



P.O. BOX 150, GLENVILLE, WV 26351  
 (304) 462-5634 • FAX (304) 462-5656

# LETTER OF TRANSMITTAL

TO: Doddridge County Floodplain Coordinator  
118 East Court Street  
West Union, WV 26456

DATE 11/15/13	JOB NO. 7871
ATTENTION Dan Wellings	
RE: WEU 49 Well Pad and Service Road	

FILED  
 2013 NOV 18 PM 12:13  
 BETH A. ROGERS  
 COUNTY CLERK  
 DODDRIDGE COUNTY, WV

WE ARE SENDING YOU  Attached  Under separate cover via \_\_\_\_\_ the following items:

Shop drawings     Prints     Plans     Samples     Specifications  
 Copy of letter     Change order     \_\_\_\_\_

COPIES	DATE	NO.	DESCRIPTION
1			Request for Concurrence to Begin Construction on WEU 49 Well Pad and Service Road

THESE ARE TRANSMITTED as checked below:

For approval     Approved as submitted     Resubmit \_\_\_\_\_ copies for approval  
 For your use     Approved as noted     Submit \_\_\_\_\_ copies for distribution  
 As requested     Returned for corrections     Return \_\_\_\_\_ corrected prints  
 For review and comment     \_\_\_\_\_  
 FOR BIDS DUE \_\_\_\_\_ 20 \_\_\_\_\_  PRINTS RETURNED AFTER LOAN TO US

REMARKS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

COPY TO SLS Files; EQT Production Company

SIGNED: Deanna McVicker

If enclosures are not as noted, kindly notify us at once.



P.O. BOX 150, GLENVILLE, WV 26351  
 (304) 462-5634 • FAX (304) 462-5656

# LETTER OF TRANSMITTAL

TO: Dan Wellings, Floodplain Coordinator  
118 East Court Street  
West Union, WV 26456

DATE 11/12/13	<b>FILED</b> 7871
ATTENTION	
RE: EQT WEU 49	<b>2013 NOV 14 AM 11:49</b>
	BETH A. ROGERS COUNTY CLERK DODDRIDGE COUNTY, WV

> WE ARE SENDING YOU  Attached  Under separate cover via \_\_\_\_\_ the following items:

- Shop drawings       Prints       Plans       Samples       Specifications  
 Copy of letter       Change order       \_\_\_\_\_

COPIES	DATE	NO.	DESCRIPTION
1			WEU 49 Well Pad and Service Road Site Map
1			WEU 49 Well Pad and Service Road Location Map
1			WEU Service Road Site Plans
1			WEU 49 Site Plans
			Please see attached letter

THESE ARE TRANSMITTED as checked below:

- For approval       Approved as submitted       Resubmit \_\_\_\_\_ copies for approval  
 For your use       Approved as noted       Submit \_\_\_\_\_ copies for distribution  
 As requested       Returned for corrections       Return \_\_\_\_\_ corrected prints  
 For review and comment       \_\_\_\_\_  
 FOR BIDS DUE \_\_\_\_\_ 20 \_\_\_\_\_  PRINTS RETURNED AFTER LOAN TO US

REMARKS \_\_\_\_\_  
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 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

COPY TO SLS Files; EQT Production Company

SIGNED: Deanna McVicker



2013 NOV 14 AM 11:49

BETH A. ROGERS  
COUNTY CLERK  
DODDRIDGE COUNTY, WV

November 12, 2013

Mr. Dan Wellings  
Floodplain Coordinator  
Doddridge County Commission  
118 East Court Street  
West Union, WV 26456

RE: EQT Production Company  
WEU 49 Well Pad Project and WEU 49 Service Road

Mr. Wellings,

On behalf of EQT, SLS is submitting this letter pursuant to the requirements of the Doddridge County Floodplain Ordinance to request concurrence to complete a project in Doddridge County, West Virginia. EQT has proposed a well pad, access road, and tank pad (Well Pad Project) and a Service Road to aid in the development of individual Marcellus Shale gas wells. The Well Pad site is located in West Union and the access road entrance is located 2,933' +/- southeast of the junction of US Route 50 and County Route 50/41. The coordinates of the well pad's access road are latitude 39.27490 and longitude 80.78524 (NAD 83). The center of the well pad is located 1.6 miles +/- southeast of the junction of US Route 50 and County Route 50/41. The coordinates of the center of the well pad are latitude 39.25491 and longitude 80.78648 (NAD 83). The approximate location of the Service Road is 39.27578, -80.79493 off of County Route 50/41.

This site does not impact a floodplain. Please see the attached project location map, site plans and FEMA firmette.

On behalf of EQT, SLS is requesting your concurrence to begin construction on the WEU 49 Well Pad and Service Road once the WVDEP drilling permits are received. Please feel to contact Thomas Meeks with SLS at 304-462-5634 or [tmeeks@slssurveys.com](mailto:tmeeks@slssurveys.com), or Megan Landfried with EQT at 304-848-0061 or [mlandfried@eqt.com](mailto:mlandfried@eqt.com) should you have any questions or comments.

Respectfully submitted,

Gregory A. Smith, P.S.  
President

GAS/ch

cc: Megan Landfried/EQT Production Company



#13-090

November 12, 2013

Mr. Dan Wellings  
Floodplain Coordinator  
Doddridge County Commission  
118 East Court Street  
West Union, WV 26456

RE: EQT Production Company  
WEU 49 Well Pad Project and WEU 49 Service Road

FILED  
2013 NOV 18 PM 12:13  
BETH A. ROGERS  
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DODDRIDGE COUNTY, WV

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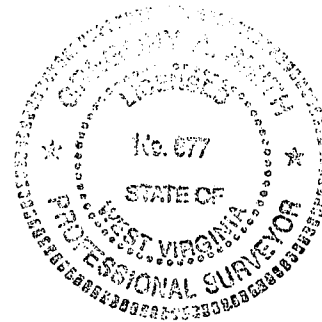
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Respectfully submitted,

Gregory A. Smith, P.S.  
President

GAS/ch

cc: Megan Landfried/EQT Production Company





# 13-090  
WEU 49 Well Pad  
WEU 49 Service Rd

# 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 Meja E Jand  
DATE 11/8/13

## 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.**

**APPLICANT'S NAME: EQT Production Company  
ADDRESS: 115 Professional Place, Bridgeport, WV 26330  
TELEPHONE NUMBER: 304-848-0061**

**BUILDER'S NAME: EQT Production Company**  
**ADDRESS: 115 Professional Place, Bridgeport, WV 26330**  
**TELEPHONE NUMBER: 304-848-0061**

**ENGINEER'S NAME: Smith Land Surveying**  
**ADDRESS: 226 West Main Street, Glenntown, WV 26351**  
**TELEPHONE NUMBER: 304-462-5634**

**PROJECT LOCATION:**

**NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)**  
**COASTAL FOREST RESOURCES COMPANY**  
**ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)**  
**1772 Brushy Fork Road, Buckhannon, WV 26201**  
**DISTRICT: West Union**  
**DATE/FROM WHOM PROPERTY PURCHASED: 9/16/1996 - The Wolfe Revocable Trust by**  
**William J. Wolfe, Trustee**  
**LAND BOOK DESCRIPTION: PRITCHARD RUN 32.82 AC**  
**DEED BOOK REFERENCE: 232/ 611**  
**TAX MAP REFERENCE: Map 15, Parcel 6**  
**EXISTING BUILDINGS/USES OF PROPERTY: No buildings/Timberlands**  
**NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT**  
**PROPERTY - None**  
**ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE**  
**SUBJECT PROPERTY - None**

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**NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)**  
**RUTH M DAVIES PIERCE Heirs C/O TOM DAVIES**  
**ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)**  
**1104 GREENMONT CIRCLE, VIENNA, WV 26105**  
**DISTRICT: West Union**  
**DATE/FROM WHOM PROPERTY PURCHASED: 7-26-1972 - Ruth M. Davies Pierce and George**  
**A. Pierce; 4/24/1970 Anne Davies Rieley; 10/30/1997 - Will of Thomas R. Davies (WB42/401)**  
**LAND BOOK DESCRIPTION: ARNOLDS CREEK & BLUESTONE CK 1457.95 AC**  
**DEED BOOK REFERENCE: DB 162/771**  
**TAX MAP REFERENCE: Map 15, Parcel 8**  
**EXISTING BUILDINGS/USES OF PROPERTY: No buildings/woodlands**

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**NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY - None**

**ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY - None**

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**NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)**

Doddridge County Board of Education

**ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)**

**103 Sistersville Pike, West Union, West Virginia 26456**

**DISTRICT: West Union**

**DATE/FROM WHOM PROPERTY PURCHASED: 10/20/2004 – John R. Davies, Robert S. Rieley, Robert D. Hall, Richard Hall, Bruce Hall, Margaret Hall Dowling and Stephen R. Hall; 5/9/2012 - COASTAL FOREST RESOURCES COMPANY**

**LAND BOOK DESCRIPTION: ARNOLDS CREEK & BLUESTONE CK 1457.95 AC**

**DEED BOOK REFERENCE: DB 661/667; 300/621**

**TAX MAP REFERENCE: Map 15, Parcel 6, 8.1, 8.2**

**EXISTING BUILDINGS/USES OF PROPERTY: Bus Garage (under construction)/Bus Maintenance**

**NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY – Alvin Ross, Director of Support Services**

**ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY - 103 Sistersville Pike, West Union, West Virginia 26456**

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To avoid delay in processing the application, please provide enough information to easily identify the project location. EQT proposed to build a road from Route 50 to existing infrastructure behind the Doddridge County Highschool. This road will eliminate oil and gas traffic on the highschools road.

**DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)**

**A. STRUCTURAL DEVELOPMENT**

<u>ACTIVITY</u>	<u>STRUCTURAL TYPE</u>
<input checked="" 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 checked="" 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 type="checkbox"/>            | Fill  | <input type="checkbox"/> | Mining | <input type="checkbox"/> | Drilling | <input type="checkbox"/> | Pipelining |
| <input type="checkbox"/>            | Grading   |                          |        |                          |          |                          |            |
| <input type="checkbox"/>            | Excavation (except for STRUCTURAL DEVELOPMENT checked above)          |                          |        |                          |          |                          |            |
| <input type="checkbox"/>            | Watercourse Altercation (including dredging and channel modification) |                          |        |                          |          |                          |            |
| <input type="checkbox"/>            | Drainage Improvements (including culvert work)                        |                          |        |                          |          |                          |            |
| <input checked="" type="checkbox"/> | Road, Street, or Bridge Construction                                  |                          |        |                          |          |                          |            |
| <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**

1. **SUBMIT ALL STANDARD SITE PLANS, IF ANY HAVE BEEN PREPARED.**
2. **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.
3. **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 \$440,000.00**

**D. ADJACENT AND/OR AFFECTED LANDOWNERS:**

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: COASTAL FOREST RESOURCES COMPANY**  
**ADDRESS: 1772 Brushy Fork Road,**  
**Buckhannon, WV 26201**

**NAME: RUTH M DAVIES PIERCE**  
**C/O TOM DAVIES**  
**ADDRESS: 1104 GREENMONT CIRCLE**  
**VIENNA, WV 26105**

- 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.**

<b>NAME:</b> _____	<b>NAME:</b> _____
<b>ADDRESS:</b> _____	<b>ADDRESS:</b> _____
_____	_____

<b>NAME:</b> _____	<b>NAME:</b> _____
<b>ADDRESS:</b> _____	<b>ADDRESS:</b> _____
_____	_____

**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.
- (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): Megan E. Landfried

SIGNATURE: Megan E. Landfried DATE: 11/8/13

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: 120  
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 \_\_\_\_\_  
100-Year flood elevation is: \_\_\_\_\_ NGVD (MSL)

Unavailable

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

See section 4 for additional instructions.

SIGNED Don Welton DATE 11/19/2013

**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 \_\_\_\_\_ DATE \_\_\_\_\_

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: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

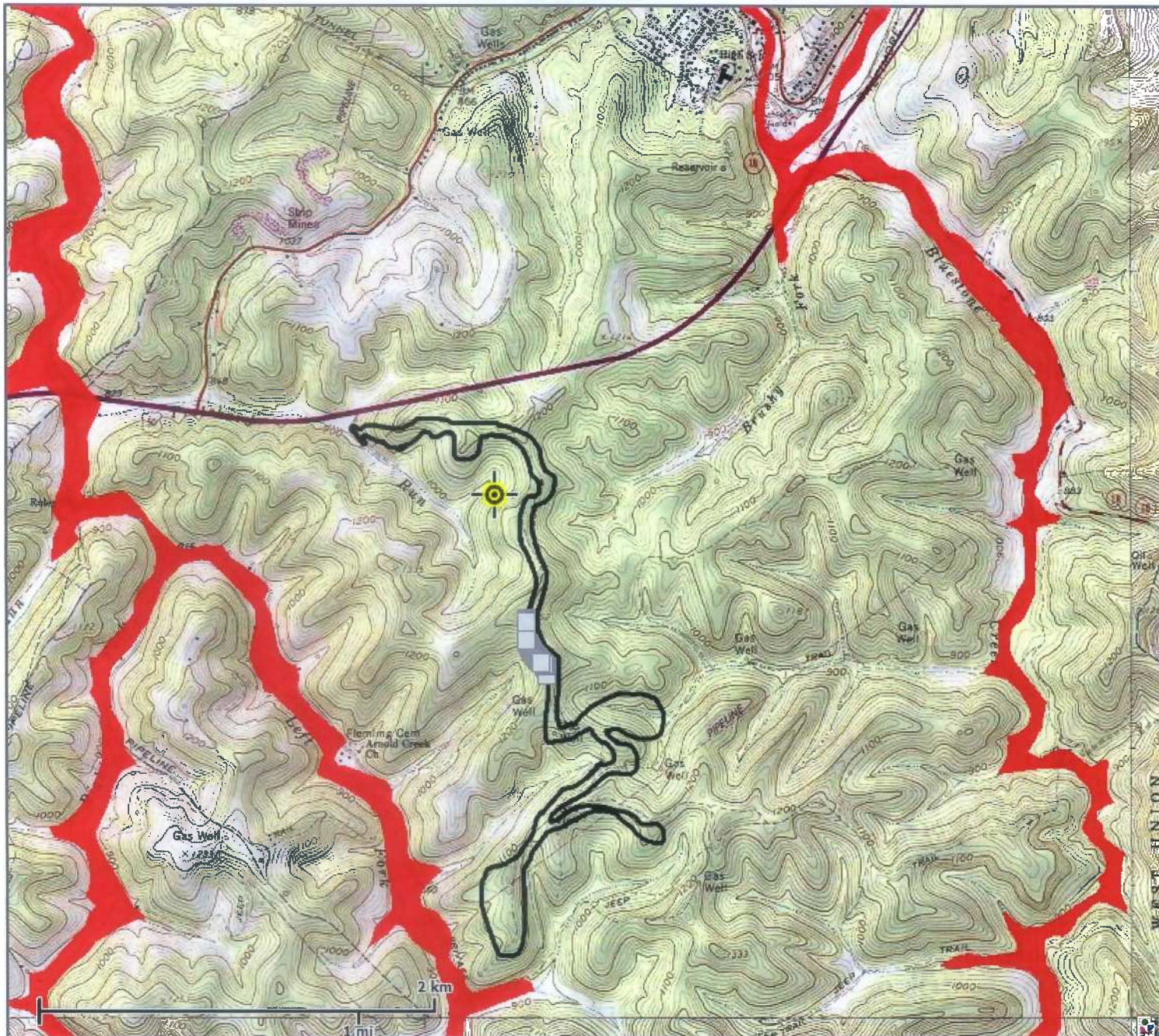
THE FOLLOWING MUST BE COMPLETED BY THE FLOODPLAIN  
ADMINISTRATOR/MANAGER OR HIS/HER AGENT.

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 \_\_\_\_\_





# WEU 49 WELL PAD AND SERVICE ROAD SITE



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

Map Created on 11/12/2013

 Location of the mouse click

 **Flood Hazard Zone**  
(1% annual chance floodplain)

### User Notes:

7871 WEU 49 WELL PAD AND SERVICE ROAD PROJECT LOCATIONS  
OUTLINED IN BLACK

### Disclaimer:

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

WV Flood Tool is supported by FEMA, WV NFIP Office, and WV GIS Technical Center  
(<http://www.MapWV.gov/flood>)

**Flood Hazard Area:** Selected site is NOT WITHIN any identified flood hazard area. Unmapped flood hazard areas may be present.

**Elevation:** About 1071 feet

**Location (long, lat):** 80.787131 W, 39.273157 N

**Location (UTM 17N):** (518362, 4347111)

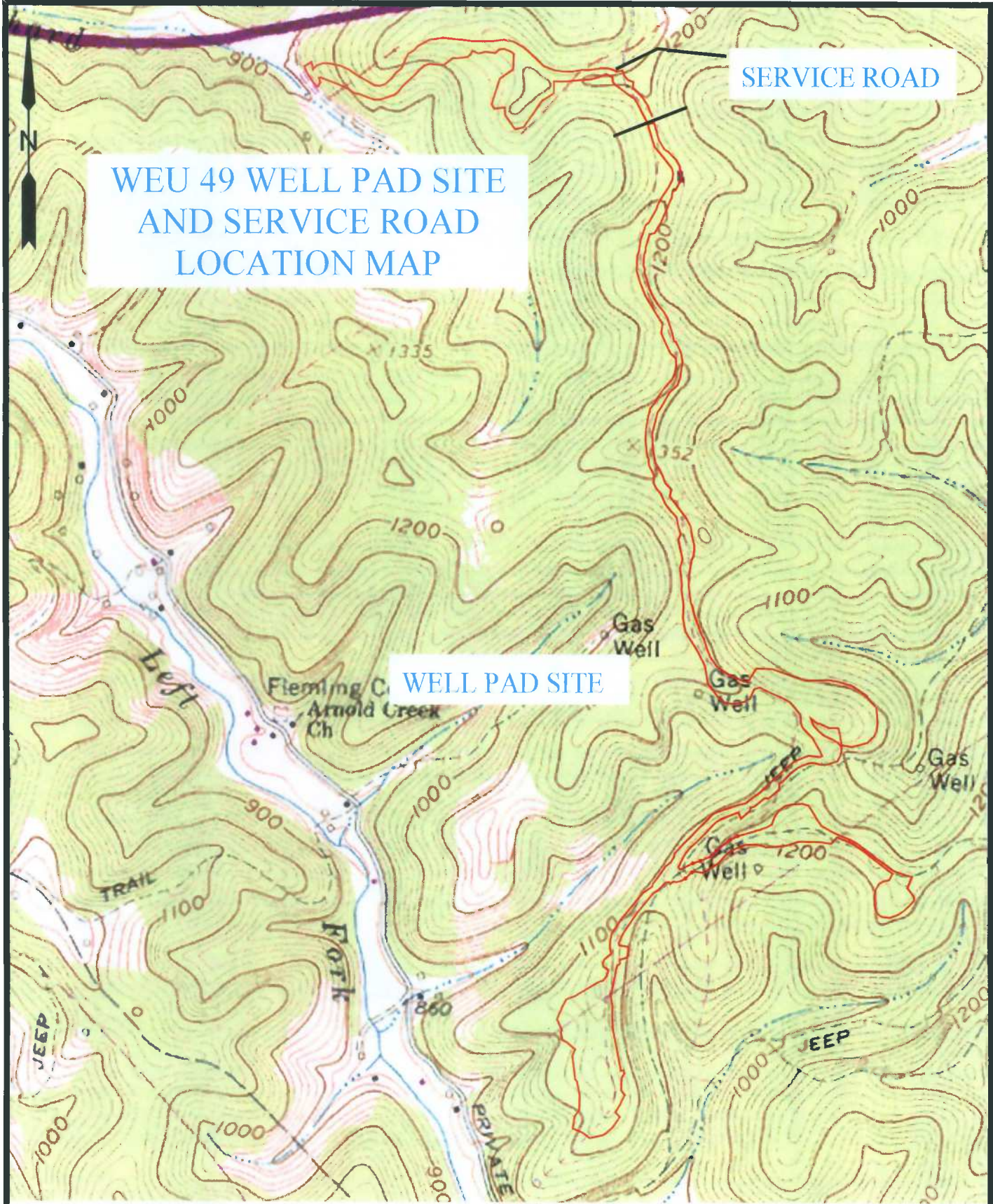
**FEMA Issued Flood Map:** 54017C0120C

**Contacts:** Doddridge County

**CRS Information:** No CRS information available

**Parcel Number:**





**WEU 49 WELL PAD SITE  
AND SERVICE ROAD  
LOCATION MAP**

**WELL PAD SITE**

**SERVICE ROAD**

**SCALE**  
**1 INCH = 1000-FEET**



**Professional Energy Consultants**  
A DIVISION OF SMITH LAND SURVEYING

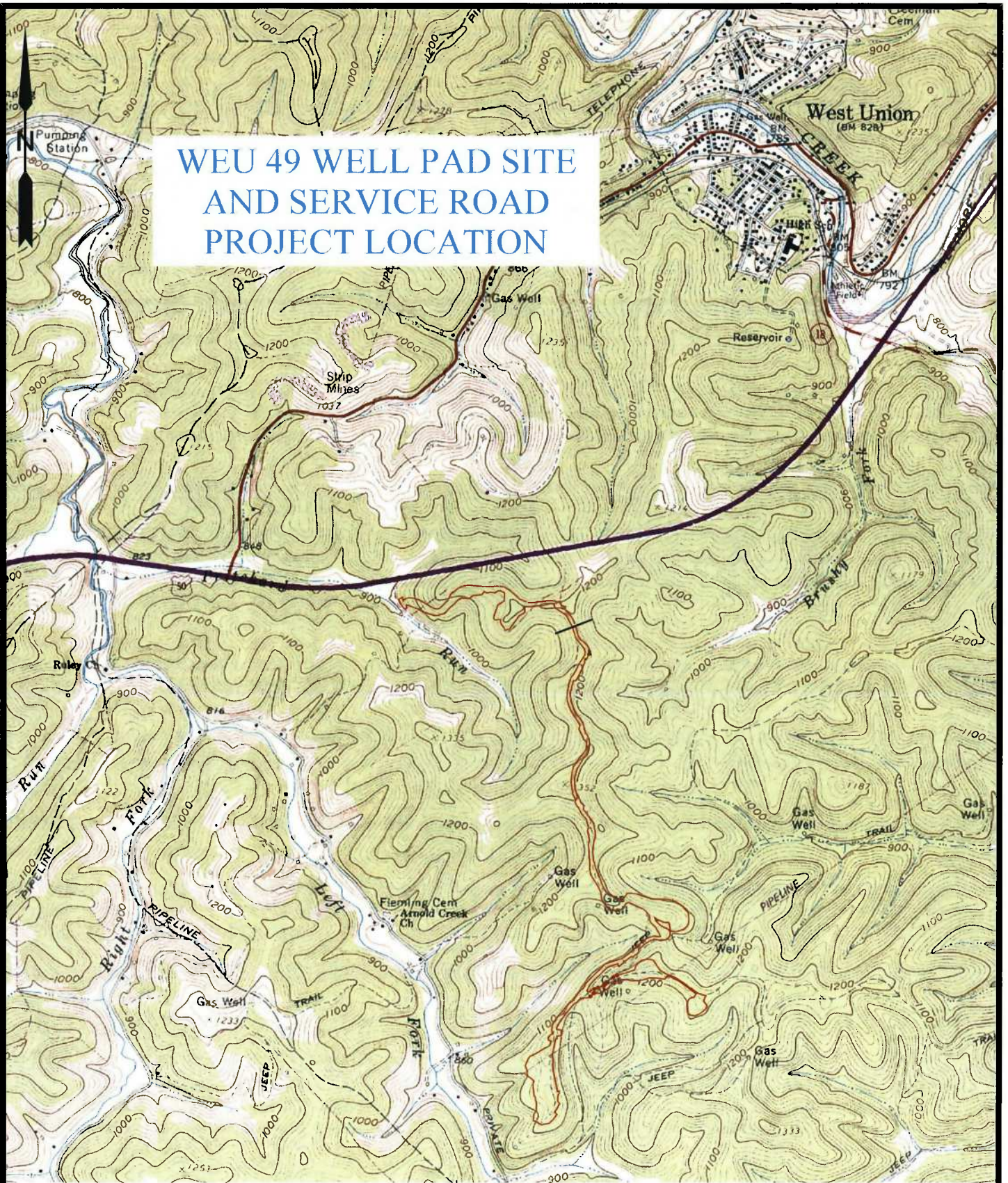
SURVEYORS  
PROJECT MGMT: **SLS**  
228 West Main St.  
P.O. Box 156  
Glenville, WV 26031  
(304) 462-2634  
HONESTY, INTEGRITY, QUALITY

ENGINEERS  
ENVIRONMENTAL  
56665 Dixie Bottom Road  
Shady Side, OH 43087  
(740) 671-9911

FILE NO. 7871	DATE 11/8/13	CADD FILE: 7871WEU4@projection.dwg
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# WEU 49 WELL PAD SITE AND SERVICE ROAD PROJECT LOCATION



SCALE  
1 INCH = 2000-FEET

0'      2000'      4000'      6000'



**Professional Energy Consultants**  
A DIVISION OF SMITH LAND SURVEYING

SURVEYORS      ENGINEERS  
PROJECT MGMT      ENVIRONMENTAL

**SLS**

228 West Main St.  
P.O. Box 158  
Glendale, WV 26031  
(304) 462-3634

56065 Dilles Bottom Road  
Shadyside, OH 43047  
(740) 871-9011

HONESTY. INTEGRITY. QUALITY

FILE NO. 7871	DATE 11/12/13	CADD FILE: 7871WEU49projectlocation.dwg
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# WEU SERVICE ROAD EQT PRODUCTION COMPANY

## PROJECT INFORMATION

PROJECT NAME: WEU SERVICE ROAD

### SURFACE OWNER:

ELEANOR MEYER, ET AL  
MAP 14, PARCEL 06  
DODDRIDGE COUNTY, WV  
TOTAL PROPERTY AREA: 349.75 +/- ACRES  
TOTAL DISTURBANCE AREA: 2.10 +/- ACRES

### DODDRIDGE COUNTY BOARD OF EDUCATION

MAP 15, PARCEL 6.1  
MAP 15, PARCEL 8.2  
DODDRIDGE COUNTY, WV  
TOTAL PROPERTY AREA: 43.22 +/- ACRES  
TOTAL DISTURBANCE AREA: 7.12 +/- ACRES

### COASTAL FOREST RESOURCES CO.

MAP 15, PARCEL 06  
DODDRIDGE COUNTY, WV  
TOTAL PROPERTY AREA: 32.82 +/- ACRES  
TOTAL DISTURBANCE AREA: 1.97 +/- ACRES

### OIL AND GAS ROYALTY OWNER:

NOT APPLICABLE

### SITE LOCATION:

THE ENTRANCE TO THE WEU SERVICE ROAD IS LOCATED 400' +/- SOUTH OF THE JUNCTION OF US RT. 50 AND CO. RT. 50/41.

## LOCATION COORDINATES

WEU SERVICE ROAD AT CR 50/41  
LATITUDE: 39.27578 LONGITUDE: 80.79493 (NAD 83)

## GENERAL DESCRIPTION

THE SERVICE ROAD IS BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

## SITE DISTURBANCE COMPUTATIONS

SERVICE ROAD/STOCKPILES AREA = 11.19 +/- ACRES  
TOTAL SITE DISTURBANCE AREA = 11.19 +/- ACRES

## ENTRANCE PERMIT

EQT PRODUCTION COMPANY WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

## MISS UTILITY STATEMENT

MISS UTILITY OF WEST VIRGINIA WAS NOTED FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN; TICKET #1319851533. IN ADDITION, MISS UTILITY WILL BE CONTACTED PRIOR TO START OF THE PROJECT.

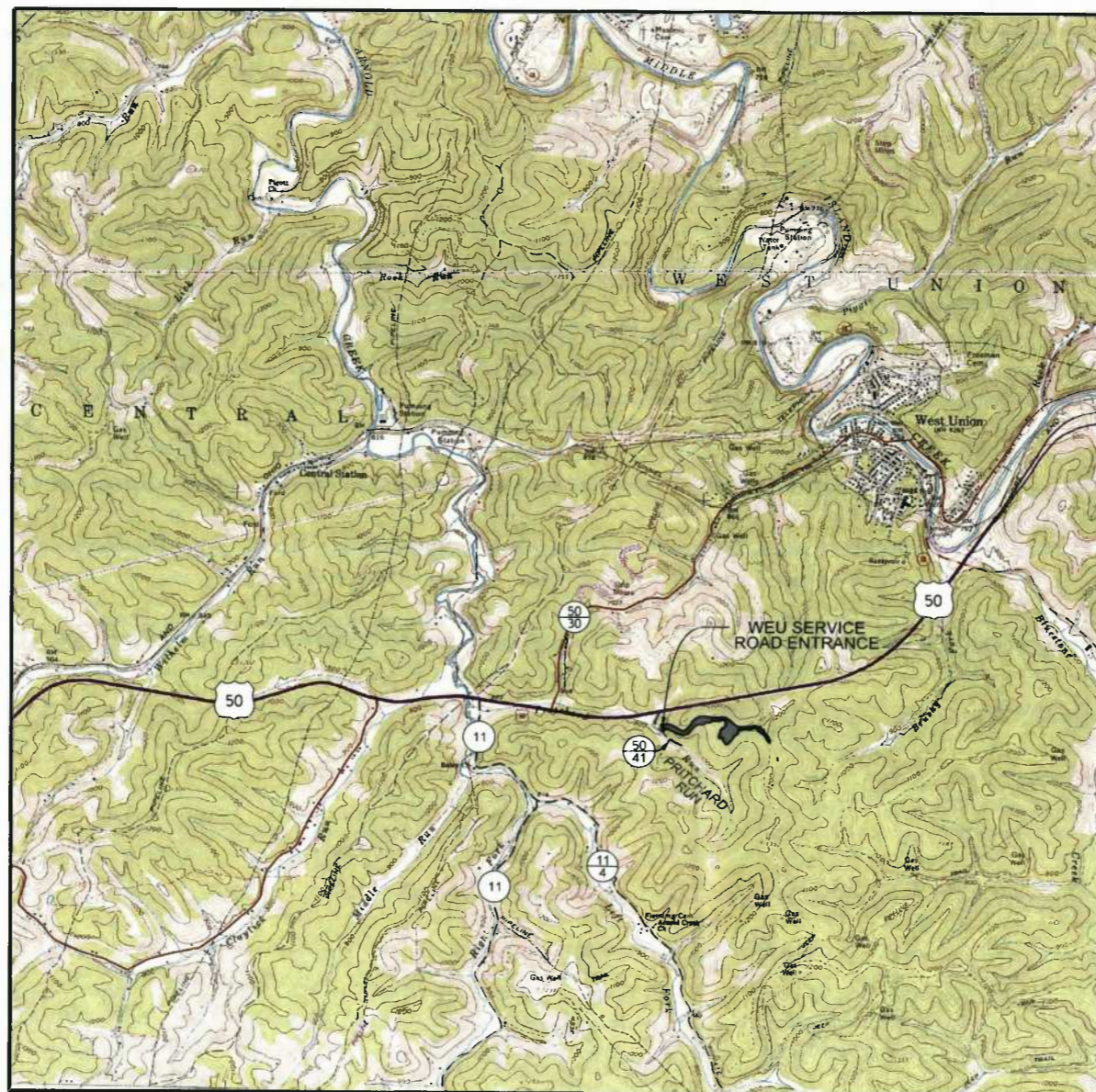
## ENVIRONMENTAL NOTES

A WETLAND DELINEATION WAS PERFORMED ON DECEMBER 14, 2011, BY POTESTA & ASSOCIATES, INC. TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE OCTOBER 16, 2013 REPORT FOR WEU-49 WAS PREPARED BY POTESTA & ASSOCIATES, INC., SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE REPORT DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP. IT IS STRONGLY RECOMMENDED THAT THE AFOREMENTIONED AGENCIES BE CONSULTED IN AN EFFORT TO GAIN WRITTEN CONFIRMATION OF THE DELINEATION DESCRIBED BY THIS REPORT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CROSSINGS.

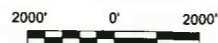
## GEOTECHNICAL NOTES

A GEOTECHNICAL INVESTIGATION WAS NOT PERFORMED.

GRID NORTH AND ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY SURVEY GRADE GPS



WEST UNION QUADRANGLE  
WEST VIRGINIA  
7.5 MINUTE SERIES



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!

LIST OF DRAWINGS	
SHEET NO.	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3	OVERALL PLAN SHEET INDEX
4 - 6	ACCESS ROAD LAYOUT
7	ACCESS ROAD PROFILE
8 - 12	ACCESS ROAD CROSS SECTIONS
12	ACCESS ROAD TYPICAL SECTION
13 - 16	CONSTRUCTION DETAILS
17	CONSTRUCTION QUANTITIES

LEGEND	
EX. INDEX CONTOUR	PROP. INDEX CONTOUR
EX. INTERMEDIATE CONTOUR	PROP. INTERMEDIATE CONTOUR
EX. BOUNDARY LINE	PROP. CUT LINE
EX. EDGE OF ROAD PAVEMENT	PROP. FILL LINE
EX. GUARDRAIL	PROP. LIMITS OF DISTURBANCE
EX. FENCELINE	PROP. ROAD CENTERLINE
EX. GATE	PROP. V-DITCH WITH CHECK DAMS
EX. OVERHEAD UTILITY	PROP. CULVERT
EX. OVERHEAD UTILITY RAW	PROP. RIP-RAP OUTLET PROTECTION
EX. UTILITY POLE	PROP. RIP-RAP INLET PROTECTION
EX. GUY WIRE	PROP. COMPOST FILTERSOCK
EX. TELEPHONE LINE	PROP. STONE CONSTRUCTION ENTRANCE
EX. GASLINE	X-SECTION GRID INDEX
EX. GASLINE RW	X-SECTION GRID INTERMEDIATE
EX. WATERLINE	X-SECTION PROPOSED GRADE
EX. WATER WELL	X-SECTION EXISTING GRADE
EX. GAS WELL	
EX. TREELINE	
EX. REFERENCE TREE	
EX. DELINEATED STREAM	
EX. DELINEATED WETLAND	
EX. BUILDING	

### OPERATOR

EQT PRODUCTION COMPANY  
OPERATOR ID: 306686  
P.O. BOX 280  
BRIDGEPORT, WV 26630  
PHONE: (304) 348-3870

### ENGINEER

STANTEC CONSULTING, INC.  
111 ELKINS STREET  
FAIRMONT, WV 26554  
PHONE: (304) 367-9401

### SURVEYOR

SMITH LAND SURVEYING, INC.  
PO BOX 150  
226 WEST MAIN STREET  
GLENNVILLE, WV 26351  
PHONE: (304) 462-5634



THIS DOCUMENT WAS PREPARED BY STANTEC FOR EQT PRODUCTION COMPANY

TITLE SHEET  
**WEU SERVICE ROAD**  
WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

DATE: 10/31/2013  
SCALE: AS SHOWN  
DESIGNED BY: RJH/JMR  
FILE NO.: SLS-7871  
SHEET: 1 OF 17  
REV:



DOT 2013  
WORKSPACE  
UNL202708.1372.NGT WEU 49313.0 CADDD.13.1 H:\pwworkspace\ES\CR\rebu1\dwg\1372esdno1\_r.dwg, cgm

10/11/2013 DOT 2006 SURVEY FEET  
WORKSPACE  
UNL202708.1372.NGT WEU 49313.0 CADDD.13.1 H:\pwworkspace\ES\CR\rebu1\dwg\1372esdno1\_r.dwg, cgm

### CONSTRUCTION NOTES

1. THE CONTRACTOR IS TO VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION AND WILL NOTIFY STANTEC AT (304) 367-9401 OR SMITH LAND SURVEYING AT (304) 462-5634 IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE APPROVED PLAN. ANY WORK PERFORMED BY THE CONTRACTOR AFTER THE FINDING OF SUCH DISCREPANCIES, SHALL BE DONE AT THE CONTRACTOR'S RISK.
2. METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS HEREIN SHALL CONFORM TO THE CURRENT COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS AND/OR CURRENT WVDEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL STANDARDS AND SPECIFICATIONS. SHOULD A CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, AND PLANS OCCUR, THE MOST STRINGENT REQUIREMENT WILL APPLY. THE APPROVAL OF THESE PLANS IN NO WAY RELIEVES THE DEVELOPER OR HIS AGENT OF THE RESPONSIBILITIES CONTAINED IN THE WVDEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
3. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. ALSO, A REPRESENTATIVE OF THE DEVELOPER MUST BE AVAILABLE AT ALL TIMES.
4. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING MUD FROM TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING PUBLIC STREETS, AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN STREETS, ALLAY DUST, AND TO TAKE WHATEVER MEASURES ARE NECESSARY TO ENSURE THAT THE STREETS ARE MAINTAINED IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES.
5. THE LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS ARE FROM FIELD LOCATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES AS NEEDED PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE ENGINEER OF ANY CONFLICTS ARISING FROM HIS EXISTING UTILITY VERIFICATION AND THE PROPOSED CONSTRUCTION.
6. THE CONTRACTOR SHALL PROVIDE NOTIFICATION TO THE APPROPRIATE UTILITY COMPANY PRIOR TO CONSTRUCTION OF WATER AND/OR GAS PIPE LINES. INFORMATION SHOULD ALSO BE OBTAINED FROM THE APPROPRIATE AUTHORITY CONCERNING PERMITS, CUT SHEETS, AND CONNECTIONS TO EXISTING LINES.
7. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGES TO THE EXISTING STREETS AND UTILITIES WHICH OCCURS AS A RESULT OF HIS CONSTRUCTION PROJECT WITHIN OR CONTIGUOUS TO THE EXISTING RIGHT-OF-WAY.
8. WHEN GRADING IS PROPOSED WITHIN EASEMENTS OF UTILITIES, LETTERS OF PERMISSION FROM ALL INVOLVED COMPANIES MUST BE OBTAINED PRIOR TO GRADING AND/OR SITE DEVELOPMENT.
9. THE DEVELOPER WILL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITIES WHICH IS REQUIRED AS A RESULT OF HIS PROJECT. THE RELOCATION SHOULD BE DONE PRIOR TO CONSTRUCTION.
10. THESE PLANS IDENTIFY THE LOCATION OF ALL KNOWN GRAVESITES. GRAVESITES SHOWN ON THIS PLAN WILL BE PROTECTED IN ACCORDANCE WITH STATE LAW. IN THE EVENT GRAVESITES ARE DISCOVERED DURING CONSTRUCTION, THE OWNER AND ENGINEER MUST BE NOTIFIED IMMEDIATELY.
11. THE CONTRACTOR(S) SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATING OR BLASTING AT LEAST TWO (2) WORKING DAYS, BUT NOT MORE THAN TEN (10) WORKING DAYS, PRIOR TO COMMENCEMENT OF EXCAVATING OR DEMOLITION.
12. THE CONTRACTOR IS TO CONTACT THE OPERATOR AND ENGINEER IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION. THE ENGINEER OR SURVEYOR IS NOT RESPONSIBLE FOR ANY BURIED WATER WELLS, SPRINGS OR ANY OTHER FEATURES UNCOVERED DURING CONSTRUCTION.
13. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE EROSION AND SEDIMENT CONTROL INSPECTOR TWO DAYS PRIOR TO THE START OF CONSTRUCTION.
14. THE CONTRACTOR IS RESPONSIBLE FOR ALL FILL MATERIAL TESTING REQUIRED DURING THE CONSTRUCTION OF THIS PROJECT. ALL MATERIAL TESTS SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LABORATORY AND A CERTIFICATION OF THE MATERIALS TESTED SHALL BE PROVIDED BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LABORATORY. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER CERTIFYING THE CONSTRUCTED FACILITY. FAILURE TO CONDUCT THE DENSITY TEST SHALL BE CAUSE FOR NON-ACCEPTANCE OF THE CONSTRUCTED FACILITY.
15. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE SITE IN ACCORDANCE WITH THE DESIGN PLANS AND CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK SHALL CONFORM WITH THE GRADES, BERMS, DEPTHS, DIMENSIONS, ETC. SHOWN HEREON.

### MAINTENANCE PROGRAM

1. BMPS WILL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH MEASUREABLE RAINFALL EVENT DURING THE ACTIVE CONSTRUCTION PHASE OF THE PROJECT.
2. ALL REVEGETATED ACCESS ROADS AND FACILITIES ARE TO BE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT.
3. CULVERTS, ROAD DITCHES, BROAD-BASED DIPS, DIVERSION DITCHES, AND ROCK CHECK DAMS MUST BE MAINTAINED IN PROPER WORKING ORDER AND WILL BE CLEANED OUT, REPAIRED, OR REPLACED AS NECESSARY.
4. SEDIMENT SHOULD BE REMOVED FROM COMPOST FILTER SOCK WHERE ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FILTER SOCK. REPLACE SECTIONS OF FAILED FILTER SOCK IMMEDIATELY. REMOVE ENTIRE FILTER SOCK UPON COMPLETION OF PROJECT AND ESTABLISHMENT OF VEGETATIVE GROWTH.
5. ALL AREAS OF EARTH DISTURBANCE WILL BE REPAIRED WHERE SIGNS OF ACCELERATED EROSION ARE DETECTED.
6. SEEDING AND MULCHING WILL BE REPEATED IN THOSE AREAS THAT APPEAR TO BE FAILING OR HAVE FAILED.

### CONSTRUCTION SEQUENCE

THE DEVELOPMENT OF THE SITE SHALL BE CONSISTENT WITH THE FOLLOWING GENERAL SEQUENCE OF CONSTRUCTION. THE CONTRACTOR SHALL IMPLEMENT, MAINTAIN, AND OPERATE ALL PROPOSED EROSION AND SEDIMENT CONTROL MEASURES TO EFFECTIVELY MITIGATE THE HAZARD OF ACCELERATED EROSION AND SEDIMENTATION TO ACCEPTABLE LEVELS. MINOR DEVIATIONS FROM THIS SEQUENCE SHALL BE EXECUTED BY THE PROJECT'S SUPERINTENDENT AS NEEDED TO ELIMINATE ANY POTENTIAL EROSION CONDITION THAT MAY ARISE FOR THE DURATION OF THE PROJECT. THE WVDEP OFFICE OF OIL AND GAS SHALL BE NOTIFIED OF ANY AND ALL SUCH DEVIATIONS FROM THE APPROVED PLANS.

1. HOLD A PRE-CONSTRUCTION CONFERENCE WITH THE CONTRACTOR AND THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO BEGINNING WORK TO REVIEW THE CONSTRUCTION DRAWING AND PROVIDE ANY REQUESTED GUIDANCE.
2. STAKE THE LIMITS OF CONSTRUCTION.
3. INSTALL THE ROCK CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS.
4. INSTALL ALL BMPS NECESSARY TO BEGIN CLEARING AND GRUBBING OF THE SITE AS SHOWN ON THE PLANS AND DETAILS.
5. CLEAR AND GRUB THE ACCESS ROAD AREA. ALL WOODY MATERIAL, BRUSH, TREES, STUMPS, LARGE ROOTS, BOULDERS, AND DEBRIS SHALL BE CLEARED FROM THE SITE AREA AND KEPT TO THE MINIMUM NECESSARY FOR PROPER CONSTRUCTION, INCLUDING THE INSTALLATION OF ANY NECESSARY SEDIMENT CONTROLS. TREES SIX INCHES IN DIAMETER AND LARGER SHALL BE CUT AND LOGS STACKED. SMALLER TREES, BRUSH, AND STUMPS SHALL BE CUT AND/OR GRUBBED AND WINDROWED IN APPROPRIATE AREAS FOR USE AS SEDIMENT BARRIERS AT WATER DRAINAGE OUTLETS, WINDROWED BELOW THE WELL SITE, USED FOR WILDLIFE HABITAT, BURNED (AS PER WV FOREST FIRE LAWS), REMOVED FROM THE SITE, OR DISPOSED OF BY OTHER METHODS APPROVED BY DEP.
6. STRIP THE TOPSOIL FROM THE ACCESS ROAD AREA. ALL STRIPPED TOPSOIL SHALL BE STOCKPILED ON AREAS SHOWN ON THE PLANS AND IMMEDIATELY STABILIZED. ADDITIONAL BMP MEASURES SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES, IF NECESSARY.
7. CONSTRUCT THE ACCESS ROAD, PROPOSED CROSS CULVERTS AND ROAD SIDE DITCHES. AS FILL SLOPES ARE CONSTRUCTED, INSTALL SLOPE INTERRUPTION COMPOST FILTER SOCK AS LABELED ON THE PLANS AND SHOWN ON THE DETAILS.
8. INSTALL DITCH RELIEF CULVERTS AT A MINIMUM SLOPE OF 1% AND APPROXIMATELY 30 DEGREES DOWNGRADE TO THE CENTERLINE OF THE DITCH. INSTALL OUTLET PROTECTION AS SHOWN ON PLANS AND DETAILS AS CROSS CULVERTS ARE INSTALLED AND IMMEDIATELY STABILIZE ROAD SIDE DITCHES WITH ROCK. STABILIZE THE ROAD WITH GEOTEXTILE FABRIC AND STONE AND SIDE SLOPES AS SPECIFIED WITH PERMANENT SEEDING. STOCKPILE AND STABILIZE EXCESS MATERIAL ALONG THE ACCESS ROAD, AS NEEDED.
9. ALL DITCH LINES SHALL BE CLEANED PRIOR TO INSTALLATION OF LINED PROTECTION. ALL DITCHES SHALL BE ROCK LINED WITH D50 = 6" MIN. SIZED RIPRAP UNLESS SPECIFIED OTHERWISE.
10. STABILIZE ALL SIDE SLOPES WITH COCONUT EROSION CONTROL BLANKETS. APPLY SEED AND MULCH TO ALL DISTURBED AREAS. THIS SHALL BE INCLUDED IN ALL AREAS THAT WILL NOT BE SUBJECT TO REGULAR TRAFFIC ACTIVITY (TO BE STABILIZED WITH STONE), OR ANY DISTURBED AREA THAT WILL NOT BE RE-DISTURBED BEFORE SITE RECLAMATION BEGINS.
11. PREVIOUSLY DISTURBED AREAS AND IMMEDIATE DOWN SLOPE AREAS SHALL BE INSPECTED AFTER EACH RAINFALL STORM EVENT AND MONITORED WEEKLY FOR SIGNS OF ACCELERATED EROSION. IMPLEMENT ADDITIONAL BMPS AS DEEMED NECESSARY. THESE INSPECTIONS SHALL CONTINUE DURING THE DURATION OF THE PROJECT AND SUBSEQUENT SITE RECLAMATION.
12. ONCE DISTURBED AREAS HAVE BEEN RE-VEGETATED AND STABILIZED FOLLOWING RECLAMATION, THE TEMPORARY BMPS IN THOSE AREAS MAY BE REMOVED. CONTINUE TO MONITOR THESE AREAS TO ENSURE A UNIFORM RATE OF 70% VEGETATIVE COVERAGE IS MAINTAINED. ANY AREAS FOUND TO BE DEFFICIENT SHALL BE RE-SEEDDED AND MULCHED.



111 ELKINS STREET  
FARMINGTON, WV 26030  
PHONE: 304-801-9601

Professional Energy Consultants  
A DIVISION OF SMITH LAND SURVEYING

ENGINEERS  
ENVIRONMENTAL

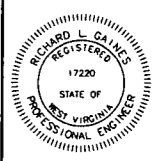
**SLS**

Surveyors  
Professional Meas.

100 West Main St.  
P.O. Box 100  
Farmington, WV 26031  
(304) 871-2831

3600 Gates Barren Road  
Farmington, WV 26031  
(304) 871-2831

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STANTEC  
FOR:  
EOT PRODUCTION COMPANY

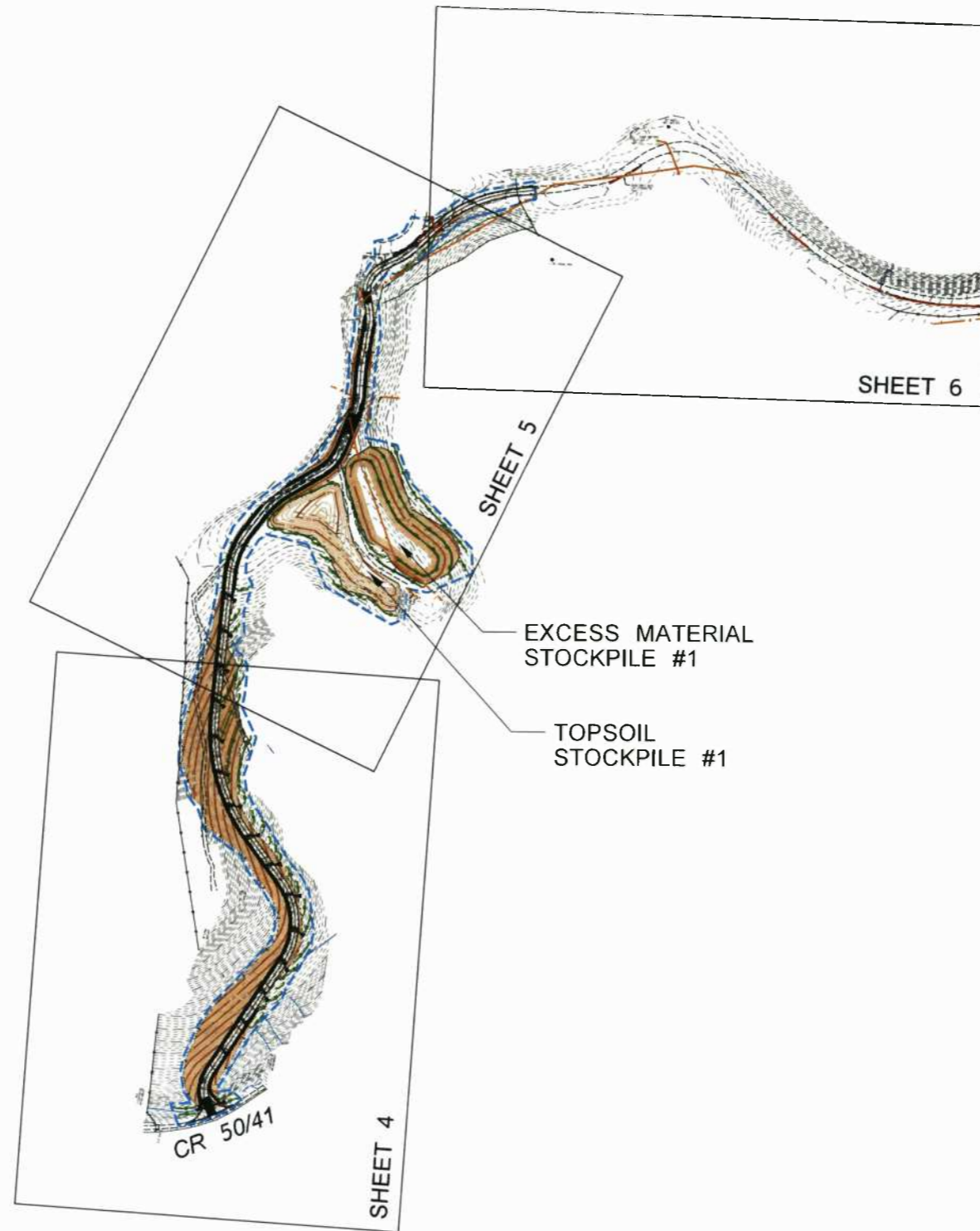
GENERAL NOTES

**WEU SERVICE ROAD**

WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

DATE: 10/31/2013  
SCALE: AS SHOWN  
DESIGNED BY: RJH/JMR  
FILE NO.: SLS-7871  
SHEET 2 OF 17  
REV:

# OVERALL PLAN SHEET INDEX WEU SERVICE ROAD



EXCESS MATERIAL STOCKPILES	
NAME	VOLUME (CY)
#1	24,620
<b>TOTALS</b>	<b>24,620</b>

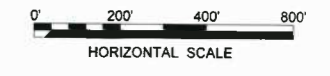
TOPSOIL STOCKPILES	
NAME	VOLUME (CY)
#1	8,800
<b>TOTALS</b>	<b>8,800</b>

WEU SERVICE ROAD						
DESCRIPTION	CUT (CY)	FILL (CY)	SPOIL (CY)	BORROW (CY)	MAX SLOPE (%)	LENGTH OF SLOPE (FT)
WEU SERVICE ROAD	27,119	3,573	23,546	0	16.5%	725
STRIPPED TOPSOIL (6")	3,501	0	3,501	0	N/A	N/A
TOPSOIL FROM EQT 49 SITE	3,889	0	3,889	0	N/A	N/A
	0	0	0	0	N/A	N/A
	0	0	0	0	N/A	N/A
<b>TOTALS</b>	<b>34,509</b>	<b>3,573</b>	<b>30,936</b>	<b>0</b>		
<b>TOTAL REQUIRED STOCKPILE VOLUME*</b>				<b>30,936</b>		
<b>TOTAL AVAILABLE STOCKPILE VOLUME*</b>				<b>33,420</b>		
<b>EXCESS MATERIAL</b>				<b>0**</b>		

\* INCLUDES TOPSOIL  
 \*\*AVAILABLE STOCKPILE VOLUME EXCEEDS REQUIRED

THE EARTHWORK QUANTITIES PROVIDED ARE AN ESTIMATE FOR CONSIDERATION. THE QUANTITIES SHOWN ARE CALCULATED USING A 1:1 CUT/SWELL AND FILL/SHRINK FACTOR. THE QUANTITIES SHOWN MAY BE GREATER OR LESSER THAN ACTUALLY EXCAVATED. THE ENGINEER IS NOT RESPONSIBLE FOR VARIANCES FROM THE ESTIMATED QUANTITIES AND DOES NOT CERTIFY TO THEIR ACCURACY.

WEU SERVICE ROAD WETLAND AND STREAM IMPACT TABLE			
WETLAND NAME	IMPACT (AC)	STREAM NAME	IMPACT (LF)
NO WETLAND IMPACTS	0	NO STREAM IMPACTS	0
<b>TOTAL</b>	<b>0</b>	<b>TOTAL</b>	<b>0</b>



111 EDWARDS STREET  
 FARMINGTON, WV 25544  
 PHONE: 304-327-0461

Professional Energy Consultants  
 A DIVISION OF SMITH AND SURVEYING ENGINEERS ENVIRONMENTAL

**SLS**

Supervisors PROJECT MGMT. 203 West Main St. P.O. Box 100 (252) 331-2331 (252) 331-2331

MOOREVILLE, NORTH CAROLINA  
 INTEGRITY. INNOVATION. QUALITY.

THIS DOCUMENT WAS PREPARED BY STANTEC FOR EQT PRODUCTION COMPANY

OVERALL PLAN SHEET INDEX  
**WEU SERVICE ROAD**  
 WEST UNION DISTRICT  
 DODDRIEGE COUNTY, WV

DATE: 10/31/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 3 OF 17  
 REV:

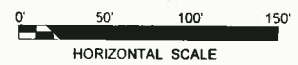
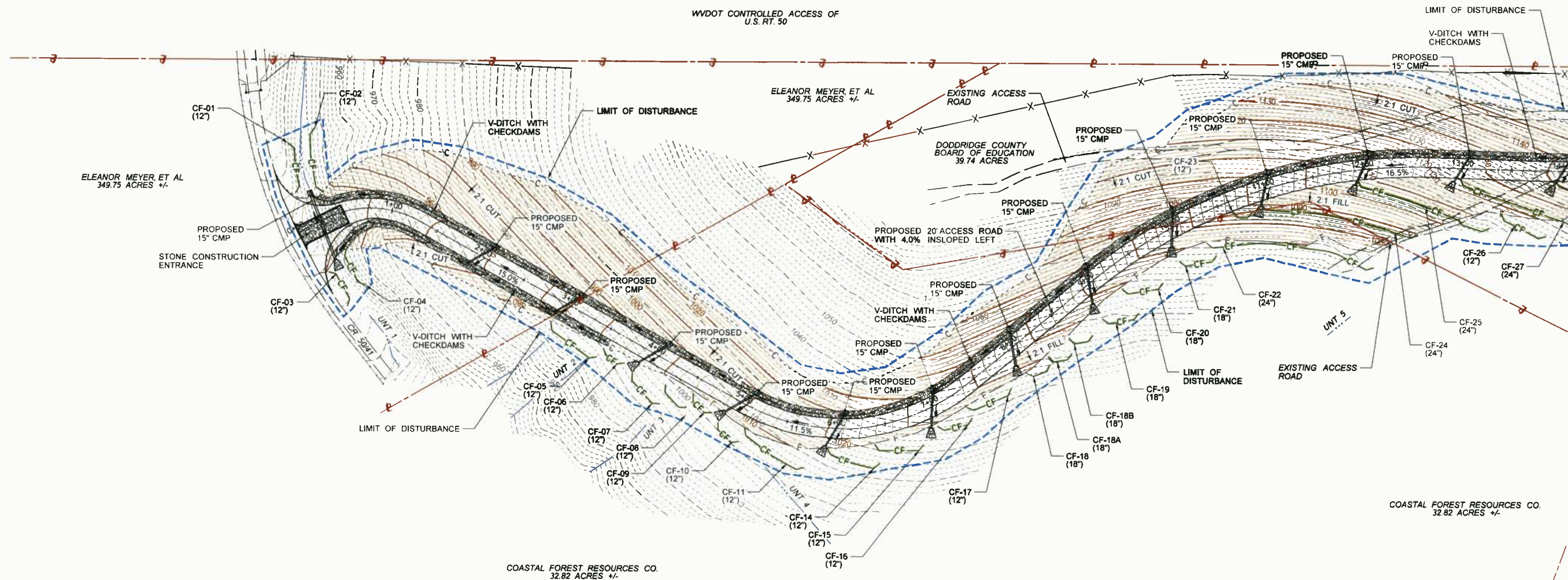
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 FILE: 1372as\DDI\_Road.dgn  
 PLOT: 10/31/2013 10:54:13 AM



DOT 2013  
 01.04.13.01  
 01.04.13.01

10/31/2013  
 WORKSPACE DOT\_2006 (SURVEY FEET)  
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- NOTES:
1. ALL PROPOSED CULVERTS SHALL HAVE ADEQUATE INLET AND OUTLET PROTECTION AS INDICATED ON THIS PLAN
  2. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR.
  3. EQT WILL NOTIFY THE ARMY CORP OF ENGINEERS THAT THE DISTURBANCE IS WITHIN 100' OF A DELINEATED WETLAND. E&S CONTROLS WILL BE INSTALLED.
  4. AERIAL TOPOGRAPHIC MAPPING WAS PERFORMED BY BLUE MOUNTAIN AERIAL MAPPING BY PHOTOGRAMMETRY ON 04/30/11.
  5. ALL CORRUGATED METAL PIPES TO BE ALUMINIZED STEEL.



