

Doddridge County Sheriff
Flood Plain Ordinance Fund

1024

69-217/515

DATE July 16, 2013

PAY TO THE ORDER OF THE HERALD RECORD

\$ 67.62

Sixty-Seven Dollars and 62/100-----

DOLLARS

Security features included. Details on back.



Ralph Sanderson Jr.
Beth A. Rogers
MP

Inv #s-2694 & 2695 Legal Ads

MEMO Bldg Permits-#13-021 and #13-024

⑈001024⑈ ⑈051502175⑈

⑈119649⑈

By: BH - MEH - AML
Asst. Chief Tax Deputy

Michael Headley
Sheriff of Doddridge County

The Person paying Money into the Treasury shall forthwith file one of these Receipts with the County Clerk

Doddridge County, West Virginia

No. 4787

Date: June 27, 2013
Customer copy

Received: #13-021 Antero Resources

\$8,400.23

In Payment For: 318 Building Permits (LP)

For: 12-Flood Plain Ordinanc Fund #20 Fund

By: BH - MEH - AML
Asst. Chief Tax Deputy

Michael Headley
Sheriff of Doddridge County



ANTERO RESOURCES APPALACHIAN
1625 17th STREET, SUITE 300
DENVER, COLORADO 80202

Vendor Name	Vendor No.	Date	Check Number	Check Total
DODDRIDGE COUNTY COMMISSION	43312	Jun-21-2013	32210	\$8,400.23

VOUCHER	VENDOR INV #	INV DATE	TOTAL AMOUNT	PRIOR PMTS & DISCOUNTS	NET AMOUNT
06-AP-10286	SUSIEJANEPAD	06/21/13	8,400.23	0.00	8,400.23
	FLOOD PLAIN PERMIT APP- SUSIE JANE PAD				
	TOTAL INVOICES PAID				8,400.23

DETACH AND RETAIN FOR TAX PURPOSES

Doddridge County Flood Plain Application Fee Calculator (if in Flood Plain)**Susie Jane Pad**

Estimated Construction Costs	\$1,380,046.00
Amount over \$100,000	\$1,280,046.00
Drilling Oil and Gas Well Fee	\$1,000.00
Deposit for additional charges	\$1,000.00
\$5 per \$1,000 over \$100,000	\$6,400.23
Amount Due with application	\$8,400.23

Legal Advertisement:
Doddridge County
Floodplain Permit Application

Please take notice that on the 25th day of June, 2013,
ANTERO RESOURCES APPALACHIAN CORP. filed an
application for a Floodplain Permit to develop land located at or
about: **Betty D. Garwood, surface owner, Greenbrier District
Tax Map: 4/10, 10.1, 10.2 & 4/30, DB: 261/408 & WB 26/611.**
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 **July 15, 2013.**

Delivered to the:
Clerk of the County Court
118 E. Court Street, West Union, WV 26456.

Beth A Rogers, Doddridge County Clerk
Dan Wellings, Doddridge County Flood Plain Manager

TRANSACTION REPORT

P. 01

JUN-27-2013 THU 10:47 AM

FOR: DODDRIDGE CO. CLERK

304 873 1840

SEND

DATE	START	RECEIVER	TX TIME	PAGES	TYPE	NOTE	M#	DP
JUN-27	10:47 AM	93048731600	25"	1	FAX TX	OK	480	

TOTAL : 25S PAGES: 1

- 20 days
July 15, 2013

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Dan Wellings, Doddridge County Flood Plain Manager



June 23, 2013

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

Antero Resources
1625 17th Street
Denver, Colorado 80202
Office 303.357.7310
Fax 303.357.7315

Mr. Wellings:

Antero Resources Appalachian Corporation (Antero) would like to submit a Doddridge County Floodplain permit application for our Susie Jane Drill Pad. Our project is located in Doddridge County, Greenbrier District. Per HEC-RAS study prepared by L&W Enterprises, Inc. on May 2, 2013, and FEMA Map 54017C0165C, the development associated with the entrance road and offload pas has little impact on the existing flood plain.

Attached you will find the following:

- Doddridge County Floodplain Permit Application and Permit Fee
- HEC-RAS Flood Plain Study
- A detailed set of plans signed by a WV licensed professional engineer
- Adjacent Surface Owner Data
- Copies of other required permits
- Site Safety Plan

If you have any questions please feel free to contact me at (303) 357-6820.

Thank you in advance for your consideration.

Sincerely,

Shauna Redican
Permit Representative
Antero Resources Appalachian Corporation

Enclosures

AM 7:10:00 JUN 25 2013
WEST UNION, WV

2013 JUN 25 PM 4:01

111

PERMIT NO. 13-021

DODDRIDGE COUNTY
FLOODPLAIN DEVELOPMENT
PERMIT

PURPOSE FOR PERMIT: Fill, Grading, Road

ISSUED TO Antero Resources Appalachian Corp.

ADDRESS: 1625 17th Street, Denver Co. 80202

PROJECT ADDRESS: Betty Garland
Greenbrier

ISSUED BY: Dan Wellings

DATE: 07/19/2013

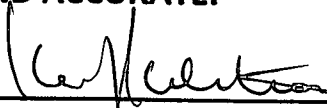
THIS PERMIT MUST BE POSTED ON THE PREMISES IN A CONSPICUOUS PLACE SO AS TO BE CLEARLY
VISIBLE FROM THE STREET.

DODDRIDGE COUNTY FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

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



DATE June 24, 2013

SECTION 2: PROPOSE DEVELOPMENT (TO BE COMPLETED BY APPLICANT).

IF THE APPLICANT IS NOT A NATURAL PERSON, THE NAME, ADDRESS, AND TELEPHONE NUMBER OF A NATURAL PERSON WHO SHALL BE APPOINTED BY THE APPLICANT TO RECEIVE NOTICE PURSUANT TO ANY PROVISION OF THE CURRENT DODDRIDGE COUNTY FLOODPLAIN ORDINANCE.

Antero Resources Appalachian Corporation - Kevin Kilstrom, Vice
President of Production

APPLICANT'S NAME:

ADDRESS: 1625 17th Street, Denver, CO 80202

TELEPHONE NUMBER: Contact Shauna Redican: 303-357-6820

BUILDER'S NAME: Antero Resources Appalachian Corporation

ADDRESS: 1625 17th Street, Denver, CO 80202

TELEPHONE NUMBER: (303) 357-7310

ENGINEER'S NAME: Allegheny Surveys, Inc. - Charles K. Wilson

ADDRESS: 172 Thompson Drive, Bridgeport, WV 26330

TELEPHONE NUMBER: 304-848-5035

PROJECT LOCATION:

NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT) Please see attached Exhibit A

ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT) Please see attached Exhibit A

DISTRICT: Greenbrier

DATE/FROM WHOM PROPERTY

PURCHASED: N/A

LAND BOOK DESCRIPTION:

DEED BOOK REFERENCE: Please see attached Exhibit A

TAX MAP REFERENCE: Please see attached Exhibit A

EXISTING BUILDINGS/USES OF PROPERTY: None

NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY Betty D. Garwood

ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY Rt. 1 Box 401, Salem, WV 26426

To avoid delay in processing the application, please provide enough information to easily identify the project location.

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

ACTIVITY

STRUCTURAL TYPE

- | | | | |
|--------------------------|-------------------------|--------------------------|----------------------------------|
| <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:

- | | | | | | | | |
|-------------------------------------|--|--------------------------|--------|-------------------------------------|----------|--------------------------|------------|
| <input checked="" type="checkbox"/> | Fill | <input type="checkbox"/> | Mining | <input checked="" type="checkbox"/> | Drilling | <input type="checkbox"/> | Pipelining |
| <input checked="" type="checkbox"/> | Grading | | | | | | |
| <input type="checkbox"/> | Excavation (except for STRUCTURAL DEVELOPMENT checked above) | | | | | | |
| <input type="checkbox"/> | Watercourse Altercation (including dredging and channel modification) | | | | | | |
| <input checked="" type="checkbox"/> | Drainage Improvements (including culvert work) *Replace existing culvert as shown on pages 6-9 of attached Susie Jane Pad Design | | | | | | |
| <input checked="" type="checkbox"/> | Road, Street, or Bridge Construction *Access Road Construction as shown on pages 6-9 of attached Susie Jane Pad Design | | | | | | |
| <input type="checkbox"/> | Subdivision (including new expansion) | | | | | | |
| <input type="checkbox"/> | Individual Water or Sewer System | | | | | | |
| <input type="checkbox"/> | Other (please specify) | | | | | | |

C. STANDARD SITE PLAN OR SKETCH

- SUBMIT ALL STANDARD SITE PLANS, IF ANY HAVE BEEN PREPARED.**
- IF STANDARD SITE PLANS HAVE NOT BEEN PREPARED:**
 SKETCH ON A SEPARATE 8 ½ X 11 INCH SHEET OF PAPER THE SHAPE AND LOCATION OF THE LOT. SHOW THE LOCATION OF THE INTENDED CONSTRUCTION OR LAND USE INDICATING BUILDING SETBACKS, SIZE & HEIGHT. IDENTIFY EXISTING BUILDINGS, STRUCTURES OR LAND USES ON THE PROPERTY.
- SIGN AND DATE THE SKETCH.**

ACTUAL TOTAL CONSTRUCTION COSTS OF THE COMPLETE DEVELOPMENT IRRESPECTIVE OF WHETHER ALL OR ANY PART OF THE SUBJECT PROPOSED CONSTRUCTION PROJECT IS WITHIN THE FLOODPLAIN \$ 1,380,045.64

*See attached Floodplain Calculation Fee

D. ADJACENT AND/OR AFFECTED LANDOWNER

1. NAME AND ADDRESS OF ALL OWNERS OF SURFACE TRACTS ADJACENT TO THE AREA OF THE SURFACE TRACT (UP & DOWN STREAM) UPON WHICH THE PROPOSED ACTIVITY WILL OCCUR AND ALL OTHER SURFACE OWNERS UP & DOWN STREAM) WHO OWN PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY (IF ONE HAS BEEN COMPLETED).

NAME: Please see attached Exhibit B
 ADDRESS: _____

NAME: _____
 ADDRESS: _____

NAME: _____
 ADDRESS: _____

NAME: _____
 ADDRESS: _____

1. NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON ANY ADJACENT PROPERTY AT THE TIME THE FLOODPLAIN PERMIT APPLICATION IS FILED AND THE NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN ANY HOME ON ANY PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY.

NAME: Please see attached Exhibit B
 ADDRESS: _____

NAME: _____
 ADDRESS: _____

NAME: _____
 ADDRESS: _____

NAME: _____
 ADDRESS: _____

E. CONFIRMATION FORM

THE APPLICANT ACKNOWLEDGES, AGREES, AND CONFIRMS THAT HE/IT WILL PAY WITHIN 30 DAYS OF RECEIPT OF INVOICE BY THE COUNTY FOR ALL EXPENSES RELATIVE TO THE PERMIT APPLICATION PROCESS GREATER THAN THE REQUIRED DEPOSIT FOR EXPENSES INCLUDING:

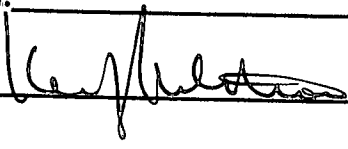
- (A) PERSONAL SERVICE OF PROCESS BY THE DODDRIDGE COUNTY SHERIFF AT THE RATES PERMITTED BY LAW FOR SUCH SERVICE.
- (B) SERVICE BY CERTIFIED MAIL RETURN RECEIPT REQUESTED.
- (C) PUBLICATION.

Susie Jane Pad Doddridge County Floodplain Permit – Exhibit A

Surface Owner Name	Address	Deed/Page	Tax Map/ Parcel
Betty D. Garwood	Rt. 1 Box 401, Salem, WV 26426	WB26/611	4/10, 10.1 and 10.2
Betty D. Garwood	Box 32, Prt Republic, NJ 08241	261/408	4/30
Robert G. Price	Rt. 1 Box 401, Salem, WV 26426	261/408	4/30
Jason S. and Pamela M. Trent	166 John Trent Rd., Salem, WV 26426	281/269	4/14.2
John S. Trent Jr. and Jacqueline S. Trent	Rt 1 Box 375, Salem, WV 26426	225/223	3/32
Eugene E. Lloyd	108 Water St., Salem, WV 26426	286/360	3/22
Sharon M. (Carty) Davis	RR 2 Box 172, Bristol, WV 26426	198/595	3/22.2

- (D) COURT REPORTING SERVICES AT ANY HEARINGS REQUESTED BY THE APPLICANT.
- (E) CONSULTANTS AND/OR HEARING EXPERTS UTILIZED BY DODDRIDGE COUNTY FLOODPLAIN ADMINISTRATOR/MANAGER OR FLOODPLAIN APPEALS BOARD FOR REVIEW OF MATERIALS AND/OR TESTIMONY REGARDING THE EFFICACY OF GRANTING OR DENYING THE APPLICANT'S FLOODPLAIN PERMIT.

NAME (PRINT): Kevin Kilstrom _____

SIGNATURE:  DATE: 6/24/13

After completing SECTION 2, APPLICANT should submit form to Floodplain Administrator/Manager or his/her representative for review.

SECTION 3: FLOODPLAIN DETERMINATION (to be completed by Floodplain Administrator/Manager or his/her representative)

THE PROPOSED DEVELOPMENT:

THE PROPOSED DEVELOPMENT IS LOCATED ON:

FIRM Panel: _____ 165
 Dated: _____ 10/04/2011

Is **NOT** located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and **NO FLOODPLAIN DEVELOPMENT PERMIT IS REQUIRED**).

Is located in Special Flood Hazard Area.
 FIRM zone designation _____ A
 100-Year flood elevation is: _____ 903.79 _____ NGVD (MSL)

Unavailable

The proposed development is located in a floodway.
 FBFM Panel No. _____ Dated _____

See section 4 for additional instructions.

SIGNED Dan Wellings

DATE 07/19/2013

SECTION 4: ADDITIONAL INFORMATION REQUIRED (To be completed by Floodplain Administrator/Manager or his/her representative)

The applicant must submit the documents checked below before the application can be processed.

- A plan showing the location of all existing structures, water bodies, adjacent roads, lot dimensions and proposed development.

- Development plans, drawn to scale, and specifications, including where applicable: details for anchoring structures, storage tanks, proposed elevation of lowest floor, (including basement or crawl space), types of water resistant materials used below the first floor, details of flood proffing of utilities located below the first floor and details of enclosures below the first floor. Also _____

- Subdivision or other development plans (If the subdivision or development exceeds 50 lots or 5 acres, whichever is the lesser, the applicant must provide 100-year flood elevations if they are not otherwise available).

- Plans showing the extent of watercourse relocation and/or landform alterations.

- Top of new fill elevation _____ Ft. NGVD (MSL).
For floodproofing structures applicant must attach certification from registered engineer or architect.

- Certification from a registered engineer that the proposed activity in a regulatory floodway will not result in any increase in the height of the 100-year flood. A copy of all data and calculations supporting this finding must also be submitted.

- Manufactured homes located in a floodplain area must have a West Virginia Contractor's License and a Manufactured Home Installation License as required by the Federal Emergency Management Agency (FEMA).

Other:

SECTION 5: PERMIT DETERMINATION (To be completed by Floodplain Administrator/Manager or his/her representative)

I have determined that the proposed activity (type is or is not) in conformance with provisions of the Floodplain Ordinance adopted by the County Commission of Doddridge County on May 21, 2013. The permit is issued subject to the conditions attached to and made part of this permit.

SIGNED *Dan Welling* DATE 07/19/2013

If the Floodplain Administrator/Manager found that the above was not in conformance with the provisions of the Doddridge County Floodplain Ordinance and/or denied that application, the applicant may complete an appealing process below.

APPEALS: Appealed to the County Commission of Doddridge County? Yes No
Hearing Date: _____
County Commission Decision - Approved Yes No

CONDITIONS: _____

SECTION 6: AS-BUILT ELEVATIONS (To be submitted by APPLICANT before Certificate of Compliance is issued).

The following information must be provided for project structures. This section must be completed by a registered professional engineer or a licensed land surveyor (or attach a certification to this application).

COMPLETE 1 OR 2 BELOW:

- 1 Actual (As-Built) Elevation of the top of the lowest floor (including basement or crawl space is _____ FT. NGVD (MSL)
- 2 Actual (As Built) elevation of floodproofing is _____ FT. NGVD (MSL)

Note: Any work performed prior to submittal of the above information is at risk of the applicant.

SECTION 7: COMPLIANCE ACTION (To be completed by the Floodplain Administrator/Manager or his/her representative).

The Floodplain Administrator/Manager or his/her representative will complete this section as applicable based on inspection of the project to ensure compliance with the Doddridge County Floodplain Ordinance.

INSPECTIONS:

DATE: _____ BY: _____
DEFICIENCIES ? Y/N

COMMENTS _____

SECTION 8: CERTIFICATE OF COMPLIANCE (To be completed by Floodplain Administrator/Manager or his/her representative).

Certificate of Compliance issued: DATE: _____ BY: _____

**CERTIFICATE OF COMPLIANCE
FOR DEVELOPMENT IN SPECIAL FLOOD HAZARD AREA
(OWNER MUST RETAIN)**

PERMIT NUMBER: _____

PERMIT DATE: _____

PURPOSE –

CONSTRUCTION LOCATION: _____

OWNER'S ADDRESS: _____

**THE FOLLOWING MUST BE COMPLETED BY THE FLOODPLAIN
ADMINISTRATOR/MANAGER OR HIS/HER AGENT.**

**COMPLIANCE IS HEREBY CERTIFIED WITH THE REQUIREMENT OF THE
FLOODPLAIN ORDINANCE ADOPTED BY THE COUNTY COMMISSION OF
DODDRIDGE COUNTY ON MAY 21, 2013.**

SIGNED _____ **DATE** _____

Susie Jane Pad – Adjacent Surface Owner Data – Exhibit B

Impact Parcel - GARWOOD BETTY D Acres 13.43730314 District 4 Map 4 PID 10.2 Book 207 Page 6

SALEM	
FID	2090
DIST	4
MAP	4
PID	10.2
GIS_Link	4-4-10.2
TAXDIST	4
TAXYR	2008
PARID	04 4001000020000
PAR_MAP	4
PAR_MAP1	10
PAR_MAP2	2
OWNTYPE1	
OWNTYPE2	
OWN1	GARWOOD BETTY D
OWN2	
ADDR1	
ADDR2	RT 1 BOX 401
ADDR3	SALEM WV 26426
CITYNAME	SALEM
STATECODE	WV
ZIP1	26426
BOOK	207
PAGE	6
LEGAL1	BUFFALO CALF
LEGAL2	31 AC
GISJOIN	4-4-10.2
MAPPED_AC	13.437303

Susie Jane Pad – Adjacent Surface Owner Data – Exhibit B

Upstream adjacent Parcel –MCIE DEBORAH (LIFE) Acres 0.69712157 District 4 Map 4 PID 4.1 Book 214 Page 98

SALEM

FID 2087
DIST 4
MAP 4
PID 4.1
GIS_Link 4-4-4.1
TAXDIST 4
TAXYR 2008
PARID 04
4000400010000
PAR_MAP 4
PAR_MAP1 4
PAR_MAP2 1
OWNTYPE1
OWNTYPE2
OWN1 MCIE
DEBORAH
(LIFE)
OWN2
ADDR1
ADDR2 RT 1 BOX 403
ADDR3 SALEM WV
26426
CITYNAME SALEM
STATECODE WV
ZIP1 26426
BOOK 214
PAGE 98
LEGAL1 BUFFALO
CALF
LEGAL2 .716 AC
GISJOIN 4-4-4.1
MAPPED_AC 0.697122

Susie Jane Pad – Adjacent Surface Owner Data – Exhibit B

Upstream Adjacent Parcel - WELLS WILLIAM B & CATHY D Acres 68.66327204 District 4 Map 4 PID 4.2 Book 239 Page 476

SALEM

FID	2032
DIST	4
MAP	4
PID	4.2
GIS_Link	4-4-4.2
TAXDIST	4
TAXYR	2008
PARID	04 4000400020000
PAR_MAP	4
PAR_MAP1	4
PAR_MAP2	2
OWNTYPE1	
OWNTYPE2	
OWN1	WELLS WILLIAM B & CATHY D
OWN2	(SURV)
ADDR1	
ADDR2	16 GAIN ST
ADDR3	SALEM WV 26426
CITYNAME	SALEM
STATECODE	WV
ZIP1	26426
BOOK	239
PAGE	476
LEGAL1	72.93 AC BUFFALO CALF
LEGAL2	
GISJOIN	4-4-4.2
MAPPED_AC	68.663272

Susie Jane Pad – Adjacent Surface Owner Data – Exhibit B

Downstream Adjacent - GARWOOD BETTY D & Robert G. Price- Acres 33.77256973 District 4 Map 4 PID 30 Book 261 Page 408

SALEM	
-------	--

FID	2097
DIST	4
MAP	4
PID	30
GIS_Link	4-4-30
TAXDIST	4
TAXYR	2008
PARID	04 4003000000000
PAR_MAP	4
PAR_MAP1	30
PAR_MAP2	0
OWNTYPE1	
OWNTYPE2	
OWN1	GARWOOD BETTY D &
OWN2	ROBERT G PRICE (SURV)
ADDR1	
ADDR2	401 BUFFALO CALF
ADDR3	SALEM WV 26426
CITYNAME	SALEM
STATECODE	WV
ZIP1	26426
BOOK	261
PAGE	408
LEGAL1	BUFFALO CALF
LEGAL2	35.75 AC
GISJOIN	4-4-30
MAPPED_AC	33.77257

			\$69,326.25
--	--	--	--------------------

QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
0.0	CY	\$3.27	\$0.00
0.0	CY	\$11.35	\$0.00
0.0	FT	\$10.93	\$0.00
0.0	LF	\$10.60	\$0.00
0.0	LF	\$6.35	\$0.00
0.0	LF	\$4.00	\$0.00
0.0	AC	\$2.67	\$0.00
0.0	HOUR	\$1,962.50	\$0.00
0.0	SY	\$2.13	\$0.00
			\$0.00

GRAND TOTAL	\$1,380,045.64
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CLEARING & GRUBBING; EROSION & SEDIMENT CONTROLS

Susie Jane Pad

	QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
MOBILIZATION	1	EA	\$19,140.00	\$19,140.00
CONSTRUCTION ENTRANCE	1	EA	\$3,172.76	\$3,172.76
CLEARING & GRUBBING	36.35	AC	\$4,513.25	\$164,056.64
TREE REMOVAL	31.76	AC	\$2,953.00	\$93,787.28
8" COMPOST FILTER SOCK	0	LF	\$2.83	\$0.00
12" COMPOST FILTER SOCK	5,500	LF	\$3.82	\$21,010.00
18" COMPOST FILTER SOCK	925	LF	\$7.94	\$7,344.50
24" COMPOST FILTER SOCK	1,125	LF	\$9.23	\$10,383.75
32" COMPOST FILTER SOCK	4,650	LF	\$14.00	\$65,100.00
JUTE MATTING - SLOPE MATTING	32,750	SY	\$2.13	\$69,757.50
SUPER SILT FENCE	100	LF	\$8.48	\$848.00
9" STRAW WATTLES	8,500	LF	\$3.11	\$26,435.00
TOTAL				\$481,035.43

RETAINING STRUCTURES

	QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
CONCRETE BIN BLOCKS (2' x 2' x 6')	175	EA	\$75.00	\$13,125.00
GABION CAGES WITH STONE (3' X 3' X 6')	0	EA	\$175.00	\$0.00
HORIZONTAL REINFORCEMENT (INSTALL TENSAR TX190 GEOGRID or EQUIVALENT)	0	SY	\$0.82	\$0.00
TOTAL				\$13,125.00

SITE

	QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
DRILL PAD EXCAVATION	46,642	CY	\$3.75	\$174,907.50
ACCESS ROADS EXCAVATION	60,053	CY	\$4.16	\$249,820.48
TANK PAD and/or FRAC PIT EXCAVATION	19,686	CY	\$4.13	\$81,303.18
OFFLOAD PAD EXCAVATION	225	CY	\$7.00	\$1,575.00
SPOIL PAD EXCAVATION	127	CY	\$3.84	\$487.68
TRUCK QUEUE / TURNAROUND EXCAVATION	1,018	CY	\$4.13	\$4,204.34
TOPSOIL	19,000	CY	\$4.09	\$77,710.00
DIVERSION DITCH	0	LF	\$4.50	\$0.00
ROADSIDE DITCH	8,100	LF	\$3.99	\$32,319.00
TOTAL				\$622,327.18

SUMP(S) PER ANTERO RESOURCES STANDARD DETAIL

	QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
INSTALL 102" x 78" x 44" PRE CAST SUMP	4	EA	\$844.22	\$3,376.88
VALVE BOX HDPE PIPE (MINIMUM 12" DIAMETER x 48" HEIGHT)	4	EA	\$545.50	\$2,182.00
4" PVC CONNECTIVE PIPE (ANTERO SUMP DRAIN DETAIL)	100	LF	\$9.42	\$942.00
TOTAL				\$6,500.88

AGGREGATE SURFACING - SPREADING, COMPACTION, and/or INSTALLATION

	QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
DRILL PAD AASHTO #1 (8" THICK)	4,550	TON	\$2.59	\$11,784.50
DRILL PAD 1 1/2" or 3/4" CRUSHER RUN STONE (2" THICK)	1,150	TON	\$2.89	\$3,323.50
DRILL PAD GEOTEXTILE FABRIC (US 200)	9,100	SY	\$1.06	\$9,646.00
ACCESS ROADS 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	9,775	TON	\$2.83	\$27,663.25
ACCESS ROADS 1 1/2" OR 3/4" CRUSHER RUN STONE (2" THICK)	2,450	TON	\$2.95	\$7,227.50
ACCESS ROADS GEOTEXTILE FABRIC (US 200)	20,400	SY	\$1.02	\$20,808.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	20,400	SY	\$0.82	\$16,728.00
OFFLOAD PAD/TRUCK QUEUE/TURNAROUND 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	2,100	TON	\$4.50	\$9,450.00
OFFLOAD PAD/TRUCK QUEUE/TURNAROUND 1 1/2" or 3/4" CRUSHER RUN AGGREGATE (2" THICK)	525	TON	\$4.50	\$2,362.50
OFFLOAD PAD/TRUCK QUEUE/TURNAROUND GEOTEXTILE FABRIC (US 200)	4,375	SY	\$1.25	\$5,468.75
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	4,375	SY	\$1.00	\$4,375.00
TANK PAD 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	0	TON	\$2.43	\$0.00
TANK PAD 1 1/2" or 3/4" CRUSHER RUN AGGREGATE (2" THICK)	0	TON	\$2.56	\$0.00
TANK PAD GEOTEXTILE FABRIC (US 200)	0	SY	\$1.16	\$0.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	0	SY	\$0.73	\$0.00
TOTAL				\$118,837.00

ROAD CULVERTS

	QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
15" HDPE	560	LF	\$20.11	\$11,261.60
18" HDPE	0	LF	\$23.33	\$0.00
24" HDPE	0	LF	\$41.20	\$0.00
30" HDPE	0	LF	\$32.50	\$0.00
36" HDPE	0	LF	\$0.00	\$0.00

42" HDPE	0	LF		\$0.00
48" HDPE	0	LF		\$0.00
60" HDPE	60	LF	\$200.00	\$12,000.00
R4 RIP RAP (INLETS/OUTLETS)	250	TON	\$35.69	\$8,922.50
AASHTO #1 STONE (DITCH CHECKS)	18	TON	\$61.10	\$1,099.80
DITCH LINING - (ACCESS ROAD) JUTE MATTING	1,500	SY	\$3.00	\$4,500.00
DITCH LINING - (ACCESS ROAD) SYNTHETIC MATTING (TRM)	3,050	SY	\$3.45	\$10,522.50
DIVERSION DITCH LINING - SYNTHETIC MATTING (TRM)	0	SY	\$3.45	\$0.00
TOTAL				\$48,306.40

FENCING/GATES

	QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
4 FT WOVEN WIRE FARM FENCE w/MINIMUM 10 FT POST SPACING (WOODEN and/or "T" POST)	1,175	LF	\$16.50	\$19,387.50
16 FT DOUBLE GATE	1	EA	\$1,200.00	\$1,200.00
TOTAL				\$20,587.50

SEEDING

	QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
SITE SEEDING (LIME, FERTILIZER, SEEDING, AND HYDRO-MULCH w/TACK (HYC-2 OR EQUAL))	21	AC	\$3,301.25	\$69,326.25
TOTAL				\$69,326.25

UNFORESEEN SITE CONDITIONS

	QUANTITY	UNIT	UNIT PRICE	FINAL PRICE
*ROCK CLAUSE - BLASTING	0.0	CY	\$3.27	\$0.00
*ROCK CLAUSE - HOE RAMMING	0.0	CY	\$11.35	\$0.00
*FRENCH DRAINS	0.0	FT	\$10.93	\$0.00
*ORANGE SAFETY FENCE w/"T" POST (10FT CENTERS) - WETLAND PROTECTION	0.0	LF	\$10.60	\$0.00
*STEEL PANELS w/"T" POST (10 FT CENTERS) - WETLAND PROTECTION	0.0	LF	\$6.35	\$0.00
*SILT FENCE	0.0	LF	\$4.00	\$0.00
*TEMPORARY SEEDING	0.0	AC	\$2.67	\$0.00
*CONSTRUCTION STAKEOUT	0.0	HOUR	\$1,962.50	\$0.00
* JUTE MATTING - SLOPE MATTING	0.0	SY	\$2.13	\$0.00
TOTAL				\$0.00

GRAND TOTAL \$1,380,045.64

Surveying — Engineering — Construction Management — Timber

L & W ENTERPRISES, INC.

P.O. Box 826
Petersburg, WV 26847

Phone 304-257-4818 • Fax 304-257-2224

Dan Wellings, PS
Doddridge County Flood Plain Manager
Doddridge County Commission
118 East Court Street
West Union, WV 26456

May 2, 2013

Dear Dan,

Attached is a HEC-RAS (Vers 4.10) study made for the entrance and Water Tank Offload Pad for the Susie Jane Drill Pad of Antero Resource Appalachian Corporation. The project site is south east of County Route 42 on the drains of Buffalo Calf Fork. The project constructs within the flood plain a 20' wide gravel road off of an existing driveway, installs a new 60" CMP culvert in the stream and then the road continues up and out of the flood plain to the south on the east side of an existing pond.

The area is covered by FEMA Map 54017C0165C and is shown as an Approximate Zone A without Base Flood Elevation. A screen shot of the area from the WV Flood Determination Tool is attached as Attachment 1.

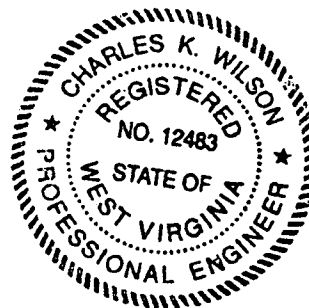
In summary The HEC-RAS study indicates the existing 100 year Flood Plain has an Energy Grade line Elevation of 903.63' and water elevation of 902.63' at the upstream Cross Section (0+60) and a developed Energy Grade line Elevation of 902.91' and water elevation of 903.77'. This indicates that the development associated with the entrance road and offload pad has little impact on the existing flood plain. The remaining cross sections all had similar results from existing to developed conditions. At no cross section did the Energy Grade line or water levels exceed and elevation of 904'. Based on the HEC RAS results and rounding up, the Base Flood Elevation in the studied area is 904'. Attachment 2 shows the construction, flood plains, cross sections and other features.

There is no impact from the construction of the entrance road or offload pad to any adjacent property owners.

The full report is attached.

Sincerely,


Charles Kirk Wilson, PE
President



WV FLOOD TOOL

[Click here to Provide Feedback](#)



View

Layers

Search

Tools

Public

Expert

Risk MAP

Flood

Reference

Basemap

Input your address



Flood Hazard Area: Selected site is **WITHIN** the FEMA 100-year floodplain.

Flood Zone: A

Additional Hazard Info: [Click here](#)

Advisory Flood Height: 11' [Disclaimer](#)

Water Depth: 11'

Elevation (Ground): About 901 feet

Location (long, lat): [\(80.622298 W, 39.257752 N\)](#)

Location (UTM 17N): (532578, 4345448)

FEMA Issued Flood Map: 54017C0185C

Contacts: [Doddridge County](#)

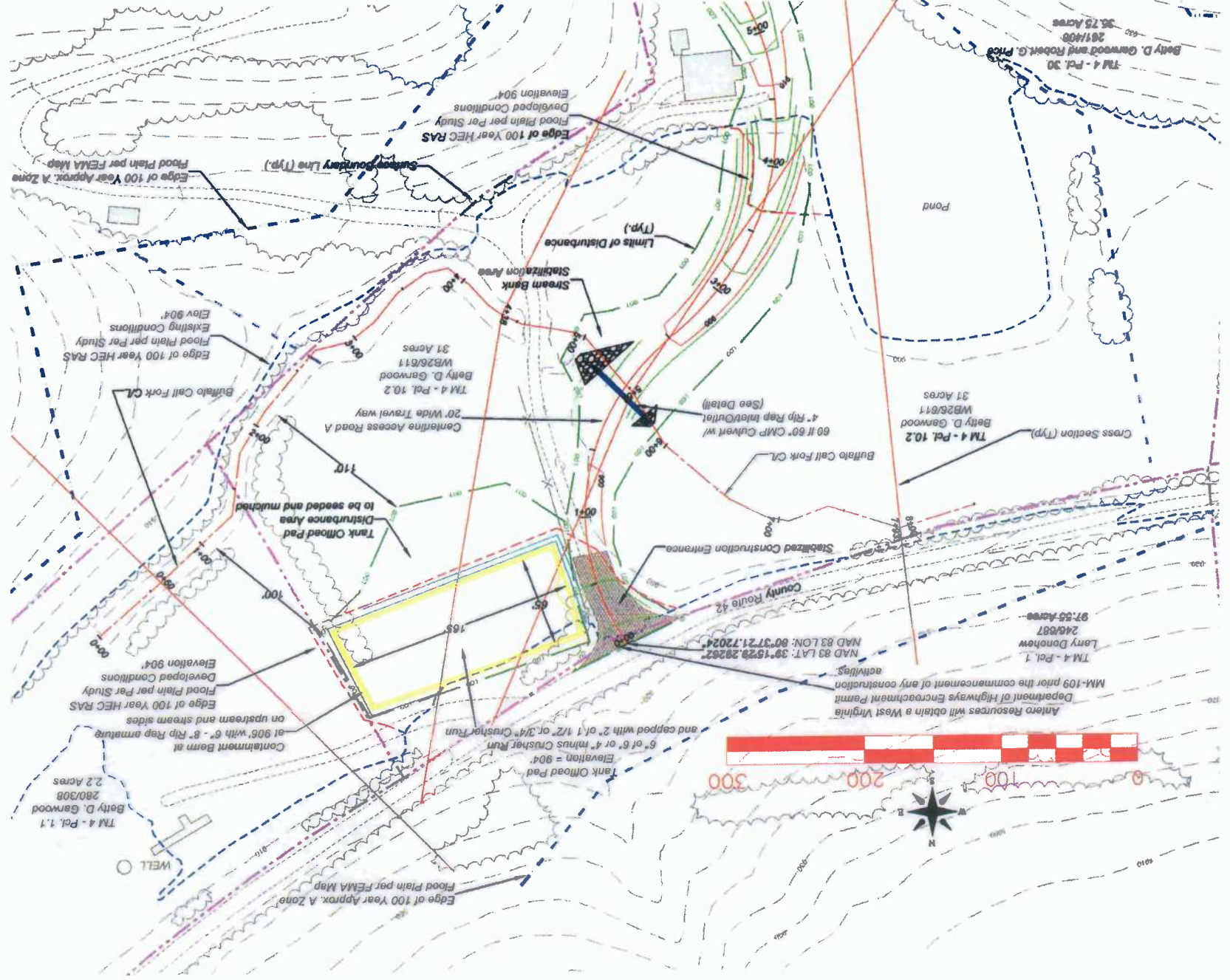
CRS Information: No CRS information available

Flood Profile: [No Profile](#)

HEC-RAS Model: [No Model](#)

Parcel Information: No parcel data [Disclaimer](#)

Attachment 9



**HEC RAS Flood Plain Study of
Susie Jane Drill Pad Entrance and
Water Offload Pad**

**For
Antero Resource Appalachian Corporation**

By

**L&W Enterprises Inc.
Petersburg, WV
304-257-4818**

May 2, 2013

Study Description

This study, using US Army Corps of Engineers HEC RAS program, will determine the 100 year flood plain within the study area for existing and developed conditions. Antero Resources will construct within the floodway a 20' wide gravel entrance road off of an existing driveway, install a 60" culvert in Buffalo Calf Fork and then continue the road to the south.

Existing conditions

The existing floodway is cut pasture with the stream crossing from the south to the north in the study area. There is an existing gas well and road along with a gravel driveway to the property owner's home and a small pond at the southernmost edge. The owner's driveway has a 60" HDPE culvert crossing the stream. The stream runs from east to west and is bounded on the north by County Route 42 and on the south by the rising mountains. All of the property in the study area and up and downstream of the area are owned by Betty D. Garwood who lives on the property.

Developed Conditions

The project constructs within the floodway a 20' wide gravel road off of an existing driveway, installs a new 60" CMP culvert in the stream and then the road continues up and out of the flood plain to the south on the east side of an existing pond.

Watershed Description

Enclosure 1 shows the watershed boundaries and conditions overlaid on USGS topo and includes the information required to do the watershed analysis. Values for fields and impervious surfaces were determined by aerial photographs. In general the watershed is typical for the area in Doddridge County. There are steep wooded slopes with relatively wide and flat drainages with meandering streams. This type of watershed will have wide floodways as the low slope stream profile and gradient are not good for stream flow. The water in these types of watersheds tend to rapidly flow from the ridges and accumulate in the floodway and then slowly flow downstream. The area is covered by FEMA Map 54017C0165C and is shown as an Approximate Zone A without Base Flood Elevation.

Watershed Analysis of Peak Flow

The 100 year Peak Flow for the study area was determined using Carlson ServCad Hydrology Module (HydroCad). Runoff curve numbers were assigned to the corresponding areas in the watershed and then weighted accordingly to resulted in a weighted CN of 70.7 which was rounded to 71 for analysis purposes. The SCS method was used to determine the Time of Concentration based on the length of flow and average slope. The Time of Concentration for the watershed was calculated to be 131.5 minutes (2.19 hours) which is consistent with this type of watershed. The 100 year storm event is 5.40 inches over a 24 hour period (USDA SCS source).

The resulting 100 year flood event peak discharge was calculated to 1007 cubic feet per second (cfs). The results are shown below.

100 yr Return

Runoff Curve Number and Runoff Fri Apr 19 10:41:58 2013

Project: Susie Jane Hec Ras By: ckw Date: 04/19/13
Location: Checked: Date:
Present

1. Runoff Curve Number (CN)

Cover description	CN	Soil Group	Area(Acre)
Woods (Good)	70	C	1131.350
Pasture Grassland Range (Good)	74	C	160.000
Paved Streets w/ Open Ditches	92	C	11.850

CN (weighted): 70.7
Total Area: 1303.000 Acre

2. Runoff
Return Period: 100-Year
Rainfall, P: 0.00 in
Runoff, Q: 0.0000 in
Runoff Volume: 0.0000 Acre-Ft

Time of Concentration (SCS) Fri Apr 19 10:43:34 2013

Project: Susie Jane Hec Ras By: ckw Date: 04/19/13
Location: Checked: Date:
Present

Curve Number: 71
Length of Flow: 11482.00 ft
Average Land Slope: 4.88 %
Time of Concentration: 2.191 hrs, 131.5 mins

Graphical Peak Discharge Fri Apr 19 10:45:37 2013

Project: Susie Jane Hec Ras By: ckw Date: 04/19/13

Location: Checked: Date:

Present

1. Data:

- Drainage area:.....A = 1303.0000Acres
- Runoff Curve Number:.....CN = 71
- Time of Concentration:.....Tc = 2.19
- Storm Type:..... = II
- Pond and swamp areas spread throughout watershed..... = 0.00 percent of A
0.0000 Acres
- 2. Frequency.....yr = 100
- 3. Rainfall,P(24-hour).....In = 5.40
- 4. Initial abstraction, Ia..... = 0.8189
- 5. Compute Ia/P..... = 0.1513
- 6. Unit peak discharge, qu.....csm/in = 204.19
- 7. Runoff,Q.....In = 2.4234
- 8. Pond & swep adjustment factor,...Fp = 1.00
- 9. Peak Discharge,qp.....cfs = 1007.4318

HEC RAS Analysis

Cross Sections were developed from survey and ortho-digital topography and entered into the HEC RAS program along with stream reach and Mannings roughness coefficients. Because of the flat gradient, a steady state analysis was performed using Normal Depth boundary conditions for the peak flow. The Mannings n coefficients selected were for the normal range for the stream and overbank areas. Mannings for the stream was $n=0.035$ and for the overbanks $n=0.030$ with the exception of the overbanks near the County Road where the coefficient was maintained at $n=0.035$.

Existing and developed analysis were performed to determine the appropriate base flood elevations for the given conditions. The existing cross sections were modified to reflect developed conditions by changing ground levels or inserting obstructions where the cross section will have in effective or limited flow because of the road construction.

The HEC RAS cross sections for the existing conditions are shown in Enclosure 3 and the developed cross sections are shown in Enclosure 4.

HEC RAS Results

The existing HEC RAS show a Base Flood Elevation varying from 902.96 (Energy Grade Line of 903.63') at the upstream extents to 903.79' at the downstream extents. The difference in the Energy Grade line and the water surface is associated with the Normal Depth boundary condition and therefore the Energy Grade line will be used when setting the BFE. At all other cross sections the Energy Grade line corresponds with the water level. The analysis shows that the existing and new culvert have no real effect on the flood plain as they will both be submerged with a majority of the flow passing over them.

Enclosure 5 is a plan view map showing the study area construction, flood plains, cross sections, property ownership and other features. In particular it shows the existing FEMA floodplain, the HEC RAS existing flood plain and the developed flood plain.

At no cross section did the Energy Grade line or water levels exceed an elevation of 904'. Based on the HEC RAS results and rounding up, the Base Flood Elevation in the studied area is 904' as shown in Enclosure 5.

There is no impact from the construction of the entrance road or offload pad to any adjacent property owners.



Well Site Safety Plan

Antero Resources

Well Name: Kelley Unit 1H, Kelly Unit 2H, Trent Unit 1H, Chumley Unit 1H, Chumley Unit 2H, Gus Unit 1H, Gus Unit 2H, Roleson Unit 1H, Roleson Unit 2H, Denver Unit 1H and Denver Unit 2H

Pad Location: SUSIE JANE PAD
Doddridge County/ Greenbrier District

GPS Coordinates: Lat 39°15'14.02"/Long 80°37'55.035"
(NAD83)

Driving Directions to Susie Jane Pad:

From the intersection of Co Route 50/22 and US-50 near the town of Smithburg head east on US-50 for 2.6 miles. Turn right at Co Route 50/35 for 0.1 miles. Take the 1st right onto Co Route 15/ Blacklick Rd for 0.4 miles. Turn left onto Blacklick Rd/ Long Run for 1.6 miles. Turn right onto Co Route 15 for 1.3 miles. Slight left onto Co Route 42 for 1.5 miles. Lease road will be on your right

Approval Sheet

The West Virginia Department of Environmental Protection Office of Oil and Gas has set forth minimum requirements for a Well Site Safety Plan which shall be submitted with each horizontal well application. A horizontal well shall be any well which meets the definition as provided for in Title 35, Series 8, Section 2.2 of the West Virginia Department of Environmental Protection Office of Oil and Gas.

Approved Safety Plans should be maintained and available at the drilling rig at all times and provided to the local emergency planning committee for the emergency planning district in which the well work will occur or to the county office of emergency services at least seven days before commencement of well work or site preparation work that involves any disturbance of land.

The Safety Plan, once approved, may only be modified upon approval by the West Virginia Department of Environmental Protection Office of Oil and Gas ("Office").

This plan has met the requirements of the West Virginia Department of Environmental Protection Office of Oil and Gas Well Site Safety Plan Standards.

Approved this day _____ of month _____, 20__ by

_____ Date: _____

_____ Date: _____

Plan Modification*

Revision No.	Description of Revision	Antero Preparer	Antero Reviewer/Approver	Agency Approval	Date

*The Office of Oil and Gas must approve all changes and modifications to previously approved plans.

Site Specific Safety Plan

Antero Resources

1.0 Siting Requirements

1.1. Exhibit 1 provides a plan view map showing the well location, access road, pits, flare lines, dwellings, and noting the north and prevailing wind directions.

1.2. Exhibit 2 also provides an area topographical map showing the well site location

2.0 Site Safety Plan

2.1. Safety Meeting

Safety meetings will be conducted as follows:

- Pre-Drilling,
- Pre-Completion,
- Pre-Workover
- Post Accident/Near Miss, and
- As-Needed.

Safety meetings should be held on-site weekly, at a minimum, prior to the beginning of operations, and:

- Includes personnel employed and involved in the operations, and
- Includes the District Oil and Gas Inspector (or other designated Office of Oil and Gas representative, for the pre-spud meeting only).

Typically, contractor of the operator will conduct these safety meetings with Antero Resources personnel participating as needed. Please list the above personnel as a record of attendance using the form found in Appendix A, or one similar. These records may be maintained separate from this plan.

2.2 Personnel and Visitor Log

This log is intended to provide a current headcount of all persons present at the site at any given time. All personnel and visitors must sign in upon entering the site and sign out upon departure. This log, or one similar, is provided in Appendix B and will be maintained at all times by the Drilling Supervisor or Toolpusher.

2.3 Evacuation Plan

The Drilling Supervisor or Toolpusher will establish a muster point at which all persons on site will assemble for personnel safety and verification of headcount. This point will be located at the entrance to the site.

In the event of an emergency requiring the evacuation of personnel, an audible or visual alarm will be sounded. The Drilling Supervisor and/or the Toolpusher will determine if local residents should be evacuated at this time depending on the outcome of their assessment of the situation.

If local resident evacuation is indicated, the Drilling Supervisor and/or the Toolpusher will be responsible for notifying the local impacted residents, or the local authorities will take this responsibility depending on the urgency, availability and direction of the local authorities. Local authorities have indicated that they will take this responsibility typically and will notify of evacuation mandates via television and radio media announcements in addition to public address units on patrol vehicles. In the event that Antero is directed to take this responsibility, notification will be by dispatching a worker to each affected residence to inform them of evacuation requirements and procedures. See section 8.1 for additional information.

Evacuated local residents may be temporarily housed in local hotels depending on the severity and duration of the emergency. Included in Exhibits 1 & 2 are maps and drawings that may assist in the emergency response and evacuation process.

The Drilling Supervisor and/or the Toolpusher will secure the Personnel and Visitor log before evacuating the site in order to perform a headcount at the muster point.

2.4 Emergency Response Personnel

Requesting public emergency response assistance for this location would be accomplished by the Drilling Supervisor or Toolpusher via telephone to Harrison County Dispatch which can be reached by dialing 911. From there, they will dispatch the appropriate and available emergency response agencies depending on the nature and extent of the emergency.

A list of Emergency Contacts, including Antero's 24 hour emergency contact telephone number, any contractors of the operator, the Department, the local oil and gas inspector, and local emergency response units are found in Appendix C. This list will be posted at the well site.

2.5 Local Schools and Public Facilities

In the event of an emergency requiring the evacuation of schools and public facilities the Drilling Supervisor or Toolpusher will make the required notifications unless the local public emergency responders take on this responsibility. Generally, local emergency responders have stated that they will assume this responsibility. Exhibit 3 lists all schools and public facilities, with their contact information, within a one-mile radius of the horizontal well location.

2.6 Material Safety Data Sheets

The Drilling Supervisor or Contractor of the Operator will maintain Material Data Safety Sheets (MSDS) for all materials and chemicals used on the well site. The MSDS sheets should be located in the Company Representatives Office on-site. Copies of the MSDS sheets may also be obtained from the area Safety Coordinator, the operator contact for maintaining MSDSs, by calling the local Antero Resource Office at 304-622-3842. See Appendix F for a list of hazardous chemicals used during phases of operation.

3.0 Casing Requirements

3.1 Geologic Prognosis

A list of anticipated freshwater, saltwater, oil and gas, hydrogen sulfide, thief zones, and high pressure and high volume zones, including their expected depth are attached to this plan in Exhibit 4, WW-6B.

3.2 Casing and Cementing Program

Exhibit 4 shows the detailed casing and cementing program, which meets the standards of the American Petroleum Institute (API) and employs a minimum of three strings of casing which are of sufficient weight, quantity and quality for the anticipated conditions to be encountered. This

casing and cementing program is designed to maintain well control and integrity. The casing setting depths are sufficient to cover and seal off those zones as identified in Exhibit 4.

4.0 BOP Requirements

4.1 BOP Equipment

The following is a list of all BOP equipment with types, sizes and ratings to be utilized and available during the drilling, completion and work-over of the well.

5M system:

- Annular preventer*
- Pipe ram, blind ram, and, if conditions warrant, as specified by the authorized officer, another pipe ram shall also be required*
- A second pipe ram preventer shall be used with a tapered drill string
- Drilling spool, or blowout preventer with 2 side outlets (choke side shall be a 3-inch minimum diameter, kill side shall be at least 2-inch diameter)*
- 3 inch diameter choke line
- 2 choke line valves (3 inch minimum)*
- Kill line (2 inch minimum)
- 2 chokes with 1 remotely controlled from rig floor
- 2 kill line valves and a check valve (2 inch minimum)*
- Upper kelly cock valve with handle available
- When the expected pressures approach working pressure of the system, 1 remote kill line tested to stack pressure (which shall run to the outer edge of the substructure and be unobstructed)
- Lower kelly cock valve with handle available
- Safety valve(s) and subs to fit all drill string connections in use
- Inside BOP or float sub available
- Pressure gauge on choke manifold
- All BOPE connections subjected to well pressure shall be flanged, welded, or clamped*

- Fill-up line above the uppermost preventer.

If repair or replacement of the BOPE is required after testing, this work shall be performed prior to drilling out the casing shoe.

