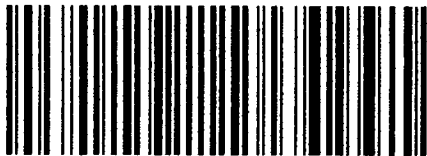
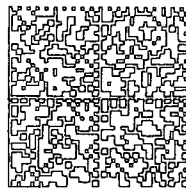


CERTIFIED MAIL®

Floodplain Manager
Doddridge County Office of Emergency Management
105 Court Street, Suite 3
West Union, WV 26456



7017 1450 0001 5871 8151



HASLER

\$006.59⁰⁰

11/22/2017 ZIP 26456
012E14643162

US POSTAGE

Betty M. Ryan
4153 Grove Summers Road
New Milton, WV 26411

1st 11-28-17

12-8
12-13

NIXIE 250 DE 1

0012/15/17

RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD

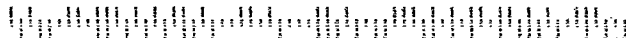
.. 9326010755517386

UNC

BC: 26456201205

*1771-01890-15-23

264562012



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

Betty M. Ryan
4153 Grove Summers Road
New Milton, WV 26411



9590 9402 3306 7196 1890 07

2. Article Number (Transfer from service label)

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

Agent

Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? Yes
If YES, enter delivery address below: No

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery (over \$500)
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

Doddridge County Office of
Emergency Management/Floodplain Management
105 Court Street, Suite 3
304-873-1343
doddridgecountyfpm@gmail.com



Dear Sir or Ma'am,

November 22, 2017

You are receiving this letter because you have been identified as a land surface and/or mineral rights owner for property or adjacent property related to the proposed development/project identified by the following page.

No action is required of you. This letter is simply to inform you of the proposed development.

If you would like to comment on this proposed project, or would like additional information, you may contact the Doddridge County Floodplain Manager at the above address.

Respectfully yours,

A handwritten signature in cursive script, appearing to read "George Eidel".

George Eidel, CFM, OEM Director/Floodplain Manager



Doddridge County Floodplain Permits

(Week of November 27, 2017)

Please take notice that on the **21st** day of **November, 2017**, **Blue Mountain Inc. on behalf of EQT Production** filed an application for a Floodplain Permit (**#17-496**) to develop land located at or about **Grove Summers Road, Coordinates 39.151225 N; -80.12471**. The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by **December 18, 2017** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Clerk of the County Court at 108 Court Street Ste. 1, West Union, WV 26456. **This project is for the Middle Fork Janscheck Withdrawal to OXF44 Temporary Water Line**

7017 1450 0001 5871 8120

U.S. Postal Service™ CERTIFIED MAIL® RECEIPT <i>Domestic Mail Only</i>	
<small>For delivery information, visit our website at www.usps.com®.</small>	
OFFICIAL USE	
Certified Mail Fee \$ 3.35	
Extra Services & Fees (check box, add fee as appropriate)	
<input type="checkbox"/> Return Receipt (hardcopy) \$ 2.75	
<input type="checkbox"/> Return Receipt (electronic) \$ _____	
<input type="checkbox"/> Certified Mail Restricted Delivery \$ _____ <input type="checkbox"/> Adult Signature Required \$ _____ <input type="checkbox"/> Adult Signature Restricted Delivery \$ _____	
Postage \$ 49	
Total Postage and Fees \$ 6.59	
Sent To Helen J. Jones Street and Apt. No., or PO Box No. 1463 Old Farm Rd. City, State, ZIP+4® Tyler, TX 75703 17-495	
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions	

7017 0660 0000 2275 7321

U.S. Postal Service™ CERTIFIED MAIL® RECEIPT <i>Domestic Mail Only</i>	
<small>For delivery information, visit our website at www.usps.com®.</small>	
OFFICIAL USE	
Certified Mail Fee \$ 3.35	
Extra Services & Fees (check box, add fee as appropriate)	
<input type="checkbox"/> Return Receipt (hardcopy) \$ 2.75	
<input type="checkbox"/> Return Receipt (electronic) \$ _____	
<input type="checkbox"/> Certified Mail Restricted Delivery \$ _____ <input type="checkbox"/> Adult Signature Required \$ _____ <input type="checkbox"/> Adult Signature Restricted Delivery \$ _____	
Postage \$ 49	
Total Postage and Fees \$ 6.59	
Sent To Robert C. & Arlene R. Bland Street and Apt. No., or PO Box No. 9101 W. Rt. 185 City, State, ZIP+4® West Union, WV 26456 17-495	
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions	

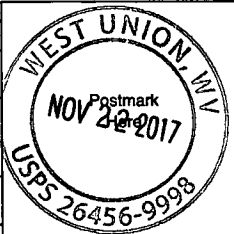
7017 0660 0000 2275 7324

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com

OFFICIAL USE

Certified Mail Fee	\$ 3.35
Extra Services & Fees (check box, add fee as appropriate)	
<input type="checkbox"/> Return Receipt (hardcopy)	\$ 2.75
<input type="checkbox"/> Return Receipt (electronic)	\$
<input type="checkbox"/> Certified Mail Restricted Delivery	\$
<input type="checkbox"/> Adult Signature Required	\$
<input type="checkbox"/> Adult Signature Restricted Delivery	\$
Postage	.49
Total Postage and Fees	\$ 6.59



Sent To George R. Gore
 Street and Apt. No. or PO Box No. 5116 Smithton Rd.
 City, State, ZIP+4® West Union, WV 26456 17-495

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

George R. Gore
5116 Smithton Road
West Union, WV 26456



9590 9402 3306 7196 1890 76

2. Article Number (Transfer from service label)

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

George R. Gore

Agent

Addressee

B. Received by (Printed Name)

C. Date of Delivery

11-30-17

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type

- | | |
|--|---|
| <input type="checkbox"/> Adult Signature | <input type="checkbox"/> Priority Mail Express® |
| <input type="checkbox"/> Adult Signature Restricted Delivery | <input type="checkbox"/> Registered Mail™ |
| <input type="checkbox"/> Certified Mail® | <input type="checkbox"/> Registered Mail Restricted Delivery |
| <input type="checkbox"/> Certified Mail Restricted Delivery | <input type="checkbox"/> Return Receipt for Merchandise |
| <input type="checkbox"/> Collect on Delivery | <input type="checkbox"/> Signature Confirmation™ |
| <input type="checkbox"/> Collect on Delivery Restricted Delivery | <input type="checkbox"/> Signature Confirmation Restricted Delivery |
| <input type="checkbox"/> Insured Mail | |
| <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500) | |

USPS TRACKING#



9590 9402 3306 7196 1890 76



First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

**United States
Postal Service**

• Sender: Please print your name, address, and ZIP+4® in this box•

**Doddridge County OEM/CFM
George Eidel
105 Court Street, Suite 3
West Union, WV 26456**

17-495

201205



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

C. & Arlene R. Bland (SURV) (LIFE)
4101 WV Rt. 18S
West Union, WV 26456



9590 9402 3306 7196 1890 52

2. Article Number (Transfer from service label)

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X *Arlene R. Bland*

Agent

Addressee

B. Received by (Printed Name)

Arlene Bland

C. Date of Delivery

11-28-17

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery (over \$500)

- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

USPS TRACKING#



First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

9590 9402 3306 7196 1890 52

**United States
Postal Service**

• Sender: Please print your name, address, and ZIP+4® in this box•

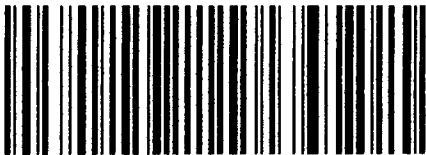
**Doddridge County OEM/CFM
George Eidel
105 Court Street, Suite 3
West Union, WV 26456**

17-495

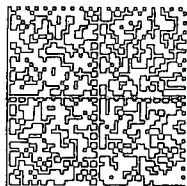


Floodplain Manager
Doddridge County Office of Emergency Management
105 Court Street, Suite 3
West Union, WV 26456

CERTIFIED MAIL



7017 1450 0001 5871 8144



HASLER

\$006.59⁰⁰

11/22/2017 ZIP 26456
012E14643162

US POSTAGE

11-28
12-1
12-12

Dana Roger Long, II
5674 Grove Summers Road
West Union, WV 26456

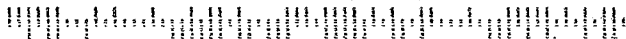
NIXIE 250 DE 1 0012/15/17

RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD

UNC

BC: 26456201205 *1771-01889-15-23

264562012



PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT
OF THE RETURN ADDRESS

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

Dana Roger Long, II
5674 Grove Summers Road
West Union, WV 26456



9590 9402 3306 7196 1890 14

2. Article Number (Transfer from service label)

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

- Agent
- Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery (over \$500)
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

Doddridge County Office of
Emergency Management/Floodplain Management
105 Court Street, Suite 3
304-873-1343
doddridgecountyfpm@gmail.com



Dear Sir or Ma'am,

November 22, 2017

You are receiving this letter because you have been identified as a land surface and/or mineral rights owner for property or adjacent property related to the proposed development/project identified by the following page.

No action is required of you. This letter is simply to inform you of the proposed development.

If you would like to comment on this proposed project, or would like additional information, you may contact the Doddridge County Floodplain Manager at the above address.

Respectfully yours,

A handwritten signature in black ink, appearing to read "George Eidel". The signature is fluid and cursive.

George Eidel, CFM, OEM Director/Floodplain Manager



Doddridge County Floodplain Permits

(Week of November 27, 2017)

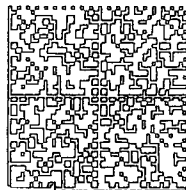
Please take notice that on the **21st** day of **November, 2017**, **Blue Mountain Inc. on behalf of EQT Production** filed an application for a Floodplain Permit **(#17-496)** to develop land located at or about **Grove Summers Road, Coordinates 39.151225 N; -80.12471**. The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by **December 18, 2017** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Clerk of the County Court at 108 Court Street Ste. 1, West Union, WV 26456. **This project is for the Middle Fork Janscheck Withdrawal to OXF44 Temporary Water Line**

CERTIFIED MAIL

Floodplain Manager
Doddridge County Office of Emergency Management
105 Court Street, Suite 3
West Union, WV 26456



7017 1450 0001 5871 8182



HASLER

\$006.59⁰

11/22/2017 ZIP 26456
012E14643162

US POSTAGE

Mary Jo Janscheck
5071 Grove Summers Road
West Union, WV 26456

NIXIE 250 DE 1 0012/24/17

11-2

RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD

.. 9320000239351550

UNC

BC: 26456201205 *1771-01325-24-31

26456>2012



PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT
OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

Mary Jo Janscheck
5071 Grove Summers Road
West Union, WV 26456



9590 9402 3306 7196 1889 70

2. Article Number (Transfer from service label)

COMPLETE THIS SECTION ON DELIVERY

A. Signature Agent
 Addressee
X

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
- | | |
|--|---|
| <input type="checkbox"/> Adult Signature | <input type="checkbox"/> Priority Mail Express® |
| <input type="checkbox"/> Adult Signature Restricted Delivery | <input type="checkbox"/> Registered Mail™ |
| <input type="checkbox"/> Certified Mail® | <input type="checkbox"/> Registered Mail Restricted Delivery |
| <input type="checkbox"/> Certified Mail Restricted Delivery | <input type="checkbox"/> Return Receipt for Merchandise |
| <input type="checkbox"/> Collect on Delivery | <input type="checkbox"/> Signature Confirmation™ |
| <input type="checkbox"/> Collect on Delivery Restricted Delivery | <input type="checkbox"/> Signature Confirmation Restricted Delivery |
| <input type="checkbox"/> Insured Mail | |
| <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500) | |

Doddridge County Office of
Emergency Management/Floodplain Management
105 Court Street, Suite 3
304-873-1343
doddridgecountyfpm@gmail.com



Dear Sir or Ma'am,

November 22, 2017

You are receiving this letter because you have been identified as a land surface and/or mineral rights owner for property or adjacent property related to the proposed development/project identified by the following page.

No action is required of you. This letter is simply to inform you of the proposed development.

If you would like to comment on this proposed project, or would like additional information, you may contact the Doddridge County Floodplain Manager at the above address.

Respectfully yours,

A handwritten signature in cursive script, appearing to read "George Eidel".

George Eidel, CFM, OEM Director/Floodplain Manager



Doddridge County Floodplain Permits

(Week of November 27, 2017)

Please take notice that on the **21st** day of **November, 2017**, **Blue Mountain Inc. on behalf of EQT Production** filed an application for a Floodplain Permit (**#17-496**) to develop land located at or about **Grove Summers Road, Coordinates 39.151225 N; -80.12471**. The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by **December 18, 2017** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Clerk of the County Court at 108 Court Street Ste. 1, West Union, WV 26456. **This project is for the Middle Fork Janscheck Withdrawal to OXF44 Temporary Water Line**



Floodplain Development Permit

Doddridge County, WV Floodplain Management

This permit gives approval for the development/ project listed that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV, pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance. This permit must be posted at the site of work as to be clearly visible, and must remain posted during entirety of development.

Permit: #17-495

Date Approved: December 18, 2017 **Expires: December 18, 2018**

Issued to: Antero Midstream, LLC

POC: Rachel McKinney

Company Address: 535 White Oaks Blvd. Bridgeport, WV 26330

Project Address: Sherwood to Smithburg

Firm: 54017C0140C

Lat/Long: 39.268408N, -80.734558W

Purpose of Development: Sherwood to Smithburg Pipeline Project

Issued by: George C. Eidel, CFM, OEM Director/Doddridge County FPM (or designee)

Date: December 18, 2017

For additional information regarding this permit, please contact
Doddridge County Floodplain Manager at 304.873.2631, or via email at
doddridgecountyfpm@gmail.com
118 East Court Street; West Union, WV 26456



ANTERO MIDSTREAM LLC
1615 WYNKOOP STREET
DENVER, COLORADO 80202

Vendor Name	Vendor No.	Date	Check Number	Check Total
DODDRIDGE COUNTY COMMISSION	43312	Nov-02-2017	108561	\$1,400.00

INV #	INV DATE	DESCRIPTION	AMOUNT	DISCOUNTS	NET AMOUNT
SR10272017	10/27/17	FLOODPLAIN PERMIT SHERWOOD TO SMITH	1,400.00	0.00	1,400.00

FP# 17-495

COPY

COPY

COPY

COPY

COPY

COPY

TOTAL INVOICES PAID ==> 1,400.00 0.00 1,400.00

DETACH AND RETAIN FOR TAX PURPOSES

THIS CHECK HAS A COLORED FACE ON WHITE STOCK AND AN ARTIFICIAL WATERMARK ON THE BACK.



ANTERO MIDSTREAM LLC
1615 WYNKOOP STREET
DENVER, COLORADO 80202

Wells Fargo
Denver, CO

Check No. 108561

11-24
412

800 - AP ACCT WELLS FARGO

Void After 90 Days

CHECK NUMBER	DATE	PAY EXACTLY
108561	Nov-02-2017	\$1,400.00

PAY EXACTLY \$1,400dols00cts
One Thousand Four Hundred Dollars and Zero Cents

COPY

TO THE ORDER OF

DODDRIDGE COUNTY COMMISSION
118 E COURT ST STE 1-
WEST UNION, WV 26456

COPY

COPY

[Signature]

Doddridge County, West Virginia

RECEIPT NO: 10029

DATE: 2017/11/27

FROM: BLUE MOUNTAIN

AMOUNT: \$ 500.00

FIVE HUNDRED DOLLARS AND 00 CENTS

FOR: #17-496 MF JANSHECK WDRL TO OXF44

00000019804 FP-BUILDING PERMITS

020-318

TOTAL: \$500.00

MICHAEL HEADLEY

SHERIFF & TREASURER

MEC

CLERK

Customer Copy

Blue Mountain, Inc.

19804

DODDRIDGE COUNTY COMMISSION

11/17/2017

MF JANSHECK WDRL TO OXF44

500.00

FP# 17-496

First Exchange Bank MF JANSHECK WDRL TO OXF44

500.00

FLOODPLAIN PERMIT #17-495

Antero/Sherwood to Smithburg Pipeline

7017 0660 0000 2275 7314

7017 1450 0001 5871 8120

7017 0660 0000 2275 7321

TASK	COMPLETE (DATE)	NOTES
CHECK RECEIVED	11/13/2017	
US ARMY CORP. ENGINEERS (USACE)	11/13/17	
US FISH & WILDLIFE SERVICES (USFWS)	11/13/17	
WV DEPT. NATURAL RESOURCES (WVDNR)	11/13/17	
WV DEPT. ENVIROMENTAL PROTECTION (WVDEP)		
STATE HISTORIC & PRESERVATION OFFICE (SHPO)	11/13/17	
OFFICE of LAND & STREAM (OLS)	11/13/17	
DATE OF COMMISSION READING	11/28/17	
DATE AVAILABLE TO BE GRANTED	12/18/2017	
PERMIT GRANTED		
COMPLETE		



Doddridge County Floodplain Permits

(Week of November 20, 2017)

Please take notice that on the 9th day of **November, 2017**, **Antero Resources** filed an application for a Floodplain Permit (**#17-495**) to develop land located at or about **2991 Rt 18 S. Coordinates 39.268408 N, -80.734558 W**. The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by **December 18, 2017** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Clerk of the County Court at 108 Court Street Ste. 1, West Union, WV 26456. **This project is the Sherwood to Smithburg Pipeline**

**Antero**
Midstream Partners LP
Antero Midstream, LLC
535 White Oaks Blvd
Bridgeport, WV 26330
Office 304.842.4100
Fax 304.842.4102

October 16, 2017

Doddridge County Commission
Attn: George Eidel, Doddridge County Floodplain Manager
118 East Court Street, Room 102
West Union, WV 26456

NOV 1 17 1:39PM

Mr. Eidel:

Antero Midstream LLC would like to submit a Doddridge County Floodplain permit application for our *Sherwood to Smithburg Pipeline* project. Our project is located in Doddridge County beginning at coordinates 39.275242N, 80.689575W, and continues to coordinates 39.275894N, 80.716342W. Per the FIRM Map #54017C0140C, this location is in the floodplain.

Attached you will find the following:

- Doddridge County Floodplain Permit Application
- No-Rise Certificate
- WV Flood Tool Map
- FIRM Maps
- Design Plans

If you have any questions please feel free to contact me at (304) 842-4008.

Thank you in advance for your consideration.

Sincerely,



Rachel McKinney
Environmental Specialist II
Antero Resources Corporation

Enclosures



Permit# 17-495
Project Name: Sherwood to Smithburg Pipeline
Permittees Name: Antero Midstream

NOV 1 17 1:39PM

Doddridge County, WV

Floodplain Development Permit Application

This document is to be used for projects that impact/potentially impact the FEMA--designated floodplain and/or floodway of Doddridge County, WV pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance.

SECTION 1: GENERAL PROVISIONS (APPLICANT TO READ AND SIGN)

1. No work may start until a permit is issued.
2. The permit may be revoked if any false statements are made herein.
3. If revoked, all work must cease until permit is re-issued.
4. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within six months of issuance.
6. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
7. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
8. I THE APPLICANT CERTIFY THAT ALL STATEMENTS HEREIN AND IN ATTACHMENTS TO THIS APPLICATION ARE, TO THE BEST OF MY KNOWLEDGE, TRUE AND ACCURATE.

APPLICANT'S SIGNATURE

Brian Warner

DATE

10-17-17

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Applicant Information:

Please provide all pertinent data.

Applicant Information		
Responsible Company Name: Antero Midstream LLC		
Corporate Mailing Address: 1615 Wynkoop Street		
City: Denver	State: CO	Zip: 80202
Corporate Point of Contact (POC):		
Corporate POC Title:		
Corporate POC Primary Phone:		
Corporate POC Primary Email:		
Corporate FEIN:	Corporate DUNS:	
Corporate Website: www.anteroresources.com		
Local Mailing Address: 535 White Oaks Blvd		
City: Bridgeport	State: WV	Zip: 26330
Local Project Manager (PM):		
Local PM Primary Phone:		
Local PM Secondary Phone:		
Local PM Primary Email:		
Person Filing Application: Rachel McKinney		
Applicant Title: Environmental Specialist II		
Applicant Primary Phone: (304) 842-4008		
Applicant Secondary Phone: (304) 641-2396		
Applicant Primary Email: rmckinney@anteroresources.com		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Proposed Development:

Please check all elements of the proposed project that apply.

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

<u>ACTIVITY</u>	<u>STRUCTURAL TYPE</u>
<input type="checkbox"/> New Structure	<input type="checkbox"/> Residential (1 – 4 Family)
<input type="checkbox"/> Addition	<input type="checkbox"/> Residential (more than 4 Family)
<input type="checkbox"/> Alteration	<input type="checkbox"/> Non-residential (floodproofing)
<input type="checkbox"/> Relocation	<input type="checkbox"/> Combined Use (res. & com.)
<input type="checkbox"/> Demolition	<input type="checkbox"/> Replacement
<input type="checkbox"/> Manufactured/Mobil Home	

B. OTHER DEVELOPMENT ACTIVITIES:

- Fill Mining Drilling Pipelining
- Grading
- Excavation (except for STRUCTURAL DEVELOPMENT checked above)
- Watercourse Alteration (including dredging and channel modification)
- Drainage Improvements (including culvert work)
- Road, Street, or Bridge Construction
- Subdivision (including new expansion)
- Individual Water or Sewer System
- Other (please specify)

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: 1 of 7

Site/Property Information:		
Legal Description: BUCKEYE 192.68 AC		
Physical Address/911 Address: ROUTE 50		
Decimal Latitude/Longitude: 39.275086, -80.683672		
DMS Latitude/Longitude: 39°16'30.31"N, 80°41'01.22"W		
District: 03	Map: 19	Parcel: 32
Land Book Description:		
Deed Book Reference: Deed Book 346, Page 457		
Tax Map Reference: 09 03 0019 0032 0000 0000		
Existing Buildings/Use of Property: Industrial O & G, Wooded		

Floodplain Location Data: (to be completed by Floodplain Manager or designee)			
Community:	Number:	Panel:	Suffix:
Location (Lat/Long):		Approximate Elevation:	
		Estimated BFE:	
Is the development in the floodway? <input type="checkbox"/> Yes <input type="checkbox"/> No		Is the development in the floodplain? <input type="checkbox"/> Yes <input type="checkbox"/> No Zone: _____	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: 2 of 7

Site/Property Information:		
Legal Description: BUCKEYE 178.48 AC		
Physical Address/911 Address: ROUTE 50		
Decimal Latitude/Longitude: 39.273689, -80.692561		
DMS Latitude/Longitude: 39°16'25.28"N, 80°41'33.22"W		
District: 03	Map: 19	Parcel: 31
Land Book Description:		
Deed Book Reference: Deed Book 304, Page 355		
Tax Map Reference: 09 03 0019 0031 0000 0000		
Existing Buildings/Use of Property: Storage Trailers, Wooded		

Floodplain Location Data: (to be completed by Floodplain Manager or designee)			
Community:	Number:	Panel:	Suffix:
Location (Lat/Long):		Approximate Elevation:	
		Estimated BFE:	
Is the development in the floodway?		Is the development in the floodplain?	
<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No Zone: _____	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: 3 of 7

Site/Property Information:		
Legal Description: MI CREEK 148 AC		
Physical Address/911 Address: ROUTE 16		
Decimal Latitude/Longitude: 39.278378, -80.717144		
DMS Latitude/Longitude: 39°16'42.16"N, 80°43'01.72"W		
District: 08	Map: 16	Parcel: 15.2
Land Book Description:		
Deed Book Reference: Deed Book 310, Page 243		
Tax Map Reference: 09 08 0016 0015 0002 0000		
Existing Buildings/Use of Property: Wooded		

Floodplain Location Data: (to be completed by Floodplain Manager or designee)			
Community:	Number:	Panel:	Suffix:
Location (Lat/Long):		Approximate Elevation:	
		Estimated BFE:	
Is the development in the floodway? <input type="checkbox"/> Yes <input type="checkbox"/> No		Is the development in the floodplain? <input type="checkbox"/> Yes <input type="checkbox"/> No Zone: _____	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: 4 of 7

Site/Property Information:		
Legal Description: MEATHOUSE FK 200 AC TWO TRS		
Physical Address/911 Address: OFF RT 18/5 DOUGLAS RUN		
Decimal Latitude/Longitude: 39.271889, -80.705672		
DMS Latitude/Longitude: 39°16'18.80"N, 80°42'20.42"W		
District: 06	Map: 2	Parcel: 2
Land Book Description:		
Deed Book Reference: Deed Book 282, Page 657		
Tax Map Reference: 09 06 0002 0002 0000 0000		
Existing Buildings/Use of Property: Wooded		

Floodplain Location Data: (to be completed by Floodplain Manager or designee)			
Community:	Number:	Panel:	Suffix:
Location (Lat/Long):		Approximate Elevation:	
		Estimated BFE:	
Is the development in the floodway? <input type="checkbox"/> Yes <input type="checkbox"/> No		Is the development in the floodplain? <input type="checkbox"/> Yes <input type="checkbox"/> No Zone: _____	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: 5 of 7

Site/Property Information:		
Legal Description: BUCKEYE 141.73 AC (CARNEGIE & G JACKSON)		
Physical Address/911 Address: RR1 MORGANSVILLE RT 50		
Decimal Latitude/Longitude: 39.278531, -80.706347		
DMS Latitude/Longitude: 39°16'42.71"N 80°42'22.85"W		
District: 08	Map: 17	Parcel: 3
Land Book Description:		
Deed Book Reference: DEED BOOK 278, PAGE 427		
Tax Map Reference: 09 08 0017 0003 0000 0000		
Existing Buildings/Use of Property: WOODED		

Floodplain Location Data: (to be completed by Floodplain Manager or designee)			
Community:	Number:	Panel:	Suffix:
Location (Lat/Long):		Approximate Elevation:	
		Estimated BFE:	
Is the development in the floodway? <input type="checkbox"/> Yes <input type="checkbox"/> No		Is the development in the floodplain? <input type="checkbox"/> Yes <input type="checkbox"/> No Zone: _____	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: 6 of 7

Site/Property Information:		
Legal Description: DOUGLAS CAMP 107 AC		
Physical Address/911 Address: OFF RT 18/5 DOUGLAS RUN		
Decimal Latitude/Longitude: 39.274533, -80.713789		
DMS Latitude/Longitude: 39°16'28.32"N, 80°42'49.64"W		
District: 06	Map: 2	Parcel: 1
Land Book Description:		
Deed Book Reference: DEED BOOK 214 PAGE 644		
Tax Map Reference: 09 06 0002 0001 0000 0000		
Existing Buildings/Use of Property: Wooded		

Floodplain Location Data: (to be completed by Floodplain Manager or designee)			
Community:	Number:	Panel:	Suffix:
Location (Lat/Long):		Approximate Elevation:	
		Estimated BFE:	
Is the development in the floodway? <input type="checkbox"/> Yes <input type="checkbox"/> No		Is the development in the floodplain? <input type="checkbox"/> Yes <input type="checkbox"/> No Zone: _____	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: 7 of 7

Site/Property Information:		
Legal Description: BUCKEYE 40.5 AC		
Physical Address/911 Address: OLD RT 50		
Decimal Latitude/Longitude: 39.275950, -80.699528		
DMS Latitude/Longitude: 39°16'33.42"N, 80°41'58.30"W		
District: 03	Map: 19	Parcel: 30
Land Book Description:		
Deed Book Reference: Deed Book 219, Page 49		
Tax Map Reference: 09 03 0019 0030 0000 0000		
Existing Buildings/Use of Property: Wooded, House, Outbuilding		

Floodplain Location Data: (to be completed by Floodplain Manager or designee)			
Community:	Number:	Panel:	Suffix:
Location (Lat/Long):		Approximate Elevation:	
		Estimated BFE:	
Is the development in the floodway? <input type="checkbox"/> Yes <input type="checkbox"/> No		Is the development in the floodplain? <input type="checkbox"/> Yes <input type="checkbox"/> No Zone: _____	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: 1, 2, & 3 of 7

Property Owner Data:		
Name of Primary Owner (PO): MARKWEST LIBERTY MIDSTREAM & RESOURCES LLC		
PO Address: 1515 ARAPAHOE ST, TOWER 1, SUITE 1		
City: DENVER	State: CO	Zip: 80202
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Surface Rights Owner Data:		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Mineral Rights Owner Data: (As Applicable)		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: <u> 4 </u> of <u> 7 </u>
--

Property Owner Data:		
Name of Primary Owner (PO): BLAND, ROBERT C. & ARLENE R. (SURV) (LIFE)		
PO Address: 4101 WV RT 18 S		
City: WEST UNION	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Surface Rights Owner Data:		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Mineral Rights Owner Data: (As Applicable)		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: <u> 5 </u> of <u> 7 </u>
--

Property Owner Data:		
Name of Primary Owner (PO): JONES, HELEN JANE CREDIT TRUST		
PO Address: 1463 OLD FARM RD		
City: TYLER	State: TX	Zip: 75703
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Surface Rights Owner Data:		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Mineral Rights Owner Data: (As Applicable)		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: <u> 6 </u> of <u> 7 </u>
--

Property Owner Data:		
Name of Primary Owner (PO): LAW, RONALD L		
PO Address: 472 TENT CHURCH RD		
City: COLLIERS	State: WV	Zip: 26035
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Surface Rights Owner Data:		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Mineral Rights Owner Data: (As Applicable)		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: <u> 7 </u> of <u> 7 </u>
--

Property Owner Data:		
Name of Primary Owner (PO): GORE, GEORGE R		
PO Address: 5116 SMITHTON RD		
City: WEST UNION	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Surface Rights Owner Data:		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Mineral Rights Owner Data: (As Applicable)		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

**Doddridge County Commercial/Industrial
Floodplain Development Permit Application**

Contractor Data:

Please provide all pertinent data for contractors and sub---contractors that may be participating in this project. Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: ___ of ___

Contractor/Sub-Contractor (C/SC) Information:		
C/SC Company Name:		
C/SC WV License Number:		
C/SC FEIN:	C/SC DUNS:	
Local C/SC Point of Contact (POC):		
Local C/SC POC Title:		
C/SC Mailing Address:		
City:	State:	Zip-Code:
Local C/SC Office Phone:		
Local C/SC POC Phone:		
Local C/SC POC E-Mail:		

Engineer Firm Information:		
Engineer Firm Name:		
Engineer WV License Number:		
Engineer Firm FEIN:	Engineer Firm DUNS:	
Engineer Firm Primary Point of Contact (POC):		
Engineer Firm Primary POC Title:		
Engineer Firm Mailing Address:		
City:	State:	Zip-Code:
Engineer Firm Office Phone:		
Engineer Firm Primary POC Phone:		
Engineer Firm Primary POC E-Mail:		

Adjacent and/or Affected Landowners Data

Please provide data for all adjacent and/or affected surface owners (both up and down stream) whose property may be impacted by proposed development as demonstrated by a floodplain study or survey. Use additional copies of this page as needed.

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): Carroll, Gail ET UX		
Physical Address: 28 Salem Long Run Road		
City: West Union	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): Bonnell, Michael E. ET AL		
Physical Address: 3825 WV RT 18 S		
City: West Union	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): D&M Powell, LLC.		
Physical Address: 304 Stuart St.		
City: West Union	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO):		
Physical Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Site Plan

A Site Plan is an accurate and detailed map of the proposed development for this project. It shows the size, shape, location and special features of the project property, and the size and location of any development planned to the property, especially as that development will impact the floodplain and/or floodway. Site plans show what currently exists on the project property, and any changes or improvements you are proposing to make. **A certified and licensed engineering firm should complete site plans.**

A SITE PLAN MUST CONTAIN THE FOLLOWING INFORMATION:

1. Legal description of the parcel, north arrow and scale
2. All property lines and their dimensions
3. Names of adjacent roads, location of driveways
4. Location of sloughs, tributaries, streams, rivers, wetlands, ponds, and lakes, with setbacks indicated, and including FEMA floodplain data based on most updated FIRM.
5. Location, size, shape of all buildings, existing and proposed, with elevation of lowest floor indicated.
6. Location and dimensions of existing or proposed on-site sewage systems.
7. Location of all propane tanks, fuel tanks or other liquid storage tanks whether above ground or below ground level.
8. Location and dimensions of any proposed pipeline placement(s) into floodplain/floodway.
9. Location and dimensions of any roadway development into floodplain/floodway. *(Includes initial development accessroads)*
10. Location and dimensions of any bridge and/or culvert development into floodplain/floodway.
11. Location and dimensions of any storage yard or facility into the floodplain/floodway.
12. Location of any existing utilities and/or proposed utility placement and/or displacement.
13. Location, dimensions and depth of any existing or proposed fill on site.
14. A survey showing the **existing ground elevations** of at least location on the building site. **ELEVATION NOTE:** All vertical datum will reference either NGVD 29 or NAVD 88. Assumed datum will not be acceptable unless the property is located in an area where vertical datum has not been published. For those areas where vertical datum has not been established, a site plan with contours, elevations using assumed datum, high water marks and existing water levels of sloughs, rivers, lakes or streams and proposed lowest floor elevation.

Applicant

Please read print name, sign and date below:

- I certify that I am authorized to submit this application for the primary project developer.
- I certify that the information included in this application is to the best of my knowledge true and complete.
- I certify that all required Federal, State, and local permits required by law and/or ordinance for the above described development of this project have been properly attained, are current and valid, and must be presented with this application before a Doddridge County Floodplain Permit may be issued.
- I understand that if in the course of the development project additional permits become required that were not needed during the initial proposal, the primary developer must notify the Doddridge County Floodplain Manager within 48 hours of such need, and that a "Stop Work" order may be issued for all project work directly impacting the floodplain or floodway, until such time the required additional permits are acquired.
- I understand that once the floodplain permit is submitted, the application will be entered into official public record at the next regularly scheduled Doddridge County Commission meeting after the date of submittal.
- I understand that from the date of submittal of the fully completed permit application, the Doddridge County Floodplain Manager has ninety (90) days to make a determination to either grant or deny said permit application. During this approval period, the Doddridge County Floodplain Manager may, at his or her discretion, conduct a review and/or additional study of provided documentation by means of an independent engineering firm. All costs associated with said review and/or study must be reimbursed to the County before issuance of approved permit.
- I understand that during the approval period, the Doddridge County Floodplain Manager or designee may at his or her discretion conduct site visits and document conditions of proposed development pursuant to the permit application.
- I understand that once the Floodplain Permit is granted, the permit will be entered into official public record at the next scheduled Doddridge County Commission meeting after the date of issuance. Appeals to the permit may be made no later than twenty (20) days after said issuance. If a valid appeal is submitted, as determined by the Doddridge County Floodplain Manager, a "Stop Work" order will be issued for all project development directly involving the floodplain or floodway. A public hearing by the Doddridge County Appeals Board will be scheduled no less than ten (10) days after the next regularly scheduled Doddridge County Commission meeting.
- I understand that all decisions of the Doddridge County Appeals Board shall be final.
- I understand issuance of a Floodplain Permit authorizes me to proceed with construction as proposed. A Certificate of Compliance is required upon substantial completion of the project.
- In signing this application, the primary developer hereby grants the Doddridge County Floodplain Manager or designee the right to enter onto the above--described location to inspect the development work proposed, in progress, and/or completed.
- I understand that if I do not follow exactly the site--plan submitted and approved by this permit that a "Stop Work" order may be issued by the Wirt County Floodplain Manager and that I must stop all construction immediately until discrepancies of actual work vs. proposed work is resolved.

Applicant Signature: _____

Date: 10-17-17

Applicant Printed Name: _____



October 11, 2017

Doddridge County Commission
Attn: George Eidel, Doddridge County Floodplain Manager
118 East Court Street, Room 102
West Union, WV 26456

Subject: Antero Midstream, LLC.
Sherwood to Smithburg Pipeline (AFE #A05924)
No-Rise Certificate
Doddridge County, West Virginia
CEC Project 174-514

Civil & Environmental Consultants, Inc. (CEC) is pleased to evaluate the potential floodplain impacts for the above referenced project on behalf of Antero Midstream, LLC., 535 White Oaks Blvd, Bridgeport, WV 26330. Antero Midstream, LLC. proposes to install a 30" High Pressure Steel Gas Line. A portion of the proposed project is located within the Buckeye Creek Zone A Flood Hazard area, according to the Flood Insurance Rate Map (FIRM) for Doddridge County, map panel 54017C0140C with a revised date of October 4, 2011. The proposed work that will take place in the floodplain includes the installation of permanent water bars and the installation of the pipeline. The material needed to construct the permanent water bars will be excavated from the up-gradient side of the berm. Therefore, a net loss of floodplain storage is not expected. All other disturbed areas will be returned to existing conditions at the conclusion of the work. As a result, the project will not result in a decrease of the available floodplain storage area and will not adversely affect the existing base flood elevation of Buckeye Creek.

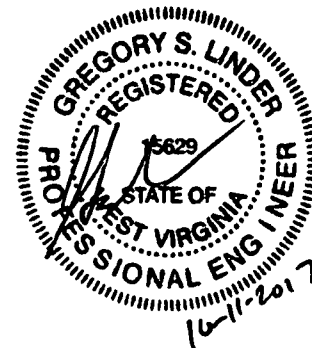
This no-rise certificate is provided in support of the floodplain development permit application. Your time and effort in reviewing this floodplain development permit application is appreciated. Please feel free to contact me at 304-933-3119 or via e-mail at glinder@cecinc.com or contact Mrs. Rachel McKinney at 304-842-4008 or via e-mail at rmckinney@anteroresources.com if you have questions or need additional information.

Respectfully submitted,

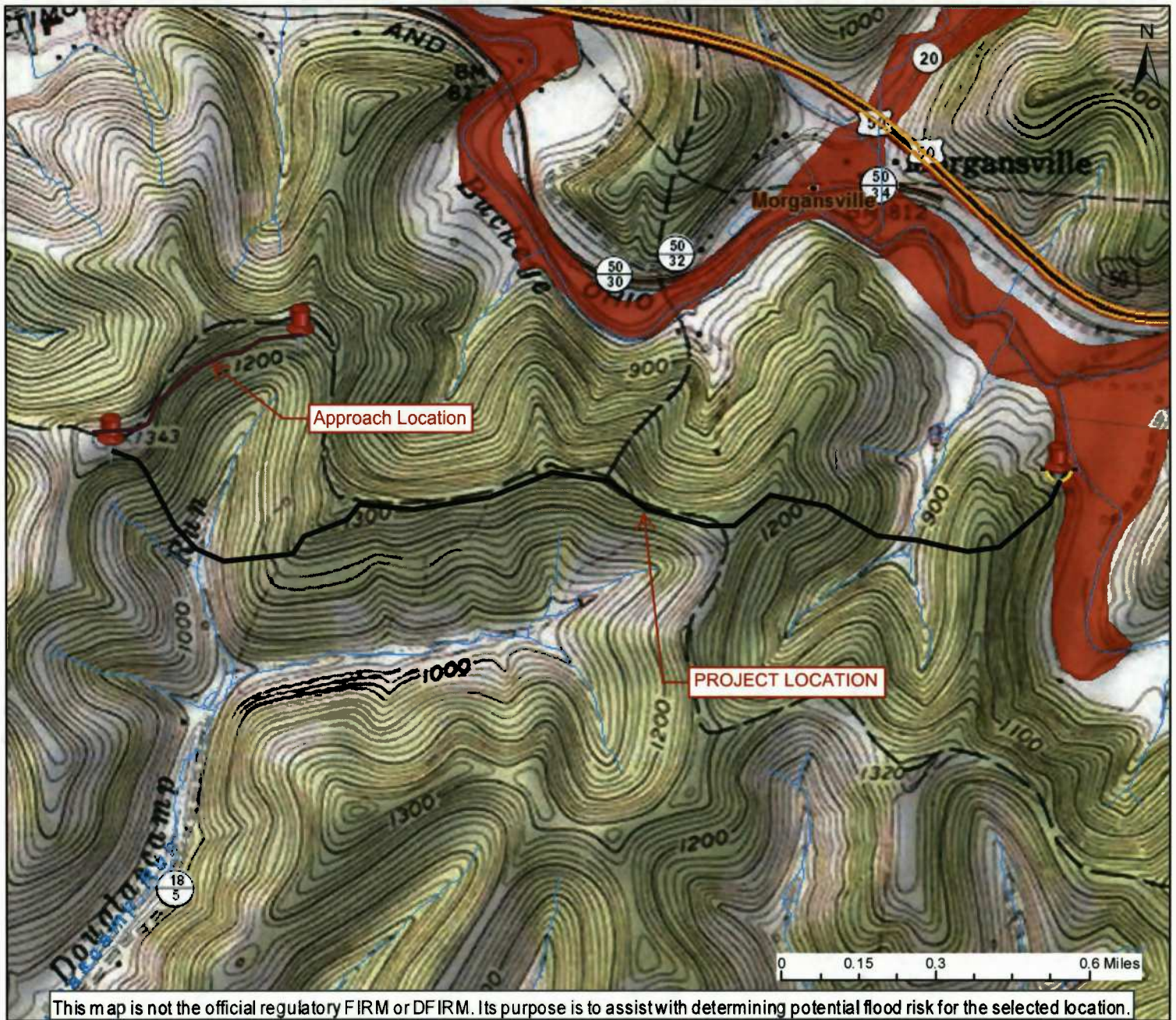
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Andrew P. Darnell, E.I.
Assistant Project Manager

Greg S. Linder, P.E.
Senior Project Manager



WV Flood Map



This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.

