMENT CONTROL PLAN - OVERALL VIEW

EE HELBRETH
XTO ENERGY, INC.
ROBERSON WYATT RD/ CR 3
HARRISON COUNTY, WEST VIRGINIA

ISSUED DATE: 08-06-14

MORRIS KUCHLES & ASSOCIATES, INC.
A HARRISONVILLE COMPANY
ENGINEERS, PLANNERS, SURVEYORS
441 ANDROS BOKE DRIVE PA 1938
PH: (717) 483-0222 FAX: (717) 488-8700
www.morisk.com

2300058P



ZONING:

NO ZONING

WETLANDS:

NO WETLANDS ON SITE PER WETLAND DELINEATION

FLOOD_ZONE:

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, MAP NUMBER 540300030, EFFECTIVE DATE, OCTOBER 2, 2012, THE SUBJECT PROPERTIES LIES WITHIN ZONE X WHICH IS DEFINED ON SAID MAP AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN".

NOTES:

1. ASSURE UNIFORM 6" OF TOPSOIL PER WETLAND DELINEATION REPORT.
2. EROSION CONTROL BLANKETS OR FLEXITERA TO BE INSTALLED ON ALL CUT AND FILL SLOPES OF 3:1 OR STEEPER.
3. WHEREVER SEED AND MULCH IS APPLIED BY HYDROSEEDING METHODS, THE SEED AND MULCH SHOULD BE APPLIED IN SEPARATE APPLICATIONS WITH THE SEED BEING APPLIED FIRST AND THE MULCH SPRAYED ON TOP OF THE SEED. THIS IS TO ENSURE THAT THE SEED MAKES CONTACT WITH THE UNDERLYING SOIL. SOIL PREPARATION SHOULD BE COMPLETED PRIOR TO ADDING SEED TO THE HYDROSEEDING EQUIPMENT. RUNNING SEED THROUGH THE PUMPING SYSTEM CAN RESULT IN EXCESSIVE ABRASION OF THE SEED AND REDUCE THE PERCENTAGE OF PURE LIVE SEED IN THE APPLICATION. THEREFORE ALL SITE PREPARATION SHOULD BE COMPLETED PRIOR TO THE ARRIVAL OF THE HYDROSEEDER.

LEGEND:

- (S) INLET PROTECTION
- (SE) STONE CONSTRUCTION ENTRANCE
- (RF) ROCK FILTER
- (RCP) ROCK CHANNEL OUTLET PROTECTION
- (PC) PERMANENT CHANNEL
- (TC) TEMPORARY CHANNEL
- (12") 12" COMPOST FILTER SOCK
- (18") 18" COMPOST FILTER SOCK
- (24") 24" COMPOST FILTER SOCK
- (32") 32" COMPOST FILTER SOCK
- (3P) COMPOST FILTER SOCK PYRAMID (3) 18" OR (2) 24" W/ (1) 18"

CONSTRUCTION SEQUENCE, EE HELDRETH:
THE ENTIRE SITE CANNOT BE CLEARED AND GRUBBED AT ONE TIME. ONLY AREAS FOR WHICH THE SPECIFIED EROSION AND SEDIMENTATION CONTROL HAS BEEN INSTALLED CAN BE CLEARED AND GRUBBED OR DISTURBED.