When the BOPE cannot function to secure the hole, the hole shall be secured using cement, retrievable packer or a bridge plug packer, bridge plug, or other acceptable approved method to assure safe well conditions.

Minimum standards for choke manifold equipment.

- i. All choke lines shall be straight lines unless turns use tee blocks or are targeted with running tees, and shall be anchored to prevent whip and reduce vibration.
- ii. Choke manifold equipment configuration shall be functionally equivalent to the appropriate example diagram shown in Appendix C. The actual configuration of the chokes may vary.

All valves (except chokes) in the kill line choke manifold, and choke line shall be a type that does not restrict the flow (full opening) and that allows a straight through flow).

Pressure gauges in the well control system shall be a type designed for drilling fluid service

5M and higher system accumulator shall have sufficient capacity to open the hydraulically-controlled gate valve (if so equipped) and close all rams plus the annular preventer (for 3 ram systems add a 50 percent safety factor to compensate for any fluid loss in the control system or preventers) and retain a minimum pressure of 200 psi above precharge on the closing manifold without use of the closing unit pumps. The fluid reservoir capacity shall be double the usable fluid volume of the accumulator system capacity and the fluid level of the reservoir shall be maintained at the manufacturer's recommendations. Two independent sources of power shall be available for powering the closing unit pumps. Sufficient nitrogen bottles are suitable as a backup power source only, and shall be recharged when the pressure falls below manufacturer's specifications.

Accumulator Precharge Pressure Test

This test shall be conducted prior to connecting the closing unit to the BOP stack and at least once every 6 months. The accumulator pressure shall be corrected if the measured precharge pressure is found to be above or below the maximum or minimum limit specified below (only nitrogen gas may be used to precharge):

Power Availability

Power for the closing unit pumps shall be available to the unit at all times so that the pumps shall automatically start when the closing valve manifold pressure has decreased to the pre-set level.

Accumulator Pump Capacity

Each BOP closing unit shall be equipped with sufficient number and sizes of pumps so that, with the accumulator system isolated from service, the pumps shall be capable of opening the hydraulically-operated gate valve (if so equipped), plus closing the annular preventer on the smallest size drill pipe to be used within 2 minutes, and obtain a minimum of 200 psi above specified accumulator precharge pressure.

Locking Devices

A manual locking device (i.e., hand wheels) or automatic locking devices shall be installed on all systems of 2M or greater. A valve shall be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve shall be maintained in the open position and shall be closed only when the power source for the accumulator system is inoperative.

Accumulator working pressure rating	Minimum acceptable operating pressure	Desired precharge pressure	Maximum acceptable precharge pressure	Minimum acceptable precharge pressure
1,500 psi	1,500 psi	750 psi	800 psi	700 psi
2,000 psi	2,000 psi	1,000 psi	1,100 psi	900 psi
3,000 psi	3,000 psi	1,000 psi	1,100 psi	900 psi

Remote Controls

Remote controls shall be readily accessible to the driller. Remote controls for all 3M or greater systems shall be capable of closing all preventers. Remote controls for 5M or greater systems shall be capable of both opening and closing all preventers. Master controls shall be at the accumulator and shall be capable of opening and closing all preventers and the choke line valve (if so equipped). No remote control for a 2M system is required.

4.2 Procedure and Schedule for Testing BOP Equipment

Well Control Equipment Testing

- i. Perform all tests described below using clear water or an air..
- ii. Ram type preventers and associated equipment shall be tested to approved stack working pressure if isolated by test plug or to 80 percent of internal yield pressure of casing if BOP stack is not isolated from casing. Pressure shall be maintained for at least 10 minutes or until requirements of test are met, whichever is longer. If a test plug is utilized, no bleed-off of pressure is acceptable. For a test not utilizing a test plug, if a decline in pressure of more than 10 percent in 30 minutes occurs, the test shall be considered to have failed. Valve on casing head below test plug shall be open during test of BOP stack.
- iii. Annular type preventers shall be tested to 70 percent of rated working pressure. Pressure shall be maintained at least 10 minutes or until provisions of test are met, whichever is longer.
- iv. As a minimum, the above test shall be performed:
 - a. when initially installed:
 - b. whenever any seal subject to test pressure is broken:
 - c. following related repairs: and
 - d. 30-day intervals.
- v. Valves shall be tested from working pressure side during BOPE tests with all downstream valves open.
- vi. When testing the kill line valve(s), the check valve shall be held open or the ball removed.
- vii. Annular preventers shall be functionally operated at least weekly.
- viii. Pipe and blind rams shall be activated each trip, however, this function need not be performed more than once a day.
- ix. A BOPE pit level drill shall be conducted weekly for each drilling crew.
- x. Pressure tests shall apply to all related well control equipment.
- xi. All of the above described tests and/or drills shall be recorded in the drilling log.
- xii. For intermediate wellbore drilling phase, the BOP equipment will be pressure and function tested upon initial installation.
- xiii. For the bottom and horizontal wellbore drilling phase, the BOP equipment will be pressure and function tested upon initial installation, weekly, and after each bit trip.

4.3 BOP Installation Schedule

The BOP will be installed after running surface casing as well as after running intermediate casing. BOP equipment shall be installed on the innermost string of casing after the surface casing.

4.4 Well Control Training

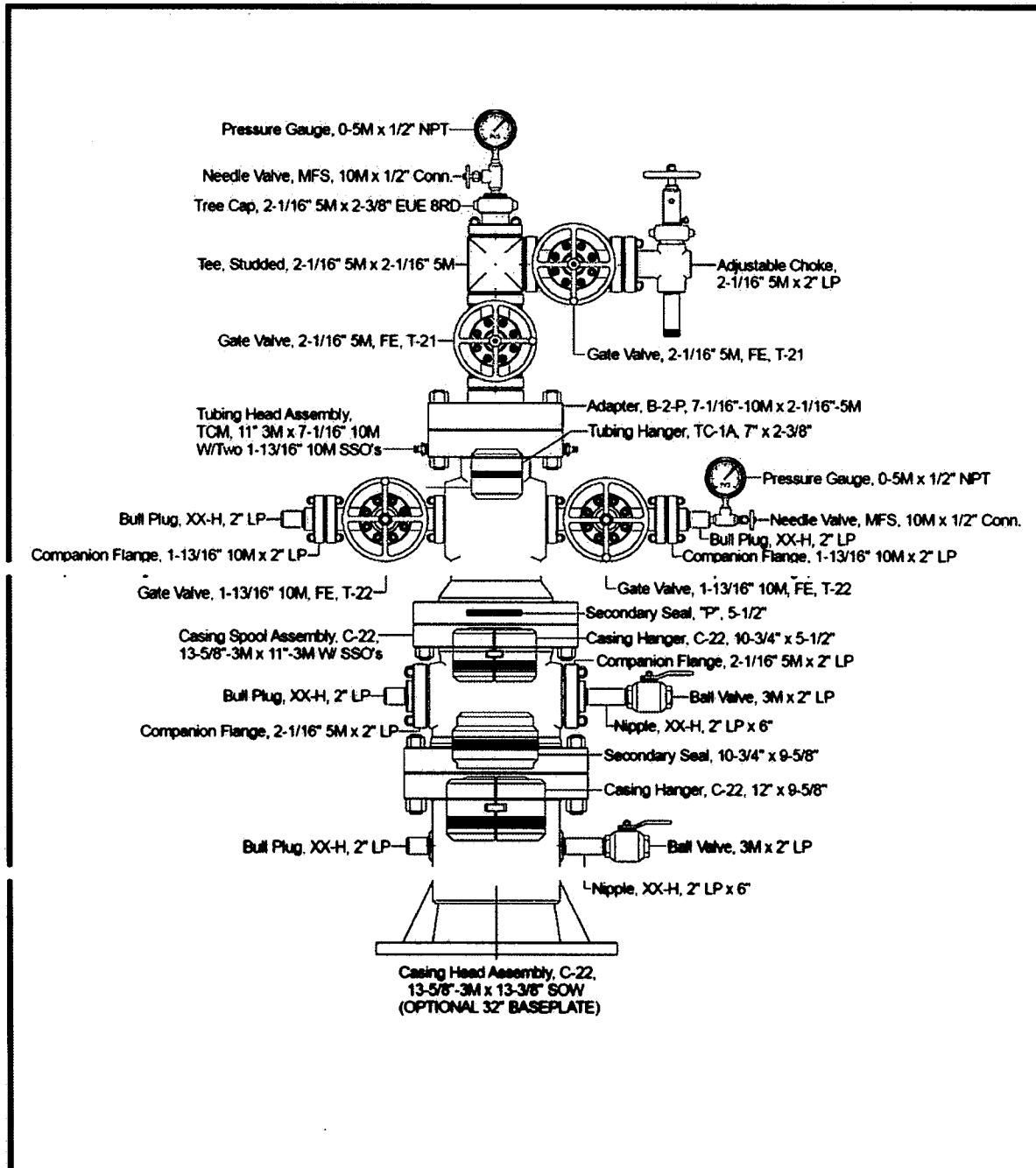
All Drilling Supervisors and Toolpushers used on this well will be IADC trained and certified. A trained person will be present during the drilling operations. Training certificates will be available for review on the location. The list of personnel with said training is provided in Appendix E.

4.5 Drilling Record

The Drilling Supervisor will maintain detailed records of significant drilling events such as lost circulation, hydrogen sulfide gas, fluid entry, kicks and abnormal pressures through the electronic data entry and recording system, Wellview. This system allows the Drilling Supervisor to enter daily reports containing the specified information. The records are then retained electronically at Antero Main Office in Denver, CO.

The Emergency Response Plan for this operating area requires the Drilling Supervisor to notify the district oil and gas inspector or the designated Office of Oil and Gas representative any unusual drilling events such as hydrogen sulfide gas or significant kicks that occur during drilling operations. Any encounter of hydrogen sulfide gas requires immediate notification of the Office of Oil and Gas.

4.6 Schematic and Description of the Wellhead Assembly



5.0 Well Flaring Operations

5.1 Size, Construction and Length of Flare Line

The flare line will be a 4" diameter, steel line that extends 50' from the well. The line will be anchored to the surface of the ground by cross pinning it in place using metal staking at multiple points along the line.

The choke assembly is described in previous section of this document and in drawing "5M Choke Manifold Equipment" BLM drawing Onshore Oil and Gas Order Number 2, Appendix D.

We do not anticipate flaring since we would first attempt to route the flow to the Gas Buster and work the gas kick off from there. Flaring would occur as a last resort or if needed.

5.2 Flare Lighting System

The system for lighting the flare will be an automatic flare igniter using a solar collector panel and battery charger system. A second igniter will be installed as a backup. Should flaring be required or needed.

The Drilling Supervisor will give notification to the local fire department prior to lighting the flare, if practicable, or as soon as possible thereafter.

5.3 Flare Safe Distances

The flare line(s) discharge shall be located not less than 50 feet from the well head, having straight lines unless turns are targeted with running tees, and shall be positioned downwind of rig and trailers. The flare system shall have an effective method for ignition. All flammable material beyond the end of the flare line will be cleared to a minimum distance of 50feet.

5.4 Flare Duration

The flare duration should not exceed the maximum time requirements needed to complete the operation.

6.0 Well Killing Operations

6.1 Mud Mixing Inventory

The following shows the inventory of all materials that will be on-site for the mixing of mud:

- 20 sack of Soda Ash
- 480 sacks of KCL
- 200 sacks of Biolose
- 40 sack of Xan-Plex
- 20 buckets of X-Cide 102
- 3 Drums of KD-40
- 5 Buckets of LD-S
- 15 super sack of MIL Bar
- 100 sacks of Soletex
- 40 Sacks of Graphite
- 300 Sack of Salt

Volume of mixed mud = pit volume + equivalent volume in tanks
= 500 bbls + 500 bbls
= 1000 bbls total

Mixed Mud Weight The mixed mud weight will vary depending on the bottom hole pressures and will be calculated and adjusted as we gather more information; we intend to use 12.8 lb – 13.0 lb mud but will adjust the mud weight as information becomes available

Volume of Add'l

Weighting Mat'l Antero will have the necessary materials available to mix up enough mud to weight the mud up 1 lb more than the mud used for drilling; as an estimate, we expect to have 10 pallets of barite on site and 12 pallets of bentonite

Volume Water for Mixing The rig has a 400 bbl rig water tank and the location will have 800 bbls additional in separate tanks.

6.2 Mud Mixing Units

The drilling rig is equipped with 2 mud tanks with agitators and jets such that it can make two pills.

6.3 Kill Procedures

The following paragraph describes the methodology and type of kill procedures that will be used if needed. These procedures are recognized by the IADC.

Once a Kick is detected a prompt shut in of the well is essential. The exact shut in method will be dictated by the operation being performed at the time of the kick, available equipment, plus other extenuating circumstance. The following types of kill operations may be performed to bring the well back under control. The different methods listed below to be used will be determined by the operation being performed at the time of the kick.

Kill Procedures

- 1.) Drillers Method
- 2.) Wait and Weight Method
- 3.) Circulate and Weight Method
- 4.) Concurrent Method
- 5.) Reverse Circulation Method
- 6.) Dynamic Kill Method
- 7.) Bullheading Method
- 8.) Volumetric Method

7.0 Hydrogen Sulfide Operations

7.1 H₂S Monitoring

The equipment and method used for the monitoring, detection and warning of the presence of hydrogen sulfide gas during drilling, completions and work-over operations will be portable electronic gas detection such as BW gas detectors or equivalent. These detectors will be

typically located near the well bore on the drilling rig, outside the data van or on the drillers stand.

7.2 H2S Training

All personnel that will be involved in the drilling operations will be trained in H2S in drilling operations to a minimum of the awareness level. Additional training will be given to the Drilling Supervisors both in H2S and emergency response duties related specifically to air toxins. All of the aforementioned training will be completed prior to spudding the well. These records may be kept separate from this plan.

7.3 Personal Protection Equipment

The following personal protection equipment will be available and in use as needed on location:

- Fire Retardant Clothing (FRC),
- Hardhats,
- safety shoes,
- safety glasses and/or safety goggles/face shields,
- hearing protection earplugs,
- cotton and chemical resistant work gloves, and
- dust mask respirators.

In the event that other hazards are identified or presented during the drilling operation, we will attempt to eliminate the hazard, and if not practical, additional PPE will be provided to mitigate the risk to the worker. In the event that H2S is detected, a hazard assessment will be performed for this exposure along with risk mitigation.

7.4 H2S Notification and Control

The emergency alarm will be audible or visual type which will be detectable by all personnel on location. If dangerous levels of H2S are detected, we will immediately implement our Emergency Response Plan which will provide for site control and evacuation as needed. Generally, the site will be secured such that access is allowed only for trained emergency response personnel. Site security will be accomplished by trained workers stationed at safe points on the perimeter and access road to the site.

If H2S is detected and confirmed, a telephonic notification will be made to the local oil and gas inspector.

8.0 Notification and Protection Zone Standards

8.1 Method of Notification

In an emergency which requires the notification of residents and emergency personnel that may be affected during drilling such as release of H₂S, flaring, etc., the emergency response plan will be immediately implemented. This plan specifies the roles and responsibilities of on-site personnel in case of emergency and addresses emergency notification of potentially affected residents and public emergency response personnel.

In general under the situation presently described, after the activation of the emergency alarm, the on-site personnel will muster for a headcount by the On-Scene Incident Commander which is usually the Drilling Supervisor or Toolpusher. After initial assessment of the situation, the OSIC will notify the public emergency response agency from which direction will be taken. If the agency directs, on-site personnel will notify all local impacted residents of the incident by dispatching a worker by truck to each potentially affected residence. If the public emergency responder does not direct this notification to be made by the operator, then the public response agency will be responsible for this notification. The local emergency responders have, in general, stated that emergency notification of local residents will be accomplished by their means including television and radio announcement as well as public address systems on patrol vehicles. Antero safety coordinators who are located in the field may assist with the notification of local residents.

8.2 Established Protection Zones

Protection zones will be established and maintained based on the nature, extent and severity of the event. These protection zones will be based on those safe distances outlined in the applicable portions of the DOT Emergency Response Guidebook.

Safety Meeting Log

Date: _____ Location(Pad): _____ Well Name: _____

	<u>Name</u>	<u>Organization</u>	<u>Job Title</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____
11.	_____	_____	_____
12.	_____	_____	_____
13.	_____	_____	_____
14.	_____	_____	_____
15.	_____	_____	_____
16.	_____	_____	_____
18.	_____	_____	_____
19.	_____	_____	_____
20.	_____	_____	_____
21.	_____	_____	_____
22.	_____	_____	_____
23.	_____	_____	_____
24.	_____	_____	_____
25.	_____	_____	_____

Appendix C.

EMERGENCY CONTACT LIST AND PHONE NUMBERS

Contact	Phone Number
<p><i>Designated Person and Incident Commander:</i></p> <p>John Kawcak, <i>Operations Manager</i> Tim Culberson, <i>Midstream Construction Manager</i> Terry Wyckoff, <i>Midstream Production Manager</i></p>	<p>817.368.1553 John 918.916.0116 Tim 304.991.0720 Terry</p>
<p><i>Designated Backup Person Incident Commander/Response Coordinator:</i></p> <p>Mike Ward Ricky Jones Norman Wood Stanley Dudley Jeff Partridge Landon West Tim Henrich Mike Alcorn James Harvey Tim Murrell Delf Martinez Ralph Ybarra Virgil Gaither James Neal</p>	<p>580.276.7484 Mike 580.927.6276 Ricky 903.353.4429 Norman 970.618.7602 Stanley 940.577.2288 Jeff 940.389.0602 Landon 720.530.3059 Tim H. 304.627.7070 Mike 918.916.4340 James 903.256.6040 Tim 970.629.0055 Delf 580.927.5606 Ralph 580.504.2366 Virgil 607.644.8701 James</p>
<p>Frontier #3 Frontier #14 Frontier #17 Frontier #8 Frontier #22 Hall Drilling #3</p>	<p>832.487.7965 Rig Sat Phone 713.758.0662 Rig Sat Phone 713.758.0730 Rig Sat Phone 832.531.7014 Rig Sat Phone 713.758.0893 Rig Sat Phone 713.758.0881 Rig Sat Phone</p>
<p>Antero Resources Denver Office 1625 17th Street, Suite 300 Denver, CO 80202</p>	<p>Office: (303) 357-7310 Fax: 303-357-7315</p>
<p>Environmental Manager Jerry Alberts</p>	<p>Direct: (303) 357-7341 Cell: 720-201-0160 24hr</p>

Contact	Phone Number
Safety Manager Rick Blankenship	Direct: (303) 357-7378 Cell: (720) 235-2775 24hr
Vice President Production Kevin Kilstrom	Direct: (303) 357-7335 Cell: (303) 808-0254 24hr
Federal and State Agencies	
National Response Center	(800) 424-8802
West Virginia Office of Water Resources' Emergency Notification Number, Oil Spill Response	1-800-642-3074
West Virginia Office of Oil and Gas Sam Ward, WVDEP Inspector – Harrison County Joe Taylor, WVDEP Inspector – Tyler County David Cowan, WVDEP Inspector – Ritchie County Douglas Newlon, WVDEP Inspector – Doddridge County	(304) 389-7583 cell Sam Ward (304) 380-7469 cell Joe Taylor (304) 389-3509 cell David Cowan (304) 932-8049 cell Douglas Newlon
Environmental Protection Agency (EPA) Region 3	Phone: 215-814-3231 Fax: 215-814-3163
West Virginia Worker's Compensation	1-888-4WVCOMP 1-304-926-3400
West Virginia Fish and Wildlife Service, Field Office, Elkins, WV	Phone: 304-636-6586 Fax: 304-636-7824
US OSHA Charles Green	1-800-321-OSHA (1-800-321-6742) 304.347.5937
Local Agencies and Responders	
Sheriff/Police/Fire Department	911
Harrison County LEPC	304.624.9700 John Keeling
Hospital- United Hospital Center--Clarksburg	304. 624.2121
Harrison County Emergency and Dispatch Business Office	911 304.623.6559

Contact	Phone Number
Doddridge County Emergency	911 304.873.3253
Doddridge County LEPC	304.782.2124 Roland W. Kniceley
WV Highway Patrol	304,782,2124 doddridgeoes@dishmail.net
Public Water Intakes (see App G for add'l points)	to be determined
Waste Removal	
TK Stanley—Waste Removal, Vac Truck	304.622.6677
Stallion	330.760.4248
Waste Management	
Contractors	
Hall Drilling Services MT Hall	304588 3368
TK Stanley	304.622.6677
Cleanup Crews	
Ryan Environmental	304.641.0244
Water Haulers	
TK Stanley	304.476.0396
Hall Drilling	304.483.8125
Frac Tank Suppliers	
TK Stanley—Frac Tank Rental	304.622.6677
Stallion	330.760.4248
Winch Trucks	
TK Stanley	304.476.9588

Contact	Phone Number
Water Moving/Pumping	
TK Stanley	304.476.0396
Pumping Services—Kill Fluids	
Halliburton—Jane Lew	724.743.6601 Central Dispatch
Light Plants	254.434.1469 Hot Lights- Josh
Wolfpack	304-623-1199.
BOPs	
Blue Dot	304.290.7399
Snubbing Services	Basic Energy- 724-825-2548 Bryan Berlison
Cudd Well Control	713.849.2769 Houston
Wild Well Control	281.353.5481
Roustabout Crews	740.473-1305 Hall Drilling Office 304.588.66474 Hall Drilling- Jack 601.410.7440 TK Stanley Office 724.984.7626 TK Stanley Brett

WV Emergency Reporting

In the event of a hazardous waste or hazardous material release or emergency, please contact:
1-800-642-3074.

Additional Contact Information

1-800-424-8802 National Response Center

1-304-558-5938 DEP Elkview Emergency Response Unit

Email Contacts:

Mike Dorsey Mike.H.Dorsey@wv.gov

Rusty Joins Rusty.T.Joins@wv.gov

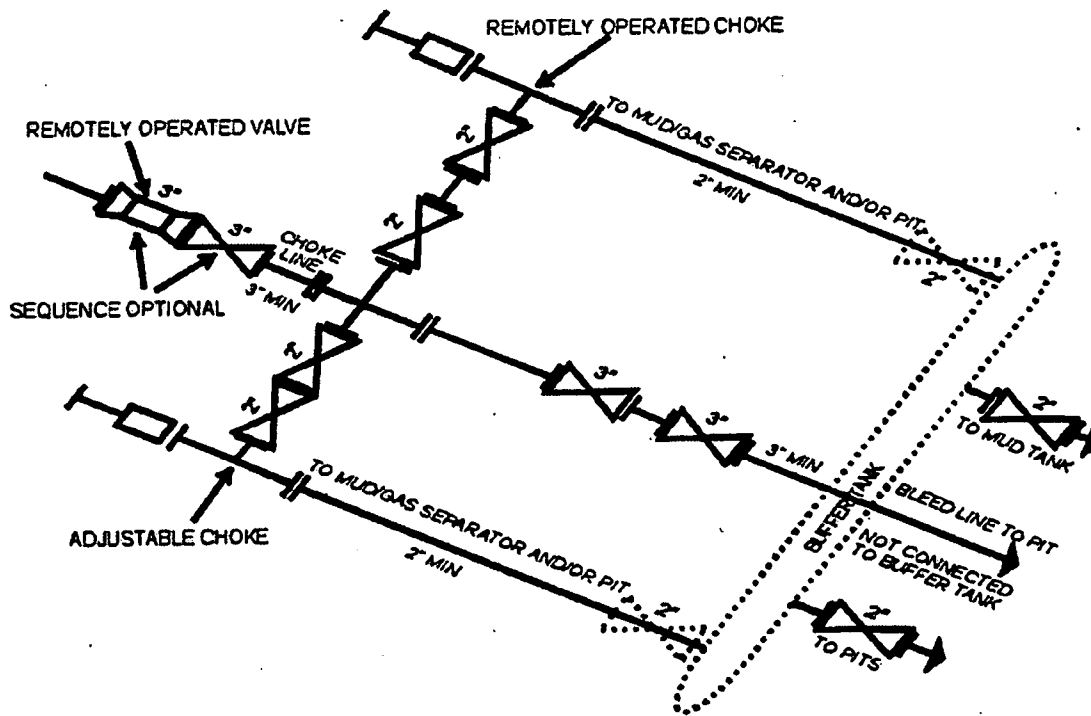
WHERE TO FIND HELP

Doddridge County:

Ambulance, Fire, Law Enforcement Emergencies Call 911
Poison Control Center....1-304-388-4211 or 1-800-222-1222
Emergency Alert System Radio WFBY-FM 106.5

FIRE:	
Doddridge County Ambulance Authority	304-838-5718
Greenwood V.F.D	304-873-3669
McClellan V.F.D	304-782-2774
Smithburg V.F.D	304-873-1493
West Union V.F.D	304-873-1391
B.A.N.C.S V.F.D	304-873-3722
EMS:	
Doddridge County Office of Emergency Service	304-782-2124
Doddridge County EMS	304-873-3330
LAW ENFORCEMENT:	
Doddridge County Sheriff Department	304-873-1000
West Union Police Department	304-873-1107
West Virginia State Police Doddridge County Detachment	304-873-2101
OTHER IMPORTANT NUMBERS:	
W.V. Dept. of Health & Human Resources	304-627-2295
National Response Center (Chemical, Oil Spills & Chemical/Biological Terrorism) (State Emergency Spill Notification)	1-800-424-8802 1-800-642-3074
Allegheny Power	1-800-255-3443
WV State Fire Marshal (Arson Hotline)	304-588-2191 1-800-233-3473
Dominion Hope Gas	1-800-688-4673

Appendix D: Choke Manifold Schematic



5M CHOKE MANIFOLD EQUIPMENT - CONFIGURATION OF CHOKES MAY VARY

Although not required for any of the choke manifold systems, buffer tanks are sometimes installed downstream of the choke assemblies for the purpose of manifolding the bleed lines together. When buffer tanks are employed, valves shall be installed upstream to isolate a failure or malfunction without interrupting flow control. Though not shown on 2M, 3M, 10M, OR 15M drawings, it would also be applicable to those situations.

[54 FR 39528, Sept. 27, 1989]

Appendix E. List of Well Control Trained Personnel

1. John Kawcak- Antero
2. Mike Ward- Drilling Consultant
3. Ricky Jones- Drilling Superintendent
4. Mike Alcorn- Drilling Superintendent
5. Landon West- Completion Consultant
6. Jeff Partridge-Completion Consultant
7. Norman Wood- Drilling Consultant
8. Delf Martinez- Drilling Consultant
9. James Harvey- Drilling Consultant
10. Steve Guffey- Drilling Consultant
11. Tim Murell- Drilling Consultant
12. James Neal-Drilling Consultant
13. Virgil Gaither-Drilling Consultant
14. Ralph Ybarra- Drilling Consultant
15. Bob Belcher- Completion Consultant (Willowbend)
16. Kris Humpert- Completion Consultant (Willowbend)
17. Ronnie Fuller- Completion Consultant (Willowbend)
18. Trevor Lively- Completion Consultant (Willowbend)
19. Trey Armstrong- Completion Consultant (Willowbend)
20. Gary Linn- Completion Consultant (Willowbend)
21. Justin Bowers- Completion Consultant (Willowbend)
22. Michael Pettitt- Completion Consultant (Willowbend)
23. Stephen Sanders- Completion Consultant (Willowbend)

Appendix F. List of Hazardous Chemicals used during Phases of Operation:

<u>Chemical Name</u>	<u>Daily Qty. on Location</u>	<u>Storage Container</u>
Diesel Fuel Oil	<u>Construction</u> 2000 Gallons	Double Walled Tank
	<u>Drilling</u>	
Airfoam HD	275 gallons	Drum
Alpha 1655	220 gallons	Drum
Aluminum Stearate	150 lbs	Tote
Caustic Soda	1500 lbs	Bag
Claytrol	440 gallons	Drum
Conqor 404	55 gallons	Drum
Diesel Fuel Oil	8000 gallons	Double Walled Tank
Gear Oil	250 gallons	Double Walled Tank
Hydraulic Fluid	250 gallons	Double Walled Tank
KCL (Potassium Chloride)	15000 lbs	Bag
LD-9	100 gallons	Bucket
Lime	2500 lbs	Bag
Mil-Bar	80000 lbs	Super Sack
Mil-Lube	220 gallons	Drum
Milmica	2500 lbs	Bag
Mil-Pac LV	2500 lbs	Bag
Mil-Plug (Walnut Shells)	5000 lbs	Bag
Milstarch	10000 lbs	Bag
Mineral Oil	265 gallons	Tote
Motor Oil	250 gallons	Double Walled Tank
New-Drill	160 gallons	Bucket
Perma-Lose HT	10000 lbs	Bag
Salt	30000 lbs	Super Sack
Soda Ash	1000 lbs	Bag
SWF	265 gallons	Drum
W.O. Defoam	160 gallons	Bucket
Xan-Plex D	1200 lbs	Bag
X-Cide 102	160 gallons	Bucket
	<u>Completions</u>	
15% Hydrochloric Acid	1000 gallons	Acid Tanker
DAP 901 (Scale Inhibitor)	284 gallons	Tote
DAP-923 (Acid Additive)	1.8 gallons	Acid Tanker
Diesel Fuel Oil	8000 gallons	Tanker
DWP-111 (Gel)	4980 gallons	Tote
DWP-204 (Buffer)	496 gallons	Tote
DWP-612 (FR)	1116 gallons	Tote
DWP-901 (Oxide Breaker)	1112 pounds	Bucket
DWP-944 (Biocide)	224 gallons	Tote
Oil 40 (Pump Flush)	300 gallons	Tote
EB-4L(Gel Breaker)	362 gallons	Tote
HCl Acid	1000 gallons	Tanker
KR-153SL(Biocide)	74 gallons	Tote

Appendix F. CONTINUED

Completions -CONTINUED

Super Scale Inhibitor	112 gallons	Tote
WFR-3B(Friction Reducer)	372 gallons	Tote

Service/Work over

FR-1100(Friction Reducer)	800 gallons	Bucket
FR-1205(Pipe on Pipe)	265 gallons	Bucket
FR1302(Liquid Beads)	80 gallons	Bucket
FR-1400(Gel Sweep/Friction Reducer)	550 gallons	Tote
76 Dynalife LEP Grease	20 gallons	Bucket
LithoPlex rt. No. 2 grease	2 gallons	Tube
Hi Temp red grease	3 gallons	Tube
50/50 antifreeze	15 gallons	Bucket
Hydraulic oil 68	15 gallons	Bucket
Hydraulic oil 46	25 gallons	Bucket
Premium Lithium grease	1 gallon	Spray Can
P.B. Blaster	2 gallons	Spray Can
Transmission fluid	10 gallons	Bucket
Max-gear	15 gallons	Bucket
Brakleen	3 gallons	Spray Can
Off-road diesel	700 gallons	Double Walled Tank

Reclamation

Diesel Fuel Oil	2000 gallons	Double Walled Bulk Tank
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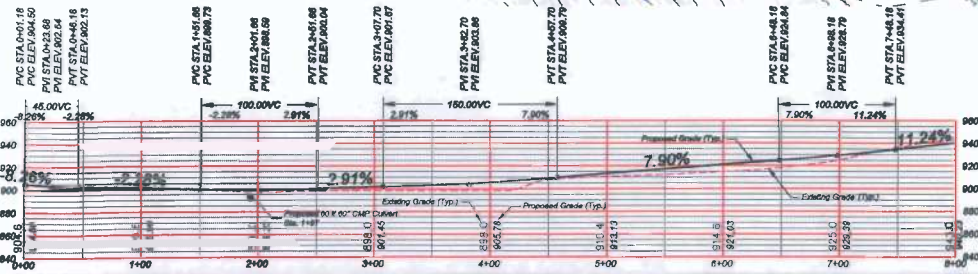
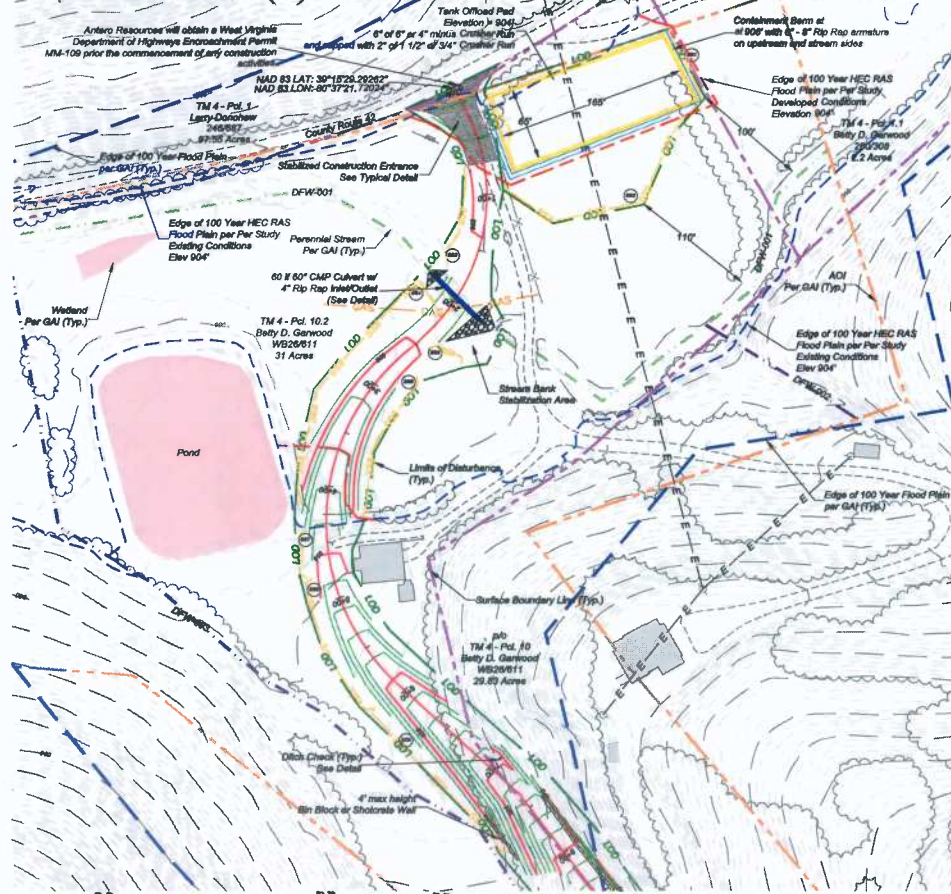
Salem Compressor Station

Used Oil	50 barrels	Bulk Tank
Compressor Oil	1600 gallons	Bulk Tank
Engine Oil	1600 gallons	Bulk Tank
Ethylene Glycol	2000 gallons	Bulk Tank
Produced Water	420 barrels	Bulk Tank

Note: The attached list represents anticipated materials used for planned operations on the well site. In the event of an unplanned event on the well site, additional materials may be required. Additional MSDS for any unplanned events will be maintained on the well site in accordance with OSHA CFR 1910.1200 standards.

The Drilling Supervisor or Contractor of the Operator will maintain Material Data Safety Sheets (MSDS) for all materials and chemicals used on the well site in accordance with OSHA CFR 1910.1200 standards. The MSDS should be located in the Company Representative's Office on-site. Copies of the MSDS may also be obtained from the area Safety Coordinator, the operator contact for maintaining MSDS, by calling the local Antero Resource Office at 304-622-3842 or 800-878-1373.

SITE PLAN (1) - ACCESS ROAD A STA: 0+00 - 8+00



Antero Resources

Allegany Surveys, Inc.
122 Thornhill Way, Ste 200
Blaine, WV 26039
(304) 848-5035

L&W ENTERPRISES, INC.
PO BOX 68
PITTSBURGH, WV 26067
TEL: 304-257-4411
FAX: 304-257-4411
EMAIL: L&W@L&W.COM

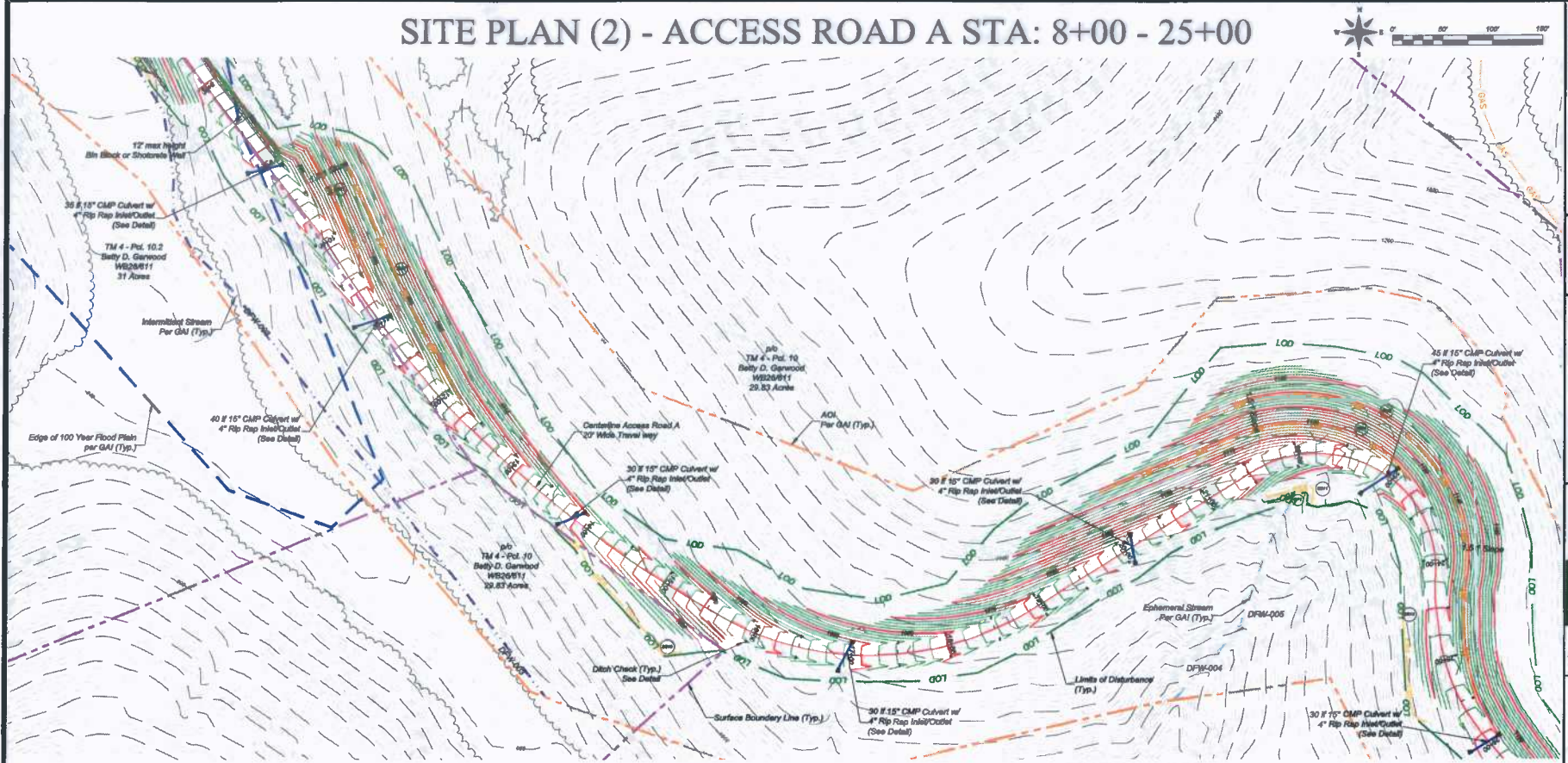
ANTERO

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ANTERO RESOURCES
APPALACHIAN CORP

SITE PLAN (1) - ACCESS ROAD A STA: 0+00 - 8+00

SUSIE JANE PAD
GREENBAIER DISTRICT
DODDRIEGE COUNTY, WV

SITE PLAN (2) - ACCESS ROAD A STA: 8+00 - 25+00



Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 846-5035



L&W ENTERPRISES, INC.
172 Thompson Drive
Bridgeport, WV 26330
PETERSON@L&W.COM



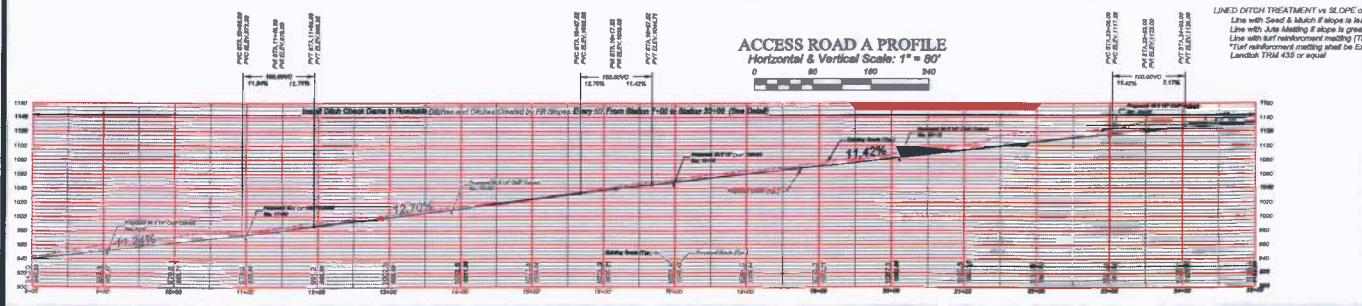
ANTERO RESOURCES
THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

SUSIE JANE PAD
GREENBERG DISTRICT
DOBBSFORD COUNTY, WV

DATE: 9/25/12
SCALE: 1" = 50'
DESIGNED BY: CKW/CJM
FILE NO.: ANTERO-209-12
PAGE 2 OF 18

ACCESS ROAD A PROFILE

Horizontal & Vertical Scale: 1" = 80'

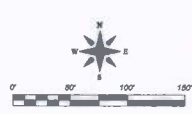
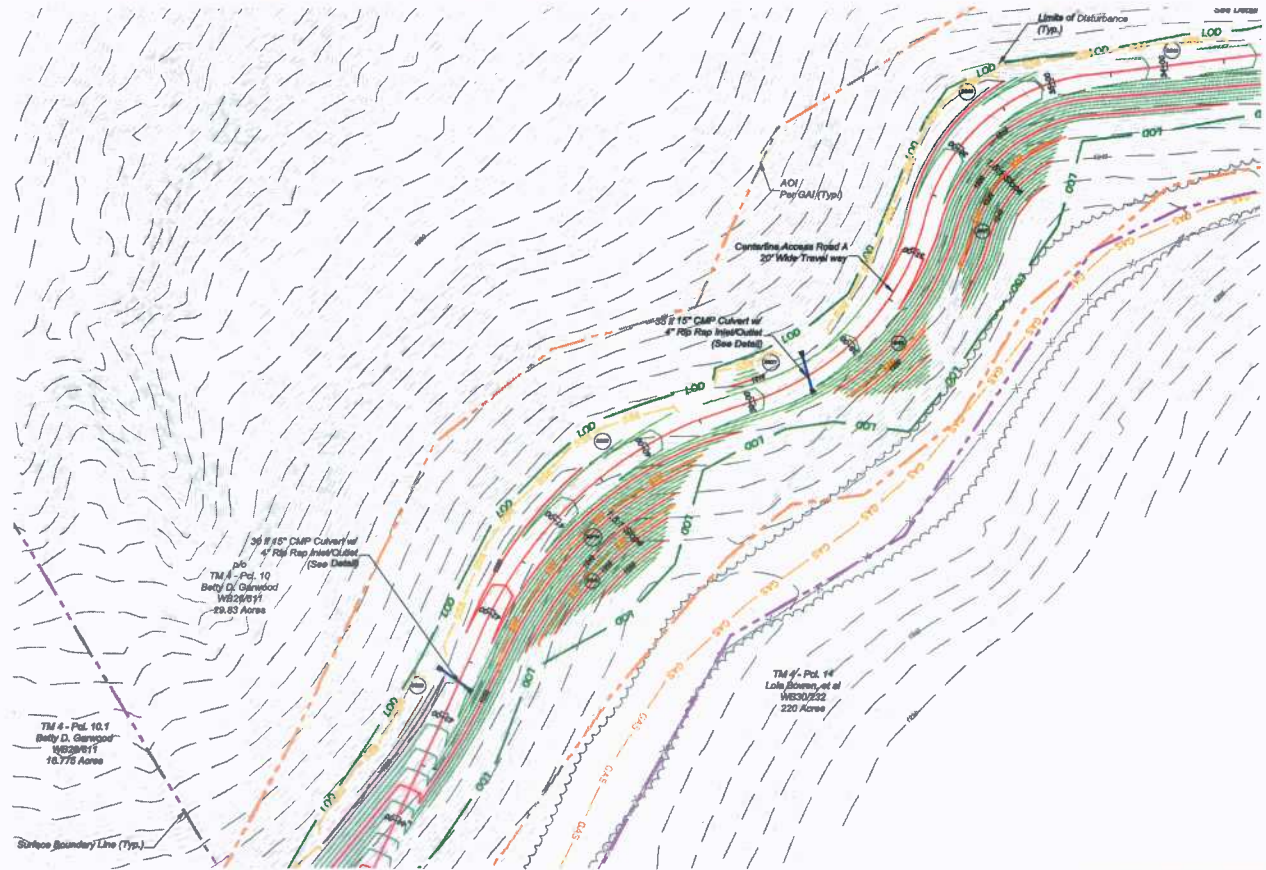


LINED DITCH TREATMENT vs. SLOPE of DITCH:
Line with Seed & Mulch if slope is less than 3%
Line with Jute Matting if slope is greater than 3% less than 6%
Line with full reinforcement matting (TMS) if slope is greater than 6%
*TMS reinforcement matting shall be Excobac Fibrocels or Landt 1704 435 or equal

Legend		
--- 110 ---	Existing 2' Contour	--- Proposed Check Dam
--- 10' ---	Existing 10' Contour	--- Proposed Culvert W/ Inlet & Outlet Protection
--- E ---	Existing Tree Line	--- Proposed Straw Wattles
--- U ---	Existing Utility Line / Pole	--- Proposed SR Soxx w/ Diameter
--- S ---	Surface Owner Property Line	--- Proposed 2' Contour
--- G&S ---	Existing Gas Line CL	--- Proposed 10' Contour
--- L ---	Limits of Disturbance	--- Proposed Rip-Rap
--- D ---	Proposed Diverion Ditch	--- SR Soxx Diameter in Inches
--- 2' ---	Proposed 2' Contour	* Super SR Fence Can be Substituted for SR Soxx of any Size
--- 10' ---	Proposed 10' Contour	
--- SF ---	Proposed Super Sill Fence	

DATE	REVISIONS
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards

SITE PLAN (4) - ACCESS ROAD A STA: 35+00 - 44+00



Allegheny Surveys, Inc.
 772 Thompson Drive
 Blairsville, PA 15016
 (724) 848-6035



L&W ENTERPRISES, INC.
 PO BOX 84
 GREENBRIER, WV 26037
 TEL 304-327-4418
 FAX 304-327-4420
 EMAIL: L&W@L&WENTR.COM

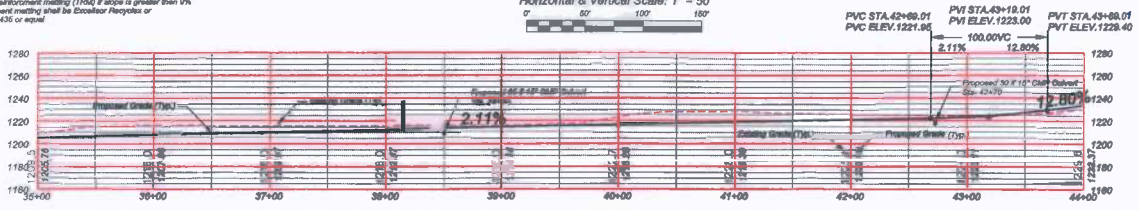


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 APPALACHIAN CORP

SITE PLAN (4) - ACCESS ROAD A STA: 35+00 - 44+00
SUSIE JANE PAD
 GREENBRIER DISTRICT
 DODDRIIDGE COUNTY, WV

LINED DITCH TREATMENT vs SLOPE of DITCH
 Line with SLOPE 0' Match if slope is less than 2%
 Line with Auto Modeling if slope is greater than 2% less than 6%
 Line with full mechanized modeling (TRM) if slope is greater than 6%
 *Turn mechanized modeling shall be Easement Properties or
 Land Use TRM 435 or equal

ACCESS ROAD A PROFILE
 Horizontal & Vertical Scale: 1" = 50'

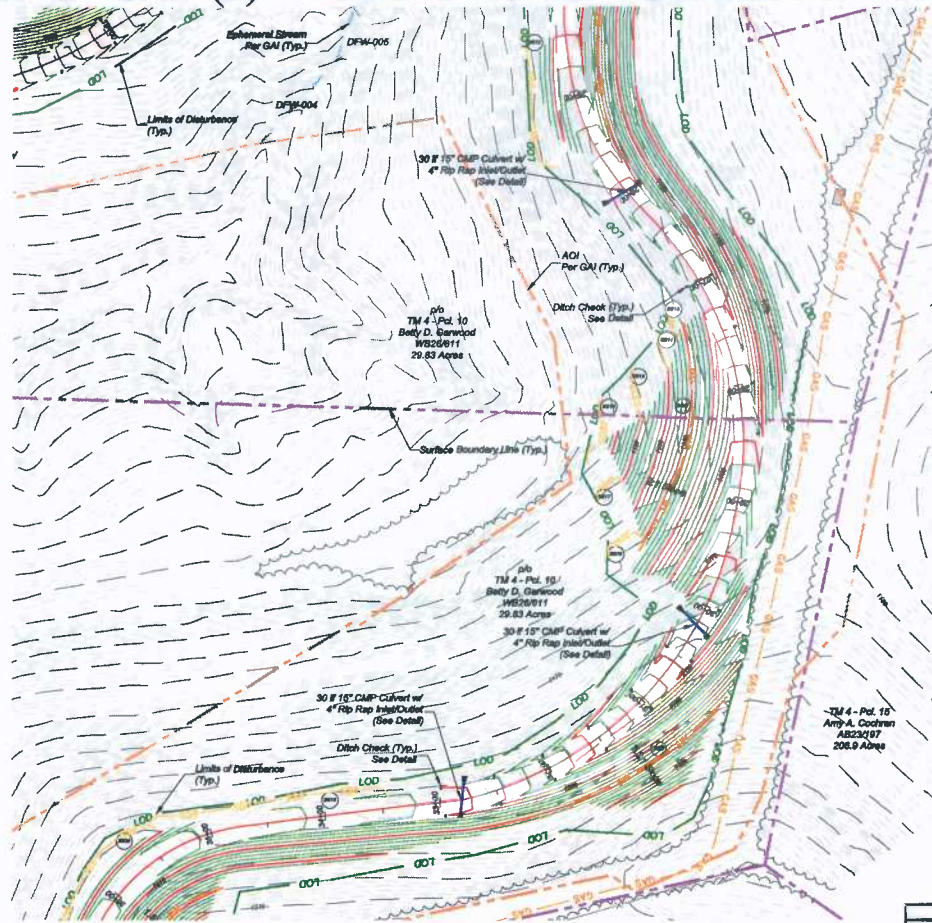


Legend			
---	Existing 2' Contour	---	Proposed Check Dam
---	Existing 10' Contour	---	Proposed Culvert W/ Inlet & Outlet Protection
---	Existing Ties Line	---	Proposed Straw Wasties
---	Existing Utility Line / Pole	---	Proposed 8" Size w/ Diameter
---	Surface Owner Property Line	---	Proposed 10' Contour
---	Existing Gas Line CL	---	Proposed 2' Contour
---	Limits of Disturbance	---	Proposed 10' Contour
---	Proposed Diverter Ditch	---	Proposed Rip-Rap
---	Proposed 2' Contour	---	* Silt Sock Diameter in Inches
---	Proposed 10' Contour	---	* Super Silt Fence Can be Substituted for Silt Sock of any Size
---	Proposed Super Silt Fence		

