Commercial/Industrial Floodplain Development Permit

Doddridge County, WV Floodplain Management

This permit has been issued to EQT Production Company, and is for the approved commercial and/or industrial development project associated with this permit that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV, pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance. This permit must be posted at the site of work as to be clearly visible, and must remain posted during entirety of development.

Permit: # 15-375

Date Approved: 08/26/2015 **Expires: Not in FloodPlain**

Issued to: **EQT Production Co** **POC:**

Company Address:120 Professional Place, Bridgeport, WV 26330

Project Address: Co. Rt. 4/Broad Run

Firm: #54017C0045C **Lat/Long: 39.411532, -80.661258**

Purpose of development: Well Pad

Issued by: George C. Eidel, Doddridge County FPM (*or designee*)

George C. Eidel

Date: 8/26/2015

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

15-375

KLEINFELDER
Bright People. Right Solutions.

FILED

2015 AUG 21 PM 2:55

August 20, 2015

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

Re: Doddridge County Floodplain Development Permit Application (Outside Floodplain)
CPT-10 Well Pad Project
Doddridge County, West Virginia
EQT Production Company

Dear Mr. Eidel:

EQT Production Company (EQT) proposes to construct the proposed CPT-10 Well Pad (Project) in Doddridge County, West Virginia (Figure 1). The proposed Project will support EQT's natural gas development of state permitted wells and will be accessible from County Route 4 at 39.411532°, -80.661258°. Kleinfelder, Inc. (Kleinfelder), on behalf of EQT, has enclosed a Doddridge County Floodplain Development Permit Application for your review and approval.

A list of property owners located within the proposed Project is included as Attachment A. Figures 1 and 2 present the project on USGS Topographic and Aerial Maps, respectively and depicts the proposed area-of-interest (AOI) and limit-of-disturbance associated with the well pad construction activities.

Kleinfelder biologists conducted stream and wetland investigations and habitat assessments on October 30 – 31, 2013, August 19, 2014, and February 2, 2015 to identify streams and wetlands within a 110.0-acre AOI surrounding the proposed Project. During the site review, seven (7) jurisdictional features were observed within the AOI and included five (5) ephemeral streams, one (1) intermittent stream, and one (1) palustrine emergent wetland.

Based on the engineered design plans (Attachment B), construction activities will permanently impact one (1) intermittent stream.

Construction of the proposed Project will not take place within a designated Federal Emergency Management Administration regulated flood zone according to FIRM Map #54017C0045C within Doddridge County (Attachment C). There will be no fill deposited and no impacts to the floodplain as a result of construction acitivities.

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 p | 724.772.7072 f | 724.772.7079

Directions to the Site from Center Point, WV: Head north on WV-23 W toward Hill Street. Make a slight right onto County Route 4/Broad Run and continue for 0.9 mile. The entrance to the Project will be on your left.

We appreciate your timely review of this request. Please contact Matt Albright (724-831-5101) of Kleinfelder or Lacoa Corder (304-848-0066) of EQT with any questions.

Respectfully submitted,

Matthew J. Albright
Project Manager

Josh Farley, PE
Senior Engineer

c: Lacoa Corder, EQT

Enclosures (6)
- Doddridge County Floodplain Development Permit Application
- Figure 1 – Project Location Map
- Figure 2 – Delineation Map
- Attachment A – Property Owner Table
- Attachment B – Engineered Design Plans
- Attachment C – Floodplain Map

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 p | 724.772.7072 f | 724.772.7079

DODDRIDGE COUNTY
FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

SECTION 1: GENERAL PROVISIONS (APPLICANT TO REAL 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 Lacoa Corder

DATE 8/19/15

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 c/o Lacoa Corder

ADDRESS: 120 Professional Place, Bridgeport, WV 26330

TELEPHONE NUMBER: 304-848-0066

BUILDER'S NAME: EQT Production Company
ADDRESS: 120 Professional Place, Bridgeport, WV 26330
TELEPHONE NUMBER: 304-848-0066

ENGINEER'S NAME: Josh Farley, P.E
ADDRESS: 230 Executive Drive, Suite 122, Cranberry Township, PA 16066
TELEPHONE NUMBER: 724-831-5108

PROJECT LOCATION:

NAME AND ADDRESSES FOR SURFACE OWNER/OWNERS (IF NOT THE APPLICANT) See Attachment A

DISTRICT: McClellan

DATE/FROM WHOM PROPERTY PURCHASED: N/A

LAND BOOK DESCRIPTION: See Attachment A

DEED BOOK REFERENCE: See Attachment A

TAX MAP REFERENCE: See Attachment A

EXISTING BUILDINGS/USES OF PROPERTY: N/A

NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY See Attachment A

ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY See Attachment A

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

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

ACTIVITY		STRUCTURAL TYPE	
[x]	New Structure	[ ]	Residential (1— 4 Family)
[ ]	Addition	[ ]	Residential (more than 4 Family)
[ ]	Alteration	[x]	Non-residential (floodproofing)
[ ]	Relocation	[ ]	Combined Use (res. & com.)
[ ]	Demolition	[ ]	Replacement
[ ]	Manufactured/Mobil Home		

B. OTHER DEVEOPLMENT ACTIVITIES:

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

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 1/2 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 Not Applicable.

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).

See Attachment A

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

NAME: See Attachment A **NAME:** _____

ADDRESS: _____ **ADDRESS:** _____

E. CONFIRMATION FORM

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

(A) PERSONAL SERVICE OF PROCESS BY THE DODDRIDGE COUNTY SHERIFF AT THE RATES PERMITTED BY LAW FOR SUCH SERVICE.

(B) SERVICE BY CERTIFIED MAIL RETURN RECEIPT REQUESTED.

(C) PUBLICATION.

(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): Lacoa Corder

SIGNATURE: Lacoa Corder **DATE:** 8/19/15

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:_____
Dated:

[] Is **NOT** located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and **NO FLOOPLAIN 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 _____ **DATE** _____

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 proofing 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 flood proofing 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.

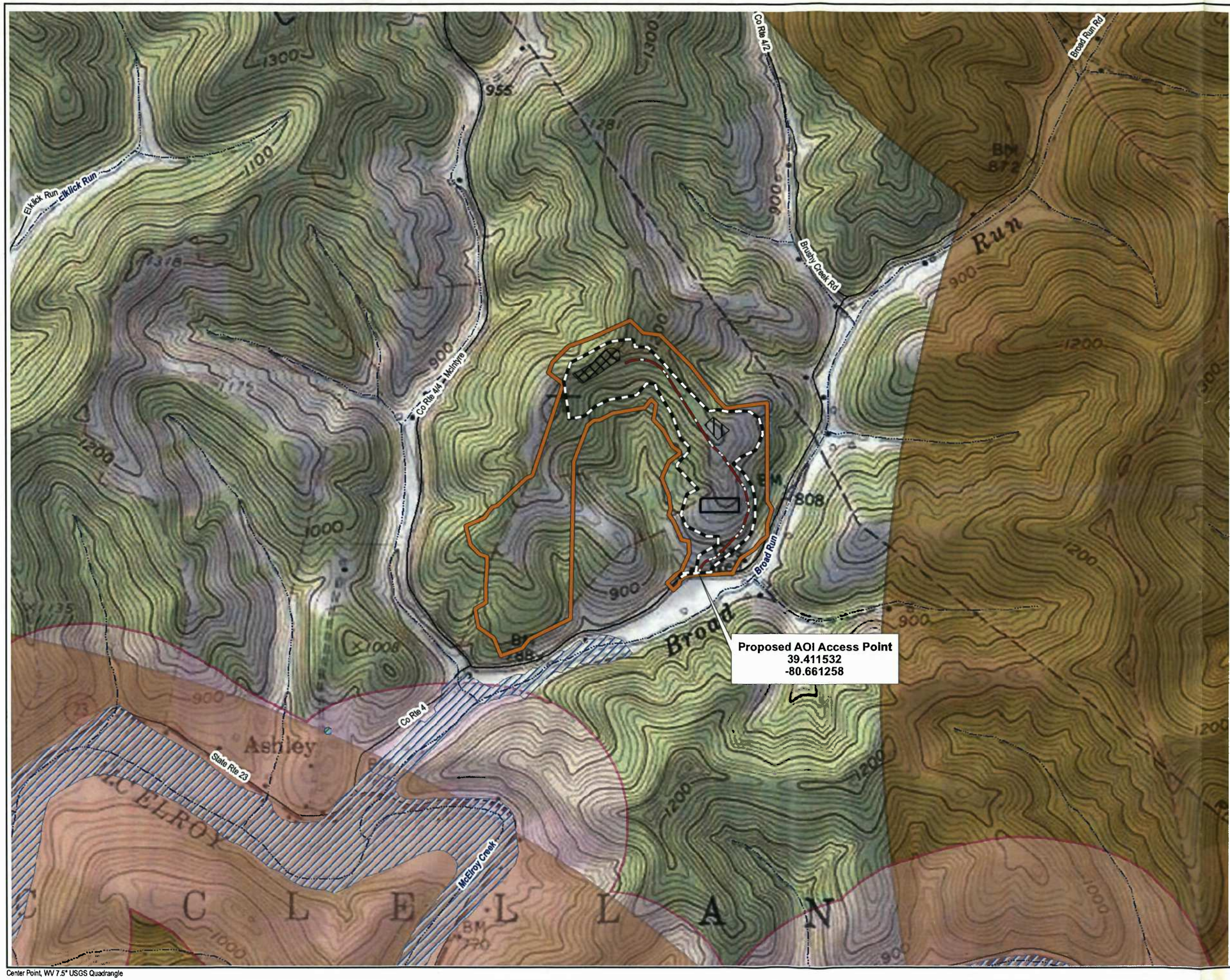
COMPLIANCE IS HEREBY CERTIFIED WITH THE REQUIREMENT OF THE FLOODPLAIN ORDINANCE ADOPTED BY THE COUNTY COMMISSION OF DODDRIDGE COUNTY ON MAY 21, 2013.

SIGNED _____ **DATE** _____

FIGURES

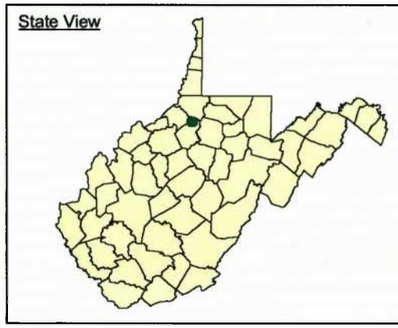
FIGURE 1
PROJECT LOCATION MAP

CPT-10 Well Pad
EQT Production Company
Doddridge County, WV



Center Point, WV 7.5' USGS Quadrangle

State View



Legend

- AOI (110.0 ac)
- Proposed LOD (40.5 ac)
- Proposed Well Pad
- Proposed Access Road
- Proposed Completion Pit
- Proposed Flow Back Pit
- NHD Stream
- NWI Wetland (N/A)
- USFWS Aquatic Buffer
- USFWS Terrestrial Buffer
- FEMA 100 Year Flood Zone
- Existing Road

PROJECT #: 00137355.000A

DRAWN: 7/15/2014 **PRINTED:** 8/10/2015

DRAWN BY: GHB

CHECKED BY: MA

FILE NAME:
G:\GIS\PROJECTS\EQT\Production\CPT-10-137355\MXD\WDSIR\CPT-10_Fig1.mxd

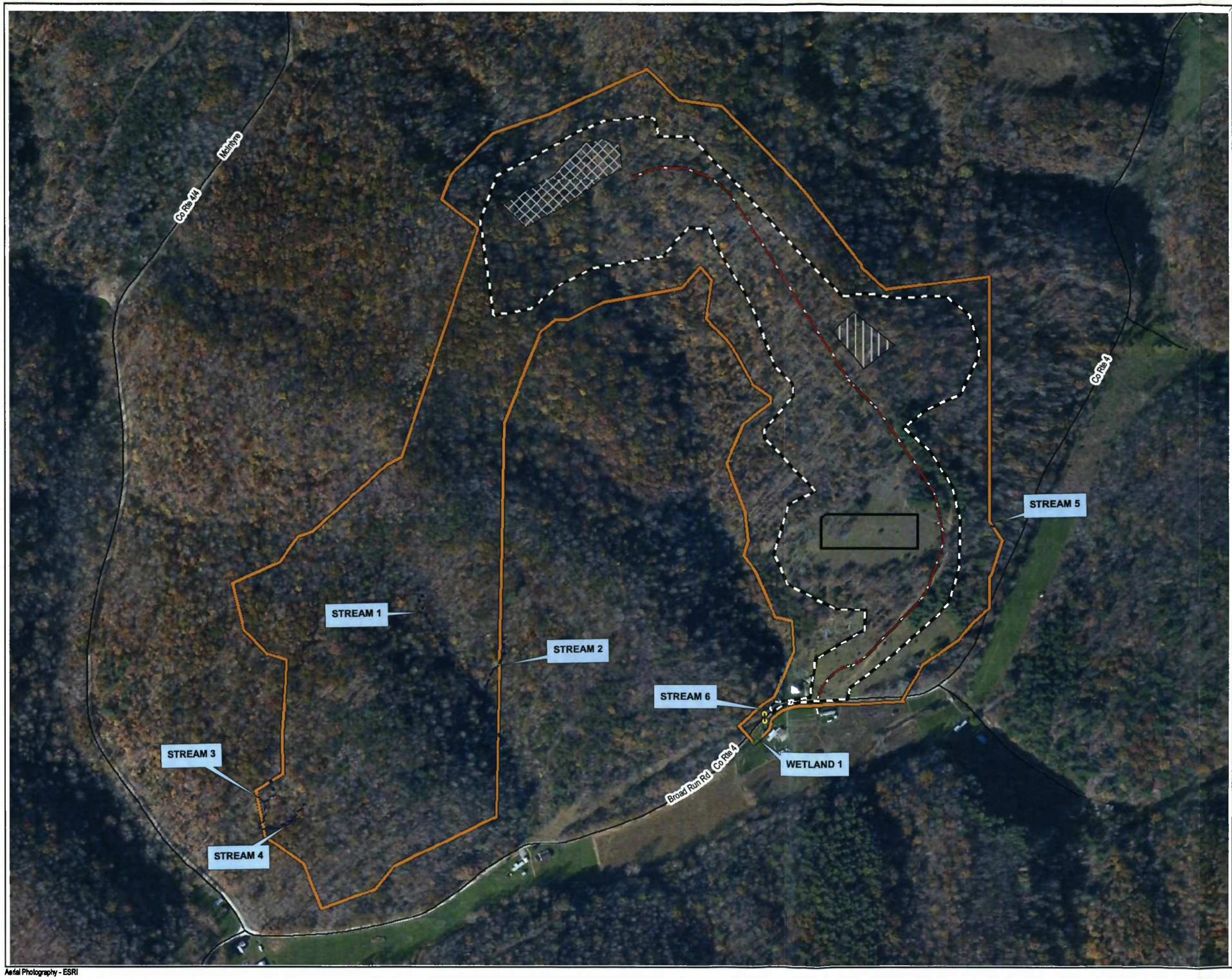
0 1,000 2,000
Feet

EQT
Where energy meets innovation.

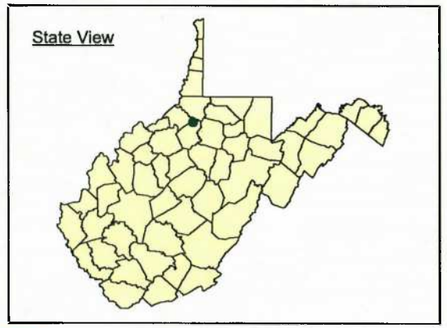
KLEINFELDER
Bright People. Right Solutions.
www.kleinfelder.com

FIGURE 2
DELINEATION MAP

CPT-10 Well Pad
EQT Production Company
Doddridge County, WV



Aerial Photography - ESRI



- AOI (110.0 ac)
- Proposed LOD (40.5 ac)
- Proposed Well Pad
- Proposed Access Road
- Delineated Intermittent Stream
- Delineated Ephemeral Stream
- Delineated PEM Wetland
- Existing Culvert
- Proposed Completion Pit
- Proposed Flow Back Pit
- Existing Road
- USFWS Aquatic Buffer (N/A)
- USFWS Terrestrial Bufferr (N/A)

PROJECT #: 00137355.000A

DRAWN: 7/15/2014 **PRINTED:** 8/10/2015

DRAWN BY: GHB

CHECKED BY: MA

FILE NAME:
G:\GIS\PROJECTS\EQT\Production\CPT-10-137355\MXD\WDSIR\CPT-10_Fig2_Delineation.mxd

0 400 800
Feet

EQT Where energy meets innovation.

KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com

ATTACHMENT A

PROPERTY OWNER TABLE

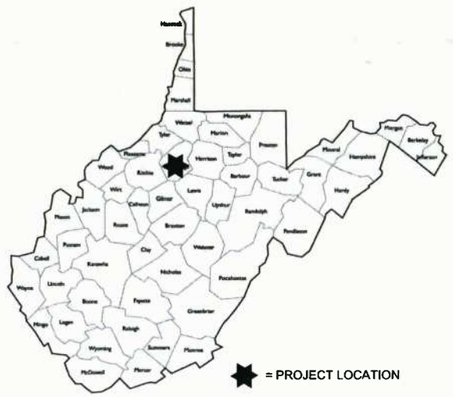
Property Owner Table - Doddridge County
EQT Production Company - CPT-10 Well Pad Project

Property Owner Name	Mailing Address	Parcel ID	Deed Book Reference	Land Book Description
HOST PROPERTIES - OUTSIDE FLOODPLAIN				
HAYES SHIRLEY JAMES & MA	81 Broad Run Rd. Center point, WV 26339	7-10-2	Deed Book 203	Page 183-184
ASH SAMUEL G ET UX	Route 4 Center Point, WV 26339	5-12-2.3	Deed Book 201	Page 350
COASTAL FOREST RESOURCES	Off Route 4/Broad Run Road	5-6-27	Deed Book 78	Page 313

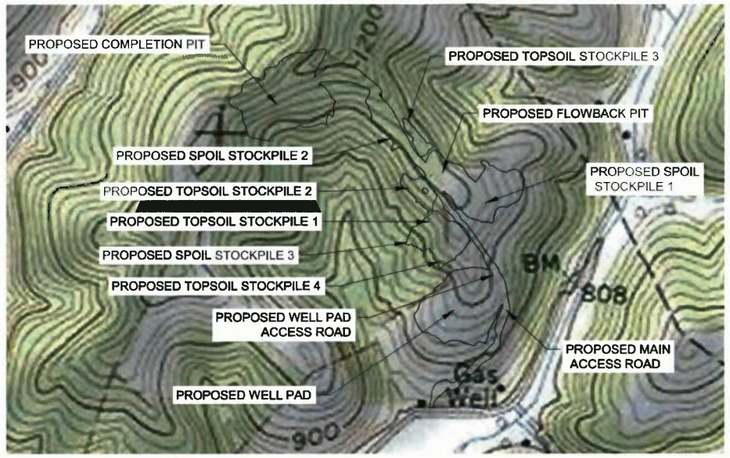
ATTACHMENT B

ENGINEERED DESIGN PLANS

CPT-10 WELL PAD
SITE DESIGN & CONSTRUCTION PLAN, EROSION & SEDIMENT CONTROL PLANS
EQT PRODUCTION COMPANY



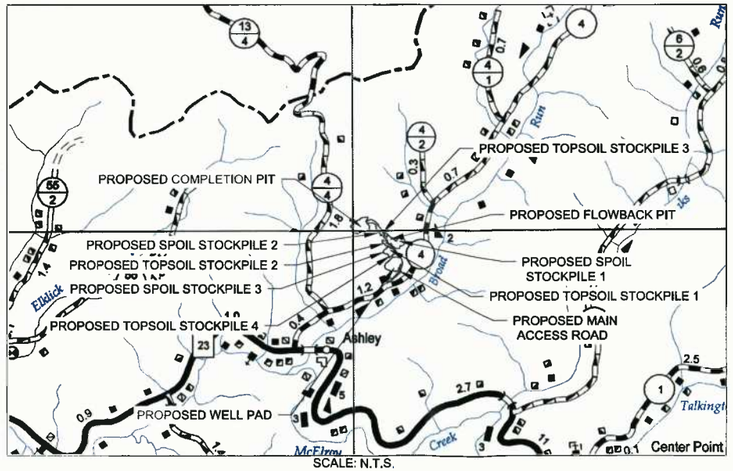
Where energy meets innovation.



NORTH MERIDIAN REFERENCED TO NAD83 WEST VIRGINIA STATE PLANE NORTH ZONE

AFFECTED TAX PARCELS: SEE SHEET 2

CENTER POINT QUAD



SCALE: N.T.S.

PROJECT CONTACTS

PROJECT OWNER

EQT PRODUCTION COMPANY
CONTACT: CHRIS METZGAR
115 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330
304.848.0075 OFFICE

LOCATION SURVEYOR

ENCOMPASS ENERGY SERVICES, LLC
CONTACT: TYLER HASTINGS
1370 WASHINGTON PIKE, SUITE 308
BRIDGEVILLE, PA 15017
412.564.5215 OFFICE

ENGINEER OF RECORD

KLEINFELDER
CONTACT: JOSH FARLEY, PE
WV PE #020711
230 EXECUTIVE DRIVE, SUITE 122
CRANBERRY TOWNSHIP, PA 16066
724.772.7072 OFFICE
724.772.7079 FAX

ENVIRONMENTAL/ DELINEATION BOUNDARY

KLEINFELDER
CONTACT: MATTHEW ALBRIGHT
230 EXECUTIVE DRIVE, SUITE 122
CRANBERRY TOWNSHIP, PA 16066
724.772.7072 OFFICE
724.772.7079 FAX

TOPO SURVEYOR

BLUE MOUNTAIN AERIAL MAPPING
CONTACT: CRAIG FRY
11023 MASON DIXON HIGHWAY
BURTON, WV 26562
304.662.2626 OFFICE
304.815.4890 CELL

SITE LOCATION				
DESCRIPTION	NAD 83 (DEGREES)		UTM ZONE 17N NAD 83 (M)	
	LATITUDE (N)	LONGITUDE (W)	NORTHING	EASTING
CENTER OF WELL PAD	39.413493° N	80.660501° W	4362718.95	529225.97
CENTER OF COMPLETION PIT	39.417796° N	80.664784° W	4363195.12	528855.49
CENTER OF FLOWBACK PIT	39.415813° N	80.660713° W	4362976.36	529206.76
MAIN ACCESS ROAD ENTRANCE	39.411547° N	80.661251° W	4362502.75	529162.22
WELL PAD ACCESS ROAD ENTRANCE	39.413638° N	80.659453° W	4362735.39	529316.13

FLOOD CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	NO
HEC-RAS STUDY COMPLETED:	N/A
FLOODPLAIN SHOWN ON DRAWINGS:	NO
FIRM MAP NUMBER FOR SITE:	54017C0045C
ACREAGE OF CONSTRUCTION IN FLOODPLAIN:	N/A

ACCESS ROAD LENGTH (FEET)	
DESCRIPTION	FEET
MAIN ACCESS ROAD	3,100
PAD ACCESS ROAD	24
TOTAL	3,124

811 Know what's below. Call before you dig.
THREE DAYS BEFORE YOU DIG
CALL PA ONE CALL SYSTEM TOLL FREE
811
OR
1-800-242-1776

DESIGN CERTIFICATION

THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS §35-4-21 AND §35-8.

MM-109 PERMIT

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

WELL LOCATION RESTRICTIONS

WELL PAD IS TO COMPLY WITH WELL LOCATION RESTRICTIONS OF WV CODE 22-6A-12. THE PADS COMPLY WITH THE FOLLOWING RESTRICTIONS:

- 250' FROM AN EXISTING WELL OR DEVELOPED SPRING USED FOR HUMAN OR DOMESTIC ANIMALS TO WELL BEING DRILLED
- 625' FROM AN OCCUPIED DWELLING OR BARN GREATER THAN 2500 SF USED FOR POULTRY OR DAIRY MEASURED FROM THE CENTER OF THE PAD
- 100' FROM EDGE OF DISTURBANCE TO WETLANDS, PERENNIAL STREAMS, NATURAL OR ARTIFICIAL LAKE, POND OR RESERVOIR
- 300' FROM EDGE OF DISTURBANCE TO NATURALLY REPRODUCING TROUT STREAMS
- 1000' FROM EDGE OF DISTURBANCE TO ANY SURFACE OR GROUND WATER INTAKE TO A PUBLIC WATER SUPPLY

PLAN REPRODUCTION WARNING

THE PLANS HAVE BEEN CREATED ON ANSI D (22" x 34") SHEETS. FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

THE PLANS HAVE BEEN CREATED FOR FULL COLOR PLOTTING. ANY SET OF THE PLANS THAT IS NOT PLOTTED IN FULL COLOR SHALL NOT BE CONSIDERED ADEQUATE FOR CONSTRUCTION PURPOSES.

WARNING: INFORMATION MAY BE LOST IN COPYING AND/OR GRAY SCALE PLOTTING

WELL HEAD LAYOUT				
WELL HEAD	WV STATE PLANE NAD 83 (FT)		NAD 83 (DEGREES)	
	NORTHING	EASTING	LATITUDE (N)	LONGITUDE (W)
H1-513513	334850.57	1640597.50	39.413529° N	80.660625° W
H2-513514	334850.57	1640612.50	39.413530° N	80.660572° W
H3-513515	334850.57	1640627.50	39.413530° N	80.660519° W
H4-513516	334850.57	1640642.50	39.413531° N	80.660466° W
H5-513517	334850.57	1640657.50	39.413531° N	80.660413° W
H6-513518	334850.57	1640672.50	39.413532° N	80.660359° W
H7-514143	334850.57	1640687.50	39.413532° N	80.660306° W
H8-514144	334850.57	1640702.50	39.413533° N	80.660253° W

WELL HEAD LAYOUT				
WELL HEAD	WV STATE PLANE NAD 27 (FT)		UTM ZONE 17N NAD 83 (M)	
	NORTHING	EASTING	NORTHING	EASTING
H1-513513	334814.30	1672038.29	4362723.13	529215.29
H2-513514	334814.30	1672053.29	4362723.15	529219.86
H3-513515	334814.30	1672068.29	4362723.17	529224.43
H4-513516	334814.30	1672083.29	4362723.18	529229.00
H5-513517	334814.30	1672098.29	4362723.20	529233.57
H6-513518	334814.30	1672113.29	4362723.22	529238.14
H7-514143	334814.30	1672128.29	4362723.46	529242.71
H8-514144	334814.30	1672143.29	4362723.47	529247.28

SHEET INDEX	
PAGE NO.	DESCRIPTION
1	COVER PAGE & LOCATION MAP
2	SCHEDULE OF QUANTITIES
3	NOTES
4	EXISTING CONDITIONS
5	OVERALL PLAN
6-8	SITE PLAN
9	WELL PAD CROSS SECTIONS AND PROFILE
10	FLOWBACK PIT CROSS SECTIONS AND PROFILE
11-12	COMPLETION PIT CROSS SECTIONS AND PROFILE
13-15	MAIN ACCESS ROAD CROSS SECTIONS AND PROFILE
16	CULVERT PROFILES
17-22	DETAILS
23-25	RECLAMATION PLAN

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSHUA M. FARLEY 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS				
REV	DESCRIPTION	DSN DWN	CHK APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 500 1000 1500
SCALE: 1" = 500' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

COVER PAGE & LOCATION MAP

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 1 of 25

CAD FILE: C:\pwwork\ngdms\8707\EQT_CPT-10_Site Plan.dwg LAYOUT: 1 COVER PLOTTED: 7/1/2015 5:29 PM BY: kyle.fink

SCHEDULE OF QUANTITIES
CPT-10 WELL PAD

ITEM DESCRIPTION		QUANTITY	UNIT
1.1 - MOBILIZATION		1	LS
2.1 - CLEARING			
	2.1.A - CLEAR & GRUB (TREES, STUMPS, BRUSH)	41	AC
	2.1.B - CLEAR FELLED TIMBER & GRUB	31	AC
3.1 - EROSION & SEDIMENT CONTROL			
	3.1.A - 12" COMPOST FILTER SOCK	1,005	LF
	3.1.B - 18" COMPOST FILTER SOCK	1,205	LF
	3.1.C - 24" COMPOST FILTER SOCK	575	LF
	3.1.D - 32" COMPOST FILTER SOCK	615	LF
	3.1.D - SUPER SILT FENCE	3,780	LF
	3.1.E - ROCK CONSTRUCTION ENTRANCE	1	EA
	3.1.F - R-3 RIP RAP (ROCK FILTER OUTLETS)	10	TONS
	3.1.G - AASHTO #57 STONE (ROCK FILTER OUTLETS)	5	TONS
	3.1.H - R-3 RIP RAP (ROCK CHECK DAMS)	27	TONS
	3.1.L -EROSION CONTROL MATTING - NAG C125BN	30,781	SY
	3.1.L -EROSION CONTROL MATTING -NAG C350	30,875	SY
4.1 - DITCH LINING			
	4.1.A - NORTH AMERICAN GREEN C125BN	1,589	SY
	4.1.A - R-3	1,787	SY
	4.1.A - R-4	676	SY
5.1 - AGGREGATE SURFACING			
	5.1.A.1 - WELL PAD #3 - #6 LIMESTONE (8" THICK)	6,485	TONS
	5.1.A.2 - WELL PAD 0.75" OR 1.5" CRUSHER RUN LIMESTON (2" THICK)	2,671	TONS
	5.1.A.3 - WELL PAD GEOTEXTILE FABRIC (US 200)	25,431	SY
	5.1.B.1 - ACCESS ROADS #3 - #6 LIMESTONE (8" THICK)	5,424	TONS
	5.1.B.2 - ACCESS ROADS 0.75" OR 1.5" CRUSHER RUN LIMESTON (2" THICK)	2,234	TONS
	5.1.B.3 - ACCESS ROADS GEOTEXTILE FABRIC (US 200)	21,269	SY
	5.1.C.1 - TRUCK QUEUES #3 - #6 LIMESTONE (8" THICK)	627	TONS
	5.1.C.2 - TRUCK QUEUES 0.75" OR 1.5" CRUSHER RUN LIMESTON (2" THICK)	259	TONS
	5.1.C.3 - TRUCK QUEUES GEOTEXTILE FABRIC (US 200)	2,458	SY
6.1 - SEED & MULCH			
	6.1.A - SITE SEEDING (LIME, FERTILIZER, SEEDING, AND HYDRO-MULCH w/TACK (HYC-2 OR EQUAL))	30.2	AC
	6.1.B - RECLAMATION SEEDING (LIME, FERTILIZER, SEEDING, AND HYDRO-MULCH w/TACK (HYC-2 OR EQUAL))	1.9	AC
7.1 - EXCAVATION			
	7.1.A - TOPSOIL (ESTIMATED AT 1' DEEP)	30,402	CY
	7.1.B -WELL PAD EXCAVATION (CUT TO FILL)	32,642	CY
	7.1.C -WELL PAD EXCAVATION (EXPORT TO SPOIL AREA)	41,490	CY
	7.1.D - COMPLETION PIT & TRUCK QUEUE EXCAVATION (CUT TO FILL)	67,537	CY
	7.1.E - COMPLETION PIT & TRUCK QUEUE EXCAVATION (IMPORT FROM SPOIL AREA)	18,337	CY
	7.1.F - FLOWBACK PIT & TRUCK QUEUE EXCAVATION (CUT TO FILL)	1,023	CY
	7.1.G - FLOWBACK PIT & TRUCK QUEUE EXCAVATION (EXPORT TO SPOIL AREA)	35,779	CY
	7.1.H - ACCESS ROADS EXCAVATION (CUT TO FILL)	17,240	CY
	7.1.I - ACCESS ROADS EXCAVATION (IMPORT FROM SPOIL AREA)	2,742	CY
8.1 - PAD			
	8.1.A - CONTAINMENT BERM	7,050	CY
	8.1.B - SUMPS - (SEE "SUMP SYSTEM DETAIL")	8	EA
	8.1.C - 4" PVC SUMP DRAIN PIPE - (SEE "SUMP SYSTEM DETAIL")	100	LF
	8.1.D - PVC PIPE OUTLET PROTECTION - R-3 RIP RAP	88	TONS
9.1 - CROSS DRAIN CULVERTS			
	9.1.A - 18" HDPE	370	LF
	9.1.B - FLARED END SECTION	5	EA
	9.1.C - R-3 RIP RAP (INLETS/OUTLETS)	20	TONS
	9.1.E - R-4 RIP RAP (INLETS/OUTLETS)	41	TONS
	9.1.G - R-6 RIP RAP (INLETS/OUTLETS)	51	TONS
	9.1.D - AASHTO #57 STONE (INLETS)	91	TONS
10.1 - PIT			
	10.1.A - PRIMARY LINER (60 MIL)	9,122	SY
	10.1.B - NON-WOVEN GEOTEXTILE FABRIC CUSHION (16OZ FELT)	9,122	SY
11.1 FRENCH DRAIN			
	11.1.A - 4" PERFORATED PIPE	1,248	LF
	11.1.B - GEOTEXTILE FABRIC	7,488	SY
	11.1.C - #57 STONE	114	TONS

LIMITS OF DISTURBANCE

DESCRIPTION	AREA (ACRES)	AFFECTED TAX PARCELS
COMPLETION PIT	2.14	COASTAL FOREST RESOURCES
MAIN ACCESS ROAD	7.75	HAYES SHIRLEY JAMES & MA
WELL PAD	7.47	
FLOWBACK PIT & TURN AROUND	2.31	
COMPLETION PIT & TURN AROUND	4.51	
SPOIL STOCKPILE 1	3.84	
SPOIL STOCKPILE 2	2.67	
SPOIL STOCKPILE 3	0.22	
SPOIL STOCKPILE 4	0.11	
TOPSOIL STOCKPILE 1	3.51	
TOPSOIL STOCKPILE 2	1.56	
TOPSOIL STOCKPILE 3	0.71	
COMPLETION PIT	3.66	ASH SAMUEL G ET UX
TOTAL	40.46	
TOTAL WOODED ACRES DISTURBED	30.88	
TOTAL LINEAR FOOTAGE OF MAIN ACCESS ROAD	3,100	
TOTAL LINEAR FOOTAGE OF WELL PAD ACCESS ROAD	24	

FLOWBACK PIT VOLUMES

Elevation	Barrels	Gallons	Acre-Ft	Unincised Acre-Ft	Incised Acre-Ft
1081 (Bottom)	0	0	0.000	0.000	0.000
1082	903	37,908	0.116	0.000	0.116
1083	1,983	83,277	0.256	0.000	0.256
1084	3,254	136,650	0.419	0.000	0.419
1085	4,728	198,570	0.609	0.000	0.609
1086	6,419	269,579	0.827	0.000	0.827
1087	8,339	350,219	1.075	0.000	1.075
1088	10,501	441,036	1.353	0.000	1.353
1089	12,918	542,573	1.665	0.000	1.665
1090	15,604	655,368	2.011	0.000	2.011
1091	18,571	779,968	2.394	0.000	2.394
1092	21,831	916,917	2.814	0.000	2.814
1093	25,399	1,066,756	3.274	0.000	3.274
1094	29,286	1,230,026	3.775	0.000	3.775
1095	33,506	1,407,273	4.319	0.000	4.319
1096	38,072	1,599,040	4.907	0.000	4.907
1097 (Pit Capacity)	42,997	1,805,869	6.642	0.635	4.907
1098	48,293	2,028,302	6.225	1.317	4.907
1099 (Top Berm)	53,973	2,266,882	6.957	2.050	4.907

* 1 Barrel [US Petroleum] = 42 gallons [US liquid]

GRADING

CUT SLOPE	2:1 *
FILL SLOPE	2:1 *
SPOIL SWELL FACTOR	20%
WELL PAD ELEVATION	969'
FLOWBACK PIT BERM ELEVATION	1099'
COMPLETION PIT BERM ELEVATION	1179'

*UNLESS OTHERWISE NOTED

COMPLETION PIT VOLUMES

Elevation	Barrels	Gallons	Acre-Ft	Unincised Acre-Ft	Incised Acre-Ft
1160 (Bottom)	0	0	0.000	0.000	0.000
1161	3,136	131,717	0.404	0.000	0.404
1162	6,769	284,290	0.872	0.000	0.872
1163	10,910	458,230	1.406	0.000	1.406
1164	15,573	654,048	2.007	0.000	2.007
1165	20,768	872,251	2.677	0.000	2.677
1166	26,508	1,113,352	3.417	0.000	3.417
1167	32,806	1,377,863	4.229	0.000	4.229
1168	39,674	1,666,293	5.114	0.000	5.114
1169	47,123	1,979,151	6.074	0.000	6.074
1170	55,165	2,316,949	7.110	1.037	6.074
1171	63,814	2,680,199	8.225	2.151	6.074
1172	73,081	3,069,411	9.420	3.346	6.074
1173	82,978	3,485,092	10.695	4.622	6.074
1174	93,518	3,927,759	12.054	5.980	6.074
1175	104,712	4,397,921	13.497	7.423	6.074
1176	116,573	4,896,086	15.026	8.952	6.074
1177 (Pit Capacity)	129,114	5,422,767	16.642	10.568	6.074
1178	142,345	5,978,473	18.347	12.273	6.074
1179 (Top Berm)	156,279	6,563,715	20.143	14.069	6.074

* 1 Barrel [US Petroleum] = 42 gallons [US liquid]

PAD/ROAD CUT/ FILL SLOPES	Z:1
EQUIPMENT PAD & ACCESS ROADS	2
COMPLETION & FLOWBACK PIT INTERIOR SLOPES	3
COMPLETION & FLOWBACK PIT EXTERIOR SLOPES	2
SPOIL STOCKPILES	2
TOPSOIL STOCKPILES	3

QUANTITIES

DESCRIPTION	CUT (CY)	FILL (CY)	BASE (CY)	TOPSOIL (CY)	SPOIL (CY)	BORROW (CY)	MAX. SLOPE	LENGTH OF SLOPE
WELL PAD	74132	32642	4021	8477	37034	N/A	N/A	N/A
FLOWBACK PIT	36802	1023	716	2819	33675	N/A	N/A	N/A
COMPLETION PIT	67537	85874	1429	6949	N/A	23858	N/A	N/A
PRIMARY ACCESS ROAD	13410	19982	1906	7079	N/A	11745	16.99%	1520'
WELL PAD ACCESS ROAD	3870	0	15	11	3874	N/A	N/A	N/A
TOPSOIL STOCKPILE 1	0	21689	0	0	N/A	21689	N/A	N/A
TOPSOIL STOCKPILE 2	0	2926	0	0	N/A	2926	N/A	N/A
TOPSOIL STOCKPILE 3	0	1103	0	0	N/A	1103	N/A	N/A
SPOIL STOCKPILE 1	0	31093	0	0	N/A	31093	N/A	N/A
SPOIL STOCKPILE 2	0	1738	0	0	N/A	1738	N/A	N/A
SPOIL STOCKPILE 3*	0	3570	0	0	N/A	3570	N/A	N/A
SPOIL STOCKPILE 4*	0	1560	0	0	N/A	1560	N/A	N/A
TOTALS	195751	203200	8087	25335	74584	99281	N/A	N/A
	TOTAL EXPORT (CY)			637				

*SPOIL STOCKPILES 3 & 4 WILL BE BUILT PRIOR TO CONSTRUCTION OF TOPSOIL STOCKPILE 1. CONSTRUCTION SEQUENCING MUST BE EVALUATED

WEST VIRGINIA 811 UTILITY RESPONSE STATUS
TICKET #1421253047 THRU SEPTEMBER 4, 2014

Utility Code	Utility Owner	Utility Contact/Responder Information			Utility Response	Utility Type	Utility Specifications (diameter, pole number(s), etc.)	Notes
		Name	Number	E-Mail				
AC	Frontier Communications (Formerly Verizon)	-	-	-	Clear	Phone	-	-
CGS	Columbia Gas Transmission - Clarksburg	-	1-800-835-7191	jrthnetapp@nisource.com	Clear	Gas	-	-
EQW560	EQT Gathering	-	-	-	No Response	Gas	-	-
MPC	Firstenergy Corp	-	-	-	Clear	Electric	-	-

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN	CHK	DATE
		DWN	APP	
1	REVISED SCHEDULE OF QUANTITIES (11.1.C)	MDV	JMF	7/21/2015
		MDV	JMF	

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

SCHEDULE OF QUANTITIES

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

2

SHEET 2 of 25

GENERAL NOTES

1. 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.
2. ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY INCONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER, IN WRITING, WHO SHALL PROMPTLY ADDRESS SUCH PROBLEMS. WORK DONE BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH DISCREPANCIES, INCONSISTENCIES, OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
3. WORK ON THIS PROJECT SHALL CONFORM TO THE LATEST EDITIONS OF THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP) EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE HANDBOOK. IN THE EVENT OF CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, OR PLANS, THE MOST STRINGENT WILL GOVERN.
4. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL PUBLIC OR PRIVATE UTILITIES WHICH LIE IN OR ADJACENT TO THE CONSTRUCTION SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR, AT HIS OR HER EXPENSE, OF ALL EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION THE CONTRACTOR SHALL CALL MISS UTILITY AT 1-8OO-245-4848.
5. INSTALLATION OF STORM PIPE SHALL BE IN CONFORMANCE WITH THESE DRAWINGS.
6. ALL MATERIALS USED FOR FILL OR BACK FILL SHALL BE FREE OF WOOD, ROOTS, ROCKS, BOULDERS OR ANY OTHER NON-COMPACTABLE SOIL TYPE MATERIALS. UNSATISFACTORY MATERIALS ALSO INCLUDE MAN MADE FILLS AND REFUSE DEBRIS DERIVED FROM ANY SOURCE.
7. MATERIALS USED TO FILL AROUND DRAINAGE STRUCTURES IN UTILITY TRENCHES OR ANY OTHER DEPRESSION REQUIRING FILL OR BACK FILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST AS SET FORTH IN ASTM STANDARD D-698. THE MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE LIMITS OF THE STANDARD PROCTOR TEST RESULTS. SOME SOILS CANNOT BE COMPACTED TO 95% OF THE STANDARD PROCTOR AT PLUS OR MINUS 4% MOISTURE CONTENT. THE CONTRACTOR SHALL PRIOR TO ANY OPERATIONS INVOLVING FILLING OR BACK FILLING, SUBMIT THE RESULTS OF THE PROCTOR TEST TOGETHER WITH A CERTIFICATION THAT THE SOIL TESTED IS REPRESENTATIVE OF THE MATERIALS TO BE USED ON THE PROJECT. THE TESTS SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LABORATORY AND THE CERTIFICATIONS MADE BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LABORATORY. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THESE TESTS AND THEIR SUBMITTALS.
8. FILL SHALL BE PLACED IN LIFTS AT A MAXIMUM UNCOMPACTED DEPTH OF 12" WITH SOIL FREE FROM AGGREGATES EXCEEDING 6".
9. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER. FAILURE TO CONDUCT DENSITY TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE OF THE FACILITY. TESTS SHALL BE CONDUCTED AT THE SOLE COST OF THE CONTRACTOR OR HIS AGENT.
10. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION.
11. SATISFACTORY MATERIALS FOR USE AS FILL FOR PAD AREAS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS GW, GP, GM, GC, SW, SP, SM, SC, ML. AND CL GROUPS. THE MOISTURE CONTENT SHALL BE CONTROLLED WITHIN PLUS OR MINUS 4% OF THE OPTIMUM TO FACILITATE COMPACTION. GENERALLY, UNSATISFACTORY MATERIALS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS PT, CH, MH, OL, OH AND ANY SOIL TOO WET TO FACILITATE COMPACTION. CH AND MH SOILS MAY BE USED SUBJECT TO APPROVAL OF THE ENGINEER. SOILS SHALL HAVE A MINIMUM DRY DENSITY OF 92 LB/CF PER ASTM D-698 AND SHALL HAVE A PLASTICITY INDEX LESS THAN 17.
12. CONTRACTOR SHALL DEVELOP A GENERIC GROUNDWATER PROTECTION PLAN (GPP). SUBMITTAL TO WVDEP IS NOT REQUIRED. THE GROUNDWATER PROTECTION PLAN SHALL BE ADHERED TO DURING CONSTRUCTION.
13. NO ROCK FILL LIFTS SHALL BE GREATER THAN 36".

EROSION & SEDIMENT CONTROL NARRATIVE

1. PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS TO GRADE AND INSTALL EROSION AND SEDIMENT CONTROL MEASURES, IN PREPARATION FOR THE CONSTRUCTION OF A NATURAL GAS WELL PAD COUNTY ROUTE 4, IN DODDRIDGE COUNTY, WEST VIRGINIA. THE CONSTRUCTION INCLUDES TWO ACCESS ROADS, ONE WELL PAD, ONE FLOWBACK PIT, ONE COMPLETION PIT, STORM WATER CONTROLS, AND INCIDENTAL WORK.
2. EXISTING SITE CONDITIONS: THE EXISTING SITE IS PREDOMINATELY WOODS. NO EROSION IS NOTICED ON SITE, OR IN ANY NATURAL DRAINAGE WAYS.
3. ADJACENT PROPERTY: THE SITE IS BORDERED BY WOODS.
4. SOILS: NO SOIL STUDIES OR SUBSURFACE INVESTIGATIONS WERE PERFORMED FOR THIS PROJECT.
5. OFF SITE AREAS: THERE SHALL BE NO BORROW AREA OUTSIDE OF THE PROPOSED GRADING AND CONSTRUCTION AREA.
6. CLEARING OF VEGETATION SHOULD BE KEPT TO THE MINIMUM NECESSARY FOR CONSTRUCTION PLUS THE INSTALLATION OF SEDIMENT CONTROLS.
7. CRITICAL EROSION AREAS MAINTENANCE: ALL 3:1 SLOPES AND STEEPER, DITCHES AND OTHER CONTROLS SHALL BE CONSIDERED CRITICAL EROSION AREAS. THESE AREAS SHALL BE MONITORED & MAINTAINED DAILY AND AFTER EACH RAIN FALL OF 0.5 INCH OR GREATER. THE LOCAL GOVERNING AUTHORITY WILL HAVE THE AUTHORITY TO RECOMMEND THE PLACEMENT OF ADDITIONAL EROSION CONTROL MEASURES IN THESE AREAS IF IT BECOMES EVIDENT DURING CONSTRUCTION THAT THE ONES IN PLACE ARE NOT FUNCTIONING SUFFICIENTLY.
8. EROSION AND SEDIMENT CONTROL MEASURES: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE CURRENT WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL. THE CONTRACTOR SHALL OBTAIN A COPY OF THIS MANUAL FROM THE WVDEP WEBSITE AND CONSTRUCT ALL DEVICES BASED ON THIS MANUAL OR A HANDBOOK THAT IS COMPARABLE OR EXCEEDS THE SPECIFICATIONS OF THE WEST VIRGINIA MANUAL. THE MINIMUM STANDARDS OF THIS MANUAL SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE. SEE PLANS FOR ALL PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.
9. STRUCTURAL PRACTICES:
   - DIVERSION DITCHES: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
   - OUTLET PROTECTION: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
   - FILTER SOCK/SUPER SILT FENCE: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
10. VEGETATIVE PRACTICE TOPSOILING: TOPSOIL WILL BE STRIPPED FROM THE SITE AND STOCKPILED AS SHOWN ON THE PLANS. UPON THE COMPLETION OF THE PROJECT, TOPSOIL WILL BE PLACED ON ALL DISTURBED AREAS AT A MINIMUM DEPTH OF 4 INCHES. TEMPORARY SEEDING: ALL DENUDED AREAS LEFT DORMANT FOR MORE THAN 21 DAYS SHALL BE SEEDED WITH A FAST GERMINATING SEED. THE TIME OF YEAR WILL BE THE BASIS FOR THE SEED MIXTURE. PERMANENT SEEDING: ALL SEEDED AREAS WILL BE RESEEDED, MULCHED AND FERTILIZED AS NEEDED TO OBTAIN AN ADEQUATE STAND OF GRASS. PERMANENT SEEDING SHALL BE PLACED WITHIN SEVEN DAYS UPON ACHIEVING FINAL GRADE. WATER, MULCH, AND RESEED AS NECESSARY TO OBTAIN AN ADEQUATE STAND OF VEGETATION.
11. MANAGEMENT STRATEGIES: CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS WILL BEGIN AND END AS SOON AS POSSIBLE. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES. AFTER ACHIEVING ADEQUATE STABILIZATION THE TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE REMOVED AND ANY AREAS DISTURBED DURING THIS PROCESS SHALL BE STABILIZED.
12. PERMANENT STABILIZATION: ALL AREAS LEFT UNCOVERED BY EITHER BUILDINGS OR PAVEMENT SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING AND WITHIN 7 DAYS. AT NO TIME SHALL LAND LAY DORMANT FOR LONGER THAN 21 DAYS.
13. MAINTENANCE AND OTHER CONSIDERATIONS AND GROUND WATER PROTECTION: ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH RAINFALL OF 0.5 INCH OR MORE. THEY WILL BE INSPECTED FOR UNDERMINING, DETERIORATION, EROSION AND EXCESS DEPOSITED MATERIAL. ALL DEFICIENCIES WILL BE CORRECTED IMMEDIATELY. EXCESS MATERIAL WILL BE SPREAD ON THE SITE IN A MANNER WHERE IT IS NOT LIKELY TO ERODE IN THE FUTURE. CLEANING PROCEDURES WILL BE COMPLETED AT REGULAR INTERVALS AND AT LEAST WHEN SEDIMENT REACHES 33% OF CAPACITY, OR AS SHOWN ON APPLICABLE DETAILS. RECORDS OF CLEANING AND CORRECTIONS WILL BE MAINTAINED BY THE CONTRACTOR. THE "GENERIC GROUNDWATER PROTECTION PLAN FOR CONSTRUCTION SITES" (GPP) WILL BE USED AND AVAILABLE ON SITE AT ALL TIMES. AN AREA WILL BE PROVIDED FOR VEHICLE AND EQUIPMENT MAINTENANCE. MOBILE FUEL TRUCKS WITH APPROVED TANKS WILL BE USED ON THE SITE. PORTABLE SANITARY FACILITIES WILL BE AVAILABLE FOR EMPLOYEES. IF CONCRETE IS USED, EXCESS CONCRETE WILL BE DISPOSED OF PROPERLY AND NOT ALLOWED TO REMAIN ON THIS SITE. MACHINERY WILL NOT BE ALLOWED IN LIVE STREAMS. FLUIDS SUCH AS DIESEL FUEL, GAS, OIL OR ANTIFREEZE WILL BE KEPT IN PROPER CONTAINERS AND ANY SPILLAGE WILL BE CLEANED AND TAKEN OFF SITE TO A PROPER FACILITY. SOLID OR HAZARDOUS WASTES WILL BE DISPOSED IN ACCORDANCE WITH APPROPRIATE STATE AND FEDERAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE CHANGES AND NOTIFY WVDEP ON ANY CHANGES TO GPP. A FINAL INSPECTION WILL BE MADE AT THE CONCLUSION OF THE PROJECT AND ALL CORRECTIONS MADE BEFORE SIGN-OFF OF THE PROJECT SITE.

GENERAL EROSION & SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL ARRANGE FOR A PRE-CONSTRUCTION CONFERENCE WITH THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO BEGINNING WORK.
2. ALL EROSION CONTROL DEVICES AS SHOWN OR AS REQUIRED, ARE TO BE CONSTRUCTED TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL AND ARE TO BE IN PLACE PRIOR TO ALL CONSTRUCTION.
3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUOUSLY, RELOCATED WHEN AND AS NECESSARY AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED, RESEEDED AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.
4. ALL DRAIN INLETS SHALL BE PROTECTED FROM SILTATION. INEFFECTIVE PROTECTION DEVICES SHALL BE IMMEDIATELY REPLACED AND THE INLET CLEANED. FLUSHING IS NOT AN ACCEPTABLE METHOD OF CLEANING.
5. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 21 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
6. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING DEVICES.
7. SEDIMENT BASINS AND TRAPS. PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
8. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS IMPOUNDMENTS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
9. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
10. NO SEDIMENT TRACKING ON THE ROADWAY IS ALLOWED. IN THE EVENT THAT SEDIMENT IS INADVERTENTLY TRACKED ONTO THE ROAD, THE ROAD SHALL BE CLEANED THOROUGHLY BY THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR PICKUP SWEEPING AND SHALL BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA. STREET WASHING OF SEDIMENTS TO THE STORM DRAIN SYSTEM IS NOT ALLOWED. IF STREET WASH WASTEWATER CAN BE CONTROLLED FROM ENTERING THE STORM DRAINAGE SYSTEM, THEN IT SHALL BE PUMPED BACK ONTO THE SITE, CONTAINED AND DISPOSED OF PROPERLY.
11. ALL DISTURBED AREAS NOT PAVED OR BUILT UPON SHALL BE HYDRO-SEEDED AND FERTILIZED. PERFORM PERMANENT TOP SOILING, SEEDING AND FERTILIZING AS SOON AFTER FINISH GRADING AS POSSIBLE. SEEDING SHALL COMPLY WITH THE FOLLOWING:
   - TOPSOIL - 4 INCH MINIMUM FOR PERMANENT TURF.
   - FERTILIZER - 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR EQUIVALENT POUNDAGE OF DIFFERENT ANALYSIS. WORK INTO SOIL PRIOR TO SEEDING.
   - LIME (PERMANENT SEEDING) - AGRICULTURAL LIME SPREAD AT RATE OF 4 TONS PER ACRE. WORK INTO SOIL PRIOR TO SEEDING.
   - MULCH OR EROSION CONTROL BLANKET (ECB) - WOOD FIBER OR CHOPPED STRAW AT RATE OF 2 TONS PER ACRE. HYDRO-MULCH AT RATE OF 30 BALES PER ACRE. ECB SHALL BE PER PLANS.
   - SEED - 45 LBS. PER ACRE TALL FESCUE AND 20 LBS. PER ACRE PERENNIAL RYE GRASS. TO BE SEEDED WITH HYDRO-SEEDER

SEQUENCE OF BMP INSTALLATION AND REMOVAL

CONSTRUCTION MUST BE IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. THIS SEQUENCE IS DESIGNED TO MINIMIZE SOIL EROSION AND SEDIMENTATION. THE CONTRACTOR MAY DEVIATE SLIGHTLY FROM THE STAGING OF PERMANENT SITE IMPROVEMENTS, BUT NO DEVIATION FROM THE RELATIVE ORDER OF EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE ALLOWED.

THE STAGING OF EARTHMOVING ACTIVITIES FOR THIS PROJECT IS A GENERAL DESCRIPTION OF THE WORK REQUIRED. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH COMPANY STANDARDS, THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS AND ALL OTHER APPLICABLE FEDERAL, STATE OR LOCAL REQUIREMENTS.

THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN INCLUDING THE SOIL EROSION CONTROL DRAWINGS SHALL BE AVAILABLE ON SITE AT ALL TIMES DURING EARTH DISTURBANCE.