- STAGE 1: INSTALL STONE CONSTRUCTION ENTRANCE AT BEGINNING OF ACCESS DRIVE**
- A. CLEAR MINIMUM AREA NECESSARY FOR ENTRANCE INSTALLATION.
 - B. EXCAVATE FOR AND FORM ENTRANCE.
 - C. IMMEDIATELY STABILIZE ENTRANCE WITH ROCK.
- STAGE 2: INSTALL 12" AND 18" COMPOST FILTER SOCK DOWNSLOPE OF PROPOSED WELL PAD**
- STAGE 3: CLEAR SITE**
- A. LIMIT ADVANCED CLEARING AND GRUBBING AS MUCH AS POSSIBLE TO REDUCE THE AMOUNT OF AREA DISTURBED AT ANY ONE TIME. RECYCLING OF MATERIALS SHALL BE DONE WHERE POSSIBLE.
 - B. THE ENTIRE SITE CANNOT BE CLEARED AND GRUBBED AT ONE TIME. ONLY AREAS FOR WHICH THE SPECIFIED EROSION AND SEDIMENTATION CONTROL HAS BEEN INSTALLED CAN BE CLEARED AND GRUBBED OR DISTURBED.
 - C. STOCKPILE TREES AND BRUSH ALONG ACCESS DRIVE.
- STAGE 4: EXCAVATION**
- A. STRIP TOPSOIL AND WINDOW AT BOTTOM AND TOP OF CUT AND FILL SLOPES.
 - B. EXCAVATE SITE TO DESIGN GRADE.
 - C. APPLY TEMPORARY STABILIZATION TO EMBANKMENTS AND FINISH GRADE AREAS IN CUT OR FILL.
- STAGE 5: CONSTRUCT WELL PAD AND ACCESS DRIVE**
- STAGE 6: STABILIZE, REPAIR, AND MAINTAIN ACCESS DRIVE WITH GRAVEL AS DIRECTED BY XTO ENERGY, INC. CONSTRUCTION SUPERVISOR.**
- STAGE 7: FILL EXISTING WELL**
- STAGE 8: SEED AND MULCH**
- A. SEED/MULCH: ALL DISTURBED AREAS WITH SPECIFIED SEEDING MIXTURE. ALL EAS CONTROL FACILITIES SHALL BE MAINTAINED AND KEPT FUNCTIONAL UNTIL SITE STABILIZATION IS COMPLETE.



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DESIGN BY: SDG DATE: 5/22/14
DRAWN BY: SDG REV. BY: DATE:
FIELD BY: BK PG: DATE:
SCALE: HORIZ: 1" = 30'
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EROSION & SEDIMENT CONTROL PLAN - WELL PAD
EE HELDRETH
XTO ENERGY, INC.
ROBINSON WYATT RUN, ROY, VA 24088
HARRISON COUNTY, WEST VIRGINIA

ES-3

18500058 P

EROSION AND SEDIMENTATION CONTROL PLAN NOTES:

- ONLY LIMITED DISTURBANCE WILL BE PERMITTED TO PROVIDE ACCESS TO CHANNELS OF CONVEYANCE AS APPROPRIATE FOR GRADING AND ACQUIRING BORROW TO CONSTRUCT THOSE CONTROLS.
- EROSION AND SEDIMENTATION CONTROLS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE WITHIN THE TRIBUTARY AREAS OF THOSE CONTROLS.
- AFTER SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE CONTROLS MUST BE STABILIZED.
- STORMWATER INLETS WHICH DO NOT DISCHARGE TO SEDIMENT TRAPS OR BASINS, MUST BE PROTECTED UNTIL THE TRIBUTARY AREAS ARE STABILIZED.
- SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.
- STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.
- ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 30 DAYS MUST BE STABILIZED IMMEDIATELY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN ONE YEAR MAY BE STABILIZED IN ACCORDANCE WITH TEMPORARY SEEDING SPECIFICATIONS. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE REDISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS.
- STOCKPILES MUST BE STABILIZED IMMEDIATELY.
- MAY OR STRAW MULCH MUST BE APPLIED AT RATES OF AT LEAST 3.0 TONS PER ACRE.
- UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION CONTROLS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS ALL PREVENTATIVE AND REPAIR MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND REMEDIATION.
- THE CONTRACTOR SHALL RECYCLE MATERIALS WHENEVER APPROPRIATE AND WHEN IN ACCORDANCE WITH LOCAL, STATE, & FEDERAL REQUIREMENTS ALL MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF PROPERLY IN A C&D LANDFILL. IF CLEAN FILL MATERIAL IS REMOVED FROM THE SITE, IT SHALL BE TAKEN TO AN APPROVED C&D LANDFILL OR IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AN APPROVED C&S PLAN IF OVER 5000 SQUARE FEET OF AREA IS DISTURBED.