DATE	REVISIONS
4-11-13	Updated Per New Antero Standards

Date: 9/25/12
 Scale: 1" = 50'
 Drawn by: CEW/DM
 File No.: Antero 209-12

SITE PLAN (3) - ACCESS ROAD A STA: 25+00 - 35+00



Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 846-5035



L&W ENTERPRISES, INC.
100 W. MARKET ST.
PO BOX 202224
FAYETTE COUNTY, WV 25724
FAYETTE, WV 25704



ANTERO

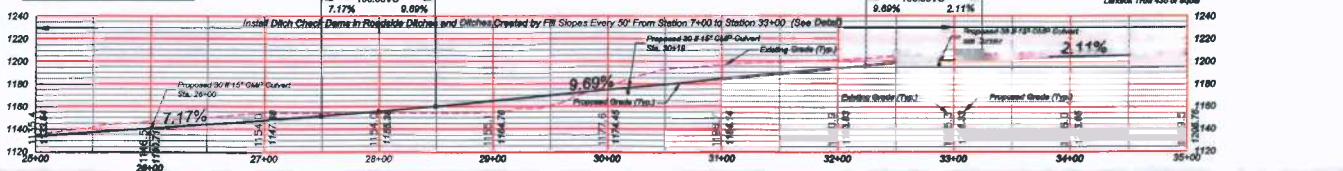
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ANTERO RESOURCES
APPALACHIAN CORP

SITE PLAN (3) - ACCESS ROAD A STA: 25+00 - 35+00

SUSIE JANE PAD
GREENBRIER DISTRICT
PODDRIDGE COUNTY, WV

ACCESS ROAD A PROFILE

Horizontal & Vertical Scale: 1" = 50'



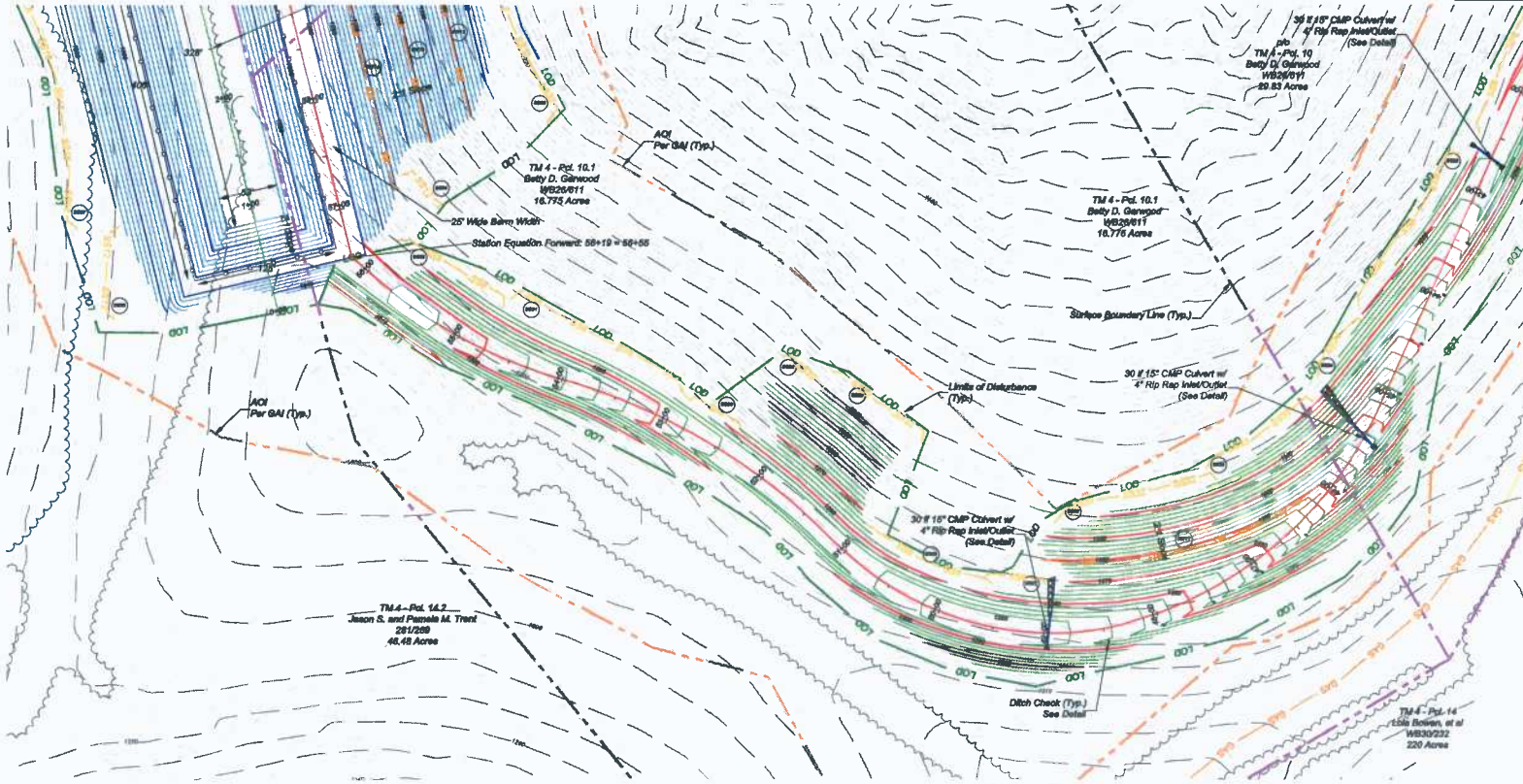
LINED DITCH TREATMENT ON SLOPE OF DITCH
Line with Seed & Mulch if slope is less than 3%
Line with Seed & Mulch if slope is greater than 3% less than 9%
Line with turf reinforcement matting (TRM) if slope is greater than 9%
Turf reinforcement matting shall be Shockor Resprock or Lendek TRM 435 or equal

Legend	
--- 1:30 ---	Existing 2' Contour
--- 1:10 ---	Existing 10' Contour
---	Existing Three Line
--- E ---	Existing Utility Line / Pole
---	Surface Owner Property Line
---	Existing Gas Line CL
---	Limits of Disturbance
---	Proposed Diversion Ditch
---	Proposed 2' Contour
---	Proposed 10' Contour
---	Proposed Super Silt Fence
---	Proposed Check Dam
---	Proposed Culvert W/ Inlet & Outlet Protection
---	Proposed Straw Wattles
---	Proposed Silt Sock w/ Diameter
---	Proposed 2' Contour
---	Proposed 10' Contour
---	Proposed Rip-Rap
---	* Silt Sock Diameter in Inches
---	* Super Silt Fence Can be Substituted for Silt Sock of any Size

DATE	REVISIONS	DATE
4-11-13	Updated Per New Antero Standards	9/25/12

Date: 9/25/12
Scale: 1" = 50'
Designed By: GCV/CEM
File No.: Antero 209-12
Page 6 of 19

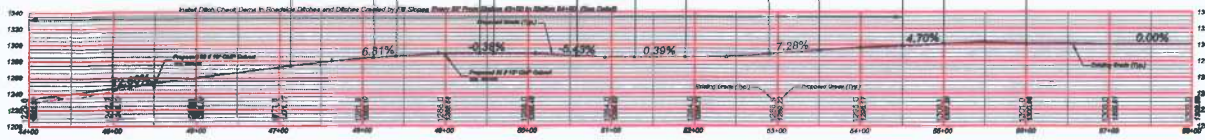
SITE PLAN (5) - ACCESS ROAD A STA: 44+00 - 58+00



LINED DITCH TREATMENT vs. SLOPE of DITCH
 Line with Seed & Mulch if slope is less than 3%
 Line with Joint Matting if slope is greater than 3% less than 5%
 Line with Joint reinforcement matting (TROM) if slope is greater than 5%
 *Turf reinforcement matting shall be Escalator Reocyster or Landturf TROM 435 or equal

ACCESS ROAD A PROFILE

Horizontal & Vertical Scale: 1" = 70'



Legend	
--- 15' ---	Proposed Check Dam
--- 10' ---	Proposed Culvert W/ Inlet & Outlet Protection
---	Existing Time Line
-E- -E-	Proposed Sliver Wellies
---	Proposed 36\"/>
---	Proposed 24\"/>
---	Proposed 18\"/>
---	Proposed Rip-Rap
---	* Silt Soak Diameter In Inches
---	* Super Silt Fence Can be Substituted for Silt Soak of any Size

DATE	REVISIONS
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards



SUSIE JANE PAD
 GREENBERG DISTRICT
 DODDRIEGE COUNTY, WV



L&W ENTERPRISES, INC.
 10 SOUTH BRIDGE ST.
 FARMERSBURG, WV 26032
 PHONE: 304-337-4414
 FAX: 304-337-5229
 EMAIL: L&W@LWENTR.COM



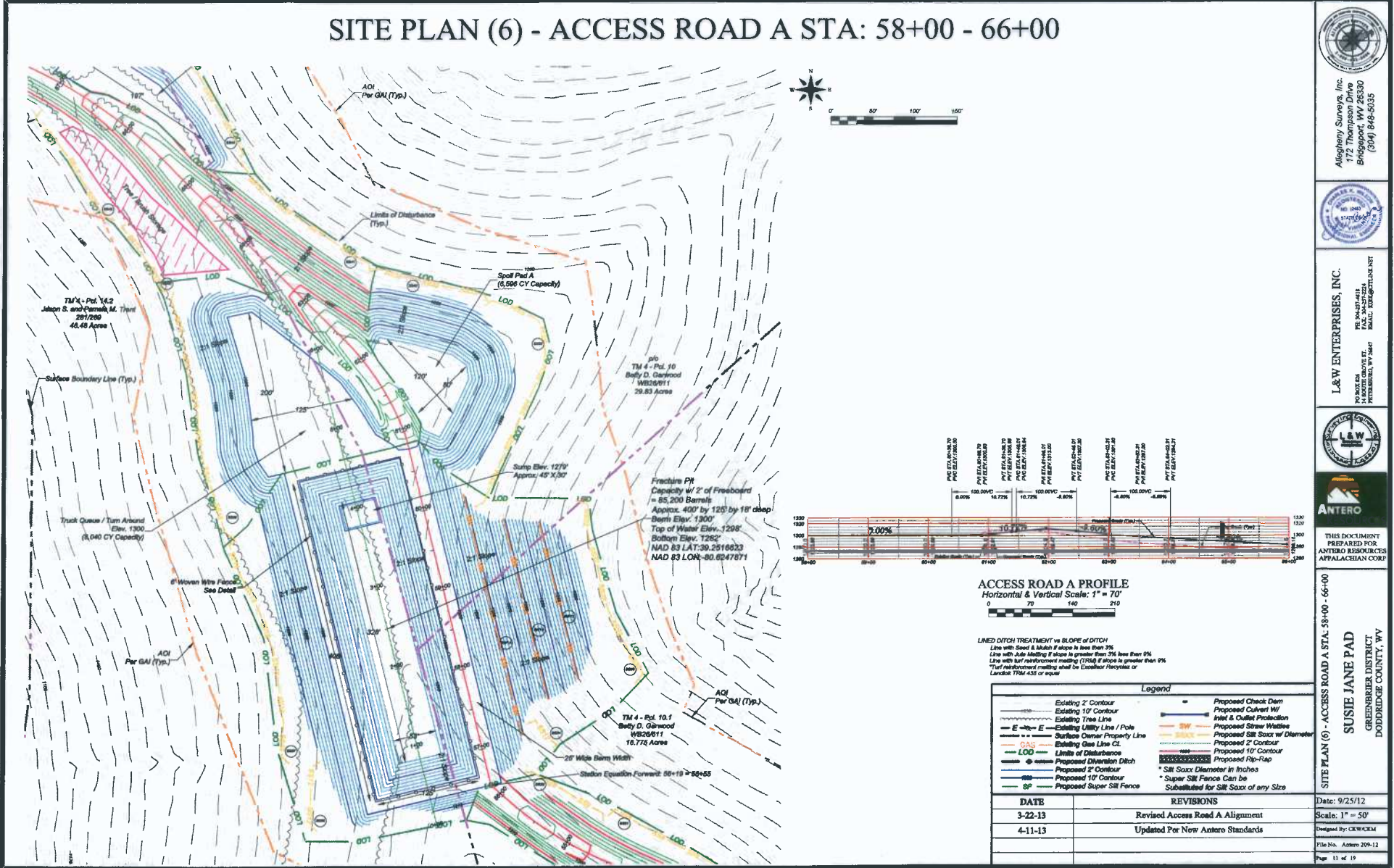
ANTERO

THIS DOCUMENT
 PREPARED FOR
ANTERO RESOURCES
 APPALACHIAN CORP

SITE PLAN (5) - ACCESS ROAD A STA: 44+00 - 58+00

Date: 9/25/12
 Scale: 1" = 50'
 Designed By: CE/WCK/M
 File No. Antero 209-12
 Page 10 of 19

SITE PLAN (6) - ACCESS ROAD A STA: 58+00 - 66+00



Aulegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-6035



L&W ENTERPRISES, INC.
P.O. Box 1000
10000 Greenway St.
Petersburg, VA 23407



THIS DOCUMENT
PREPARED FOR
ANTERO RESOURCES
APPALACHIAN CORP

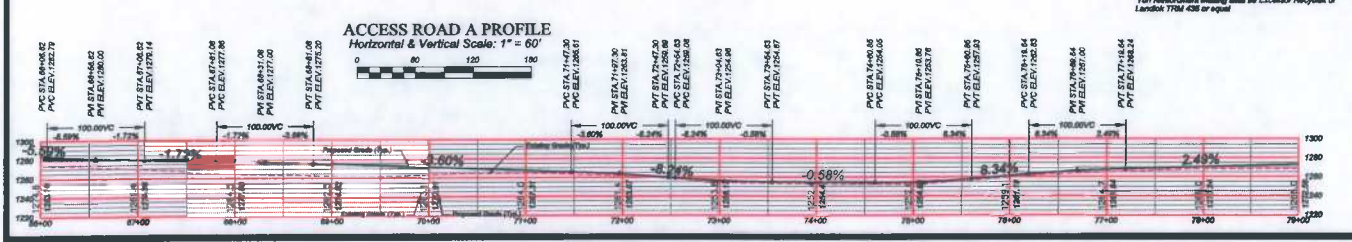
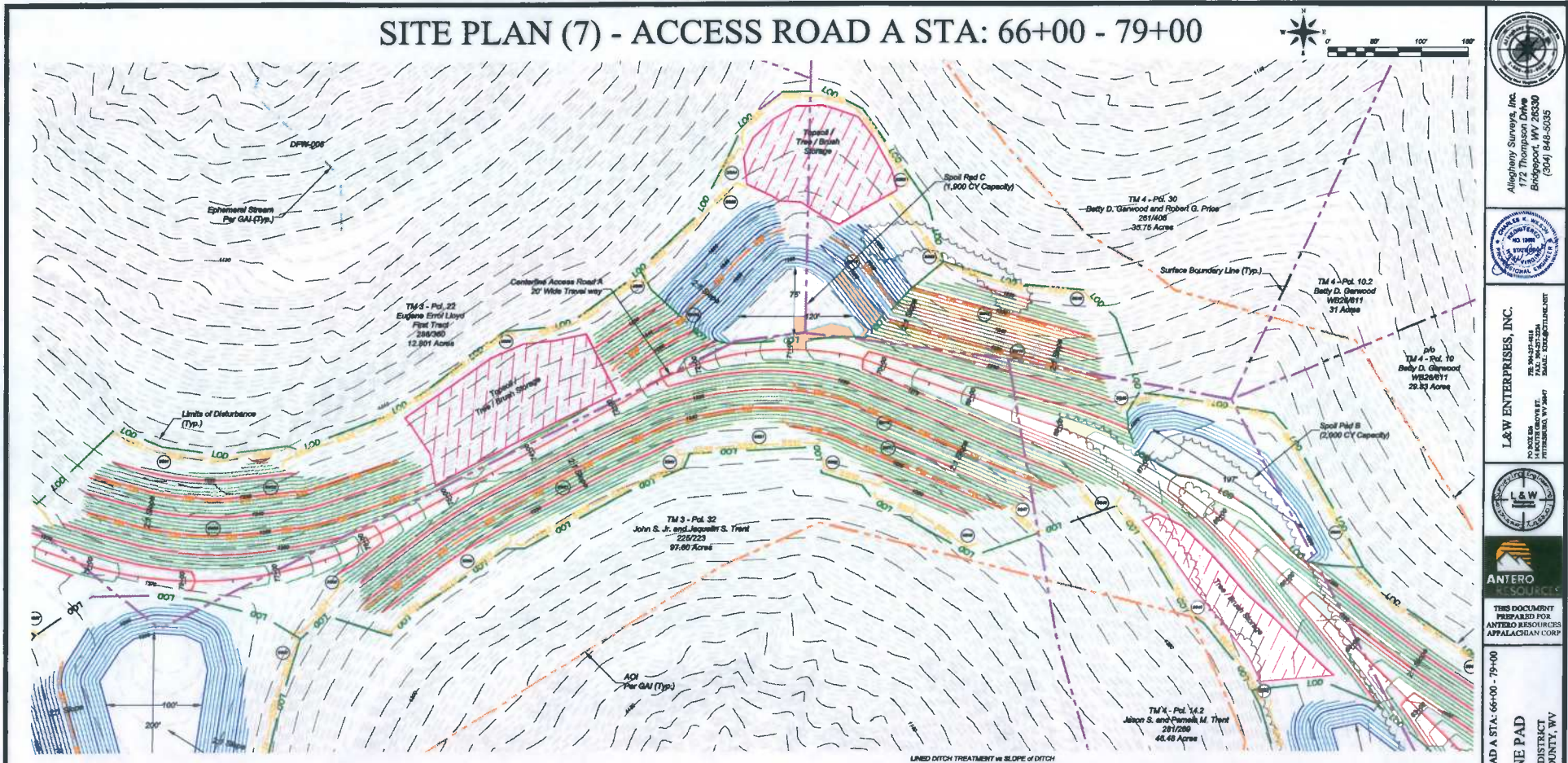
DATE: 9/25/12
SCALE: 1" = 50'

SUSIE JANE PAD
GREENBERG DISTRICT
DODDRIEGE COUNTY, WV

SITE PLAN (6) - ACCESS ROAD A STA: 58+00 - 66+00

DATE	REVISIONS
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards

SITE PLAN (7) - ACCESS ROAD A STA: 66+00 - 79+00



Legend

- Existing 2' Contour
- Existing 10' Contour
- Existing Tree Line
- Existing Utility Line / Pole
- Surface Owner Property Line
- Existing Gas Line GI
- LCD Limits of Disturbance
- Proposed 2' Contour
- Proposed 10' Contour
- Proposed 2' Contour
- Proposed 10' Contour
- Proposed Super Silt Fence
- Proposed Check Dam
- Proposed Culvert W/ Inlet & Outlet Protection
- Proposed Straw Wattles
- Proposed Silt Socks w/ Diameter
- Proposed 2' Contour
- Proposed 10' Contour
- Proposed Rip-Rap
- Silt Sock Diameter in inches
- Super Silt Fence Can be Substituted for Silt Sock of any Size

DATE	REVISIONS
4-11-13	Updated Per New Antero Standards

Allegany Surveys, Inc.
175 The Woodlands
Bridgeport, WV 26330
(304) 646-5035

STATE OF WEST VIRGINIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF LAND USE AND PLANNING

LAW ENTERPRISES, INC.
1000 EAST MAIN STREET
PITTSBURGH, WV 26107
TEL: 304-263-1111
FAX: 304-263-1111
WWW.LEI-CORP.COM

ANTERO
RESOURCES

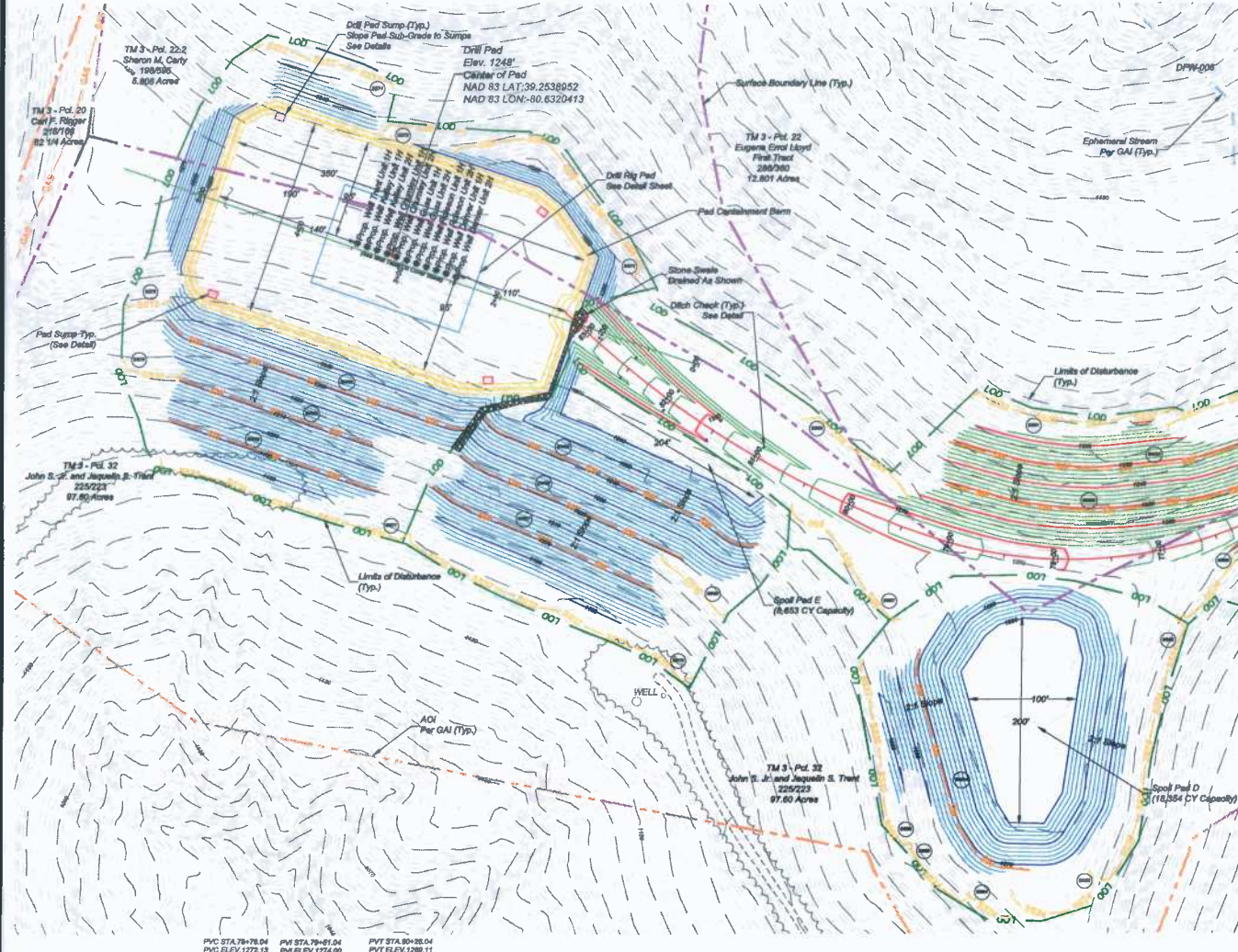
THIS DOCUMENT PREPARED FOR
ANTERO RESOURCES
APPALACHIAN CORP.

SITE PLAN (7) - ACCESS ROAD A STA: 66+00 - 79+00

SUSIE JANE PAD
GREENBRIER DISTRICT
DODDGE COUNTY, WV

DATE: 9/25/12
Scale: 1" = 50'
Designed By: CEW/CJM
File No. Acme 209-12
Page 13 of 15

SITE PLAN (8) - ACCESS ROAD A STA: 79+00 - 83+50



Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-5035



L&W ENTERPRISES, INC.
1000 W. MARKET ST.
P.O. BOX 20222
CHARLOTTE, NC 28220
TEL: 770-437-1000



ANTERO RESOURCES
THIS DOCUMENT
PREPARED FOR
ANTERO RESOURCES
APPALACHIAN CORP

SITE PLAN (8) - ACCESS ROAD A STA: 79+00 - 83+50
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDERSBURG COUNTY, WV

Legend	
--- Existing 2' Contour	--- Proposed Check Dam
--- Existing 10' Contour	--- Proposed Culvert W/ Inlet & Outlet Protection
--- Existing Tree Line	--- Proposed Stream Weirline
--- E --- Existing Utility Line / Pole	--- Proposed Silt Soxx w/ Diameter
--- Surface Owner Property Line	--- Proposed 2' Contour
--- GAS --- Existing Gas Line CL	--- Proposed 10' Contour
--- Limits of Disturbance	--- Proposed Rip-Rap
--- Proposed 2' Contour	--- Proposed Silt Soxx w/ Diameter
--- Proposed 10' Contour	--- Proposed Silt Fence Can be Substituted for Silt Soxx of any Size
--- Proposed Super Silt Fence	

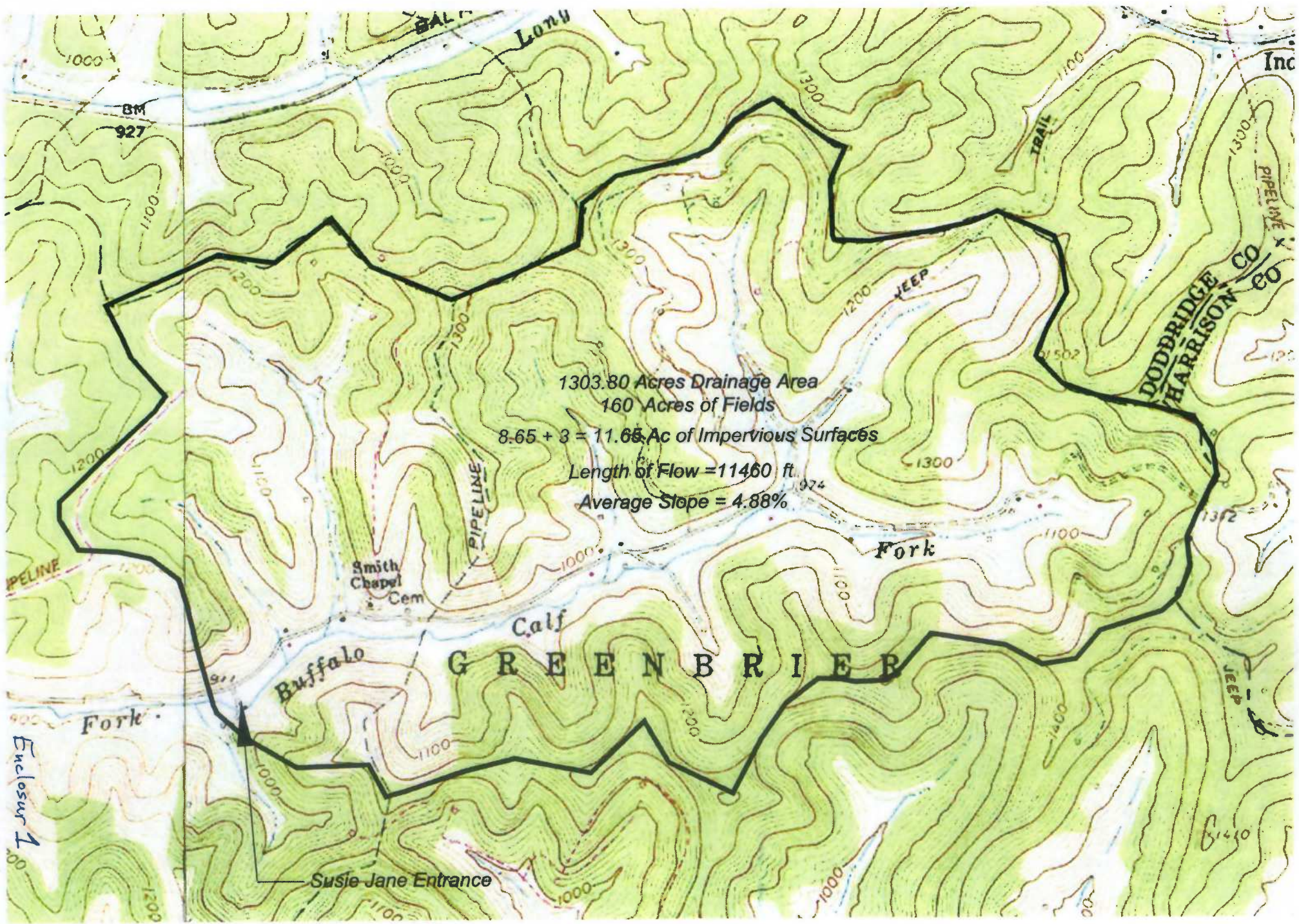
DATE	REVISIONS	DATE
3-7-13	Revised Well Layout	9/25/12
4-11-13	Updated Per New Antero Standards	Scale: 1" = 50'

Designed By: CEW/CEM
 File No. Antero 209-12
 Page 13 of 19

ACCESS ROAD A PROFILE
Horizontal & Vertical Scale: 1" = 60'



LINED DITCH TREATMENT vs SLOPE OF DITCH
 Line with Seed & Mulch if slope is less than 3%
 Line with Jute Matting if slope is greater than 3% less than 5%
 Line with turf reinforcement matting (TRM) if slope is greater than 5%
 *Turf reinforcement matting shall be Excelsior Reingles or Lantite TRM 438 or equal

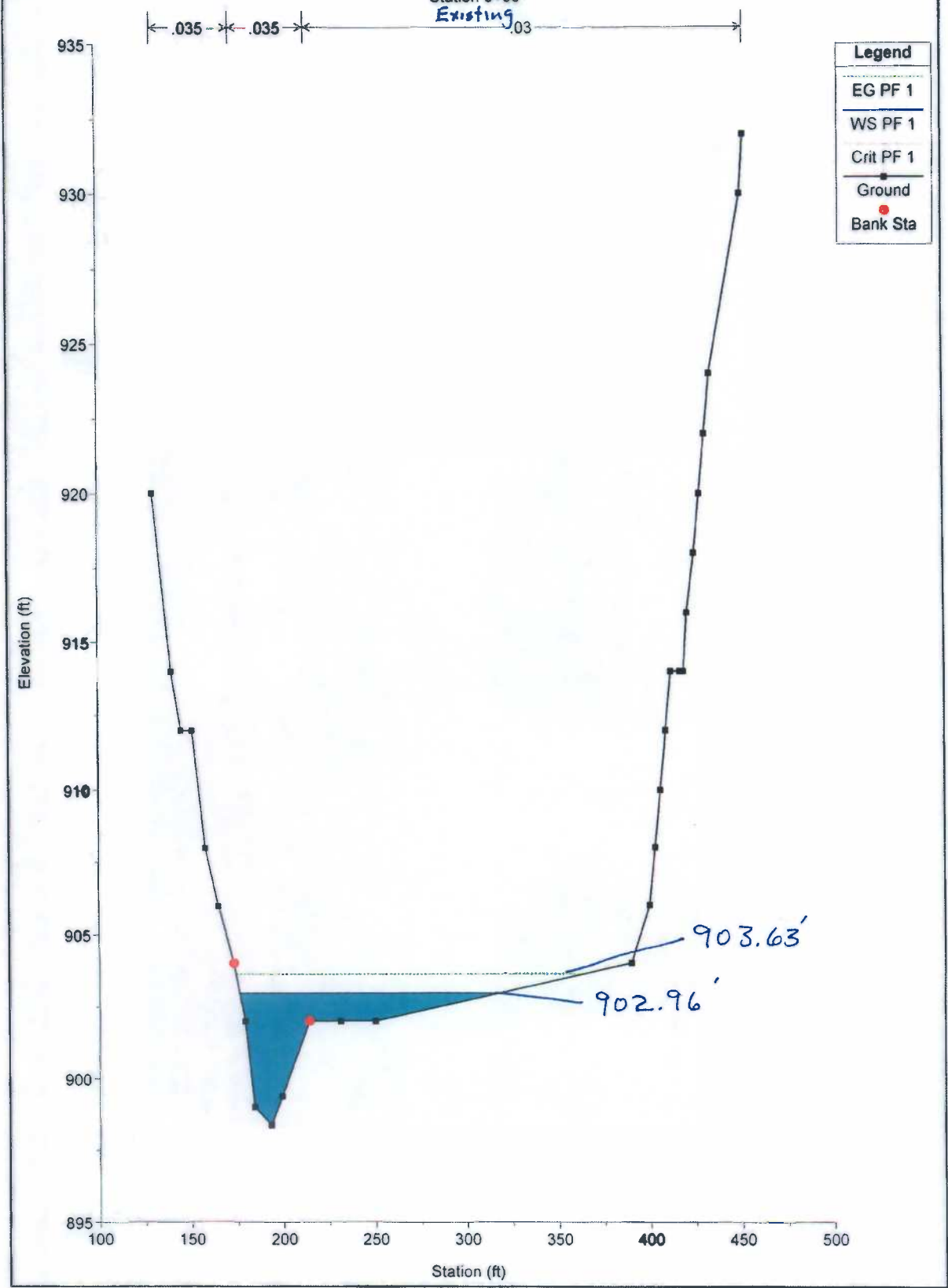


1303.80 Acres Drainage Area
160 Acres of Fields
 $8.65 + 3 = 11.65$ Ac of Impervious Surfaces
Length of Flow = 11460 ft.
Average Slope = 4.88%

Enclosure 1

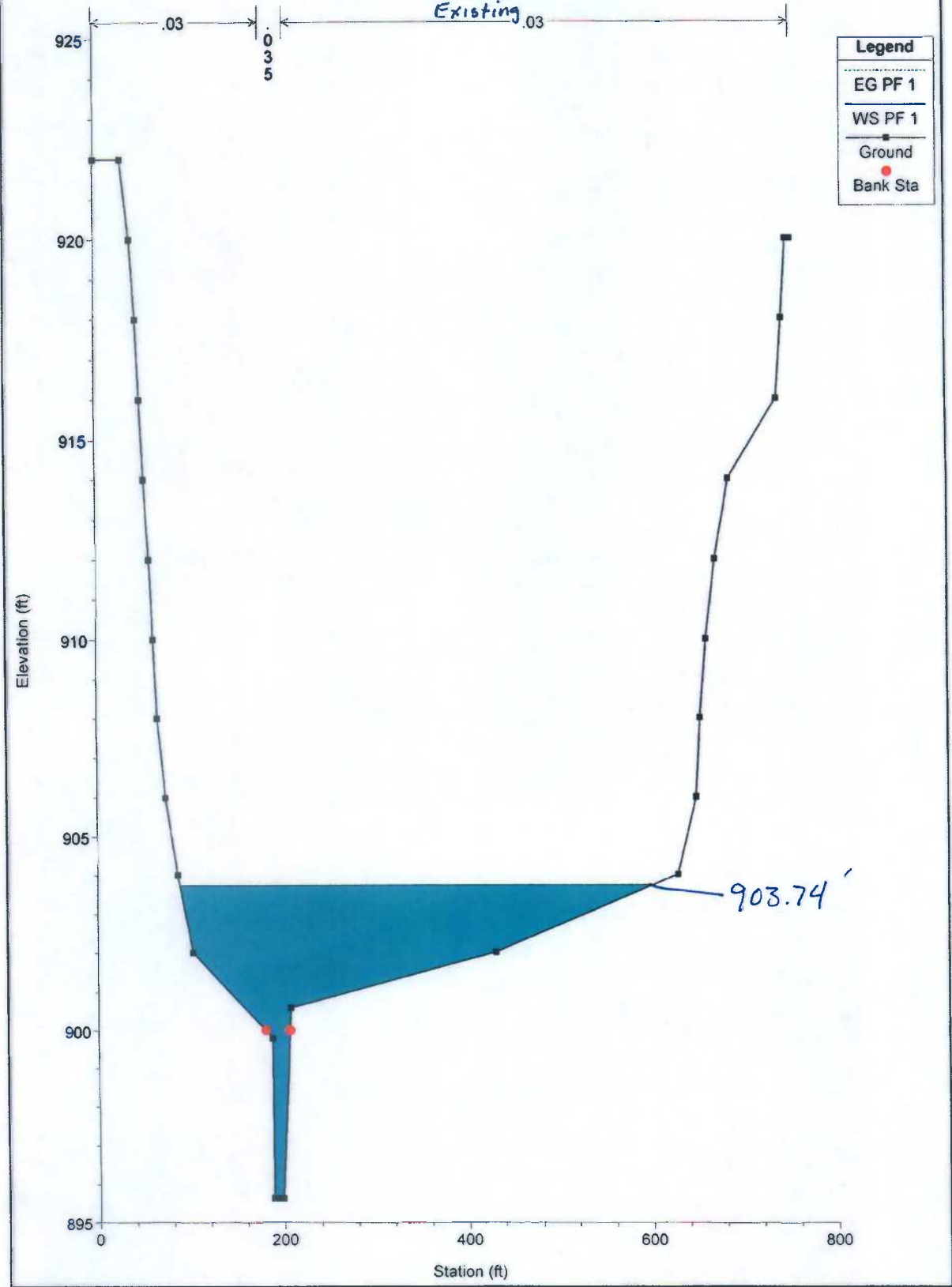
Susie Jane Entrance Road Plan: Plan 01 5/2/2013

Station 0+60
Existing



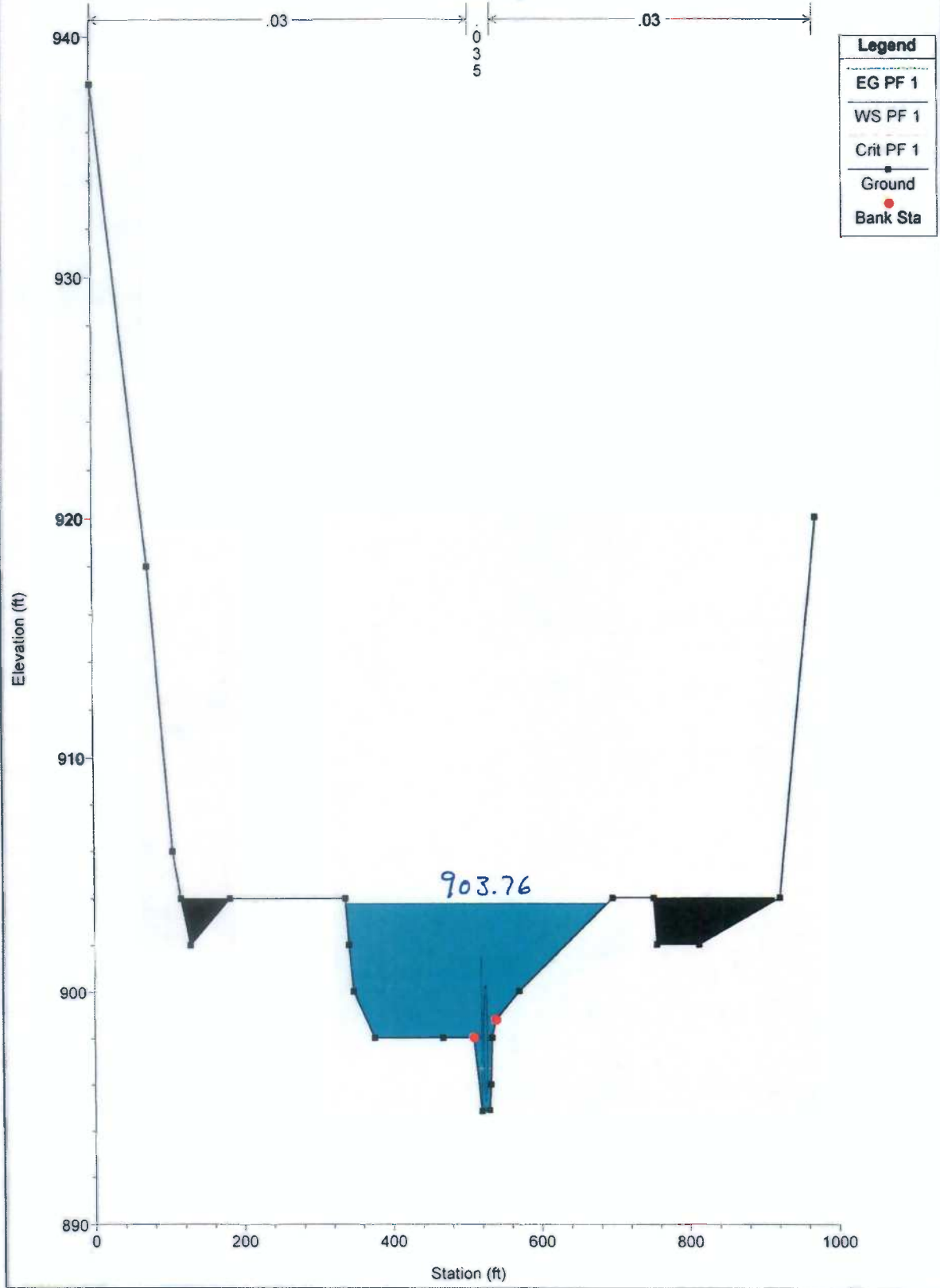
Susie Jane Entrance Road Plan: Plan 01 5/2/2013

Station 4+38
Existing



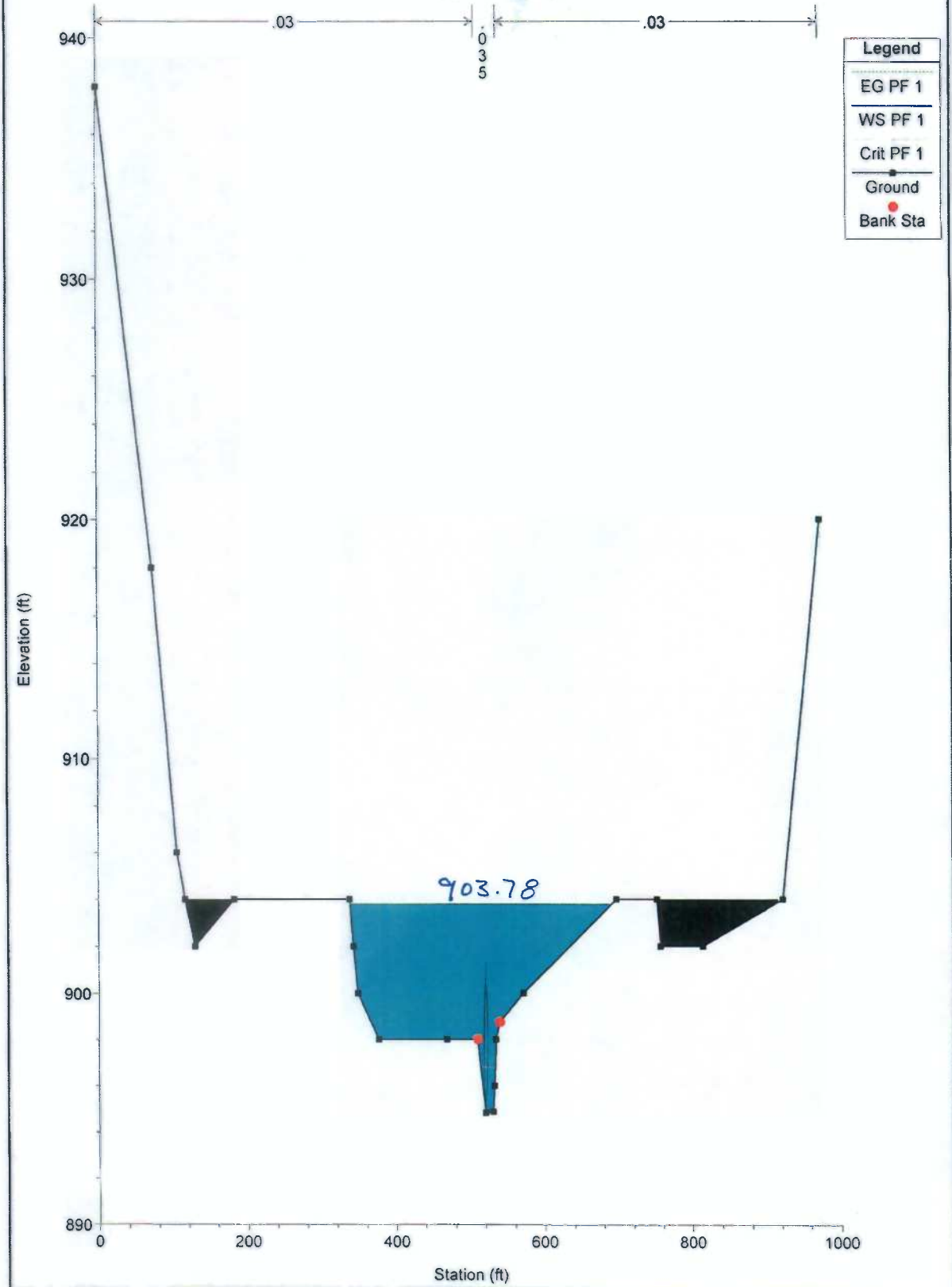
Susie Jane Entrance Road Plan: Plan 01 5/2/2013

Existing



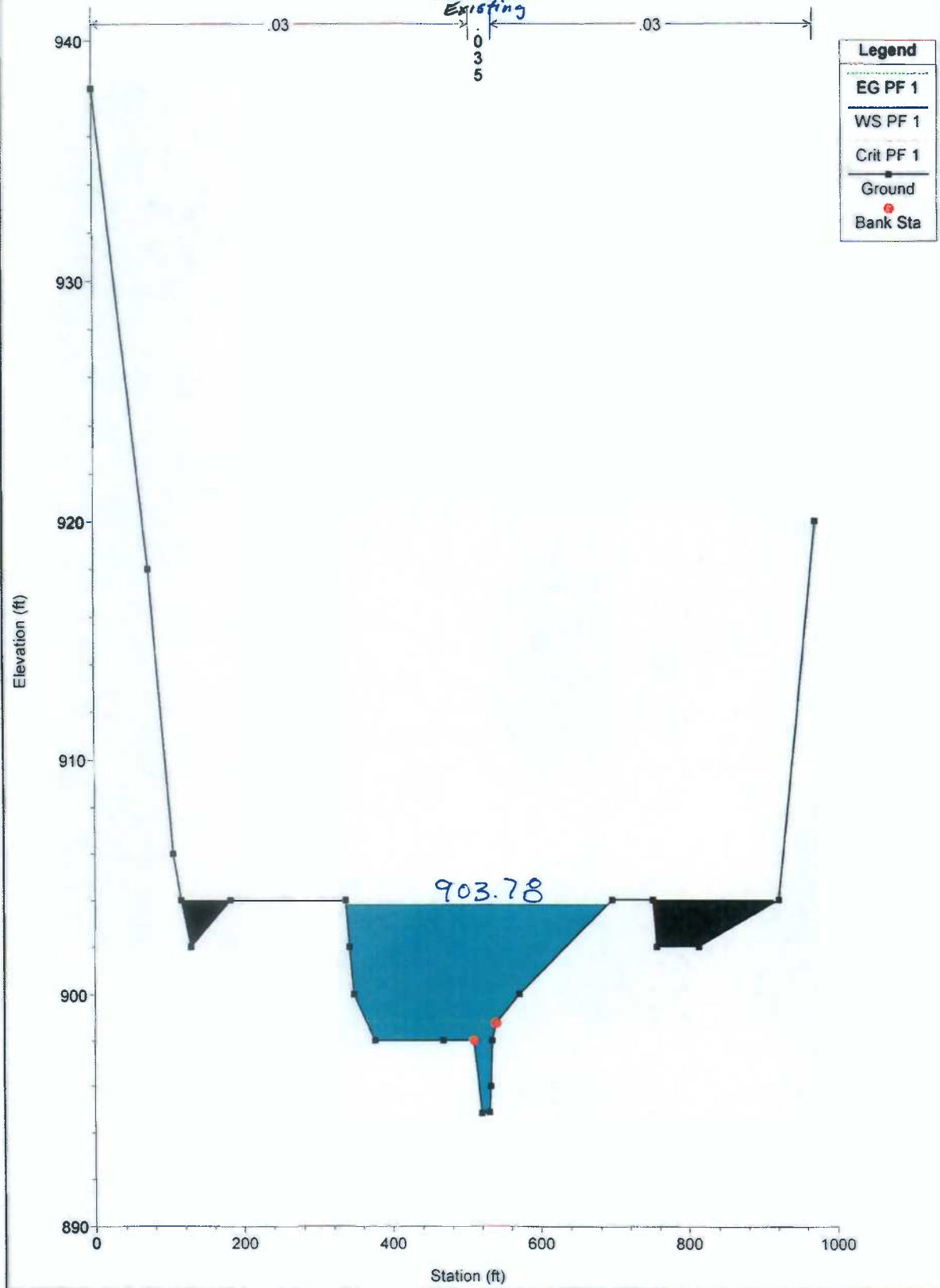
Susie Jane Entrance Road Plan: Plan 01 5/2/2013