ALL BMPs SHALL BE INSPECTED AFTER EACH MEASURABLE RAINFALL RUNOFF EVENT. ANY NECESSARY REPAIRS MUST BE MADE IMMEDIATELY TO ENSURE EFFECTIVE AND EFFICIENT OPERATION.

1. A PRE-CONSTRUCTION CONFERENCE WILL BE HELD ON SITE WITH CONTRACTOR TO REVIEW THE CONSTRUCTION DRAWINGS AND PROVIDE ANY REQUESTED GUIDANCE.
2. STAKE/FLAG DISTURBED WORK AREA, CLEARLY IDENTIFYING WETLAND AND STREAM EDGES AND BUFFERS. INSTALL SIGNS TO DESIGNATE THE AREA AND ORANGE SAFETY FENCE TO IDENTIFY IMPORTANT PROJECT ATTRIBUTES SUCH AS APPROVED ACCESS ROADS, NO REFUELING ZONES, WETLAND/STREAM BOUNDS, ETC.
3. CONSTRUCT THE CONSTRUCTION ENTRANCE.
4. CONSTRUCT ALL PROPOSED SEDIMENT CONTROL DEVICES AS SOON AS CLEARING AND GRUBBING OPERATIONS ALLOW.
5. PRIOR TO GRADING OR OTHER EARTH DISTURBANCE ON THE PARCEL, PERMANENT DOWN SLOPE BMPs ARE TO BE INSTALLED.
6. CLEAR AND GRUB, REMOVE TOPSOIL AND PLACE AS SHOWN ON THE PLANS. TOPSOIL STOCKPILE TO BE SEEDED AND MULCHED. E&S BMPs SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES AS SHOWN.
7. GRADING OPERATIONS AS REQUIRED. CUT SLOPES AND ALL SLOPES SHALL BE TOPSOILED AS NEEDED. DITCH LINES SHALL BE CLEANED. ALL DITCHES WILL HAVE AT LEAST GRASS LINING PROTECTION OR AS SPECIFIED IN DETAIL ON SHEET 16.
8. THE ACCESS ROAD SHALL BE CONSTRUCTED UP TO THE PROPOSED PADS. THE ACCESS ROAD SHALL RECEIVE A STONE SURFACE.
9. INSTALL PROPOSED EQUIPMENT PAD AND EQUIPMENT PAD BERMS.
10. CULVERT INLET AND OUTLET PROTECTION SHALL BE CONSTRUCTED IMMEDIATELY UPON PLACEMENT OF INLETS AND CULVERTS. INSTALLATION OF MATTING AND/OR RIP RAP TO OCCUR ONCE DITCHES ARE CONSTRUCTED.
11. SIDE SLOPE STABILIZATION MATTING AND STABILIZATION SHALL OCCUR AS SOON AS POSSIBLE.
12. AT THE END OF EACH WORK DAY, WHERE THE PARCEL HAS BEEN GRADED, INCLUDING ANY STRIPPING, STUMPING, LEVELING, 2:1 ON SIDE SLOPES, ETC. BMPs ARE TO BE INSTALLED. IN NO CASE IS THE CONTRACTOR TO LEAVE THE JOB SITE AT THE END OF THE WORK DAY WITHOUT TEMPORARY OR PERMANENT BMPs BEING INSTALLED. THE CONTRACTOR IS NOT REQUIRED TO MAINTAIN WATERBARS DURING THE WORK DAY UNLESS THE ENVIRONMENTAL INSPECTOR DETERMINES THAT THERE IS A RISK OF A RAIN EVENT THAT WARRANTS THEIR IMMEDIATE INSTALLATION.
13. WHEN FINAL GRADE IS ACHIEVED, TOPSOIL TO BE PLACED ON ALL DISTURBED AREAS NOT LINED. SEED ALL DISTURBED AREAS AS REQUIRED. A SOIL SAMPLE SHOULD BE TAKEN AND TESTED TO DETERMINE RECOMMENDED RATES. IF NO SOILS SAMPLE IS TAKEN THE FOLLOWING RATES SHOULD BE APPLIED AS A MINIMUM: LIME AT A RATE OF 4 TONS PER ACRE. FERTILIZE AT A RATE OF 500 LBS. OF 10-20-20 PER ACRE. SEED WITH 45 LBS. PER ACRE OF TALL FESCUE AND 20 LBS. PER ACRE OF PERENNIAL RYE GRASS.
14. LIME, FERTILIZER, AND SEED WILL BE APPLIED. HYDRO-MULCH PRODUCTS SHALL BE MIXED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS, OR EROSION CONTROL BLANKET SHALL BE INSTALLED PER PLANS & SPECIFICATIONS.
15. FINAL SEEDING MUST OCCUR WITHIN 7 DAYS OF FINAL GRADING.
16. WHEN SITE IS STABILIZED, ALL EROSION AND SEDIMENT CONTROL MEASURES CAN BE REMOVED AND REPAIR/STABILIZE THOSE AREAS IN ACCORDANCE WITH STATE STANDARDS.
17. FINAL SITE INSPECTION. A NOTICE OF TERMINATION SHOULD BE FILED WITH DEP UPON FINAL STABILIZATION. .

GENERAL CONSTRUCTION NOTES

1. THE WELL PAD AND FRESHWATER IMPOUDMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK AND SHALL CONFORM GENERALLY WITH THE GRADES, BERMS, AND DIMENSIONS SHOWN.
2. THE CONSTRUCTION DOCUMENTS SHOW THE EXISTING AND PROPOSED GRADES AND BERMS, ETC. THAT ALL CUT AND FILL ESTIMATES ARE BASED UPON THE ENGINEER'S ESTIMATES OF THE QUANTITIES ARE ONLY ESTIMATES AND MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS.
3. THE GRADES, BERMS, DEPTHS, AND DIMENSIONS MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS. THE ENGINEER RESERVES THE RIGHT TO CHANGE GRADES, BERMS, DEPTHS AND DIMENSIONS AS NECESSARY TO MEET FIELD CONDITIONS.
4. THE CONTRACTOR SHALL PROVIDE THE ENGINEER ALL REASONABLE FACILITIES AND PROVIDE INFORMATION AND SAMPLES AS REQUIRED BY THE ENGINEER FOR PROPER MONITORING AND TESTING OF MATERIAL WORKMANSHIP.
5. THE CONTRACTOR SHALL HAVE ON SITE AT ALL TIMES WHEN CONSTRUCTION IS IN PROGRESS A COMPETENT SUPERINTENDENT THOROUGHLY FAMILIAR WITH THE CONSTRUCTION OF EARTH BERMS AND EMBANKMENTS, THE COMPACTION OF SOILS AND PLACEMENTS OF LINERS.
6. THE CONTRACTOR SHALL INSTALL FILTER SOCK AND SUPER SILT FENCE PRIOR TO CLEARING AND GRUBBING AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH WVDEP BEST MANAGEMENT PRACTICES MANUAL CHAPTER 3. SURFACE WATER SHALL BE DIVERTED AWAY FROM ALL EXCAVATIONS AND THE FACE OF ALL FILLS TO PREVENT FLOODING AND SOFTENING OF THE SUBGRADE OR COMPACTED MATERIALS.
7. CLEARING AND GRUBBING SHALL REMOVE ALL BRUSH, TREES, ROOTS, STUMPS, FENCES, SIGNS OR ANY OTHER MATERIAL THAT IS NOT TO BE REUSED FOR THE CONSTRUCTION. SOME STUMPS MAY REMAIN AT THE APPROVAL OF THE ENGINEER. NO CLEARING DEBRIS SHALL BE BURIED ON-SITE. FOR CLEARING WITHIN PERMITTED LOD, STUMPS AND ROOTS LARGER THAN 2 INCHES IN DIAMETER SHALL BE COMPLETELY GRUBBED AND PROPERLY DISPOSED OF OFF-SITE. ALL TIMBER, TREETOPS, BRANCHES, STUMPS LESS THAN 2 INCHES IN DIAMETER, ETC., WILL BE CHIPPED, GROUND, AND/OR MULCHED AND USED AS SITE BMP'S WITH THE REMAINDER BEING PROPERLY DISPOSED OF OFF-SITE. CLEARING TO BE COMPLETED ONLY AS NEEDED WITHIN THE LOD TO CONSTRUCT THE FACILITY AS DEPICTED.
8. TOP SOIL SHALL BE STRIPPED AND STOCKPILED WITH APPROPRIATE STABILIZATION TO PREVENT EROSION. THE TOP SOIL SHALL BE REUSED DURING THE RECLAMATION PROCESS AS NEEDED.
9. PRIOR TO PLACING ANY FILL, THE EXPOSED SUBGRADE SHALL BE COMPACTED AND PROOF ROLLED TO PRODUCE A STABLE AND UNYIELDING SITE.
10. RIPRAP USED AS OUTLET PROTECTION MUST BE HARD, ANGULAR AND OF A QUALITY RESISTANT TO WEATHERING AND DISINTEGRATION. RIPRAP SHOULD BE GROUTED ON STEEP OR LENGTHY FILL SLOPES WITH A MINIMUM THICKNESS TWO TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN SIX INCHES.
11. ALL FILL SHALL BE PLACED IN LOOSE LIFTS OF UP TO 12" AND SHALL BE COMPACTED TO AT LEAST 95% OF THE LABORATORY MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST METHOD (ASTM D 698). THE MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE LIMITS OF THE STANDARD PROCTOR TEST RESULTS. SOME SOILS CANNOT BE COMPACTED TO 95% OF THE STANDARD PROCTOR AT PLUS OR MINUS 4% MOISTURE CONTENT. CONTRACTOR IS RESPONSIBLE FOR THE ORIGINAL SOIL TEST AND PROVIDING A COPY OF THE RESULTS WITH MOISTURE-DENSITY CURVE TO THE ENGINEER. THE CONTRACTOR SHALL DO IN-PLACE DENSITY TESTS EVERY THIRD LIFT OF SOIL. FIELD DENSITY TESTS FOR COMPACTION SHALL BE PERFORMED IN ACCORDANCE WITH ASTM D 2922 (NUCLEAR METHOD). RECORDS SHALL BE MAINTAINED OF TEST LOCATION AND RESULTS AND PROVIDED TO THE ENGINEER ON REQUEST. AREAS THAT FAIL FOR COMPACTION SHALL BE REMOVED, RE-COMPACTED AND RETESTED FOR COMPLIANCE. IN LIEU OF STANDARD PROCTOR TESTING, THE CONTRACTOR MAY PROOF-ROLL THE SOIL EVERY 24" OF SOIL LIFT WITH A LOADED 15 TON TANDEM DUMP TRUCK. SOIL THAT DEFLECTS UNDER THE REAR WHEELS GREATER THAN 1/2" SHALL BE REMOVED, RE-COMPACTED AND RETESTED. COMPACTION OF SOIL SHALL BE DONE WITH A 5 TON SMOOTH, SHEEPS FOOT, OR VIBRATORY ROLLER.
12. ON-SITE FILL SHALL BE USED TO THE MAXIMUM EXTENT POSSIBLE. ANY IMPORTED FILL SHALL BE CERTIFIED BY THE CONTRACTOR TO BE CLEAR OF ALL HAZARDOUS SUBSTANCES OR MATERIALS. IF MATERIAL IS ENCOUNTERED THAT CANNOT BE RIPPED BY A CAT D6 WITH A SINGLE TOOTH RIPPER, THEN THE CONTRACTOR SHALL CONTACT THE ENGINEER WHO WILL VISIT THE SITE AND DETERMINE IF THE MATERIAL MAY BE USED AS IS OR MUST BE REMOVED BY OTHER MEANS. IF UNSUITABLE SOILS IN THE SUBGRADE ARE FOUND THEY SHALL BE REMOVED AND REPLACED WITH APPROPRIATE FILL AT THE CONTRACTOR'S EXPENSE AND THE ENGINEER'S DIRECTION.
13. IF SPRINGS OR SEEPS ARE ENCOUNTERED, SUBSURFACE DRAINAGE FEATURES SHALL BE INSTALLED PRIOR TO FILL PLACEMENT. CONTACT ENGINEER FOR EVALUATION AND RECOMMENDATION OF CORRECTIVE MEASURES.
14. THE FILL TOE FOR ALL EMBANKMENTS SHALL BE BENCHED OR KEYED INTO THE NATURAL SOIL. ALL FILL TOES SHALL BE SUPPORTED BY COMPETENT BEDROCK OR SOIL MATERIAL.
15. FILL PLACED AGAINST EXISTING SLOPES SHALL BE BENCHED INTO THE EXISTING MATERIAL DURING ALL PLACEMENT TO REDUCE THE POTENTIAL FOR DEVELOPMENT OF A SMOOTH INTERFACE BETWEEN THE FILL AND EXISTING SLOPE.
16. ANY SOFT AREAS SHALL BE OVER-EXCAVATED TO A FIRM MATERIAL AND BACKFILLED WITH A WELL COMPACTED STRUCTURAL FILL.
17. FILL REQUIRED TO OBTAIN DESIGN GRADES SHALL BE PLACED AS CONTROLLED, COMPACTED. ALL THE FILL SHALL BE FREE OF TRASH, WOOD, TOPSOIL, ORGANICS, COAL, COAL MINE REFUSE, FROZEN MATERIAL AND PIECES OF ROCK GREATER THAN 6" IN ANY DIMENSION.
18. DURING PLACEMENT OF MATERIAL, MOISTEN OR AERATE EACH LAYER OF FILL, AS NECESSARY, TO OBTAIN THE REQUIRED COMPACTION. FILL SHOULD NOT BE PLACED ON SURFACES THAT ARE MUDDY OR FROZEN, OR HAVE NOT BEEN APPROVED BY PRIOR PROOF-ROLLING. FREE WATER SHALL BE PREVENTED FROM APPEARING ON THE SURFACE DURING OR SUBSEQUENT TO COMPACTION OPERATIONS.
19. SOIL MATERIAL WHICH IS REMOVED BECAUSE IT IS TOO WET TO PERMIT PROPER COMPACTION MAY BE SPREAD AND ALLOWED TO DRY. DRYING CAN BE FACILITATED BY DISKING OR HARROWING UNTIL THE MOISTURE CONTENT IS REDUCED TO AN ACCEPTABLE LEVEL. WHEN THE SOIL IS TOO DRY, WATER MAY BE UNIFORMLY APPLIED TO THE LAYER TO BE COMPACTED.
20. THE FILL OUTSLOPES SHALL BE OVERBUILT AND TRIMMED BACK TO DESIGN CONFIGURATIONS TO VERIFY PROPER COMPACTION.
21. GRANULAR MATERIALS, SUCH AS AASHTO NO. 57 STONE SHALL BE COMPACTED TO 85% OF ITS RELATIVE DENSITY, AS DETERMINED BY ASTM D 4253 AND D 4254 TEST METHODS.
22. PHOTOGRAPHIC DOCUMENTATION SHALL BE TAKEN BY THE CONTRACTOR AND PROVIDED TO THE ENGINEER OF THE FOLLOWING ACTIVITIES;
    - SITE AFTER CLEARING AND GRUBBING;
    - THE SITE AFTER TOPSOIL REMOVAL;
    - TOE KEY AND INSPECTION TRENCH CONSTRUCTION;
    - DAILY PHOTOS OF CUT AND FILL OPERATIONS;
    - PROOF-ROLLING TESTS.
23. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A COMPLETE BINDER THAT INCLUDES ALL PHOTO DOCUMENTATION, ALL COMPACTION TEST REPORTS, RESULTS AND MAPS, AND A REPORT OF ALL CUT AND FILL VOLUMES IN CUBIC YARDS.

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY
20711

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY

1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

NOTES

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

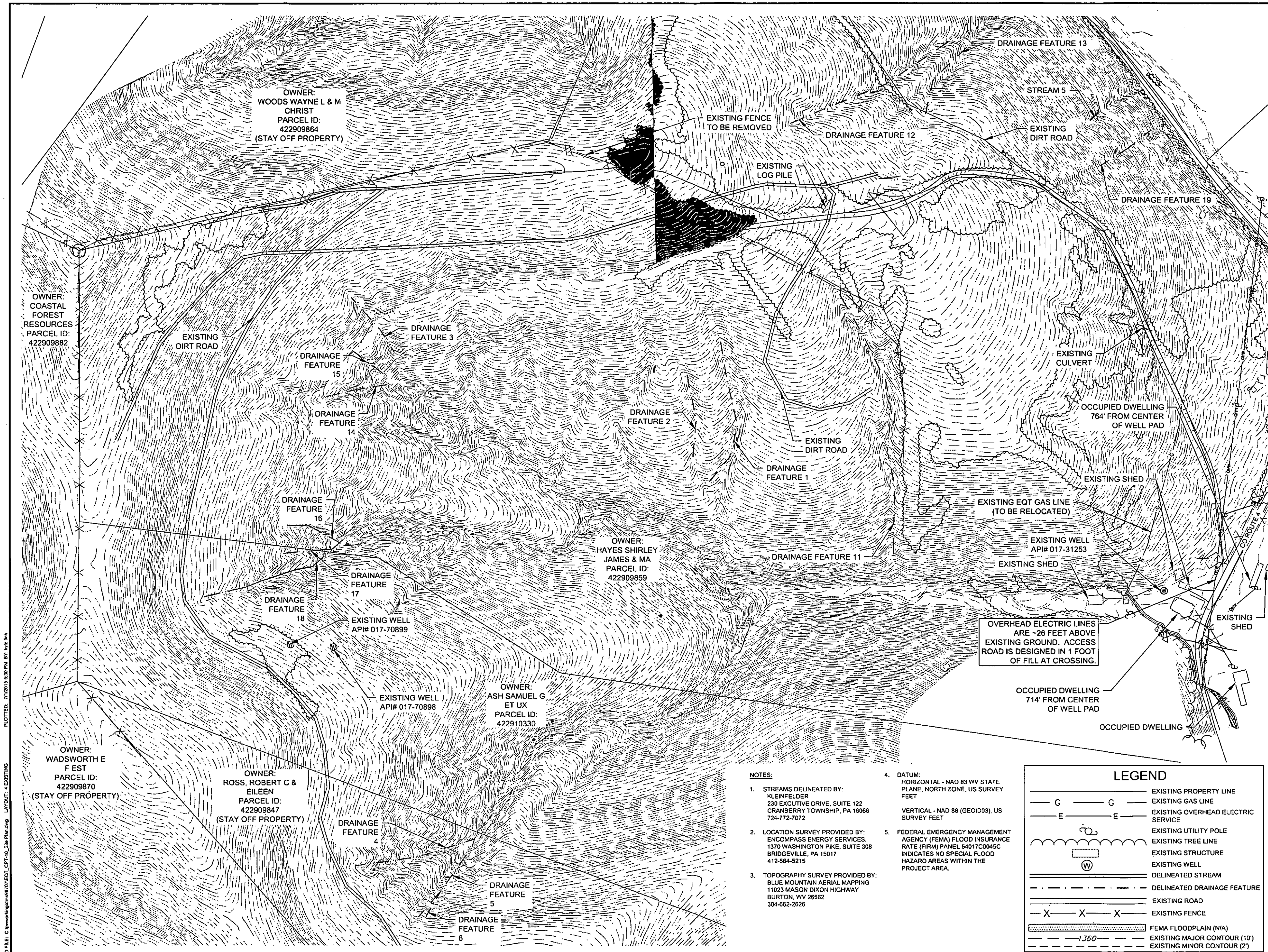
PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

3

SHEET 3 of 25

CAD FILE: C:\pwworking\dms98707\EQT_CPT-10_NOTES_DETAILS.dwg LAYOUT: NOTES PLOTTED: 7/1/2015 5:29 PM BY: kyle fink



NOTES:

1. STREAMS DELINEATED BY:
   KLEINFELDER
   230 EXCUTIVE DRIVE, SUITE 122
   CRANBERRY TOWNSHIP, PA 16066
   724-772-7072
2. LOCATION SURVEY PROVIDED BY:
   ENCOMPASS ENERGY SERVICES.
   1370 WASHINGTON PIKE, SUITE 308
   BRIDGEVILLE, PA 15017
   412-564-5215
3. TOPOGRAPHY SURVEY PROVIDED BY:
   BLUE MOUNTAIN AERIAL MAPPING
   11023 MASON DIXON HIGHWAY
   BURTON, WV 26562
   304-662-2626
4. DATUM:
   HORIZONTAL - NAD 83 WV STATE PLANE, NORTH ZONE, US SURVEY FEET

   VERTICAL - NAD 88 (GEOID03), US SURVEY FEET
5. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE (FIRM) PANEL 54017C0045C INDICATES NO SPECIAL FLOOD HAZARD AREAS WITHIN THE PROJECT AREA.

LEGEND

- EXISTING PROPERTY LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC SERVICE
- EXISTING UTILITY POLE
- EXISTING TREE LINE
- EXISTING STRUCTURE
- EXISTING WELL
- DELINEATED STREAM
- DELINEATED DRAINAGE FEATURE
- EXISTING ROAD
- EXISTING FENCE
- FEMA FLOODPLAIN (N/A)
- EXISTING MAJOR CONTOUR (10')
- EXISTING MINOR CONTOUR (2')

KLEINFELDER
Bright People. Right Solutions.

230 Excutive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 100 200 300
SCALE: 1" = 100' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

EXISTING CONDITIONS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

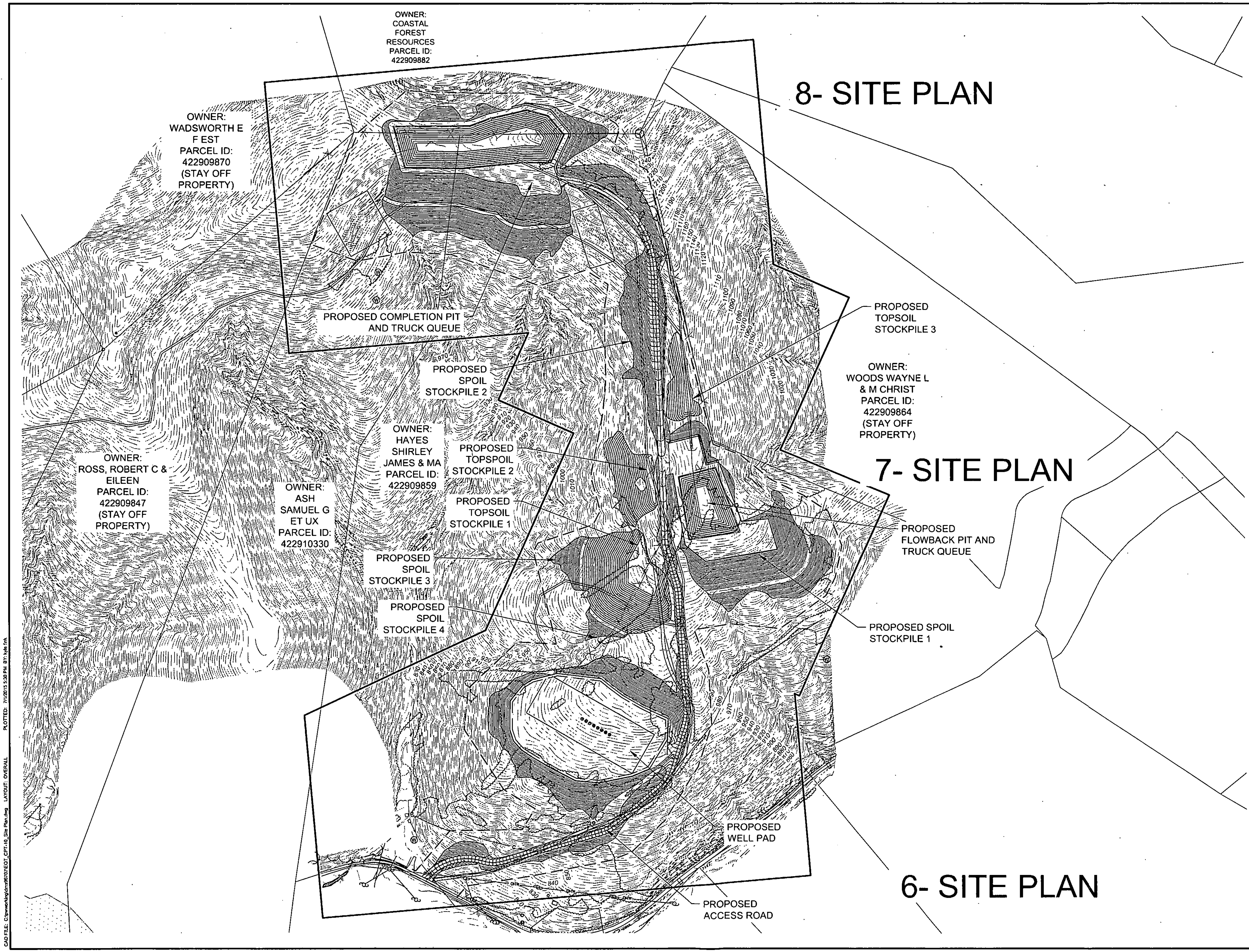
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

4

SHEET 4 of 25



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 150 300 450
SCALE: 1" = 150' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

OVERALL PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

5

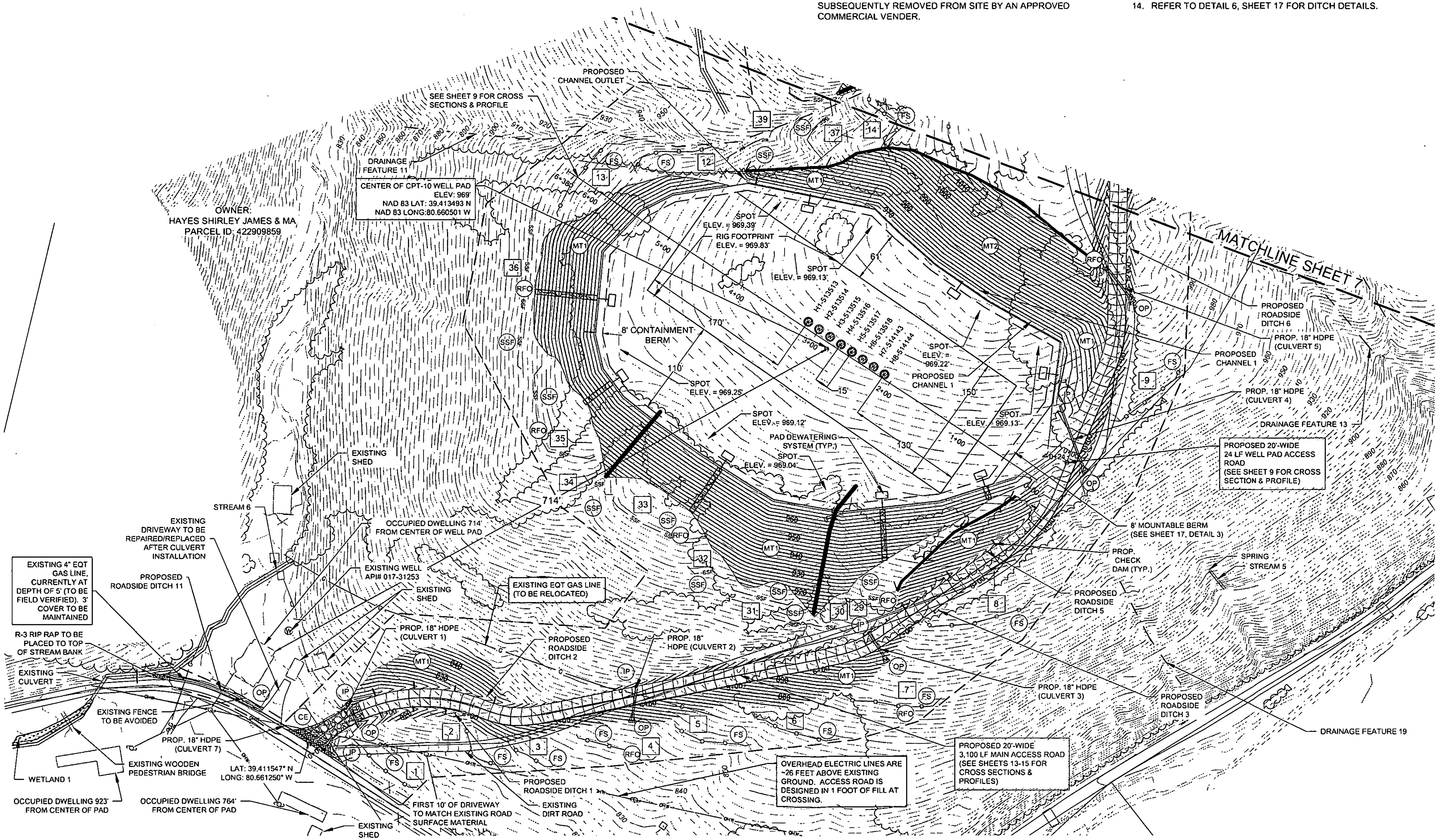
SHEET 5 of 25

LEGEND

	EXISTING PROPERTY LINE
— G — G —	EXISTING GAS LINE
— E — E —	EXISTING OVERHEAD ELECTRIC SERVICE
	EXISTING UTILITY POLE
	EXISTING TREE LINE
	EXISTING STRUCTURE
(W)	EXISTING WELL
	DELINEATED STREAM
	DELINEATED WETLAND
	DELINEATED DRAINAGE FEATURE
	EXISTING ROAD
— X — X — X —	EXISTING FENCE
	FEMA FLOODPLAIN (N/A)
— 1360 —	EXISTING MAJOR CONTOUR (10')
	EXISTING MINOR CONTOUR (2')
— 1360 —	PROP. MAJOR CONTOUR (10')
	PROP. MAJOR CONTOUR (10')
	PROP. LIMITS OF DISTURBANCE
	PROP. PAD & ROAD EDGE
24	SUPER SILT FENCE AND FILTER SOCK INDICATION (SEE SHEET 19 FOR SUPER SILT FENCE AND FILTER SOCK TABLE)
(FS)	PROP. FILTER SOCK
(SSF) — SSF — SSF —	PROP. SUPER SILT FENCE
(CE)	PROP. ROCK CONSTRUCTION ENTRANCE
(RFO)	PROP. ROCK FILTER OUTLET
(OP)	PROP. OUTLET PROTECTION
(IP)	PROP. INLET PROTECTION
	PROP. PVC PIPE FOR SUMP SYSTEM
	PROP. CHECK DAM
	PROP. RIP RAP APRON
	PROP. RIP RAP OUTLETS
FES	FLARED END SECTION
(MT1)	PROP. NAG C125BN EROSION CONTROL MATTING*
(MT2)	PROP. NAG C350 EROSION CONTROL MATTING*
	PROP. CULVERT
	PROP. DITCH
	PROP. PAD PERIMETER SUMP
(W)	PROP. WELL HEAD
	PROP. FRENCH DRAIN
	PROP. TOP OF SLOPE BERM

NOTES:

1. THE GRADE SHOWN REPRESENT FINISH GRADE ELEVATIONS.
2. PIPE MATERIALS SHALL BE AS NOTED ON THE PLAN AND IN THE STORM DRAINAGE COMPUTATION ON SHEET 16.
3. CUT AND FILL SLOPES SHALL BE AT 2H:1V UNLESS NOTED OTHERWISE.
4. FILL SHALL BE PLACED IN 12" LIFTS AND BE COMPACTED TO 95% STANDARD PROCTOR.
5. INTERMEDIATE TOE BENCHES SHALL BE INSTALLED ON FILL SLOPES AT INTERVALS OF 50' VERTICAL FEET OR LESS IF SOILS CONDITIONS WARRANT ADDITIONAL SLIP PRECAUTIONS.
6. ALL FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 20.
7. POSITIVE FLOW FROM PAD TO SUMPS. SEDIMENT AND MATERIALS REMOVED FROM THE PAD SUMPS SHALL BE PUMPED TO ON-SITE HOLDING/STORAGE TANKS AND SUBSEQUENTLY REMOVED FROM SITE BY AN APPROVED COMMERCIAL VENDER.
8. ALL STORMWATER CONVEYANCES ON THE SITE HAVE BEEN DESIGNED TO ACCOMMODATE THE 10-YEAR STORM EVENT.
9. SEE DETAIL 9, SHEET 18 FOR RIP RAP OUTLET PROTECTION AND SIZING AND DESIGN.
10. CONTRACTOR TO INSTALL ROCK CHECK DAMS WITHIN ROADSIDE DITCHES. SEE DETAIL 17 ON PAGE 19 FOR SPACING REQUIREMENTS. ROCK CHECK DAMS WILL BE INSTALLED DURING CONSTRUCTION AS EROSION CONTROL MEASURES AND REMAIN IN PLACE AS PERMANENT CHECK DAMS AFTER CONSTRUCTION IS COMPLETE.
11. FILTER SOCK AND SUPER SILT FENCE SIZING TABLE IS SHOWN IN DETAIL 18, SHEET 19.
12. IN TOPSOIL PLACEMENT AREAS, CONTRACTOR TO INSTALL PROPER BMPS TO ENSURE NO OFFSITE EROSION & SEDIMENTATION RUNOFF.
13. INSTALL ROCK FILTER OUTLETS ALONG SEDIMENT BARRIERS AS SHOWN AND AT LOW POINTS AS IDENTIFIED IN THE FIELD.
14. REFER TO DETAIL 6, SHEET 17 FOR DITCH DETAILS.



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

SITE PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

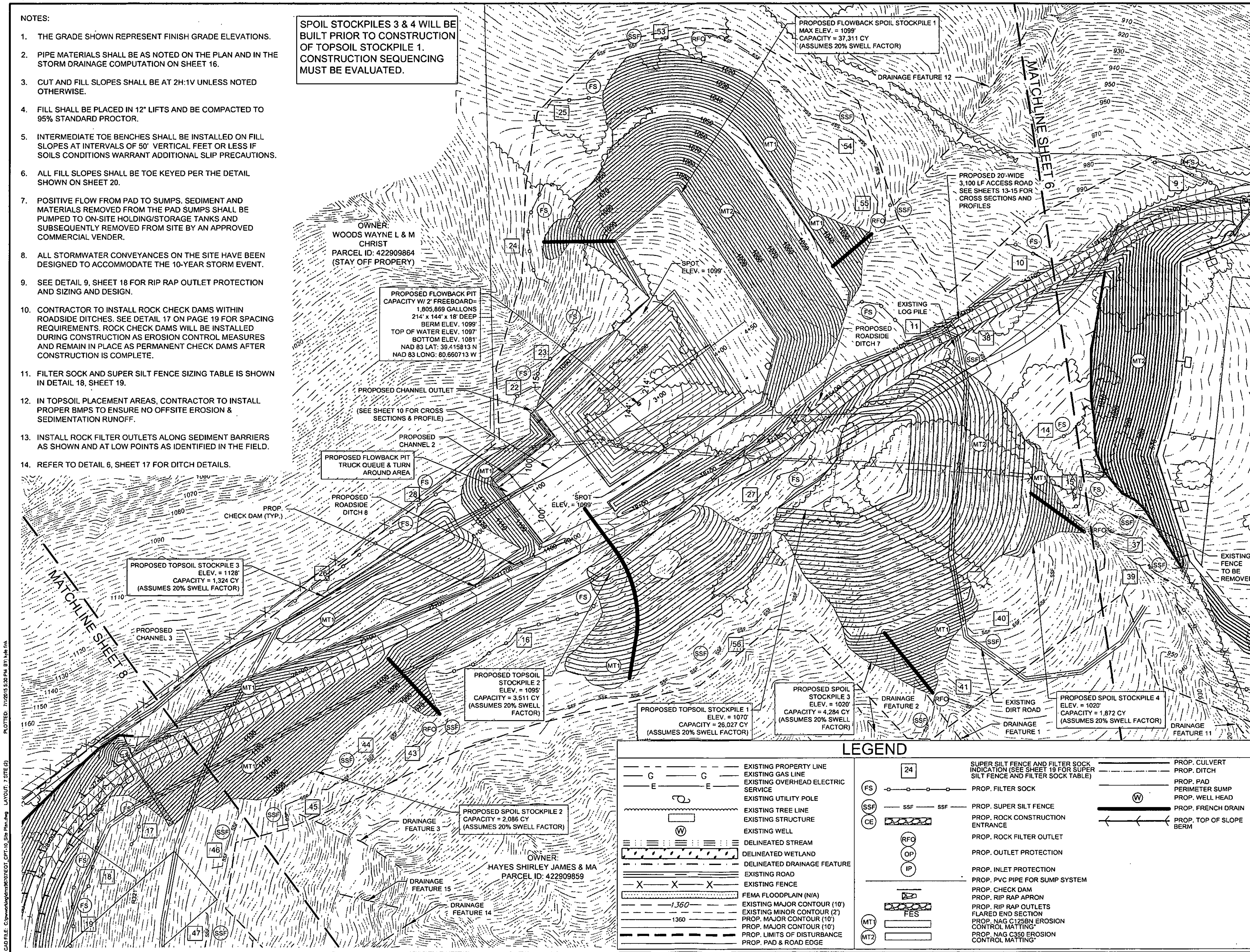
SHEET 6

6 of 25

NOTES:

1. THE GRADE SHOWN REPRESENT FINISH GRADE ELEVATIONS.
2. PIPE MATERIALS SHALL BE AS NOTED ON THE PLAN AND IN THE STORM DRAINAGE COMPUTATION ON SHEET 16.
3. CUT AND FILL SLOPES SHALL BE AT 2H:1V UNLESS NOTED OTHERWISE.
4. FILL SHALL BE PLACED IN 12" LIFTS AND BE COMPACTED TO 95% STANDARD PROCTOR.
5. INTERMEDIATE TOE BENCHES SHALL BE INSTALLED ON FILL SLOPES AT INTERVALS OF 50' VERTICAL FEET OR LESS IF SOILS CONDITIONS WARRANT ADDITIONAL SLIP PRECAUTIONS.
6. ALL FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 20.
7. POSITIVE FLOW FROM PAD TO SUMPS. SEDIMENT AND MATERIALS REMOVED FROM THE PAD SUMPS SHALL BE PUMPED TO ON-SITE HOLDING/STORAGE TANKS AND SUBSEQUENTLY REMOVED FROM SITE BY AN APPROVED COMMERCIAL VENDER.
8. ALL STORMWATER CONVEYANCES ON THE SITE HAVE BEEN DESIGNED TO ACCOMMODATE THE 10-YEAR STORM EVENT.
9. SEE DETAIL 9, SHEET 18 FOR RIP RAP OUTLET PROTECTION AND SIZING AND DESIGN.
10. CONTRACTOR TO INSTALL ROCK CHECK DAMS WITHIN ROADSIDE DITCHES. SEE DETAIL 17 ON PAGE 19 FOR SPACING REQUIREMENTS. ROCK CHECK DAMS WILL BE INSTALLED DURING CONSTRUCTION AS EROSION CONTROL MEASURES AND REMAIN IN PLACE AS PERMANENT CHECK DAMS AFTER CONSTRUCTION IS COMPLETE.
11. FILTER SOCK AND SUPER SILT FENCE SIZING TABLE IS SHOWN IN DETAIL 18, SHEET 19.
12. IN TOPSOIL PLACEMENT AREAS, CONTRACTOR TO INSTALL PROPER BMPS TO ENSURE NO OFFSITE EROSION & SEDIMENTATION RUNOFF.
13. INSTALL ROCK FILTER OUTLETS ALONG SEDIMENT BARRIERS AS SHOWN AND AT LOW POINTS AS IDENTIFIED IN THE FIELD.
14. REFER TO DETAIL 6, SHEET 17 FOR DITCH DETAILS.

SPOIL STOCKPILES 3 & 4 WILL BE BUILT PRIOR TO CONSTRUCTION OF TOPSOIL STOCKPILE 1. CONSTRUCTION SEQUENCING MUST BE EVALUATED.



LEGEND

Symbol	Description	Symbol	Description	Symbol	Description
	EXISTING PROPERTY LINE	24	SUPER SILT FENCE AND FILTER SOCK INDICATION (SEE SHEET 19 FOR SUPER SILT FENCE AND FILTER SOCK TABLE)		PROP. CULVERT
G	EXISTING GAS LINE				PROP. DITCH
E	EXISTING OVERHEAD ELECTRIC SERVICE	FS	PROP. FILTER SOCK		PROP. PAD PERIMETER SUMP
	EXISTING UTILITY POLE			W	PROP. WELL HEAD
	EXISTING TREE LINE	SSF	PROP. SUPER SILT FENCE		PROP. FRENCH DRAIN
	EXISTING STRUCTURE	CE	PROP. ROCK CONSTRUCTION ENTRANCE		PROP. TOP OF SLOPE BERM
W	EXISTING WELL	RFO	PROP. ROCK FILTER OUTLET		
	DELINEATED STREAM				
	DELINEATED WETLAND	OP	PROP. OUTLET PROTECTION		
	DELINEATED DRAINAGE FEATURE				
	EXISTING ROAD	IP	PROP. INLET PROTECTION		
X	EXISTING FENCE		PROP. PVC PIPE FOR SUMP SYSTEM		
	FEMA FLOODPLAIN (N/A)		PROP. CHECK DAM		
1360	EXISTING MAJOR CONTOUR (10')		PROP. RIP RAP APRON		
	EXISTING MINOR CONTOUR (2')		PROP. RIP RAP OUTLETS		
1360	PROP. MAJOR CONTOUR (10')	FES	FLARED END SECTION		
	PROP. MAJOR CONTOUR (10')	MT1	PROP. NAG C125BN EROSION CONTROL MATTING*		
	PROP. LIMITS OF DISTURBANCE	MT2	PROP. NAG C350 EROSION CONTROL MATTING*		
	PROP. PAD & ROAD EDGE				

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180

SCALE: 1" = 60' SCALE IN FEET

ORIGINAL DRAWING SIZE IS 22 x 34

SITE PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

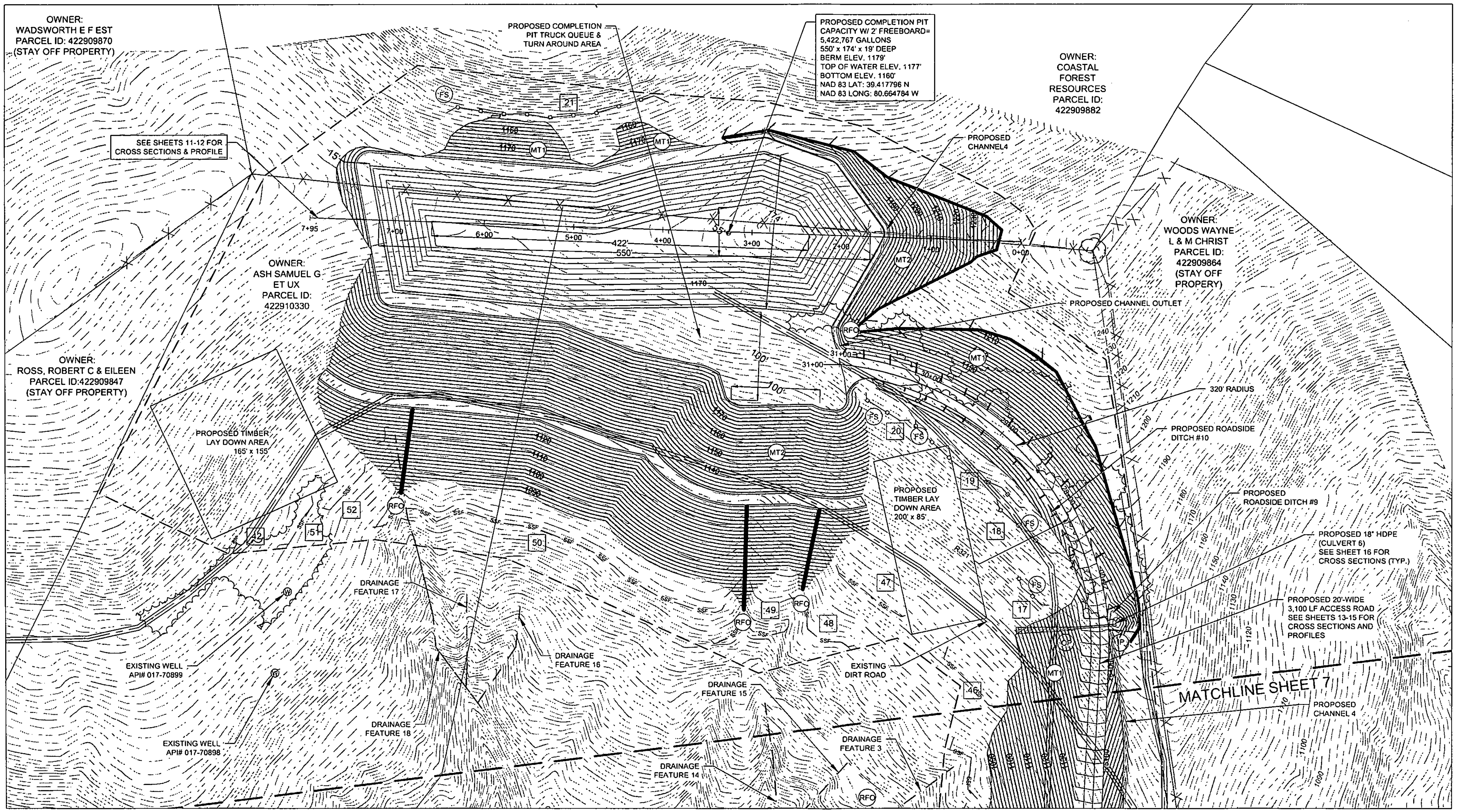
SHEET 7 of 25

LEGEND

- EXISTING PROPERTY LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC SERVICE
- EXISTING UTILITY POLE
- EXISTING TREE LINE
- EXISTING STRUCTURE
- EXISTING WELL
- DELINEATED STREAM
- DELINEATED WETLAND
- DELINEATED DRAINAGE FEATURE
- EXISTING ROAD
- EXISTING FENCE
- FEMA FLOODPLAIN (N/A)
- EXISTING MAJOR CONTOUR (10')
- EXISTING MINOR CONTOUR (2')
- PROP. MAJOR CONTOUR (10')
- PROP. MAJOR CONTOUR (10')
- PROP. LIMITS OF DISTURBANCE
- PROP. PAD & ROAD EDGE
- 24 — SUPER SILT FENCE AND FILTER SOCK INDICATION (SEE SHEET 19 FOR SUPER SILT FENCE AND FILTER SOCK TABLE)
- FS — PROP. FILTER SOCK
- SSF — PROP. SUPER SILT FENCE
- CE — PROP. ROCK CONSTRUCTION ENTRANCE
- RFO — PROP. ROCK FILTER OUTLET
- OP — PROP. OUTLET PROTECTION
- IP — PROP. INLET PROTECTION
- PROP. PVC PIPE FOR SUMP SYSTEM
- PROP. CHECK DAM
- PROP. RIP RAP APRON
- PROP. RIP RAP OUTLETS
- FES — FLARED END SECTION
- MT1 — PROP. NAG C125BN EROSION CONTROL MATTING*
- MT2 — PROP. NAG C350 EROSION CONTROL MATTING*
- PROP. CULVERT
- PROP. DITCH
- PROP. PAD PERIMETER SUMP
- W — PROP. WELL HEAD
- PROP. FRENCH DRAIN
- PROP. TOP OF SLOPE BERM

NOTES:

1. THE GRADE SHOWN REPRESENT FINISH GRADE ELEVATIONS.
2. PIPE MATERIALS SHALL BE AS NOTED ON THE PLAN AND IN THE STORM DRAINAGE COMPUTATION ON SHEET 16.
3. CUT AND FILL SLOPES SHALL BE AT 2H:1V UNLESS NOTED OTHERWISE.
4. FILL SHALL BE PLACED IN 12" LIFTS AND BE COMPACTED TO 95% STANDARD PROCTOR.
5. INTERMEDIATE TOE BENCHES SHALL BE INSTALLED ON FILL SLOPES AT INTERVALS OF 50' VERTICAL FEET OR LESS IF SOILS CONDITIONS WARRANT ADDITIONAL SLIP PRECAUTIONS.
6. ALL FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 20.
7. POSITIVE FLOW FROM PAD TO SUMPS. SEDIMENT AND MATERIALS REMOVED FROM THE PAD SUMPS SHALL BE PUMPED TO ON-SITE HOLDING/STORAGE TANKS AND SUBSEQUENTLY REMOVED FROM SITE BY AN APPROVED COMMERCIAL VENDER.
8. ALL STORMWATER CONVEYANCES ON THE SITE HAVE BEEN DESIGNED TO ACCOMMODATE THE 10-YEAR STORM EVENT.
9. SEE DETAIL 9, SHEET 18 FOR RIP RAP OUTLET PROTECTION AND SIZING AND DESIGN.
10. CONTRACTOR TO INSTALL ROCK CHECK DAMS WITHIN ROADSIDE DITCHES. SEE DETAIL 17 ON PAGE 19 FOR SPACING REQUIREMENTS. ROCK CHECK DAMS WILL BE INSTALLED DURING CONSTRUCTION AS EROSION CONTROL MEASURES AND REMAIN IN PLACE AS PERMANENT CHECK DAMS AFTER CONSTRUCTION IS COMPLETE.
11. FILTER SOCK AND SUPER SILT FENCE SIZING TABLE IS SHOWN IN DETAIL 18, SHEET 19.
12. IN TOPSOIL PLACEMENT AREAS, CONTRACTOR TO INSTALL PROPER BMPS TO ENSURE NO OFFSITE EROSION & SEDIMENTATION RUNOFF.
13. INSTALL ROCK FILTER OUTLETS ALONG SEDIMENT BARRIERS AS SHOWN AND AT LOW POINTS AS IDENTIFIED IN THE FIELD.
14. REFER TO DETAIL 6, SHEET 17 FOR DITCH DETAILS.