111 ELKINS STREET  
 FARMINGTON, WV 26564  
 PHONE: 304-321-5901

Professional Energy Consultants  
 A DIVISION OF SMITH LAND SURVEYING  
 ENGINEERS Environmental  
 SLS  
 208 West Adams St.  
 P.O. Box 100  
 Charleston, WV 25301  
 (304) 771-7871  
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THIS DOCUMENT WAS PREPARED BY STANTEC FOR EQT PRODUCTION COMPANY

SERVICE ROAD LAYOUT  
**WEU SERVICE ROAD**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/31/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: R.J.H./M.R.  
 FILE NO.: SLS-7871  
 SHEET 4 OF 17  
 REV:

SEE SHEET 5



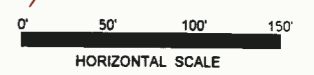
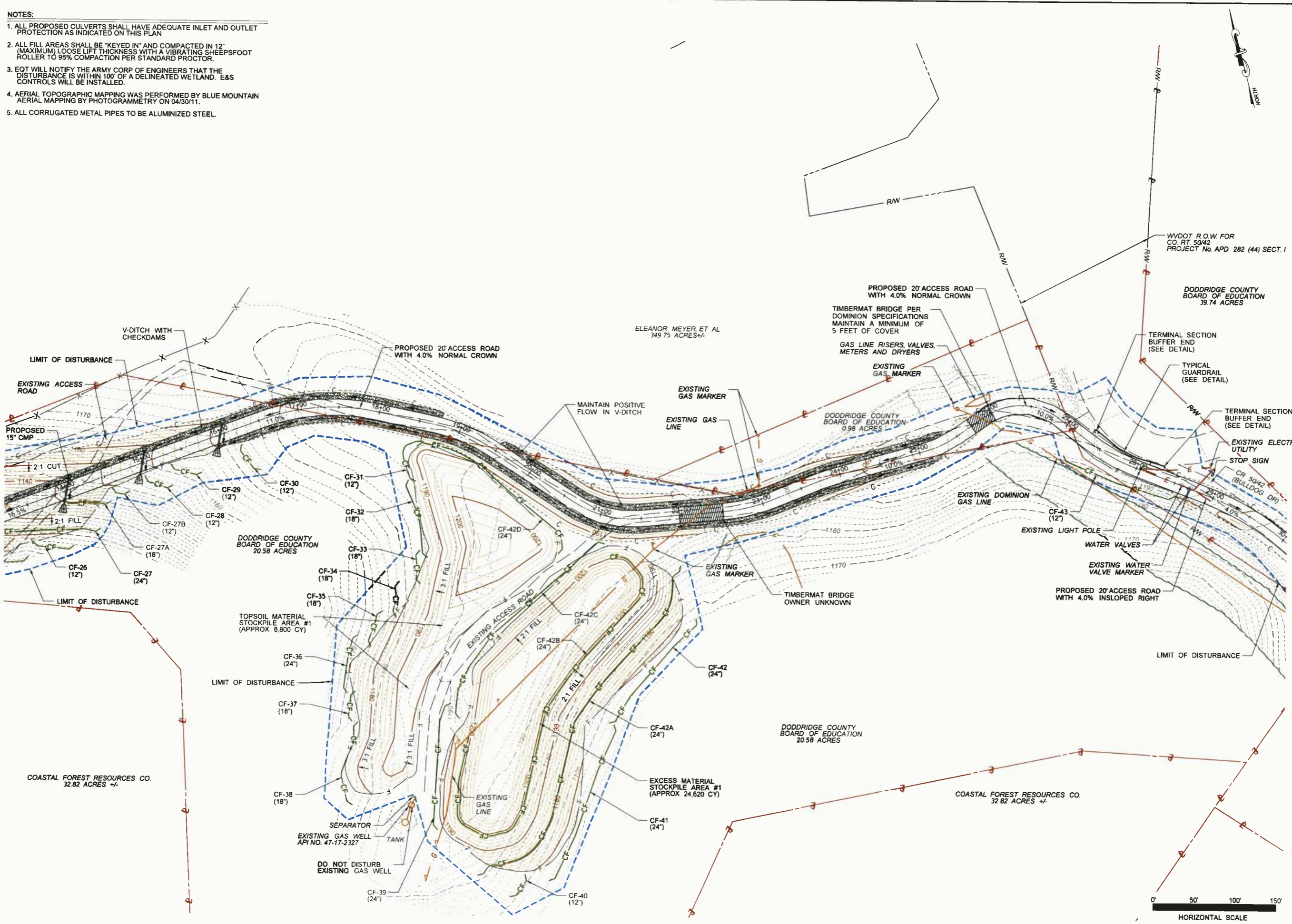
DOT 2013  
 COLLECTOR OF RECORDS  
 DATE: 10/31/2013

- NOTES:**
1. ALL PROPOSED CULVERTS SHALL HAVE ADEQUATE INLET AND OUTLET PROTECTION AS INDICATED ON THIS PLAN
  2. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR.
  3. EQT WILL NOTIFY THE ARMY CORP OF ENGINEERS THAT THE DISTURBANCE IS WITHIN 100' OF A DELINEATED WETLAND. E&S CONTROLS WILL BE INSTALLED.
  4. AERIAL TOPOGRAPHIC MAPPING WAS PERFORMED BY BLUE MOUNTAIN AERIAL MAPPING BY PHOTOGRAMMETRY ON 04/30/11.
  5. ALL CORRUGATED METAL PIPES TO BE ALUMINIZED STEEL.

SEE SHEET 4

SEE SHEET 6

10/31/2013 DOT 2006 (SURVEY FEET)  
 WORKSPACE DOT\_2006 (SURVEY FEET)  
 IP: 2027051372.EXT WEU 4913.0 CAUDN13.1 Highway\p\ES\CR\rob\1100\1172\as\PS03\_Road.dgn



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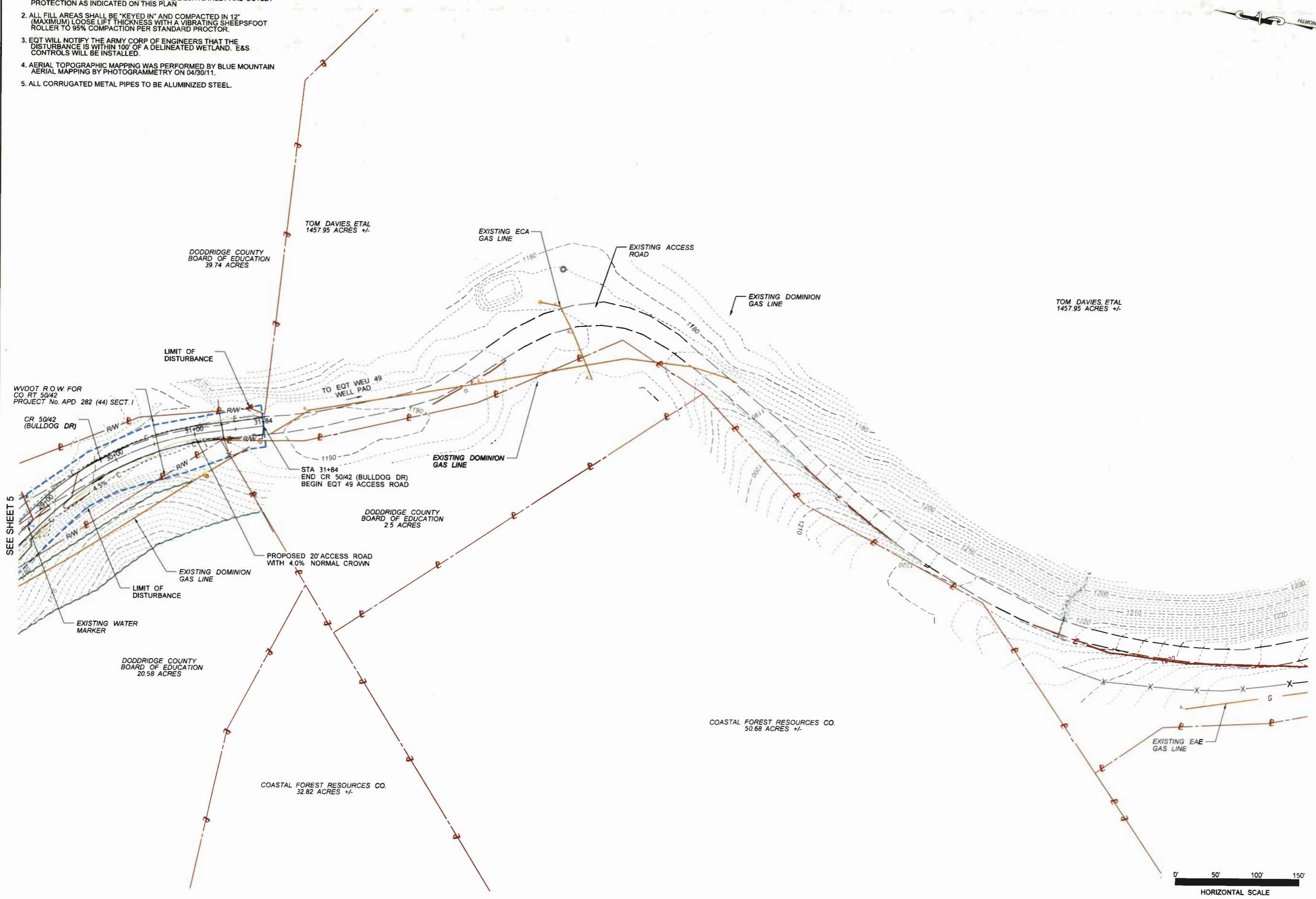
**SERVICE ROAD LAYOUT**  
**WEU SERVICE ROAD**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/31/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: R.J.H./M.R.  
 FILE NO.: SLS-7871  
 SHEET 5 OF 17  
 REV:

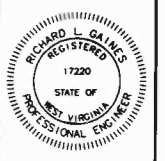


DOT 2013  
COLORED PLOT  
SHEET NO. 1372  
10/31/2013  
DOT 2006 (SURVEY FEET)  
WORKSPACE  
D:\2007061372\EQT\WEU 49\13.0\CADD\13.1\_Highway\RES\CR to BU\1372.esps\04\_Road.dgn

- NOTES:
1. ALL PROPOSED CULVERTS SHALL HAVE ADEQUATE INLET AND OUTLET PROTECTION AS INDICATED ON THIS PLAN
  2. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR.
  3. EQT WILL NOTIFY THE ARMY CORP OF ENGINEERS THAT THE DISTURBANCE IS WITHIN 100' OF A DELINEATED WETLAND. E&S CONTROLS WILL BE INSTALLED.
  4. AERIAL TOPOGRAPHIC MAPPING WAS PERFORMED BY BLUE MOUNTAIN AERIAL MAPPING BY PHOTOGRAMMETRY ON 04/30/11.
  5. ALL CORRUGATED METAL PIPES TO BE ALUMINIZED STEEL.



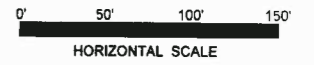
Professional Energy Consultants  
A DIVISION OF SMITH LAND SURVEYING  
SURVEYORS  
PROJECT MANAGERS  
ENGINEERS  
ENVIRONMENTAL  
SLS  
1000 DIXIE BOTTOM ROAD  
P.O. BOX 100  
DUNSMIRE, WV 26031  
(740) 811-9911  
HONESTY, INTEGRITY, QUALITY

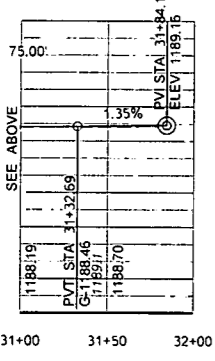
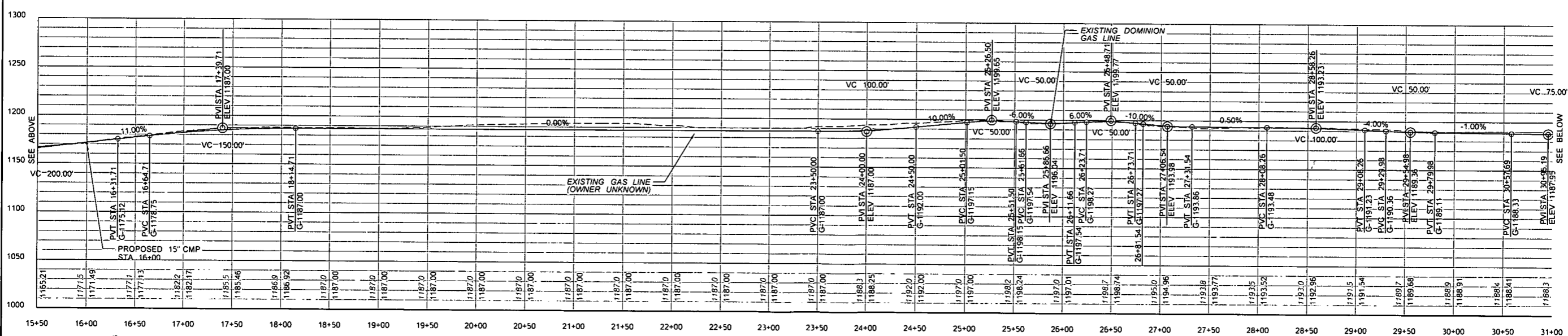
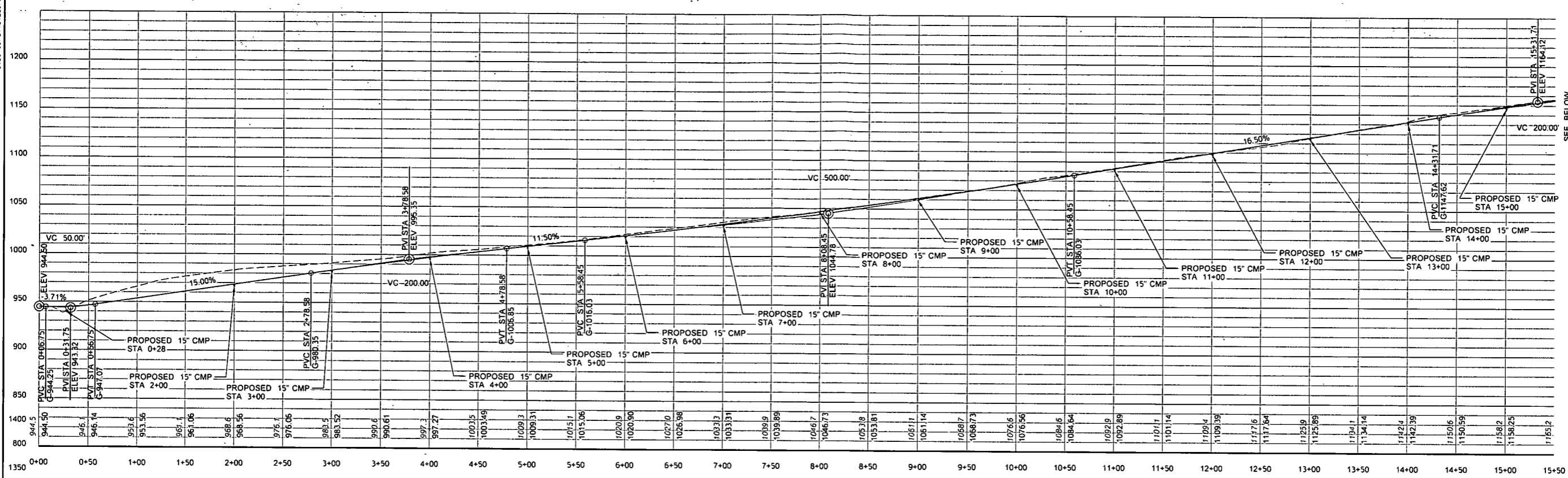


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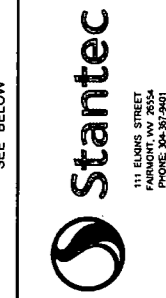
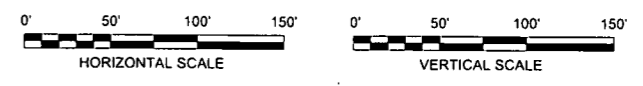
SERVICE ROAD LAYOUT  
**WEU SERVICE ROAD**  
WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

DATE: 10/31/2013
SCALE: AS SHOWN
DESIGNED BY: R.J.H/JMR
FILE NO.: SLS-7871
SHEET 6 OF 17
REV:

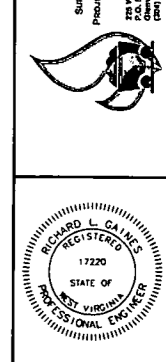




WEU SERVICE ROAD PROFILE



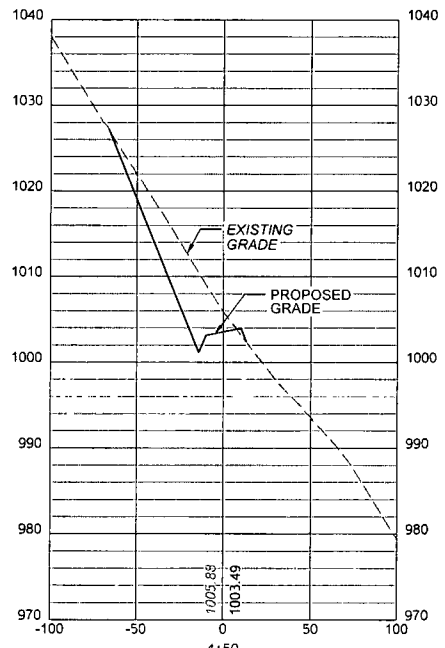
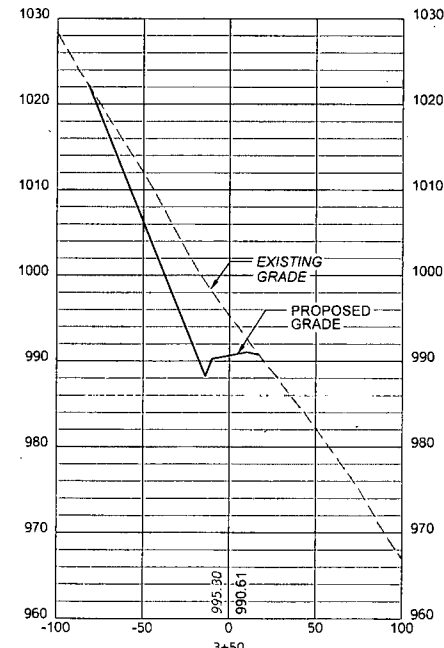
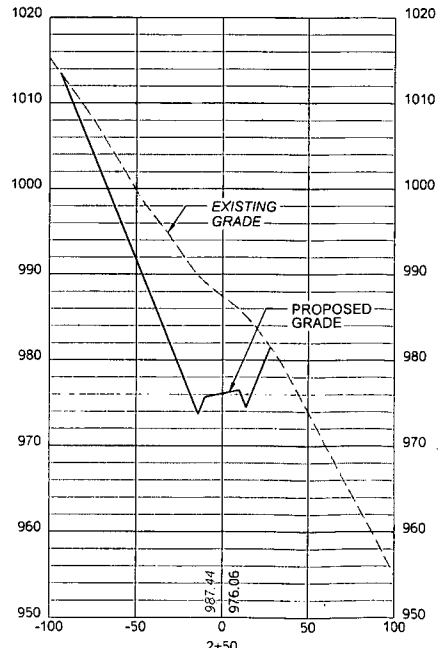
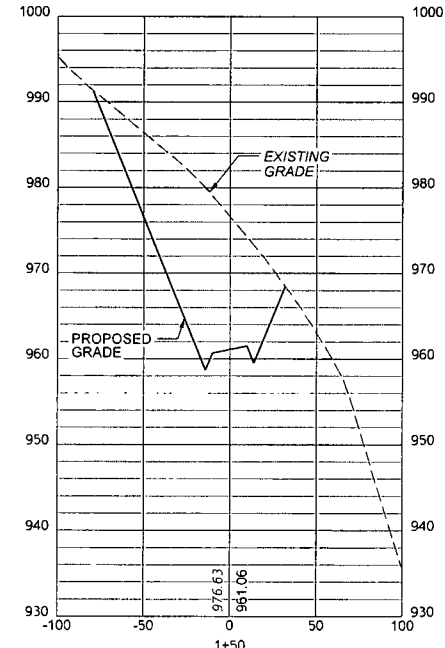
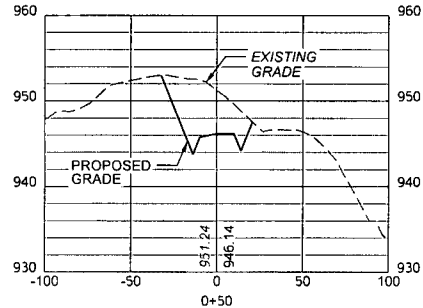
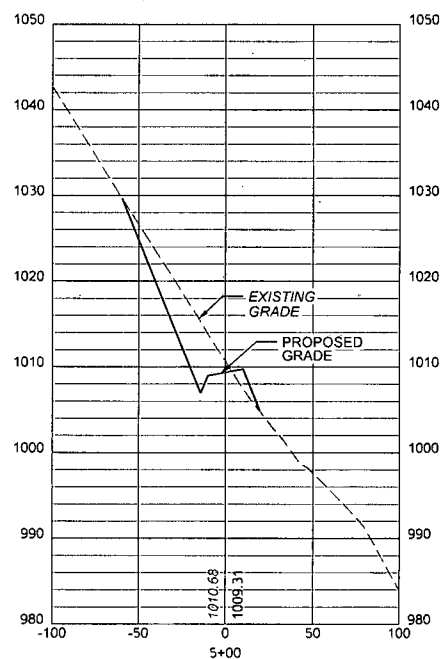
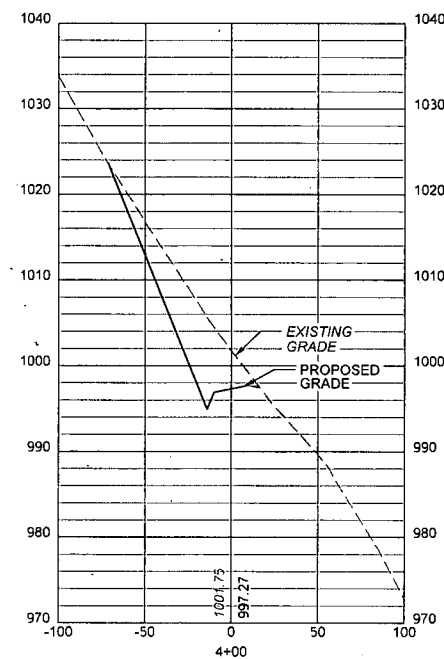
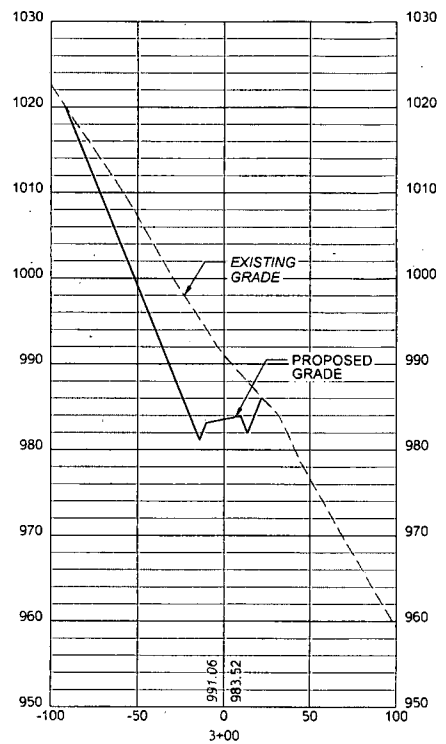
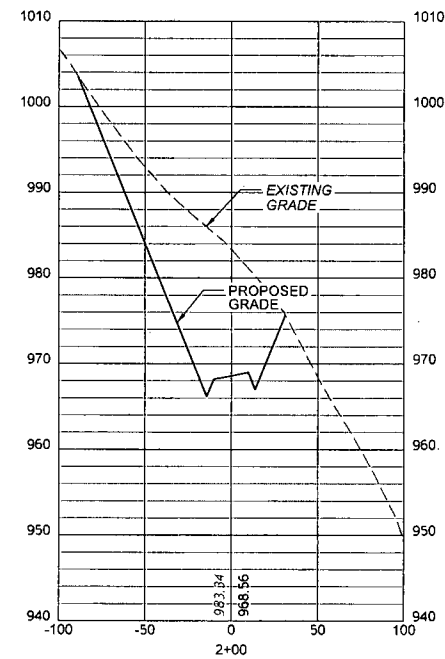
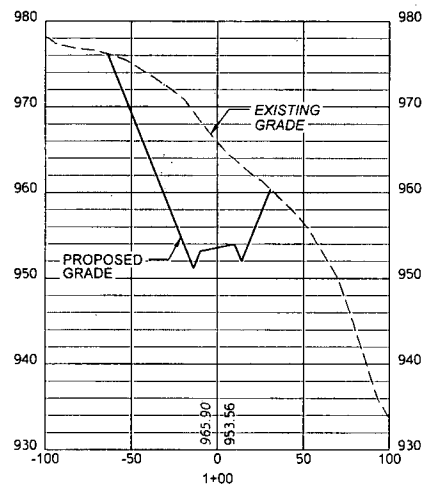
Professional Energy Consultants  
 A DIVISION OF SETH LAM SURVEYING  
 ENGINEERS  
 Environmental  
 SLS  
 100 West Main St.  
 P.O. Box 188  
 Cambridge, WI 53102  
 (608) 871-8811  
 www.sls-engineers.com



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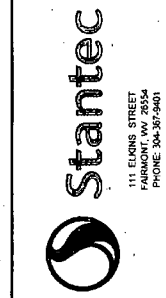
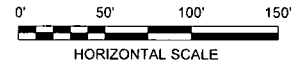
ACCESS ROAD PROFILE  
**WEU SERVICE ROAD**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WY

DATE: 10/31/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 7 OF 17  
 REV:

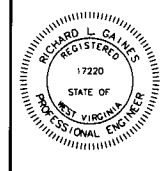


NOTE:  
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### WEU SERVICE ROAD CROSS SECTIONS



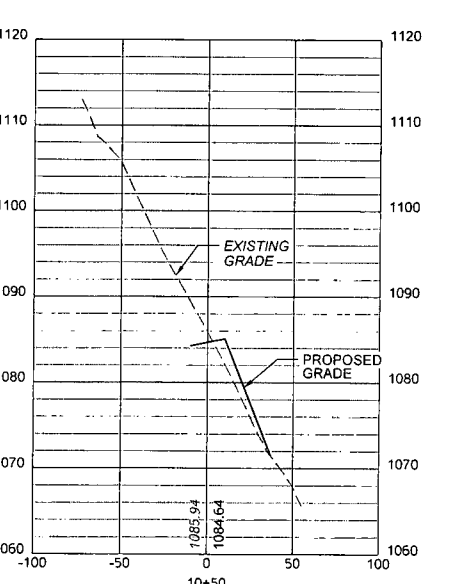
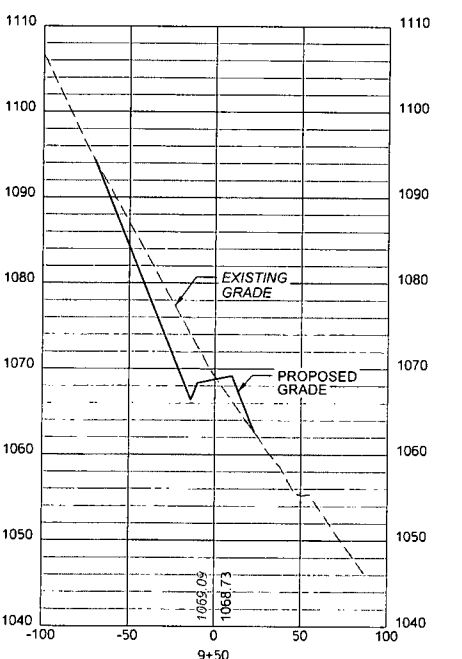
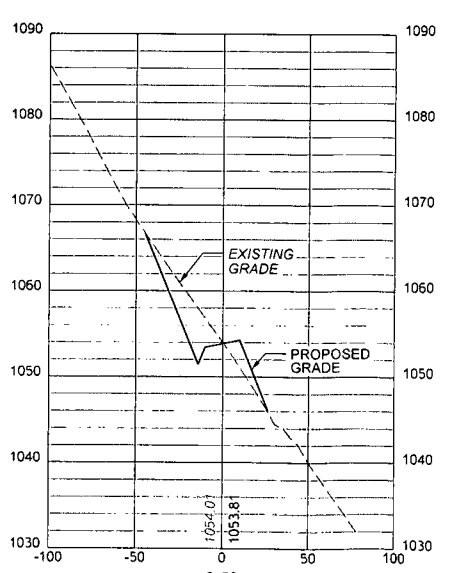
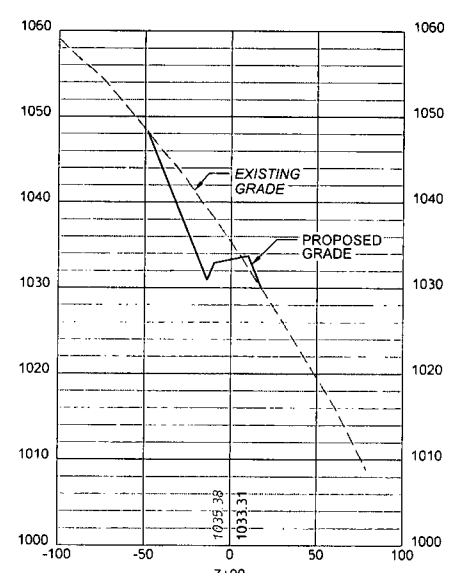
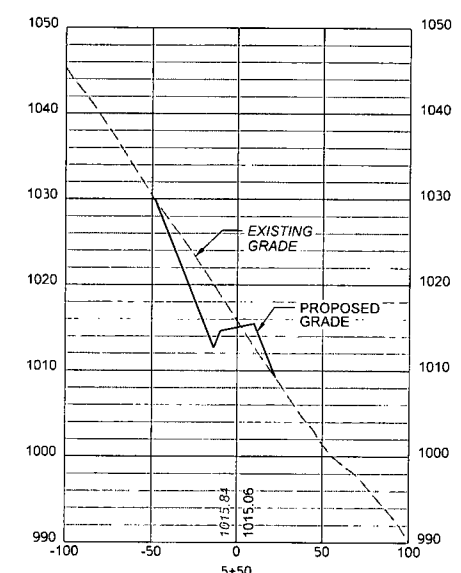
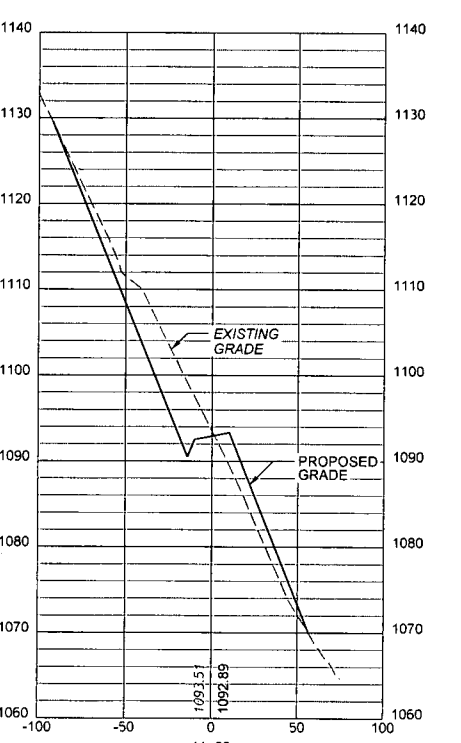
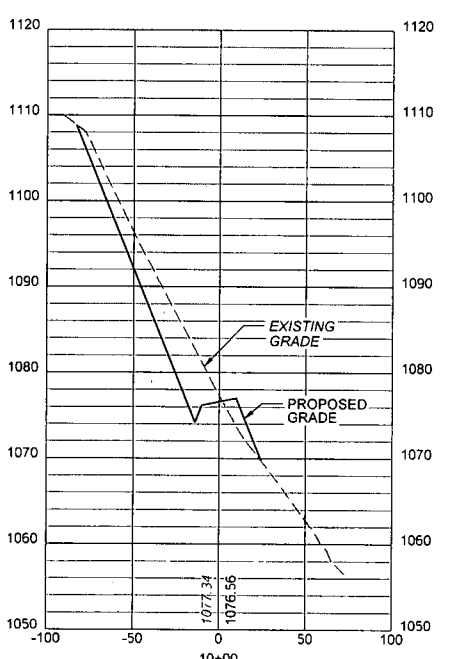
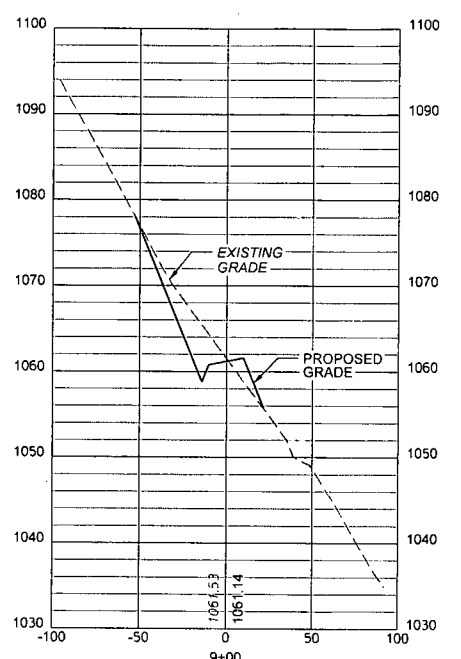
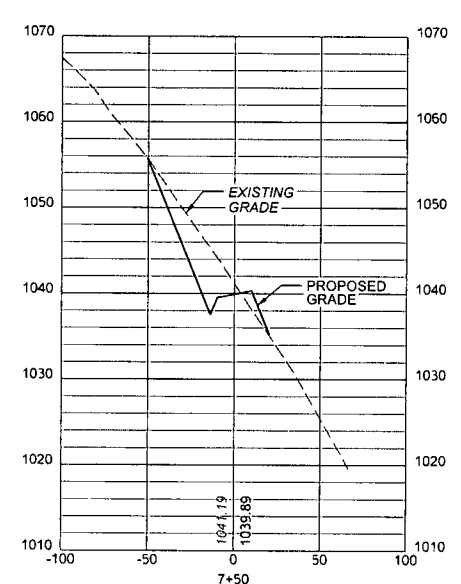
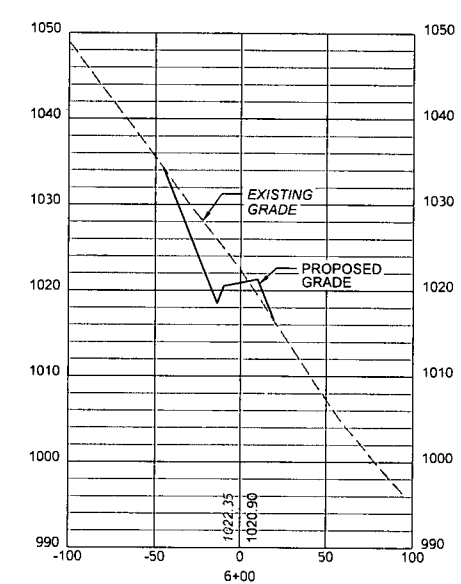
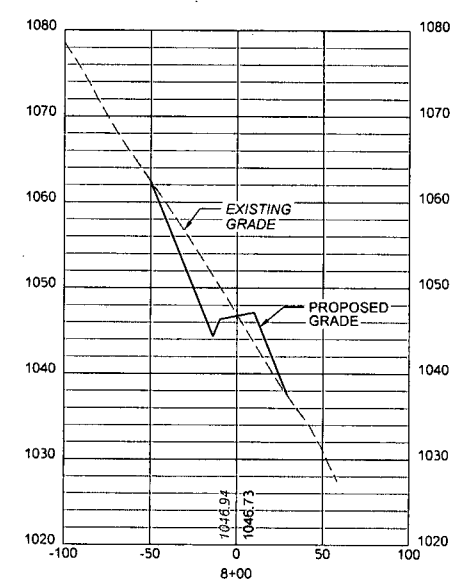
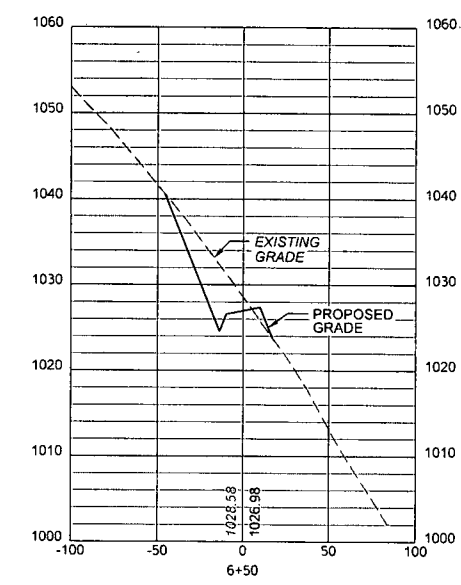
Professional Energy Consultants  
 A DIVISION OF SITH LAND SURVEYING  
**SLS**  
 Surveyors  
 Project Mgr.:  
 225 West Lake St.  
 P.O. Box 100, 3rd Fl.  
 Springfield, OR 97477  
 (503) 911-8811  
 Honesty, Integrity, Quality



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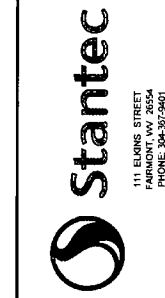
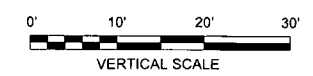
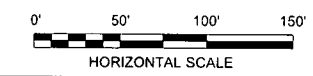
ACCESS ROAD CROSS SECTIONS  
**WEU SERVICE ROAD**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/31/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 8 OF 17  
 REV:



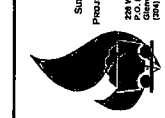
NOTE:  
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WEU SERVICE ROAD CROSS SECTIONS



111 ELIENS STREET  
FARMINGTON, WV 26554  
PHONE: 304-901-6601

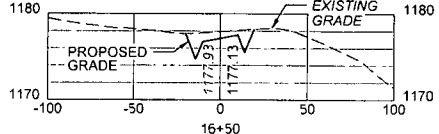
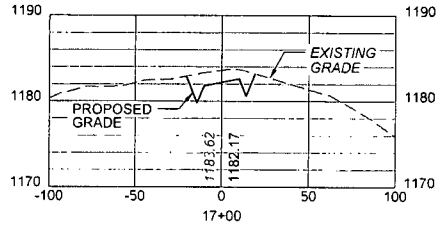
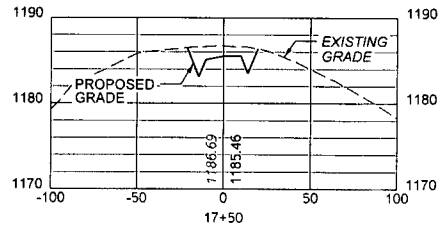
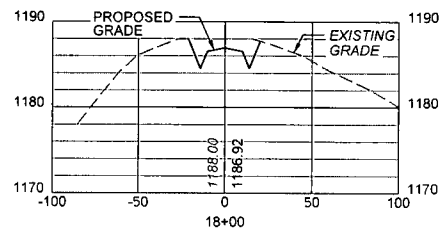
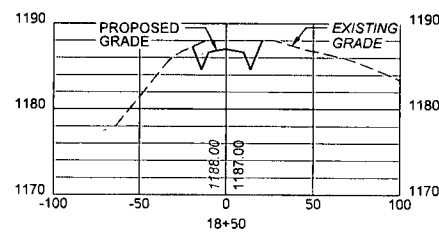
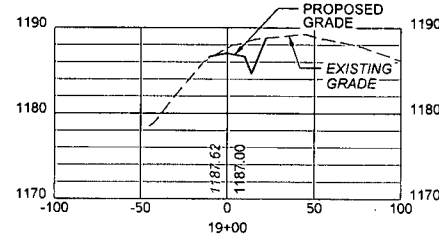
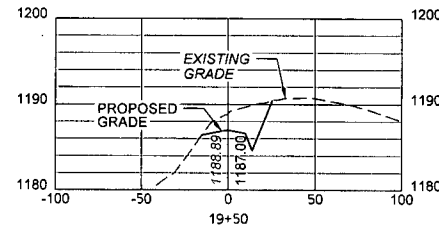
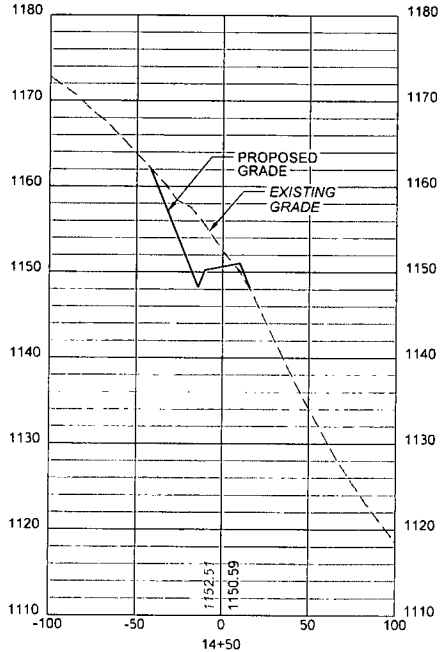
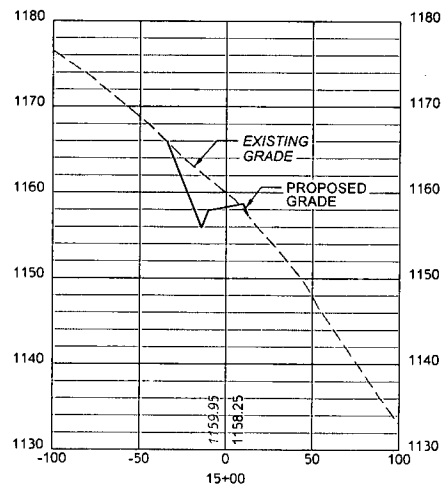
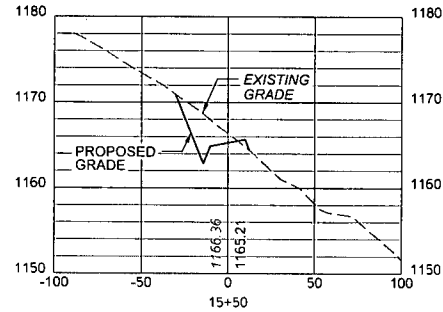
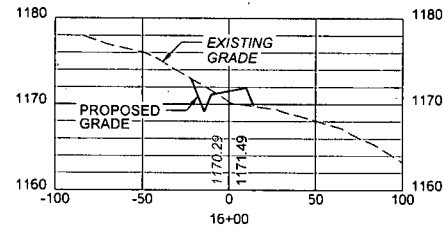
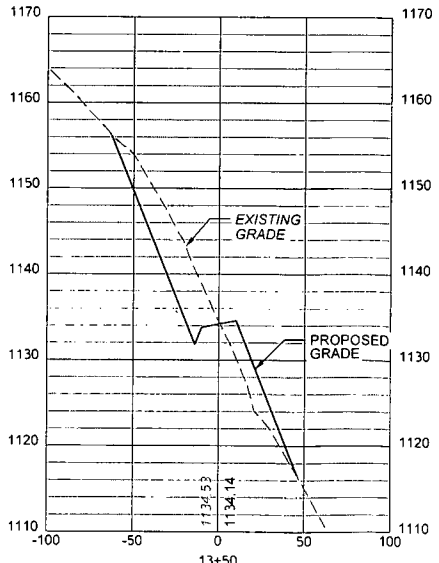
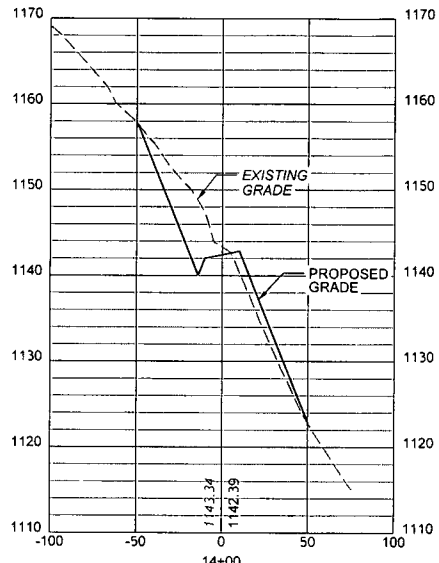
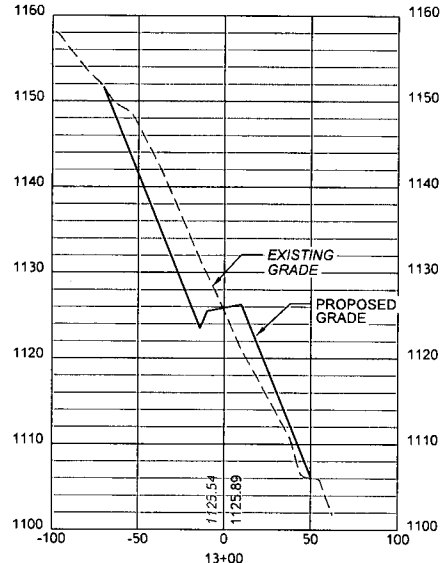
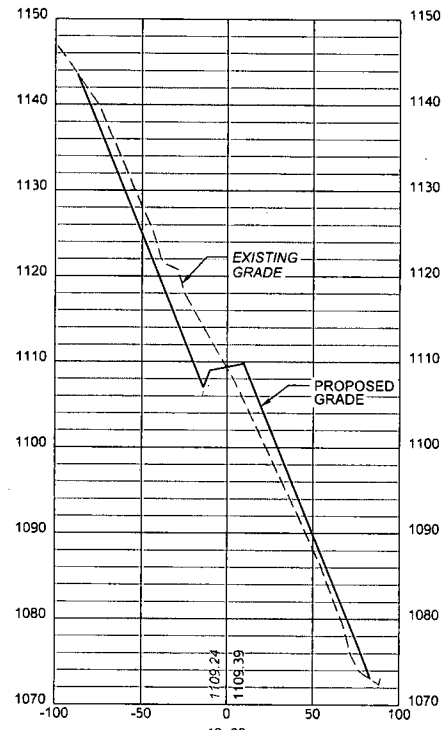
Professional Energy Consultants  
A DIVISION OF SURVEYING  
SURVEYORS  
PROJECT MGMT.  
ENGINEERS  
ENVIRONMENTAL  
SLS  
1000 10th Street, Suite 300  
P.O. Box 100  
Charleston, WV 25301  
(760) 871-8811  
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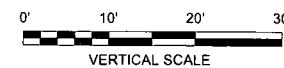
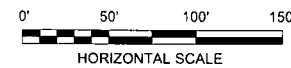
ACCESS ROAD CROSS SECTIONS  
**WEU SERVICE ROAD**  
WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

DATE: 10/31/2013  
SCALE: AS SHOWN  
DESIGNED BY: RJH/JMR  
FILE NO.: SLS-7871  
SHEET: 9 OF 17  
REV:

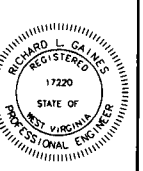


NOTE:  
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### WEU SERVICE ROAD CROSS SECTIONS



Professional Energy Consultants  
 A DIVISION OF SMITH LAND SURVEYING  
 ENGINEERS  
 Environmental  
 SURVEYORS  
 PROJECT MGMT.  
 100 West Main St.  
 P.O. Box 609  
 West Union, WV 26054  
 (304) 325-1234  
 (304) 325-1235  
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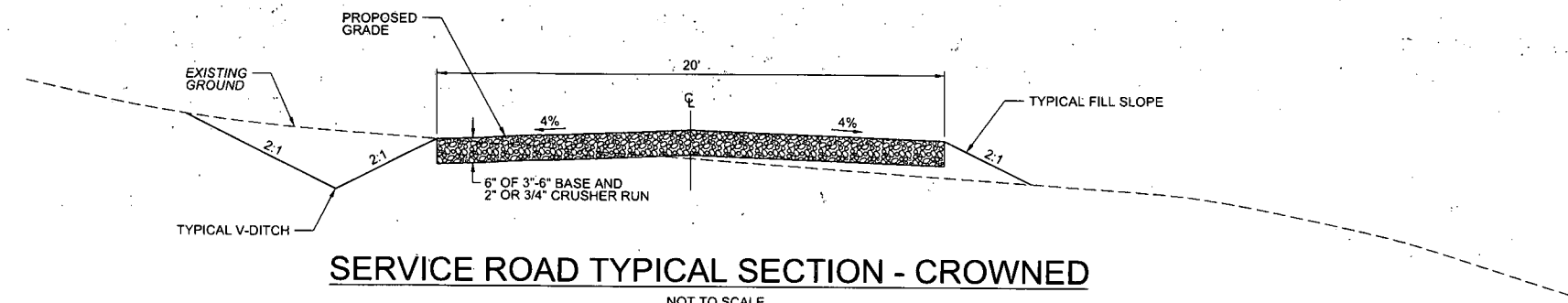
ACCESS ROAD CROSS SECTIONS  
**WEU SERVICE ROAD**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/31/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 10 OF 17  
 REV:



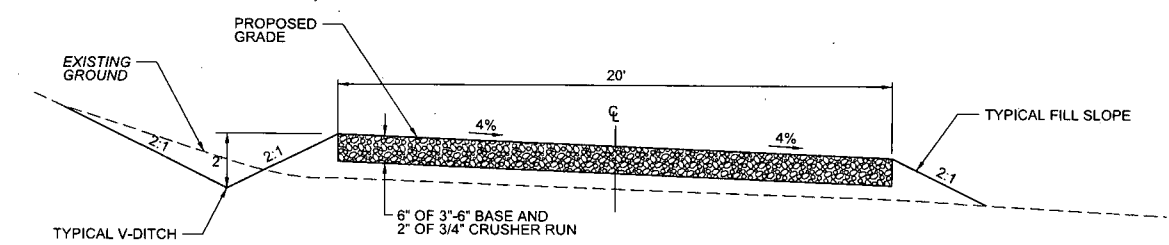






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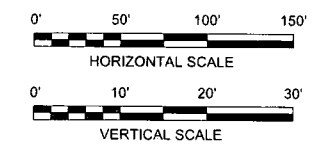
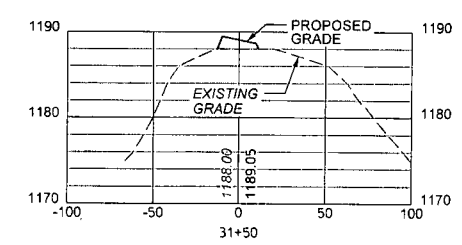
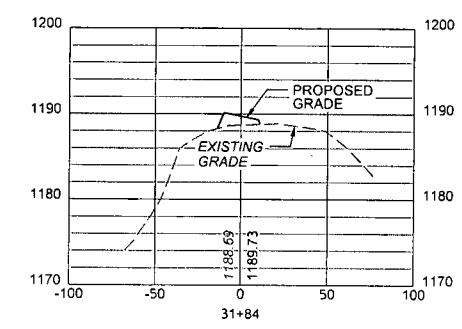
NOT TO SCALE  
 STA 0+00 TO STA 1+00  
 STA 18+00 TO STA 27+50



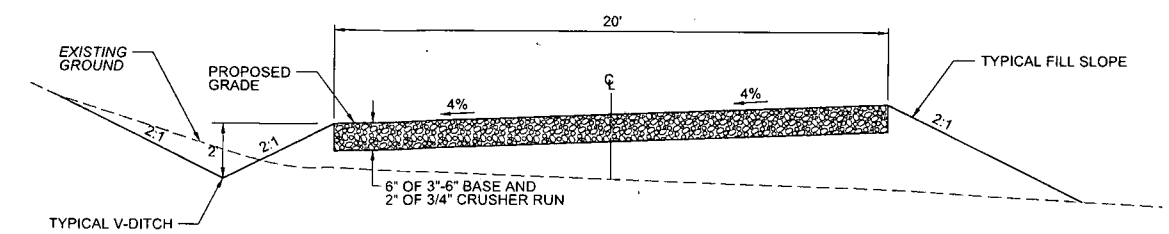
**SERVICE ROAD TYPICAL SECTION - INSLOPED RIGHT**

NOT TO SCALE  
 STA 27+50 TO STA 31+84

**NOTE:**  
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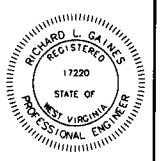
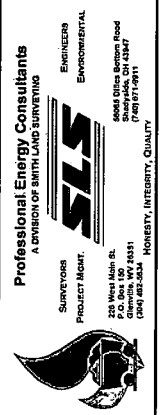
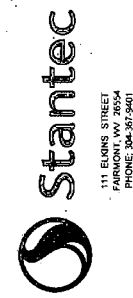


**WEU SERVICE ROAD CROSS SECTIONS**



**SERVICE ROAD TYPICAL SECTION - INSLOPED LEFT**

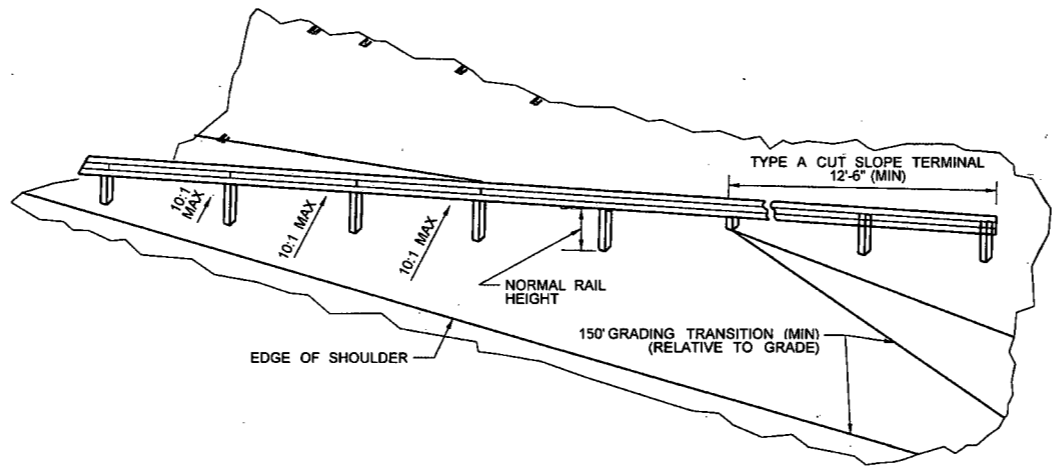
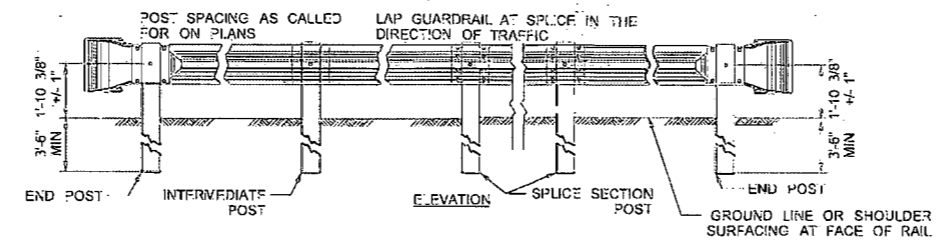
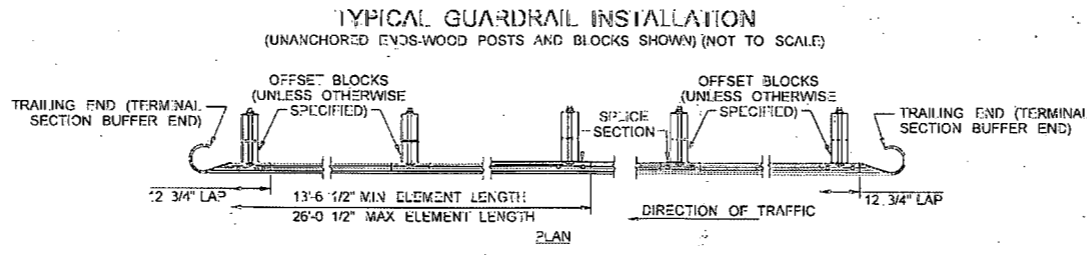
NOT TO SCALE  
 STA 1+00 TO STA 18+00



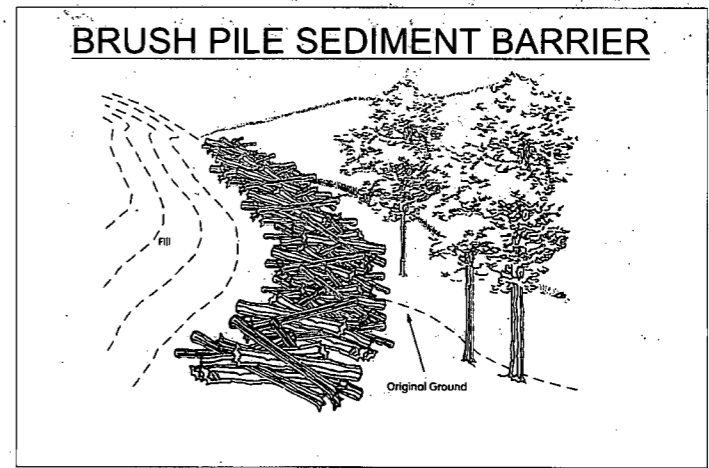
THIS DOCUMENT WAS PREPARED BY: STANTEC FOR: EOT PRODUCTION COMPANY

ACCESS ROAD CROSS SECTIONS AND TYPICAL SECTIONS  
**WEU SERVICE ROAD**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

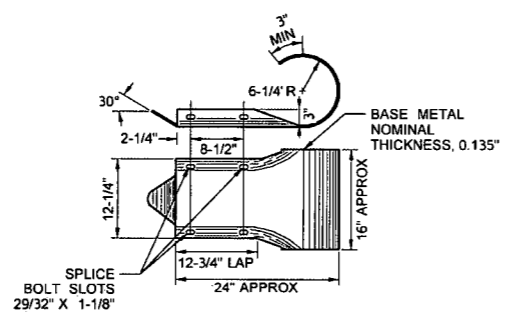
DATE: 10/31/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 12 OF 17  
 REV:



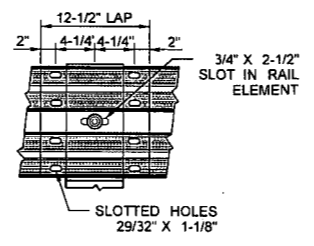
**TYPE A (SOFT SHALE OR SOIL) CUT SLOPE TERMINAL INSTALLATION**  
 (NOT TO SCALE)



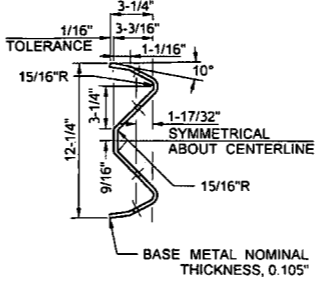
**TERMINAL SECTION BUFFER END**  
 (FOR USE ONLY ON UNANCHORED ENDS AND SPECIAL TRAILING END TERMINAL) (NOT TO SCALE)



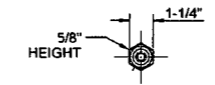
**RAIL SPLICE**  
 (EIGHT (8) SPLICE BOLTS ARE TO BE USED AT ALL RAIL SPLICES) (NOT TO SCALE)



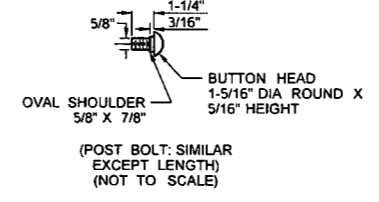
**RAIL ELEMENT**  
 (SECTION) (NOT TO SCALE)



**NUT**



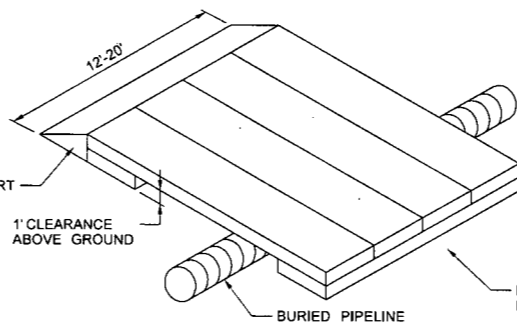
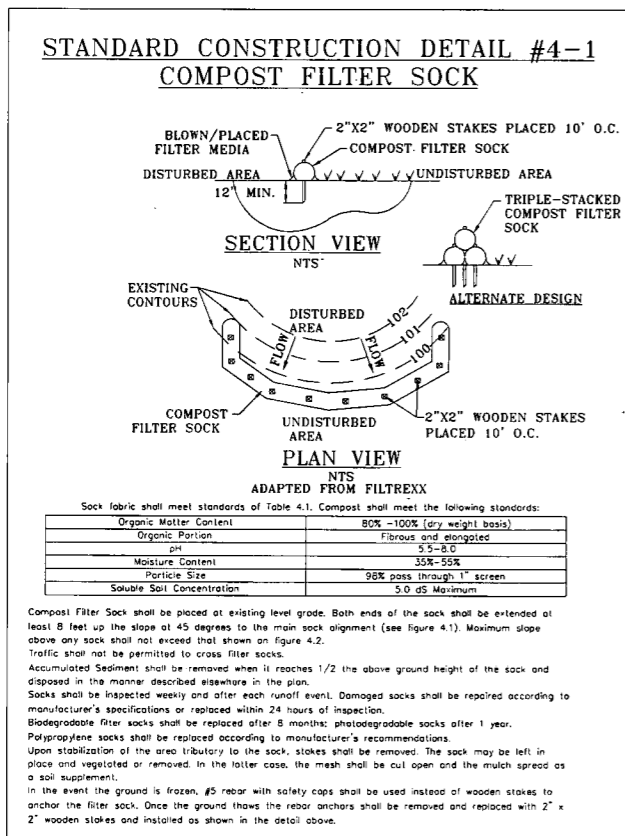
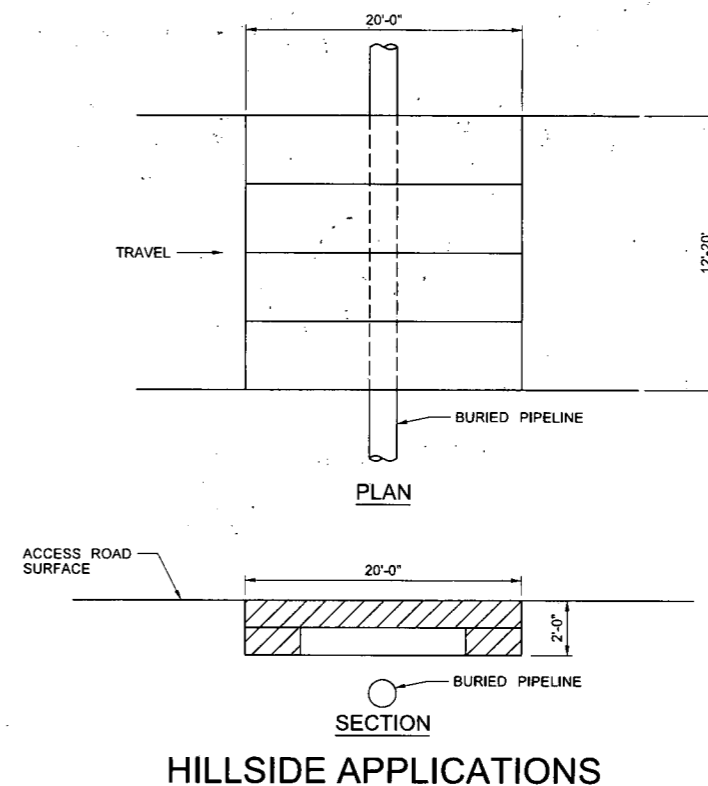
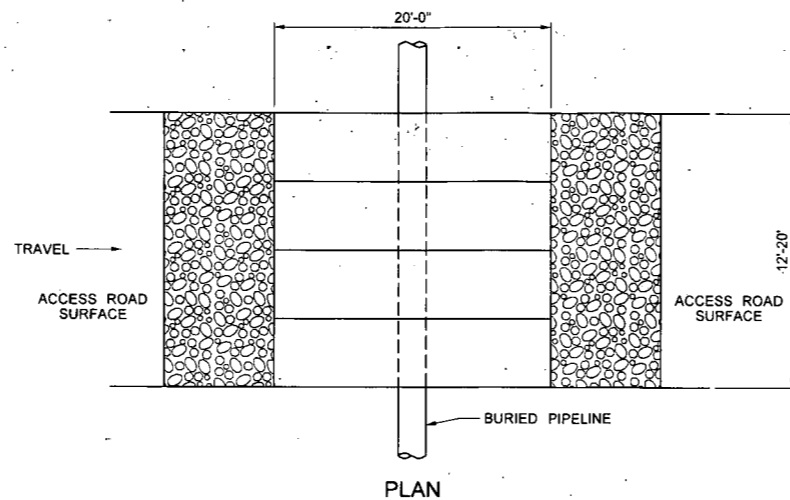
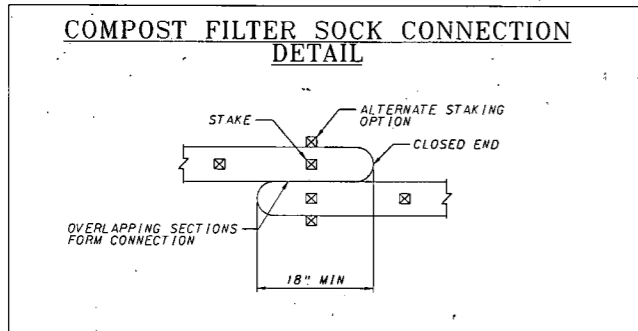
**SPLICE BOLT**



NOTE:  
 GUARDRAIL DETAILS PROVIDED ON THIS PLAN ARE FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION (WVDOT) STANDARD DETAILS BOOK, VOLUME 1, DATED JANUARY 1, 2000. INSTALL GUARDRAIL IN ACCORDANCE WITH ALL APPLICABLE WVDOT STANDARD DETAILS AND SPECIFICATIONS.