User Notes:
 Antero Midstream LLC
 AFE# A05924
 Sherwood to Smithburg Pipeline

Map created on October 11, 2017

Flood Hazard Area:
 Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.

FEMA Issued Flood Map: 54017C0140C

Watershed (HUC8): Little Musringum-Middle Island (5

Elevation: About 839 ft

Location (long, lat): (80.689576 W, 39.275241 N)

Location (UTM 17N): (526776, 4347366)

Contacts: Doddridge

CRS Information: N/A

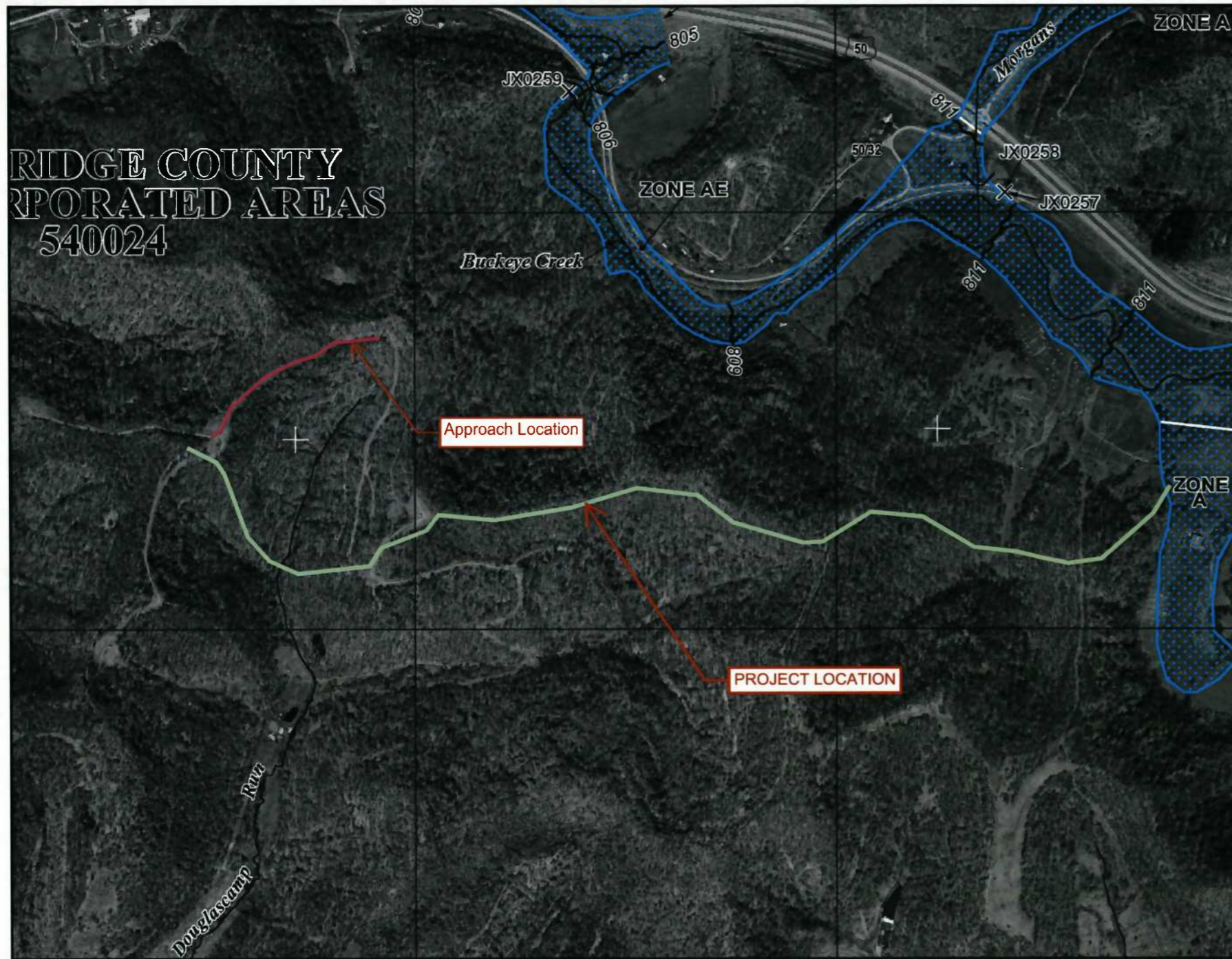
Parcel Number: 09-03-0019-0031-0000

- Flood Hazard Zone
- Flood Point of Interest

Disclaimer:

The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. To obtain more detailed information in areas where Base Flood Elevations have been determined, users are encouraged to consult the latest Flood Profile data contained in the official flood insurance study. These studies are available online at www.msc.fema.gov. WV Flood Tool (<http://www.MapWV.gov/flood>) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

RIDGE COUNTY
INCORPORATED AREAS
540024



National Flood Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 1000'

500 0 1000 2000

NFIP

PANEL 0140C

FIRM

FLOOD INSURANCE RATE MAP
DODDRIDGE COUNTY,
WEST VIRGINIA
AND INCORPORATED AREAS

PANEL 140 OF 325
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DODDRIDGE COUNTY	540024	0140	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
54017C0140C
MAP REVISED
OCTOBER 4, 2011

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

ANTERO MIDSTREAM LLC

ISSUED FOR PERMITTING PLANS FOR THE PROPOSED SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE

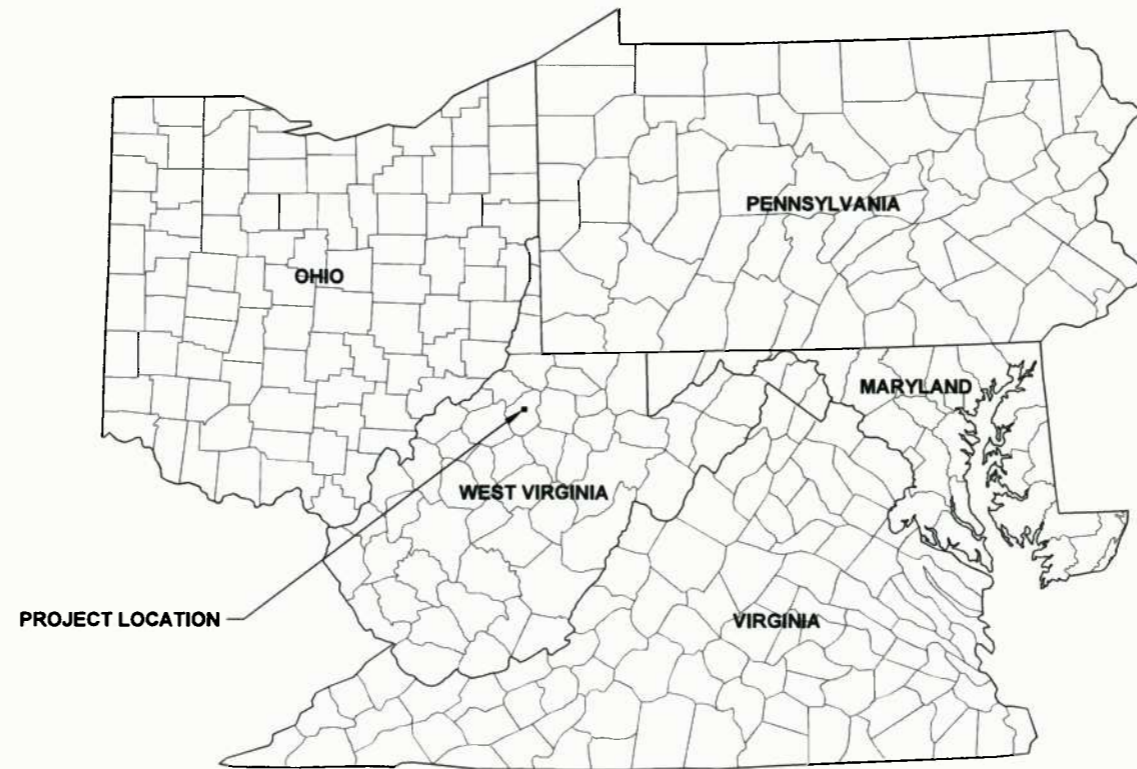
AFE #A05924 101-050-6323

DODDRIDGE COUNTY, WEST VIRGINIA JULY 2017

AERIAL MAP



VICINITY MAP
FULL SCALE: 1"=3,000'
HALF SCALE: 1"=6,000'



Know what's at stake
Call 811
BEFORE YOU DIG

Antero
Midstream Partners LP

PHONE: (303) 357-7310 | FAX: (303) 357-7315
1615 WYNKOOP STREET
DENVER, CO 80202

ENGINEER OF RECORD

THRASHER

PHONE: (304) 624-4108 | FAX: (304) 624-7831
600 WHITE OAKS BLVD., P.O. BOX 940
BRIDGEPORT, WV 26330

EXISTING INFORMATION SOURCES

BASE CONTOUR DATA PROVIDED BY THE WEST VIRGINIA OFFICE OF GIS AT TWO FOOT CONTOUR INTERVALS.

SUPPLEMENTAL SPOT ELEVATIONS AND ALIGNMENT PROVIDED BY:

THE THRASHER GROUP
600 WHITE OAKS BLVD., P.O. BOX 940
BRIDGEPORT, WV 26330

BENCHMARK:
HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, US SURVEY FOOT
VERTICAL - NAVD 88 (GEOID12B), US SURVEY FOOT

ROAD DESIGNATIONS OBTAINED FROM WV-DOH
(<http://www.transportation.wv.gov>)

PLAN REPRODUCTION WARNING

THESE PLANS ARE INTENDED TO BE PLOTTED ON ANSI D (22" X 34") SHEETS. FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
THESE PLANS HAVE BEEN CREATED FOR FULL COLOR PLOTTING. ANY SET OF THESE PLANS THAT IS NOT PLOTTED IN FULL COLOR SHALL NOT BE CONSIDERED ADEQUATE FOR CONSTRUCTION PURPOSES.
WARNING: INFORMATION MAY BE LOST IN COPYING AND/OR GRAY SCALE PLOTTING

THE INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF THE THRASHER GROUP INC. REPRODUCTION OF THESE DOCUMENTS IN WHOLE OR IN PART, FOR ANY REASON WITHOUT PRIOR WRITTEN PERMISSION, IS STRICTLY PROHIBITED.
COPYRIGHT © 2017 THE THRASHER GROUP INC.



Matthew W. Fluharty
MATTHEW W. FLUHARTY, WV P.E. # 16375

ISSUED FOR PERMITS DATE: 7/5/17 BY: *mf*
 ISSUED FOR CONSTRUCTION DATE: _____ BY: _____

LAYOUT FILE: COVER USER: robert.j.luczak PLOT DATE/TIME: 7/5/2017 2:51 PM CAD FILE: R:\090-8323-MC-HP-LOOP PHASE 3-ANTERO-Survey\PLANS\COVER SHEET.dwg

WVDOH GENERAL NOTES

- ALL CONSTRUCTION ON THE DIVISION OF HIGHWAYS RIGHT OF WAY WILL CONFORM TO THE FOLLOWING:
- THE FOLLOWING NOTES APPLY TO ALL PROJECT PLAN SHEETS:
- ALL METER SETTINGS ACROSS PAVED ROADS SHALL BE BORED OR MOLED, UNLESS OPEN CUT HAS BEEN APPROVED BY W.V.D.O.H. AND SPECIFICALLY INDICATED ON PLANS.
 - NOTIFICATION OF PROPOSED EXCAVATION, DEMOLITION OR ANY OTHER EARTH DISTURBING ACTIVITIES ARE REQUIRED TO BE PLACED TO MISS UTILITY OF WEST VIRGINIA (1-800-245-4848) NOT LESS THAN FORTY EIGHT (48) BUSINESS HOURS BEFORE ANY SUCH WORK IS TO BEGIN.
 - BEDDING SHALL BE PLACED ON ASPHALT SURFACE TO PROTECT THE PAVEMENT WHEN A TRENCHER OR TRACKED VEHICLE IS USED.
 - THE WEST VIRGINIA DIVISION OF HIGHWAYS PUBLICATIONS "STANDARD SPECIFICATIONS ROADS AND BRIDGES" AND "ACCOMMODATIONS OF UTILITIES ON HIGHWAY RIGHT OF WAY" LATEST EDITION ARE PART OF THE PROJECT SPECIFICATIONS AND WILL BE ADHERED TO BY THE CONTRACTOR.
 - ALL DAMAGE TO ROAD SURFACE SHALL BE REPAIRED ACCORDING TO THE WEST VIRGINIA DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS AND DETAILS.
 - ALL EXISTING DUMP ROCK OR RIP RAP DITCHES DISTURBED BY THE WATER LINE CONTRACTOR SHALL BE RESTORED WITH THE SAME SIZE, GRADE AND QUALITY OF ROCK AFTER THE WATER LINE HAS BEEN INSTALLED. NEW DUMP ROCK (RIP RAP) IS TO BE PLACED IN ALL LOCATIONS WHERE THE DITCH LINE GRADE IS GREATER THAN 5% AND THERE IS NO EXISTING RIP RAP.
 - TRAFFIC CONTROL SHALL CONFORM TO THE W.V.D.O.H. PUBLICATION "TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE" OPERATION LATEST EDITION.
 - ALL BACKFILL MATERIAL AND COMPACTION REQUIREMENT SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS IN THE ACCOMMODATION OF UTILITIES ON HIGHWAY RIGHT OF WAY AND ADJUSTMENT AND RELOCATION OF UTILITY FACILITIES ON HIGHWAY PROJECTS AND SUBJECT TO D.O.H. APPROVAL. EVIDENCE OF PROPER COMPACTION BY TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE TESTING SHALL BE ONE (1) PER DAY OR EVERY 500 LINEAL FEET OR AS DETERMINED BY THE DISTRICT MANAGER (ENGINEER) OR HIS AUTHORIZED REPRESENTATIVE.
 - WATER LINES OR OTHER LINES SHALL BE PLACED EITHER AROUND, UNDER OR OVER DRAINAGE CULVERTS AS SHOWN ON PLANS.
 - AGGREGATE SHOULDER STONE IS TO BE PLACED ON THE SHOULDER AT A THICKNESS EQUAL TO 6" OR ITS ORIGINAL THICKNESS WHICHEVER IS GREATER. PAVED SHOULDERS WILL BE PAVED.
 - MAGNETIC MARKING TAPE SHALL BE INSTALLED AT A DEPTH OF 12" TO 18" BELOW THE SURFACE AND DIRECTLY ABOVE ALL LINES OR PIPE.
 - REPAIR TO DRIVEWAYS ON W.V.D.O.H. RIGHT OF WAYS SHALL CONFORM TO THE APPROPRIATE W.V.D.O.H. TYPICAL REPAIR DETAIL.
 - CLEANUP WILL BE ACCOMPLISHED DAILY. RIGHT OF WAYS SHALL CONFORM TO THE APPROPRIATE W.V.D.O.H. REPAIR. ALL CULVERTS AND DRAINAGE DITCHES SHALL BE OPEN AND MAINTAINED DURING CONSTRUCTION. SHOULDERS WILL BE RESTORED AND STABILIZED WITH STONE DAILY WITH APPROPRIATE STONE AT THE DISCRETION OF W.V.D.O.H.
 - ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED WITHIN SEVEN DAYS OF COMPLETION OF BACK FILL OPERATION.
 - NO EXCESS EXCAVATION MATERIAL SHALL BE WASTED ON W.V.D.O.H. RIGHT OF WAYS WITHOUT THE AGREEMENT OF THE W.V.D.O.H.
 - THE W.V.D.O.H. RESERVES THE RIGHT TO RELOCATE WATERLINES, FIRE HYDRANTS, AND VALVES AS DEEMED NECESSARY.
 - THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING UTILITY COMPANIES, PRIOR TO CONSTRUCTION TO OBTAIN UTILITY LOCATIONS AND PERFORMING EXPLORATORY WORK TO DETERMINE SUBSURFACE MATERIALS AND STRUCTURES THAT MAY AFFECT ITS WORK.
 - PRIOR TO THE START OF ANY WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY, THE CONTRACTOR SHALL GIVE THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION 48 HOURS NOTICE.
 - THE CONTRACTOR IS RESPONSIBLE FOR ANY OFFSITE DISPOSAL REQUIRED. DISPOSAL SHALL BE TO AN ACCEPTABLE LEGAL SITE. CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL AT DISPOSAL SITES.
 - ALL ELEVATION GRADES AND DISTANCES SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE PRIOR TO CONSTRUCTION.
 - ALL CONSTRUCTION SHALL MAINTAIN 5' FROM EDGE OF PAVEMENT OR BOTTOM OF DITCH UNLESS NO OTHER PRACTICAL MEANS OF CONSTRUCTION EXISTS.
 - PERFORM ACCEPTABLE REPAIR OF ANY AND ALL SUB-BASE FAILURES THAT ARE CAUSED BY THE CONTRACTOR'S OPERATION ON A DAILY BASIS.
 - PERFORM TOTAL REPAIR AND/OR REPLACEMENT OF ANY DAMAGED ASPHALT SURFACE AS DETERMINED BY THE W.V.D.O.H REPRESENTATIVE.
 - PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL MAKE A COMPLETE VIDEO SHOWING THE ROAD SURFACE OF THE ENTIRE PROJECT OF ROADS TO BE UTILIZED IN THE CONSTRUCTION OF THE PROJECT AND PRESENT IT TO UTILITY SUPERVISOR W.V.D.O.H.
 - REMOVE DITCH-LINE OBSTACLES AND/OR RECONSTRUCTION OF THE DITCH-LINE.
 - IN THE CASE OF MANHOLES OR VALVES IF AT ALL POSSIBLE SHALL BE PLACED OUTSIDE THE ROADWAY, SHOULDER, OR DITCH LINE IF PLACED IN THE SHOULDER THERE IS TO BE A MINIMUM OF 6 INCHES OF COVER IN THE DITCH LINE THERE IS TO BE 12 INCHES OF COVER BETWEEN THE MANHOLE AND THE INVERT OF THE DITCH.
 - ANY MANHOLES OR VALVES OR VALVE BOXES PLACED IN THE ROADWAY WILL BE ON THE SAME PLANE AS THE ROADWAY AND SET FLUSH WITH ROADWAY.
 - ANY ROADS REQUIRING AN H.L.B.C. OVERLAY, FULL WIDTH OR PARTIAL, SHALL HAVE SHOULDER STONE FROM AN APPROVED SOURCE PLACED AS PER D.O.H. SPECIFICATIONS.
 - THE DEPARTMENT OF HIGHWAYS REQUIRES THERE BE NO WORK WITHIN THE DEPARTMENT'S RIGHT-OF-WAY DURING SNOW AND ICE REMOVAL. THERE MAY BE EXCEPTIONS FOR EMERGENCY AND CASE BY CASE SITUATIONS WITH NOTIFICATION TO THE DEPARTMENT.

UTILITY AGENCIES SERVING PROJECT AREA

MISS UTILITY
1-800-245-4848

WEST VIRGINIA DIVISION OF HIGHWAYS
WVDOH DIST #4
P.O. BOX 4220
CLARKSBURG, WV 26301-4220
(304) 842-1576
(304) 842-1507 FAX
DAVE SCHEARER - UTILITY SUPERVISOR - CROSSINGS
DENISE RONCONE - PERMIT SUPERVISOR - TEMP. ACCESSES

GAS
DOMINION TRANSMISSION INC.
1-888-264-8240

ANTERO RESOURCES CORPORATION
1-303-357-7310

ENERGY CORPORATION OF AMERICA (ECA)
1-304-925-6100
(RICK JETT) 1-304-678-7446

KEY OIL COMPANY
1-304-269-7102
(GREG KELLY) 1-304-588-7610

RITCHIE PETROLEUM
1-304-659-2123
(JUSTIN SMITH) 1-304-266-6332

ALLIANCE PETROLEUM CORPORATION (APC)
1-330-493-0440
(GENE DILLON) 1-304-629-9120

POWER
MON POWER
1-800-686-0022

CABLE
AT&T
1-304-216-4100

SEWER
NO PUBLIC SEWER IN PROJECT AREA

WATER
NO PUBLIC WATER IN PROJECT AREA

TELEPHONE
VERIZON TELECOMMUNICATIONS
1-800-275-2355

RESPONSE TEAMS:
NATIONAL RESPONSE CENTER FOR REPORTING CHEMICAL OR OIL SPILLS
1-800-424-8802

STATE EMERGENCY SPILL NOTIFICATION
1-800-642-3074

EMERGENCY AMBULANCE, FIRE, LAW ENFORCEMENT
911

DRAWING INDEX

01	COVER	COVER SHEET
02	GNOTS	GENERAL NOTES SHEET
03	SPECS	GENERAL CONSTRUCTION SPECS SHEET
04	INDEX	INDEX SHEET
05-08	PLAN1-PLAN4	PROPOSED ALIGNMENT PLAN AND PROFILE SHEETS
09-10	AR1-AR2	ACCESS ROAD SHEETS
11	HTP	HYDROSTATIC TEST PROFILE SHEET
12	S&WC1	STREAM & WETLAND CROSSING SHEET
13-22	ESCP1-ESCP10	ESCP DETAIL SHEETS

GENERAL NOTES

- EXISTING UTILITIES SHOWN ON PLANS WHERE EVIDENCE HAS BEEN FOUND OR PROVIDED BY LOCAL UTILITIES. EXACT DEPTH AND LOCATION OF UTILITY LINES NOT KNOWN. CONTRACTOR TO VERIFY UTILITY LOCATIONS PRIOR TO CROSSING BY CONTACTING MISS UTILITY AT 1-800-245-4848 AND LOCAL UTILITY COMPANIES AS LISTED AND/OR NOT LISTED ON THIS SHEET. CONTRACTOR TO LOCATE WATER AND UTILITY SERVICES BEFORE BORING AND JACKING.
- IN THE EVENT AN ERROR WITH THE PLANS SEEMS APPARENT, THE MATTER MUST BE TAKEN UP WITH THE ENGINEER FOR REVIEW BEFORE PROCEEDING WITH CONSTRUCTION.
- ALL PERMITS MUST BE SECURED PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL COORDINATE ALL STREAM CROSSING INSTALLATIONS PROPOSED SO NOT TO DELAY THE CONSTRUCTION PROCESS. STREAM CROSSINGS ARE TO BE CONSTRUCTED USING AN OPEN CUT CROSSING METHOD UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- ALL WVDOH ROAD CROSSINGS TO BE CONSTRUCTED USING AN OPEN CUT CROSSING METHOD UNLESS OTHERWISE SPECIFIED ON THE PLANS. WVDOH TO BE NOTIFIED AT LEAST 48 HOURS PRIOR TO ANY WORK WITHIN WVDOH R/W.
- ALL CONSTRUCTION TO BE DONE IN THE PROPOSED PIPELINE LIMITS OF DISTURBANCE AS SHOWN.
- ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE STANDARDS AND SPECIFICATIONS PROVIDED IN A SEPARATE BOUND VOLUME.
- CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE TYPES AND O.D. PRIOR TO CONNECTION.
- PROPERTY LINES SHOWN ON PLANS WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.

EROSION & SEDIMENT CONTROL NOTES

- ALL EROSION AND SEDIMENT MEASURES TO BE IN ACCORDANCE WITH WEST VIRGINIA ONLINE BMP MANUAL FOR STANDARD GUIDELINES AND SPECIFICATIONS AVAILABLE AT:
[HTTPS://APPS.DEP.WV.GOV/DWWM/STORMWATER/BMP/INDEX.HTML](https://apps.dep.wv.gov/DWWM/STORMWATER/BMP/INDEX.HTML)
- EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN SHOWN ON PLANS AND DETAILED IN SPECIFICATIONS.
- EXPOSED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM THE EROSION FORCES OF RAINDROPS, FLOWING WATER, AND WIND.
- CLEARING AND GRUBBING IS TO OCCUR IN THE NOTED LIMITS OF DISTURBANCE (L.O.D.) ONLY.
- ALL GRADED AREAS THAT ARE AT FINAL GRADE MUST BE SEEDED AND MULCHED WITHIN 7 DAYS AND AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN 7 DAYS.
- AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70% WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RE-SEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.
- TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL BMPs SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND REPAIR SHALL BE CONDUCTED IN ACCORDANCE WITH BMPs.
- EROSION AND SEDIMENT CONTROL BMPs SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES PER 24 HOUR PERIOD. ANY NECESSARY OR REQUIRED REPAIRS SHOULD BE MADE IMMEDIATELY.

CONSTRUCTION SEQUENCE OF EVENTS

- CALL MISS UTILITY (1-800-245-4848)
- INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES.
- CONSTRUCTION OF PIPELINE WITH RESTORATIONS.
- TESTING OF PIPELINE AND APPURTENANCES.
- PROJECT CLOSE-OUT, PUNCH LIST, CLEAN UP, REPAIRS, FINAL SEEDING AND MULCHING, ETC...

LEGEND / ABBREVIATIONS

- = EXISTING PIPELINE VENT
 - = EXISTING WELL (AS NOTED)
 - = EXISTING GAS METER
 - = EXISTING RECTIFIERS
 - = EXISTING PIPELINE MARKER
 - = EXISTING GAS VALVE
 - = EXISTING MONUMENT FOUND (AS NOTED)
 - = EXISTING UTILITY POLE
 - = EXISTING PIPELINE
 - = EXISTING WATER LINE
 - = EXISTING FENCE
 - = EXISTING OVERHEAD UTILITY
 - = EXISTING UNDERGROUND UTILITY
 - = PROPERTY LINE
 - = DOH RIGHT-OF-WAY LINE
 - = PROPOSED PERMANENT RIGHT-OF-WAY
 - = PROPOSED CONSTRUCTION RIGHT-OF-WAY
 - = COMPRESSOR LIMITS-OF-DISTURBANCE
 - = PROPOSED ANTERO BASELINE
 - = PROPOSED ANTERO GAS LINE
 - = PROPOSED ANTERO WATER LINE
 - = EXISTING GROUND PROFILE
 - = PROPOSED PIPELINE PROFILE
 - = CONTOUR
 - = PROJECT AREA-OF-INTEREST
 - = PROPOSED ORANGE SAFETY FENCE
 - = PROPOSED SILT SAVER BSRF-P1
 - = PROPOSED SILT SAVER BSRF-P2
 - = PROPOSED COMPOST FILTER SOCK
 - = PROPOSED PERMANENT WATER BAR (PLAN)
 - = DELINEATED STREAMS
 - = DELINEATED STREAMS (PROPOSED PERMANENT FILL)
 - = DELINEATED WETLANDS
 - = DELINEATED WETLANDS (PROPOSED PERMANENT FILL)
 - = DELINEATED GROUNDWATER SEEP/SPRING
 - = USFWS PROTECTIVE AQUATIC BUFFER
 - = ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
 - = ADDITIONAL TEMPORARY WORKSPACE
 - = STONE CONSTRUCTION ENTRANCE
 - = TEMPORARY TIMBERMAT CROSSING
 - = PROPOSED ACCESS ROAD
 - = PIPELINE MILE POST
 - = PROPOSED PERMANENT WATER BAR (PROFILE)
 - = PROPOSED EARTH TRENCH BREAKER (PROFILE)
 - = PROPOSED TRENCH PLUG DRAIN (PROFILE)
 - = PROPOSED GAS LINE MARKER
 - = PROPOSED TEST STATION
 - = PROPOSED ANODE
 - = PROPOSED RECTIFIER
 - = PROPOSED INSULATION KIT
 - = PROPOSED AC COUPON
 - = PARCEL IDENTIFICATION 43-3-4-31.1
 - = WEST END CONNECTOR PIPELINE WEC PL
- *LEGEND IS TYPICAL. NOT ALL ITEMS IN LEGEND APPEAR IN DRAWING

PROPOSED CONSTRUCTION RIGHT-OF-WAY

- CONSTRUCTION R/W LIMITS-OF-DISTURBANCE
- C.L. PROPOSED CORRIDOR
- CONSTRUCTION R/W LIMITS-OF-DISTURBANCE

USER: robert.j.luczo PLOT DATE/TIME: 7/5/2017 1:50 PM LAYOUT FAS: GNOTS CAD FILE: R:\050-6323-WEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\GENERAL NOTES SHEETS.dwg

	<p>ISSUED FOR PERMITTING</p> <p>DATE: 07/05/2017</p> <p>AFE # A05924</p>	<p>SUMMARY OF MATERIALS (3D)</p> <table border="1"> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>QTY</th> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> <tr> <td>1</td> <td>30" STEEL API 5L PSL-2, X-70, 0.625" WALL, FBE COATED PIPE</td> <td>9,098 LF</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>30" STEEL API 5L PSL-2, X-70, 0.625" WALL, ARO COATED PIPE</td> <td>80 LF</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>RECP</td> <td>ROLLED EROSION CONTROL PRODUCT</td> <td>1,312,812 SF</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SS1</td> <td>SILT SAVER BSRF-P1</td> <td>2,300 LF</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SS2</td> <td>SILT SAVER BSRF-P2</td> <td>12,308 LF</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>TB</td> <td>EARTH TRENCH BREAKERS</td> <td>85</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>WB</td> <td>PERMANENT WATERBARS</td> <td>55</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>GM</td> <td>GAS LINE MARKERS</td> <td>33</td> <td>1</td> <td>REVISED PER COMMENTS FROM ANTERO</td> <td>06/30/17</td> <td>JDU</td> </tr> <tr> <td>TS</td> <td>TEST STATIONS</td> <td>9</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	NO.	DESCRIPTION	QTY	NO.	DESCRIPTION	DATE	BY	1	30" STEEL API 5L PSL-2, X-70, 0.625" WALL, FBE COATED PIPE	9,098 LF					2	30" STEEL API 5L PSL-2, X-70, 0.625" WALL, ARO COATED PIPE	80 LF					RECP	ROLLED EROSION CONTROL PRODUCT	1,312,812 SF					SS1	SILT SAVER BSRF-P1	2,300 LF					SS2	SILT SAVER BSRF-P2	12,308 LF					TB	EARTH TRENCH BREAKERS	85					WB	PERMANENT WATERBARS	55					GM	GAS LINE MARKERS	33	1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JDU	TS	TEST STATIONS	9					<p>SUMMARY OF MATERIALS (3D)</p> <table border="1"> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>QTY</th> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	NO.	DESCRIPTION	QTY	NO.	DESCRIPTION	DATE	BY								<p>GENERAL INFORMATION</p> <ol style="list-style-type: none"> FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE. 	<p>SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE GENERAL NOTES</p> <p>PROPOSED 30" HIGH PRESSURE STEEL GAS LINE DODDRIDGE COUNTY, WEST VIRGINIA</p> <p>DATE: 7/5/2017 AFE No.: A05924</p> <p>SCALE: AS SHOWN</p> <p>DRAWN BY: JDU, JFL (TTO)</p> <p>CHECKED: AR, JSH (TTO)</p> <p>SHEET 02</p> <p>SHT. NAME: 050-6323\RESIDUE\GNOTS REV. 1</p>
		NO.	DESCRIPTION	QTY	NO.	DESCRIPTION	DATE	BY																																																																																	
1	30" STEEL API 5L PSL-2, X-70, 0.625" WALL, FBE COATED PIPE	9,098 LF																																																																																							
2	30" STEEL API 5L PSL-2, X-70, 0.625" WALL, ARO COATED PIPE	80 LF																																																																																							
RECP	ROLLED EROSION CONTROL PRODUCT	1,312,812 SF																																																																																							
SS1	SILT SAVER BSRF-P1	2,300 LF																																																																																							
SS2	SILT SAVER BSRF-P2	12,308 LF																																																																																							
TB	EARTH TRENCH BREAKERS	85																																																																																							
WB	PERMANENT WATERBARS	55																																																																																							
GM	GAS LINE MARKERS	33	1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JDU																																																																																			
TS	TEST STATIONS	9																																																																																							
NO.	DESCRIPTION	QTY	NO.	DESCRIPTION	DATE	BY																																																																																			

GENERAL CONSTRUCTION SPECIFICATIONS

1. GRADING

THE CONTRACTOR SHALL GRADE AS NECESSARY TO MITIGATE THE NECESSITY OF ABRUPT OVER-BENDS OR SAG-BENDS. CONTRACTOR SHALL MINIMIZE THE GRADING WHERE PRACTICAL TO PREVENT UNNECESSARY DISTURBANCE AND MINIMIZE WORK REQUIRED TO RETURN THE RIGHT-OF-WAY TO ITS ORIGINAL ELEVATIONS, SLOPES, AND PROFILE AS CLOSELY AS PRACTICAL, BUT CONSISTENT WITH MINIMIZING ABRUPT OVER-BENDS AND SAG-BENDS. GRADED SUBSOIL MATERIALS SHALL BE STOCK PILED SO IT CAN BE RETURNED TO ITS ORIGINAL DEPTH AND LOCATION AS OPPOSED TO SPREAD ALONG THE RIGHT-OF-WAY. THE CONTRACTOR SHALL GRUB, OR OTHERWISE REMOVE AND DISPOSED OF ALL STUMPS, ROOTS AND DEBRIS FOUND TO BE IN THE WAY OF CONSTRUCTION WITH PERMANENT RIGHT-OF-WAY LIMITS. WHEN THE CONTRACTOR IS CUTTING GRADE ALONG OR ACROSS EXISTING PIPELINES, SPOIL OR MATS SHALL BE PLACED OVER THE EXISTING LINES PER THE REQUIREMENTS OF THE OPERATING COMPANY OF THE FOREIGN PIPELINE.

2. COMPANY FOREIGN LINE AND UTILITY CROSSINGS

CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL SUCH CROSSINGS AND NOTIFY THE OWNER PRIOR TO ANY DITCHING ACTIVITY IN THE VICINITY OF THE CROSSINGS. A MINIMUM CLEARANCE OF 12 in., OR AS REQUIRED BY THE OWNER/OPERATOR, SHALL BE MAINTAINED FROM THE FOREIGN CROSSING. THE CONTRACTOR SHALL MAKE ALL REQUIRED "ONE-CALL" NOTIFICATIONS, AND KEEP DOCUMENTATION OF NOTIFICATIONS. THE CONTRACTOR SHALL KEEP THE MARKINGS FRESH AS NECESSARY DURING THE LENGTH OF THE CONSTRUCTION ACTIVITIES, MAKING NECESSARY RE-NOTIFICATIONS AS REQUIRED. COMPANY WILL LOCATE AND MARK LOCATIONS OF KNOWN COMPANY-OWNED FACILITIES WITHIN EXISTING OPERATING LOCATIONS.

IN AREAS WHERE UNDERGROUND FACILITIES, SUCH AS PIPELINES, ELECTRICAL LINES, FIBER OPTIC CABLES, ETC. EXISTING, EXCAVATION BY MACHINE SHALL BE LIMITED TO NO CLOSER THAN 2 FEET (IN ANY DIRECTION) TO THE FACILITY. THE FACILITY SHALL THEN BE EXPOSED AND POSITIVELY LOCATED BY HAND EXCAVATION. AFTER THE FACILITY IS EXPOSED, AND ONLY WHILE A COMPANY REPRESENTATIVE IS ON-SITE, EXCAVATION BY MACHINE IS PERMITTED TO WITHIN 1 FOOT (IN ANY DIRECTION) OF THE FACILITY. THE REMAINING EXCAVATION MUST BE HAND DUG.

3. DITCH SPECIFICATIONS

DITCH WIDTH AND DEPTH - UNLESS OTHERWISE STATED ON THE DRAWINGS OR RIGHT-OF-WAY LINE LIST, THE DITCH SHALL BE A MINIMUM OF 12 in. WIDER THAN THE PIPE BEING LAID FOR PIPE DIAMETERS LESS THAN 12 in. AND A MINIMUM OF 18 in. WIDER FOR PIPE DIAMETERS 12 in. AND GREATER AND OF SUCH DEPTH THAT THE PIPE SHALL HAVE 36 in. MINIMUM COVER IN SOIL AND 24 in. IN CONSOLIDATED ROCK, MEASURED FROM THE TOP OF THE PIPE TO THE AVERAGE LEVEL OF THE ORIGINAL OR RESTORED GROUND ON THE TWO SIDES OF THE DITCH, WHICHEVER IS LOWER.

CONSOLIDATED ROCK - CONSOLIDATED ROCK IS DEFINED AS ROCK LAYERS WHERE THE UPPERMOST SURFACE EXISTS AT A HIGHER ELEVATION THAN THE ELEVATION OF THE TOP OF THE PIPE. THIS CONDITION PROVIDES PROTECTION AGAINST DAMAGE FROM EXTERNAL FORCES AND JUSTIFIES COVER.

DITCH GRADING - THE BOTTOM OF THE DITCH SHALL BE CUT TO A UNIFORM GRADE SO THAT THE FULL WIDTH OF THE DITCH SHALL BE AVAILABLE FOR PROVIDING SLACK IN THE LINE WHEN LAID.

BEND EXCAVATIONS - AT OVER-BENDS AND SIDE-BENDS, THE CONTRACTOR SHALL EXCAVATE THE DITCH TO ALLOW PROPER CLEARANCE BETWEEN THE INSIDE BEND OF THE PIPE AND THE BOTTOM OR SIDE OF THE DITCH TO MAINTAIN THE MINIMUM COVER.

ROCK - IN ALL CASES WHERE ROCK, OR ANY BOULDER LARGER THAN TWO in. IN DIAMETER IS ENCOUNTERED IN THE BOTTOM OF THE DITCH, THE DITCH SHALL BE EVENLY PADDED WITH SOIL, SAND OR OTHER PADDING MATERIAL IN ORDER TO PREVENT THE ROCK OR BOULDERS FROM COMING INTO CONTACT WITH THE PIPE COATING.

4. SPOIL BANK

THE SPOIL BANK FROM THE DITCHING OPERATIONS SHALL NOT BE PLACED ON ANY LOOSE DEBRIS OR FOREIGN MATTER WHICH MIGHT BECOME MIXED DURING PADDING AND BACKFILLING OPERATIONS. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN GAPS OR OPENINGS IN THE SPOIL BANK ACROSS CULTIVATED FIELDS, SO THAT EXCESSIVE RAINS DO NOT CAUSE WATER TO BACK UP AND FLOOD CULTIVATED SECTIONS. EXTREME CARE SHALL BE EXERCISED TO KEEP ALL DRAIN DITCHES AND WATER COURSES OPEN AND USEFUL.

5. TEMPORARY BRIDGES

WHEN THE DITCH IS EXCAVATED THROUGH LANDS WHERE LIVESTOCK/WILDLIFE IS CONFINED OR THROUGH AGRICULTURAL FIELDS WHERE THE COMPANY DETERMINES IT IS DESIRABLE FOR THE LANDOWNER OR TENANT TO HAVE A PASSAGEWAY ACROSS THE DITCH, THE CONTRACTOR SHALL PLUG THE DITCH OR PROVIDE SAFE, TEMPORARY BRIDGES FOR CROSSING THE DITCH AND LEAVE AN OPENING IN THE SPOIL BANK.