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

SITE PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

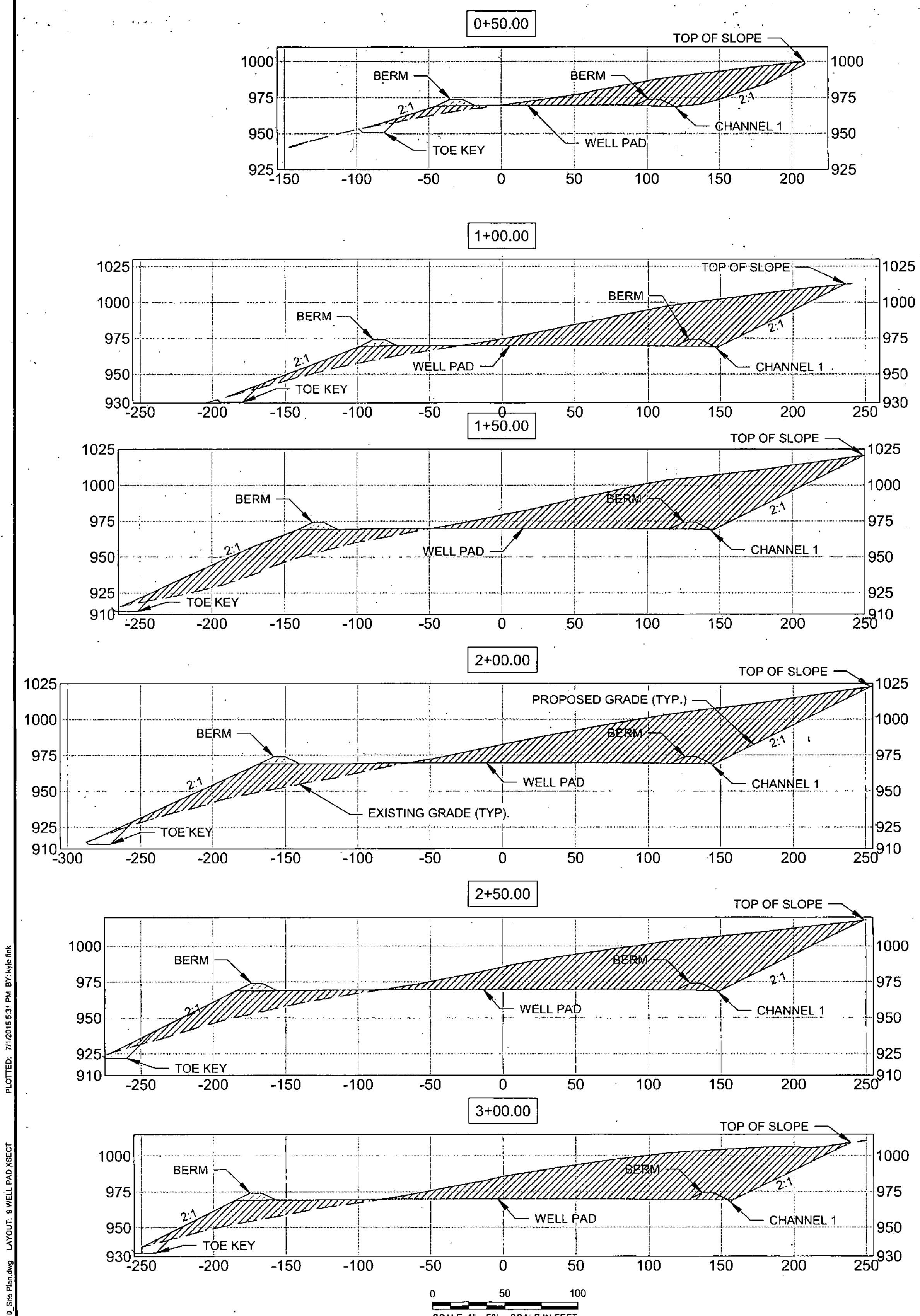
PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

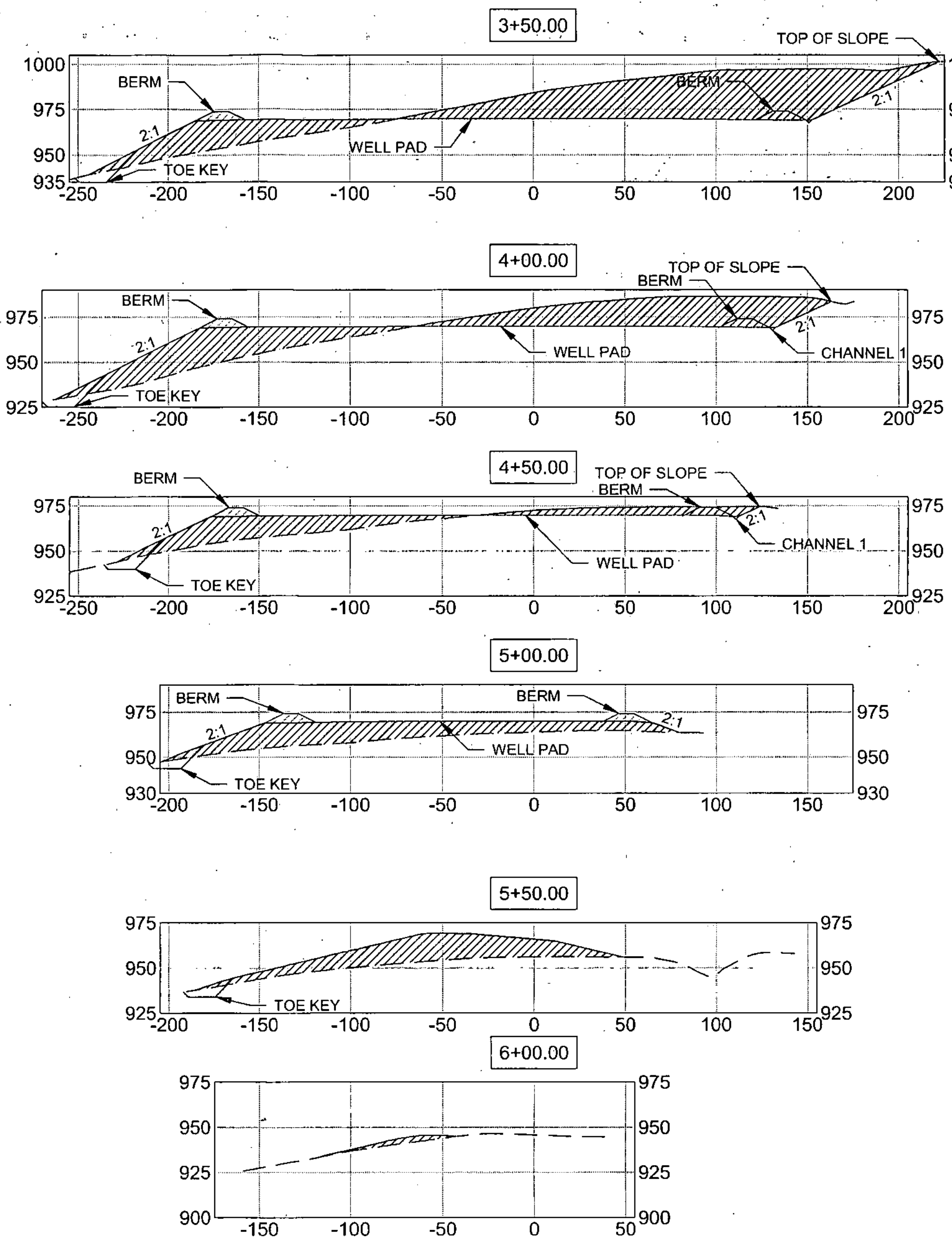
8

SHEET 8 of 25

CAD FILE: C:\pwworking\ems\d0870\EQT_CPT-10_Site Plan.dwg LAYOUT: 8 SITE PLOTTED: 7/1/2015 5:30 PM BY: kyle.fink



WELL PAD SECTIONS



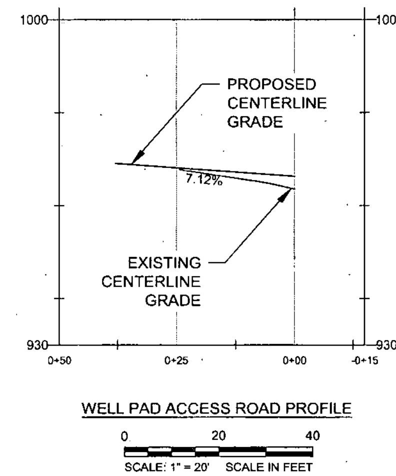
WELL PAD SECTIONS

LEGEND

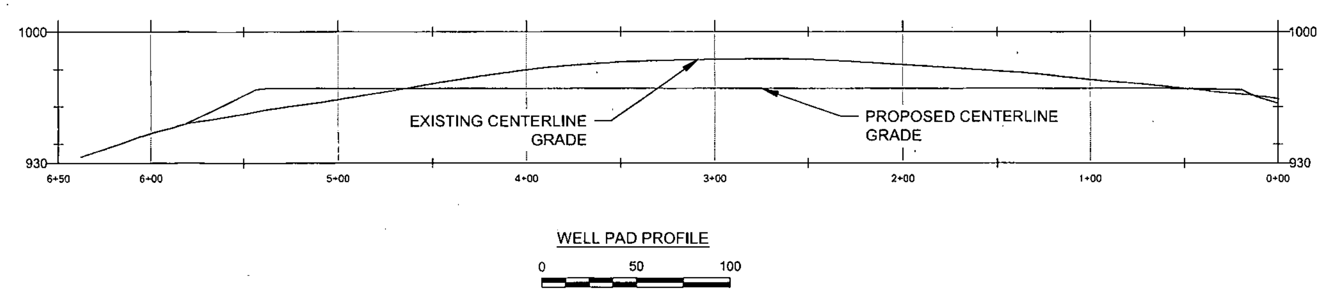
- AREA IN FILL
- AREA IN CUT
- EXISTING GRADE
- PROPOSED WELL PAD (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL WELL PAD INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES



WELL PAD ACCESS ROAD PROFILE



WELL PAD PROFILE

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

WELL PAD CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

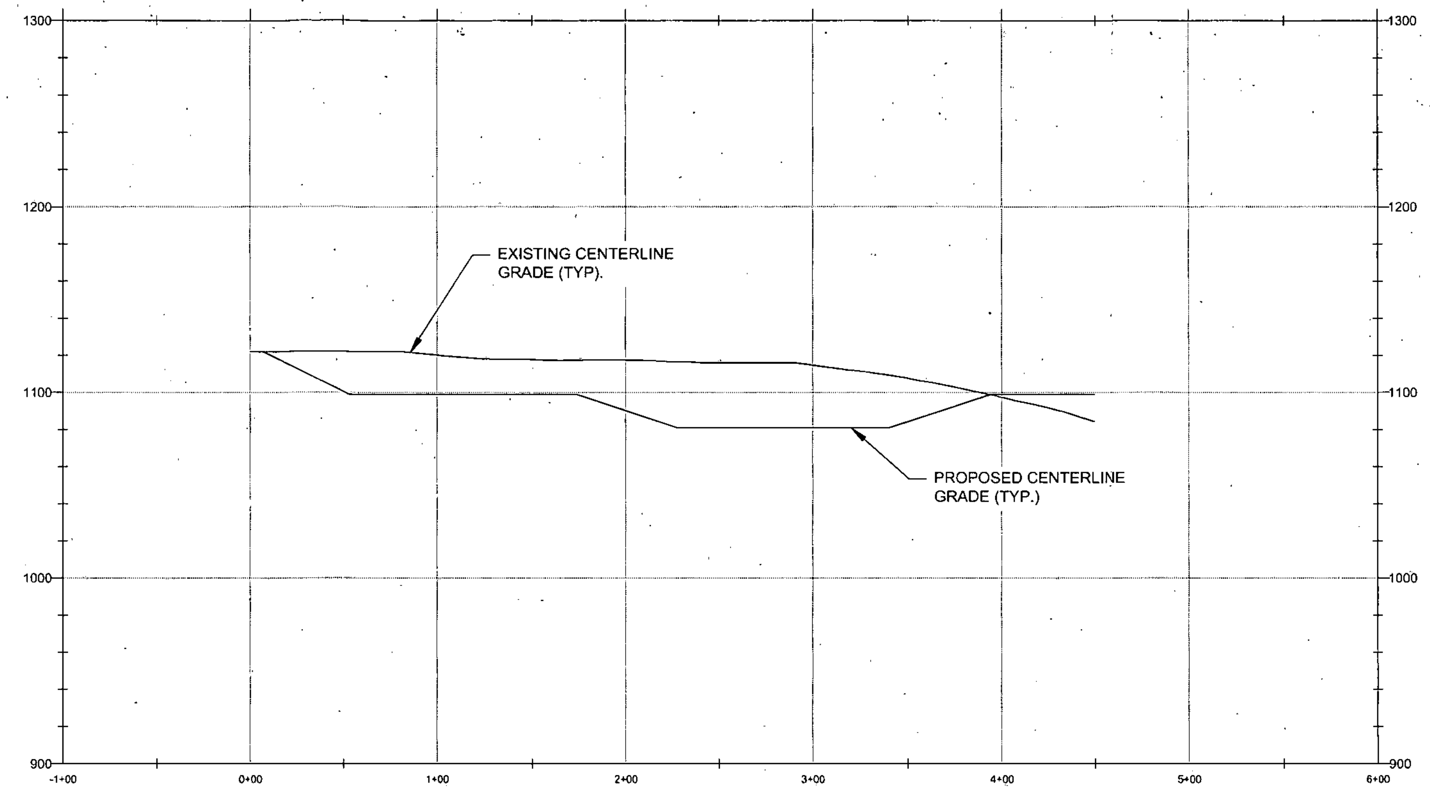
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

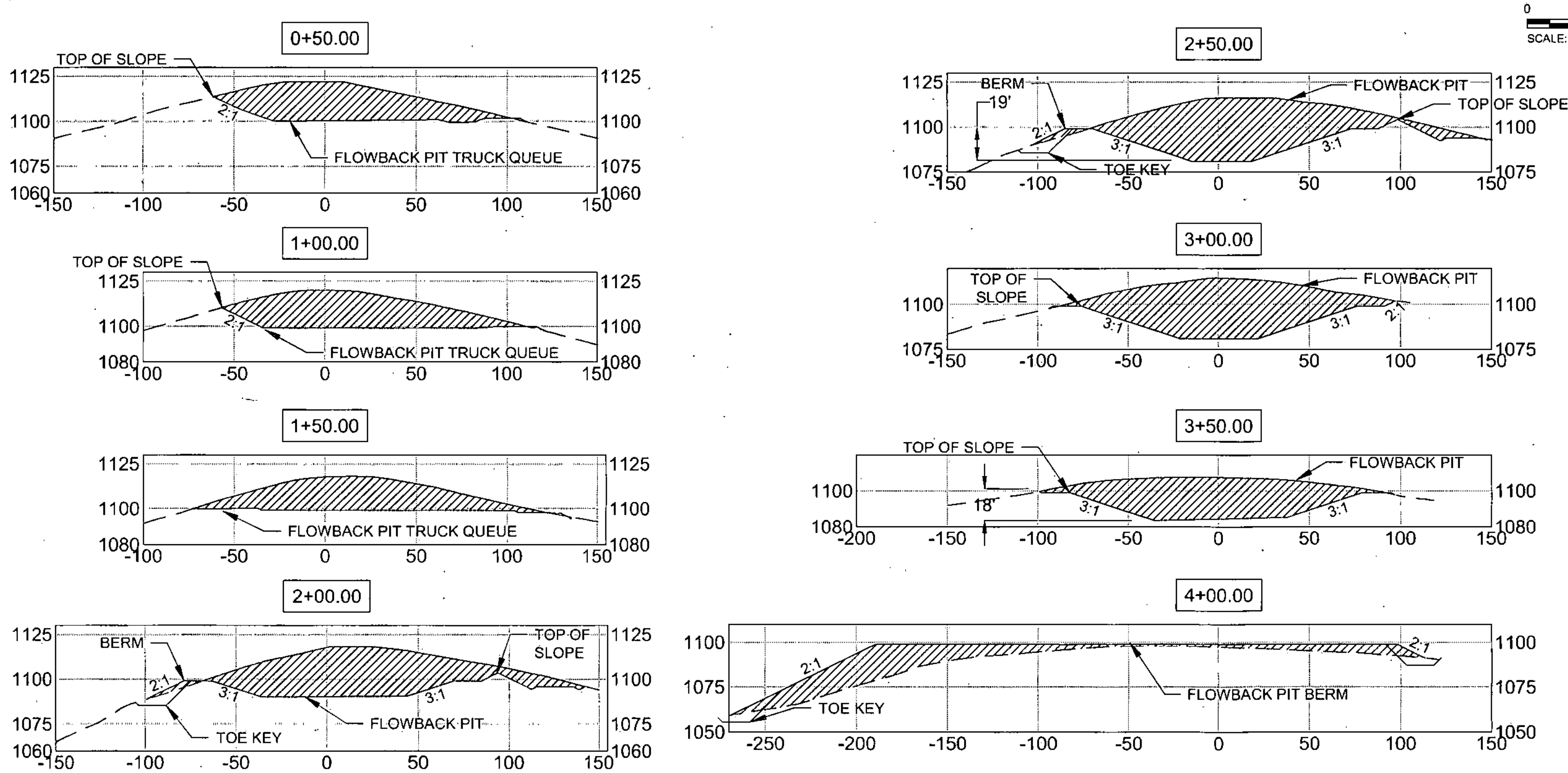
SHEET 9

PLOTTED: 7/1/2015 5:31 PM BY: kyle.fink LAYOUT: 9 WELL PAD XSECT CAD FILE: C:\pwworking\dms99107\EQT_CPT-10_Site Plan.dwg



FLOWBACK PIT PROFILE

0 50 100
SCALE: 1" = 50' SCALE IN FEET



FLOWBACK PIT SECTIONS

0 50 100
SCALE: 1" = 50' SCALE IN FEET

LEGEND

- AREA IN FILL
- AREA IN CUT
- EXISTING GRADE
- PROPOSED WELL FLOWBACK PIT AND FLOWBACK PIT ACCESS ROAD (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL WELL PAD INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

FLOWBACK PIT CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

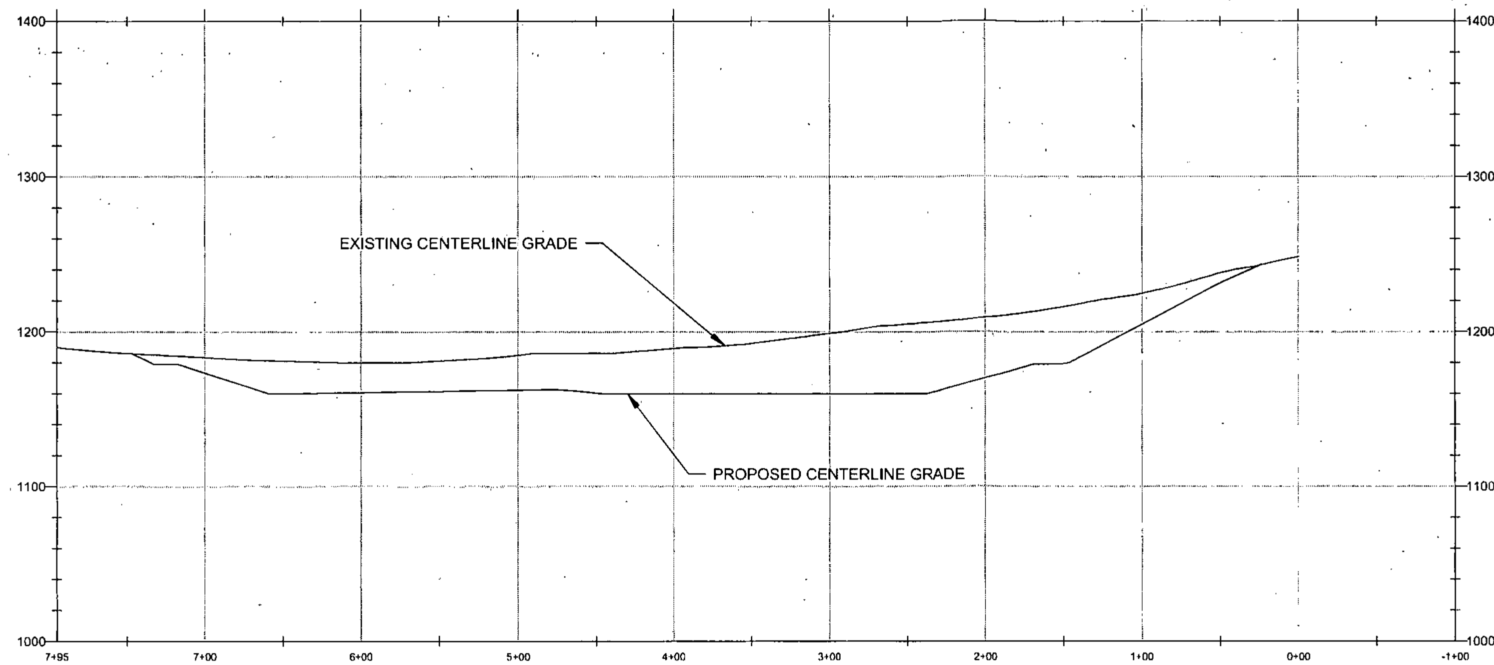
PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

10

SHEET 10 of 25

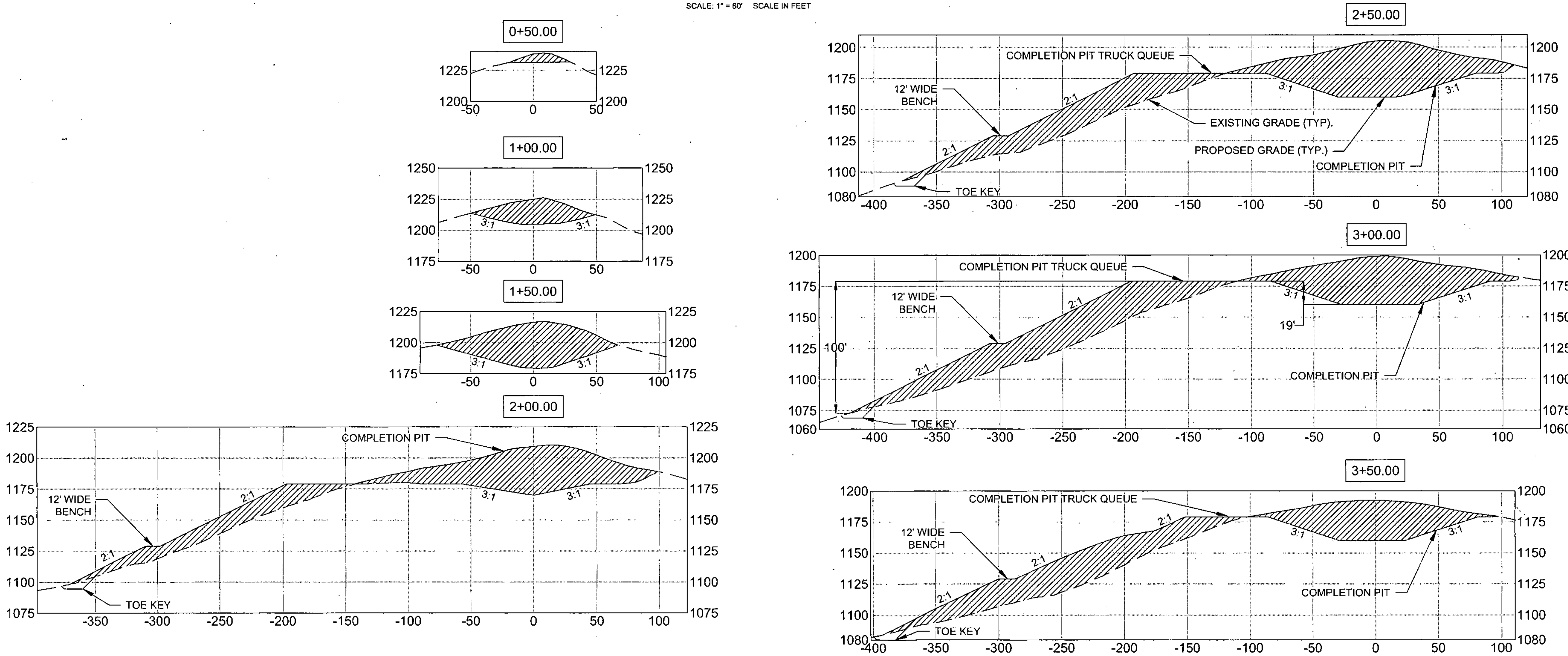
CAD FILE: C:\pwwork\...\EQT_CPT-10_Site Plan.dwg LAYOUT: 10 FLOW XSECT PLOTTED: 7/1/2015 5:31 PM BY: kyle fink



COMPLETION PIT PROFILE

0 60 120

SCALE: 1" = 60' SCALE IN FEET



COMPLETION PIT SECTIONS

0 50 100

SCALE: 1" = 50' SCALE IN FEET

LEGEND

AREA IN FILL

AREA IN CUT

EXISTING GRADE

PROPOSED COMPLETION PIT (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL COMPLETION PIT INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

COMPLETION PIT CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

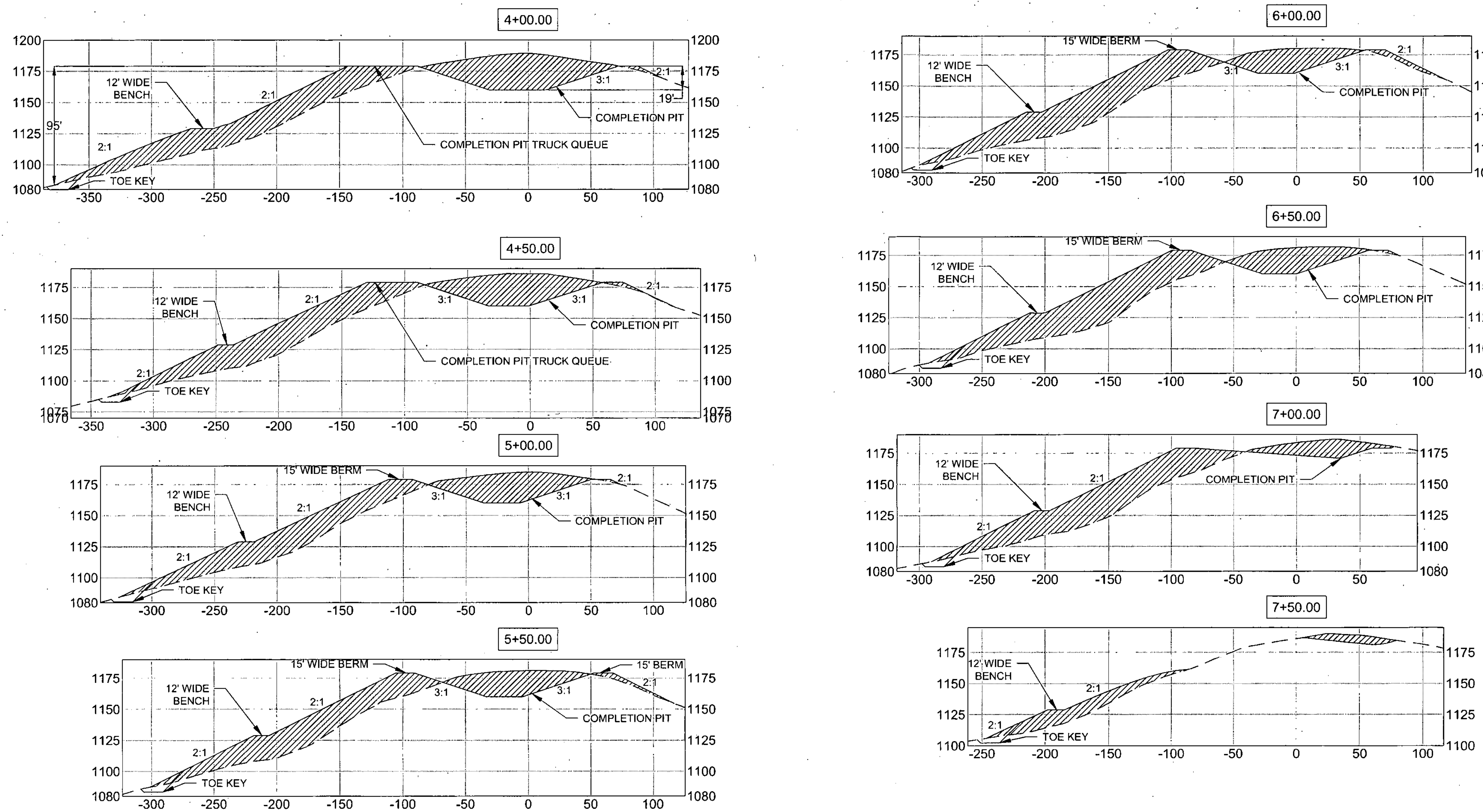
PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

11

SHEET 11 of 25

CAD FILE: C:\pwwork\jgtdms9610\EQT_CPT-10_Site Plan.dwg LAYOUT: 11. COMP XSECT PLOTTED: 7/1/2015 5:31 PM BY: kyle.fink



COMPLETION PIT SECTIONS

0 50 100

SCALE: 1" = 50' SCALE IN FEET

LEGEND

- AREA IN FILL
- AREA IN CUT
- EXISTING GRADE
- PROPOSED COMPLETION PIT (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL COMPLETION PIT INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

COMPLETION PIT CROSS SECTIONS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

Where energy meets innovation.

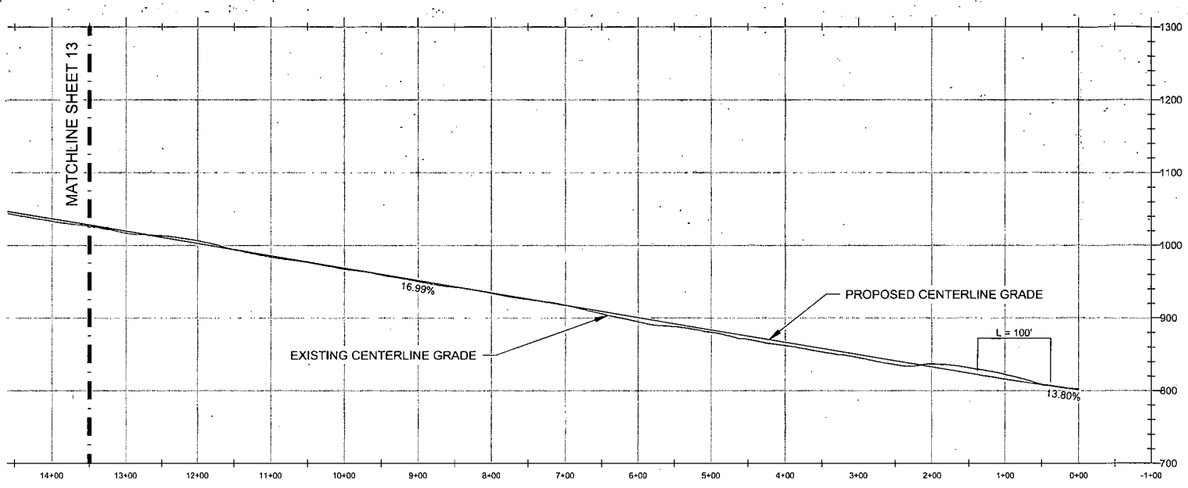
PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 12

12 of 25

CAD FILE: C:\pwworking\...\EQT_CPT-10_Site Plan.dwg LAYOUT: 12 COMP XSECT PLOTTED: 7/1/2015 5:32 PM BY: kyle fink



MAIN ACCESS ROAD PROFILE

0 100 200

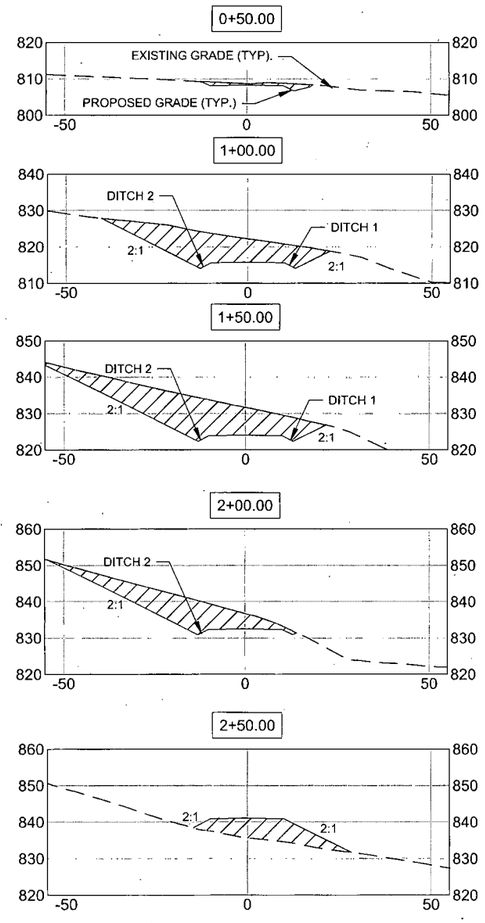
SCALE: 1" = 100' SCALE IN FEET

LEGEND

- AREA IN FILL
- AREA IN CUT
- EXISTING GRADE
- PROPOSED MAIN ACCESS ROAD (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL WELL PAD ACCESS ROAD INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES



MAIN ACCESS ROAD SECTIONS

0 20 40

SCALE: 1" = 20' SCALE IN FEET

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN DWN	CHK APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

MAIN ACCESS ROAD CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

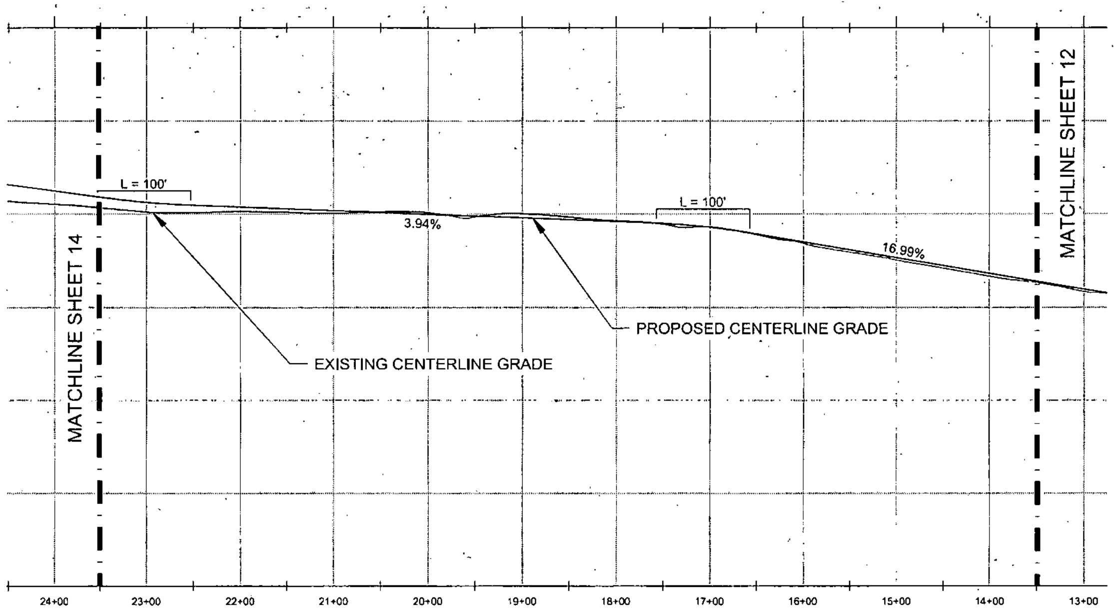
PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

13

SHEET 13 of 25

CAD FILE: C:\pwworkingdirs\8570\EQT_CPT-10_Site Plan.dwg LAYOUT: 13. MAIN AR XSECT PLOTTED: 7/1/2015 5:32 PM BY: kyle fish



MAIN ACCESS ROAD PROFILE

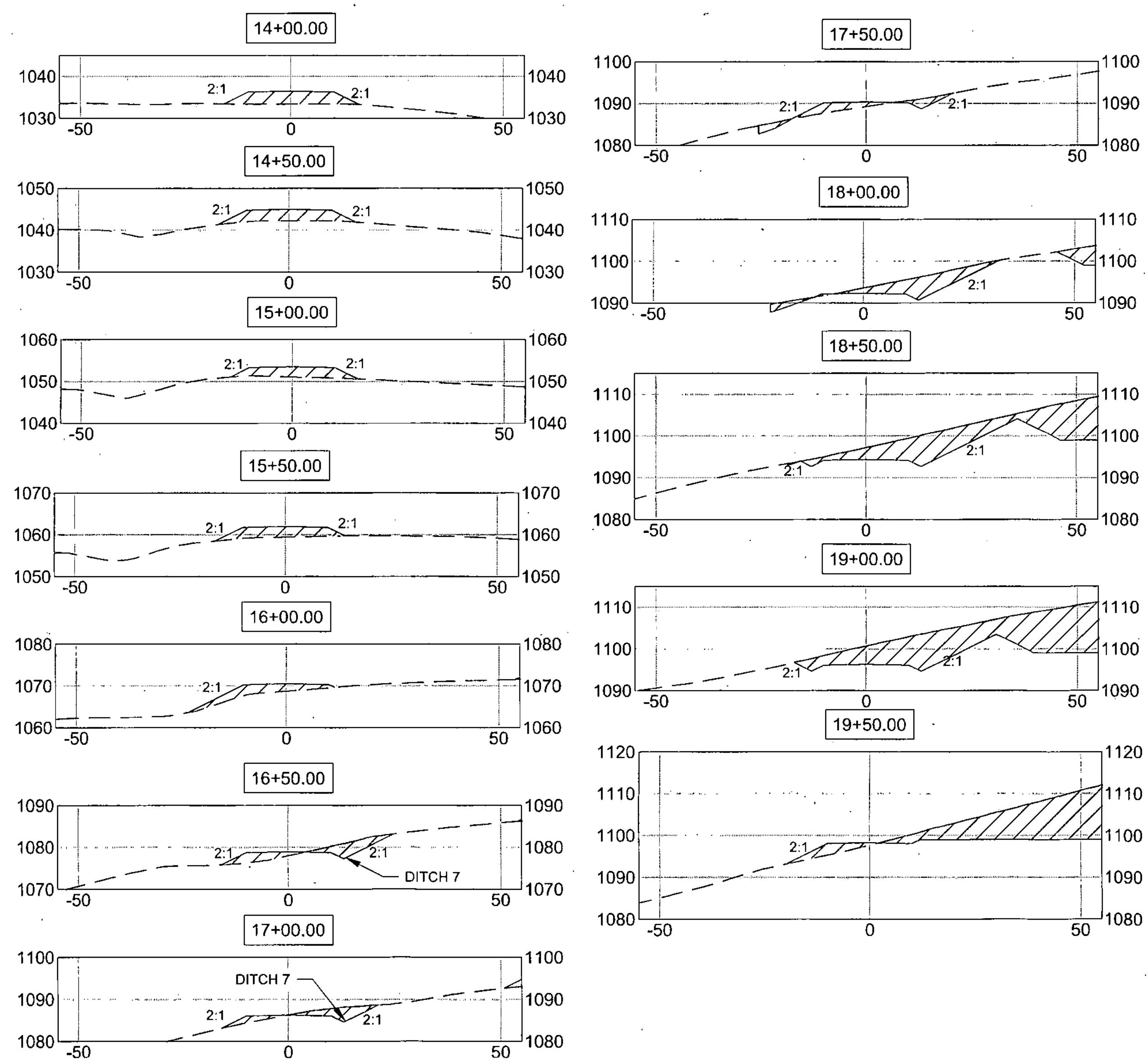
SCALE: 1" = 100' SCALE IN FEET

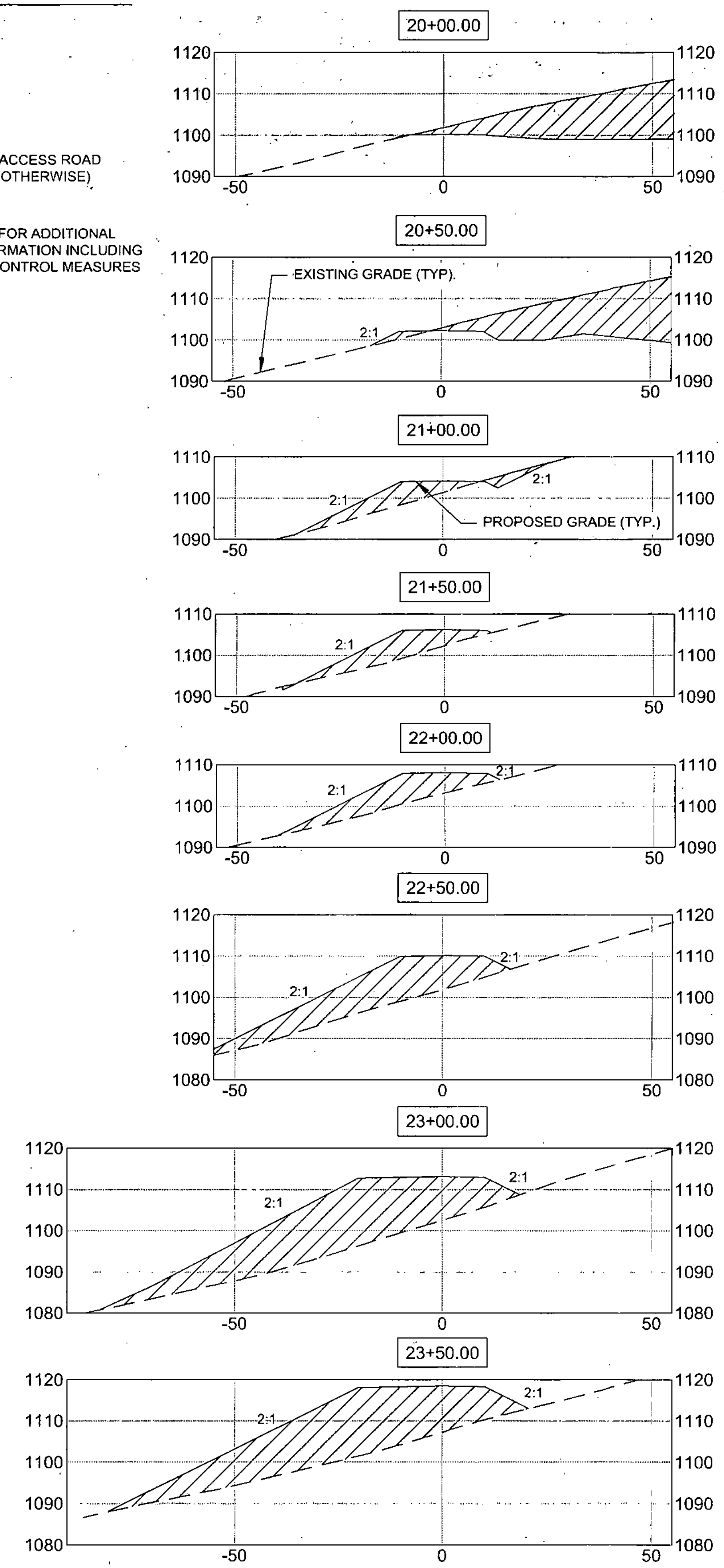
LEGEND

- AREA IN FILL
- AREA IN CUT
- EXISTING GRADE
- PROPOSED MAIN ACCESS ROAD (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL WELL PAD ACCESS ROAD INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES





MAIN ACCESS ROAD SECTIONS

SCALE: 1" = 20' SCALE IN FEET

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS				
REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

MAIN ACCESS ROAD CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

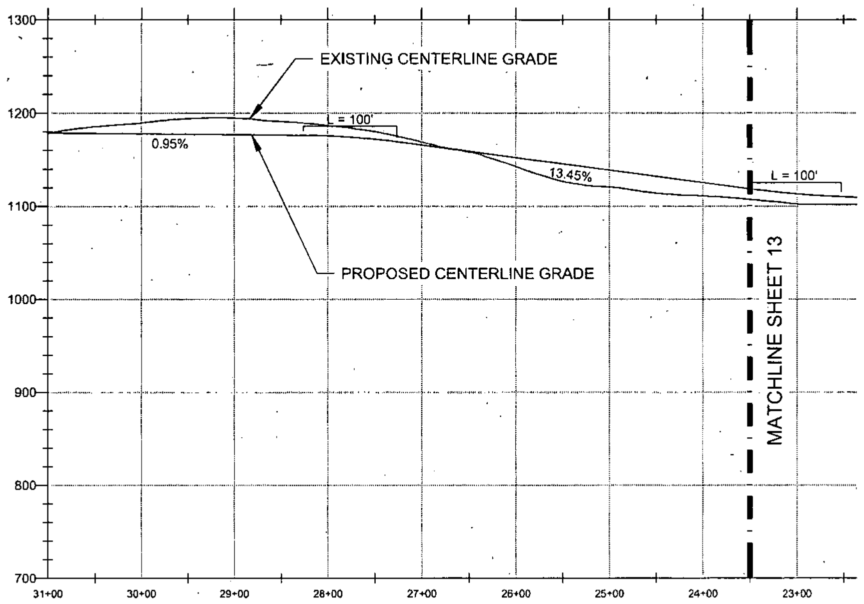
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 14

14 of 25



MAIN ACCESS ROAD PROFILE

0 100 200

SCALE: 1" = 100' SCALE IN FEET

LEGEND

AREA IN FILL

AREA IN CUT

EXISTING GRADE

PROPOSED MAIN ACCESS ROAD (UNLESS STATED OTHERWISE)

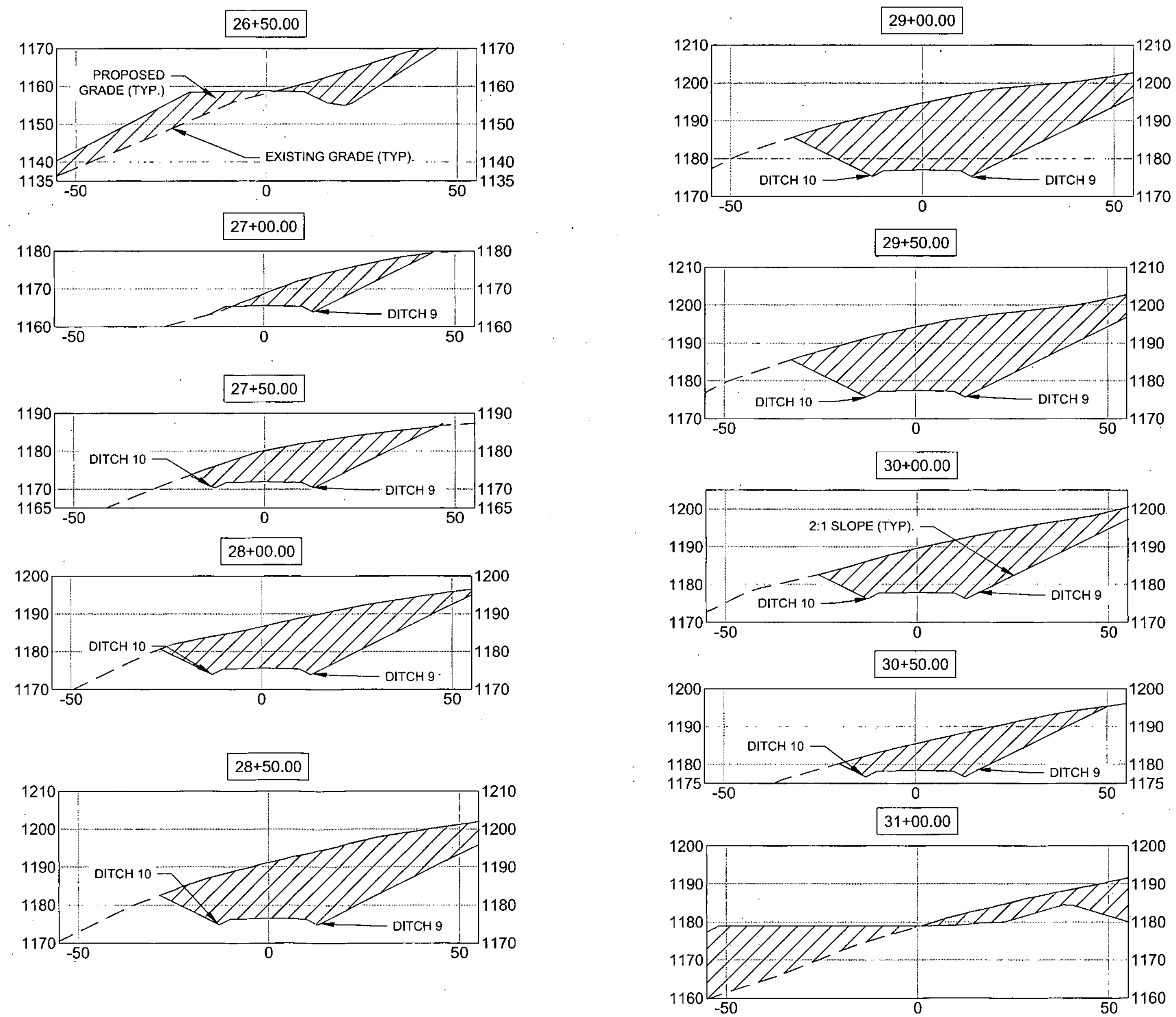
NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL WELL PAD ACCESS ROAD INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES

MAIN ACCESS ROAD SECTIONS

0 20 40

SCALE: 1" = 20' SCALE IN FEET



KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

MAIN ACCESS ROAD CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

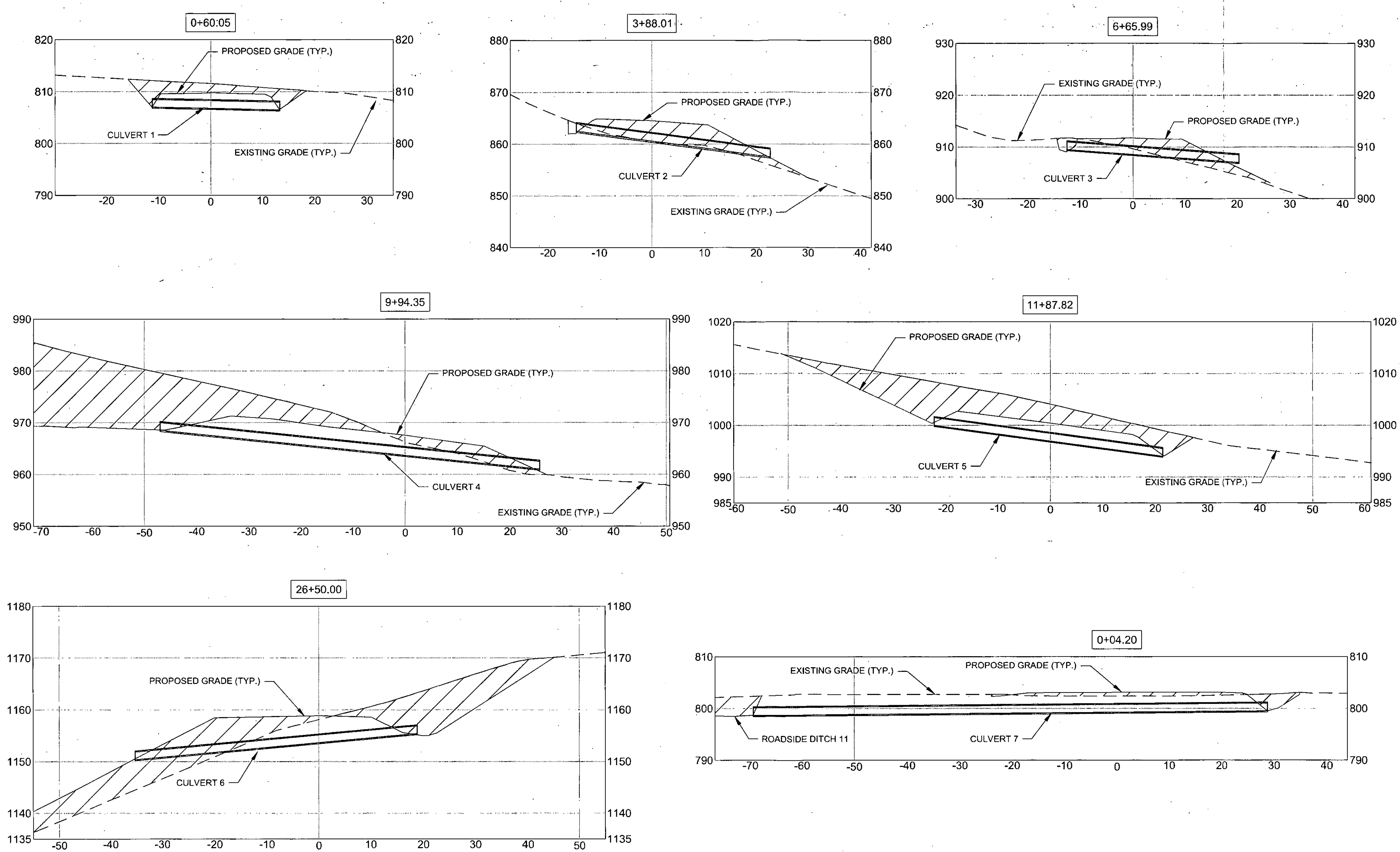
PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

15

SHEET 15 of 25

CAD FILE: C:\pwworking\dms96707\EQT_CPT-10_Site Plan.dwg LAYOUT: 15 MAIN AR XSECT PLOTTED: 7/1/2015 5:33 PM BY: kyle fink



STORM DRAINAGE COMPUTATIONS								
ACCESS ROAD CROSS-DRAINS		Q TOTAL FLOW (cfs)	SLOPE (ft/ft)	SIZE	LENGTH (ft)	UPPER INVERT (ft)	LOWER INVERT (ft)	PIPE MATERIAL
PIPE	STATION							
CULVERT 1	AR1 0+60	4.45	0.0152	18"	33.00	807.00	806.50	HDPE
CULVERT 2	AR1 3+88	0.40	0.1246	18"	39.00	862.50	857.50	HDPE
CULVERT 3	AR1 6+66	0.40	0.0743	18"	34.00	909.50	907.00	HDPE
CULVERT 4	AR1 9+94	0.82	0.1032	18"	73.00	968.50	961.00	HDPE
CULVERT 5	AR1 11+88	1.42	0.1376	18"	44.00	997.00	994.00	HDPE
CULVERT 6	AR1 26+50	3.56	0.0907	18"	48.00	1155.50	1150.58	HDPE
CULVERT 7	CO RT 4	10.59	0.0100	18"	98.50	799.50	798.52	HDPE

CULVERT SECTIONS

SCALE: 1" = 10' SCALE IN FEET

LEGEND

AREA IN FILL

AREA IN CUT

EXISTING GRADE

PROPOSED GRADE

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK. / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

CULVERT PROFILES

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

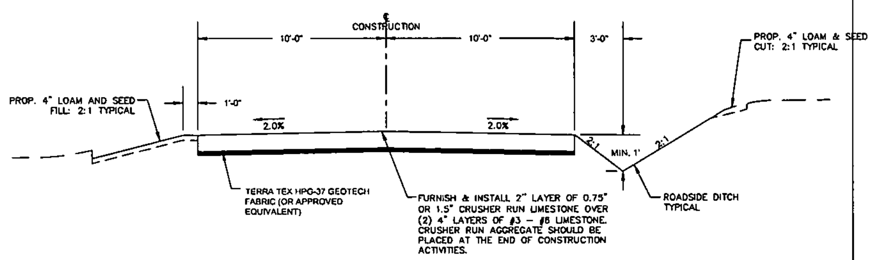
PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

16

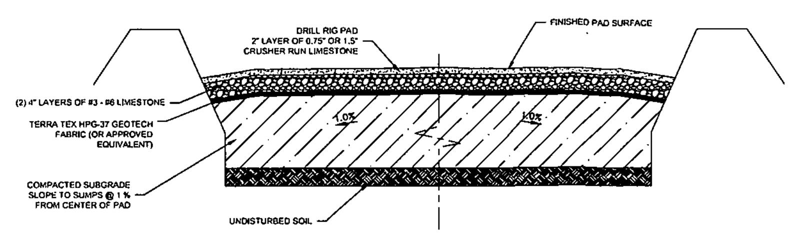
SHEET 16 of 25

PLOTTED: 7/1/2015 5:33 PM BY: kyle fink

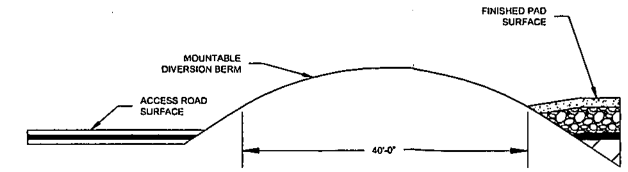
CAD FILE: C:\pwworking\dms96707\EQT_CPT-10_Site Plan.dwg LAYOUT: 16 CULVERT PROFILES



1/17 TYPICAL SECTION – SITE ACCESS DRIVE DETAIL
NTS



2/14 TYPICAL PAD CROSS-SECTION DETAIL
NTS



3/17 MOUNTABLE BERM DETAIL
NTS

PIPE INSTALLATION PROCEDURES

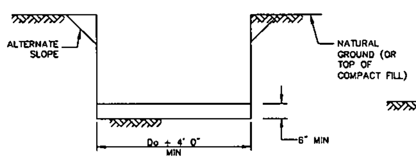
CONSTRUCTION DETAILS BELOW COVER THE FOLLOWING CONDITIONS:

A. PIPE LYING ON TOP OF THE NATURAL GROUND, ROCK OR COMPACTED (95% SPD) FILL.
B. THE EXISTING GROUND IS BETWEEN THE TOP AND THE BOTTOM OF THE PROPOSED PIPE AND THE PIPE IS TO BE COVERED WITH EARTH FILL.
C. THE TOP OF PIPE IS BELOW THE LEVEL OF THE NATURAL GROUND OR COMPACTED FILL (TO MINIMUM 95% SPD) AND TO BE COVERED WITH EARTH FILL TO HEIGHTS ABOVE THE NATURAL GROUND.

STEP 1: REMOVE TOPSOIL (COMPRESSIBLE LAYER OF ORGANIC MATERIAL) TO A WIDTH EQUAL TO 5 OUTSIDE DIAMETERS OF THE PIPE IN ALL FILL CONDITIONS ABOVE A., B. & C.. ALSO IF SPECIFIED ON THE CONTRACT DRAWING, UNDERCUT FOR THE DEPTH BELOW THE BEDDING AS SHOWN BY DESIGN (MAKE MIN WIDTH 5 DIAMETERS OF PIPE). PAY AS CLASS 1 EXCAVATION.

STEP 2: CONSTRUCT THE EMBANKMENT TO 4' – 0" ABOVE THE TOP OF PIPE OR TO THE SUBGRADE ELEVATION, WHICHEVER IS LESS. FOR PIPES 72" OR GREATER SEE NOTE 1.

STEP 3: EXCAVATE THE TRENCH TO THE WIDTH OF THE OUTSIDE DIAMETER OF THE PIPE BARREL PLUS 4' – 0" AND CREATE AN APPROPRIATE BEDDING 6" DEEP.

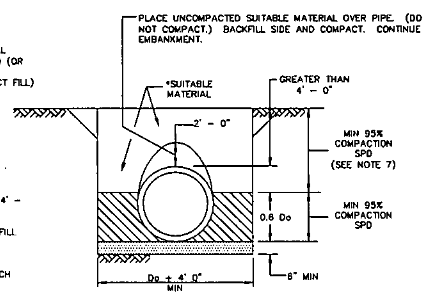


STEP 4: FOR CONCRETE PIPE, IF THIS EXCAVATION IS THROUGH ROCK, OR HARD SHALE, OR IN AREAS OF UNDERCUT, PROVIDE 6"+1/2" INCH/FT OF Do+4' – 0", BELOW THE INTENDED BOTTOM ELEVATION OF THE PIPE, 16" MAX.

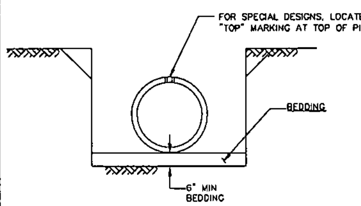
NOTE: IF UNSUITABLE MATERIAL IS FOUND, UNDERCUT AS DIRECTED AND BACKFILL WITH SUITABLE MATERIAL TO BOTTOM OF BEDDING ELEVATION. (UNLESS OTHERWISE SPECIFIED.)

STEP 5: LAY PIPE ON APPROPRIATE BEDDING. SEE STEP 60 FOR METAL PIPE ARCH AND METAL PLATE PIPE ARCH.