Existing



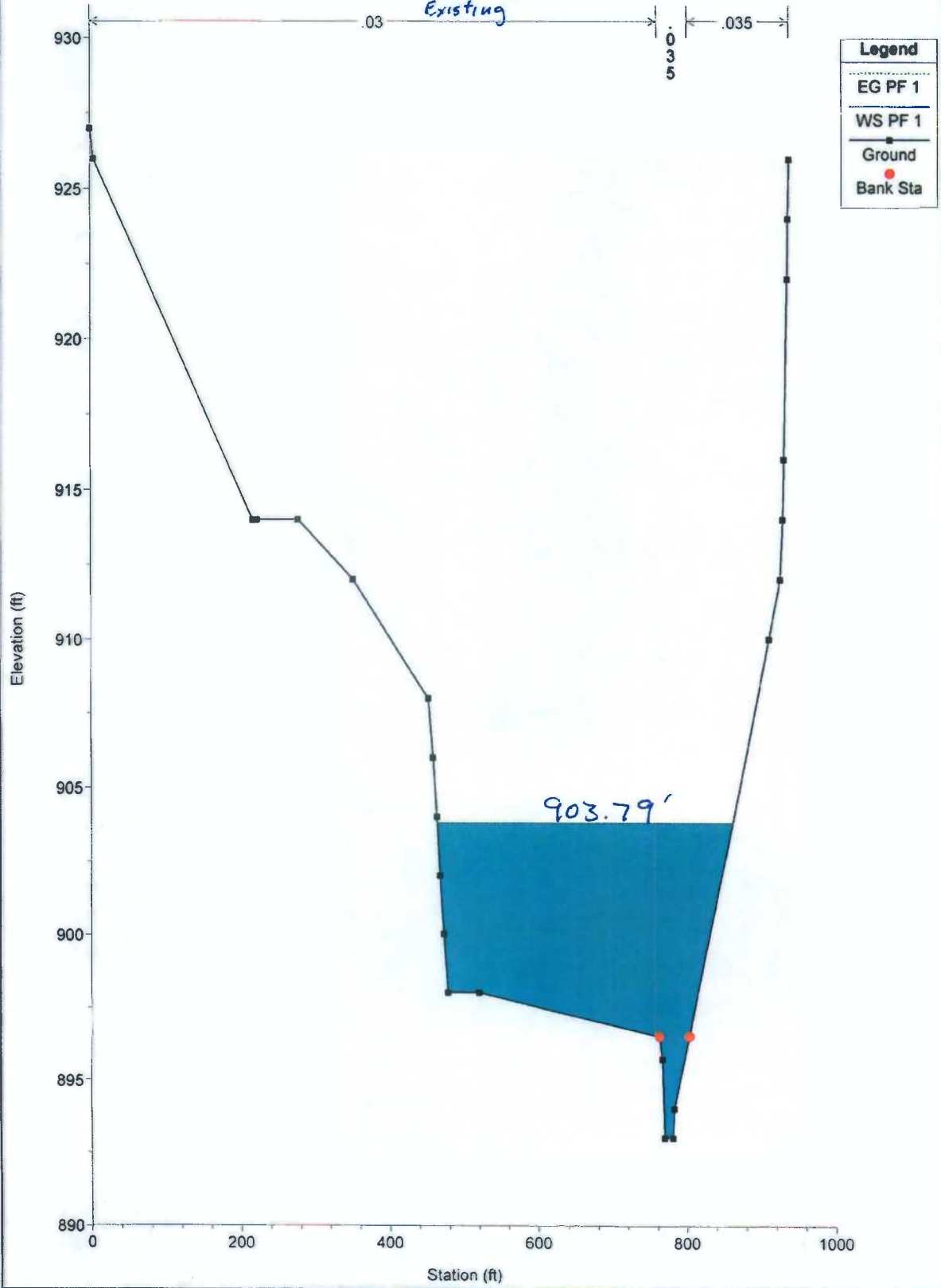
Susie Jane Entrance Road Plan: Plan 01 5/2/2013

Station 5+53
Existing
0
3
5



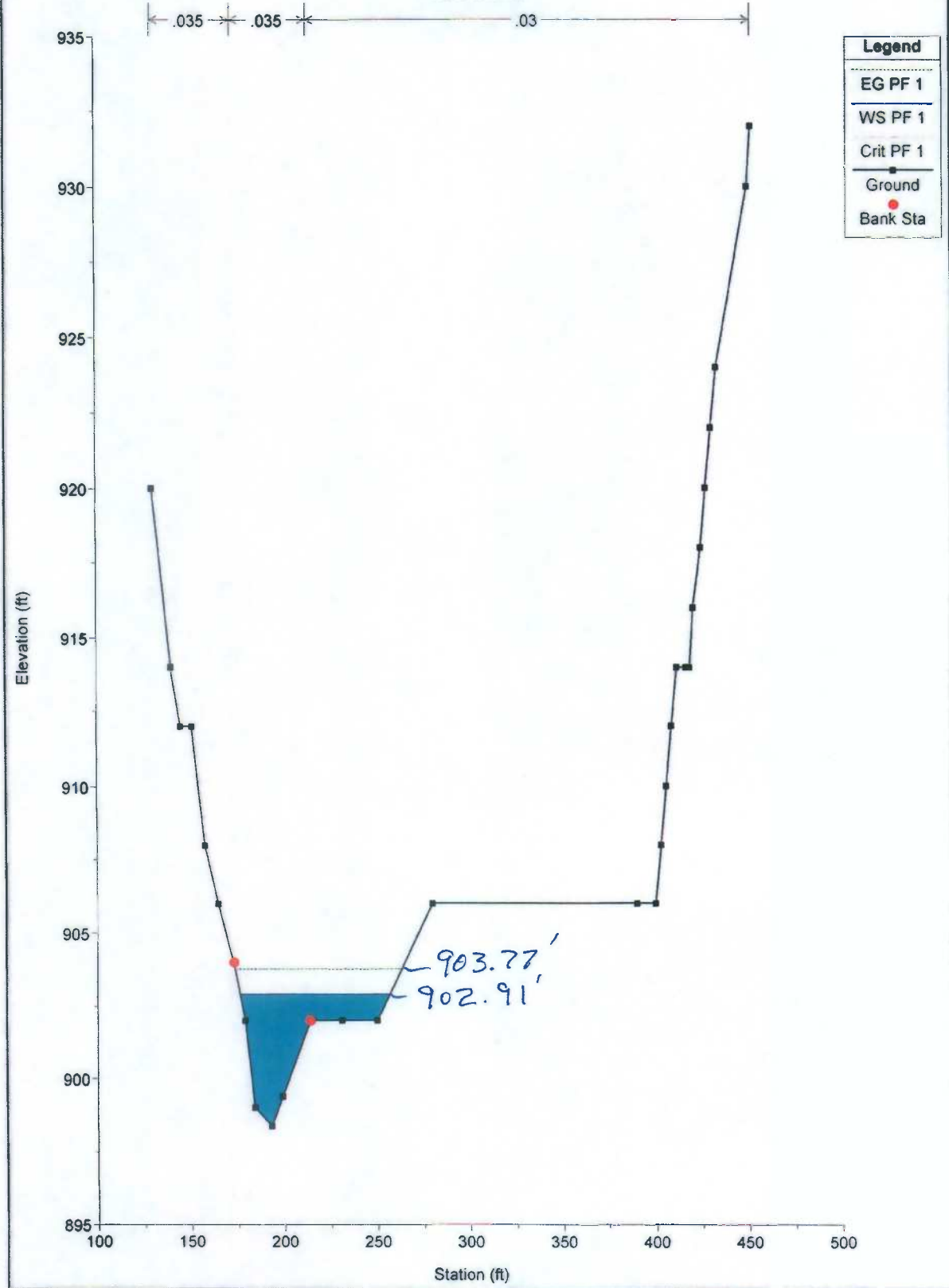
Susie Jane Entrance Road Plan: Plan 01 5/2/2013

Station 7+93
Existing

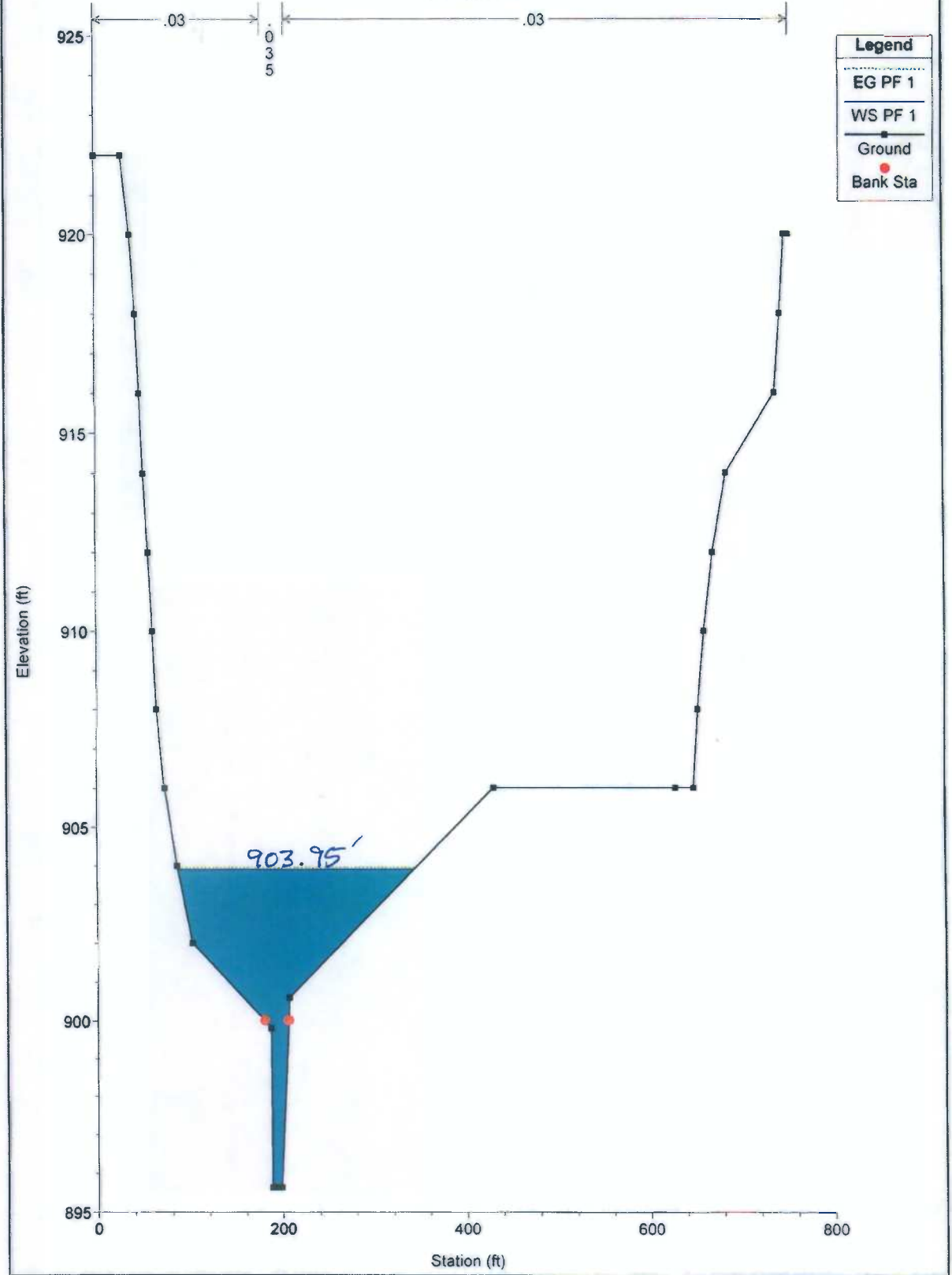


Legend	
---	EG PF 1
---	WS PF 1
—■—	Ground
●	Bank Sta

Susie Jane Entrance Road developed Plan: Plan 03 5/2/2013
 Station 0+60

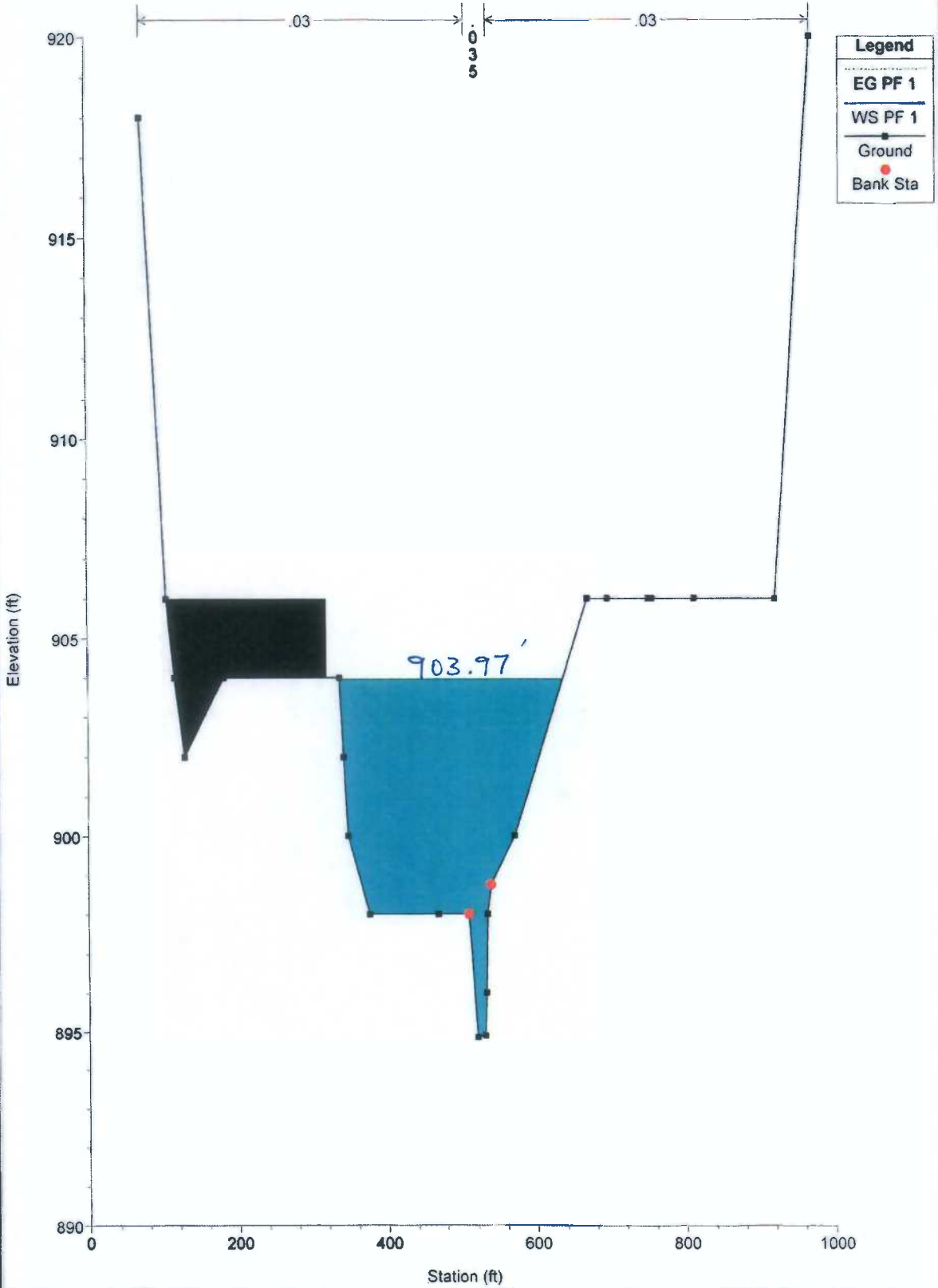


Susie Jane Entrance Road developed Plan: Plan 03 5/2/2013
 Station 4+38

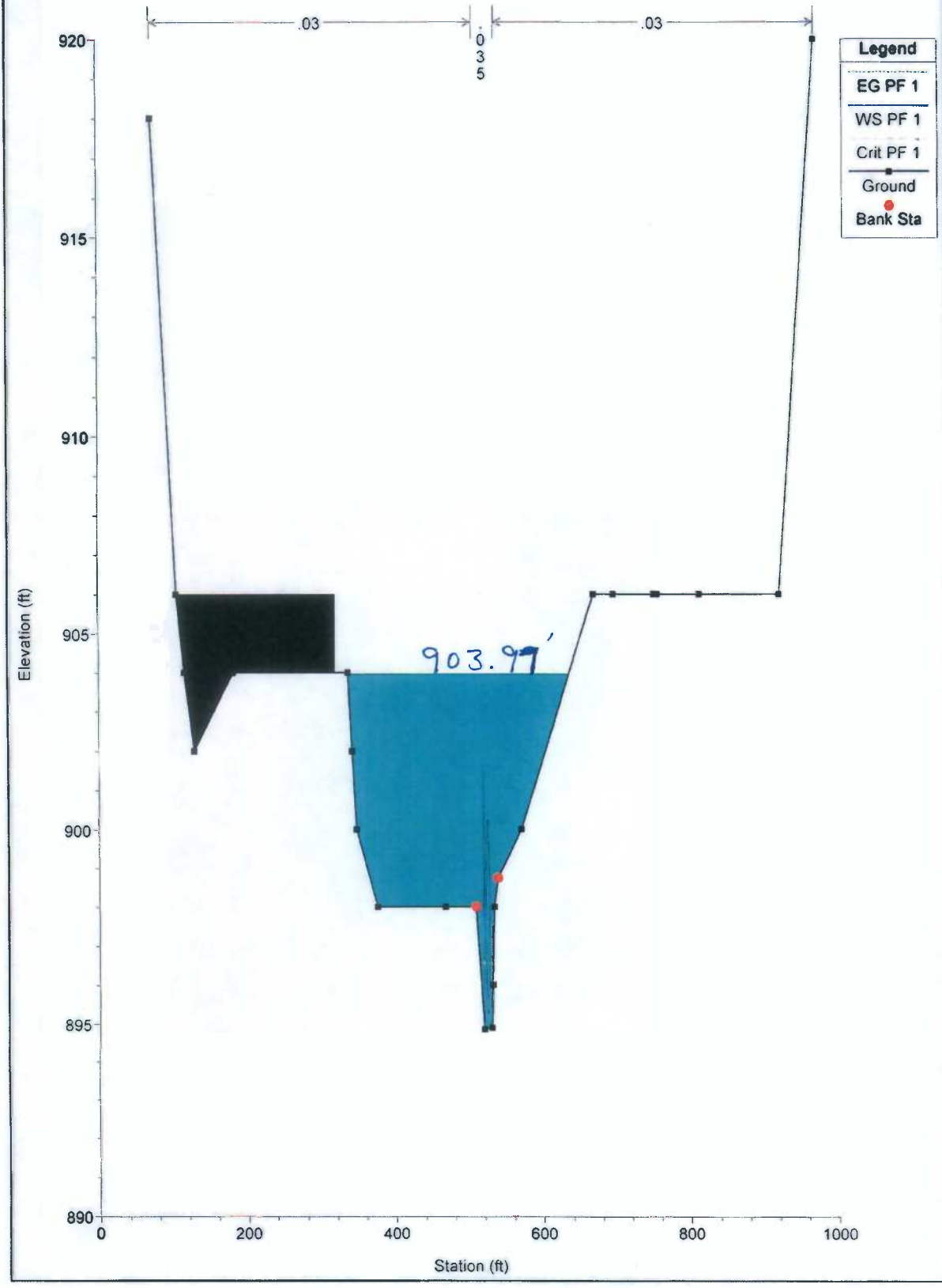


Susie Jane Entrance Road developed Plan: Plan 03 5/2/2013

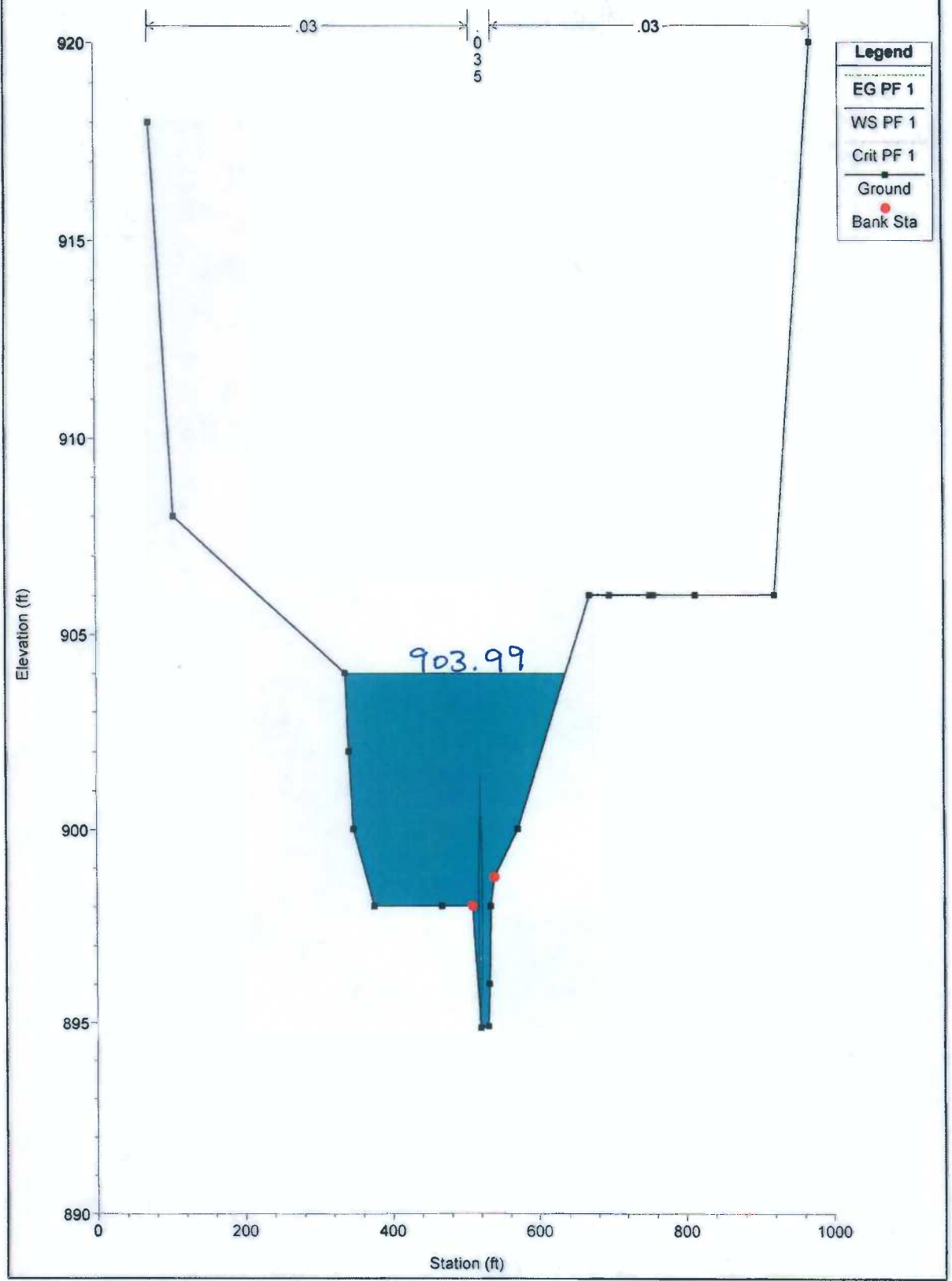
Station 5+53



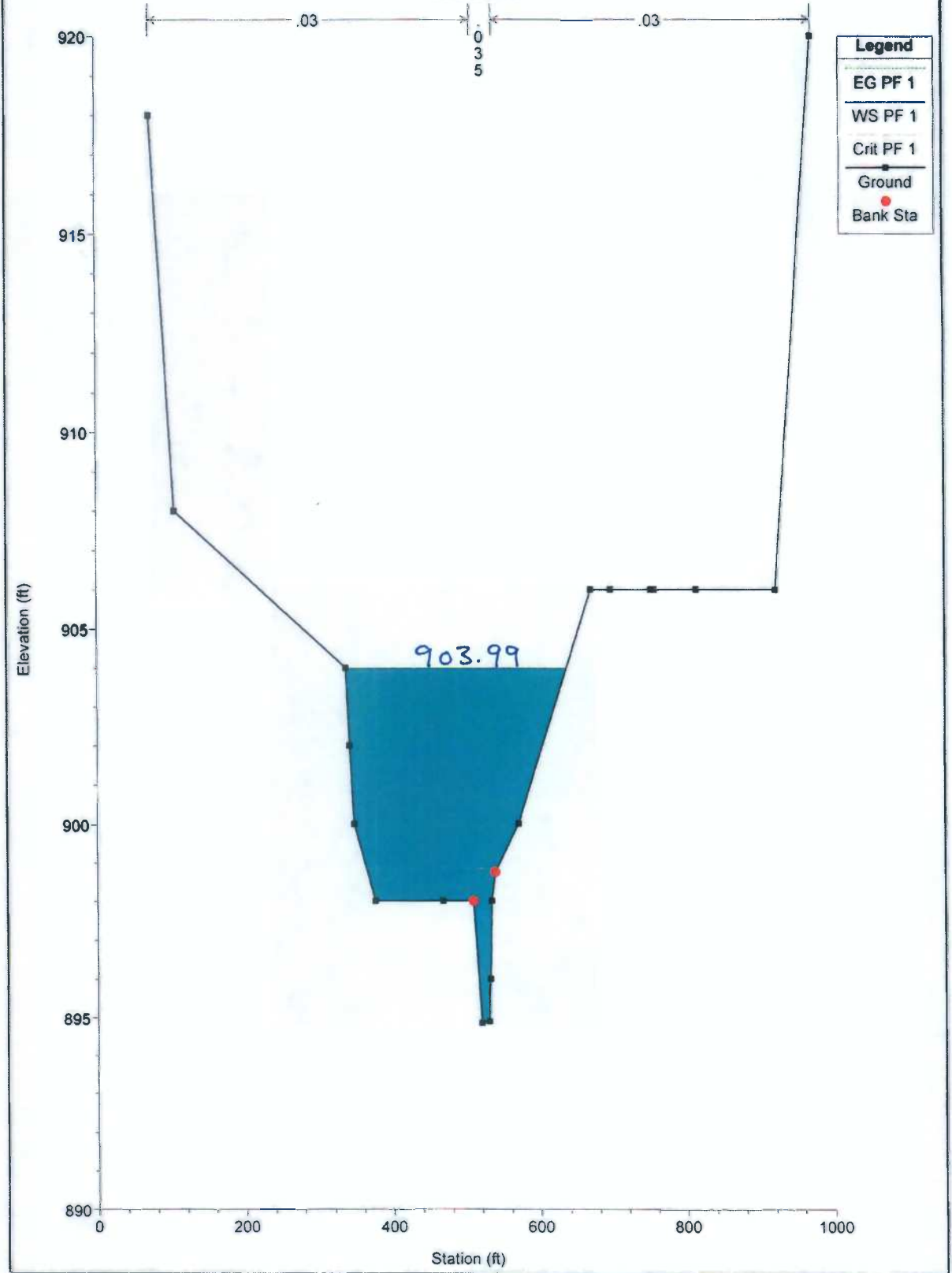
Susie Jane Entrance Road developed Plan: Plan 03 5/2/2013



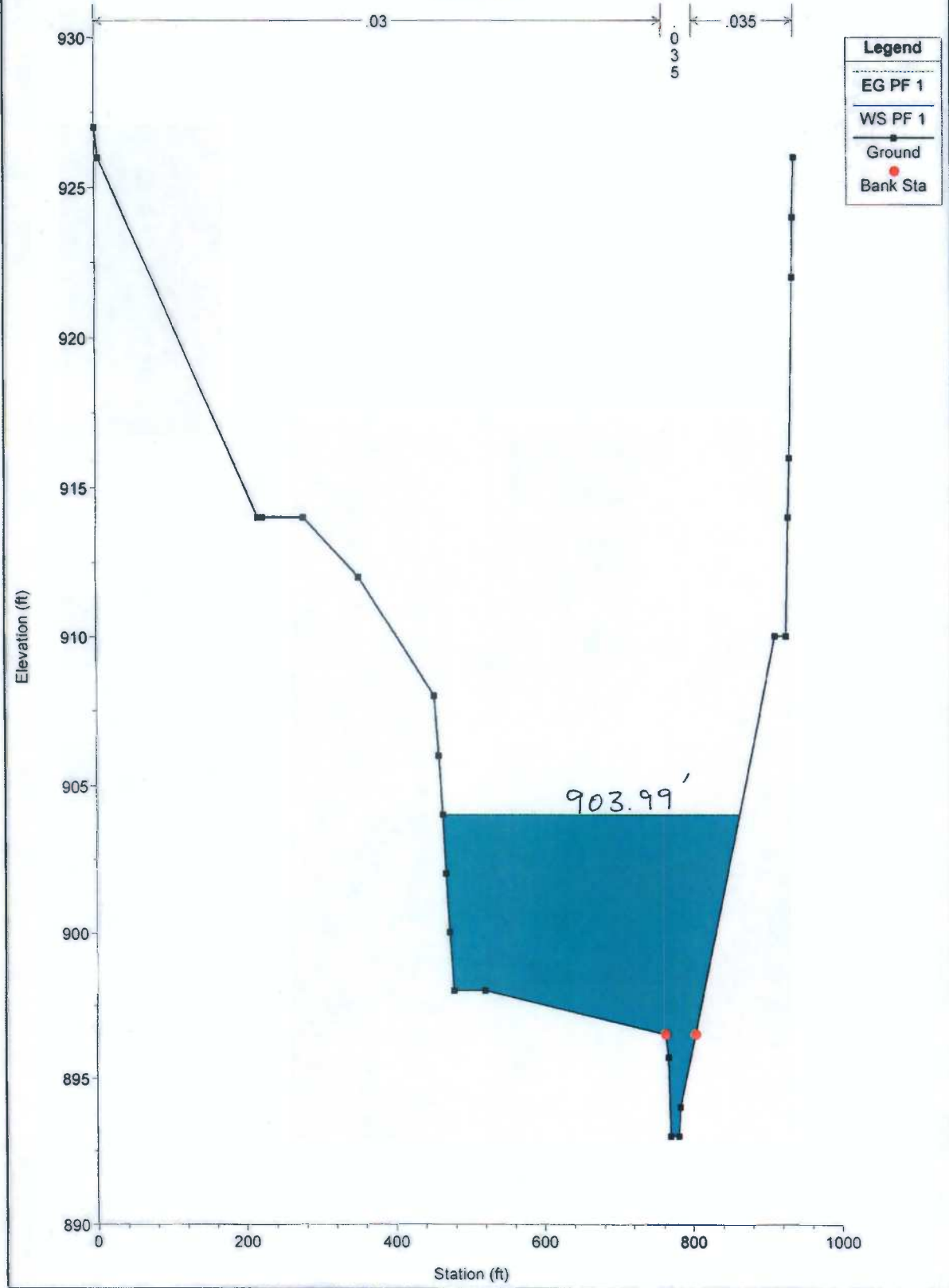
Susie Jane Entrance Road developed Plan: Plan 03 5/2/2013

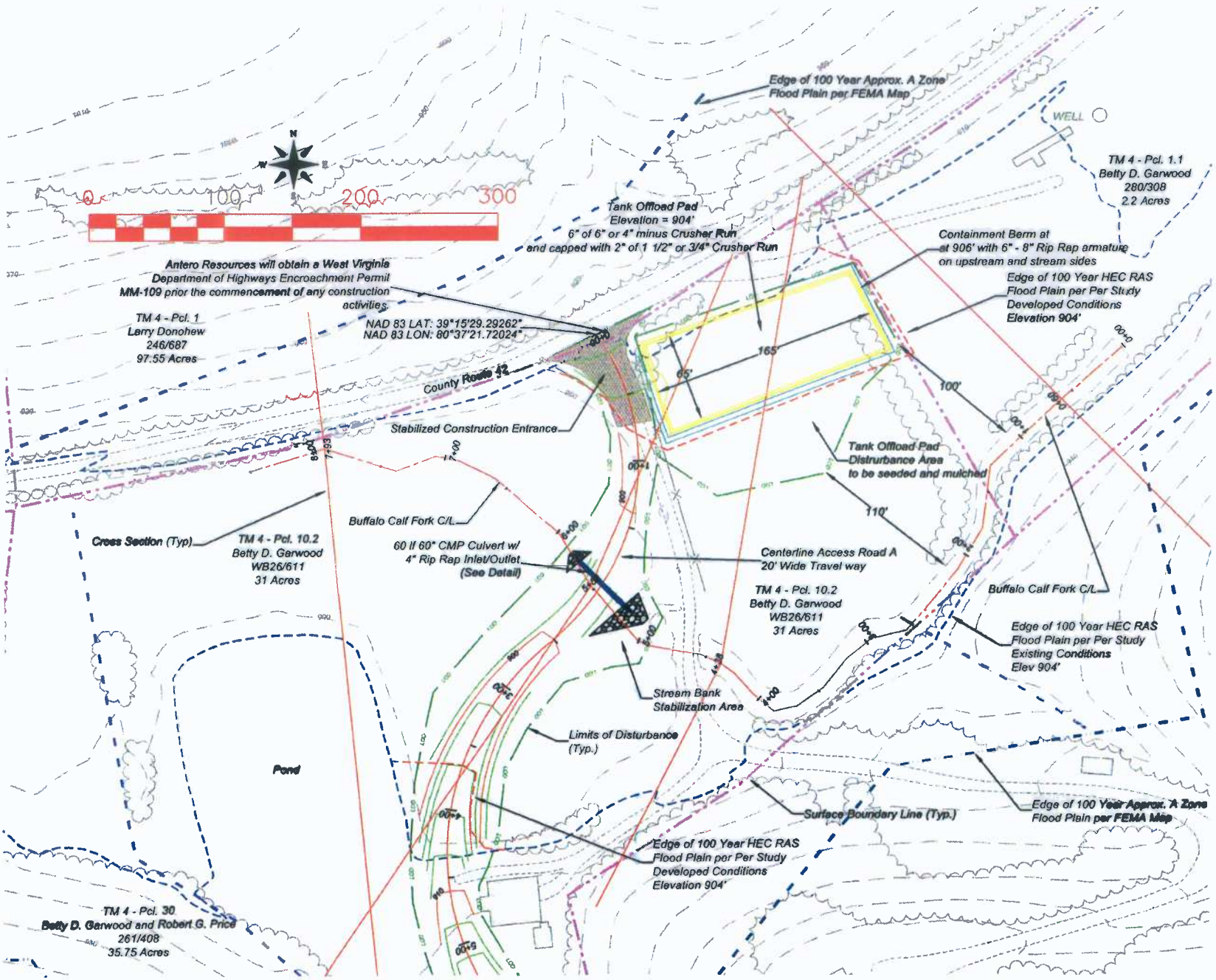


Susie Jane Entrance Road developed Plan: Plan 03 5/2/2013
Station 5+53

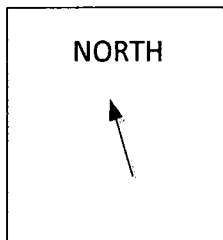


Susie Jane Entrance Road developed Plan: Plan 03 5/2/2013
Station 7+93





Enclosure 4



PREVAILING WIND
DIRECTION NNE



EXHIBIT 1
SUSIE JANE
PAD

EXHIBIT 1, PAGE 9

DRILLING LAYOUT/FLARE LINES/PREVAILING WINDS

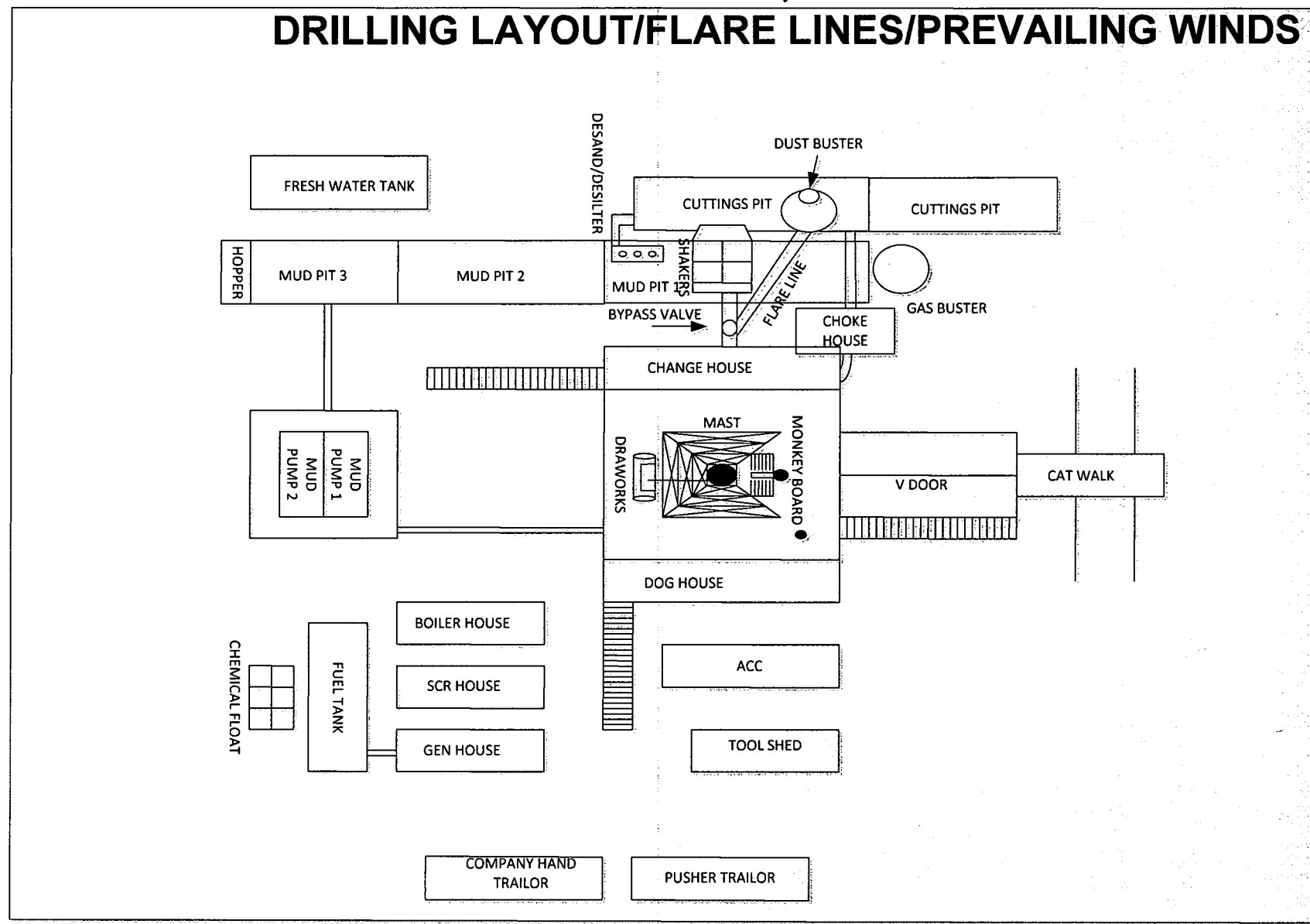
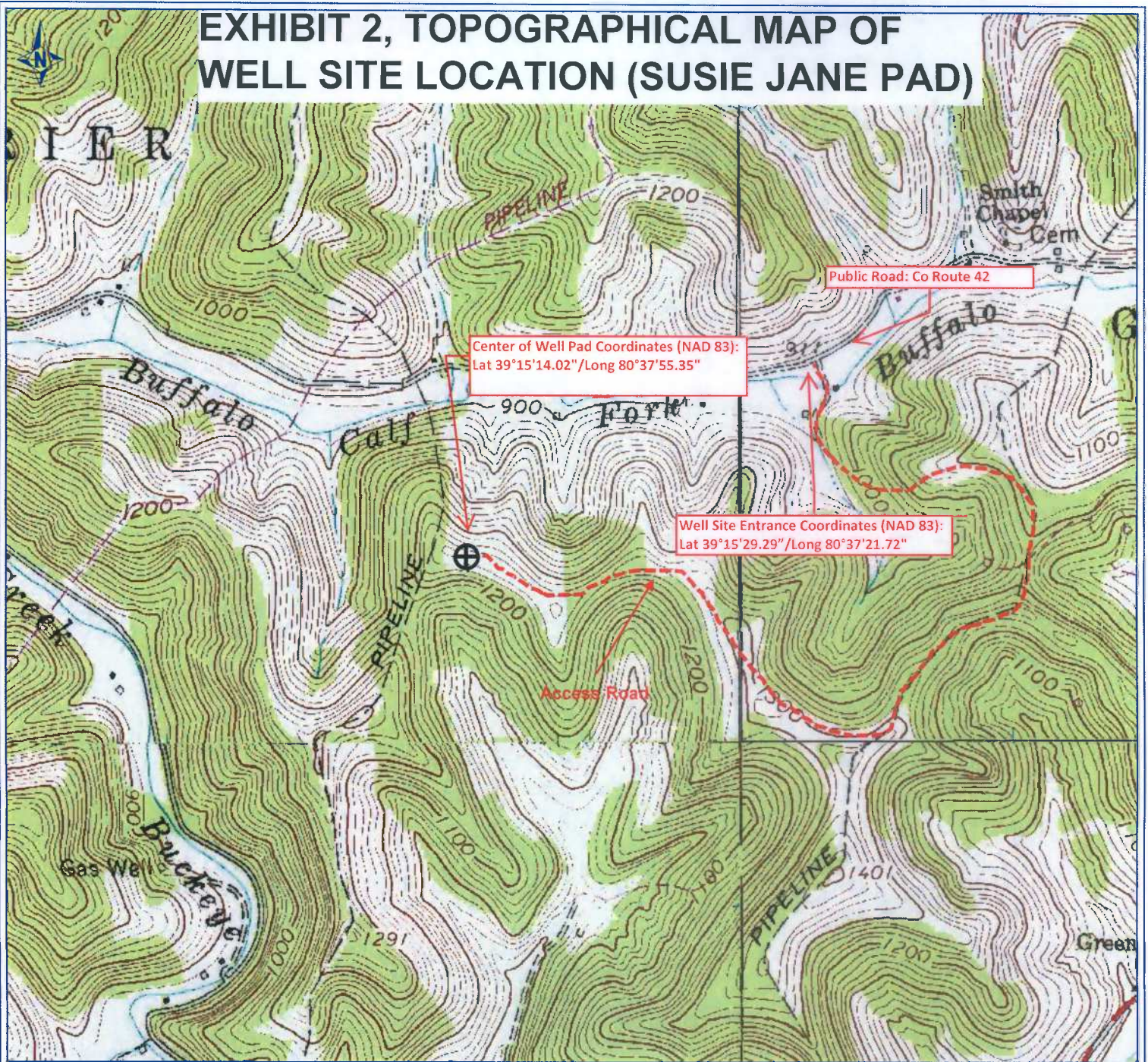


EXHIBIT 2, TOPOGRAPHICAL MAP OF WELL SITE LOCATION (SUSIE JANE PAD)



PETRA 4/25/2013 12:49:05 PM

Antero Resources Corp

APPALACHIAN BASIN

Susie Jane Pad

Doddridge County

REMARKS
 QUADRANGLE: NEW MILTON, SMITHBU
 WATERSHED: BUFFALO CALF FORK
 DISTRICT: GREENBRIER

By: ECM



EXHIBIT 3: LIST OF ALL SCHOOLS & PUBLIC FACILITIES WITHIN A ONE MILE RADIUS OF PROPOSED WELL SITE

District	Map	Parcel	Name	Address	City	St	Zip	Phone	Deed Book/Page	Pad
Greenbrier	4	3	Pleasant Hill Church	***No address listed***				***No phone number listed***	67/202	Susie Jane Pad

EXHIBIT 4.a to SSP- WW-2B FORM

WW - 6B
(3/13)

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

1) Well Operator: Antero Resources Appalachian Corporation 494488557 017-Doddridge Greenbrier Smithburg
Operator ID County District Quadrangle

2) Operator's Well Number: Kelley Unit 1H Well Pad Name: Susie Jane Pad

3 Elevation, current ground: -1269' Elevation, proposed post-construction: 1248'

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

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Marcellus Shale: 7400' TVD, Anticipated Thickness- 60 Feet, Associated Pressure- 3250#

7) Proposed Total Vertical Depth: 7400' TVD

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 13000' MD

10) Approximate Fresh Water Strata Depths: 38', 164', 173'

11) Method to Determine Fresh Water Depth: Offset well records. Depths have been adjusted according to surface elevations.

12) Approximate Saltwater Depths: None available

13) Approximate Coal Seam Depths: 291'

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No

16) Describe proposed well work: Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale

17) Describe fracturing/stimulating methods in detail:
Antero plans to pump slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 36.35 acres

19) Area to be disturbed for well pad only, less access road (acres): 3.55 acres

20)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	H-40	94#	90'	90'	CTS, 86 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/ 48#	305'	305'	CTS, 424 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2485'	2485'	CTS, 1012 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	13000'	13000'	3172 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

21) Describe centralizer placement for each casing string.

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the Insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

22) Describe all cement additives associated with each cement type.

Conductor: no additives, Class A cement.

Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

23) Proposed borehole conditioning procedures.

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

EXHIBIT 4.b to SSP- WW-2B FORM

WW - 6B
(3/13)

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

1) Well Operator: Antero Resources Appalachian Corporation 494488557 017-Doddridge Greenbrier Smithburg
Operator ID County District Quadrangle

2) Operator's Well Number: Trent Unit 1H Well Pad Name: Susie Jane Pad

3 Elevation, current ground: ~1269' Elevation, proposed post-construction: 1248'

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

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Marcellus Shale: 7400' TVD, Anticipated Thickness- 60 Feet, Associated Pressure- 3250#

7) Proposed Total Vertical Depth: 7400' TVD

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 12900' MD

10) Approximate Fresh Water Strata Depths: 38', 164', 173'

11) Method to Determine Fresh Water Depth: Offset well records. Depths have been adjusted according to surface elevations.

12) Approximate Saltwater Depths: None available

13) Approximate Coal Seam Depths: 291'

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No

16) Describe proposed well work: Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale

17) Describe fracturing/stimulating methods in detail:
Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 36.35 acres

19) Area to be disturbed for well pad only, less access road (acres): 3.55 acres

WW - 6B
(3/13)

20)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	H-40	94#	90'	90'	CTS, 86 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/ 48#	310'	310'	CTS, 431 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2490'	2490'	CTS, 1014 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	12900'	12900'	3143 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tall - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

21) Describe centralizer placement for each casing string.

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

22) Describe all cement additives associated with each cement type.

Conductor: no additives, Class A cement.

Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

23) Proposed borehole conditioning procedures.

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water. pump 48 bbls barite pill. pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

EXHIBIT 4.c to SSP- WW-2B FORM

WW - 6B
(3/13)

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

1) Well Operator: Antero Resources Appalachian Corporation 494488557 017-Doddridge Greenbrier Smithburg
Operator ID County District Quadrangle

2) Operator's Well Number: Kelley Unit 2H Well Pad Name: Susie Jane Pad

3 Elevation, current ground: ~1269' Elevation, proposed post-construction: 1248'

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

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Marcellus Shale: 7400' TVD. Anticipated Thickness- 60 Feet, Associated Pressure- 3250#

7) Proposed Total Vertical Depth: 7400' TVD

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 13200' MD

10) Approximate Fresh Water Strata Depths: 38', 164', 173'

11) Method to Determine Fresh Water Depth: Offset well records. Depths have been adjusted according to surface elevations.

12) Approximate Saltwater Depths: None available

13) Approximate Coal Seam Depths: 281'

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No

16) Describe proposed well work: Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale

17) Describe fracturing/stimulating methods in detail:
Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 98 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 36.35 acres

19) Area to be disturbed for well pad only, less access road (acres): 3.55 acres

20)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	H-40	94#	90'	90'	CTS, 86 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/ 48#	300'	300'	CTS, 417 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2480'	2480'	CTS, 1010 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	13200'	13200'	3223 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		6900'	
Liners							

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

21) Describe centralizer placement for each casing string.

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

22) Describe all cement additives associated with each cement type.

Conductor: no additives, Class A cement.

Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat

Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

23) Proposed borehole conditioning procedures.

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

Earl Ray Tomblin
Governor

Office of the District Engineer/Manager
District Four

PO Box 4220 (EXIT 121, I-79) * Clarksburg, WV 26302 * 304-842-1550

May 6, 2013

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

ANTERO RESOURCES APPALACHIAN
CORPORATION
175 D ELK CREEK ROAD
MOUNT CLARE, WV 26408

Dear Applicant:

Your approved copy of Permit Number 04-2013-0150 for a DP - Drilling Permit
permit type is enclosed. A description of the work is on the permit.

Please contact the District Four office:

Denise Roncone 304-842-1575

at least 48 hours in advance of the date you plan to begin work so arrangements can be made to inspect the work authorized
by the permit.

Failure to comply will result in cancellation of your permit.

A copy of this permit is to be available on the job at all times while the work is in progress for inspection by the
West Virginia Division of Highways' personnel.

Sincerely,

District Engineer / District Manager

Permit Supervisor

Initials: TC

Attachments: Yes

Enclosure: No

cc:0409 Charleston Permits

PERMIT TO ENTER UPON, UNDER, OVER OR ACROSS THE STATE ROADS OF THE STATE OF WEST VIRGINIA, AS PROVIDED FOR IN SECTION 6, ARTICLE 16, CHAPTER 17; SECTION 9, ARTICLE 16, CHAPTER 17; SECTION 8, ARTICLE 4, CHAPTER 17, WEST VIRGINIA CODE, 1931, AS AMENDED.

THIS PERMIT, Made this 8th day of February 20 13, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation hereinafter called DIVISION and Antero Resources Appalachian Corporation
Address: 1625 17th Street, Denver, CO 80202 Phone No: 303) 357-7310
hereinafter called APPLICANT.