EROSION AND SEDIMENT CONTROL FACILITIES MAINTENANCE SCHEDULE:

- ALL EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED UNTIL A UNIFORM 70% PERENNIAL VEGETATIVE COVER IS ESTABLISHED.

STONE CONSTRUCTION ENTRANCE:

- THE STONE CONSTRUCTION ENTRANCES ARE TO BE INSPECTED AT THE END OF EACH WORKING DAY AND REPAIRED IMMEDIATELY.
- THE THICKNESS OF THE ROCK CONSTRUCTION ENTRANCE SHALL BE CONSTANTLY MAINTAINED AT 8".
- A STONE STOCKPILE IS TO BE READILY AVAILABLE ON THE SITE AT ALL TIMES FOR IMMEDIATE REPAIR.

COMPOST FILTER SOCK:

- COMPOST FILTER SOCK MUST BE INSTALLED AT LEVEL GRADE. BOTH ENDS OF EACH COMPOST FILTER SOCK SECTION MUST EXTEND AT LEAST 10 FEET UPSLOPE AT 45 DEGREES TO THE MAIN COMPOST FILTER SOCK ALIGNMENT.
- THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTER SOCK IN A FUNCTIONAL CONDITION AT ALL TIMES AND IT SHALL BE ROUTINELY INSPECTED.
- WHERE THE SOCK REQUIRES REPAIR, IT WILL BE ROUTINELY REPAIRED.
- THE CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SOCK WHEN IT REACHES 1/2 OF THE EXPOSED HEIGHT OF THE SOCK OR AS DIRECTED BY THE ENGINEER.
- THE COMPOST FROM THE FILTER SOCK WILL BE DISPERSED ON THE SITE WHEN SITE REACHES 70% VEGETATIVE COVER.

VEGETATION:

- THE CONTRACTOR SHALL INSPECT VEGETATED AREAS WEEKLY AND AFTER EACH STORM (RUNOFF) EVENT.
- THE CONTRACTOR SHALL INSPECT THE SITE FOR RILLS OR GULLIES ON CUT OR FILL SLOPES. THE CONTRACTOR SHALL FILL RILLS AND GULLIES, REGRADE DISTURBED AREAS TO PROVIDE A UNIFORM SLOPE, THEN RESEED/MULCH AND REPAIR/REPLACE MATS TO ORIGINAL SPECIFICATIONS.
- THE REPAIRS SHALL BE MADE WITHIN 2 DAYS OF DISCOVERING PROBLEM.

DRILL PITS:

- THE PIT SHALL BE CONSTRUCTED AND MAINTAINED SO AS TO PREVENT SEEPAGE, LEAKAGE, AND OVERFLOWS.
- PITS SHOULD BE CONSTRUCTED BELOW SURFACE GROUND LEVEL. WHEN POSSIBLE, ANY ABOVEGROUND PIT WALLS, AS IS THE CASE WITH PITS CONSTRUCTED IN THE LOWER SLOPE AREAS OF THE WELLSITE, SHALL BE COMPACTED, WITH A SIDE SLOPE BEING MAINTAINED THAT WILL PRESERVE THE STRUCTURAL INTEGRITY. THE FILL MATERIAL SHOULD CONTAIN THE PROPER AMOUNT OF MOISTURE TO ENSURE THAT COMPACTION WILL BE ACHIEVED.
- ALL PITS SHALL BE DESIGNED, CONSTRUCTED, LOCATED, MAINTAINED, AND USED IN ACCORDANCE WITH TITLE 35CSR4.21 AND IN SUCH A MANNER AS TO MINIMIZE ADVERSE ENVIRONMENTAL IMPACTS AND TO ASSURE SAFETY TO THE PUBLIC.