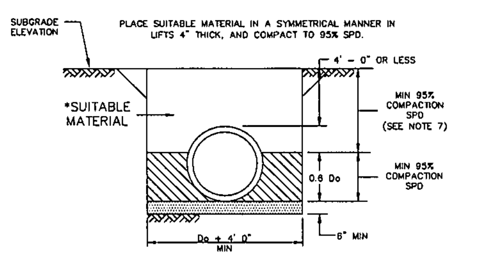
STEP 6: PLACE CRUSHER RUN COARSE AGGREGATE MATERIAL IN LIFTS 100 (4") THICK, ADJACENT TO THE LOWER HAUNCHES TO A HEIGHT OF 0.6 Do.COMPACT TO 95% SPD. TEST THE SIDE OF BACKFILL MATERIAL AND CONTINUE EMBANKMENT IN ACCORDANCE WITH PUBLICATION 408, SECTION 601.



GREATER THAN 4' TO 48'
FOR FILLS OVER 48', SEE NOTE 6.



AASHTO NO. 8
(UNCOMPACTED) – CONCRETE PIPE CRUSHER RUN
(UNCOMPACTED) – METAL PIPE CRUSHER RUN
(UNCOMPACTED) – THERMOPLASTIC PIPE



SHALLOW FILLS 4' – 0" AND LESS

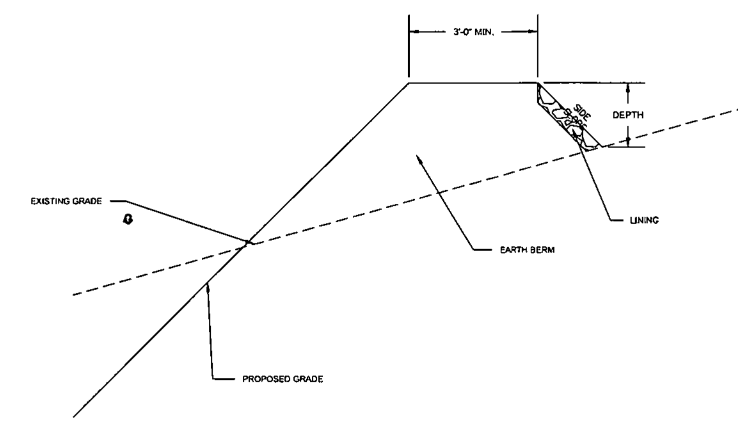
LEGEND

- AGGREGATE FOR BEDDING (AASHTO NO. 8)
- COARSE AGGREGATE (CRUSHER RUN)

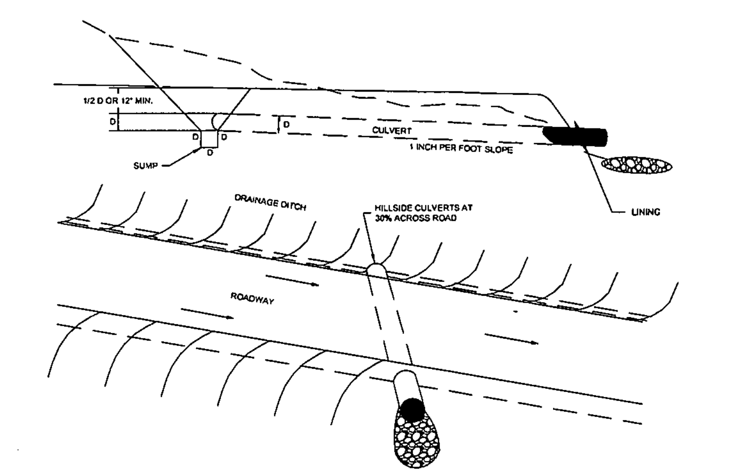
Do = OUTSIDE DIAMETER OF PIPE, MILLIMETERS (INCHES)
SPD = STANDARD PROCTOR DENSITY
ID = INSIDE DIAMETER

*SUITABLE MATERIAL = MATERIAL CONTAINING NO DEBRIS, ORGANIC MATTER, FROZEN MATERIAL OR LARGE STONES WITH A DIAMETER GREATER THAN ONE-HALF THE THICKNESS OF THE COMPACTED LAYERS BEING PLACED.

4/17 CIRCULAR PIPE INSTALLATION DETAIL
NTS

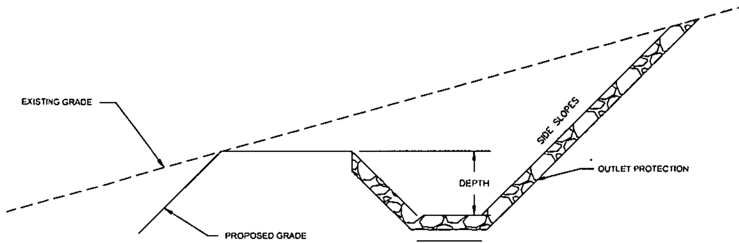


5/17 TYPICAL DRAINAGE BERM DETAIL
NTS



CONSTRUCTION SPECIFICATIONS
1. CULVERTS WITH OUTLETS ONTO LENGTHY FILL SLOPES MAY REQUIRE SLOPE DRAINS WITH OUTLET PROTECTION DEPENDING ON THE STEEPNESS OF THE OUTSLOPE.
2. RIPRAP USED AS OUTLET PROTECTION MUST BE HARD, ANGULAR AND OF A QUALITY RESISTANT TO WEATHERING AND DISINTEGRATION. RIPRAP SHOULD BE GROUTED ON STEEP OR LENGTHY FILL SLOPES WITH A MINIMUM THICKNESS TWO TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN SIX INCHES.

6/17 DITCH RELIEF CULVERT DETAIL
NTS



ROAD-SIDE DITCH & CHANNEL DESIGN AND LINING												
ROAD-SIDE DITCH / CHANNEL NAME	TOTAL RUNOFF, Q (cfs)*	UPPER STATION	LOWER STATION	LENGTH (ft)	CHANNEL SECTION	BOTTOM WIDTH (ft)	LEFT SIDE SLOPE, Z:1 (ft)	RIGHT SIDE SLOPE, Z:1 (ft)	CHANNEL DEPTH (ft)	CHANNEL SLOPE (ft/ft)	TEMPORARY LINER	PERMANENT LINER
ROAD-SIDE DITCH 1	0.23	AR1 01+95	AR1 00+32	163.00	TRIANGULAR	-	2.00	2.00	1.50	0.04	C125BN	C125BN
ROAD-SIDE DITCH 2	4.45	AR1 02+40	AR1 00+00	240.00	TRIANGULAR	-	2.00	2.00	1.50	0.03	C125BN	C125BN
ROAD-SIDE DITCH 3	0.04	AR1 07+75	AR1 07+18	57.00	TRIANGULAR	-	2.00	2.00	1.50	0.03	C125BN	C125BN
ROAD-SIDE DITCH 4	0.40	AR1 07+02	AR1 06+50	52.00	TRIANGULAR	-	2.00	2.00	1.50	0.10	C125BN	C125BN
ROAD-SIDE DITCH 5	0.95	AR1 09+50	AR1 07+02	248.00	TRIANGULAR	-	2.00	2.00	1.50	0.02	C125BN	C125BN
ROAD-SIDE DITCH 6	1.42	AR1 12+72	AR1 11+60	112.00	TRIANGULAR	-	2.00	2.00	1.50	0.02	C125BN	C125BN
ROAD-SIDE DITCH 7	0.45	AR1 17+85	AR1 16+08	177.00	TRIANGULAR	-	2.00	2.00	1.50	0.05	C125BN	C125BN
ROAD-SIDE DITCH 8	0.50	AR1 21+50	AR1 20+05	145.00	TRIANGULAR	-	2.00	2.00	1.50	0.13	C125BN	C125BN
ROAD-SIDE DITCH 9	3.56	AR2 31+00	AR1 26+25	475.00	TRIANGULAR	-	2.00	2.00	1.50	0.05	C125BN	C125BN
ROAD-SIDE DITCH 10	0.49	AR2 30+60	AR1 27+00	360.00	TRIANGULAR	-	2.00	2.00	1.50	0.10	C125BN	C125BN
ROAD-SIDE DITCH 11	10.78	CO RT 4	CO RD 4	98.50	TRIANGULAR	-	2.00	2.00	1.25	0.10	C125BN	C125BN
CHANNEL 1	0.08	N/A	N/A	530.00	TRIANGULAR	-	1.00	1.00	3.00	0.01	R-3	R-3
CHANNEL 2	1.38	N/A	N/A	322.00	TRIANGULAR	-	1.00	1.00	3.00	0.01	R-4	R-4
CHANNEL 3	11.01	N/A	N/A	500.00	TRIANGULAR	-	1.00	1.00	3.00	0.01	R-3	R-3
CHANNEL 4	1.96	N/A	N/A	321.00	TRIANGULAR	-	1.00	1.00	3.00	0.01	R-3	R-3
*TOTAL RUNOFF FOR CHANNEL 1 IS THE AREA & FLOW OF ROAD-SIDE DITCH 28 AND CHANNEL 1												
*TOTAL RUNOFF FOR CHANNEL 2 IS THE AREA & FLOW OF ROAD-SIDE DITCH 29, 30, & 31 AND CHANNEL 2												

7/17 TYPICAL DRAINAGE ROAD-SIDE DITCH AND CHANNEL DETAIL

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

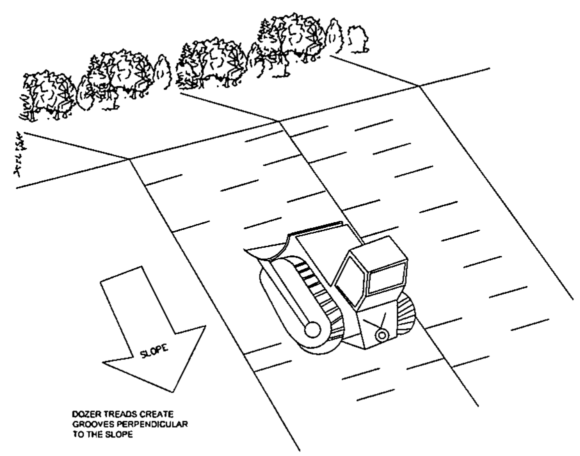
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

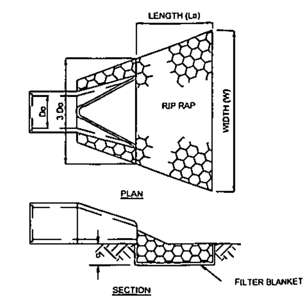
SHEET 17

CAD FILE: C:\pwworking\kmi\s96707\EQT_CPT-10_NOTES_DETAILS.dwg LAYOUT: DETAILS PLOTTED: 7/1/2015 5:34 PM BY: kyle fink



NOTES
TRACKING SLOPES IS DONE BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR. IF A BULLDOZER IS USED, THE BLADE SHOULD BE UP.

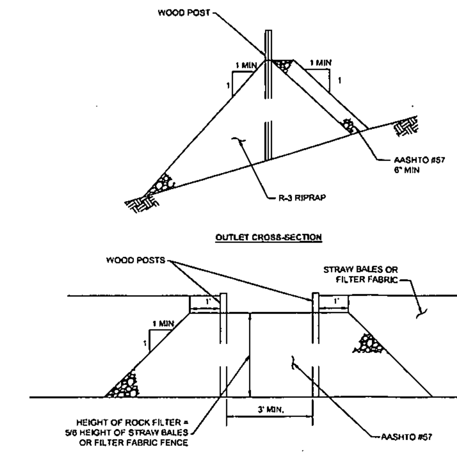
8/18 BULLDOZER TRACKING DETAIL
NTS



NOTES:
1. IF FLARED END SECTION IS DISCHARGING INTO DITCH FROM THE SIDE, EXTEND RIP RAP UP DITCH BANK ON OFF-SIDE A MINIMUM OF 4 FEET.
2. USE WVDEP RIP RAP GRADATION AND FILTER BLANKET REQUIREMENTS PER THE TABLE ON SHEET 3.17-3 OF THE "WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES MANUAL 2006" FOR BLANKET THICKNESS .
3. A SUITABLE NON-WOVEN GEOTEXTILE FABRIC, USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, MAY BE SUBSTITUTED FOR FILTER BLANKET STONE UNDER THE RIP RAP.
4. D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".

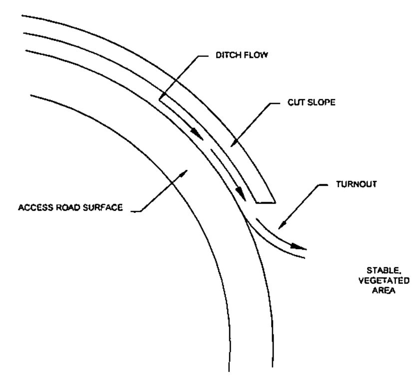
OUTLET	Do	3Do	La	W	RIP RAP	d
FES 1	18"	4.5'	9'	12.5'	R-3 RIPRAP	18"
FES 2	18"	4.5'	18'	12.5'	R-4 RIPRAP	18"
FES 3	18"	4.5'	18'	12.5'	R-4 RIPRAP	18"
FES 4	18"	4.5'	18'	12.5'	R-4 RIPRAP	18"
FES 5	18"	4.5'	36'	12.5'	R-6 RIPRAP	18"
FES 6	18"	4.5'	36'	12.5'	R-6 RIPRAP	18"

9/18 RIP RAP OUTLET PROTECTION DETAIL
NTS

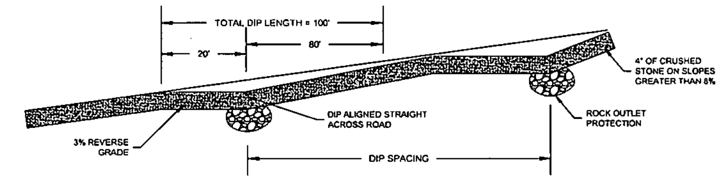


Sediment must be removed when accumulations reach 1/3 the height of the outlet.

10/18 ROCK FILTER OUTLET DETAIL
NTS



11/18 TURN OUT DETAIL
NTS

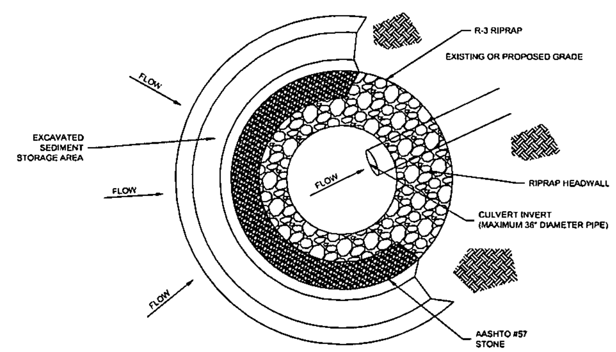


DESIGN CRITERIA
1. MAXIMUM ROAD GRADE ON WHICH DIPS CAN BE CONSTRUCTED IS 10%
2. A 3% REVERSE GRADE SHOULD BE CONSTRUCTED IN THE EXISTING ROADBEND, BY CUTTING UPGRADE OF THE DIP LOCATION.
3. BROADBASED DIP SHOULD BE ARMORED WITH STONE TO WITHSTAND EXPECTED TRAFFIC.
4. DRAINAGE OUTLET PROTECTION SHALL BE PROVIDED WITH APPROPRIATE SEDIMENT BARRIER STRUCTURES.

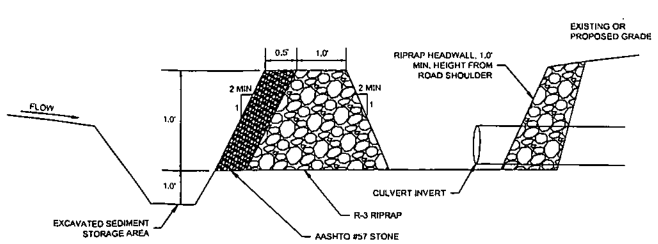
SPACING OF CROSS DRAINS

ROAD GRADE (%)	DISTANCE BETWEEN DRAINS (FT)
2	300
3	235
4	200
5	180
6	165
7	155
8	150
9	145
10	140

12/18 BROAD-BASED DIP DETAIL
NTS



PLAN VIEW



SECTION VIEW

DESIGN CRITERIA AND CONSTRUCTION SPECIFICATIONS
1. MINIMUM STONE HEIGHT SHOULD BE 1.0' WITH SIDE SLOPES NO STEEPER THAN 2:1. THE STONE "HORSESHOE" AROUND THE PIPE INLET SHOULD BE CONSTRUCTED OF R-3 RIPRAP WITH A MINIMUM CREST WIDTH OF 1.0'. THE OUTSIDE FACE OF THE RIPRAP SHOULD BE COVERED WITH A 6" THICK LAYER OF #57 STONE.
2. THE EMBANKMENT OVER THE PIPE MUST BE PROTECTED FROM OVERTOPPING. THE TOP OF THE STONE SHOULD BE A MINIMUM OF 1.0' BELOW THE TOP OF THE FILL OVER THE PIPE AND TIE INTO THE FILL ON BOTH SIDES OF THE PIPE. THE INSIDE TOE OF THE RIPRAP SHOULD BE NO CLOSER THAN 2' FROM THE CULVERT OPENING TO ALLOW PASSAGE OF HIGH FLOWS.
3. THE SEDIMENT STORAGE AREA SHOULD BE EXCAVATED UPSTREAM OF THE ROCK PIPE INLET PROTECTION, WITH A MINIMUM DEPTH OF 1.0' BELOW GRADE.
4. CLEAR THE AREA OF ALL DEBRIS THAT MIGHT HINDER EXCAVATION AND DISPOSAL OF SPOIL.
5. INSTALL THE R-3 RIPRAP IN A SEMI-CIRCLE AROUND THE PIPE INLET. THE STONE SHOULD BE BUILT UP HIGHER ON EACH END WHERE IT TIES INTO THE EMBANKMENT, ADJUST CREST AND BOTTOM WITH AS NECESSARY TO FACILITATE PLACEMENT WITHIN THE DITCH/CHANNEL. THE MINIMUM HEIGHT SHOULD BE 1.0', BUT ALSO LOWER THAN THE SHOULDER OF THE EMBANKMENT OR DIVERSIONS.
6. THE SEDIMENT STORAGE AREA SHOULD BE EXCAVATED AROUND THE OUTSIDE OF THE STONE HORSESHOE 1.0' BELOW NATURAL GRADE.
7. WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, FILL DEPRESSION AND ESTABLISH FINAL GRADING ELEVATIONS, COMPACT AREA PROPERLY, AND STABILIZE WITH GROUND COVER.

13/18 ROCK PIPE INLET DETAIL
NTS

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY
REGISTERED
20711
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

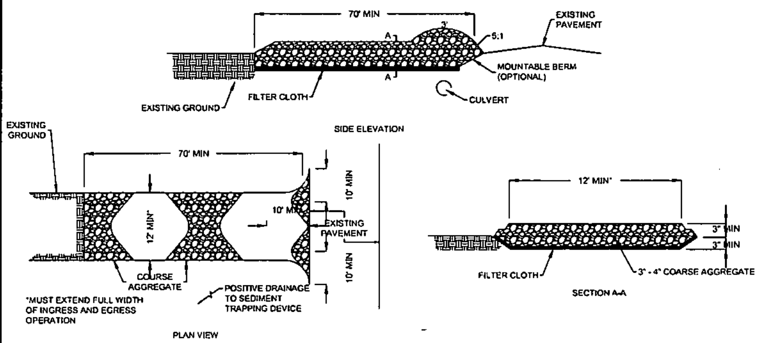
CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

18



CONSTRUCTION SPECIFICATIONS

1. CLEAR THE ENTRANCE AND EXIT AREA OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL AND PROPERLY GRADE IT.
2. PLACE THE 3 INCH CRUSHED ROCK TO MATCH FINISHED GRADE AT THE ROADWAY AND SMOOTH IT.
3. PROVIDE DRAINAGE WHERE NEEDED TO CARRY WATER TO A SEDIMENT TRAP OR OTHER SUITABLE OUTLET.

MAINTENANCE:

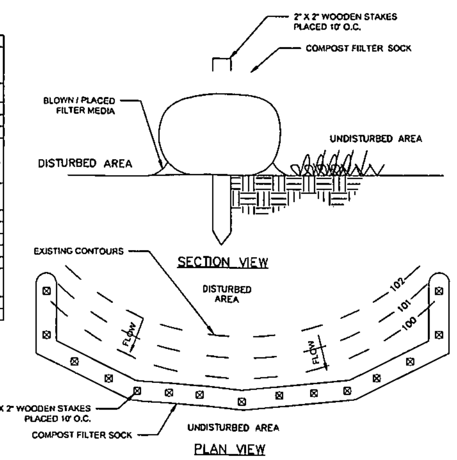
MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP-DRESSING WITH ADDITIONAL 3 INCH CRUSHED ROCK. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.

MAINTENANCE SHOULD BE PROVIDED DAILY, BUT AT A MINIMUM EVERY SEVEN DAYS AND AFTER EVERY RAIN OF 0.5 INCH OR GREATER.

14/19 STONE CONSTRUCTION ENTRANCE DETAIL
NTS

COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS					
MATERIAL TYPE	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament POLYPROPYLENE (MFPP)	HEAVY DUTY Multi-Filament Polypropylene (HDMFPP)
MATERIAL CHARACTERISTICS	PHOTO-DEGRADABLE	PHOTO-DEGRADABLE	BIO-DEGRADABLE	PHOTO-DEGRADABLE	PHOTO-DEGRADABLE
SOCK DIAMETERS	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
MESH OPENING	3/8"	3/8"	3/8"	3/8"	3/8"
TENSILE STRENGTH		26 psi	26 psi	44 psi	202 psi
ULTRA VIOLET STABILITY % ORIGINAL STRENGTH (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
MINIMUM FUNCTIONAL LONGEVITY	6 MONTHS	9 MONTHS	6 MONTHS	1 YEAR	2 YEARS
TWO-PLY SYSTEMS					
INNER CONTAINMENT NETTING			HDPE		
			CONTINUOUSLY WOUND		
			FUSION-WELDED JUNCTURES		
			3/4" X 3/4" MAX. APERTURE SIZE		
OUTER FILTRATION MESH			COMPOSITE POLYPROPYLENE FABRIC (WOVEN LAYER AND NON-WOVEN FLEEECE MECHANICALLY FUSED VIA NEEDLE PUNCH)		
			3/16" MAX. APERTURE SIZE		
SOCK FABRICS COMPOSED OF BURLAP MAY BE USED ON PROJECTS LASTING 6 MONTHS OR LESS.					

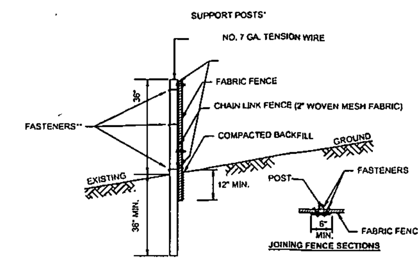
COMPOST STANDARDS	
ORGANIC MATTER CONTENT	80%-100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
pH	5.5-8.0
MOISTURE CONTENT	35%-55%
PARTICLE SIZE	98% PASS THROUGH 1" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 dS/m (mmhos/cm) MAXIMUM



NOTES

1. SOCK FABRIC SHALL MEET STANDARDS OF TABLE SHOWN ABOVE. COMPOST SHALL MEET THE STANDARDS OF TABLE SHOWN ABOVE.
2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT. STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.
3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.
4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
5. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
6. BIODEGRADABLE FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
7. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

15/19 COMPOST FILTER SOCK DETAIL
NTS



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

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

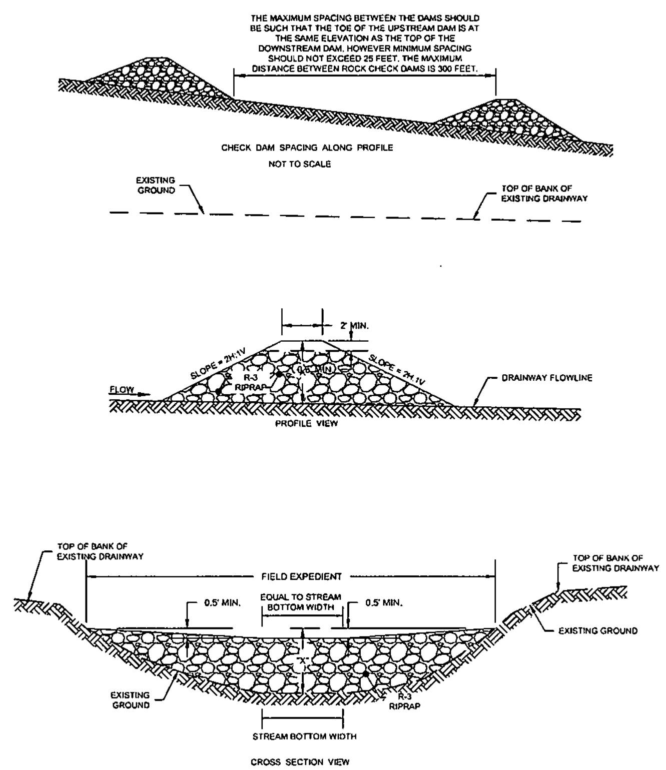
NO. 7 GA. TENSION WIRE INSTALLED HORIZONTALLY AT TOP AND BOTTOM OF CHAIN-LINK FENCE.

FILTER FABRIC FENCE SHOULD BE PLACED AS CLOSE TO THE CONTOUR AS POSSIBLE. NO SECTION OF SILT FENCE SHOULD EXCEED A GRADE OF 5 PERCENT FOR MORE THAN A DISTANCE OF 20 FEET.

THE LENGTH OF SLOPE ABOVE THE FENCE SHALL NOT EXCEED 400 FEET IN STEEP TERRAIN. IN FLATTER AREAS THE LENGTH CAN BE EXTENDED WITH THE APPROVAL OF THE ENGINEER.

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

16/19 SUPER SILT FENCE DETAIL
NTS



NOTES

1. "X" DIMENSION AS DETAILED BY THE SPECIFCATIONS, FOR SEDIMENT CONTROL THE MAXIMUM HEIGHT OF THE ROCK CHECK DAM IS 3 FEET. HOWEVER, ROCK CHECK DAMS CAN BE CONSTRUCTED IN SMALLER DITCHES. THE CENTER OF THE ROCK CHECK DAM SHALL BE 0'-6" LOWER THAN THE OUTER EDGES AS SHOWN.
2. ROCK CHECK DAMS ARE NORMALLY INSTALLED IN EXISTING DRAINS AND THE TOP CROSS SECTION OF THE DAM SHOULD HAVE A LEVEL CENTER SECTION THE SAME WIDTH AS THE EXISTING CHANNEL BOTTOM AND 0'-6" LOWER THAN THE OUTER EDGES OF THE DAM. ROCK CHECK DAMS PLACED IN PROJECT CONSTRUCTED FLAT-BOTTOM DITCHES SHALL HAVE SIMILAR DIMENSIONS.
3. THE CENTER OF ROCK CHECK DAMS CONSTRUCTED IN PROJECT CONSTRUCTED "VEE" SHAPED OR EXISTING "VEE" SHAPED DITCHES SHALL BE 0'-6" LOWER THAN AND SLOPED TO THE OUTER TOP EDGES OF THE DITCH SO HIGH FLOWS GO OVER THE TOP OF THE DAM AND NOT AROUND THE EDGES.
4. ROCK CHECK DAMS SHALL BE REMOVED AFTER THE FIRST GROWING SEASON.

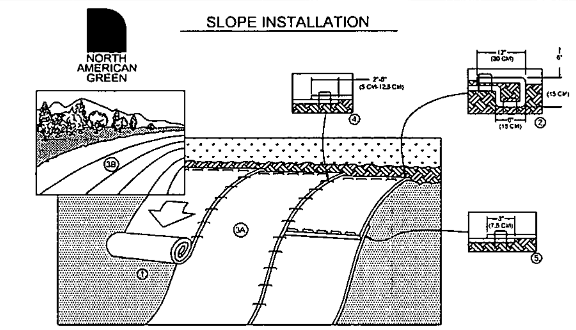
17/19 ROCK CHECK DAM DETAIL
NTS

ID #	CFS (LF)	DIAMETER (IN)
1	100	18
2	95	18
3	50	18
4	100	24
5	100	32
6	110	32
7	120	32
8	140	18
9	105	32
10	90	32
11	90	32
12	115	18
13	120	18
14	70	24
15	150	24
16	240	18
17	70	18
18	125	12
19	165	12
20	65	12
21	255	24
22	40	12
23	115	12
24	225	12
25	110	18
26	200	12
27	165	18
28	70	12

ID #	SSF (LF)
29	55
30	100
31	80
32	50
33	125
34	45
35	165
36	200
37	135
38	75
39	90
40	180
41	140
42	40
43	60
44	160
45	105
46	95
47	100
48	110
49	110
50	460
51	75
52	65
53	250
54	220
55	90
56	400

18/19 SUPER SILT FENCE & FILTER SOCK TABLES
NTS

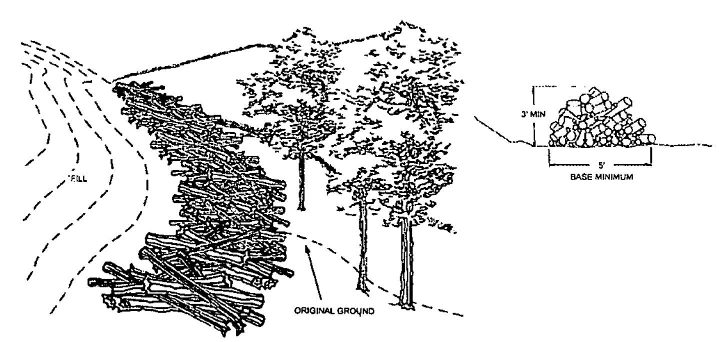
SLOPE INSTALLATION



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

DETAIL AND LANGUAGE PROVIDED BY NORTH AMERICAN GREEN REV. 1/2004

19/19 SLOPE PROTECTION INSTALLATION DETAIL
NTS



20/19 BRUSH PILE SEDIMENT BARRIER DETAIL
NTS

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS				
REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 19
19 of 25

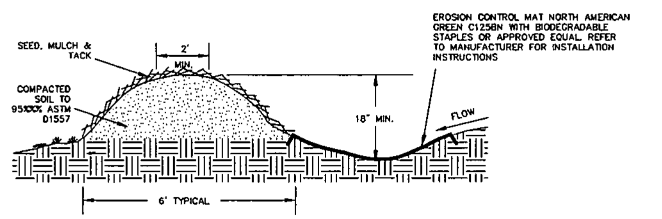
CAD FILE: C:\pwworking\...\EQT_CPT-10_NOTES_DETAILS.dwg LAYOUT: DETAILS (3) PLOTTED: 7/1/2015 5:34 PM BY: kyle.fink

INSTALLATION

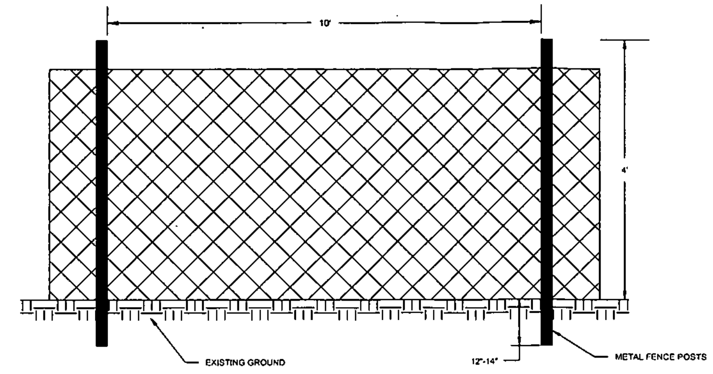
1. WHEN CLEARING THE LOCATION FOR THE DIVERSION, ONLY CLEAR ENOUGH ROOM FOR CONSTRUCTION AND MAINTENANCE EQUIPMENT ACCESS. DO NOT CLEAR ANY ADDTIONAL AREA UNTIL ALL EROSION CONTROL DEVICES ARE IN PLACE.
2. REMOVE ALL STUMPS, ROOTS AND OTHER DEBRIS AND DISPOSE OF THEM PROPERLY.
3. INSTALL DIVERSION AND COMPACT AS SHOWN IN DETAIL. INSURE POSITIVE DRAINAGE DURING CONSTRUCTION OF BERM.
4. SCARIFY, SEED, MULCH AND TACK DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF BERM.
5. INSTALL EROSION CONTROL MAT N.A.G. C125BN PER MANUFACTURER'S RECOMMENDATIONS AND KEY INTO SIDES OF CHANNEL TO PREVENT WATER FROM UNDERMINING OR DAMAGING CHANNEL LINER.

MAINTENANCE

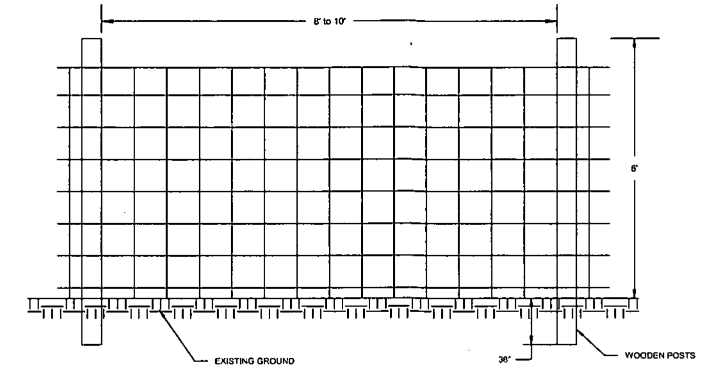
INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED. WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH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



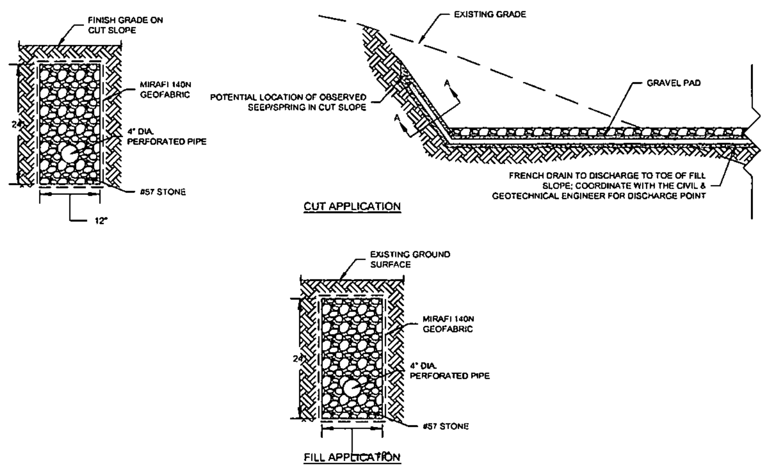
21/20 TEMPORARY DIVERSION BERM DETAIL
NTS



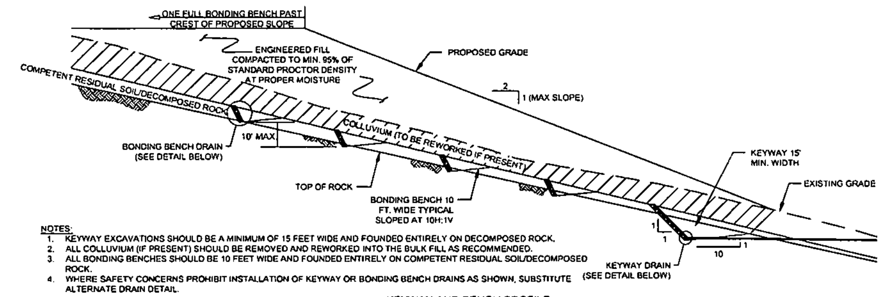
22/20 TYPICAL CONSTRUCTION FENCE DETAIL
NTS



23/20 TYPICAL WOVEN WIRE FENCE DETAIL
NTS



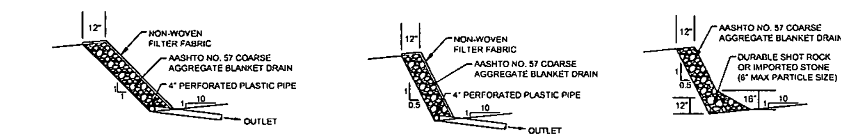
24/20 SEEP/SPRING FRENCH DRAIN DETAIL
NTS



NOTES:

1. KEYWAY EXCAVATIONS SHOULD BE A MINIMUM OF 15 FEET WIDE AND FOUNDED ENTIRELY ON DECOMPOSED ROCK.
2. ALL COLLUVIUM (IF PRESENT) SHOULD BE REMOVED AND REWORKED INTO THE BULK FILL AS RECOMMENDED.
3. ALL BONDING BENCHES SHOULD BE 10 FEET WIDE AND FOUNDED ENTIRELY ON COMPETENT RESIDUAL SOIL/DECOMPOSED ROCK.
4. WHERE SAFETY CONCERNS PROHIBIT INSTALLATION OF KEYWAY OR BONDING BENCH DRAINS AS SHOWN, SUBSTITUTE ALTERNATE DRAIN DETAIL.

KEYWAY AND BENCH PROFILE
N.T.S.

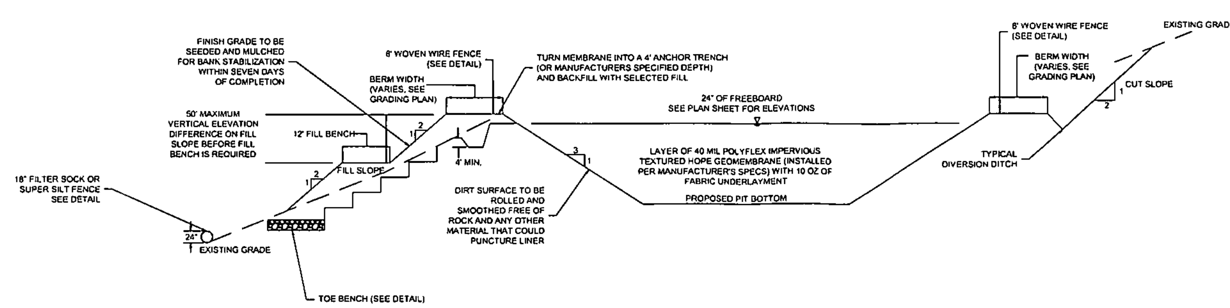


*OUTLETS AT 100 FT. CENTERS MAX. OR AS DEEMED NECESSARY
KEYWAY DRAIN DETAIL
N.T.S.

*SLOPE OUTLET TO PROVIDE POSITIVE DRAINAGE TO SLOPE FACE
*OUTLETS AT 250 FT. CENTERS MAX. OR AS DEEMED NECESSARY
BONDING BENCH DRAIN DETAIL
N.T.S.

ALTERNATE KEYWAY/BONDING BENCH DRAIN DETAIL
N.T.S.

25/20 TYPICAL KEYWAY, BENCH, AND DRAINAGE DETAIL
NTS



26/20 TYPICAL PIT EMBANKMENT DETAIL
NTS

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

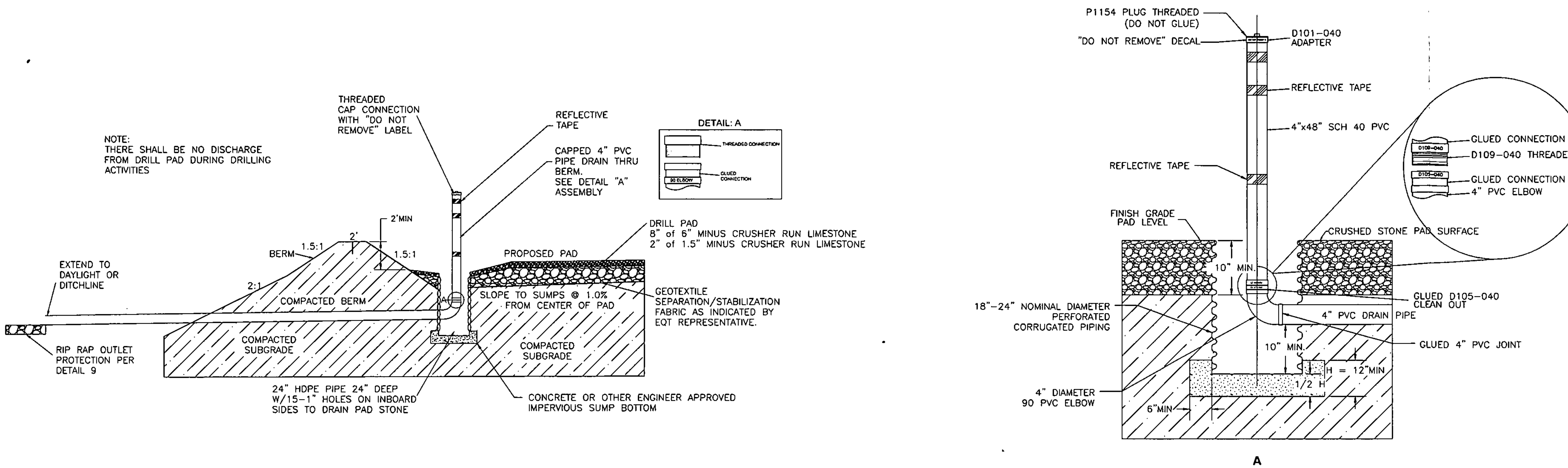
EQT
Where energy meets innovation.

PERMITTING

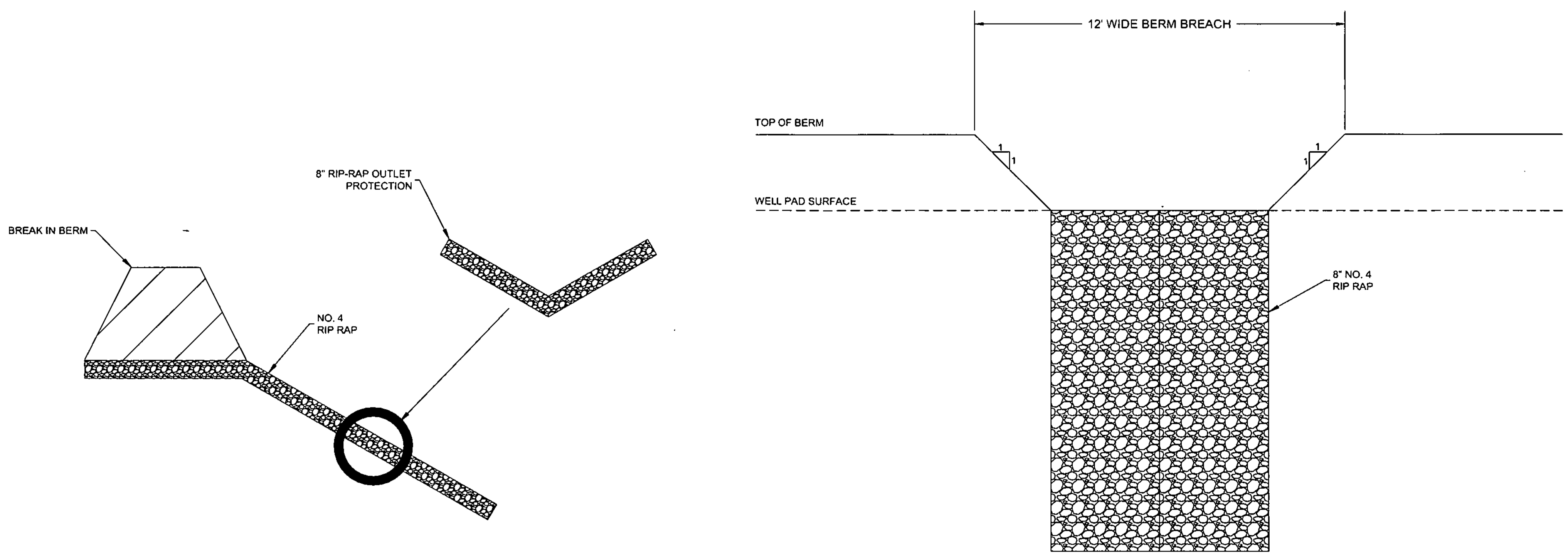
PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 20
20 of 25

CAD FILE: C:\pwworking\dms96707\EQT_CPT-10_NOTES_DETAILS.dwg LAYOUT: DETAILS (4) PLOTTED: 7/1/2015 5:34 PM BY: kyle fink



27/21 **PAD SUMP TYPICAL DETAIL**
NOT TO SCALE



28/21 TYPICAL BERM BREACH
NTS

CAD FILE: C:\pwworking\...\CPT-10_NOTES_DETAILS.dwg LAYOUT: DETAILS (5) PLOTTED: 7/1/2015 5:34 PM BY: kyle.fink

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

21
SHEET 21 of 25

ROLLMAX™
ROLLED EROSION CONTROL

Specification Sheet – BioNet® C125BN™ Erosion Control Blanket

DESCRIPTION

The long-term double net erosion control blanket shall be a machine-produced mat of 100% coconut fiber with a functional longevity of up to 24 months. *(NOTE: functional longevity may vary depending upon climatic conditions, soil, geographical location, and elevation)*. The blanket shall be of consistent thickness with the coconut evenly distributed over the entire area of the mat. The blanket shall be covered on the top and bottom sides with 100% biodegradable woven natural organic fiber netting. The netting shall consist of machine directional strands formed from two intertwined yarns with cross directional strands interwoven through the the twisted machine strands (commonly referred to as Leno weave) to form an approximate 0.50 x 1.0 in (1.27 x 2.54 cm) mesh. The blanket shall be sewn together on 1.50 inch (3.81 cm) centers with degradable thread. The blanket shall be manufactured with a colored thread stitched along both outer edges (approximately 2-5 inches [5-12.5 cm] from the edge) as an overlap guide for adjacent mats

The C125BN shall meet Type 4 specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.17

Material Content

Matrix	100% Coconut Fiber	0.5 lbs/sq yd (0.27 kg/sm)
Netting	Leno Woven 100% biodegradable jute	9.3 lbs/1000 sq ft (4.5 kg/100 sm)
	100% Biodegradable Jute	7.7 lb/1000 sq ft (3.76 kg/100 sm)
Thread	Black polypropylene	

Standard Roll Sizes

Width	6.67 (2.03 m)	8.0 ft (2.4 m)
Length	108 ft (32.92 m)	112 ft (34.14 m)
Weight ± 10%	52.22 lbs (23.69 kg)	65.25 lbs (29.61 kg)
Area	80 sq yd (66.9 sm)	100 sq yd (83.61 sm)
	Leno weave top only	Leno weave top and bottom

Index Property	Test Method	Typical
Thickness	ASTM D6525	0.23 in. (5.84 mm)
Resiliency	ECTC Guidelines	85%
Water Absorbency	ASTM D1117	365%
Mass/Unit Area	ASTM 6475	9.79 oz/sy (333 g/sm)
Swell	ECTC Guidelines	40%
Smolder Resistance	ECTC Guidelines	Yes
Stiffness	ASTM D1388	0.11 oz-in
Light Penetration	ASTM D6567	16.2%
Tensile Strength - MD	ASTM D6818	206.4 lbs/ft (3.06 kN/m)
Elongation - MD	ASTM D6818	15.3%
Tensile Strength - TD	ASTM D6818	145.2 lbs/ft (2.15 kN/m)
Elongation - TD	ASTM D6818	12.9%
Biomass Improvement	ASTM 7322	473%

Design Permissible Shear Stress

Unvegetated Shear Stress	2.35 psf (112 Pa)
Unvegetated Velocity	10.0 fps (3.05 m/s)

Slope Design Data: C Factors

	Slope Gradients (S)		
Slope Length (L)	≤ 3:1	3:1 - 2:1	≥ 2:1
≤ 20 ft (6 m)	0.0001	0.018	0.050
20-50 ft	0.003	0.040	0.060
≥ 50 ft (15.2 m)	0.007	0.070	0.070

Roughness Coefficients – Unveg.

Flow Depth	Manning's n
≤ 0.50 ft (0.15 m)	0.022
0.50 - 2.0 ft	0.022-0.014
≥ 2.0 ft (0.60 m)	0.014

Tensar
NORTH AMERICAN GREEN®

Tensar International Corporation
2500 Northwinds Parkway
Suite 500
Alpharetta, GA 30009
800-TENSAR-1
tensarcorp.com

Tensar International Corporation warrants that at the time of delivery the product furnished hereunder shall conform to the specification stated herein. Any other warranty including merchantability and fitness for a particular purpose, are hereby executed. If the product does not meet specifications on this page and Tensar is notified prior to installation, Tensar will replace the product at no cost to the customer. **This product specification supersedes all prior specifications for the product described above and is not applicable to any products shipped prior to January 1, 2012.**

 EC_RMX_MPDS_BC125BN_5.13

29/22 NORTH AMERICAN GREEN C125BN TURF REINFORCEMENT MATTING (OR EQUIVALENT)
NTS

ROLLMAX™
ROLLED EROSION CONTROL

Specification Sheet – VMax® C350® Turf Reinforcement Mat

DESCRIPTION

The composite turf reinforcement mat (C-TRM) shall be a machine-produced mat of 100% coconut fiber matrix incorporated into permanent three-dimensional turf reinforcement matting. The matrix shall be evenly distributed across the entire width of the matting and stitch bonded between super heavy duty UV-stabilized nettings with 0.50 x 0.50 in. (1.27 x 1.27 cm) openings, an ultra heavy duty UV-stabilized, dramatically corrugated (crimped) intermediate netting with 0.5 x 0.5 in. (1.27 x 1.27 cm) openings, and covered by a super heavy duty UV-stabilized nettings with 0.50 x 0.50 in. (1.27 x 1.27 cm) openings. The middle corrugated netting shall form prominent closely spaced ridges across the entire width of the mat. The three nettings shall be stitched together on 1.50 in. (3.81 cm) centers with UV-stabilized polypropylene thread to form permanent three-dimensional turf reinforcement matting. All mats shall be manufactured with colored thread stitched along both outer edges as an overlap guide for adjacent mats.

The C350 shall meet Type 5A, B and C specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) *FP-03 Section 713.18*.

Material Content

Matrix	100% Coconut Fiber	0.5 lb/sy (0.27 kg/sm)
Netting	Top and Bottom, UV-Stabilized Polypropylene	8 lb/1000 sf (3.91 kg/100 sm)
	Middle, Corrugated UV-Stabilized Polypropylene	24 lb/1000 sf (11.7 kg/100 sm)
Thread	Polypropylene, UV Stable	

Standard Roll Sizes

Width	6.5 ft (2.0 m)
Length	55.5 ft (16.9 m)
Weight ± 10%	37 lbs (16.8 kg)
Thread	40 sy (33.4 sm)

Index Property	Test Method	Typical
Thickness	ASTM D6525	0.73 in. (18.54 mm)
Resiliency	ASTM D6524	90%
Density	ASTM D792	0.917 g/cm¹
Mass/Unit Area	ASTM D6566	18.36 oz/sy (624 g/sm)
UV Stability	ASTM D4355/ 1000 HR	86%
Porosity	ECTC Guidelines	99%
Stiffness	ASTM D1388	0.24 in.-lb (275990 mg-cm)
Light Penetration	ASTM D6567	7.2%
Tensile Strength - MD	ASTM D6818	585.8 lbs/ft (8.70 kN/m)
Elongation - MD	ASTM D6818	45.3%
Tensile Strength - TD	ASTM D6818	687.6 lbs/ft (10.20 kN/m)
Elongation - TD	ASTM D6818	19.5%
Biomass Improvement	ASTM D7322	380%

Design Permissible Shear Stress

	Short Duration	Long Duration
Phase 1 Unvegetated	3.2 psf (153 Pa)	3.0 psf (144 Pa)
Phase 2 Partially Veg.	10.0 psf (480 Pa)	10.0 psf (480 Pa)
Phase 3 Fully Veg.	12.0 psf (576 Pa)	10.0 psf (480 Pa)
Unvegetated Velocity	10.5 fps (3.2 m/s)	
Vegetated Velocity	20 fps (6.0 m/s)	

30/22 NORTH AMERICAN GREEN C350 TURF REINFORCEMENT MATTING (OR EQUIVALENT)
NTS

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY
REGISTERED
20711
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

22

LEGEND

Symbol	Description
— — — —	EXISTING PROPERTY LINE
— G — G —	EXISTING GAS LINE
— E — E —	EXISTING OVERHEAD ELECTRIC SERVICE
	EXISTING UTILITY POLE
	EXISTING TREE LINE
	EXISTING STRUCTURE
(W)	EXISTING WELL
	DELINEATED STREAM
	DELINEATED WETLAND
	DELINEATED DRAINAGE FEATURE
	EXISTING ROAD
— X — X — X —	EXISTING FENCE
	FEMA FLOODPLAIN (N/A)
—1360—	EXISTING MAJOR CONTOUR (10')
	EXISTING MINOR CONTOUR (2')
1360	PROP. MAJOR CONTOUR (10')
	PROP. MAJOR CONTOUR (10')
	PROP. LIMITS OF DISTURBANCE
	PROP. PAD & ROAD EDGE
	PROP. CULVERT
	PROP. PAD PERIMETER SUMP
(W)	PROP. WELL HEAD
	PROP. BREACHES
	PROP. CHECK DAM
	PROP. RIP RAP APRON
	PROP. TOP OF SLOPE BERM

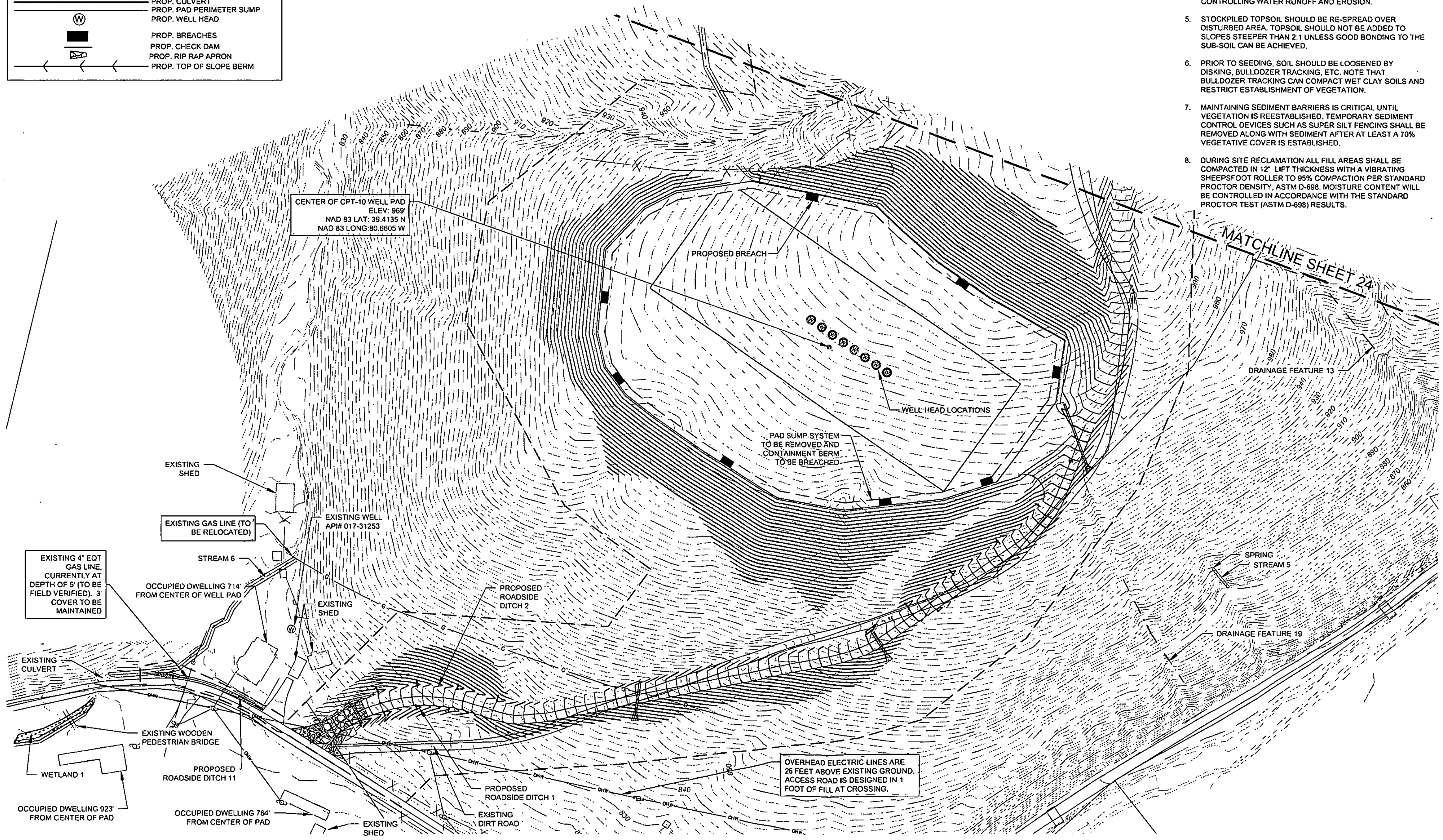
NOTES:

1. MUNICIPAL BOUNDARY LINES SHOWN ARE APPROXIMATE IN LOCATION, BASED ON MAPS BY OTHERS, AND MAY NOT CORRESPOND TO THE LEGAL LOCATION.
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE.
3. NO PERMANENT PUBLIC SANITARY SEWER NOR POTABLE WATER IS PROPOSED AT THE SITE.
4. NO BUFFER AREAS, PLANTINGS, OR LANDSCAPING ARE PROPOSED AT THE SITE. NO PERMANENT OPEN SPACE OR PUBLIC USE AREAS ARE PROPOSED AT THE SITE.
5. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE (FIRM) PANEL 54017C0045C INDICATE NO SPECIAL FLOOD HAZARD AREAS WITHIN THE PROJECT AREA.
6. ALL PROPOSED SLOPES ARE 2H:1V EXCEPT WHERE NOTED.
7. FILL OVER 50 VERTICAL FEET ON SPOIL PAD NEEDS A 12' BENCH.
8. FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 19.