**GUARDRAIL INSTALLATION DETAILS**

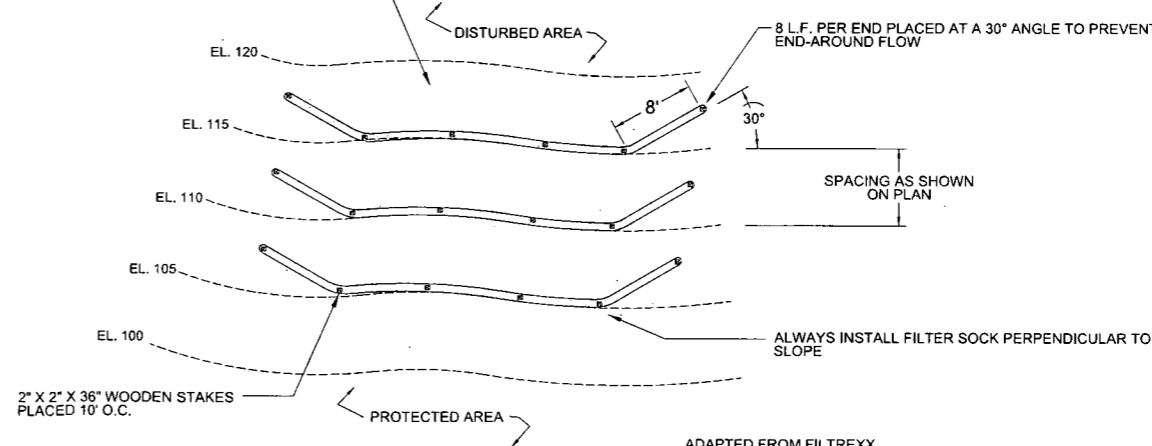
NTS



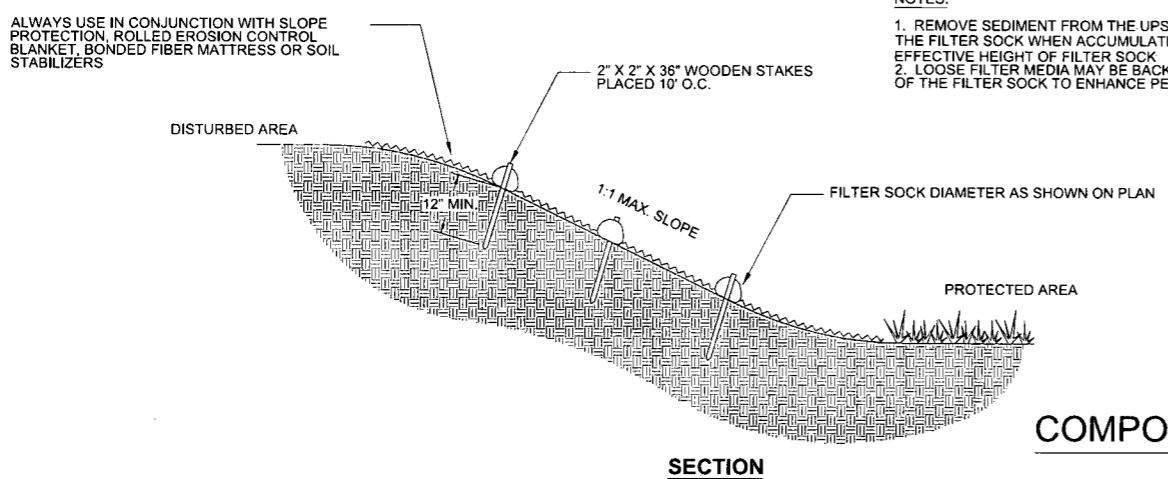
### TIMBER MAT CROSSING FOR DOMINION TRANSMISSION INC. BURIED PIPELINE NOT TO SCALE

- NOTES:
1. TIMBER MATS ARE TYPICALLY 20' LONG X 4' WIDE X 1" THICK.
  2. THIS IS A TYPICAL TIMBERMAT DETAIL CONTACT DTI AREA ENGINEER FOR WHEEL LOAD CALCULATION BEFORE USE.

ALWAYS USE IN CONJUNCTION WITH SLOPE PROTECTION, ROLLED EROSION CONTROL BLANKET, BONDED FIBER MATTRESS OR SOIL STABILIZERS



- NOTES:
1. REMOVE SEDIMENT FROM THE UPSLOPE SIDE OF THE FILTER SOCK WHEN ACCUMULATION HAS REACHED 1/2 OF EFFECTIVE HEIGHT OF FILTER SOCK
  2. LOOSE FILTER MEDIA MAY BE BACKFILLED ON THE UPSLOPE SIDE OF THE FILTER SOCK TO ENHANCE PERFORMANCE



### COMPOST FILTER SOCK SLOPE INTERRUPTION NTS (ADAPTED FROM FILTREXX)



Professional Energy Consultants  
 A DIVISION OF SIRTH LAND SURVEYING  
 Environmental Engineers  
 SLS  
 178 West 10th St.  
 P.O. Box 100  
 Spokane, WA 99201  
 (509) 325-8000  
 WWW.SLS-CONSULTING.COM



THIS DOCUMENT WAS PREPARED BY: STANTEC FOR: EQT PRODUCTION COMPANY

CONSTRUCTION DETAILS  
**WEU SERVICE ROAD**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/31/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 14 OF 17  
 REV:



**Table 2  
Acceptable Fertilization Recommendation**

Species	N (lbs/ac)	P2O5 (lbs/ac)	Example Rec. (per acre)
Cool Season Grass	40	80	400 lbs. 10-20-20
CS Grass & Legume	30	60	300 lbs. 10-20-20
Temporary Cover	40	40	200 lbs. 19-19-19

**Table 3  
Temporary Cover**

Species	Seeding Rate (lbs/acre)	Optimum Seeding Dates	Drainage	pH Range
Annual Ryegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Poorly	5.5 - 7.5
Field Bromegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Mod. Well	6.0 - 7.0
Spring Oats	98	3/1 - 6/15	Well - Poorly	5.5 - 7.0
Sundgrass	40	5/15 - 8/15	Well - Poorly	5.5 - 7.5
Winter Rye	160	8/15 - 10/15	Well - Poorly	5.5 - 7.5
Winter Wheat	180	8/15 - 11/15	Well - Mod. Well	5.5 - 7.0
Japanese Millet	30	6/15 - 8/15	Well	4.5 - 7.0
Redtop	5	3/1 - 6/15	Well	4.0 - 7.5
Annual Ryegrass	28	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Spring Oats	64	3/1 - 6/15	Well - Poorly	5.5 - 7.5

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

**Table IV-5  
Lime and Fertilizer Table**

pH of Soil	Lime in Tons per Acre	Fertilizer, lbs., per Acre (10-20-20 or Equivalent)
Above 6.0	2	500
5.0 to 6.0	3	500
Below 5.0	4	500

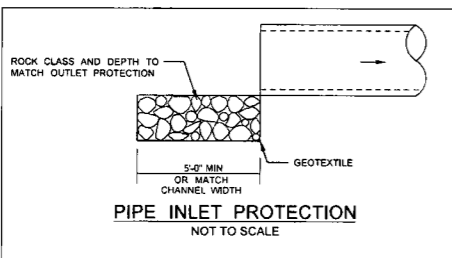
**Table IV-6  
Mulch Materials Is Rates and Used**

Material	Minimum Rates per acre	Coverage	Remarks
Hay or straw	2 to 3 Tons	Cover 75% to 90% of Surface	Subject to wind blowing or washing unless tied down
Wood Fiber	100 to 150 tons	Cover all	For hydrosowing
Pulp Fiber	1000 to 1500 lbs	Disturbed Areas	
Wood - Cellulose			
Recirculated Paper			

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

**Table IV-1  
Recommended Seeding Dates**

Planting Dates	Suitability
March 1 - April 15 and August 1 - October 1	Best Seeding Periods
April 15 - August 1	HIGH RISK - moisture stress likely
October 1 - December 1	HIGH RISK - freeze damage to young seedlings
December 1 - March 1	Good seeding period. Dormant seeding



**CORRUGATED METAL PIPE DESIGN TABLE**

PIPE LOCATION (STA)	PIPE DIAMETER (IN)	PIPE LENGTH (FT)	OUTLET PROTECTION			
			MIN D50 (IN)	ROCK DEPTH (IN)	LENGTH (FT)	WIDTH (FT)
0+26	15	70	6	14	6	4
2+00	15	30	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
3+00	15	30	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
4+00	15	34	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
5+00	15	35	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
6+00	15	38	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
7+00	15	38	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
8+00	15	36	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
9+00	15	37	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
10+00	15	36	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
11+00	15	33	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
12+00	15	33	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
13+00	15	31	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
14+00	15	32	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
15+00	15	32	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
16+00	15	32	SEE DITCH RELIEF CULVERT OUTLET DETAIL			

**Table 4a  
Permanent Seeding Mixture**

Species/Mixtures	Seeding Rate (lbs/acre)	Drainage	pH Range
Crownvetch/ Tall Fescue	10 - 15	Well - Mod. Well	6.0 - 7.5
Crownvetch/ Perennial Ryegrass	10 - 15	Well - Mod. Well	6.0 - 7.5
Ladino Clover/ Serecia Lespedeza/ Tall Fescue	30	Well - Mod. Well	4.5 - 7.5
Tall Fescue/ Ladino Clover/ Redtop	40	Well - Mod. Well	6.0 - 7.0
Crownvetch/ Tall Fescue/ Redtop	10	Well - Mod. Well	6.0 - 7.5
Tall Fescue/ Birdsfoot Trefoll/ Redtop	40	Well - Mod. Well	5.0 - 7.5
Serecia Lespedeza/ Tall Fescue/ Redtop	30	Well - Mod. Well	4.5 - 7.5
Redtop/ Tall Fescue/ Creeping Red Fescue/ Tall Fescue	50	Well - Mod. Well	6.0 - 7.5
Tall Fescue	50	Well - Poorly	4.5 - 7.5

\* 'Lathco' Flatpea is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.

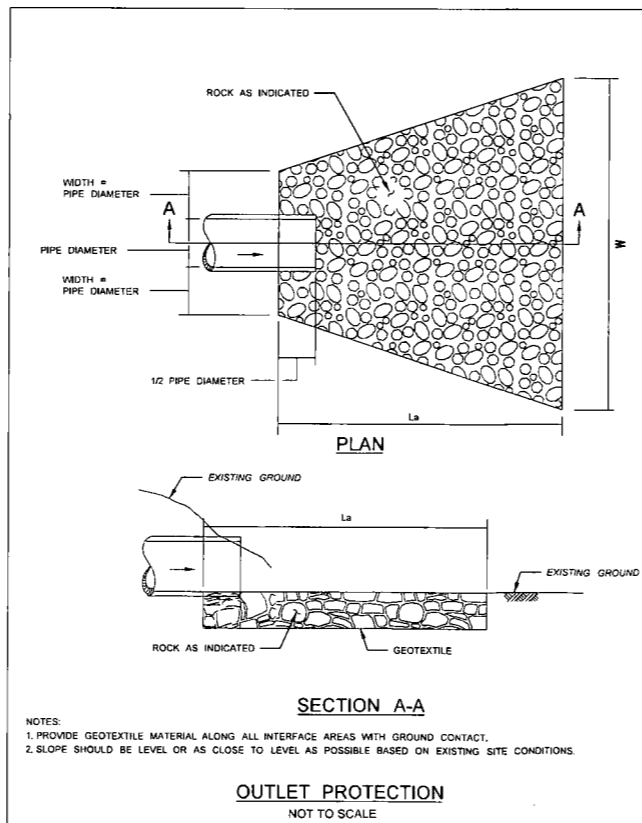
Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

**Table 4b  
Wildlife and Farm Friendly Seed Mixtures**

Species/Mixtures	Seeding Rate (lbs/acre)	Drainage	pH Range
KY Bluegrass/ Redtop	3	Well - Mod. Well	5.5 - 7.5
Ladino or Birdsfoot Trefoll	2/10		
Timothy/ Alopecurus	5	Well - Mod. Well	6.5 - 8.0
Timothy/ Birdsfoot Trefoll	8	Well - Poorly	5.5 - 7.5
Orchardgrass/ Ladino Clover/ Redtop	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Ladino Clover	2	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Perennial Ryegrass	20	Well - Mod. Well	5.5 - 7.5
Creeping Red Fescue/ Perennial Ryegrass	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass or KY Bluegrass	20	Well - Mod. Well	6.0 - 7.5
Birdsfoot Trefoll/ Redtop/ Orchardgrass	10	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea*/ Perennial Ryegrass	30	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea*/ Orchardgrass	30	Well - Mod. Well	5.5 - 7.5

\* 'Lathco' Flatpea is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.

Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.



**REVEGETATION**

Taken from the  
West Virginia Erosion and Sediment Control Field Manual  
West Virginia Division of Environmental Protection Office of Oil and Gas  
Charleston, W.Va.  
Section IV

**Temporary Seeding**

**A. General Conditions Where Practice Applies**

Where exposed soil surfaces are not to be fine-graded or worked for periods longer than 21 days. Temporary vegetative cover with sediment controls must be established where runoff will go directly into a stream. Immediately upon construction of the site (site includes road and location), vegetation must be established on road bank and location slopes. A permanent vegetative cover shall be applied to areas that will be left un-worked for a period of more than six months.

**B. Seed Mixtures and Planting Dates**

Refer to Tables 2 through 4 for recommended dates to establish vegetative cover and the approved lists of temporary and permanent plant species, and planting rates. Table 3 gives recommended types of temporary vegetation, rates of application, and optimum seeding dates. In situations where another cover is desired, contact the local soil conservation district for seeding recommendations.

**C. Seed Application**

Apply seed by broadcasting, drilling, or by hydrosseed according to the rates indicates in Table IV-3. Perform a11 planting operations at right angles to the slope. Necessary site preparation and roughening of the soil surface should be done just prior to seeding. Seedbed preparation may not be required on newly disturbed areas.

**Permanent Seeding**

**A. General**

Permanent vegetative cover will be established where no further soil disturbance is anticipated or needed. Soil fertility and pH level should be tested and adjusted according to seed species planted. Planting of permanent vegetative covers must be performed on a11 disturbed areas after completion of the drilling process. Any site that contains significant amounts of topsoil shall have the topsoil removed and stockpiled when feasible. Topsoil should not be added to slopes steeper than 2:1 unless a good bonding to the sub-layer can be achieved. After proper grading and seedbed preparation, the vegetation will reestablish ground cover for the control of surface water runoff erosion. All required seedbed preparation and loosening of soil by disk or dozer tracking should be performed just prior to seeding. If seedbed preparation is not feasible, 50% more seed shall be added to the recommended rates shown in Tables IV-3 and IV-4. When hydrosseeding, seedbed preparation may not be necessary if adequate site preparation was performed. Incorporate the appropriate amount of lime and/or fertilizer in the slurry mix when hydrosseeding. When hydrosseeding, first mix the lime, fertilizer, and hydro-mulch in the recommended amount of water. Mix the seed and inoculants together within one hour prior to planting, and add to the slurry just before seeding. Apply the slurry uniformly over the prepared site. Assume that agitation is continuous throughout the seeding operation and the mix is applied within one hour of initial mixing.

**B. Lime and Fertilizer**

- Lime shall be applied to a11 permanent seedings. The pH of the soil is to be determined and lime applied accordingly. Once the pH is known, select the amount of lime to be applied from Table IV-5.
- Fertilizer shall be applied in all permanent seedings. Apply the equivalent for 500 lbs. minimum 10-20-20 fertilizer per acre or use the amount of fertilizer and lime recommended by a certified soil test.
- Application: For best results and maximum benefits, the lime and fertilizer are to be applied at the time of seedbed preparation.

**C. Permanent Seed Mixtures**

Planners should take into consideration the species makeup of the existing pasture and the landowner's future pasture management plans when recommending seed mixtures. Selection: From Tables IV 4a and b. Permanent Seeding Mixtures Suitable for Establishment in West Virginia.

**Notes:**

- All legumes must be planted with the proper inoculants prior to seeding.
- 'Lathco' Flatpea is potentially poisonous to some livestock.
- Only endophyte free varieties of Tall Fescue and Crownvetch are also very invasive species, non-native to WV.
- For unprepared seedbeds or seeding outside the optimum timeframes, add 50% more seed to the specified rate. Mixtures in Table 4b are more wildlife and farm friendly; those listed in bold are suitable for use in shaded woodland settings. Mixtures in italic are suitable for use in filter strips.

**D. Seeding for Wildlife Habitat**

Consider the use of the native plants or locally adapted plants when selecting cover types and species for wildlife habitat. Wildlife friendly species or mixes that have multiple values should be considered. See wildlife friendly species/mixtures in Table IV-4b. Consider selecting no or low maintenance long-lived plants adaptable to sites which may be difficult to maintain with equipment.

**Mulching**

**A. General Organic Mulches**

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

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

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

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

**B. Chemical Mulches, Soil Binders and Tackifiers**

A wide range of synthetic spray on materials are marketed to stabilize and protect the soil surface. These are mixed with water and sprayed over the mulch and to the soil. They may be used alone in some cases as temporary stabilizers, or in conjunction with fiber mulch, straw or hay.

When used alone most chemical mulches do not have the capability to insulate the soil or retain soil moisture that organic mulches have.

**C. Specifications**

From Table IV-6 select the type of mulch and rate of application that will best suit the conditions at the site.

**D. Anchoring**

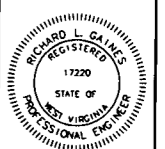
- Mechanical Anchoring**  
Apply mulch and pull mulch anchoring tool over the mulch. When a disk is used set the disk straight and pull across slope. Mulch material should be tucked into the soil about three inches.
- Mulch netting**  
Follow manufacturer's recommendation when positioning and stapling the mulch netting in the soil.

WEU SERVICE ROAD MATERIAL QUANTITIES				
SERVICE ROAD				
ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	ITEM TOTAL
<b>1.0 CLEARING AND GRUBBING</b>				
1.a. TREE CLEARING (ENTIRE PROJECT)	4.34	AC	\$	\$
1.b. MOWING	0	AC	\$	\$
<b>2.0 COMPOST FILTER SOCK</b>				
2.a. 12" COMPOST FILTER SOCK	1,252	LF	\$	\$
2.b. 18" COMPOST FILTER SOCK	719	LF	\$	\$
2.c. 24" COMPOST FILTER SOCK	2,845	LF	\$	\$
			\$	\$
<b>3.0 AGGREGATE SURFACING</b>				
3.a. 6" of 3"-6" BASE	1,814	TONS	\$	\$
3.b. 2" of 3/4" CRUSHER RUN	746	TONS	\$	\$
3.c. GEOTEXTILE	7,255	SY	\$	\$
<b>4.0 COCONUT SLOPE MATTING</b>				
	13,040	SY	\$	\$
<b>5.0 SEED &amp; MULCH</b>				
5.a. SEEDING (INCLUDES AREA OF SLOPE MATTING)	8.8	AC	\$	\$
5.b. MULCH (EXCLUDES AREA OF SLOPE MATTING)	6.2	AC	\$	\$
<b>6.0 DITCH LINING</b>				
ROCK, d50 = 6" MIN	1,889	SY	\$	\$
<b>7.0 CMP CULVERT</b>				
7.a. 15" CMP	577	LF	\$	\$
			\$	\$
<b>8.0 EXCAVATION</b>				
8.a. SERVICE ROAD (CUT W/ NO SWELL) - INCLUDES EXC. FOR AGGREGATE	27,119	CY	\$	\$
8.b. TOPSOIL (ESTIMATED 6")	3,501	CY	\$	\$
			\$	\$
<b>9.0 DITCH LENGTH</b>				
	3,642	LF	\$	\$
<b>10.0 RIP RAP APRONS</b>				
10.a. OUTLET PROTECTION (d50 = 6" MIN)	92	TON	\$	\$
			\$	\$
<b>11.0 KEYWAY EXCAVATION</b>				
	2,219	CY	\$	\$

NOTE:  
GEOTEXTILE FABRIC, ROLLED EROSION CONTROL PRODUCT AND LINER SYSTEM QUANTITIES DO NOT ACCOUNT FOR OVERLAP.



Professional Energy Consultants  
A DIVISION OF S&S CONSULTANTS  
SURVEYOR  
PROJECT MANAGER  
111 ELMONS STREET  
FARMINGTON, WV 26564  
PHONE: 304-381-5461



THIS DOCUMENT WAS PREPARED BY: STANTEC FOR: EOT PRODUCTION COMPANY

CONSTRUCTION QUANTITIES  
**WEU SERVICE ROAD**  
WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

DATE: 10/31/2013  
SCALE: AS SHOWN  
DESIGNED BY: RJH/JMR  
FILE NO.: SLS-7871  
SHEET 17 OF 17  
REV:



# EQT WEU 49 SITE PLAN

## EQT PRODUCTION COMPANY

(PROPOSED WELL NO. WV 514395, WV 514394,  
 WV 514393, WV 514392, WV 514391, WV 514390)

**PROJECT INFORMATION**

PROJECT NAME: EQT WEU 49  
 TAX PARCEL:  
 WEST UNION DISTRICT, DODDRIDGE COUNTY, WV  
 MAP 20 PARCELS 09 AND 14  
 MAP 15 PARCEL 6.1, 08 AND 8.2

SURFACE OWNER:  
 TOM DAVIES, ET AL  
 MAP 15, PARCEL 08  
 WEST UNION DISTRICT, DODDRIDGE COUNTY, WV  
 TOTAL PROPERTY AREA: 1457.95 +/- ACRES  
 TOTAL DISTURBANCE AREA: 19.02 +/- ACRES

COASTAL FOREST RESOURCES CO.  
 MAP 15, PARCEL 09  
 WEST UNION DISTRICT, DODDRIDGE COUNTY, WV  
 TOTAL PROPERTY AREA: 50.88 +/- ACRES  
 TOTAL DISTURBANCE AREA: 0.06 +/- ACRES

MARY S FARR  
 MAP 20, PARCEL 14  
 WEST UNION DISTRICT, DODDRIDGE COUNTY, WV  
 TOTAL PROPERTY AREA: 829.75 +/- ACRES  
 TOTAL DISTURBANCE AREA: 17.81 +/- ACRES

LOREN & LARRY SMITH  
 MAP 20, PARCEL 09  
 WEST UNION DISTRICT, DODDRIDGE COUNTY, WV  
 TOTAL PROPERTY AREA: 41.0 +/- ACRES  
 TOTAL DISTURBANCE AREA: 0.85 +/- ACRES

DODDRIDGE COUNTY BOARD OF EDUCATION  
 MAP 15, PARCEL 6.1 AND 8.2  
 WEST UNION DISTRICT, DODDRIDGE COUNTY, WV  
 TOTAL PROPERTY AREA: 83.8 +/- ACRES  
 TOTAL DISTURBANCE AREA: 0.05 +/- ACRES

OIL AND GAS ROYALTY OWNER:  
 LEWIS MAXWELL HEIRS  
 WEST UNION DISTRICT, DODDRIDGE COUNTY, WV  
 TOTAL PROPERTY AREA: 2654 +/- ACRES

SITE LOCATION:  
 THE EQT WEU 49 ACCESS ROAD ENTRANCE IS LOCATED 2,933' +/-  
 SOUTHEAST OF THE JUNCTION OF US RT. 50 AND CO. RT. 50/41.  
 THE WELL PAD IS LOCATED 1.8 MILES +/- SOUTHEAST OF THE  
 JUNCTION OF US RT. 50 AND CO. RT. 50/41.

**LOCATION COORDINATES**

JUNCTION OF EQT WEU 49 ACCESS ROAD AND THE WEU SERVICE ROAD  
 LATITUDE: 39.27490 LONGITUDE: 80.78524 (NAD 83)

EQT WEU 49 WELL PAD CENTER  
 LATITUDE: 39.25491 LONGITUDE: 80.78648 (NAD 83)

EQT WEU 49 TANK A PAD  
 LATITUDE: 39.25579 LONGITUDE: 80.78668 (NAD 83)

EQT WEU 49 TANK B PAD  
 LATITUDE: 39.25992 LONGITUDE: 80.78090 (NAD 83)

**GENERAL DESCRIPTION**

THE WELL PAD, ACCESS ROAD AND TANK PAD ARE BEING CONSTRUCTED  
 TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS  
 WELLS.

**SITE DISTURBANCE COMPUTATIONS**

WELL PAD/TANK A PAD/WELL SITE STOCKPILES AREA = 9.6 +/- ACRES  
 TANK B PAD/ACCESS ROAD = 6.7 +/- ACRES  
 ACCESS ROAD AREA = 21.3 +/- ACRES  
 TOTAL SITE DISTURBANCE AREA = 37.6 +/- ACRES

**ENTRANCE PERMIT**

EQT PRODUCTION COMPANY WILL OBTAIN AN ENCROACHMENT PERMIT (FORM  
 MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION  
 ACTIVITIES.

**MISS UTILITY STATEMENT**

MISS UTILITY OF WEST VIRGINIA WAS NOTED FOR THE LOCATING OF  
 UTILITIES PRIOR TO THIS PROJECT DESIGN; TICKET #1319851533.  
 IN ADDITION, MISS UTILITY WILL BE CONTACTED PRIOR TO START OF THE  
 PROJECT.

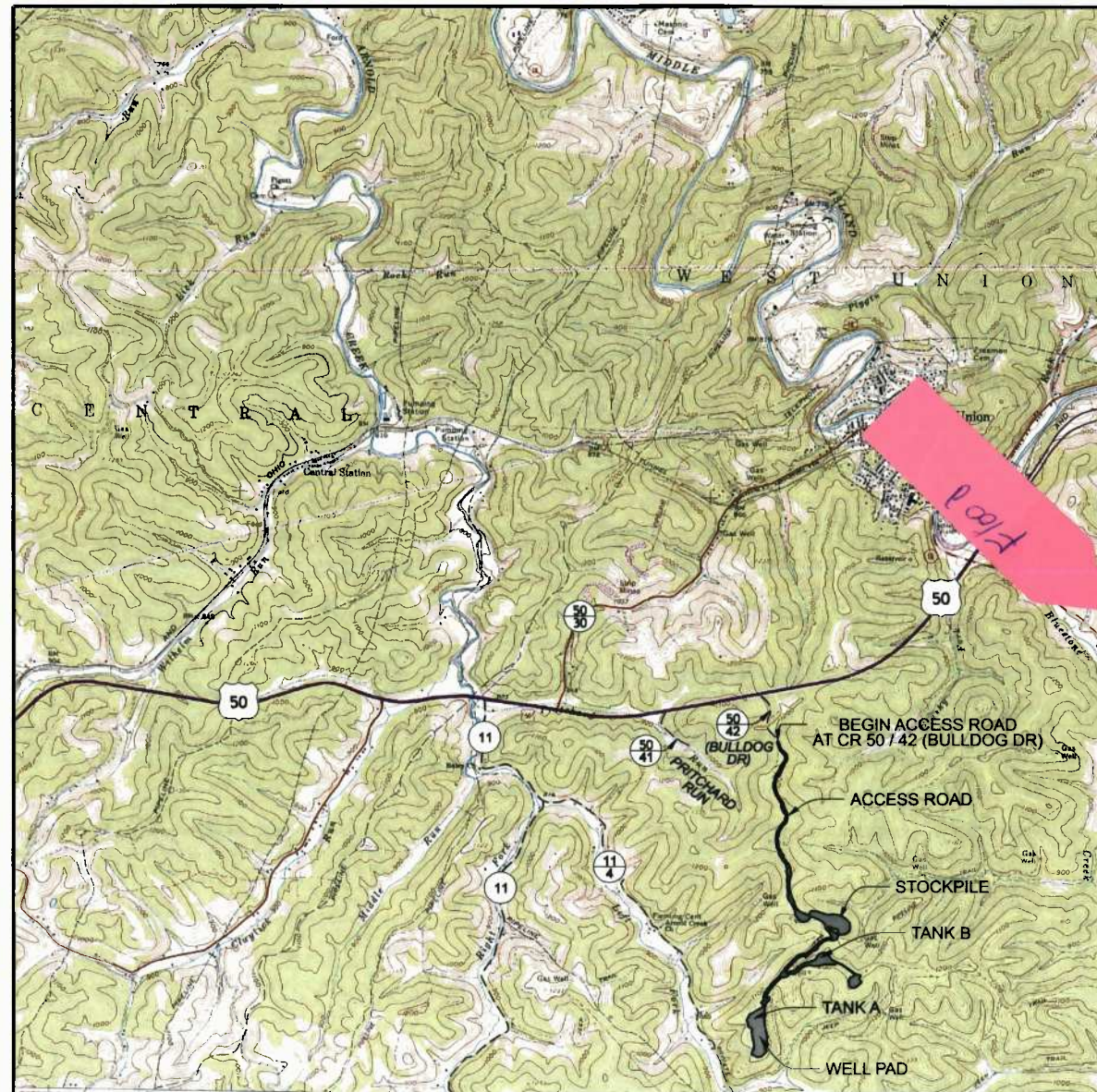
**ENVIRONMENTAL NOTES**

A WETLAND DELINEATION WAS PERFORMED ON DECEMBER 14, 2011, BY POTESA &  
 ASSOCIATES TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY  
 WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE)  
 AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP).  
 THE OCTOBER 16, 2013 REPORT FOR THE EQT WEU 49 SITE WAS PREPARED BY POTESA &  
 ASSOCIATES, INC., SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE REPORT  
 DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE  
 LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE  
 OR THE WVDEP. IT IS STRONGLY RECOMMENDED THAT THE AFOREMENTIONED AGENCIES  
 BE CONSULTED IN AN EFFORT TO GAIN WRITTEN CONFIRMATION OF THE DELINEATION  
 DESCRIBED BY THIS REPORT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY  
 DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM  
 THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS  
 TO WATERS OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CROSSINGS.

**GEOTECHNICAL NOTES**

A SUBSURFACE GEOTECHNICAL INVESTIGATION HAS NOT BEEN PERFORMED AT THIS SITE.

GRID NORTH AND ELEVATIONS  
 SHOWN HEREON WERE  
 ESTABLISHED BY SURVEY  
 GRADE GPS



WEST UNION QUADRANGLE  
 WEST VIRGINIA  
 7.5 MINUTE SERIES



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!

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EX. FENCELINE	---	PROP. WELL HEAD	---
EX. GATE	---	PROP. CONTAINMENT BERM	---
EX. OVERHEAD UTILITY	---	PROP. ROAD CENTERLINE	---
EX. OVERHEAD UTILITY RW	---	PROP. V-DITCH WITH CHECK DAMS	---
EX. UTILITY POLE	---	PROP. CULVERT	---
EX. GUY WIRE	---	PROP. RIP-RAP OUTLET PROTECTION	---
EX. TELEPHONE LINE	---	PROP. RIP-RAP INLET PROTECTION	---
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EX. REFERENCE TREE	---	X-SECTION EXISTING GRADE	---
EX. DELINEATED STREAM	---		
EX. DELINEATED WETLAND	---		
EX. BUILDING	---		

**OPERATOR**

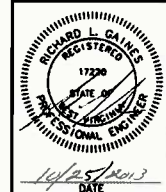
EQT PRODUCTION COMPANY  
 OPERATOR ID: 306686  
 P.O. BOX 280  
 BRIDGEPORT, WV 26630  
 PHONE: (304) 348-3870

**ENGINEER**

STANTEC CONSULTING, INC.  
 111 ELKINS STREET  
 FAIRMONT, WV 26554  
 PHONE: (304) 387-9401

**SURVEYOR**

SMITH LAND SURVEYING, INC.  
 PO BOX 150  
 226 WEST MAIN STREET  
 GLENVILLE, WV 26351  
 PHONE: (304) 462-5634



THIS DOCUMENT WAS  
 PREPARED BY:  
 STANTEC  
 FOR:  
 EQT PRODUCTION COMPANY

TITLE SHEET  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/23/2013
SCALE: AS SHOWN
DESIGNED BY: RLH/JMR
FILE NO.: SLS-7871
SHEET 1 OF 47
REV:



### CONSTRUCTION NOTES

1. THE CONTRACTOR IS TO VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION AND WILL NOTIFY STANTEC AT (304) 367-9401 OR SMITH LAND SURVEYING AT (304) 462-5634 IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE APPROVED PLAN. ANY WORK PERFORMED BY THE CONTRACTOR AFTER THE FINDING OF SUCH DISCREPANCIES, SHALL BE DONE AT THE CONTRACTOR'S RISK.
2. METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS HEREIN SHALL CONFORM TO THE CURRENT COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS AND/OR CURRENT WVDEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL STANDARDS AND SPECIFICATIONS. SHOULD A CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, AND PLANS OCCUR, THE MOST STRINGENT REQUIREMENT WILL APPLY. THE APPROVAL OF THESE PLANS IN NO WAY RELIEVES THE DEVELOPER OR HIS AGENT OF THE RESPONSIBILITIES CONTAINED IN THE WVDEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
3. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. ALSO, A REPRESENTATIVE OF THE DEVELOPER MUST BE AVAILABLE AT ALL TIMES.
4. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING MUD FROM TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING PUBLIC STREETS, AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN STREETS, ALLAY DUST, AND TO TAKE WHATEVER MEASURES ARE NECESSARY TO ENSURE THAT THE STREETS ARE MAINTAINED IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES.
5. THE LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS ARE FROM FIELD LOCATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES AS NEEDED PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE ENGINEER OF ANY CONFLICTS ARISING FROM HIS EXISTING UTILITY VERIFICATION AND THE PROPOSED CONSTRUCTION.
6. THE CONTRACTOR SHALL PROVIDE NOTIFICATION TO THE APPROPRIATE UTILITY COMPANY PRIOR TO CONSTRUCTION OF WATER AND/OR GAS PIPE LINES. INFORMATION SHOULD ALSO BE OBTAINED FROM THE APPROPRIATE AUTHORITY CONCERNING PERMITS, CUT SHEETS, AND CONNECTIONS TO EXISTING LINES.
7. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGES TO THE EXISTING STREETS AND UTILITIES WHICH OCCURS AS A RESULT OF HIS CONSTRUCTION PROJECT WITHIN OR CONTIGUOUS TO THE EXISTING RIGHT-OF-WAY.
8. WHEN GRADING IS PROPOSED WITHIN EASEMENTS OF UTILITIES, LETTERS OF PERMISSION FROM ALL INVOLVED COMPANIES MUST BE OBTAINED PRIOR TO GRADING AND/OR SITE DEVELOPMENT.
9. THE DEVELOPER WILL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITIES WHICH IS REQUIRED AS A RESULT OF HIS PROJECT. THE RELOCATION SHOULD BE DONE PRIOR TO CONSTRUCTION.
10. THESE PLANS IDENTIFY THE LOCATION OF ALL KNOWN GRAVESITES. GRAVESITES SHOWN ON THIS PLAN WILL BE PROTECTED IN ACCORDANCE WITH STATE LAW. IN THE EVENT GRAVESITES ARE DISCOVERED DURING CONSTRUCTION, THE OWNER AND ENGINEER MUST BE NOTIFIED IMMEDIATELY.
11. THE CONTRACTOR(S) SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATING OR BLASTING AT LEAST TWO (2) WORKING DAYS, BUT NOT MORE THAN TEN (10) WORKING DAYS, PRIOR TO COMMENCEMENT OF EXCAVATING OR DEMOLITION.
12. THE CONTRACTOR IS TO CONTACT THE OPERATOR AND ENGINEER IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION. THE ENGINEER OR SURVEYOR IS NOT RESPONSIBLE FOR ANY BURIED WATER WELLS, SPRINGS OR ANY OTHER FEATURES UNCOVERED DURING CONSTRUCTION.
13. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE EROSION AND SEDIMENT CONTROL INSPECTOR TWO DAYS PRIOR TO THE START OF CONSTRUCTION.
14. THE CONTRACTOR IS RESPONSIBLE FOR ALL FILL MATERIAL TESTING REQUIRED DURING THE CONSTRUCTION OF THIS PROJECT. ALL MATERIAL TESTS SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LABORATORY AND A CERTIFICATION OF THE MATERIALS TESTED SHALL BE PROVIDED BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LABORATORY. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER CERTIFYING THE CONSTRUCTED FACILITY. FAILURE TO CONDUCT THE DENSITY TEST SHALL BE CAUSE FOR NON-ACCEPTANCE OF THE CONSTRUCTED FACILITY.
15. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE SITE IN ACCORDANCE WITH THE DESIGN PLANS AND CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK SHALL CONFORM WITH THE GRADES, BERMS, DEPTHS, DIMENSIONS, ETC. SHOWN HEREON.

### MAINTENANCE PROGRAM

1. BMPS WILL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH MEASUREABLE RAINFALL EVENT DURING THE ACTIVE CONSTRUCTION PHASE OF THE PROJECT.
2. ALL REVEGETATED ACCESS ROADS AND FACILITIES ARE TO BE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT.
3. CULVERTS, ROAD DITCHES, BROAD-BASED DIPS, DIVERSION DITCHES, AND ROCK CHECK DAMS MUST BE MAINTAINED IN PROPER WORKING ORDER AND WILL BE CLEANED OUT, REPAIRED, OR REPLACED AS NECESSARY.
4. SEDIMENT SHOULD BE REMOVED FROM COMPOST FILTER SOCK WHERE ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FILTER SOCK. REPLACE SECTIONS OF FAILED FILTER SOCK IMMEDIATELY. REMOVE ENTIRE FILTER SOCK UPON COMPLETION OF PROJECT AND ESTABLISHMENT OF VEGETATIVE GROWTH.
5. ALL AREAS OF EARTH DISTURBANCE WILL BE REPAIRED WHERE SIGNS OF ACCELERATED EROSION ARE DETECTED.
6. SEEDING AND MULCHING WILL BE REPEATED IN THOSE AREAS THAT APPEAR TO BE FAILING OR HAVE FAILED.

### CONSTRUCTION SEQUENCE

THE DEVELOPMENT OF THE SITE SHALL BE CONSISTENT WITH THE FOLLOWING GENERAL SEQUENCE OF CONSTRUCTION. THE CONTRACTOR SHALL IMPLEMENT, MAINTAIN, AND OPERATE ALL PROPOSED EROSION AND SEDIMENT CONTROL MEASURES TO EFFECTIVELY MITIGATE THE HAZARD OF ACCELERATED EROSION AND SEDIMENTATION TO ACCEPTABLE LEVELS. MINOR DEVIATIONS FROM THIS SEQUENCE SHALL BE EXECUTED BY THE PROJECT'S SUPERINTENDENT AS NEEDED TO ELIMINATE ANY POTENTIAL EROSION CONDITION THAT MAY ARISE FOR THE DURATION OF THE PROJECT. THE WVDEP OFFICE OF OIL AND GAS SHALL BE NOTIFIED OF ANY AND ALL SUCH DEVIATIONS FROM THE APPROVED PLANS.

1. HOLD A PRE-CONSTRUCTION CONFERENCE WITH THE CONTRACTOR AND THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO BEGINNING WORK TO REVIEW THE CONSTRUCTION DRAWING AND PROVIDE ANY REQUESTED GUIDANCE.
2. STAKE THE LIMITS OF CONSTRUCTION.
3. INSTALL THE ROCK CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS.
4. INSTALL ALL BMPS NECESSARY TO BEGIN CLEARING AND GRUBBING OF THE SITE AS SHOWN ON THE PLANS AND DETAILS.
5. CLEAR AND GRUB THE ACCESS ROAD, WELL PAD, AND TANK PAD AREAS. ALL WOODY MATERIAL, BRUSH, TREES, STUMPS, LARGE ROOTS, BOULDERS, AND DEBRIS SHALL BE CLEARED FROM THE SITE AREA AND KEPT TO THE MINIMUM NECESSARY FOR PROPER CONSTRUCTION, INCLUDING THE INSTALLATION OF ANY NECESSARY SEDIMENT CONTROLS. TREES SIX INCHES IN DIAMETER AND LARGER SHALL BE CUT AND LOGS STACKED. SMALLER TREES, BRUSH, AND STUMPS SHALL BE CUT AND/OR GRUBBED AND WINDROWED IN APPROPRIATE AREAS FOR USE AS SEDIMENT BARRIERS AT WATER DRAINAGE OUTLETS, WINDROWED BELOW THE WELL SITE, USED FOR WILDLIFE HABITAT, BURNED (AS PER WV FOREST FIRE LAWS), REMOVED FROM THE SITE, OR DISPOSED OF BY OTHER METHODS APPROVED BY DEP.
6. STRIP THE TOPSOIL FROM THE ACCESS ROAD, WELL PAD, AND TANK PAD AREAS. ALL STRIPPED TOPSOIL SHALL BE STOCKPILED ON AREAS SHOWN ON THE PLANS AND IMMEDIATELY STABILIZED. ADDITIONAL BMP MEASURES SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES, IF NECESSARY.
7. CONSTRUCT THE ACCESS ROAD, PROPOSED CROSS CULVERTS AND ROAD SIDE DITCHES. AS ACCESS ROAD CONSTRUCTION PROGRESSES, BEGIN WELL PAD AND TANK PAD CONSTRUCTION. AS FILL SLOPES ARE CONSTRUCTED, INSTALL SLOPE INTERRUPTION COMPOST FILTER SOCK AS LABELED ON THE PLANS AND SHOWN ON THE DETAILS.
8. INSTALL DITCH RELIEF CULVERTS AT A MINIMUM SLOPE OF 1% AND APPROXIMATELY 30 DEGREES DOWNGRADE TO THE CENTERLINE OF THE DITCH. INSTALL OUTLET PROTECTION AS SHOWN ON PLANS AND DETAILS AS CROSS CULVERTS ARE INSTALLED AND IMMEDIATELY STABILIZE ROAD SIDE DITCHES WITH ROCK. STABILIZE THE ROAD WITH GEOTEXTILE FABRIC AND STONE AND SIDE SLOPES AS SPECIFIED WITH PERMANENT SEEDING. STOCKPILE AND STABILIZE EXCESS MATERIAL ALONG THE ACCESS ROAD, AS NEEDED.
9. ALL DITCH LINES SHALL BE CLEANED PRIOR TO INSTALLATION OF LINED PROTECTION. ALL DITCHES SHALL BE ROCK LINED WITH D50 = 6" MIN. SIZED RIPRAP UNLESS SPECIFIED OTHERWISE.
10. FINALIZE GRADING OF THE WELL PAD AND TANK PAD AREAS. IMMEDIATELY STABILIZE THE OUTER AREAS OF THE WELL PAD AND TANK PADS. THE WELL PAD, TANK PADS AND MANIFOLD PAD TURNAROUND AREA(S) SHALL BE STABILIZED WITH GEOTEXTILE FABRIC AND STONE. STABILIZE ALL SIDE SLOPES WITH COCONUT EROSION CONTROL BLANKETS. APPLY SEED AND MULCH TO ALL DISTURBED AREAS. THIS SHALL BE INCLUDED IN ALL AREAS THAT WILL NOT BE SUBJECT TO REGULAR TRAFFIC ACTIVITY (TO BE STABILIZED WITH STONE), OR ANY DISTURBED AREA THAT WILL NOT BE RE-DISTURBED BEFORE SITE RECLAMATION BEGINS.
11. PRIOR TO THE INSTALLATION OF THE TANK PAD LINER SYSTEM, THE CONTRACTOR SHALL CONTACT THE ENGINEER/SURVEYOR TO COMPLETE AN AS-BUILT SURVEY OF THE CONSTRUCTED TANK PAD/BERM TO ENSURE CONFORMANCE WITH THE DESIGN DRAWINGS. THE AS-BUILT WILL BE REVIEWED BY THE ENGINEER AND THE CONTRACTOR IS RESPONSIBLE FOR ANY CORRECTIVE ACTION DEEMED NECESSARY BY THE ENGINEER FOR ANY DEVIATION(S) FROM THE DESIGN DRAWINGS.
12. PREVIOUSLY DISTURBED AREAS AND IMMEDIATE DOWN SLOPE AREAS SHALL BE INSPECTED AFTER EACH RAINFALL STORM EVENT AND MONITORED WEEKLY FOR SIGNS OF ACCELERATED EROSION. IMPLEMENT ADDITIONAL BMPS AS DEEMED NECESSARY. THESE INSPECTIONS SHALL CONTINUE DURING THE DURATION OF THE PROJECT AND SUBSEQUENT SITE RECLAMATION.
13. ONCE THE TANK PADS AND TANKS HAVE BEEN CONSTRUCTED AND LINER SYSTEMS COMPLETED, SUBMIT THE AS-BUILT CERTIFICATION FOR THE FACILITIES TO THE WVDEP OFFICE OF OIL AND GAS PRIOR TO PLACING FLUIDS IN EITHER STRUCTURE.
14. COMMENCE THE DRILLING ACTIVITY.
15. ONCE DISTURBED AREAS HAVE BEEN RE-VEGETATED AND STABILIZED FOLLOWING RECLAMATION, THE TEMPORARY BMPS IN THOSE AREAS MAY BE REMOVED. CONTINUE TO MONITOR THESE AREAS TO ENSURE A UNIFORM RATE OF 70% VEGETATIVE COVERAGE IS MAINTAINED. ANY AREAS FOUND TO BE DEFICIENT SHALL BE RE-SEEDING AND MULCHED.

### TANK PAD CONSTRUCTION STANDARDS

THE DESIGN, CONSTRUCTION, AND REMOVAL OF EMBANKMENTS ASSOCIATED WITH THE TANK PAD MUST BE ACCOMPLISHED IN SUCH A MANNER AS TO PROTECT THE HEALTH AND SAFETY OF THE PEOPLE, THE NATURAL RESOURCES, AND ENVIRONMENT OF THE STATE. THE EMBANKMENTS SHALL BE DESIGNED, CONSTRUCTED, AND MAINTAINED TO BE STRUCTURALLY SOUND AND REASONABLY PROTECTED FROM UNAUTHORIZED ACTS OF THIRD PARTIES.

1. THE FOUNDATION FOR THE TANK PAD MUST BE STRIPPED AND GRUBBED TO A MINIMUM DEPTH OF 2 FEET PRIOR TO PLACEMENT AND COMPACTION OF EARTHEN FILL MATERIAL. NO EMBANKMENT FILL SHALL BE PLACED ON FROZEN MATERIAL. REMOVE ROCK PIECES GREATER THAN 3 INCHES IN ANY DIMENSION. BACKFILL VOIDS CREATED BY REMOVAL OF ROCK.
2. ANY SPRINGS ENCOUNTERED WITHIN THE FOUNDATION AREA SHALL BE DRAINED TO OUTSIDE/DOWNSTREAM TOE OF EMBANKMENT. CONSTRUCTED DRAIN SECTION SHALL BE AN EXCAVATED 2' X 2' TRENCH AND BACK FILLED WITH TYPE A SAND, COMPACTED BY HAND TAMPER. NO GEOTEXTILES SHALL BE USED TO LINE TRENCH. THE LAST 3 FEET OF DRAIN AT THE DOWNSTREAM END SHALL BE CONSTRUCTED WITH AASHTO #8 MATERIAL.
3. SOILS FOR EARTHEN EMBANKMENT CONSTRUCTION SHALL BE LIMITED TO TYPES GC, GM, SC, SM, CL, OR ML (ASTM D-2487 - UNIFIED SOILS CLASSIFICATION). SOILS MUST CONTAIN A MINIMUM OF 20% PF PLUS NO. 200 SIEVE AND BE "WELL GRADED" MATERIAL WITH NO COBBLES OR BOULDER SIZE MATERIAL MIXED WITH CLAY. A MINIMUM OF THREE SAMPLES SHALL BE CLASSIFIED.
4. THE EARTHEN EMBANKMENT SHALL BE COMPACTED BY A VIBRATING SHEEPSFOOT ROLLER. THE LIFTS MUST BE IN HORIZONTAL LAYERS WITH A MAXIMUM LOOSE LIFT THICKNESS OF 12" AND MAXIMUM PARTICLE SIZE LESS THAN 6". ALL FILL SHALL BE COMPACTED TO 95% PER THE STANDARD PROCTOR TEST (ASTM D-698).
5. THE PLACEMENT OF ALL FILL MATERIAL SHALL BE FREE OF WOOD, STUMPS AND ROOTS, LARGE ROCKS AND BOULDERS, AND ANY OTHER NONCOMPACTABLE SOIL MATERIAL. THE EMBANKMENT SHALL BE COMPACTED TO A MINIMUM OF VISIBLE NON-MOVEMENT, HOWEVER, THE COMPACTION EFFORT SHALL NOT EXCEED THE OPTIMUM MOISTURE LIMITS.
6. THE MINIMUM INSIDE AND OUTSIDE SIDESLOPES SHALL BE 2H:1V, UNLESS OTHERWISE SPECIFIED.
7. ALL EXPOSED EMBANKMENT SLOPES, NOT COVERED BY COMPACTED ROCKFILL OR RIPRAP SHALL BE LIMED, FERTILIZED, SEEDED AND MULCHED. PERMANENT VEGETATIVE GROUND COVER IN COMPLIANCE WITH THE WVDEP EROSION AND SEDIMENT CONTROL FIELD MANUAL MUST BE ESTABLISHED UPON THE COMPLETION OF THE PAD CONSTRUCTION. EMBANKMENTS SHALL BE MAINTAINED WITH A GRASSY VEGETATIVE COVER AND FREE OF BRUSH AND/OR TREES.
8. A MINIMUM OF 2 FEET OF FREEBOARD SHALL BE MAINTAINED AT ALL TIMES DURING THE OPERATION OF THE TANK.
9. ALL EMBANKMENT CONSTRUCTION AND COMPACTION TESTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.