SITE STABILIZATION INSTALLATION AND MAINTENANCE (TEMPORARY AND PERMANENT):

- TILL SOIL TO DEPTH OF 2". REMOVE ALL OBJECTS 2" OR LARGER.
- BLEND COMMERCIAL FERTILIZER INTO THE SOIL TO A DEPTH OF 2" FERTILIZER MAY BE BLENDED DURING TILLING.
- SOIL REQUIRED SEED MIXTURE UNIFORMLY ON THE PREPARED AREA BY HYDRAULIC SEEDING EQUIPMENT, MAN DRESSING, OR ANY OTHER APPROPRIATE METHOD.
- AFTER SEEDING ROLL TOPSOILED AREAS THAT ARE TO BE MOWED USE A ROLLER WEIGHING NOT MORE THAN 65 LBS/FT WIDTH.
- FOR PERMANENT SITE STABILIZATION APPLY SLOW RELEASE NITROGEN FERTILIZER TO THE SURFACE OF SEEDED AREAS.
- PLACE MULCH IMMEDIATELY AFTER SEEDING OR WITHIN 48 HOURS AFTER SEEDING IS COMPLETED. PLACE MAY BE STRATIFIED UNIFORMLY, IN A CONTIGUOUS LAYER AT THE MINIMUM RATE SPECIFIED ABOVE. AN ACCEPTABLE MECHANICAL SLOWER MAY BE USED TO APPLY MULCH. MACHINES WHICH CUT MULCH INTO SHORT PIECES WILL NOT BE PERMITTED.
- MAINTENANCE - SATISFACTORILY MAINTAIN GRASS AREAS WITHIN GRADING LIMITS. UNTIL THE ENTIRE PROJECT HAS BEEN COMPLETED, MOW AS INDICATED AND WHEN DIRECTED. CONTROL PROHIBITED AND NOxious WEED GROWTH BY HERBICIDE SPRAYING OR CUTTING AFTER THE SEEDING AND SOIL SUPPLEMENT WORK ON A SLOPE HAS BEEN SATISFACTORILY COMPLETED. IF A SLOPE FAILURE OCCURS, ONE WHICH REQUIRES REDRESSING, EXCAVATION, OR ESTABLISHMENT OF A NEW SLOPE, REAPPLY SOIL SUPPLEMENTS, THEN RESEED, AS SPECIFIED FOR THE ORIGINAL TREATMENT.
- A SITE WILL BE CONSIDERED TO BE PERMANENTLY STABILIZED WHEN ALL PERMANENT CONTROL MEASURES AND FACILITIES HAVE BEEN COMPLETED AND ARE OPERATIONAL, TEMPORARY CONTROL MEASURES AND FACILITIES REMOVED, AND UNIFORM 70% PERENNIAL VEGETATIVE COVER IS ESTABLISHED TO THE POINT WHERE THE SURFACE SOIL IS CAPABLE OF RESISTING EROSION DURING RUNOFF EVENTS. THE STANDARD FOR THIS VEGETATIVE COVER WILL BE A UNIFORM COVERAGE OR DENSITY OF 70% ACROSS THE DISTURBED AREA.
- THE CONTRACTOR SHALL MAINTAIN THE SITE PER THE PROVISIONS OF THIS PLAN UNTIL PERMANENT STABILIZATION IS ESTABLISHED.

PERMANENT STABILIZATION:

SPECIES:	KENTUCKY BLUEGRASS/ REDTOP/ BIRDFOOT TREFLE
% PURE LIVE SEED:	99%
APPLICATION RATE:	20 LBS/ACRE, 3 LBS/ACRE, AND 10 LBS/ACRE, RESPECTIVELY
FERTILIZER TYPE:	COMMERCIAL FERTILIZER 10-20-20
FERTILIZER APPL. RATE:	COMMERCIAL - 1000 LBS/ACRE
LIMING RATE:	3 TONS/ACRE
MULCH TYPE:	MAY & STRAW
MULCHING RATE:	3 TONS/ACRE
ANCHORING MATERIAL:	RECYCLED CELLULOSE FIBER/WOOD FIBER MIXTURE
ANCHORING METHOD:	HYDRAULIC SEEDING EQUIPMENT
RATE OF ANCHOR:	310 LBS/1000 SQ YD
MATERIAL APPLICATION:	YEAR AROUND
SEEDING SEASON DATES:	

TEMPORARY STABILIZATION:

SPECIES:	ANNUAL RYEGRASS
% PURE LIVE SEED:	98%
APPLICATION RATE:	40 LBS/ACRE
FERTILIZER TYPE:	COMMERCIAL FERTILIZER 10-10-10
FERTILIZER APPL. RATE:	1000 LBS/ACRE
LIMING RATE:	3 TONS/ACRE
MULCH TYPE:	MAY & STRAW
MULCHING RATE:	3 TONS/ACRE

PERMANENT-STEEP SLOPE:

SPECIES:	KENTUCKY BLUEGRASS/ REDTOP/ BIRDFOOT TREFLE
% PURE LIVE SEED:	99%
APPLICATION RATE:	20 LBS/ACRE, 3 LBS/ACRE, 8 LBS/ACRE, RESPECTIVELY
FERTILIZER TYPE:	COMMERCIAL FERTILIZER 10-20-20
FERTILIZER APPL. RATE:	COMMERCIAL - 1000 LBS/ACRE
LIMING RATE:	3 TONS/ACRE
MULCH TYPE:	MAY & STRAW
MULCHING RATE:	3 TONS/ACRE
ANCHORING MATERIAL:	RECYCLED CELLULOSE FIBER/WOOD FIBER MIXTURE
ANCHORING METHOD:	HYDRAULIC SEEDING EQUIPMENT
RATE OF ANCHORING MATERIAL APPL.:	310 LBS/1000 SQ. YD
SEEDING DATES:	YEAR AROUND

GENERAL NOTES:

- THE GENERAL CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES INVOLVED IN THE SITE NO MORE THAN TEN DAYS AND NO LESS THAN THREE DAYS IN ADVANCE OF EXCAVATION EXCLUDING SATURDAY, SUNDAY, AND FEDERAL OR STATE HOLIDAYS (BY CHAPTER 24C-1-5, UNDERGROUND FACILITY DAMAGE PROTECTION ACT).
- TRAFFIC SHALL BE MAINTAINED ON ALL ADJOINING STREETS AND DRIVES AT ALL TIMES. TRAFFIC CONTROL SHALL BE MAINTAINED IN ACCORDANCE WITH WVDOT'S REQUIREMENTS.
- CONTRACTOR SHALL VERIFY THE LOCATION AND INVERT ELEVATION OF ALL EXISTING UTILITIES WITH PROPOSED CONNECTIONS PRIOR TO CONSTRUCTION AND GRADING OF THE SITE.

GRADING NOTES:

- THE CONTRACTOR SHALL REMOVE ALL EXISTING ASPHALT PAVEMENT AND CONCRETE SLABS FROM THE SITE.
- THE CONTRACTOR SHALL PROOF ROLL THE SITE TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER AND REMOVE ANY SOFT SOFT PRIOR TO THE IMPORTING OF ANY FILL MATERIAL.
- THE CONTRACTOR SHALL REPLACE ALL CURB SECTIONS, SIDEWALKS, AND PAVEMENT, WHICH HAS BEEN CUT AND DISTURBED WITHIN THE RIGHT-OF-WAY WITH WEST VIRGINIA DEPARTMENT OF TRANSPORTATION'S STANDARD MATERIALS.
- THE CONTRACTOR SHALL ADJUST TO GRADE ALL WATER AND GAS VALVES.
- THE CONTRACTOR SHALL COMPACT ALL FILL MATERIALS TO NOT LESS THAN 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D1557 TO PROVIDE STABILITY AND PREVENT SETTLEMENT.
- THE CONTRACTOR SHALL USE WEST VIRGINIA EROSION AND SEDIMENT CONTROL FIELD MANUAL.

EROSION CONTROL BLANKETING:

- EROSION CONTROL BLANKETING TO BE INSTALLED ON ALL SLOPES OF 3:1 GRADING OR STEEPER IN ACCORDANCE WITH EROSION CONTROL BLANKETING DETAIL PROVIDED.
- PROPERLY PREPARE SOIL BEFORE INSTALLING BLANKETS.
- ANCHOR BLANKETS IN A TRENCH AT THE TOP OF SLOPE USING A ROW OF STAPLES/STAKES.
- BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL.
- SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES ACROSS THE WIDTH OF THE BLANKET.
- ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE.
- OVERLAP PARALLEL BLANKETS.
- IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