NOTE:
ALL EROSION AND SEDIMENT DEVICES SHALL BE REMOVED UPON COMPLETION OF FINAL VEGETATION AND SITE STABILIZATION.

SITE RECLAMATION NOTES:

1. FLOWBACK PIT AND COMPLETION PIT, ALONG WITH THEIR ASSOCIATED TRUCK QUEUES SHALL BE RECLAIMED TO SURFACE OWNER'S SPECIFICATIONS OR AS CLOSE TO PRE-DISTURBED GRADES AS POSSIBLE. THE PIT LINER AND ANY REMAINING FLUID SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.
2. DRILL CUTTINGS, DRILLING MUD AND LINER, FOR WELLS PERMITTED UNDER WV CODE 22-6A AND 35CSR-8, MUST BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED SOLID WASTE FACILITY OR IF THE SURFACE OWNER CONSENTS THE DRILL-CUTTINGS AND ASSOCIATED DRILLING MUD MAY BE MANAGED ON SITE IN A MANNER APPROVED BY THE SECRETARY.
3. THE OPERATOR SHALL GRADE OR TERRACE AND PLANT, SEED OR SOD THE AREA DISTURBED THAT IS NOT REQUIRED IN PRODUCTION OF THE WELL IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.
4. INSTALL ALL PERMANENT WATER DRAINAGE AND DIVERSION DITCHES. IN AREAS OF LONG SLOPES, IT MAY BE DESIRABLE TO INSTALL ANGLED DIVERSION DITCHES TO AID IN CONTROLLING WATER RUNOFF AND EROSION.
5. STOCKPILED TOPSOIL SHOULD BE RE-SPREAD OVER DISTURBED AREA. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS GOOD BONDING TO THE SUB-SOIL CAN BE ACHIEVED.
6. PRIOR TO SEEDING, SOIL SHOULD BE LOOSENED BY DISKING, BULLDOZER TRACKING, ETC. NOTE THAT BULLDOZER TRACKING CAN COMPACT WET CLAY SOILS AND RESTRICT ESTABLISHMENT OF VEGETATION.
7. MAINTAINING SEDIMENT BARRIERS IS CRITICAL UNTIL VEGETATION IS REESTABLISHED. TEMPORARY SEDIMENT CONTROL DEVICES SUCH AS SUPER SILT FENCING SHALL BE REMOVED ALONG WITH SEDIMENT AFTER AT LEAST A 70% VEGETATIVE COVER IS ESTABLISHED.
8. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 12" LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698. MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM D-698) RESULTS.



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60' SCALE IN FEET

ORIGINAL DRAWING SIZE IS 22 x 34

RECLAMATION PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 23

CAD FILE: C:\pwwork\kingdoms\6870\EQT_CPT-10_Site Plan.dwg LAYOUT: 23 RECLAM PLOTTED: 7/1/2015 5:34 PM BY: kyle fisk

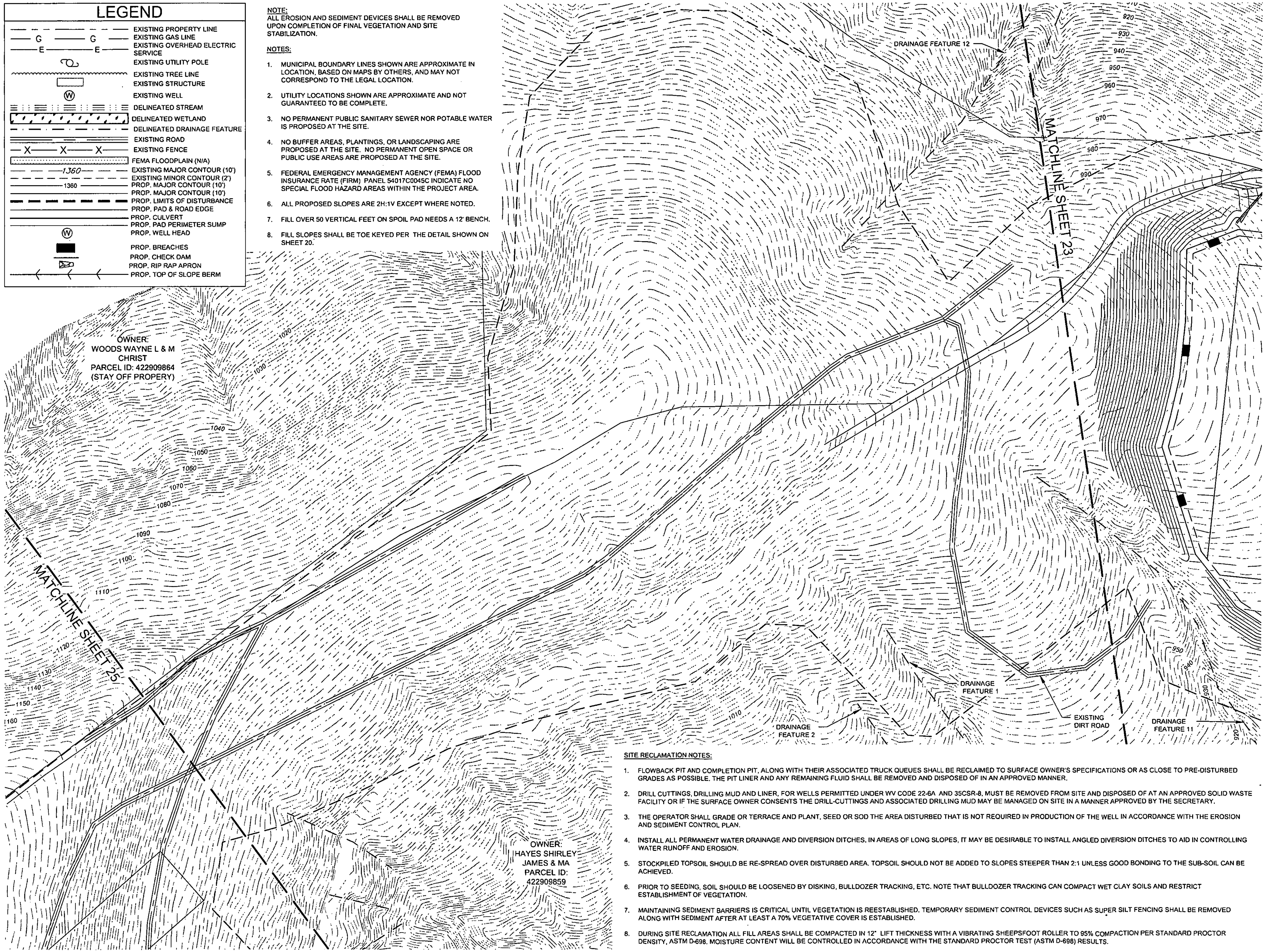
LEGEND

Symbol	Description
— — —	EXISTING PROPERTY LINE
— G — G —	EXISTING GAS LINE
— E — E —	EXISTING OVERHEAD ELECTRIC SERVICE
	EXISTING UTILITY POLE
	EXISTING TREE LINE
	EXISTING STRUCTURE
(W)	EXISTING WELL
	DELINEATED STREAM
	DELINEATED WETLAND
	DELINEATED DRAINAGE FEATURE
	EXISTING ROAD
— X — X — X —	EXISTING FENCE
	FEMA FLOODPLAIN (N/A)
— 1360 —	EXISTING MAJOR CONTOUR (10')
	EXISTING MINOR CONTOUR (2')
— 1360 —	PROP. MAJOR CONTOUR (10')
	PROP. MAJOR CONTOUR (10')
	PROP. LIMITS OF DISTURBANCE
	PROP. PAD & ROAD EDGE
	PROP. CULVERT
	PROP. PAD PERIMETER SUMP
(W)	PROP. WELL HEAD
	PROP. BREACHES
	PROP. CHECK DAM
	PROP. RIP RAP APRON
	PROP. TOP OF SLOPE BERM

NOTE:
ALL EROSION AND SEDIMENT DEVICES SHALL BE REMOVED UPON COMPLETION OF FINAL VEGETATION AND SITE STABILIZATION.

NOTES:

1. MUNICIPAL BOUNDARY LINES SHOWN ARE APPROXIMATE IN LOCATION, BASED ON MAPS BY OTHERS, AND MAY NOT CORRESPOND TO THE LEGAL LOCATION.
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE.
3. NO PERMANENT PUBLIC SANITARY SEWER NOR POTABLE WATER IS PROPOSED AT THE SITE.
4. NO BUFFER AREAS, PLANTINGS, OR LANDSCAPING ARE PROPOSED AT THE SITE. NO PERMANENT OPEN SPACE OR PUBLIC USE AREAS ARE PROPOSED AT THE SITE.
5. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE (FIRM) PANEL 54017C0045C INDICATE NO SPECIAL FLOOD HAZARD AREAS WITHIN THE PROJECT AREA.
6. ALL PROPOSED SLOPES ARE 2H:1V EXCEPT WHERE NOTED.
7. FILL OVER 50 VERTICAL FEET ON SPOIL PAD NEEDS A 12' BENCH.
8. FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 20.



SITE RECLAMATION NOTES:

1. FLOWBACK PIT AND COMPLETION PIT, ALONG WITH THEIR ASSOCIATED TRUCK QUEUES SHALL BE RECLAIMED TO SURFACE OWNER'S SPECIFICATIONS OR AS CLOSE TO PRE-DISTURBED GRADES AS POSSIBLE. THE PIT LINER AND ANY REMAINING FLUID SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.
2. DRILL CUTTINGS, DRILLING MUD AND LINER, FOR WELLS PERMITTED UNDER WV CODE 22-6A AND 35CSR-8, MUST BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED SOLID WASTE FACILITY OR IF THE SURFACE OWNER CONSENTS THE DRILL-CUTTINGS AND ASSOCIATED DRILLING MUD MAY BE MANAGED ON SITE IN A MANNER APPROVED BY THE SECRETARY.
3. THE OPERATOR SHALL GRADE OR TERRACE AND PLANT, SEED OR SOD THE AREA DISTURBED THAT IS NOT REQUIRED IN PRODUCTION OF THE WELL IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.
4. INSTALL ALL PERMANENT WATER DRAINAGE AND DIVERSION DITCHES. IN AREAS OF LONG SLOPES, IT MAY BE DESIRABLE TO INSTALL ANGLED DIVERSION DITCHES TO AID IN CONTROLLING WATER RUNOFF AND EROSION.
5. STOCKPILED TOPSOIL SHOULD BE RE-SPREAD OVER DISTURBED AREA. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS GOOD BONDING TO THE SUB-SOIL CAN BE ACHIEVED.
6. PRIOR TO SEEDING, SOIL SHOULD BE LOOSENED BY DISKING, BULLDOZER TRACKING, ETC. NOTE THAT BULLDOZER TRACKING CAN COMPACT WET CLAY SOILS AND RESTRICT ESTABLISHMENT OF VEGETATION.
7. MAINTAINING SEDIMENT BARRIERS IS CRITICAL UNTIL VEGETATION IS REESTABLISHED. TEMPORARY SEDIMENT CONTROL DEVICES SUCH AS SUPER SILT FENCING SHALL BE REMOVED ALONG WITH SEDIMENT AFTER AT LEAST A 70% VEGETATIVE COVER IS ESTABLISHED.
8. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 12" LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698. MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM D-698) RESULTS.

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

RECLAMATION PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 24 of 25

CAD FILE: C:\pwwork\...\EQT_CPT-10_Site Plan.dwg LAYOUT: 24 RECLAM PLOTTED: 7/1/2015 5:35 PM BY: lyde.tish

NOTES:

1. MUNICIPAL BOUNDARY LINES SHOWN ARE APPROXIMATE IN LOCATION, BASED ON MAPS BY OTHERS, AND MAY NOT CORRESPOND TO THE LEGAL LOCATION.
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE.
3. NO PERMANENT PUBLIC SANITARY SEWER NOR POTABLE WATER IS PROPOSED AT THE SITE.
4. NO BUFFER AREAS, PLANTINGS, OR LANDSCAPING ARE PROPOSED AT THE SITE. NO PERMANENT OPEN SPACE OR PUBLIC USE AREAS ARE PROPOSED AT THE SITE.
5. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE (FIRM) PANEL 54017C0045C INDICATE NO SPECIAL FLOOD HAZARD AREAS WITHIN THE PROJECT AREA.
6. ALL PROPOSED SLOPES ARE 2H:1V EXCEPT WHERE NOTED.
7. FILL OVER 50 VERTICAL FEET ON SPOIL PAD NEEDS A 12' BENCH.
8. FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 20.

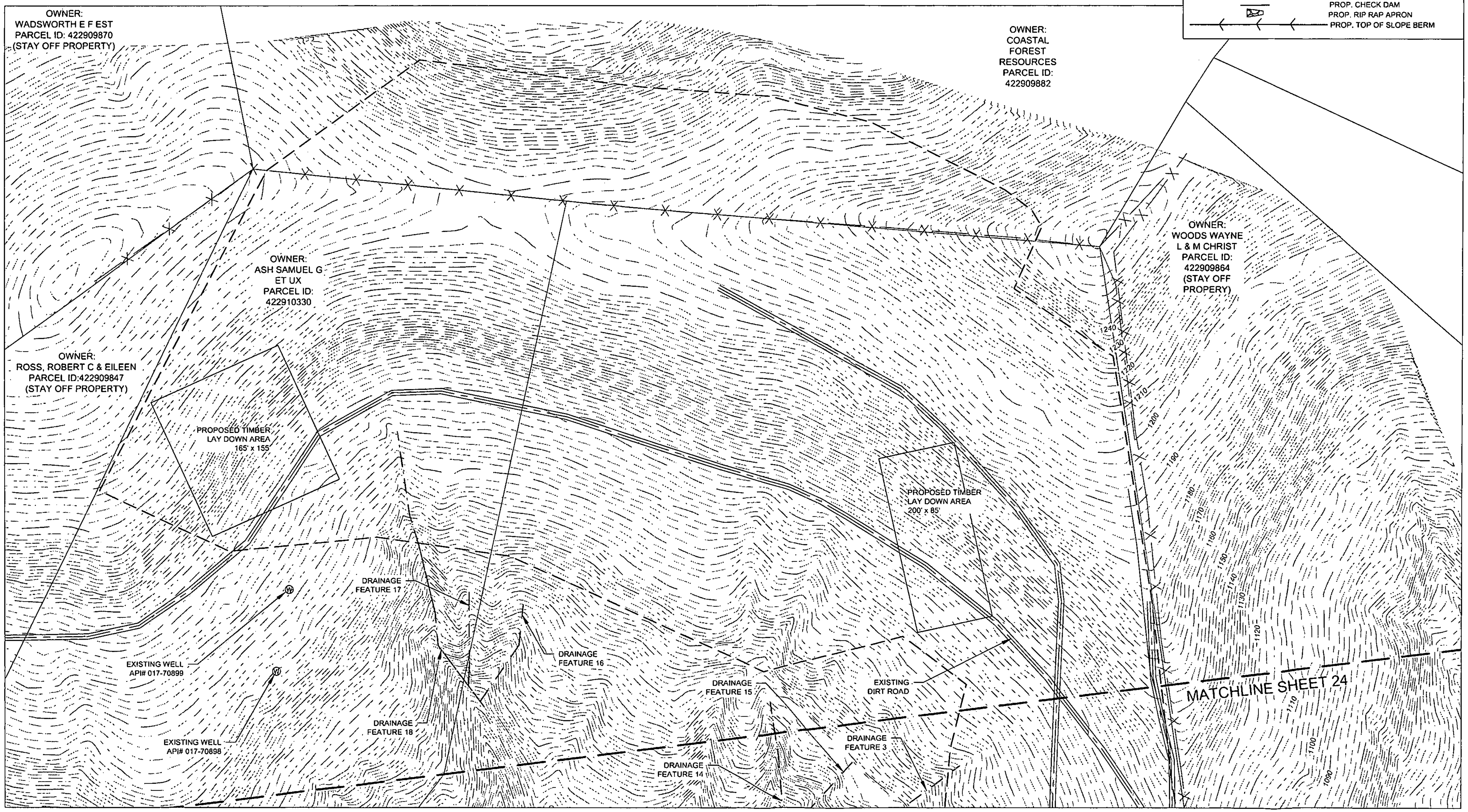
NOTE:
ALL EROSION AND SEDIMENT DEVICES SHALL BE REMOVED UPON COMPLETION OF FINAL VEGETATION AND SITE STABILIZATION.

SITE RECLAMATION NOTES:

1. FLOWBACK PIT AND COMPLETION PIT, ALONG WITH THEIR ASSOCIATED TRUCK QUEUES SHALL BE RECLAIMED TO SURFACE OWNER'S SPECIFICATIONS OR AS CLOSE TO PRE-DISTURBED GRADES AS POSSIBLE. THE PIT LINER AND ANY REMAINING FLUID SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.
2. DRILL CUTTINGS, DRILLING MUD AND LINER, FOR WELLS PERMITTED UNDER WV CODE 22-6A AND 35CSR-8, MUST BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED SOLID WASTE FACILITY OR IF THE SURFACE OWNER CONSENTS THE DRILL-CUTTINGS AND ASSOCIATED DRILLING MUD MAY BE MANAGED ON SITE IN A MANNER APPROVED BY THE SECRETARY.
3. THE OPERATOR SHALL GRADE OR TERRACE AND PLANT, SEED OR SOD THE AREA DISTURBED THAT IS NOT REQUIRED IN PRODUCTION OF THE WELL IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.
4. INSTALL ALL PERMANENT WATER DRAINAGE AND DIVERSION DITCHES. IN AREAS OF LONG SLOPES, IT MAY BE DESIRABLE TO INSTALL ANGLED DIVERSION DITCHES TO AID IN CONTROLLING WATER RUNOFF AND EROSION.
5. STOCKPILED TOPSOIL SHOULD BE RE-SPREAD OVER DISTURBED AREA. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS GOOD BONDING TO THE SUB-SOIL CAN BE ACHIEVED.
6. PRIOR TO SEEDING, SOIL SHOULD BE LOOSENED BY DISKING, BULLDOZER TRACKING, ETC. NOTE THAT BULLDOZER TRACKING CAN COMPACT WET CLAY SOILS AND RESTRICT ESTABLISHMENT OF VEGETATION.
7. MAINTAINING SEDIMENT BARRIERS IS CRITICAL UNTIL VEGETATION IS REESTABLISHED. TEMPORARY SEDIMENT CONTROL DEVICES SUCH AS SUPER SILT FENCING SHALL BE REMOVED ALONG WITH SEDIMENT AFTER AT LEAST A 70% VEGETATIVE COVER IS ESTABLISHED.
8. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 12" LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698. MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM D-698) RESULTS.

LEGEND

- EXISTING PROPERTY LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC SERVICE
- EXISTING UTILITY POLE
- EXISTING TREE LINE
- EXISTING STRUCTURE
- EXISTING WELL
- DELINEATED STREAM
- DELINEATED WETLAND
- DELINEATED DRAINAGE FEATURE
- EXISTING ROAD
- EXISTING FENCE
- FEMA FLOODPLAIN (N/A)
- EXISTING MAJOR CONTOUR (10')
- EXISTING MINOR CONTOUR (2')
- PROP. MAJOR CONTOUR (10')
- PROP. MAJOR CONTOUR (10')
- PROP. LIMITS OF DISTURBANCE
- PROP. PAD & ROAD EDGE
- PROP. CULVERT
- PROP. PAD PERIMETER SUMP
- PROP. WELL HEAD
- PROP. BREACHES
- PROP. CHECK DAM
- PROP. RIP RAP APRON
- PROP. TOP OF SLOPE BERM



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60' SCALE IN FEET

ORIGINAL DRAWING SIZE IS 22 x 34

RECLAMATION PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

25

SHEET 25 of 25

CAD FILE: C:\pwworking\dms06\EQT_CPT-10_Site Plan.dwg LAYOUT: 25 RECLAM PLOTTED: 7/1/2015 5:35 PM BY: lyle.link

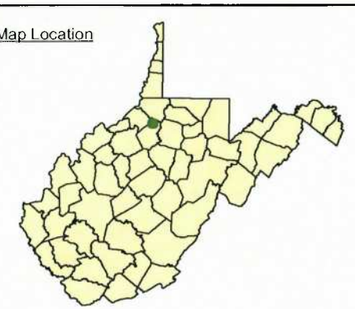
ATTACHMENT C

FLOODPLAIN MAP

CPT-10 Well Pad
FEMA FIRM 54017C0045C
EQT Production Company
Doddridge County, WV

Center Point, WV 7.5' USGS Quadrangle

Map Location



Legend

- Proposed LOD (40.5 ac)
- Existing Road
- FEMA 100 Year Flood Zone

McClellan District	
Doddridge County, WV	
Headwaters McElroy Creek	
Will Construction activities take place in a floodplain:	NO
Coordination with county flooplain coordinator required:	NO
HEC-RAS study required:	N/A
Floodplain shown on mapping:	YES
FIRM Map number(s) for project : 54017C0045C	
Acreage of temporary construction in floodplain:	N/A
Acreage of LOD in floodplain:	N/A

PROJECT #: 00137355.000A

DRAWN: 8/14/2015 **PRINTED:** 8/17/2015

DRAWN BY: AL

CHECKED BY: MA

FILE PATH:
X:\GIS_Database\Clients\EQT\CPT10_WP_137355\MXD\Floodplain\CPT10WP_Floodplain.mxd

0 400 800
Feet

EQT
Where energy meets innovation.

KLEINFELDER
Bright People. Right Solutions.
www.kleinfelder.com

The Doddridge Independent

The Doddridge Independent

PUBLISHER'S CERTIFICATE

I, Michael D. Zorn, Publisher of The Doddridge Independent, A newspaper of general circulation published in the town of West Union, Doddridge County, West Virginia, do hereby certify that:

Floodplain Permit Application # 15-375
Please take notice that on the 17th day of August, 2015
EQT Production Company
filed an application for a Floodplain Permit to develop land located at or about:
15-375- EQT Production Company
CPT-10 Well Pad Project Location: County Route 4
Coordinates: 39.411532, -80.661258

was published in The Doddridge Independent
2 times commencing on Friday, August 28, 2015 and
Ending on Friday, September 4, 2015 at the request of:

George Eidel, Doddridge County Floodplain Manager & Doddridge County Commission

Given under my hand this Tuesday, September 8, 2015

The publisher's fee for said publication is:

$ 25.27 1st Run/$ 18.95 Subsequent Runs
This Legal Ad Total: $ 44.22

Michael D. Zorn
Publisher of The Doddridge Independent

Subscribed to and sworn to before me on
this date: 9/8/15

Notary Public in and for Doddridge County

My Commission expires on
The 17th day of May 2019

Public Notice • Legal Notice

Doddridge County
Floodplain Permit Application # 15-375
Please take notice that on the 17th day of August, 2015
EQT Production Company
filed an application for a Floodplain Permit to develop land located at or about
15-375- EQT Production Company
CPT-10 Well Pad Project
Location: County Route 4
Coordinates: 39.411532, -80.661258
Received: 08/21/2015
To Be Announced: 09/01/2015
Publication Date: Week of 09/24/2015
20-Day Comment Period Window (from Commission Meeting)
09/20/2015 - NOT IN FLOODPLAIN
The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. As this project is outside the FEMA identified floodplain of Doddridge County, Doddridge County Floodplain Management has no regulatory authority. Any interested persons who desire to comment shall present the same in writing by August 28, 2015 delivered to:
Clerk of the County Court
118 E. Court Street, West Union, WV 26456
Beth A Rogers, Doddridge County Clerk
George Eidel, Doddridge County Flood Plain Manager
8/28 - 9/04

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
PAMELA R. STINESPRING
P. O. BOX 61
WEST UNION, WV 26456
My commission expires May 17, 2019

NON-REPORTING NATIONWIDE PERMIT 14 CPT-10 WELL PAD PROJECT

DODDRIDGE COUNTY, WEST VIRGINIA

PREPARED FOR:

EQT

Where energy meets innovation.

EQT PRODUCTION COMPANY
120 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330

PREPARED BY:

KLEINFELDER
Bright People. Right Solutions.

KLEINFELDER, INC.
230 EXECUTIVE DRIVE, SUITE 122
CRANBERRY TOWNSHIP, PA 16066

AUGUST 2015

TABLE OF CONTENTS

Executive Summary 1

1.0 Introduction 2

1.1 Project Description 2
1.2 Land Owner Information 2
1.3 Location 2
1.4 Site Description 2
1.5 Climate/Site Conditions 3

2.0 Methods 3

2.1 Date of Field Work and Personnel 3
2.2 Scope of Work 3
2.3 Desktop Analysis 4
2.4 ACOE Jurisdictional Statement 4

3.0 Jurisdictional Findings 4

4.0 Impacts 7

5.0 Permitting Requirements 9

LIST OF TABLES

Table 1 – Land Owner Information 2
Table 2 – Potentially Jurisdictional Features Identfied in the AOI 6
Table 3 – Impacts to Potentially Jurisdictional Waters in the Project LOD (Fill Only) 8
Table 4 – Temporary Disturbance Related to Construction in the Project LOD (No Fill) 8

LIST OF FIGURES

Figure 1 – Project Location Map
Figure 2 – Delineation Map
Figure 3 – Soils Map

APPENDICES

Appendix A – Delineation Data Sheets
Appendix B – Photos of Jurisdictional Features
Appendix C – Design Drawings
Appendix D – Agency Correspondence Letters

Executive Summary

EQT Production Company (EQT) is proposing to construct a well pad, completion pit, flowback pit, and associated access roads, known as the CPT-10 Well Pad (Project), in Doddridge County, West Virginia (WV) (Figure 1). Site location maps are provided as Figure 1 (Project Location Map) and Figure 2 (Aerial Imagery Map). The proposed Project will have a limit of disturbance (LOD) of 40.5 acres and will support EQT's natural gas development of state-permitted wells within the region. As described in this report, the project meets all of the terms and conditions of a non-reporting Nationwide Permit (NWP) 14 for linear transportation projects.

Kleinfelder, Inc. (Kleinfelder) biologists conducted stream and wetland investigations and habitat assessments on October 30 – 31, 2013, August 19, 2014, and February 2, 2015 within the 100-acre Area of Interest (AOI) surrounding the project. Seven (7) potentially jurisdictional features were observed within the AOI and included five (5) ephemeral streams, one (1) intermittent stream and one (1) palustrine emergent (PEM) wetland.

Field data collected during stream and wetland delineations provided the basis for adjusting the Project location in a manner that minimized and avoided impacts to aquatic habitats and biological features. The proposed Project will permanently impact one (1) intermittent stream (Stream 6). This impact will be associated with placement of rip-rap for a drainage ditch along County Route 4. Temporary disturbances related to construction (non-fill) will occur to one (1) intermittent stream (Stream 6). Table 3 summarizes the proposed fill related impacts to potential jurisdictional features. Table 4 summarizes the proposed non-fill related construction disturbances to potentially jurisdictional features and the associated avoidance and minimization measures.

A Pre-Construction Notification to the U.S. Army Corps of Engineers (ACOE) is not required since each proposed stream impact is under 100 linear feet, and therefore the contents of this report represents a "No Impact Project". Information contained herein records EQT's due diligence in a thorough environmental site investigation.

1.0 Introduction

This report represents a non-reporting Nationwide Permit (NWP). Information contained in this report records EQT Production Company's (EQT) due diligence in a thorough environmental site investigation. This project is within the constraints of a non-reporting NWP 14 (linear transportation projects). Therefore, the project does not require District Engineer notification.

1.1 Project Description

EQT is proposing to construct a well pad, completion pit, flowback pit, and associated access roads, known as the CPT-10 Well Pad (Project), in Doddridge County, West Virginia (WV) (Figure 1) to support EQT's natural gas development of state-permitted wells within the region. Site location maps are provided as Figure 1 (Project Location Map) and Figure 2 (Delineation Map). The proposed area of interest (AOI) is approximately 110 acres. However, only 40.5 acres will be associated with the limit-of-disturbance (LOD). In order to construct the proposed Project, site access will be obtained through the use of one (1) access road. During site reviews, seven (7) potentially jurisdictional features were identified. None of the features are listed in the National Hydrography Dataset (NHD) or in the National Wetland Inventory (NWI) (Figures 1 and 2).

1.2 Land Owner Information

Property owner information is included in Table 1.

Table 1. Land Owner Information

Property ID	Property Owner Name
05-12-3	HAYES, SHIRLEY, JAMES & MARJORIE
05-6-27	COASTAL FOREST RESOURCES CO
05-12-2.3	ASH, SAMUEL G. ET UX

1.3 Location

The Project is located in Doddridge County, WV as shown on the Project Location Map (Figure 1) and will be accessed via County Route 4 at 39.411532°, -80.661258°. Directions to the site from Center Point, WV are provided below:

- Head north on WV-23 W toward Hill Street.
- Make a slight right onto County Route 4/Broad Run and continue for 0.9 miles.
- The entrance to the access road will be on your left.

1.4 Site Description

Figure 1 depicts the location of the proposed AOI on a United States Geological Survey (USGS) topographic background. Land cover types within the AOI consist primarily of deciduous forest and open pasture. The forested community is dominated by American beech (*Fagus grandifolia*), eastern white pine (*Pinus strobus*), shagbark hickory (*Carya ovata*), red oak (*Quercus rubra*), sugar maple (*Acer saccharum*), and white oak (*Quercus alba*). Elevations throughout the AOI range from approximately 800 feet to 1,260 feet above mean sea level. No roads are crossed by the proposed Project, however County Route 4 does travel within the AOI and will be used for site access.

1.5 Climate/Site Conditions

The Project was visited by Kleinfelder Biologists with weather conditions consisting of the following during each site visit:

- October 30 – 31, 2013 - Temperatures averaging 52 degrees Fahrenheit (°F) with scattered rain events.
- August 19, 2014 - Temperatures averaging 76°F with overcast skies.
- February 2, 2015 - Temperatures averaging 33°F with light rain in the morning changing over to light snow in afternoon and evening.

2.0 Methods

2.1 Date of Field Work and Personnel

Field work was led by Kleinfelder Biologists Evan McClung, Jaime Zsiros, and John Lewis on October 30 – 31, 2013, August 19, 2014, and February 2, 2015, respectively. Evan McClung is a Senior Environmental Scientist with 15 years of experience conducting stream assessments, wetland delineations, habitat assessments, and operating professional grade GPS units. Jaime Zsiros is a Senior Environmental Scientist with 13 years of experience conducting stream assessments, wetland delineations, habitat assessments, and operating professional grade GPS units. John Lewis is an Environmental Scientist with five (5) years of experience conducting stream assessments, wetland delineations, habitat assessments, and operating professional grade GPS units.

2.2 Scope of Work

At the request of EQT, Kleinfelder Biologists delineated aquatic features within the 110-acre AOI according to procedures outlined in the *1987 United States Army Corps of Engineers (ACOE) Wetland Delineation Manual and the ACOE Eastern Mountains and Piedmont Regional Supplement Version 2.0* (ACOE, 2012). Aquatic features including springs, seeps, culverts, ditches, ponds and areas of standing water were evaluated and are illustrated on Figure 2.

Kleinfelder utilized a three-parameter approach, involving the examination of vegetation, soils, and hydrology to identify indicators of wetlands. Representative photographs were taken of each feature (Appendix B). Data points were collected with a sub-meter accuracy Global Positioning System (GPS) unit in order to record the boundary of each aquatic feature within the AOI. The GPS data points were verified and validated by the field and engineering teams and combined into shapefiles, which were used to create the mapping (Figure 2).

Jurisdictional determinations were made in accordance with the "Routine Wetland Determination" procedures outlined in the *1987 ACOE Wetland Delineation Manual* and the *ACOE Eastern Mountains and Piedmont Regional Supplement to the Wetland Delineation Manual, Version 2.0* (ACOE, 2012) and based on instruction and guidance given by ACOE personnel during site walks in March 2015. The routine method was selected because it resulted in adequate qualitative data for making determinations. Occasionally the comprehensive method may be used in highly complex systems, but for this Project the routine method was sufficient to obtain the necessary data.

Wetlands determined to be jurisdictional exhibited hydric soils, hydrophytic vegetation and indicators of hydrology. Jurisdictional streams exhibited ordinary high water marks (OHWM), a defined bed and bank and a sorted substrate.

2.3 Desktop Analysis

Kleinfelder conducted a desktop analysis to examine known stream and wetland data from the NWI and NHD. NWI data were obtained from the United States Fish and Wildlife Service (USFWS) (http://www.fws.gov/wetlands/Data/State-Downloads.html). NHD data were obtained from the ESRI online map service. These datasets were superimposed upon USGS topographic data to identify areas likely to contain hydrologic features. Hydric soils data from the United States Department of Agriculture – Natural Resources Conservation Service (USDA – NRCS) was also reviewed to determine areas likely to contain aquatic features (Figure 3).

After delineation, a desktop review was conducted to determine stream classifications (Table 2). Designated trout streams were evaluated through consultation with the West Virginia Department of Environmental Protection (WVDEP). High Quality (HQ) waters were evaluated by reviewing Water Quality Standard Data available through the WVDEP website (http://www.dep.wv.gov/WWE/Programs/wqs/Pages/default.aspx), which indicates that no HQ waters exist in the Project AOI.

Additionally, a preliminary review of the National Register of Historic Places (NRHP) and the West Virginia State Historic Preservation Office (WVSHPO) online databases was conducted to determine if any known registered sites are located in the vicinity of the proposed Project. The results of this review identified no archeological areas within the Project AOI. The closest archeological area occurs approximately 1.75 miles southeast of the AOI.

2.4 ACOE Jurisdictional Statement

This report reflects the professional opinion of Kleinfelder. Formal determination of jurisdiction regarding wetlands and waters of the United States (WoUS) can only be determined by the ACOE with the submittal of a jurisdictional determination request by the Project Applicant.

3.0 Jurisdictional Findings

Seven (7) potentially jurisdictional features were observed within the AOI and included five (5) ephemeral streams, one (1) intermittent stream and one (1) palustrine emergent (PEM) wetland. The jurisdictional streams and wetland in the AOI are described below and depicted in Figure 2. Table 2 provides a list of the potential jurisdictional features and characteristics. Data sheets and photographs are included as Appendix A and Appendix B, respectively.

Description of Potentially Jurisdictional Findings:

Stream 1 is an ephemeral stream (Unnamed Tributary (UNT) to Broad Run) located in the southwest portion of the Project AOI. At the time of the field investigation, the stream exhibited an OHWM of two (2) inches deep and four and one-half (4.5) feet wide. The stream substrate was primarily composed of gravel and cobble. This stream maintains surface connectivity to a relatively permanent waterway (RPW) and meets the definition of a jurisdictional WoUS.

Stream 2 is an ephemeral stream (UNT to Broad Run) located in the southwest portion of the Project AOI. At the time of the field investigation, the stream exhibited an OHWM of one (1) inch deep and four and one-half (4.5) feet wide. The stream substrate was primarily composed of

gravel and cobble. This stream maintains surface connectivity to a RPW and meets the definition of a jurisdictional WoUS.

Stream 3 is an ephemeral stream (UNT to Broad Run) located in the southwest portion of the Project AOI. At the time of the field investigation, the stream exhibited an OHWM of two (2) inches deep and five (5) feet wide. The stream substrate was primarily composed of gravel and cobble. This stream maintains surface connectivity to a RPW and meets the definition of a jurisdictional WoUS.

Stream 4 is an ephemeral stream (UNT to Broad Run) located in the southwest portion of the Project AOI. At the time of the field investigation, the stream exhibited an OHWM of two (2) inches deep and four and one-half (4.5) feet wide. The stream substrate was primarily composed of gravel and cobble. This stream maintains surface connectivity to a RPW and meets the definition of a jurisdictional WoUS.

Stream 5 is an ephemeral stream (UNT to Broad Run) located in the southeast portion of the Project AOI. At the time of the field investigation, the stream exhibited an OHWM of one (1) inch deep and eight tenths (0.8) of a foot wide. The stream substrate was primarily composed of gravel. This stream maintains surface connectivity to a RPW and meets the definition of a jurisdictional WoUS.

Stream 6 is an intermittent stream (UNT to Broad Run) located in the southeast portion of the Project AOI. At the time of the field investigation, the stream exhibited an OHWM of two (2) inches deep and four (4) feet wide. The stream substrate was primarily composed of gravel. The stream is an RPW and meets the definition of a jurisdictional WoUS.

Wetland 1 is a PEM located in the southeast portion of the AOI. Wetland 1 occurs in the floodplain of Stream 6 and is located inside a residential yard. Hydric soils, hydrophytic vegetation, and indicators of hydrology were observed. This wetlands maintains a hydrologic connection to a RPW and is anticipated to be jurisdictional to the ACOE.

Table 2. Potentially Jurisdictional Features Identified in the AOI

Name[1]	Cowardin Code[2]	HGM Code[2]	Measurement Type	Amount	Units	Waters Type[2]	Latitude[3]	Longitude[3]	Local Waterway	Wild Trout[4]	Stocked Trout[5]	High Quality Water[6]
Streams												
Stream 1	R6	N/A	Linear	758	Feet	NRPW	39.412334	-80.667085	UNT to Broad Run	No	No	No
Stream 2	R6	N/A	Linear	160	Feet	NRPW	39.412211	-80.665987	UNT to Broad Run	No	No	No
Stream 3	R6	N/A	Linear	190	Feet	NRPW	39.410339	-80.669389	UNT to Broad Run	No	No	No
Stream 4	R6	N/A	Linear	217	Feet	NRPW	39.409936	-80.669373	UNT to Broad Run	No	No	No
Stream 5	R6	N/A	Linear	18	Feet	NRPW	39.413567	-80.658559	UNT to Broad Run	No	No	No
Stream 6	R4SB3	N/A	Linear	408	Feet	RPW	39.411703	-80.661819	UNT to Broad Run	No	No	No
Wetlands												
Wetland 1	PEM	Riverine	Area	818	Square Feet	DELINEATE	39.411194	-80.66213	N/A	N/A	N/A	N/A

Notes:

1. Kleinfelder naming convention.
2. As determined by the ACOE's Waters Upload Sheet
3. North American Datum 1983
4. Sustains wild trout populations with no annual stocking. WV Division of Natural Resources (WVDNR) communication states there are no trout streams in Doddridge County.
5. WVDNR Interactive Trout Stream Map. http://mapwv.gov/trout/
6. WV High Quality (WVHQ) Streams, Sixth Edition. WVDNR (2001)

4.0 Impacts

The location of the proposed Project was developed to avoid and minimize impacts to stream and wetlands. Field data collected during stream and wetland delineations provided the basis for adjusting the Project location in a manner that minimized and avoided impacts to aquatic habitats and biological features.

The proposed Project will permanently impact one (1) intermittent stream (Stream 6). This impact will be associated with placement of rip-rap for a drainage ditch along County Route 4. Temporary disturbances related to construction (non-fill) will occur to one (1) intermittent stream (Stream 6). Table 3 summarizes the proposed fill related impacts to potential jurisdictional features. Table 4 summarizes the proposed non-fill related construction disturbances to potentially jurisdictional features and the associated avoidance and minimization measures.

Table 3. Impacts to Potentially Jurisdictional Waters in the Project LOD (Fill Only)

Feature Label	OHWM Width (feet)	OHWM Depth (inches)	Nature of Impact	Length of Disturbance (feet)	Area of Disturbance (acres)	Fill Quantity (cubic yards)	Temporary (T) or Permanent (P) Impacts	Type of Fill
Stream 6	4	2	Open-Cut	31	0.002	3	P	Rip-Rap

Table 4. Temporary Disturbance Related to Construction in the Project LOD (No Fill)

Feature Label	Length of Non-Fill Disturbance (feet)	Area of Disturbance (acres)	Nature of Disturbance	Avoidance and Minimization
Stream 6	18	0.010	Equipment crossing	The boundaries of the LOD have been reduced at this crossing to minimize impacts to this feature. Matting and pallets will be in place during construction to protect stream banks from construction related traffic.

5.0 Permitting Requirements

- ACOE – This project meets the terms and conditions of a non-reporting NWP-14 for impacts to streams under 100 linear feet. No further consultation with the ACOE is required.

- USFWS – A rare, threatened and endangered (RTE) species consultation letter was submitted to the USFWS on July 24, 2015 (Appendix D). The project will result in greater than 17 acres of forest clearing. A conservation plan was submitted with the Section 7 consultation letter to the USFWS. Final concurrence from USFWS is currently pending.

- WVDNR-Office of Land and Streams (OLS) – Stream Activity Application for coverage under a Right-of-Entry Permit is required for the proposed stream crossing and will be submitted by EQT.

- WVSHPO – Environment and Archaeology, LLC (E&A) conducted a literature review on July 9, 2015 and submitted a desktop analysis for the proposed CPT-10 Well Pad Project. Based on the results of the desktop analysis (Appendix D), the proposed project will have no effect on any recorded archeological sites, architectural resources or cemeteries listed on or determined eligible for the National Register of Historic Places. A response from the WVSHPO is currently pending.

- Doddridge County Floodplain Coordinator – The proposed Project does not cross any Federal Emergency Management Agency (FEMA) floodplains. However, Project notification is still required to the Doddridge County Floodplain Coordinator and will be submitted by Kleinfelder.

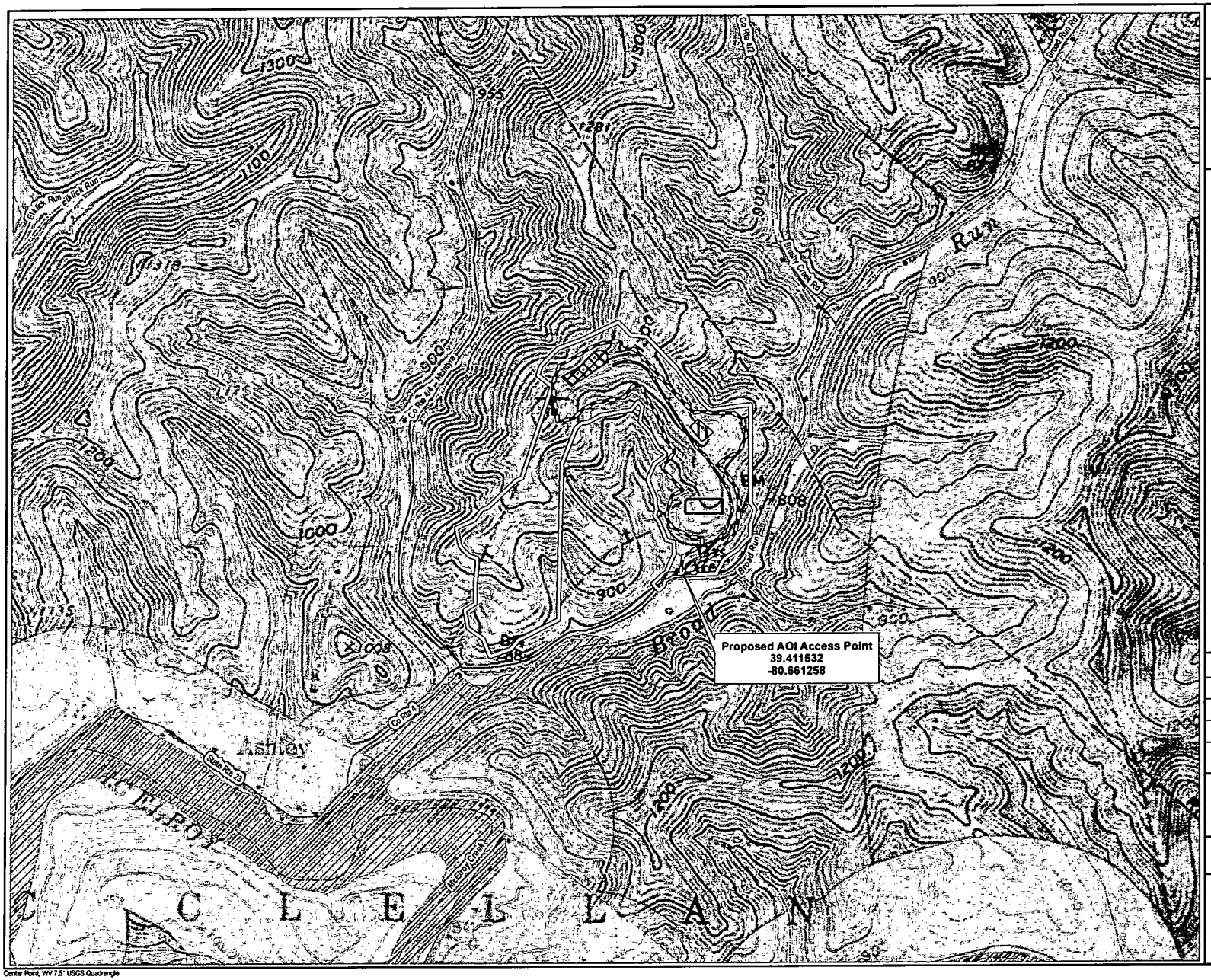
- WV Division of Highways (WVDOH) – Permits are required from District 4 for the proposed well pad access road and will be submitted by EQT.

FIGURES

Figure 1 Project Location Map
Figure 2 Delineation Map
Figure 3 Soils Map

FIGURE 1

PROJECT LOCATION MAP

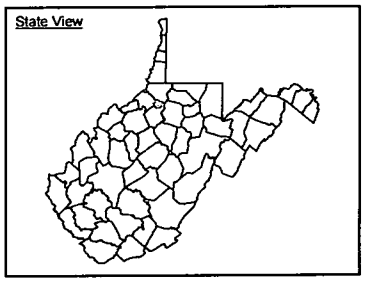


Center Point, WV 7.5' USGS Quadrangle

FIGURE 1
PROJECT LOCATION MAP

CPT-10 Well Pad
EQT Production Company
Doddridge County, WV

State View



Legend

- AOI (110.0 ac)
- Proposed LOD (40.5 ac)
- Proposed Well Pad
- Proposed Access Road
- Proposed Completion Pit
- Proposed Flow Back Pit
- NHD Stream
- NWI Wetland (N/A)
- USFWS Aquatic Buffer
- USFWS Terrestrial Buffer
- FEMA 100 Year Flood Zone
- Existing Road

PROJECT #:	00137355.000A
DRAWN: 7/15/2014	**PRINTED:** 8/10/2015
DRAWN BY:	GHB
CHECKED BY:	MA
FILE NAME:	G:\GIS\PROJECTS\EQT\Production\CPT-10-137355\MXD\MXD\SRC\CPT-10_Fig1.mxd

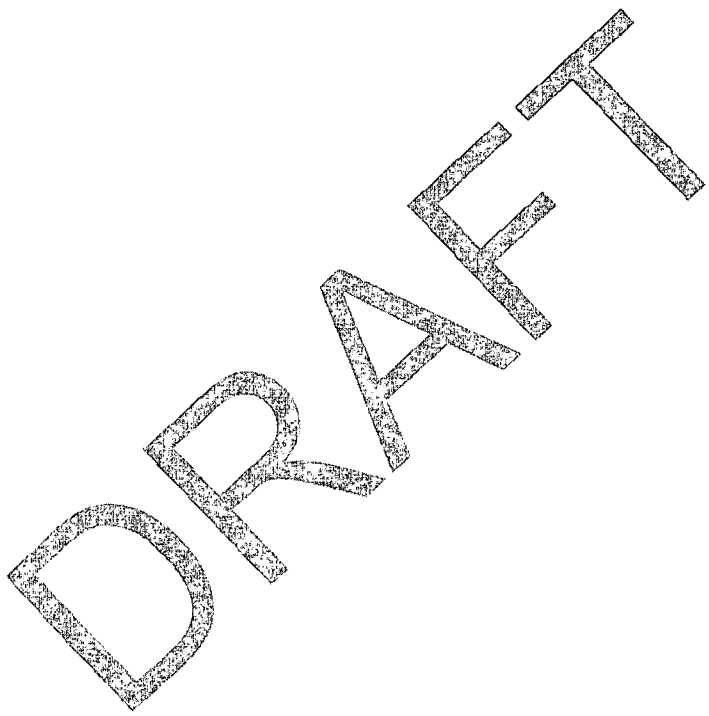
0 1,000 2,000
Feet

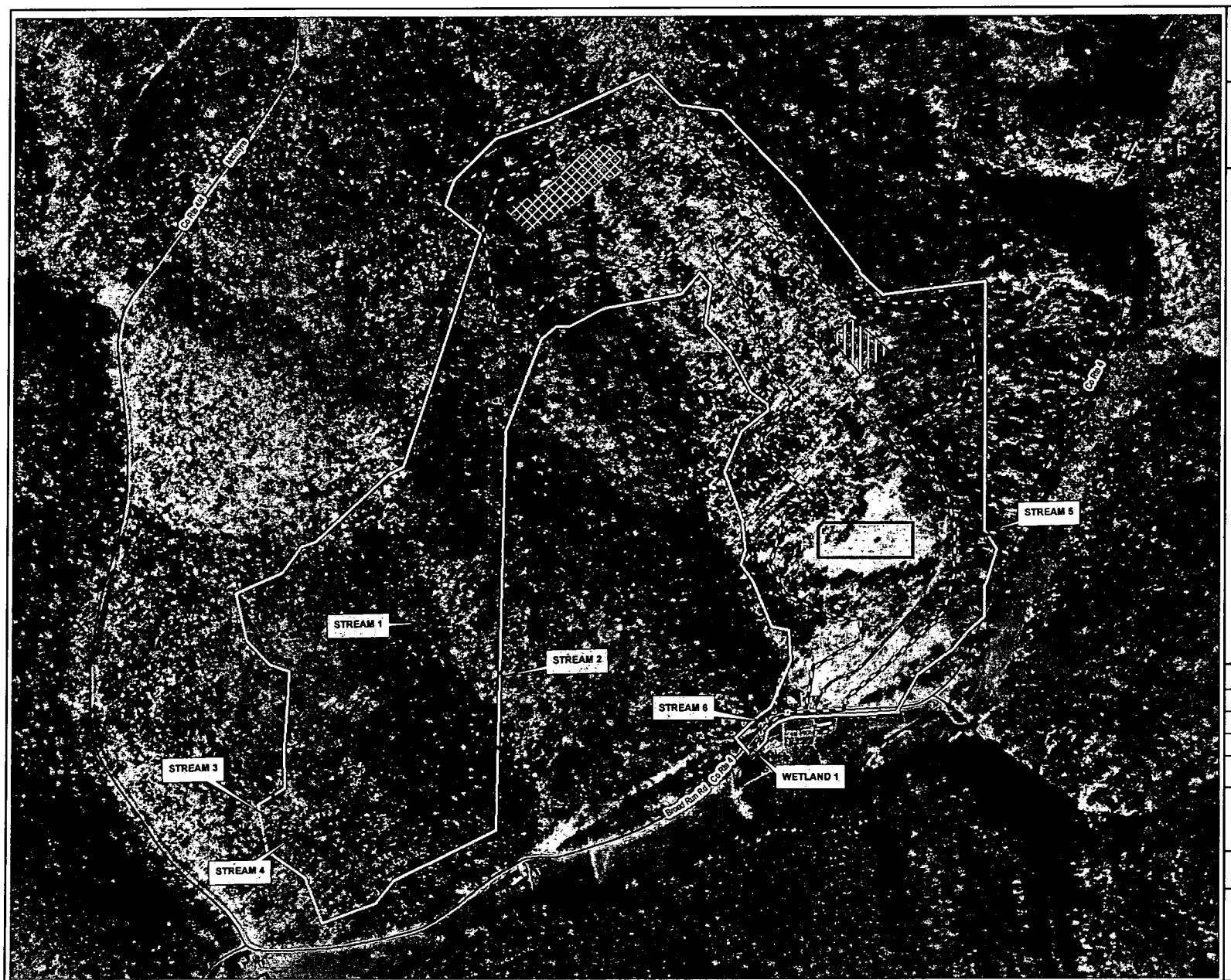
EQT Where energy meets innovation.

KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com

FIGURE 2

DELINEATION MAP



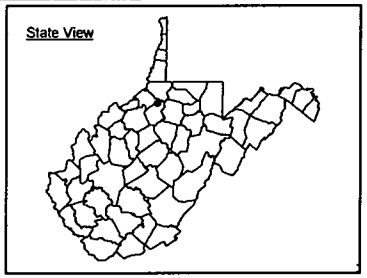


Aerial Photography - ESRI

FIGURE 2
DELINEATION MAP

CPT-10 Well Pad
EQT Production Company
Doddridge County, WV

State View



- AOI (110.0 ac)
- Proposed LOD (40.5 ac)
- Proposed Well Pad
- Proposed Access Road
- Delineated Intermittent Stream
- Delineated Ephemeral Stream
- Delineated PEM Wetland
- Existing Culvert
- Proposed Completion Pit
- Proposed Flow Back Pit
- Existing Road
- USFWS Aquatic Buffer (N/A)
- USFWS Terrestrial Buffer (N/A)

PROJECT #:	00137355.000A
DRAWN: 7/15/2014	**PRINTED:** 8/10/2015
DRAWN BY:	GHB
CHECKED BY:	MA
FILE NAME:	G:\GIS\PROJECTS\EQT\Production\CPT-10-137355\MXD\WDS\RCPT-10_Fig2_Delineation.aprx

0 400 800

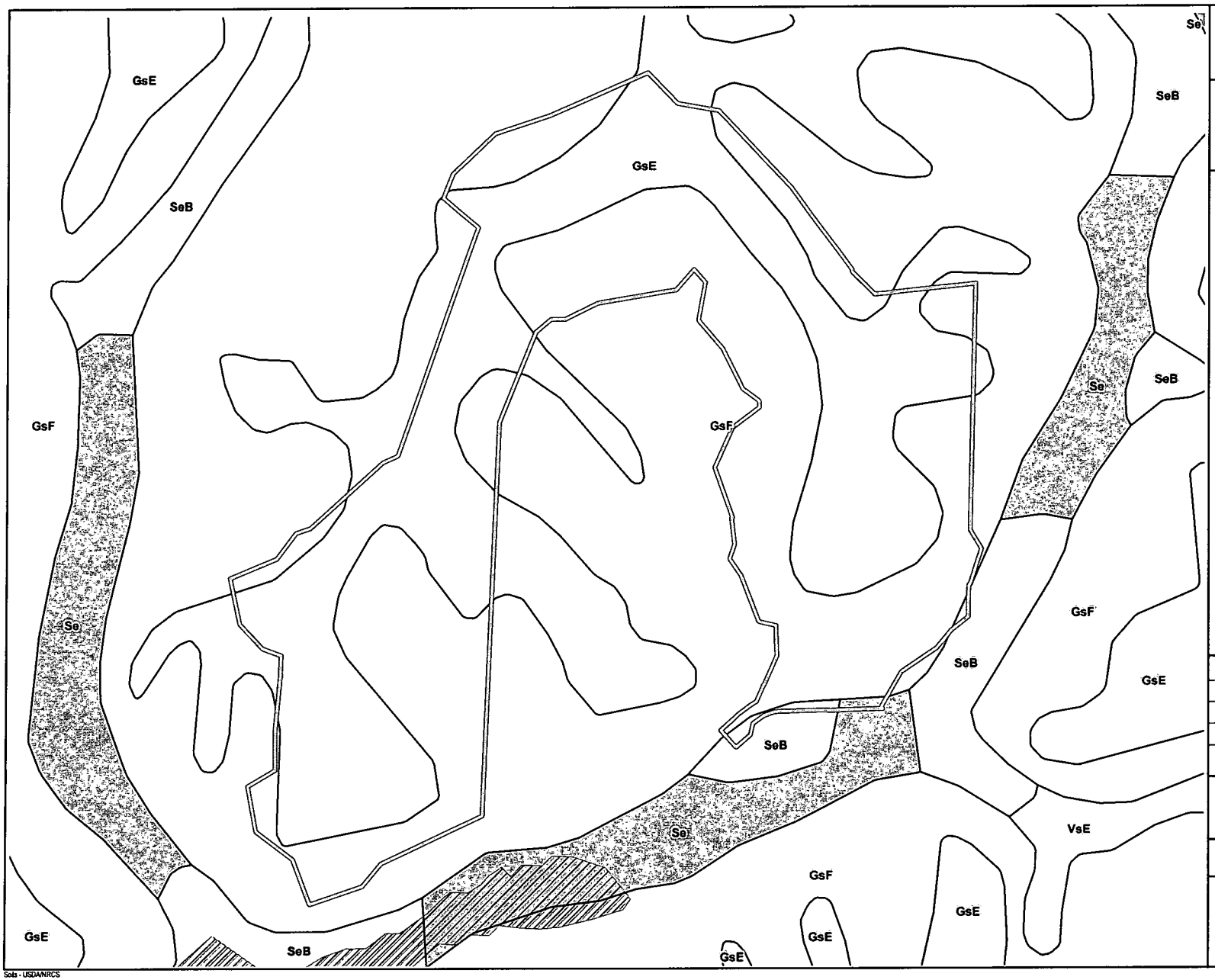
Feet

EQT Where energy meets innovation.

KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com

FIGURE 3

SOILS MAP

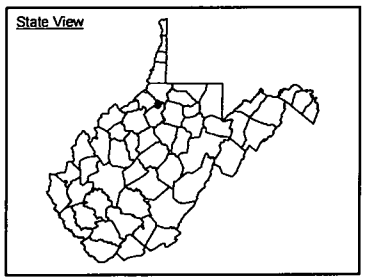


Soils - USDA/NRCS

FIGURE 3
SOILS MAP

CPT-10 Well Pad
EQT Production Company
Doddridge County, WV

State View



Legend

- AOI (110.0 ac)
- Soil Unit Boundary
- Partially Hydric Soil
- Non-Hydric Soil
- FEMA 100 Year Flood Zone

Soil Types within AOI

MUSYM	Hydric Rating	Area (ac)
GsF	No	56.9
GsE	No	52.4
SeB	No	0.5
Se	Partially	0.2
	TOTAL	*110.0*

PROJECT #: 00137355.000A

DRAWN: 1/22/2015 **PRINTED:** 8/10/2015

DRAWN BY: GHB

CHECKED BY: MA

FILE NAME:
G:\GIS\PROJECTS\EQT\Production\CPT-10-137355\MXD\Wetland Report\CPT-10_Fig3_Soils.mxd

0 400 800
Feet

EQT Where energy meets innovation.

KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com

APPENDIX A

Delineation Data Sheets

KLEINFELDER
Bright People. Right Solutions.

Stream Characterization Data Form

Stream Datasheet 6

Stream evaluations should be performed while facing upstream.

Date: 10/31/2013 Client: EQT Production Company Site: CPT-10 Well Pad

County/State: Doddridge Co., WV Investigators: McClung, Evan & Renaudin, Nathan

GPS Coordinates: LAT: 39.41233377 LONG: -80.66708484 Data Entered by: McClung, Evan

Stream Name: UNT to Broad Run Field ID: Stream 1

Type of Stream: Ephemeral Predominant weather in past ☐ 24hrs ☐ 48hrs ☑ 72hrs Showers (intermittent rain)

1. a) Approximate depth of water in stream: ____ x N/A
   b) Approximate width of water flow: ____ x N/A
   c) Approximate width of stream: (from top of bank to top of bank) 5 ft
   d) Approximate width of stream: (from toe of bank to toe of bank) 4 ft
   e) Approximate depth of pool(s): 2 in ____ N/A

   f) Approximate height of banks (channel depth): Flow: ____
   left 12 in right 12 in
   g) OHWM Depth 2 in ____ N/A
   h) OHWM Width 4.5 ft ____ N/A

2. Is there a significant nexus to another water source? Yes a) If so, is the water source: delineated
   b) If delineated, list connected features: Stream 2

3. Plant Species Adjacent to stream (scientific name):
   Trees: *Fagus grandifolia* *Acer rubrum* *Acer saccharum*
   Shrubs: *Carpinus caroliniana*
   Understorey: *Polystichum acrostichoides*

4. Stream habitats present: ☑ Pools ☐ Runs ☐ Riffles ☐ N/A

5. Aquatic Fauna Present? No If Yes - Describe: ____

6. Nature of the particles in the stream bottom:
   silt/clay/mud Some cobbles (2-10" diam.) Most
   sand Little boulders (> 10" diam.) Some
   gravel Most bedrock Some

7. Presence of:
   a) naturally occuring organic material in stream Occasional
   b) logs or large woody debris in stream Occasional

8. a) What is the extent of forest cover out to 50 ft. of the stream? left side 50 ft. right side 50 ft.
   And what is the % of that cover? left side 70 % right side 70 %
   b) What is the extent of shrub cover out to 50 ft. of the stream? left side 50 ft. right side 50 ft.
   And what is the % of that cover? left side 15 % right side 15 %

9. Water Appearance: clear If other, explain: ____

10. Water Odor none If other, explain: ____

11. Pick the description that best fits the stream bank and the channel Left Gradual/No slope (<30°) Right Gradual/No slope (<30°)

12. Describe the streamside cover. Select Present or Common

Streamside Habitat and Land Uses

	Left	Right
Trees	Common	Common
Bushes, Shrubs	Common	Common
Tall grasses, ferns	Present	Present
Lawn		
Boulders/Rocks	Present	Present
Gravel/Sand		
Bare Soil	Present	Present
Pavement Structures		
Agriculture		
Other		
If other, explain:		

13. In the vicinity of the stream, select Present or Common

	Left	Right
Natural Streamside plant cover degraded		
Banks collapsed/eroded	Present	Present
Garbage/junk adjacent to the stream		
Foam or sheen on bank		
Mud, silt, or sand in or entering the stream		
Garbage/junk in the stream		
Yard waste on bank (clippings, leaves, etc.)		
Livestock in or with unrestricted access		
Actively discharging pipes		
Other pipes		
Ditches entering stream		

Additional Comments

KLEINFELDER
Bright People. Right Solutions.

Stream Characterization Data Form

Stream Datasheet 6

Stream evaluations should be performed while facing upstream.

Date: 10/31/2013 Client: EQT Production Company Site: CPT-10 Well Pad

County/State: Doddridge Co., WV Investigators: McClung, Evan & Renaudin, Nathan

GPS Coordinates: LAT: 39.41221072 LONG: -80.66598735 Data Entered by: McClung, Evan

Stream Name: UNT to Broad Run Field ID: Stream 2

Type of Stream: Ephemeral Predominant weather in past: ☐ 24hrs ☐ 48hrs ☑ 72hrs Showers (intermittent rain)

1. a) Approximate depth of water in stream: ____ x N/A
   b) Approximate width of water flow: ____ x N/A
   c) Approximate width of stream: (from top of bank to top of bank) 5 ft
   d) Approximate width of stream: (from toe of bank to toe of bank) 4 ft
   e) Approximate depth of pool(s): ____ x N/A
   f) Approximate height of banks (channel depth): left 12 in right 12 in Flow: ____
   g) OHWM Depth 1 in ____ N/A
   h) OHWM Width 4.5 ft ____ N/A

2. Is there a significant nexus to another water source? Yes a) If so, is the water source: delineated
   b) If delineated, list connected features: Stream 1

3. Plant Species Adjacent to stream (scientific name):
   Trees: *Fagus grandifolia* *Acer rubrum* *Acer saccharum*
   Shrubs: *Carpinus caroliniana*
   Understory: *Polystichum acrostichoides*

4. Stream habitats present: ☐ Pools ☐ Runs ☐ Riffles ☑ N/A

5. Aquatic Fauna Present? No If Yes - Describe: ____

6. Nature of the particles in the stream bottom:
   silt/clay/mud Some; sand Little; gravel Most; cobbles (2-10" diam.) Most; boulders (> 10" diam.) Some; bedrock Some

7. Presence of:
   a) naturally occuring organic material in stream: Occasional
   b) logs or large woody debris in stream: Occasional

8. a) What is the extent of forest cover out to 50 ft. of the stream? left side 50 ft. right side 50 ft.
   And what is the % of that cover? left side 70 % right side 70 %
   b) What is the extent of shrub cover out to 50 ft. of the stream? left side 50 ft. right side 50 ft.
   And what is the % of that cover? left side 15 % right side 15 %

9. Water Appearance: clear If other, explain: ____

10. Water Odor none If other, explain: ____

11. Pick the description that best fits the stream bank and the channel: Left Gradual/No slope (<30°) Right Gradual/No slope (<30°)

12. Describe the streamside cover. Select Present or Common

Streamside Habitat and Land Uses

	Left	Right
Trees	Common	Common
Bushes, Shrubs	Common	Common
Tall grasses, ferns	Present	Present
Lawn		
Boulders/Rocks	Present	Present
Gravel/Sand		
Bare Soil	Present	Present
Pavement Structures		
Agriculture		
Other		
If other, explain:		

13. In the vicinity of the stream, select Present or Common

	Left	Right
Natural Streamside plant cover degraded		
Banks collapsed/eroded	Present	Present
Garbage/junk adjacent to the stream		
Foam or sheen on bank		
Mud, silt, or sand in or entering the stream		
Garbage/junk in the stream		
Yard waste on bank (clippings, leaves, etc.)		
Livestock in or with unrestricted access		
Actively discharging pipes		
Other pipes		
Ditches entering stream		

Additional Comments

KLEINFELDER
Bright People. Right Solutions.

Stream Characterization Data Form

Stream Datasheet 6

Stream evaluations should be performed while facing upstream.

Date: 10/31/2013 Client: EQT Production Company Site: CPT-10 Well Pad
County/State: Doddridge Co., WV Investigators: McClung, Evan & Renaudin, Nathan
GPS Coordinates: LAT: 39.41033857 LONG: -80.66938896 Data Entered by: McClung, Evan
Stream Name: UNT to Broad Run Field ID: Stream 3
Type of Stream: Ephemeral Predominant weather in past: ☐ 24hrs ☐ 48hrs ☑ 72hrs Showers (intermittent rain)

1. a) Approximate depth of water in stream: ____ x N/A
b) Approximate width of water flow: ____ x N/A
c) Approximate width of stream: (from top of bank to top of bank) 6 ft
d) Approximate width of stream: (from toe of bank to toe of bank) 4 ft
e) Approximate depth of pool(s): ____ x N/A
f) Approximate height of banks (channel depth): Flow: ____
left 16 in right 16 in
g) OHWM Depth 2 in ____ N/A
h) OHWM Width 5 ft ____ N/A

2. Is there a significant nexus to another water source? Yes a) If so, is the water source: delineated
b) If delineated, list connected features: Stream 4

3. Plant Species Adjacent to stream (scientific name):
Trees: *Fagus grandifolia* *Acer saccharum*
Shrubs: *Carpinus caroliniana*
Understory: *Polystichum acrostichoides*

4. Stream habitats present: ☐ Pools ☐ Runs ☐ Riffles ☑ N/A 5. Aquatic Fauna Present? No If Yes - Describe: ____

6. Nature of the particles in the stream bottom:
silt/clay/mud Some cobbles (2-10" diam.) Most
sand Little boulders (> 10" diam.) Some
gravel Most bedrock Some

7. Presence of:
a) naturally occuring organic material in stream Occasional
b) logs or large woody debris in stream Occasional

8. a) What is the extent of forest cover out to 50 ft. of the stream? left side 50 ft. right side 50 ft.
And what is the % of that cover? left side 70 % right side 70 %
b) What is the extent of shrub cover out to 50 ft. of the stream? left side 50 ft. right side 50 ft.
And what is the % of that cover? left side 15 % right side 15 %

9. Water Appearance: ____ If other, explain: ____ 10. Water Odor ____ If other, explain: no water

11. Pick the description that best fits the stream bank and the channel Left Steeply sloping (>30°) Right Steeply sloping (>30°)

12. Describe the streamside cover. Select Present or Common

Streamside Habitat and Land Uses

	Left	Right
Trees	Common	Common
Bushes, Shrubs	Common	Common
Tall grasses, ferns	Present	Present
Lawn		
Boulders/Rocks	Present	Present
Gravel/Sand		
Bare Soil	Present	Present
Pavement Structures		
Agriculture		
Other		
If other, explain:		

13. In the vicinity of the stream, select Present or Common

	Left	Right
Natural Streamside plant cover degraded		
Banks collapsed/eroded	Present	Present
Garbage/junk adjacent to the stream		
Foam or sheen on bank		
Mud, silt, or sand in or entering the stream		
Garbage/junk in the stream		
Yard waste on bank (clippings, leaves, etc.)		
Livestock in or with unrestricted access		
Actively discharging pipes		
Other pipes		
Ditches entering stream		

Additional Comments

KLEINFELDER
Bright People. Right Solutions.

Stream Characterization Data Form

Stream Datasheet 6

Stream evaluations should be performed while facing upstream.

Date: 10/31/2013 Client: EQT Production Company Site: CPT-10 Well Pad

County/State: Doddridge Co., WV Investigators: McClung, Evan & Renaudin, Nathan

GPS Coordinates: LAT: 39.40993606 LONG: -80.66937319 Data Entered by: McClung, Evan

Stream Name: UNT to Broad Run Field ID: Stream 4

Type of Stream: Ephemeral Predominant weather in past: ☐ 24hrs ☐ 48hrs ☑ 72hrs Showers (intermittent rain)

1. a) Approximate depth of water in stream: ____ x N/A
   b) Approximate width of water flow: ____ x N/A
   c) Approximate width of stream: (from top of bank to top of bank) 5.5 ft
   d) Approximate width of stream: (from toe of bank to toe of bank) 4 ft
   e) Approximate depth of pool(s): ____ x N/A
   f) Approximate height of banks (channel depth): left 16 in right 16 in Flow: ____
   g) OHWM Depth 2 in ____ N/A
   h) OHWM Width 4.5 ft ____ N/A

2. Is there a significant nexus to another water source? Yes a) If so, is the water source: delineated
   b) If delineated, list connected features: Stream 3

3. Plant Species Adjacent to stream (scientific name):
   Trees: *Fagus grandifolia* *Acer saccharum*
   Shrubs: *Carpinus caroliniana*
   Understory: *Polystichum acrostichoides*

4. Stream habitats present: ☐ Pools ☐ Runs ☐ Riffles ☑ N/A

5. Aquatic Fauna Present? No If Yes - Describe: ____

6. Nature of the particles in the stream bottom:
   silt/clay/mud: Some
   sand: Little
   gravel: Most
   cobbles (2-10" diam.): Most
   boulders (> 10" diam.): Some
   bedrock: Some

7. Presence of:
   a) naturally occuring organic material in stream: Occasional
   b) logs or large woody debris in stream: Occasional

8. a) What is the extent of forest cover out to 50 ft. of the stream? left side 50 ft. right side 50 ft.
   And what is the % of that cover? left side 70 % right side 70 %
   b) What is the extent of shrub cover out to 50 ft. of the stream? left side 50 ft. right side 50 ft.
   And what is the % of that cover? left side 15 % right side 15 %

9. Water Appearance: ____ If other, explain: ____

10. Water Odor ____ If other, explain: no water

11. Pick the description that best fits the stream bank and the channel: Left Steeply sloping (>30°) Right Steeply sloping (>30°)

12. Describe the streamside cover. Select Present or Common

Streamside Habitat and Land Uses

	Left	Right
Trees	Common	Common
Bushes, Shrubs	Common	Common
Tall grasses, ferns	Present	Present
Lawn		
Boulders/Rocks	Present	Present
Gravel/Sand		
Bare Soil	Present	Present
Pavement Structures		
Agriculture		
Other		
If other, explain:		

13. In the vicinity of the stream, select Present or Common

	Left	Right
Natural Streamside plant cover degraded		
Banks collapsed/eroded	Present	Present
Garbage/junk adjacent to the stream		
Foam or sheen on bank		
Mud, silt, or sand in or entering the stream		
Garbage/junk in the stream		
Yard waste on bank (clippings, leaves, etc.)		
Livestock in or with unrestricted access		
Actively discharging pipes		
Other pipes		
Ditches entering stream		

Additional Comments

STREAM DATASHEET

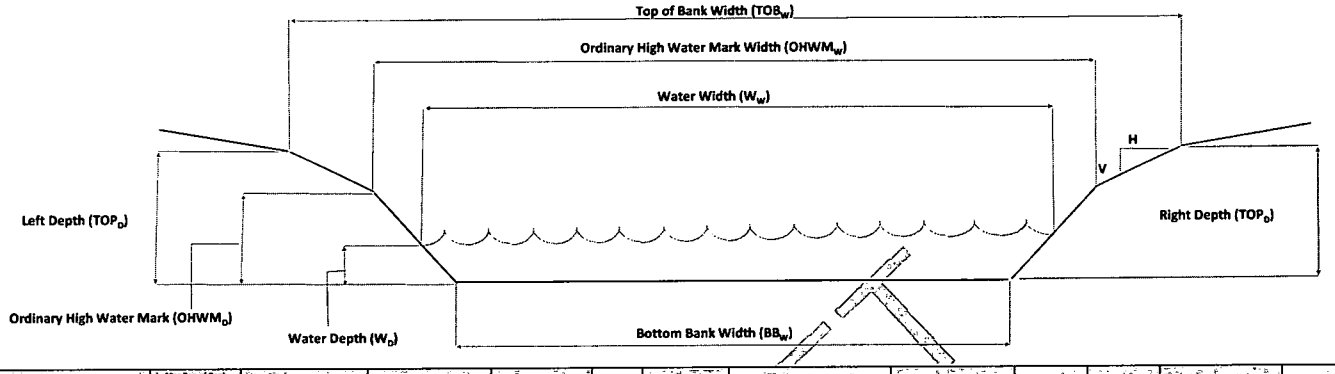
Project Site: CPT-10 Well Pad

Client: EQT Production Company

Investigator(s): John Lewis / Mitch Fleming

Date: 2/2/2015

FACING DOWNSTREAM



Feature ID	Location Coordinates		Top of Bank (at proposed crossing)			Max Top of Bank (along width of AOI)	Water Dimensions		Ordinary High Water Mark (at proposed crossing)		Max Ordinary High Water Mark (along width of AOI)	Bottom of Bank (BB_W)	Bank Slope (H:V)		Vegetation Coverage[1] (for 150')				Stream Type	Primary Substrate[2]	Aquatic fauna?	Bank Stability? (Y or N) Give details in Comments		Comments
				Depth (TOP_D)											Upstream		Downstream		Perennial (P), Intermittent (I), or Ephemeral (E)		Describe or No			
	Latitude	Longitude	Width (TOB_W)	Left	Right	Width (TOB_W)	Width (W_W)	Depth (W_D)	Width ($OHWM_W$)	Depth ($OHWM_D$)	Width ($OHWM_W$)		Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank				Left Bank	Right Bank	
Stream 5	39.413567	-80.658559	2.5	4"	5"	3	8"	1"	8"	1"	10"	1.5	2:1	2:1	F	F	F	F	Ephemeral	Gravel	No	Y	Y	Stream starts at distinct notch in hillside where groundwater spring originates. Stream channel has weak characteristics but contains an OHWM and sorted sediment.

All units should be in feet (unless otherwise noted)

1. Average vegetation coverage per area noted as either U (< 60% canopy cover) or F (>60% canopy cover). 2. Stream substrates include silt/clay/mud, sand, gravel (0.1-2" diam.), cobble (2-10" diam.), boulder (>10" diam.), and bedrock

STREAM DATASHEET

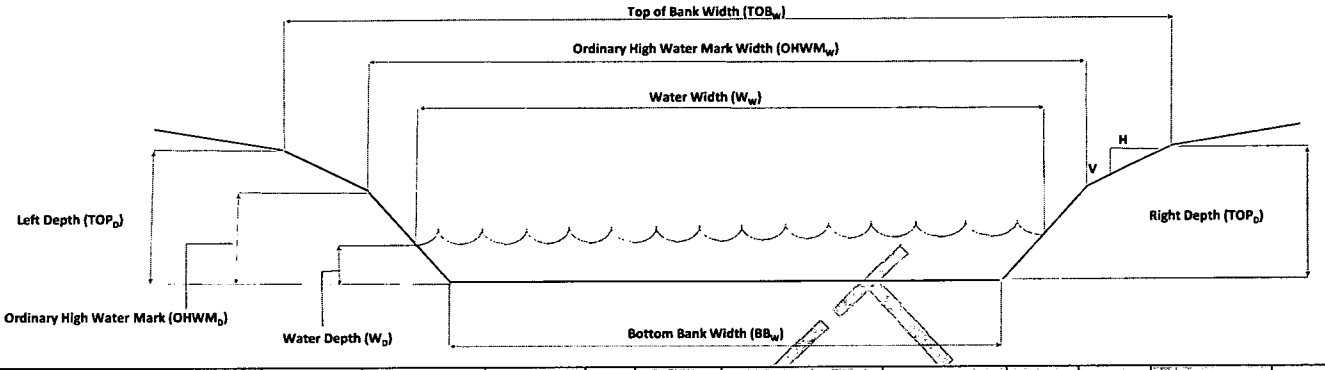
Project Site: CPT-10 Well Pad

Client: EQT Production Company

Investigator(s): John Lewis

Date: 6/8/2015

FACING DOWNSTREAM



Feature ID	Location Coordinates		Top of Bank (at proposed crossing)			Max Top of Bank (along width of ADI)	Water Dimensions		Ordinary High Water Mark (at proposed crossing)		Max Ordinary High Water Mark (along width of ADI)	Bottom of Bank (BB_W)	Bank Slope (H:V)		Vegetation Coverage[1] (to 150')				Stream Type	Primary Substrate[2]	Aquatic Fauna?	Bank Stability? (Y or N) Give details in Comments		Comments
				Depth (TOP_D)											Upstream		Downstream							
	Latitude	Longitude	Width (TOB_W)	Left	Right	Width (TOBw)	Width (W_W)	Depth (W_D)	Width ($OHWM_W$)	Depth ($OHWM_D$)	Width (OHWMw)		Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank	Perennial (P), Intermittent (I), or Ephemeral (E)		Describe or No	Left Bank	Right Bank	
STREAM 6	39.411414	-80.661961	6	3	2.5	7	4	2"	4	2"	4	4	1:1	1:1	U	F	U	U	Intermittent	Gravel	Macros	Y	Y	The channel has been made to parallel County Route 4 prior to crossing underneath by means of culvert. While delineating, a severe thunderstorm passed over dropping a substantial amount of rain. Supporting pictures for this feature were taken post rain event. Neither of the banks are entirely stable, with some areas showing signs of erosion. Algae was observed throughout the stream bed as well.

All units should be in feet (unless otherwise noted)

1. Average vegetation coverage per area noted as either U (< 60% canopy cover) or F (>60% canopy cover). 2. Stream substrates include silt/clay/mud, sand, gravel (0.1-2" diam.), cobble (2-10" diam.), boulder (>10" diam.), and bedrock

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: CPT-10 Well Pad **City/County:** Doddridge **Sampling Date:** 08-Jun-15

Applicant/Owner: EQT Production Company **State:** WV **Sampling Point:** SP 1

Investigator(s): John Lewis **Section, Township, Range:** S N/A T N/A R N/A

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** concave **Slope:** 3.0% / 1.7 °

Subregion (LRR or MLRA): LRR N **Lat.:** 39.411098 **Long.:** -80.662141 **Datum:** NAD83

Soil Map Unit Name: SeB - Sensabaugh silt loam, 3 to 8 percent slopes, rarely flooded **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?**	Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○		
Wetland Hydrology Present?	Yes ◉ No ○		

Remarks:

WETLAND 1 (PEM) is located on the floodplain of STREAM 6. Normal circumstances are not present due to the location of the wetland inside a residential yard. The wetland vegetation appears to have been cut possibly weeks ago as some of the vegetation is starting to recover.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND 1 abuts STREAM 6. One could assume during heavy rain events, this area receives flood waters from STREAM 6. This area is also a concave depression in a valley bottom that would retain run-off from the surrounding topography.

VEGETATION (Five/Four Strata)- Use scientific names of plants.

Sampling Point: SP 1

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30')				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
	0	= Total Cover		
Sapling-Sapling/Shrub Stratum (Plot size: 15')				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	0	= Total Cover		
Shrub Stratum (Plot size: 15')				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0	= Total Cover		
Herb Stratum (Plot size: 5')				
1. Lysimachia nummularia	40	☑	33.9%	FACW
2. Arthraxon hispidus	25	☑	21.2%	FAC
3. Glechoma hederacea	15	☐	12.7%	FACU
4. Carex lurida	15	☐	12.7%	OBL
5. Rumex crispus	8	☐	6.8%	FAC
6. Bidens tripartita	5	☐	4.2%	FACW
7. Scirpus atrovirens	5	☐	4.2%	OBL
8. Mentha spicata	5	☐	4.2%	FACW
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	118	= Total Cover		
Woody Vine Stratum (Plot size: 30')				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	20	x 1 =	20	
FACW species	50	x 2 =	100	
FAC species	33	x 3 =	99	
FACU species	15	x 4 =	60	
UPL species	0	x 5 =	0	
Column Totals:	118 (A)		279	(B)

Prevalence Index = B/A = 2.364

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definition of Vegetation Strata:

Four Vegetation Strata:

Tree stratum – Consists of woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub stratum – Consists of woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb stratum – Consists of all herbaceous (non-woody) plants, regardless of size, and all other plants less than 3.28 ft tall.

Woody vines – Consists of all woody vines greater than 3.28 ft in height.

Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling stratum – Consists of woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub stratum – Consists of woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vines – Consists of all woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation is dominated by hydrophytes and meets the dominance test.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc [2]	Texture	Remarks
0-8	7.5YR	4/2	95	7.5YR	4/6	5	C	PL	Silt Loam	
8-20	7.5YR	5/2	60	7.5YR	4/6	40	C	PL	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (LRR N)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1) (LRR N, MLRA 147, 148)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) (MLRA 147,148)
- ☐ Thin Dark Surface (S9) (MLRA 147, 148)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ☐ Umbric Surface (F13) (MLRA 136, 122)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 148)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils [3]:

- ☐ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147,148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet the criteria for F3, Depleted Matrix.

APPENDIX B

Photos of Jurisdictional Features

APPENDIX B: Photos of Jurisdictional Features

Photo #1: View south (downstream) of Stream 1

Photo #2: View west (downstream) of Stream 2

APPENDIX B: Photos of Jurisdictional Features

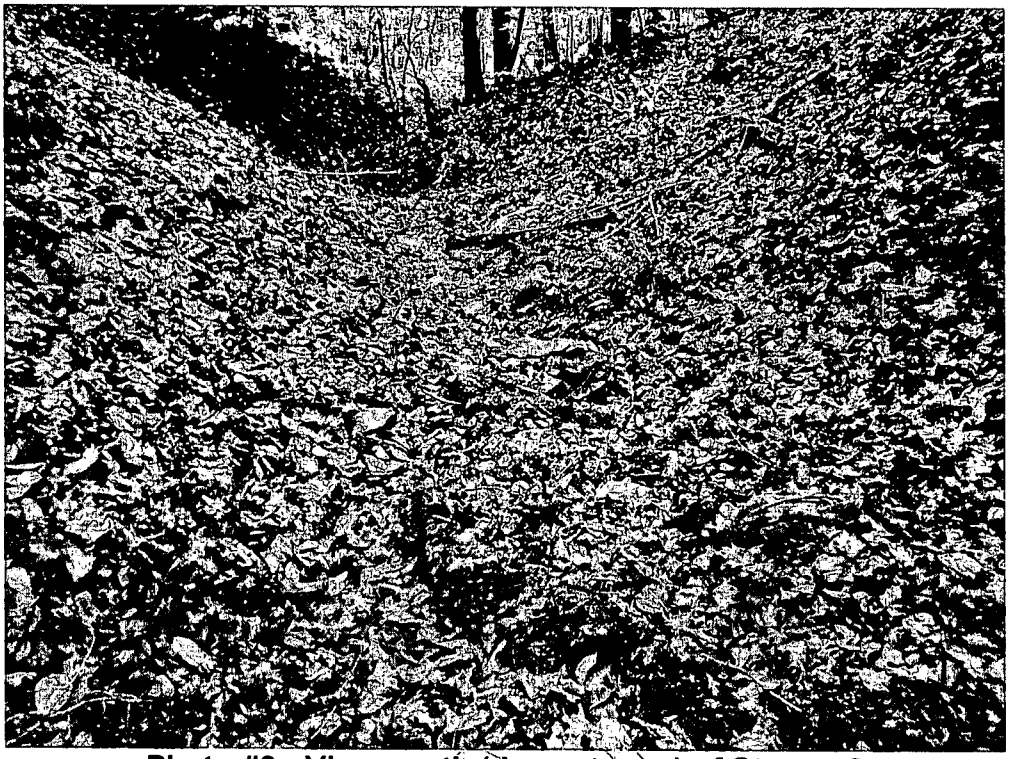


Photo #3: View south (downstream) of Stream 3

Photo #4: View south (downstream) of Stream 4

APPENDIX B: Photos of Jurisdictional Features

Photo #5: View southeast (downstream) of Stream 5

Photo #6: View northeast (upstream) of Stream 6

APPENDIX B: Photos of Jurisdictional Features

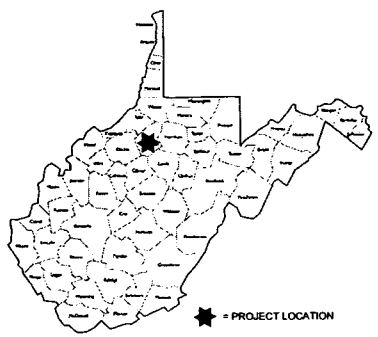
Photo #7: View northeast of Wetland 1

APPENDIX C

Design Drawings

CPT-10 WELL PAD
SITE DESIGN & CONSTRUCTION PLAN, EROSION & SEDIMENT CONTROL PLANS
EQT PRODUCTION COMPANY

EQT
Where energy meets innovation.



PLAN REPRODUCTION WARNING

THE PLANS HAVE BEEN CREATED ON ANSI D (22" x 34") SHEETS. FOR REDUCTIONS, REFER TO GRAPHIC SCALE.

THE PLANS HAVE BEEN CREATED FOR FULL COLOR PLOTTING. ANY SET OF THE PLANS THAT IS NOT PLOTTED IN FULL COLOR SHALL NOT BE CONSIDERED ADEQUATE FOR CONSTRUCTION PURPOSES.

WARNING: INFORMATION MAY BE LOST IN COPYING AND/OR GRAY SCALE PLOTTING

PROJECT CONTACTS

PROJECT OWNER
EQT PRODUCTION COMPANY
CONTACT: CHRIS METZGAR
115 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330
304.848.0075 OFFICE

LOCATION SURVEYOR
ENCOMPASS ENERGY SERVICES, LLC
CONTACT: TYLER HASTINGS
1370 WASHINGTON PIKE, SUITE 308
BRIDGEVILLE, PA 15017
412.564.5215 OFFICE

ENGINEER OF RECORD
KLEINFELDER
CONTACT: JOSH FARLEY, PE
WV PE #020711
230 EXECUTIVE DRIVE, SUITE 122
CRANBERRY TOWNSHIP, PA 16066
724.772.7072 OFFICE
724.772.7079 FAX

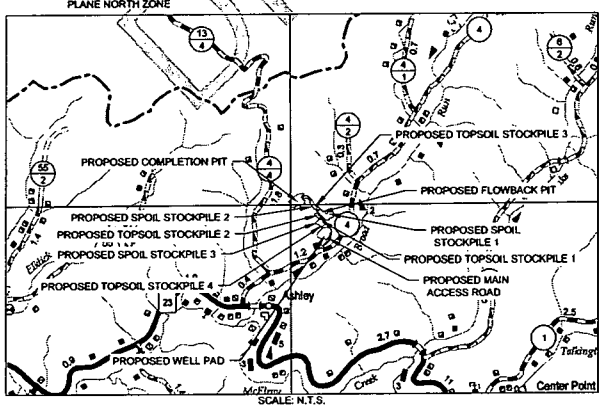
ENVIRONMENTAL/ DELINEATION BOUNDARY
KLEINFELDER
CONTACT: MATTHEW ALBRIGHT
230 EXECUTIVE DRIVE, SUITE 122
CRANBERRY TOWNSHIP, PA 16066
724.772.7072 OFFICE
724.772.7079 FAX

TOPO SURVEYOR
BLUE MOUNTAIN AERIAL MAPPING
CONTACT: CRAIG FRY
11023 MASON DIXON HIGHWAY
BURTON, WV 26562
304.662.2626 OFFICE
304.815.4890 CELL

NORTH MERIDIAN REFERENCED TO NAD83 WEST VIRGINIA STATE PLANE NORTH ZONE

AFFECTED TAX PARCELS: SEE SHEET 2

CENTER POINT QUAD



SCALE: N.T.S.

WELL HEAD LAYOUT				
WELL HEAD	WV STATE PLANE NAD 83 (FT)		NAD 83 (DEGREES)	
	NORTHING	EASTING	LATITUDE (N)	LONGITUDE (W)
H1-513513	334850.57	1640597.50	39.413529° N	80.660625° W
H2-513514	334850.57	1640612.50	39.413530° N	80.660572° W
H3-513515	334850.57	1640627.50	39.413530° N	80.660519° W
H4-513516	334850.57	1640642.50	39.413531° N	80.660466° W
H5-513517	334850.57	1640657.50	39.413531° N	80.660413° W
H6-513518	334850.57	1640672.50	39.413532° N	80.660359° W
H7-514143	334850.57	1640687.50	39.413532° N	80.660306° W
H8-514144	334850.57	1640702.50	39.413533° N	80.660253° W

WELL HEAD LAYOUT				
WELL HEAD	WV STATE PLANE NAD 27 (FT)		UTM ZONE 17N NAD 83 (M)	
	NORTHING	EASTING	NORTHING	EASTING
H1-513513	334814.30	1672038.29	4362723.13	529215.29
H2-513514	334814.30	1672053.29	4362723.15	529219.86
H3-513515	334814.30	1672068.29	4362723.17	529224.43
H4-513516	334814.30	1672083.29	4362723.18	529229.00
H5-513517	334814.30	1672098.29	4362723.20	529233.57
H6-513518	334814.30	1672113.29	4362723.22	529238.14
H7-514143	334814.30	1672128.29	4362723.46	529242.71
H8-514144	334814.30	1672143.29	4362723.47	529247.28

SITE LOCATION				
DESCRIPTION	NAD 83 (DEGREES)		UTM ZONE 17N NAD 83 (M)	
	LATITUDE (N)	LONGITUDE (W)	NORTHING	EASTING
CENTER OF WELL PAD	39.413493° N	80.660501° W	4362718.95	529225.97
CENTER OF COMPLETION PIT	39.417796° N	80.664784° W	4363195.12	528855.49
CENTER OF FLOWBACK PIT	39.415813° N	80.660713° W	4362976.36	529206.76
MAIN ACCESS ROAD ENTRANCE	39.411547° N	80.661251° W	4362502.75	529162.22
WELL PAD ACCESS ROAD ENTRANCE	39.413638° N	80.659453° W	4362735.39	529316.13

FLOOD CONDITIONS	
DO SITE CONSTRUCTION ACTIVITIES TAKE PLACE IN FLOODPLAIN:	NO
PERMIT NEEDED FROM COUNTY FLOODPLAIN COORDINATOR:	NO
HEC-RAS STUDY COMPLETED:	N/A
FLOODPLAIN SHOWN ON DRAWINGS:	NO
FIRM MAP NUMBER FOR SITE:	54017C0045C
ACREAGE OF CONSTRUCTION IN FLOODPLAIN:	N/A

ACCESS ROAD LENGTH (FEET)	
DESCRIPTION	FEET
MAIN ACCESS ROAD	3,100
PAD ACCESS ROAD	24
TOTAL	3,124

811
Know what's below. Call before you dig.
THREE DAYS BEFORE YOU DIG
CALL PA ONE CALL SYSTEM TOLL FREE
811
OR
1-800-242-1776

DESIGN CERTIFICATION
THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS §35-4-21 AND §35-8.

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

WELL LOCATION RESTRICTIONS
WELL PAD IS TO COMPLY WITH WELL LOCATION RESTRICTIONS OF WV CODE 22-6A-12. THE PADS COMPLY WITH THE FOLLOWING RESTRICTIONS:
- 250' FROM AN EXISTING WELL OR DEVELOPED SPRING USED FOR HUMAN OR DOMESTIC ANIMALS TO WELL BEING DRILLED
- 625' FROM AN OCCUPIED DWELLING OR BARN GREATER THAN 2500 SF USED FOR POULTRY OR DAIRY MEASURED FROM THE CENTER OF THE PAD
- 100' FROM EDGE OF DISTURBANCE TO WETLANDS, PERENNIAL STREAMS, NATURAL OR ARTIFICIAL LAKE, POND OR RESERVOIR
- 300' FROM EDGE OF DISTURBANCE TO NATURALLY REPRODUCING TROUT STREAMS
- 1000' FROM EDGE OF DISTURBANCE TO ANY SURFACE OR GROUND WATER INTAKE TO A PUBLIC WATER SUPPLY

SHEET INDEX	
PAGE NO.	DESCRIPTION
1	COVER PAGE & LOCATION MAP
2	SCHEDULE OF QUANTITIES
3	NOTES
4	EXISTING CONDITIONS
5	OVERALL PLAN
6-8	SITE PLAN
9	WELL PAD CROSS SECTIONS AND PROFILE
10	FLOWBACK PIT CROSS SECTIONS AND PROFILE
11-12	COMPLETION PIT CROSS SECTIONS AND PROFILE
13-15	MAIN ACCESS ROAD CROSS SECTIONS AND PROFILE
16	CULVERT PROFILES
17-22	DETAILS
23-25	RECLAMATION PLAN

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSHUA M. FARLEY 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN DWN	CHK APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 500 1000 1500
SCALE: 1" = 500' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

COVER PAGE & LOCATION MAP

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137305
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF
SHEET	1 of 25

1

SCHEDULE OF QUANTITIES CPT-10 WELL PAD ITEM DESCRIPTION		QUANTITY	UNIT
1.1 - MOBILIZATION		1	LS
2.1 - CLEARING			
	2.1.A - CLEAR & GRUB (TREES, STUMPS, BRUSH)	41	AC
	2.1.B - CLEAR FELLED TIMBER & GRUB	31	AC
3.1 - EROSION & SEDIMENT CONTROL			
	3.1.A - 12" COMPOST FILTER SOCK	1,005	LF
	3.1.B - 18" COMPOST FILTER SOCK	1,205	LF
	3.1.C - 24" COMPOST FILTER SOCK	575	LF
	3.1.D - 32" COMPOST FILTER SOCK	615	LF
	3.1.D - SUPER SILT FENCE	3,780	LF
	3.1.E - ROCK CONSTRUCTION ENTRANCE	1	EA
	3.1.F - R-3 RIP RAP (ROCK FILTER OUTLETS)	10	TONS
	3.1.G - AASHTO #57 STONE (ROCK FILTER OUTLETS)	5	TONS
	3.1.H - R-3 RIP RAP (ROCK CHECK DAMS)	27	TONS
	3.1.L -EROSION CONTROL MATTING - NAG C125BN	30,781	SY
	3.1.L -EROSION CONTROL MATTING -NAG C350	30,875	SY
4.1 - DITCH LINING			
	4.1.A - NORTH AMERICAN GREEN C125BN	1,589	SY
	4.1.A - R-3	1,787	SY
	4.1.A - R-4	676	SY
5.1 - AGGREGATE SURFACING			
	5.1.A.1 - WELL PAD #3 - #6 LIMESTONE (8" THICK)	6,485	TONS
	5.1.A.2 - WELL PAD 0.75" OR 1.5" CRUSHER RUN LIMESTON (2" THICK)	2,671	TONS
	5.1.A.3 - WELL PAD GEOTEXTILE FABRIC (US 200)	25,431	SY
	5.1.B.1 - ACCESS ROADS #3 - #6 LIMESTONE (8" THICK)	5,424	TONS
	5.1.B.2 - ACCESS ROADS 0.75" OR 1.5" CRUSHER RUN LIMESTON (2" THICK)	2,234	TONS
	5.1.B.3 - ACCESS ROADS GEOTEXTILE FABRIC (US 200)	21,269	SY
	5.1.C.1 - TRUCK QUEUES #3 - #6 LIMESTONE (8" THICK)	627	TONS
	5.1.C.2 - TRUCK QUEUES 0.75" OR 1.5" CRUSHER RUN LIMESTON (2" THICK)	259	TONS
	5.1.C.3 - TRUCK QUEUES GEOTEXTILE FABRIC (US 200)	2,458	SY
6.1 - SEED & MULCH			
	6.1.A - SITE SEEDING (LIME, FERTILIZER, SEEDING, AND HYDRO-MULCH w/TACK (HYC-2 OR EQUAL))	30.2	AC
	6.1.B - RECLAMATION SEEDING (LIME, FERTILIZER, SEEDING, AND HYDRO-MULCH w/TACK (HYC-2 OR EQUAL))	1.9	AC
7.1 - EXCAVATION			
	7.1.A - TOPSOIL (ESTIMATED AT 1' DEEP)	30,402	CY
	7.1.B -WELL PAD EXCAVATION (CUT TO FILL)	32,642	CY
	7.1.C -WELL PAD EXCAVATION (EXPORT TO SPOIL AREA)	41,490	CY
	7.1.D - COMPLETION PIT & TRUCK QUEUE EXCAVATION (CUT TO FILL)	67,537	CY
	7.1.E - COMPLETION PIT & TRUCK QUEUE EXCAVATION (IMPORT FROM SPOIL AREA)	18,337	CY
	7.1.F - FLOWBACK PIT & TRUCK QUEUE EXCAVATION (CUT TO FILL)	1,023	CY
	7.1.G - FLOWBACK PIT & TRUCK QUEUE EXCAVATION (EXPORT TO SPOIL AREA)	35,779	CY
	7.1.H - ACCESS ROADS EXCAVATION (CUT TO FILL)	17,240	CY
	7.1.I - ACCESS ROADS EXCAVATION (IMPORT FROM SPOIL AREA)	2,742	CY
8.1 - PAD			
	8.1.A - CONTAINMENT BERM	7,050	CY
	8.1.B - SUMPS - (SEE "SUMP SYSTEM DETAIL")	8	EA
	8.1.C - 4" PVC SUMP DRAIN PIPE - (SEE "SUMP SYSTEM DETAIL")	100	LF
	8.1.D - PVC PIPE OUTLET PROTECTION - R-3 RIP RAP	88	TONS
9.1 - CROSS DRAIN CULVERTS			
	9.1.A - 18" HDPE	370	LF
	9.1.B - FLARED END SECTION	5	EA
	9.1.C - R-3 RIP RAP (INLETS/OUTLETS)	20	TONS
	9.1.E - R-4 RIP RAP (INLETS/OUTLETS)	41	TONS
	9.1.G - R-6 RIP RAP (INLETS/OUTLETS)	51	TONS
	9.1.D - AASHTO #57 STONE (INLETS)	91	TONS
10.1 - PIT			
	10.1.A - PRIMARY LINER (60 MIL)	9,122	SY
	10.1.B - NON-WOVEN GEOTEXTILE FABRIC CUSHION (16OZ FELT)	9,122	SY
11.1 FRENCH DRAIN			
	11.1.A - 4" PERFORATED PIPE	1,248	LF
	11.1.B - GEOTEXTILE FABRIC	7,488	SY
	11.1.C - #57 STONE	114	TONS

LIMITS OF DISTURBANCE DESCRIPTION	AREA (ACRES)	AFFECTED TAX PARCELS
COMPLETION PIT	2.14	COASTAL FOREST RESOURCES
MAIN ACCESS ROAD	7.75	HAYES SHIRLEY JAMES & MA
WELL PAD	7.47	
FLOWBACK PIT & TURN AROUND	2.31	
COMPLETION PIT & TURN AROUND	4.51	
SPOIL STOCKPILE 1	3.84	
SPOIL STOCKPILE 2	2.67	
SPOIL STOCKPILE 3	0.22	
SPOIL STOCKPILE 4	0.11	
TOPSOIL STOCKPILE 1	3.51	
TOPSOIL STOCKPILE 2	1.56	
TOPSOIL STOCKPILE 3	0.71	
COMPLETION PIT	3.66	ASH SAMUEL G ET UX
TOTAL	40.46	
TOTAL WOODED ACRES DISTURBED	30.88	
TOTAL LINEAR FOOTAGE OF MAIN ACCESS ROAD	3,100	
TOTAL LINEAR FOOTAGE OF WELL PAD ACCESS ROAD	24	

FLOWBACK PIT VOLUMES Elevation	Barrels	Gallons	Acre-Ft	Unincised Acre-Ft	Incised Acre-Ft
1081 (Bottom)	0	0	0.000	0.000	0.000
1082	903	37,908	0.116	0.000	0.116
1083	1,983	83,277	0.256	0.000	0.256
1084	3,254	136,650	0.419	0.000	0.419
1085	4,728	198,570	0.609	0.000	0.609
1086	6,419	269,579	0.827	0.000	0.827
1087	8,339	350,219	1.075	0.000	1.075
1088	10,501	441,036	1.353	0.000	1.353
1089	12,918	542,573	1.665	0.000	1.665
1090	15,604	655,368	2.011	0.000	2.011
1091	18,571	779,968	2.394	0.000	2.394
1092	21,831	916,917	2.814	0.000	2.814
1093	25,399	1,066,758	3.274	0.000	3.274
1094	29,286	1,230,026	3.775	0.000	3.775
1095	33,506	1,407,273	4.319	0.000	4.319
1096	38,072	1,599,040	4.907	0.000	4.907
1097 (Pit Capacity)	42,997	1,805,869	5.542	0.635	4.907
1098	48,293	2,028,302	6.225	1.317	4.907
1099 (Top Berm)	53,973	2,266,882	6.957	2.050	4.907
* 1 Barrel [US Petroleum] = 42 gallons [US liquid]					

GRADING	
CUT SLOPE	2:1 *
FILL SLOPE	2:1 *
SPOIL SWELL FACTOR	20%
WELL PAD ELEVATION	969'
FLOWBACK PIT BERM ELEVATION	1099'
COMPLETION PIT BERM ELEVATION	1179'
*UNLESS OTHERWISE NOTED	

COMPLETION PIT VOLUMES Elevation	Barrels	Gallons	Acre-Ft	Unincised Acre-Ft	Incised Acre-Ft
1160 (Bottom)	0	0	0.000	0.000	0.000
1161	3,136	131,717	0.404	0.000	0.404
1162	6,769	284,290	0.872	0.000	0.872
1163	10,910	458,230	1.406	0.000	1.406
1164	15,573	654,048	2.007	0.000	2.007
1165	20,768	872,251	2.677	0.000	2.677
1166	26,508	1,113,352	3.417	0.000	3.417
1167	32,806	1,377,863	4.229	0.000	4.229
1168	39,674	1,666,293	5.114	0.000	5.114
1169	47,123	1,979,151	6.074	0.000	6.074
1170	55,165	2,316,949	7.110	1.037	6.074
1171	63,814	2,680,199	8.225	2.151	6.074
1172	73,081	3,069,411	9.420	3.346	6.074
1173	82,978	3,485,092	10.695	4.622	6.074
1174	93,518	3,927,759	12.054	5.980	6.074
1175	104,712	4,397,921	13.497	7.423	6.074
1176	116,573	4,896,086	15.026	8.952	6.074
1177 (Pit Capacity)	129,114	5,422,767	16.642	10.568	6.074
1178	142,345	5,978,473	18.347	12.273	6.074
1179 (Top Berm)	156,279	6,563,715	20.143	14.069	6.074
* 1 Barrel [US Petroleum] = 42 gallons [US liquid]					

PAD/ROAD CUT/ FILL SLOPES	Z:1
EQUIPMENT PAD & ACCESS ROADS	2
COMPLETION & FLOWBACK PIT INTERIOR SLOPES	3
COMPLETION & FLOWBACK PIT EXTERIOR SLOPES	2
SPOIL STOCKPILES	2
TOPSOIL STOCKPILES	3

QUANTITIES DESCRIPTION	CUT (CY)	FILL (CY)	BASE (CY)	TOPSOIL (CY)	SPOIL (CY)	BORROW (CY)	MAX. SLOPE	LENGTH OF SLOPE
WELL PAD	74132	32642	4021	8477	37034	N/A	N/A	N/A
FLOWBACK PIT	36802	1023	716	2819	33675	N/A	N/A	N/A
COMPLETION PIT	67537	85874	1429	6949	N/A	23858	N/A	N/A
PRIMARY ACCESS ROAD	13410	19982	1908	7079	N/A	11745	16.89%	1520'
WELL PAD ACCESS ROAD	3870	0	15	11	3874	N/A	N/A	N/A
TOPSOIL STOCKPILE 1	0	21689	0	0	N/A	21689	N/A	N/A
TOPSOIL STOCKPILE 2	0	2928	0	0	N/A	2928	N/A	N/A
TOPSOIL STOCKPILE 3	0	1103	0	0	N/A	1103	N/A	N/A
SPOIL STOCKPILE 1	0	31093	0	0	N/A	31093	N/A	N/A
SPOIL STOCKPILE 2	0	1738	0	0	N/A	1738	N/A	N/A
SPOIL STOCKPILE 3*	0	3570	0	0	N/A	3570	N/A	N/A
SPOIL STOCKPILE 4*	0	1560	0	0	N/A	1560	N/A	N/A
TOTALS	195751	203200	8087	25335	74584	99281	N/A	N/A
	TOTAL EXPORT (CY)			637				

*SPOIL STOCKPILES 3 & 4 WILL BE BUILT PRIOR TO CONSTRUCTION OF TOPSOIL STOCKPILE 1. CONSTRUCTION SEQUENCING MUST BE EVALUATED

WEST VIRGINIA 811 UTILITY RESPONSE STATUS
TICKET #1421253047 THRU SEPTEMBER 4, 2014

Utility Code	Utility Owner	Utility Contact/Responder Information			Utility Response	Utility Type	Utility Specifications (diameter, pole number(s), etc.)	Notes
		Name	Number	E-Mail				
AC	Frontier Communications (Formerly Verizon)	-	-	-	Clear	Phone	-	-
CGS	Columbia Gas Transmission - Clarksburg	-	1-800-835-7191	irthnetapp@nisource.com	Clear	Gas	-	-
EQW560	EQT Gathering	-	-	-	No Response	Gas	-	-
MPC	Firstenergy Corp	-	-	-	Clear	Electric	-	-

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE
1	REVISED SCHEDULE OF QUANTITIES (11.1.C)	MDV / MDV	JMF / JMF	7/21/2015

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

SCHEDULE OF QUANTITIES

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 2

2 of 25

GENERAL NOTES

1. 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.
2. ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY INCONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER, IN WRITING, WHO SHALL PROMPTLY ADDRESS SUCH PROBLEMS. WORK DONE BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH DISCREPANCIES, INCONSISTENCIES, OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
3. WORK ON THIS PROJECT SHALL CONFORM TO THE LATEST EDITIONS OF THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP) EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE HANDBOOK. IN THE EVENT OF CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, OR PLANS, THE MOST STRINGENT WILL GOVERN.
4. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL PUBLIC OR PRIVATE UTILITIES WHICH LIE IN OR ADJACENT TO THE CONSTRUCTION SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR, AT HIS OR HER EXPENSE, OF ALL EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION THE CONTRACTOR SHALL CALL MISS UTILITY AT 1-800-245-4848.
5. INSTALLATION OF STORM PIPE SHALL BE IN CONFORMANCE WITH THESE DRAWINGS.
6. ALL MATERIALS USED FOR FILL OR BACK FILL SHALL BE FREE OF WOOD, ROOTS, ROCKS, BOULDERS OR ANY OTHER NON-COMPACTABLE SOIL TYPE MATERIALS. UNSATISFACTORY MATERIALS ALSO INCLUDE MAN MADE FILLS AND REFUSE DEBRIS DERIVED FROM ANY SOURCE.
7. MATERIALS USED TO FILL AROUND DRAINAGE STRUCTURES IN UTILITY TRENCHES OR ANY OTHER DEPRESSION REQUIRING FILL OR BACK FILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST AS SET FORTH IN ASTM STANDARD D-698. THE MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE LIMITS OF THE STANDARD PROCTOR TEST RESULTS. SOME SOILS CANNOT BE COMPACTED TO 95% OF THE STANDARD PROCTOR AT PLUS OR MINUS 4% MOISTURE CONTENT. THE CONTRACTOR SHALL PRIOR TO ANY OPERATIONS INVOLVING FILLING OR BACK FILLING, SUBMIT THE RESULTS OF THE PROCTOR TEST TOGETHER WITH A CERTIFICATION THAT THE SOIL TESTED IS REPRESENTATIVE OF THE MATERIALS TO BE USED ON THE PROJECT. THE TESTS SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LABORATORY AND THE CERTIFICATIONS MADE BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LABORATORY. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THESE TESTS AND THEIR SUBMITTALS.
8. FILL SHALL BE PLACED IN LIFTS AT A MAXIMUM UNCOMPACTED DEPTH OF 12" WITH SOIL FREE FROM AGGREGATES EXCEEDING 6".
9. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER. FAILURE TO CONDUCT DENSITY TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE OF THE FACILITY. TESTS SHALL BE CONDUCTED AT THE SOLE COST OF THE CONTRACTOR OR HIS AGENT.
10. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION.
11. SATISFACTORY MATERIALS FOR USE AS FILL FOR PAD AREAS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS GW, GP, GM, GC, SW, SP, SM, SC, ML AND CL GROUPS. THE MOISTURE CONTENT SHALL BE CONTROLLED WITHIN PLUS OR MINUS 4% OF THE OPTIMUM TO FACILITATE COMPACTION. GENERALLY, UNSATISFACTORY MATERIALS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS PT, CH, MH, OL, OH AND ANY SOIL TOO WET TO FACILITATE COMPACTION. CH AND MH SOILS MAY BE USED SUBJECT TO APPROVAL OF THE ENGINEER. SOILS SHALL HAVE A MINIMUM DRY DENSITY OF 92 LB/CF PER ASTM D-698 AND SHALL HAVE A PLASTICITY INDEX LESS THAN 17.
12. CONTRACTOR SHALL DEVELOP A GENERIC GROUNDWATER PROTECTION PLAN (GPP). SUBMITTAL TO WVDEP IS NOT REQUIRED. THE GROUNDWATER PROTECTION PLAN SHALL BE ADHERED TO DURING CONSTRUCTION.
13. NO ROCK FILL LIFTS SHALL BE GREATER THAN 36".