THIS DOCUMENT WAS PREPARED BY STANTEC FOR EQT PRODUCTION COMPANY

GENERAL NOTES  
**EQT WEU 49**  
WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
SCALE: AS SHOWN  
DESIGNED BY: RJH/JMR  
FILE NO.: SLS-7671  
SHEET 2 OF 47  
REV:



# EQT WEU 49 SITE PLAN

PROPOSED WELL NO. WV 514395, WV 514394, WV 514393, WV 514392, WV 514391, WV 514390



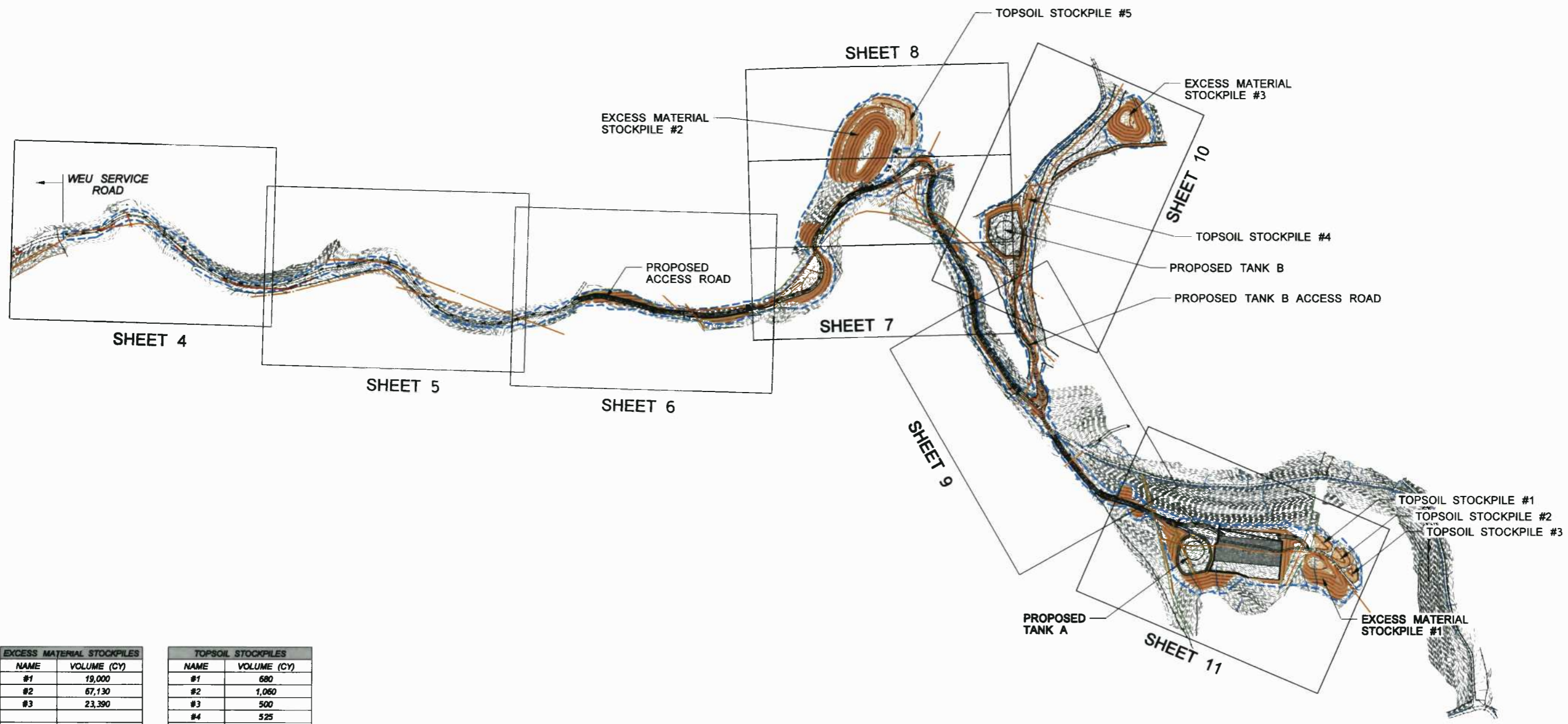
Professional Energy Consultants  
 A DIVISION OF SMITH LAND SURVEYING  
**SLS**  
 Environmental  
 228 West Main St.  
 P.O. Box 100, 26711  
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 HONESTY, INTEGRITY, QUALITY



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 FOR  
 EQT PRODUCTION COMPANY

OVERALL PLAN SHEET INDEX  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 3 OF 47  
 REV:



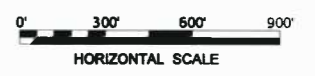
EXCESS MATERIAL STOCKPILES	
NAME	VOLUME (CY)
#1	19,000
#2	67,130
#3	23,390
<b>TOTALS</b>	<b>109,520</b>

TOPSOIL STOCKPILES	
NAME	VOLUME (CY)
#1	680
#2	1,060
#3	500
#4	525
#5	3,540
<b>TOTALS</b>	<b>6,305**</b>

EQT WEU 49 SITE EARTHWORK SUMMARY						
DESCRIPTION	CUT (CY)	FILL (CY)	SPOIL (CY)	BORROW (CY)	MAX SLOPE (%)	LENGTH OF SLOPE (FT)
ACCESS ROAD	4,329	35,602	0.0	31,273	18.5%	240
DRILL PAD	96,842	6,958	89,884	0	N/A	0.0
TANK PAD	27,233	7,659	19,574	0	N/A	0.0
TANK PAD B AND ROAD	34,286	3,851	30,435	0	N/A	0.0
STRIPPED TOPSOIL (6')	10,194	0	10,194	0	N/A	0.0
<b>TOTALS</b>	<b>172,884</b>	<b>54,070</b>	<b>150,087</b>	<b>31,273</b>		
TOTAL REQUIRED STOCKPILE VOLUME*				118,814		
TOTAL AVAILABLE STOCKPILE VOLUME*				115,825		
<b>EXCESS MATERIAL</b>				<b>2,989**</b>		

EQT WEU 49 SITE WETLAND AND STREAM IMPACT TABLE			
WETLAND NAME	IMPACT (AC)	STREAM NAME	IMPACT (LF)
NO WETLAND IMPACTS	0	UNT 1	143
		UNT 2	126
		UNT 3	147
		UNT 3A	9
		UNT 4	16
		UNT 5	45
		UNT 12	43
		UNT 15	68
<b>TOTAL</b>	<b>0</b>	<b>TOTAL</b>	<b>597</b>

THE EARTHWORK QUANTITIES PROVIDED ARE AN ESTIMATE FOR CONSIDERATION. THE QUANTITIES SHOWN ARE CALCULATED USING A 1:1 CUT/SWELL AND FILL/SHRINK FACTOR. THE QUANTITIES SHOWN MAY BE GREATER OR LESSER THAN ACTUALLY EXCAVATED. THE ENGINEER IS NOT RESPONSIBLE FOR VARIANCES FROM THE ESTIMATED QUANTITIES AND DOES NOT CERTIFY TO THEIR ACCURACY.









# EQT WEU 49 SITE PLAN

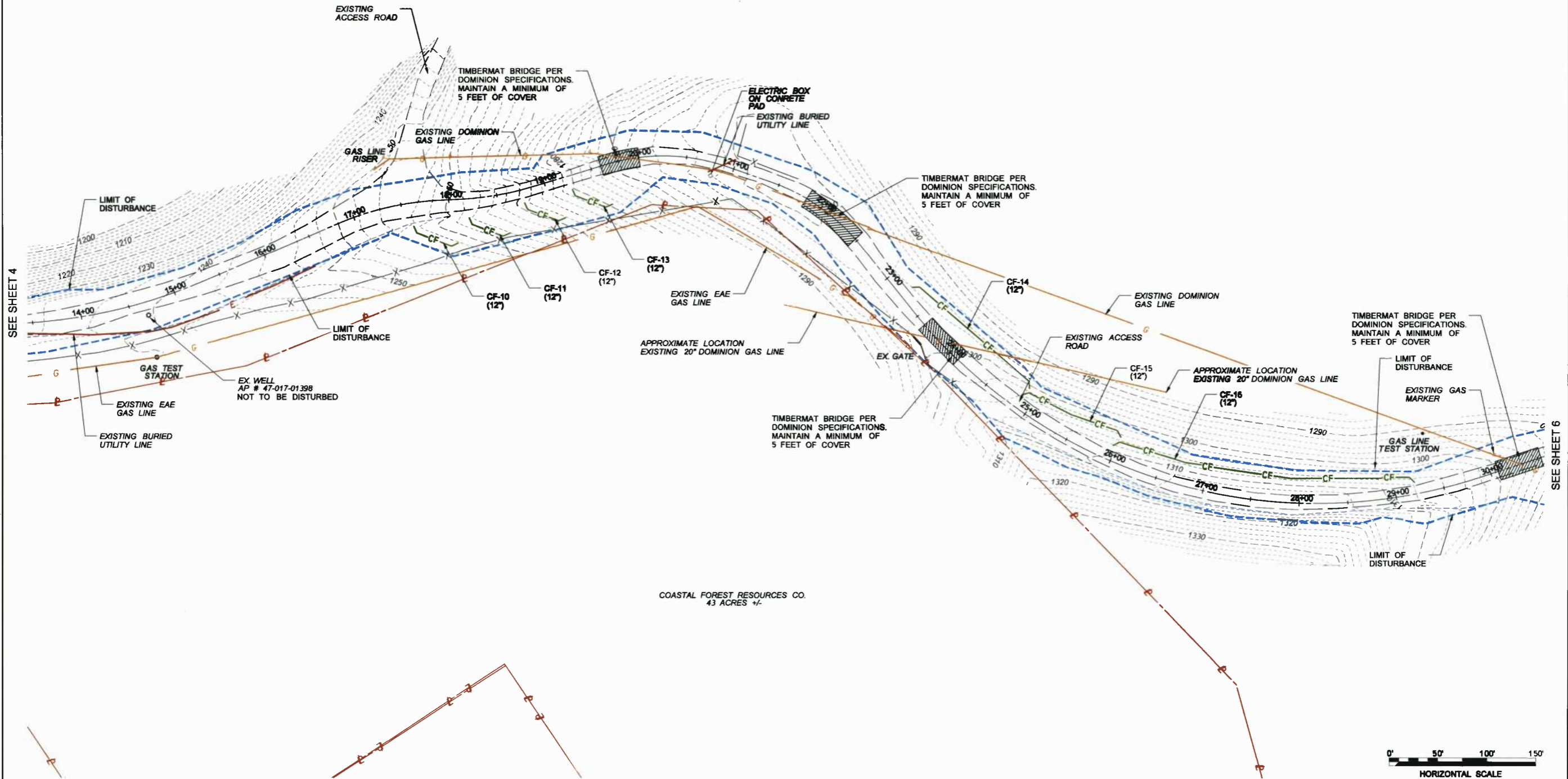
PROPOSED WELL NO. WV 514395, WV 514394, WV 514393, WV 514392, WV 514391, WV 514390

**NOTES:**

1. ALL PROPOSED CULVERTS SHALL HAVE ADEQUATE INLET AND OUTLET PROTECTION AS INDICATED ON THIS PLAN.
2. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 98% COMPACTION PER STANDARD PROCTOR.
3. EQT WILL NOTIFY THE ARMY CORP OF ENGINEERS THAT THE DISTURBANCE IS WITHIN 100' OF A DELINEATED WETLAND. E&S CONTROLS WILL BE INSTALLED.
4. AERIAL TOPOGRAPHIC MAPPING WAS PERFORMED BY BLUE MOUNTAIN AERIAL MAPPING BY PHOTOGRAMMETRY ON 04/30/11.
5. INSTALL ROLLED EROSION CONTROL PRODUCTS (COCONUT MATTING) ON ALL EXPOSED CUT AND FILL SLOPES. INSTALL ROCK (d50 = 6" MIN) IN ALL DRAINAGE CHANNELS UNLESS OTHERWISE NOTED.
6. ALL CORRUGATED METAL PIPES TO BE ALUMINIZED STEEL.

TOM DAVIES ETAL  
1457.95 ACRES +/-

COASTAL FOREST RESOURCES CO.  
43 ACRES +/-



THIS DOCUMENT WAS PREPARED BY STANTEC FOR EQT PRODUCTION COMPANY

ACCESS ROAD LAYOUT  
**EQT WEU 49**  
WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

DATE: 10/25/2013
SCALE: AS SHOWN
DESIGNED BY: RLH/JMR
FILE NO.: SLS-7871
SHEET 5 OF 47
REV:

10/25/2013 001T 2006 SURVEY FEET  
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 01/06/2013 01:00:00  
 01/06/2013 01:00:00

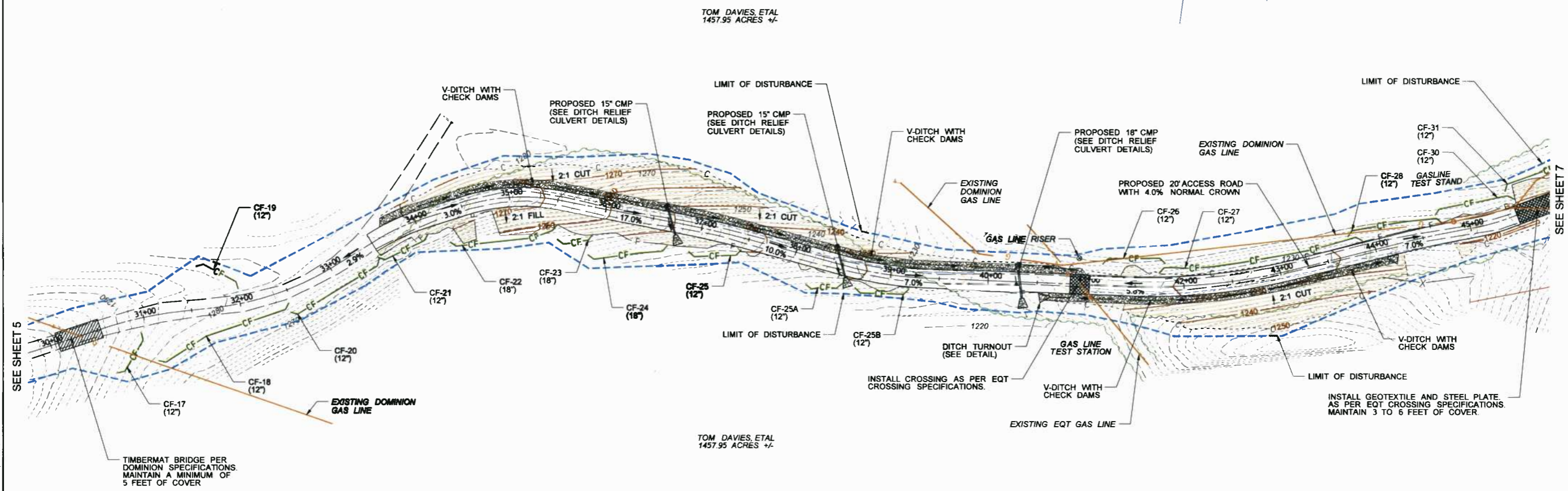
DOT 2006  
 01/04/15 - Full Size - Pdf - p. 1

10/28/2013 10:11:20 AM SURVEY FEET  
 11/20/2013 12:12:00 PM EQT MEI 49 UNITS 3, 0, 2, 000 1 3, 1 Highway 49 ES 1372.epr506.mer.prd.dwg

- NOTES:**
1. ALL PROPOSED CULVERTS SHALL HAVE ADEQUATE INLET AND OUTLET PROTECTION AS INDICATED ON THIS PLAN.
  2. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR.
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  6. ALL CORRUGATED METAL PIPES TO BE ALUMINIZED STEEL.

# EQT WEU 49 SITE PLAN

PROPOSED WELL NO. WV 514395, WV 514394, WV 514393, WV 514392, WV 514391, WV 514390



TOM DAVIES ETAL  
 1457.95 ACRES +/-

TOM DAVIES ETAL  
 1457.95 ACRES +/-



**Professional Energy Consultants**  
 A DIVISION OF SMITH LAND SURVEYING  
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 Project No.:  
 138 West Union Rd.  
 P.O. Box 100, West Union,  
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 (304) 481-2444  
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ACCESS ROAD LAYOUT  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIEGE COUNTY, WV

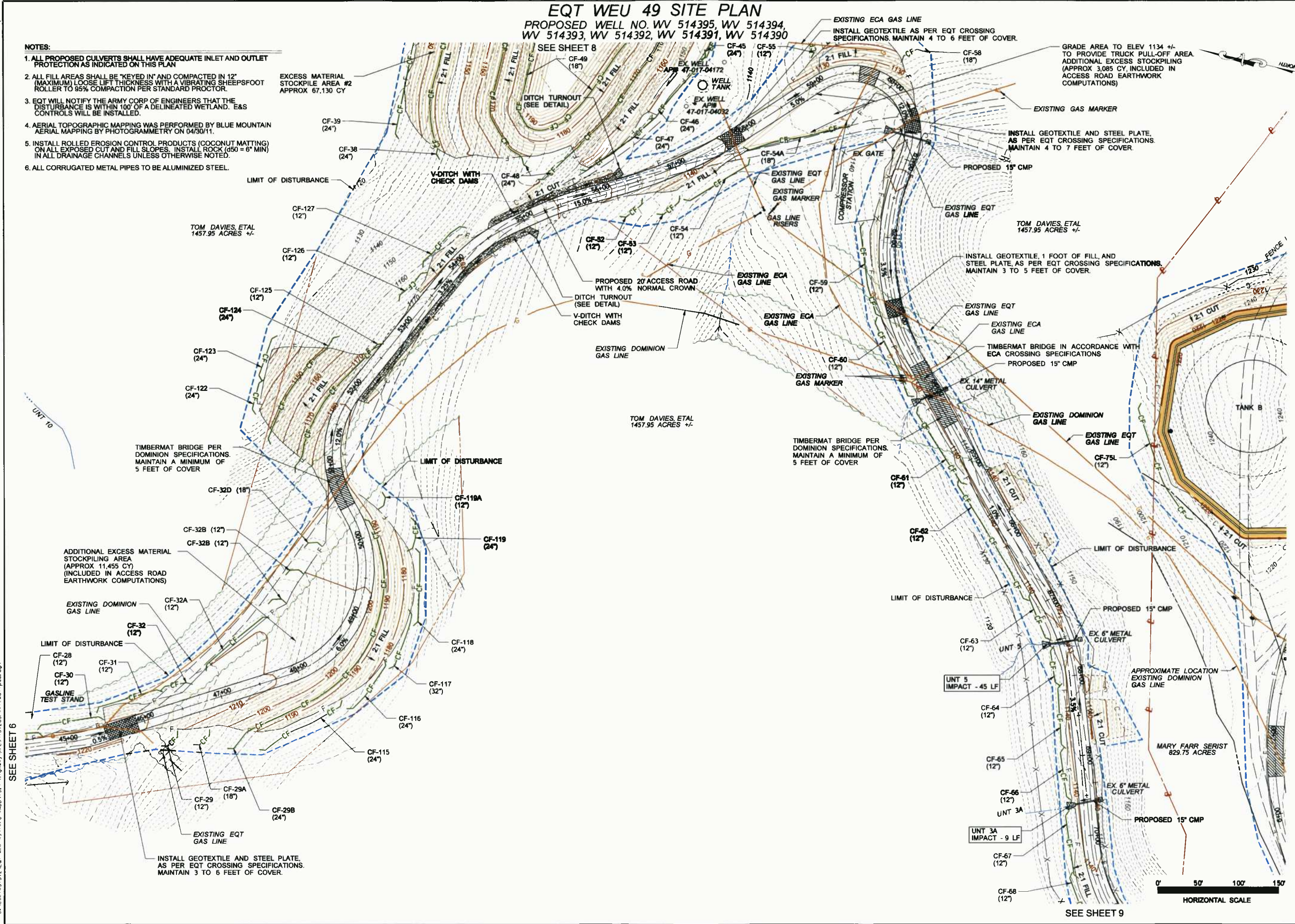
DATE: 10/25/2013
SCALE: AS SHOWN
DESIGNED BY: R.J.H./M.R.
FILE NO.: SLS-7871
SHEET 6 OF 47
REV:



# EQT WEU 49 SITE PLAN

PROPOSED WELL NO. WV 514395, WV 514394,  
WV 514393, WV 514392, WV 514391, WV 514390

- NOTES:**
1. ALL PROPOSED CULVERTS SHALL HAVE ADEQUATE INLET AND OUTLET PROTECTION AS INDICATED ON THIS PLAN.
  2. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR.
  3. EQT WILL NOTIFY THE ARMY CORP OF ENGINEERS THAT THE DISTURBANCE IS WITHIN 100' OF A DELINEATED WETLAND. E&S CONTROLS WILL BE INSTALLED.
  4. AERIAL TOPOGRAPHIC MAPPING WAS PERFORMED BY BLUE MOUNTAIN AERIAL MAPPING BY PHOTOGRAMMETRY ON 04/30/11.
  5. INSTALL ROLLED EROSION CONTROL PRODUCTS (COCONUT MATTING) ON ALL EXPOSED CUT AND FILL SLOPES. INSTALL ROCK (#50 = 6" MIN) IN ALL DRAINAGE CHANNELS UNLESS OTHERWISE NOTED.
  6. ALL CORRUGATED METAL PIPES TO BE ALUMINIZED STEEL.



Professional Energy Consultants  
A DIVISION OF SITH LAND SURVIVING  
ENGINEERS  
ENVIRONMENTAL  
**SLS**  
PROJECT MANAGER  
200 West Main St.  
PO Box 100  
Martinsburg, WV 26151  
(304) 425-3333  
HONESTY, INTEGRITY, QUALITY



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ACCESS ROAD LAYOUT  
**EQT WEU 49**  
WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
SCALE: AS SHOWN  
DESIGNED BY: RJH/JMR  
FILE NO.: SLS-7871  
SHEET 7 OF 47  
REV:

10/25/2013 DATE: 2006 (SURVEY FEET)  
 WORKSPACE: J:\200705\312\EQT WEU 49\1.3.0\EADD\1.3.1\Highway\HES\1372aep017.mxd  
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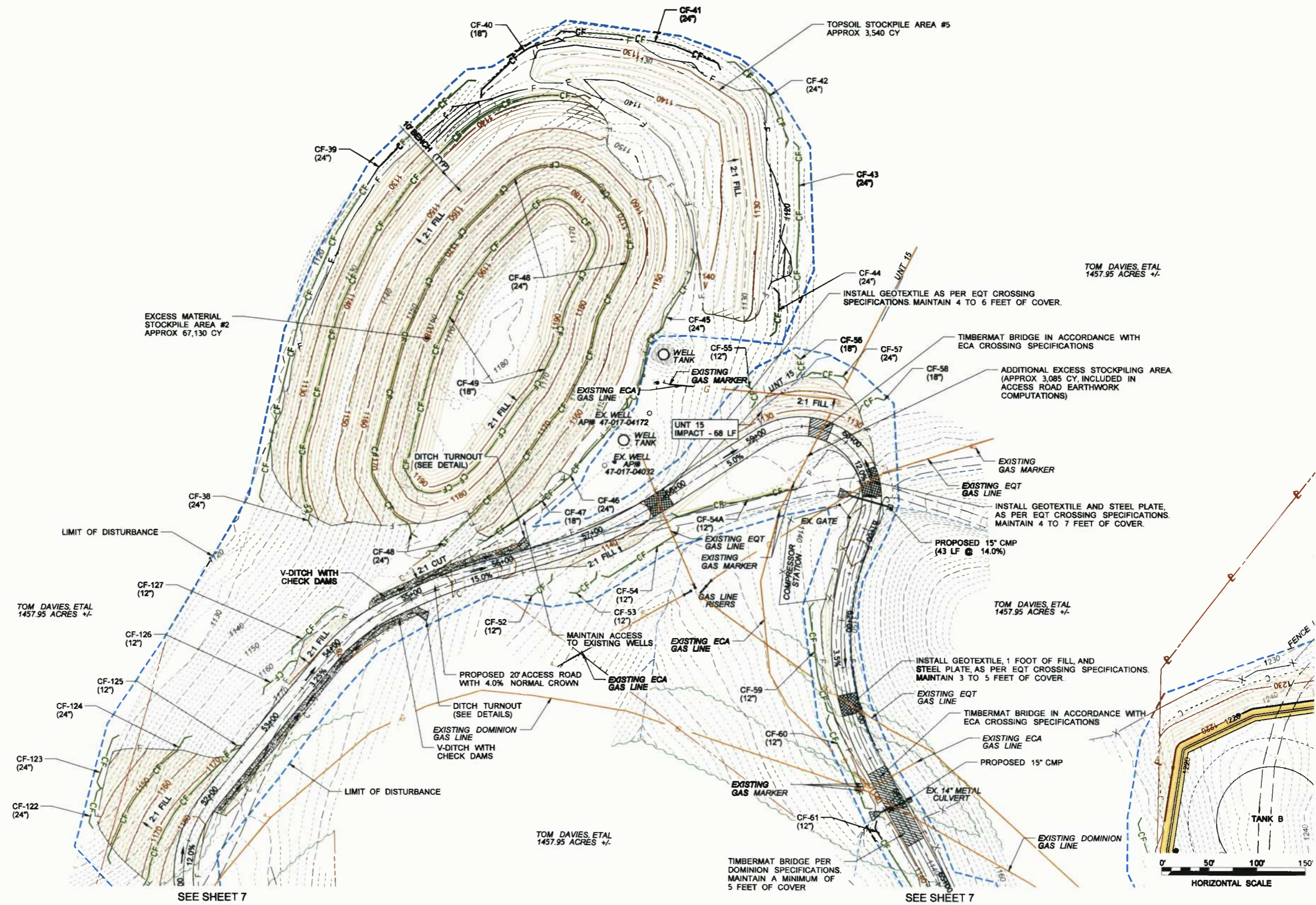
DOT 2/10/13 (CHK, TBL)  
011, 045, F, U, 115, 128, P, F, p, 1

**NOTES:**

1. ALL PROPOSED CULVERTS SHALL HAVE ADEQUATE INLET AND OUTLET PROTECTION AS INDICATED ON THIS PLAN
2. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR.
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6. ALL CORRUGATED METAL PIPES TO BE ALUMINIZED STEEL.

## EQT WEU 49 SITE PLAN

PROPOSED WELL NO. WV 514395, WV 514394, WV 514393, WV 514392, WV 514391, WV 514390



SEE SHEET 7

SEE SHEET 7

15-08-0013 DOT 2006 (SURVEY FEET)  
WORKSPACE1 DOT 2006 (SURVEY FEET)  
DOT 200705131214EQT WEU 49 13.0' CADIAN 1.3.1 H:\p\w\y\p\ES\1372\epf\08\_wel\ipad.dgn



Professional Energy Consultants  
A DIVISION OF BIRTH LAND SURVIVING

**SLS**  
SURVEYORS  
PROJECT MEASUREMENT

Engineers  
Environmental

111 ELWOOD STREET  
NEWPORT NEWS, VA 23602  
PHONE: 804-247-4800



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ACCESS ROAD LAYOUT  
**EQT WEU 49**  
WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
SCALE: AS SHOWN

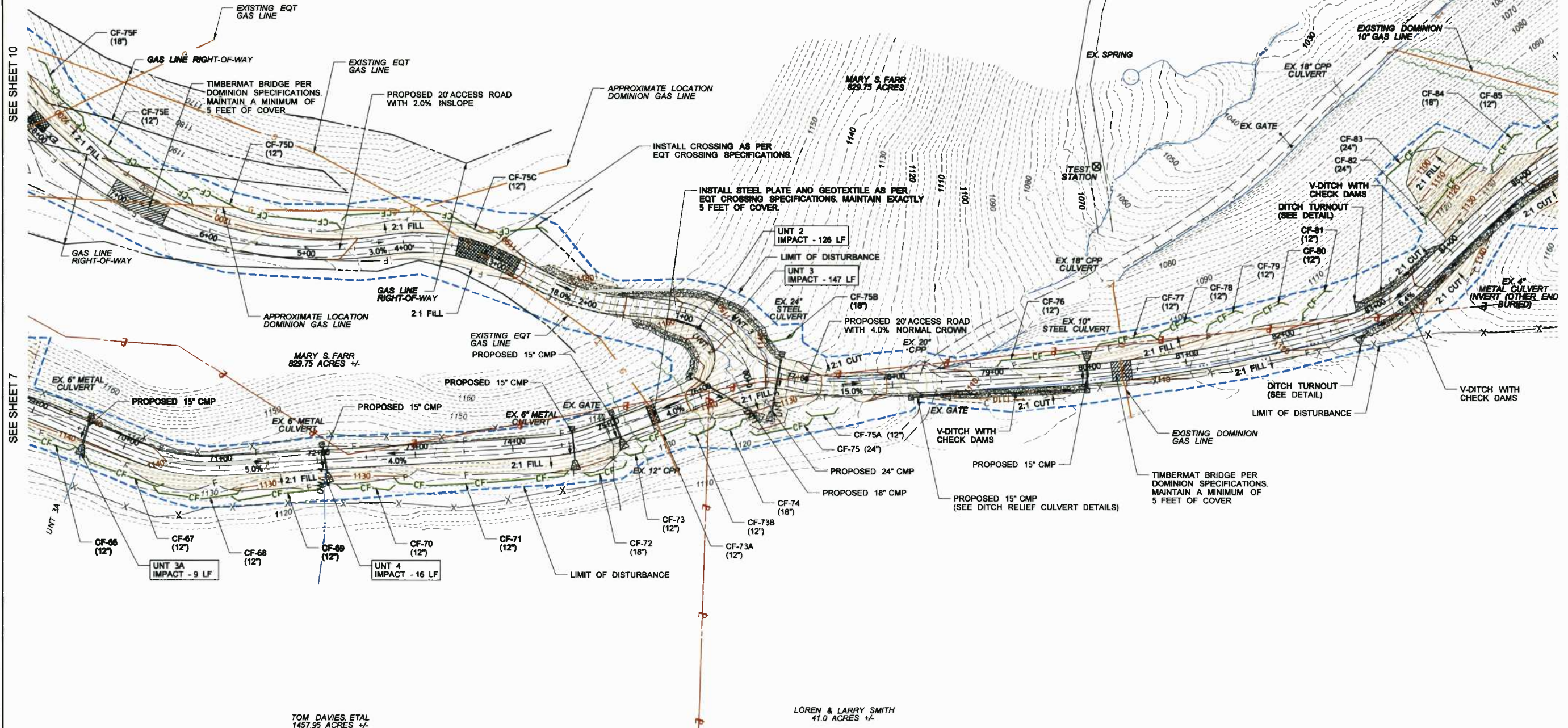
DESIGNED BY: RJH/JMR  
FILE NO.: SLS-7871  
SHEET 8 OF 47

REV:



# EQT WEU 49 SITE PLAN

PROPOSED WELL NO. WV 514395, WV 514394, WV 514393, WV 514392, WV 514391, WV 514390



- NOTES:**
1. ALL PROPOSED CULVERTS SHALL HAVE ADEQUATE INLET AND OUTLET PROTECTION AS INDICATED ON THIS PLAN
  2. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR.
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  6. ALL CORRUGATED METAL PIPES TO BE ALUMINIZED STEEL.



Professional Energy Consultants  
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P.O. Box 100, 26231  
Dodgeville, WI 53533  
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ACCESS ROAD LAYOUT  
**EQT WEU 49**  
WEST UNION DISTRICT  
DODDRIIDGE COUNTY, WV

DATE: 10/25/2013  
SCALE: AS SHOWN  
DESIGNED BY: RJH/JMR  
FILE NO.: SLS-7871  
SHEET 9 OF 47  
REV:

DOT, 2006 (SURVEY FEET)  
UN 20270513121EQT WEU 49 V13.0 CAD113.1 Highway DEVS\1312288P009\_we1.pod.dgn  
DOT, 2006 (SURVEY FEET)  
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SEE SHEET 10

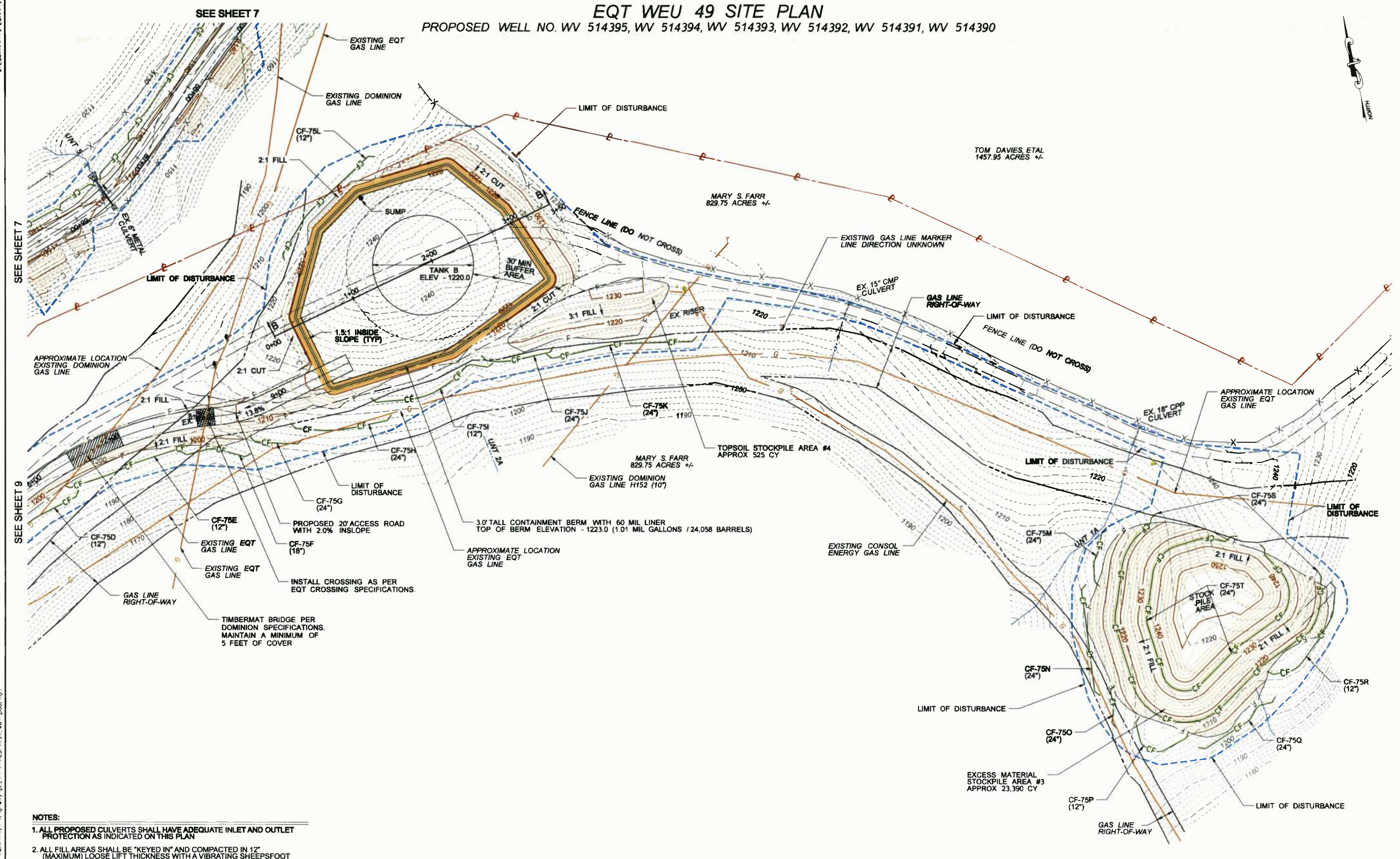
SEE SHEET 7

SEE SHEET 11



EQT WEU 49 SITE PLAN

PROPOSED WELL NO. WV 514395, WV 514394, WV 514393, WV 514392, WV 514391, WV 514390



SEE SHEET 7

SEE SHEET 9

- NOTES:
1. ALL PROPOSED CULVERTS SHALL HAVE ADEQUATE INLET AND OUTLET PROTECTION AS INDICATED ON THIS PLAN
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  5. INSTALL ROLLED EROSION CONTROL PRODUCTS (COCONUT MATTING) ON ALL EXPOSED CUT AND FILL SLOPES. INSTALL ROCK (d50 = 8" MIN) IN ALL DRAINAGE CHANNELS UNLESS OTHERWISE NOTED.
  6. ALL CORRUGATED METAL PIPES TO BE ALUMINIZED STEEL.



Professional Energy Consultants  
A DIVISION OF EARTH LAND SURVEYING

Professional Engineers  
Environmental Engineers

111 ELWOOD STREET  
MARTINSBURG, WV 26101  
PHONE 304-263-8800

---

REGISTERED PROFESSIONAL ENGINEER  
STATE OF WEST VIRGINIA  
17220

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TANK B LAYOUT  
EQT WEU 49  
WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

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DATE: 10/25/2013  
SCALE: AS SHOWN  
DESIGNED BY: RJH/JMR  
FILE NO.: SLS-7871  
SHEET 10 OF 47  
REV:



DOT 2016  
01/08/2016  
01/08/2016  
01/08/2016

DOT 2016  
01/08/2016  
01/08/2016  
01/08/2016

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01/08/2016



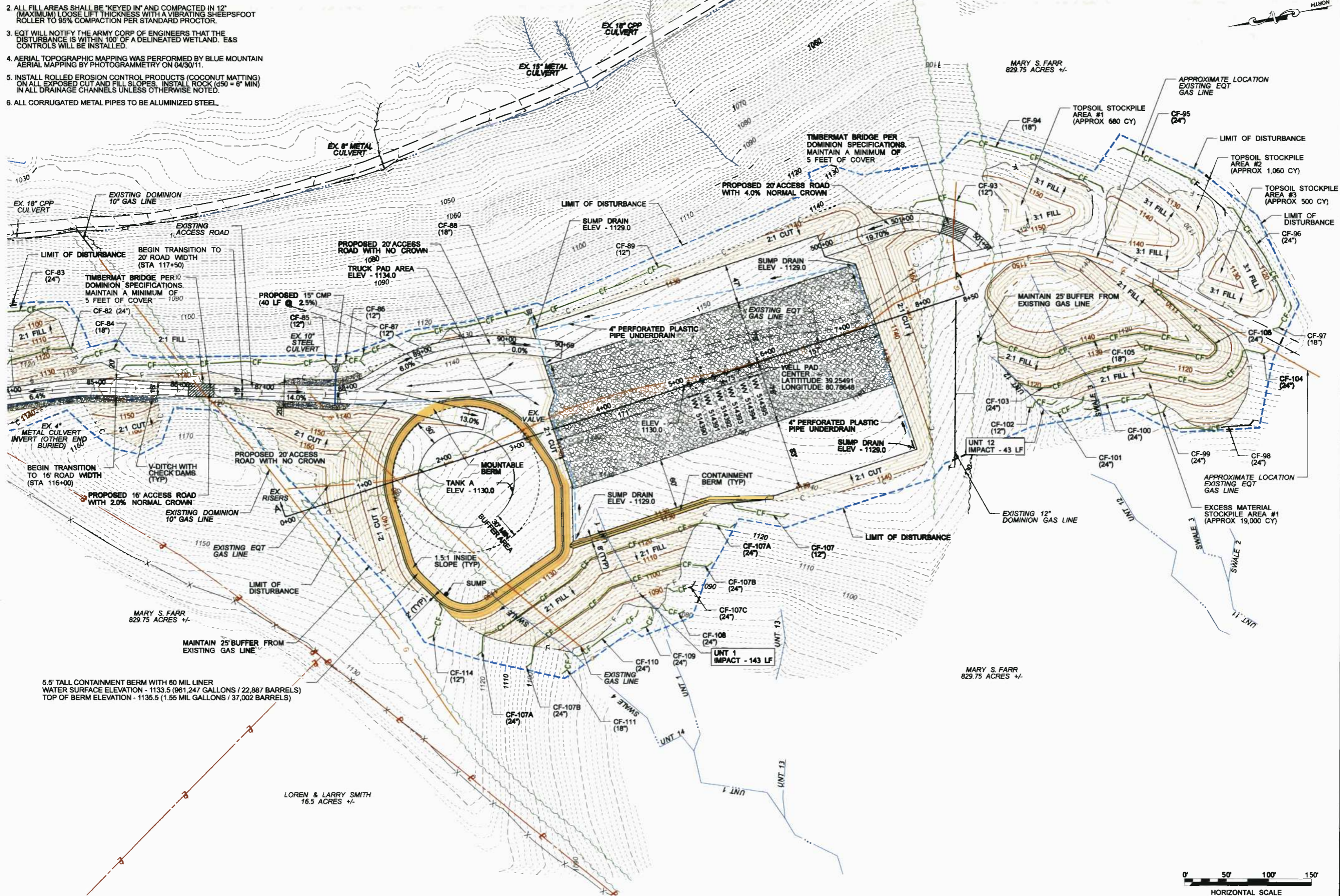
# EQT WEU 49 SITE PLAN

PROPOSED WELL NO. WV 514395, WV 514394, WV 514393, WV 514392, WV 514391, WV 514390

**NOTES:**

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6. ALL CORRUGATED METAL PIPES TO BE ALUMINIZED STEEL.

SEE SHEET 9



**Stantec**  
111 ELIOTT STREET  
DODDRIIDGE COUNTY, WV  
PHONE: 304.263.2000



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SURVEYORS  
PROJECT NO. 11  
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P.O. Box 100  
Doddridge, WV 26036  
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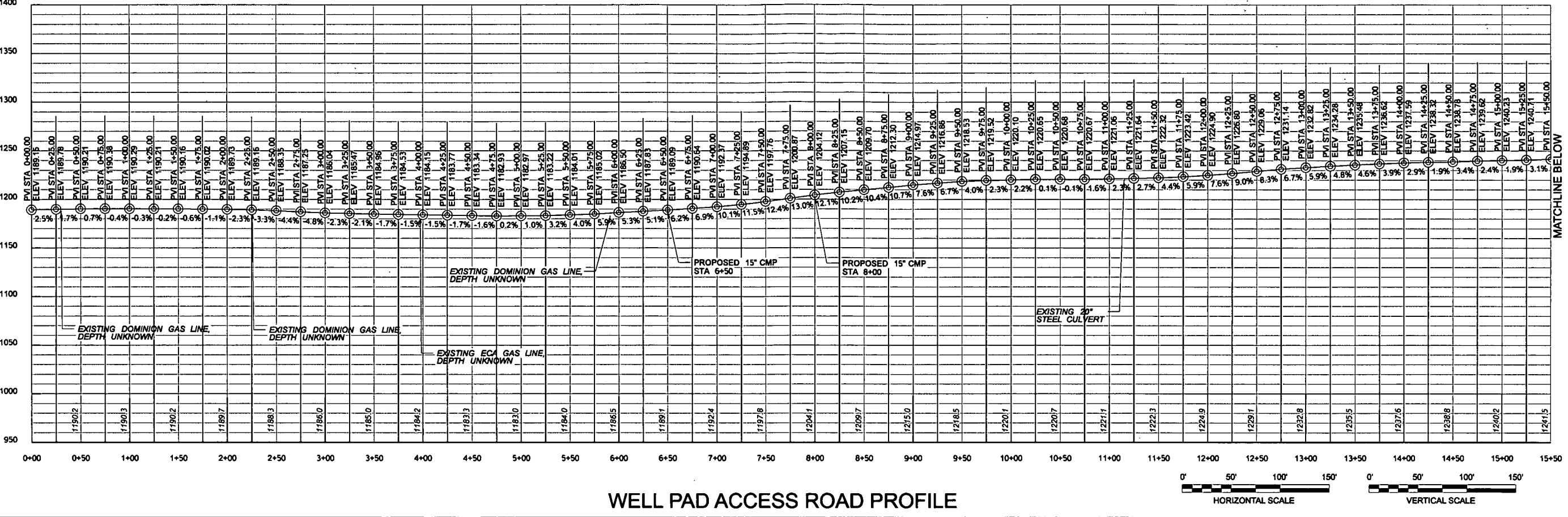
WELL PAD LAYOUT  
**EQT WEU 49**  
WEST UNION DISTRICT  
DODDRIIDGE COUNTY, WV

DATE: 10/25/2013  
SCALE: AS SHOWN  
DESIGNED BY: RLH/JMR  
FILE NO.: SLS-7871  
SHEET: 11 OF 47  
REV:

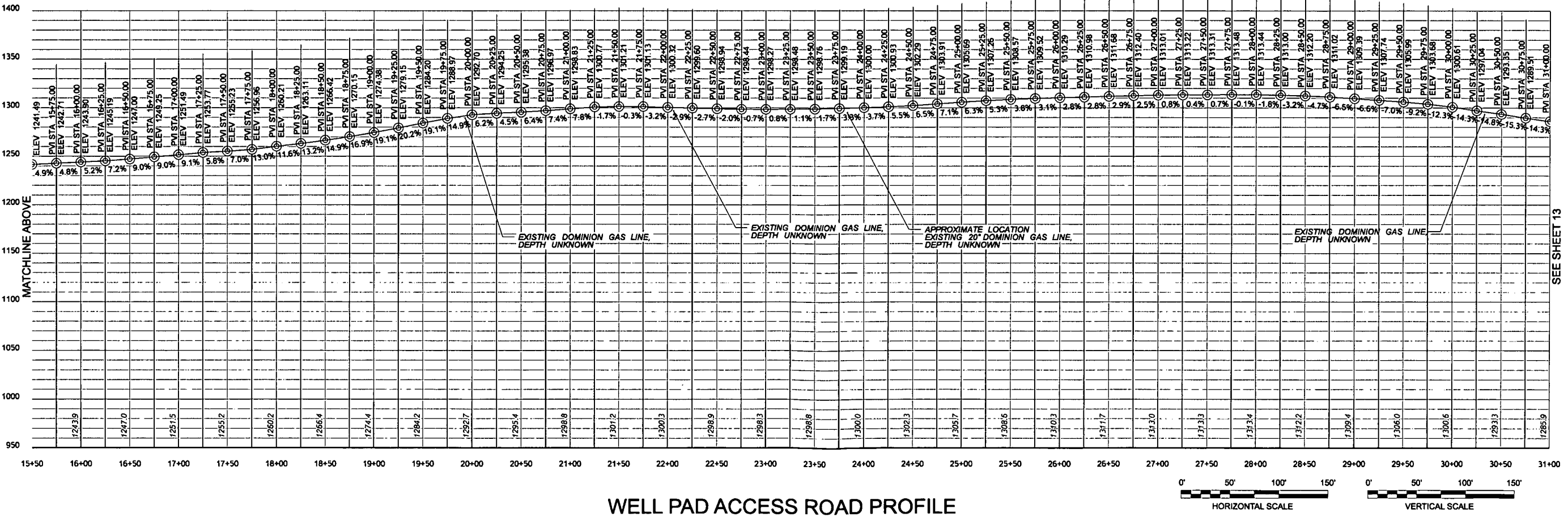


10/25/2013 10:00 AM  
 PROJECT: EQT WEU 49  
 DRAWING: EQT WEU 49 SITE PLAN  
 DRAWN BY: RLH/JMR  
 CHECKED BY: JMR  
 DATE: 10/25/2013





WELL PAD ACCESS ROAD PROFILE



WELL PAD ACCESS ROAD PROFILE



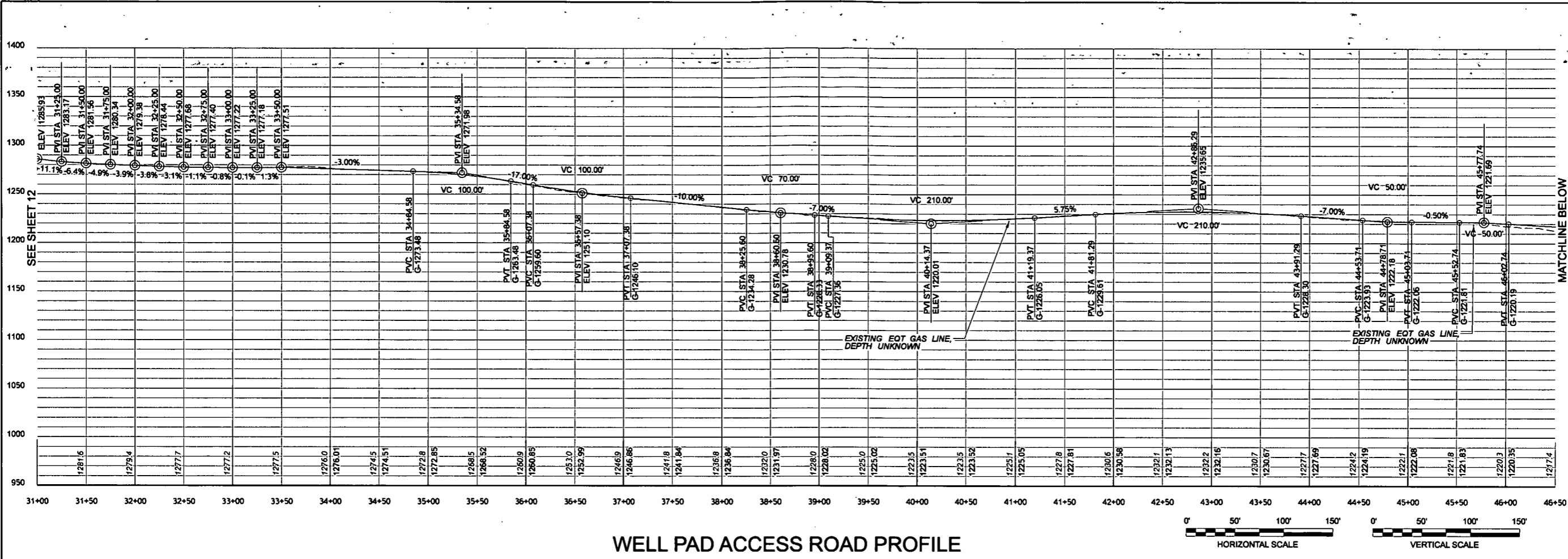
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**SLS**  
 SURVEYORS  
 PROJECT ENGINEER  
 225 West Main St.  
 P.O. Box 100  
 Danville, VA 24041  
 (540) 751-8811  
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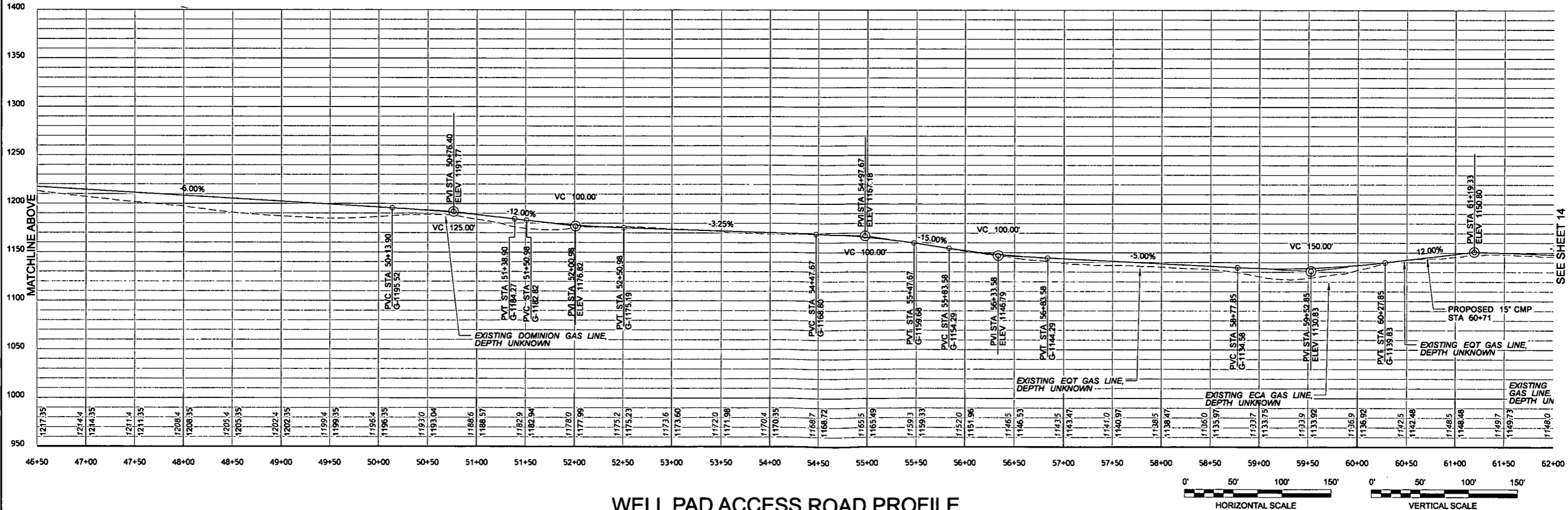
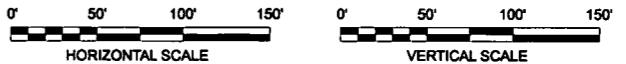
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ACCESS ROAD PROFILE  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

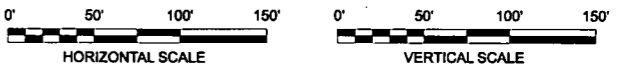
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 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 12 OF 47  
 REV:



WELL PAD ACCESS ROAD PROFILE



WELL PAD ACCESS ROAD PROFILE



11 ELDON STREET  
 SUITE 400 WEST  
 FAIRFAX, VA 22031  
 PHONE: 541.307.5401

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228 West Main St.  
 Ste 100  
 Dallas, TX 75201  
 (972) 911-9111

RICHARD L. GAINES  
 REGISTERED  
 12220  
 STATE OF  
 TEXAS  
 PROFESSIONAL ENGINEER

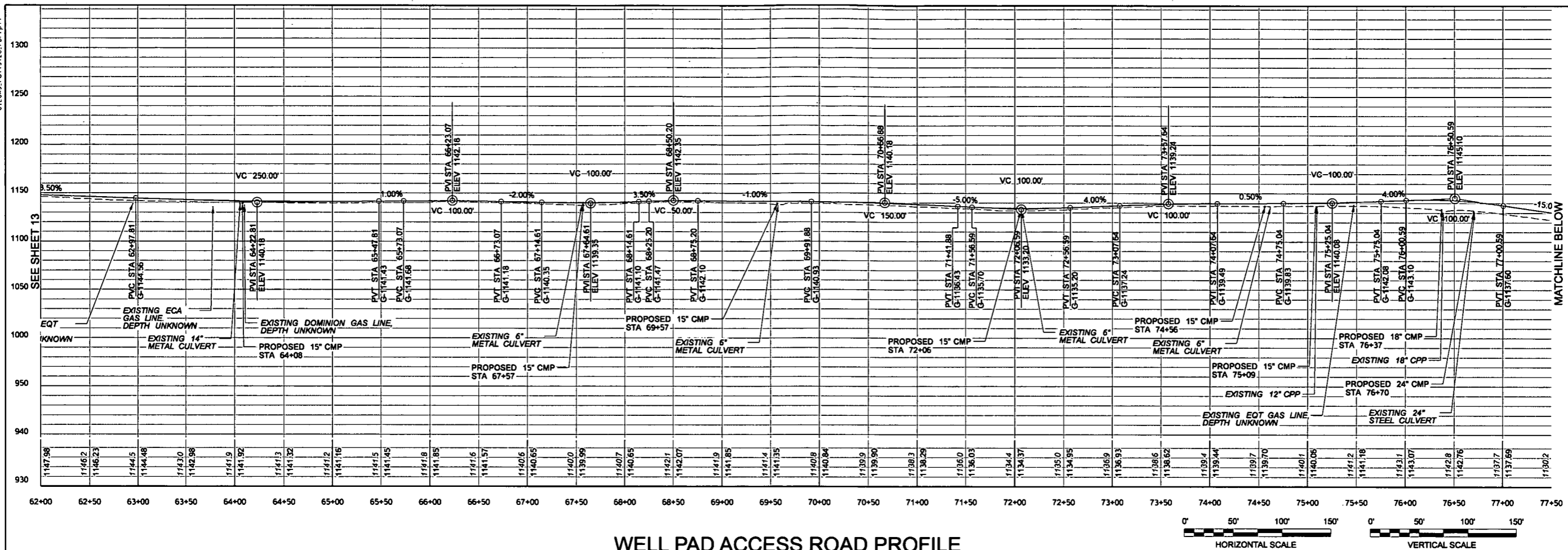
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**EQT WEU 49**  
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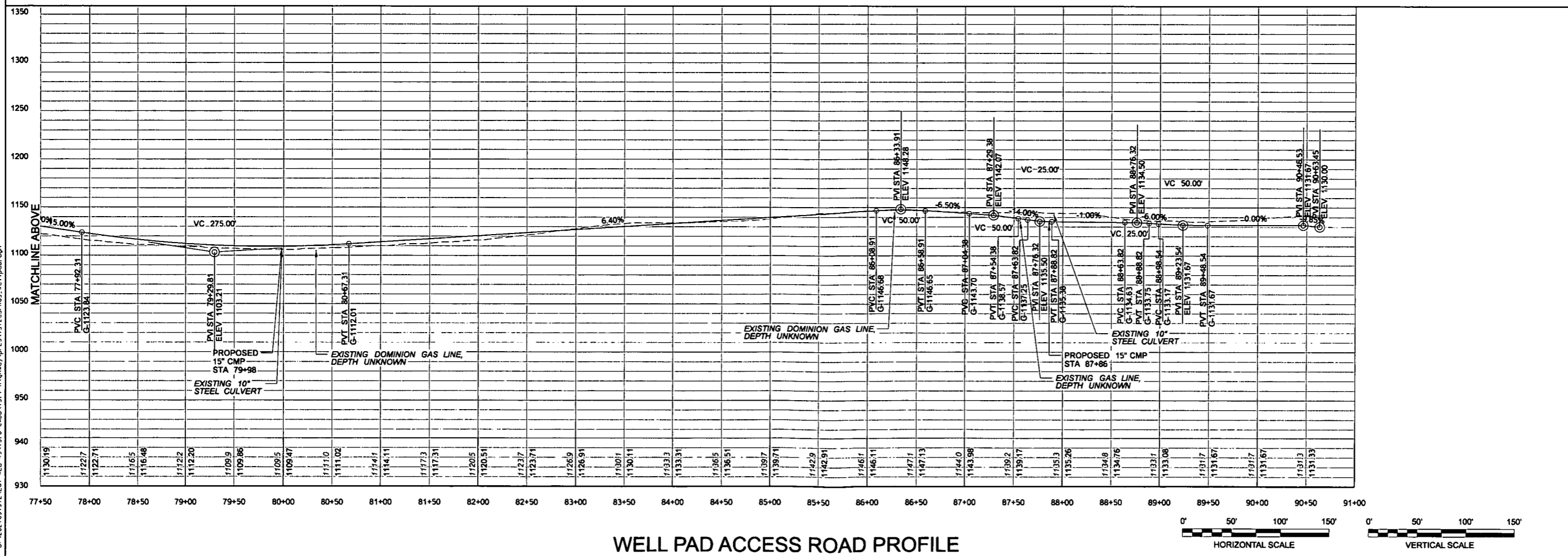
DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 13 OF 47  
 REV:



DOT 2006 SURVEY FEET  
 01.04.05 Full Size Plot, p11



106256201 DOT 2006 SURVEY FEET  
 U:\2007\1172\EGT-WEU 49\13.0' CADD\13.1 Highway\PR\ES\1372esPR03\_wellpad.dgn



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 Engineering

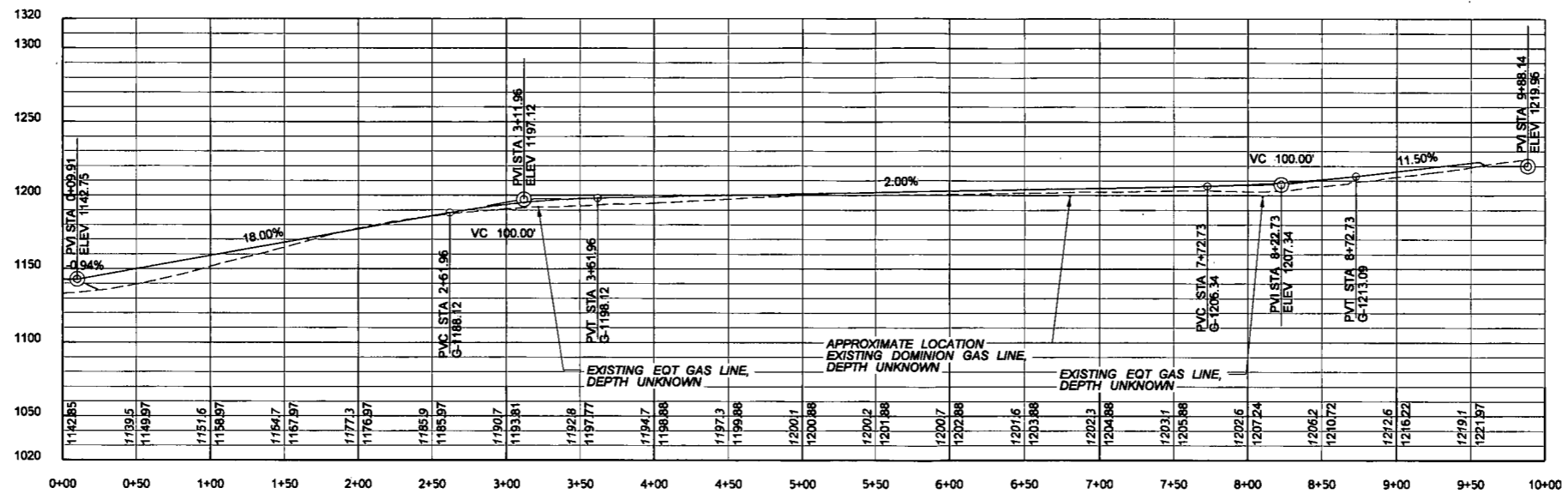
111 ELDON STREET  
 SUITE 200  
 DODDRIIDGE COUNTY, WI 53020  
 PHONE: 262.347.2900



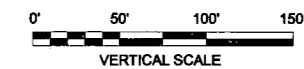
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 FOR  
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ACCESS ROAD PROFILE  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIIDGE COUNTY, WI

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 14 OF 47  
 REV:

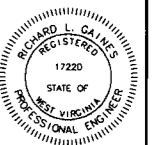


TANK B ACCESS ROAD PROFILE

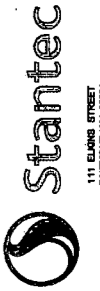


ACCESS ROAD PROFILE  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RLJ/HJM/R  
 FILE NO.: SLS-7871  
 SHEET 15 OF 47  
 REV:



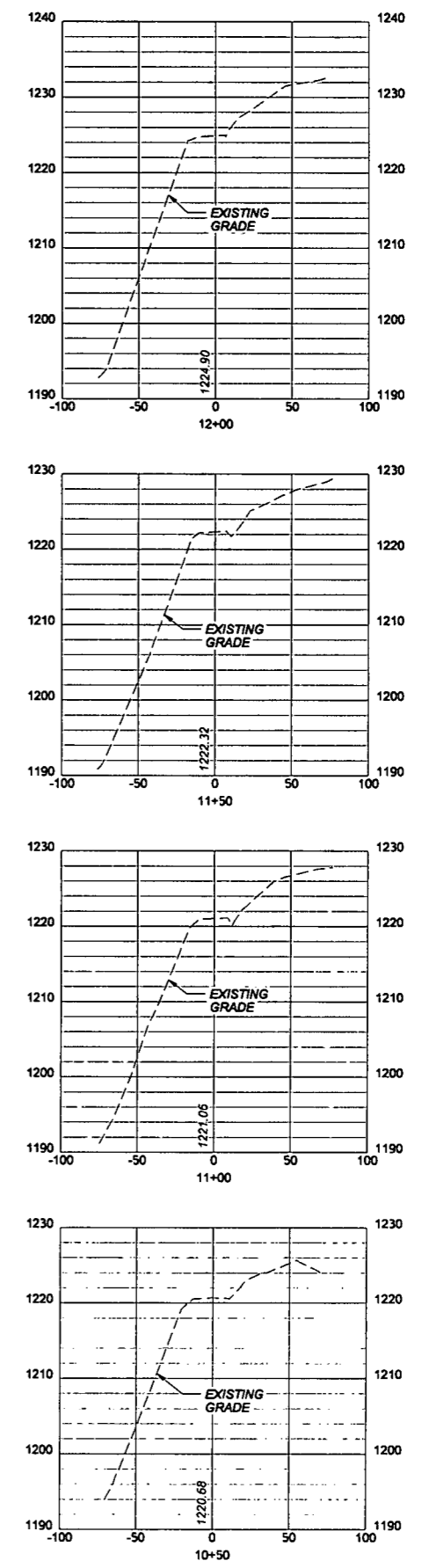
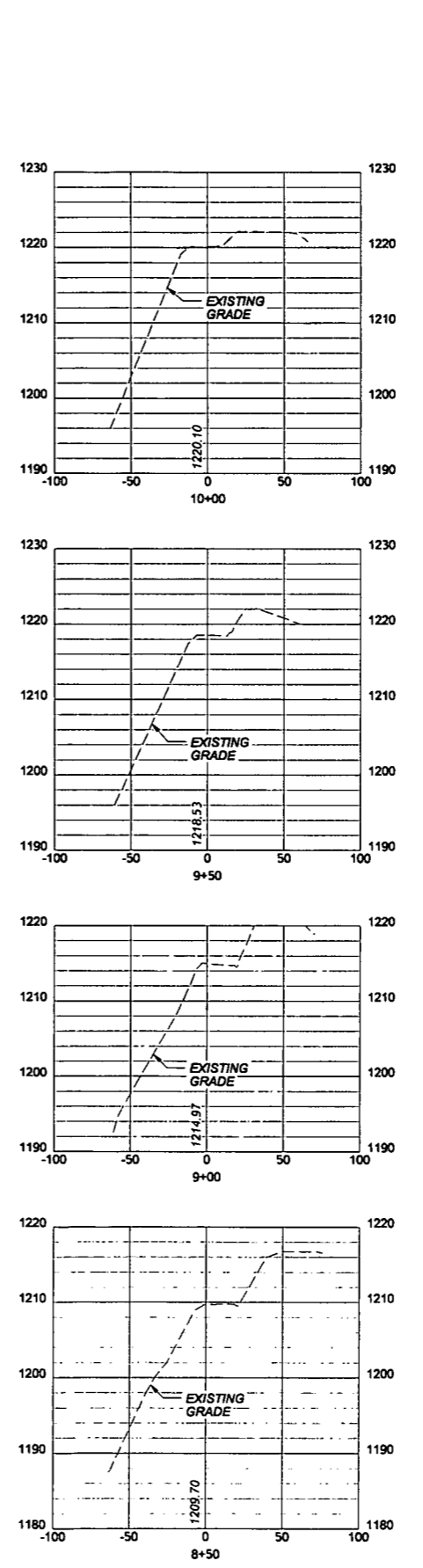
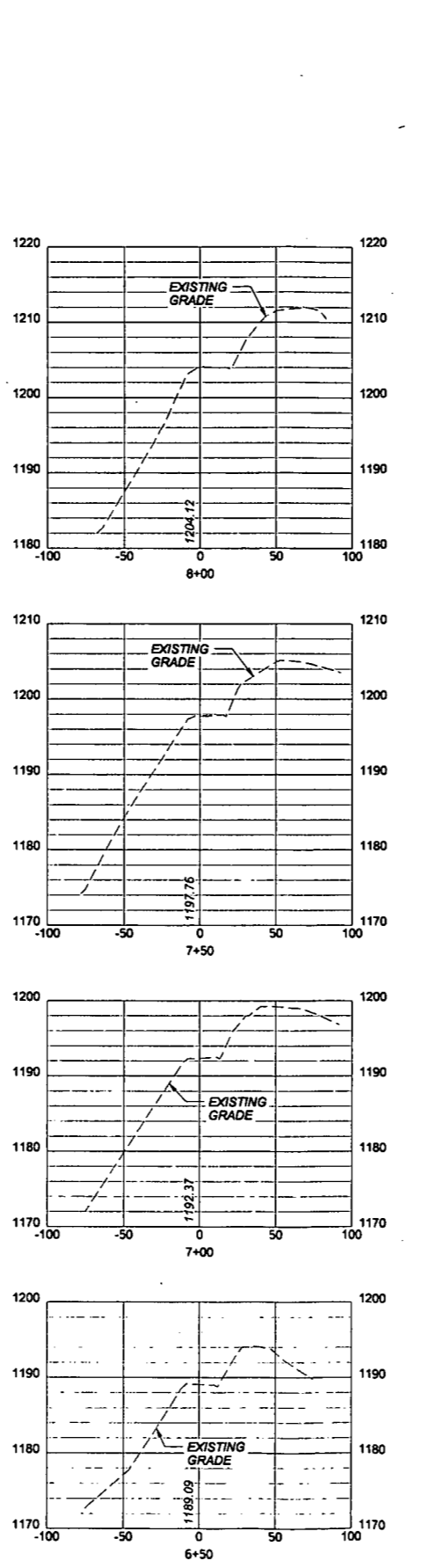
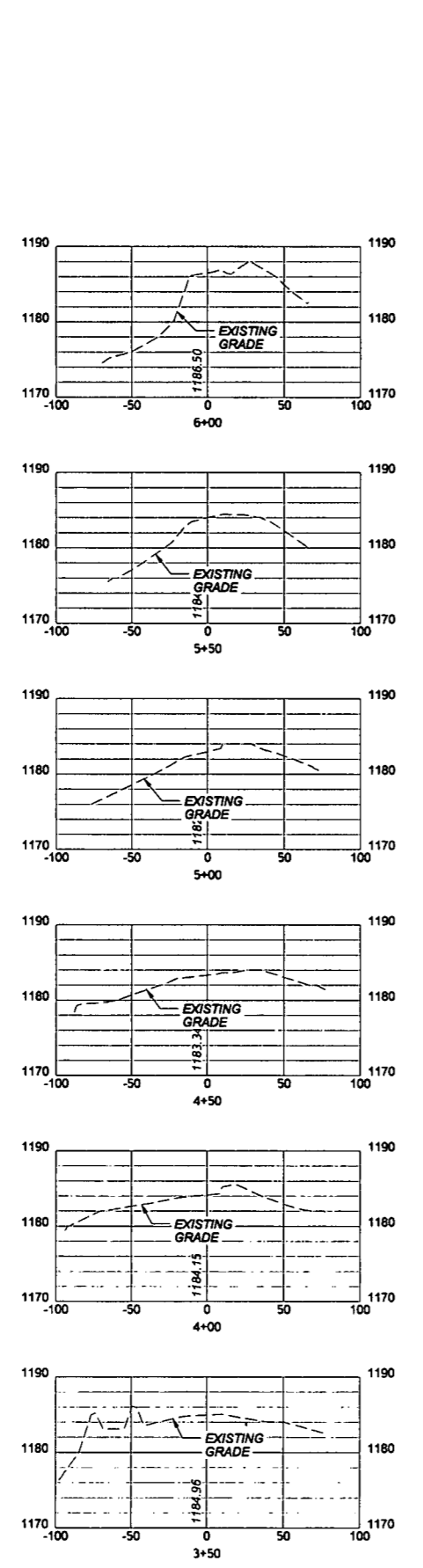
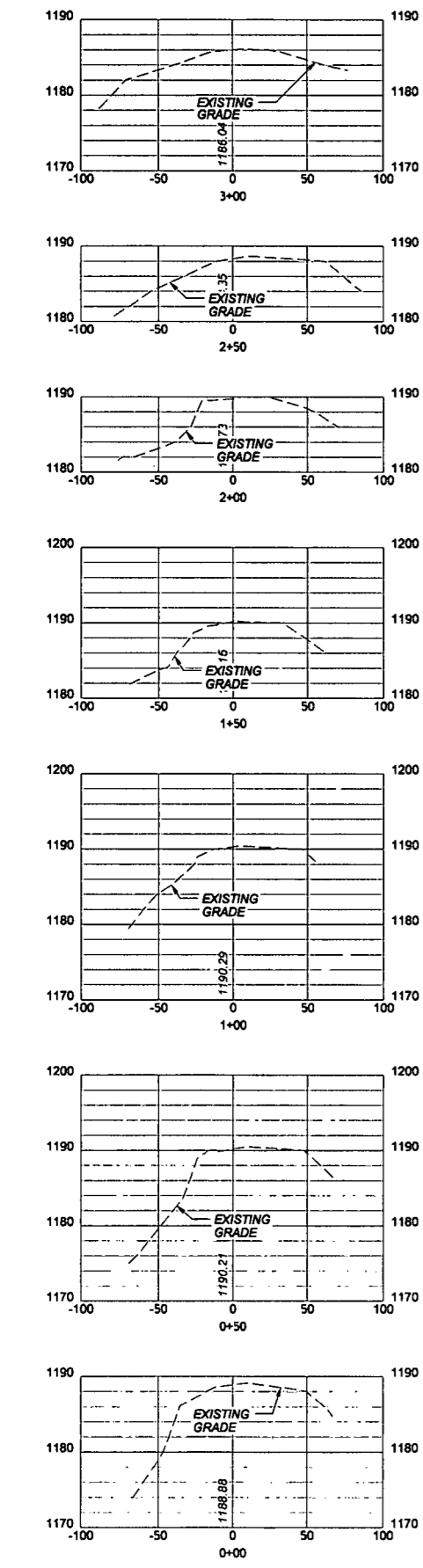
Professional Energy Consultants  
 A DIVISION OF SLS  
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 PROJECT MANAGERS  
 1308 West Main St.  
 P.O. Box 130  
 West Union, WV 26057  
 (304) 887-8811  
 HONESTY. INTEGRITY. QUALITY.



111 ELKINS STREET  
 WEST UNION, WV 26057  
 PHONE: 304-387-2000

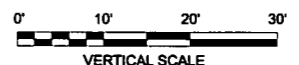
DOT, 2006  
 01 LG, 10 OCT, 18  
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10/28/2013  
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**NOTE:**  
 ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR.

**WELL PAD ACCESS ROAD CROSS SECTIONS**



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 ENVIRONMENTAL



**RICHARD L. GALES**  
 REGISTERED  
 17220  
 STATE OF  
 WEST VIRGINIA  
 PROFESSIONAL ENGINEER

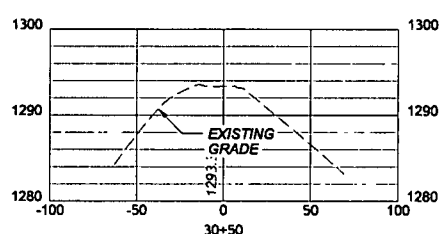
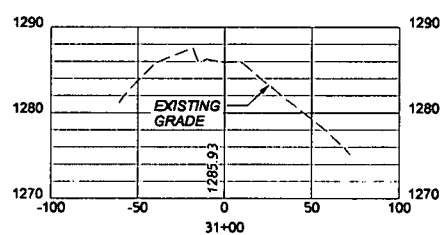
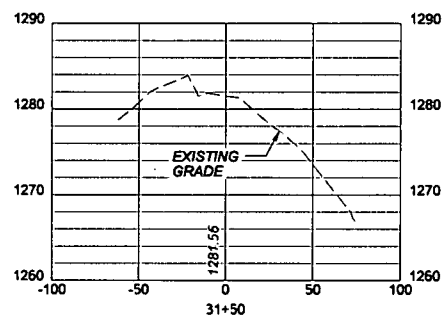
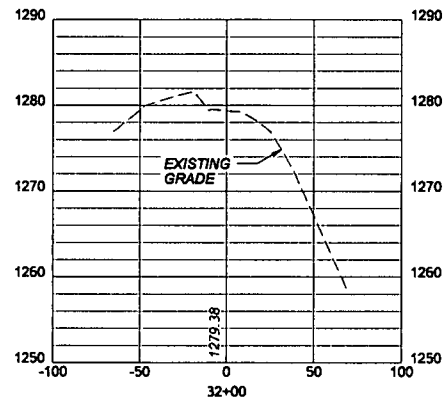
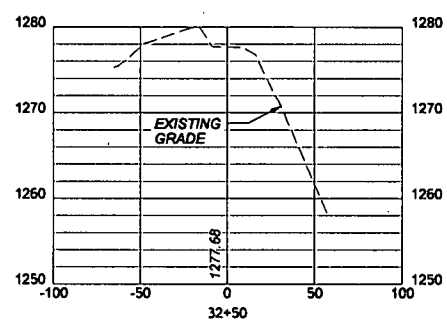
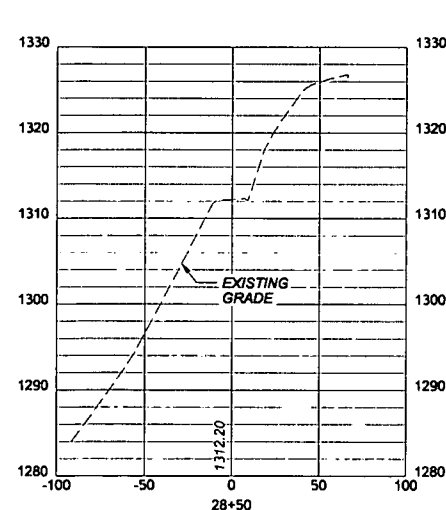
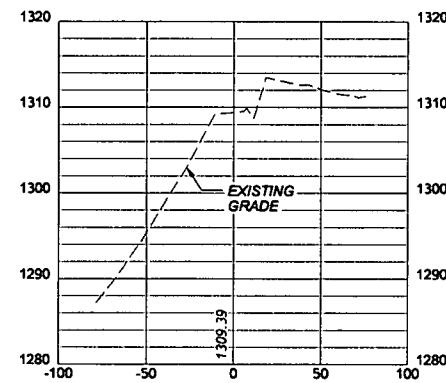
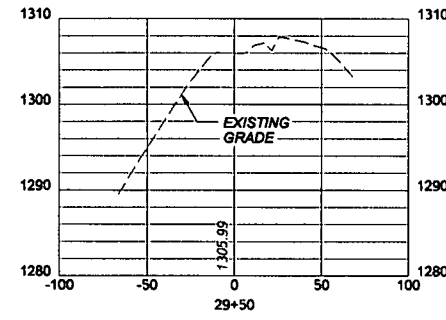
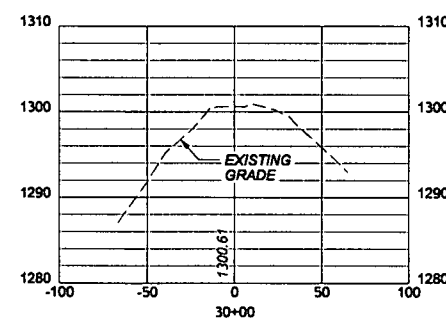
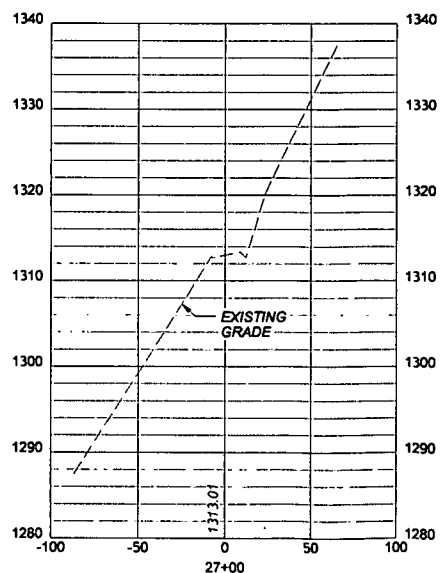
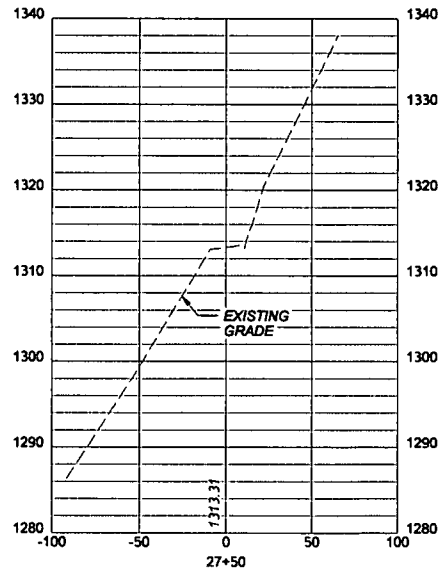
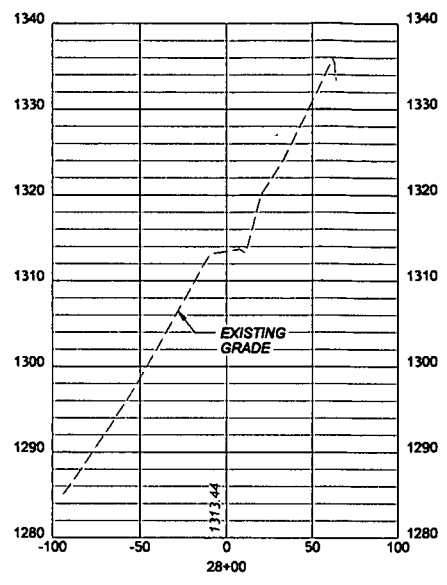
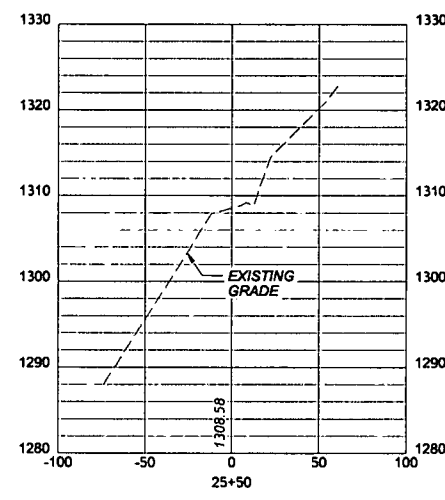
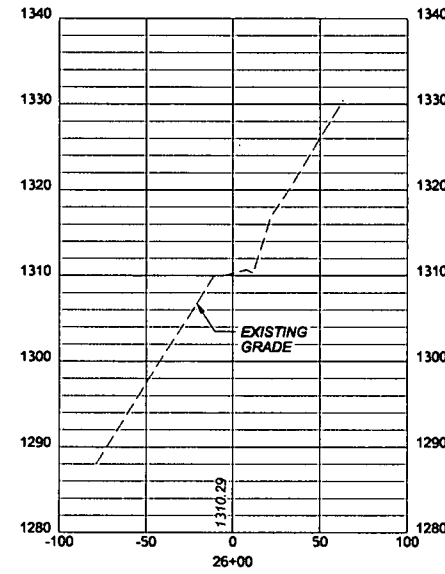
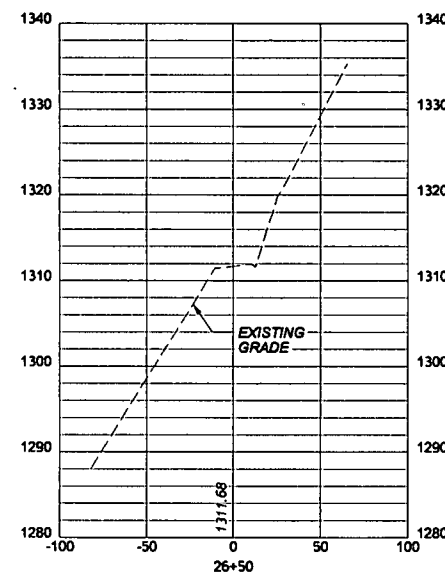
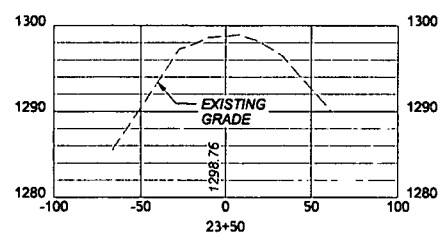
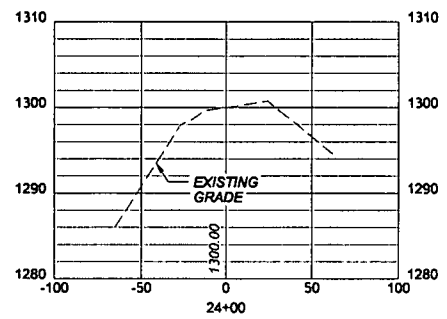
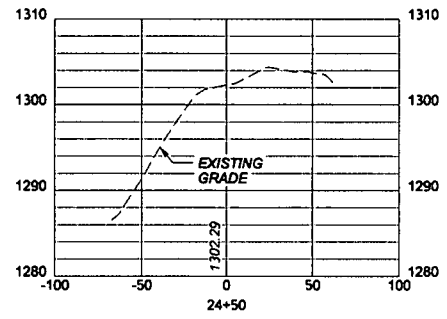
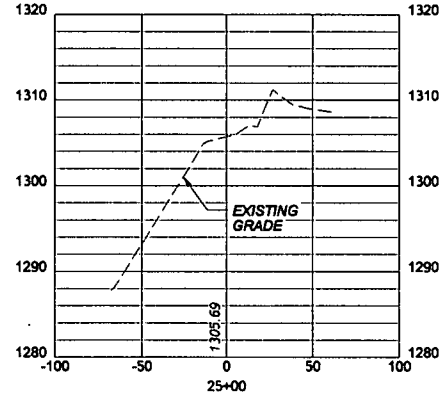
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**ACCESS ROAD CROSS SECTIONS**  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 16 OF 47  
 REV:

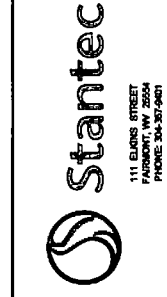
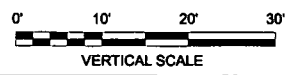
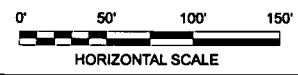




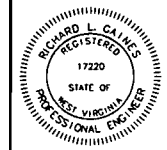


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WELL PAD ACCESS ROAD CROSS SECTIONS



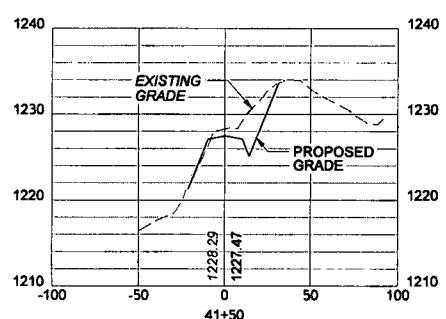
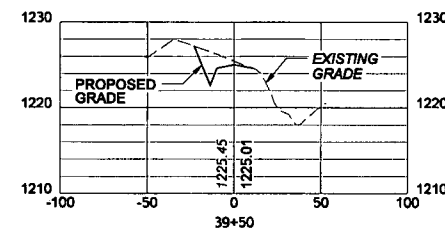
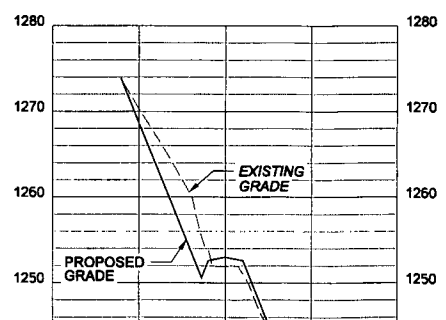
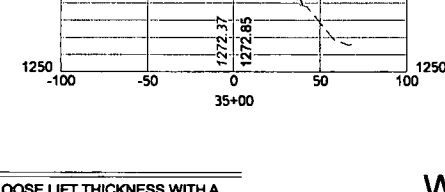
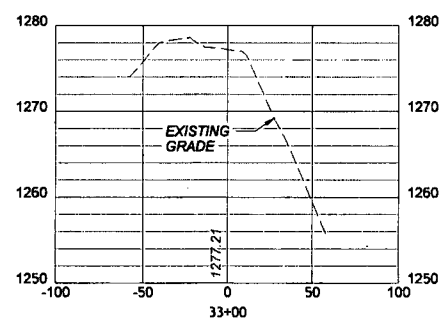
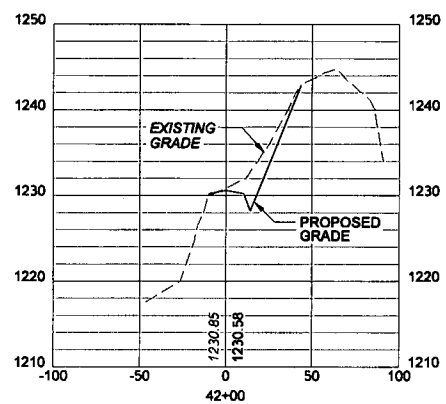
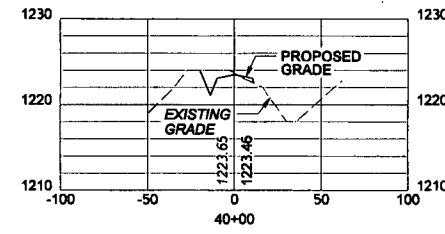
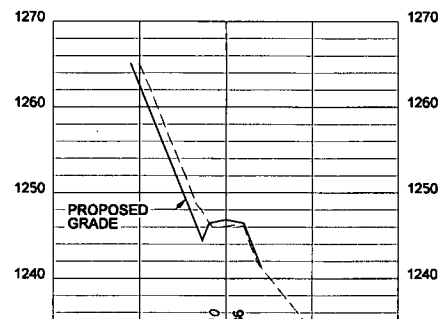
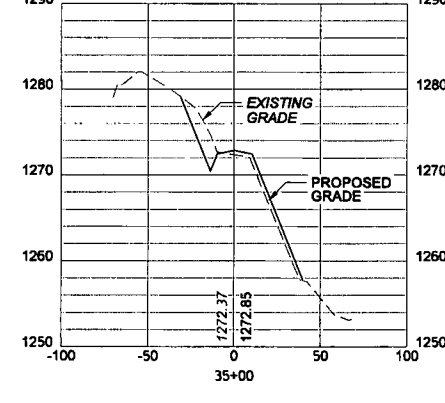
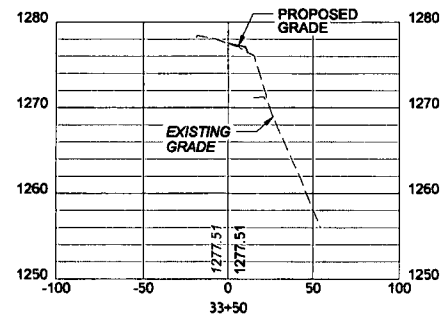
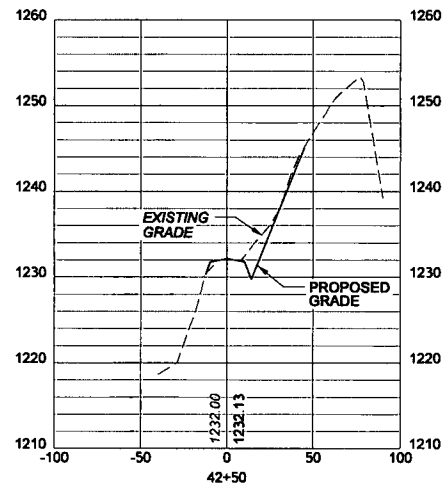
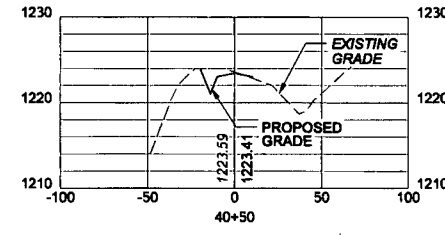
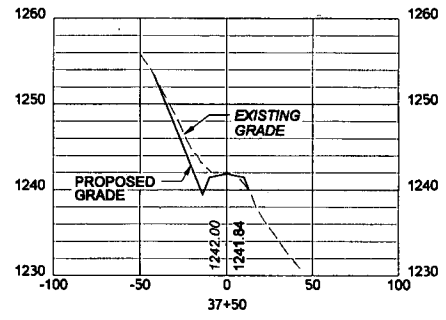
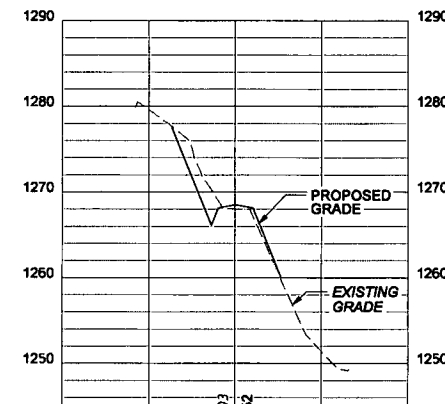
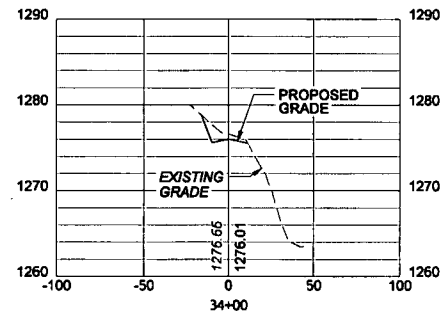
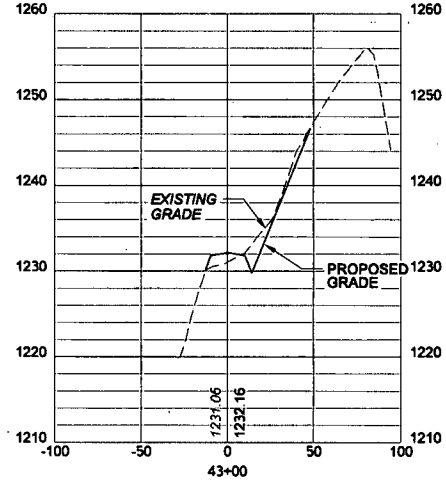
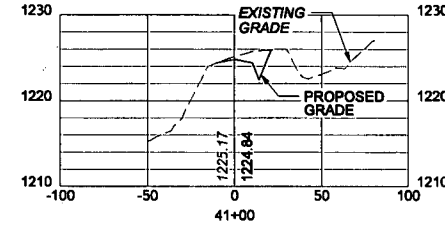
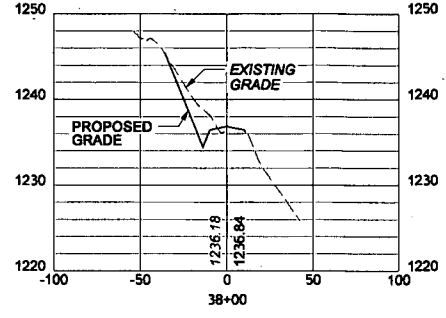
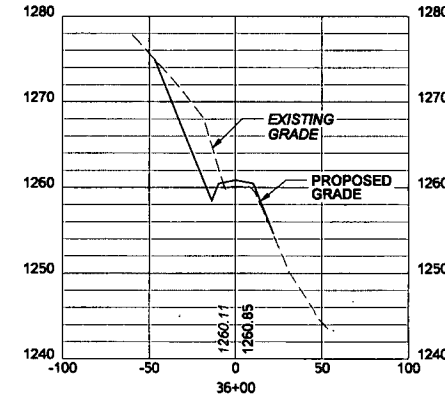
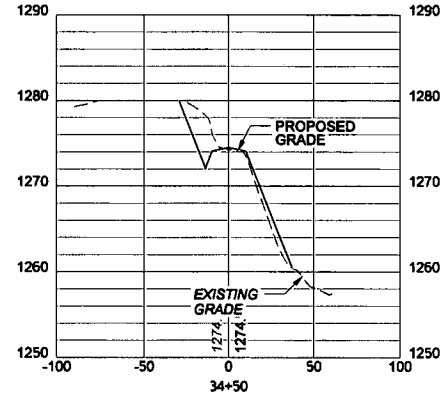
Professional Energy Consultants  
 A Division of earth-link surveying  
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 Environmental  
 Surveyors  
 Project Team:  
 225 West Lake St.  
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 (501) 471-1811  
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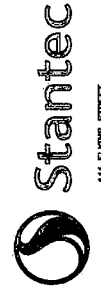
ACCESS ROAD CROSS SECTIONS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 18 OF 47  
 REV:



NOTE:  
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WELL PAD ACCESS ROAD CROSS SECTIONS



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 SURVEYORS  
 PROJECT ROOM:  
 111 ELIJAH STREET  
 SUITE 200  
 WEST UNION, OHIO 43084  
 PHONE: 614-881-2000

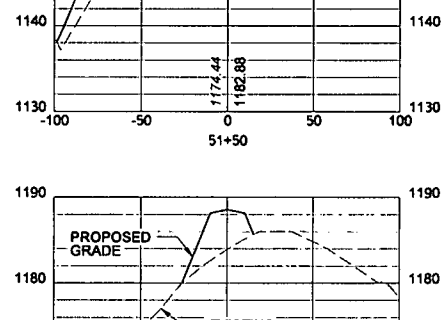
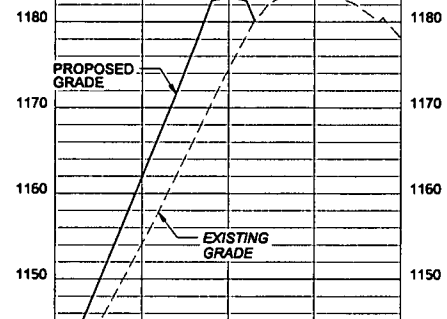
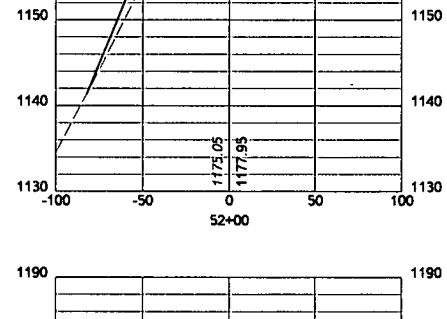
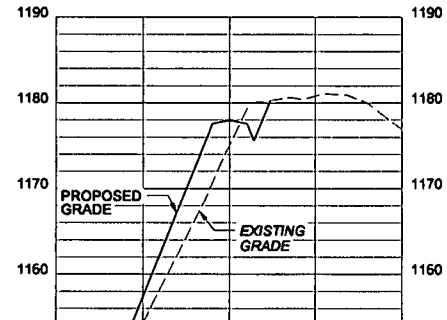
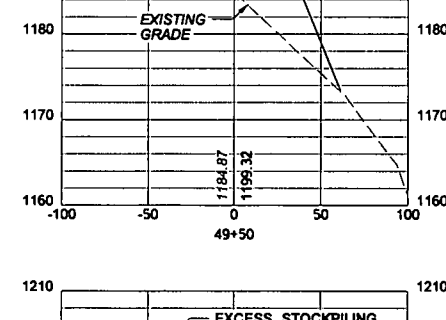
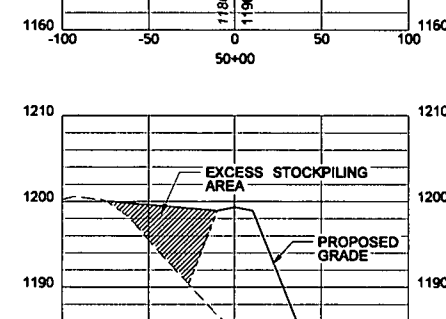
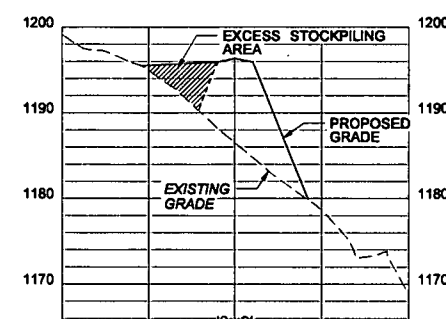
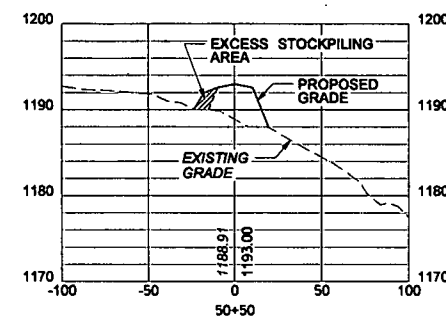
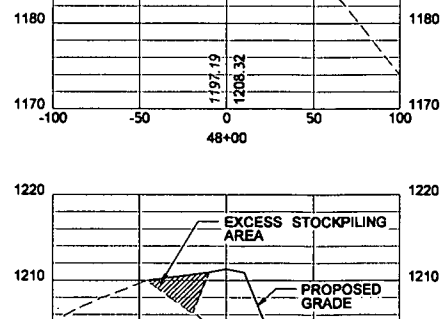
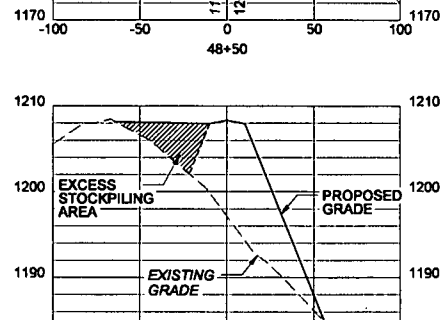
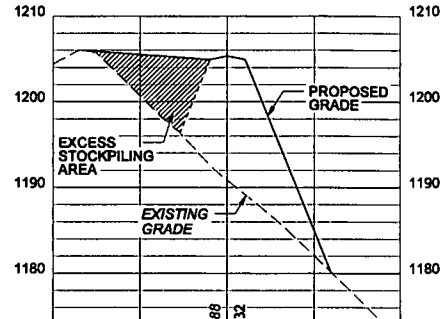
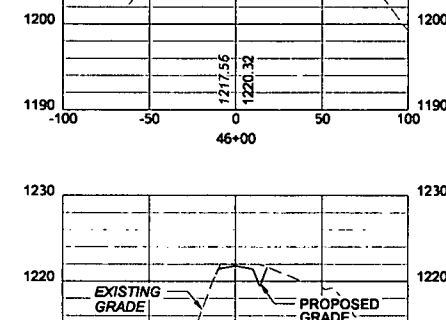
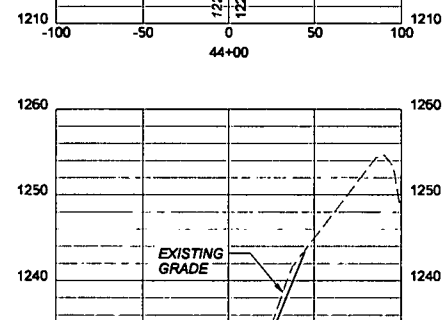
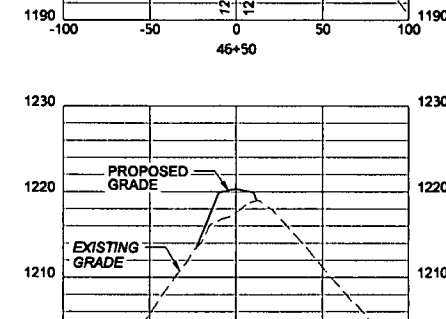
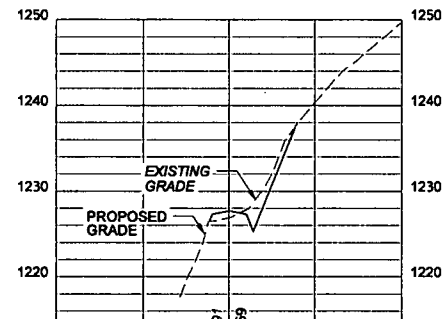
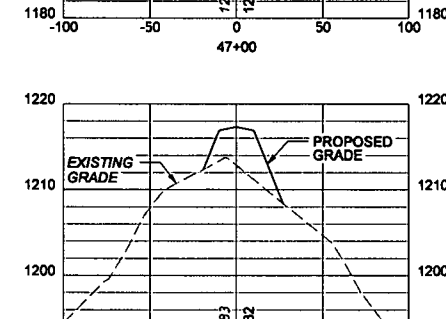
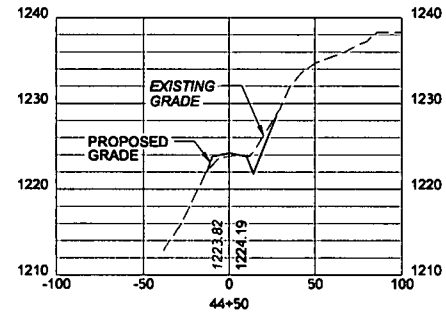
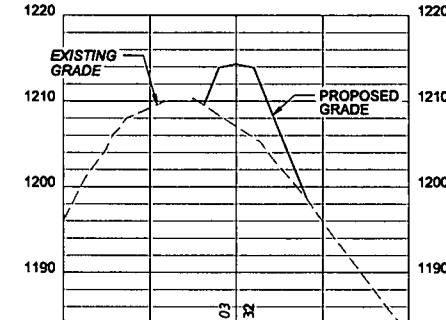
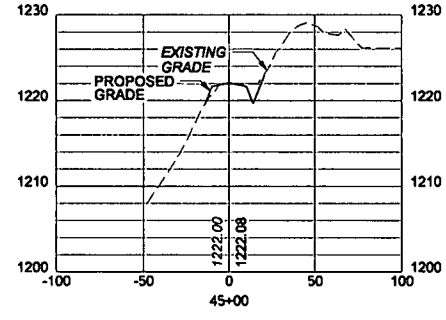


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ACCESS ROAD CROSS SECTIONS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

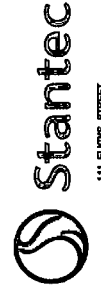
DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/MR  
 FILE NO.: SL-7871  
 SHEET 19 OF 47  
 REV:





NOTE:  
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WELL PAD ACCESS ROAD CROSS SECTIONS



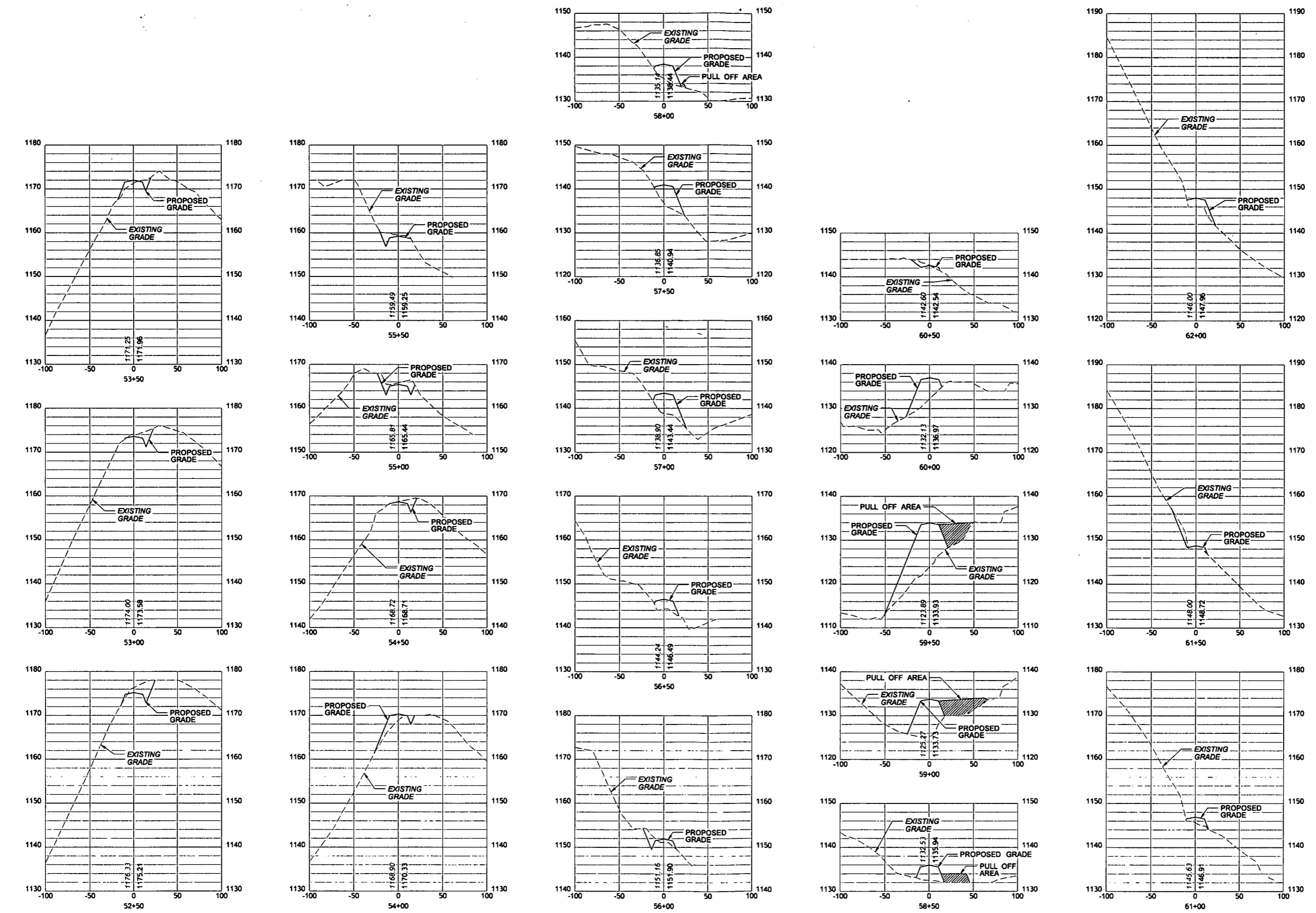
Professional Energy Consultants  
 A DIVISION OF SLS  
 SLS  
 ENGINEERS  
 ENVIRONMENTAL  
 200 West Lake St.  
 Suite 100  
 Springfield, MA 01102  
 (417) 875-2000  
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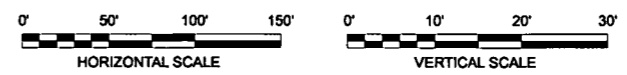
ACCESS ROAD CROSS SECTIONS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 20 OF 47  
 REV:



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**WELL PAD ACCESS ROAD CROSS SECTIONS**



**Stantec**  
 111 ELDON STREET  
 SUITE 200  
 PHOENIX, AZ 85001

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 PROJECT ROOM:  
 200 West Main St.  
 P.O. Box 100  
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---

RICHARD L. CALLES  
 REGISTERED  
 17220  
 STATE OF  
 ARIZONA  
 PROFESSIONAL ENGINEER

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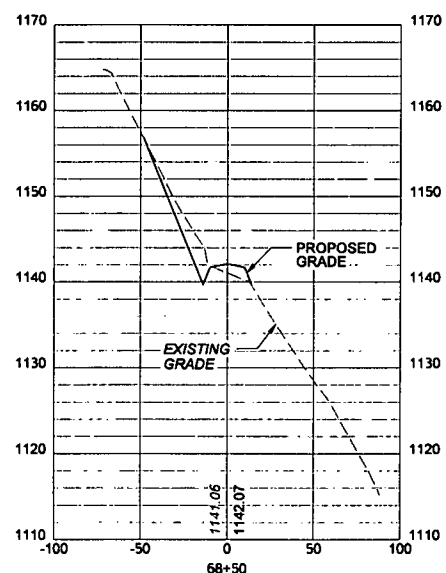
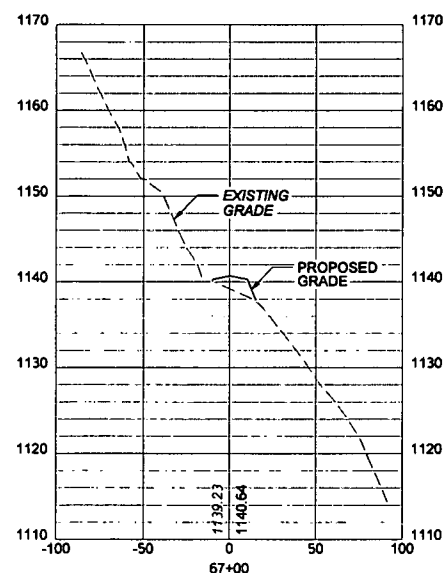
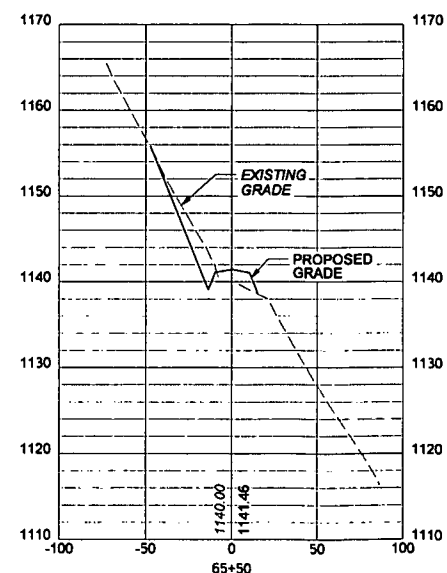
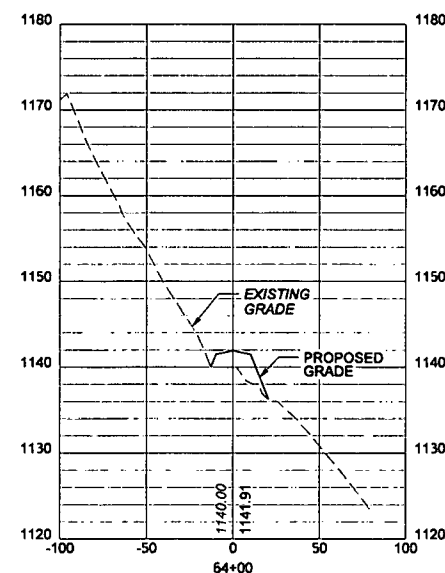
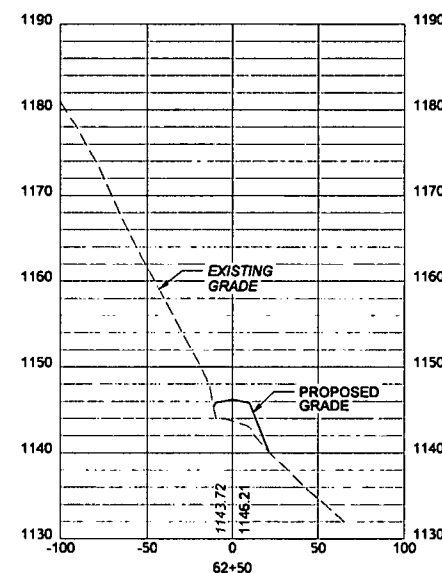
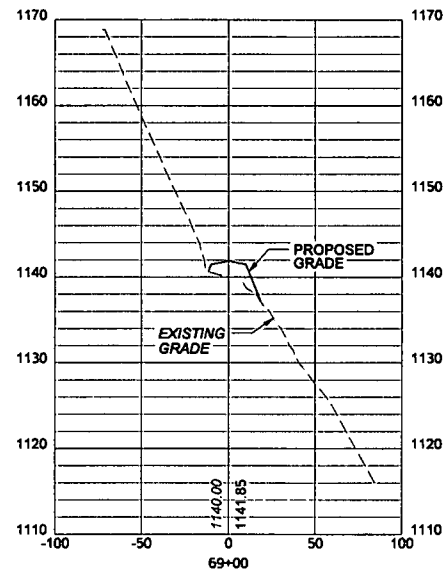
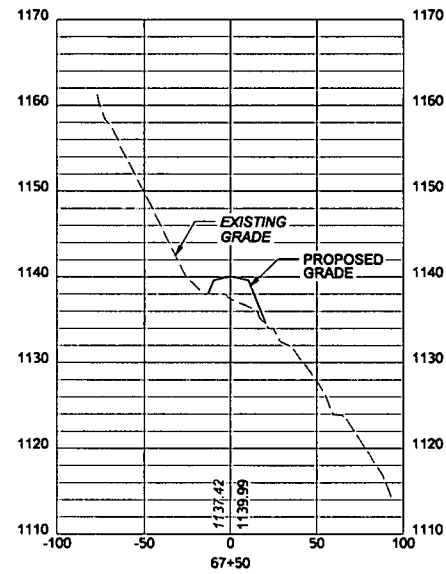
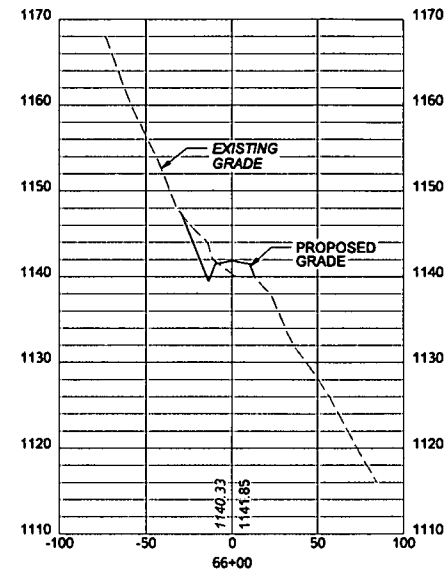
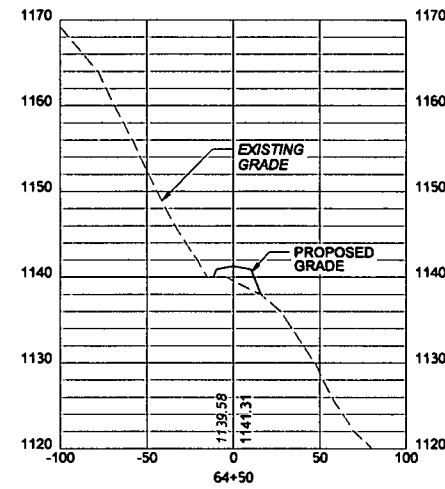
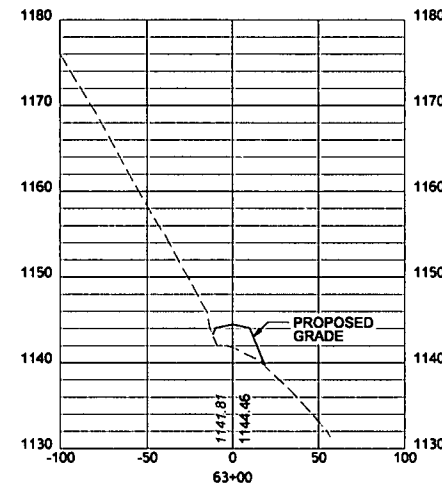
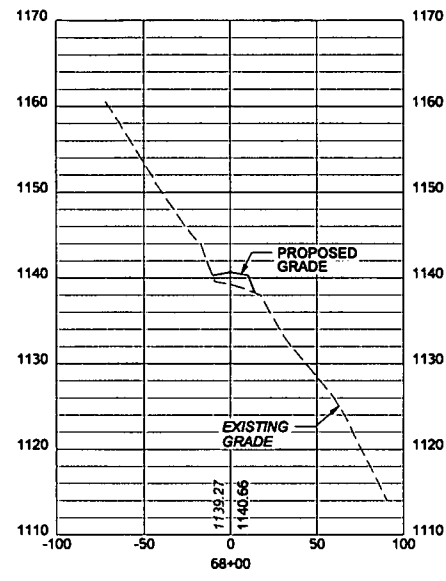
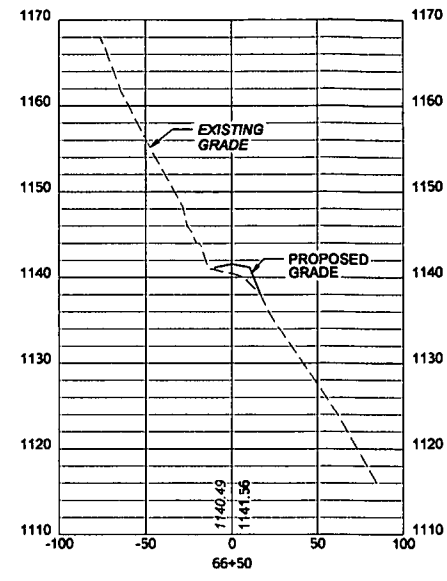
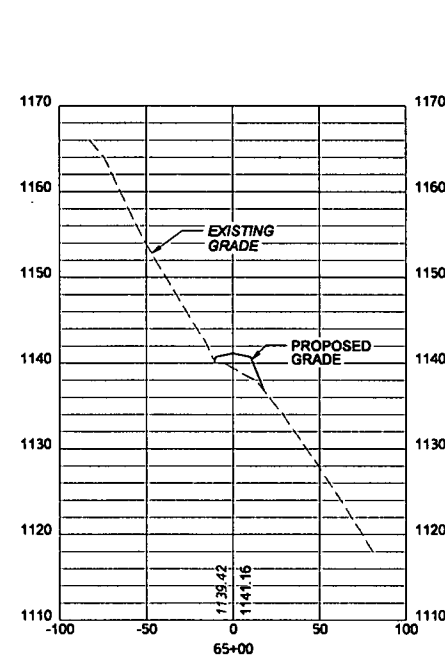
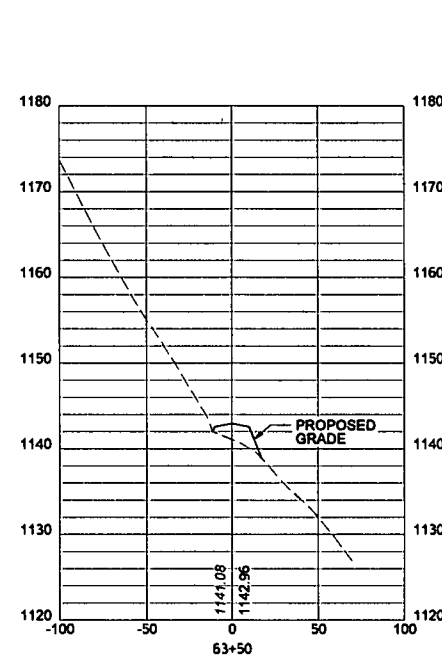
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ACCESS ROAD CROSS SECTIONS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WY