HYDRAULICALLY APPLIED BLANKETS:

- HYDRAULICALLY APPLIED BLANKETS SHOULD NOT BE USED IN AREAS OF CONCENTRATED FLOW (E.G. CHANNELS).
- A BONDED FIBER MATRIX (BFM) CAN BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. BFMS MAKE USE OF A CROSS-LINKED HYDROGEL POLYMER TO BOND THERMALLY PROCESSED WOOD FIBERS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS. FOR SLOPES UP TO 3:1 THE BFM SHOULD BE APPLIED AT A RATE OF 3,000 LB/ACRE. STEEPER SLOPES MAY NEED AS MUCH AS 4,000 LB/ACRE. IN ANY CASE, MANUFACTURER'S RECOMMENDATIONS SHOULD BE FOLLOWED. BFMS SHOULD ONLY BE USED WHEN NO RAIN IS FORECAST FOR AT LEAST 48 HOURS FOLLOWING THE APPLICATION. THIS IS TO ALLOW THE BACKFILL SUFFICIENT TIME TO CURE PROPERLY. ONCE PROPERLY APPLIED, A BFM IS TYPICALLY 90% EFFECTIVE IN PREVENTING ACCELERATED EROSION. BONDED FIBER MATRIX SHOULD NOT BE APPLIED BETWEEN SEPTEMBER 30 AND APRIL 1. ONCE FIBER MATRICES THAT HAVE BEEN SHOWN TO BE EFFECTIVE IN PREVENTING EROSION ON DISTURBED SURFACES MAY BE USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS IF SUFFICIENT SUPPORTING DOCUMENTATION IS PROVIDED.
- A FLEXIBLE GROWTH MEDIUM (FGM) HAS THE ADDED COMPONENT OF 1/2 INCH LONG, CRUMPED ORGANIC OR MANURE FIBERS WHICH ADD A MECHANICAL BOND TO THE CHEMICAL BOND PROVIDED BY BFMS. THIS INCREASES THE BLANKET'S RESISTANCE TO BOTH HANNOFF IMPACT AND EROSION DUE TO RUNOFF. UNLIKE BFMS, A FLEXIBLE GROWTH MEDIUM TYPICALLY DOES NOT REQUIRE A CURING TIME TO BE EFFECTIVE. PROPERLY APPLIED, AN FGM MAY BE AS MUCH AS 90% EFFECTIVE.
- A POLYMER STABILIZED FIBER MATRIX (PSFM) CAN ALSO BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. PSFMS MAKE USE OF A LINEAR SOIL STABILIZING TACKIFIER TO BOND DIRECTLY ON SOIL TO MAINTAIN SOIL STRUCTURE, MAINTAIN PORE SPACE CAPACITY AND FLOCCULATE DISLODGED SEDIMENT THAT WILL SIGNIFICANTLY REDUCE RUNOFF TURBIDITY. PROPERLY APPLIED, A PSFM MAY BE AS MUCH AS 90% EFFECTIVE. PSFMS CAN BE USED IN RE-VEGETATION APPLICATIONS AND FOR SITE WINTERIZATION AND/OR DORMANT SEEDING - FALL PLANTING FOR SPRING GERMINATION - APPLICATIONS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS AND THE FOLLOWING APPLICATION RATES ARE SUGGESTED. IN ANY CASE, MANUFACTURER'S RECOMMENDATIONS SHOULD BE FOLLOWED. THE FOLLOWING ARE TYPICAL APPLICATION RATES:

TYPICAL POLYMER STABILIZED FIBER MATRIX APPLICATION RATES

SLOPE	MAXIMUM RAINFALL OF 5.20"					
	6:1	5:1	4:1	3:1	2:1	1.5:1
SOIL STABILIZER (cwt/acre)	4	5	6	7	8	10
FIBER (lb/acre)	1,500	1,500	1,500	1,800	2,000	2,500

MAXIMUM RAINFALL OF 2.20" AND FOR SITE WINTERIZATION

SLOPE	MAXIMUM RAINFALL OF 2.20"		
	5:1	4:1	3:1
SOIL STABILIZER (cwt/acre)	6	8	10
FIBER (lb/acre)	2,000	2,500	3,000