WITNESSETH

In consideration of the hereinafter set out covenants and in accordance with Section 6, Article 16, Chapter 17; or Section 9, Article 16, Chapter 17; or Section 8, Article 4, Chapter 17, of the Official Code of West Virginia, 1931, as amended, and the rules and regulations promulgated thereunder, APPLICANT does hereby apply to enter

Route Type & No. SLS 42 DOH Project No. _____ (if applicable);
at 1.45 miles east of the intersection of SLS 42 and SLS 15 Mile Post 1.465
in Doddridge County, for the purposes hereinafter set forth and in accordance with the plans and specifications which are attached hereto and made a part hereof: To construct and maintain a existing heavy hauling approach for a well pad. Site distance is approximately 500 feet in both directions. The approach is located 1.45 miles east of the intersection of SLS 42 and SLS 15 on the south side of SLS 42. The Susie Jane pad.

APPLICANT further agrees to accept the conditions hereinafter set forth:

1. APPLICANT shall deposit with DIVISION the sum of \$ 1,000,000 in the form of an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the granting of this permit, including any expense incurred in restoring said highway to its original condition or the proper repair of any and all damages that may result within one (1) year from the date of the completion of said work.
2. APPLICANT agrees to reimburse DIVISION for inspection costs as follows:
 - A. For any inspection costs incurred under this permit.
 - B. At \$ _____ per linear foot for _____ feet of water line installed under this permit
 - C. At \$ _____ per linear foot for _____ feet of sewer line installed under this permit
3. APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply will be cause for cancellation of this permit.
4. APPLICANT agrees to protect its employees, equipment and users of the highway at all times in accordance with the current Division of Highways manual "Traffic Control For Street and Highway Construction and Maintenance Operations".
5. APPLICANT agrees to comply with all applicable state and federal laws in the performance of work under this permit.
6. Supplementary conditions cited on the reverse side of this permit are understood and agreed to be a part hereof.
7. The work authorized under this permit shall be completed on or before (Date): February 8, 2014

RECOMMENDED: *Alanie Lyone*
Title PERMIT SUPERVISOR

Engue Sio
Signature and Title of Applicant

BOND REQUIREMENT:
BOND NO. LPM 9062881 /DATE 2/21/2012
Attached On File
INSPECTION: Owner/Consultant
Full Time Part Time
Periodic Reimbursable No Cost

APPROVED: *Greg Pulley*
Title DISTRICT MANAGER
West Virginia Division of Highways

AUTHORIZATION NO: _____

CHAPTER 17 WEST VIRGINIA CODE, 1931

§17-4-8. Use of roadbed by railroad, telephone company, etc.

No railroad or electric or other railway shall be constructed upon the roadbed of any state road, except to cross the same, nor shall any person, firm or corporation enter upon or construct any works in or upon such road, or lay or maintain thereon or thereunder any drainage, sewer or water pipes, gas pipes, electric conduits or other pipes, nor shall any telephone, telegraph or electric line or power pole, or any other structure whatsoever, be erected upon, in or over any portion of a state road, except under such restrictions, conditions and regulations as may be prescribed by the state road commissioner. Whenever any railroad or electric or other railway, heretofore or hereafter constructed, shall cross any state road, it shall be required to keep its own roadbed, and the bed of the road or highway at such crossing, in proper repair, or else to construct and maintain an overhead or undergrade crossing, subject to the approval of the state road commissioner; and the tracks of such railroad or railway at grade crossings shall be so constructed as to give a safe and easy approach to and across the same, and when the construction of such approaches is made necessary by a change in the railroad grade at the grade crossing, the cost shall be upon the railway company.

§17-16-6. Permit by commission or county court for openings in or structures on public roads; franchises and easements of oil, etc., transportation companies.

No opening shall be made in any state or county-district road or highway, nor shall any structure be placed therein or thereover, nor shall any structure, which has been so placed, be changed or removed, except in accordance with a permit from the state road commission or county court, as the case may be. No road or highway shall be dug up for laying or placing pipes, sewers, poles or wires, or for other purposes, and no trees shall be planted or removed or obstructions placed thereon, without the written permit of the commission or county court, or its duly authorized agent, and then only in accordance with the regulations of the commission or court. The work shall be done under the supervision and to the satisfaction of the commission or court; and the entire expense of replacing the highway in as good condition as before shall be paid by the persons to whom the permit was given, or by whom the work was done: **Provided, however,** That nothing herein contained shall be so construed as to prevent any oil or gas company or person having a proper permit or franchise from transporting oil or gasoline along any of the public highways of this State, nor to give such company a franchise without paying to the landowners through whose lands such road passes the usual and customary compensation paid or to be paid to the landowners for such right of way. Any grant or franchise when made shall be construed to give to such company or person only the right to use the easement in such public road.

A violation of any provision of this section shall be a misdemeanor, and the person or corporation violating the same shall, upon conviction thereof, be fined not less than twenty-five nor more than one hundred dollars for each offense.

§17-16-9. Private driveways or approaches to roads; obstruction of ditches.

The owner or tenant of land fronting on any state road shall construct and keep in repair all approaches or driveways to and from the same, under the direction of the state road commission, and, likewise, the owner or tenant of land fronting on any county-district road shall construct and keep in repair approaches or driveways to and from the same, under the direction of the county road engineer, and it shall be unlawful for such owner or tenant to fill up any ditch, or place any material of any kind or character in any ditch, so as in any manner to obstruct or interfere with the purposes for which it was made.

SUPPLEMENTARY CONDITIONS

1. The person, firm or corporation to whom a permit is issued agrees to hold the State of West Virginia and DIVISION harmless on account of any damages to persons or property which may arise during the process of the work authorized by this permit or by reason thereof.
2. Applications for permission to perform work within highway rights of way shall be made on DIVISION'S standard permit form and shall be signed by the authorized representative of the person, firm or corporation applying.
3. The APPLICANT shall give detailed information concerning the work to be performed and the application must include a sketch sufficient to show the nature of the work performed.
4. APPLICANT, his agents, successor, heirs or assigns, contractors or any other person, firm or corporation working under APPLICANT'S real or apparent authority, shall perform the work in a manner satisfactory to DIVISION. Damage to the road resulting at any time from work authorized under this permit shall be repaired by APPLICANT. Unsatisfactory repairs may be corrected by DIVISION or its authorized agent and the cost thereof paid by APPLICANT.
5. DIVISION assumes no liability for damage to the proposed work by reason of construction or maintenance work on the road.
6. This permit is granted subject to removal of the authorized installation by APPLICANT at no cost to DIVISION when required for improvement of the road, and subject to all regulations now or hereafter adopted by DIVISION.
7. Utility installation shall be in accordance with the current manual, "Accommodation of Utilities on Highway Right of Way".
8. Driveways shall be in accordance with the current manual, "Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way."
9. DIVISION reserves the right to cancel this permit at any time, should APPLICANT fail to comply with the terms and conditions under which it is granted.
10. This permit is granted only insofar as the DIVISION has a right to do so.

0420130150

Addendum to Permit 04-2013-0150

This addendum, made this 17th day of April 2013, between the West Virginia Department of Transportation, Division of Highways, a statutory company hereinafter called the Division

and **Antero Resources**

Address: 1625 17th Street, Denver, CO 80202

Phone: 303 357-7310

hereinafter called APPLICANT.

The Applicant has filed with the DIVISION a written application for the following named route and location:

Doddridge County Route SLS 15, Miletus Rd @ MP 0.00 to 3.567; SLS 42, Buffalo Calf @ MP 0.00 to 1.465, Susie Jane Pad.

- After completion of the project, a joint review of roads will be filmed and evaluated to assure roads have been repaired to existing condition or better.
- No travel on School Bus Routes during their traversing operational hours on above mentioned route on bi-directional roadways where the lane widths are less than 10 ft.
- Pilot Vehicle required for all Oversized Loads on covered roads.
- Ditch lines to be maintained by applicant. FDR or equivalent required to stabilize road to uphold increased traffic and heavy and excess amount of loads. Centerline of roadway cannot be relocated without an agreement between WV DOH and Antero Resources.
- Repairs that will include "Hot Mix Asphalt" will have the following testing requirement: The supplier will be responsible for testing at the plant; Compaction testing will be as per WV DOH specifications.
- The Division of Highways shall have the right at all times to inspect the work, and if such inspections should reveal that the work is not done according to specifications, upon being so advised by the Division, ANTERO Resources agrees to take immediate corrective actions.

Applicant shall properly repair and maintain any and all damages that may result to said bridges, highways, shoulders and ditches from hauling activities of Applicant, its agents, contractors and employees, to as good

a condition prior to commencement of Applicant's operation or as when the permit was issued, as determined by the District Engineer/Manager of the DIVISION having jurisdiction over the work permitted, or pay damages therefore in the amount to sufficiently restore such bridges, roads, highways, shoulders and ditches to original condition; and shall reimburse the DIVISION for all inspection costs incurred by it in connection with said work and repairs of such damages and faithfully comply with all terms and conditions of said permits and save harmless the DIVISION and the State of West Virginia from all losses resulting from the conduct of said work and repairs; provided that all projects covered by this blanket bond have been restored to original or better condition; then this Bond shall be released; or otherwise will remain in full force and effect.

Bond Amount: \$1,000,000.00

Bond Number: LPM5062891 Date: 2/21/2012

Dist. Permit Number 0420130150

BOND Number LPM 9062891

OIL and GAS DATA INFORMATION SHEET

APPLICANT

Company Name ANTERO RESOURCES APPALCHIAN CORPORATION

Address 1625 17TH STREET

City DENVER ST CO Zip 80202

Contact Person Permit Burt Simcox Telephone (304) 282-9372

24/7 Road Maintenance Contact Aaron Kunzler Telephone _____ Cell (405) 227-8344

24/7 Backup Contact Dusty Wood Telephone _____ Cell (817) 771-1436

Drilling/Fracking will require _____ Less than 5000 Barrels of fluids _____ 5000/+

Site Location

Site Name Susie Jane approach Road Local Name Buffalo Calf Rte.# SLS 42

Approach location WGS 83 Decimal Format GPS 39.258136 W: 80.6227 County Doddridge

Location Description

On Route.# SLS 42 being 1.45 miles N S E W of Jct. of Rte.# SLS 42 and Rte.# SLS 15

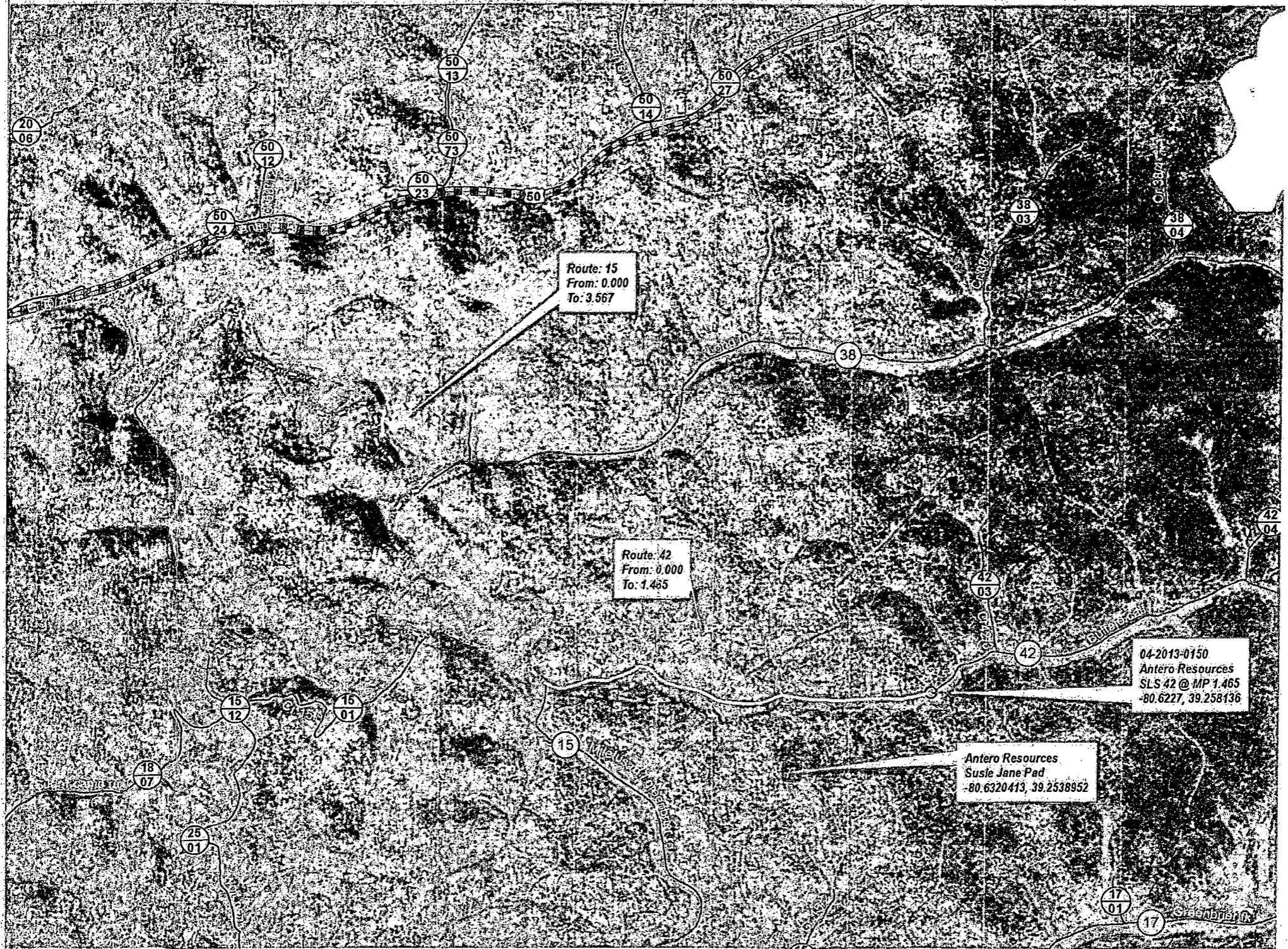
DOH USE ONLY HAULING ROUTE From US or WY Route (Attach Map)

Name & Rte.#	Beg MP	End MP	Surface Type	Condition
<u>Buffalo Calf 42</u>	<u>0</u>	<u>1.465</u>	<u>T+C</u>	<u>POOR</u>
<u>Miletus Rd 15</u>	<u>0</u>	<u>3.567</u>		

Well location WGS 83 Decimal Format GPS N: 39.2538952 W: 80.6320413

WV DEP Permit Number 47 - _____ - _____

STATE COUNTY PERMIT NUMBER

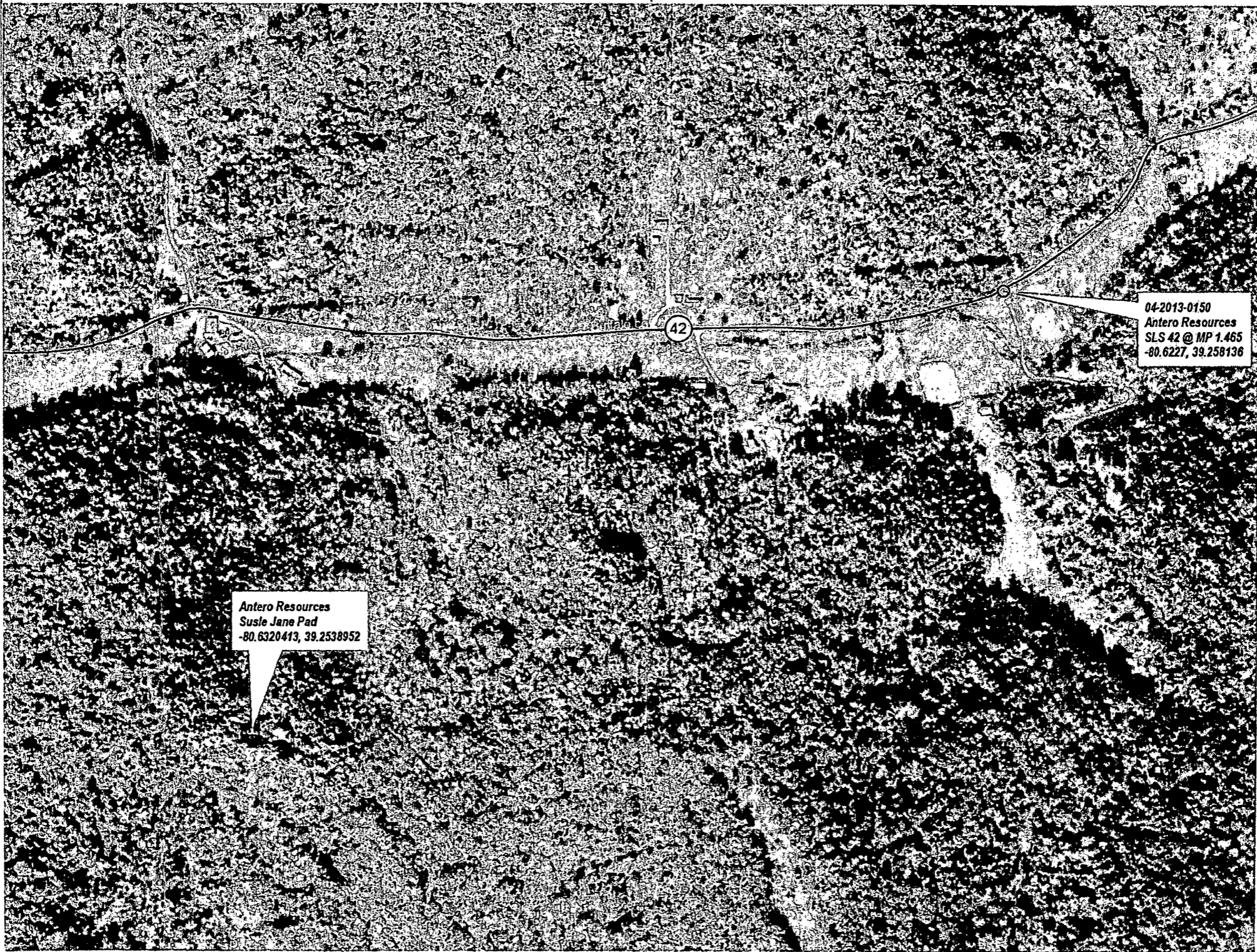


Route: 15
From: 0.000
To: 3.567

Route: 42
From: 0.000
To: 1.465

04-2013-0150
Antero Resources
SLS 42 @ MP 1.465
-80.6227, 39.258136

Antero Resources
Susie Jane Pad
-80.6320413, 39.2538952

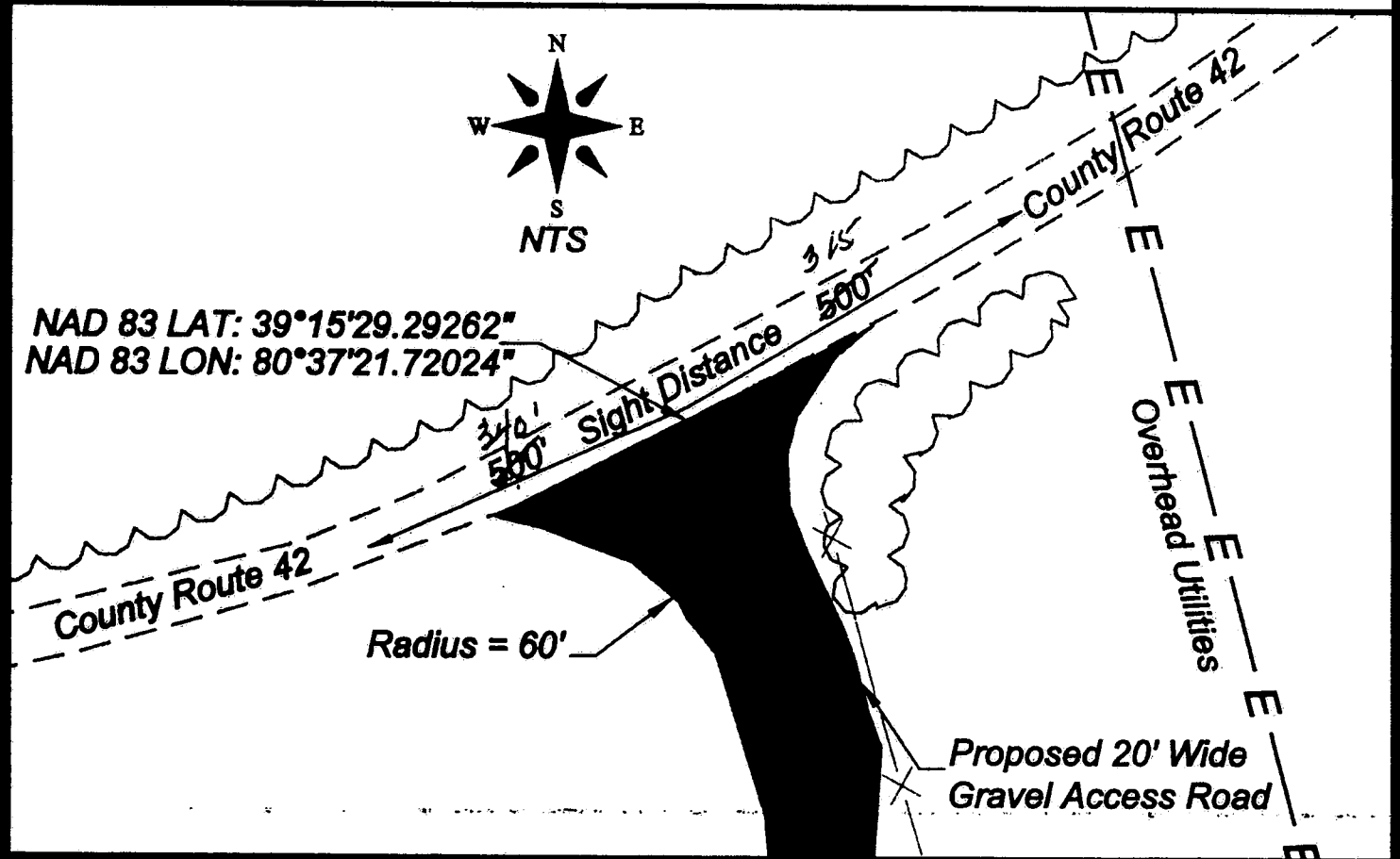


04-2013-0150
Antero Resources
SLS 42 @ MP 1.465
-80.6227, 39.258136

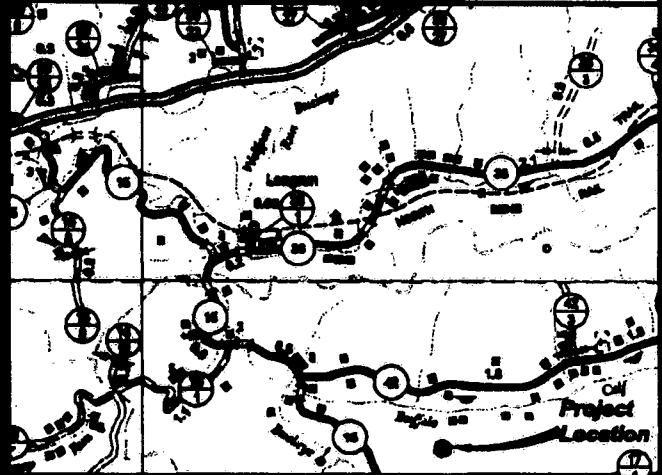
Antero Resources
Susie Jane Pad
-80.6320413, 39.2538952

0420130150

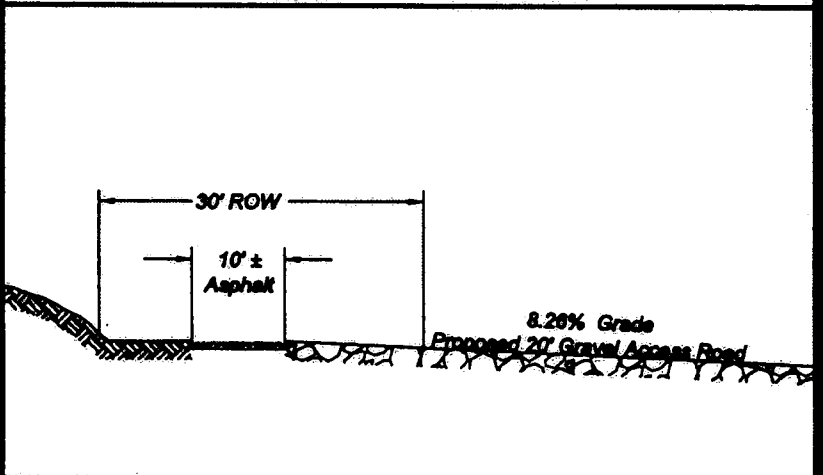
PLAN VIEW OF PROPOSED ROAD APPROACH



VICINITY MAP NTS



APPROACH PROFILE



Notes:

All specifications as set forth in the "Rules and Regulations for Construction of Highways on State Highway Right-of-Way" which are applicable will be stated out in full.

Location:

Proposed to construct and maintain a proposed 20 ft. commercial approach on the south side of County Rt. 42, 1.45 miles east of the intersection of County Rt. 42 & County Rt. 15 in Greenbrier District, Doddridge County, West Virginia.

DRAWN BY: C. Milam

DATE: September 25, 2016

PROJECT NO: 209-12

FIELD REVIEW: Aerial Photography

CADD FILE: 209-12 Draft June Rd App.

DRAWING NOT TO SCALE



SURVEYING AND MAPPING SERVICES PERFORMED BY:
ALLEGHENY SURVEYS, INC.

P.O. BOX 439
BIRCH RIVER, WV 26010
PH: (304) 848-8888
FAX: (304) 848-8888

1-800-483-8886

172 THOMPSON DRIVE
BRIDGEPORT, WV 26330
PH: (304) 848-8838
FAX: (304) 848-8837

PREPARED FOR:

ANTERO RESOURCES

1625 17th St.
Denver, CO 80202



0420130150



0420130150



0420130150



0420130150

Permit: 04-2013-0150

Addendum Continued

County: Dodd

Applicant: Antero

Conditions and Requirements

Repairs/Upgrades Necessary for Maintenance Permit

Well Pad: Susie Lane

Route No.	Route Name	Mile Post	Perform Ditching	Patch Potholes	Clean Culverts	Repair Base Failures	Slip Repair	Overlay Asphalt	Overlay S&C	Stone/Stabilize Roadway	Stone/Repair Shoulders	Bridge Concerns	Ongoing Roadway Maintained	Other	Approach Coordinates:		Comments
															N	W	
42 513	Bull Run	0.00															shot & chipped road in poor condition
7	1																Box culvert to be replaced
		1.465															Entrance
																	Check 4-12-716 Leonard Pad
																	video 8/24/2012 DVD 8/31/2012
																	Antero

RECOMMENDATIONS: Full Depth Rehabilitation of road to well pad for well pad

Above routes reviewed for necessary repairs and upgraded required for Maintenance Permit/Agreement.

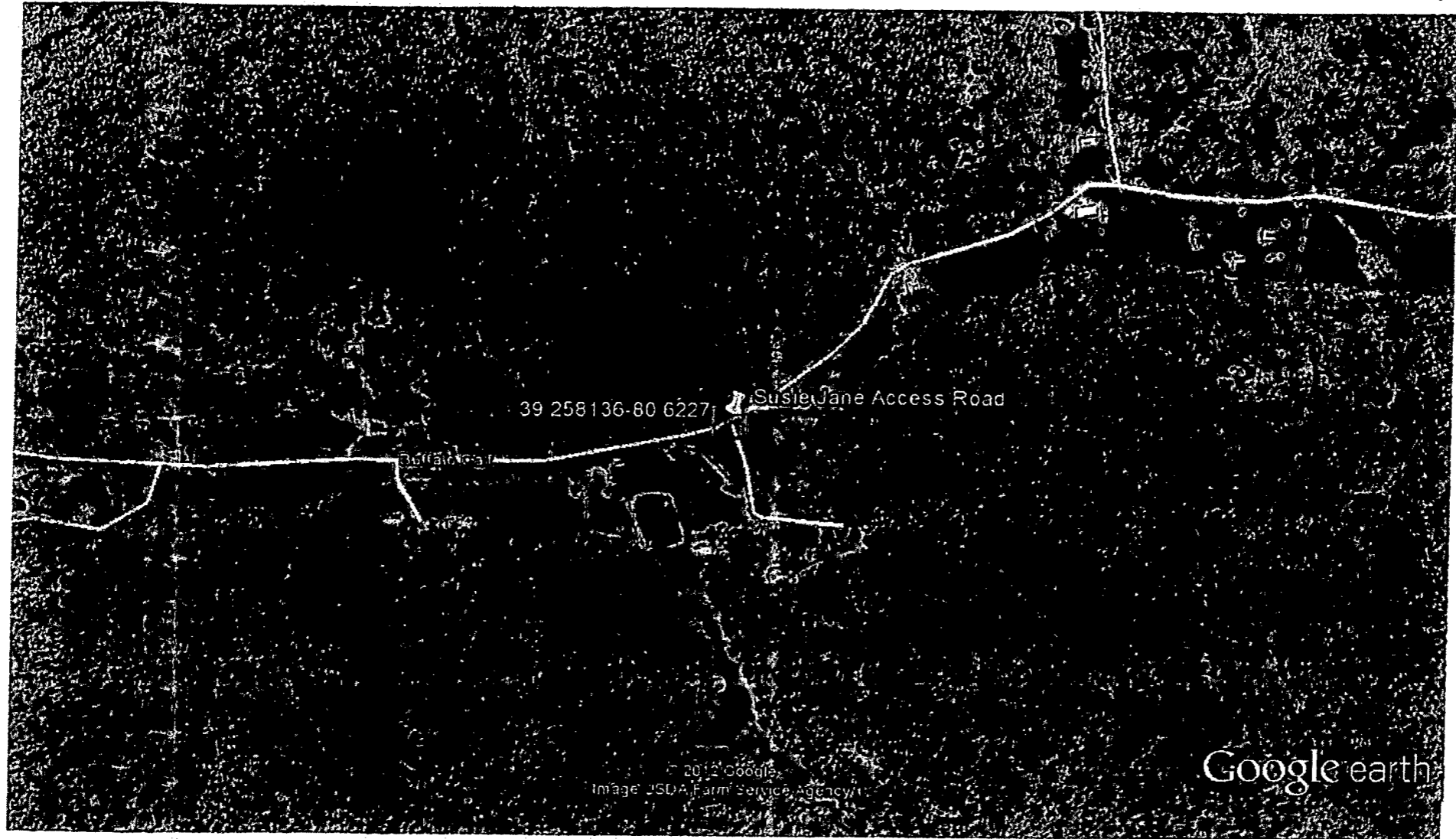
Engene Sincay
Applicant Representative

4-17-2013
Date

[Signature]
DOH Representative

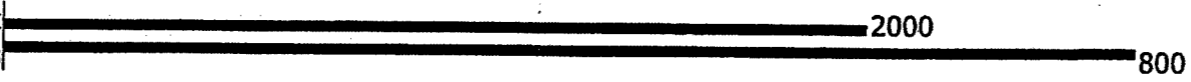
4/17/13
Date

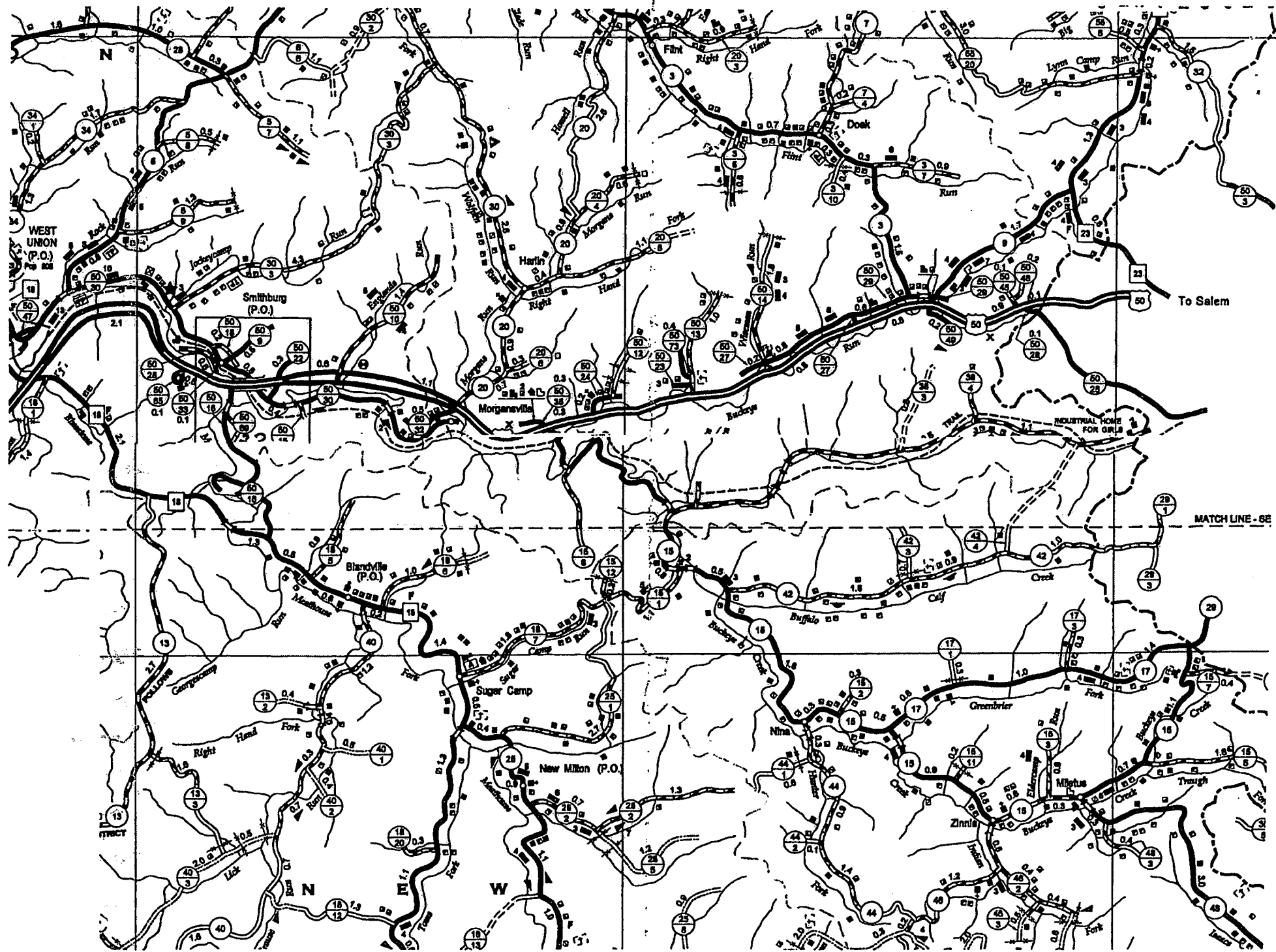
0420130150



Google earth

feet
meters





STATE OF WEST VIRGINIA,
COUNTY OF DODDRIDGE, TO WIT

I, Virginia Nicholson, Editor of THE
HERALD RECORD, a weekly newspaper
published regularly, in Doddridge County,
West Virginia, Do Hereby Certify Upon
Oath That the Accompanying Legal Notice
Entitled:

Doddridge Co. Floodplain
Permit - Antero

Permit #

13-021

was published in said paper for ... 2

successive weeks beginning with the issue
of July 2 2013 and
ending with the issue of

July 9 2013 and
that said notice contains 168

WORD SPACE at 115 cents a word
amounts to the sum of \$ 19.32

FOR FIRST PUBLICATION, SECOND
PUBLICATION IS 75% OF THE FIRST
PUBLICATION

\$ 14.49
and each publication thereafter

\$ 33.81 TOTAL

EDITOR

Karla J. Adams - Asst Editor

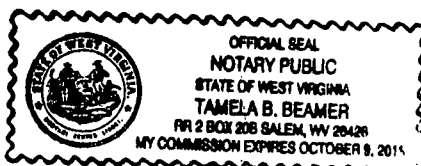
SWORN TO AND SUBSCRIBED

BEFORE ME THIS THE 11 DAY
OF July 2013

NOTARY PUBLIC

Tamela B. Beamer

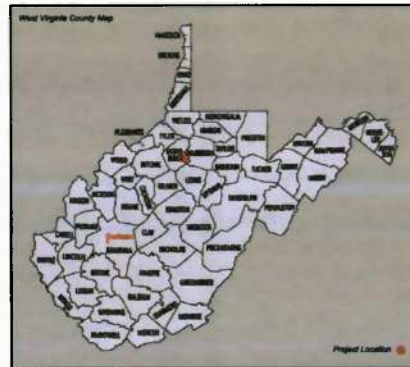
Legal Advertisement:
Doddridge County
Floodplain Permit Application
Please take notice that on the 25th day of June 2013,
ANTERO RESOURCES APPALACHIAN CORP. filed
an application for a Floodplain Permit to develop land
located about Betty D. Canwood, surface owner,
Greenbrier District Tax Map 4/10/10, 102 & 4/30, DB
261/408 & WB 26/611.
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 July 02,
2013.
Delivered to the
Clerk of the County Court
118 E. Court Street, West Union, WV 26450
Beth A. Rogers, Doddridge County Clerk
Dan Wellings, Doddridge County Flood Plain Manager
47-2-2xb



SUSIE JANE PAD

SITE DESIGN, CONSTRUCTION PLAN, & EROSION & SEDIMENT CONTROL PLANS

ANTERO RESOURCES APPALACHIAN CORPORATION



West Virginia State Plane Coordinate System
North Zone, NAD83
Elevations Based on NAVD88
Established By Survey Grade GPS & OPUS Post-Processing



Well Table					
Left Blank Intentionally					
Prop. Well Tard Unit 1H WV-NAD83 N: 27802.25 WV-NAD83 E: 164795.84 LAT NAD83: 38.2539154 LON NAD83: -80.821597	Prop. Well Kelley Unit 1H WV-NAD83 N: 27817.34 WV-NAD83 E: 1647916.20 LAT NAD83: 38.2539181 LON NAD83: -80.821251	Prop. Well Kelley Unit 2H WV-NAD83 N: 27816.29 WV-NAD83 E: 1647926.73 LAT NAD83: 38.2539082 LON NAD83: -80.820911	Prop. Well Chumley Unit 1H WV-NAD83 N: 27816.82 WV-NAD83 E: 1647936.00 LAT NAD83: 38.2539092 LON NAD83: -80.820976	Prop. Well Chumley Unit 2H WV-NAD83 N: 27816.58 WV-NAD83 E: 1647944.38 LAT NAD83: 38.2539112 LON NAD83: -80.820928	Prop. Well Chumley Unit 3H WV-NAD83 N: 27816.58 WV-NAD83 E: 1647944.38 LAT NAD83: 38.2539112 LON NAD83: -80.820928
Prop. Well Gus Unit 1H WV-NAD83 N: 27804.23 WV-NAD83 E: 1647954.13 LAT NAD83: 38.2539214 LON NAD83: -80.8219010	Prop. Well Gus Unit 2H WV-NAD83 N: 27803.88 WV-NAD83 E: 1647953.88 LAT NAD83: 38.2539204 LON NAD83: -80.821874	Prop. Well Robison Unit 1H WV-NAD83 N: 27807.72 WV-NAD83 E: 1647973.53 LAT NAD83: 38.2539627 LON NAD83: -80.8219239	Prop. Well Robison Unit 2H WV-NAD83 N: 27804.47 WV-NAD83 E: 1647962.49 LAT NAD83: 38.2539098 LON NAD83: -80.8219004	Prop. Well Denver Unit 1H WV-NAD83 N: 27801.22 WV-NAD83 E: 1647951.98 LAT NAD83: 38.2538480 LON NAD83: -80.8218686	Prop. Well Denver Unit 2H WV-NAD83 N: 27801.98 WV-NAD83 E: 1647951.40 LAT NAD83: 38.2538394 LON NAD83: -80.8218233

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Antero Resources

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304-257-4818 Off. 304-669-0365 Cell

Well Location Restrictions:

All Pad and Fracture Pit construction complies with the following restrictions.

- * 250' from an existing well or developed spring used for human or domestic animals.
- * 625' from occupied dwelling or barn greater than 2500 SF used for poultry or dairy measured from the center of the pad.
- * 100' from edge of disturbance to wetlands, perennial streams, natural or artificial lake, pond or reservoir.
- * 300' from edge of disturbance to a naturally reproducing trout stream.
- * 1000' of a surface or ground water intake to a public water supply.

SMITHBURG / SALEM QUAD

SITE LOCATIONS	
NAD 83	
Begin Access Road (UTM Meters)	N=4345490.77 m E=532552.07 m
Center of Pad (UTM Meters)	N=4344771.50 m E=532374.98 m
Center of Pad (UTM Meters)	N=4345016.73 m E=531748.06 m
LATITUDE LONGITUDE	
Begin Access Road	39.2581368 -80.8227001
Center of Pad	39.2518623 -80.8247871
Center of Pad	39.2538962 -80.8204113

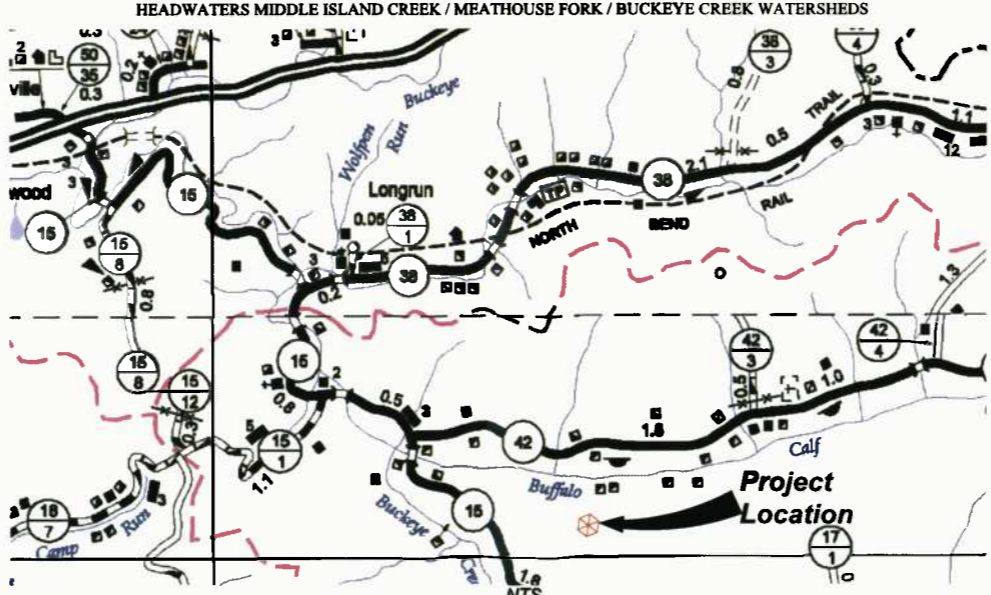
Design Certification

The drawings, construction notes, and reference diagrams attached hereto have been prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection, Office of Oil and Gas §35-4-21. The information reflects a temporary frac pit pond. The computed above grade storage volume is less than 15 acre feet, filling method pumped, pond is lined.

LOD Area (ac)	
Road A (8,331 ft)	21.35
Frac Pit	3.86
Drill Pad	3.55
Spill Pad A	0.89
Spill Pad B	0.50
Spill Pad C	1.33
Spill Pad D	1.80
Spill Pad E	1.48
Tank Offload Pad	0.48
Truck Queue / Turnaround	1.11
Total Affected Area	36.35
Total Wooded Acres Disturbed	31.76
Total Linear Feet of Access Road	8,331

Perennial Stream Impact (Linear feet)				
Stream and Impact Class	Current (LF)	Inlet/Outlet Structures (LF)	Contrib. Disturb. To LOD (LF)	Total Impact (LF)
OPW-001 (ROA)	60	0	15	75

FLOODPLAIN CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN:	YES
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	YES
HEC-RAS STUDY COMPLETED:	YES
FLOODPLAIN SHOWN ON DRAWINGS:	YES
FIRM MAP NUMBER(S) FOR SITE:	54017C0165C
ACREAGES OF CONSTRUCTION IN FLOODPLAIN:	1.04 Acres



- DRAWING INDEX**
- 1 COVER SHEET/LOCATION MAP
 - 2 SCHEDULE OF QUANTITIES
 - 3 CONSTRUCTION, EROSION, & SEDIMENT CONTROL NOTES
 - 4 EXISTING CONDITIONS
 - 5 PLAN SHEET INDEX
 - 6-13 SITE PLANS
 - 14 DRILL PAD BASELINE PROFILE & CROSS SECTIONS
 - 15 FRACTURE PIT BASELINE PROFILE & CROSS SECTIONS
 - 16-17 ACCESS ROAD A CROSS SECTIONS
 - 18 DETAILS
 - 19 RECLAMATION PLAN

DATE	REVISIONS
3-7-13	Revised Well Layout
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards
5-7-13	Updated Per Floodplain Ordinance
6-18-13	Updated Per New Antero / DEP Standards



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ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR
ANTERO RESOURCES
APPALACHIAN CORP

COVER SHEET/LOCATION MAP

SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 9/25/12
Scale: N/A
Designed By: CKW/CKM
File No. Antero 209-12
Page 1 of 19

MISS Utility of West Virginia
1-800-245-4848

West Virginia State Law
(Section XIV: Chapter 24-C)
Requires that you call two
business days before you dig in
the state of West Virginia.
IT'S THE LAW!!

**Know what's below.
Call before you dig.**

SCHEDULE OF QUANTITIES

Susie Jane Pad			
DESCRIPTION	QUANTITY	UNIT	FINAL PRICE
CLEARING & GRUBBING, EROSION & SEDIMENT CONTROLS			
MOBILIZATION	1	EA	\$0.00
CONSTRUCTION ENTRANCE	1	EA	\$0.00
CLEARING & GRUBBING	36.35	AC	\$0.00
TREE REMOVAL	31.76	AC	\$0.00
8" COMPOST FILTER SOCK	0	LF	\$0.00
12" COMPOST FILTER SOCK	5,500	LF	\$0.00
18" COMPOST FILTER SOCK	925	LF	\$0.00
24" COMPOST FILTER SOCK	1,125	LF	\$0.00
32" COMPOST FILTER SOCK	4,650	LF	\$0.00
JUTE MATTING - SLOPE MATTING	32,750	SY	\$0.00
SUPER SILT FENCE	100	LF	\$0.00
9" STRAW WATTLES	8,500	LF	\$0.00
TOTAL			\$0.00
RETAINING STRUCTURES			
CONCRETE BIN BLOCKS (2' x 2' x 6')	175	EA	\$0.00
GABION CAGES WITH STONE (3' x 3' x 6')	0	EA	\$0.00
HORIZONTAL REINFORCEMENT (INSTALL TENSAR TX190 GEOGRID or EQUIVALENT)	0	SY	\$0.00
TOTAL			\$0.00
SITE			
DRILL PAD EXCAVATION	46,642	CY	\$0.00
ACCESS ROADS EXCAVATION	60,053	CY	\$0.00
TANK PAD and/or FRAC PIT EXCAVATION	19,686	CY	\$0.00
OFFLOAD PAD EXCAVATION	225	CY	\$0.00
SPOIL PAD EXCAVATION	127	CY	\$0.00
TRUCK QUEUE / TURNAROUND EXCAVATION	1,018	CY	\$0.00
DRILL PAD PARKING AREA EXCAVATION	0	CY	\$0.00
TOPSOIL	19,000	CY	\$0.00
DIVERSION DITCH	0	LF	\$0.00
ROADSIDE DITCH	8,100	LF	\$0.00
TOTAL			\$0.00
SUMPS (5) PER ANTERO RESOURCES STANDARD DETAIL			
INSTALL 102" x 78" x 44" PRE CAST SUMP	4	EA	\$0.00
VALVE BOX HDPE PIPE (MINIMUM 12" DIAMETER x 48" HEIGHT)	4	EA	\$0.00
4" PVC CONNECTIVE PIPE (ANTERO SUMP DRAIN DETAIL)	120	LF	\$0.00
TOTAL			\$0.00
AGGREGATE SURFACING, SPREADING, COMPACTION, and/or INSTALLATION			
DRILL PAD AASHTO #1 (8" THICK)	4,550	TON	\$0.00
DRILL PAD 1 1/2" or 3/4" CRUSHER RUN STONE (2" THICK)	1,150	TON	\$0.00
DRILL PAD GEOTEXTILE FABRIC (US 200)	9,100	SY	\$0.00
ACCESS ROADS 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	9,775	TON	\$0.00
ACCESS ROADS 1 1/2" OR 3/4" CRUSHER RUN STONE (2" THICK)	2,450	TON	\$0.00
ACCESS ROADS GEOTEXTILE FABRIC (US 200)	20,400	SY	\$0.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	20,400	SY	\$0.00
OFFLOAD PAD/TRUCK QUEUE/TURNAROUND 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	2,100	TON	\$0.00
OFFLOAD PAD/TRUCK QUEUE/TURNAROUND 1 1/2" or 3/4" CRUSHER RUN AGGREGATE (2" THICK)	525	TON	\$0.00
OFFLOAD PAD/TRUCK QUEUE/TURNAROUND GEOTEXTILE FABRIC (US 200)	4,375	SY	\$0.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	4,375	SY	\$0.00

DESCRIPTION	QUANTITY	UNIT	FINAL PRICE
DRILL PAD PARKING AREA 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	0	TON	\$0.00
DRILL PAD PARKING AREA 1 1/2" or 3/4" CRUSHER RUN AGGREGATE (2" THICK)	0	TON	\$0.00
DRILL PAD PARKING AREA GEOTEXTILE FABRIC (US 200)	0	SY	\$0.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	0	SY	\$0.00
TANK PAD 6" OR 4" MINUS CRUSHER RUN AGGREGATE (8" THICK)	0	TON	\$0.00
TANK PAD 1 1/2" or 3/4" CRUSHER RUN AGGREGATE (2" THICK)	0	TON	\$0.00
TANK PAD GEOTEXTILE FABRIC (US 200)	0	SY	\$0.00
*INSTALL TENSAR TX190 GEOGRID or EQUIVALENT	0	SY	\$0.00
TOTAL			\$0.00
ROAD CULVERTS			
15" HDPE	560	LF	\$0.00
18" HDPE	0	LF	\$0.00
24" HDPE	0	LF	\$0.00
30" HDPE	0	LF	\$0.00
36" HDPE	0	LF	\$0.00
42" HDPE	0	LF	\$0.00
48" HDPE	0	LF	\$0.00
60" HDPE	60	LF	\$0.00
R4 RIP RAP (INLETS/OUTLETS)	250	TON	\$0.00
AASHTO #1 STONE (DITCH CHECKS)	18	TON	\$0.00
DITCH LINING - (ACCESS ROAD) JUTE MATTING	1,500	SY	\$0.00
DITCH LINING - (ACCESS ROAD) SYNTHETIC MATTING (TRM)	3,050	SY	\$0.00
DIVERSION DITCH LINING - SYNTHETIC MATTING (TRM)	0	SY	\$0.00
TOTAL			\$0.00
FENCING/GATES			
4 FT WOVEN WIRE FARM FENCE w/ MINIMUM 10 FT POST SPACING (WOODEN and/or "T" POST)	1,175	LF	\$0.00
36 FT DOUBLE GATE	1	EA	\$0.00
TOTAL			\$0.00
SEEDING			
SITE SEEDING (LIME, FERTILIZER, SEEDING, AND HYDRO-MULCH w/ TACK (HYC-2 OR EQUAL))	21	AC	\$0.00
TOTAL			\$0.00
UNFORESEEN SITE CONDITIONS			
*ROCK CLAUSE - BLASTING	0.0	CY	\$0.00
*ROCK CLAUSE - HOE RAMMING	0.0	CY	\$0.00
*FRENCH DRAINS	0.0	FT	\$0.00
*ORANGE SAFETY FENCE w/ "T" POST (10 FT CENTERS) - WETLAND PROTECTION	0.0	LF	\$0.00
*STEEL PANELS w/ "T" POST (10 FT CENTERS) - WETLAND PROTECTION	0.0	LF	\$0.00
*SILT FENCE	0.0	LF	\$0.00
*TEMPORARY SEEDING	0.0	AC	\$0.00
*CONSTRUCTION STAKEOUT	0.0	HOURL	\$0.00
*JUTE MATTING - SLOPE MATTING	0.0	SY	\$0.00
TOTAL			\$0.00
GRAND TOTAL			\$0.00

The quantities provided are an estimate for consideration. The quantities shown may be greater or less than actually excavated. The engineer is not responsible for variances from the estimated quantities and does not certify to their accuracy.