6. EXCAVATING NEAR IN-SERVICE PIPELINES

WHEN DITCHING PARALLEL TO AN EXISTING PIPELINE IN THE SAME RIGHTS-OF-WAY, NEAR THE EXISTING LINE AND DEEPER THAN THE EXISTING LINE, CARE SHOULD BE TAKEN TO LEAVE SUFFICIENT DISTANCE AND SUPPORT TO ENSURE SAID LINE DOES NOT SLOUGH OFF INTO NEW EXCAVATION. IF PARALLEL LINE IS A COUPLED HIGH PRESSURE LINE, IT IS NOT PERMITTED TO EXPOSE MORE THAN ONE COUPLING AT A TIME. IN ALL INSTANCES, THE WORK SHOULD BE PLANNED SUCH THAT THE EXCAVATION IS OPEN A MINIMUM AMOUNT OF TIME.

7. HAULING AND STRINGING

THE CONTRACTOR SHALL HAUL AND STRING PIPE, CASING AND OTHER MATERIALS TO THE RIGHT-OF-WAY OR WORK AREA. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRUCKS AND EQUIPMENT FOR THE HAULING AND SPOTTING OF ALL MATERIALS. THE CONTRACTOR SHALL FURNISH SKIDS AND PLACE PIPE ON SKIDS ON THE RIGHT-OF-WAY IN A MANNER WHICH KEEPS BOTH ENDS FREE OF DIRT AND DEBRIS.

8. BENDING

FIELD BENDING - WHERE IT IS NECESSARY TO BEND PIPE, ONLY COLD BENDS SHALL BE EMPLOYED. THE BENDS SHALL BE FREE FROM BUCKLING, FLATTENING, CRACKS OR OTHER EVIDENCE OF MECHANICAL DAMAGE AND ALL BENDS SHALL NOT HAVE A DIFFERENCE BETWEEN THE MAXIMUM AND MINIMUM DIAMETERS IN EXCESS OF 2.5 % OF THE NOMINAL DIAMETER. ALL BENDS SHALL MEET THE CRITERIA SET FORTH IN DOT PART 192.

8. BENDING (CONTD)

SLACK AND LONGITUDINAL WELDS - ALL OVER-BENDS, SAGS AND SIDE-BENDS SHALL BE MADE TO PROVIDE AN ADEQUATE AMOUNT OF SLACK IN THE PIPELINE. ON PIPE HAVING A LONGITUDINAL WELD, THE LONGITUDINAL WELD MUST BE LOCATED AS NEAR AS PRACTICABLE TO THE NEUTRAL AXIS OF THE BEND.

BENDING MACHINE - EACH BEND SHALL BE MADE USING A COMPANY APPROVED BENDING MACHINE HAVING A FULL CIRCLE BENDING SHOE WITH A NEOPRENE OR URETHANE LINING TO PRODUCE A SMOOTH, SYMMETRICAL BEND, UNLESS SPECIFIED OTHERWISE BY THE COMPANY. ON PIPE CONTAINING A LONGITUDINAL WELD, THE LONGITUDINAL SEAM MUST BE AS NEAR AS PRACTICAL TO NEUTRAL AXIS OF THE BEND UNLESS THE BEND IS MADE WITH AN INTERNAL BENDING MANDREL OR THE PIPE IS 12 in. OR LESS IN OUTSIDE DIAMETER OR HAS A DIAMETER-TO-WALL THICKNESS RATIO LESS THAN 70. IF THE PIPE IS INTERNALLY COATED, THE BEARING SURFACES OF THE MANDREL SHALL BE CONSTRUCTED TO AVOID PERMANENTLY MARKING OR DAMAGING THE INTERNAL COATING. NO APPRECIABLE STRETCHING OR THINNING OF THE PIPE WALL THICKNESS SHALL BE PERMITTED.

BENDING LIMITATION - DEFLECTION SHALL BE LIMITED TO A MAXIMUM OF ONE AND ONE-HALF DEGREES PER PIPE DIAMETER MEASURED LONGITUDINALLY ALONG THE PIPE. A COMPANY ACCEPTED METHOD OF MEASUREMENT SHALL BE USED BY THE CONTRACTOR WHEN MARKING THE PIPE IN PREPARATION FOR MAKING FIELD BENDS. BENDING SHALL NOT BE ALLOWED IN A CIRCUMFERENTIAL WELD AND NOT CLOSER THAN 6 ft. TO AN OPEN END.

9. SWABBING AND CLOSING OPEN ENDS

SWABBING - EACH PIPE JOINT SHALL BE SWABBED AS NECESSARY TO REMOVE ALL DIRT AND FOREIGN MATTER FROM THE INSIDE OF THE PIPE BEFORE THE JOINTS ARE ALIGNED AND WELDED. THE SWABBING OPERATION SHALL NOT BE CARRIED ON MORE THAN FOUR JOINTS AHEAD OF THE FIRING LINE WELDERS OR ALIGNING AND WELDING OPERATIONS.

CLOSING OF PIPE ENDS - WHERE THE LINE IS WELDED IN LONG SECTIONS BY THE FIRING LINE METHOD, THE ENDS OF THE LONG SECTIONS SHALL BE CLOSED AND KEPT CLOSED IN A MANNER APPROVED BY THE COMPANY UNTIL THE LONG SECTIONS ARE FINALLY JOINED DURING THE LAYING OPERATIONS. CLOSE ATTENTION SHALL BE GIVEN TO OPEN ENDS TO ENSURE A COMPLETELY OPEN AND CLEAN LINE FREE OF ANY OBSTRUCTIONS. ALL REASONABLE PRECAUTIONS SHALL BE TAKEN TO PREVENT WATER FROM ENTERING THE LINE.

PREVENTION OF FOREIGN MATTER IN THE PIPELINE - THE OPEN END OF THE LINE SHALL BE SECURELY CLOSED AT THE END OF EACH DAY'S WORK TO PREVENT ENTRANCE OF SMALL ANIMALS OR THE INTRODUCTION OF FOREIGN MATTER OF ANY NATURE AND SHALL NOT BE REOPENED UNTIL WORK IS RESUMED. ANY OBSTRUCTIONS REMAINING IN THE LINE AFTER THE COMPLETION THEREOF SHALL BE REMOVED.

10. POSITING OF LONGITUDINAL SEAM

IN INSTANCES WHERE PIPE OTHER THAN SEAMLESS IS FURNISHED BY THE COMPANY, THE LONGITUDINAL SEAMS OF SUCH PIPE SHALL BE STAGGERED BY NOT MORE THAN 45'. LONGITUDINAL WELD SEAMS SHALL HAVE A MINIMUM FOUR-INCH CIRCUMFERENTIAL OFFSET BETWEEN ABUTTING JOINTS. UNLESS OTHERWISE SPECIFIED, THE LONGITUDINAL SEAMS ON ADJACENT PIPE SHALL BE STAGGERED, PLACING ONE APPROXIMATELY IN THE 10 O'CLOCK POSITION AND THE OTHER APPROXIMATELY IN THE 2 O'CLOCK POSITION.

11. LOWERING-IN PIPE

OVER-BENDS, SIDE-BENDS AND SAG-BENDS - ALL OVER-BENDS SHALL BE MADE AND INSTALLED TO CLEAR THE HIGH POINT OF THE BOTTOM OF THE DITCH BY AT LEAST 12 in. AT THE POINT OF BEND. AT SIDE-BENDS, THE PIPE SHALL BE BENT AND LOWERED TO LAY AGAINST THE OUTSIDE WALL AT THE BOTTOM OF THE DITCH. ALL SAG-BENDS SHALL CONTINUOUSLY LIE ON FIRM GROUND AT THE BOTTOM OF THE DITCH.

PIPE SLINGS AND CRADLES - THE CONTRACTOR SHALL PROVIDE PADDED SLINGS FOR HANDLING COATED AND WRAPPED PIPE. THE USE OF BELTING REINFORCED WITH WIRE CABLE SHALL NOT BE PERMITTED. ANY METHOD OF LOWERING-IN WHICH PREVENTS DAMAGE TO THE COATING SHALL BE ACCEPTABLE; HOWEVER, THE USE OF CRADLES IS PREFERRED.

CONDITION OF DITCH - PRIOR TO LOWERING-IN THE CONTRACTOR SHALL PROVIDE, TO THE SATISFACTION OF THE COMPANY, A DITCH WHICH IS FREE FROM EXCESS DEBRIS, LARGE ROCKS AND ROOTS, WELDING RODS, SKIDS OR OTHER SUCH OBJECTS WHICH CAN CAUSE DAMAGE TO THE PIPE AND ITS PROTECTIVE COATING DURING LOWERING-IN OPERATIONS. THE CONTRACTOR SHALL PUMP WATER FROM THE DITCH, BELL HOLES OR OTHER TIE-IN EXCAVATIONS PRIOR TO LOWERING-IN.

ROCK DITCH PADDING - IN ALL CASES WHERE ROCKS 2 in. AND LARGER ARE ENCOUNTERED IN THE BOTTOM OF THE DITCH AND NO ADDITIONAL PIPE COATING PROTECTION IS PROVIDED, THE CONTRACTOR SHALL PROVIDE PADDING MATERIAL PLACED EVENLY AND CONTINUOUSLY TO A MINIMUM DEPTH OF 8 in. ALONG THE BOTTOM OF THE DITCH AS APPROVED BY THE COMPANY.

SUPPORTS - THE CONTRACTOR SHALL CONSTRUCT THE PIPELINE TO LIE ON THE BOTTOM OF THE PIPE TRENCH. ALL BENDS SHALL BE MADE TO FIT THE PIPE DITCH. WHERE PIPE CANNOT BE DIRECTLY SUPPORTED BY THE BOTTOM OF THE TRENCH, SUPPORT SHALL BE PROVIDED BY SANDBAGS OR OTHER COMPANY APPROVED MATERIALS. SANDBAGS SHALL BE PLACED AT POINTS TO PROVIDE STRESS-FREE SUPPORT FOR THE PIPELINE SUBSEQUENT TO BACKFILLING. SPACING INTERVALS FOR SANDBAG SUPPORTS SHALL BE 15 FT. OR LESS AS REQUIRED BY THE COMPANY. SUPPORTS COMPRISED OF MATERIALS OTHER THAN SANDBAGS SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND AT SPACING INTERVALS NO GREATER THAN THE APPROPRIATE MAXIMUM INTERVAL RECOMMENDED BY THE MANUFACTURER. SUPPORT SHALL BE PLACED AT POINTS TO PROVIDE A STRESS-FREE INSTALLATION SUBSEQUENT TO BACKFILL. THE CONTRACTOR SHALL NOT USE ANY SUPPORT METHOD WITHOUT THE PRIOR APPROVAL OF THE COMPANY AND WITHOUT PROVIDING THE COMPANY WITH THE MANUFACTURER'S RECOMMENDED INSTALLATION DIRECTIONS FOR THE SPECIFIC METHOD BEING USED.

TIE-INS - SECTIONS OF THE PIPELINE EXCAVATED FOR TIE-INS SHALL BE SUPPORTED WITH SANDBAGS OR OTHER APPROVED MATERIALS AT INTERVALS INDICATED ABOVE. SUPPORTS SHALL BE PLACED IMMEDIATELY AFTER FINAL TIE-IN TO PROVIDE A STRESS-FREE INSTALLATION SUBSEQUENT TO THE BACKFILLING OPERATION.

12. BACKFILLING

AFTER LOWERING-IN HAS BEEN COMPLETED, BUT BEFORE BACKFILLING, THE DITCH SHALL BE PUMPED DRY IN UPLAND AREAS AND THE LINE SHALL BE INSPECTED TO ENSURE THAT NO SKIDS, BRUSH, STUMPS, TREES, BOULDERS OR DEBRIS ARE IN THE DITCH. NO SUCH MATERIALS OR DEBRIS ARE TO BE BACKFILLED INTO THE DITCH. AFTER THE PIPE HAS BEEN INSPECTED AND APPROVED BY THE COMPANY, AFTER ALL DAMAGE TO THE PROTECTIVE COATING HAS BEEN REPAIRED AND AFTER THE COATING ON THE PIPE HAS HAD SUFFICIENT TIME TO CURE, THEN THE CONTRACTOR SHALL BACKFILL THE DITCH SUFFICIENTLY TO PREVENT FLOATING. THE CONTRACTOR SHALL COMPLETE THE FILLING OF THE DITCH TO PRODUCE A TRIM BACKFILL. EXCAVATED MATERIAL SHALL BE PLACED IN THE DITCH, TOPSOIL, WHERE IT HAS BEEN SEGREGATED, SHALL BE BACKFILLED AS CLOSE AS POSSIBLE TO ITS ORIGINAL LOCATION.

ROCK, TWO INCHES IN DIAMETER AND LARGER, OR LIKE MATERIALS SHALL NOT BE BACKFILLED DIRECTLY ONTO THE PIPE. WHERE SUCH MATERIALS ARE ENCOUNTERED, THE CONTRACTOR SHALL HAUL, IF NECESSARY, SUFFICIENT EARTH OR SAND TO BE BACKFILLED AROUND AND OVER THE PIPE TO FORM A PROTECTIVE PADDING OR CUSHION TO A MINIMUM OF EIGHT INCHES OR, AS OTHERWISE SPECIFIED IN THE SCOPE OF WORK, IN DEPTH BETWEEN THE PIPE AND ANY GRAVEL OR SMALL BROKEN ROCK TO BE BACKFILLED. LARGE ROCK OR BOULDERS IN EXCESS OF 24 in. IN DIAMETER, WIDTH OR LENGTH, SHALL NOT BE BACKFILLED INTO THE DITCH. SUCH ROCK SHALL BE DISPOSED OF PROPERLY.

13. TRENCH BREAKER

THE CONTRACTOR SHALL INSTALL EROSION BREAKERS IN THE DITCH OVER, UNDER AND AROUND THE PIPE TO PROVIDE FULL PROTECTION AGAINST BACKFILL WASHING AT VARIOUS POINTS ALONG THE PIPELINE. BREAKER INSTALLATIONS AND SPACING SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS AS WELL AS COMPANY, LOCAL, STATE, AND FEDERAL REQUIREMENTS.

- BREAKER MATERIALS SHALL INCLUDE, BUT ARE NOT BE LIMITED TO, DECOMPOSABLE BAGS, SAND AND ANY OTHER MATERIALS REQUIRED TO FACILITATE THE PROPER PLACEMENT OF THE BREAKER MATERIAL IN THE DITCH.
- BREAKER INSTALLATIONS MAY BE COMPRISED OF EITHER A MULTIPLE SANDBAG CONFIGURATION OR BY OTHER APPROVED METHODS. ALL BREAKER INSTALLATIONS SHALL MEET WITH THE APPROVAL OF THE COMPANY.
- BREAKER SIZE IS DEPENDENT ON THE EXTENT AND CONDITION OF THE DITCH IN DEPTH, WIDTH, SLOPE AND GRADE. AT A MINIMUM, BREAKERS SHALL EXTEND THE WIDTH AND DEPTH OF THE DITCH.
- BREAKERS, SHALL BE SPACED ALONG THE DITCH IN ACCORDANCE WITH THE COMPANY'S ENVIRONMENTAL STANDARDS.

14. DIRT PADDING

THE CONTRACTOR SHALL INSTALL ROCK-FREE DIRT PADDING IN AREAS DESIGNATED BY THE COMPANY. TOPSOIL SHALL NOT BE USED FOR PADDING THE DITCH. DIRT PADDING SHALL BE INSTALLED IN THE BOTTOM OF THE DITCH TO A MINIMUM DEPTH OF 8 in., PRIOR TO LOWERING-IN THE PIPELINE. IF OTHER ACCEPTABLE SUPPORT FOR PROTECTING THE BOTTOM OF THE PIPE IS NOT UTILIZED, A MINIMUM OF 8 in. OF DIRT PADDING SHALL BE INSTALLED AS COVER ON TOP OF THE LINE AS PROTECTION PRIOR TO BACKFILLING. ACCEPTABLE ROCK-FREE PADDING MATERIAL MAY BE OBTAINED DIRECTLY FROM THE SPOIL, OR BY USING A PADDING MACHINE WITH MATERIAL TAKEN DIRECTLY FROM THE SPOIL OR ROCK-FREE PADDING MATERIAL CAN BE HAULED IN BY THE CONTRACTOR.

15. CLEAN-UP

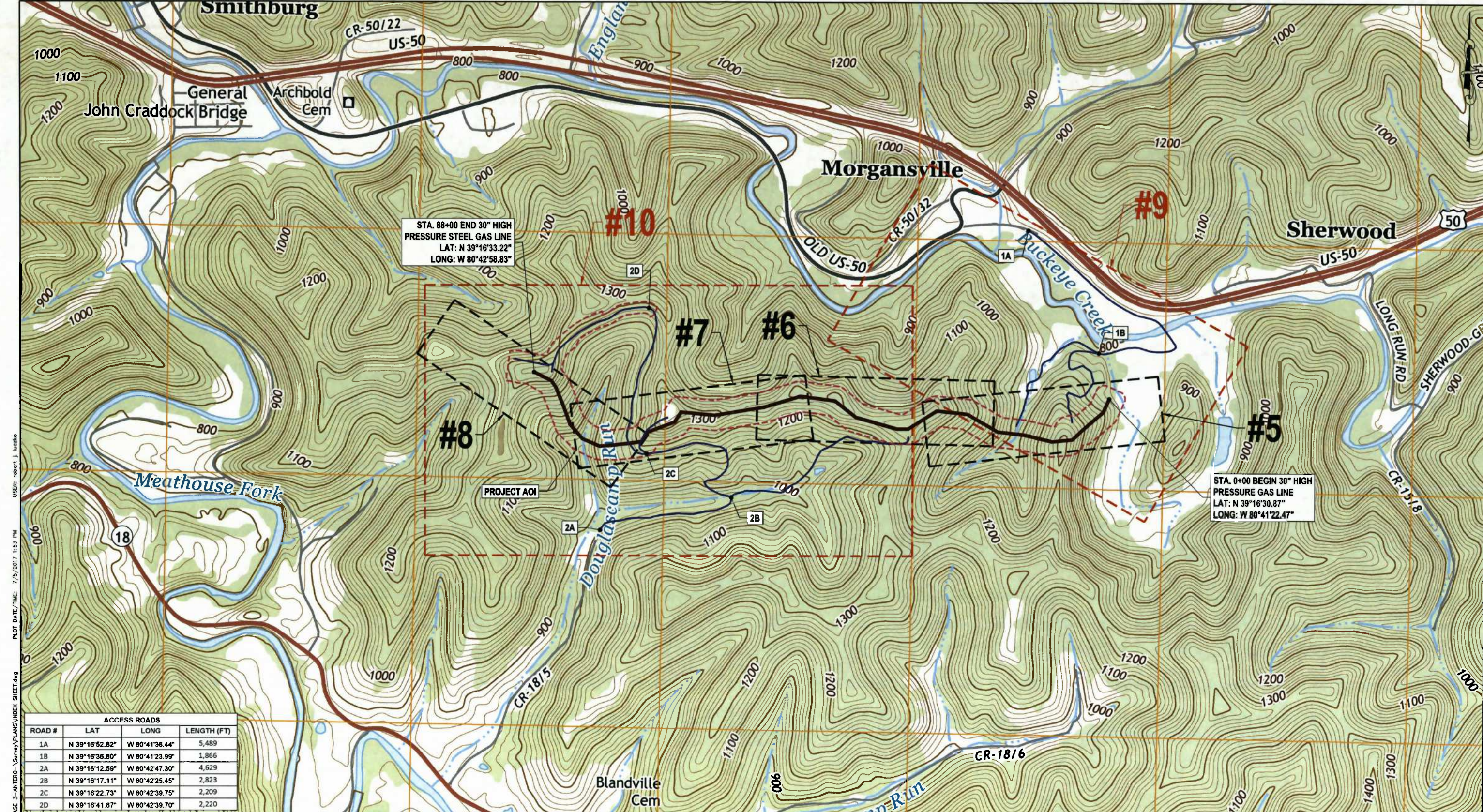
THE CONTRACTOR SHALL KEEP THE RIGHT-OF-WAY CLEAR OF LITTER, SKIDS, DEFECTIVE MATERIALS, AND ALL OTHER CONSTRUCTION DEBRIS IMMEDIATELY BEHIND ITS OPERATIONS, TO THE SATISFACTION OF THE COMPANY. UPON COMPLETION OF THE BACKFILL, THE CONTRACTOR WILL CLEAN THE RIGHT-OF-WAY IN A NEAT AND ACCEPTABLE CONDITION. SURPLUS MATERIALS SHALL BE ASSEMBLED AND DELIVERED BY CONTRACTOR TO A LOCATION DESIGNATED BY THE COMPANY. FENCES SHALL BE RECONSTRUCTED TO THE ORIGINAL LINE AND GATES INSTALLED AS INDICATED BY THE COMPANY. THE CONTRACTOR SHALL FURNISH GATES, FENCING AND POSTS.

THE RIGHT-OF-WAY SHALL BE DISKED, LIMED, SEEDED AND FERTILIZED DURING THE CLEAN-UP OPERATION. THE CONTRACTOR SHALL FURNISH THE LIME, SEED AND FERTILIZER. SEEDING, FERTILIZING AND MULCHING MUST BE DONE WITHIN 6 DAYS OF FINAL CLEAN UP OR IN ACCORDANCE WITH COMPANY ENVIRONMENTAL REQUIREMENTS.

PIPELINE MARKERS SHALL BE INSTALLED AT POINTS DESIGNATED BY THE COMPANY DURING CLEAN-UP OPERATIONS. THE COMPANY SHALL FURNISH LINE AND AERIAL MARKERS.

LAYOUT FILE: EPCS
 CAD FILE: R:\050-6323-MEC-HP-LOOP-PHASE-3-INTERIO-SURVEY\PLANS\GENERAL NOTES SHEETS.dwg
 USER: robert.l.lucsko
 PLOT DATE/TIME: 7/5/2017 1:51 PM

	<p>ISSUED FOR PERMITTING</p> <p>DATE: 07/05/2017</p> <p>A/E # A05924</p>	<p>SUMMARY OF MATERIALS (3D)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>NO.</td><td>DESCRIPTION</td><td>QTY</td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>	NO.	DESCRIPTION	QTY																						<p>SUMMARY OF MATERIALS (3D)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>NO.</td><td>DESCRIPTION</td><td>QTY</td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>	NO.	DESCRIPTION	QTY																						<p>GENERAL INFORMATION</p> <p>1. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.</p>	<p>SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE GENERAL CONSTRUCTION SPECS</p> <p>PROPOSED 30" HIGH PRESSURE STEEL GAS LINE DODDRIDGE COUNTY, WEST VIRGINIA</p> <p>DATE: 7/5/2017 A/E No.: A05924</p> <p>SCALE: AS SHOWN</p> <p>DRAWN BY: JDL BJA (TTO) SHEET 03</p> <p>CHECKED BY: AR_BJA (TTO)</p> <p>SHT. NAME: 050-6323\RESIDUE\SPECS REV. 1</p>
NO.	DESCRIPTION	QTY																																																			
NO.	DESCRIPTION	QTY																																																			
		<p>REVISION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> <tr> <td>1</td> <td>REVISED PER COMMENTS FROM ANTERO</td> <td>06/30/17</td> <td>JDL</td> </tr> </table>	NO.	DESCRIPTION	DATE	BY	1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JDL																																											
NO.	DESCRIPTION	DATE	BY																																																		
1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JDL																																																		



STA. 88+00 END 30" HIGH
PRESSURE STEEL GAS LINE
LAT: N 39°16'33.22"
LONG: W 80°42'58.83"

STA. 0+00 BEGIN 30" HIGH
PRESSURE GAS LINE
LAT: N 39°16'30.87"
LONG: W 80°41'22.47"

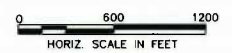
ACCESS ROADS			
ROAD #	LAT	LONG	LENGTH (FT)
1A	N 39°16'52.82"	W 80°41'36.44"	5,489
1B	N 39°16'36.80"	W 80°41'23.99"	1,866
2A	N 39°16'12.59"	W 80°42'47.30"	4,629
2B	N 39°16'17.11"	W 80°42'25.45"	2,823
2C	N 39°16'22.73"	W 80°42'39.75"	2,209
2D	N 39°16'41.87"	W 80°42'39.70"	2,220

LAYOUT TAB: INDEX
 CAD FILE: R:\050-6323-MEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\INDEX SHEET.dwg
 USER: robert.j.luciano
 PLOT DATE/TIME: 7/5/2017 1:53 PM

THRASHER

IFP

ISSUED FOR PERMITTING
 DATE: 07/05/2017
 AFE # A05924



SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JJ

GENERAL INFORMATION

- MAPPING SOURCE: SMITHBURG, WV USGS 7.5 MINUTE QUADRANGLE DATED 2014.
- FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
- COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
 HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
 VERTICAL - NAVD 88 (GEOID28), U.S. SURVEY FOOT
- THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero
Midstream Partners LP

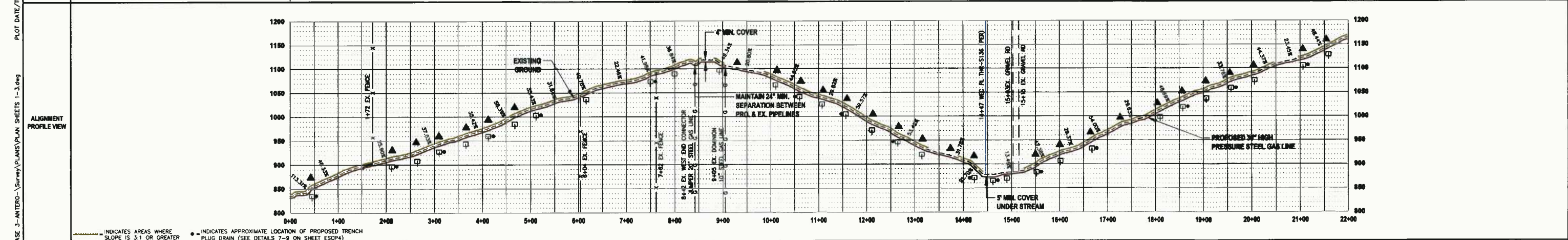
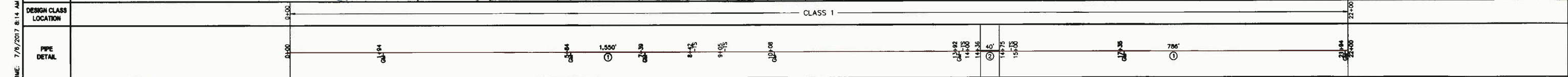
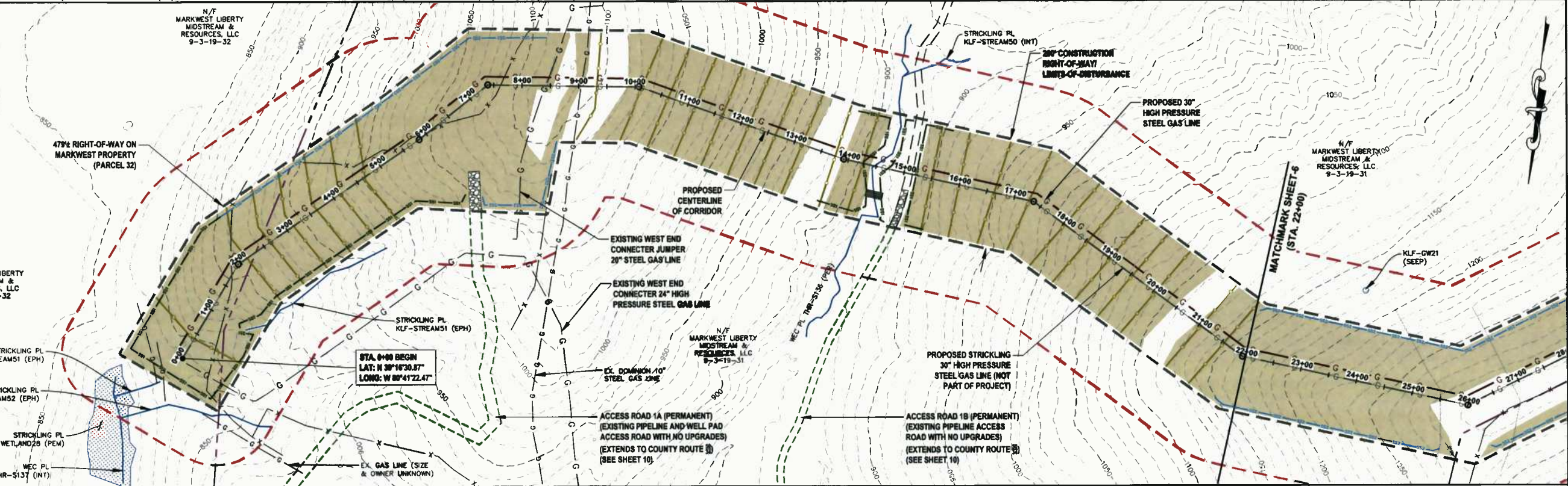
SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE
INDEX SHEET

PROPOSED 30" HIGH PRESSURE
STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017
 SCALE: AS SHOWN
 DRAWN BY: JLU, R.A. (TTO)
 CHECKED BY: JLU, R.A. (TTO)
 SHEET 04
 SHT. NAME: 050-6323\RESIDUE\INDEX
 REV. 1

OWNERSHIP, PARCEL NO. & LENGTH (FT) OF PIPE	0+00	MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC 9-3-19-32 HORIZ. DIST. = 232'± SLOPE DIST. = 250'±	2+32	MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC 9-3-19-31 HORIZ. DIST. = 1,968'± SLOPE DIST. = 2,126'±	22+00
STATIONING & P.I. ANGLES	0+00	1+72 EX. FENCE P.L. 1+94 ANGLE: 25° RT	2+32	7+42 EX. FENCE P.L. 7+59 ANGLE: 10° RT 8+42 EX. WEST END CONNECTOR JUMPER 20" STEEL GAS LINE P.L. 8+42 ANGLE: 10° RT 9+45 EX. DOMINION 10" STEEL GAS LINE P.L. 10+08 ANGLE: 19° RT	22+00

- E&S LEGEND**
- PROJECT AREA-OF-INTEREST
 - SILT SAVER BSRF-P1
 - SILT SAVER BSRF-P2
 - ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
 - PERMANENT WATER BAR (PLAN)
 - PERMANENT WATER BAR (PROFILE)
 - EARTH TRENCH BREAKER (PROFILE)
 - TEMPORARY TIMBERMAT (AS NEEDED)
 - STONE CONSTRUCTION ENTRANCE



THRASHER

ISSUED FOR PERMITTING

DATE: 07/05/2017

AFE # A05924

HORIZ. SCALE IN FEET: 1" = 100'

VERT. SCALE IN FEET: 1" = 20'

IFP

ISSUED FOR PERMITTING

DATE: 07/05/2017

AFE # A05924

SUMMARY OF MATERIALS (3D)		QTY
①	30" STEEL API 5L PSL-2, X-70, 0.825" WALL, FBE COATED PIPE	2,336 LF
②	30" STEEL API 5L PSL-2, X-70, 0.825" WALL, ARO COATED PIPE	40 LF
RECP	ROLLED EROSION CONTROL PRODUCT	389,853 SF
SS1	SILT SAVER BSRF-P1	1,787 LF
SS2	SILT SAVER BSRF-P2	953 LF
TB	EARTH TRENCH BREAKERS	31
WB	PERMANENT WATERBARS	28
GM	GAS LINE MARKERS	7
TS	TEST STATIONS	4

SUMMARY OF MATERIALS (3D)		QTY
NO.	DESCRIPTION	QTY
1	REVISED PER COMMENTS FROM ANTERO	06/30/17 JDJ

- GENERAL INFORMATION**
- PROPOSED HIGH PRESSURE GAS LINE MAOP = 1,440 psig.
 - COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT. VERTICAL - NAVD 88 (GEOID12B), U.S. SURVEY FOOT.
 - ALL STATIONING SHOWN IS HORIZONTAL STATIONING.
 - CENTERLINE STATION SHOWN PERTAINS TO THE CENTER OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED WITHIN THE PERMITTED CORRIDOR. IT WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
 - FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
 - THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
 - ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
 - ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
 - THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
 - FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero
Midstream Partners LP

SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE STA. 0+00 TO STA. 22+00

PROPOSED 30" HIGH PRESSURE STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

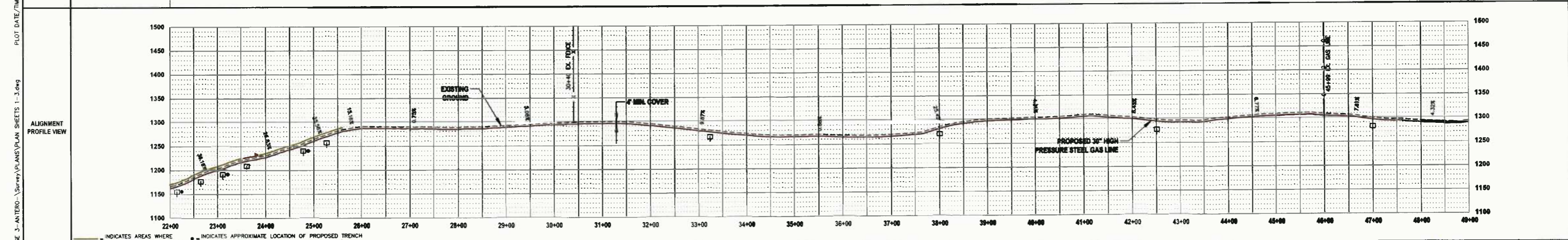
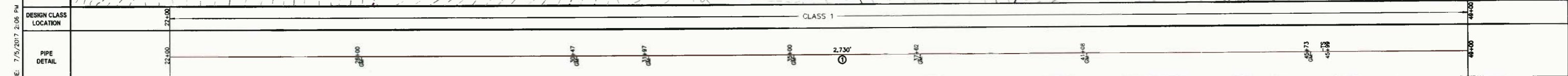
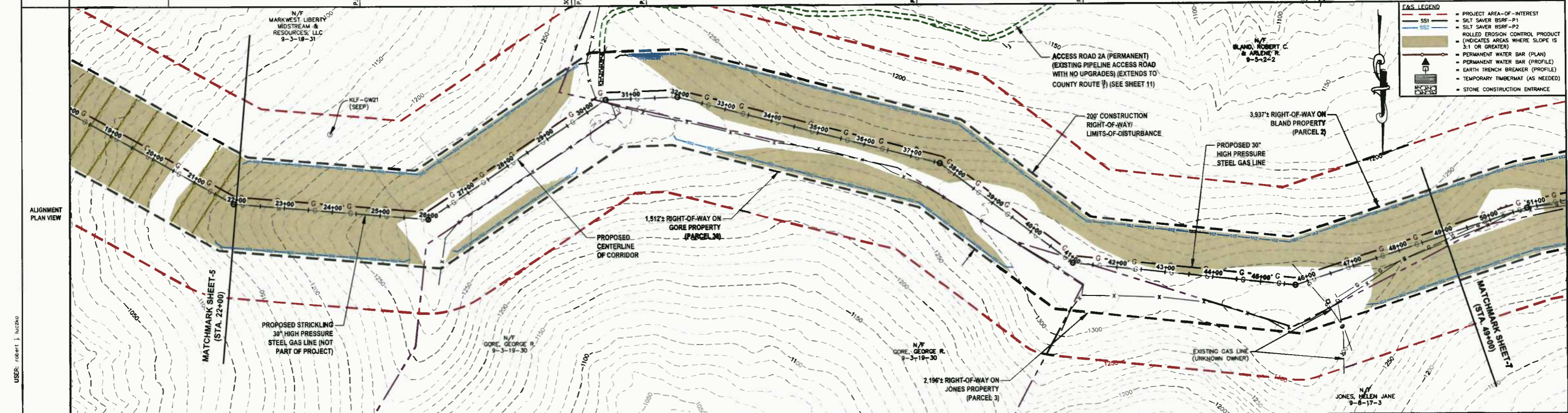
DATE: 7/6/2017
SCALE: AS SHOWN
DRAWN BY: JDL, RAL (TIG)
CHECKED BY: AR, JPH (TIG)

SHEET 05

SHT. NAME: 050-6323\RESIDUE\PLAN1
REV. 1

LAYOUT TAB: PLAN1
CAD FILE: R:\050-6323-MEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\PLAN SHEETS 1-3.dwg
PLOT DATE/TIME: 7/6/2017 8:14 AM
USER: robert.j.wczko

OWNERSHIP, PARCEL NO. & LENGTH (FT) OF PIPE	22+00	30+40	41+45	48+00
MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC 9-3-19-31 HORIZ. DIST. = 840± SLOPE DIST. = 862±				
BLAND, ROBERT C. & ARLENE R. 9-6-2-2 HORIZ. DIST. = 1,046± SLOPE DIST. = 1,051±				
JONES, HELEN JANE 9-8-17-3 HORIZ. DIST. = 59± SLOPE DIST. = 59±				
BLAND, ROBERT C. & ARLENE R. 9-6-2-2 HORIZ. DIST. = 755± SLOPE DIST. = 758±				
STATIONING & P.I. ANGLES	22+00	30+40 EX. FENCE P.I. 26+00 ANGLE 39° LT 30+40 EX. FENCE P.I. 30+47 ANGLE 32° RT 31+47 P.I. 31+87 ANGLE 18° RT 37+42 P.I. 37+42 ANGLE 31° LT 41+45 P.I. 41+45 ANGLE 31° LT 48+00 EX. GAS LINE P.I. 45+73 ANGLE 24° LT		



THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 07/05/2017
AFE # A05924

0 100 200
HORIZ. SCALE IN FEET

0 100 200
VERT. SCALE IN FEET

NO.	DESCRIPTION	QTY
1	30" STEEL API 5L PSL-2, X-70, 0.825" WALL, FBE COATED PIPE	2,730 LF
RECP	ROLLED EROSION CONTROL PRODUCT	300,736 SF
SS2	SILT SAVER BSRF-P2	4,264 LF
TB	EARTH TRENCH BREAKERS	10
GM	GAS LINE MARKERS	7
TS	TEST STATIONS	1

NO.	DESCRIPTION	QTY
1	REVISED PER COMMENTS FROM ANTERO	06/30/17 J.D.J.