- UNLIKE ROLLED BLANKETS, THERE IS NO NEED TO SMOOTH THE SLOPE PRIOR TO APPLICATION OF HYDRAULICALLY APPLIED BLANKETS. IN FACT SOME ROUGHENING OF THE SURFACE, EITHER NATURAL OR MECHANICAL, IS PREFERRED. HOWEVER, LARGE ROCKS, TUSSES & BIRCHES, AND EXISTING RILLS SHOULD BE REMOVED PRIOR TO APPLICATION. TRACKING OR GROOVING OF SLOPES SHOULD BE CONSIDERED TO SLOW WATER FLOWS DURING A STORM EVENT. SLOPE INTERRUPTION DEVICES SUCH AS START STEP GRADING OR BONDING SHOULD BE APPLIED PRIOR TO THE APPLICATION. MIXING AND APPLICATION RATES SHOULD FOLLOW MANUFACTURER'S RECOMMENDATIONS.
- HYDRAULICALLY APPLIED BLANKETS ARE TYPICALLY APPLIED IN TWO STAGES, UNLESS SPECIFICALLY RECOMMENDED TO BE APPLIED IN ONE APPLICATION BY THE MANUFACTURER. THE SEED MIXTURE AND SOIL AMENDMENTS SHOULD BE APPLIED FIRST. IF THE SEED IS APPLIED AT THE SAME TIME AS THE HYDRAULICALLY APPLIED BLANKET, THE BONDED FIBERS MAY KEEP THE SEED FROM MAKING SUFFICIENT CONTACT WITH THE SOIL TO GERMINATE. AFTER THE SEED MIXTURE IS APPLIED, THE BFM, FGM, OR PSFM SHOULD BE SPRAYED OVER THE AREA AT THE REQUIRED APPLICATION RATE.

PUMPED WATER FILTERING DEVICE:

- THE CONTRACTOR SHALL INSPECT FILTER BAGS DAILY AND AFTER EACH STORM (RUNOFF) EVENT TO ENSURE THEY ARE WORKING PROPERLY.
- IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.
- ALL SEDIMENT REMOVED FROM THE FILTER BAGS SHALL BE TAKEN TO THE TOPSOIL STOCKPILE, SPREAD, SEEDED AND MULCHED.

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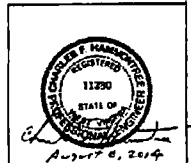
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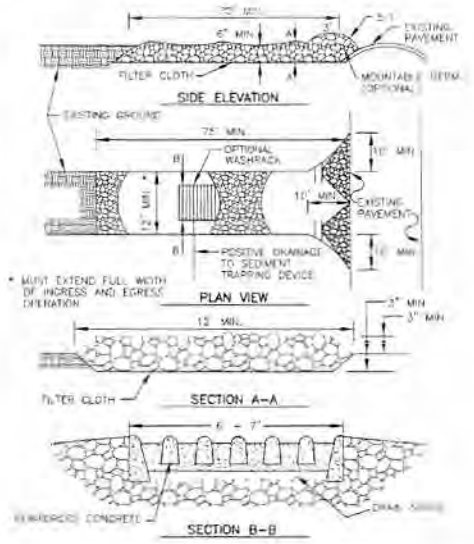
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EROSION & SEDIMENT CONTROL NOTES
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 HARRISON COUNTY, WEST VIRGINIA