EROSION & SEDIMENT CONTROL NARRATIVE

1. PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS TO GRADE AND INSTALL EROSION AND SEDIMENT CONTROL MEASURES, IN PREPARATION FOR THE CONSTRUCTION OF A NATURAL GAS WELL PAD COUNTY ROUTE 4, IN DODDRIDGE COUNTY, WEST VIRGINIA. THE CONSTRUCTION INCLUDES TWO ACCESS ROADS, ONE WELL PAD, ONE FLOWBACK PIT, ONE COMPLETION PIT, STORM WATER CONTROLS, AND INCIDENTAL WORK.
2. EXISTING SITE CONDITIONS: THE EXISTING SITE IS PREDOMINATELY WOODS. NO EROSION IS NOTICED ON SITE, OR IN ANY NATURAL DRAINAGE WAYS.
3. ADJACENT PROPERTY: THE SITE IS BORDERED BY WOODS.
4. SOILS: NO SOIL STUDIES OR SUBSURFACE INVESTIGATIONS WERE PERFORMED FOR THIS PROJECT.
5. OFF SITE AREAS: THERE SHALL BE NO BORROW AREA OUTSIDE OF THE PROPOSED GRADING AND CONSTRUCTION AREA.
6. CLEARING OF VEGETATION SHOULD BE KEPT TO THE MINIMUM NECESSARY FOR CONSTRUCTION PLUS THE INSTALLATION OF SEDIMENT CONTROLS.
7. CRITICAL EROSION AREAS MAINTENANCE: ALL 3:1 SLOPES AND STEEPER, DITCHES AND OTHER CONTROLS SHALL BE CONSIDERED CRITICAL EROSION AREAS. THESE AREAS SHALL BE MONITORED & MAINTAINED DAILY AND AFTER EACH RAIN FALL OF 0.5 INCH OR GREATER. THE LOCAL GOVERNING AUTHORITY WILL HAVE THE AUTHORITY TO RECOMMEND THE PLACEMENT OF ADDITIONAL EROSION CONTROL MEASURES IN THESE AREAS IF IT BECOMES EVIDENT DURING CONSTRUCTION THAT THE ONES IN PLACE ARE NOT FUNCTIONING SUFFICIENTLY.
8. EROSION AND SEDIMENT CONTROL MEASURES: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE CURRENT WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL. THE CONTRACTOR SHALL OBTAIN A COPY OF THIS MANUAL FROM THE WVDEP WEBSITE AND CONSTRUCT ALL DEVICES BASED ON THIS MANUAL OR A HANDBOOK THAT IS COMPARABLE OR EXCEEDS THE SPECIFICATIONS OF THE WEST VIRGINIA MANUAL. THE MINIMUM STANDARDS OF THIS MANUAL SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE. SEE PLANS FOR ALL PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.
9. STRUCTURAL PRACTICES:
   - DIVERSION DITCHES: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
   - OUTLET PROTECTION: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
   - FILTER SOCK/SUPER SILT FENCE: WILL BE CONSTRUCTED AS SHOWN ON THE PLANS.
10. VEGETATIVE PRACTICE TOPSOILING: TOPSOIL WILL BE STRIPPED FROM THE SITE AND STOCKPILED AS SHOWN ON THE PLANS. UPON THE COMPLETION OF THE PROJECT, TOPSOIL WILL BE PLACED ON ALL DISTURBED AREAS AT A MINIMUM DEPTH OF 4 INCHES. TEMPORARY SEEDING: ALL DENUDED AREAS LEFT DORMANT FOR MORE THAN 21 DAYS SHALL BE SEEDED WITH A FAST GERMINATING SEED. THE TIME OF YEAR WILL BE THE BASIS FOR THE SEED MIXTURE. PERMANENT SEEDING: ALL SEEDED AREAS WILL BE RESEEDED, MULCHED AND FERTILIZED AS NEEDED TO OBTAIN AN ADEQUATE STAND OF GRASS. PERMANENT SEEDING SHALL BE PLACED WITHIN SEVEN DAYS UPON ACHIEVING FINAL GRADE. WATER, MULCH, AND RESEED AS NECESSARY TO OBTAIN AN ADEQUATE STAND OF VEGETATION.
11. MANAGEMENT STRATEGIES: CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS WILL BEGIN AND END AS SOON AS POSSIBLE. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES. AFTER ACHIEVING ADEQUATE STABILIZATION THE TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE REMOVED AND ANY AREAS DISTURBED DURING THIS PROCESS SHALL BE STABILIZED.
12. PERMANENT STABILIZATION: ALL AREAS LEFT UNCOVERED BY EITHER BUILDINGS OR PAVEMENT SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING AND WITHIN 7 DAYS. AT NO TIME SHALL LAND LAY DORMANT FOR LONGER THAN 21 DAYS.
13. MAINTENANCE AND OTHER CONSIDERATIONS AND GROUND WATER PROTECTION: ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH RAINFALL OF 0.5 INCH OR MORE. THEY WILL BE INSPECTED FOR UNDERMINING, DETERIORATION, EROSION AND EXCESS DEPOSITED MATERIAL. ALL DEFICIENCIES WILL BE CORRECTED IMMEDIATELY. EXCESS MATERIAL WILL BE SPREAD ON THE SITE IN A MANNER WHERE IT IS NOT LIKELY TO ERODE IN THE FUTURE. CLEANING PROCEDURES WILL BE COMPLETED AT REGULAR INTERVALS AND AT LEAST WHEN SEDIMENT REACHES 33% OF CAPACITY, OR AS SHOWN ON APPLICABLE DETAILS. RECORDS OF CLEANING AND CORRECTIONS WILL BE MAINTAINED BY THE CONTRACTOR. THE "GENERIC GROUNDWATER PROTECTION PLAN FOR CONSTRUCTION SITES" (GPP) WILL BE USED AND AVAILABLE ON SITE AT ALL TIMES. AN AREA WILL BE PROVIDED FOR VEHICLE AND EQUIPMENT MAINTENANCE. MOBILE FUEL TRUCKS WITH APPROVED TANKS WILL BE USED ON THE SITE. PORTABLE SANITARY FACILITIES WILL BE AVAILABLE FOR EMPLOYEES. IF CONCRETE IS USED, EXCESS CONCRETE WILL BE DISPOSED OF PROPERLY AND NOT ALLOWED TO REMAIN ON THIS SITE. MACHINERY WILL NOT BE ALLOWED IN LIVE STREAMS. FLUIDS SUCH AS DIESEL FUEL, GAS, OIL OR ANTIFREEZE WILL BE KEPT IN PROPER CONTAINERS AND ANY SPILLAGE WILL BE CLEANED AND TAKEN OFF SITE TO A PROPER FACILITY. SOLID OR HAZARDOUS WASTES WILL BE DISPOSED IN ACCORDANCE WITH APPROPRIATE STATE AND FEDERAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE CHANGES AND NOTIFY WVDEP ON ANY CHANGES TO GPP. A FINAL INSPECTION WILL BE MADE AT THE CONCLUSION OF THE PROJECT AND ALL CORRECTIONS MADE BEFORE SIGN-OFF OF THE PROJECT SITE.

GENERAL EROSION & SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL ARRANGE FOR A PRE-CONSTRUCTION CONFERENCE WITH THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO BEGINNING WORK.
2. ALL EROSION CONTROL DEVICES AS SHOWN OR AS REQUIRED, ARE TO BE CONSTRUCTED TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL AND ARE TO BE IN PLACE PRIOR TO ALL CONSTRUCTION.
3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUOUSLY, RELOCATED WHEN AND AS NECESSARY AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED, RESEEDED AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.
4. ALL DRAIN INLETS SHALL BE PROTECTED FROM SILTATION. INEFFECTIVE PROTECTION DEVICES SHALL BE IMMEDIATELY REPLACED AND THE INLET CLEANED. FLUSHING IS NOT AN ACCEPTABLE METHOD OF CLEANING.
5. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 21 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
6. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING DEVICES.
7. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
8. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS IMPOUNDMENTS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
9. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
10. NO SEDIMENT TRACKING ON THE ROADWAY IS ALLOWED. IN THE EVENT THAT SEDIMENT IS INADVERTENTLY TRACKED ONTO THE ROAD, THE ROAD SHALL BE CLEANED THOROUGHLY BY THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR PICKUP SWEEPING AND SHALL BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA. STREET WASHING OF SEDIMENTS TO THE STORM DRAIN SYSTEM IS NOT ALLOWED. IF STREET WASH WASTEWATER CAN BE CONTROLLED FROM ENTERING THE STORM DRAINAGE SYSTEM, THEN IT SHALL BE PUMPED BACK ONTO THE SITE. CONTAINED AND DISPOSED OF PROPERLY.
11. ALL DISTURBED AREAS NOT PAVED OR BUILT UPON SHALL BE HYDRO-SEEDED AND FERTILIZED. PERFORM PERMANENT TOP SOILING. SEEDING AND FERTILIZING AS SOON AFTER FINISH GRADING AS POSSIBLE. SEEDING SHALL COMPLY WITH THE FOLLOWING:
    - TOPSOIL - 4 INCH MINIMUM FOR PERMANENT TURF.
    - FERTILIZER - 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR EQUIVALENT POUNDAGE OF DIFFERENT ANALYSIS. WORK INTO SOIL PRIOR TO SEEDING.
    - LIME (PERMANENT SEEDING) - AGRICULTURAL LIME SPREAD AT RATE OF 4 TONS PER ACRE. WORK INTO SOIL PRIOR TO SEEDING.
    - MULCH OR EROSION CONTROL BLANKET (ECB) - WOOD FIBER OR CHOPPED STRAW AT RATE OF 2 TONS PER ACRE. HYDRO-MULCH AT RATE OF 30 BALES PER ACRE. ECB SHALL BE PER PLANS.
    - SEED - 45 LBS. PER ACRE TALL FESCUE AND 20 LBS. PER ACRE PERENNIAL RYE GRASS. TO BE SEEDED WITH HYDRO-SEEDER

SEQUENCE OF BMP INSTALLATION AND REMOVAL

CONSTRUCTION MUST BE IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. THIS SEQUENCE IS DESIGNED TO MINIMIZE SOIL EROSION AND SEDIMENTATION. THE CONTRACTOR MAY DEVIATE SLIGHTLY FROM THE STAGING OF PERMANENT SITE IMPROVEMENTS, BUT NO DEVIATION FROM THE RELATIVE ORDER OF EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE ALLOWED.

THE STAGING OF EARTHMOVING ACTIVITIES FOR THIS PROJECT IS A GENERAL DESCRIPTION OF THE WORK REQUIRED. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH COMPANY STANDARDS, THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS AND ALL OTHER APPLICABLE FEDERAL, STATE OR LOCAL REQUIREMENTS.

THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN INCLUDING THE SOIL EROSION CONTROL DRAWINGS SHALL BE AVAILABLE ON SITE AT ALL TIMES DURING EARTH DISTURBANCE.

ALL BMPs SHALL BE INSPECTED AFTER EACH MEASURABLE RAINFALL RUNOFF EVENT. ANY NECESSARY REPAIRS MUST BE MADE IMMEDIATELY TO ENSURE EFFECTIVE AND EFFICIENT OPERATION.

1. A PRE-CONSTRUCTION CONFERENCE WILL BE HELD ON SITE WITH CONTRACTOR TO REVIEW THE CONSTRUCTION DRAWINGS AND PROVIDE ANY REQUESTED GUIDANCE.
2. STAKE/FLAG DISTURBED WORK AREA, CLEARLY IDENTIFYING WETLAND AND STREAM EDGES AND BUFFERS. INSTALL SIGNS TO DESIGNATE THE AREA AND ORANGE SAFETY FENCE TO IDENTIFY IMPORTANT PROJECT ATTRIBUTES SUCH AS APPROVED ACCESS ROADS, NO REFUELING ZONES, WETLAND/STREAM BOUNDS, ETC.
3. CONSTRUCT THE CONSTRUCTION ENTRANCE.
4. CONSTRUCT ALL PROPOSED SEDIMENT CONTROL DEVICES AS SOON AS CLEARING AND GRUBBING OPERATIONS ALLOW.
5. PRIOR TO GRADING OR OTHER EARTH DISTURBANCE ON THE PARCEL, PERMANENT DOWN SLOPE BMPs ARE TO BE INSTALLED.
6. CLEAR AND GRUB, REMOVE TOPSOIL AND PLACE AS SHOWN ON THE PLANS. TOPSOIL STOCKPILE TO BE SEEDED AND MULCHED. E&S BMPs SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES AS SHOWN.
7. GRADING OPERATIONS AS REQUIRED. CUT SLOPES AND ALL SLOPES SHALL BE TOPSOILED AS NEEDED. DITCH LINES SHALL BE CLEANED. ALL DITCHES WILL HAVE AT LEAST GRASS LINING PROTECTION OR AS SPECIFIED IN DETAIL ON SHEET 16.
8. THE ACCESS ROAD SHALL BE CONSTRUCTED UP TO THE PROPOSED PADS. THE ACCESS ROAD SHALL RECEIVE A STONE SURFACE.
9. INSTALL PROPOSED EQUIPMENT PAD AND EQUIPMENT PAD BERMS.
10. CULVERT INLET AND OUTLET PROTECTION SHALL BE CONSTRUCTED IMMEDIATELY UPON PLACEMENT OF INLETS AND CULVERTS. INSTALLATION OF MATTING AND/OR RIP RAP TO OCCUR ONCE DITCHES ARE CONSTRUCTED.
11. SIDE SLOPE STABILIZATION MATTING AND STABILIZATION SHALL OCCUR AS SOON AS POSSIBLE.
12. AT THE END OF EACH WORK DAY, WHERE THE PARCEL HAS BEEN GRADED, INCLUDING ANY STRIPPING, STUMPING, LEVELING, 2:1 ON SIDE SLOPES, ETC. BMPs ARE TO BE INSTALLED. IN NO CASE IS THE CONTRACTOR TO LEAVE THE JOB SITE AT THE END OF THE WORK DAY WITHOUT TEMPORARY OR PERMANENT BMPs BEING INSTALLED. THE CONTRACTOR IS NOT REQUIRED TO MAINTAIN WATERBARS DURING THE WORK DAY UNLESS THE ENVIRONMENTAL INSPECTOR DETERMINES THAT THERE IS A RISK OF A RAIN EVENT THAT WARRANTS THEIR IMMEDIATE INSTALLATION.
13. WHEN FINAL GRADE IS ACHIEVED, TOPSOIL TO BE PLACED ON ALL DISTURBED AREAS NOT LINED. SEED ALL DISTURBED AREAS AS REQUIRED. A SOIL SAMPLE SHOULD BE TAKEN AND TESTED TO DETERMINE RECOMMENDED RATES. IF NO SOILS SAMPLE IS TAKEN THE FOLLOWING RATES SHOULD BE APPLIED AS A MINIMUM: LIME AT A RATE OF 4 TONS PER ACRE. FERTILIZE AT A RATE OF 500 LBS. OF 10-20-20 PER ACRE. SEED WITH 45 LBS. PER ACRE OF TALL FESCUE AND 20 LBS. PER ACRE OF PERENNIAL RYE GRASS.
14. LIME, FERTILIZER, AND SEED WILL BE APPLIED. HYDRO-MULCH PRODUCTS SHALL BE MIXED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS, OR EROSION CONTROL BLANKET SHALL BE INSTALLED PER PLANS & SPECIFICATIONS.
15. FINAL SEEDING MUST OCCUR WITHIN 7 DAYS OF FINAL GRADING.
16. WHEN SITE IS STABILIZED, ALL EROSION AND SEDIMENT CONTROL MEASURES CAN BE REMOVED AND REPAIR/STABILIZE THOSE AREAS IN ACCORDANCE WITH STATE STANDARDS.
17. FINAL SITE INSPECTION. A NOTICE OF TERMINATION SHOULD BE FILED WITH DEP UPON FINAL STABILIZATION.

GENERAL CONSTRUCTION NOTES

1. THE WELL PAD AND FRESHWATER IMPOUNDMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK AND SHALL CONFORM GENERALLY WITH THE GRADES, BERMS, AND DIMENSIONS SHOWN.
2. THE CONSTRUCTION DOCUMENTS SHOW THE EXISTING AND PROPOSED GRADES AND BERMS, ETC. THAT ALL CUT AND FILL ESTIMATES ARE BASED UPON THE ENGINEER'S ESTIMATES OF THE QUANTITIES ARE ONLY ESTIMATES AND MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS.
3. THE GRADES, BERMS, DEPTHS, AND DIMENSIONS MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS. THE ENGINEER RESERVES THE RIGHT TO CHANGE GRADES, BERMS, DEPTHS AND DIMENSIONS AS NECESSARY TO MEET FIELD CONDITIONS.
4. THE CONTRACTOR SHALL PROVIDE THE ENGINEER ALL REASONABLE FACILITIES AND PROVIDE INFORMATION AND SAMPLES AS REQUIRED BY THE ENGINEER FOR PROPER MONITORING AND TESTING OF MATERIAL WORKMANSHIP.
5. THE CONTRACTOR SHALL HAVE ON SITE AT ALL TIMES WHEN CONSTRUCTION IS IN PROGRESS A COMPETENT SUPERINTENDENT THOROUGHLY FAMILIAR WITH THE CONSTRUCTION OF EARTH BERMS AND EMBANKMENTS, THE COMPACTION OF SOILS AND PLACEMENTS OF LINERS.
6. THE CONTRACTOR SHALL INSTALL FILTER SOCK AND SUPER SILT FENCE PRIOR TO CLEARING AND GRUBBING AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH WVDEP BEST MANAGEMENT PRACTICES MANUAL, CHAPTER 3. SURFACE WATER SHALL BE DIVERTED AWAY FROM ALL EXCAVATIONS AND THE FACE OF ALL FILLS TO PREVENT FLOODING AND SOFTENING OF THE SUBGRADE OR COMPACTED MATERIALS.
7. CLEARING AND GRUBBING SHALL REMOVE ALL BRUSH, TREES, ROOTS, STUMPS, FENCES, SIGNS OR ANY OTHER MATERIAL THAT IS NOT TO BE REUSED FOR THE CONSTRUCTION. SOME STUMPS MAY REMAIN AT THE APPROVAL OF THE ENGINEER. NO CLEARING DEBRIS SHALL BE BURIED ON-SITE. FOR CLEARING WITHIN PERMITTED LOD, STUMPS AND ROOTS LARGER THAN 2 INCHES IN DIAMETER SHALL BE COMPLETELY GRUBBED AND PROPERLY DISPOSED OF OFF-SITE. ALL TIMBER, TREETOPS, BRANCHES, STUMPS LESS THAN 2 INCHES IN DIAMETER, ETC., WILL BE CHIPPED, GROUND, AND/OR MULCHED AND USED AS SITE BMP'S WITH THE REMAINDER BEING PROPERLY DISPOSED OF OFF-SITE. CLEARING TO BE COMPLETED ONLY AS NEEDED WITHIN THE LOD TO CONSTRUCT THE FACILITY AS DEPICTED.
8. TOP SOIL SHALL BE STRIPPED AND STOCKPILED WITH APPROPRIATE STABILIZATION TO PREVENT EROSION. THE TOP SOIL SHALL BE REUSED DURING THE RECLAMATION PROCESS AS NEEDED.
9. PRIOR TO PLACING ANY FILL, THE EXPOSED SUBGRADE SHALL BE COMPACTED AND PROOF ROLLED TO PRODUCE A STABLE AND UNYIELDING SITE.
10. RIPRAP USED AS OUTLET PROTECTION MUST BE HARD, ANGULAR AND OF A QUALITY RESISTANT TO WEATHERING AND DISINTEGRATION. RIPRAP SHOULD BE GROUTED ON STEEP OR LENGTHY FILL SLOPES WITH A MINIMUM THICKNESS TWO TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN SIX INCHES.
11. ALL FILL SHALL BE PLACED IN LOOSE LIFTS OF UP TO 12" AND SHALL BE COMPACTED TO AT LEAST 95% OF THE LABORATORY MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST METHOD (ASTM D 698). THE MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE LIMITS OF THE STANDARD PROCTOR TEST RESULTS. SOME SOILS CANNOT BE COMPACTED TO 95% OF THE STANDARD PROCTOR AT PLUS OR MINUS 4% MOISTURE CONTENT. CONTRACTOR IS RESPONSIBLE FOR THE ORIGINAL SOIL TEST AND PROVIDING A COPY OF THE RESULTS WITH MOISTURE-DENSITY CURVE TO THE ENGINEER. THE CONTRACTOR SHALL DO IN-PLACE DENSITY TESTS EVERY THIRD LIFT OF SOIL. FIELD DENSITY TESTS FOR COMPACTION SHALL BE PERFORMED IN ACCORDANCE WITH ASTM D 2922 (NUCLEAR METHOD). RECORDS SHALL BE MAINTAINED OF TEST LOCATION AND RESULTS AND PROVIDED TO THE ENGINEER ON REQUEST. AREAS THAT FAIL FOR COMPACTION SHALL BE REMOVED, RE-COMPACTED AND RETESTED FOR COMPLIANCE. IN LIEU OF STANDARD PROCTOR TESTING, THE CONTRACTOR MAY PROOF-ROLL THE SOIL EVERY 24" OF SOIL LIFT WITH A LOADED 15 TON TANDEM DUMP TRUCK. SOIL THAT DEFLECTS UNDER THE REAR WHEELS GREATER THAN 1/2" SHALL BE REMOVED, RE-COMPACTED AND RETESTED. COMPACTION OF SOIL SHALL BE DONE WITH A 5 TON SMOOTH, SHEEPS FOOT, OR VIBRATORY ROLLER.
12. ON-SITE FILL SHALL BE USED TO THE MAXIMUM EXTENT POSSIBLE. ANY IMPORTED FILL SHALL BE CERTIFIED BY THE CONTRACTOR TO BE CLEAR OF ALL HAZARDOUS SUBSTANCES OR MATERIALS. IF MATERIAL IS ENCOUNTERED THAT CANNOT BE RIPPED BY A CAT D8 WITH A SINGLE TOOTH RIPPER, THEN THE CONTRACTOR SHALL CONTACT THE ENGINEER WHO WILL VISIT THE SITE AND DETERMINE IF THE MATERIAL MAY BE USED AS IS OR MUST BE REMOVED BY OTHER MEANS. IF UNSUITABLE SOILS IN THE SUBGRADE ARE FOUND THEY SHALL BE REMOVED AND REPLACED WITH APPROPRIATE FILL AT THE CONTRACTOR'S EXPENSE AND THE ENGINEER'S DIRECTION.
13. IF SPRINGS OR SEEPS ARE ENCOUNTERED, SUBSURFACE DRAINAGE FEATURES SHALL BE INSTALLED PRIOR TO FILL PLACEMENT. CONTACT ENGINEER FOR EVALUATION AND RECOMMENDATION OF CORRECTIVE MEASURES.
14. THE FILL TOE FOR ALL EMBANKMENTS SHALL BE BENCHED OR KEYED INTO THE NATURAL SOIL. ALL FILL TOES SHALL BE SUPPORTED BY COMPETENT BEDROCK OR SOIL MATERIAL.
15. FILL PLACED AGAINST EXISTING SLOPES SHALL BE BENCHED INTO THE EXISTING MATERIAL DURING ALL PLACEMENT TO REDUCE THE POTENTIAL FOR DEVELOPMENT OF A SMOOTH INTERFACE BETWEEN THE FILL AND EXISTING SLOPE.
16. ANY SOFT AREAS SHALL BE OVER-EXCAVATED TO A FIRM MATERIAL AND BACKFILLED WITH A WELL COMPACTED STRUCTURAL FILL.
17. FILL REQUIRED TO OBTAIN DESIGN GRADES SHALL BE PLACED AS CONTROLLED, COMPACTED. ALL THE FILL SHALL BE FREE OF TRASH, WOOD, TOPSOIL, ORGANICS, COAL, COAL MINE REFUSE, FROZEN MATERIAL AND PIECES OF ROCK GREATER THAN 6" IN ANY DIMENSION.
18. DURING PLACEMENT OF MATERIAL, MOISTEN OR AERATE EACH LAYER OF FILL, AS NECESSARY, TO OBTAIN THE REQUIRED COMPACTION. FILL SHOULD NOT BE PLACED ON SURFACES THAT ARE MUDDY OR FROZEN, OR HAVE NOT BEEN APPROVED BY PRIOR PROOF-ROLLING. FREE WATER SHALL BE PREVENTED FROM APPEARING ON THE SURFACE DURING OR SUBSEQUENT TO COMPACTION OPERATIONS.
19. SOIL MATERIAL WHICH IS REMOVED BECAUSE IT IS TOO WET TO PERMIT PROPER COMPACTION MAY BE SPREAD AND ALLOWED TO DRY. DRYING CAN BE FACILITATED BY DISKING OR HARROWING UNTIL THE MOISTURE CONTENT IS REDUCED TO AN ACCEPTABLE LEVEL. WHEN THE SOIL IS TOO DRY, WATER MAY BE UNIFORMLY APPLIED TO THE LAYER TO BE COMPACTED.
20. THE FILL OUTSLOPES SHALL BE OVERBUILT AND TRIMMED BACK TO DESIGN CONFIGURATIONS TO VERIFY PROPER COMPACTION.
21. GRANULAR MATERIALS, SUCH AS AASHTO NO. 57 STONE SHALL BE COMPACTED TO 65% OF ITS RELATIVE DENSITY, AS DETERMINED BY ASTM D 4253 AND D 4254 TEST METHODS.
22. PHOTOGRAPHIC DOCUMENTATION SHALL BE TAKEN BY THE CONTRACTOR AND PROVIDED TO THE ENGINEER OF THE FOLLOWING ACTIVITIES;
    - SITE AFTER CLEARING AND GRUBBING;
    - THE SITE AFTER TOPSOIL REMOVAL;
    - TOE KEY AND INSPECTION TRENCH CONSTRUCTION;
    - DAILY PHOTOS OF CUT AND FILL OPERATIONS;
    - PROOF-ROLLING TESTS.
23. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A COMPLETE BINDER THAT INCLUDES ALL PHOTO DOCUMENTATION, ALL COMPACTION TEST REPORTS, RESULTS AND MAPS, AND A REPORT OF ALL CUT AND FILL VOLUMES IN CUBIC YARDS.

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

NOTES

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

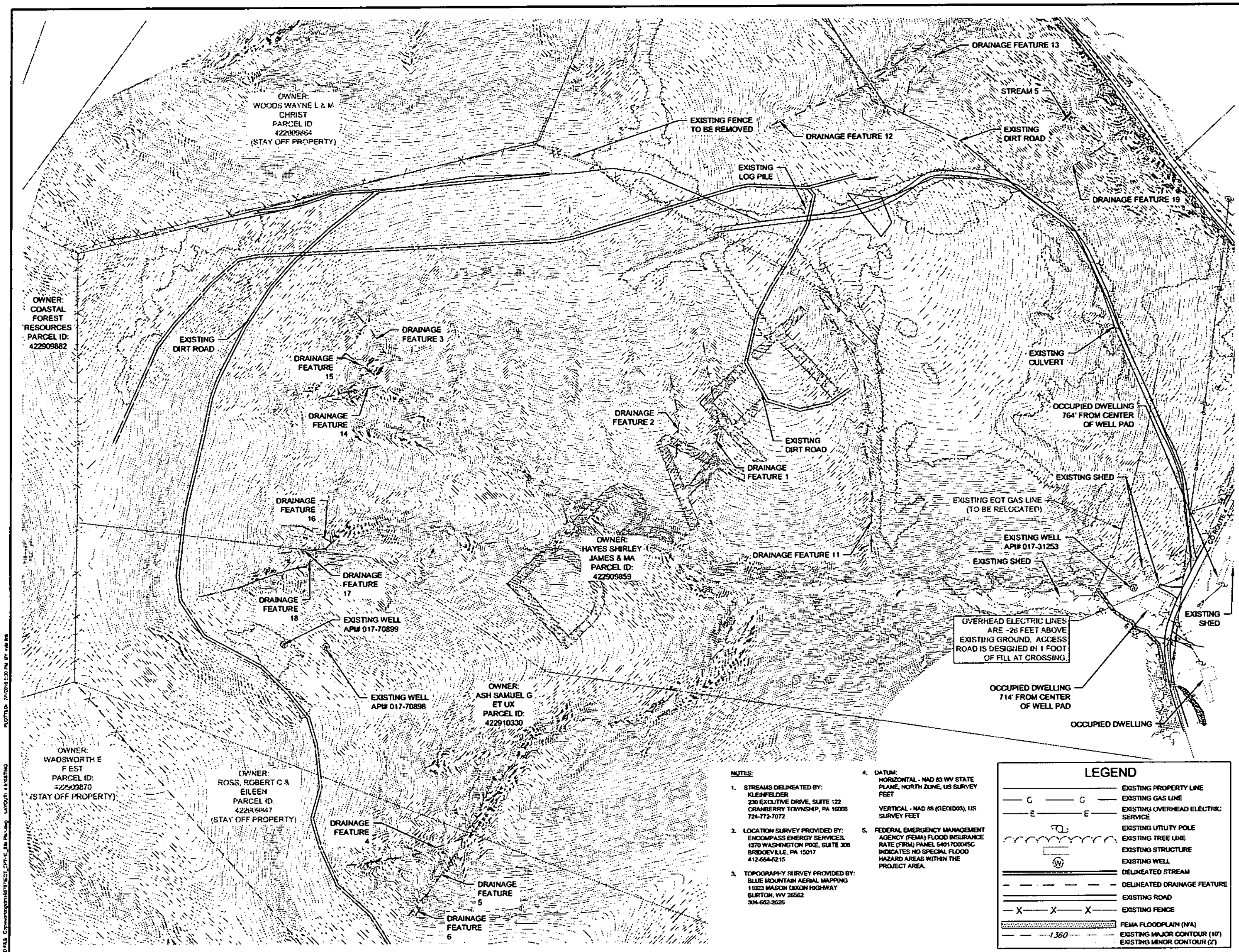
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

3

SHEET 3 of 25



NOTES:

1. STREAMS DELINEATED BY:
   KLEINFELDER
   230 EXCUTIVE DRIVE, SUITE 122
   CRANBERRY TOWNSHIP, PA 16066
   724-772-7072
2. LOCATION SURVEY PROVIDED BY:
   ENCOMPASS ENERGY SERVICES.
   1370 WASHINGTON PIKE, SUITE 306
   BRIDGEVILLE, PA 15017
   412-664-6215
3. TOPOGRAPHY SURVEY PROVIDED BY:
   BLUE MOUNTAIN AERIAL MAPPING
   11023 MASON DIXON HIGHWAY
   BURTON, WV 26562
   304-662-2525
4. DATUM:
   HORIZONTAL - NAD 83 WV STATE PLANE, NORTH ZONE, US SURVEY FEET
   VERTICAL - NAD 88 (GEOID03), US SURVEY FEET
5. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE (FIRM) PANEL 54017C0045C INDICATES NO SPECIAL FLOOD HAZARD AREAS WITHIN THE PROJECT AREA.

LEGEND

- EXISTING PROPERTY LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC SERVICE
- EXISTING UTILITY POLE
- EXISTING TREE LINE
- EXISTING STRUCTURE
- EXISTING WELL
- DELINEATED STREAM
- DELINEATED DRAINAGE FEATURE
- EXISTING ROAD
- EXISTING FENCE
- FEMA FLOODPLAIN (N/A)
- 1360 EXISTING MAJOR CONTOUR (10')
- EXISTING MINOR CONTOUR (2')

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 100 200 300
SCALE: 1" = 100' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

EXISTING CONDITIONS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

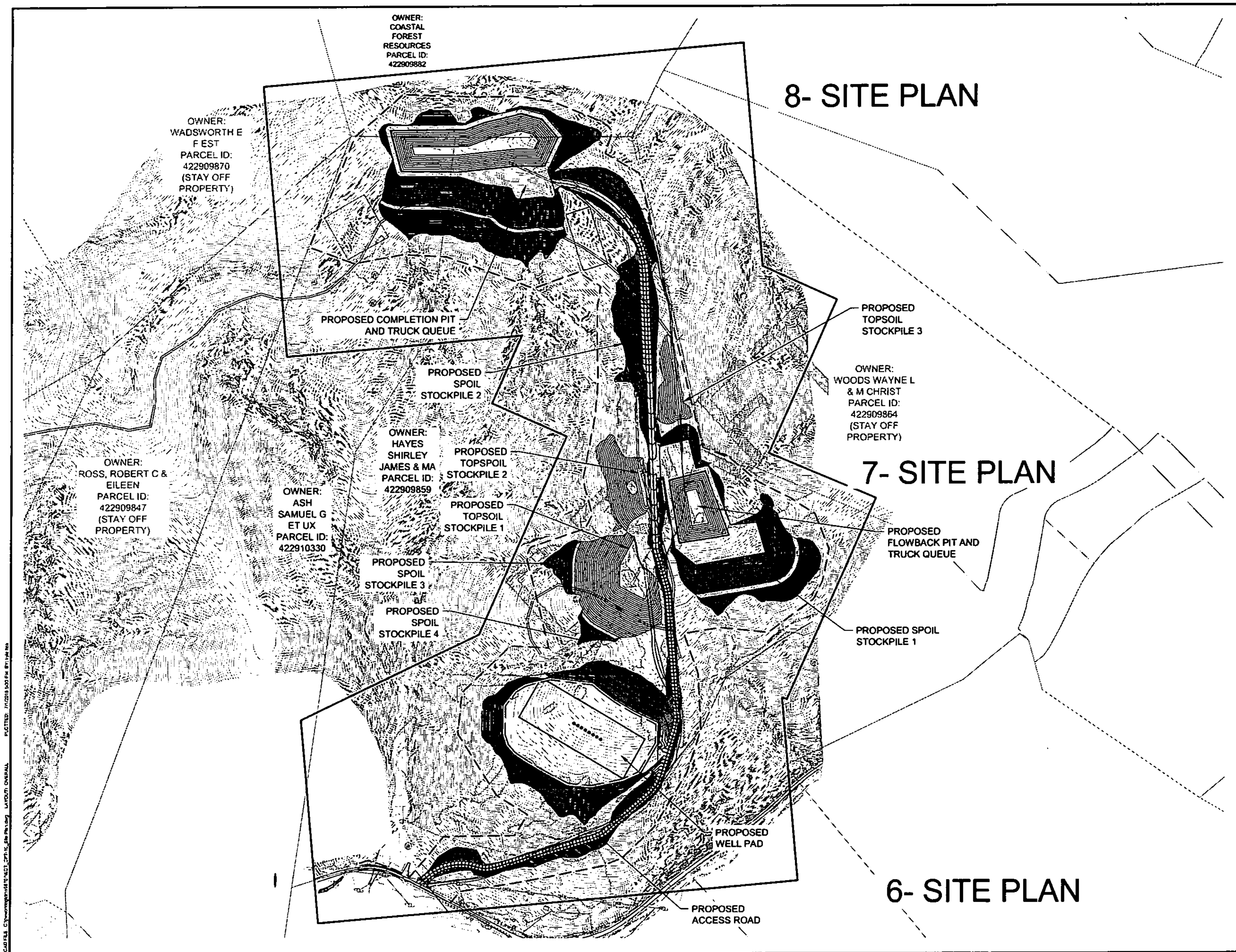
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137335
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

4

SHEET 4 of 25



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 150 300 450
SCALE: 1" = 150' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

OVERALL PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

5

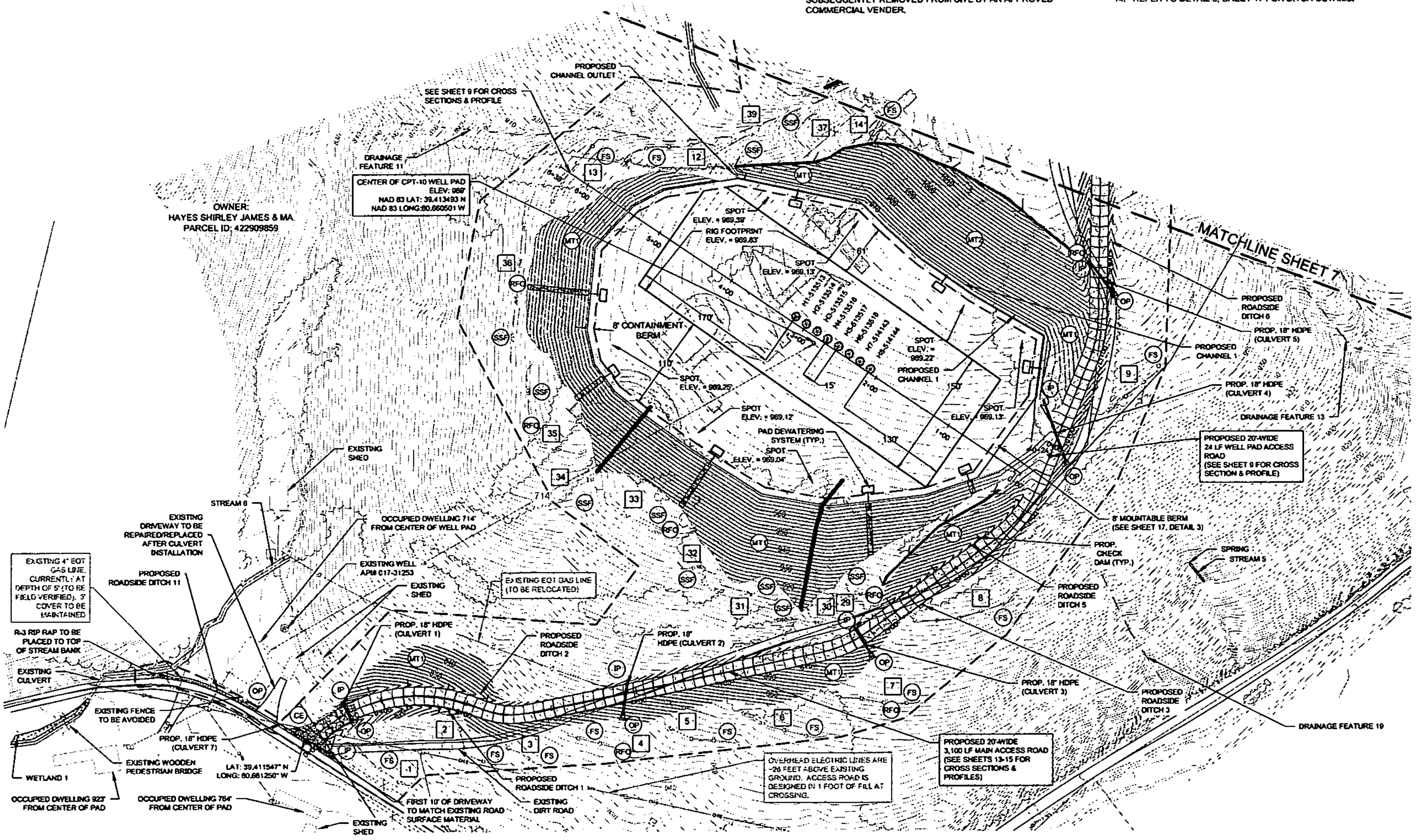
SHEET 5 of 25

LEGEND

- EXISTING PROPERTY LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC SERVICE
- EXISTING UTILITY POLE
- EXISTING TREE LINE
- EXISTING STRUCTURE
- EXISTING WELL
- DELINEATED STREAM
- DELINEATED WETLAND
- DELINEATED DRAINAGE FEATURE
- EXISTING ROAD
- EXISTING FENCE
- FEMA FLOODPLAIN (N/A)
- EXISTING MAJOR CONTOUR (10')
- EXISTING MINOR CONTOUR (2')
- PROP. MAJOR CONTOUR (10')
- PROP. MAJOR CONTOUR (10')
- PROP. LIMITS OF DISTURBANCE
- PROP. PAD & ROAD EDGE
- SUPER SILT FENCE AND FILTER SOCK INDICATION (SEE SHEET 19 FOR SUPER SILT FENCE AND FILTER SOCK TABLE)
- PROP. FILTER SOCK
- PROP. SUPER SILT FENCE
- PROP. ROCK CONSTRUCTION ENTRANCE
- PROP. ROCK FILTER OUTLET
- PROP. OUTLET PROTECTION
- PROP. INLET PROTECTION
- PROP. PVC PIPE FOR SUMP SYSTEM
- PROP. CHECK DAM
- PROP. RIP RAP APRON
- PROP. RIP RAP OUTLETS
- FLARED END SECTION
- PROP. NAG C125BN EROSION CONTROL MATTING*
- PROP. NAG C350 EROSION CONTROL MATTING*
- PROP. CULVERT
- PROP. DITCH
- PROP. PAD PERIMETER SUMP
- PROP. WELL HEAD
- PROP. FRENCH DRAIN
- PROP. TOP OF SLOPE BERM

NOTES:

1. THE GRADE SHOWN REPRESENT FINISH GRADE ELEVATIONS.
2. PIPE MATERIALS SHALL BE AS NOTED ON THE PLAN AND IN THE STORM DRAINAGE COMPUTATION ON SHEET 16.
3. CUT AND FILL SLOPES SHALL BE AT 2H:1V UNLESS NOTED OTHERWISE.
4. FILL SHALL BE PLACED IN 12" LIFTS AND BE COMPACTED TO 95% STANDARD PROCTOR.
5. INTERMEDIATE TOE BENCHES SHALL BE INSTALLED ON FILL SLOPES AT INTERVALS OF 50' VERTICAL FEET OR LESS IF SOILS CONDITIONS WARRANT ADDITIONAL SLIP PRECAUTIONS.
6. ALL FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 20.
7. POSITIVE FLOW FROM PAD TO SUMPS. SEDIMENT AND MATERIALS REMOVED FROM THE PAD SUMPS SHALL BE PUMPED TO ON-SITE HOLDING/STORAGE TANKS AND SUBSEQUENTLY REMOVED FROM SITE BY AN APPROVED COMMERCIAL VENDER.
8. ALL STORMWATER CONVEYANCES ON THE SITE HAVE BEEN DESIGNED TO ACCOMMODATE THE 10-YEAR STORM EVENT.
9. SEE DETAIL 9, SHEET 18 FOR RIP RAP OUTLET PROTECTION AND SIZING AND DESIGN.
10. CONTRACTOR TO INSTALL ROCK CHECK DAMS WITHIN ROADSIDE DITCHES. SEE DETAIL 17 ON PAGE 19 FOR SPACING REQUIREMENTS. ROCK CHECK DAMS WILL BE INSTALLED DURING CONSTRUCTION AS EROSION CONTROL MEASURES AND REMAIN IN PLACE AS PERMANENT CHECK DAMS AFTER CONSTRUCTION IS COMPLETE.
11. FILTER SOCK AND SUPER SILT FENCE SIZING TABLE IS SHOWN IN DETAIL 18, SHEET 19.
12. IN TOPSOIL PLACEMENT AREAS, CONTRACTOR TO INSTALL PROPER BMPS TO ENSURE NO OFFSITE EROSION & SEDIMENTATION RUNOFF.
13. INSTALL ROCK FILTER OUTLETS ALONG SEDIMENT BARRIERS AS SHOWN AND AT LOW POINTS AS IDENTIFIED IN THE FIELD.
14. REFER TO DETAIL 6, SHEET 17 FOR DITCH DETAILS.



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSHUA M. FARLEY
REGISTERED
20711
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

SITE PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

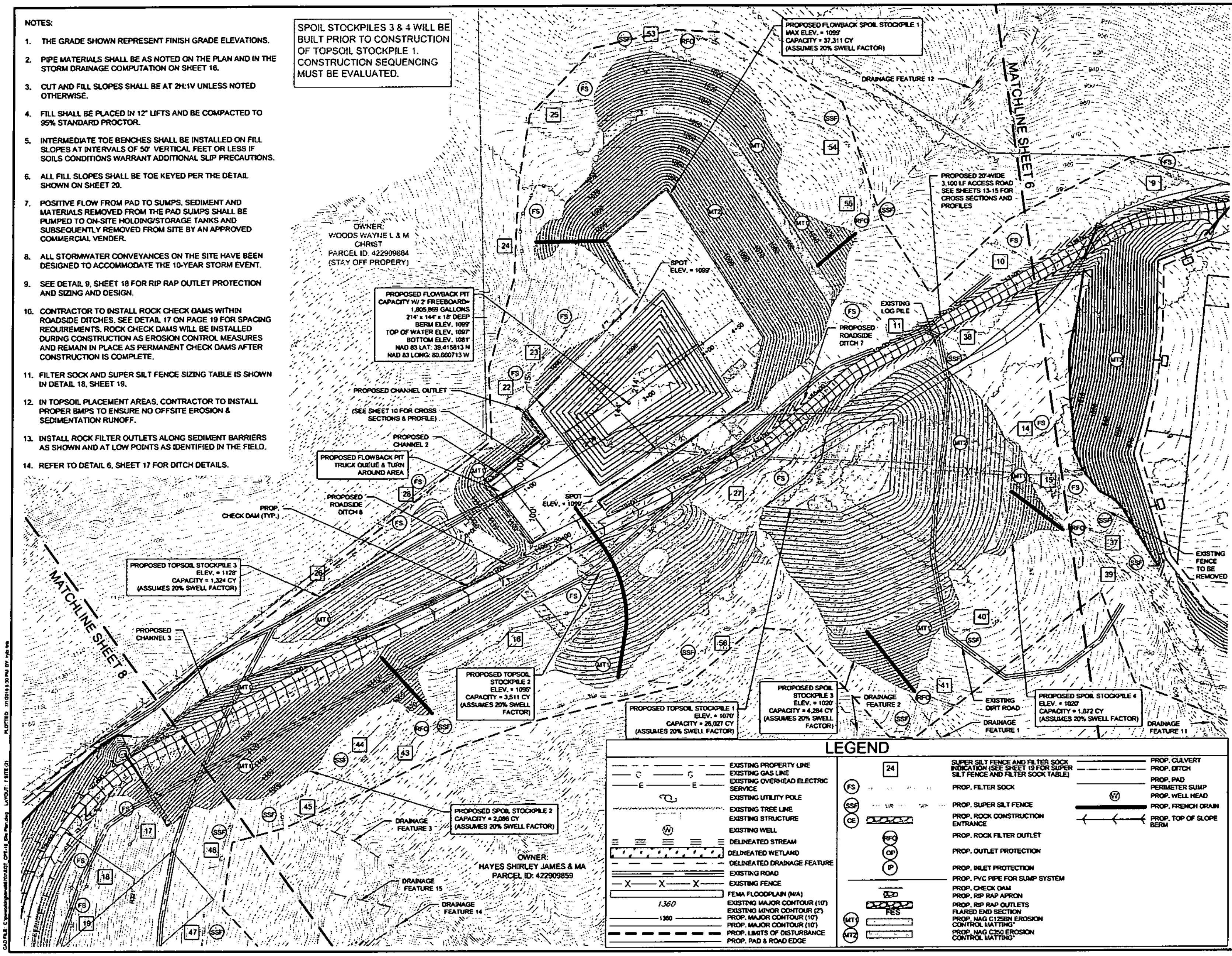
PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 6 — 6 of 25

NOTES:

1. THE GRADE SHOWN REPRESENT FINISH GRADE ELEVATIONS.
2. PIPE MATERIALS SHALL BE AS NOTED ON THE PLAN AND IN THE STORM DRAINAGE COMPUTATION ON SHEET 16.
3. CUT AND FILL SLOPES SHALL BE AT 2H:1V UNLESS NOTED OTHERWISE.
4. FILL SHALL BE PLACED IN 12" LIFTS AND BE COMPACTED TO 95% STANDARD PROCTOR.
5. INTERMEDIATE TOE BENCHES SHALL BE INSTALLED ON FILL SLOPES AT INTERVALS OF 50' VERTICAL FEET OR LESS IF SOILS CONDITIONS WARRANT ADDITIONAL SLIP PRECAUTIONS.
6. ALL FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 20.
7. POSITIVE FLOW FROM PAD TO SUMPS. SEDIMENT AND MATERIALS REMOVED FROM THE PAD SUMPS SHALL BE PUMPED TO ON-SITE HOLDING/STORAGE TANKS AND SUBSEQUENTLY REMOVED FROM SITE BY AN APPROVED COMMERCIAL VENDER.
8. ALL STORMWATER CONVEYANCES ON THE SITE HAVE BEEN DESIGNED TO ACCOMMODATE THE 10-YEAR STORM EVENT.
9. SEE DETAIL 9, SHEET 18 FOR RIP RAP OUTLET PROTECTION AND SIZING AND DESIGN.
10. CONTRACTOR TO INSTALL ROCK CHECK DAMS WITHIN ROADSIDE DITCHES. SEE DETAIL 17 ON PAGE 19 FOR SPACING REQUIREMENTS. ROCK CHECK DAMS WILL BE INSTALLED DURING CONSTRUCTION AS EROSION CONTROL MEASURES AND REMAIN IN PLACE AS PERMANENT CHECK DAMS AFTER CONSTRUCTION IS COMPLETE.
11. FILTER SOCK AND SUPER SILT FENCE SIZING TABLE IS SHOWN IN DETAIL 18, SHEET 19.
12. IN TOPSOIL PLACEMENT AREAS, CONTRACTOR TO INSTALL PROPER BMPS TO ENSURE NO OFFSITE EROSION & SEDIMENTATION RUNOFF.
13. INSTALL ROCK FILTER OUTLETS ALONG SEDIMENT BARRIERS AS SHOWN AND AT LOW POINTS AS IDENTIFIED IN THE FIELD.
14. REFER TO DETAIL 6, SHEET 17 FOR DITCH DETAILS.

SPOIL STOCKPILES 3 & 4 WILL BE BUILT PRIOR TO CONSTRUCTION OF TOPSOIL STOCKPILE 1. CONSTRUCTION SEQUENCING MUST BE EVALUATED.