- | | |
|--|--|
| 1. PROPOSED HIGH PRESSURE GAS LINE MAOP = 1,440 psig; | 6. THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED. |
| 2. COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT VERTICAL - NAVD 88 (GEOID28), U.S. SURVEY FOOT | 7. ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION. |
| 3. ALL STATIONING SHOWN IS HORIZONTAL STATIONING. | 8. ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW. |
| 4. CENTERLINE STATION DEPICTED PERTAINS TO THE CENTER OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE. | 9. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34") FOR REDUCTIONS, REFER TO GRAPHIC SCALE. |
| 5. FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC. | 10. FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET. |

Antero
Midstream Partners LP

SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE
STA. 22+00 TO STA. 49+00

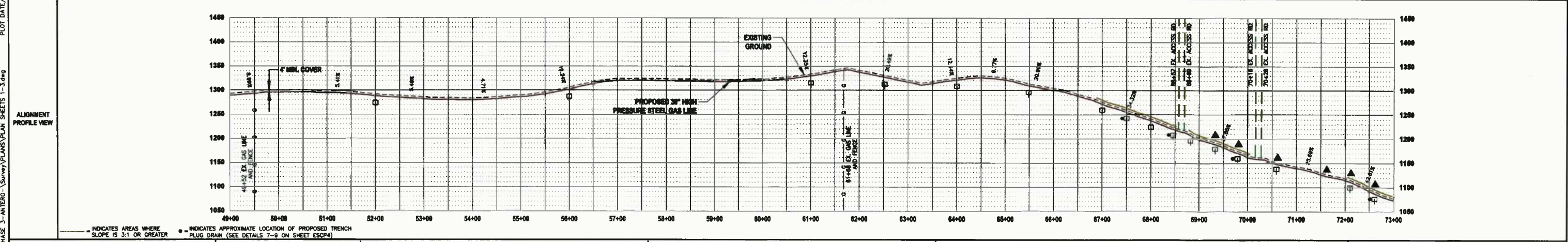
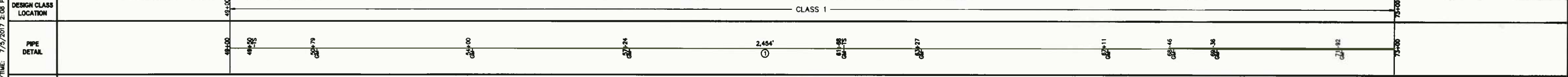
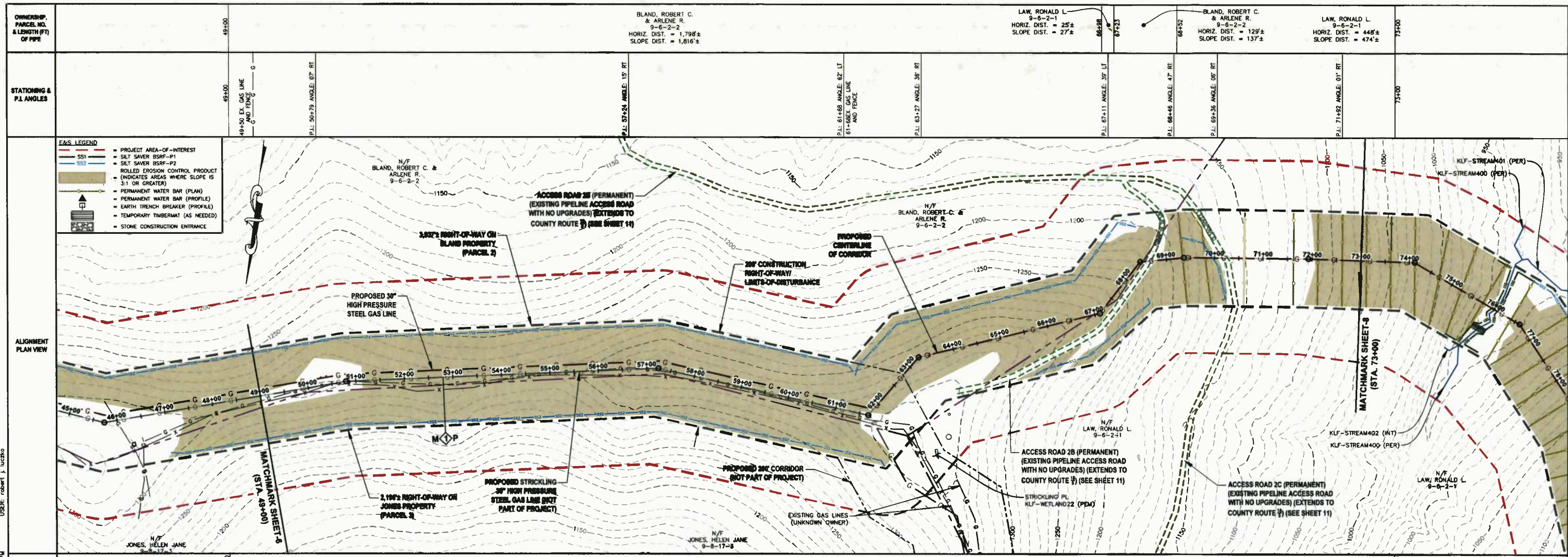
PROPOSED 30" HIGH PRESSURE
STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017
SCALE: AS SHOWN
DRAWN BY: J.D.J. (TTC)
CHECKED: A.L. (TTC)

SHEET 06

SHT. NAME: 050-6323\RESIDUE\PLAN2 REV. 1

LAYOUT TAB: PLAN2
CAD FILE: R:\050-6323-MEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\PLAN SHEETS 1-3.dwg
USER: robert.j.lucsko
PLOT DATE/TIME: 7/5/2017 2:06 PM



THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 07/05/2017
AFE # A05924

0 100 200
HORIZ. SCALE IN FEET

0 100 200
VERT. SCALE IN FEET

SUMMARY OF MATERIALS (3D)	
① 30" STEEL API 5L PSL-2, X-70, 0.625" WALL, FBE COATED PIPE	2,454 LF
RECP ROLLED EROSION CONTROL PRODUCT	370,499 SF
SS2 SILT SAVER BSRF-P2	3,729 LF
TB EARTH TRENCH BREAKERS	16
WB PERMANENT WATERBARS	6
GM GAS LINE MARKERS	9
TS TEST STATIONS	2

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY
1	REVISED PER COMMENTS FROM ANTERO	08/30/17 JJJ

REVISION			
NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	08/30/17	JJJ

Antero
Midstream Partners LP

**SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE
STA. 49+00 TO STA. 73+00**

PROPOSED 30" HIGH PRESSURE
STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017
SCALE: AS SHOWN
DRAWN BY: J.A. P.A. (TDS)
CHECKED: J.A. P.A. (TDS)

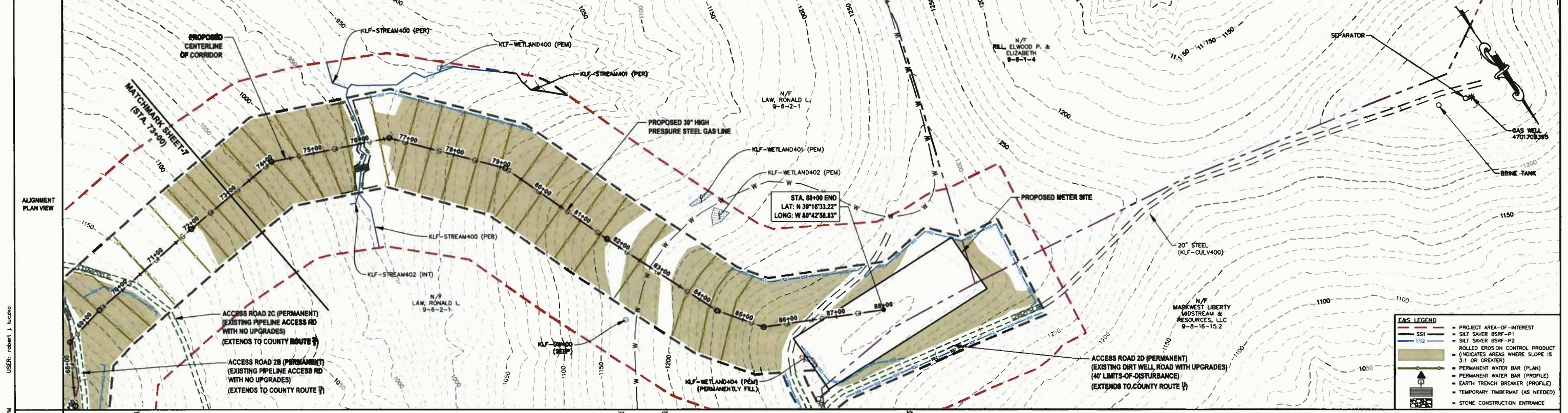
SHEET 07
SHT. NAME: 050-6323-RESIDUE/PLAN3

REV. 1

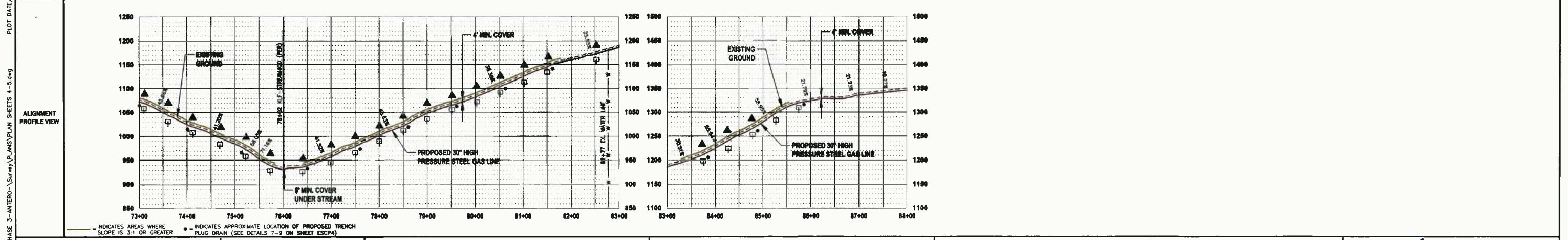
- GENERAL INFORMATION**
- PROPOSED HIGH PRESSURE GAS LINE MAOP = 1,440 psig.
 - COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT. VERTICAL - NAVD 88 (GEOID12B), U.S. SURVEY FOOT.
 - ALL STATIONING SHOWN IS HORIZONTAL STATIONING.
 - CENTERLINE STATION SHOWN PERTAINS TO THE CENTER OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
 - FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
 - THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
 - ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
 - ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
 - THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
 - FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

LAYOUT TAB: PLANS
CAD FILE: R: 050-6323-MEC HP LOOP PHASE 3-ANTERO-Survey/PLANS/PLAN SHEETS 1-3.dwg
PLOT DATE/TIME: 7/5/2017 2:08 PM
USER: robert.j.ucsko

OWNERSHIP, PARCEL NO. & LENGTH (FT) OF PIPE	73+00	LAW, RONALD L. 9-6-2-1 HORIZ. DIST. = 1,000'± SLOPE DIST. = 1,083'±	83+00	LAW, RONALD L. 9-6-2-1 HORIZ. DIST. = 800'± SLOPE DIST. = 836'±	88+00
STATIONING & P.I. ANGLES	73+00	P.I.: 74+11 ANGLE: 29° RT	83+00	P.I.: 84+43 ANGLE: 14° LT	88+00



DESIGN CLASS	CLASS 1	CLASS 1
LOCATION	73+00	88+00
PIPE DETAIL	73+00 316' 316' 75+50 75+83 76+22 76+61 76+15	83+00 727' 81+69 83+00



THRASHER

IFP
ISSUED FOR PERMITTING

DATE: 07/05/2017
AFE # A05924

HORIZ. SCALE IN FEET: 1" = 100'
VERT. SCALE IN FEET: 1" = 20'

SUMMARY OF MATERIALS (3D)

①	30" STEEL API 5L PSL-2, X-70, 0.625" WALL, FBE COATED PIPE	1,578 LF
②	30" STEEL API 5L PSL-2, X-70, 0.625" WALL, ARO COATED PIPE	40 LF
RECP	ROLLED EROSION CONTROL PRODUCT	251,524 SF
SS1	SILT SAVER BSRF-P1	913 LF
SS2	SILT SAVER BSRF-P2	1,866 LF
TB	EARTH TRENCH BREAKERS	28
WB	PERMANENT WATERBARS	21
GM	GAS LINE MARKERS	10
TS	TEST STATIONS	2

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY	NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO		06/30/17	JDU		

REVISION

- GENERAL INFORMATION**
- PROPOSED HIGH PRESSURE GAS LINE MAOP = 1,440 psig;
 - COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY: HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT. VERTICAL - NAVD 88 (GEOID128), U.S. SURVEY FOOT.
 - ALL STATIONING SHOWN IS HORIZONTAL STATIONING.
 - CENTERLINE STATION DEPICTED PERTAINS TO THE CENTER OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
 - FIELD DELINEATION PERFORMED AND PROVIDED BY: KLENFELDER, INC.
 - THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
 - ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
 - ALL SHEET BANDS EXCLUDING ALIGNMENT PLAN VIEW REFERENCE THE ALIGNMENT PROFILE VIEW.
 - THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34") FOR REDUCTIONS. REFER TO GRAPHIC SCALE.
 - FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero
Midstream Partners LP

**SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE
STA. 73+00 TO STA. 100+00**

PROPOSED 30" HIGH PRESSURE
STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

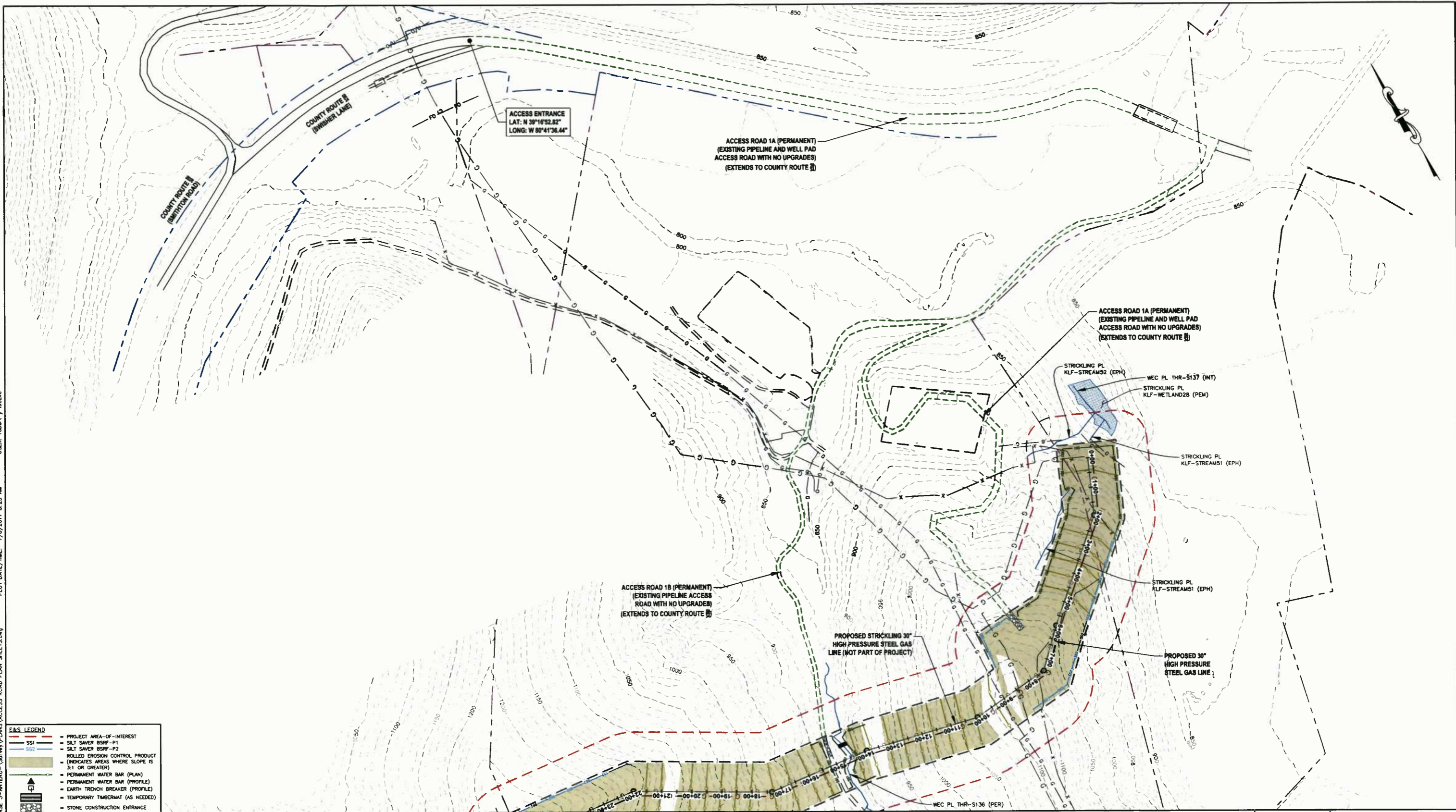
DATE: 7/5/2017
SCALE: AS SHOWN
DRAWN BY: JDL (TTO)
CHECKED: AR, JHI (TTO)

SHEET 08

SHT. NAME: 050-6323\RESIDUE\PLAN4
REV. 1

USER: robert.j.luczko
 PLOT DATE/TIME: 7/5/2017 2:12 PM
 LAYOUT TAB: PLAN4
 CAD FILE: R:\050-6323-MEC-HP-LOOP PHASE_3-ANTERO-Sherwood-Smithburg-Residue-Pipeline-Plan-Sheets-4-5.dwg

LAYOUT TAB: ARI
 CAD FILE: R:\050-6323-SEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\ACCESS ROAD PLAN SHEETS.dwg
 USER: robert.j.luczko
 PLOT DATE/TIME: 7/6/2017 8:23 AM



E&S LEGEND

- PROJECT AREA-OF-INTEREST
- SILT SAVER BSRF-P1
- SILT SAVER BSRF-P2
- ROLLED EROSION CONTROL PRODUCT
- INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER
- PERMANENT WATER BAR (PLAN)
- PERMANENT WATER BAR (PROFILE)
- EARTH TRENCH BREAKER (PROFILE)
- TEMPORARY TIMBERMAT (AS NEEDED)
- STONE CONSTRUCTION ENTRANCE

THRASHER

IFP
 ISSUED FOR PERMITTING

DATE: 07/05/2017
 AFE # A05924

0 150 300
 HORIZ. SCALE IN FEET

SUMMARY OF MATERIALS (3D)	
NO.	DESCRIPTION

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

REVISION			
NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	08/30/17	JDU

- GENERAL INFORMATION**
- COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
 HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
 VERTICAL - NAVD 88 (GEOID12B), U.S. SURVEY FOOT
 - ALL STATIONING SHOWN IS HORIZONTAL STATIONING
 - CENTERLINE STATIONING PERTAINS TO THE CENTER OF THE PERMITTED CORRIDOR. IT IS NOT A DIRECT REPRESENTATION OF WHERE THE PIPELINE WILL BE INSTALLED. INSTALLATION WITHIN THE PERMITTED CORRIDOR WILL BE COORDINATED IN THE FIELD BY ANTERO CONSTRUCTION REPRESENTATIVE.
 - FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
 - THE BOUNDARY MONUMENTS FOUND AND PROPERTY LINES SHOWN ON THIS DRAWING WERE OBTAINED FROM PARTIAL FIELD SURVEY AND RESEARCHED INFORMATION TAKEN FROM VARIOUS RECORDS ON FILE IN THE LOCAL COUNTY COURTHOUSE. TO OBTAIN A MORE ACCURATE BOUNDARY LINE LOCATION, A FULL PROPERTY SURVEY IS RECOMMENDED.
 - ALL EXISTING FENCES AND ROADS DISTURBED DURING CONSTRUCTION TO BE REPLACED BY CONTRACTOR POST-CONSTRUCTION.
 - THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34") FOR REDUCTIONS, REFER TO GRAPHIC SCALE
 - FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

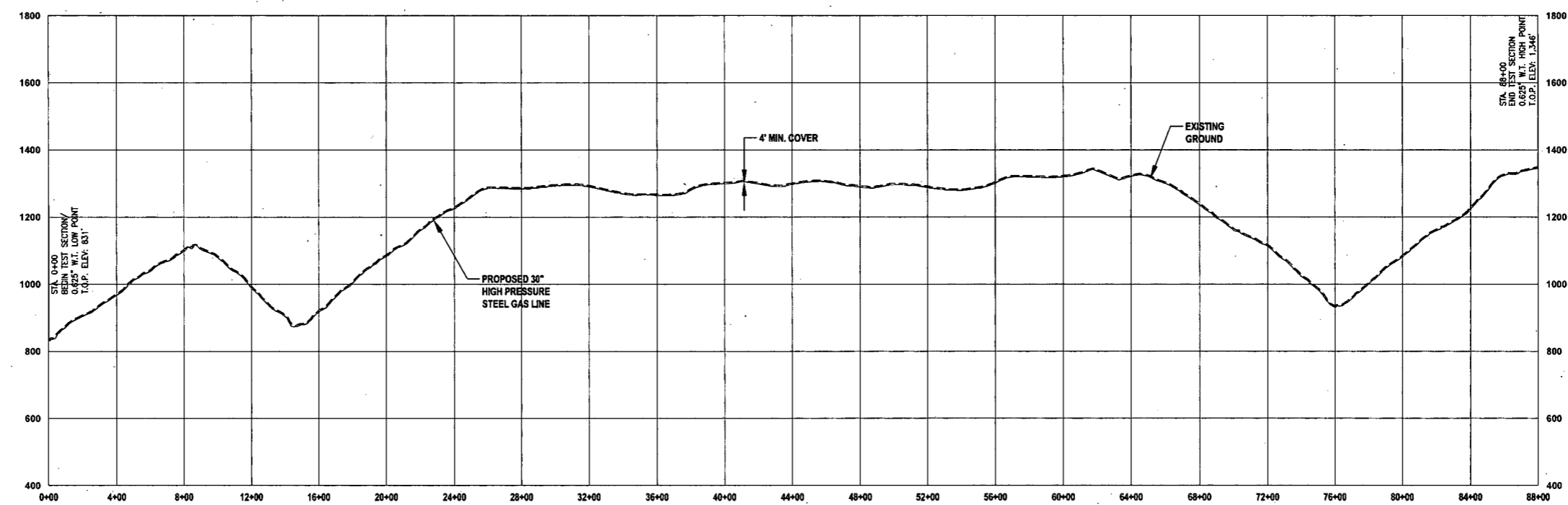
Antero
 MidstreamPartners LP

SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE ACCESS ROAD PLAN SHEET

PROPOSED 30" HIGH PRESSURE STEEL GAS LINE
 DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/6/2017 AFE No: A05924
 SCALE: AS SHOWN
 DRAWN BY: JDL, R.L. (TIS) SHEET 09
 CHECKED: AR, JRH (TIS)
 SHT. NAME: 050-6323\RESIDUE\ARI REV. 1

LAYOUT BAR: HTP
 CAD FILE: R:\050-6323-REC HP LOOP PHASE 3-ANTERO-Survey\PLANS\HYDROSTATIC TEST PROFILE SHEET.dwg
 PLOT DATE/TIME: 7/5/2017 2:16 PM
 USER: robert.j.luczko



HYDROSTATIC TEST (30" HIGH PRESSURE)	Station	Elevation (ft msl)
Start Point	0+00	831
Low Point (0.625 wt X-70)	0+00	831
High Point (0.625 wt X-70)	88+00	1,346
End Point	88+00	1,346
Differential (0.625 wt X-70)		515
Static Head Pressure @ 0+00' (0.625 wt X-70) PSI		223.1495

THRASHER

HORIZ. SCALE IN FEET
 0 400 800

VERT. SCALE IN FEET
 0 200 400

IFP

ISSUED FOR PERMITTING

DATE: 07/05/2017

AFE # A05924

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JDJ

GENERAL INFORMATION

- PROPOSED HIGH PRESSURE GAS LINE MAOP = 1,440 psig
- REFER TO ANTERO MIDSTREAM PRESSURE TESTING PROCEDURE.
- COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
 HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
 VERTICAL - NAVD 88 (GEOID12B), U.S. SURVEY FOOT
- ALL STATIONING SHOWN IS HORIZONTAL STATIONING.
- THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero
 Midstream Partners LP

**SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE
 HYDROSTATIC TEST PROFILE**

PROPOSED 30" HIGH PRESSURE
 STEEL GAS LINE
 DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017 AFE No.: A05924

SCALE: AS SHOWN

DRAWN BY: JDL, R.L. (TTO)

CHECKED: AR, JBL (TTO)

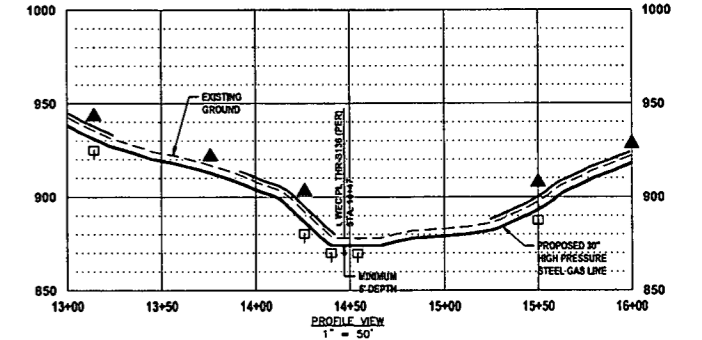
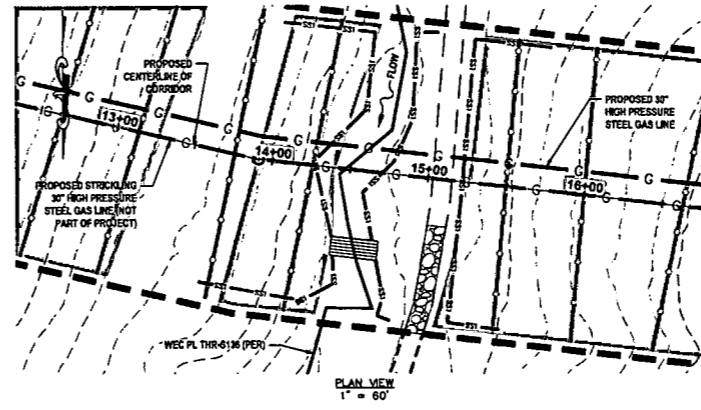
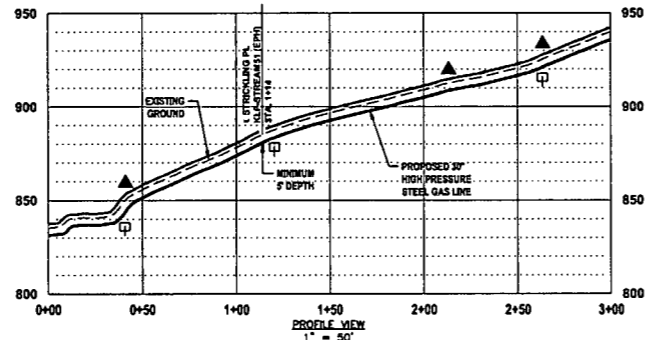
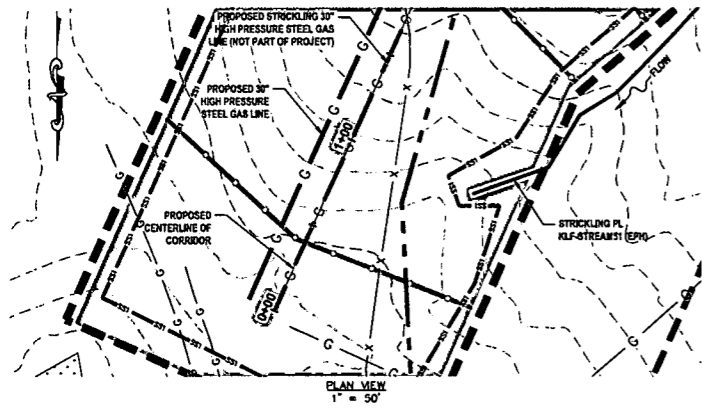
SHEET 11

SHT. NAME: 050-6323\RESIDUE\HTP

REV. 1

**STREAM CROSSING 1
STRICKLING PL KLF-STREAM51 (EPH)**

**STREAM CROSSING 2
WEC PL THR-S136 (PER)**



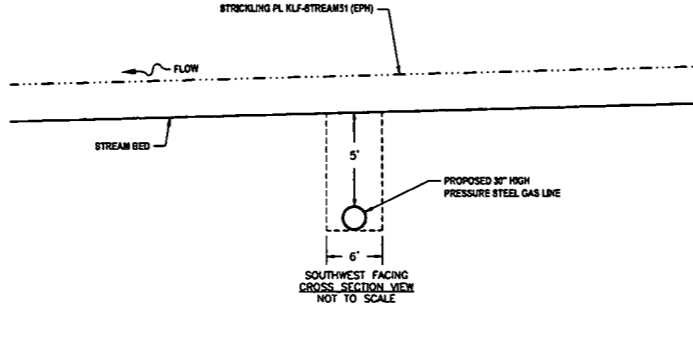
LEGEND

- PERMANENT WATER BAR (PROFILE)
- EARTH TRENCH BREAKER (PROFILE)
- PERMANENT WATER BAR (PLAN)
- SS1 SILT SAVER BSRF-P1
- SS2 SILT SAVER BSRF-P2
- ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAM
- DELINEATED WETLAND
- EDGE OF ACCESS ROAD
- EDGE OF DIRT/GRAVEL ROAD
- CONSTRUCTION RIGHT-OF-WAY/LIMITS OF DISTURBANCE
- C PROPOSED STEEL GAS LINE (NOT PART OF PROJECT)
- 21+00 CENTERLINE OF PROPOSED CORRIDOR WITH STATIONING

STREAM INFORMATION:
STREAM CLASSIFICATION: EPHEMERAL
STREAM WIDTH: 2.0'
PROPOSED METHOD OF CONSTRUCTION: OPEN CUT

REFERENCES:
LAT: 39°16'30.19" N
LONG: 80°41'24.08" W
SHEET REF: SHEET 05

NOTES:
1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.



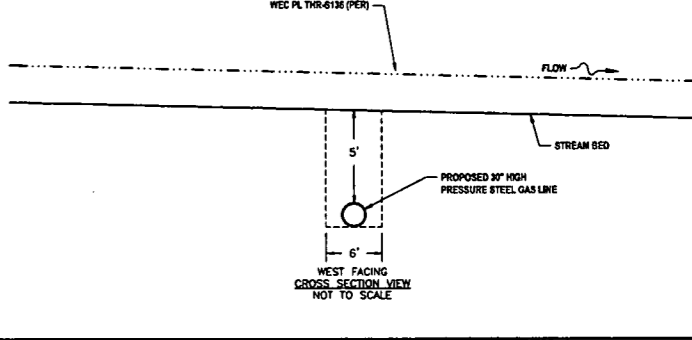
LEGEND

- PERMANENT WATER BAR (PROFILE)
- EARTH TRENCH BREAKER (PROFILE)
- PERMANENT WATER BAR (PLAN)
- SS1 SILT SAVER BSRF-P1
- SS2 SILT SAVER BSRF-P2
- ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAM
- DELINEATED WETLAND
- EDGE OF ACCESS ROAD
- EDGE OF DIRT/GRAVEL ROAD
- CONSTRUCTION RIGHT-OF-WAY/LIMITS OF DISTURBANCE
- C PROPOSED STEEL GAS LINE (NOT PART OF PROJECT)
- 21+00 CENTERLINE OF PROPOSED CORRIDOR WITH STATIONING

STREAM INFORMATION:
STREAM CLASSIFICATION: PERENNIAL
STREAM WIDTH: 3.0'
PROPOSED METHOD OF CONSTRUCTION: OPEN CUT

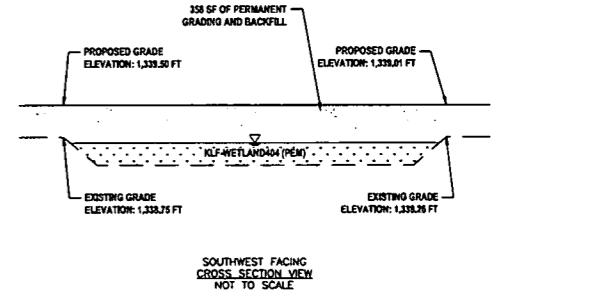
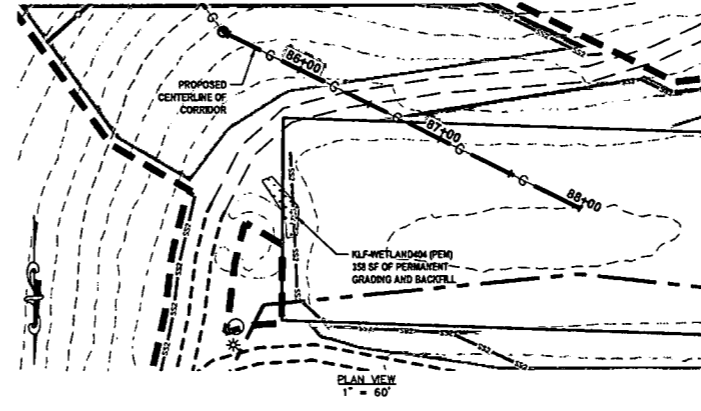
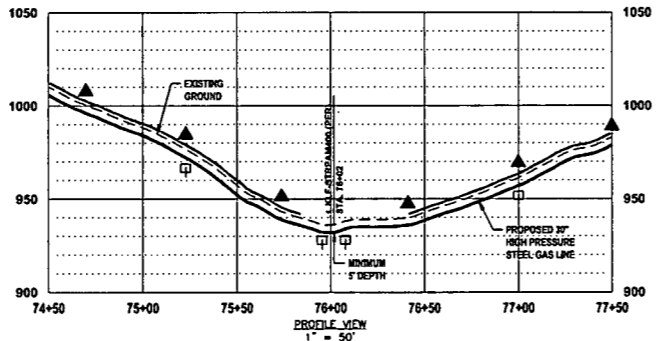
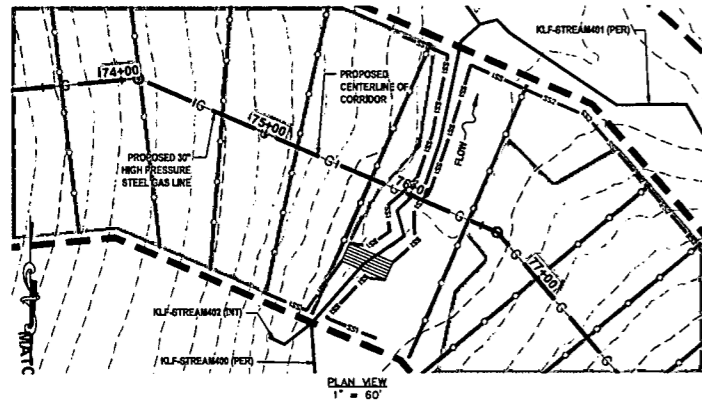
REFERENCES:
LAT: 39°16'26.03" N
LONG: 80°41'37.43" W
SHEET REF: SHEET 05

NOTES:
1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.



**STREAM CROSSING 3
KLF-STREAM400 (PER)**

**PERMANENT FILL IMPACT 1
@ KLF-WETLAND404 (PEM)**



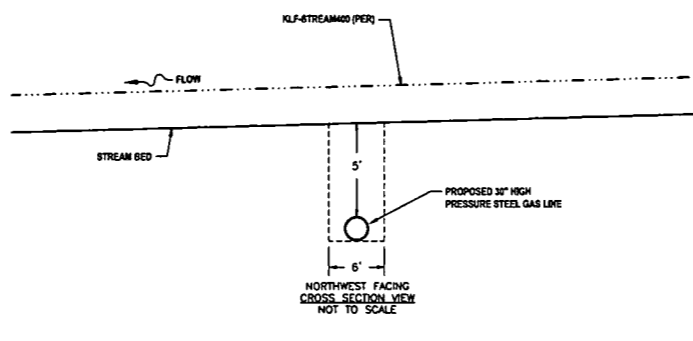
LEGEND

- PERMANENT WATER BAR (PROFILE)
- EARTH TRENCH BREAKER (PROFILE)
- PERMANENT WATER BAR (PLAN)
- SS1 SILT SAVER BSRF-P1
- SS2 SILT SAVER BSRF-P2
- ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAM
- DELINEATED WETLAND
- EDGE OF ACCESS ROAD
- EDGE OF DIRT/GRAVEL ROAD
- CONSTRUCTION RIGHT-OF-WAY/LIMITS OF DISTURBANCE
- C PROPOSED STEEL GAS LINE (NOT PART OF PROJECT)
- 21+00 CENTERLINE OF PROPOSED CORRIDOR WITH STATIONING

STREAM INFORMATION:
STREAM CLASSIFICATION: PERENNIAL
STREAM WIDTH: 6.0'
PROPOSED METHOD OF CONSTRUCTION: OPEN CUT

REFERENCES:
LAT: 39°16'24.34" N
LONG: 80°47'48.88" W
SHEET REF: SHEET 06

NOTES:
1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.



LEGEND

- PERMANENT WATER BAR (PROFILE)
- EARTH TRENCH BREAKER (PROFILE)
- PERMANENT WATER BAR (PLAN)
- SS1 SILT SAVER BSRF-P1
- SS2 SILT SAVER BSRF-P2
- ROLLED EROSION CONTROL PRODUCT (INDICATES AREAS WHERE SLOPE IS 3:1 OR GREATER)
- DELINEATED STREAM (PERMANENT FILL)
- DELINEATED WETLAND (PERMANENT FILL)
- EDGE OF ACCESS ROAD
- EDGE OF DIRT/GRAVEL ROAD
- CONSTRUCTION RIGHT-OF-WAY/LIMITS OF DISTURBANCE
- C PROPOSED STEEL GAS LINE (NOT PART OF PROJECT)
- 21+00 CENTERLINE OF PROPOSED CORRIDOR WITH STATIONING

WETLAND INFORMATION:
WETLAND CLASSIFICATION: PALUSTRINE EMERGENT
WETLAND WIDTH: 38.0'
PROPOSED METHOD OF CONSTRUCTION: PERMANENT FILL

REFERENCES:
LAT: 39°16'33.83" N
LONG: 80°47'26.43" W
SHEET REF: SHEET 06

NOTES:
1. ORANGE SAFETY FENCE TO BE INSTALLED AT THE EDGE OF THE PROPOSED LIMITS OF CONSTRUCTION TO PREVENT ACCESS INTO STREAM OR WETLAND.
2. CONTRACTOR TO MAINTAIN 5' DEPTH AT STREAM OR WETLAND CROSSING.
3. ANY SLOPES GREATER THAN 3:1 SHALL HAVE ROLLED EROSION CONTROL MATTING INSTALLED DURING FINAL RESTORATION.

THRASHER

IFP

ISSUED FOR PERMITTING
DATE: 07/05/2017
AFE # A05924

SUMMARY OF MATERIALS (3D)

SUMMARY OF MATERIALS (3D)

GENERAL INFORMATION

NO.	DESCRIPTION	QTY

NO.	DESCRIPTION	QTY

- PROPOSED HIGH PRESSURE GAS LINE MAOP = 1,440 psig
- COORDINATE SYSTEM USED FOR MAPPING AND TOPOGRAPHY:
HORIZONTAL - NAD 83 WEST VIRGINIA STATE PLANE, NORTH ZONE, U.S. SURVEY FOOT
VERTICAL - NAVD 88 (GEOID12B), U.S. SURVEY FOOT
- FIELD DELINEATION PERFORMED AND PROVIDED BY: KLEINFELDER, INC.
- ALL STATIONING SHOWN IS HORIZONTAL STATIONING.
- THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34") FOR REDUCTIONS, REFER TO GRAPHIC SCALE.
- FOR LEGEND/ABBREVIATION INFORMATION, REFER TO THE GENERAL NOTES SHEET.

Antero
Midstream Partners LP

**SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE
STREAM & WETLAND CROSSINGS**

PROPOSED 30" HIGH PRESSURE
STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017 AFE No.: A05924
SCALE: AS SHOWN
DRAWN BY: JOL RAL (TTC) SHEET 12
CHECKED BY: AR_JPH (TTC)
SHT. NAME: 050-6323\RESIDUE\S&WC1 REV. 1

LAYOUT BAR: SANUCI
CAD FILE: R:\050-6323-WEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\STREAM & WETLAND CROSSING SHEETS.dwg
PLOT DATE/TIME: 7/5/2017 8:28 AM
USER: robert.j.hacke

GENERAL NOTES

- ANTERO WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
- ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY INCONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE PROJECT MANAGER, IN WRITING, WHO SHALL PROMPTLY ADDRESS SUCH PROBLEMS. WORK DONE BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH DISCREPANCIES, INCONSISTENCIES OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
- WORK ON THIS PROJECT SHALL CONFORM TO THE LATEST EDITIONS OF THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (DWM) EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE HANDBOOK. IN THE EVENT OF CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, OR PLANS, THE MOST STRINGENT WILL GOVERN.
- THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL PUBLIC OR PRIVATE UTILITIES WHICH LIE IN OR ADJACENT TO THE CONSTRUCTION SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR, AT HIS OR HER EXPENSE, OF ALL EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION THE CONTRACTOR SHALL CALL WEST VIRGINIA 811.
- INSTALLATION OF CONCRETE, CORRUGATED METAL OR HDPE STORM PIPE SHALL BE IN CONFORMANCE WITH THESE DRAWINGS.
- ALL MATERIALS USED FOR FILL OR BACK FILL SHALL BE FREE OF WOOD, ROOTS, ROCKS, BOULDERS, ORGANIC MATERIAL, OR ANY OTHER NON-COMPACTABLE SOIL TYPE MATERIALS. UNSATISFACTORY MATERIALS ALSO INCLUDE MAN MADE FILLS AND REFUSE DEBRIS DERIVED FROM ANY SOURCE.
- A PRE-CONSTRUCTION KICK-OFF MEETING SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION.
- IF SPRINGS OR SEEPS AND/OR AN ACCUMULATION OF GROUND WATER IS OBSERVED ON A SIDE CUT OR CUT SLOPE PIPE TRENCH, IMMEDIATELY INFORM THE ON-SITE INSPECTOR FOR AN EVALUATION AND CONSIDERATION OF THE INSTALLATION OF A FRENCH DRAIN.
- EROSION CONTROL BLANKETS ARE REQUIRED FOR SLOPES OF 30 PERCENT OR GREATER.
- HYDROMULCH CAN BE UTILIZED AS A SUBSTITUTE TO EROSION CONTROL BLANKETS WITH APPROVAL FROM ANTERO. EXCEPT FOR ON RESTORED STREAM BANKS AND ROAD BANKS. HYDROMULCH SHALL ONLY BE A VALID SUBSTITUTE FOR EROSION CONTROL BLANKETS DURING GRASS GROWING SEASONS.
- HYDROSTATIC PRESSURE TEST - POTABLE WATER FROM ANTERO APPROVED SOURCES ONLY TO BE USED FOR HYDROTEST. NO DEWATERING IS PERMITTED WITHOUT PRIOR ANTERO APPROVAL AND APPLICABLE PERMITS. NOTIFICATION REQUIRED TO ANTERO ENVIRONMENTAL PRIOR TO HYDROTEST.