Elevation	Barrels	Gallons	Acre-Ft
1282 (Bottom)	0	0	0.000
1283	1,867	78,425	0.241
1284	4,471	187,796	0.576
1285	7,650	321,305	0.986
1286	11,349	476,664	1.463
1287	15,450	648,905	1.992
1288	19,886	835,220	2.563
1289	24,684	1,036,712	3.182
1290	29,845	1,253,497	3.847
1291	35,338	1,484,212	4.555
1292	41,164	1,728,883	5.306
1293	47,403	1,990,944	6.110
1294	54,011	2,268,462	6.962
1295	61,058	2,564,438	7.870
1296	68,611	2,881,667	8.844
1297	76,740	3,223,069	9.892
1298 (Pit Capacity)	85,286	3,582,029	10.993
1299	94,075	3,951,147	12.126
1300 (Top of Berm)	102,960	4,324,300	13.271

* Highlighted Area Is Incised Volume
* Pit Liner Materials: 60 MIL Liner and 10oz Felt Under-Layment
~ 62,000 SF Each

Susie Jane Pad Quantities						
Description	Cut (CY)	Fill (CY)	Spoil (CY)	Borrow (CY)	Max. Slope	Length Of Slope
Road A	60,053	56,260	3,793	n/a	12.80%	500 ft
Frac Pit	19,686	17,675	2,011	n/a	n/a	n/a
Drill Pad	46,642	10,119	36,523	n/a	n/a	n/a
Spoil Pad A	0	6,596	n/a	6,596	n/a	n/a
Spoil Pad B	0	2,000	n/a	2,000	n/a	n/a
Spoil Pad C	127	2,035	n/a	1,908	n/a	n/a
Spoil Pad D	0	18,354	n/a	18,354	n/a	n/a
Spoil Pad E	0	8,653	n/a	8,653	n/a	n/a
Tank Offload Pad	225	900	n/a	675	n/a	n/a
Truck Queue / Turnaround	1,018	9,058	n/a	8,040	n/a	n/a
Totals	127,751	131,650	42,327	46,226	n/a	n/a
Total Spoil (CY) =		-3,899	(Excess Spoil Capacity)			

The earthwork quantities provided are an estimate for consideration. The quantities shown may be greater or less than actually excavated. The engineer is not responsible for variances from the estimated quantities and does not certify to their accuracy.

EARTHWORK & CAPACITY REPORTS

Access Road A Earthwork Report

Processing 0+00.000 to 83+31.000
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00
Total Cut: 1,621,453.385 C.F., 600,533.829 C.Y.
Total Fill: 1,519,031.690 C.F., 562,604.433 C.Y.
Cut to Fill Ratio: 1.07

Drill Pad Earthwork Report

Top of pad elevation: 1248.0000
Cut slope percent grade: 66.67, slope ratio: 1.50
Fill slope percent grade: 50.00, slope ratio: 2.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut: 1,259,346.5 C.F., 48,642.48 C.Y.
Total fill: 373,237.5 C.F., 10,119.81 C.Y.
Balance Export: 886,109.0 C.F., 38,522.66 C.Y.
Area: 123359.4 Sq.Ft., 2.832 Acres

Tank Offload Pad Earthwork Report

Top of pad elevation: 804.0000
Cut slope percent grade: 66.67, slope ratio: 1.50
Fill slope percent grade: 50.00, slope ratio: 2.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut: 6,099.9 C.F., 225.92 C.Y.
Total fill: 24,300 C.F., 900 C.Y.
Balance Import: 18,225 C.F., 675 C.Y.
Area: 11620.0 Sq.Ft., 0.267 Acres

Frac Pit Earthwork & Capacity Report

Top of dam elevation: 1300.0000
Bottom of pond elevation: 1282.0000
Top of dam width: 15.0000
Cut slope percent grade: 66.67, slope ratio: 1.50
Fill slope percent grade: 50.00, slope ratio: 2.00
Interior slope percent grade: 50.00, slope ratio: 2.00

Pond Earthwork Volumes
Cut Factor: 1.05
Total cut: 531,530.41 C.F., 19,686.31 C.Y.
Total fill: 477,229.87 C.F., 17,675.18 C.Y.

Water Elev	Storage(AcresFt)	(C.Y.)	(C.F.)	(Gallons)	Area(Acres)
1282.00	0.00000	0.0	0.0	0.0	0.215
1283.00	0.24069	388.3	10483.9	78425.0	0.311
1284.00	0.57632	929.8	25104.7	187796.0	0.396
1285.00	0.98650	1690.8	42952.3	321305.7	0.458
1286.00	1.46283	2360.0	63720.8	476664.3	0.510
1287.00	1.99141	3212.8	86746.0	648905.2	0.558
1288.00	2.56320	4135.3	111652.8	835220.9	0.605
1289.00	3.18155	5132.9	139588.2	1036712.0	0.653
1290.00	3.84694	6206.2	167566.2	1253497.1	0.697
1291.00	4.55488	7348.5	198410.4	1484212.5	0.737
1292.00	5.30574	8559.9	231118.2	1728883.8	0.785
1293.00	6.10998	9857.4	266150.5	1990944.2	0.838
1294.00	6.96165	11231.5	303249.3	2268462.3	0.892
1295.00	7.86996	12696.9	342815.6	2564438.5	0.949
1296.00	8.84350	14267.5	385222.9	2891867.1	1.024
1297.00	9.89123	15957.8	43061.8	3232069.0	1.099
1298.00	10.92983	17735.1	478847.7	3582028.2	1.126
1299.00	12.12561	19562.7	528191.7	3951147.8	1.143
1300.00	13.27078	21410.2	578075.0	4324300.9	1.148

Spoil Pad A Capacity Report

Top of pad elevation: 1308.0000
Cut slope percent grade: 66.67, slope ratio: 1.50
Fill slope percent grade: 50.00, slope ratio: 2.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut: 0.0 C.F., 0.00 C.Y.
Total fill: 178,113.4 C.F., 6,596.79 C.Y.
Area: 28203.3 Sq.Ft., 0.647 Acres

Spoil Pad B Capacity Report

Top of pad elevation: 1280.0000
Cut slope percent grade: 66.67, slope ratio: 1.50
Fill slope percent grade: 50.00, slope ratio: 2.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut: 0.0 C.F., 0.00 C.Y.
Total fill: 114,851.2 C.F., 4,257.45 C.Y.
Area: 19241.1 Sq.Ft., 0.442 Acres

Spoil Pad C Capacity Report

Top of pad elevation: 1254.0000
Cut slope percent grade: 66.67, slope ratio: 1.50
Fill slope percent grade: 50.00, slope ratio: 2.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut: 3,446.0 C.F., 127.63 C.Y.
Total fill: 64,950.1 C.F., 2,035.19 C.Y.
Balance Import: 61,504.2 C.F., 1,907.56 C.Y.
Area: 26270.9 Sq.Ft., 0.603 Acres

Spoil Pad D Capacity Report

Top of pad elevation: 1290.0000
Cut slope percent grade: 66.67, slope ratio: 1.50
Fill slope percent grade: 50.00, slope ratio: 2.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut: 0.1 C.F., 0.00 C.Y.
Total fill: 495,574.6 C.F., 18,354.62 C.Y.
Area: 51599.9 Sq.Ft., 1.185 Acres

Spoil Pad E Capacity Report

Top of pad elevation: 1260.0000
Cut slope percent grade: 66.67, slope ratio: 1.50
Fill slope percent grade: 50.00, slope ratio: 2.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut: 5.1 C.F., 0.19 C.Y.
Total fill: 233,652.1 C.F., 8,653.78 C.Y.
Area: 45578.8 Sq.Ft., 1.046 Acres

Truck Queue & Turn Around Earthwork Report

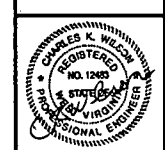
Top of pad elevation: 1300.0000
Cut slope percent grade: 66.67, slope ratio: 1.50
Fill slope percent grade: 50.00, slope ratio: 2.00
Cut Swell Factor: 1.05
Fill Shrink Factor: 1.00

Pad Earthwork Volumes
Total cut: 27,496.9 C.F., 1,018.40 C.Y.
Total fill: 244,692.7 C.F., 9,058.99 C.Y.
Balance Import: 217,095.8 C.F., 8,040.59 C.Y.
Area: 37784.3 Sq.Ft., 0.867 Acres

DATE	REVISIONS
3-7-13	Updated Sump Quantity
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards
5-7-13	Updated Per Floodplain Ordinance
6-18-13	Updated Per New Antero / DEP Standards



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ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

SCHEDULE OF QUANTITIES
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIEGE COUNTY, WV

Date: 9/25/12
Scale: N/A
Designed By: CKW/CKM

CONSTRUCTION, EROSION AND SEDIMENT NOTES

CONSTRUCTION SPECIFICATIONS:

- THE IMPOUNDMENT/FRAC PIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK AND SHALL CONFORM GENERALLY WITH THE GRADES, BERMS, DEPTHS AND DIMENSIONS SHOWN.
- THE CONSTRUCTION DOCUMENTS SHOW THE EXISTING AND NEW GRADES AND BERMS, ETC. THAT ALL CUT AND FILL ESTIMATES ARE BASED UPON. THE ENGINEER'S ESTIMATES OF THE QUANTITIES ARE ONLY ESTIMATES AND MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS.
- THE GRADES, BERMS, DEPTHS, AND DIMENSIONS MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS. THE ENGINEER RESERVES THE RIGHT TO CHANGE GRADES, BERMS, DEPTHS AND DIMENSIONS AS NECESSARY TO MEET FIELD CONDITIONS.
- THE CONTRACTOR SHALL PROVIDE THE ENGINEER ALL REASONABLE FACILITIES AND PROVIDE INFORMATION AND SAMPLES AS REQUIRED BY THE ENGINEER FOR PROPER MONITORING AND TESTING OF MATERIAL WORKMANSHIP.
- THE CONTRACTOR SHALL HAVE ON SITE AT ALL TIMES WHEN CONSTRUCTION IS IN PROGRESS A COMPETENT SUPERINTENDENT THOROUGHLY FAMILIAR WITH THE CONSTRUCTION OF EARTH BERMS AND EMBANKMENTS, THE COMPACTION OF SOILS AND PLACEMENTS OF LINERS.
- SILT SOCK / SUPER SILT FENCE SHALL BE INSTALLED PRIOR TO CLEARING AND GRUBBING AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH THE OFFICE OF OIL & GAS, W.VA. EROSION & SEDIMENT CONTROL FIELD MANUAL, MAY 2012. SURFACE WATER SHALL BE DIVERTED AWAY FROM ALL EXCAVATIONS TO PREVENT FLOODING AND SOFTENING OF THE SUBGRADE OR COMPACTED MATERIALS.
- CLEARING AND GRUBBING SHALL REMOVE ALL BRUSH, TREES, ROOTS, STUMPS, FENCES, SIGNS OR ANY OTHER MATERIAL THAT IS NOT TO BE REUSED FOR THE CONSTRUCTION. SOME STUMPS MAY REMAIN AT THE APPROVAL OF THE ENGINEER. NO CLEARING DEBRIS SHALL BE BURIED ON-SITE.
- TOP SOIL SHALL BE STRIPPED AND STOCKPILED WITH APPROPRIATE STABILIZATION AND SILT FENCE TO PREVENT EROSION. THE TOP SOIL SHALL BE REUSED DURING THE RECLAMATION PROCESS OR ON THE FACE OF THE IMPOUNDMENT/FRAC PIT PRIOR TO SEEDING.
- TOE CUTS OF 10' MINIMUM WIDE SHALL BE EXCAVATED ON ALL RECEIVING SLOPES TO PROVIDE A BASE FOR THE IMPOUNDMENT/FRAC PIT BERM. ADDITIONAL TERRACING SHALL BE CONSTRUCTED FOR EACH ADDITIONAL FIFTY (50) VERTICAL FEET OF SLOPE AND SHALL BE A MINIMUM OF TEN (10) FEET WIDE.
- PRIOR TO PLACING ANY FILL, THE EXPOSED SUBGRADE SHALL BE COMPACTED AND PROOF ROLLED TO PRODUCE A STABLE AND UNYIELDING SITE.
- IMPOUNDMENT/FRAC PIT BERMS SHALL BE UNIFORMLY GRADED SOIL FREE FROM AGGREGATE EXCEEDING 6". THE FILL SHALL BE FREE OF ALL ORGANIC MATERIAL, STUMPS, BRUSH, OR OTHER DELETERIOUS MATTER.
- ALL FILL SHALL BE PLACED IN LIFTS OF UP TO 12" AND SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR DENSITY OF THE SOIL PER ASTM D-698. THE MOISTURE CONTENT SHALL BE CONTROLLED WITHIN PLUS OR MINUS 2% OF THE OPTIMUM TO FACILITATE COMPACTION. CONTRACTOR IS RESPONSIBLE FOR THE ORIGINAL SOIL TEST AND PROVIDING A COPY OF THE RESULTS WITH MOISTURE-DENSITY CURVE TO THE ENGINEER. THE CONTRACTOR SHALL DO IN-PLACE DENSITY TESTS EVERY LIFT OF SOIL AND SHALL BE DONE IN TWO RANDOM PLACES ON EACH STRAIGHT SIDE OF THE IMPOUNDMENT BERM. RECORDS SHALL BE MAINTAINED OF TEST LOCATION AND RESULTS AND PROVIDED TO THE ENGINEER ON REQUEST. AREAS THAT FAIL FOR COMPACTION SHALL BE REMOVED, RE-COMPACTED AND RETESTED FOR COMPLIANCE. THE CONTRACTOR MAY PROOF-ROLL THE SOIL EVERY 12" OF SOIL LIFT WITH A LOADED 15 TON TANDEM DUMP OR LARGER TRUCK. SOIL THAT DEFLECTS UNDER THE REAR WHEELS GREATER THAN 1/2" SHALL BE REMOVED, RE-COMPACTED AND RETESTED. COMPACTION OF SOIL SHALL BE DONE WITH A 5 TON SHEEPS FOOT, OR VIBRATORY ROLLER DEPENDING ON THE TYPE OF SOIL BEING COMPACTED.
- ON-SITE FILL SHALL BE USED TO THE MAXIMUM EXTENT POSSIBLE. ANY IMPORTED FILL SHALL BE CERTIFIED BY THE CONTRACTOR TO BE CLEAR OF ALL HAZARDOUS SUBSTANCES OR MATERIALS. IF MATERIAL IS ENCOUNTERED THAT CANNOT BE RIPPED BY A CAT WITH A SINGLE TOOTH RIPPER, THEN THE CONTRACTOR SHALL CONTACT THE ENGINEER WHO WILL VISIT THE SITE AND DETERMINE IF THE MATERIAL MAY BE USED AS IS OR MUST BE REMOVED BY OTHER MEANS. IF UNSUITABLE SOILS IN THE SUBGRADE ARE FOUND THEY SHALL BE REMOVED AND REPLACED WITH APPROPRIATE FILL AT THE CONTRACTOR'S EXPENSE AND THE ENGINEER'S DIRECTION.
- THE INSIDE OF THE IMPOUNDMENT/FRAC PIT SHALL BE BOTH SMOOTH DRUM ROLLED AND FREE OF PROTRUDING OR SHARP ROCKS IN ORDER TO RECEIVE THE LINER.
- PRIOR TO THE LINER INSTALLATION THE CONTRACTOR SHALL CONTACT THE SURVEYOR TO DO AN AS-BUILT SURVEY OF THE IMPOUNDMENT/FRAC PIT TO ENSURE CONFORMANCE WITH THE ENGINEER'S DRAWINGS. THE SURVEYOR SHALL PROVIDE THE INFORMATION TO THE ENGINEER WHO WILL MAKE DETERMINATIONS ON ANY VARIATION FROM THE DRAWINGS AND DIRECT THE CONTRACTOR TO DO CORRECTIVE WORK.
- LINER SHALL BE POLYFLEX IMPERVIOUS TEXTURED HDPE GEOMEMBRANE, 60MIL, INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. THE TOP OF THE LINER SHALL BE TURNED DOWN INTO A 4" ANCHOR TRENCH AT THE TOP OF THE BERM AND BACKFILLED WITH SELECT FILL AS SHOWN ON THE DRAWINGS OR AS REQUIRED BY THE LINER MANUFACTURER.
- PHOTOGRAPHIC DOCUMENTATION SHALL BE TAKEN BY THE CONTRACTOR AND PROVIDED TO THE ENGINEER OF THE FOLLOWING ACTIVITIES: 1, SITE AFTER CLEARING AND GRUBBING; 2, THE SITE AFTER TOPSOIL REMOVAL; 3, TOE KEY AND INSPECTION TRENCH CONSTRUCTION; 4, DAILY PHOTOS OF CUT AND FILL OPERATIONS; 5, PROOF-ROLLING TESTS.
- PRIOR TO AS-BUILT CERTIFICATION, THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A COMPLETE BINDER THAT INCLUDES ALL PHOTO DOCUMENTATION, ALL COMPACTION TEST REPORTS, RESULTS AND MAPS, A REPORT OF ALL CUT AND FILL VOLUMES IN CUBIC YARDS, AND A COPY OF THE AS-BUILT CONFIRMATION SURVEY PRIOR TO LINER PLACEMENT.

GENERAL NOTES

- 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 ENGINEER, 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 OFFICE OF OIL & GAS, W.VA. EROSION & SEDIMENT CONTROL FIELD MANUAL, MAY, 2012. IN THE EVENT OF CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, OR PLANS, THE MOST STRINGENT WILL GOVERN.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED DAILY, RELOCATED WHEN NECESSARY AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED, RESEEDED AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.
- ALL DRAIN INLETS SHALL BE PROTECTED FROM SILTATION. INEFFECTIVE PROTECTION DEVICES SHALL BE REPLACED AND THE INLET CLEANED. FLUSHING IS NOT AN ACCEPTABLE MEANS OF CLEANING.
- 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 MISS UTILITY AT (800) 655-7061.
- 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 OR ANY OTHER NON-COMPACTABLE SOIL TYPE MATERIALS. UNSATISFACTORY MATERIALS ALSO INCLUDE MAN MADE FILLS AND REFUSE DEBRIS DERIVED FROM ANY SOURCE.
- MATERIALS USED TO FILL AROUND DRAINAGE STRUCTURES IN UTILITY TRENCHES OR ANY OTHER DEPRESSION REQUIRING FILL OR BACK FILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST AS SET FORTH IN ASTM STANDARD D-698. THE CONTRACTOR SHALL, PRIOR TO ANY OPERATIONS INVOLVING FILLING OR BACK FILLING, SUBMIT THE RESULTS OF THE PROCTOR TEST TOGETHER WITH A CERTIFICATION THAT THE SOIL TESTED IS REPRESENTATIVE OF THE MATERIALS TO BE USED ON THE PROJECT. THE TESTS SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LABORATORY AND THE CERTIFICATIONS MADE BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LABORATORY. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THESE TESTS AND THEIR SUBMITTALS.
- FILL SHALL BE PLACED IN LIFTS AT A MAXIMUM UNCOMPACTED DEPTH OF 12-INCHES WITH SOIL FREE FROM AGGREGATES EXCEEDING 6".
- ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER. FAILURE TO CONDUCT DENSITY TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE OF THE FACILITY. TESTS SHALL BE CONDUCTED AT THE SOLE COST OF THE CONTRACTOR OR HIS AGENT.
- A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION.
- SATISFACTORY MATERIALS FOR USE AS FILL FOR PAD AREAS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487AS GW, GP, GM, GC, SM, GP, SM, GC, ML, AND CL GROUPS. THE MOISTURE CONTENT SHALL BE CONTROLLED WITHIN PLUS OR MINUS 2% OF THE OPTIMUM TO FACILITATE COMPACTION. GENERALLY, UNSATISFACTORY MATERIALS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS PT, CH, MH, OL, OH AND ANY SOIL TOO WET TO FACILITATE COMPACTION. CH AND MH SOILS MAY BE USED SUBJECT TO APPROVAL OF THE ENGINEER. SOILS SHALL HAVE A MINIMUM DRY DENSITY OF 128 PCF PER ASTM D-698 AND SHALL HAVE A PLASTICITY INDEX LESS THAN 11.
- CONTRACTOR SHALL SUBMIT AND ADHERE TO A GENERAL GROUNDWATER PROTECTION PLAN.

EROSION CONTROL NOTES

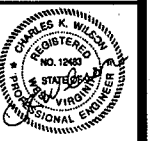
- THE CONTRACTOR SHALL ARRANGE FOR A PRE-CONSTRUCTION CONFERENCE WITH THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO BEGINNING WORK.
- ALL EROSION CONTROL DEVICES AS SHOWN OR AS REQUIRED, ARE TO BE CONSTRUCTED TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL AND ARE TO BE IN PLACE PRIOR TO ALL CONSTRUCTION.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUOUSLY, RELOCATED WHEN AND AS NECESSARY AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED, RESEEDED AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.
- ALL DISTURBED AREAS NOT PAVED OR BUILT UPON ARE TO BE FERTILIZED, SEEDED, HYDRO-SEEDED (WITH STRAW AND COTTEN PRODUCT WITH TACK AGENTS) OR MULCHED BY THE CONTRACTOR IN ACCORDANCE WITH THE OFFICE OF OIL & GAS, W.VA. EROSION & SEDIMENT CONTROL FIELD MANUAL, MAY 2012.
- ALL DRAIN INLETS SHALL BE PROTECTED FROM SILTATION. INEFFECTIVE PROTECTION DEVICES SHALL BE IMMEDIATELY REPLACED AND THE INLET CLEANED. FLUSHING IS NOT AN ACCEPTABLE METHOD OF CLEANING.
- PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 21 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN SIX MONTHS.
- DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES.
- SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
- STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS IMPOUNDMENT/FRAC PITS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
- ALL DISTURBED AREAS NOT PAVED OR BUILT UPON SHALL BE SEEDED, SLOPE MATTED AND FERTILIZED. PERFORM PERMANENT TOP SOILING, SEEDING, FERTILIZING, AND MATTING AS SOON AFTER FINISH GRADING AS POSSIBLE. SEEDING SHALL COMPLY WITH THE FOLLOWING:
 - TOPSOIL - 4 INCH MINIMUM FOR PERMANENT TURF
 - FERTILIZER - 500 POUNDS PER ACRES OF 10-20-10 FERTILIZER OR EQUIVALENT POUNDAGE OF DIFFERENT ANALYSIS. WORK INTO SOIL PRIOR TO SEEDING.
 - LIME (PERMANENT SEEDING) - AGRICULTURAL LIME SPREAD AT RATE OF 4 TONS/ACRE. WORK INTO SOIL PRIOR TO SEEDING.
 - MULCH - WOOD FIBER OR CHOPPED STRAW AT RATE OF 2 TONS PER ACRE. HYDRO-MULCH (EAST COAST EROSION CONTROL HY-C2 OR EQUAL) AT MANUFACTURER'S RECOMMEND RATE OR 2500 LB/AC WHICHEVER IS GREATER.
 - SEED - 45 LBS. PER ACRE TALL FESCUE AND 20 LBS. PER ACRE PERENNIAL RYE GRASS. TO BE SEEDED BY HAND OR HYDRO-SEEDER.

EROSION AND SEDIMENT CONTROL NARRATIVE

- PROJECT DESCRIPTION:** THE PURPOSE OF THIS PROJECT IS TO GRADE AND INSTALL EROSION AND SEDIMENT CONTROL MEASURES, IN PREPARATION FOR THE CONSTRUCTION OF A GAS WELL PAD NEAR LONG RUN, WEST VIRGINIA, IN DODDGE COUNTY. THE CONSTRUCTION INCLUDES ONE ACCESS ROAD, DRILL PAD, FIVE SPOIL PADS, ONE FRACTURE PIT, TRUCK QUEUE PAD, STORM WATER CONTROLS, AND INCIDENTAL WORK. THE TOTAL APPROXIMATE LAND DISTURBANCE ASSOCIATED WITH THIS PROJECT IS 38.35 ACRES.
- EXISTING SITE CONDITIONS:** THE EXISTING SITE IS UPLAND HARDWOODS WITH MODERATE TO STEEP TOPOGRAPHY WITH 5% TO 60% SLOPES. NO EROSION IS NOTICED ON SITE, ON ADJOINING PROPERTIES OR IN ANY NATURAL DRAINAGEWAYS. THE SITE IS ON ONE DRAINAGE AREA.
- ADJACENT PROPERTY:** THE SITE IS BORDERED ON ALL SIDES BY UPLAND HARDWOODS.
- SOILS:** NO SOIL STUDIES OR INVESTIGATIONS WERE DONE FOR THIS PROJECT.
- OFF SITE AREAS:** THERE SHALL BE NO BORROW AREA OUTSIDE OF THE PROPOSED GRADING AND CONSTRUCTION AREA.
- CRITICAL EROSION AREAS-CONTROL MAINTENANCE:** ALL 3:1 SLOPES AND STEEPER, DITCHES AND OTHER CONTROLS SHALL BE CONSIDERED CRITICAL EROSION AREAS. THESE AREAS SHALL BE MONITORED & MAINTAINED DAILY AND AFTER EACH RAIN FALL OF 0.5 INCHES OR GREATER. THE LOCAL GOVERNING AUTHORITY WILL HAVE THE AUTHORITY TO RECOMMEND THE PLACEMENT OF ADDITIONAL EROSION CONTROL MEASURES IN THESE AREAS IF IT BECOMES EVIDENT DURING CONSTRUCTION THAT THE ONES IN PLACE ARE NOT FUNCTIONING SUFFICIENTLY.
- EROSION AND SEDIMENT CONTROL MEASURES:** UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE OFFICE OF OIL & GAS, W.VA. EROSION AND SEDIMENT CONTROL FIELD MANUAL, MAY 2012. THE CONTRACTOR SHALL OBTAIN A COPY OF THIS MANUAL FROM THE WVEDP WEBSITE AND CONSTRUCT ALL DEVICES BASED ON THIS MANUAL OR A HANDBOOK THAT IS COMPARABLE OR EXCEEDS THE SPECIFICATIONS OF THE WEST VIRGINIA MANUAL. THE MINIMUM STANDARDS OF THIS MANUAL SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE. SEE PLANS FOR ALL PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.
- STRUCTURAL PRACTICES:**
 - DIVERSION DITCHES: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
 - DIVERSION BERMS: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
 - OUTLET PROTECTION: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
 - SILT SOCK/STRAW WATTLE/SUPER SILT FENCE: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
- VEGETATIVE PRACTICE TOPSOILING:** TOPSOIL WILL BE STRIPPED FROM THE SITE AND STOCKPILED IN AN AREA AS SHOWN ON THESE PLANS. UPON THE COMPLETION OF THE PROJECT TOPSOIL WILL BE PLACED ON ALL DISTURBED AREAS AT A MINIMUM DEPTH OF 4 INCHES. TEMPORARY SEEDING: ALL DENUDED AREAS LEFT DORMANT FOR MORE THAN 21 DAYS SHALL BE SEEDED WITH A FAST GERMINATING SEED. THE TIME OF YEAR WILL BE THE BASIS FOR THE SEED MIXTURE. PERMANENT SEEDING: ALL SEEDED AREAS WILL BE RESEED, MULCHED AND FERTILIZED AS NEEDED TO OBTAIN AN ADEQUATE STAND OF GRASS. PERMANENT SEEDING SHALL BE PLACED WITHIN SEVEN DAYS UPON ACHIEVING FINAL GRADE. WATER, MULCH, AND RESEED AS NECESSARY TO OBTAIN AN ADEQUATE STAND OF VEGETATION, IN THE OPINION OF THE ENGINEER.
- MANAGEMENT STRATEGIES:** CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS WILL BEGIN AND END AS SOON AS POSSIBLE. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES. AFTER ACHIEVING ADEQUATE STABILIZATION THE TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE REMOVED AND ANY AREAS DISTURBED DURING THIS PROCESS SHALL BE STABILIZED.
- SEQUENCE OF EVENTS:**
 - A PRE-CONSTRUCTION CONFERENCE WILL BE HELD ON SITE WITH CONTRACTOR TO REVIEW THE CONSTRUCTION DRAWINGS AND PROVIDE ANY REQUESTED GUIDANCE.
 - CONSTRUCT THE PROPOSED CONSTRUCTION ENTRANCE.
 - CONSTRUCT ALL PROPOSED SEDIMENT CONTROL DEVICES AS SOON AS CLEARING AND GRUBBING OPERATIONS ALLOW. DIVERSIONS AND SEDIMENT BASINS SHALL BE SEEDED AND MULCHED IMMEDIATELY.
 - CLEAR AND GRUB, REMOVE TOPSOIL AND PLACE AT AN AREA DETERMINED IN THE FIELD WHERE EROSION WILL NOT TAKE PLACE. TOPSOIL STOCKPILE TO BE SEEDED AND MULCHED.
 - GRADING OPERATIONS AS REQUIRED. CUT SLOPES AND FILL SLOPES SHALL BE TOPSOILED IF NEEDED. DITCH LINES SHALL BE CLEANED. ALL DITCHES WILL HAVE AT LEAST GRASS LINING. PROTECTION OR GREATER BASED ON DITCH SLOPE WITH THE FOLLOWING DETERMINATION: 0 TO 3% - GRASS LINED, 3 TO 9% - JUTE MATTING, AND 9% OR GREATER - TM.
 - CULVERT INLET AND OUTLET PROTECTION SHALL BE CONSTRUCTED IMMEDIATELY UPON PLACEMENT OF INLETS AND CULVERTS. INSTALLATION OF MATTING AND/OR RIP RAP TO OCCUR ONCE DITCHES ARE CONSTRUCTED.
 - WHEN FINAL GRADE IS ACHIEVED, TOPSOIL TO BE PLACED ON ALL DISTURBED AREAS NOT LINED. SEED ALL DISTURBED AREAS AS REQUIRED. A SOIL SAMPLE SHOULD BE TAKEN AND TESTED TO DETERMINE RECOMMENDED RATES. IF NO SOIL SAMPLE IS TAKEN THE FOLLOWING RATES SHOULD BE APPLIED AS A MINIMUM: LIME AT A RATE OF 4 TONS PER ACRE. FERTILIZE AT A RATE OF 500 LBS. OF 10-20-10 PER ACRE. SEED WITH 45 LBS. PER ACRE OF TALL FESCUE AND 20 LBS. PER ACRE OF PERENNIAL RYE GRASS.
 - LIME, FERTILIZER, AND SEED WILL BE APPLIED BY HAND OR USING A HYDRO-SEEDER. HYDRO-MULCH PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
 - FINAL SEEDING MUST OCCUR WITHIN 7 DAYS OF FINAL GRADING.
 - WHEN SITE IS STABILIZED WITH ESTABLISHED TURF GREATER THAN 70%, ALL EROSION AND SEDIMENT CONTROL MEASURES CAN BE REMOVED AND REPAIR/STABILIZE THOSE AREAS IN ACCORDANCE WITH STATE STANDARDS.
 - MAKE MODIFICATIONS FOR PERMANENT STORM WATER MANAGEMENT.
 - FINAL SITE INSPECTION.
- PERMANENT STABILIZATION:** ALL AREAS LEFT UNCOVERED BY EITHER BUILDINGS OR PAVEMENT SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING AND WITHIN 7 DAYS. AT NO TIME SHALL LAND LAY DORMANT FOR LONGER THAN 21 DAYS. SEE SEQUENCE OF EVENTS FOR RATES.
- MAINTENANCE AND OTHER CONSIDERATIONS AND GROUND WATER PROTECTION:** ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH RAINFALL OF 0.5 INCHES OR MORE. THEY WILL BE INSPECTED FOR UNDERMINING, DETERIORATION, EROSION AND EXCESS DEPOSITED MATERIAL. ALL DEFICIENCIES WILL BE CORRECTED IMMEDIATELY. EXCESS MATERIAL WILL BE SPREAD ON THE SITE IN A MANNER WHERE IT IS NOT LIKELY TO ERODE IN THE FUTURE. CLEANING PROCEDURES WILL BE COMPLETED AT REGULAR INTERVALS AND AT LEAST WHEN SEDIMENT REACHES CLEAN OUT LEVELS SHOWN. RECORDS OF CLEANING AND CORRECTIONS WILL BE MAINTAINED BY THE CONTRACTOR. THE "GENERAL GROUNDWATER PROTECTION PLAN FOR CONSTRUCTION SITES" WILL BE USED AND AVAILABLE ON SITE AT ALL TIMES. AN AREA WILL BE PROVIDED FOR VEHICLE AND EQUIPMENT MAINTENANCE. MOBILE FUEL TRUCKS WITH APPROVED TANKS WILL BE USED ON THIS SITE. PORTABLE SANITARY FACILITIES WILL BE AVAILABLE FOR EMPLOYEES. IF CONCRETE IS USED, EXCESS CONCRETE WILL BE DISPOSED OF PROPERLY AND NOT ALLOWED TO REMAIN ON THIS SITE. MACHINERY WILL NOT BE ALLOWED IN LIVE STREAMS. FLUIDS SUCH AS DIESEL FUEL, GAS, OIL, OR ANTIFREEZE WILL BE KEPT IN PROPER CONTAINERS AND ANY SPILLAGE WILL BE CLEANED AND TAKEN OFF SITE TO A PROPER FACILITY. SOLID OR HAZARDOUS WASTES WILL BE DISPOSED IN ACCORDANCE WITH APPROPRIATE STATE AND FEDERAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE CHANGES AND NOTIFY WVEDP OF ANY CHANGES TO OGP. A FINAL INSPECTION WILL BE MADE AT THE CONCLUSION OF THE PROJECT AND ALL CORRECTIONS MADE BEFORE SIGN-OFF OF THE PROJECT SITE.



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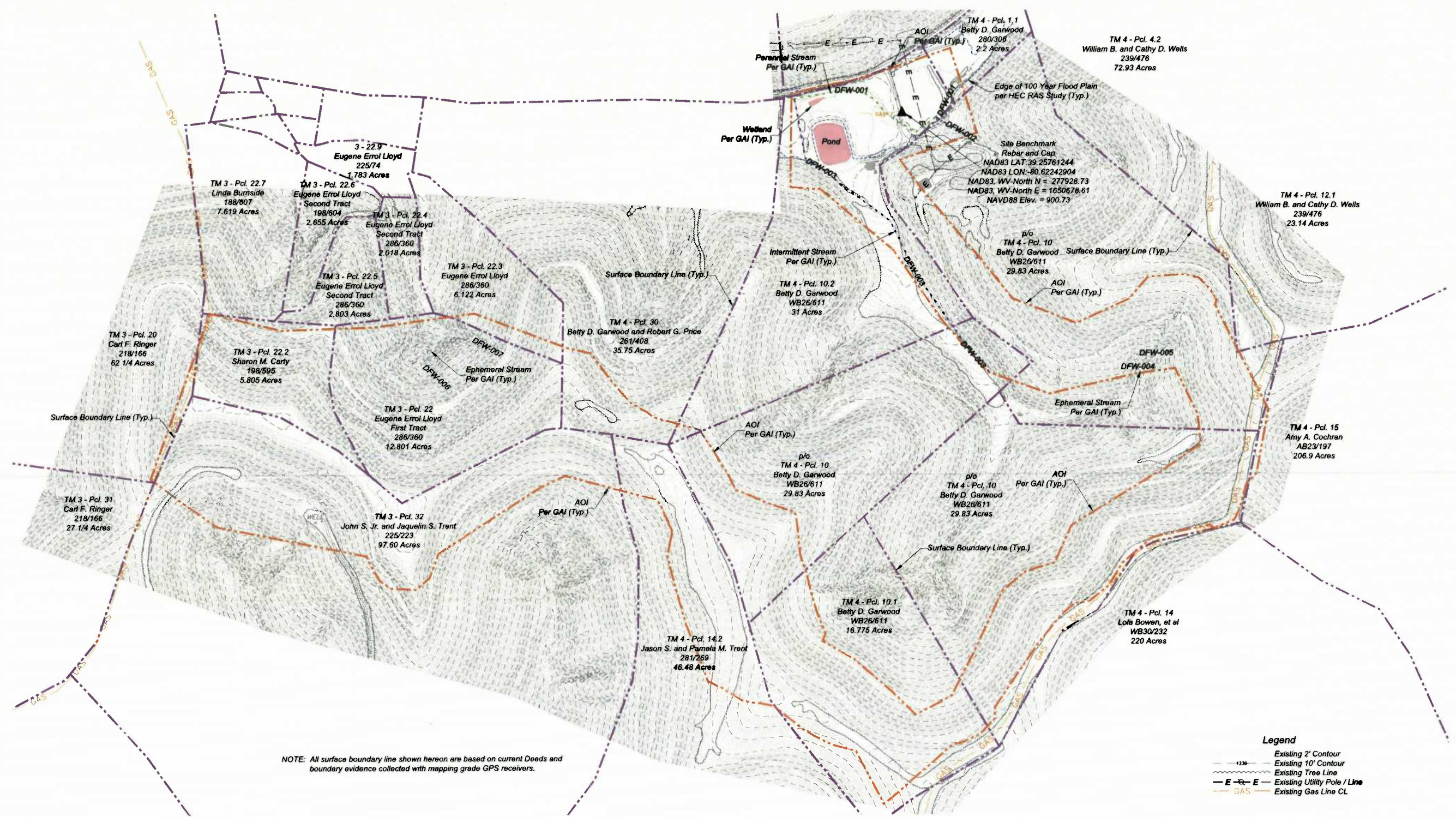
CONSTRUCTION, EROSION AND SEDIMENT NOTES

SUSIE JANE PAD
GREENBRIER DISTRICT
DODDGE COUNTY, WV

DATE	REVISIONS	Date: 9/25/12
3-7-13	Updated Construction Notes	Scale: N/A
3-22-13	Revised Access Road A Alignment	Designed By: CKW/CKM
4-11-13	Updated Per New Antero Standards	File No. Antero 209-12
6-18-13	Updated Per New Antero / DEP Standards	Page 3 of 19

All topographic information shown hereon is based on aerial photography provided by Blue Mountain Aerial Mapping with a flight date of Spring 2011

EXISTING CONDITIONS



NOTE: All surface boundary line shown hereon are based on current Deeds and boundary evidence collected with mapping grade GPS receivers.

- Legend**
- - - Existing 2' Contour
 - - - Existing 10' Contour
 - - - Existing Tree Line
 - E - E - Existing Utility Pole / Line
 - - - GAS - Existing Gas Line CL



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ANTERO RESOURCES

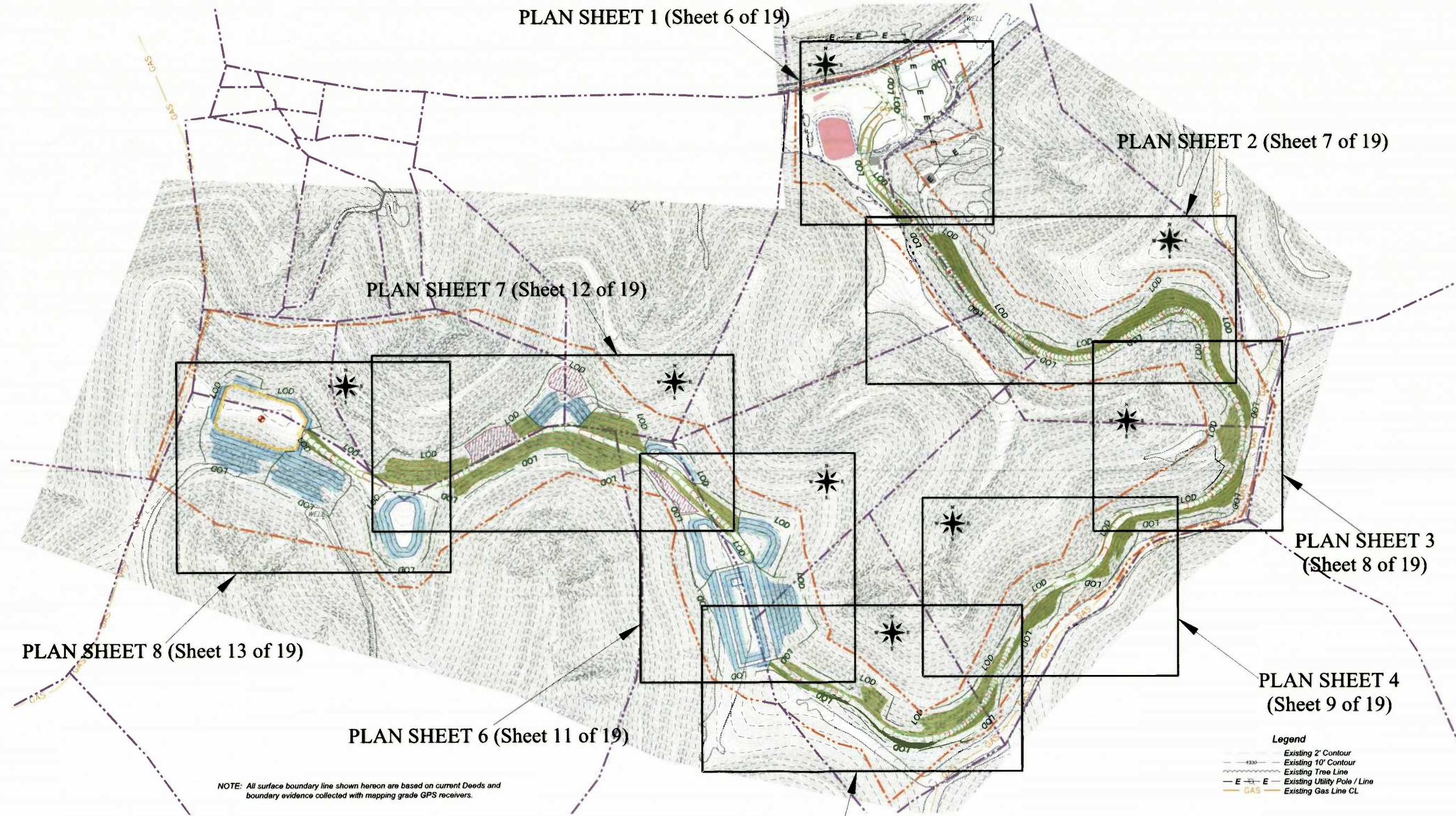
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EXISTING CONDITIONS
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

DATE	REVISIONS	Date: 9/25/12
6-18-13	Updated Per New Antero / DEP Standards	Scale: 1" = 200'
		Designed By: CKW/CKM
		File No. Antero 209-12
		Page 4 of 19

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PLAN SHEET INDEX



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		Page 5 of 19



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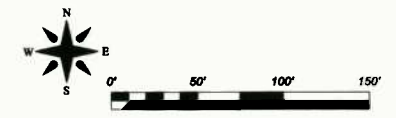
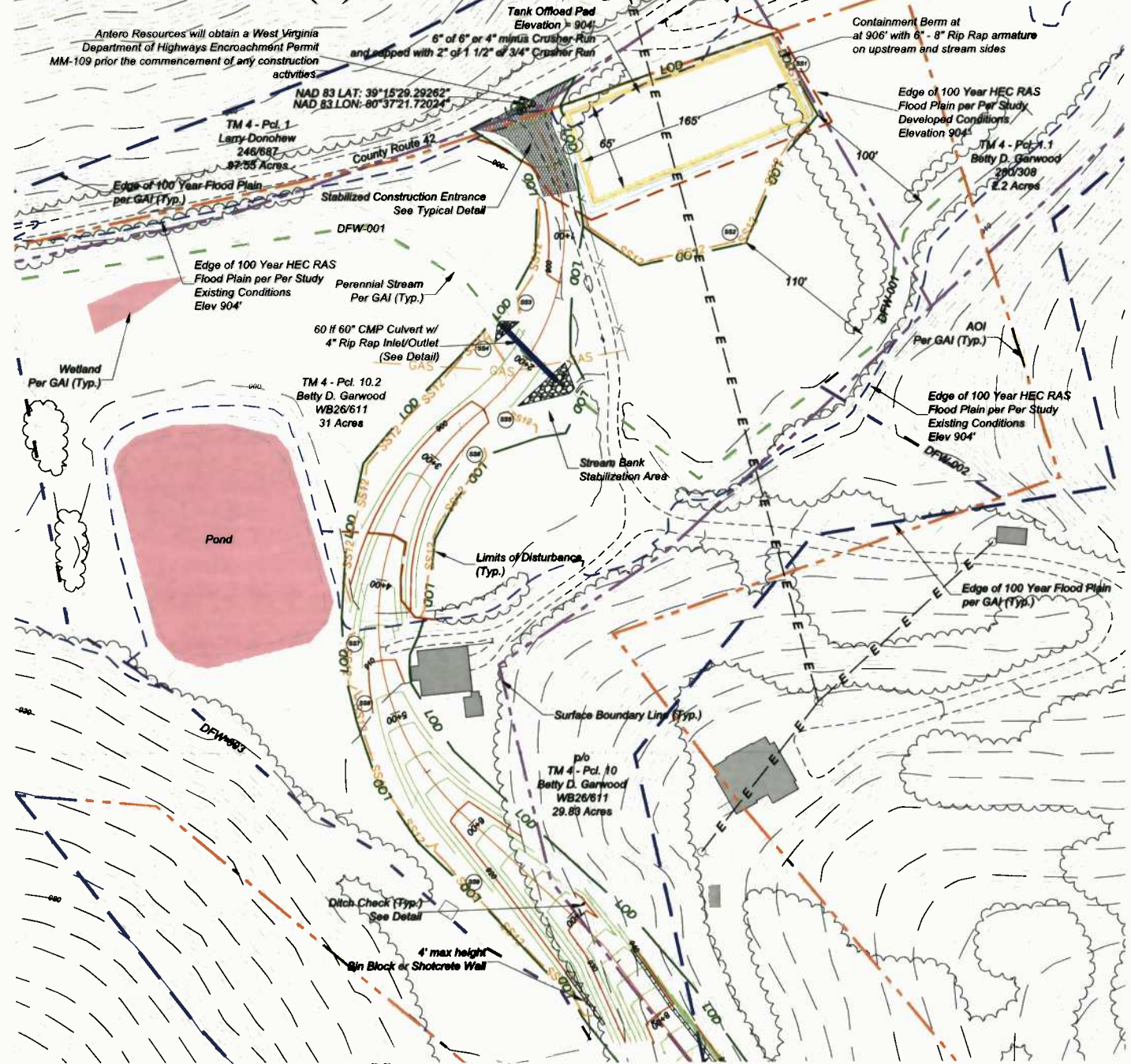
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PH: 904-237-4818
FAX: 904-237-2224
EMAIL: KIRK@LWENTRINK.NET



THIS DOCUMENT PREPARED FOR ANTERO RESOURCES APPALACHIAN CORP

PLAN SHEET INDEX
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

SITE PLAN (1) - ACCESS ROAD A STA: 0+00 - 8+00



Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-5035

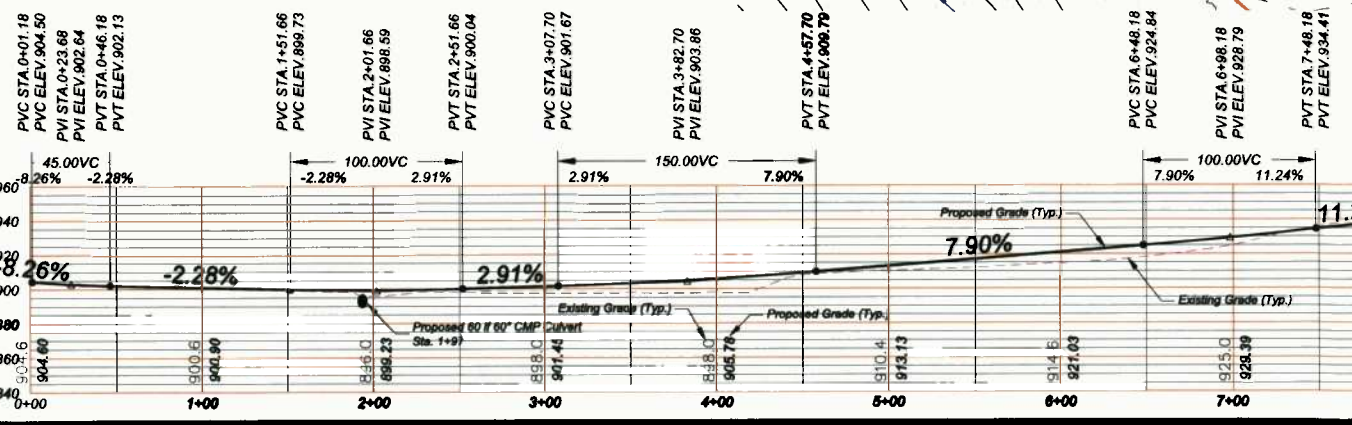


L&W ENTERPRISES, INC.
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SITE PLAN (1) - ACCESS ROAD A STA: 0+00 - 8+00
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIIDGE COUNTY, WV