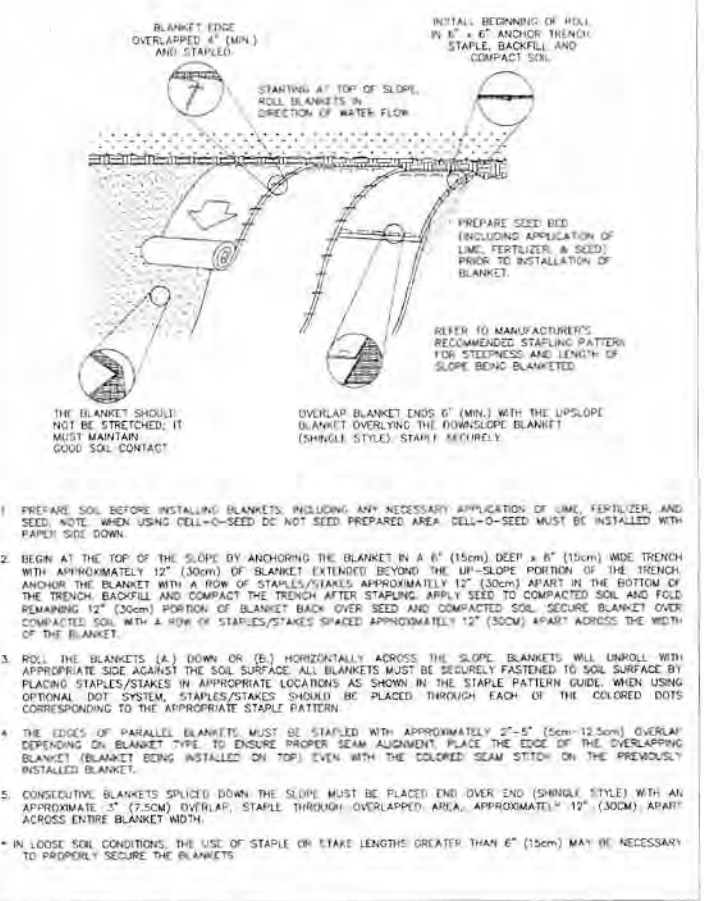
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**STANDARD CONSTRUCTION DETAIL
STONE CONSTRUCTION ENTRANCE**
NOT TO SCALE

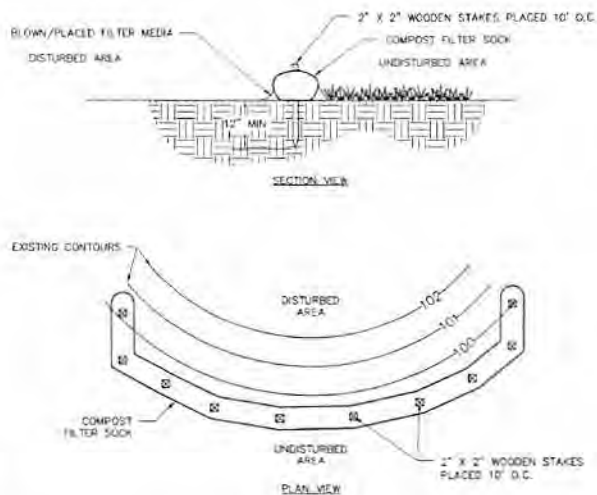


**STANDARD CONSTRUCTION DETAIL
EROSION CONTROL BLANKET**
NOT TO SCALE



1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
 2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP x 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDING BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
 3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
 4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5cm-12.5cm) OVERLAP DEPENDING ON BLANKET TYPE TO ENSURE PROPER SEAM ALIGNMENT. PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM SITTING ON THE PREVIOUSLY INSTALLED BLANKET.
 5. CONSECUTIVE BLANKETS SPACED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.
- * IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

**STANDARD CONSTRUCTION DETAIL
COMPOST FILTER SOCK**
NOT TO SCALE



- NOTES
1. ALL MATERIAL TO MEET DEP SPECIFICATIONS.
 2. FILTER SOCK/COMPOST/AGG./ROCK/SEED FILL TO MEET DEP REQUIREMENTS.
 3. FILTER SOCK DEPTH IS FOR MINIMUM SLOPES. GREATER SLOPES MAY REQUIRE LARGER ROCKS PER THE ENGINEER.
 4. COMPOST MATERIAL TO BE DISPersed ON SITE, AS DETERMINED BY ENGINEER.

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DESIGN	DATE	REVISION	DATE
DESIGNED BY		REV. BY	
DRAWN BY		REV. BY	
PROJECT NO.		REV. BY	
DATE	3/22/14	REV. BY	

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EROSION & SEDIMENT CONTROL DETAILS
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ROBINSON WYATT RUN #0 / CP 3
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Aug 18, 2014

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