EROSION AND SEDIMENT CONTROL PLAN NARRATIVE/CONSTRUCTION SEQUENCES

THE EROSION AND SEDIMENT (E&S) CONTROL MEASURES FOR THE PIPELINE CONSTRUCTION ACTIVITIES CONSIST OF COMPOST FILTER SOCK, SILT FENCE, RIGHT-OF-WAY (ROW) DIVERSIONS, TRENCH BREAKERS (PLUGS), AND TEMPORARY AND PERMANENT SEEDING AND MULCHING. BMP SPECIFICATIONS FOR THE E&S CONTROL PLAN (E&SCP) AREA TO BE UTILIZED BY THE CONSTRUCTION CONTRACTOR ACCORDING TO THE PROVIDED PLAN. STRAWHAY BALES WILL NOT BE USED AS AN E&S CONTROL, HOWEVER, THEY MAY BE ACCEPTABLE TO USE AS A VELOCITY DISSIPATER.

GENERAL CONSTRUCTION SEQUENCE PER PIPELINE SEQUENCE:

- PRIOR TO BEGINNING LAND DISTURBING ACTIVITIES, CLEARLY MARK ALL CLEARING LIMITS, SENSITIVE AREAS AND THEIR BUFFERS, AND TREES THAT ARE TO BE PRESERVED WITHIN THE CONSTRUCTION AREA. THESE SHALL BE CLEARLY MARKED, BOTH IN THE FIELD AND ON THE PLANS, TO PREVENT DAMAGE AND OFF-SITE IMPACTS.
- INSTALL STONE CONSTRUCTION ENTRANCES AT ALL LOCATIONS WHERE TEMPORARY ACCESS ROADS WILL BE ACCESSING A PAVED ROADWAY.
- INSTALL TEMPORARY E&S CONTROLS (SILT FENCE, ROW DIVERSIONS, ETC.) PRIOR TO ANY EARTH DISTURBING ACTIVITY, WHICH INCLUDES GRUBBING AND EXCAVATION, TO ENSURE, TO THE MAXIMUM EXTENT PRACTICABLE, THAT NO SIGNIFICANT EROSION OR SEDIMENTATION OCCURS.
- ROW DIVERSIONS AND/OR OTHER EROSION AND SEDIMENT CONTROL DEVICES WILL BE INSTALLED AS NEEDED. IF CLEARING AND GRUBBING IS REQUIRED, SEE BELOW REGARDING THE MANAGEMENT AND DISPOSAL OF DEBRIS.
- AFTER ACCESS TO AND ALONG THE PROPOSED UTILITY LINE HAS BEEN PROVIDED, THE GENERAL CLEARING AND GRUBBING OF THE TREES AND BRUSH ALONG THE ROW FOR PIPE TRENCHING MAY COMMENCE TO THE WIDTH SPECIFIED IN THE E&S PLANS. TREES SHALL BE WINDROWED ON LOW SIDE OF RIGHT-OF-WAY. ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ON-SITE DURING CONSTRUCTION SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF SURFACE WATERS. WOODY DEBRIS MAY BE CHOPPED AND SPREAD ON-SITE, UNLESS LANDOWNER STIPULATIONS SPECIFY OTHERWISE.
- MINOR GRADING WITHIN THE ROW WILL BE CONDUCTED WHERE NECESSARY TO PROVIDE AN EVEN SURFACE FOR SAFE AND EFFICIENT OPERATION OF CONSTRUCTION EQUIPMENT. GRADING WILL BE THE MINIMUM AMOUNT NECESSARY AND BMPs WILL BE INSTALLED PROMPTLY. TREE STUMPS, AND LARGE ROCKS AND BOULDERS WILL ALSO BE REMOVED FOR SAFETY AT THIS TIME.
- EXCAVATE PIPELINE TRENCH. A MINIMUM COVER OF 3' SHALL BE PROVIDED ABOVE PIPELINE AT ALL LOCATIONS EXCEPT FOR WETLANDS AND STREAMS. A MINIMUM COVER OF 5' SHALL BE PROVIDED ALONG PIPELINE AT WETLAND AND STREAM CROSSINGS.
- THE PROPOSED CONSTRUCTION ROW WILL BE USED AS A WORK AREA FOR TRENCH EXCAVATION, EQUIPMENT MOVEMENT, AND THE STORAGE OF SOIL STOCKPILES, AS NEEDED. EQUIPMENT SOIL STOCKPILES, AND OTHER MATERIALS AREA TO REMAIN UPSLOPE OF BMPs DURING CONSTRUCTION ACTIVITIES.
- SEGREGATION OF TOPSOIL AND SUBSOIL WILL BE PERFORMED WHERE TRENCH EXCAVATION TAKES PLACE IN AN AGRICULTURAL, WETLAND, OR RESIDENTIAL AREA. IT IS BEST MANAGEMENT PRACTICE TO SALVAGE AND SEGREGATE TOPSOIL WHERE APPLICABLE.
- TEMPORARY E&S CONTROLS FOR STREAM CROSSINGS SHALL BE INSTALLED AT LOCATIONS SHOWN ON THE E&SCP AND ASSOCIATED DETAIL SHEETS.
- STREAM AND RIVER PIPELINE CROSSING CONSTRUCTION METHODS WILL BE INSTALLED AT LOCATIONS SHOWN ON THE E&S PLAN SHEETS AND AS SPECIFIED ON THE DETAIL SHEETS. WATERBODIES WILL BE CROSSED WITH TEMPORARY BRIDGES, SUCH AS TIMBER MATS OR APPROVED EQUAL CROSSINGS. PRIOR TO CROSSING THE CONVEYANCE, STREAMBANK STABILIZATION WILL BE PERFORMED IMMEDIATELY FOLLOWING COMPLETION OF THE PIPELINE INSTALLATION.
- WETLAND CROSSING WIDTHS FOR UTILITY CROSSINGS WILL BE KEPT TO A MINIMUM AND WILL BE STABILIZED BY PLACING TIMBER MATS, RIPRAP, OR PRE-FABRICATED SWAMP MATS, AS SHOWN ON THE DETAIL SHEETS. ALL MATERIALS USED TO STABILIZE ACCESS ROADS IN WETLAND AREAS WILL BE REMOVED FROM THE WETLAND UPON COMPLETION OF THE PIPELINE CONSTRUCTION. A BARRIER (GEOTECH FABRIC) SHOULD BE USED TO PREVENT MIXING OF SOILS.
- PIPELINE SECTIONS WILL BE TRANSPORTED TO THE WORK AREA AND STRUNG ALONG THE WORKING SIDE OF THE ROW PARALLEL TO THE TRENCH LINE. THE PIPELINE WILL BE BENT TO CONFORM TO THE TRENCH CONTOUR, ALIGNED, WELDED AND PLACED ON TEMPORARY SUPPORTS ALONGSIDE THE TRENCH. WELDS WILL BE VISUALLY AND RADIO-GRAPHICALLY INSPECTED AND REPAIRED AS NECESSARY. THE PIPE SECTION WILL BE LOWERED INTO THE TRENCH AND PLACED ON PADDING MATERIAL LAID ON THE TRENCH BOTTOM TO PROTECT THE PIPE COATING. ANY WETNESS ENCOUNTERED DURING CONSTRUCTION WORK WILL BE DEWATERED BY USING PUMPS, HOSES, AND DEWATERING BAGS, AND WILL BE DISCHARGED TO A WELL-VEGETATED UPLAND AREA.
- INSTALL TRENCH BREAKERS (PLUGS) AT LOCATIONS AS SHOWN ON THE E&S PLAN SHEETS AND AS SPECIFIED ON THE DETAIL SHEETS.
- THE TRENCH WILL BE SUBSEQUENTLY BACKFILLED WITH SUITABLE EXCAVATED MATERIAL. THE BACKFILL MATERIAL WILL BE SLIGHTLY CROWNED IN UPLAND AREAS TO ALLOW FOR SETTLEMENT THAT MAY OCCUR. CROWNING THE SOIL SLIGHTLY OVER THE PIPELINE WILL HELP PREVENT FUTURE STORMWATER-RELATED PROBLEMS FROM THE SETTLING OF THE BACKFILLED AREA. NO CROWNING OF THE SOILS WILL TAKE PLACE IN WETLANDS, STREAMS, OR FLOODPLAINS. DISTURBED AREAS WILL BE RESTORED TO THEIR ORIGINAL TOPOGRAPHIC CONTOURS.

- EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM EROSION FORCES OF RAINDROPS, FLOWING WATER AND WIND. ALL DISTURBED AREAS THAT ARE AT FINAL GRADE MUST BE SEEDED AND MULCHED WITHIN SEVEN DAYS AND AREAS THAT WILL NOT BE WORKED AGAIN FOR 21 DAYS OR MORE MUST BE SEEDED AND MULCHED WITHIN SEVEN DAYS. FOR DISTURBED AREAS WITH SLOPES OF 3:1 OR GREATER, THE AREA WILL BE VERTICALLY TRACKED AND EROSION CONTROL FABRIC SHALL BE INSTALLED AFTER SEED, MULCH, AND SOIL SUPPLEMENTS HAVE BEEN APPLIED. THE TEMPORARY PERMANENT SEEDING AND MULCH TABLE ON THE DETAIL SHEETS CONSIST OF THE TYPE OF SEED AND APPLICATION RATE THAT SHALL BE APPLIED, INCLUDING THE NURSE CROP THAT SHALL BE USED DURING CERTAIN TIME OF THE YEAR TO PROMOTE STABILIZATION OF THE SOIL UNTIL THE PERENNIAL SEEDLINGS ESTABLISH.
- IN THE UNLIKELY EVENT THAT THERE ARE EXCESS EXCAVATED MATERIALS REMAINING AFTER THE TRENCH HAS BEEN BACKFILLED, THE MATERIAL WILL BE DISPOSED OF WITHIN THE EXISTING ROW IN AN UPLAND AREA. MATERIAL WILL BE SPREAD IN A THIN LAYER AND TIED INTO EXISTING CONTOURS TO CREATE POSITIVE DRAINAGE FOR STORMWATER RUNOFF.
- ALL E&S CONTROLS WILL BE INSPECTED, AT A MINIMUM, ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD UNTIL THERE IS A UNIFORM, PERENNIAL 70 PERCENT VEGETATIVE COVERAGE ESTABLISHED. TEMPORARY BMPs WILL BE REMOVED UPON ACHIEVING VEGETATIVE STABILIZATION. THE 70 PERCENT REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT A PERCENT OF THE SITE.
- NO SEDIMENT TRACKING ON THE ROADWAY IS ALLOWED. IN THE EVENT THAT SEDIMENT IS INADVERTENTLY TRACKED ONTO THE ROAD, THE ROAD SHALL BE CLEANED THOROUGHLY BY THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR PICKUP SWEEPING AND SHALL BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA. STREET WASHING OF SEDIMENTS TO THE STORM DRAIN SYSTEM IS NOT ALLOWED. IF STREET WASH WASTEWATER CAN BE CONTROLLED FROM ENTERING THE STORM DRAINAGE SYSTEM, THEN IT SHALL BE PUMPED BACK ONTO THE SITE, CONTAINED AND DISPOSED OF PROPERLY.
- CONSTRUCTION ACCESS RESTORATION SHALL BE EQUAL OR BETTER THAN THE PRE-CONSTRUCTION CONDITION AND GRADES THAT WERE ALTERED DURING CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL GRADES AND MATCH EXISTING DRAINAGE PATTERNS.
- APPLICABLE PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, TEMPORARY AND PERMANENT SEEDING, SOODING, MULCHING, EROSION CONTROL FABRICS AND MATTING, THE EARLY APPLICATION OF GRAVEL BASE ON AREAS TO BE PAVED, AND DUST CONTROL.
- SELECTED SOIL STABILIZATION MEASURES SHALL BE APPROPRIATE FOR THE TIME OF YEAR, SITE CONDITIONS, AND ESTIMATED DURATION OF USE.
- SOIL STOCKPILES MUST BE STABILIZED AND PROTECTED WITH SEDIMENT TRAPPING MEASURES.
- LINEAR CONSTRUCTION ACTIVITIES SUCH AS RIGHT-OF-WAY AND EASEMENT CLEARING, ROADWAY DEVELOPMENT, PIPELINES, AND TRENCHING FOR UTILITIES, SHALL BE CONDUCTED TO MEET THE SOIL STABILIZATION TIMEFRAME REQUIREMENTS. CONTRACTORS SHALL INSTALL THE BEDDING MATERIALS, ROADBEDS, STRUCTURES, PIPELINES, OR UTILITIES AND RE-STABILIZE THE DISTURBED SOILS SO THAT THE 7-DAY REQUIREMENTS ARE MET.
- EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES, CONSISTENT WITH SAFETY AND SPACE CONSIDERATIONS.

- FOR THREE TO ONE OR STEEPER SLOPES THE DISTURBED AREA WILL BE VERTICALLY TRACKED. EROSION CONTROL FABRIC WILL BE INSTALLED.
- TEMPORARY SEDIMENT BARRIERS WILL BE MAINTAINED, UNTIL VEGETATION HAS BECOME ESTABLISHED WITH A UNIFORM COVERAGE OF DENSITY OF 70 PERCENT OR MORE WITHIN THE DISTURBED ROW. ONCE THIS COVERAGE HAS BEEN OBTAINED, APPROPRIATE CONTROLS WILL BE REMOVED FROM THE WORK AREA. AREAS DISTURBED DURING THE REMOVAL OF THE EROSION CONTROLS WILL BE STABILIZED IMMEDIATELY. THE 70 PERCENT REQUIREMENTS REFERS TO THE TOTAL AREA VEGETATED AND NOT A PERCENT OF THE SITE.
- ALL WASTE MATERIAL WILL BE TRANSPORTED OFF-SITE FOR RECYCLING AND/OR DISPOSAL. WHERE FEASIBLE, CONSTRUCTION WASTE MATERIALS WILL BE RECYCLED OR WILL BE TAKEN TO AN APPROVED FACILITY FOR DISPOSAL. AS STATED PREVIOUSLY, EXCESS SOIL MATERIAL, IF ANY, WILL BE SPREAD AND REVEGETATED WITHIN THE ROW. OFF-SITE SPOIL AND/OR BORROW SITES MUST BE OPERATED UNDER A CURRENT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT.
- EROSION CONTROL BLANKETS SHALL NOT BE INSTALLED ON AGRICULTURAL AREAS EVEN IF SLOPES ARE STEEPER THAN THREE TO ONE. THESE AREAS MAY REQUIRE SPECIAL ATTENTION/RESTORATION UNTIL ADEQUATE GROWTH IS ACHIEVED.
- TEMPORARY STOCKPILES NEED SILT FENCE / SOCK PLACED ADJACENT TO ROW.
- CONTRACTOR IS EXPECTED TO MINIMIZE DISTURBANCE WITHIN THE ROW.

MAINTENANCE SCHEDULE

- AFTER CONSTRUCTION IS COMPLETED, ALL BMPs WILL BE REMOVED AND ANY LAND DISTURBED BY REMOVAL WILL BE PERMANENTLY STABILIZED, UNLESS OTHERWISE SPECIFIED. ALL MAINTENANCE MUST BE COMPLETED IMMEDIATELY AFTER AN INSPECTION IDENTIFIES THAT A BMP IS NOT FUNCTIONING AS REQUIRED.
- IF DURING CONSTRUCTION, CONCENTRATED FLOW AREAS FORM DUE TO A STORM EVENT AND ANY AREA BECOMES UNSTABLE, THE AREA WILL BE STABILIZED BY PLACING SIZE D50 (FOUR-INCH DIAMETER) STONE IN THE CONCENTRATED FLOW AREAS. ANY REQUIRED REPAIRS OR MAINTENANCE SHALL BE MADE IMMEDIATELY.
 - ALL E&S CONTROLS WILL BE INSPECTED, AT A MINIMUM, ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD DURING THE ENTIRE PROJECT.
 - SEDIMENT MUST BE REMOVED WHERE ACCUMULATION REACHES ONE-HALF THE ABOVE GROUND HEIGHT OF A SILT FENCE (ALL TYPES).
 - SILT FENCE SECTIONS, WHICH HAVE BEEN UNDERMINED OR TOPPED, SHOULD IMMEDIATELY BE REPAIRED.
 - REQUIRED REPAIRS OR MAINTENANCE SHALL BE MADE IMMEDIATELY.
 - LOGS OF SEDIMENT CONTROL INSPECTION MUST BE KEPT WITH THE INSPECTORS CONSTRUCTION RECORDS AND INCLUDE DATE, TIME, AND CONDITION OF BMPs AND ANY NECESSARY MAINTENANCE. A BMP INSPECTION REPORT IS INCLUDED IN APPENDIX I.
 - TEMPORARY AND PERMANENT E&S CONTROL BMPs SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND REPAIR SHALL BE CONDUCTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT GREATER THAN 0.5-INCH OF RAIN PER 24-HOUR PERIOD.
 - TEMPORARY E&S CONTROL BMPs SHOULD BE REMOVED FOLLOWING CONFIRMATION THAT 70 PERCENT PERENNIAL VEGETATIVE COVERAGE IS ESTABLISHED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON-SITE. DISTURBED SOIL RESULTING FROM REMOVAL OF BMPs OR VEGETATION SHALL BE PERMANENTLY STABILIZED.

PIPELINE BMPs INSTALLATION AND REMOVAL SEQUENCE

TEMPORARY AND PERMANENT BMPs WILL BE USED DURING CONSTRUCTION ACTIVITIES TO AVOID AND/OR MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS OF CONSTRUCTION ACTIVITIES.

INSPECTIONS OF ALL E&S CONTROLS SHALL BE CONDUCTED, AT A MINIMUM, ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5-INCH PER 24-HOUR PERIOD. ALL NECESSARY CLEANING, REPAIR AND/OR MAINTENANCE SHALL BE MADE AS SOON AS POSSIBLE AFTER THE INSPECTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT INSPECTIONS AND REPAIRS ARE MADE AS OUTLINED HEREIN. ALL SEDIMENT COLLECTED FROM THE MAINTENANCE OF E&S CONTROL MEASURES SHALL BE SPREAD ON-SITE AND SEEDED AND MULCHED, OR DISPOSED OF PROPERLY AT A WV DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP)-APPROVED LOCATION. THE FOLLOWING MAINTENANCE WILL BE PERFORMED UNTIL STABILIZATION HAS BEEN ACHIEVED:

- TEMPORARY EROSION AND SEDIMENT CONTROL BMPs SHOULD BE REMOVED FOLLOWING CONFIRMATION THAT 70 PERCENT PERENNIAL VEGETATIVE COVERAGE IS ESTABLISHED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON-SITE. DISTURBED SOIL RESULTING FROM REMOVAL OF BMPs OR VEGETATION SHALL BE PERMANENTLY STABILIZED.
- WHENEVER INSPECTION AND/OR MONITORING REVEALS THAT THE BMPs IDENTIFIED IN THE E&SCP ARE INADEQUATE, THE E&SCP SHALL BE MODIFIED, AS APPROPRIATE, IN A TIMELY MANNER.
- MAINTENANCE OF THE E&SCP - THE E&SCP SHALL BE RETAINED ON-SITE. THE E&SCP SHALL BE MODIFIED WHENEVER THERE IS A SIGNIFICANT CHANGE IN THE DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE OF ANY BMP. THE DEP MUST BE NOTIFIED OF ANY CHANGES TO THE CONSTRUCTION SWPPP. DEPENDING ON THE SIGNIFICANCE OF THE REVISION, A PERMIT MODIFICATION MAY NEED TO BE SUBMITTED TO THE DEP.

THE FOLLOWING IS A GENERAL BMP INSTALLATION SEQUENCE FOR PIPELINE CONSTRUCTION ACTIVITIES:

- A STONE CONSTRUCTION ENTRANCE SHALL BE PROVIDED AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL BE ACCESSING A PAVED ROAD DIRECTLY FROM A DISTURBED AREA.
- TEMPORARY SEDIMENT BARRIERS, INCLUDING APPROPRIATELY SIZED SILT FENCE WILL BE PLACED DOWN SLOPE OF WORK AREAS AND AROUND SOIL STOCKPILES, AS NEEDED.
- APPROPRIATELY SIZED FENCING WILL BE PLACED AROUND WETLANDS AND WATERBODIES ADJACENT TO THE WORK AREA PRIOR TO ANY TRENCHING ACTIVITIES.
- STOCKPILE SLOPES WILL BE TWO TO ONE OR FLATTER, AND STOCKPILES WILL NOT EXCEED 35 FEET IN HEIGHT.
- TEMPORARY STREAM AND WETLAND CROSSINGS SHALL BE INSTALLED AS INDICATED ON THE E&S PLAN SHEETS AND AS PER THE E&S DETAIL SHEETS. FOR ALL OTHER SURFACE OR STORMWATER CONVEYANCES THAT ARE NOT IDENTIFIED ON THE PLAN SHEETS AS STREAMS DUE TO THE LACK OF DEFINED BED AND BANK CONDITIONS, A TEMPORARY BRIDGE SUCH AS A TIMBER MAT OR AN APPROVED EQUAL SHALL BE INSTALLED, PRIOR TO CROSSING THE CONVEYANCE IF THERE IS FLOWING WATER PRESENT AT TIME OF CONSTRUCTION IN THAT AREA.
- TEMPORARY ROW DIVERSIONS WILL BE INSTALLED IMMEDIATELY AFTER INITIAL DISTURBANCE OF THE SOIL IN ACCORDANCE WITH THE DETAILS AND SPACING SIZING REQUIREMENTS. TEMPORARY ROW DIVERSIONS WILL BE CONSTRUCTED OF SOIL TO REDUCE RUNOFF VELOCITY AND DIVERT WATER OFF OF THE PIPELINE ROW. TEMPORARY ROW DIVERSIONS WILL BE MAINTAINED UNTIL PERMANENT ROW DIVERSIONS HAVE BEEN INSTALLED.
- TRENCH DEWATERING, IF NEEDED, WILL BE CONDUCTED USING A PUMP AND HOSE. WATER WILL BE RELEASED INTO A FILTER BAG THAT WILL BE LOCATED IN A WELL-VEGETATED UPLAND AREA.
- TRENCH BREAKERS (PLUGS) WILL BE INSTALLED IN SLOPING AREAS GREATER THAN FIVE PERCENT AND ON SLOPES ADJACENT TO STREAMS, WETLANDS, AND ROAD CROSSINGS TO PREVENT SUBSURFACE EROSION. TRENCH BREAKERS (PLUGS) WILL BE INSTALLED IN ACCORDANCE WITH THE SPACING REQUIREMENTS.
- THE WORK AREA WILL BE BACKFILLED FOLLOWING PIPELINE INSTALLATION OR OTHER EXCAVATION WORK. IN AREAS WHERE TOPSOIL HAS BEEN SEGREGATED, THE SUBSOIL WILL BE REPLACED FIRST, AND THEN THE TOPSOIL WILL BE SPREAD OVER THE AREA FROM WHICH IT WAS REMOVED. DISTURBED AREAS WILL BE RESTORED TO THEIR ORIGINAL TOPOGRAPHIC CONTOURS.
- ROW DIVERSIONS, WHEN REQUIRED, WILL BE CONSTRUCTED WITH A 5 TO 10 PERCENT (TYPICAL) OUTSLOPE TO DIVERT SURFACE FLOW TO A WELL-VEGETATED STABLE AREA.
- IMMEDIATELY FOLLOWING BACKFILLING, ALL DISTURBED AREAS WILL BE GRADED IN PREPARATION FOR SEEDING AND MULCHING. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL COVER MUST BE INITIATED NO LATER THAN SEVEN DAYS AFTER REACHING FINAL GRADE.

MATERIAL WASTE HANDLING AND RECYCLING

- GARBAGE DISPOSAL IS HANDLED THROUGH ONE OF THE LOCAL WASTE MANAGEMENT PROVIDERS/FACILITIES. THE CONTRACTOR WILL LEASE A DUMPSTER FOR THE DURATION OF THE PROJECT WHICH WILL BE DISPOSED OF AT A LICENSED/PERMITTED MUNICIPAL LANDFILL.
- THE CONTRACTOR WILL DISPOSE OF ALL SCRAP MATERIAL. THE SCRAP MATERIAL MUST BE REMOVED FROM THE SITE AND DISPOSED OF OR RECYCLED AT A PROPERLY LICENSED/PERMITTED FACILITY. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY PERMITS AND/OR DISPOSAL FEES. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO ASSURE THAT ALL MATERIALS ARE HANDLED AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS, RULES, AND REGULATIONS, INCLUDING BUT NOT LIMITED TO THOSE ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY, WVDEP, AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.
- CONSTRUCTION WASTE MATERIALS, INCLUDING BUT NOT LIMITED TO BENTONITE, POLY PIPE SHAVINGS, AND SANDBAGS, WILL BE RECYCLED OR WILL BE TAKEN TO THE NEAREST APPROVED FACILITY FOR DISPOSAL. EXCESS SOIL MATERIAL, IF ANY, WILL BE SPREAD AND REVEGETATED WITHIN THE ROW. OFF-SITE SPOIL AND/OR BORROW SITES MUST BE OPERATED UNDER A CURRENT NPDES.

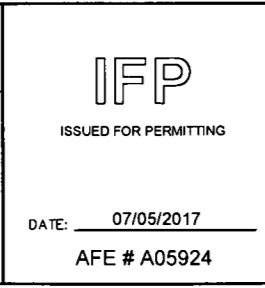
SEEDING

- SEE DETAILS 25-27 FOR TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCHING REQUIREMENTS.

POLLUTANT CONTROLS

- ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ON SITE DURING CONSTRUCTION SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF SURFACE WATER. WOODY DEBRIS MAY BE CHOPPED AND SPREAD ON SITE.
- COVER, CONTAINMENT, AND PROTECTION FROM VANDALISM SHALL BE PROVIDED FOR ALL CHEMICALS, LIQUID PRODUCTS, PETROLEUM PRODUCTS, AND NON-INERT WASTES PRESENT ON THE SITE.
- MAINTENANCE AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES INVOLVING OIL CHANGES, HYDRAULIC SYSTEM DRAIN DOWN, SOLVENT AND DE-GREASING CLEANING OPERATIONS, FUEL TANK DRAIN DOWN AND REMOVAL, AND OTHER ACTIVITIES WHICH MAY RESULT IN DISCHARGE OR SPILLAGE OF POLLUTANTS TO THE GROUND OR INTO SURFACE WATER RUNOFF MUST BE CONDUCTED USING SPILL PREVENTION MEASURES. SUCH AS DRIP PANS. CONTAMINATED SURFACES SHALL BE CLEANED IMMEDIATELY FOLLOWING ANY DISCHARGE OR SPILL INCIDENT. EMERGENCY REPAIRS MAY BE PERFORMED ON-SITE USING TEMPORARY PLASTIC PLACED BENEATH AND, IF RAINING, OVER THE VEHICLE.
- APPLICATION OF AGRICULTURAL CHEMICALS INCLUDING FERTILIZERS AND PESTICIDES SHALL BE CONDUCTED IN A MANNER AND AT APPLICATION RATES THAT WILL NOT RESULT IN LOSS OF CHEMICAL TO SURFACE WATER RUNOFF. MANUFACTURERS' RECOMMENDATIONS FOR APPLICATION RATES AND PROCEDURES SHALL BE FOLLOWED.
- BMPs SHALL BE USED TO PREVENT OR TREAT CONTAMINATION OF SURFACE WATER RUNOFF BY PH MODIFYING SOURCES. THESE SOURCES INCLUDE BULK CEMENT, CEMENT KILN DUST, FLY ASH, NEW CONCRETE WASHING AND CURING WATERS, WASTE STREAMS GENERATED FROM CONCRETE GRINDING AND SAWING, EXPOSED AGGREGATE PROCESSES, AND CONCRETE PUMPING AND MIXER WASHOUT WATERS.
- REPORT SPILLAGE OR DISCHARGE OF POLLUTANTS WITHIN 24-HOURS.

LAYOUT TAB: ESCP1
 CAD FILE: R:\050-6323-MEC-HP-LOOP PHASE 3-ANTERO-Survey\PLANS\ESCP DETAIL SHEETS.dwg
 USER: robert.j.luczo
 PLOT DATE/TIME: 7/5/2017 2:27 PM



SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

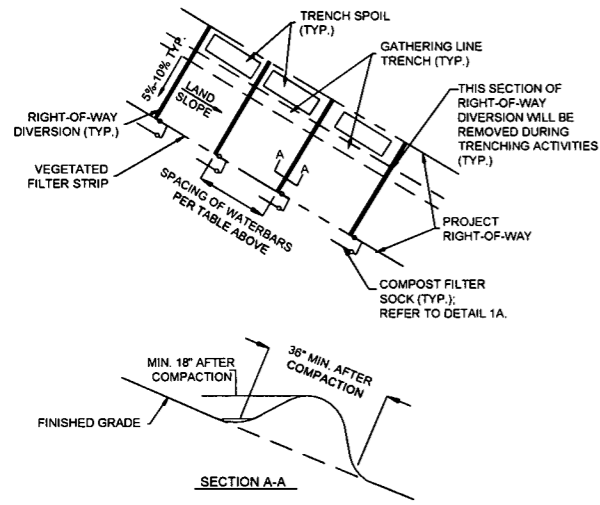
SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

REVISION			
NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	08/30/17	DLJ

Antero
 Midstream Partners LP
SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE ESCP DETAILS
 PROPOSED 30" HIGH PRESSURE STEEL GAS LINE
 DODDRIIDGE COUNTY, WEST VIRGINIA
 DATE: 7/5/2017
 SHEET 13
 SHT. NAME: 050-6323\RESIDUE\ESCP1 REV. 1

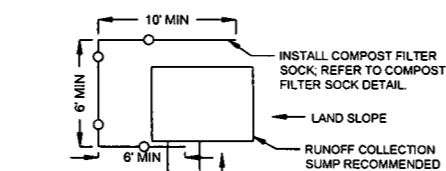
RIGHT-OF-WAY DIVERSION SPACING IN FEET		
PIPELINE GRADE	> 200' FROM STREAM	< 200' FROM STREAM
2-5 %	400	200
6-12 %	300	150
13-21 %	200	100
22-34 %	100	50
35-50 %	50	25

* IT IS DIFFICULT TO INSTALL DIVERSIONS ON SLOPES STEEPER THAN 35%. THE DIVISION OF WATER AND WASTE MANAGEMENT WILL ALLOW GREATER DISTANCES BETWEEN DIVERSIONS ON EXTREME SLOPES



NOTE: SUMPS TO BE USED DURING CONSTRUCTION (TEMPORARY)

1 RIGHT OF WAY DIVERSION OUTLET (WATERBAR)
NTS



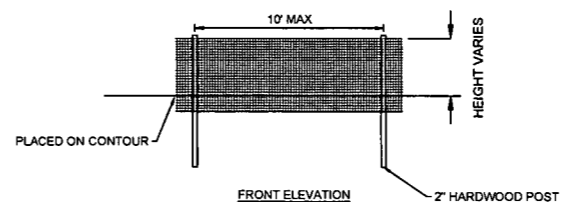
NOTES:

- RIGHT-OF-WAY DIVERSIONS SHOULD BE INSTALLED ACROSS THE ENTIRE RIGHT-OF-WAY ON ALL SLOPES GREATER THAN 5%.
- RIGHT-OF-WAY DIVERSIONS SHALL BE PLACED AT 5% TO 10% SLOPE DOWNHILL. THEY SHALL BE SPACED AT THE INCREMENTS AS SHOWN IN DETAIL 1, AND IN ACCORDANCE WITH WVDEP E&S STANDARDS.
- RIGHT-OF-WAY DIVERSIONS SHOULD BE CONSTRUCTED TO DISCHARGE TO A WELL-VEGETATED AREA. RIGHT-OF-WAY DIVERSIONS SHOULD NOT DISCHARGE INTO AN OPEN TRENCH. RIGHT-OF-WAY DIVERSIONS SHOULD BE ORIENTED SO THAT THE DISCHARGE DOES NOT FLOW BACK INTO THE RIGHT-OF-WAY. 12" COMPOST FILTER SOCK SHOULD BE LOCATED BELOW THE DISCHARGE END OF THE RIGHT-OF-WAY DIVERSIONS.
- BSRF CAN BE SUBSTITUTED IN PLACE OF CFS WITH APPROVAL FROM ANTERO.
- SUMPS TO BE USED DURING CONSTRUCTION (TEMPORARY).

MAINTENANCE:

- RIGHT-OF-WAY DIVERSIONS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED RIGHT-OF-WAY DIVERSIONS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION.
- MAINTENANCE OF RIGHT-OF-WAY DIVERSIONS SHALL BE PROVIDED UNTIL RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.
- RIGHT-OF-WAY DIVERSIONS ON RETIRED RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.

1A RIGHT OF WAY DIVERSION OUTLET (WATERBAR)
NTS

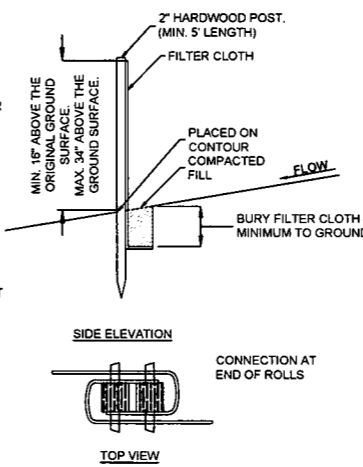


NOTE:

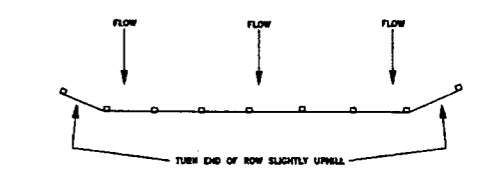
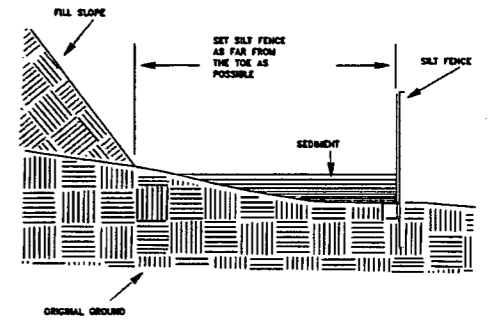
STANDARD FILTER FABRIC MUST BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 6 FEET UP SLOPE 45 DEGREES TO MAIN BARRIER ALIGNMENT.

THE MAXIMUM LENGTH OF SLOPE ABOVE A ROW OF SILT FENCE IS 110'.

SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.

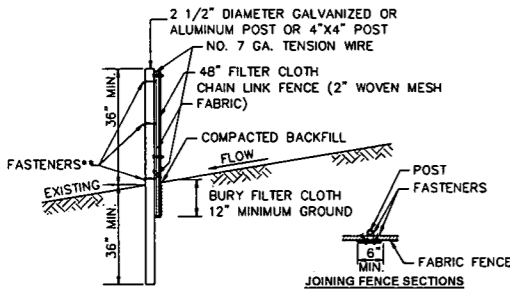


2 SILT FENCE
NTS



Slope - Percent	Maximum Slope Length (ft) Above Fence		
	Standard (18" High) Silt Fence	Reinforced (30" High) Silt Fence	Super Silt Fence
2 (or less)	150	500	1000
3	100	350	550
5	50	150	250
10	30	100	215
15	25	70	175
20	20	55	155
25	18	45	140
30	15	35	125
35	13	30	115
40	11	25	105
45	10	20	95
50	9	15	85

2A SILT FENCE PLACEMENT
NTS



* POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. GALVANIZED OR ALUMINUM POSTS OR 4" x 4" POST.

** CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POST WITH WIRE TIES OR STAPLES. GEOTEXTILE FABRIC SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID-SECTIONS.

NO. 7 GA. TENSION WIRE INSTALLED HORIZONTALLY AT TOP AND BOTTOM OF CHAIN-LINK FENCE.

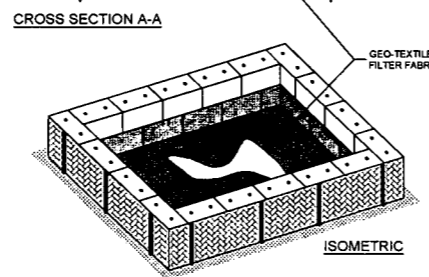
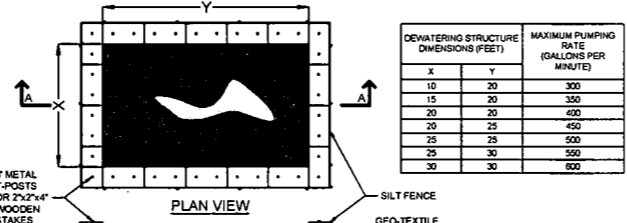
FILTER FABRIC FENCE SHOULD BE PLACED AS CLOSE TO THE CONTOUR AS POSSIBLE.

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.

NO SECTION OF SILT FENCE SHOULD EXCEED A GRADE OF 5% FOR MORE THAN A DISTANCE OF 20 FEET.

SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.

3 SUPER SILT FENCE
NTS



4 STRAW BALE DEWATERING
NTS

- STRAW BALES SHOULD BE PLACED ON THEIR SIDES WITH THE TWINE FACING OUT.
- STRAW BALES SHOULD BE STACKED TWO HIGH WITH GEO-TEXTILE FABRIC PINNED BETWEEN BALES.
- SEAMS OF GEOTEXTILE FABRIC SHOULD BE SEWN TOGETHER.
- 6 FOOT METAL T-POSTS ARE RECOMMENDED. DRIVEN THROUGH BOTH STRAW BALES. IF METAL T-POSTS ARE NOT AVAILABLE, WOODEN STAKES SHOULD BE A MINIMUM OF 2"x2"x4". STAKES SHOULD BE DRIVEN AROUND THE PERIMETER OF THE STRAW BALES AS STRUCTURAL SUPPORT AS WELL AS THROUGH THE BALES TO HELP PIN THE GEO-TEXTILE FABRIC IN PLACE.
- DEWATERING STRUCTURE DIMENSIONS SHOULD BE DESIGNED TO ACCOMMODATE THE SIZE OF THE WATER PUMP BEING UTILIZED.
- DEWATERING STRUCTURE DIMENSIONS MAY NEED TO BE ADJUSTED TO SUIT THE VARIOUS SIZES OF FILTER BAGS, THOUGH SQUARE FOOTAGE SPECIFICATIONS SHOULD STILL BE MAINTAINED. THE STRUCTURE SHOULD COMPLETELY ENCOMPASS THE BAG BEING UTILIZED.
- WHEN PUMPING LARGE AMOUNTS OF WATER FOR AN EXTENDED PERIOD OF TIME, (LARGE BELL HOLES, ETC.) INTERVAL PUMPING MAY BE NECESSARY TO AVOID OVERPOWERING THE DEWATERING STRUCTURE.
- USE OF MULTIPLE DEWATERING STRUCTURES MAY BE NECESSARY UNDER SPECIAL CIRCUMSTANCES.
- FOR STREAM CROSSINGS, WHEN PUMPING OUT THE TRENCH WITH A 2 INCH TRASH PUMP AT 1/4 THROTTLE, A STANDARD 10' BY 10' DEWATERING STRUCTURE WITH A COMPARABLE FILTER BAG SHOULD BE ADEQUATE. FIELD ADJUSTMENTS WILL BE MADE IF FLOW IS OVERPOWERING THE STRUCTURE.
- ADDITIONAL EROSION CONTROLS MAY BE UTILIZED DOWNSLOPE OF DEWATERING STRUCTURES WHERE NEEDED.
- DEWATERING STRUCTURE WILL BE PLACED TO MAXIMIZE AVAILABLE VEGETATIVE STRIP.