ACCESS ROAD A PROFILE
Horizontal & Vertical Scale: 1" = 50'



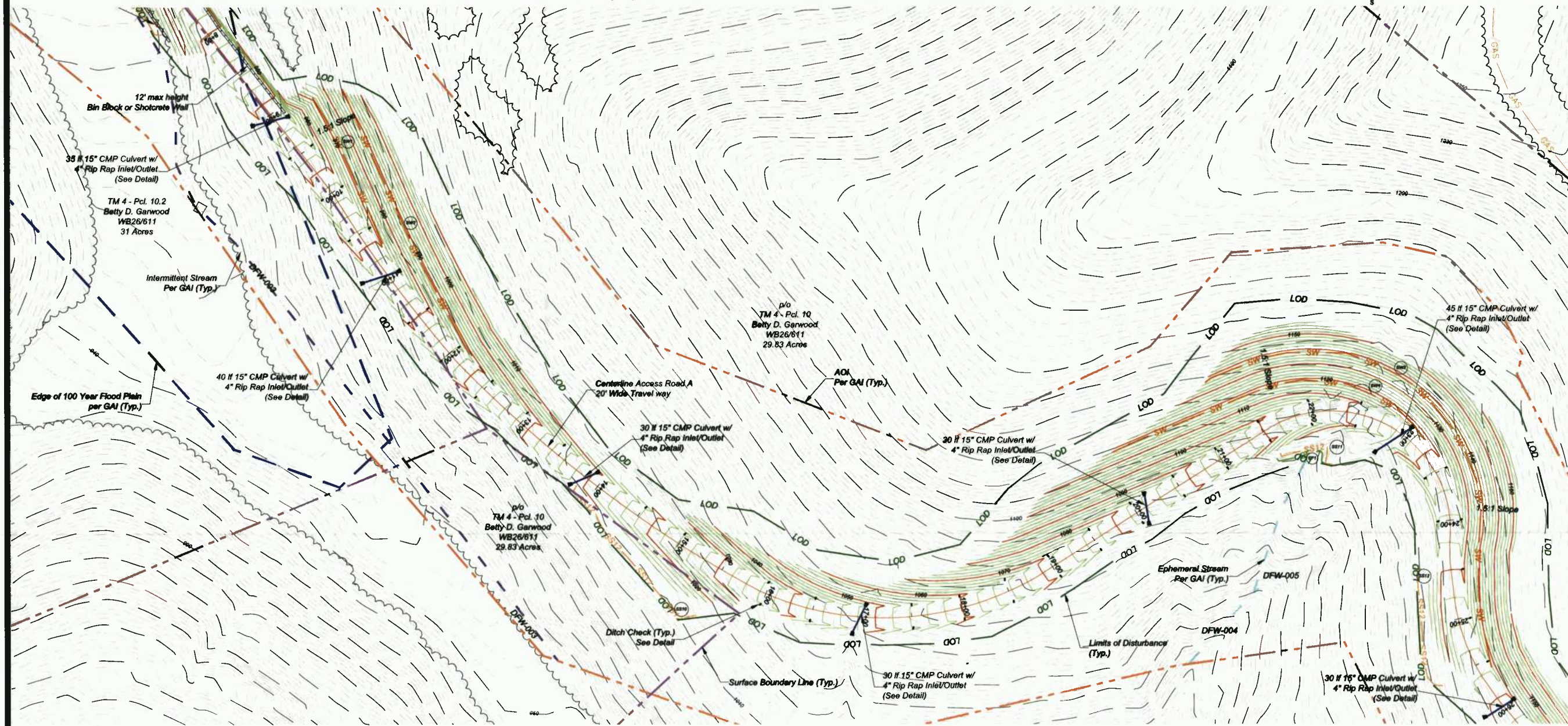
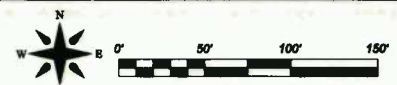
LINED DITCH TREATMENT vs. SLOPE OF DITCH
Line with Jute Matting if slope is less than 3%
Line with turf reinforcement matting (TRM) if slope is greater than 3%
Turf reinforcement matting shall be Excelsior Recyclax or Landlok TRM 435 or equal

Legend			
--- 1330	Existing 2' Contour	--- SW	Proposed Straw Wattles
--- 1000	Existing 10' Contour	--- SSXX	Proposed Silt Soxx w/ Diameter
---	Existing Tree Line	---	Proposed 2' Contour
-E-E-	Existing Utility Line / Pole	---	Proposed 10' Contour
---	Surface Owner Property Line	---	Proposed Rip-Rap
---	Existing Gas Line CL	---	* Silt Soxx Diameter in Inches
---	Limits of Disturbance	---	* Super Silt Fence Can be Substituted for Silt Soxx of any Size
---	Proposed Diversion Ditch	---	
---	Proposed 2' Contour	---	
---	Proposed 10' Contour	---	
---	Proposed Super Silt Fence	---	

DATE	REVISIONS
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards
5-7-13	Updated Per Floodplain Ordinance
6-18-13	Updated Per New Antero / DEP Standards

Date: 9/25/12
Scale: 1" = 50'
Designed By: CKW/CKM
File No. Antero 209-12
Page 6 of 19

SITE PLAN (2) - ACCESS ROAD A STA: 8+00 - 25+00



Allegheny Surveys, Inc.
172 Thompson Drive
Bridgeport, WV 26330
(304) 848-5035

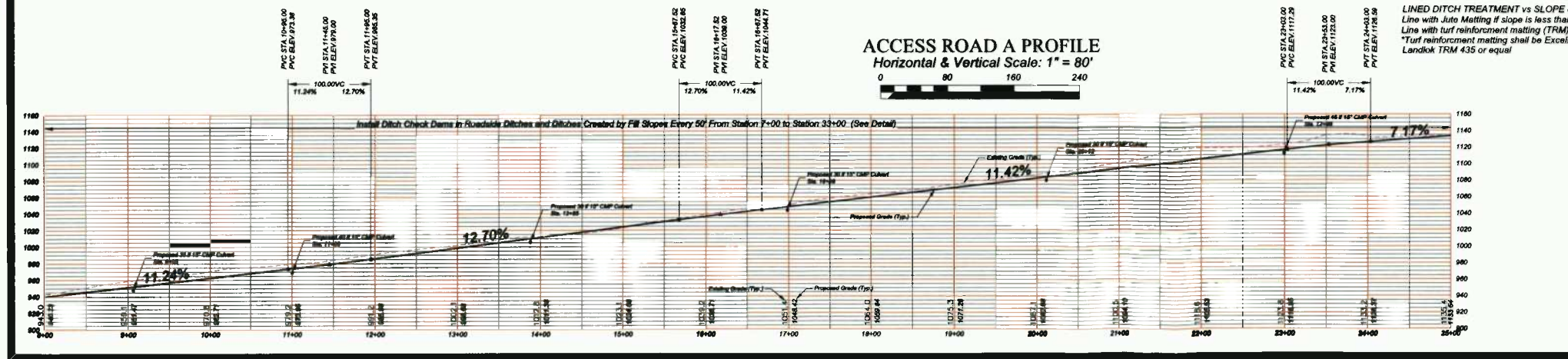


L&W ENTERPRISES, INC.
PO BOX 625
14 SOUTH GROVE ST.
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FAX: 304-257-2224
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APPALACHIAN CORP

SITE PLAN (2) - ACCESS ROAD A STA: 8+00 - 25+00
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIEGE COUNTY, WV



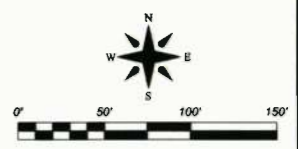
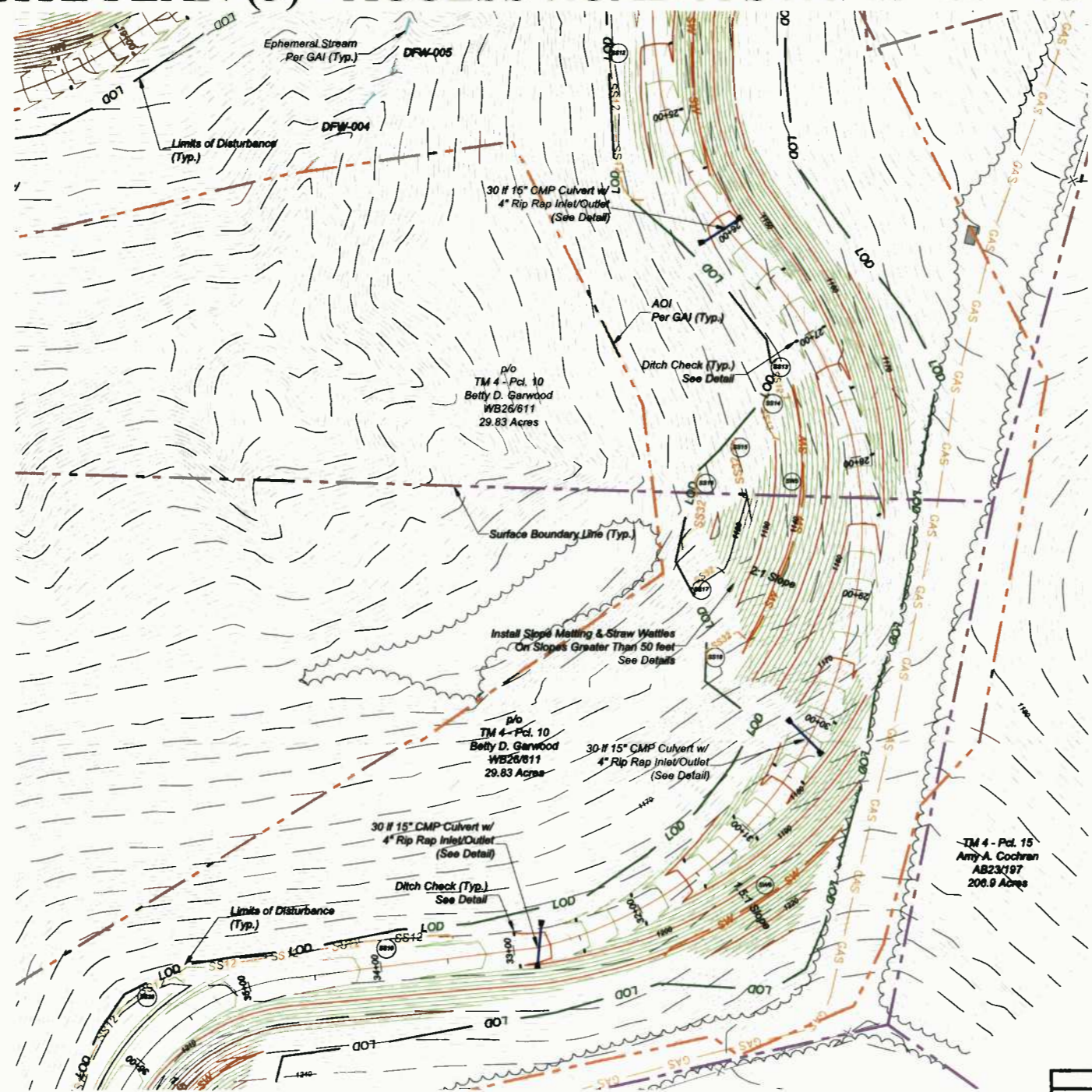
LINED DITCH TREATMENT vs SLOPE of DITCH
Line with Jute Matting if slope is less than 3%
Line with turf reinforcement matting (TRM) if slope is greater than 3%
*Turf reinforcement matting shall be Excelsior Revolex or Landlok TRM 435 or equal

Legend		
1330	Existing 2' Contour	Proposed Check Dam
1300	Existing 10' Contour	Proposed Culvert W/ Inlet & Outlet Protection
---	Existing Tree Line	SW
E - E	Existing Utility Line / Pole	SSXX
---	Surface Owner Property Line	Proposed Straw Watties
GAS	Existing Gas Line CL	Proposed Silt Soxx w/ Diameter
---	Limits of Disturbance	Proposed 2' Contour
---	Proposed Diversion Ditch	1330
Proposed 2' Contour		Proposed Rip-Rap
Proposed 10' Contour		* Silt Soxx Diameter in Inches
SF	Proposed Super Silt Fence	* Super Silt Fence Can be Substituted for Silt Soxx of any Size

DATE	REVISIONS
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards

Date: 9/25/12
Scale: 1" = 50'
Designed By: CKW/CKM
File No. Antero 209-12
Page 7 of 19

SITE PLAN (3) - ACCESS ROAD A STA: 25+00 - 35+00



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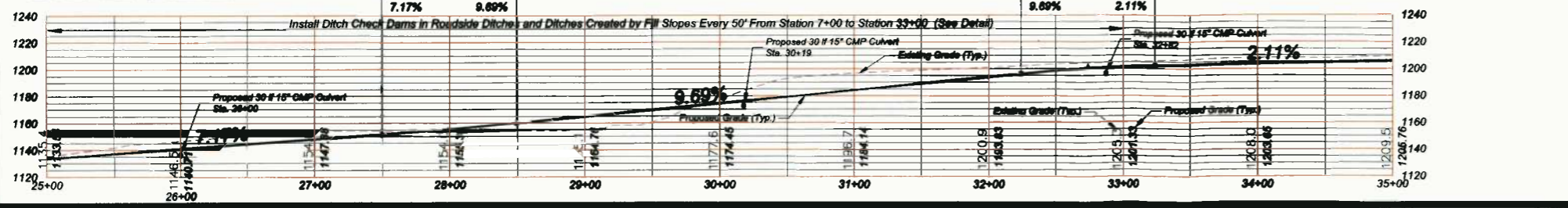


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SITE PLAN (3) - ACCESS ROAD A STA: 25+00 - 35+00
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIIDGE COUNTY, WV

ACCESS ROAD A PROFILE

Horizontal & Vertical Scale: 1" = 50'

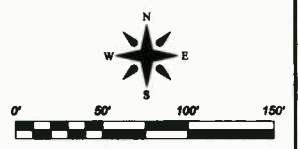
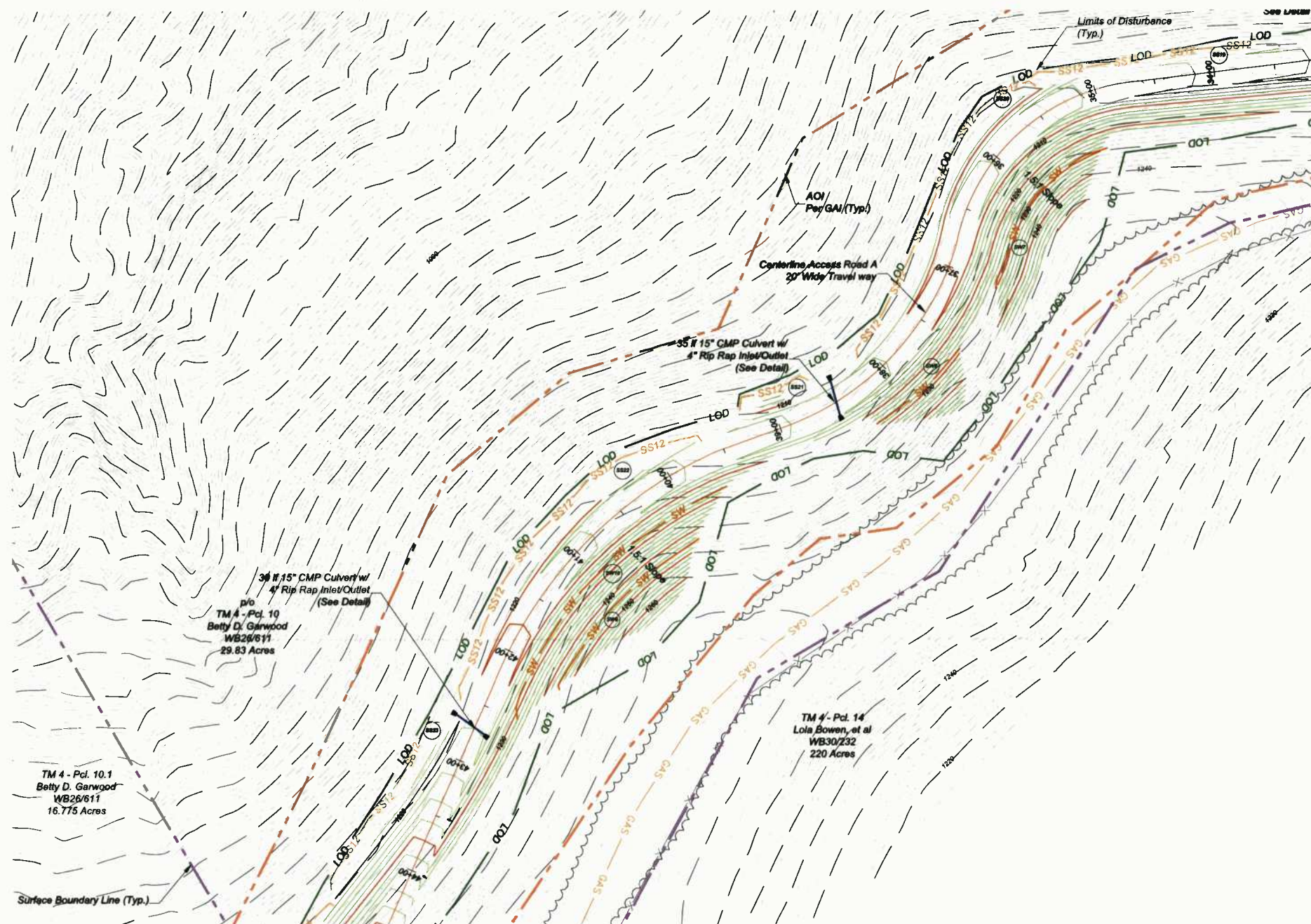


Legend			
— 1330 —	Existing 2' Contour	—	Proposed Check Dam
— 1200 —	Existing 10' Contour	—	Proposed Culvert W/ Inlet & Outlet Protection
—	Existing Tree Line	— SW —	Proposed Straw Wattles
— E — E —	Existing Utility Line / Pole	— SSXX —	Proposed Silt Soxx w/ Diameter
—	Surface Owner Property Line	—	Proposed 2' Contour
— GAS —	Existing Gas Line CL	—	Proposed 10' Contour
— LOD —	Limits of Disturbance	—	Proposed Rip-Rap
—	Proposed Diversion Ditch	—	* Silt Soxx Diameter in Inches
—	Proposed 2' Contour	—	* Super Silt Fence Can be Substituted for Silt Soxx of any Size
—	Proposed 10' Contour	—	
— SF —	Proposed Super Silt Fence		

DATE	REVISIONS
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards

Date: 9/25/12
Scale: 1" = 50'
Designed By: CKW/CKM
File No. Antero 209-12
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SITE PLAN (4) - ACCESS ROAD A STA: 35+00 - 44+00



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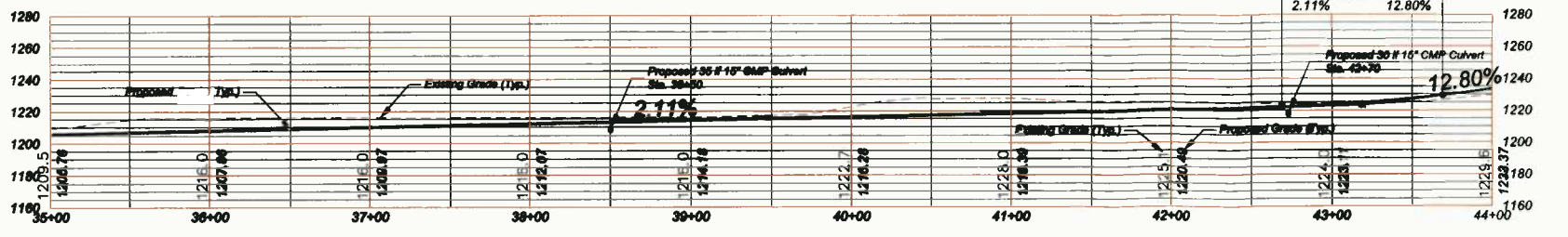
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SITE PLAN (4) - ACCESS ROAD A STA: 35+00 - 44+00
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIIDGE COUNTY, WV

LINED DITCH TREATMENT vs SLOPE OF DITCH
Line with Jute Matting if slope is less than 3%
Line with turf reinforcement matting (TRM) if slope is greater than 3%
*Turf reinforcement matting shall be Excelsior Recyclax or Landlok TRM 435 or equal

ACCESS ROAD A PROFILE

Horizontal & Vertical Scale: 1" = 50'

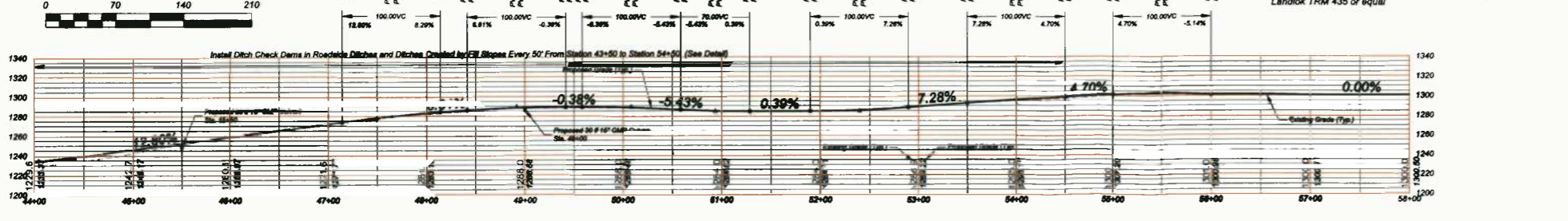
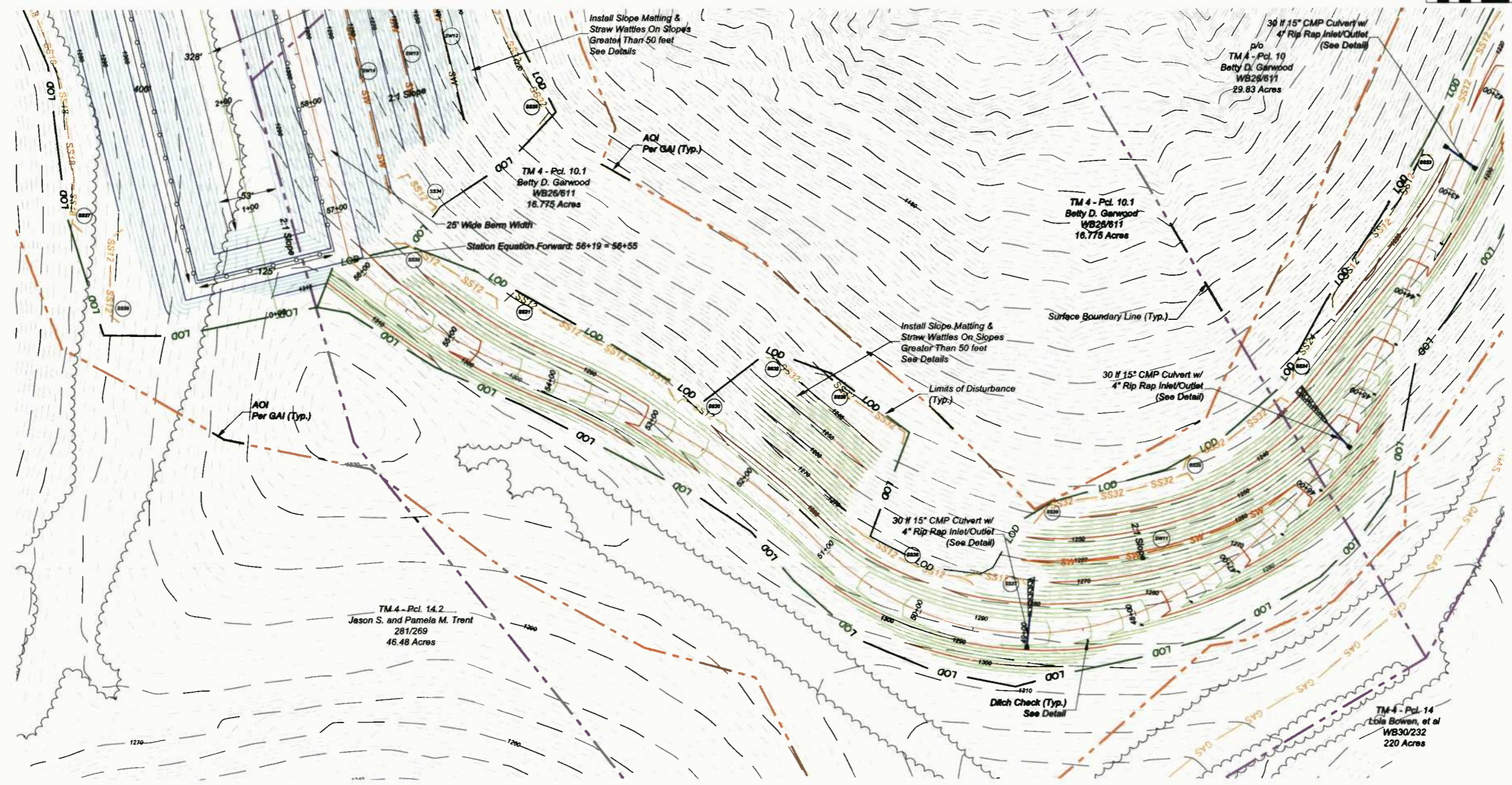


Legend			
--- 1330 ---	Existing 2' Contour	--- SW ---	Proposed Straw Wattles
--- 1300 ---	Existing 10' Contour	--- SSSX ---	Proposed Silt Soxx w/ Diameter
--- E --- E ---	Existing Utility Line / Pole	--- 1330 ---	Proposed 2' Contour
---	Existing Tree Line	--- 1300 ---	Proposed 10' Contour
---	Surface Owner Property Line	--- SF ---	Proposed Super Silt Fence
---	Existing Gas Line CL	---	Proposed Check Dam
---	Limits of Disturbance	---	Proposed Culvert W/ Inlet & Outlet Protection
---	Proposed Diversion Ditch	---	Proposed Rip-Rap
---	Proposed 2' Contour	---	* Silt Soxx Diameter in Inches
---	Proposed 10' Contour	---	* Super Silt Fence Can be Substituted for Silt Soxx of any Size

DATE	REVISIONS
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards

Date: 9/25/12
Scale: 1" = 50'
Designed By: CKW/CKM
File No. Antero 209-12
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SITE PLAN (5) - ACCESS ROAD A STA: 44+00 - 58+00



Legend	
--- 1330 ---	Existing 2' Contour
--- 1300 ---	Existing 10' Contour
---	Existing Tree Line
-E -E-	Existing Utility Line / Pole
---	Surface Owner Property Line
---	Existing Gas Line CL
---	Limits of Disturbance
---	Proposed Diversion Ditch
---	Proposed 2' Contour
---	Proposed 10' Contour
---	Proposed Super Silt Fence
---	Proposed Check Dam
---	Proposed Culvert W/ Inlet & Outlet Protection
---	Proposed Straw Wattles
---	Proposed Silt Soxx w/ Diameter
---	Proposed 2' Contour
---	Proposed 10' Contour
---	Proposed Rip-Rap
---	* Silt Soxx Diameter in Inches
---	* Super Silt Fence Can be Substituted for Silt Soxx of any Size

DATE	REVISIONS
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards

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CHARLES K. WILSON
REGISTERED PROFESSIONAL ENGINEER
NO. 12482
STATE OF WEST VIRGINIA

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L&W
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ANTERO RESOURCES

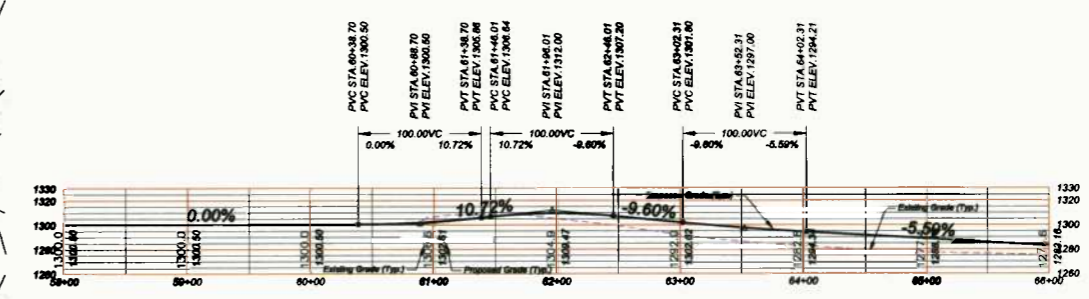
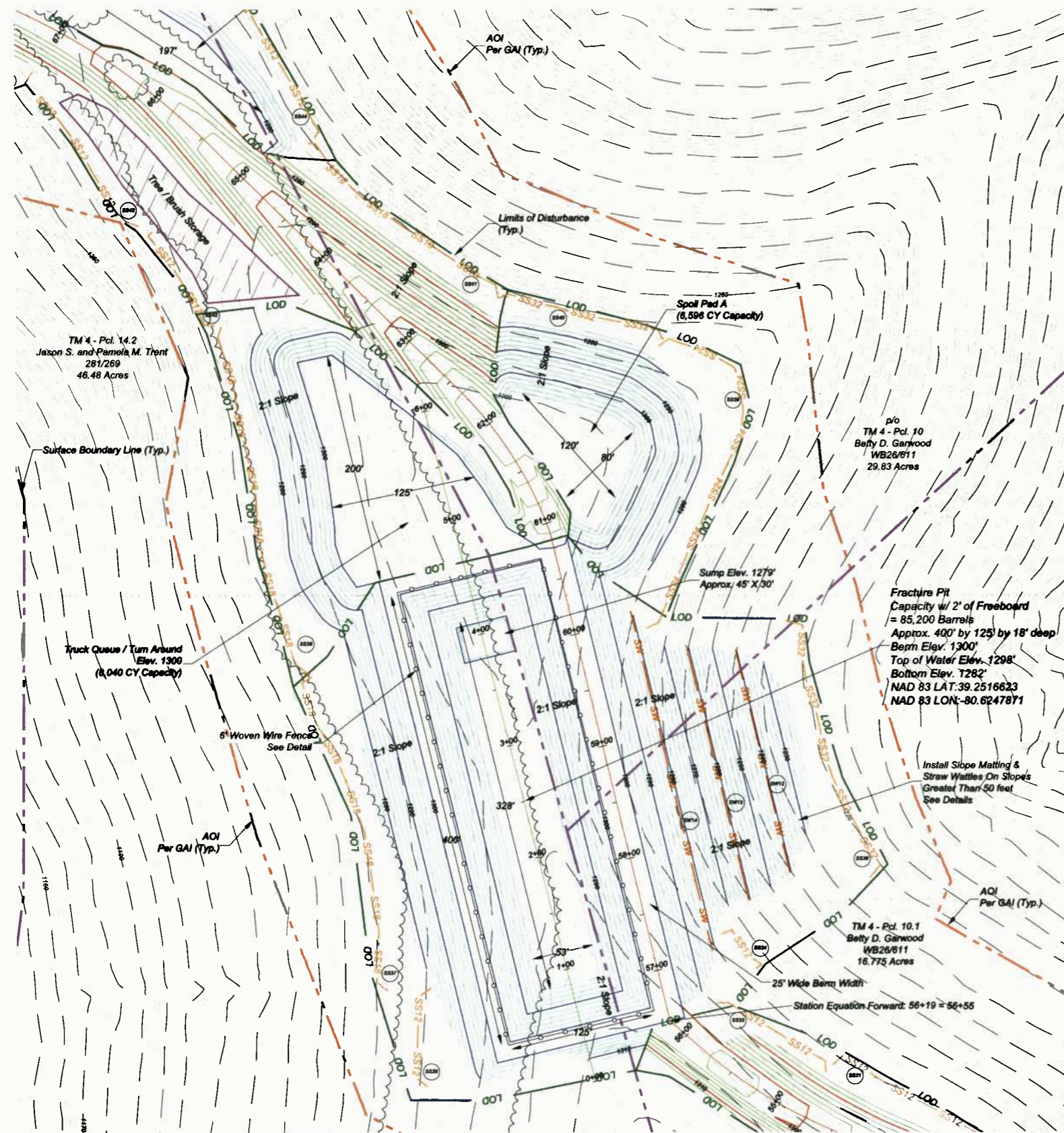
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APPALACHIAN CORP

SITE PLAN (5) - ACCESS ROAD A STA: 44+00 - 58+00

SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIIDGE COUNTY, WV

Date: 9/25/12
Scale: 1" = 50'
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File No. Antero 209-12
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SITE PLAN (6) - ACCESS ROAD A STA: 58+00 - 66+00



ACCESS ROAD A PROFILE
Horizontal & Vertical Scale: 1" = 70'

LINED DITCH TREATMENT vs SLOPE OF DITCH
Line with Jute Matting if slope is less than 3%
Line with turf reinforcement matting (TRM) if slope is greater than 3%
*Turf reinforcement matting shall be Excelsior Recyclor or Landlok TRM 435 or equal

Legend			
1330	Existing 2' Contour	SW	Proposed Check Dam
1300	Existing 10' Contour	SSXX	Proposed Culvert W/ Inlet & Outlet Protection
E - E	Existing Utility Line / Pole	SSXX	Proposed Straw Wattles
---	Surface Owner Property Line	SSXX	Proposed Silt Soxx w/ Diameter
GAS	Existing Gas Line CL	SSXX	Proposed 2' Contour
LOD	Limits of Disturbance	SSXX	Proposed 10' Contour
---	Proposed Diversion Ditch	SSXX	Proposed Rip-Rap
---	Proposed 2' Contour	SSXX	* Silt Soxx Diameter in Inches
---	Proposed 10' Contour	SSXX	* Super Silt Fence Can be Substituted for Silt Soxx of any Size
SF	Proposed Super Silt Fence		

DATE	REVISIONS
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards



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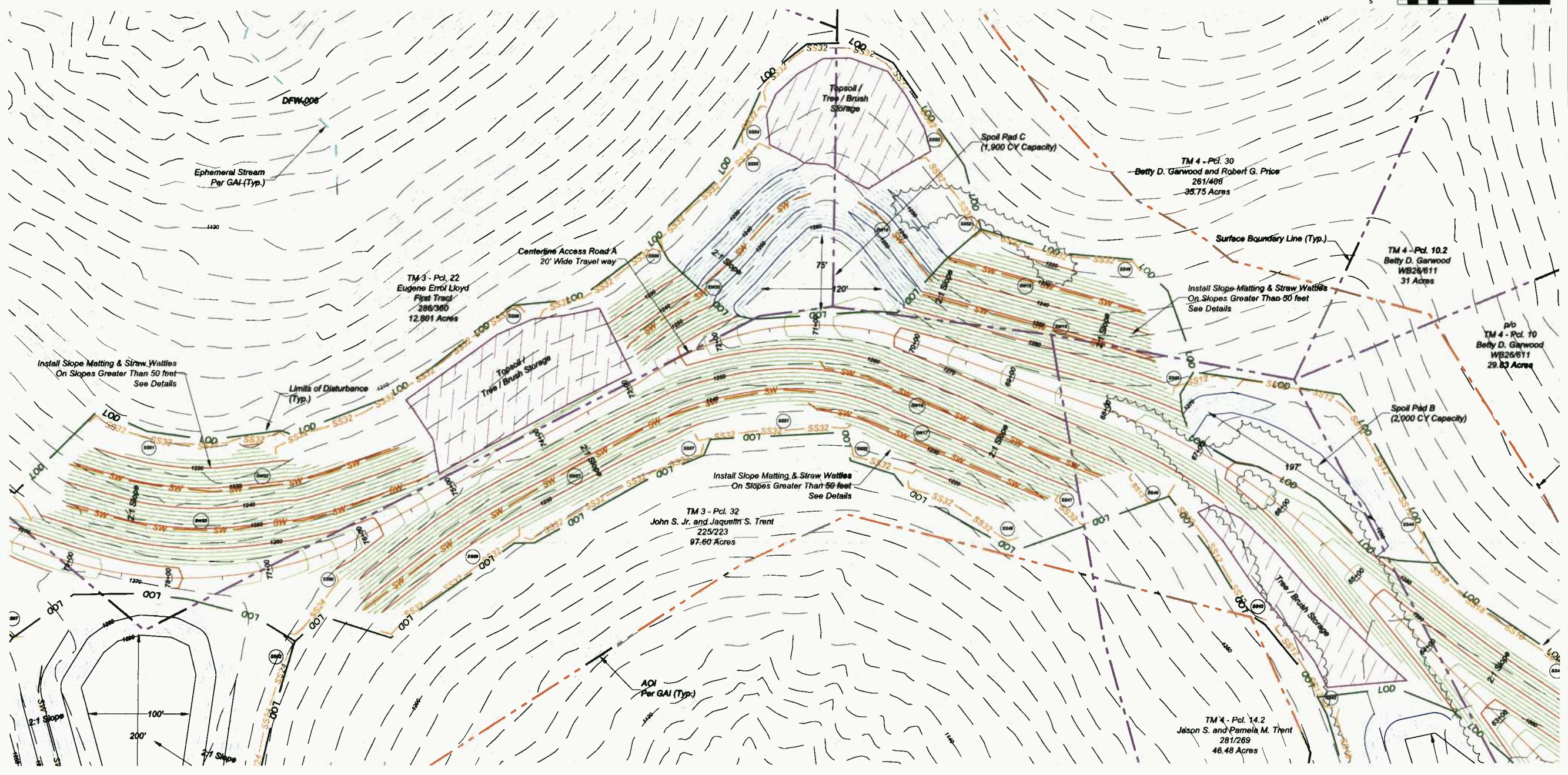
ANTERO RESOURCES

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APPALACHIAN CORP

SITE PLAN (6) - ACCESS ROAD A STA: 58+00 - 66+00
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIE COUNTY, WV

Date: 9/25/12
Scale: 1" = 50'
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File No. Antero 209-12
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SITE PLAN (7) - ACCESS ROAD A STA: 66+00 - 79+00



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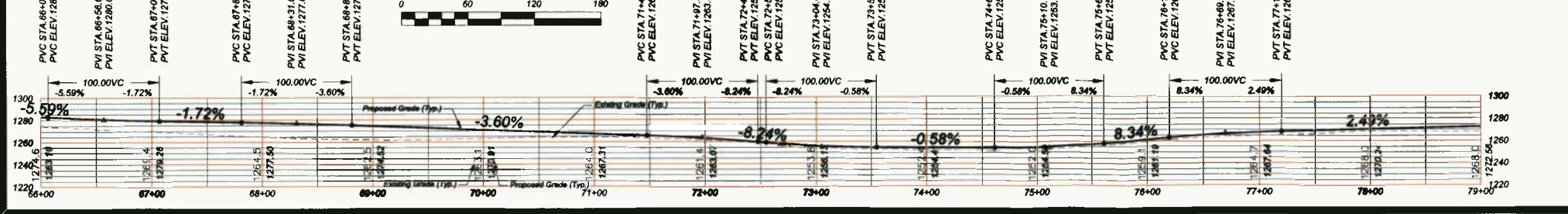
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SITE PLAN (7) - ACCESS ROAD A STA: 66+00 - 79+00

SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIIDGE COUNTY, WV

LINED DITCH TREATMENT vs SLOPE OF DITCH
Line with Jute Matting if slope is less than 3%
Line with turf reinforcement matting (TRM) if slope is greater than 3%
*Turf reinforcement matting shall be Excelsior Recyclex or Landtek TRM 435 or equal

ACCESS ROAD A PROFILE
Horizontal & Vertical Scale: 1" = 60'

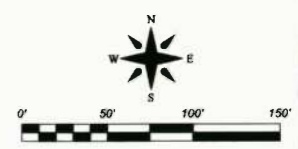
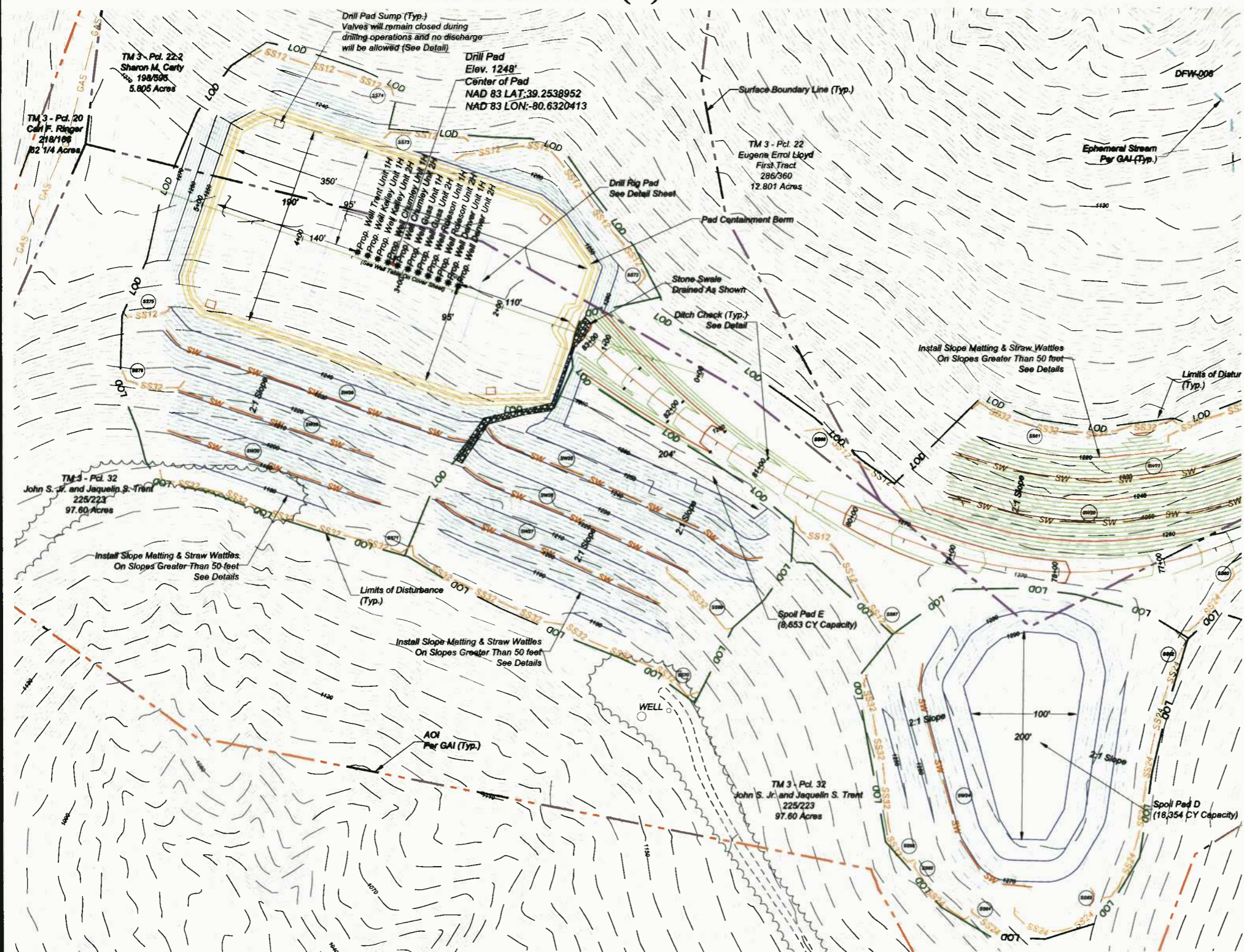


Legend		
1330	Existing 2' Contour	Proposed Check Dam
1330	Existing 10' Contour	Proposed Culvert W/ Inlet & Outlet Protection
---	Existing Tree Line	SW
---	Existing Utility Line / Pole	Proposed Straw Wattles
---	Surface Owner Property Line	SSXX
---	Existing Gas Line CL	Proposed Silt Soxx w/ Diameter
---	Limits of Disturbance	Proposed 2' Contour
---	Proposed Diversion Ditch	Proposed 10' Contour
---	Proposed 2' Contour	Proposed Rip-Rap
---	Proposed 10' Contour	* Silt Soxx Diameter in Inches
---	Proposed Super Silt Fence	* Super Silt Fence Can be Substituted for Silt Soxx of any Size

DATE	REVISIONS
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards

Date: 9/25/12
Scale: 1" = 50'
Designed By: CKWCKM
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SITE PLAN (8) - ACCESS ROAD A STA: 79+00 - 83+50



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FAX: 304-257-2224
EMAIL: KIRK@LWLINK.NET

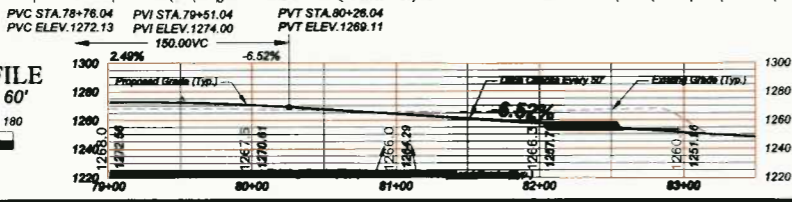
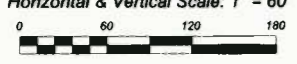


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SITE PLAN (8) - ACCESS ROAD A STA: 79+00 - 83+50

SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

ACCESS ROAD A PROFILE
Horizontal & Vertical Scale: 1" = 60'



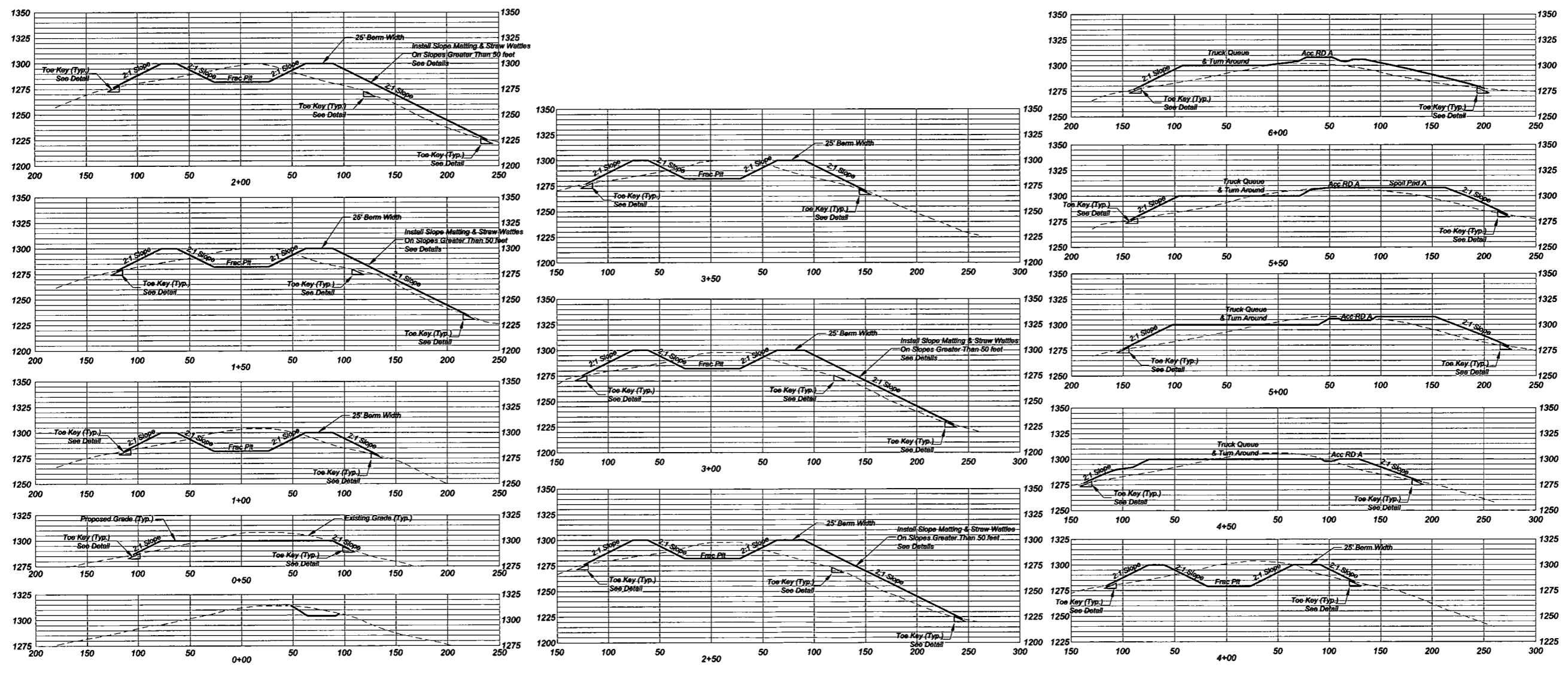
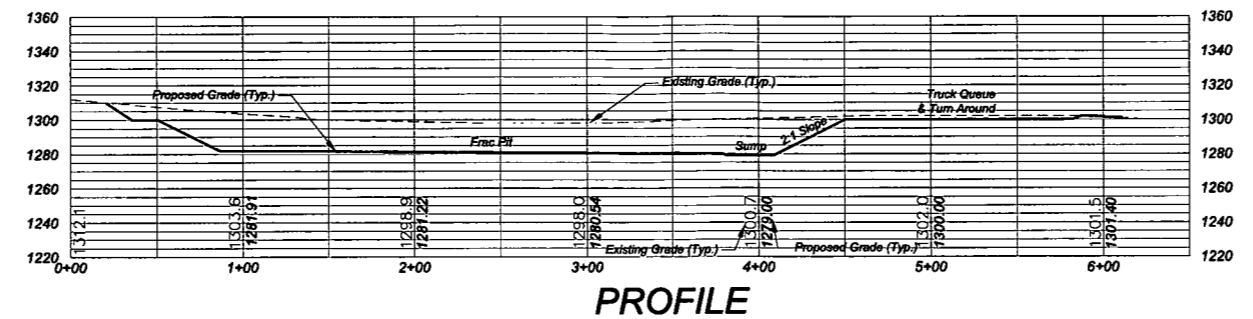
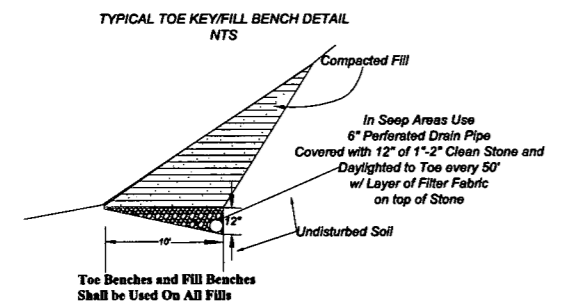
LINED DITCH TREATMENT vs SLOPE OF DITCH
Line with Auto Matting if slope is less than 3%
Line with turf reinforcement matting (TRM) if slope is greater than 3%
*Turf reinforcement matting shall be Excelsior Recyclex or Landlok TRM 435 or equal