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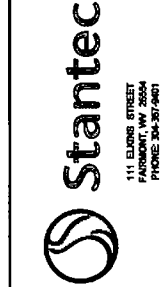
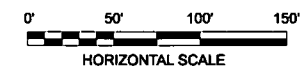
DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 21 OF 47  
 REV:



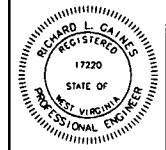


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### WELL PAD ACCESS ROAD CROSS SECTIONS



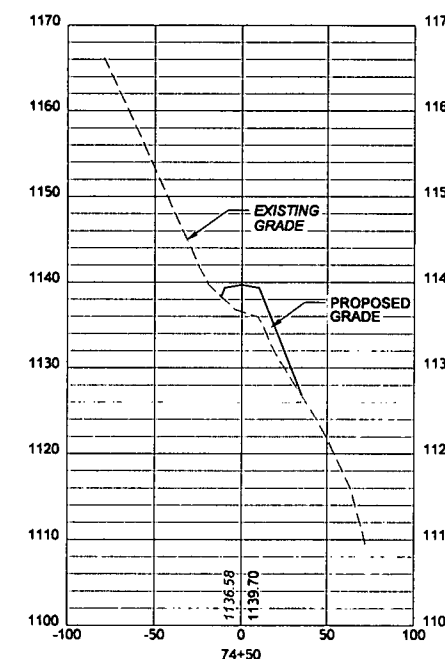
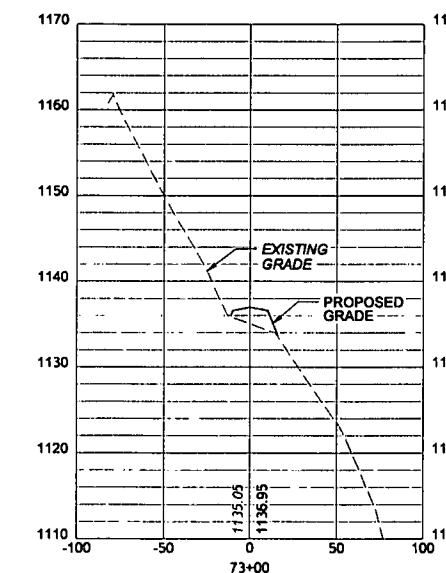
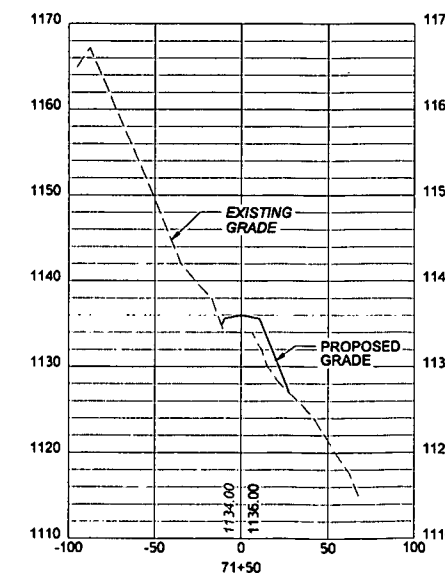
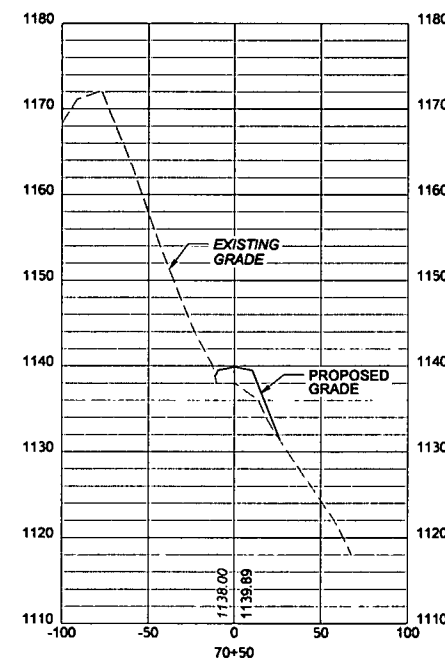
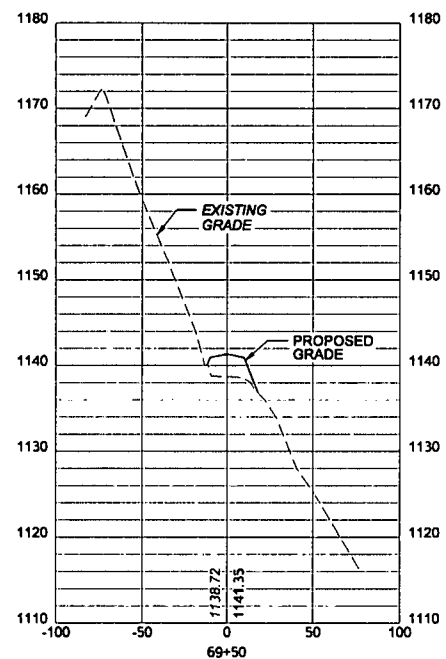
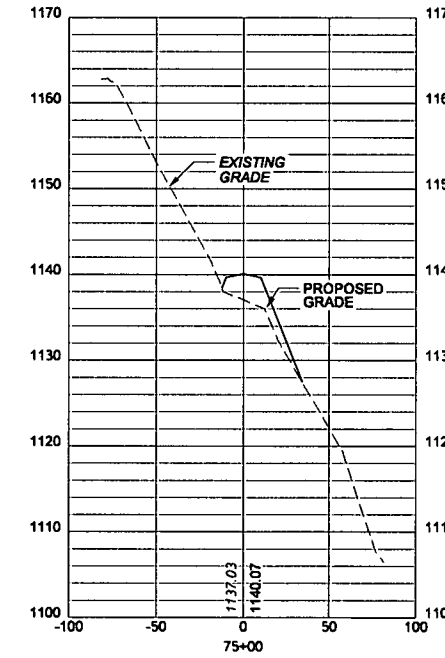
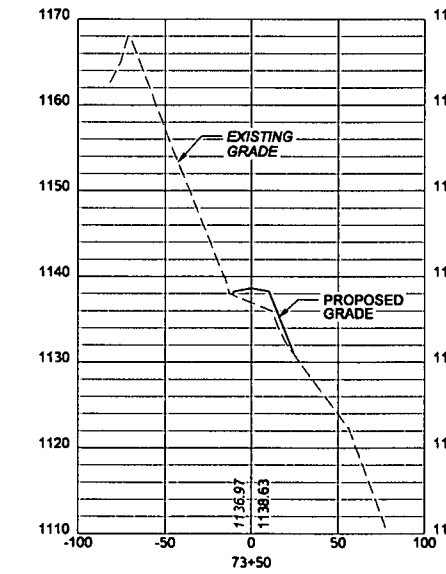
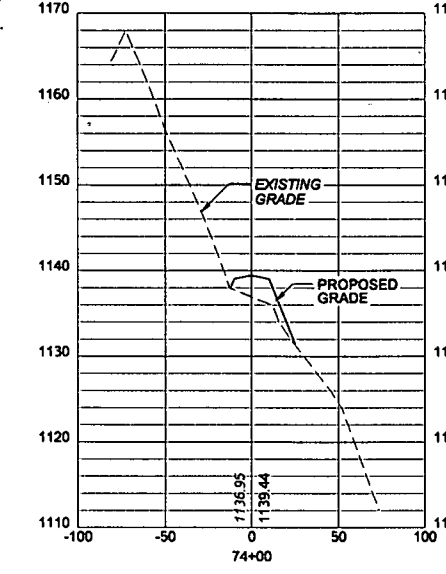
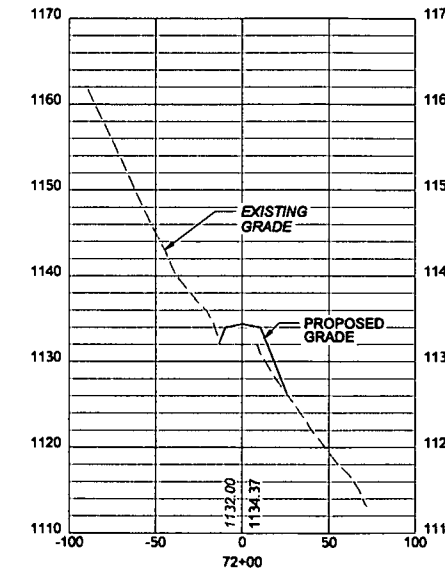
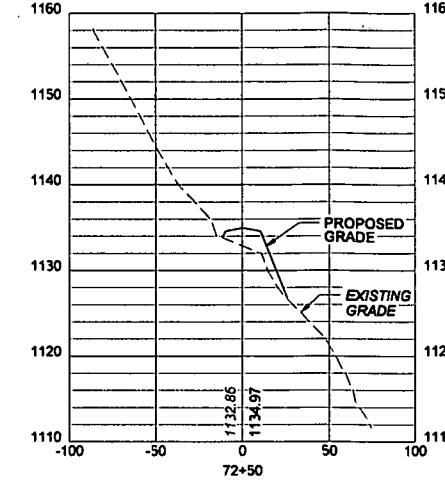
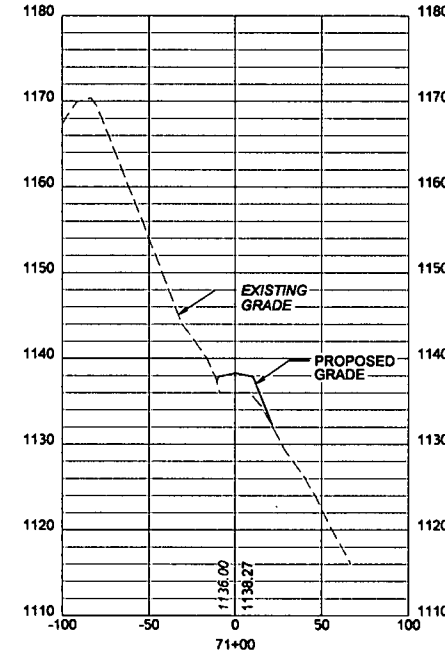
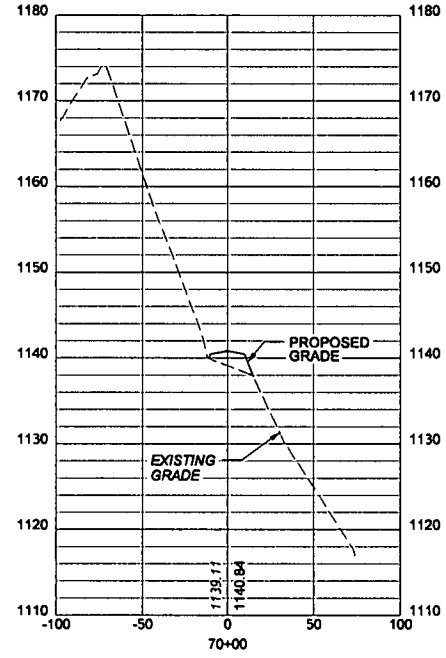
Professional Energy Consultants  
 A Division of Earth Land Survivivo  
 Surveyors  
 Environmental  
 Engineers  
 Environmental  
 225 West Main St.  
 P.O. Box 100  
 West Union, OH 43081  
 (614) 471-3341  
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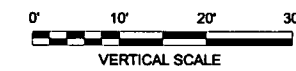
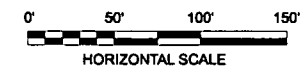
ACCESS ROAD CROSS SECTIONS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 22 OF 47  
 REV:



**NOTE:**  
 ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR.

**WELL PAD ACCESS ROAD CROSS SECTIONS**



**Professional Energy Consultants**  
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**SLS**  
 ENGINEERS  
 ENVIRONMENTAL  
 PROJECT TEAM:  
 128 West Lake St.  
 P.O. Box 108  
 West Union, WV 26055  
 (304) 871-8811

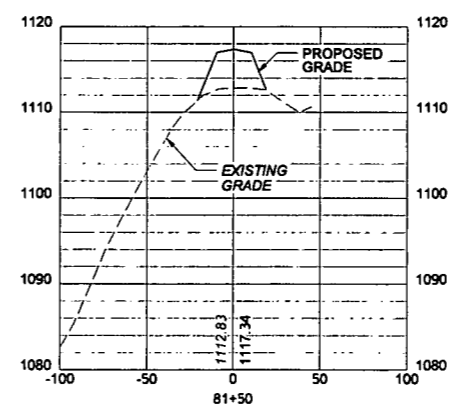
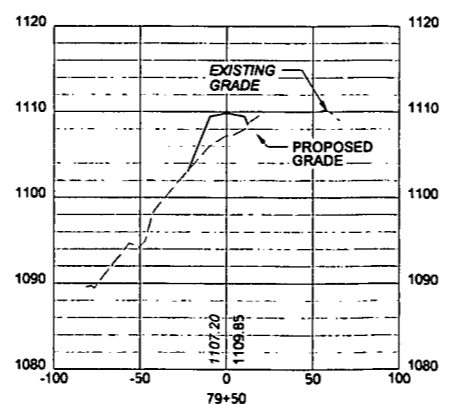
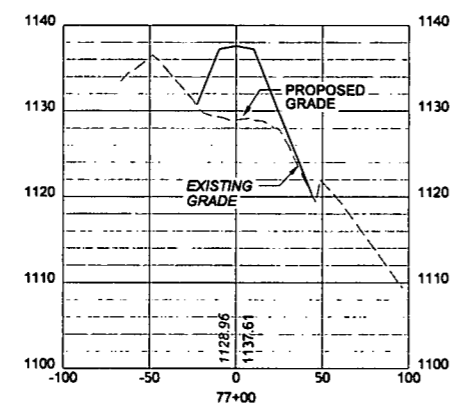
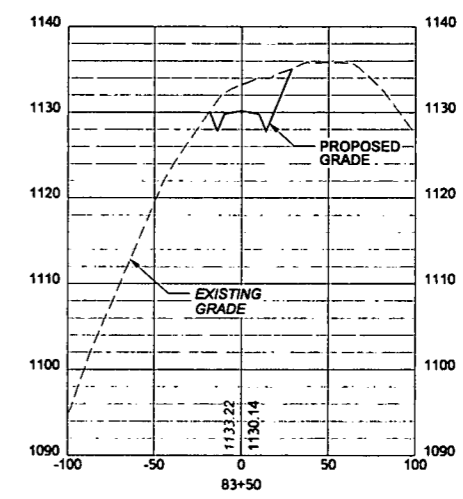
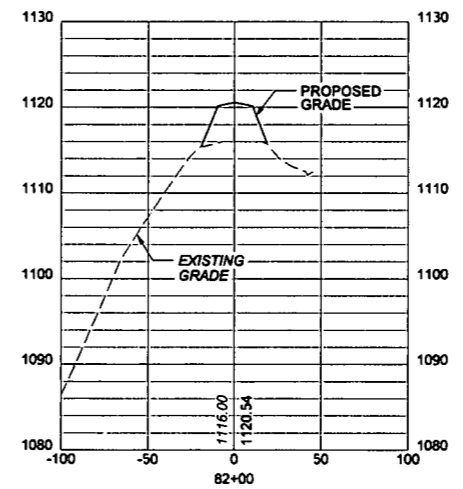
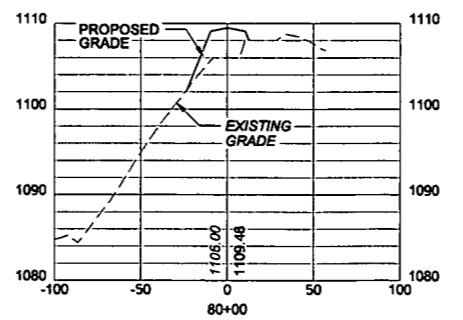
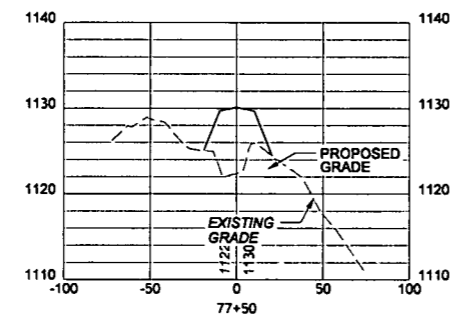
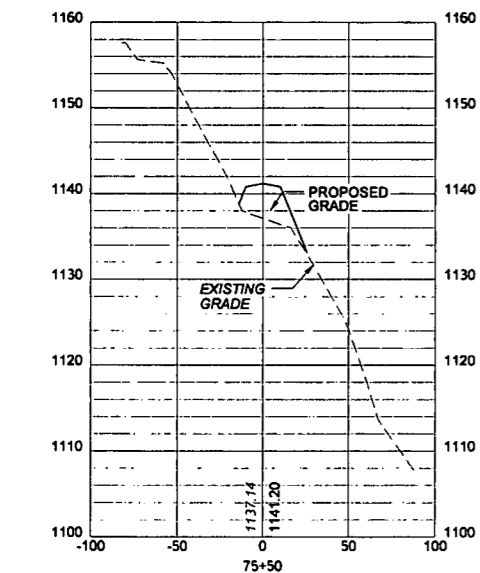
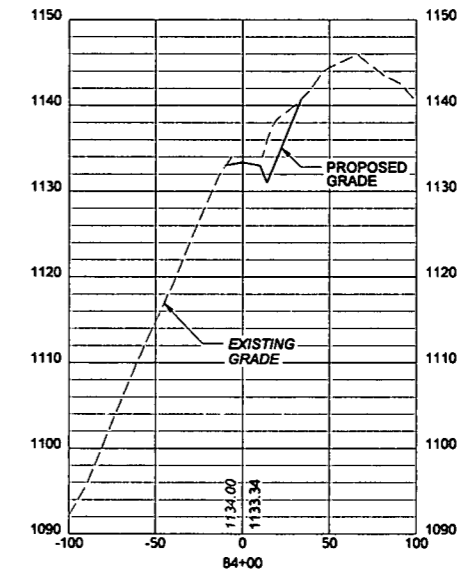
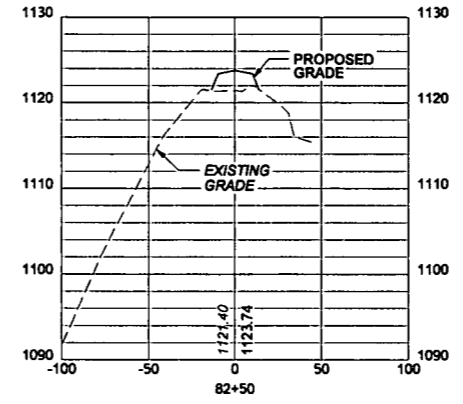
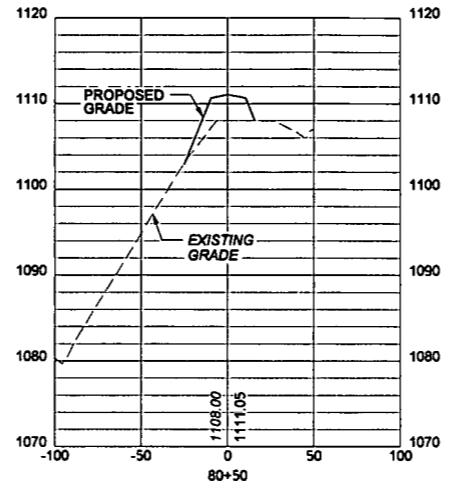
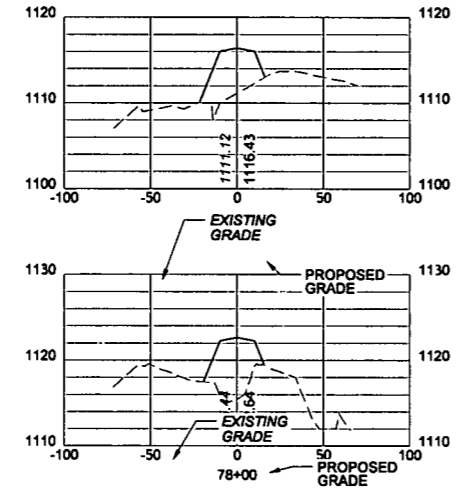
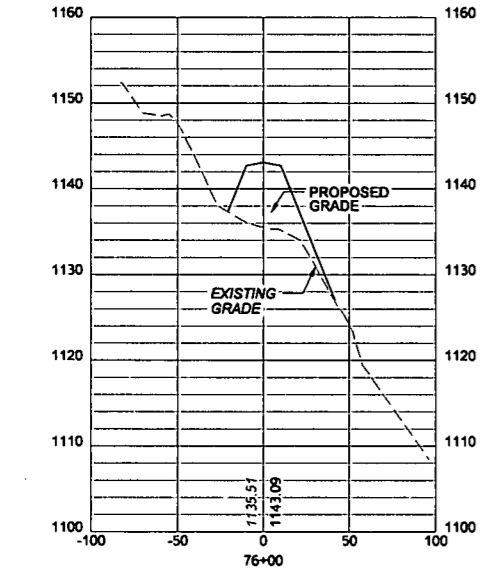
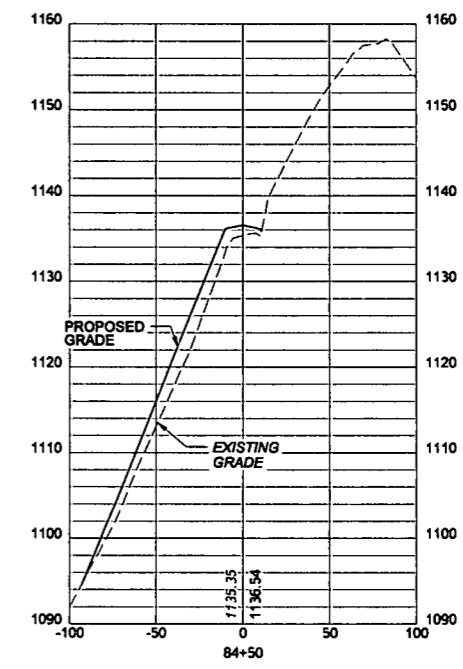
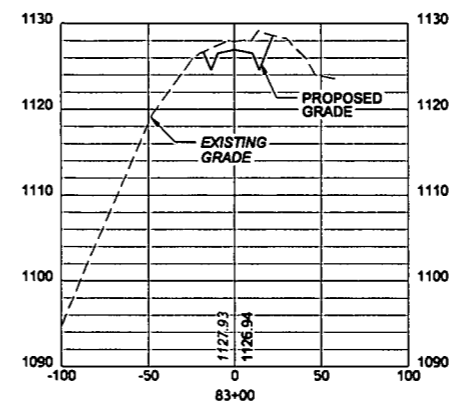
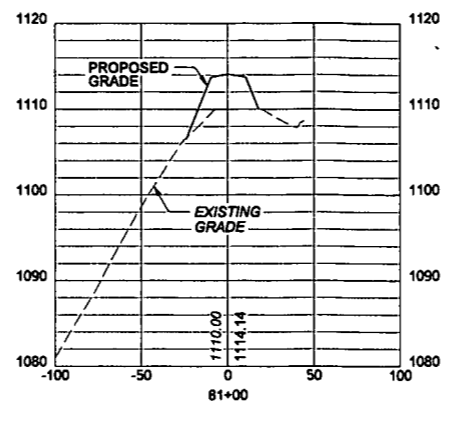
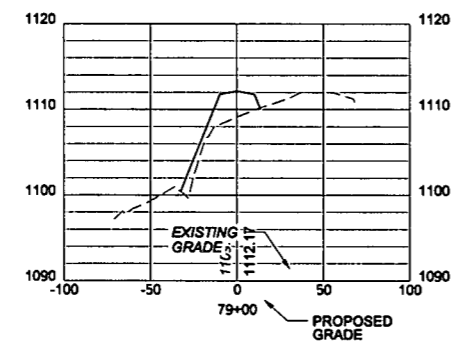
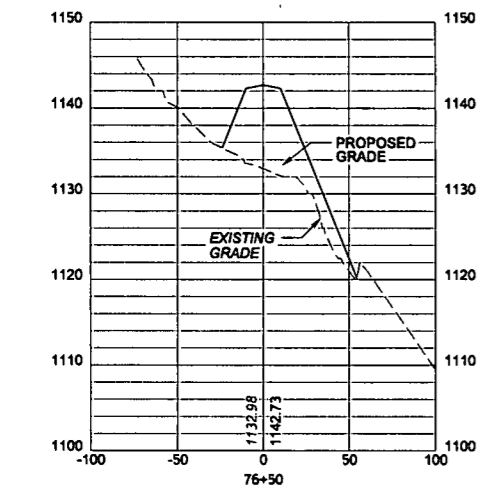


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ACCESS ROAD CROSS SECTIONS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

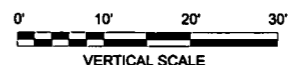
DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJ/HJM/R  
 FILE NO.: SLS-7871  
 SHEET 23 OF 47  
 REV:





NOTE:  
 ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" (MAXIMUM) LOOSE LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR.

WELL PAD ACCESS ROAD CROSS SECTIONS



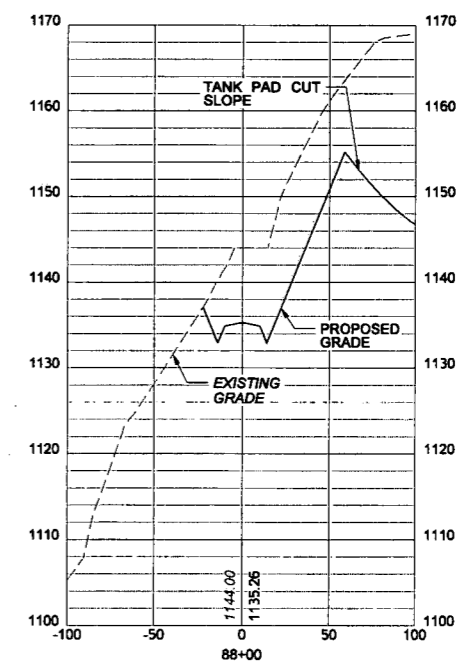
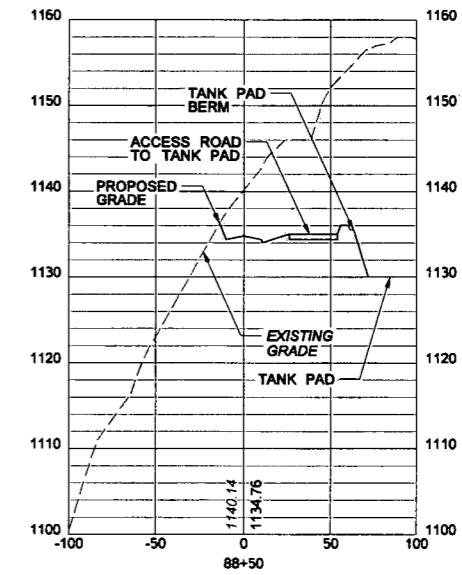
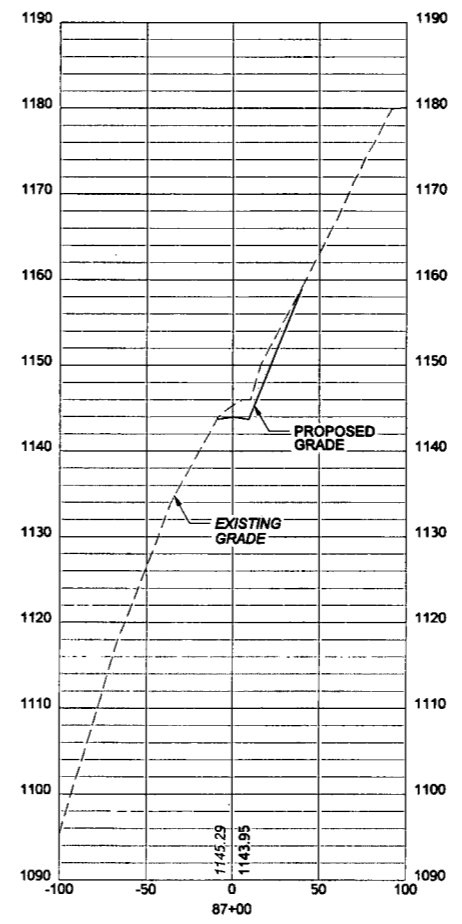
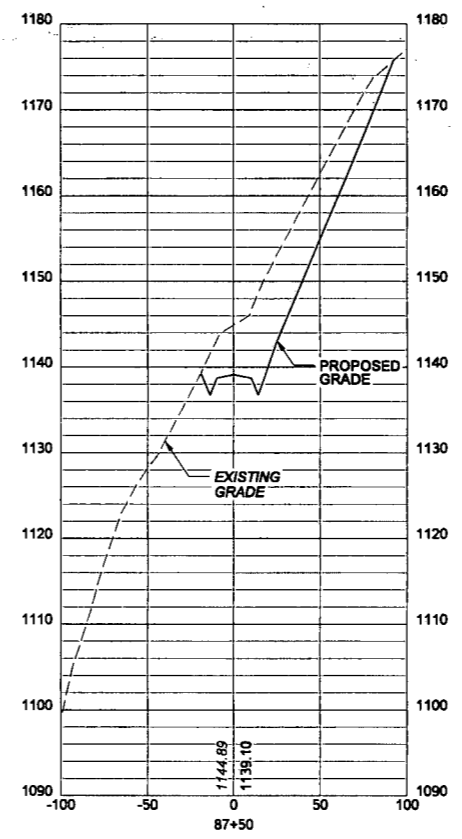
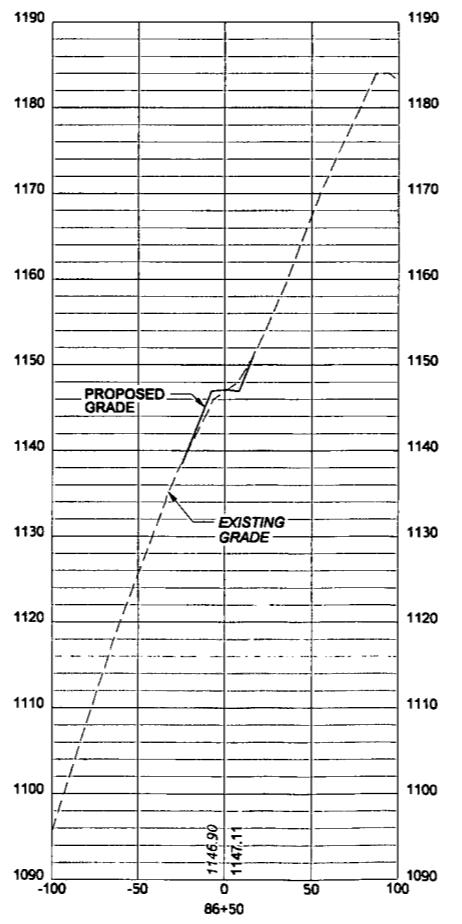
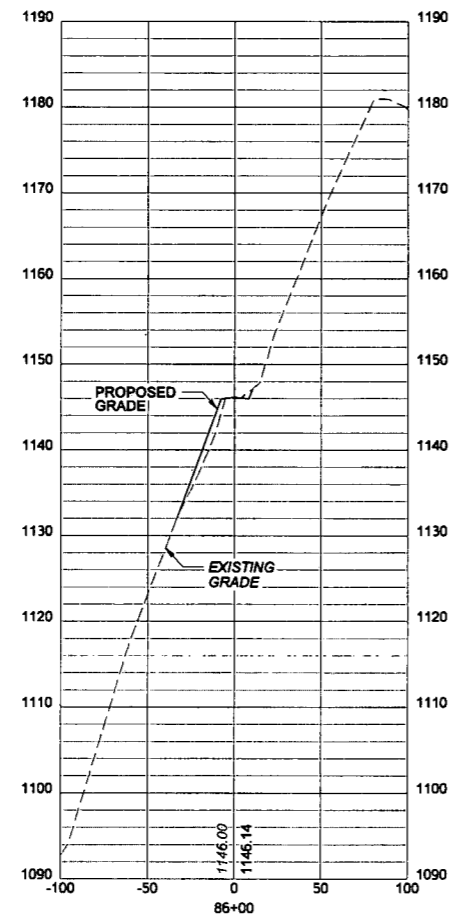
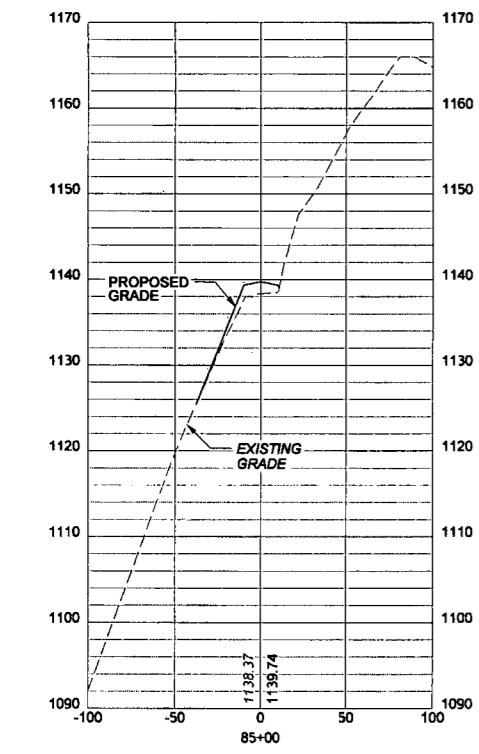
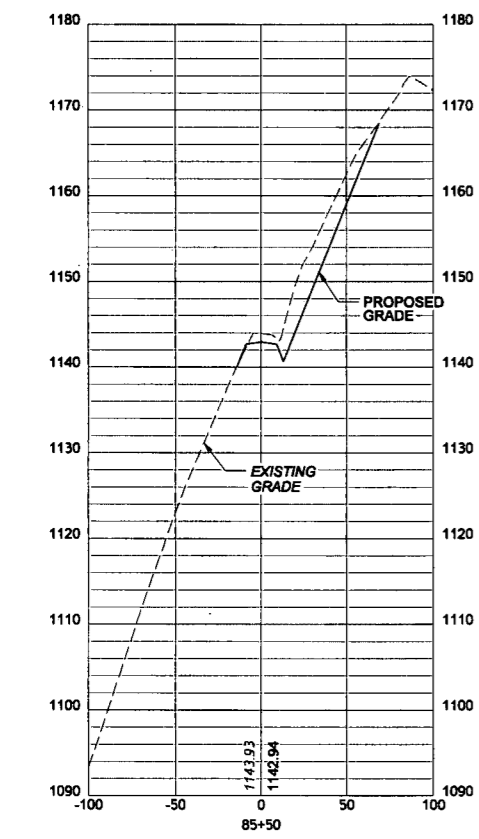
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 A Division of Earth Land Subsurface  
 ENGINEERS  
 ENVIRONMENTAL  
 SURVEYORS  
 PROJECT MGMT.



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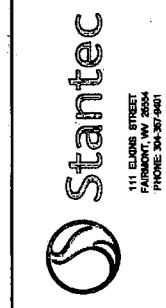
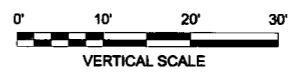
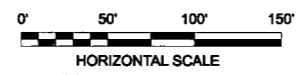
ACCESS ROAD CROSS SECTIONS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 24 OF 47  
 REV:

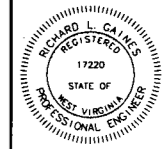


NOTE:  
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WELL PAD ACCESS ROAD CROSS SECTIONS



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 SLS  
 Supervisors  
 Project No.:  
 128 West Lake St.  
 P.O. Box 100  
 Springfield, VA 22151  
 (541) 425-2454  
 Honesty. Integrity. Quality.

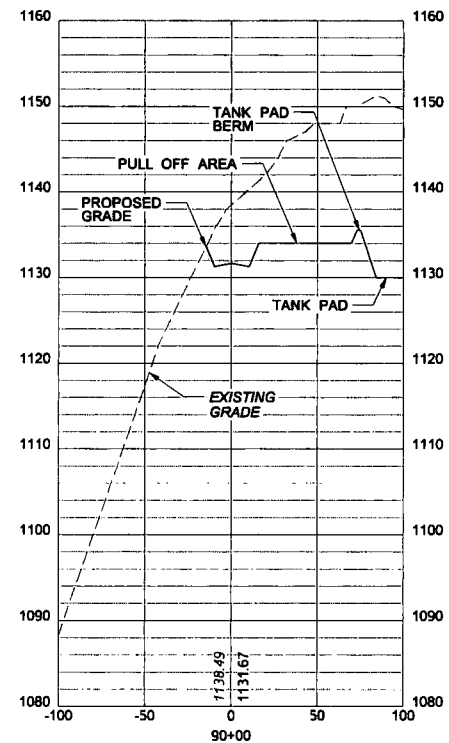
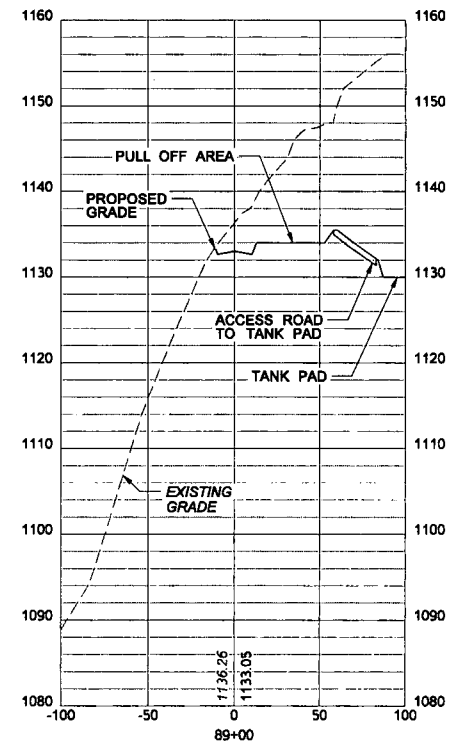
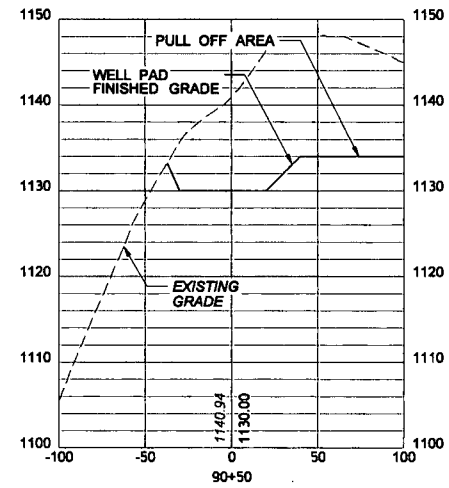
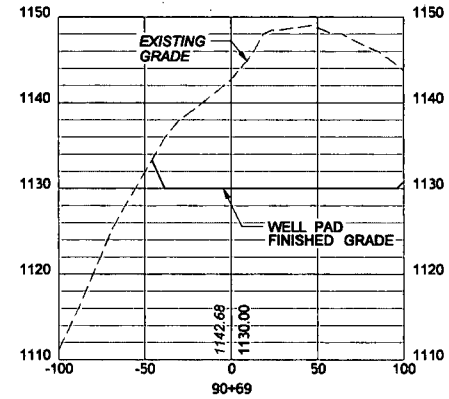
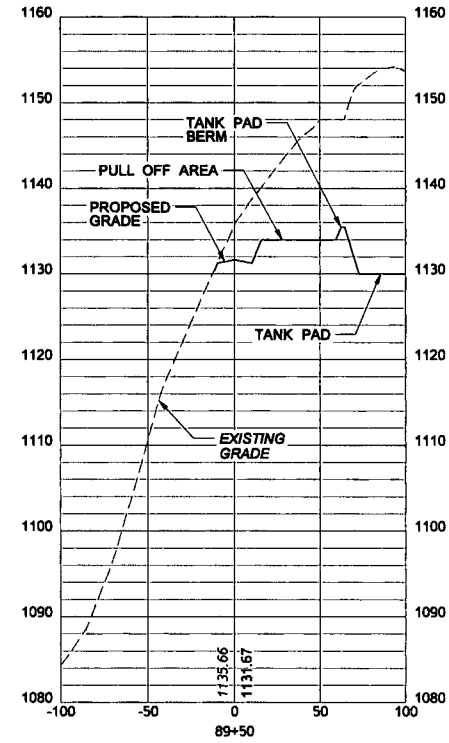


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ACCESS ROAD CROSS SECTIONS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

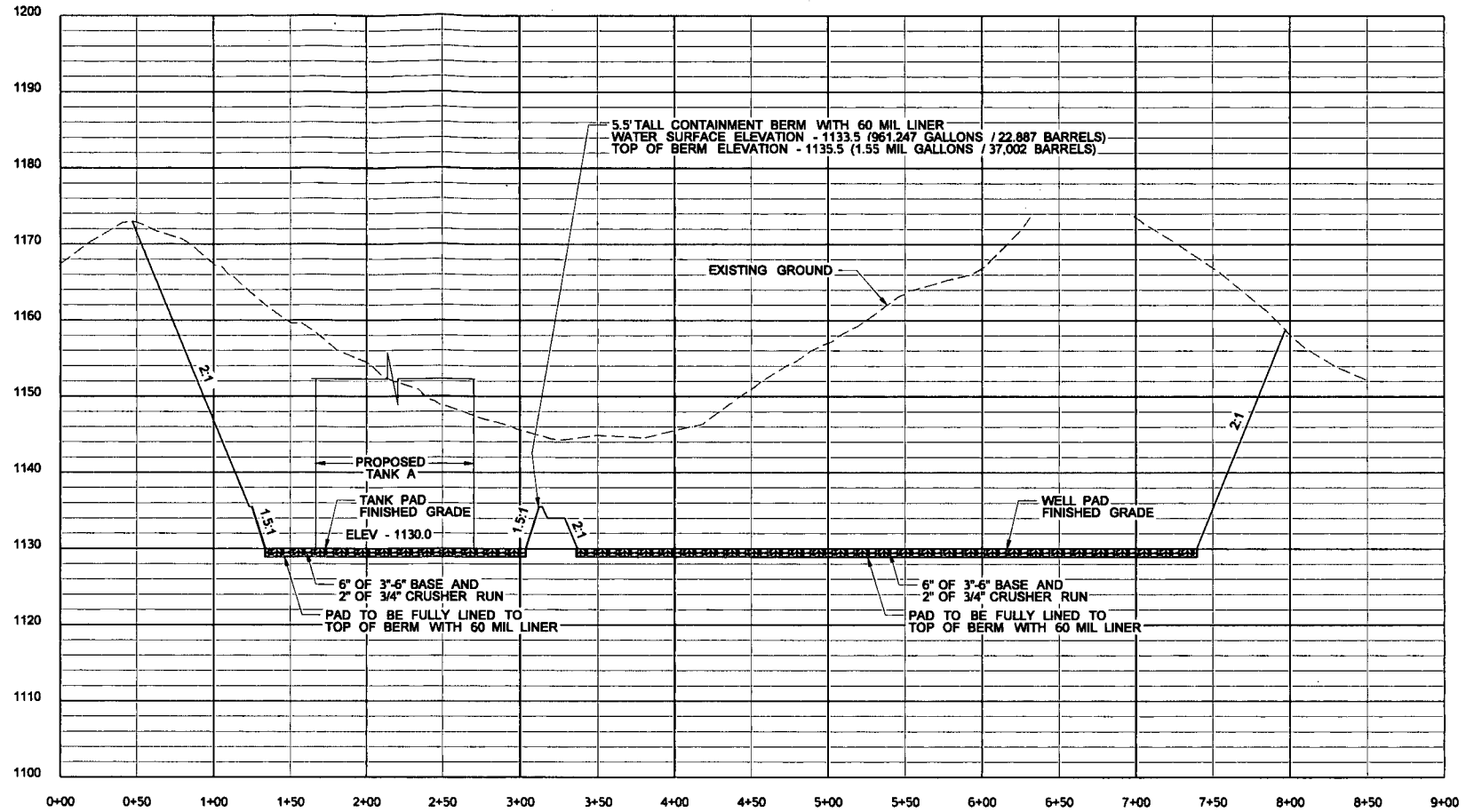
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 SCALE: AS SHOWN  
 DESIGNED BY: RLH/JMR  
 FILE NO.: SLS-7871  
 SHEET 25 OF 47  
 REV:



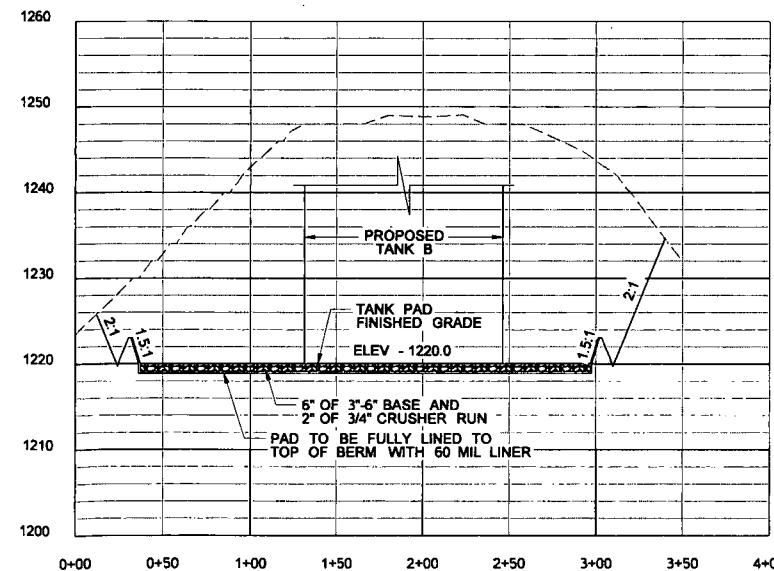


**WELL PAD ACCESS ROAD CROSS SECTIONS**

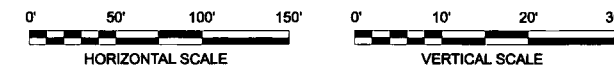
**NOTE:**  
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**WELL PAD AND TANK A PAD CROSS SECTION A-A**



**TANK B PAD CROSS SECTION B-B**



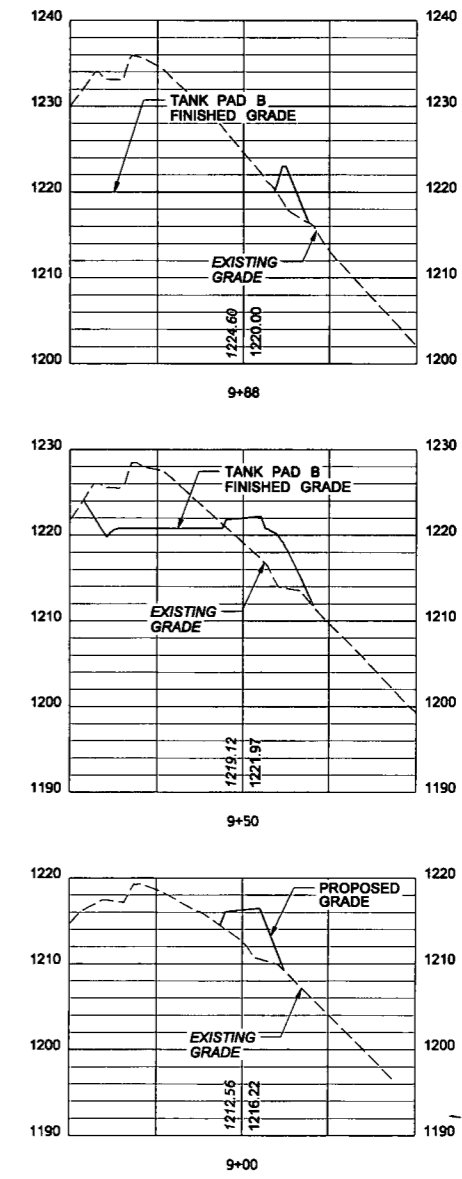
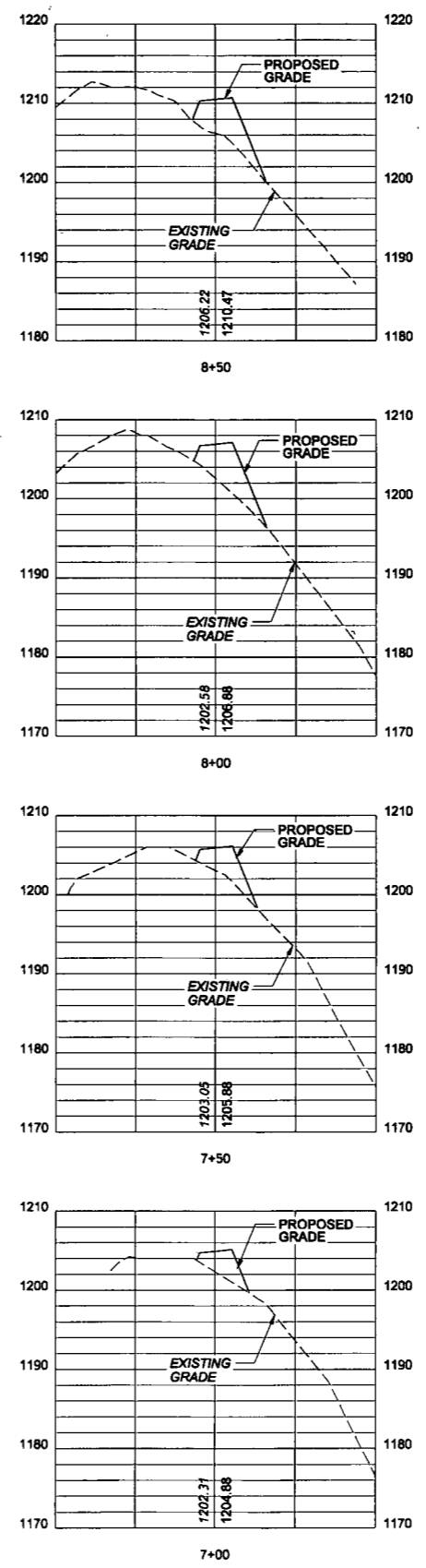
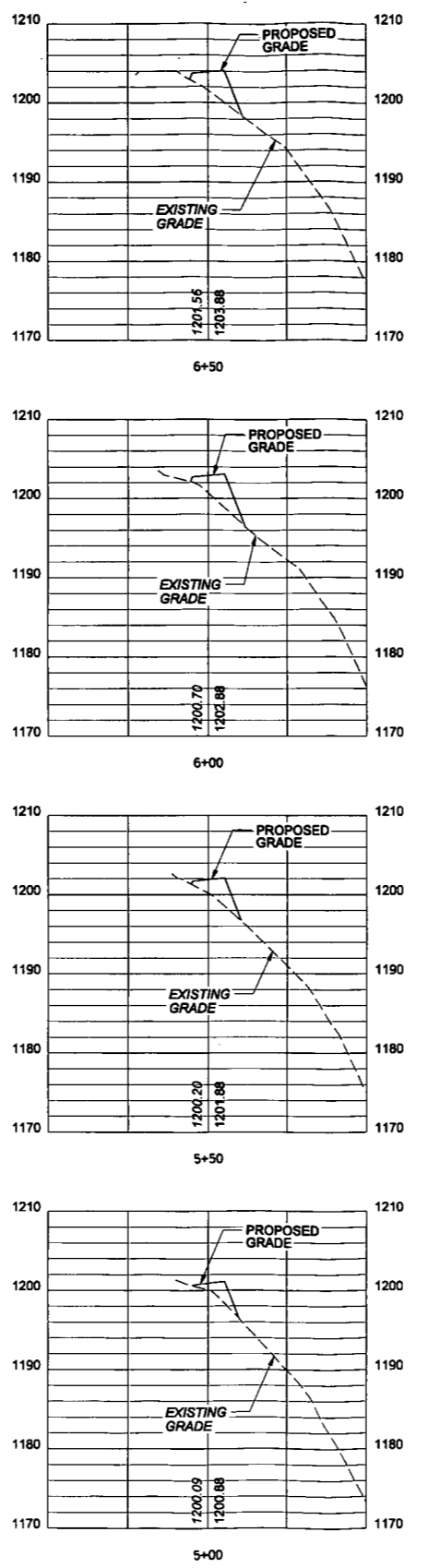
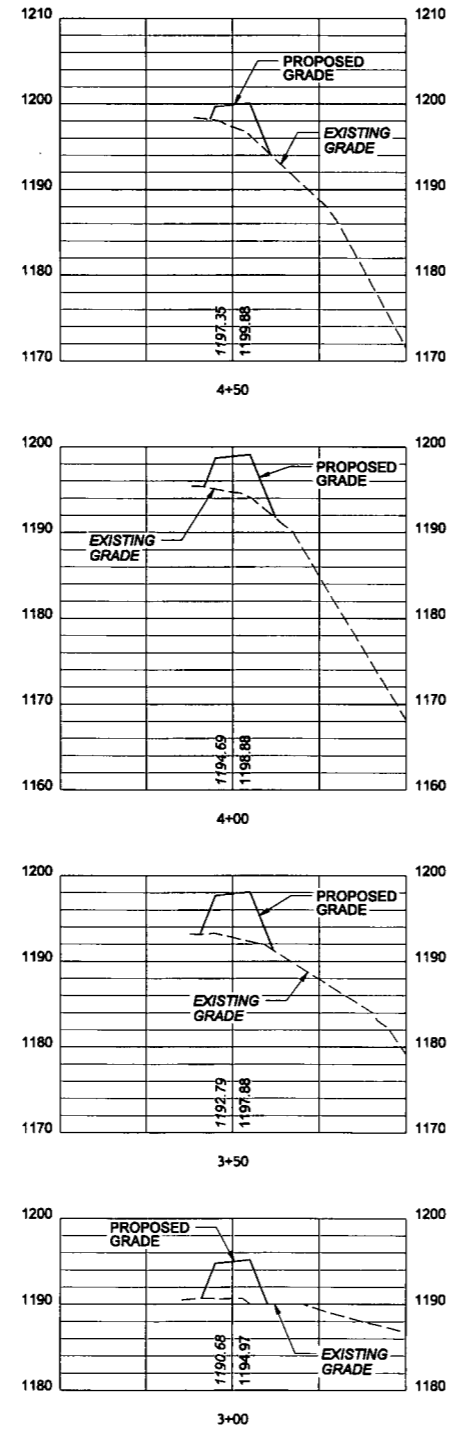
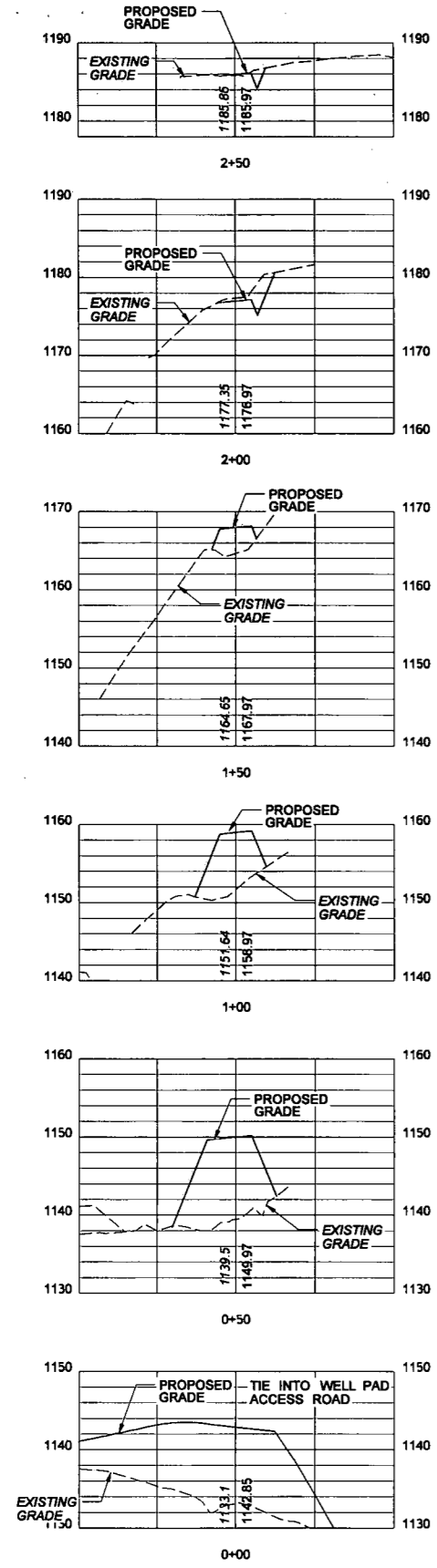
**Professional Energy Consultants**  
 A DIVISION OF BIRTH LAND SURVIVING  
**SLS**  
 ENGINEERS  
 ENVIRONMENTAL  
 SURVEYORS  
 PROJECT #001  
 208 West Main St.  
 P.O. Box 100  
 West Union, WV 26055  
 (204) 472-2334  
 FAX (204) 472-2334  
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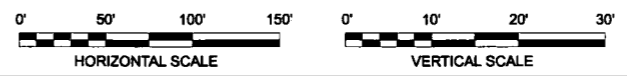
ACCESS ROAD CROSS SECTIONS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 26 OF 47  
 REV:



NOTE:  
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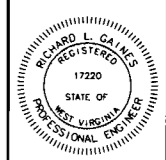
TANK B ACCESS ROAD CROSS SECTIONS



DATE: 10/25/2013  
SCALE: AS SHOWN  
DESIGNED BY: RJH/JMR  
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SHEET 27 OF 47  
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WEST UNION DISTRICT  
DODDRIDGE COUNTY, WV

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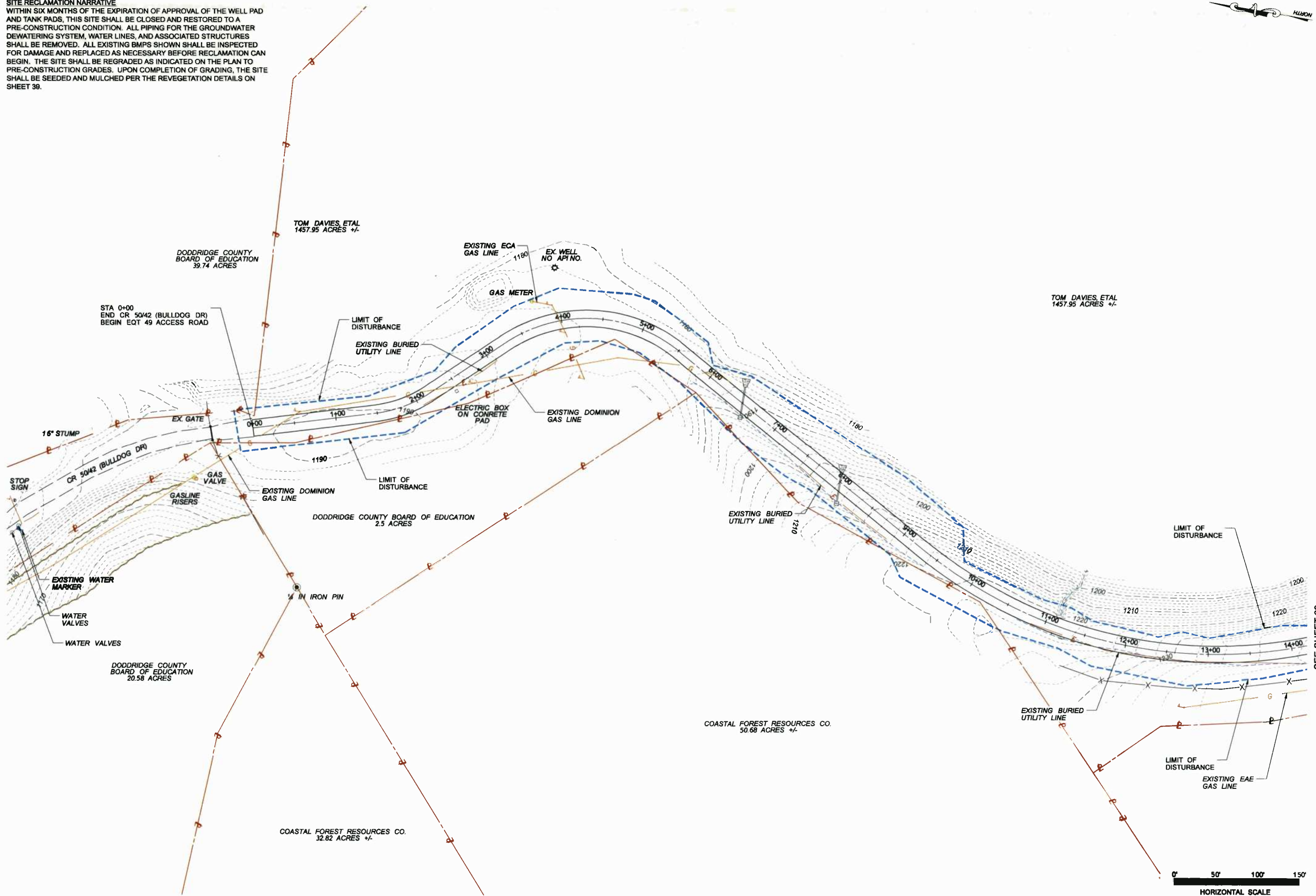


Professional Energy Consultants  
A Division of Smith Land Surveying  
Engineers  
Environmental  
SURVEYORS  
PROJECT MGMT.  
322 West Main St.  
P.O. Box 100  
Martinsburg, WV 25401  
(304) 271-0011  
HONESTY, INTEGRITY, QUALITY

Stantec  
111 E. State Street  
Parkersburg, WV  
PHONE: 304-587-2801

DOT 2006  
 01.LGA.P.15.ze.Pof.P.1

**SITE RECLAMATION NARRATIVE**  
 WITHIN SIX MONTHS OF THE EXPIRATION OF APPROVAL OF THE WELL PAD AND TANK PADS, THIS SITE SHALL BE CLOSED AND RESTORED TO A PRE-CONSTRUCTION CONDITION. ALL PIPING FOR THE GROUNDWATER DEWATERING SYSTEM, WATER LINES, AND ASSOCIATED STRUCTURES SHALL BE REMOVED. ALL EXISTING BMPS SHOWN SHALL BE INSPECTED FOR DAMAGE AND REPLACED AS NECESSARY BEFORE RECLAMATION CAN BEGIN. THE SITE SHALL BE REGRADED AS INDICATED ON THE PLAN TO PRE-CONSTRUCTION GRADES. UPON COMPLETION OF GRADING, THE SITE SHALL BE SEEDED AND MULCHED PER THE REVEGETATION DETAILS ON SHEET 38.