4A STRAW BALE DEWATERING
NTS

LAYOUT TAB: ESCP2
CAD FILE: R:\050-6323-MEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\ESCP DETAIL SHEETS.dwg
PLOT DATE/TIME: 7/5/2017 2:28 PM
USER: robert.l.luczo

ISSUED FOR PERMITTING

DATE: 07/05/2017

AFE # A05924

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

GENERAL INFORMATION			
1. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.			
REVISION			
NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JLJ

SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE ESCP DETAILS

PROPOSED 30" HIGH PRESSURE STEEL GAS LINE DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017 AFE No.: A05924

SCALE: AS SHOWN

DRAWN BY: JLA, RAL (TIG)

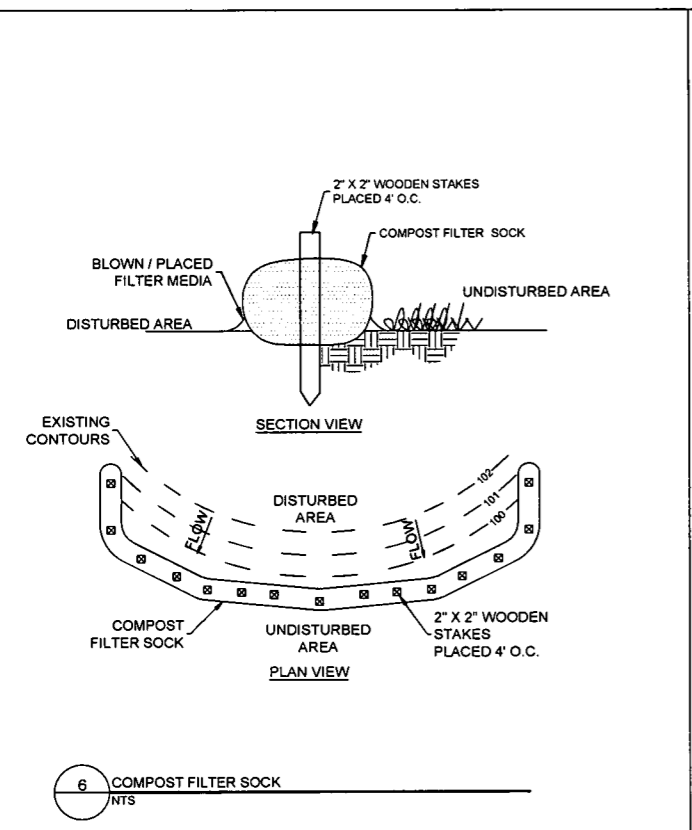
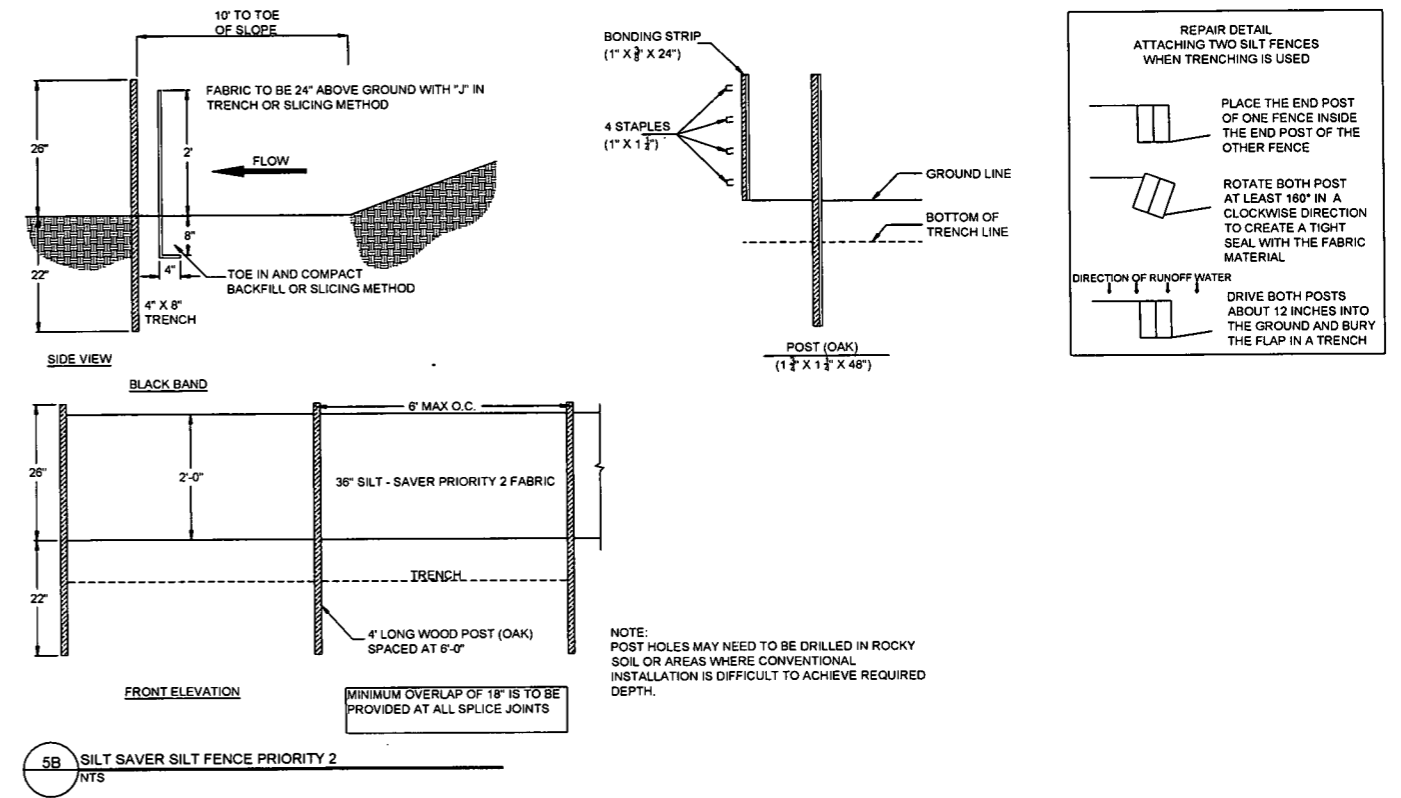
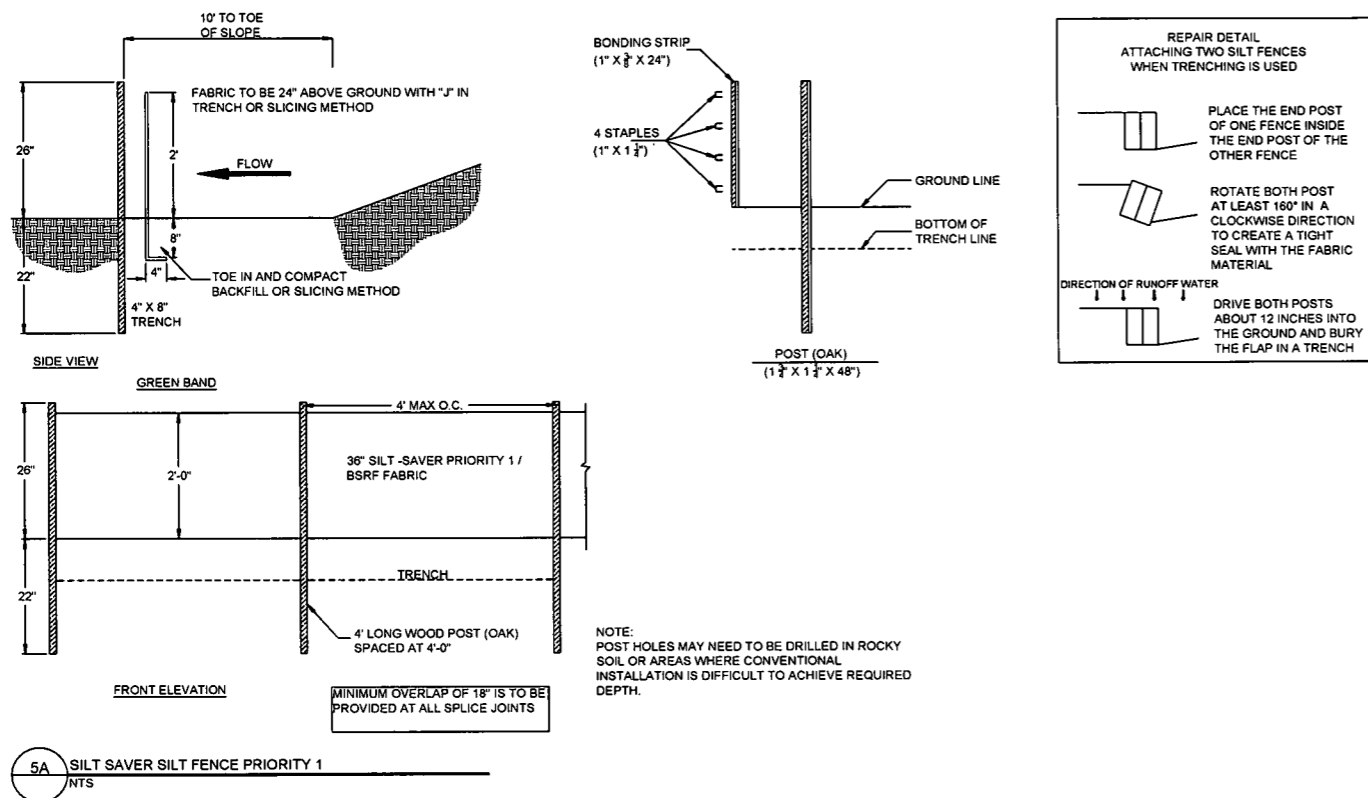
CHECKED: AR, JSP (TIG)

SHEET 14

SHT. NAME: 050-6323-RESIDUE\ESCP2

REV. 1

LAYOUT FILE: ESCP3 CAD FILE: R:\050-6323-MEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\ESCP DETAIL SHEETS.dwg USER: robert.j.luczko PLOT DATE/TIME: 7/5/2017 2:29 PM



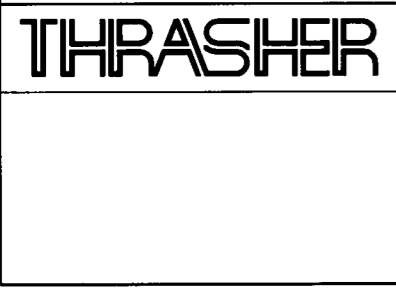
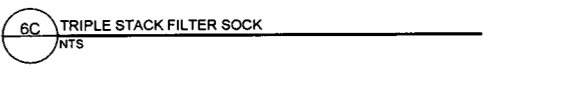
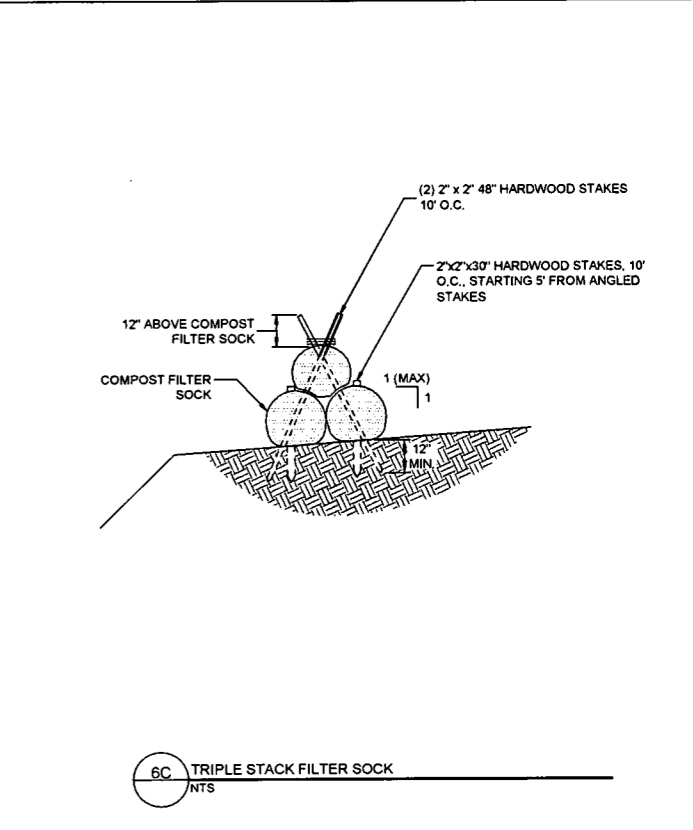
- CONDITIONS WHERE PRACTICE APPLIES:**
- INSTALL ON DISTURBED AREAS THAT REQUIRE IMMEDIATE EROSION PROTECTION.
 - USE ON SLOPES REQUIRING STABILIZATION UNTIL PERMANENT VEGETATION CAN BE ESTABLISHED.
 - CAN BE USED ALONG THE PERIMETER OF A PROJECT, AS A CHECK DAM IN UNLINED DITCHES AND AROUND TEMPORARY STOCKPILES.
 - SOCK CAN BE STAKED TO THE GROUND USING WILLOW CUTTINGS FOR ADDED REVEGETATION.
 - EROSION CAN OCCUR BENEATH AND BETWEEN SOCK IF NOT PROPERLY ENTRENCHED, ALLOWING WATER TO PASS BELOW AND BETWEEN SOCKS. IT IS THEREFORE VERY IMPORTANT TO INSTALL SOCKS CORRECTLY.
 - THEY CAN REPLACE SEDIMENT FENCE ON STEEP SLOPES.
 - ROLLS ARE A SHORT-TERM SOLUTION TO HELP ESTABLISH NATIVE VEGETATION.
 - ROLLS STORE MOISTURE FOR VEGETATION PLANTED IMMEDIATELY UPSLOPE.
 - PLASTIC NETTING WILL EVENTUALLY PHOTO-DEGRADE, ELIMINATING THE NEED FOR RETRIEVAL OF MATERIALS AFTER THE FIBER OR STRAW HAS BROKEN DOWN.
- CONSTRUCTION SPECIFICATIONS:**
- IT IS CRITICAL THAT SOCK IS INSTALLED PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE CONTOUR.
 - NARROW TRENCHES SHOULD BE DUG ACROSS THE SLOPE, ON CONTOUR, TO A DEPTH OF 3 TO 5 INCHES ON CLAY SOILS AND SOILS WITH GRADUAL SLOPES. ON LOOSE SOILS, STEEP SLOPES, AND DURING HIGH RAINFALL EVENTS, THE TRENCHES SHOULD BE DUG TO A DEPTH OF 5 TO 7 INCHES, OR 1/2 TO 2/3 OF THE THICKNESS OF THE SOCK.
 - START CONSTRUCTION OF TRENCHES AND INSTALLING SOCK FROM THE BASE OF THE SLOPE AND WORK UPHILL. EXCAVATED MATERIAL SHOULD BE SPREAD EVENLY ALONG THE UPHILL SLOPE AND COMPACTED USING HAND TAMPING OR OTHER METHOD. CONSTRUCT TRENCHES AT CONTOUR INTERVALS OF 3 TO 30 FEET APART DEPENDING ON THE STEEPNESS OF THE SLOPE, SOIL TYPE, AND RAINFALL. THE STEEPER THE SLOPE THE CLOSER TOGETHER THE TRENCHES SHOULD BE CONSTRUCTED.
 - INSTALL THE SOCK SNUGLY INTO THE TRENCHES AND ABUT TIGHTLY END TO END. DO NOT OVERLAP THE ENDS.
 - INSTALL STAKES AT EACH END OF THE SOCK, AND AT 4-FOOT CENTERS ALONG THE ENTIRE LENGTH OF THE SOCK.
 - IF REQUIRED, INSTALL PILOT HOLES FOR THE STAKES USING A STRAIGHT BAR TO DRIVE HOLES THROUGH THE SOCK AND INTO THE SOIL.
 - AT A MINIMUM, WOODEN STAKES SHOULD BE APPROXIMATELY 2 X 2 X 24 INCHES. WILLOW CUTTINGS OR 3/8-INCH REBAR CAN ALSO BE USED FOR STAKES.
 - STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE SOCK, LEAVING 2 TO 3 INCHES OF THE STAKE PROTRUDING ABOVE THE SOCK.

MAINTENANCE:

- INSPECT SOCK AT LEAST ONCE A WEEK AND AFTER EACH RAIN EVENT GREATER THAN 0.5 INCH.
- REPAIR OR REPLACE SPLIT, TORN, RAVELING, OR SLUMPING SOCK.
- REMOVE SEDIMENT ACCUMULATIONS WHEN EXCEEDING 1/2 THE HEIGHT BETWEEN THE TOP OF THE SOCK AND THE GROUND SURFACE.
- REPAIR ANY RILLS OR GULLIES PROMPTLY.
- RESEED OR REPLANT VEGETATION IF NECESSARY UNTIL THE SLOPE IS STABILIZED

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600 mm) Sediment control	32 in (800 mm) Sediment control
2 (or less)	800 (180)	700 (220)	1000 (300)	1200 (400)	1500 (500)
5	400 (120)	300 (90)	500 (150)	600 (180)	750 (225)
10	200 (60)	150 (45)	200 (60)	250 (75)	300 (90)
15	140 (40)	100 (30)	140 (40)	180 (50)	220 (60)
20	100 (30)	75 (20)	100 (30)	130 (35)	160 (45)
25	80 (20)	60 (15)	80 (20)	100 (30)	120 (35)
30	60 (15)	45 (10)	60 (15)	80 (20)	100 (30)
35	50 (10)	35 (7)	50 (10)	60 (15)	80 (20)
40	40 (10)	25 (5)	40 (10)	50 (10)	60 (15)
45	30 (5)	15 (5)	30 (5)	40 (10)	50 (10)
50	20 (5)	10 (5)	20 (5)	30 (5)	40 (10)

* Based on a failure point of 36 in (900 mm) super 80 fence (wire reinforced) at 1000 lb (450 kg) of slope, watered with equivalent to receiving length of sediment control device, 1 in (25 mm) (24 hr) rain event.
** Effective height of Sediment control after installation and with constant head from runoff as determined by Ohio State University.



IFP
ISSUED FOR PERMITTING
DATE: 07/05/2017
AFE # A05924

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

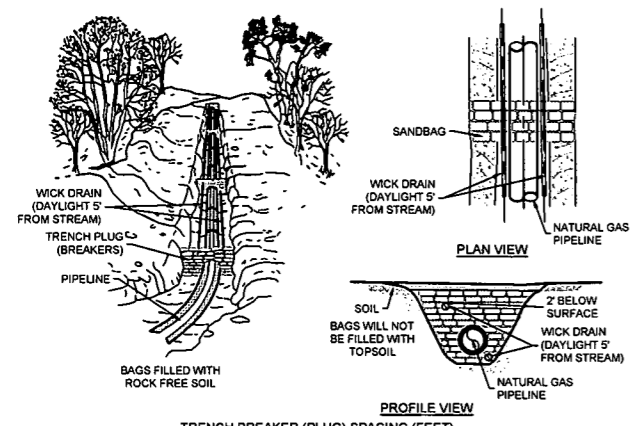
SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

GENERAL INFORMATION		
NO.	DESCRIPTION	DATE
1	REVISED PER COMMENTS FROM ANTERO	06/30/17

Antero
Midstream Partners LP
SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE ESCP DETAILS
PROPOSED 30" HIGH PRESSURE STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017 AFE No.: A05924
SCALE: AS SHOWN
DRAWN BY: JAL, RA (TTO) SHEET 15
CHECKED: AS, JH (TTO)
SHT. NAME: 050-6323\RESIDUE\ESCP3 REV. 1

LAYOUT TAB: ESCP4
 CAD FILE: R:\050-6323-WEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\ESCP DETAIL SHEETS.dwg
 USER: robert.j.lucio
 PLOT DATE/TIME: 7/5/2017 2:30 PM

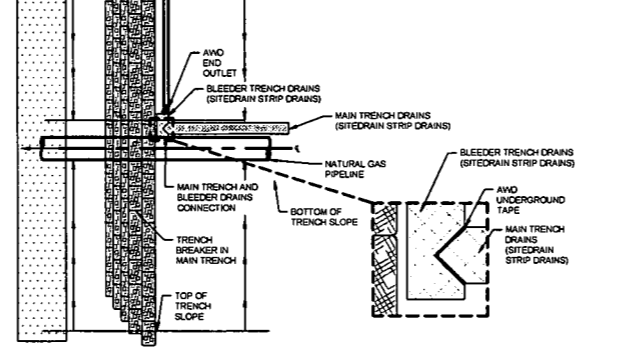
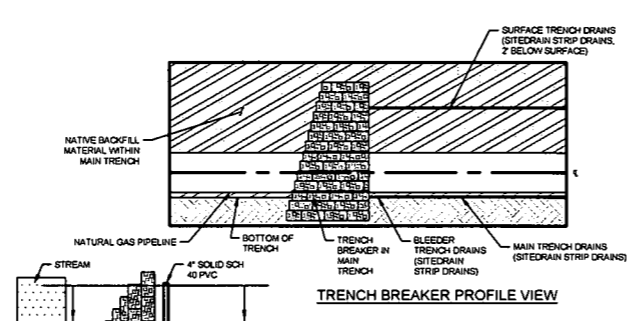


TRENCH BREAKER (PLUG) SPACING (FEET)

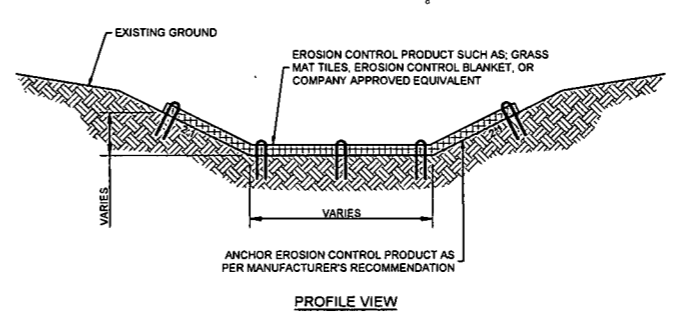
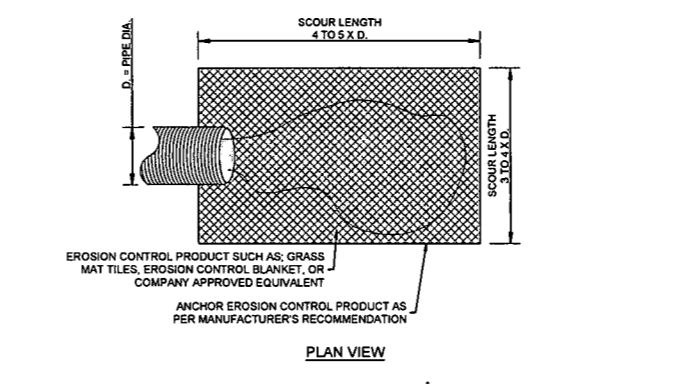
ALIGNMENT SLOPE %*	SPACING L (FT)	PLUG MATERIAL
< 5 %	1,000	** EARTH FILLED BAGS
5-15 %	500	** EARTH FILLED BAGS
15-25 %	300	** EARTH FILLED BAGS
25-35 %	200	** EARTH FILLED BAGS
35-100 %	100	** EARTH FILLED BAGS
> 100 %	50	** USE CEMENT FILLED BAGS (WETTED) OR MORTARED STONES

* TRENCH BREAKERS (PLUGS) ARE REQUIRED AT ALL STREAM, RIVER, OR WATER-BODY CROSSINGS REGARDLESS OF TRENCH SLOPE.
 ** TOP SOIL MAY NOT BE USED TO FILL BAGS. TRENCH BREAKERS (PLUGS) WITH CEMENT FILLED BAGS SHALL BE INSTALLED AND ALLOWED TO CURE WITHOUT ANY SURFACE WATER COMING INTO CONTACT WITH THEM. CONTRACTOR SHALL VERIFY CEMENT HAS CURED AND HARDENED PRIOR TO REMOVING ANY BMPs AROUND THE TRENCH BREAKER (PLUG) AREA.
 *** TRENCH BREAKERS WITH CEMENT FILLED BAGS SHALL BE INSTALLED AND ALLOWED TO CURE WITHOUT ANY SURFACE WATER COMING INTO CONTACT WITH THEM. CONTRACTOR SHALL VERIFY CEMENT HAS CURED AND HARDENED PRIOR TO REMOVING ANY BMPs AROUND THE TRENCH BREAKER AREA.

7 PERMANENT TRENCH BREAKER
 NTS

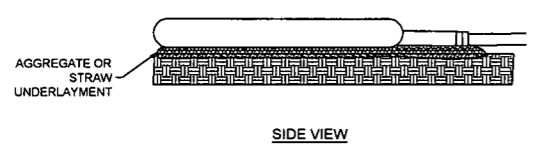
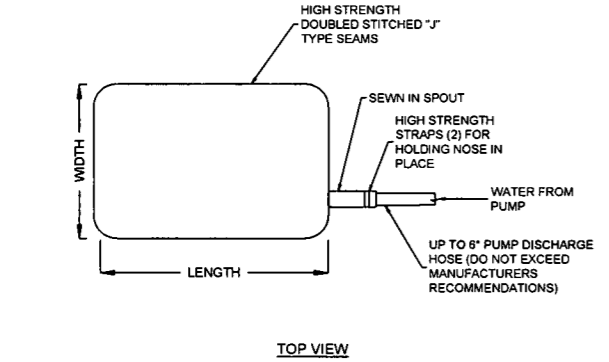


8 AMERICAN WICK DRAIN DETAIL
 NTS



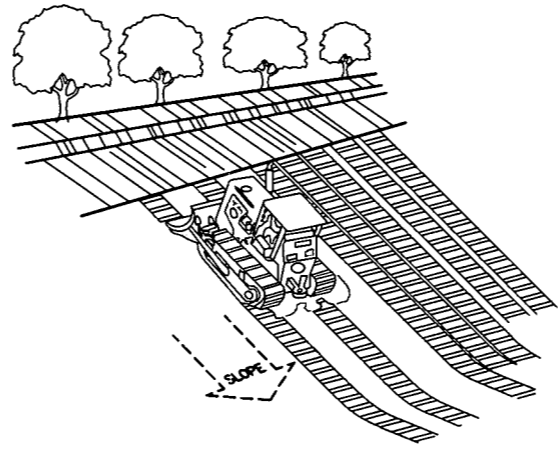
9 TRENCH PLUG DRAIN OUTFALL EROSION PROTECTION DETAIL
 NTS

NOTES:
 1) PREPARE SOIL BEFORE INSTALLING EROSION CONTROL PRODUCTS. INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
 2) FOR CULVERT AND OUTFALL APPLICATIONS, SCOUR PROTECTION SHOULD EXTEND A MINIMUM WIDTH OF 3-4 TIMES THE PIPE DIAMETER AND A MINIMUM LENGTH OF 4-5 TIMES THE PIPE DIAMETER (SEE PLAN VIEW). WITH STEEPER CHANNEL GRADIENTS, THE LENGTH OF SCOUR PROTECTION MAY NEED TO BE EXTENDED.
 3) PLACE STAPLES/ANCHORS IN THE APPROPRIATE PATTERN. IN SOFT OR HIGHLY ERODIBLE SOILS, PERCUSSION EARTH ANCHORS MAY BE REQUIRED.
 (SEE MANUFACTURERS RECOMMENDATIONS FOR ADDITIONAL INSTALLATION INSTRUCTIONS).

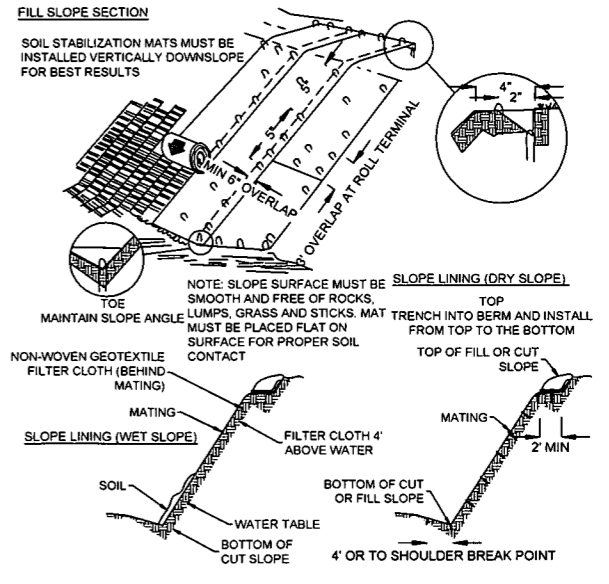


- NOTES:
- UTILIZE VEGETATED STRIP WHERE APPLICABLE.
 - MAXIMIZE DISTANCE BETWEEN LOCATION OF FILTER BAG AND AQUATIC FEATURE.
 - FILTER BAG MUST BE PLACED ON FLAT SURFACE.

10 FILTER BAG
 NTS



11 TRACKING
 NTS



12 ROLLED EROSION CONTROL PRODUCTS
 NTS

THRASHER

IFP
 ISSUED FOR PERMITTING

DATE: 07/05/2017
 AFE # A05924

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

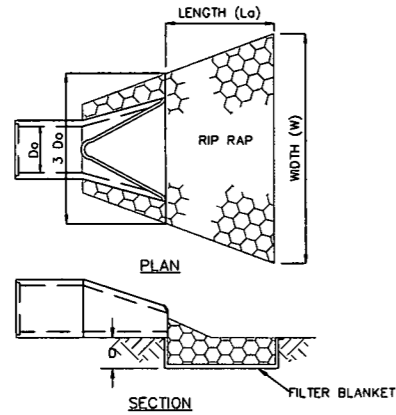
NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JLJ

GENERAL INFORMATION

1. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero
 Midstream Partners LP
SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE ESCP DETAILS
 PROPOSED 30" HIGH PRESSURE STEEL GAS LINE
 DODDRIDGE COUNTY, WEST VIRGINIA

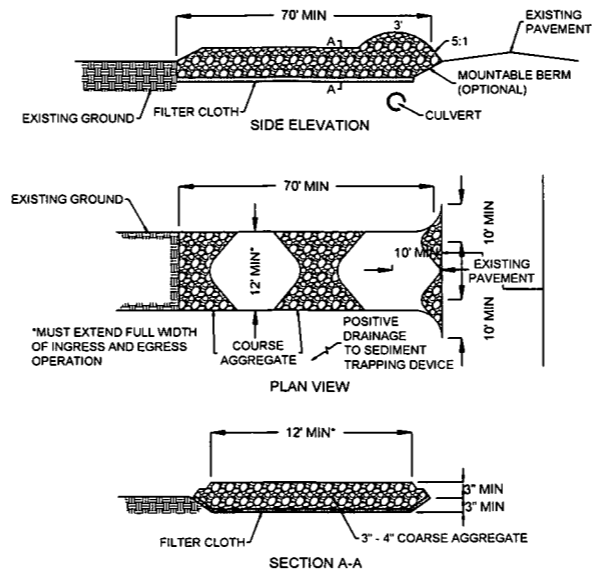
DATE: 7/5/2017 AFE No.: A05924
 SCALE: AS SHOWN
 DRAWN BY: JLA, R.L. (TTO)
 CHECKED BY: AR, JBL (TTO)
 SHEET 16
 SHT. NAME: 050-6323\RESIDUE_ESCP4
 REV. 1



NOTES:

- IF FLARED END SECTION IS DISCHARGING INTO DITCH FROM THE SIDE, EXTEND RIP RAP UP DITCH BANK ON OFF-SIDE A MINIMUM OF 4 FEET.
- USE W/DEEP RIP RAP GRADATION AND FILTER BLANKET REQUIREMENTS PER SECTION 3.17 OF THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL. A SUITABLE NON-WOVEN GEOTEXTILE FABRIC, USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, MAY BE SUBSTITUTED FOR FILTER BLANKET STONE UNDER THE RIPRAP.
- $c = 1.5$ TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".

13 RIP RAP APRON
NTS



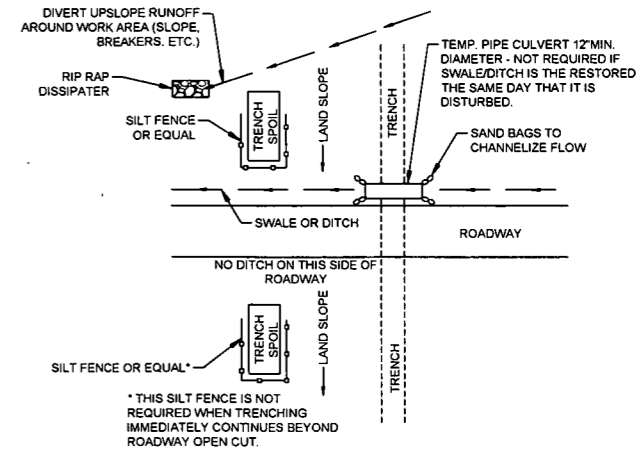
CONSTRUCTION SPECIFICATIONS:

- CLEAR THE ENTRANCE AND EXIT AREA OF ALL VEGETATION, ROOTS AND OTHER OBSTRUCTIONAL MATERIAL AND PROPERLY GRADE IT.
- PLACE THE 3 INCH CRUSHED ROCK TO MATCH FINISHED GRADE AT THE ROADWAY AND SMOOTH IT.
- PROVIDE DRAINAGE WHERE NEEDED TO CARRY WATER TO A SEDIMENT TRAP OR OTHER SUITABLE OUTLET.
- IT IS RECOMMENDED TO HAVE A STOCKPILE OF STONE ON-SITE.

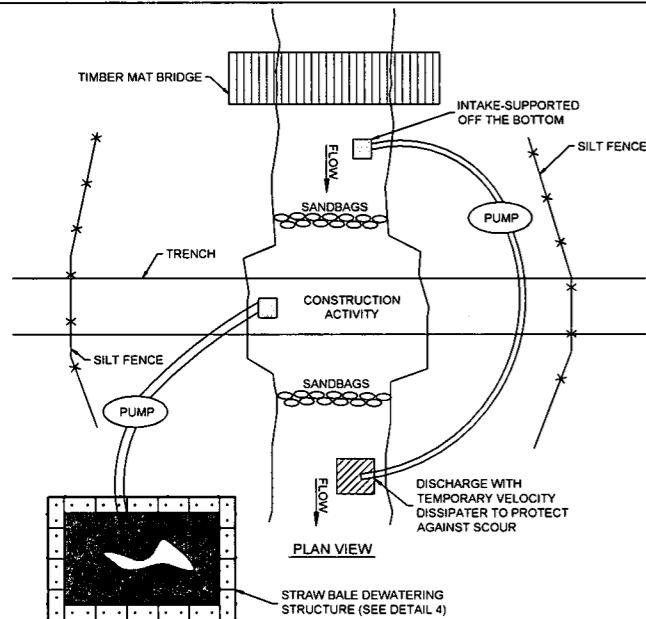
MAINTENANCE:

MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP-DRESSING WITH ADDITIONAL 3 INCH CRUSHED ROCK. IMMEDIATELY REMOVE ALL OBSTRUCTIONAL MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS. MAINTENANCE SHOULD BE PROVIDED DAILY, BUT AT A MINIMUM EVERY SEVEN DAYS AND AFTER EVERY RAIN OF 0.5 INCH OR GREATER.

14 STABILIZED CONSTRUCTION ENTRANCE
NTS



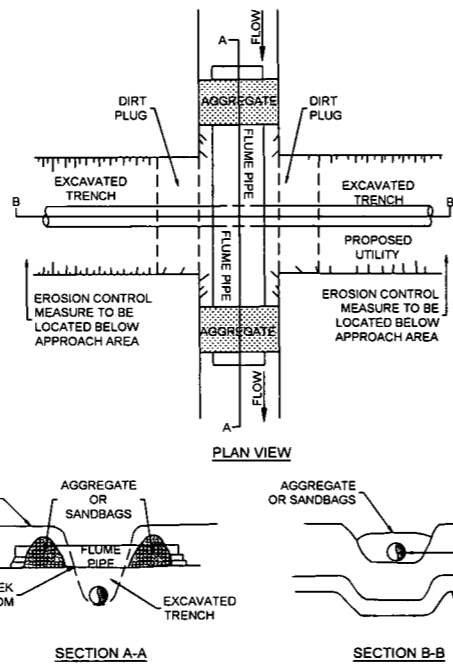
15 OPEN CUT ROAD CROSSING
NTS



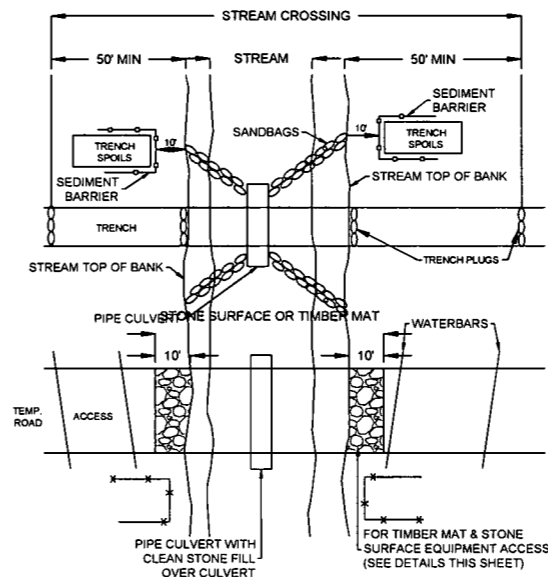
NOTES:

- DEWATERING STRUCTURE SHOULD BE PLACED IN WELL VEGETATED STRIP.
- TOP 6"-12" OF NATURAL STREAM SUBSTRATE SHOULD BE ISOLATED DURING IN-STREAM TRENCHING AND RESTORED UPON COMPLETION OF FINAL STREAM STABILIZATION.
- ENVIRONMENTAL INSPECTOR MUST VERIFY DAM AND PUMP AROUND SETUP.
- MUST BE A MINIMUM OF 5 FEET OF COVER FROM TOP OF PIPE TO NATURAL GROUND.
- PIPE SAG SECTION SHOULD BE WELDED PRIOR TO TRENCHING ACTIVITY COMMENCES.
- ACCUMULATION OF TRENCH WATER MUST BE PUMPED TO DEWATERING STRUCTURE.
- IN-STREAM WORK MUST BE COMPLETED WITHIN 24 HOURS (HIGH WATER MARK TO HIGH WATER MARK).
- STREAM BUFFER AREA MUST BE RESTORED WITHIN 72 HOURS.