Legend	
--- 1330 ---	Existing 2' Contour
--- 1300 ---	Existing 10' Contour
---	Existing Tree Line
--- E --- E ---	Existing Utility Line / Pole
---	Existing Gas Line CL
---	Limits of Disturbance
---	Proposed Diversion Ditch
---	Proposed 2' Contour
---	Proposed 10' Contour
---	Proposed Super Silt Fence
---	Proposed Check Dam
---	Proposed Culvert W/ Inlet & Outlet Protection
---	Proposed Straw Watties
---	Proposed Silt Soxx w/ Diameter
---	Proposed 2' Contour
---	Proposed 10' Contour
---	Proposed Rip-Rap
* Silt Soxx Diameter in Inches	
* Super Silt Fence Can be Substituted for Silt Soxx of any Size	

DATE	REVISIONS
3-7-13	Revised Well Layout
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards

Date: 9/25/12
Scale: 1" = 50'
Designed By: CKW/CKM
File No. Antero 209-12
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FRACTURE PIT BASELINE PROFILE AND CROSS SECTIONS



CROSS SECTIONS
Horizontal & Vertical Scale: 1" = 50'
0' 50' 100' 150'

DATE	REVISIONS
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards



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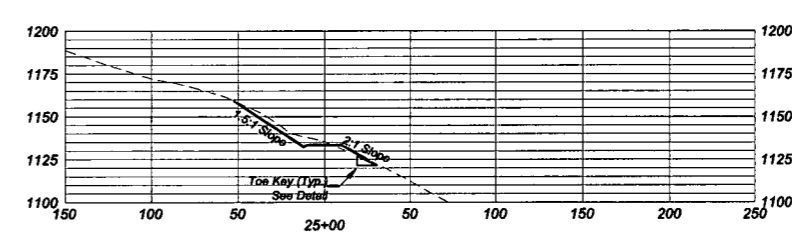
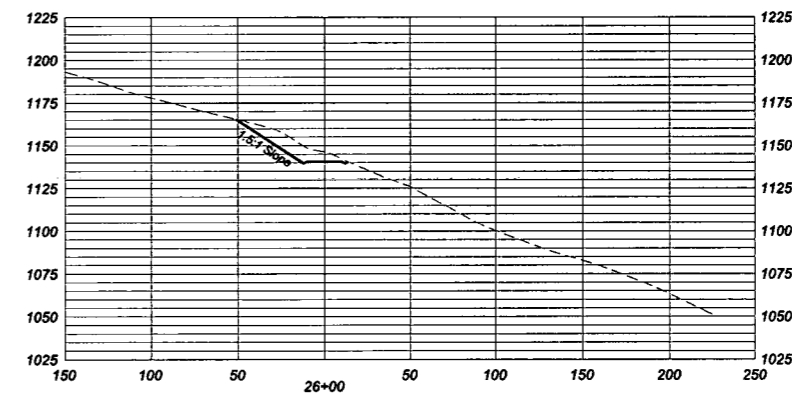
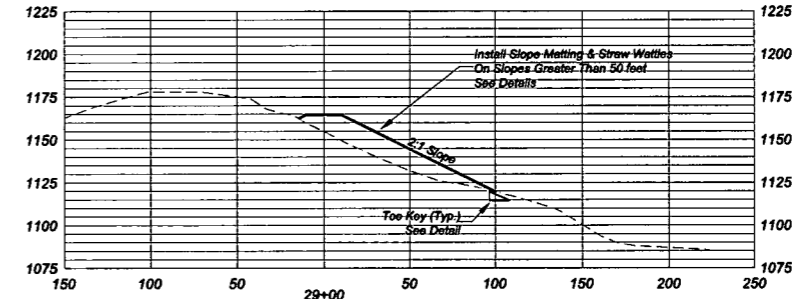
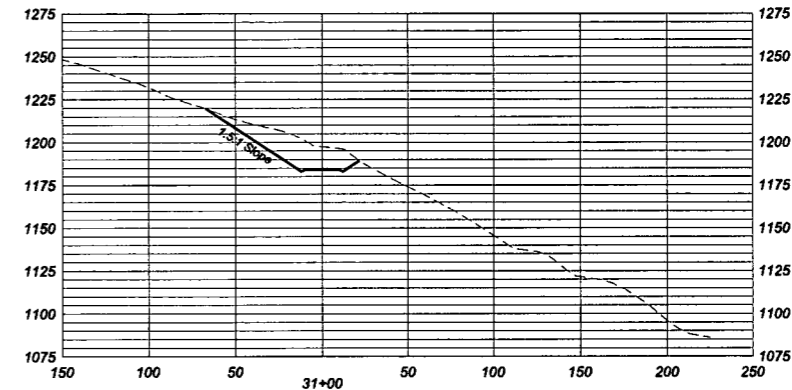
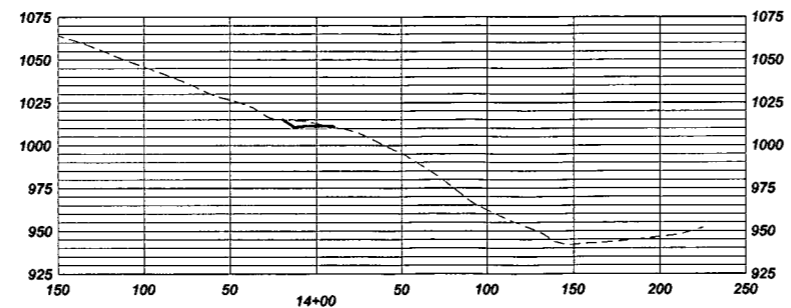
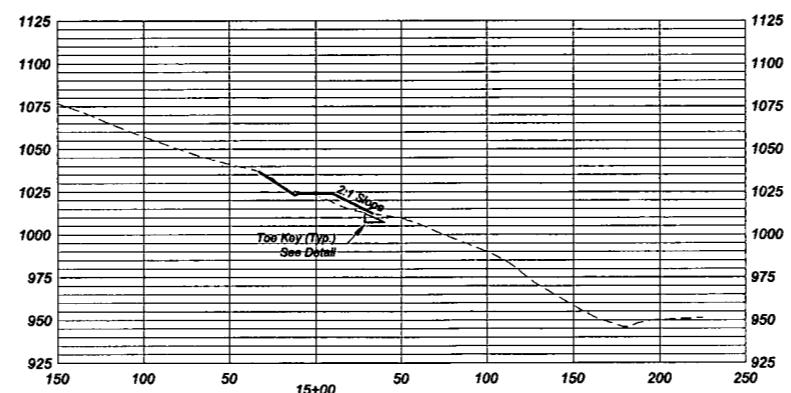
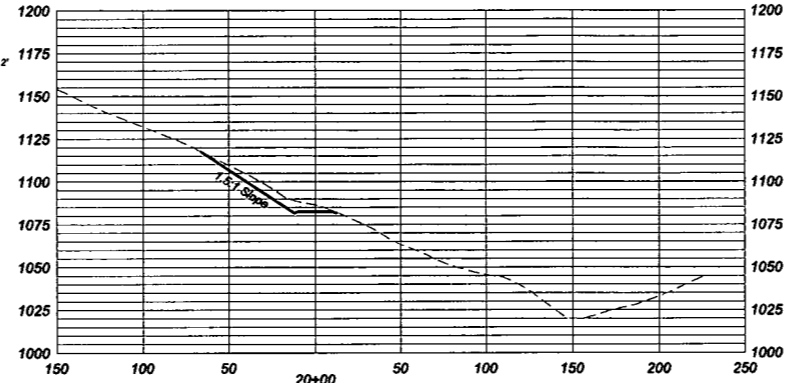
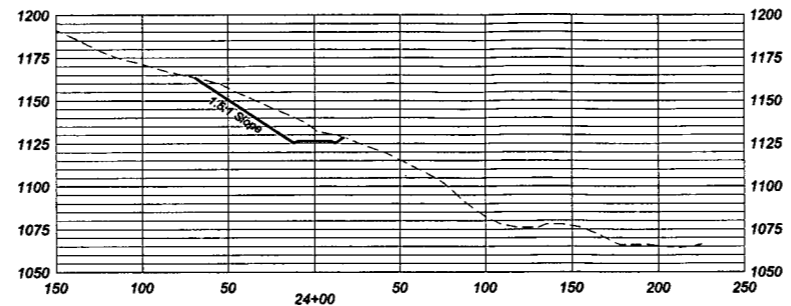
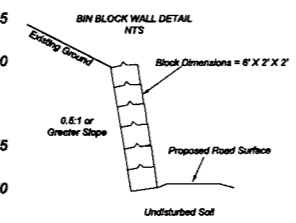
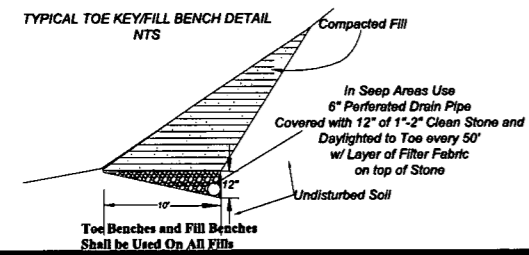
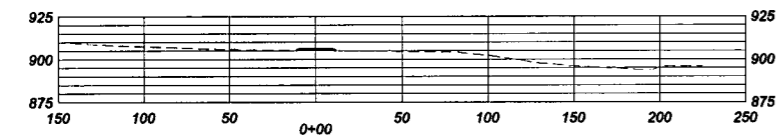
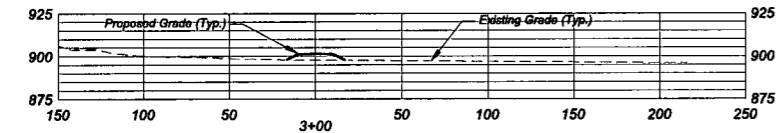
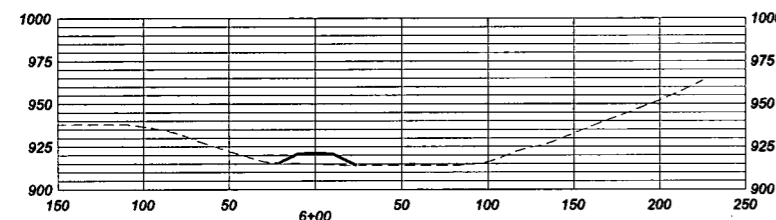
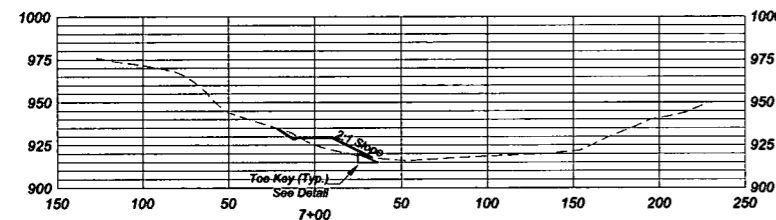
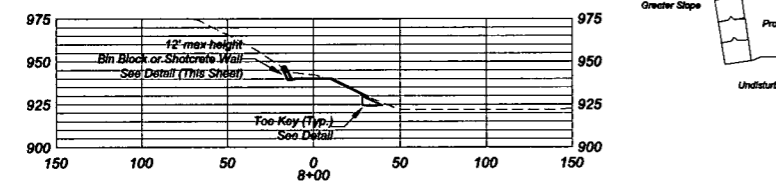
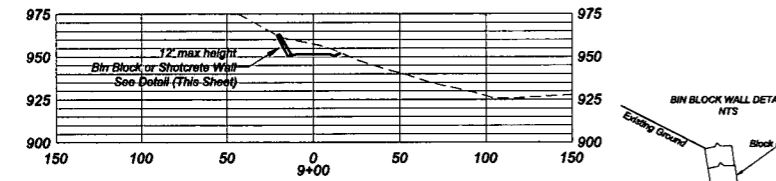
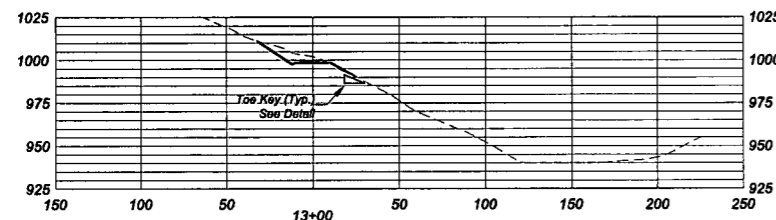
ANTERO RESOURCES

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ANTERO RESOURCES
APPALACHIAN CORP

FRACTURE PIT BASELINE
PROFILE AND CROSS SECTIONS
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIEGE COUNTY, WV

Date: 9/25/12
Scale: 1" = 50'
Designed By: CKW/CKM
File No. Antero 209-12
Page 15 of 19

ACCESS ROAD A CROSS SECTIONS (1)



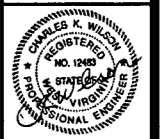
CROSS SECTIONS
Horizontal & Vertical Scale: 1" = 50'



DATE	REVISIONS
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards



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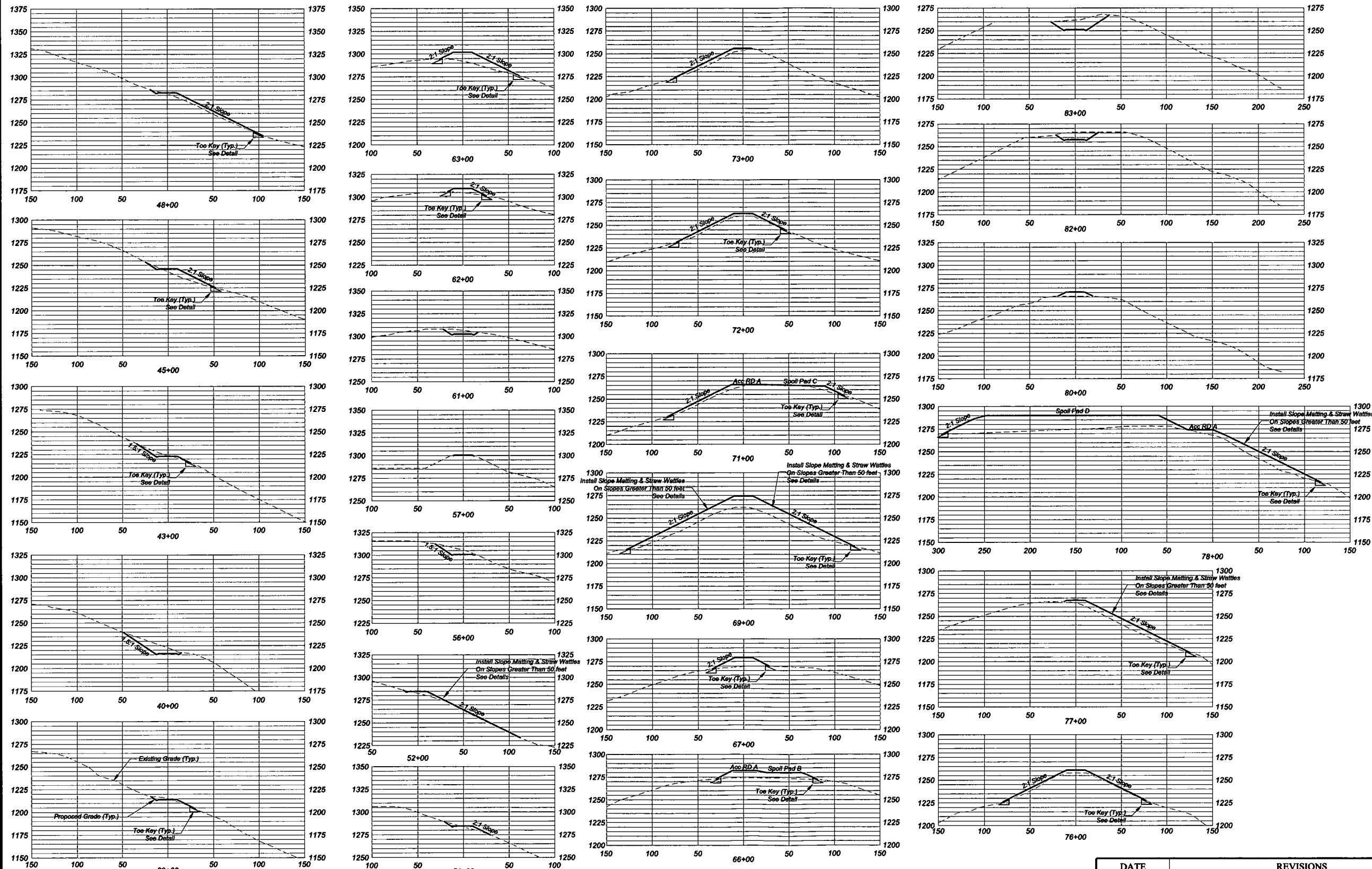
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ACCESS ROAD A CROSS SECTIONS (1)

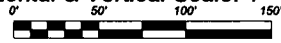
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ACCESS ROAD A CROSS SECTIONS (2)



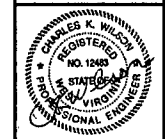
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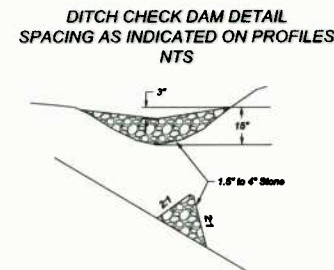
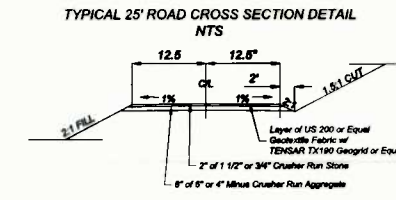
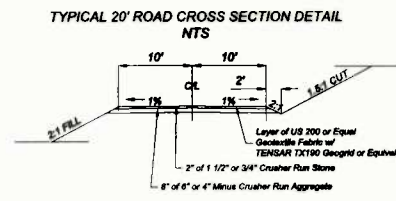
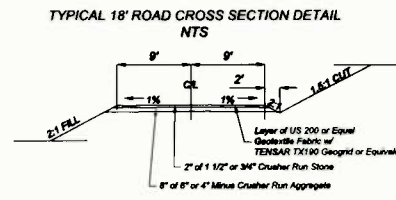
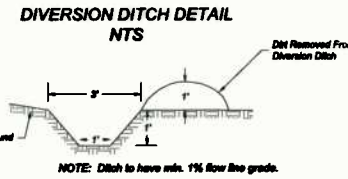
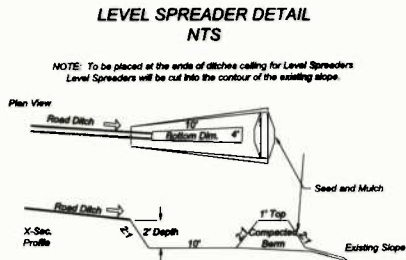
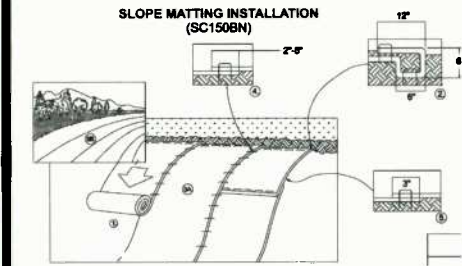
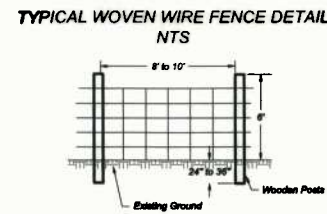
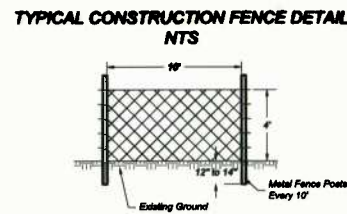
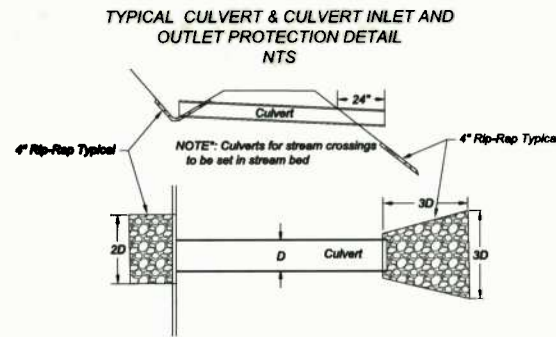
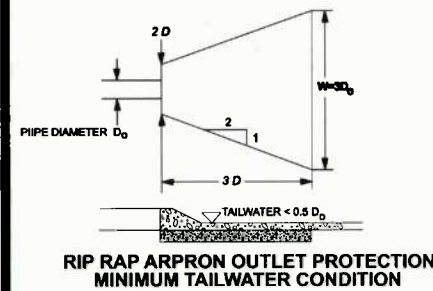
ANTERO RESOURCES

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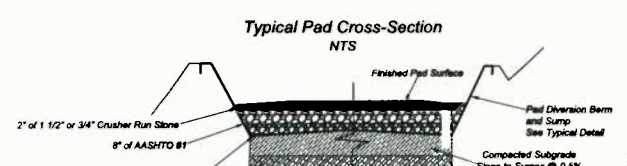
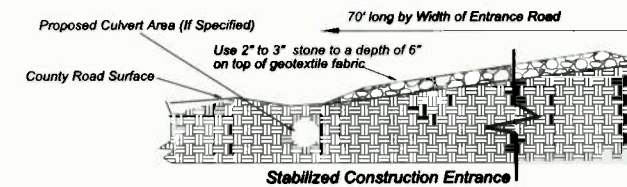
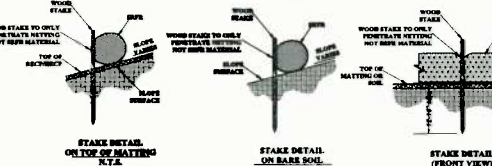
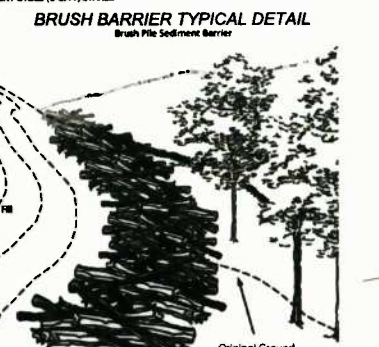
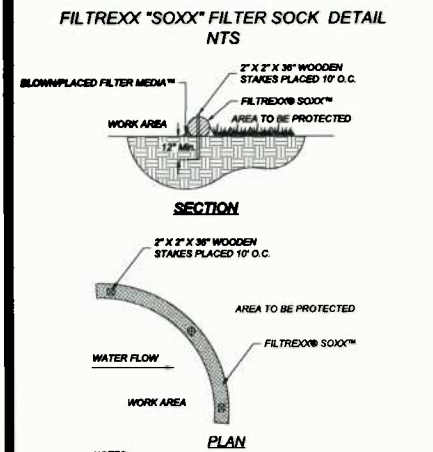
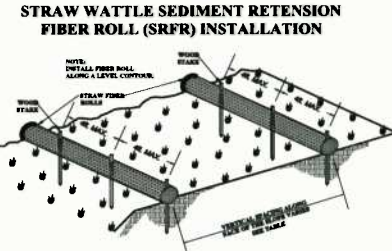
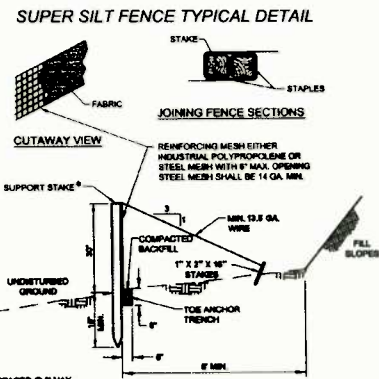
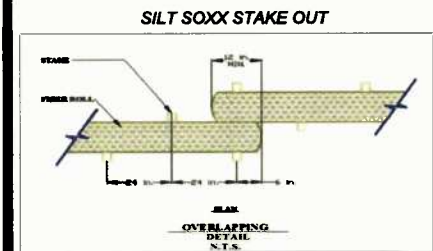
ACCESS ROAD A CROSS SECTIONS (2)
SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

Date: 9/25/12
Scale: 1" = 50'
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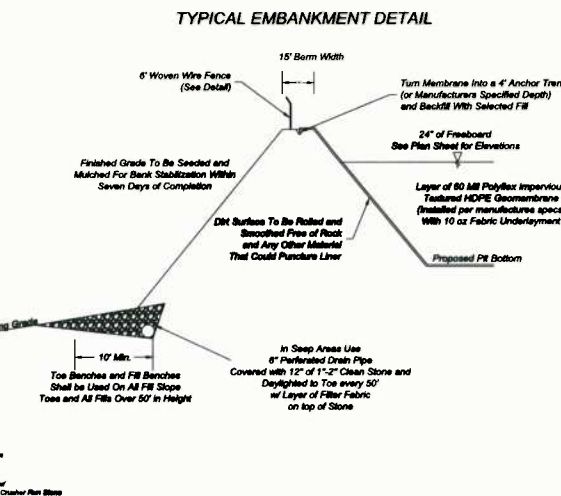
DETAILS



- COVER SLOPES WITH AVAILABLE TOP SOIL.
- PREP SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF FERTILIZER, LIME, AND SEED, WHEN NECESSARY.
- BEGIN AT THE TOP OF THE SLOPE BY SECURING THE BLANKET IN A 6" DEEP X 8" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE.
- ALL BLANKETS MUST BE FASTENED TO SOIL SURFACE IN A SECURE MANNER BY PLACING STAPLES/STAKES IN LOCATIONS AS SHOWN IN THE PATTERN GUIDE.
- THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2'-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM POSITION, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET. FOLLOW MANUFACTURER'S RECOMMENDATIONS.
- SUCCESSIVE BLANKETS SPICED DOWN THE SLOPE MUST BE PLACED END OVER END WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.
- IF SOIL CONDITIONS ARE LOOSE, STAKED OR STAPLED LENGTHS GREATER THAN 8" MAY BE NECESSARY TO SECURE THE BLANKETS PROPERLY.



**ANTERO RESOURCES
STANDARD RIBBON
COLOR SCHEME**



- NOTES:**
- ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
 - FILTREXX MEDIA TO MEET APPLICATION REQUIREMENTS.

	Yellow Ribbon: Yellow Ribbon used to indicate top of Cuts (C) Cut to be determined at time of subcut Slope determined by site design
	Yellow & Orange Ribbon: Yellow and Orange Ribbon used to indicate Grade at Top of Pad/Pond/Pit
	Orange Ribbon: Orange Ribbon used to indicate toes of Fills (F) Fill to be determined at time of subcut Slope determined by site design
	Pink Ribbon: Pink Ribbon used to indicate Top Hole Location Pink Ribbon used to indicate Survey Control Location
	Pink & Black Stripes Ribbon: Pink & Black Stripes Ribbon used to indicate Vertical Cut (VC) at Pad/Pond/Pit corner or edge Pink & Black Stripes Ribbon used to indicate Vertical Fill (VF) at Pad/Pond/Pit corner or edge Vertical Cut/Vertical Fill to be determined at time of subcut
	Blue & White Stripes Ribbon: Blue & White Stripes Ribbon used to indicate clearing limits/construction limits
	Orange & Black Stripes Ribbon: Orange & Black Stripes Ribbon used to indicate Vertical Cut (VC) at Cornerline or edge of access road Orange & Black Stripes Ribbon used to indicate Vertical Fill (VF) at cornerline or edge of access road
	Pink & White Stripes Ribbon: Pink & White Stripes Ribbon used to indicate Bottom and Sediment Control Structures Silt Fence (SF) Reinforced Filter Fence (RFF) Super Silt Fence (SSP) Filter Bank (FB)
	Orange & White Stripes Ribbon: Orange & White Stripes Ribbon used to indicate Topsoil Stockpile Locations
	Blue Ribbon: Blue Ribbon used to indicate Construction (C) Ditch Blue Ribbon used to indicate Bottoms (BTM) Sediment Traps



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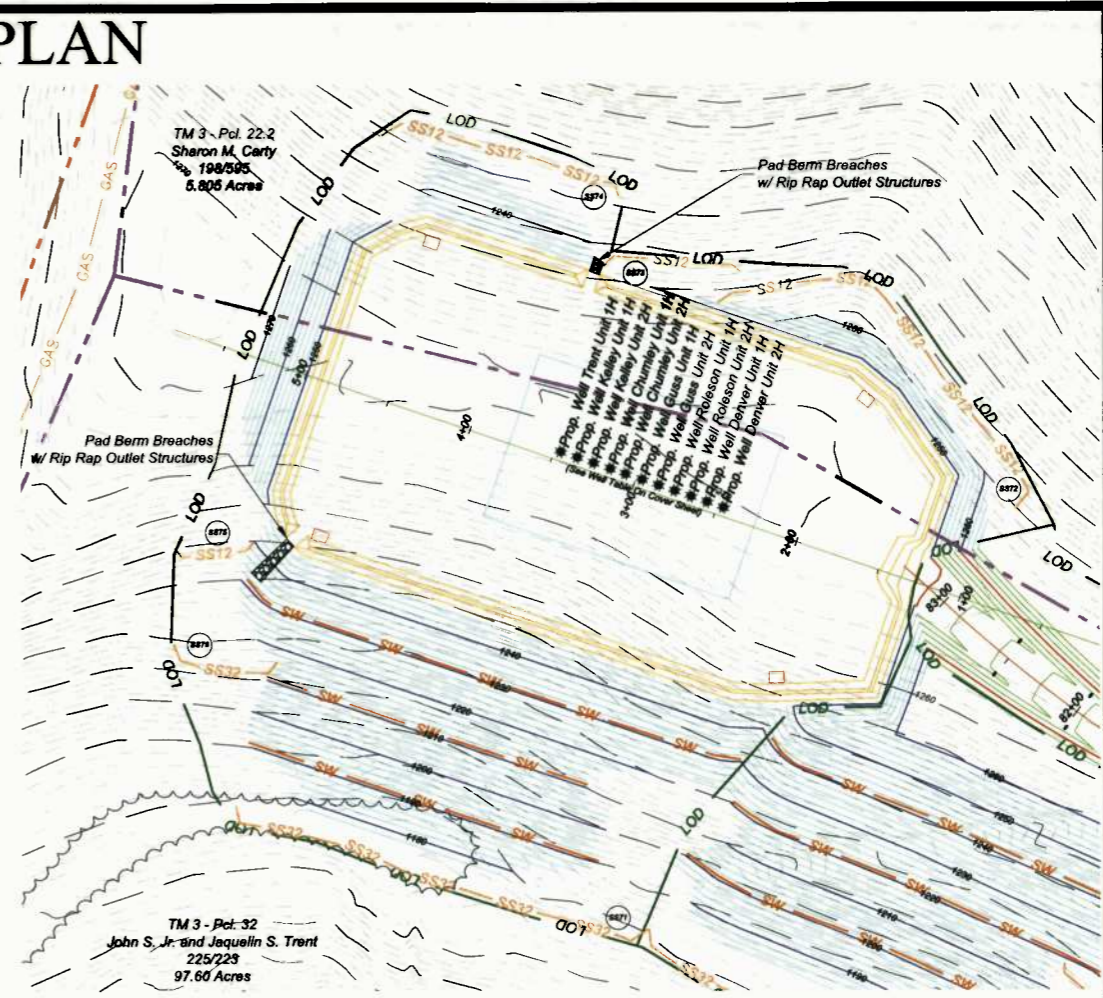
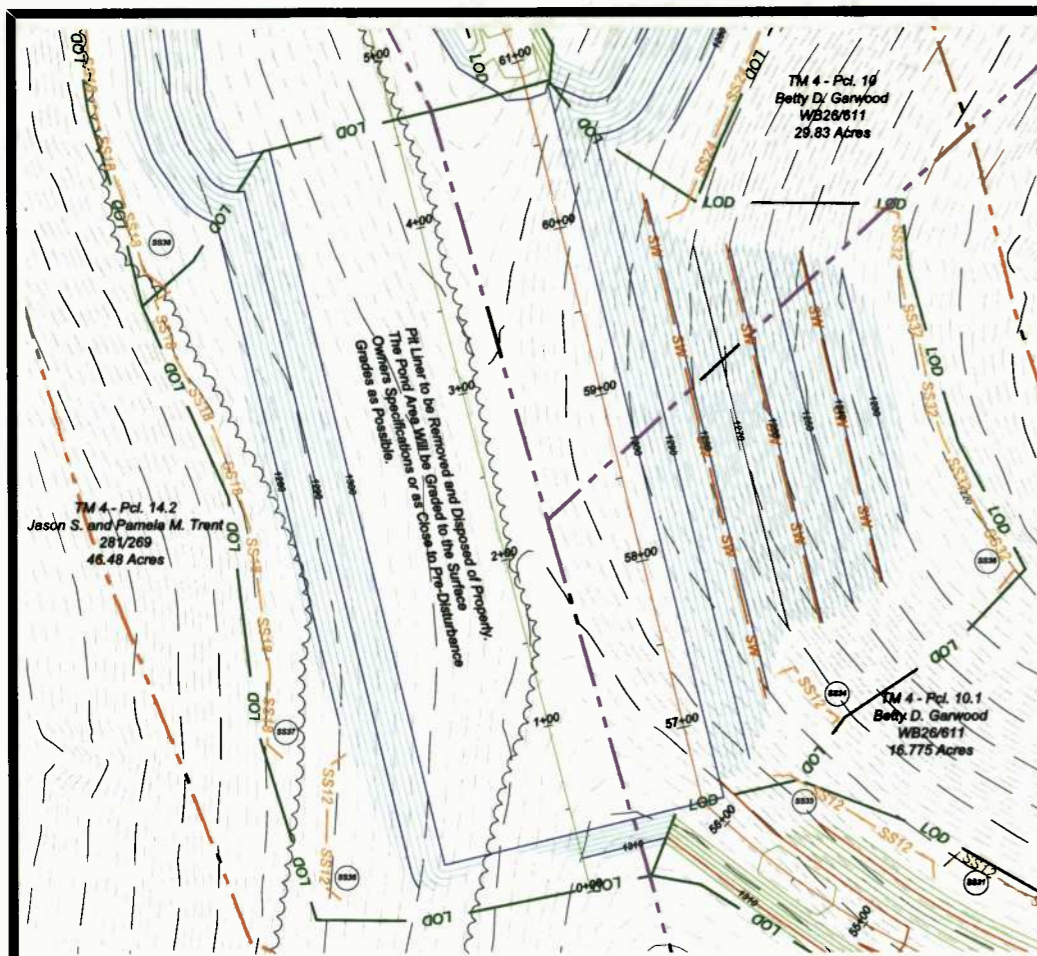
ANTERO RESOURCES
THIS DOCUMENT
PREPARED FOR
ANTERO RESOURCES
APPALACHIAN CORP

SUSIE JANE PAD
GREENBRIER DISTRICT
DODDRIDGE COUNTY, WV

DATE	REVISIONS
3-7-13	Updated Sump Detail
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards

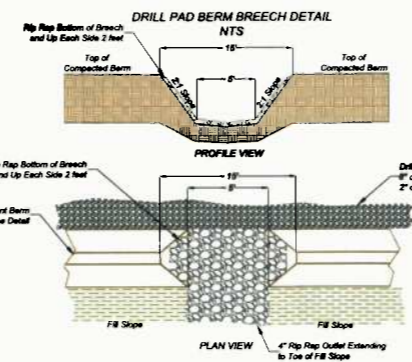
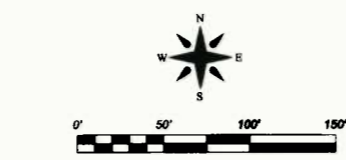
Date: 9/25/12
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Designed By: CKW/CKM
File No. Antero 209-12
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RECLAMATION PLAN



RECLAMATION CONSTRUCTION SPECIFICATIONS:

1. THE IMPOUNDMENT SHALL BE RECLAIMED TO LANDOWNERS SPECIFICATIONS OR AS NEAR TO ORIGINAL PRE-DISTURBED GRADES AS POSSIBLE. THE LINER SHALL BE REMOVED AND DISPOSED APPROPRIATELY OR RECYCLED.
2. EROSION AND SEDIMENT CONTROLS SHALL BE REPAIRED/RE-ESTABLISHED PRIOR TO RECLAMATION WORK COMMENCEMENT.
3. THE CONTRACTOR SHALL HAVE ON SITE AT ALL TIMES WHEN CONSTRUCTION IS IN PROGRESS A COMPETENT SUPERINTENDENT THOROUGHLY FAMILIAR WITH THE CONSTRUCTION OF EARTH BERMS AND EMBANKMENTS, THE COMPACTION OF SOILS AND PLACEMENTS OF LINERS.
4. SURFACE WATER SHALL BE DIVERTED AWAY FROM ALL EXCAVATIONS TO PREVENT FLOODING AND SOFTENING OF THE SUB GRADE OR COMPACTED MATERIALS.
5. TOP SOIL SHALL BE STRIPPED AND STOCKPILED WITH APPROPRIATE STABILIZATION AND SILT FENCE TO PREVENT EROSION. THE TOP SOIL SHALL BE REUSED DURING THE RECLAMATION PROCESS ON THE FACE OF THE IMPOUNDMENT PRIOR TO SEEDING.
6. TOE CUTS OF 12" MINIMUM SHALL BE EXCAVATED ON ALL RECEIVING SLOPES TO PROVIDE A BASE FOR THE IMPOUNDMENT BERM. ADDITIONAL TERRACING SHALL BE CONSTRUCTED FOR EACH ADDITIONAL FIFTY (50) VERTICAL FEET OF SLOPE AND SHALL BE A MINIMUM OF TEN (10) FEET WIDE.
7. PRIOR TO PLACING ANY FILL, THE EXPOSED SUB GRADE SHALL BE COMPACTED AND PROOF ROLLED TO PRODUCE A STABLE AND UNYIELDING SITE.
8. ALL FILL SHALL BE PLACED IN LIFTS OF UP TO 12" AND SHALL BE COMPACTED TO 80% OF THE STANDARD PROCTOR DENSITY OF THE SOIL PER ASTM D-1557. THE MOISTURE CONTENT SHALL BE CONTROLLED WITHIN PLUS OR MINUS 2% OF THE OPTIMUM TO FACILITATE COMPACTION. THE CONTRACTOR SHALL DO NUCLEON DENSITY TESTS EVERY LIFT OF SOIL AND SHALL BE DONE IN TWO RANDOM PLACES ON EACH STRAIGHT SIDE OF THE IMPOUNDMENT BERM. RECORDS SHALL BE MAINTAINED OF TEST LOCATION AND RESULTS AND PROVIDED TO THE ENGINEER ON REQUEST. AREAS THAT FAIL FOR COMPACTION SHALL BE REMOVED, RE-COMPACTED AND RETESTED FOR COMPLIANCE. IN LIEU OF MODIFIED PROCTOR TESTING, THE CONTRACTOR MAY PROOF ROLL THE SOIL EVERY 12" OF SOIL LIFT WITH A LOADED 16 TON TANDEM DUMP TRUCK. SOIL THAT DEFLECTS UNDER THE REAR WHEELS GREATER THAN 1/2" SHALL BE REMOVED, RE-COMPACTED AND RETESTED. COMPACTION OF SOIL SHALL BE DONE WITH A 3 TON SHEEPS FOOT, OR VIBRATORY ROLLER.
9. TOP SOIL SHALL BE PLACED ON THE FINAL SURFACE AND TRACKED IN WITH DOZERS ONLY AND FERTILIZED, LIMED, SEEDING AND MULCHED AT RATES ESTABLISHED ON SHEET 3 OF THESE PLANS. THE SITE SHALL BE MAINTAINED AND MANAGED TO ESTABLISH A UNIFORM TURF UNTIL 70% OF THE AREA IS ESTABLISHED. AFTER FINAL INSPECTION ALL EROSION CONTROLS SHALL BE REMOVED AND ANY DISTURBED AREAS RESEEDED AND MULCHED.
10. MAINTENANCE AND OTHER CONSIDERATIONS AND GROUND WATER PROTECTION: ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH RAINFALL OF 0.5 INCHES OR MORE. THEY WILL BE INSPECTED FOR UNDERMINING, DETERIORATION, EROSION AND EXCESS DEPOSITED MATERIAL. ALL DEFICIENCIES WILL BE CORRECTED IMMEDIATELY. EXCESS MATERIAL WILL BE SPREAD ON THE SITE IN A MANNER WHERE IT IS NOT LIKELY TO ERODE IN THE FUTURE. CLEANING PROCEDURES WILL BE COMPLETED AT REGULAR INTERVALS AND AT LEAST WHEN SEDIMENT REACHES CLEAN OUT LEVELS SHOWN. RECORDS OF CLEANING AND CORRECTIONS WILL BE MAINTAINED BY THE CONTRACTOR. THE "GENERIC GROUNDWATER PROTECTION PLAN FOR CONSTRUCTION SITES" WILL BE USED AND AVAILABLE ON SITE AT ALL TIMES. AN AREA WILL BE PROVIDED FOR VEHICLE AND EQUIPMENT MAINTENANCE. MOBILE FUEL TRUCKS WITH APPROVED TANKS WILL BE USED ON THIS SITE. PORTABLE SANITARY FACILITIES WILL BE AVAILABLE FOR EMPLOYEES. IF CONCRETE IS USED, EXCESS CONCRETE WILL BE DISPOSED OF PROPERLY AND NOT ALLOWED TO REMAIN ON THIS SITE. MACHINERY WILL NOT BE ALLOWED IN STREAMS. FLUIDS SUCH AS DIESEL FUEL, GAS, OIL OR ANTIFREEZE WILL BE KEPT IN PROPER CONTAINERS AND ANY SPILLAGE WILL BE CLEANED AND TAKEN OFF SITE TO A PROPER FACILITY. SOLID OR HAZARDOUS WASTES WILL BE DISPOSED IN ACCORDANCE WITH APPROPRIATE STATE AND FEDERAL REGULATIONS. IT IS THE CONTRACTORS RESPONSIBILITY TO MAKE CHANGES AND NOTIFY W/SHOP OF ANY CHANGES TO DWG. A FINAL INSPECTION WILL BE MADE AT THE CONCLUSION OF THE PROJECT AND ALL CORRECTIONS MADE BEFORE SIGN-OFF OF THE PROJECT SITE.
11. SEQUENCE OF EVENTS:
 - A. A PRE-CONSTRUCTION CONFERENCE WILL BE HELD ON SITE WITH CONTRACTOR TO REVIEW THE CONSTRUCTION DRAWINGS AND PROVIDE ANY REQUESTED GUIDANCE.
 - B. CONSTRUCT THE CONSTRUCTION ENTRANCE.
 - C. CONSTRUCT ALL PROPOSED SEDIMENT CONTROL DEVICES AS SHOWN.
 - D. REMOVE TOPSOIL AND PLACE AT AN AREA DETERMINED IN THE FIELD WHERE EROSION WILL NOT TAKE PLACE. SILT FENCE SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES.
 - E. GRADING OPERATIONS AS REQUIRED. FILL SLOPES SHALL BE TOPSOILED.
 - F. WHEN FINAL GRADE IS ACHIEVED, TOPSOIL TO BE PLACED ON ALL DISTURBED AREAS NOT LIMED. SEED ALL DISTURBED AREAS AS REQUIRED. A SOIL SAMPLE SHOULD BE TAKEN AND TESTED TO DETERMINE RECOMMENDED RATES. IF NO SOIL SAMPLE IS TAKEN THE FOLLOWING RATES SHOULD BE APPLIED AS A MINIMUM: LIME AT A RATE OF 4 TONS PER ACRE, FERTILIZER AT A RATE OF 300 LBS. OF 10-20-10 PER ACRE, SEED WITH 45 LBS PER ACRE OF TALL FESCUE AND 20 LBS PER ACRE OF PERENNIAL RYE GRASS.
 - G. LIME, FERTILIZER, AND SEED WILL BE APPLIED BY HAND OR USING A HYDRO-SEEDER. HYDRO-MULCH PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
 - H. FINAL SEEDING MUST OCCUR WITHIN 7 DAYS OF FINAL GRADING.
 - I. WHEN SITE IS STABILIZED, ALL EROSION AND SEDIMENT CONTROL MEASURES CAN BE REMOVED AND REPAIR/STABILIZE THOSE AREAS IN ACCORDANCE WITH STATE STANDARDS.
 - J. MAKE MODIFICATIONS FOR PERMANENT STORM WATER MANAGEMENT.
 - K. FINAL SITE INSPECTION.
12. PERMANENT STABILIZATION: ALL AREAS LEFT UNCOVERED BY EITHER BUILDINGS OR PAVEMENT SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING AND WITHIN 7 DAYS. AT NO TIME SHALL LAND LAY DORMANT FOR LONGER THAN 21 DAYS.



POST CONSTRUCTION DRILLING/FRACTURING REQUIREMENTS:

1. EROSION AND SEDIMENT CONTROLS SHALL BE REPAIRED/RE-ESTABLISHED IN AREAS WHERE AT LEAST 70% TURF HAS NOT BEEN ATTAINED OR EROSION HAS OCCURRED SINCE INITIAL CONSTRUCTION. REPAIRS TO CRITICAL EROSION AREAS (REGARDING SEEDING AND MULCH AND/OR SLOPE MATTING) SHALL BE DONE BEFORE DRILLING/FRACTURING OPERATIONS COMMENCE. WV DQG IMP SHALL BE USED FOR EROSION AND SEDIMENT CONTROLS.
2. MAINTENANCE AND OTHER CONSIDERATIONS AND GROUND WATER PROTECTION: ALL EROSION AND SEDIMENT CONTROL AND DRILL PAD CONTAINMENT MEASURES WILL BE CHECKED DAILY AND AFTER EACH RAINFALL OF 0.5 INCHES OR MORE. THEY WILL BE INSPECTED FOR UNDERMINING, DETERIORATION, EROSION AND EXCESS DEPOSITED MATERIAL. ALL DEFICIENCIES WILL BE CORRECTED IMMEDIATELY. EXCESS MATERIAL WILL BE SPREAD ON THE SITE IN A MANNER WHERE IT IS NOT LIKELY TO ERODE IN THE FUTURE. CLEANING PROCEDURES WILL BE COMPLETED AT REGULAR INTERVALS AND AT LEAST WHEN SEDIMENT REACHES CLEAN OUT LEVELS SHOWN. RECORDS OF CLEANING AND CORRECTIONS WILL BE MAINTAINED BY THE CONTRACTOR. THE "GENERIC GROUNDWATER PROTECTION PLAN FOR CONSTRUCTION SITES" WILL BE USED AND AVAILABLE ON SITE AT ALL TIMES. AN AREA WILL BE PROVIDED FOR VEHICLE AND EQUIPMENT MAINTENANCE. MOBILE FUEL TRUCKS WITH APPROVED TANKS WILL BE USED ON THIS SITE. PORTABLE SANITARY FACILITIES WILL BE AVAILABLE FOR EMPLOYEES. IF CONCRETE IS USED, EXCESS CONCRETE WILL BE DISPOSED OF PROPERLY AND NOT ALLOWED TO REMAIN ON THIS SITE. MACHINERY WILL NOT BE ALLOWED IN LIVE STREAMS. FLUIDS SUCH AS DIESEL FUEL, GAS, OIL OR ANTIFREEZE WILL BE KEPT IN PROPER CONTAINERS AND ANY SPILLAGE WILL BE CLEANED AND TAKEN OFF SITE TO A PROPER FACILITY. SOLID OR HAZARDOUS WASTES WILL BE DISPOSED IN ACCORDANCE WITH APPROPRIATE STATE AND FEDERAL REGULATIONS.

***NOTE:** An additional 15 tons of 4" Rip Rap is required for pad outlet structures.

Legend	
— 1330 —	Existing 2' Contour
— 1000 —	Existing 10' Contour
— (Tree Symbol) —	Existing Tree Line
— E — E —	Existing Utility Line / Pole
— (Dashed Line) —	Surface Owner Property Line
— GAS —	Existing Gas Line CL
— LOD —	Limits of Disturbance
— (Dashed Line with Arrow) —	Proposed Diversion Ditch
— (Dashed Line) —	Proposed 2' Contour
— 1330 —	Proposed 10' Contour
— SF —	Proposed Super Silt Fence
— (Symbol) —	Proposed Check Dam
— (Symbol) —	Proposed Culvert W/ Inlet & Outlet Protection
— SW —	Proposed Straw Wattles
— SSOX —	Proposed Silt Sox w/ Diameter
— (Symbol) —	Proposed 2' Contour
— (Symbol) —	Proposed 10' Contour
— (Symbol) —	Proposed Rip-Rap
* Silt Sox Diameter in Inches	
* Super Silt Fence Can be Substituted for Silt Sox of any Size	

DATE	REVISIONS
3-7-13	Updated Reclamation Notes
3-22-13	Revised Access Road A Alignment
4-11-13	Updated Per New Antero Standards
6-18-13	Updated Per New Antero / DEP Standards

RECLAMATION PLAN

SUSIE JANE PAD

GREENBRIER DISTRICT

DODDRIEGE COUNTY, WV

ANTERO RESOURCES

THIS DOCUMENT PREPARED FOR
ANTERO RESOURCES
APPALACHIAN CORP

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L&W Enterprises, Inc.

Date: 9/25/12
Scale: 1" = 50'
Designed by: CKW/CKM
File No. Antero 209-12
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