16/08/2013  
 WORKSPACE DOT 2006 (SURVEY FEET)  
 UN\2021051372\DOT WEU 49\3.0\CA001.3 - Highway\DES\RECL\A.M.1372esP\04.0e\1.poc.dwg



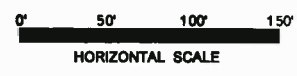
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ACCESS ROAD RECLAMATION PLAN  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET: 28 OF 47  
 REV:



SEE SHEET 29

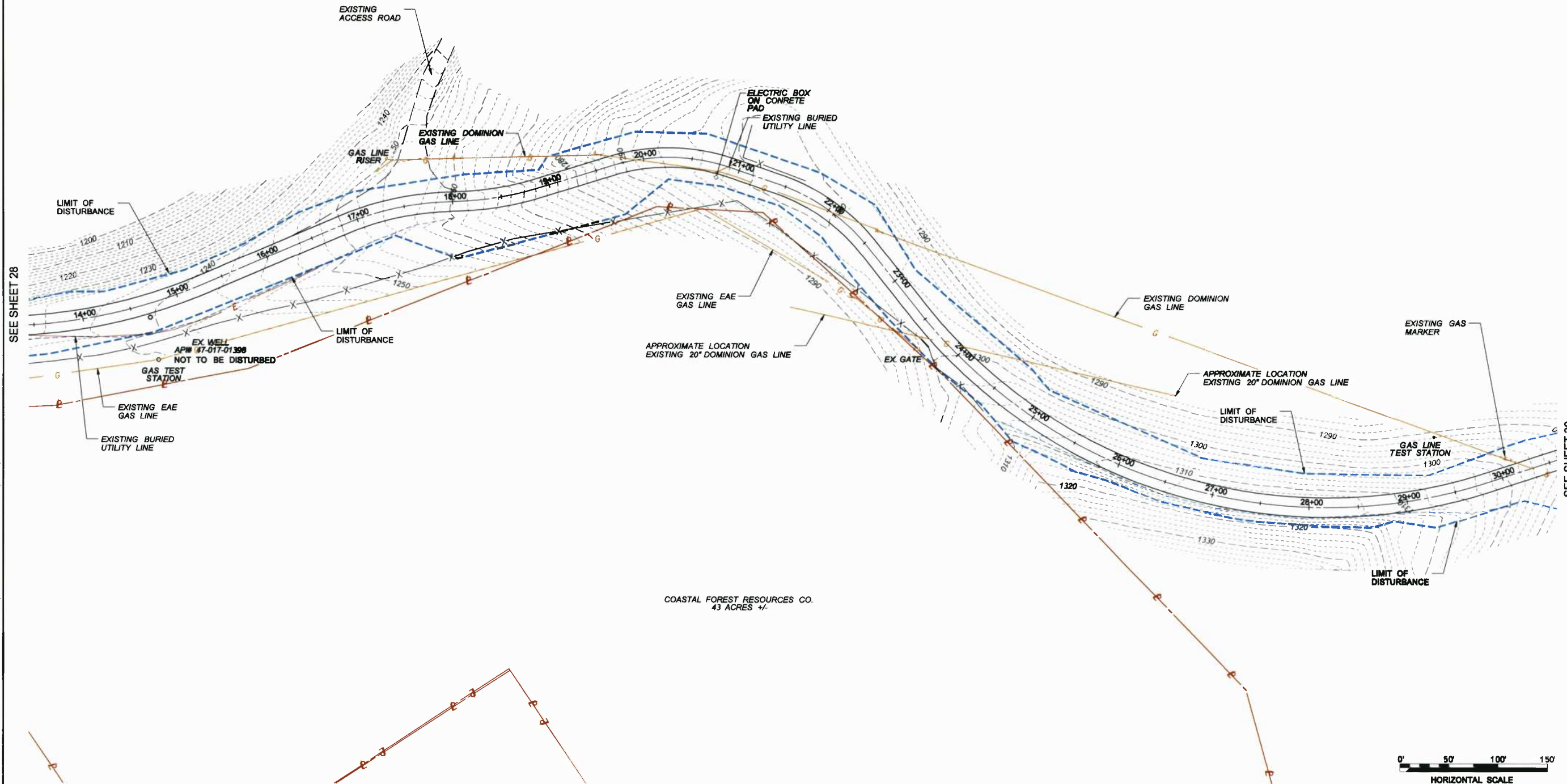


01.2006  
 011.GAS.F.U.151ze.Pdf.p11

**SITE RECLAMATION NARRATIVE**  
 WITHIN SIX MONTHS OF THE EXPIRATION OF APPROVAL OF THE WELL PAD AND TANK PADS, THIS SITE SHALL BE CLOSED AND RESTORED TO A PRE-CONSTRUCTION CONDITION. ALL PIPING FOR THE GROUNDWATER DEWATERING SYSTEM, WATER LINES, AND ASSOCIATED STRUCTURES SHALL BE REMOVED. ALL EXISTING BMPs SHOWN SHALL BE INSPECTED FOR DAMAGE AND REPLACED AS NECESSARY BEFORE RECLAMATION CAN BEGIN. THE SITE SHALL BE REGRADED AS INDICATED ON THE PLAN TO PRE-CONSTRUCTION GRADES. UPON COMPLETION OF GRADING, THE SITE SHALL BE SEEDED AND MULCHED PER THE REVEGETATION DETAILS ON SHEET 39.

TOM DAVIES, ETAL  
 1437.95 ACRES +/-

COASTAL FOREST RESOURCES CO.  
 43 ACRES +/-



SEE SHEET 28

SEE SHEET 30



Professional Energy Consultants  
 A DIVISION OF SLS LAND SURVEYING  
 SLS  
 SOLUTIONS  
 PROJECT MGMT.  
 128 West Main St.  
 P.O. Box 100  
 West Union, OH 43081  
 (614) 882-3333  
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**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET: 29 OF 47  
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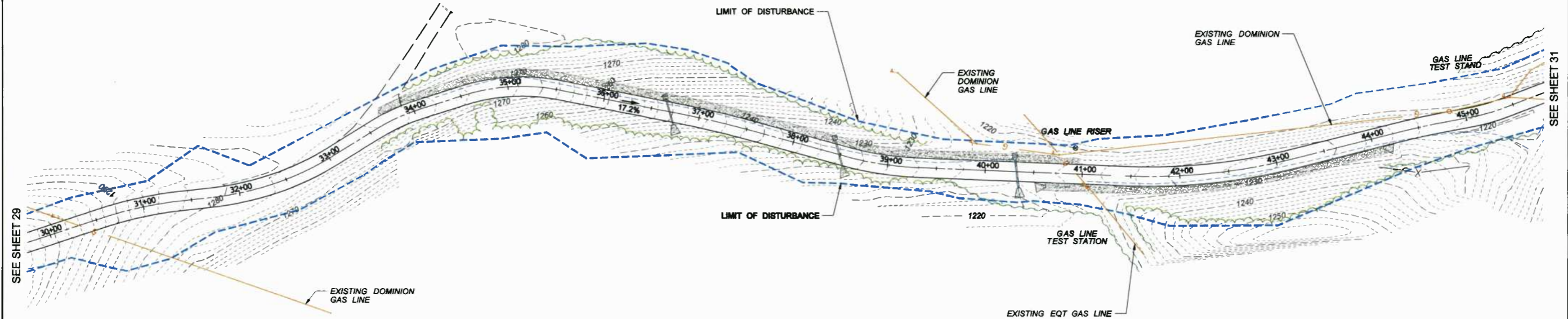
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DOT 2006  
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**SITE RECLAMATION NARRATIVE**  
 WITHIN SIX MONTHS OF THE EXPIRATION OF APPROVAL OF THE WELL PAD AND TANK PADS, THIS SITE SHALL BE CLOSED AND RESTORED TO A PRE-CONSTRUCTION CONDITION. ALL PIPING FOR THE GROUNDWATER DEWATERING SYSTEM, WATER LINES, AND ASSOCIATED STRUCTURES SHALL BE REMOVED. ALL EXISTING BMPs SHOWN SHALL BE INSPECTED FOR DAMAGE AND REPLACED AS NECESSARY BEFORE RECLAMATION CAN BEGIN. THE SITE SHALL BE REGRADED AS INDICATED ON THE PLAN TO PRE-CONSTRUCTION GRADES. UPON COMPLETION OF GRADING, THE SITE SHALL BE SEED AND MULCHED PER THE REVEGETATION DETAILS ON SHEET 39.

TOM DAVIES, ETAL  
 1457.95 ACRES +/-

TOM DAVIES, ETAL  
 1457.95 ACRES +/-



SEE SHEET 29

SEE SHEET 31



Professional Energy Consultants  
 A DIVISION OF SMITH LAND SURVEYING  
 SURVEYORS  
 PROJECT MANAGERS  
 RICHARD L. GILES  
 REGISTERED PROFESSIONAL ENGINEER  
 STATE OF WEST VIRGINIA  
 17220  
 111 EDWARDS STREET  
 WEST UNION DISTRICT  
 WASHINGTON, WV 26187  
 PHONE: 304-307-2900



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 STANTEC  
 FOR:  
 EQT PRODUCTION COMPANY

ACCESS ROAD RECLAMATION PLAN  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: R.H./JMR  
 FILE NO.: SLS-7871  
 SHEET 30 OF 47  
 REV:

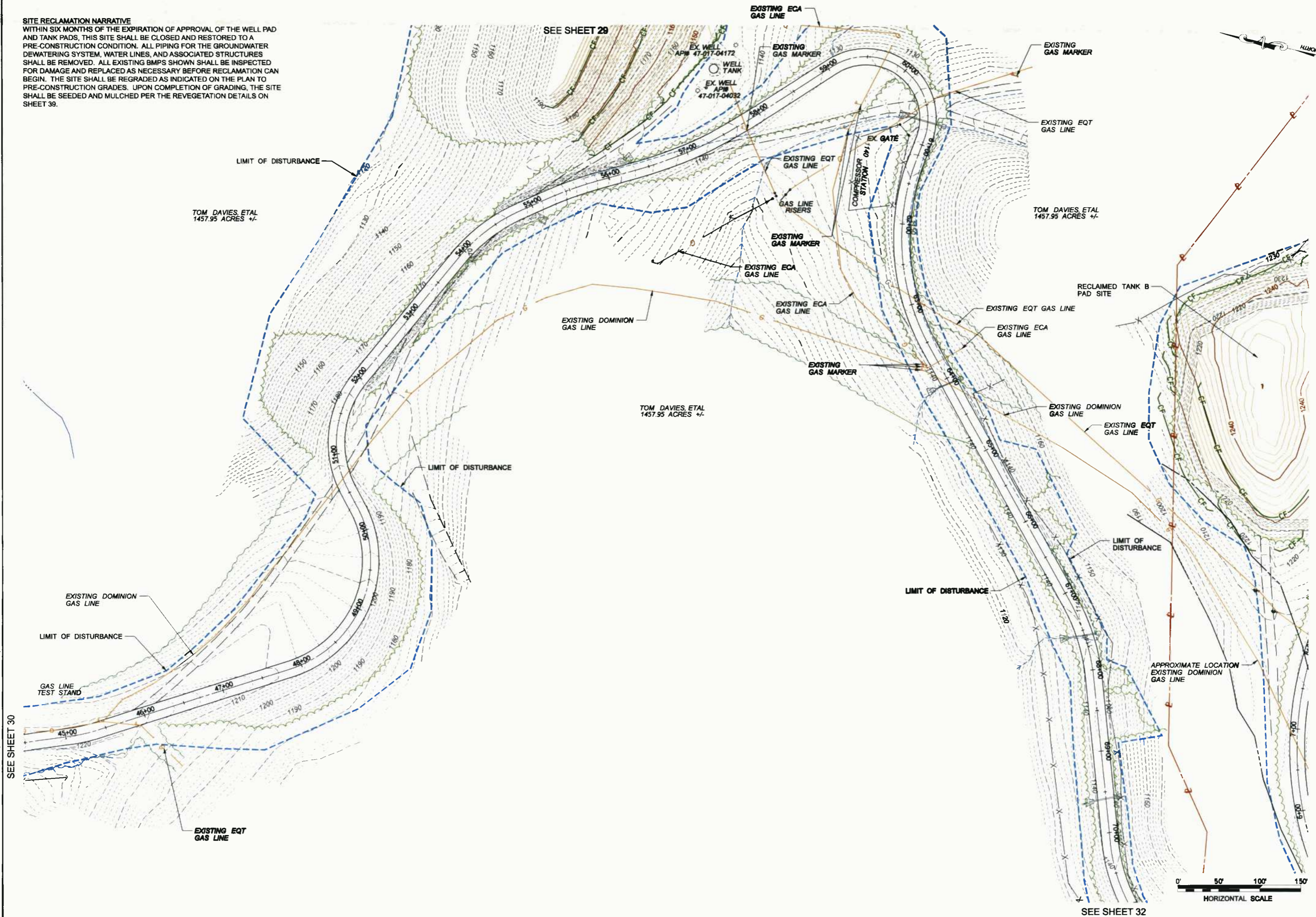
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DATE: 10/25/2013  
 TIME: 10:07:20 AM  
 USER: R.J.H./M.R.  
 PROJECT: EQT WEU 49

DATE: 10/25/2013  
 TIME: 10:07:20 AM  
 USER: R.J.H./M.R.  
 PROJECT: EQT WEU 49

**SITE RECLAMATION NARRATIVE**  
 WITHIN SIX MONTHS OF THE EXPIRATION OF APPROVAL OF THE WELL PAD AND TANK PADS, THIS SITE SHALL BE CLOSED AND RESTORED TO A PRE-CONSTRUCTION CONDITION. ALL PIPING FOR THE GROUNDWATER DEWATERING SYSTEM, WATER LINES, AND ASSOCIATED STRUCTURES SHALL BE REMOVED. ALL EXISTING BMPs SHOWN SHALL BE INSPECTED FOR DAMAGE AND REPLACED AS NECESSARY BEFORE RECLAMATION CAN BEGIN. THE SITE SHALL BE REGRADED AS INDICATED ON THE PLAN TO PRE-CONSTRUCTION GRADES. UPON COMPLETION OF GRADING, THE SITE SHALL BE SEEDED AND MULCHED PER THE REVEGETATION DETAILS ON SHEET 39.



SEE SHEET 30

SEE SHEET 29

SEE SHEET 32

TOM DAVIES, ETAL  
 1457.95 ACRES +/-

TOM DAVIES, ETAL  
 1457.95 ACRES +/-

TOM DAVIES, ETAL  
 1457.95 ACRES +/-



Professional Energy Consultants  
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**SLS**  
 SURVEYORS  
 PROJECT MGMT.  
 ENVIRONMENTAL  
 ENGINEERS



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 SHEET: 31 OF 47  
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ACCESS ROAD RECLAMATION PLAN  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

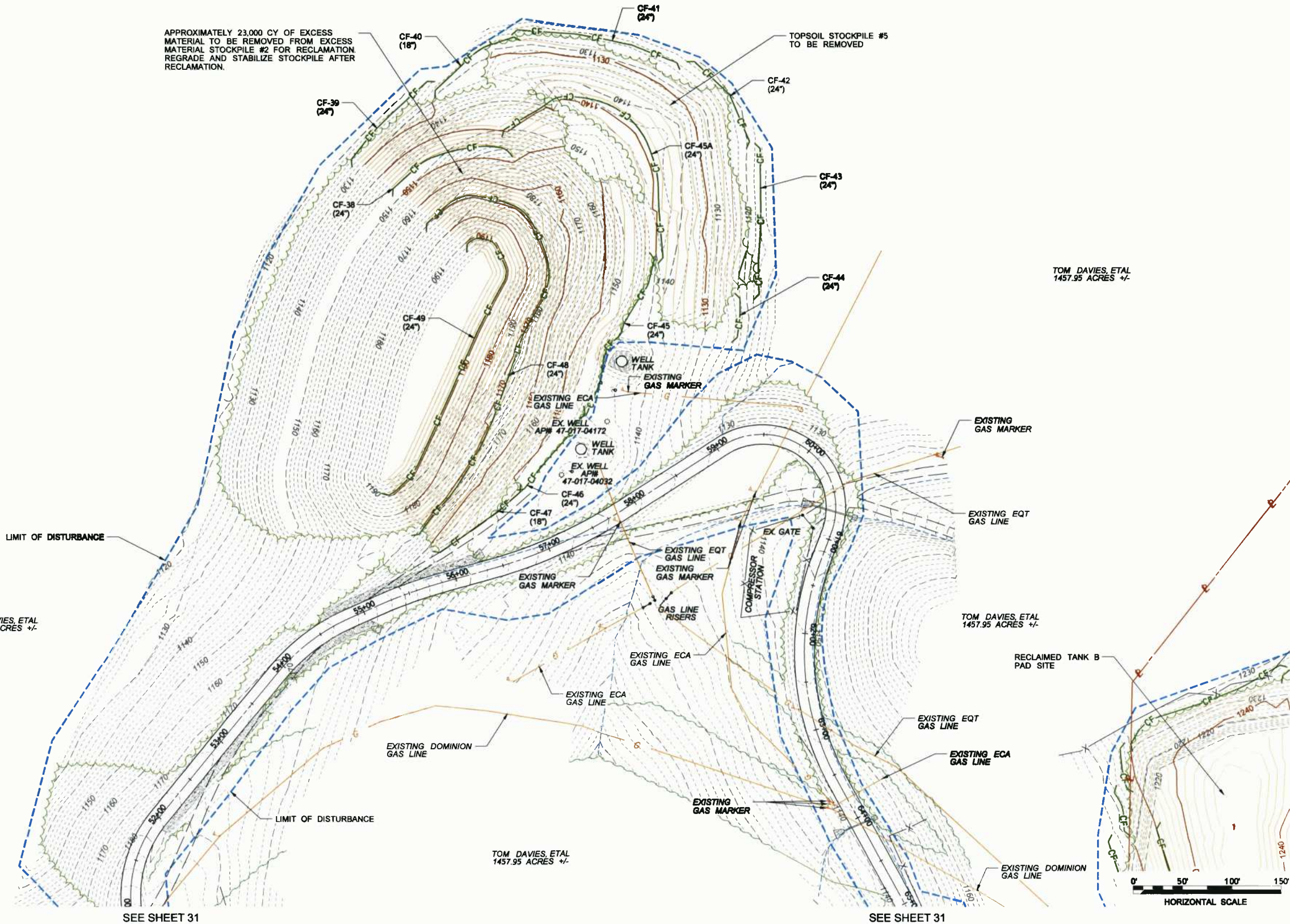
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 FILE NO.: SLS-7871  
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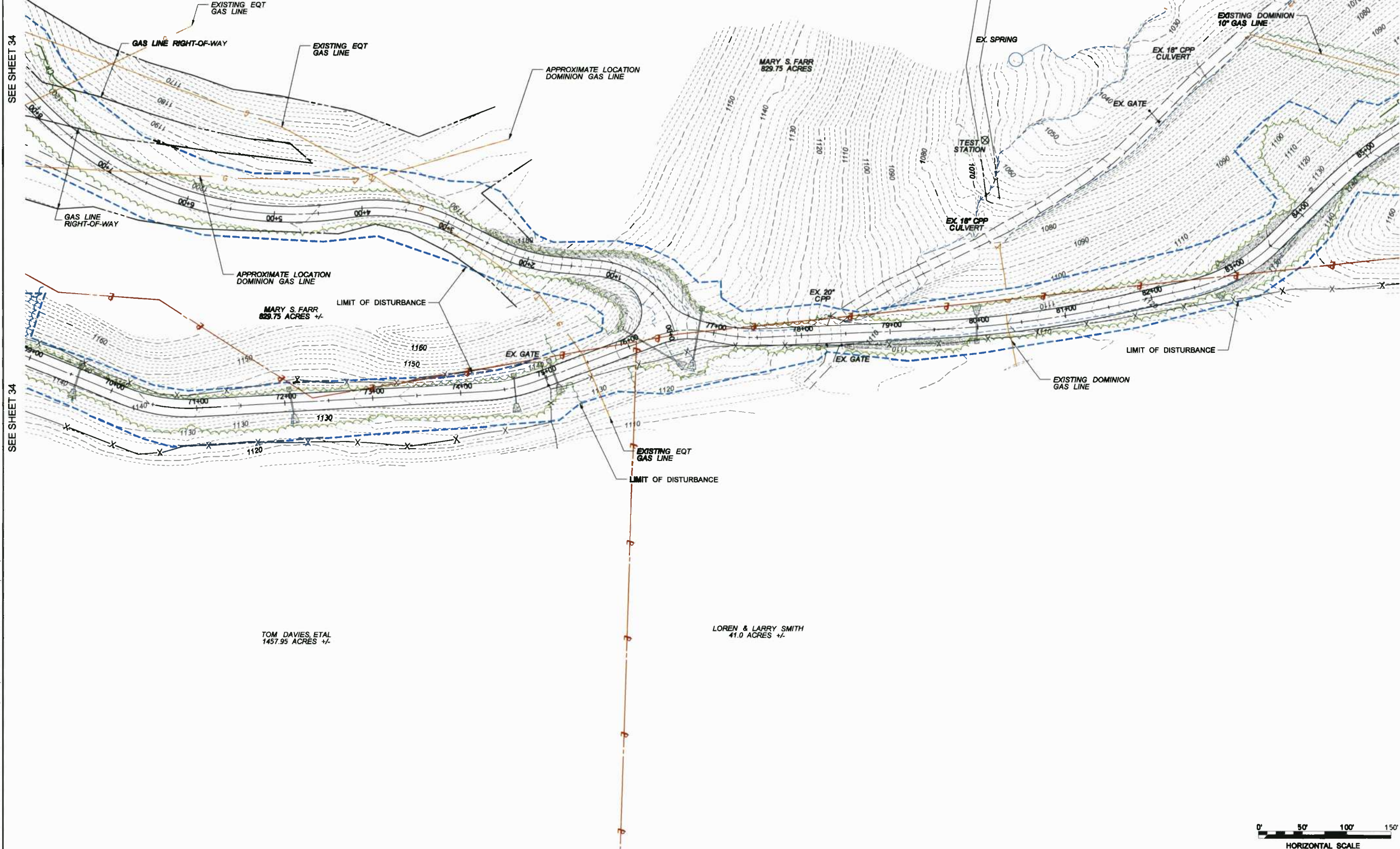
ACCESS ROAD RECLAMATION PLAN  
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 FILE NO.: SLS-7871  
 SHEET: 32 OF 47  
 REV:



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SEE SHEET 34

SEE SHEET 34

TOM DAVIES, ETAL  
 1457.95 ACRES +/-

LOREN & LARRY SMITH  
 41.0 ACRES +/-



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ACCESS ROAD RECLAMATION PLAN  
**EQT WEU 49**  
 WEST UNION DISTRICT  
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 SHEET 33 OF 47  
 REV:

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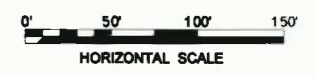
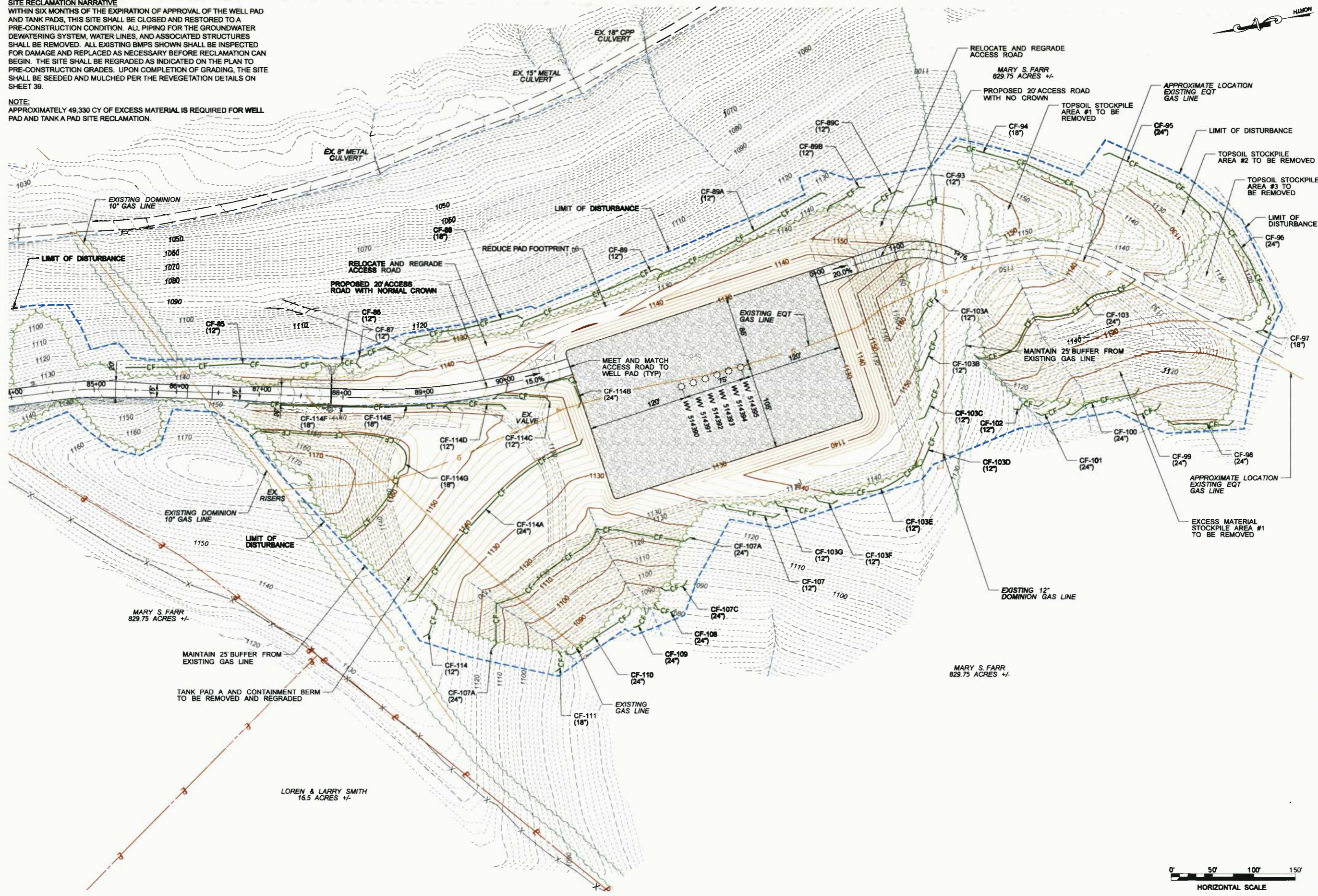


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**NOTE:**  
APPROXIMATELY 49,330 CY OF EXCESS MATERIAL IS REQUIRED FOR WELL PAD AND TANK A PAD SITE RECLAMATION.

SEE SHEET 33



10/28/2013 DOT 2006 SURVEY SHEET  
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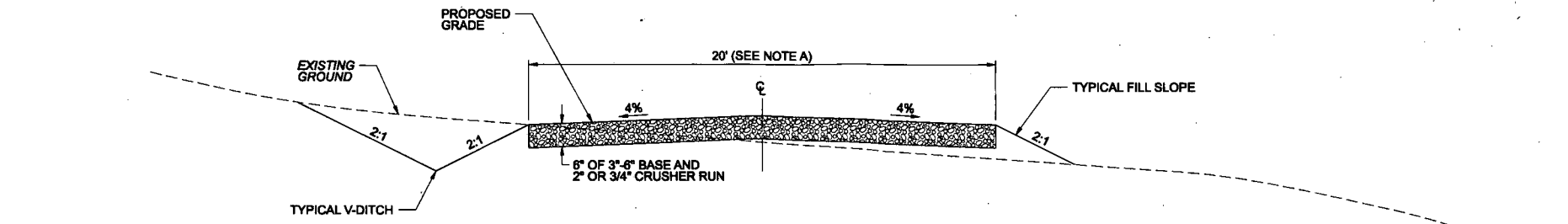
WELL PAD RECLAMATION PLAN  
**EQT WEU 49**  
WEST UNION DISTRICT  
DODDRIE COUNTY, WY

DATE: 10/25/2013  
SCALE: AS SHOWN  
DESIGNED BY: R.H.J.M.R.  
FILE NO.: SLS-7871  
SHEET 35 OF 47  
REV:



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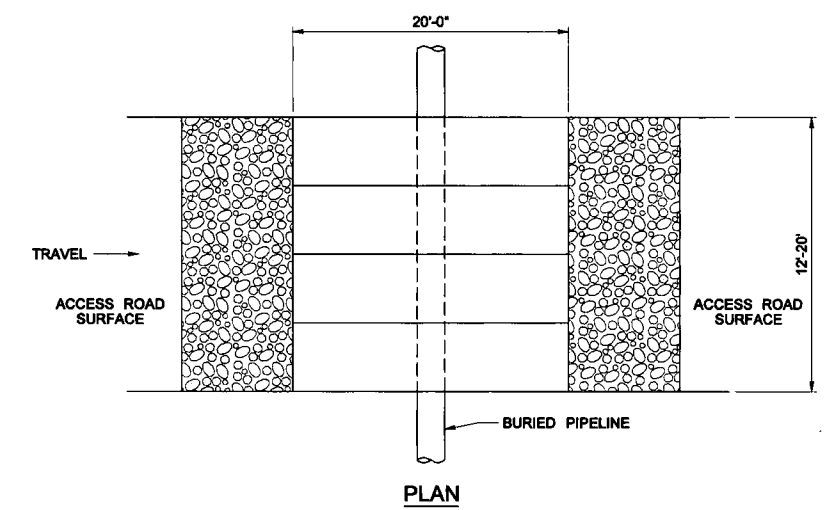
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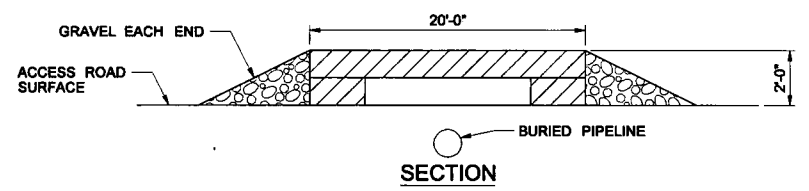
**ACCESS ROAD TYPICAL SECTION**

NOT TO SCALE  
 STA 33+50 TO STA 90+69

**NOTES:**  
 A. FROM STA 85+75 TO STA 86+75, ACCESS ROAD WIDTH IS 16 FEET  
 B. ONLY MINOR REGRADING OF THE EXISTING ACCESS ROAD WILL OCCUR FROM STA 0+00 TO STA 33+50

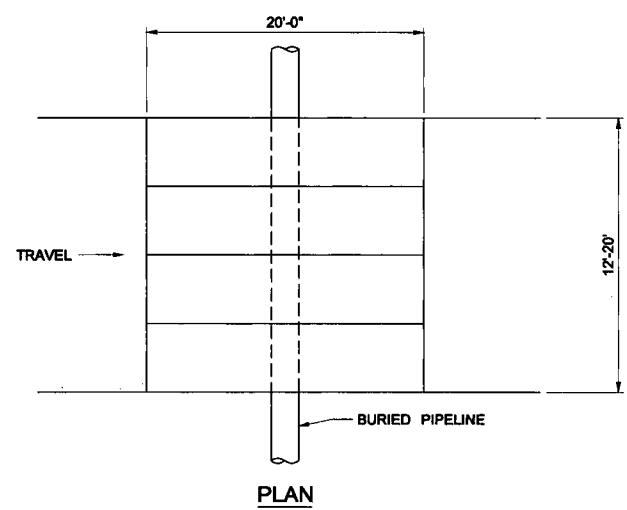


**PLAN**

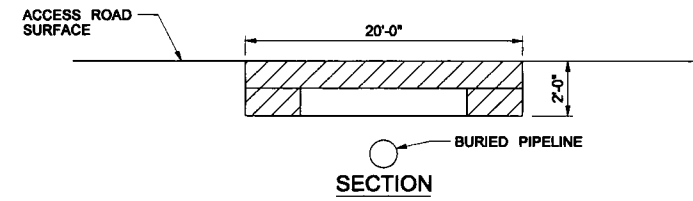


**SECTION**

**FLAT GROUND APPLICATIONS**

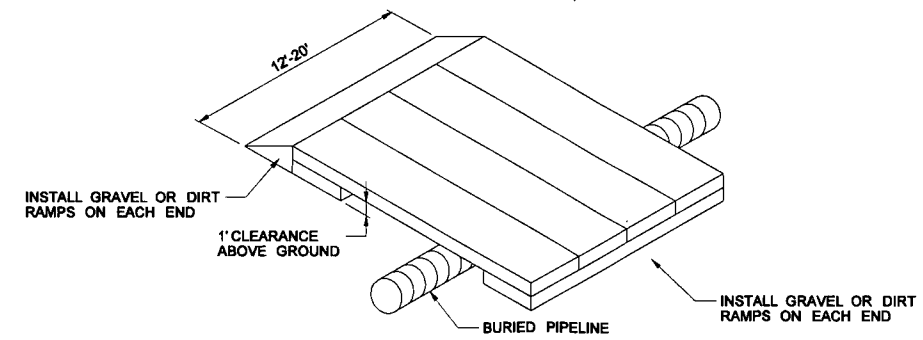


**PLAN**



**SECTION**

**HILLSIDE APPLICATIONS**



**TIMBER MAT CROSSING FOR DOMINION TRANSMISSION INC. BURIED PIPELINE**  
 NOT TO SCALE

**NOTES:**  
 1. TIMBER MATS ARE TYPICALLY 20' LONG X 4' WIDE X 1" THICK.  
 2. THIS IS A TYPICAL TIMBERMAT DETAIL CONTACT DTL AREA ENGINEER FOR WHEEL LOAD CALCULATION BEFORE USE.



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 (704) 971-5811  
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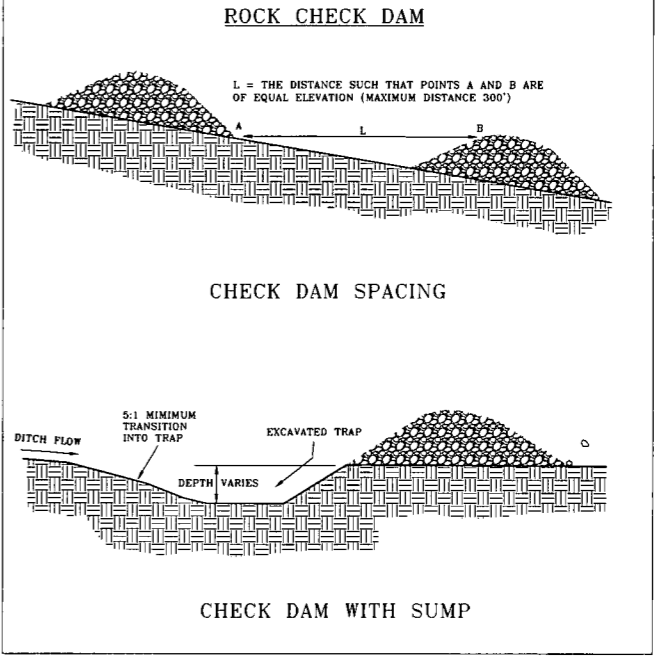
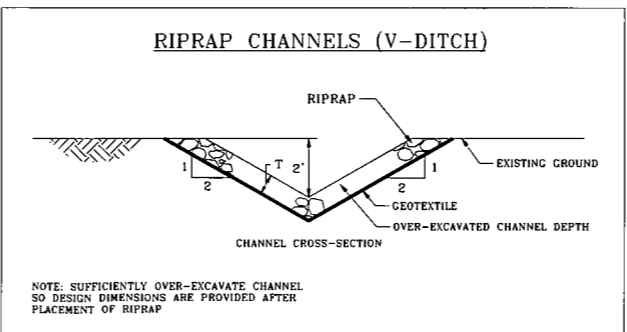
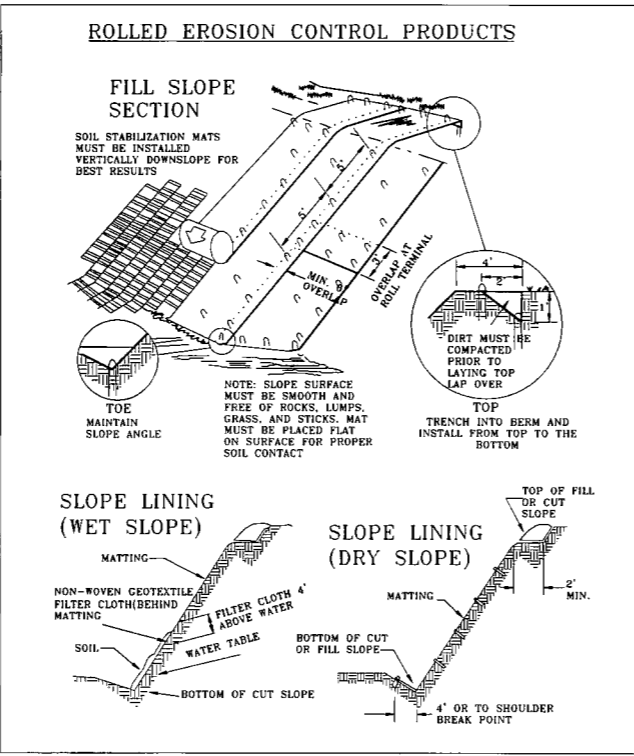
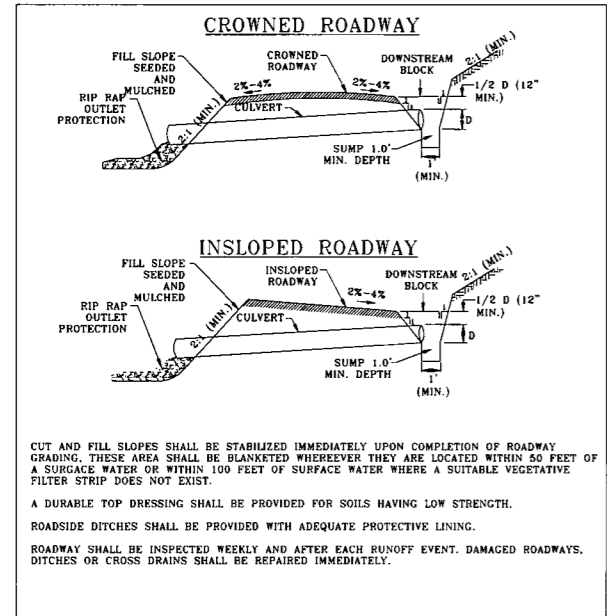
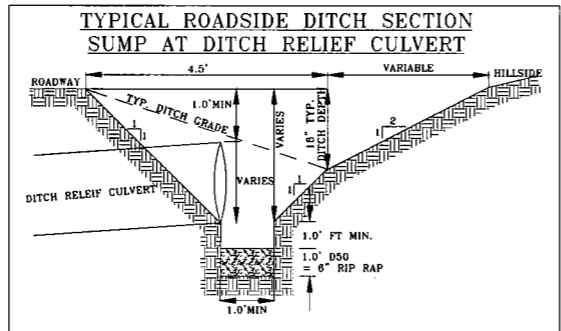
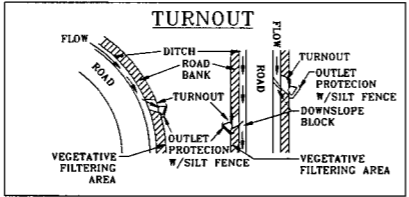
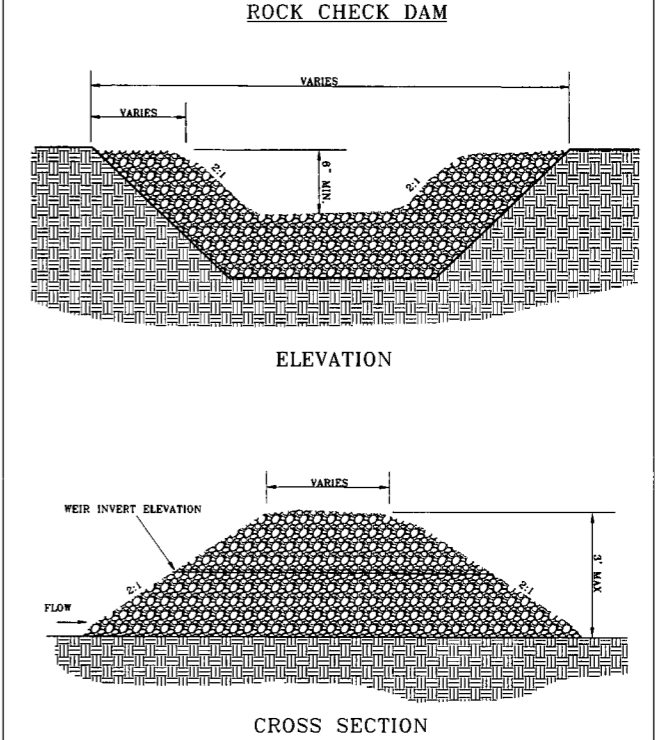
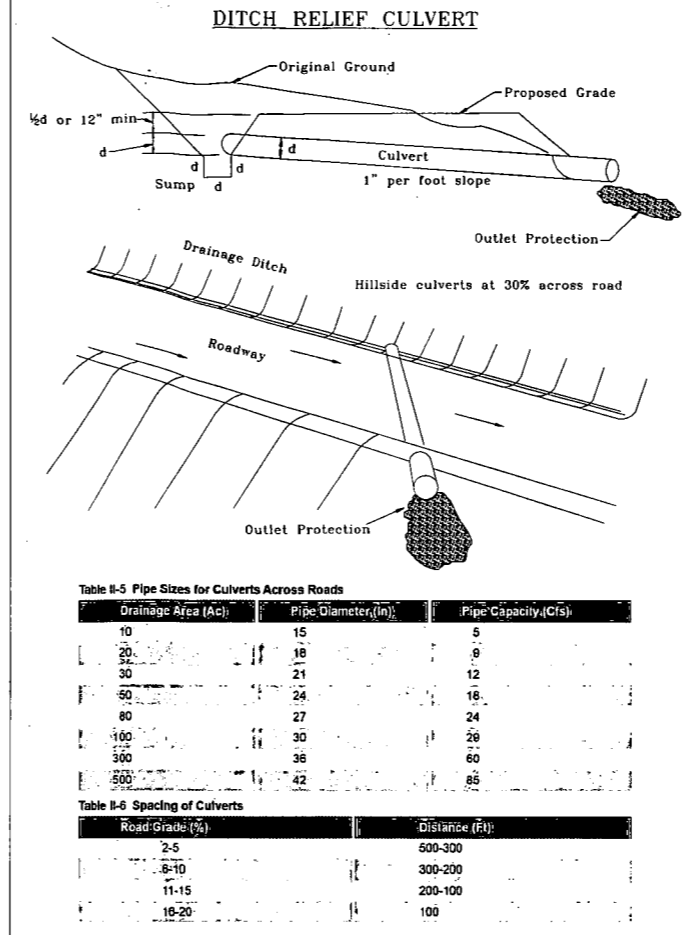
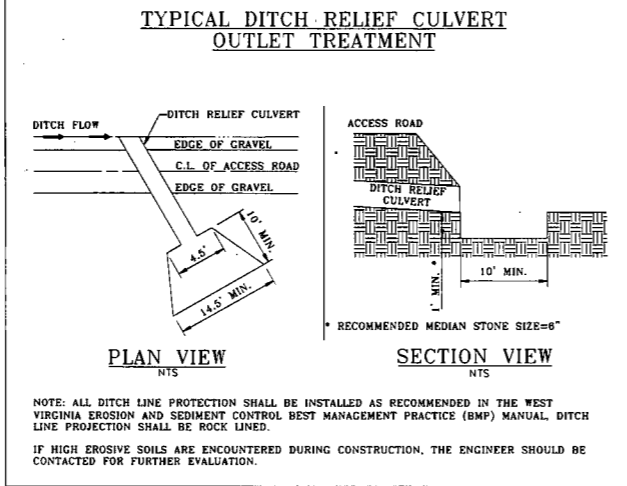
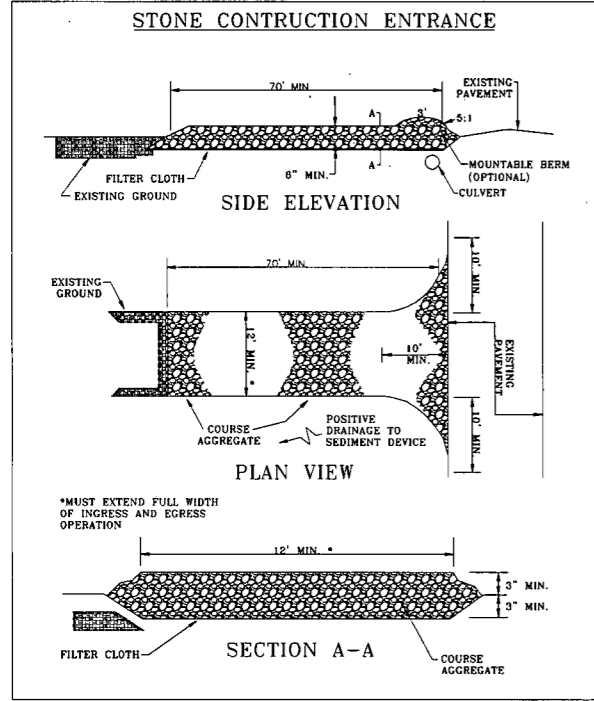
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 FOR:  
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**ACCESS ROAD TYPICAL SECTION**  
**EQT WEU 49**  
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 DODDRIDGE COUNTY, WV

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 DESIGNED BY: R.H./JMR  
 FILE NO.: SLS-7871  
 SHEET 38 OF 47  
 REV:







**Table 2**  
 Acceptable Fertilization Recommendation

Species	N (lbs/ac)	P205 (lbs/ac)	Example Rec. (per acre)
Cool Season Grass	40	80	400 lbs. 10-20-20
CS Grass & Legume	30	80	300 lbs. 10-20-20
Temporary Cover	40	40	200 lbs. 19-19-19

**Table 3**  
 Temporary Cover

Species	Seeding Rate (lbs/acre)	Optimum Seeding Dates	Drainage	pH Range
Annual Ryegrass	40	3/1 - 6/15 or 6/15 - 9/15	Well - Poorly	5.5 - 7.5
Field Bromegrass	40	3/1 - 6/15 or 6/15 - 9/15	Well - Mod. Well	6.0 - 7.0
Spring Oats	98	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Sundgrass	40	5/15 - 6/15	Well - Poorly	5.5 - 7.5
Winter Rye	168	8/15 - 10/15	Well - Poorly	5.5 - 7.5
Winter Wheat	180	9/15 - 11/15	Well - Mod. Well	5.5 - 7.0
Japanese Millet	30	6/15 - 8/15	Well	4.5 - 7.0
Redtop	5	3/1 - 6/15	Well	4.0 - 7.5
Annual Ryegrass	28	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Spring Oats	84	3/1 - 6/15	Well - Poorly	5.5 - 7.5

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

**Table IV-5**  
 Lime and Fertilizer Table

pH of Soil	Lime in Tons per Acre	Fertilizer, Lbs., per Acre (10-20-20 or Equivalent)
Above 5.0	2	500
5.0 to 6.0	3	500
Below 5.0	4	500

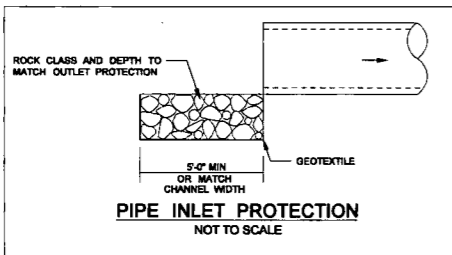
**Table IV-6**  
 Mulch Materials Is Rates and Used

Material	Minimum Rates per acre	Coverage	Remarks
Hay or straw	2 to 3 Tons	Cover 75% to 90% of Surface	Subject to wind blowing or washing unless tied down
Wood Fiber	100 to 150 bales	Cover all Disturbed Areas	For hydroseeding
Pulp Fiber	1000 to 1500 lbs		
Wood - Cellulose Recirculated Paper			

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

**Table IV-1**  
 Recommended Seeding Dates

Planting Dates	Suitability
March 1 - April 15 and August 1 - October 1	Best Seeding Periods
April 15 - August 1	HIGH RISK - moisture stress likely
October 1 - December 1	HIGH RISK - freeze damage to young seedlings
December 1 - March 1	Good seeding period. Dormant seeding



**CORRUGATED METAL PIPE DESIGN TABLE**

PIPE LOCATION (STA)	PIPE DIAMETER (IN)	PIPE LENGTH (FT)	OUTLET PROTECTION			
			MIN D50 (IN)	ROCK DEPTH (IN)	LENGTH (FT)	WIDTH (FT)
6+50	15	34	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
8+00	15	34	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
36+69	15	28	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
38+50	15	29	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
40+33	15	30	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
60+71	15	43	6	14	8	9.25
64+08	15	31	6	14	8	9.25
67+57	15	34	6	14	8	9.25
69+57	15	29	6	14	8	9.25
72+06	15	27	6	14	8	9.25
74+56	15	30	6	14	8	9.25
75+09	15	27	6	14	8	9.25
76+16	15	72	6	14	8	9.25
76+82	15	58	6	14	8	9.25
78+20	15	28	SEE DITCH RELIEF CULVERT OUTLET DETAIL			
79+98	15	28	6	14	8	9.25
87+86	15	40	6	14	8	9.25

**Table 4a**  
 Permanent Seeding Mixture

Species/Mixtures	Seeding Rate (lbs/acre)	Drainage	pH Range
Crownvetch/ Tall Fescue	10 - 15	Well - Mod. Well	5.0 - 7.5
Crownvetch/ Perennial Ryegrass	10 - 15	Well - Mod. Well	5.0 - 7.5
Ladino Clover/ Serecia Leapedeza/ Tall Fescue	30	Well - Mod. Well	4.5 - 7.5
Tall Fescue/ Ladino Clover/ Redtop	40	Well - Mod. Well	5.0 - 7.5
Crownvetch/ Tall Fescue/ Redtop	20	Well - Mod. Well	5.0 - 7.5
Tall Fescue/ Birdsfoot Trefoil/ Redtop	40	Well - Mod. Well	5.0 - 7.5
Serecia Leapedeza/ Tall Fescue/ Redtop	25	Well - Mod. Well	4.5 - 7.5
Redtop/ Tall Fescue/ Creeping Red	30	Well - Mod. Well	5.0 - 7.5
Tall Fescue	50	Well - Poorly	4.5 - 7.5

\* 'Lathco' Flatpea is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.