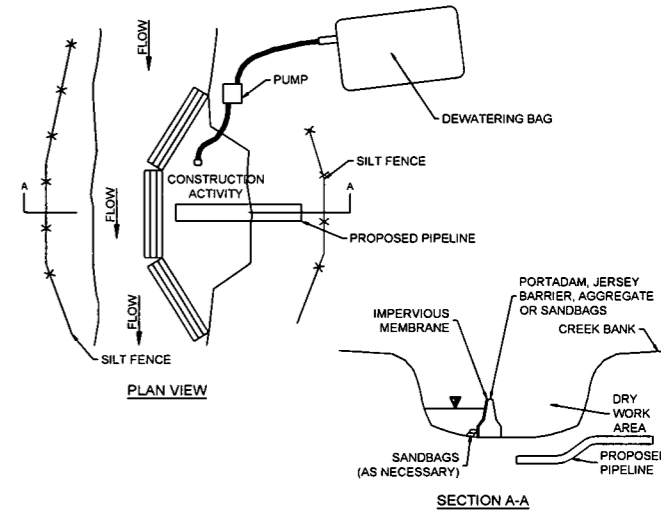
16 OPEN CUT STREAM CROSSING
NTS



17 FLUME PIPE CROSSING
NTS



18 FLUMED STREAM CROSSING WITH ACCESS ROAD
NTS



19 COFFERDAM CROSSING
NTS

THRASHER

IFP

ISSUED FOR PERMITTING

DATE: 07/05/2017

AFE # A05924

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	08/30/17	JOU

GENERAL INFORMATION

1. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"), FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero
Midstream Partners LP

SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE ESCP DETAILS

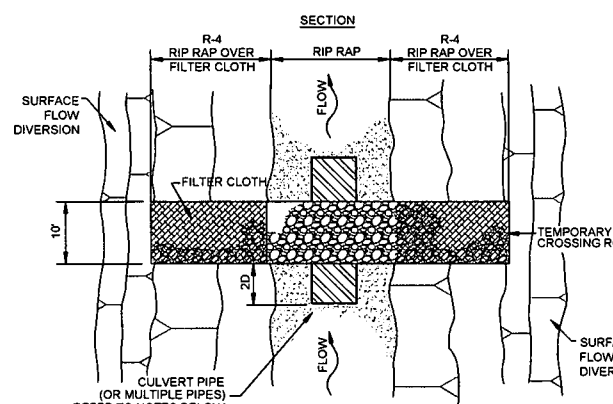
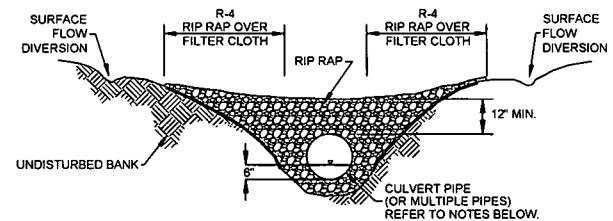
PROPOSED 30" HIGH PRESSURE STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017 AFE No.: A05924
SCALE: AS SHOWN
DRAWN BY: JMA, PJA (TTC)
CHECKED: AR, JSH (TTC)

SHEET 17

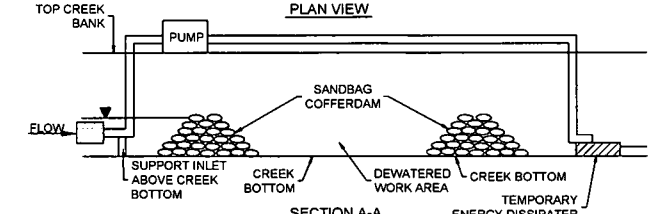
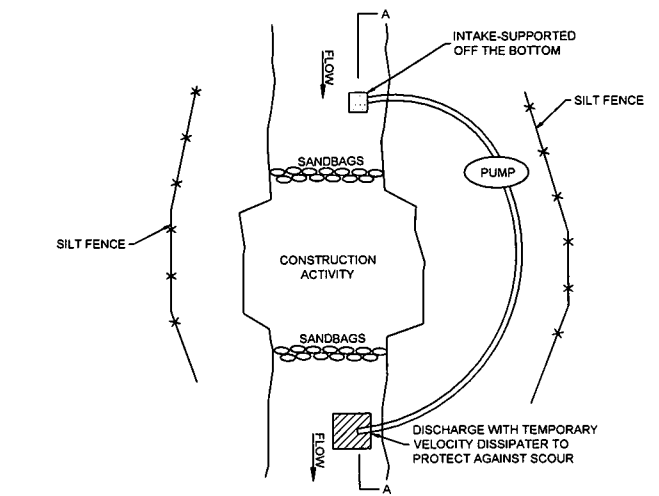
SHT. NAME: 050-6323\RESIDUE_ESCP5 REV.1

LAYOUT TAB: ESCP5 CAD FILE: R:\050-6323-REC HP LOOP PHASE 3-ANTERO-Survey\PLANS\ESCP DETAIL SHEETS.dwg USER: robert.j.luczak PLOT DATE/TIME: 7/5/2017 2:31 PM

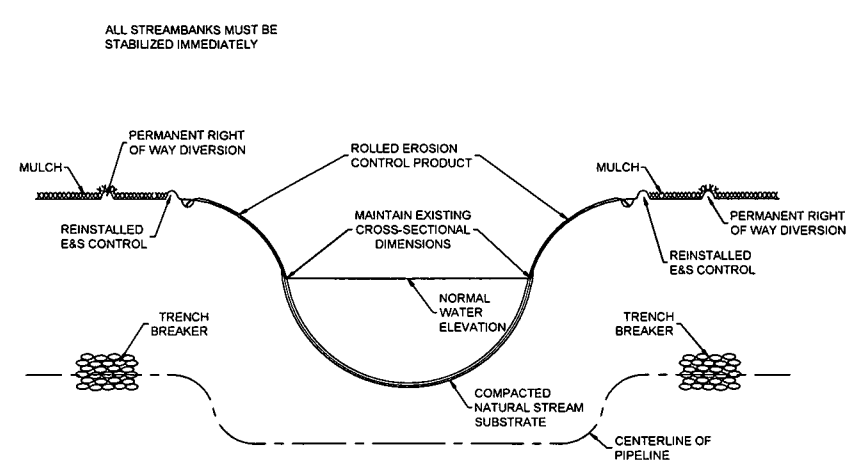


- NOTES:
1. PIPE SHOULD EXTEND BEYOND TOE OF ROADWAY.
 2. ROADWAY SHOULD BE DERESSED OVER CULVERT TO ALLOW FOR OVERFLOW.
 3. CLEAN ROCK FILL SHALL BE USED TO GUARD AGAINST EROSION AND SEDIMENTATION. STREAMBED MATERIAL IS NOT TO BE USED.
 4. MINIMUM SIZE DIAMETER CULVERT TO BE INSTALLED IS 12 INCHES.
 5. APPROACHES TO CROSSINGS ARE NOT TO EXCEED A DEPTH OF 8 INCHES ABOVE ORIGINAL GRADE.
 6. PROPER EROSION AND SEDIMENTATION CONTROL MEASURES MUST BE INSTALLED.

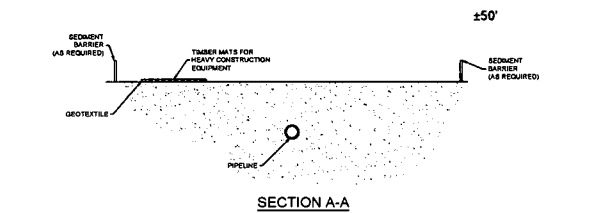
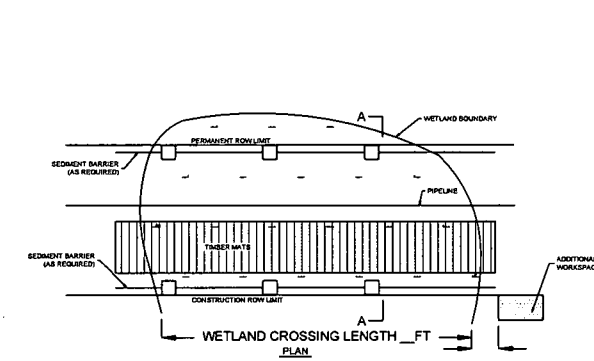
20 ROCK FLUME BRIDGE
NTS



21 DAM & PUMP AROUND
NTS

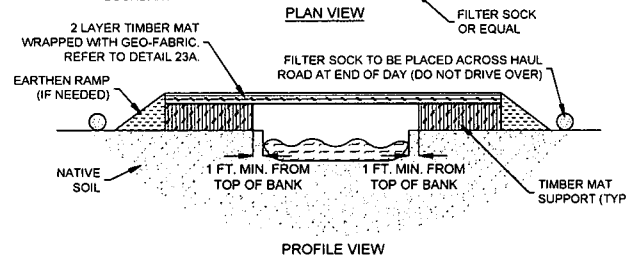
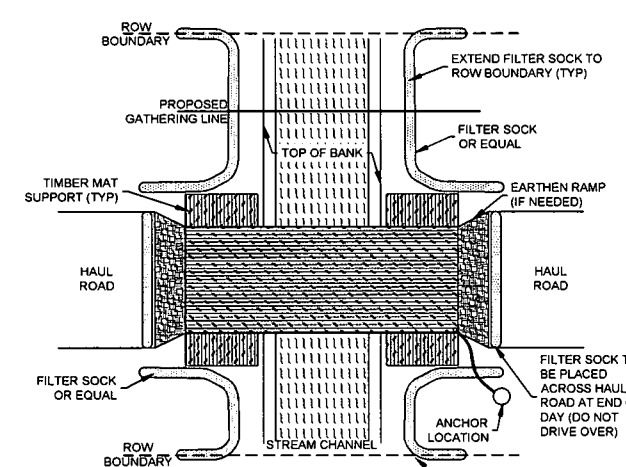


22 STREAM BANK STABILIZATION
NTS

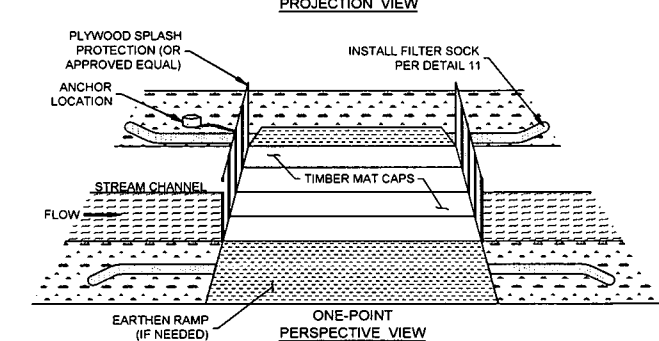
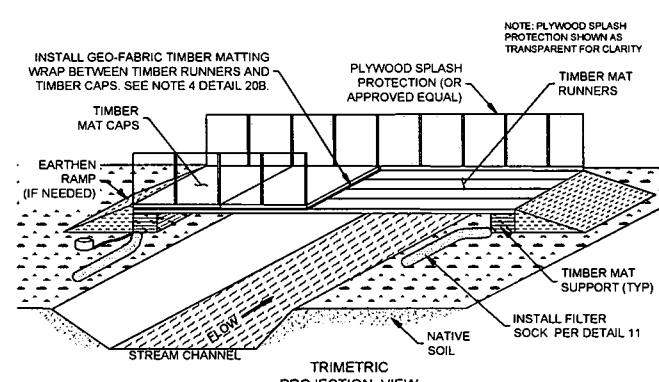


- GENERAL CONSTRUCTION SEQUENCE NOTES:
1. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS PRIOR TO EARTH DISTURBANCE.
 2. SEDIMENT BARRIERS WILL BE INSTALLED AT THE EDGE OF THE ROW.
 3. WORKING SIDE WILL BE STABILIZED WITH PRE-FABRICATED MATS, AS NEEDED TO PROVIDE A FIRM SURFACE FOR CONSTRUCTION EQUIPMENT. FOR ALL DELIMITED WETLAND AREAS, GEOTEXTILE SHALL BE PLACED UNDER THE MATS TO PREVENT MOVEMENT OR PUMPING OF THE SOIL THROUGH THE MATS.
 4. WETLAND MATERIAL WILL BE STRIPPED, SEGREGATED, AND RESTORED UPON COMPLETION OF THE CROSSING.

23 TYPICAL EROSION AND SEDIMENT CONTROL FOR WETLAND CROSSINGS
NTS



24 TYPICAL EROSION AND SEDIMENT CONTROL FOR STREAM CROSSINGS
NTS



24A TYPICAL EROSION AND SEDIMENT CONTROL FOR STREAM CROSSINGS
NTS

- CONSTRUCTION SPECIFICATIONS AND GENERAL SPECIFICATIONS:
1. CROSSING ALIGNMENT SHALL BE AT RIGHT ANGLE TO THE STREAM. WHERE THE APPROACH CONDITIONS DICTATE, THE CROSSING MAY VARY 15 DEGREES FROM THE LINE DRAWN PERPENDICULAR TO THE CENTERLINE OF THE STREAM.
 2. TIMBER MATTING RUNNERS SHALL BE PLACED PERPENDICULAR TO STREAM AND ADJACENT TO ONE ANOTHER.
 3. TIMBER MATTING CAPS SHALL BE PLACED PARALLEL TO STREAM AND ADJACENT TO ONE ANOTHER FOR THE ENTIRE SPAN OF THE BRIDGE.
 4. TIMBER MATTING CAPS SHALL BE WRAPPED UNDERNEATH AND ALONG THE SIDES OF TIMBER RUNNERS WITH GEO-FABRIC MATERIAL OR APPROVED EQUAL. EXTEND GEO-FABRIC MATERIAL AT MINIMUM 5 FEET ON EITHER SIDE TO ALLOW ENOUGH MATERIAL TO WRAP UP AND TIE INTO PLYWOOD SPLASH PROTECTION FENCING (OR APPROVED EQUAL) TO CONTROL SEDIMENT FROM ENTERING STREAM.
 5. PLYWOOD SPLASH PROTECTION FENCING (OR APPROVED EQUAL) SHALL BE SECURELY ATTACHED ALONG THE OUTER SIDES OF TIMBER MATTING TO CONTROL SEDIMENT COLLECTION AND ALLOW GEO-FABRIC MATERIAL TO BE STAPLED TO OUTSIDE OF PLYWOOD.
 6. BRIDGE SHALL BE CONSTRUCTED MINIMUM 1 FOOT OUTSIDE TOP OF BANK.
 7. BRIDGE SHALL BE SECURELY ANCHORED AT ONLY ONE END USING STEEL CABLE OR CHAIN. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL ANCHORS. ANCHORING SHALL BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.
 8. ALL AREAS DISTURBED DURING BRIDGE INSTALLATION SHALL BE STABILIZED IMMEDIATELY.
 9. PLYWOOD SPLASH PROTECTION (OR APPROVED EQUAL) SHALL BE WELL MAINTAINED, CLEARING SEDIMENT WHEN NECESSARY.
 10. FILTER SOCK SHALL BE PLACED ALONG BOTH ENTRANCES OF THE BRIDGE WHEN NOT IN USE FOR MORE THAN 24 HOURS AND/OR PRIOR TO PRECIPITATION EVENTS. DO NOT DRIVE OVER FILTER SOCK.

THRASHER

IFP

ISSUED FOR PERMITTING

DATE: 07/05/2017

AFE # A05924

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

GENERAL INFORMATION

1. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" x 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

REVISION

NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JD

Antero
Midstream Partners LP

SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE ESCP DETAILS

PROPOSED 30" HIGH PRESSURE STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017 AFE No.: A05924
SCALE: AS SHOWN
DRAWN BY: JJA, RLS (TTC)
CHECKED: AR, JBI (TTC)

SHEET 18

SHT. NAME: 050-6323\RESIDUE\ESCP6 REV. 1

LAYOUT TAB: ESCP6 CAD FILE: R:\050-6323-WEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\ESCP DETAIL SHEETS.dwg USER: robert.l.luczko PLOT DATE/TIME: 7/5/2017 2:32 PM

LAYOUT TAB: ESCP7
 CAD FILE: R:\050-6323-MEC-HP LOOP PHASE 3-ANTERO-Survey\PLANS\ESCP DETAIL SHEETS.dwg
 PLOT DATE/TIME: 7/5/2017 2:32 PM
 USER: robert.l.nucko

Temporary Stabilization Seeding		
March 15 - September 15	Annual Rye	250 - 350 lbs per acre
September 15 - March 15	Annual Winter Wheat	100 - 125 lbs per acre

25 TEMPORARY SEEDING CHART
 NTS

Antero Midstream Default Pasture Mix (200 - 225 LBS per Acre)	
Named Variety of Forage Perennial Ryegrass	20%
Named Variety of Forage Tall Fescue (not Fawn)	20%
Climax Timothy	15%
Orchardgrass	10%
Birdsfoot Trefol	10%
Medium Red Clover	5%
Ladino Clover	5%
Kentucky Bluegrass VNS	5%
Alsike Clover	5%
Alfalfa	5%
* All seed mixes require double inoculation	
Antero Midstream Default Wildlife Mix (150 - 175 LBS per Acre)	
Medium Red Clover	20%
Buckwheat	10%
Oats (Spring & Summer) or Wheat (Fall & Winter)	10%
Ladino White Clover	20%
Birdsfoot Trefol	10%
Alfalfa	10%
Named Variety of Forage Perennial Ryegrass	10%
Annual Ryegrass	10%
* All seed mixes require double inoculation	
Antero Midstream General Contractor Mix (200 - 250 LBS per Acre)	
Named Variety of Forage Tall Fescue (not Fawn)	50%
Named Variety of Forage Perennial Ryegrass	20%
Annual Ryegrass	15%
Ladino Clover	5%
Alsike Clover	5%
Birdsfoot Trefol	5%
* All seed mixes require double inoculation	

26 PERMANENT SEEDING CHART
 NTS

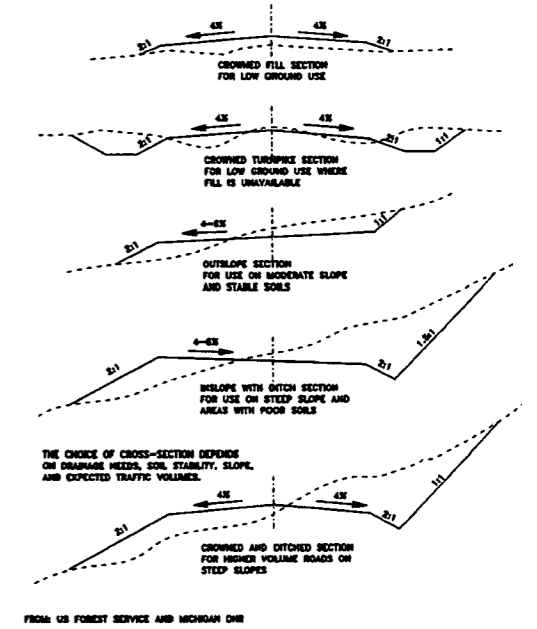
Lime
Pelletized
1.5 tons per acre

Fertilizer
10/20/20
200 lbs per acre

Straw Mulching
2 tons per acre

27 LIME, FERTILIZER, AND MULCH CHARTS
 NTS

TYPES OF ROAD CROSS-SECTIONS



28 TYPES OF ROAD CROSS-SECTIONS
 NTS

THRASHER

IFP

ISSUED FOR PERMITTING
 DATE: 07/05/2017
 AFE # A05924

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

GENERAL INFORMATION

1. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

REVISION

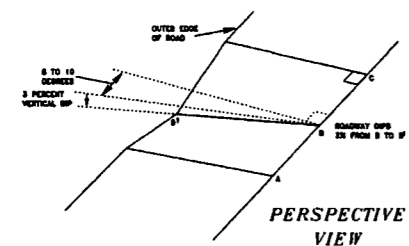
NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JLJ



SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE
 ESCP DETAILS

PROPOSED 30" HIGH PRESSURE
 STEEL GAS LINE
 DODDRIDGE COUNTY, WEST VIRGINIA

DATE:	7/5/2017	AFE No.:	A05924
SCALE:	AS SHOWN		
DRAWN BY:	JDL, RAL (T10)	SHEET	19
CHECKED:	AR, JRH (T10)	SHT. NAME:	050-6323\RESIDUE\ESCP7
		REV.	1

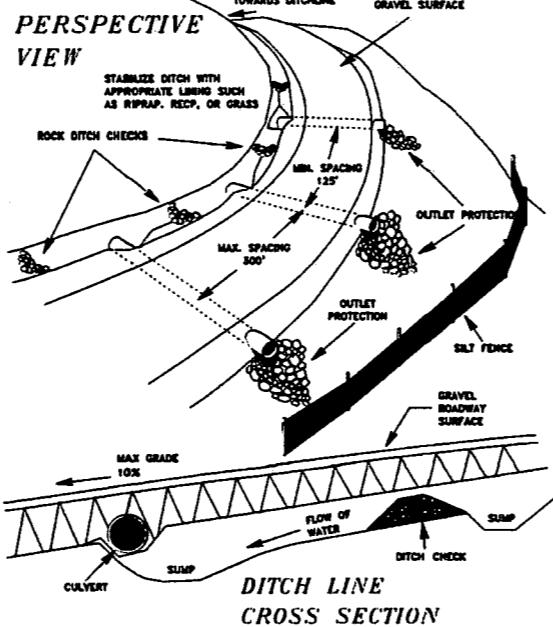


SPACING = 400' @ GRADE + 7%

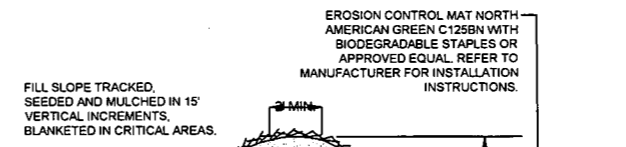
Table 3.25.1
Average Slope of Watershed

Drainage Area (Acres)	Culvert Size			
	18"	24"	30"	36"
1-25	24	24	30	36
26-50	24	30	36	42
51-100	30	36	42	48
101-150	30	36	42	48
151-200	36	42	48	54
200-250	42	42	50	60
251-300	42	48	50	60
301-350	42	48	54	60
351-400	42	54	54	60
401-450	42	54	60	72
451-500	42	54	60	72
501-550	48	60	60	72
551-600	48	60	60	72
601-640	48	60	72	72

29 BROAD-BASE DIP
NTS



30 EROSION AND SEDIMENT CONTROL FOR ACCESS ROADS AND DRIVEWAYS
NTS



INSTALLATION:

- WHEN CLEARING THE LOCATION FOR THE DIVERSION, ONLY CLEAR ENOUGH ROOM FOR CONSTRUCTION AND MAINTENANCE EQUIPMENT ACCESS. DO NOT CLEAR ANY ADDITIONAL AREA UNTIL ALL EROSION CONTROL DEVICES ARE IN PLACE.
- REMOVE ALL STUMPS, ROOTS, AND OTHER DEBRIS AND DISPOSE OF THEM PROPERLY.
- INSTALL DIVERSION AND COMPACT AS SHOWN IN DETAIL INSURE POSITIVE DRAINAGE DURING CONSTRUCTION OF BERM.
- SCARIFY, SEED, MULCH AND TACK DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF BERM.
- INSTALL EROSION CONTROL MAT NORTH AMERICAN GREEN C125N PER MANUFACTURER'S RECOMMENDATIONS AND KEY INTO SIDES OF CHANNEL TO PREVENT WATER FROM UNDERMINING OR DAMAGING CHANNEL LINER.

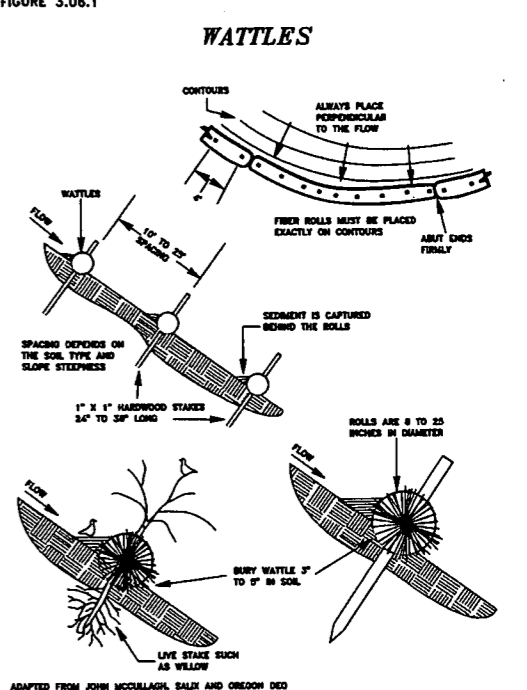
NOTES:

- TEMPORARY BERMS SHALL BE PLACED, MAINTAINED, AND ADJUSTED CONTINUOUSLY UNTIL 90% VEGETATIVE GROWTH IS ESTABLISHED ON THE EXTERIOR SLOPES WITH PERMANENT STORM DRAINAGE FACILITIES FUNCTIONING.
- BERMS SHALL OUTLET TO SLOPE PIPES, CHANNELS, OR OTHER APPROVED MEANS OF CONVEYING RUNOFF TO A SEDIMENT TRAP, SEDIMENT BASIN, OR COLLECTOR CHANNEL.
- CHANNEL BEHIND BERM SHALL HAVE POSITIVE GRADE TO OUTLET AND AN APPROPRIATE PROTECTIVE LINING.
- BERM SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
- AN ACCEPTABLE ALTERNATIVE TO TOP-OF-SLOPE BERM IS TO CONTINUOUSLY GRADE THE TOP OF FILL TO DIRECT RUNOFF AWAY FROM THE FILL/SLOPE TO A COLLECTOR CHANNEL, SEDIMENT TRAP, OR SEDIMENT BASIN.

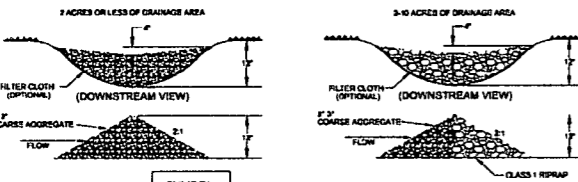
MAINTENANCE:

INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS. REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.

31 TEMPORARY DIVERSION BERM FOR OFFSITE WATER
NTS



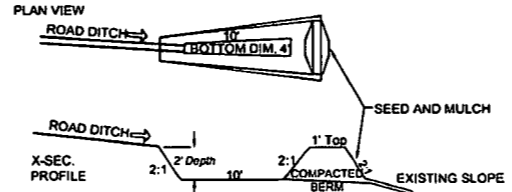
32 WATTLES
NTS



NOTES:

DITCH CHECKS WILL BE CONSTRUCTED IN CHANNELS TO MINIMIZE EROSION. THE CONSTRUCTION OF THE DITCH CHECK WILL FOLLOW THE GUIDELINES ABOVE. DITCH CHECKS WILL BE CONSTRUCTED SO THAT THE ELEVATION OF THE TOP OF THE DOWNSTREAM DITCH CHECK IS EQUAL TO THE ELEVATION OF THE BASE OF THE DITCH CHECK ABOVE. THIS CREATES A SITUATION WHERE THE CHANNEL HAS NO CHANNELIZED FLOW PER SE, THE WATER FLOWING DOWN THE DITCH WILL CASCADE FROM THE POOL CREATED BY ONE DITCH CHECK INTO THE POOL CREATED BY THE DOWNSTREAM DITCH CHECK THIS DISSIPATES ENERGY AND SLOWS THE WATER FLOW REDUCING EROSION AND ALLOWING ANY SEDIMENT IN THE DRAINAGE TO FALL OUT.

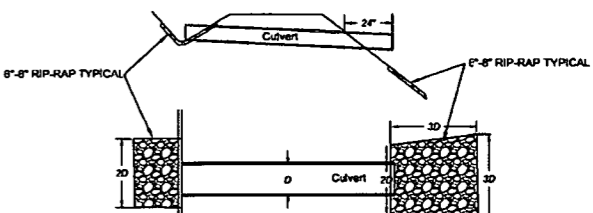
33 CHECK DAM
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC



NOTES:

LEVEL SPREADER TO BE CONSTRUCTED IN AREAS WHERE A CULVERT OR CHANNEL MUST EMPTY ONTO GROUND WITH NO ASSOCIATED CHANNELIZED FLOW. THE PURPOSE OF THE LEVEL SPREADER IS TO DISSIPATE ENERGY AND SPREAD THE FLOW OUT OVER A SIGNIFICANT AREA. THIS WILL TAKE A CHANNELIZED FLOW AND ESSENTIALLY CONVERT IT BACK TO A SHEET FLOW OVER THE GROUND SURFACE. THE SHEET FLOW WILL HAVE LESS CHANCE FOR EROSION CONSIDERING THE LOWER VELOCITIES AND FLOW VOLUMES IN ANY PARTICULAR AREA. THEY MAY BE CONSTRUCTED MUCH LIKE A SUMP WHERE THE CHANNEL OR CULVERT EMPTIES INTO THE SUMP AND THEN OVERTOPS THE BERMED AREA, BUT THEY MAY OFTEN CONTAIN GRAVEL IN THE SUMPED AREA. THEY WILL ALLOW BE CONSTRUCTED ALONG THE GROUND CONTOUR.

34 LEVEL SPREADER
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC



NOTES:

INLET AND OUTLET PROTECTION IS ESSENTIALLY GRAVELS AND/OR RIP RAP PLACED AT BOTH THE INLET AND OUTLET SIDES OF CULVERTS. THE GRAVELS WILL HELP TO SLOW THE FLOW OF WATER, AND DISSIPATE ENERGY. THIS WILL IN TURN DECREASE THE CHANCES OF EROSION AND ALSO ALLOW ANY SEDIMENT IN THE WATER TO SETTLE OUT.

35 TYPICAL CULVERT & CULVERT INLET/OUTLET PROTECTION
NTS
DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

LAYOUT P.L.S. ESC98 CAD FILE: R:\050-6323-MEC HP LOOP PHASE 3-ANTERO-Survey\PLANS\ESCP DETAIL SHEETS.dwg USER: robert.j.luczo PLOT DATE/TIME: 7/5/2017 2:33 PM



IFP
ISSUED FOR PERMITTING
DATE: 07/05/2017
AFE # A05924

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

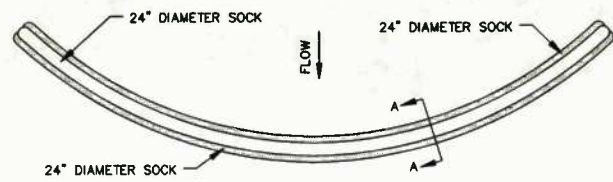
SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

REVISION			
NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JDU

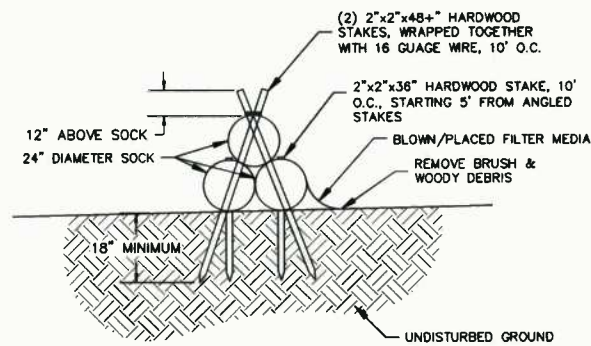
Antero Midstream Partners LP
SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE ESCP DETAILS
PROPOSED 30" HIGH PRESSURE STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017
SCALE: AS SHOWN
DRAWN BY: JDL, RAL (TTC)
CHECKED: AR, JSH (TTC)

SHEET 20
SHT. NAME: 050-6323\RESIDUE\ESCP8
REV. 1

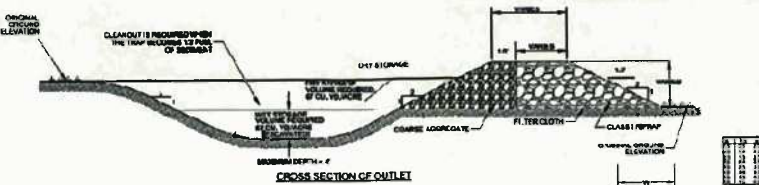


PLAN VIEW



SECTION A-A

36 TRIPLE STACK FILTER SOCK SEDIMENT TRAP
NTS



CROSS SECTION OF OUTLET

TEMPORARY SEDIMENT TRAP NOTES

1. SEE DETAIL SHEETS FOR A GENERAL SCHEMATIC. THE CONTRACTOR SHALL DESIGN AND BUILD EACH TRAP ACCORDING TO THIS GENERAL PLAN.
2. SEDIMENT TRAPS SHALL BE USED IN AREAS WHERE THE TOTAL CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES.
3. ALL MATERIALS FOR ANY SEDIMENT TRAP SHALL BE PLACED IN THE TRAP OR OTHER CONTAINMENT AREA. THE CONTRACTOR SHALL MAINTAIN THE TRAP FULLY OPERATIONAL WITH FRESH MATERIAL THROUGHOUT.
4. ANY SEDIMENT TRAP WHICH IS NOT FULLY OPERATIONAL SHALL BE REPAIRED WITH TEMPORARY VEGETATION IMMEDIATELY AT THE END OF EACH WORK DAY.
5. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENTATION ARE MINIMIZED.
6. TO MAINTAIN A SAFE SLOPE ON SLOPES AND TO MAINTAIN THE PROPER DRAINAGE AREA AND SLOPE.
7. ALL CUT AND FILL SLOPES FORMING THE SEDIMENT TRAP SHALL BE: OR FLATTER, BE MAINTAINED AS STABLE AND THE TRAP RETURNED TO ITS ORIGINAL CONDITION FROM THE SEDIMENT AND MATERIALS TO TO THE ORIGINAL SURFACE. SEDIMENT FROM THE TRAP SHALL BE REMOVED IMMEDIATELY AT THE END OF EACH WORK DAY.
8. THE STRUCTURE SHALL BE CHECKED WEEKLY TO INSURE THAT IT IS STRUCTURALLY SOUND AND NOT BEING OVERLOADED BY CONSTRUCTION EQUIPMENT.
9. A PERMITTING AGENCY MAY REQUIRE THAT A SLOPE MAINTENANCE PLAN BE SUBMITTED.
10. FILTER SOCKS SHALL BE REGULARLY CHECKED TO INSURE THAT FILTRATION PERFORMANCE IS MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT AND THE CLEANUP OF THE TRAP.

TEMPORARY SEDIMENT TRAP DETAIL

NOTES:

TEMPORARY SEDIMENT TRAPS ARE ESSENTIALLY SMALL SEDIMENT PONDS. THEY GIVE THE WATER A PLACE TO POOL AND SLOW DOWN THIS REDUCES THE CHANCES OF ADDITIONAL EROSION WHILE ALLOWING ANY SEDIMENT IN THE WATER TO SETTLE OUT. THE OUTLET IS DESIGNED OUT OF GRAVELS OF DIFFERENT DIMENSIONS WHICH CREATES A FILTER AS WELL.

37 TEMPORARY SEDIMENT TRAP
NTS

DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

NOTES:
ON MOST LOCATIONS ANTERO WILL ALSO CONSTRUCT EROSION AND SEDIMENT (E&S) CONTROLS ABOVE AND BEYOND THE E&S CONTROLS LISTED ON THE PLAN SHEETS. THESE CONTROLS WILL BE CATEGORIZED AS PHASE I, PHASE II, AND PHASE III CONTROLS. THESE CONTROLS WILL BE INSTALLED TO BOTH PROVIDE EXTRA E&S PROTECTION, AND TO ELIMINATE THE CHANCES OF MATERIALS SUCH AS SOIL OR GRAVEL BEING PLACED IN A STREAM OR WETLAND. THE SITE PLANS AND DELINEATIONS ARE REVIEWED AND THESE CONTROLS ARE SPECIFIED IN ANTERO'S CONSTRUCTION RELEASE WHICH IS SENT OUT JUST PRIOR TO CONSTRUCTION BEGINNING. THE PHASE I, II, AND III CONTROLS WILL BE CONSTRUCTED AS FOLLOWS:



PHASE I:
THIS IS ESSENTIALLY ORANGE SAFETY FENCE LIKE SHOWN ABOVE. THIS MEASURE IS PUT IN PLACE TO LET CONTRACTORS KNOW THAT NO WORK IS TAKE PLACE BEYOND THIS POINT. THIS CONTROL IS TYPICALLY UTILIZED WHEN THERE IS A WETLAND OR STREAM LOCATED IN THE AREA BUT NOT WITHIN APPROXIMATELY 100 FEET OF THE DISTURBANCE.

38A SUPPLEMENTAL 404 CWA BMP CONTROLS
NTS

DETAIL PROVIDED BY ANTERO MIDSTREAM LLC



PHASE II:
THIS CONTROL CONSISTS OF TYPICAL SILT FENCE, SUPER SILT FENCE, OR FILTER SOXX. THIS CONTROL WILL BE INSTALLED AS DESCRIBED IN THE PREVIOUS SECTIONS. THIS CONTROL WILL TYPICALLY BE USED WHEN WETLANDS OR STREAMS ARE LOCATED WITHIN 100 FEET OF THE DISTURBED AREA.

38B SUPPLEMENTAL 404 CWA BMP CONTROLS
NTS

DETAIL PROVIDED BY ANTERO MIDSTREAM LLC



PHASE III:
THIS CONTROL CONSISTS OF METAL Q-DECKING WHICH IS STOOD ON ITS EDGE AND SECURED TO METAL POSTS. THIS CONTROL IS USED TO PREVENT SOILS OR GRAVELS FROM ENTERING STREAMS OR WETLANDS DURING CONSTRUCTION. THE DECKING CAN BE BURIED OR USED IN CONJUNCTION WITH OTHER E&S METHODS. THIS CONTROL IS USED IN AREAS WHERE STREAMS OR WETLANDS ARE WITHIN APPROXIMATELY 50 FEET OF THE DISTURBED AREA. IF THE METAL DECKING IS BURIED NO OTHER E&S CONTROLS ARE REQUIRED, BUT IF THE DECKING IS PLACED ON TOP OF THE GROUND SURFACE AND ADDITIONAL E&S CONTROL SUCH AS SILT FENCE OR SILT SOXX WILL BE USED TO PROTECT THE GAPS BETWEEN THE BOTTOM OF THE DECKING AND THE UNEVEN GROUND SURFACE.

*NOTE THAT THE DISTANCES MENTIONED IN THE PHASE I, II, AND III CONTROLS ARE A GUIDELINE NOT A RULE FOR THE DECISION OF WHEN AND WHERE TO USE THESE CONTROLS.

38C SUPPLEMENTAL 404 CWA BMP CONTROLS
NTS

DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

DEFINITIONS:

- RIP RAP - LOOSE STONE USED TO FORM A FOUNDATION FOR A BREAKWATER OR OTHER STRUCTURE. THIS STONE IS TYPICALLY 3 INCHES OR GREATER IN DIAMETER.
- FILTER CLOTH - TYPICALLY TYPAR OR ANOTHER SUCH MATERIAL (USUALLY WOVEN) WHICH IS DESIGNED TO ALLOW WATER TO FLOW BUT RETAIN SEDIMENT.
- AGGREGATE - TERM USED TO IDENTIFY ANY TYPE SOLID DENSE MATERIAL USED DURING CONSTRUCTION TYPICALLY GRAVELS, SANDS, AND STONES.
- EMBANKMENT - A WALL OR BANK OF EARTH OR STONE.
- CLASS 1 RIP RAP - TYPICAL RIP RAP WITH STONES OF A DIAMETER BETWEEN 6 AND 18 INCHES.

39 DEFINITIONS
NTS

DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

LAYOUT TAB: ESCP9
CAD FILE: R:\050-6323-WC HP LOOP PHASE 3-ANTERO-Survey\PLANS\ESCP DETAIL SHEETS.dwg
PLOT DATE/TIME: 7/5/2017 2:34 PM
USER: robert.j.lucero

IFP
ISSUED FOR PERMITTING
DATE: 07/05/2017
AFE # A05924

38B SUPPLEMENTAL 404 CWA BMP CONTROLS
NTS

DETAIL PROVIDED BY ANTERO MIDSTREAM LLC

SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

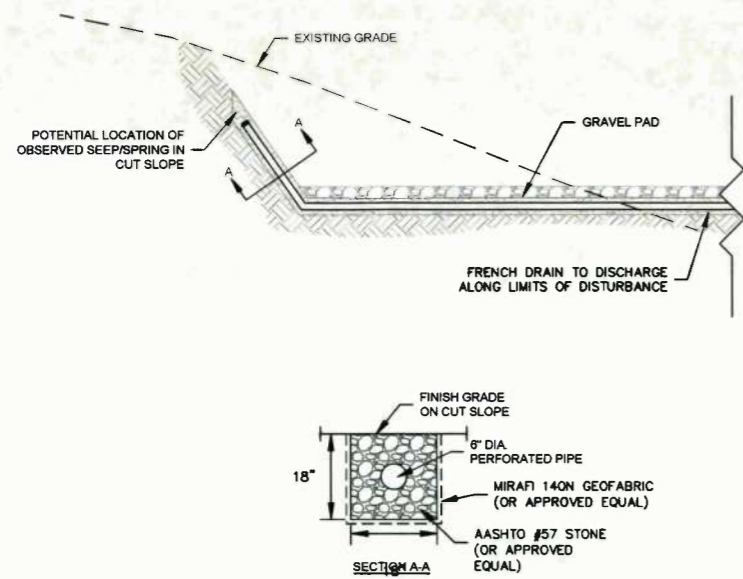
SUMMARY OF MATERIALS (3D)		
NO.	DESCRIPTION	QTY

GENERAL INFORMATION			
1. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.			
NO.	DESCRIPTION	DATE	BY
1	REVISED PER COMMENTS FROM ANTERO	06/30/17	JDJ

SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE
ESCP DETAILS

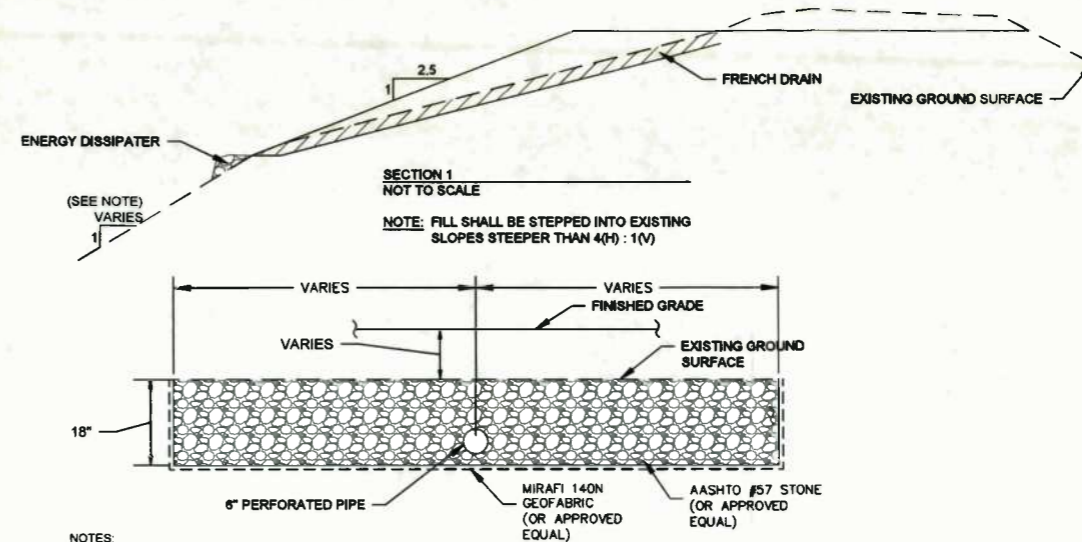
PROPOSED 30" HIGH PRESSURE
STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017 AFE No.: A05924
SCALE: AS SHOWN
DRAWN BY: JBL, RLS (TTO)
CHECKED BY: AR, JHL (TTO)
SHEET 21
SHT. NAME: 050-6323\RESIDUE\ESCP9
REV. 1



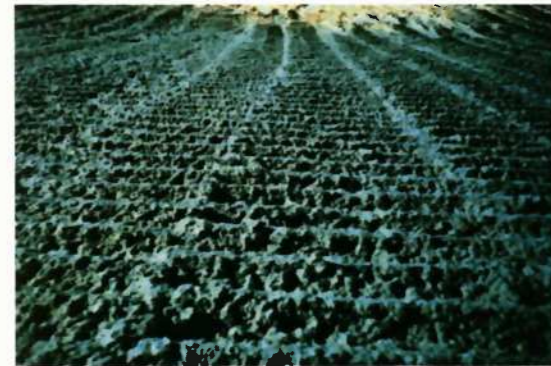
NOTE:
IF EVIDENCE OF A SEEP/SPRING IN A CUT SLOPE IS OBSERVED, THE CONTRACTOR SHOULD INSTALL A FRENCH DRAIN PER DETAIL 36 ABOVE.

40 FRENCH DRAIN AT OBSERVED SEEP/SPRING IN CUT SLOPES
NTS



- NOTES:**
- WHERE SPRINGS OR SEEPS ARE ENCOUNTERED DURING CONSTRUCTION, DRAINABLE FILL AND PERFORATED PIPES (FRENCH DRAINS) SHOULD BE INSTALLED TO PROVIDE A DRAINAGE PATH FOR SEEPAGE FROM THE EXISTING SLOPE.
 - THE FRENCH DRAIN SHOULD CONSIST OF A 6 INCH DIAMETER PERFORATED PIPE SURROUNDED BY DRAINABLE FILL, INSTALLED IN AN 18 INCH DEEP TRENCH ALONG THE EXISTING DRAINAGE FEATURE OR SEEP. PRIOR TO DRAINABLE FILL PLACEMENT, THE TRENCH SHOULD BE LINED WITH A LAYER OF GEOFABRIC SUCH AS MIRAFI 140N, OR APPROVED EQUAL, WITH SUFFICIENT OVERLAP TO PROVIDE AN ENVELOP AROUND THE PIPE TRENCH TO PREVENT THE MIGRATION OF FINES INTO THE FRENCH DRAIN.
 - THE FRENCH DRAIN SHOULD DAYLIGHT BEYOND THE TOE OR SIDE OF THE SLOPE AND EXTEND UP TO THE CREST OF THE SLOPE TO FACILITATE DRAINAGE THROUGH THE FILL SECTION. THE AS-BUILT WIDTH OF THE FRENCH DRAIN SHOULD BE A FUNCTION OF THE WIDTH OF THE SPRING, SEEP OR DRAINAGE FEATURE OBSERVED DURING CONSTRUCTION.
 - THE FRENCH DRAIN SHOULD BE CONSTRUCTED TO SPAN THE ENTIRE WIDTH OF THE OBSERVED SPRING OR SEEP.

41 FRENCH DRAIN AND DRAINABLE FILL SECTION AT OBSERVED SEEP/SPRING OR EXISTING DRAINAGE FEATURE LOCATION
NTS



Typical Polymer Stabilized Fiber Matrix Application Rates

Maximum Rainfall of $\leq 20"$							
SLOPE	6:1	5:1	4:1	3:1	2:1	1.5:1	1:1
Soil Stabilizer (gals/acre)	4	5	6	7	8	9	10
Fiber (lb/acre)	1,500	1,500	1,500	1,800	2,000	2,500	3,000

Maximum Rainfall of $> 20"$ and for Site Winterization			
SLOPE	$\leq 5:1$	4:1	$\geq 3:1$
Soil Stabilizer (gals/acre)	6	8	10
Fiber (lb/acre)	2,000	2,500	3,000

NOTES:

A BONDED FIBER MATRIX (BFM) IS AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. BMFs MAKE USE OF A CROSS-LINKED HYDROCOLLOID TACKIFIER TO BOND THERMALLY PROCESSED WOOD FIBERS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS. FOR SLOPES UP TO 3H:1V THE BFM SHOULD BE APPLIED AT A RATE OF 3,000 LB/ACRE. STEEPER SLOPES MAY NEED AS MUCH AS 4,000 LB/ACRE.

BMfs SHOULD ONLY BE USED WHEN NO RAIN IS FORECASTED FOR AT LEAST 48 HOURS FOLLOWING THE APPLICATION. THIS IS TO ALLOW THE TACKIFIER SUFFICIENT TIME TO CURE PROPERLY. ONCE PROPERLY APPLIED, A BFM IS TYPICALLY 90% EFFECTIVE IN PREVENTING ACCELERATED EROSION. BMfs SHOULD NOT BE APPLIED BETWEEN SEPTEMBER 30 AND APRIL 1.

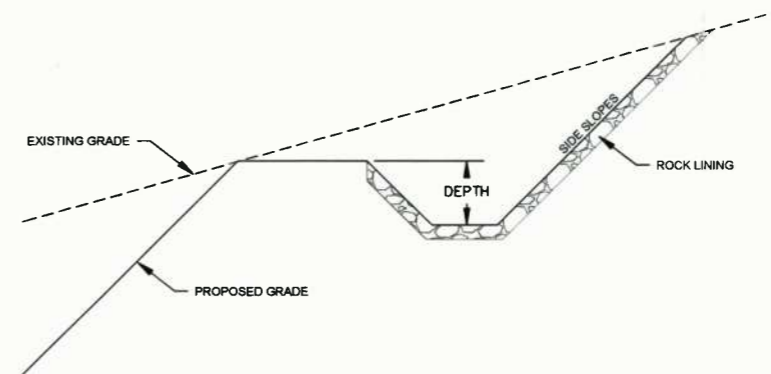
A POLYMER STABILIZED FIBER MATRIX (PSFM) CAN ALSO BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. PSFMs MAKE USE OF A LINEAR SOIL STABILIZING TACKIFIER THAT WORKS DIRECTLY ON SOIL TO MAINTAIN SOIL STRUCTURE, MAINTAIN PORE SPACE CAPACITY AND FLOCCULATE DISLODGED SEDIMENT THAT WILL SIGNIFICANTLY REDUCE RUNOFF TURBIDITY. PROPERLY APPLIED, A PSFM MAY BE AS MUCH AS 99% EFFECTIVE.

NOTES:

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 MECHANICALLY INDUCED, IS PREFERABLE. HOWEVER, LARGE ROCKS, THOSE > 9 INCHES, 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 STAIR STEP GRADING OR BENCHING 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. (SEE ABOVE TABLES)

42 BONDED FIBER MATRIX (HYDROMULCH)
NTS



NOTE:
DRAINAGE CHANNEL DIMENSIONS AND LINING WILL BE DETERMINED BY ENGINEER AS APPLICABLE.

43 TYPICAL ROCK LINED CHANNEL
NTS

THRASHER

IFP

ISSUED FOR PERMITTING
DATE: 07/05/2017
AFE # A05924

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

SUMMARY OF MATERIALS (3D)

NO.	DESCRIPTION	QTY

GENERAL INFORMATION

1. THIS SHEET IS INTENDED TO BE PLOTTED ON ANSI D (22" X 34"). FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

Antero
Midstream Partners LP

SHERWOOD TO SMITHBURG 30" RESIDUE PIPELINE ESCP DETAILS

PROPOSED 30" HIGH PRESSURE STEEL GAS LINE
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 7/5/2017 AFE No.: A05924
SCALE: AS SHOWN
DRAWN BY: JAH, RJS (TTC)
CHECKED: JAH, JSH (TTC)
SHEET 22
SHT. NAME: 050-6323\RESIDUE_ESCP10
REV. 1

LAYOUT: JAH, ESCP10
CAD FILE: R:\050-6323-MEC HP LOOP PHASE_3-ANTERO-Sherwood-Smithburg-Residue-Pipeline-ESCP DETAIL SHEETS.dwg
USER: robert.l.kuczko
PLOT DATE/TIME: 7/5/2017 2:34 PM



The Culture Center
1900 Kanawha Blvd., E.
Charleston, WV 25305-0300

Randall Reid-Smith, Commissioner

Phone 304.558.0220 • www.wvculture.org
Fax 304.558.2779 • TDD 304.558.3562
EEO/AA Employer

August 3, 2017

RECEIVED
AUG 10 2017

Ms. Karen Reed
Project Manager
SWCA Environmental Consultants
200 Bursca Drive, Suite 207
Bridgeville, Pennsylvania 15017

RE: Sherwood Smithburg 30-Inch Residue Pipeline Project
FR: 17-836-DO

Dear Ms. Reed:

We have reviewed the information that was submitted for the above referenced project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

According to the submitted information, Antero Midstream, LLC proposes to construct approximately 1.7 miles of natural gas pipeline east of County Road 50/16, approximately 1 mile southeast of Smithburg, Doddridge County, West Virginia. The project will tie into the Sherwood Natural Gas Processing Plant at its proposed eastern terminus and to an MXP meter site at its proposed western terminus. Existing and proposed access roads will be used to construct the pipeline. The project's limit of disturbance (LOD) consists of the 200-foot-wide construction corridor for the length of the pipeline centerline and encompasses 44.5 acres. The Area of Potential Effects (APE) consists of the proposed project's LOD. It is our understanding that approximately 73 percent of the proposed corridor was previously surveyed for the proposed Strickling Pipeline Project, which was reviewed by this office under FR# 17-791-DO.

Archaeological Resources:

We have reviewed the abbreviated technical report that documents the Phase I archaeological survey completed within the un-surveyed portion of the proposed project's APE. Survey methodology included pedestrian survey and shovel probe excavation. Much of the un-surveyed APE consists of steep and/or previously disturbed terrain. A total of seven shovel probes were excavated. No archaeological sites were identified. As a result, we concur that the proposed project will have no effect on archaeological historic properties.

Architectural Resources:

We have reviewed the submitted information and appreciate that consideration was taken regarding the potential indirect effects to the viewshed, as well as possible direct effects, resulting from the proposed project. We concur with the consultant that the proposed project will affect no architectural properties eligible for or included in the National Register of Historic Places. Although three previously identified built resources, DO-0025; DO-0026; and DO-0027, are located within the potential viewshed near the eastern terminus of the project area, these were determined not eligible for the National Register in

August 3, 2017
Ms. K. Reed
FR: 17-836-DO
Page 2

2001. Based on the included mapping and publicly available streetviews of the project area, we remain in concurrence that these architectural resources are not eligible for the National Register. While the project will require tree cuts, the included visual analysis demonstrates that the remaining vegetation and topography will obscure potential views of the pipeline corridor. No further consultation is necessary regarding architectural resources; however, we ask that you contact our office if your project should change.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Lora A Lamarre-DeMott, Senior Archaeologist, or Benjamin M. Riggle, Structural Historian, at (304) 558-0240.*

Sincerely,

A handwritten signature in cursive script that reads "Susan M. Pierce". The signature is written in black ink and is positioned above the typed name and title.

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP/LLD/BMR



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WEST VIRGINIA 25701-2070

October 13, 2017

Regulatory Division
Energy Resource Branch
LRH-2017-00512-OHR-Middle Island Creek

NATIONWIDE PERMIT NO. 12 VERIFICATION

Corrin MacLuckie
Antero Midstream LLC
1615 Wynkoop Street
Denver, Colorado 80202

Dear Ms. MacLuckie:

I refer to the Pre-Construction Notification (PCN) received in this office on July 19, 2017, and additional information received September 21, 2017, concerning the Sherwood to Smithburg 30" Residue Pipeline project. The proposed project is located in the Middle Island Creek watershed near West Union in Doddridge County, West Virginia. Middle Island Creek is a direct tributary to the Ohio River, a traditional navigable water of the United States. Your PCN has been assigned the following file number: LRH-2017-00512-OHR-Middle Island Creek. Please reference this number on all future correspondence related to this project.

The United States Army Corps of Engineers' (Corps) authority to regulate waters of the United States is based on the definitions and limits of jurisdiction contained in 33 CFR 328 and 33 CFR 329. Section 404 of the Clean Water Act (Section 404) requires a Department of the Army (DA) permit be obtained prior to discharging dredged or fill material into waters of the United States, including wetlands. Section 10 of the Rivers and Harbors Act of 1899 (Section 10) requires a DA permit be obtained for any work in, on, over or under a navigable water.

The proposed project, as described in the submitted information, has been reviewed in accordance with Section 404 and Section 10. Based on your description of the proposed work, and other information available to us, it has been determined that this project will not involve activities subject to the requirements of Section 10. However, this project will include the discharge of dredged or fill material into waters of the United States subject to the requirements of Section 404.

In the submitted PCN materials received in this office on July 19, 2017, and additional information received September 21, 2017, you have requested a DA authorization for the discharge dredged and/or fill material into approximately 500 linear feet of three (3) streams (Strickling Pipeline KLF-STREAM51, WEC Pipeline THR-S136 and KLF-STREAM400) and 0.008 acre of one (1) wetland (KLF-WETLAND404) at four (4) separate and distant locations, in

association with the Sherwood to Smithburg 30" Residue Pipeline project in accordance with the submitted PCN materials.

We have determined these proposed discharge of dredged and/or fill material into waters of the United States, associated with the four (4) single and complete projects, meets the criteria for Nationwide Permit Number (NWP) No. 12 under the January 6, 2017, Federal Register, Issuance of NWPs (82 FR 1860) provided you comply with all terms and conditions of the enclosed material, the enclosed special conditions, and the 401 Water Quality Certification (401 WQC) issued by the West Virginia Department of Environmental Protection. Please be aware this NWP verification does not obviate the requirement to obtain any local, state or federal assent required by law for the activities.

This verification is valid until the expiration date of the NWPs, unless the NWP authorization is modified, suspended, or revoked. The verification will remain valid if the NWP authorization is reissued without modification or the activity complies with any subsequent modification of the NWP authorization. All of the existing NWPs are scheduled to be modified, reissued, or revoked on March 18, 2022. Prior to this date, it is not necessary to contact this office for re-verification of your project unless the plans for the proposed activity are modified. Furthermore, if you commence or under contract to commence this activity before March 18, 2022, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP.

Enclosed is a copy of the NWPs and the 401 WQC to be kept at the project site during construction. You shall supply a copy of these documents to your project engineer responsible for construction activities.

Upon completion of the work, the enclosed certification must be signed and returned to this office. If you have any questions concerning the above, please contact Rachel Klug of the Energy Resource Branch at 304-399-5858, by mail at the above address, or by email at: rachel.a.klug@usace.army.mil.

Sincerely,

SPAGNA.TE
RESA.D.122
9740519

Digitally signed by
SPAGNA.TE/RESA.D.122/9740519
DN: c=US, ou=U.S. Government,
ou=DoD, ou=PKI, ou=USA,
cn=SPAGNA.TE/RESA.D.122/9740519
Date: 2017.10.13 08:38:40 -0400

Teresa D. Spagna
Chief, North Branch

Enclosures

**SPECIAL CONDITIONS FOR THE
NATIONWIDE PERMIT NO. 12 VERIFICATION FOR
Sherwood to Smithburg 30" Residue Pipeline Project
LRH-2017-00512-OHR-Middle Island Creek**

1 of 2

1. Enclosed is a copy of Nationwide Permit 12, which will be kept at the site during construction. A copy of the nationwide permit verification, special conditions, and the enclosed construction plans must be kept at the site during construction. The permittee will supply a copy of these documents to their project engineer responsible for construction activities.
2. Upon completion of the activity authorized by this nationwide permit verification, the enclosed certification must be signed and returned to this office along with as-built drawings showing the location and configuration, as well as all pertinent dimensions and elevations of the activity authorized under this nationwide permit verification.
3. Construction activities will be performed during low flow conditions to the greatest extent practicable. Additionally, appropriate site specific best management practices for sediment and erosion control will be fully implemented during construction activities at the site.
4. No area for which grading has been completed will be unseeded or unmulched for longer than 14 days. All disturbed areas will be seeded and/or revegetated with native species and approved seed mixes (where practicable) after completion of construction activities for stabilization and to help preclude the establishment of non-native invasive species
5. Should new information regarding the scope and/or impacts of the project become available that was not submitted to this office during our review of the proposal, the permittee must submit written information concerning proposed modification(s) to this office for review and evaluation, as soon as practicable.
6. In the event any previously unknown historic or archaeological sites or human remains are uncovered while accomplishing the activity authorized by this nationwide permit authorization, the permittee must cease all work in waters of the United States immediately and contact local, state and county law enforcement offices (only contact law enforcement on findings of human remains), the Corps at 304-399-5210 and West Virginia Historic Preservation Office at 304-558-0220. The Corps will initiate the Federal, state and tribal coordination required to comply with the National Historic Preservation Act and applicable state and local laws and regulations. Federally recognized tribes are afforded a government-to-government status as sovereign nations and consultation is required under Executive Order 13175 and 36 CFR Part 800.

**SPECIAL CONDITIONS FOR THE
NATIONWIDE PERMIT NO. 12 VERIFICATION FOR
Sherwood to Smithburg 30" Residue Pipeline Project
LRH-2017-00512-OHR-Middle Island Creek**

2 of 2

7. Based upon the results of the summer mist net survey titled "Strickling, Crystal Lake, and Potential Projects 1, 2, & 3 Pipeline Right-of-Ways Mist Netting Survey Report for the Indiana and Northern Long-Eared Bat, Doddridge County, West Virginia" and dated August 2017, ~~no federally-listed endangered Indiana bats (*Myotis sodalis*) were detected, demonstrating probable absence of the Indiana bats in the project area.~~ Thirty-eight (38) northern long-eared bats (*Myotis septentrionalis*) were captured and three (3) females were tracked during the bat mist net survey. Only one secondary roost tree will be removed as a result of the project; the tree would be cleared outside of the pup season (June 1- July 31). ~~The 4(d) rule for the northern long-eared bat applies~~ (<http://www.fws.gov/midwest/endangered/mammals/nleb/index.html>). ~~Tree clearing on the project site at any time of the year is unlikely to result in adverse impacts to the Indiana bats and will not result in any unauthorized incidental take of the northern long-eared bats.~~ The survey will expire on May 15, 2022. If a significant amendment is proposed to change or expand this project, or if timber will be removed after that date, a new survey may be necessary and the United States Fish and Wildlife Service must be contacted. The United States Fish and Wildlife Service may be contacted by mail at 694 Beverly Pike, Elkins, West Virginia or by phone at (304) 636-6586.

8. Section 7 obligations under Endangered Species Act must be reconsidered if new information reveals impacts of the project that may affect federally listed species or critical habitat in a manner not previously considered, the proposed project is subsequently modified to include activities which were not considered during Section 7 consultation with the United States Fish and Wildlife Service, or new species are listed or critical habitat designated that might be affected by the subject project.



DIVISION OF NATURAL RESOURCES

324 Fourth Avenue, Room 200
South Charleston WV 25303-1228
TDD (304) 558-1439
TDD 1-800-354-6087
Fax (304) 558-6048
Telephone (304) 558-3225
July 21, 2017

Jim Justice
Governor

Stephen S. McDaniel
Director

Division of Natural Resources
RIGHT OF ENTRY

Re: **LS-17-VI/09-1311**

Antero Midstream LLC
Corrin MacLuckie
c/o Kleinfelder, Inc.
Attention: Matthew Albright
230 Executive Drive, Suite 122
Cranberry Township, PA 16066-

Dear Ms. MacLuckie:

The Division of Natural Resources hereby grants to you for a period of ten (10) years from the date hereof, a Right of Entry to install, use and maintain a timber mat crossing (Sherwood to Smithburg) at two (2) separate locations along Douglascamp Run and an unnamed tributary of Buckeye Creek near Morgansville in Doddridge County, West Virginia.

This Right of Entry is subject to the following terms and conditions:

1. No in stream work during the fish-spawning season (April 1-June 30).
2. Work should be completed as quickly as possible during low flows in designated work areas only.
3. Any streambed disturbance should be restricted to the immediate area. In stream use of equipment should be kept to a minimum.
4. All shore areas disturbed by this operation must be reshaped, seeded and mulched immediately upon completion of work. The prompt establishment of vegetative cover will reduce future damage from high water levels.
5. Green concrete must not be put in the stream (highly toxic to aquatic life).
6. Guidance should be obtained from NRCS (formerly SCS) and a registered engineer for the design and construction. Must allow for passage of at least ten-year year flood flow.
7. Best management practices should be followed; measures such as hay

Antero Midstream LLC
LS-17-VI/09-1311
Page 2
July 21, 2017

bales must be used to reduce downstream siltation.

8. Applicant is responsible for removing debris from in and around the installation periodically to prevent stream flow obstruction.
9. Durable head walls of logs, crossties, rock, or concrete shall be constructed at both the upstream and downstream ends of crossing to prevent erosion of fill material into the stream.
10. The State's issuance of this Right-of-Entry does not provide for the applicant to work outside the requested boundaries nor does the State assume any liability for the applicant's/landowner's construction activities. By accepting this Right-of-Entry, the applicant/landowner assumes liability for any/all damages caused by this activity to both upstream and downstream landowners.

Guidelines of Best Management Practices for Sediment and Erosion Control as outlined by the Section of Water Resources, Division of Environmental Protection must be followed. Copies of those guidelines are available from the Section of Water Resources, Telephone No. (304) 926-0440.

The issuance of this Right of Entry by the Division of Natural Resources does not preclude the necessity for you to obtain a permit from the U.S. Corps of Engineers District Office, Permit Section, or any other state or federal permits which may be required by law, nor does this Right of Entry negate the need to comply with the West Virginia Water Pollution Control Act and/or the State Environmental Quality Board's administrative regulations, applicant is also responsible for determining if the proposed activity is located within an identified flood plain and it is the applicant's responsibility for contacting the local governmental agency in charge of that program and obtaining a flood plain development permit for it. This Right of Entry does not grant any rights or privileges, or permission to enter upon or to cross the property of any other person, nor is permission granted to remove any material that lies upon the property of any other persons. Work should be completed in as brief a period as possible and within one year from the date of this letter. In the event you fail or refuse to comply with any of the terms or conditions herein, this Right of Entry will be canceled and considered null and void and the Division will reject further applications.

Your payment is now due and payable in the amount of \$200.00 to the Division of Natural Resources covering the first year's annual fee of this agreement. Your agreement will be effective upon receipt of your payment in full. You must notify this office in writing when this installation has been removed.

Sincerely,



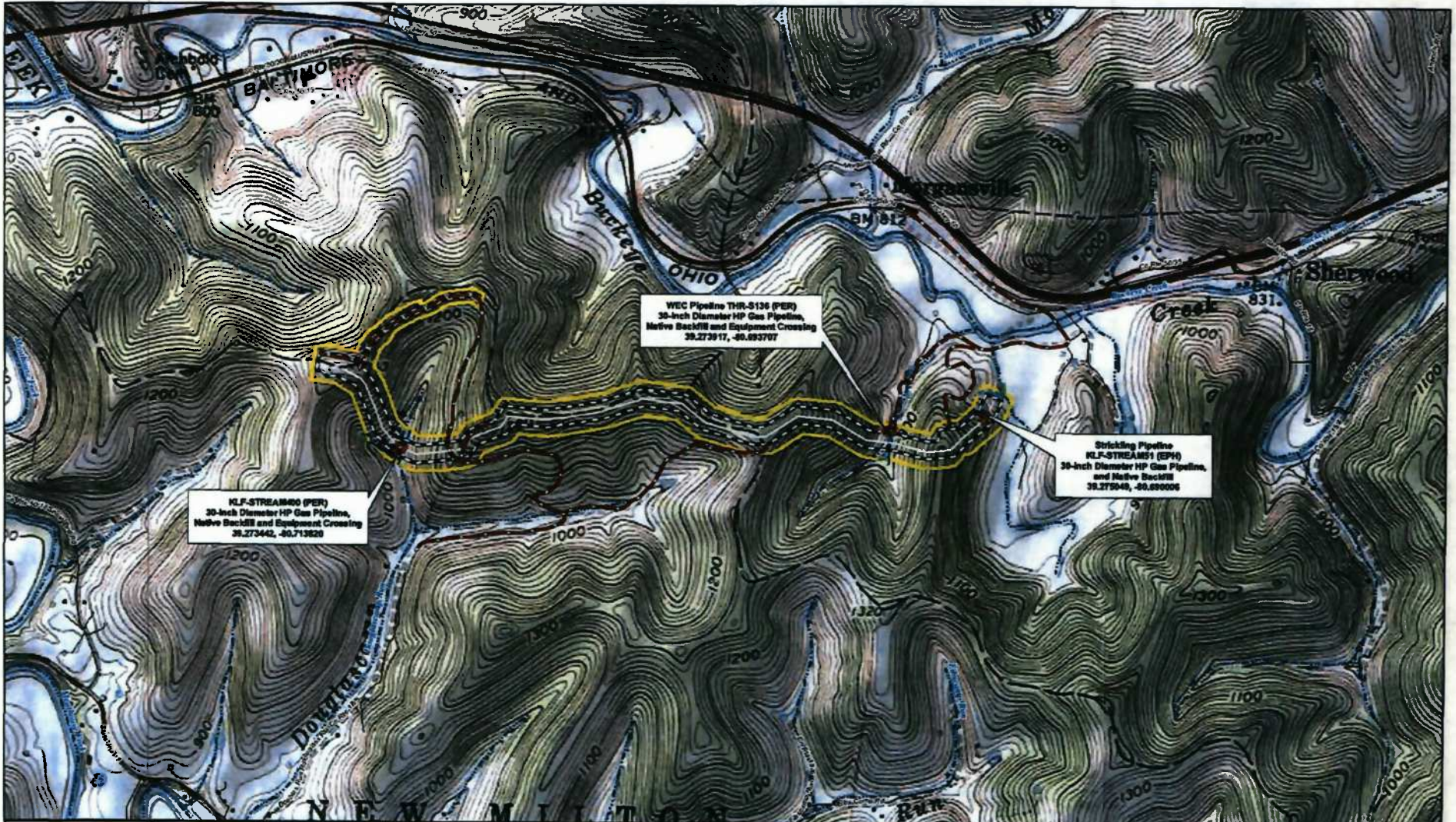
Joe T. Scarberry, Supervisor
Office of Land and Streams

JTS:cb

pc: DNR Fish Biologist
Jeremy Bandy, Environmental Enforcement
DNR Conservation Officers

P-17-VI/09-1310

Exhibit A



KLF-STREAM80 (EPH)
 30-inch Diameter HP Gas Pipeline,
 Native Buckfill and Equipment Crossing
 39.273442, -80.719829

WEC Pipeline THR-5136 (PER)
 30-inch Diameter HP Gas Pipeline,
 Native Buckfill and Equipment Crossing
 39.273917, -80.693797

Strickling Pipeline KLF-STREAM51 (EPH)
 30-inch Diameter HP Gas Pipeline,
 and Native Buckfill
 39.275048, -80.690006

	PROJECT NO: 20174408 DRAWN BY: CDC CHECKED BY: MJA FILE NAME: 30inch_Residue_Map_09A.dwg			Doddridge County West Virginia <small>Antero Midstream LLC</small>	Area of Interest (92.8 ac) LOD (44.5 ac) Pipeline (1.7 mi) Access Road (3.6 mi)	Ephemeral Stream Intermittent Stream Perennial Stream PEM Wetland	NHD Stream NWI Wetland Existing Road	Antero Midstream LLC Figure 1 Vicinity Map Sherwood to Smithburg 30" Residue Pipeline Date: 7/6/2017
	PROJECT NO: 20174408 DRAWN BY: CDC CHECKED BY: MJA FILE NAME: 30inch_Residue_Map_09A.dwg				Area of Interest (92.8 ac) LOD (44.5 ac) Pipeline (1.7 mi) Access Road (3.6 mi)	Ephemeral Stream Intermittent Stream Perennial Stream PEM Wetland	NHD Stream NWI Wetland Existing Road	Antero Midstream LLC Figure 1 Vicinity Map Sherwood to Smithburg 30" Residue Pipeline Date: 7/6/2017



DIVISION OF NATURAL RESOURCES

324 Fourth Avenue, Room 200
South Charleston WV 25303-1228

TDD (304) 558-1439

TDD 1-800-354-6087

Fax (304) 558-6048

Telephone (304) 558-3225

Jim Justice
Governor

Stephen S. McDaniel
Director

July 21, 2017

Division of Natural Resources
LICENSE AND RIGHT OF ENTRY

Re: P-17-VI/09-1310

Antero Midstream LLC
Corrin MacLuckie
c/o Kleinfelder, Inc.
Attention: Matthew Albright
230 Executive Drive, Suite 122
Cranberry Township, PA 16066-

Dear Ms. MacLuckie:

The Division of Natural Resources hereby grants to you for a term of ten (10) years, from the date hereof, a License and Right of Entry to construct, replace, cover, repair, operate, maintain, use and remove a thirty inch (30") steel pipeline (Sherwood to Smithburg) at three (3) separate locations along Douglascamp Run and unnamed tributaries of Buckeye Creek, New Milton District in Doddridge County, West Virginia, as shown located and highlighted in red on the map attached hereto as Exhibit A.

This License and Right of Entry is subject to the following terms and conditions:

High Quality Streams (HQS) as listed in the West Virginia Division of Natural Resources High Quality Stream Sixth Edition published in 2001 and for any trout streams and direct tributaries of trout streams:

- Directional boring is the only method permitted during the fish spawning season. Fish spawning season for warmwater streams runs from April 1st through June 30th. Trout spawning season runs from October 1st through April 30th.
- Other dry ditch methods (pump around, flume or cofferdam) as described in WVDEP water resources manual (published 2006) on page 3.21-4 may be used outside of spawning seasons.
- Each crossing that utilizes dry ditch methods must be completed in 2 consecutive work days.

Non-high quality stream:

- Directional boring or other dry ditch methods (pump around, flume or cofferdam) as described in WVDEP water resources manual (published 2006) on page 3.21-4 may be used at all times during fish spawning season from April 1st through June 30th. This eliminates the need for spawning season restrictions.
- Crossings using methods other than directional boring. Must be completed in 1 work

Antero Midstream LLC
P-17-VI/09-1310
Page 2
July 21, 2017

- day.
- Only ephemeral/intermittent streams that are dry can be trenched.

Bank Stabilization

All bank stabilization projects must begin immediately upon completion of utility line crossing and be completed within 24 hours of completion of utility line crossing.

Freshwater Mussels

Mussel surveys on streams with known US Fish and Wildlife listed or candidate endangered species will be required if directional boring is not an option. Contact Janet Clayton of the WVDNR Wildlife Diversity Program for information concerning mussels at 304-637-0245.

For further assistance, contact the appropriate WVDNR District Fisheries Biologist.
District 1 304-825-6787 District 2 304-822-3551 District 3 304-924-6211
District 4 304-256-6947 District 5 304-675-0871 District 6 304-420-4550

The issuance of this License and Right of Entry by the Division of Natural Resources does not preclude the necessity to obtain a permit from the Corps of Engineers or any other state or federal permits which may be required by law, nor does this License and Right of Entry negate the need to comply with the West Virginia Water Pollution Control Act and/or the State Environmental Quality Board's administrative regulations, applicant is also responsible for determining if the proposed activity is located within an identified flood plain and it is the applicant's responsibility for contacting the local governmental agency in charge of that program and obtaining a flood plain development permit for it. This License and Right of Entry does not grant any rights or privileges, or permission to enter upon or to cross the property of any other person, nor is permission granted to remove any material that lies upon the property of any other persons. Work should be completed in as brief a period as possible and within one year from the date of this letter. In the event you fail or refuse to comply with any of the terms or conditions herein, this License and Right of Entry will be canceled and considered null and void and the Division will reject further applications.

Your check in the amount of \$1200.00 is now due and payable to the Division of Natural Resources covering the (10) ten-year fee of this agreement. Your agreement will be effective upon receipt of your payment in full.

Sincerely,



Joe T. Scarberry, Supervisor
Office of Land and Streams

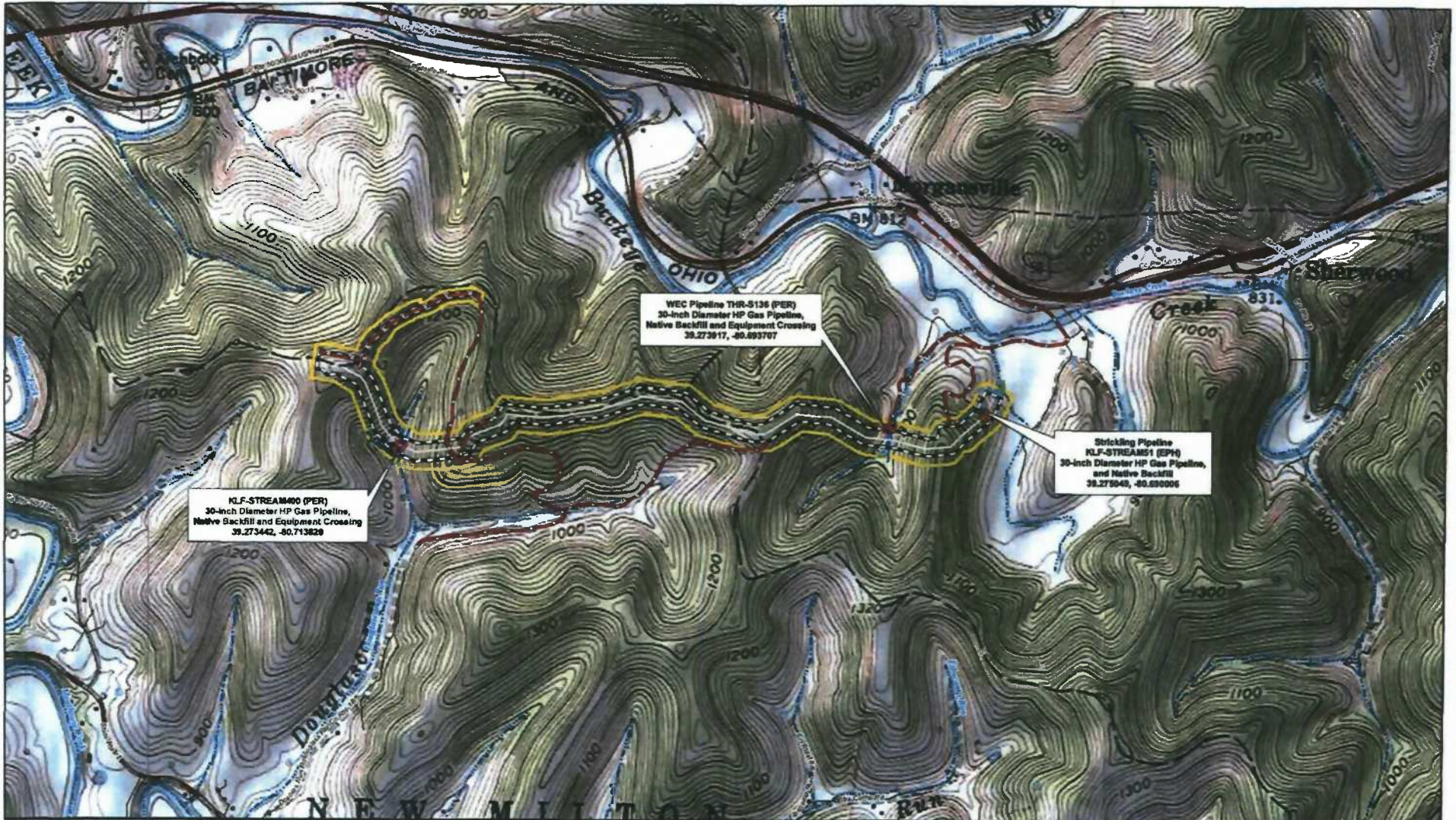
JTS:cb

attachment

pc: DNR Fish Biologist
Jeremy Bandy, Environmental Enforcement
DNR Conservation Officers

P-17-VI/69-1310

Exhibit A



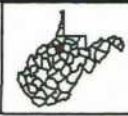
KLF-STREAM#00 (PER)
30-inch Diameter HP Gas Pipeline,
Native Backfill and Equipment Crossing
39.273442, -80.713829

WEC Pipeline THR-5136 (PER)
30-inch Diameter HP Gas Pipeline,
Native Backfill and Equipment Crossing
39.273917, -80.693707

**Strickling Pipeline
KLF-STREAM#1 (EP#)**
30-inch Diameter HP Gas Pipeline,
and Native Backfill
39.275048, -80.690066



PROJECT NO. 20174498
DRAWN BY: CDC
CHECKED BY: MJA
FILE NAME:
201706_201706_01_BAA_1.dwg



Doddridge County
West Virginia

- Area of Interest (92.8 ac)
- LOD (44.5 ac)
- Pipeline (1.7 mi)
- Access Road (3.6 mi)
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream
- NHD Stream
- NWI Wetland
- Existing Road
- PEM Wetland

Antero Midstream LLC
Figure 1
Vicinity Map
Sherwood to Smithburg 30" Residue Pipeline
Date: 7/6/2017