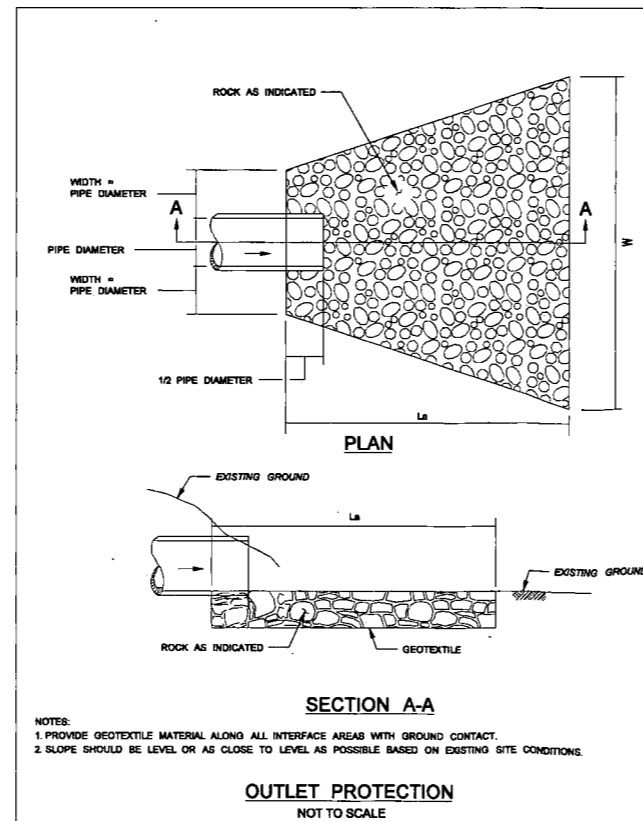
Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

**Table 4b**  
 Wildlife and Farm Friendly Seed Mixtures

Species/Mixtures	Seeding Rate (lbs/acre)	Drainage	pH Range
KY Bluegrass/ Redtop	20	Well - Mod. Well	5.5 - 7.5
Ladino or Birdsfoot Trefoil	2/10		
Timothy/ Alfalfa	5	Well - Mod. Well	6.5 - 8.0
Timothy/ Birdsfoot Trefoil	5	Well - Poorly	5.5 - 7.5
Orchardgrass/ Ladino Clover/ Redtop	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Ladino Clover	2	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Perennial Ryegrass	20	Well - Mod. Well	5.5 - 7.5
Creeping Red Fescue/ Perennial Ryegrass	30	Well - Mod. Well	5.5 - 7.5
Orchardgrass or KY Bluegrass	20	Well - Mod. Well	6.0 - 7.5
Birdsfoot Trefoil/ Redtop	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass	5	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea* Perennial Ryegrass	30	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea* Orchardgrass	20	Well - Mod. Well	5.5 - 7.5

\* 'Lathco' Flatpea is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.

Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.



**REVEGETATION**

Taken from the  
 West Virginia Erosion and Sediment Control Field Manual  
 West Virginia Division of Environmental Protection Office of Oil and Gas  
 Charleston, W.Va.  
 Section IV

**Temporary Seeding**

**A. General Conditions Where Practice Applies**

Where exposed soil surfaces are not to be fine-graded or worked for periods longer than 21 days. Temporary vegetative cover with sediment controls must be established where runoff will go directly into a stream. Immediately upon construction of the site (site includes road and location), vegetation must be established on road bank and location slopes. A permanent vegetative cover shall be applied to areas that will be left un-worked for a period of more than six months.

**B. Seed Mixtures and Planting Dates**

Refer to Tables 2 through 4 for recommended dates to establish vegetative cover and the approved lists of temporary and permanent plant species, and planting rates. Table 3 gives recommended types of temporary vegetation, rates of application, and optimum seeding dates. In situations where another cover is desired, contact the local soil conservation district for seeding recommendations.

**C. Seed Application**

Apply seed by broadcast, drilling, or by hydroseed according to the rates indicates in Table IV-3. Perform all planting operations at right angles to the slope. Necessary site preparation and roughening of the soil surface should be done just prior to seeding. Seedbed preparation may not be required on newly disturbed areas.

**Permanent Seeding**

**A. General**

Permanent vegetative cover will be established where no further soil disturbance is anticipated or needed. Soil fertility and pH level should be tested and adjusted according to seed species planted. Planting of permanent vegetative covers must be performed on all disturbed areas after completion of the drilling process. Any site that contains significant amounts of topsoil shall have the topsoil removed and stockpiled when feasible. Topsoil should not be added to slopes steeper than 2:1 unless a good bonding to the sub-layer can be achieved. After proper grading and seedbed preparation, the vegetation will reestablish ground cover for the control of surface water runoff erosion. All required seedbed preparation and loosening of soil by disk or dozer tracking should be performed just prior to seeding. If seedbed preparation is not feasible, 50% more seed shall be added to the recommended rates shown in Tables IV-3 and IV-4. When hydroseeding, seedbed preparation may not be necessary if adequate site preparation was performed. Incorporate the appropriate amount of lime and/or fertilizer in the slurry mix when hydroseeding.

When hydroseeding, first mix the lime, fertilizer, and hydro-mulch in the recommended amount of water. Mix the seed and inoculants together within one hour prior to planting, and add to the slurry just before seeding. Apply the slurry uniformly over the prepared site. Assume that agitation is continuous throughout the seeding operation and the mix is applied within one hour of initial mixing.

**B. Lime and Fertilizer**

- Lime shall be applied to all permanent seedings. The pH of the soil is to be determined and lime applied accordingly. Once the pH is known, select the amount of lime to be applied from Table IV-5.
- Fertilizer shall be applied in all permanent seedings. Apply the equivalent for 500 lbs. minimum 10-20-20 fertilizer per acre or use the amount of fertilizer and lime recommended by a certified soil test.
- Application: For best results and maximum benefits, the lime and fertilizer are to be applied at the time of seedbed preparation.

**C. Permanent Seed Mixtures**

Planners should take into consideration the species makeup of the existing pasture and the landowner's future pasture management plans when recommending seed mixtures. Selection: From Tables IV 4a and b, Permanent Seeding Mixtures Suitable for Establishment in West Virginia.

**Notes:**

- All legumes must be planted with the proper inoculants prior to seeding.
- 'Lathco' Flatpea is potentially poisonous to some livestock.
- Only endophyte free varieties of Tall Fescue should be used. Tall Fescue and Crownvetch are also very invasive species, non-native to WV.
- For unprepared seedbeds or seeding outside the optimum timeframes, add 50% more seed to the specified rate. Mixtures in Table 4b are more wildlife and farm friendly; those listed in bold are suitable for use in shaded woodland settings. Mixtures in italic are suitable for use in filter strips.

**D. Seeding for Wildlife Habitat**

Consider the use of the native plants or locally adapted plants when selecting cover types and species for wildlife habitat. Wildlife friendly species or mixes that have multiple values should be considered. See wildlife friendly species/mixtures in Table IV-4b. Consider selecting no or low maintenance long-lived plants adaptable to sites which may be difficult to maintain with equipment.

**Mulching**

**A. General Organic Mulches**

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

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

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

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

**B. Chemical Mulches, Soil Binders and Tackifiers**

A wide range of synthetic spray on materials are marketed to stabilize and protect the soil surface. These are mixed with water and sprayed over the mulch and to the soil. They may be used alone in some cases as temporary stabilizers, or in conjunction with fiber mulch, straw or hay.

When used alone most chemical mulches do not have the capability to insulate the soil or retain soil moisture that organic mulches have.

**C. Specifications**

From Table IV-6 select the type of mulch and rate of application that will best suit the conditions at the site.

**D. Anchoring**

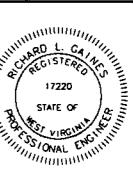
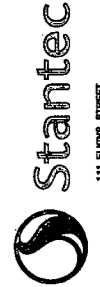
Depending on the field situation, mulch may not stay in place because of wind action or rapid water runoff. In such cases, mulch is to be anchored mechanically or with mulch netting.

**1. Mechanical Anchoring**

Apply mulch and pull mulch anchoring tool over the mulch. When a disk is used set the disk straight and pull across slope. Mulch material should be tucked into the soil about three inches.

**2. Mulch netting**

Follow manufacturer's recommendation when positioning and stapling the mulch netting in the soil.

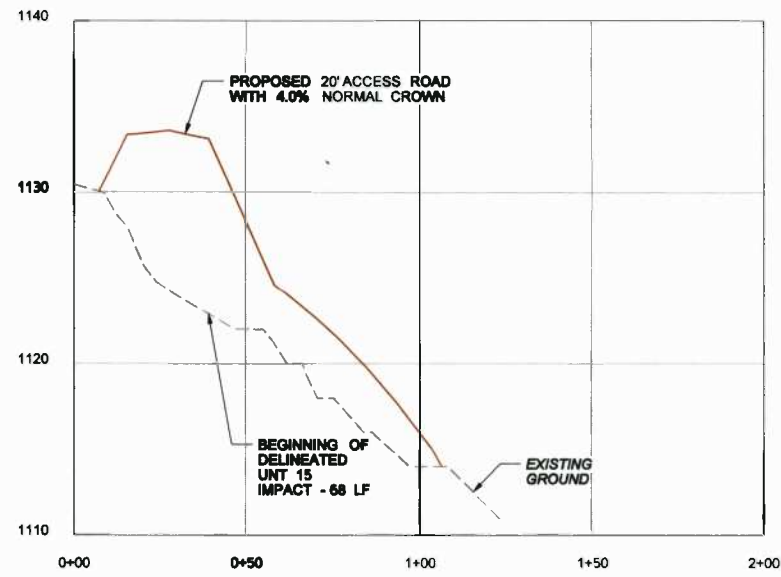


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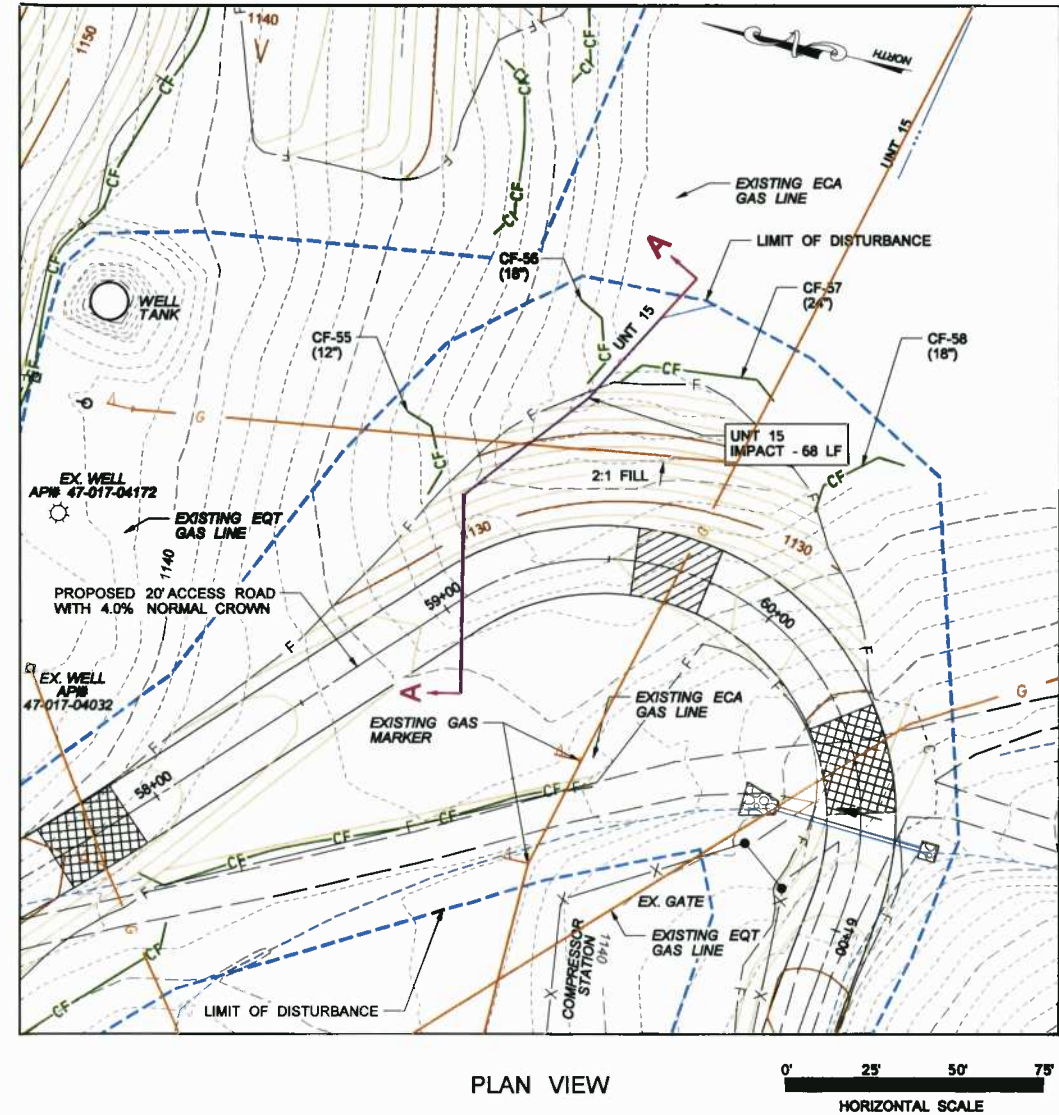
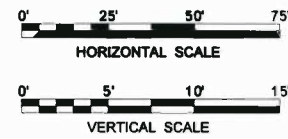
CONSTRUCTION DETAILS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/JMR  
 FILE NO.: SLS-7871  
 SHEET 39 OF 47  
 REV:





SECTION A-A



PLAN VIEW







DOT 2006  
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**NOTES:**

1. MINIMUM DEPTH OF STONE COVER OVER THE CULVERTS SHALL BE EQUAL TO ONE-HALF THE CULVERT DIAMETER OR 12 INCHES, WHICHEVER IS GREATER.
2. SIDES SHALL BE PROTECTED WITH RIPRAP TO PREVENT EROSION.
3. CLEARING AND EXCAVATION OF THE STREAMBED AND BANKS SHALL BE KEPT TO A MINIMUM.
4. FILTER CLOTH SHALL BE PLACED ON THE STREAMBED AND STREAMBANKS PRIOR TO PLACEMENT OF THE PIPE CULVERTS AND AGGREGATE. THE FILTER CLOTH SHALL COVER THE STREAMBED AND EXTEND A MINIMUM OF 6" AND A MAXIMUM OF 1' BEYOND THE END OF THE CULVERT AND BEDDING MATERIAL.
5. APPROPRIATE PERIMETER CONTROLS SUCH AS COMPOST FILTER SOCK AND/OR SEDIMENT TRAPS SHALL BE EMPLOYED ALONG THE BANKS AND PARALLEL TO THE STREAMBED.
6. PROPOSED PIPE INVERT ELEVATIONS MAY BE FIELD ADJUSTED IF WARRANTED BY EXISTING CONDITIONS. MAINTAIN MINIMUM PIPE SLOPE OF 2.0%.

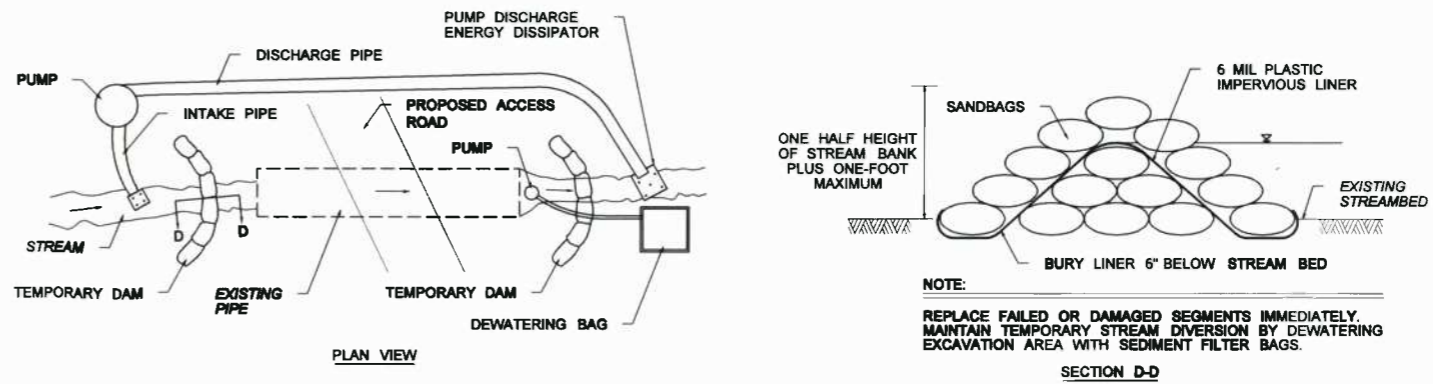
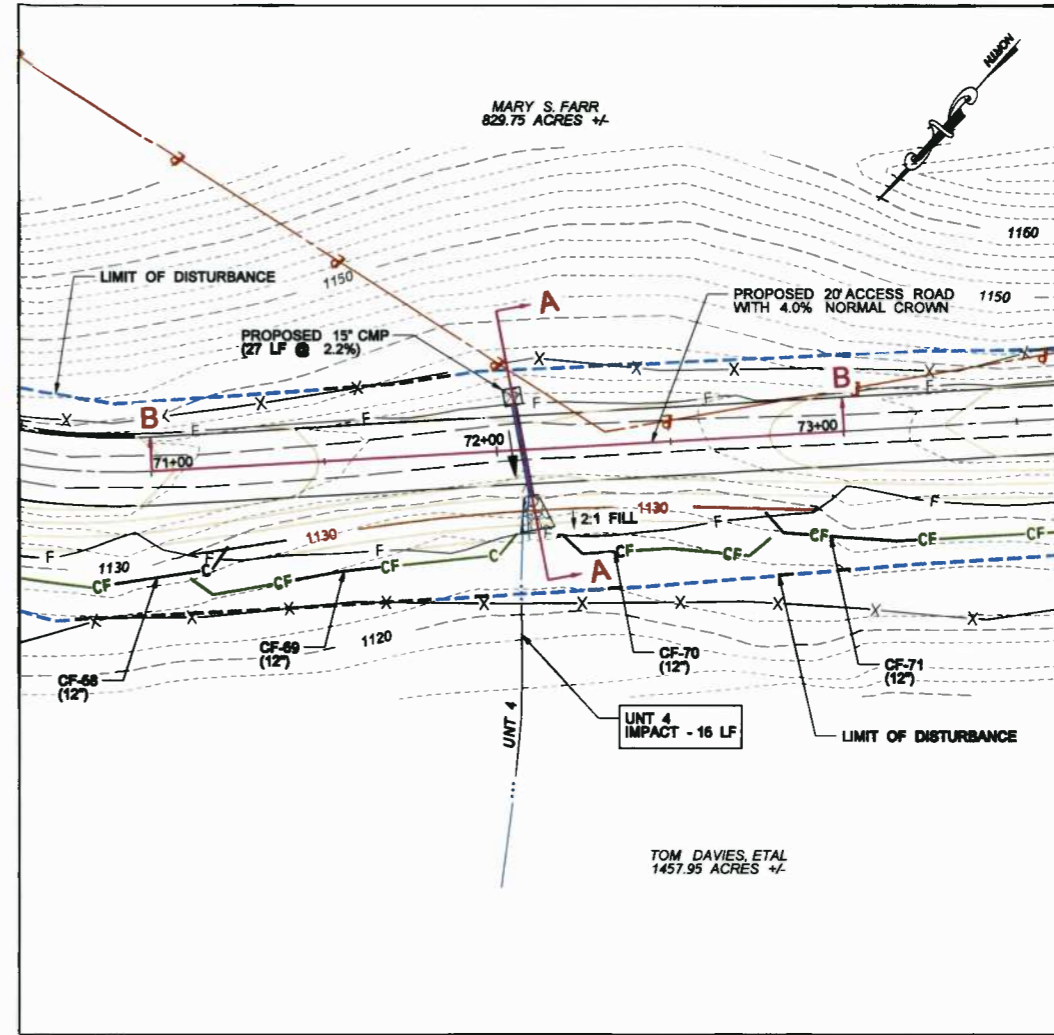
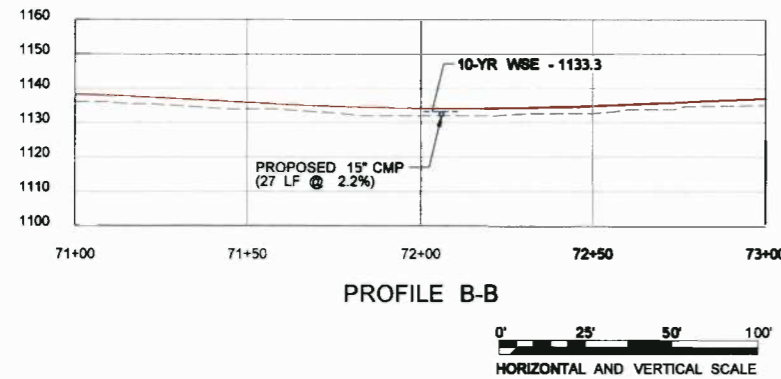
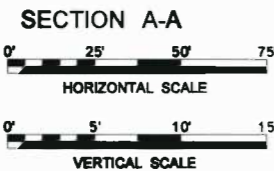
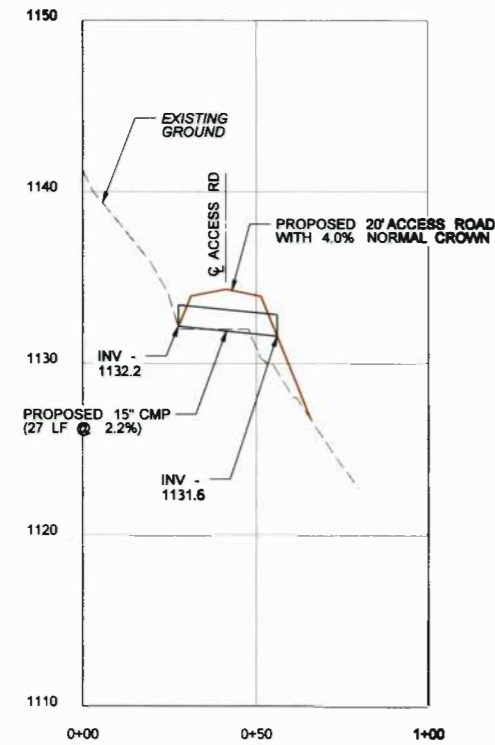
**UNT 4 STA 72+06 STREAM CROSSING HYDROLOGIC DATA**

**PEAK DISCHARGE COMPUTATION: RATIONAL METHOD**  
 DRAINAGE AREA: 1.67 AC  
 TIME OF CONCENTRATION: 11.40 MIN  
 RUNOFF COEFFICIENT (WEIGHTED): 0.39

**2 YEAR STORM EVENT**  
 I2 = 3.53 IN/HR  
 Q2 = 2.30 CFS

**10 YEAR STORM EVENT**  
 I10 = 4.71 IN/HR  
 Q10 = 3.07 CFS

**25 YEAR STORM EVENT**  
 I25 = 5.33 IN/HR  
 Q25 = 3.47 CFS



- NOTES:**
1. CONSTRUCT PUMP AROUND AND COFFERDAM IN ACCORDANCE WITH THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
  2. ALTERNATE COFFERDAM MATERIALS MAY BE UTILIZED IF APPROVED BY THE WV DEP PRIOR TO INSTALLATION.

**TEMPORARY COFFERDAM AND PUMP AROUND SYSTEM**  
 NOT TO SCALE

12/18/2013 10:01:13 AM DOT 2006 (SURVEY FEET)  
 WORKSPACE: ALEX  
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 ENGINEERS  
 ENVIRONMENTAL



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UNT 4 STREAM IMPACT DETAILS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
 SCALE: AS SHOWN  
 DESIGNED BY: RJH/MR  
 FILE NO.: SLS-7871  
 SHEET: 42 OF 47  
 REV:



- NOTES:**
- MINIMUM DEPTH OF STONE COVER OVER THE CULVERTS SHALL BE EQUAL TO ONE-HALF THE CULVERT DIAMETER OR 12 INCHES, WHICHEVER IS GREATER.
  - SIDES SHALL BE PROTECTED WITH RIPRAP TO PREVENT EROSION.
  - CLEARING AND EXCAVATION OF THE STREAMBED AND BANKS SHALL BE KEPT TO A MINIMUM.
  - FILTER CLOTH SHALL BE PLACED ON THE STREAMBED AND STREAMBANKS PRIOR TO PLACEMENT OF THE PIPE CULVERTS AND AGGREGATE. THE FILTER CLOTH SHALL COVER THE STREAMBED AND EXTEND A MINIMUM OF 6' AND A MAXIMUM OF 1' BEYOND THE END OF THE CULVERT AND BEDDING MATERIAL.
  - APPROPRIATE PERIMETER CONTROLS SUCH AS COMPOST FILTER SOCK AND/OR SEDIMENT TRAPS SHALL BE EMPLOYED ALONG THE BANKS AND PARALLEL TO THE STREAMBED.
  - PROPOSED PIPE INVERT ELEVATIONS MAY BE FIELD ADJUSTED IF WARRANTED BY EXISTING CONDITIONS. MAINTAIN MINIMUM PIPE SLOPE OF 2.0%.

**UNT 2 STA 76+16 STREAM CROSSING HYDROLOGIC DATA**

PEAK DISCHARGE COMPUTATION: RATIONAL METHOD  
 DRAINAGE AREA: 0.29 AC  
 TIME OF CONCENTRATION: 9.10 MIN  
 RUNOFF COEFFICIENT (WEIGHTED): 0.38

2 YEAR STORM EVENT  
 I2 = 3.91 IN/HR  
 Q2 = 0.43 CFS

10 YEAR STORM EVENT  
 I10 = 5.22 IN/HR  
 Q10 = 0.58 CFS

25 YEAR STORM EVENT  
 I25 = 5.92 IN/HR  
 Q25 = 0.65 CFS

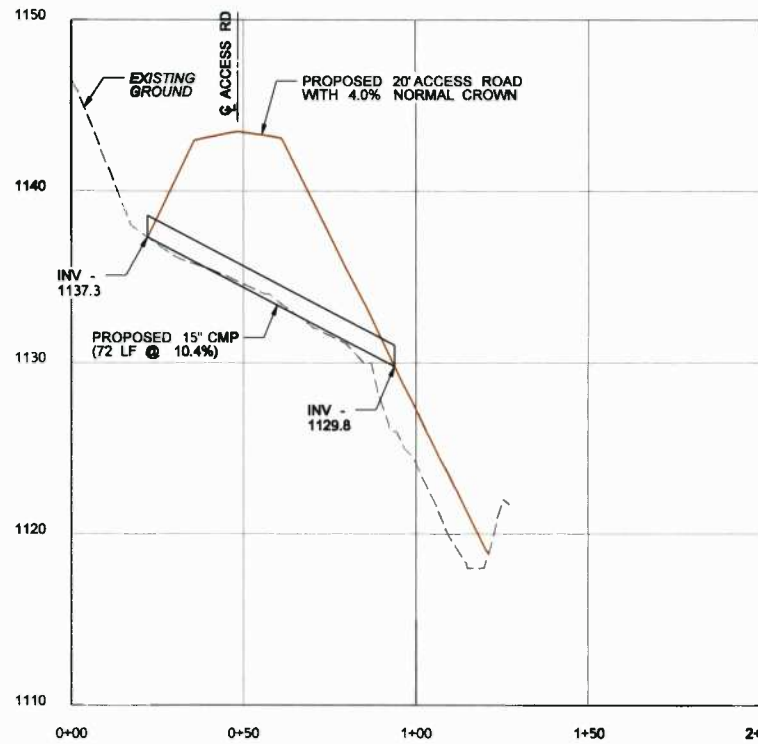
**UNT 3 STA 76+82 STREAM CROSSING HYDROLOGIC DATA**

PEAK DISCHARGE COMPUTATION: RATIONAL METHOD  
 DRAINAGE AREA: 0.30 AC  
 TIME OF CONCENTRATION: 9.20 MIN  
 RUNOFF COEFFICIENT (WEIGHTED): 0.40

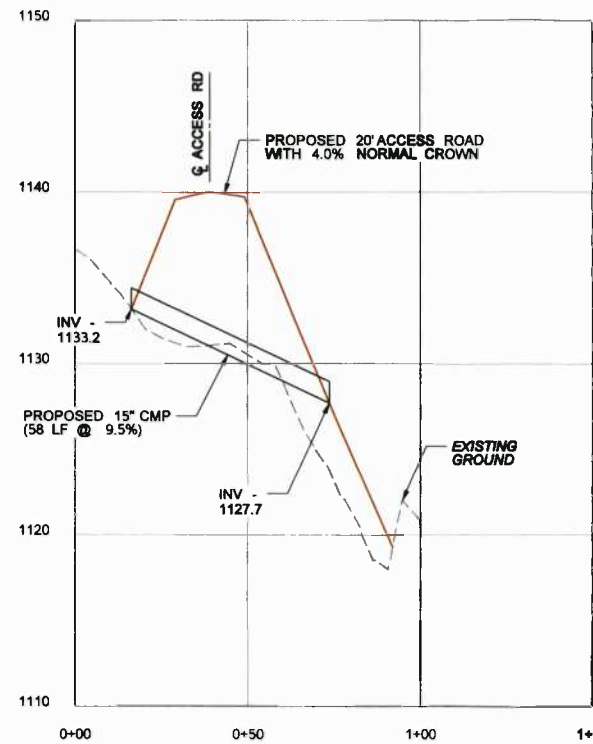
2 YEAR STORM EVENT  
 I2 = 3.89 IN/HR  
 Q2 = 0.47 CFS

10 YEAR STORM EVENT  
 I10 = 5.20 IN/HR  
 Q10 = 0.62 CFS

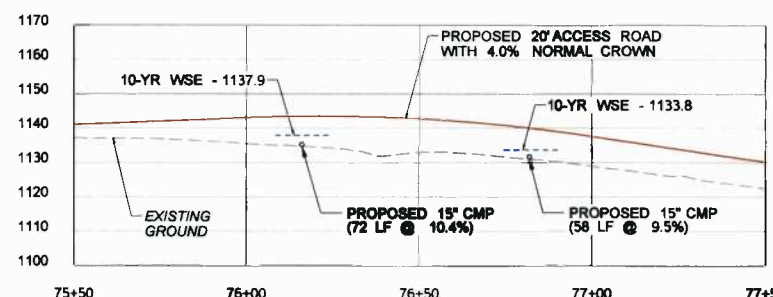
25 YEAR STORM EVENT  
 I25 = 5.89 IN/HR  
 Q25 = 0.71 CFS



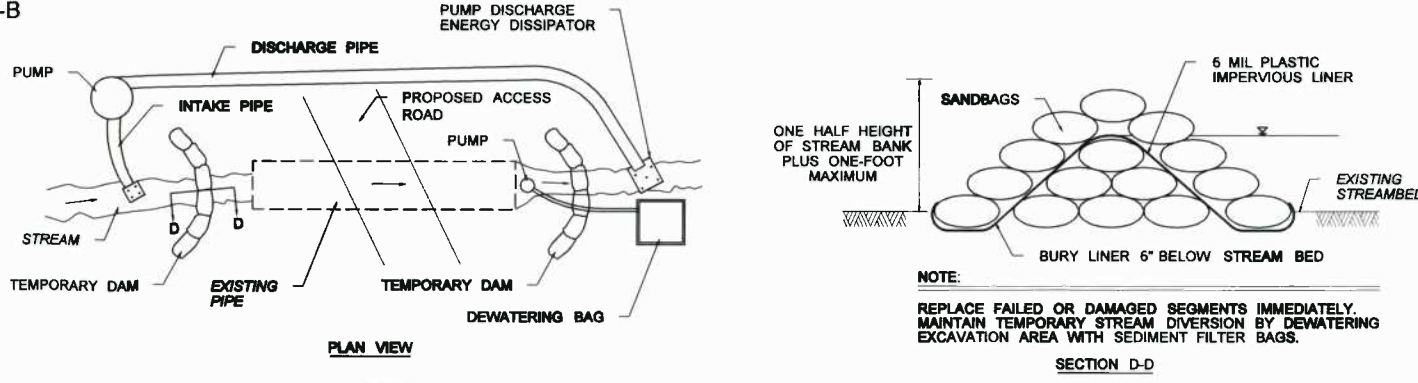
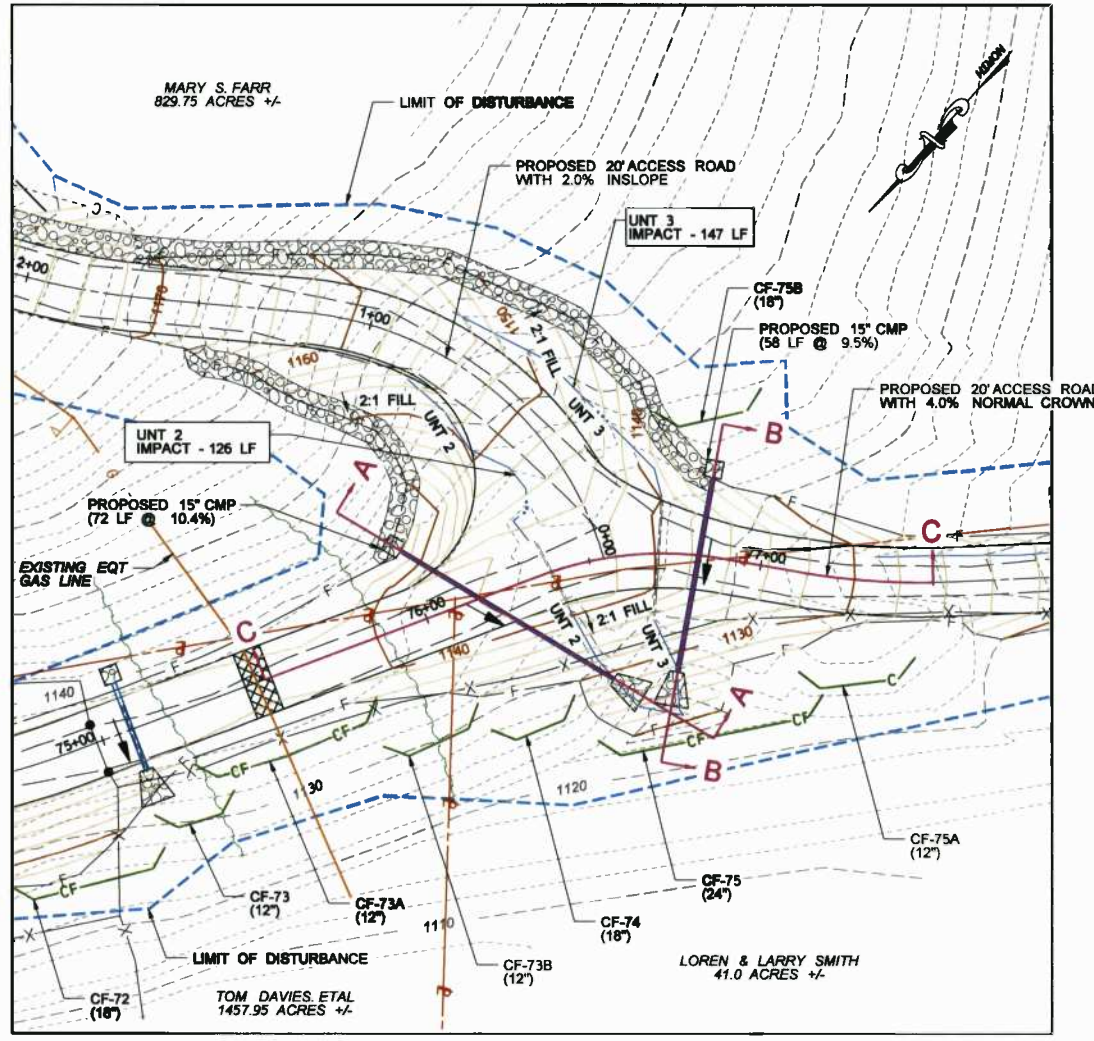
SECTION A-A



SECTION B-B



PROFILE C-C



PLAN VIEW

SECTION D-D

- NOTES:**
- CONSTRUCT PUMP AROUND AND COFFERDAM IN ACCORDANCE WITH THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
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**TEMPORARY COFFERDAM AND PUMP AROUND SYSTEM**

NOT TO SCALE



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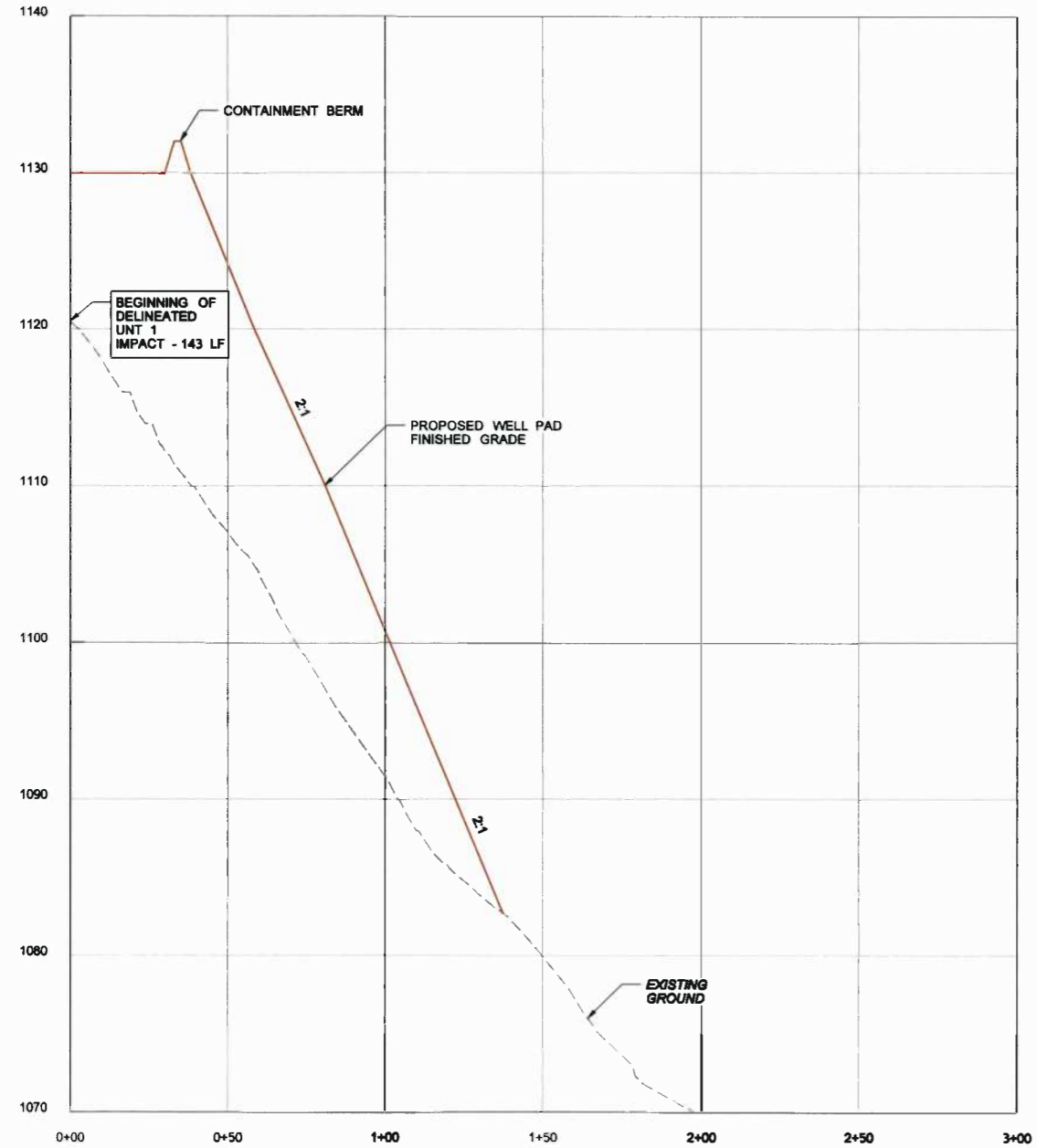


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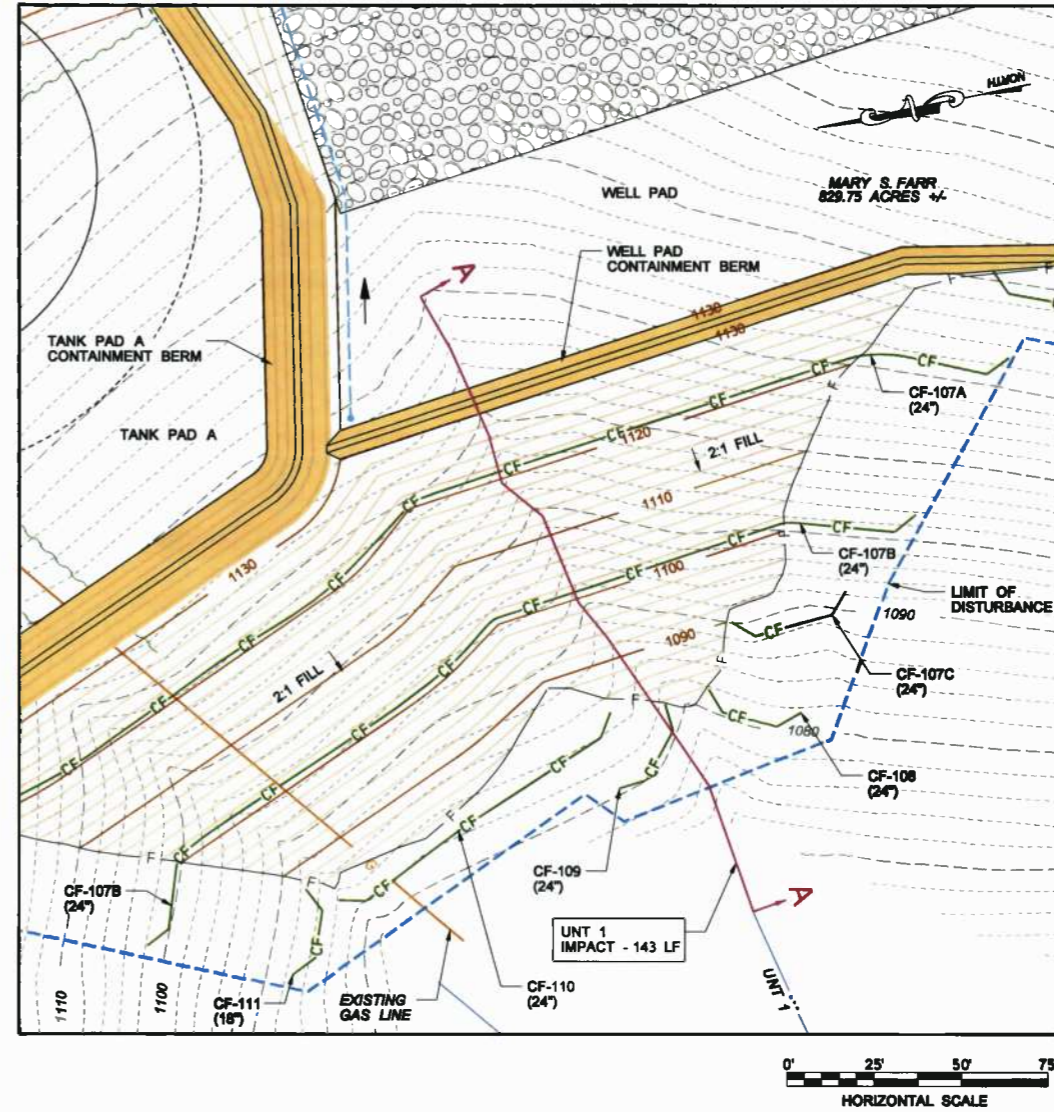
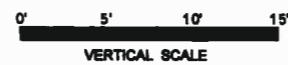
UNT 2 / UNT 3 STREAM IMPACT DETAILS  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIDGE COUNTY, WV

DATE:	10/25/2013
SCALE:	AS SHOWN
DESIGNED BY:	RJH/JMR
FILE NO.:	SLS-7871
SHEET:	43 OF 47
REV:	





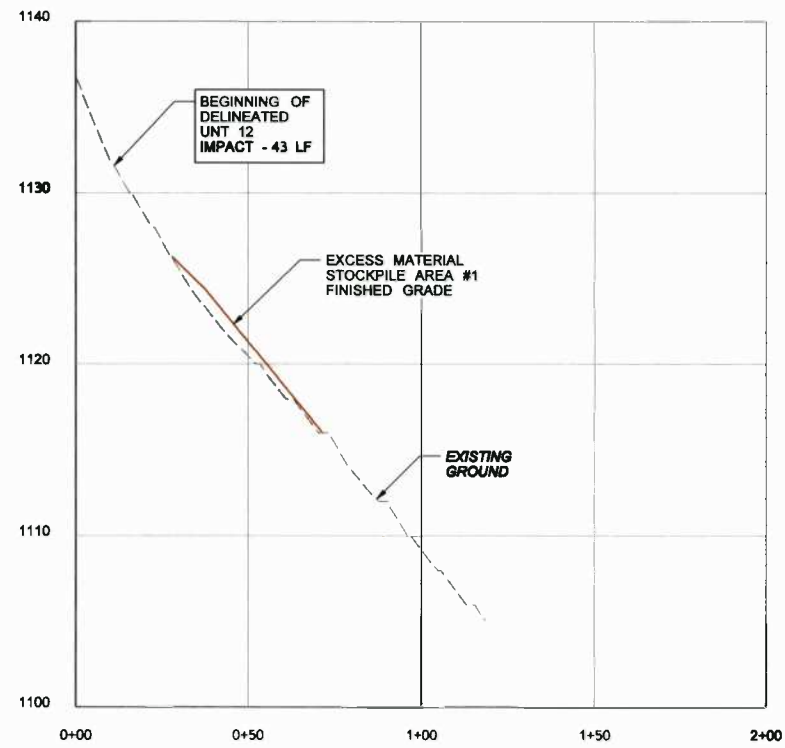
SECTION A-A



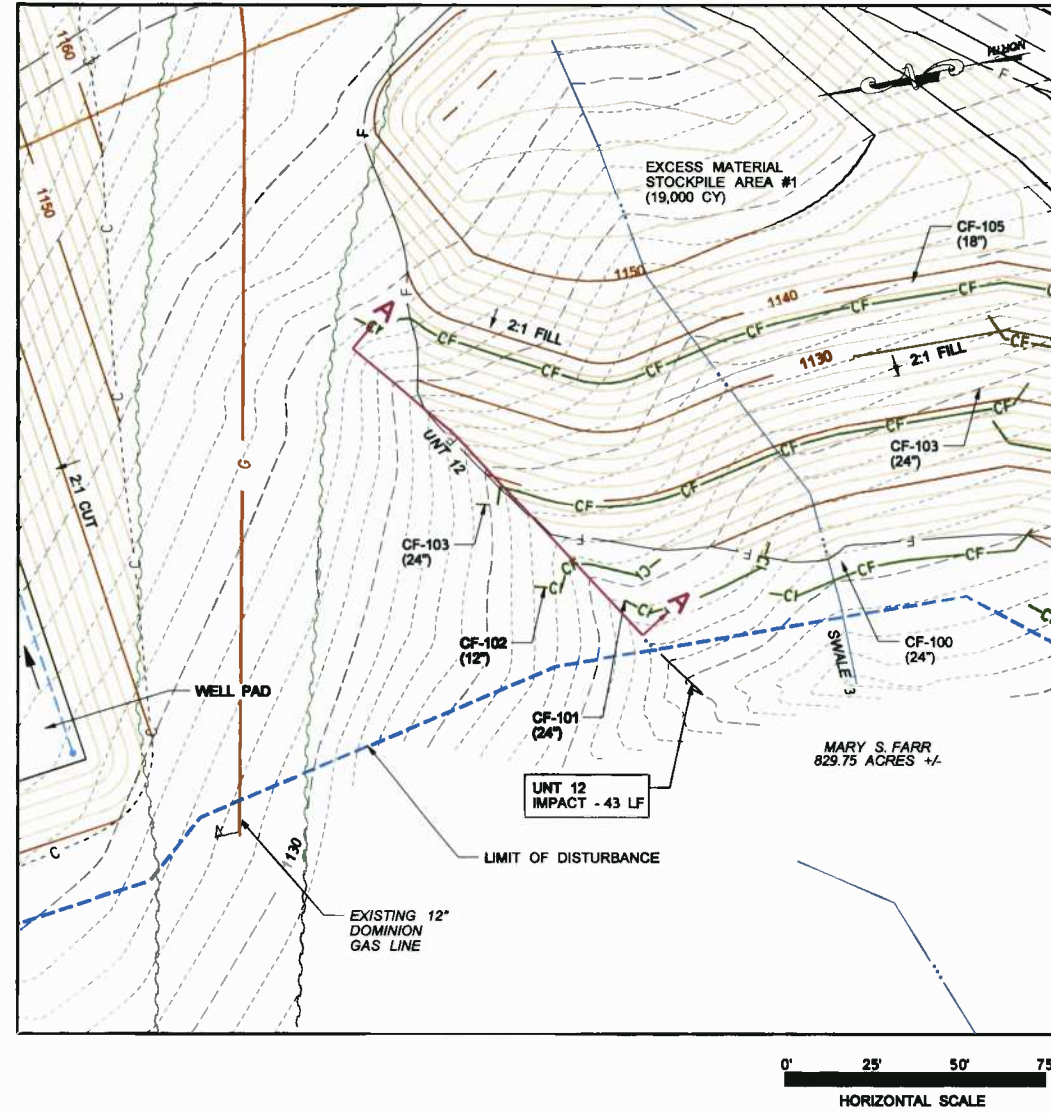
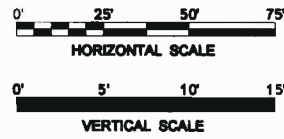
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UNT 1 STREAM IMPACT DETAILS  
**EQT WEU 49**  
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 DODDRIDGE COUNTY, WV

DATE: 10/25/2013  
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 REV:



SECTION A-A



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**SLS**  
 ENGINEERS  
 ENVIRONMENTAL  
 PROJECT MANAGER  
 200 West Main St.  
 P.O. Box 100, 2nd Fl.  
 DREXELHAR, PA 19024  
 (610) 371-1001



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UNT 12 STREAM IMPACT DETAILS  
**EQT WEU 49**  
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 DODDRIDGE COUNTY, WV

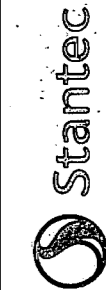
DATE:	10/25/2013
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SHEET:	45 OF 47
REV:	



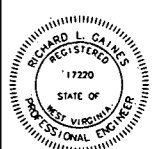
EQT.WEU 49 MATERIAL QUANTITIES				
ACCESS ROAD				
ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	ITEM TOTAL
<b>1.0 CLEARING AND GRUBBING</b>				
1.a. TREE CLEARING (ENTIRE PROJECT)	7.7	AC	\$	\$
1.b. MOWING	0	AC	\$	\$
<b>2.0 COMPOST FILTER SOCK</b>				
2.a. 12" COMPOST FILTER SOCK	5,624	LF	\$	\$
2.b. 18" COMPOST FILTER SOCK	989	LF	\$	\$
2.c. 24" COMPOST FILTER SOCK	5,266	LF	\$	\$
<b>3.0 AGGREGATE SURFACING</b>				
3.a. 6" of 3"-6" BASE	3,200	TONS	\$	\$
3.b. 2" of 3/4" CRUSHER RUN	1,315	TONS	\$	\$
3.c. GEOTEXTILE	12,796	SY	\$	\$
<b>4.0 COCONUT SLOPE MATTING</b>				
	16,751	SY	\$	\$
<b>5.0 SEED &amp; MULCH</b>				
5.a. SEEDING (INCLUDES AREA OF SLOPE MATTING)	13.6	AC	\$	\$
5.b. MULCH (EXCLUDES AREA OF SLOPE MATTING)	10.2	AC	\$	\$
<b>6.0 DITCH LINING</b>				
6.a. ROCK (d50 = 6" MN)	1,371	TON	\$	\$
<b>7.0 CMP CULVERT</b>				
7.a. 15" CMP	602	LF	\$	\$
<b>8.0 EXCAVATION</b>				
8.a. ACCESS ROAD (CUT W/ NO SWELL) - INCLUDES EXC. FOR AGGREGATE	4,329	CY	\$	\$
8.b. TOPSOIL (ESTIMATED 6")	4,516	CY	\$	\$
8.c. KEYWAY EXCAVATION	10,080	CY	\$	\$
<b>9.0 DITCH LENGTH</b>				
	2,362	LF	\$	\$
<b>10.0 RIP RAP APRONS (d50 = 6" MN)</b>				
10.a. INLET AND OUTLET PROTECTION	103	TON	\$	\$

NOTE:  
 GEOTEXTILE FABRIC, ROLLED EROSION CONTROL PRODUCT AND LINER SYSTEM QUANTITIES DO NOT ACCOUNT FOR OVERLAP.

EQT.WEU 49 MATERIAL QUANTITIES				
WELL PAD AND TANK A PAD				
ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	ITEM TOTAL
<b>1.0 CLEARING AND GRUBBING</b>				
1.a. TREE CLEARING	6.4	AC	\$	\$
1.b. MOWING	0	AC	\$	\$
<b>2.0 COMPOST FILTER SOCK</b>				
2.a. 12" COMPOST FILTER SOCK	437	LF	\$	\$
2.b. 18" COMPOST FILTER SOCK	522	LF	\$	\$
2.c. 24" COMPOST FILTER SOCK	1,966	LF	\$	\$
<b>3.0 AGGREGATE SURFACING</b>				
3.a. 6" of 3"-6" BASE	4,244	TONS	\$	\$
3.b. 2" of 3/4" CRUSHER RUN	1,745	TONS	\$	\$
3.c. GEOTEXTILE	16,979	SY	\$	\$
<b>4.0 COCONUT SLOPE MATTING</b>				
	7,587	SY	\$	\$
<b>5.0 SEED &amp; MULCH</b>				
5.a. SEEDING (INCLUDES AREA OF SLOPE MATTING AND DITCH LINING)	5.6	AC	\$	\$
5.b. MULCH (EXCLUDES AREA OF SLOPE MATTING AND DITCH LINING)	4.1	AC	\$	\$
<b>6.0 DITCH LINING</b>				
<b>7.0 CMP CULVERT</b>				
<b>8.0 EXCAVATION</b>				
8.a. TANK & WELL PAD (CUT W/ NO SWELL) - INCLUDES EXC. FOR AGGREGATE	124,075	CY	\$	\$
8.b. TOPSOIL (ESTIMATED 6")	4,037	CY	\$	\$
8.c. KEYWAY EXCAVATION	1,237	CY	\$	\$
<b>9.0 DITCH LENGTH</b>				
			\$	\$
<b>10.0 RIP RAP APRONS</b>				
<b>11.0 TANK PAD A LINER SYSTEM</b>				
11.a. PRIMARY LINER (60 MIL)	4,792	SY	\$	\$
11.b. NON-WOVEN GEOTEXTILE FABRIC CUSHION (16 OZ FELT)	4,792	SY	\$	\$
<b>12.0 WELL PAD UNDERDRAIN</b>				
12.a. 4" PERFORATED PLASTIC PIPE	893	LF	\$	\$
12.b. 40 MIL LINER	298	SY	\$	\$
12.c. GEOTEXTILE FABRIC	198	SY	\$	\$



Professional Energy Consultants  
 A Division of Smith Land Surveying  
 Engineers  
 Environmental  
 Surveyors  
 Project Mgmt.  
 225 West Union St.  
 P.O. Box 100  
 DODDRIIDGE COUNTY, IN 47701  
 (317) 871-8241  
 INTEGRITY. INDEPENDENCE. QUALITY.



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CONSTRUCTION QUANTITIES  
**EQT WEU 49**  
 WEST UNION DISTRICT  
 DODDRIIDGE COUNTY, IN

DATE: 10/25/2013  
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 SHEET 48 OF 47  
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EQT WEU 49 MATERIAL QUANTITIES				
TANK B PAD				
ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	ITEM TOTAL
<b>1.0 CLEARING AND GRUBBING</b>				
1.a. TREE CLEARING	3.3	AC	\$	\$
1.b. MOWING	0	AC	\$	\$
<b>2.0 COMPOST FILTER SOCK</b>				
2.a. 12" COMPOST FILTER SOCK	1,123	LF	\$	\$
2.b. 18" COMPOST FILTER SOCK	121	LF	\$	\$
2.c. 24" COMPOST FILTER SOCK	1,881	LF	\$	\$
<b>3.0 AGGREGATE SURFACING</b>				
3.a. 6" of 3"-6" BASE	1,703	TONS	\$	\$
3.b. 2" of 3/4" CRUSHER RUN	699	TONS	\$	\$
3.c. GEOTEXTILE	6,810	SY	\$	\$
<b>4.0 COCONUT SLOPE MATTING</b>				
	3,506	SY	\$	\$
<b>5.0 SEED &amp; MULCH</b>				
5.a. SEEDING (INCLUDES AREA OF SLOPE MATTING AND DITCH LINING)	4.7	AC	\$	\$
5.b. MULCH (EXCLUDES AREA OF SLOPE MATTING AND DITCH LINING)	3.9	AC	\$	\$
<b>6.0 DITCH LINING</b>				
6.a. ROCK (d50 = 6" MIN)	218	TON	\$	\$
<b>7.0 CMP CULVERT</b>				
<b>8.0 EXCAVATION</b>				
8.a. TANK PAD (CUT W/ NO SWELL) - INCLUDES EXC. FOR AGGREGATE	34,286	CY	\$	\$
8.b. TOPSOIL (ESTIMATED 6")	1,641	CY	\$	\$
8.c. KEYWAY EXCAVATION	3,549	CY	\$	\$
<b>9.0 DITCH LENGTH</b>				
	374	LF	\$	\$
<b>10.0 RIP RAP APRONS</b>				
<b>11.0 TANK PAD B LINER SYSTEM</b>				
11.a. PRIMARY LINER (60 MIL)	5,471	SY	\$	\$
11.b. NON-WOVEN GEOTEXTILE FABRIC CUSHION (16 OZ FELT)	5,471	SY	\$	\$

NOTE:  
 GEOTEXTILE FABRIC, ROLLED EROSION CONTROL PRODUCT AND LINER SYSTEM QUANTITIES DO NOT ACCOUNT FOR OVERLAP.



1111 E. CLARK STREET  
 FAYETTEVILLE, WV 25834  
 PHONE 304-397-9401

Professional Energy Consultants  
 A DIVISION OF SOUTH LAND SURVEYING  
**SLS**  
 Surveyors  
 Professional Engineers  
 Environmental Engineers

222 West Main St.  
 P.O. Box 100  
 Dodrridge, WV 26041  
 800-441-8524

Honesty. Integrity. Quality.



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CONSTRUCTION QUANTITIES  
**EQT WEU 49**  
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