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

SITE PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

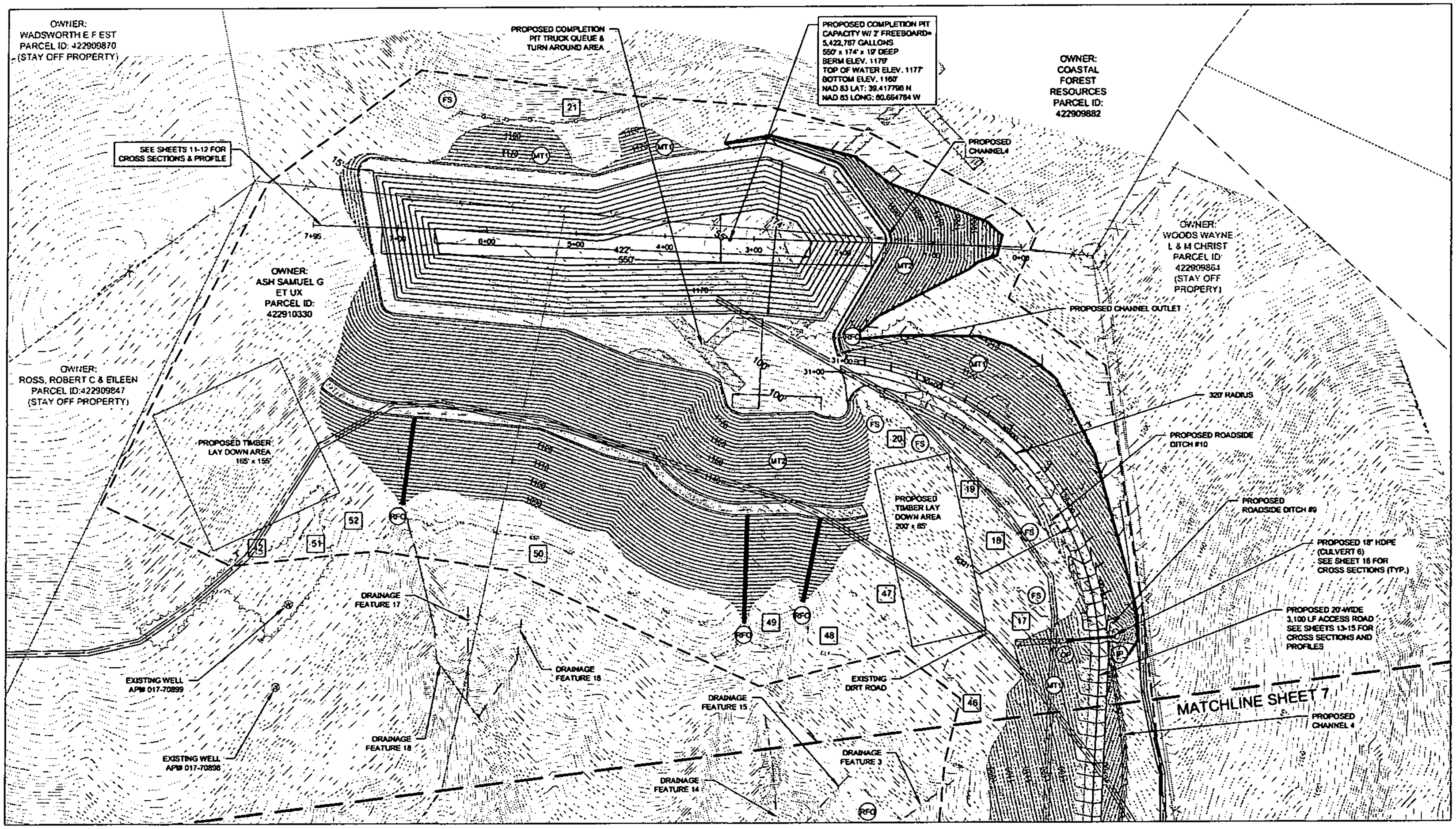
SHEET 7

LEGEND

EXISTING PROPERTY LINE	SUPER SILT FENCE AND FILTER SOCK INDICATION (SEE SHEET 19 FOR SUPER SILT FENCE AND FILTER SOCK TABLE)
EXISTING GAS LINE	PROP. FILTER SOCK
EXISTING OVERHEAD ELECTRIC SERVICE	PROP. SUPER SILT FENCE
EXISTING UTILITY POLE	PROP. ROCK CONSTRUCTION ENTRANCE
EXISTING TREE LINE	PROP. ROCK FILTER OUTLET
EXISTING STRUCTURE	PROP. OUTLET PROTECTION
EXISTING WELL	PROP. INLET PROTECTION
DELINEATED STREAM	PROP. PVC PIPE FOR SUMP SYSTEM
DELINEATED WETLAND	PROP. CHECK DAM
DELINEATED DRAINAGE FEATURE	PROP. RIP RAP APRON
EXISTING ROAD	PROP. RIP RAP OUTLETS
EXISTING FENCE	FLARED END SECTION
FEMA FLOODPLAIN (N/A)	PROP. NAG C125BN EROSION CONTROL MATTING*
EXISTING MAJOR CONTOUR (10')	PROP. NAG C350 EROSION CONTROL MATTING*
EXISTING MINOR CONTOUR (2')	PROP. CULVERT
PROP. MAJOR CONTOUR (10')	PROP. DITCH
PROP. MAJOR CONTOUR (10')	PROP. PAD PERIMETER SUMP
PROP. LIMITS OF DISTURBANCE	PROP. WELL HEAD
PROP. PAD & ROAD EDGE	PROP. FRENCH DRAIN
	PROP. TOP OF SLOPE BERM

NOTES:

1. THE GRADE SHOWN REPRESENT FINISH GRADE ELEVATIONS.
2. PIPE MATERIALS SHALL BE AS NOTED ON THE PLAN AND IN THE STORM DRAINAGE COMPUTATION ON SHEET 16.
3. CUT AND FILL SLOPES SHALL BE AT 2H:1V UNLESS NOTED OTHERWISE.
4. FILL SHALL BE PLACED IN 12" LIFTS AND BE COMPACTED TO 95% STANDARD PROCTOR.
5. INTERMEDIATE TOE BENCHES SHALL BE INSTALLED ON FILL SLOPES AT INTERVALS OF 50' VERTICAL FEET OR LESS IF SOILS CONDITIONS WARRANT ADDITIONAL SLIP PRECAUTIONS.
6. ALL FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 20.
7. POSITIVE FLOW FROM PAD TO SUMPS. SEDIMENT AND MATERIALS REMOVED FROM THE PAD SUMPS SHALL BE PUMPED TO ON-SITE HOLDING/STORAGE TANKS AND SUBSEQUENTLY REMOVED FROM SITE BY AN APPROVED COMMERCIAL VENDER.
8. ALL STORMWATER CONVEYANCES ON THE SITE HAVE BEEN DESIGNED TO ACCOMMODATE THE 10-YEAR STORM EVENT.
9. SEE DETAIL 9, SHEET 18 FOR RIP RAP OUTLET PROTECTION AND SIZING AND DESIGN.
10. CONTRACTOR TO INSTALL ROCK CHECK DAMS WITHIN ROADSIDE DITCHES. SEE DETAIL 17 ON PAGE 19 FOR SPACING REQUIREMENTS. ROCK CHECK DAMS WILL BE INSTALLED DURING CONSTRUCTION AS EROSION CONTROL MEASURES AND REMAIN IN PLACE AS PERMANENT CHECK DAMS AFTER CONSTRUCTION IS COMPLETE.
11. FILTER SOCK AND SUPER SILT FENCE SIZING TABLE IS SHOWN IN DETAIL 18, SHEET 19.
12. IN TOPSOIL PLACEMENT AREAS, CONTRACTOR TO INSTALL PROPER BMPS TO ENSURE NO OFFSITE EROSION & SEDIMENTATION RUNOFF.
13. INSTALL ROCK FILTER OUTLETS ALONG SEDIMENT BARRIERS AS SHOWN AND AT LOW POINTS AS IDENTIFIED IN THE FIELD.
14. REFER TO DETAIL 6, SHEET 17 FOR DITCH DETAILS.



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60' SCALE IN FEET

ORIGINAL DRAWING SIZE IS 22 x 34

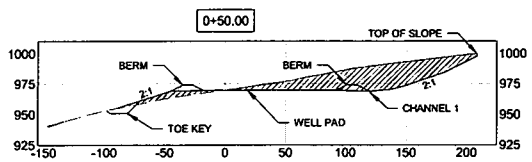
SITE PLAN

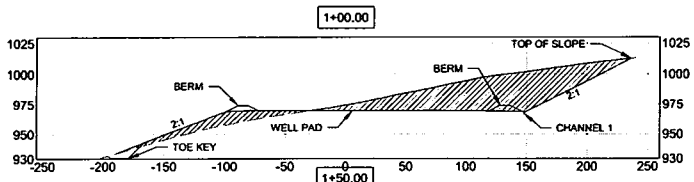
CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

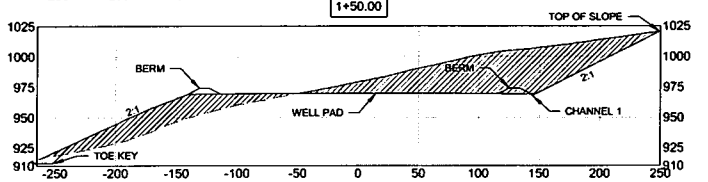
EQT
Where energy meets innovation.

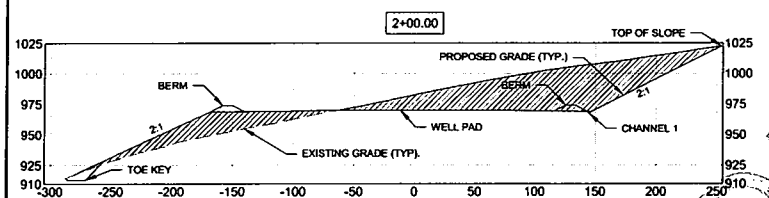
PERMITTING

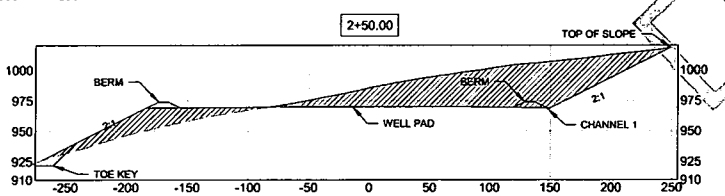
PROJECT NO.	137353	
ISSUE DATE	07/01/2015	
CURRENT REVISION	-	8
DESIGNED BY	AER	
DRAWN BY	AER	
CHECKED BY	JMF	
APPROVED BY	JMF	SHEET 8 of 25

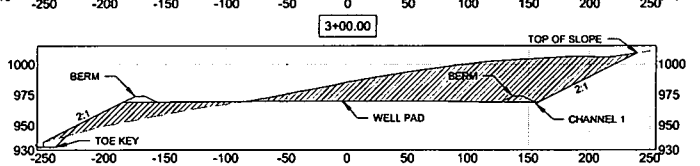


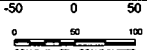




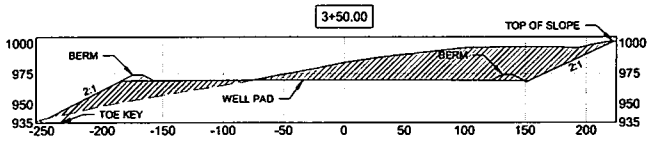


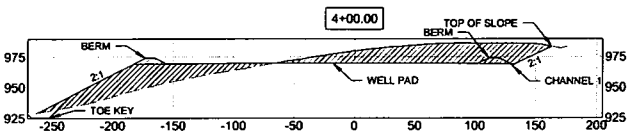


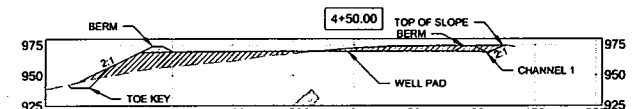


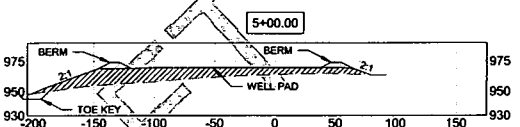


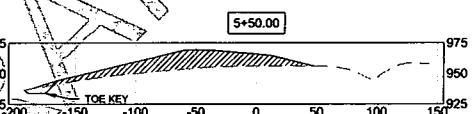
WELL PAD SECTIONS

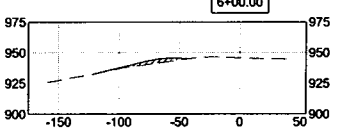


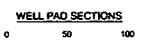












WELL PAD SECTIONS

LEGEND

AREA IN FILL

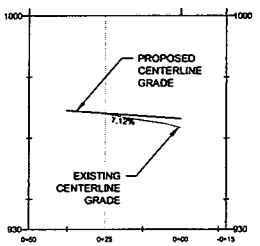
AREA IN CUT

EXISTING GRADE

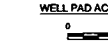
PROPOSED WELL PAD (UNLESS STATED OTHERWISE)

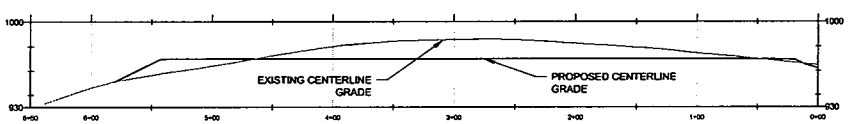
NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL WELL PAD INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES

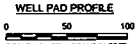


WELL PAD ACCESS ROAD PROFILE





WELL PAD PROFILE



KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-2072
www.kleinfelder.com

JOSHUA M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN DWN	CHK APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

WELL PAD CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

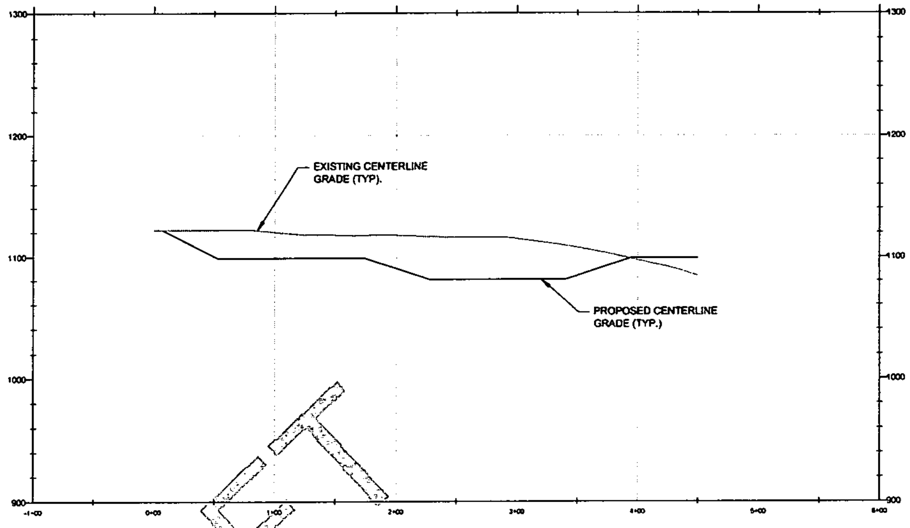
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137353
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

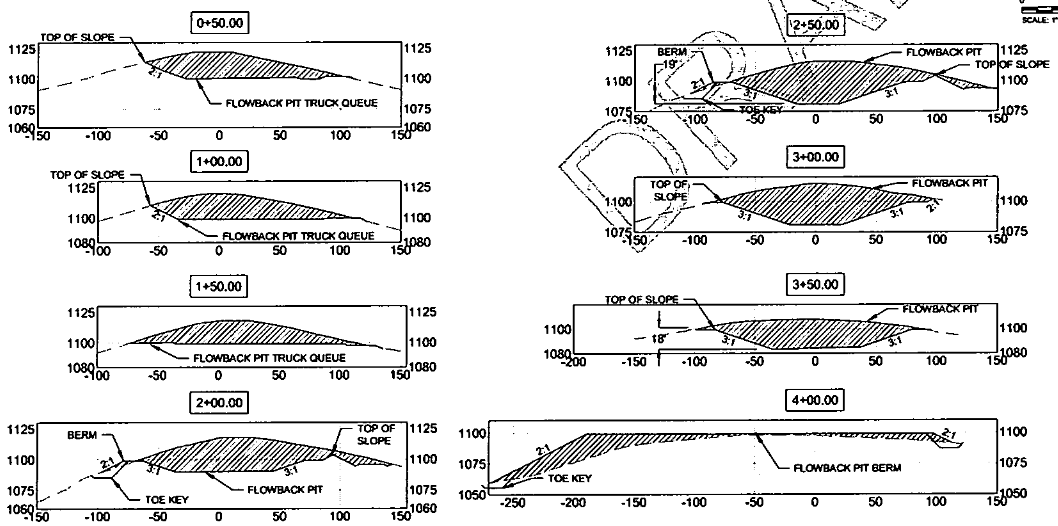
SHEET 9 of 25

9



FLOWBACK PIT PROFILE

SCALE: 1" = 50' SCALE IN FEET



FLOWBACK PIT SECTIONS

SCALE: 1" = 50' SCALE IN FEET

LEGEND

- AREA IN FILL
- AREA IN CUT
- EXISTING GRADE
- PROPOSED WELL FLOWBACK PIT AND FLOWBACK PIT ACCESS ROAD (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL WELL PAD INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

FLOWBACK PIT CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

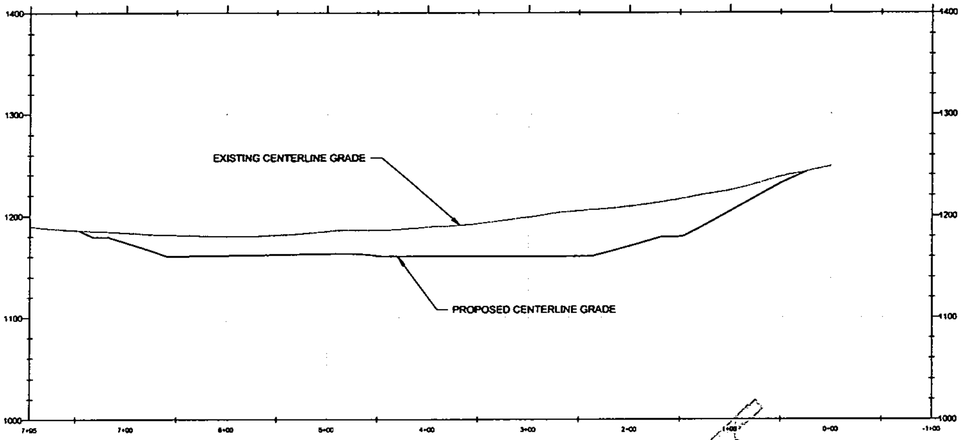
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

10

SHEET 10 of 25



COMPLETION PIT PROFILE

SCALE: 1" = 60' SCALE IN FEET

LEGEND

AREA IN FILL

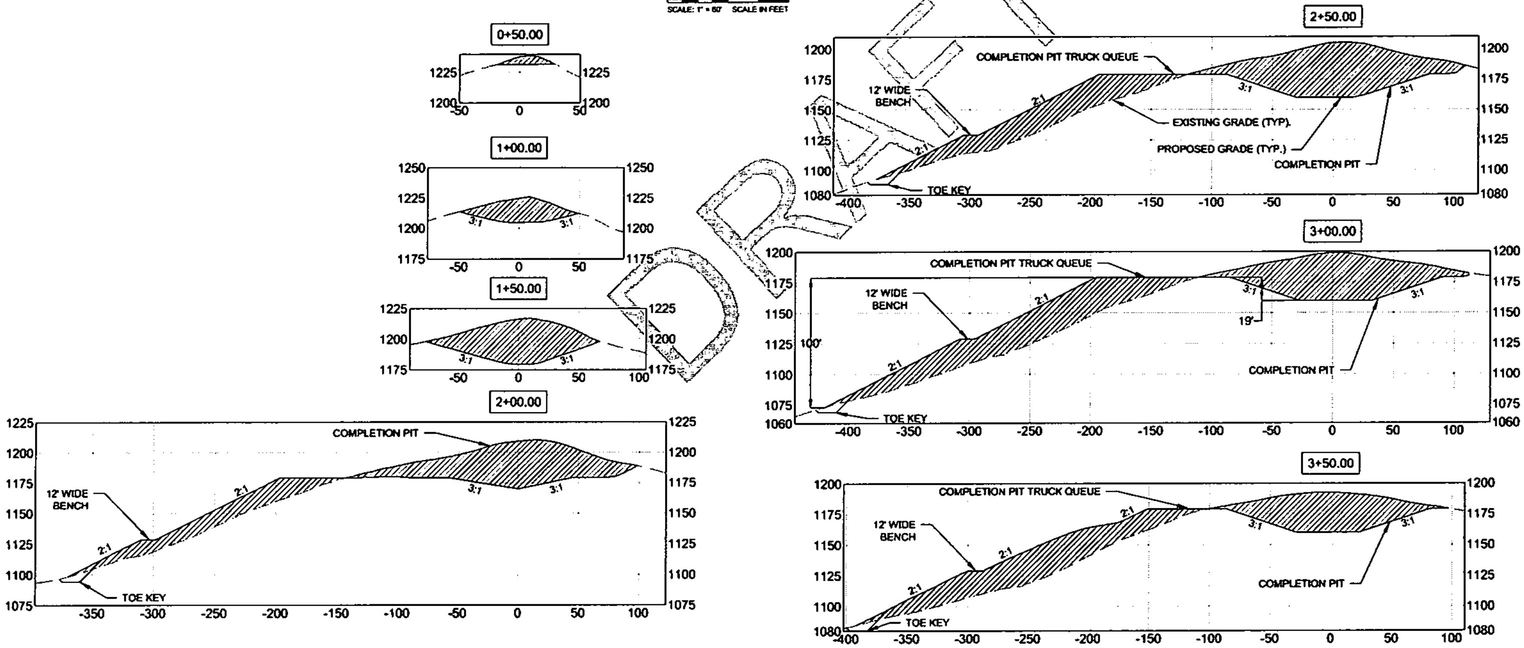
AREA IN CUT

EXISTING GRADE

PROPOSED COMPLETION PIT (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL COMPLETION PIT INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES



COMPLETION PIT SECTIONS

SCALE: 1" = 50' SCALE IN FEET

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

COMPLETION PIT CROSS SECTIONS & PROFILE

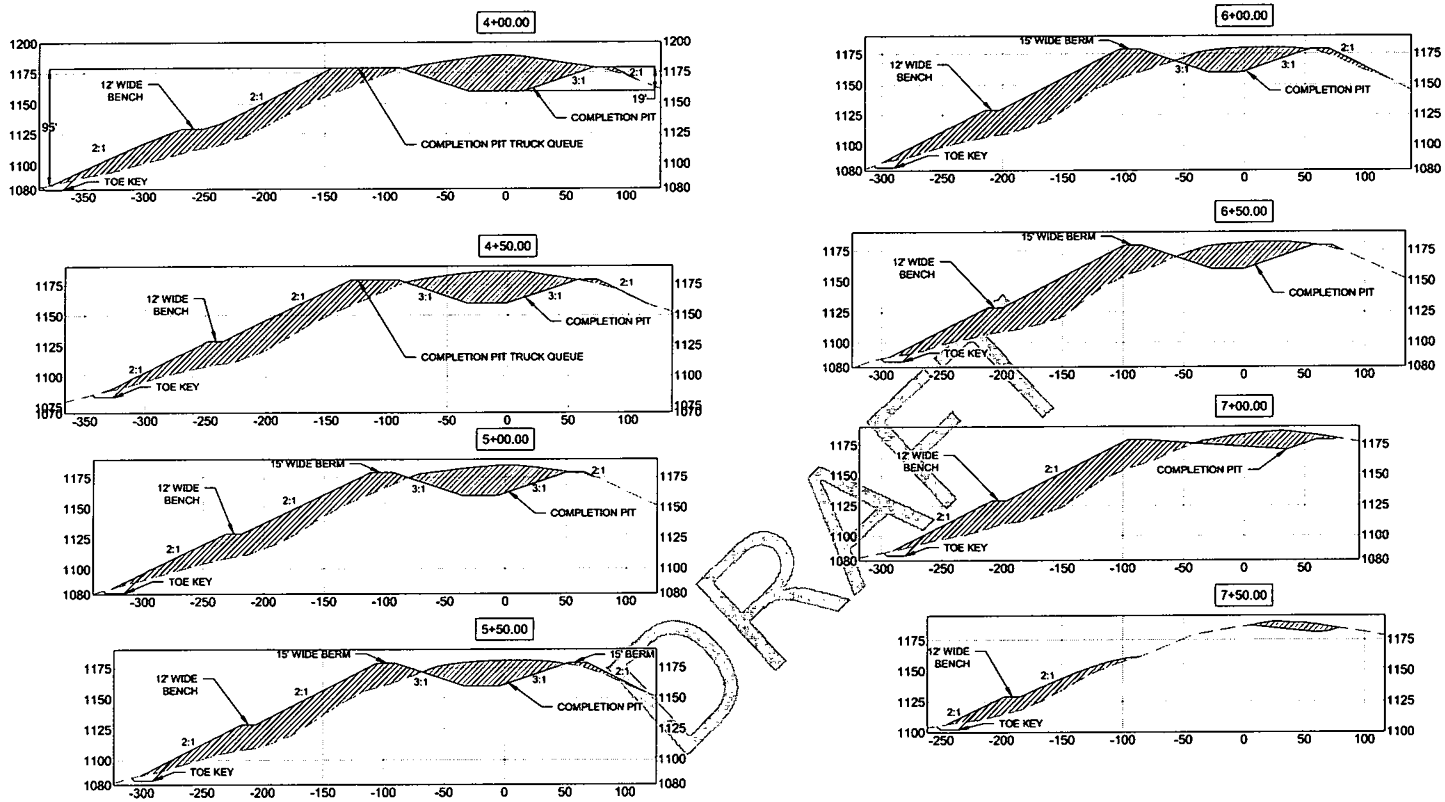
CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137353
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 11



COMPLETION PIT SECTIONS

SCALE: 1" = 50' SCALE IN FEET

LEGEND

AREA IN FILL

AREA IN CUT

EXISTING GRADE

PROPOSED COMPLETION PIT (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL COMPLETION PIT INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

COMPLETION PIT CROSS SECTIONS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

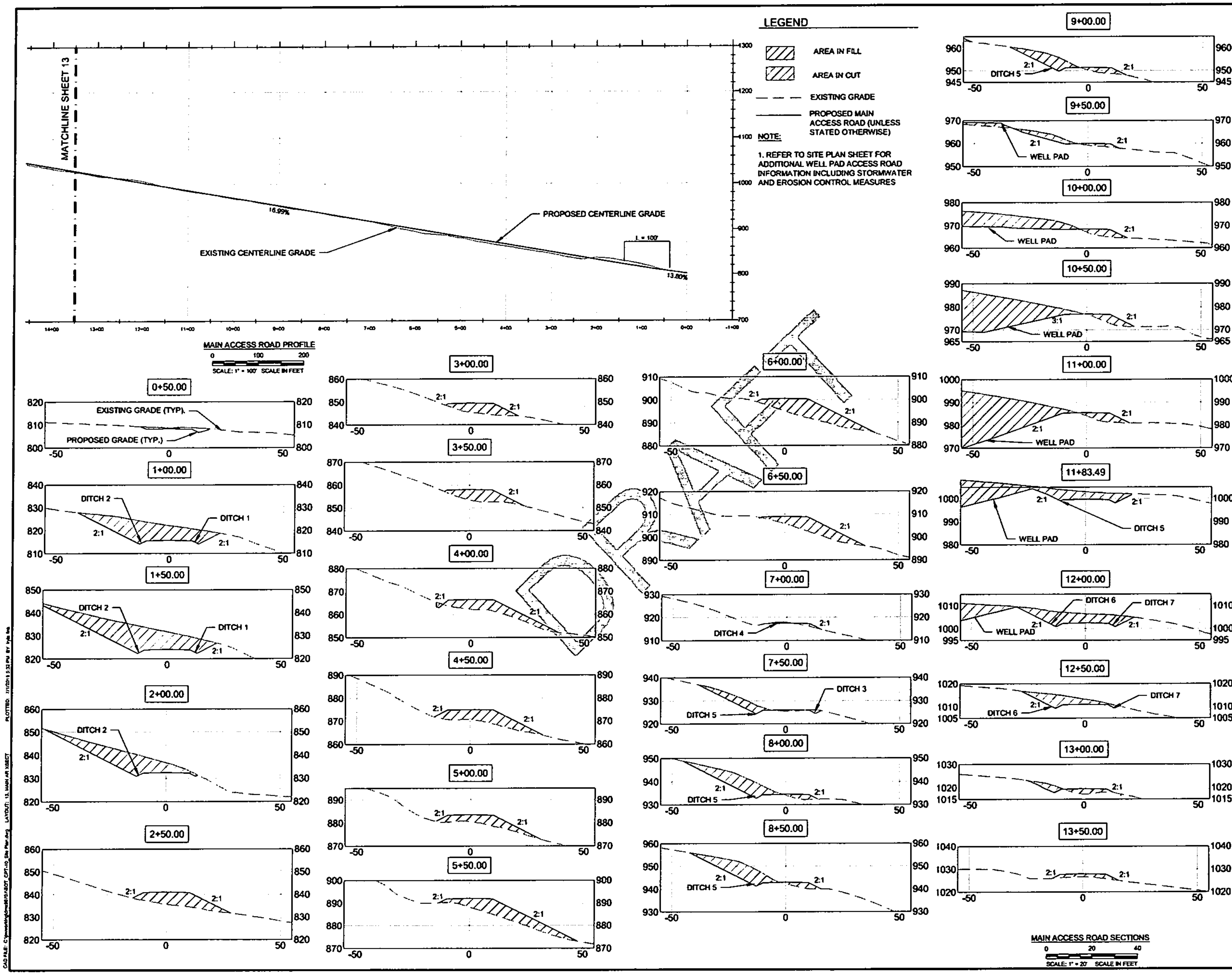
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137353
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 12

12 of 25



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

MAIN ACCESS ROAD CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

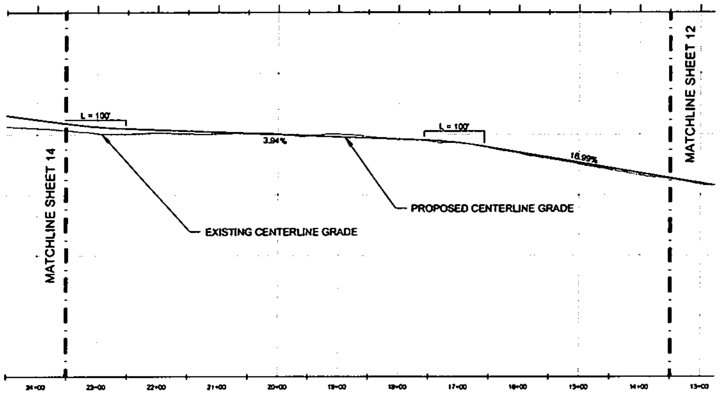
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

13

SHEET 13 of 25



MAIN ACCESS ROAD PROFILE

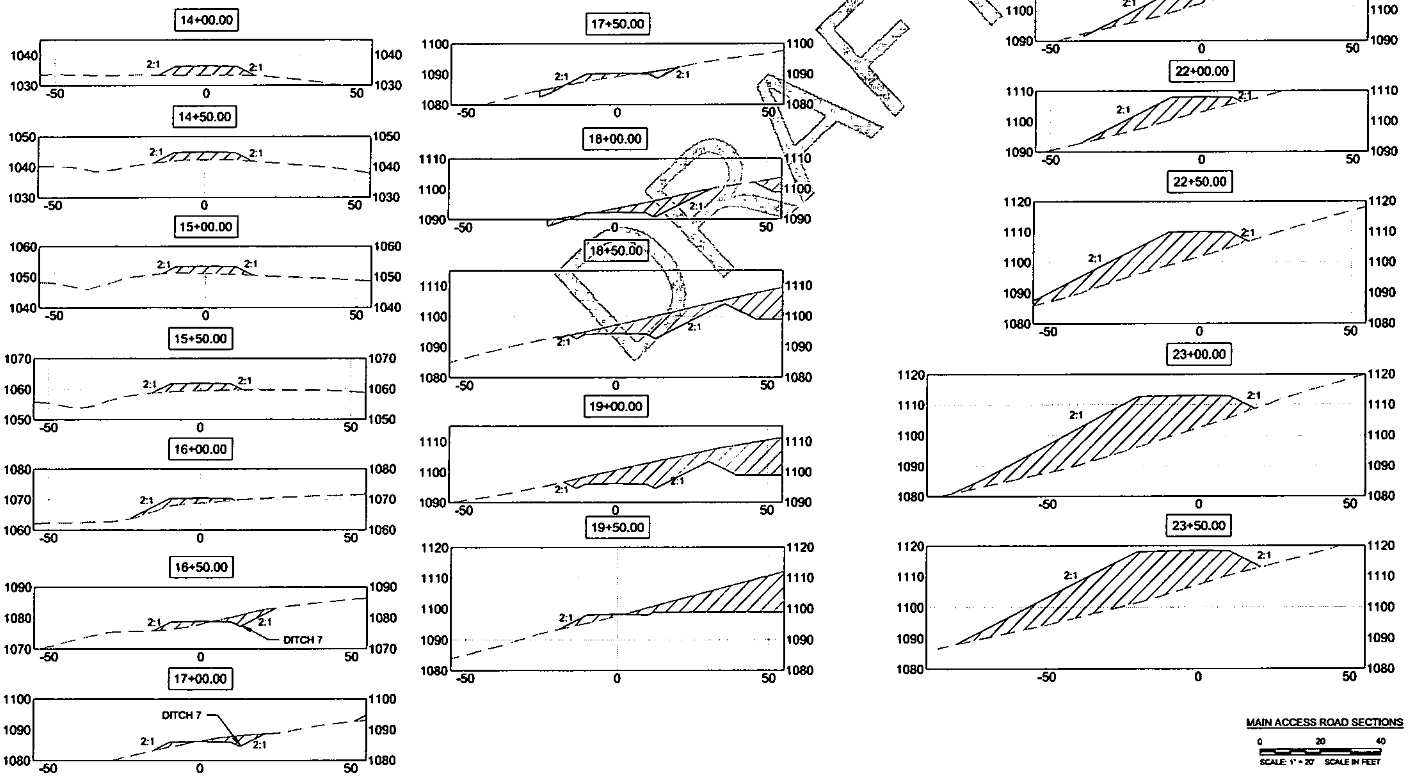
SCALE: 1" = 100' SCALE IN FEET

LEGEND

- AREA IN FILL
- AREA IN CUT
- EXISTING GRADE
- PROPOSED MAIN ACCESS ROAD (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL WELL PAD ACCESS ROAD INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES



MAIN ACCESS ROAD SECTIONS

SCALE: 1" = 20' SCALE IN FEET

DRAFT

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

MAIN ACCESS ROAD CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

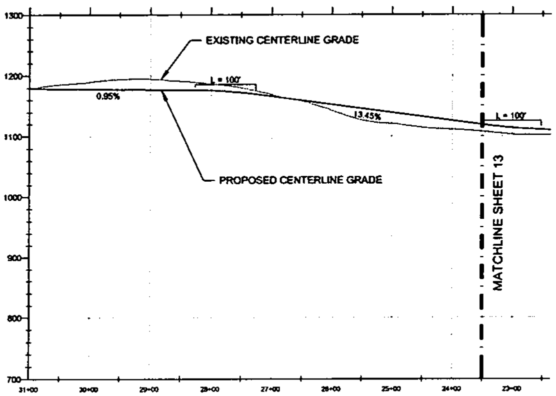
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137353
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 14 of 25

14



MAIN ACCESS ROAD PROFILE

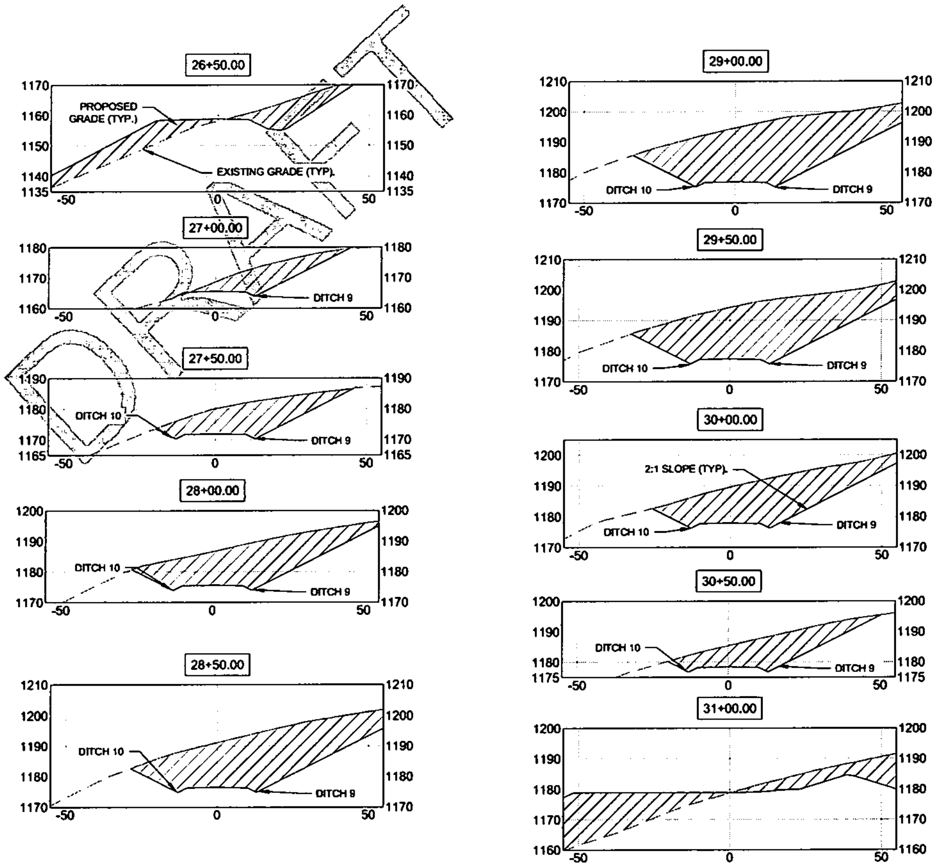
0 100 200

SCALE: 1" = 100' SCALE IN FEET

MAIN ACCESS ROAD SECTIONS

0 20 40

SCALE: 1" = 20' SCALE IN FEET



LEGEND

- AREA IN FILL
- AREA IN CUT
- EXISTING GRADE
- PROPOSED MAIN ACCESS ROAD (UNLESS STATED OTHERWISE)

NOTE:

1. REFER TO SITE PLAN SHEET FOR ADDITIONAL WELL PAD ACCESS ROAD INFORMATION INCLUDING STORMWATER AND EROSION CONTROL MEASURES

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

MAIN ACCESS ROAD CROSS SECTIONS & PROFILE

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

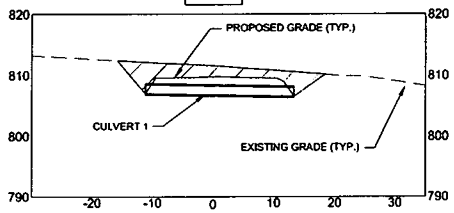
PERMITTING

PROJECT NO.	137353
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

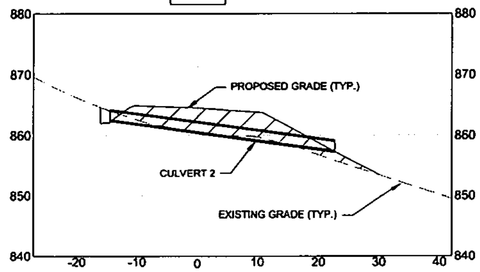
15

SHEET 15 of 25

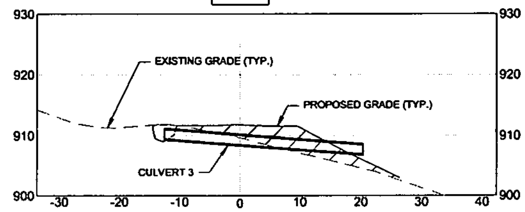
0+60.05



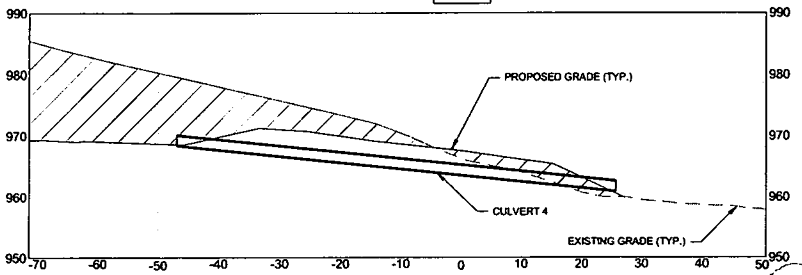
3+88.01



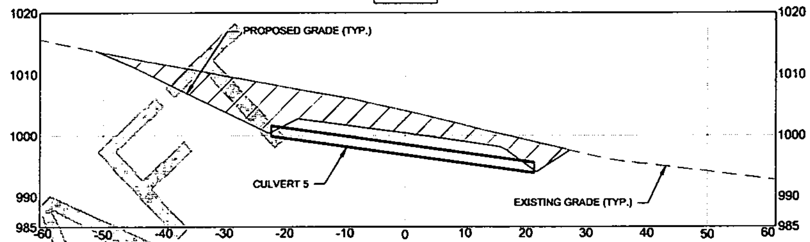
6+65.99



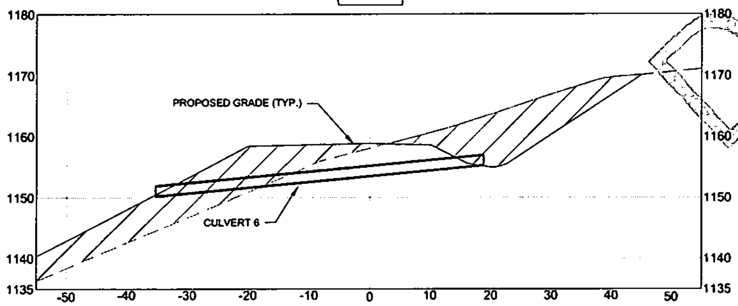
9+94.35



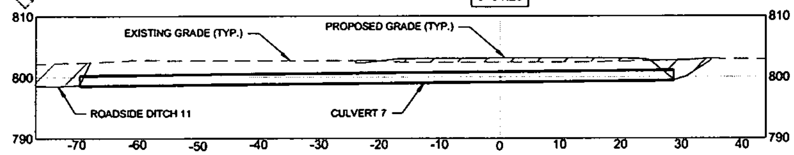
11+87.82



26+50.00



0+04.20



STORM DRAINAGE COMPUTATIONS								
ACCESS ROAD CROSS-DRAINS		Q TOTAL FLOW (cfs)	SLOPE (ft/ft)	SIZE	LENGTH (ft)	UPPER INVERT (ft)	LOWER INVERT (ft)	PIPE MATERIAL
PIPE	STATION							
CULVERT 1	AR1 0+60	4.45	0.0152	18"	33.00	807.00	806.50	HDPE
CULVERT 2	AR1 3+88	0.40	0.1246	18"	39.00	862.50	857.50	HDPE
CULVERT 3	AR1 6+66	0.40	0.0743	18"	34.00	909.50	907.00	HDPE
CULVERT 4	AR1 9+94	0.82	0.1032	18"	73.00	968.50	961.00	HDPE
CULVERT 5	AR1 11+88	1.42	0.1376	18"	44.00	997.00	994.00	HDPE
CULVERT 6	AR1 26+50	3.56	0.0907	18"	48.00	1155.50	1150.58	HDPE
CULVERT 7	CO RT 4	10.59	0.0100	18"	98.50	799.50	798.52	HDPE

CULVERT SECTIONS

0 10 20

SCALE: 1" = 10' SCALE IN FEET

LEGEND

AREA IN FILL

AREA IN CUT

EXISTING GRADE

PROPOSED GRADE

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION

1 INCH

ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

ORIGINAL DRAWING SIZE IS 22 x 34

CULVERT PROFILES

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

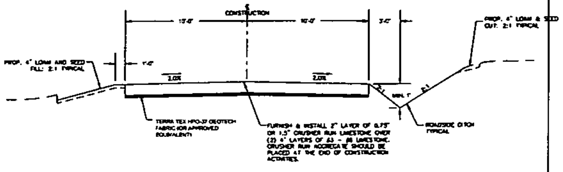
EQT
Where energy meets innovation.

PERMITTING

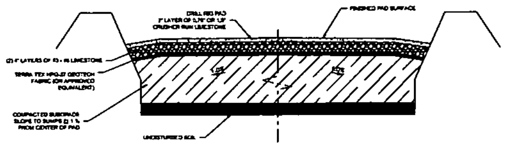
PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

16

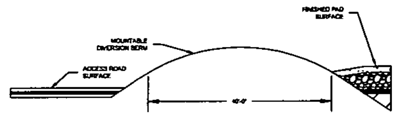
SHEET 16 of 25



1/17 TYPICAL SECTION – SITE ACCESS DRIVE DETAIL
NTS



2/14 TYPICAL PAD CROSS-SECTION DETAIL
NTS



3/17 MOUNTABLE BERM DETAIL
NTS

PIPE INSTALLATION PROCEDURES

CONSTRUCTION DETAILS BELOW COVER THE FOLLOWING CONDITIONS:

A. PIPE LYING ON TOP OF THE NATURAL GROUND, ROCK OR COMPACTED (95% SPD) FILL.
B. THE EXISTING GROUND IS BETWEEN THE TOP AND THE BOTTOM OF THE PROPOSED PIPE AND THE PIPE IS TO BE COVERED WITH EARTH FILL.
C. THE TOP OF PIPE IS BELOW THE LEVEL OF THE NATURAL GROUND OR COMPACTED FILL (TO MINIMUM 95% SPD) AND TO BE COVERED WITH EARTH FILL TO HEIGHTS ABOVE THE NATURAL GROUND.

STEP 1: REMOVE TOPSOIL (COMPRESSIBLE LAYER OF ORGANIC MATERIAL) TO A WIDTH EQUAL TO 3 OUTSIDE DIAMETERS OF THE PIPE IN ALL FILL CONDITIONS ABOVE A., B. & C. ALSO IF SPECIFIED ON THE CONTRACT DRAWING, UNDERCUT FOR THE DEPTH BELOW THE BEDDING AS SHOWN BY DESIGN (MAKE MIN WIDTH 5 DIAMETERS OF PIPE). PAY AS CLASS 1 EXCAVATION.

STEP 2: CONSTRUCT THE EMBANKMENT TO 4' – 0" ABOVE THE TOP OF PIPE OR TO THE SUBGRADE ELEVATION, WHICHEVER IS LESS. FOR PIPES 72" OR GREATER SEE NOTE 1.

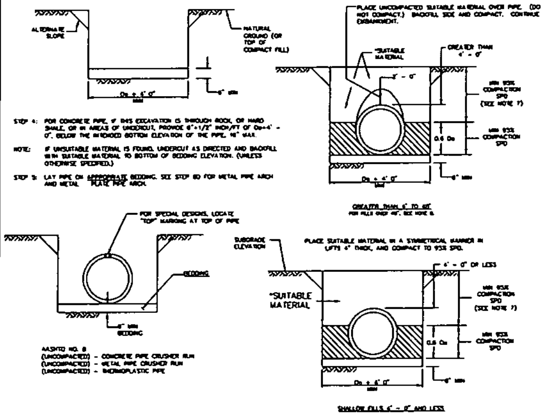
STEP 3: EXCAVATE THE TRENCH TO THE WIDTH OF THE OUTSIDE DIAMETER OF THE PIPE BARREL PLUS 4' – 0" AND CREATE AN APPROPRIATE BEDDING 6" DEEP.

STEP 4: FOR CONCRETE PIPE, IF THIS EXCAVATION IS THROUGH ROCK, OR HARD SHALE, OR IN AREAS OF UNDERCUT, PROVIDE 6"+1/2" INCH/FT OF Do+4' – 0", BELOW THE INTENDED BOTTOM ELEVATION OF THE PIPE, 18" MAX.

NOTE: IF UNSUITABLE MATERIAL IS FOUND, UNDERCUT AS DIRECTED AND BACKFILL WITH SUITABLE MATERIAL TO BOTTOM OF BEDDING ELEVATION. (UNLESS OTHERWISE SPECIFIED.)

STEP 5: LAY PIPE ON APPROPRIATE BEDDING. SEE STEP 10 FOR METAL PIPE ARCH AND METAL PLATE PIPE ARCH.

STEP 6: PLACE CRUSHER RUN COARSE AGGREGATE MATERIAL IN LIFTS 100 (4") THICK, ADJACENT TO THE LOWER HAUNCHES TO A HEIGHT OF 0.6 Do.COMPACT TO 95% SPD. TEST THE SIDE OF BACKFILL MATERIAL AND CONTINUE EMBANKMENT IN ACCORDANCE WITH PUBLICATION 408, SECTION 601.



LEGEND

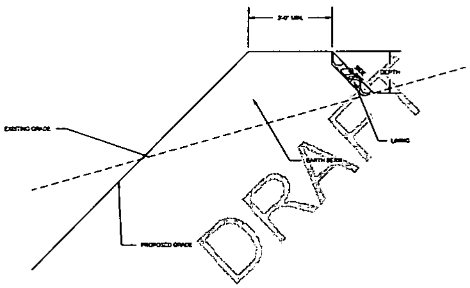
AGGREGATE FOR BEDDING (AASHTO NO. 8)

COARSE AGGREGATE (CRUSHER RUN)

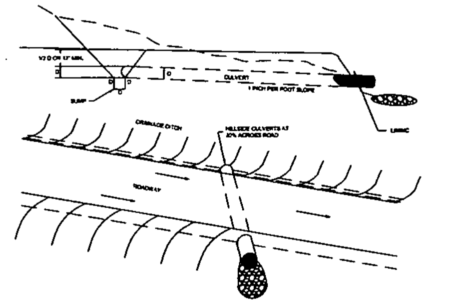
Do = OUTSIDE DIAMETER OF PIPE, MILLIMETERS (INCHES)
SPD = STANDARD PROCTOR DENSITY
D = INSIDE DIAMETER

*SUITABLE MATERIAL = MATERIAL CONTAINING NO DEBRIS, ORGANIC MATTER, FROZEN MATERIAL OR LARGE STONES WITH A DIAMETER GREATER THAN ONE-HALF THE THICKNESS OF THE COMPACTED LAYERS BEING PLACED.

4/17 CIRCULAR PIPE INSTALLATION DETAIL
NTS

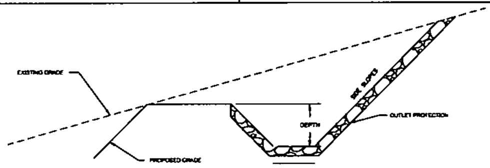


5/17 TYPICAL DRAINAGE BERM DETAIL
NTS



CONSTRUCTION SPECIFICATIONS

6/17 DITCH RELIEF CULVERT DETAIL
NTS



ROAD-SIDE DITCH & CHANNEL DESIGN AND LINING

ROAD-SIDE DITCH / CHANNEL NAME	TOTAL RUNOFF, Q (cfs)*	UPPER STATION	LOWER STATION	LENGTH (ft)	CHANNEL SECTION	BOTTOM WIDTH (ft)	LEFT SIDE SLOPE, Z:1 (ft)	RIGHT SIDE SLOPE, Z:1 (ft)	CHANNEL DEPTH (ft)	CHANNEL SLOPE (ft/ft)	TEMPORARY LINER	PERMANENT LINER
ROAD-SIDE DITCH 1	0.23	AR1 01+95	AR1 00+32	163.00	TRIANGULAR	-	2.00	2.00	1.50	0.04	C125BN	C125BN
ROAD-SIDE DITCH 2	4.45	AR1 02+40	AR1 00+00	240.00	TRIANGULAR	-	2.00	2.00	1.50	0.03	C125BN	C125BN
ROAD-SIDE DITCH 3	0.04	AR1 07+75	AR1 07+18	57.00	TRIANGULAR	-	2.00	2.00	1.50	0.03	C125BN	C125BN
ROAD-SIDE DITCH 4	0.40	AR1 07+02	AR1 06+50	52.00	TRIANGULAR	-	2.00	2.00	1.50	0.10	C125BN	C125BN
ROAD-SIDE DITCH 5	0.85	AR1 09+50	AR1 07+02	248.00	TRIANGULAR	-	2.00	2.00	1.50	0.02	C125BN	C125BN
ROAD-SIDE DITCH 6	1.42	AR1 12+72	AR1 11+60	112.00	TRIANGULAR	-	2.00	2.00	1.50	0.02	C125BN	C125BN
ROAD-SIDE DITCH 7	0.45	AR1 17+85	AR1 16+08	177.00	TRIANGULAR	-	2.00	2.00	1.50	0.05	C125BN	C125BN
ROAD-SIDE DITCH 8	0.50	AR1 21+50	AR1 20+05	145.00	TRIANGULAR	-	2.00	2.00	1.50	0.13	C125BN	C125BN
ROAD-SIDE DITCH 9	3.58	AR2 31+00	AR1 26+25	475.00	TRIANGULAR	-	2.00	2.00	1.50	0.05	C125BN	C125BN
ROAD-SIDE DITCH 10	0.49	AR2 30+60	AR1 27+00	360.00	TRIANGULAR	-	2.00	2.00	1.50	0.10	C125BN	C125BN
ROAD-SIDE DITCH 11	10.78	CO RT 4	CO RD 4	98.50	TRIANGULAR	-	2.00	2.00	1.25	0.10	C125BN	C125BN
CHANNEL 1	0.08	N/A	N/A	530.00	TRIANGULAR	-	1.00	1.00	3.00	0.01	R-3	R-3
CHANNEL 2	1.38	N/A	N/A	322.00	TRIANGULAR	-	1.00	1.00	3.00	0.01	R-4	R-4
CHANNEL 3	11.01	N/A	N/A	500.00	TRIANGULAR	-	1.00	1.00	3.00	0.01	R-3	R-3
CHANNEL 4	1.98	N/A	N/A	321.00	TRIANGULAR	-	1.00	1.00	3.00	0.01	R-3	R-3

*TOTAL RUNOFF FOR CHANNEL 1 IS THE AREA & FLOW OF ROAD-SIDE DITCH 28 AND CHANNEL 1

*TOTAL RUNOFF FOR CHANNEL 2 IS THE AREA & FLOW OF ROAD-SIDE DITCH 29, 30, & 31 AND CHANNEL 2

7/17 TYPICAL DRAINAGE ROAD-SIDE DITCH AND CHANNEL DETAIL

KLEINFELDER
Bright People. Right Solutions.

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

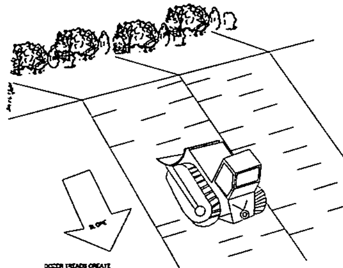
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137365
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

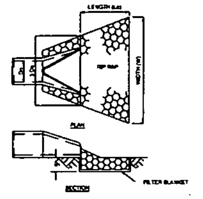
17

SHEET 17 of 25



NOTES:
TRACKING SLOPES IS DONE BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR. IF A BULLDOZER IS USED, THE BLADE SHOULD BE UP.

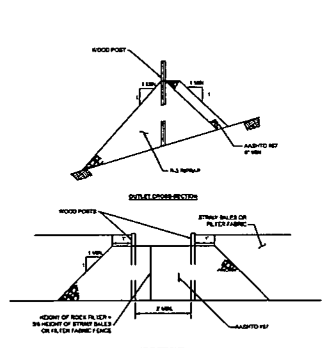
8/18 BULLDOZER TRACKING DETAIL
NTS



NOTES:
1. IF FLARED END SECTION IS DISCHARGING INTO DITCH FROM THE SIDE, EXTEND RIP RAP UP DITCH BANK ON OFF-SIDE A MINIMUM OF 4 FEET.
2. USE WVDEP RIP RAP GRADATION AND FILTER BLANKET REQUIREMENTS PER THE TABLE ON SHEET 3.17-3 OF THE "WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES MANUAL 2006" FOR BLANKET THICKNESS.
3. A SUITABLE NONWOVEN GEOTEXTILE FABRIC, USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, MAY BE SUBSTITUTED FOR FILTER BLANKET STONE UNDER THE RIP RAP.
4. D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".

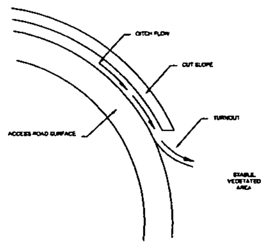
OUTLET	Do	3Do	La	W	RIP RAP	d
FES 1	18"	4.5'	8'	12.5'	R-3 RIPRAP	18"
FES 2	18"	4.5'	10'	12.5'	R-4 RIPRAP	18"
FES 3	18"	4.5'	10'	12.5'	R-4 RIPRAP	18"
FES 4	18"	4.5'	12'	12.5'	R-4 RIPRAP	18"
FES 5	18"	4.5'	20'	12.5'	R-5 RIPRAP	18"
FES 6	18"	4.5'	20'	12.5'	R-5 RIPRAP	18"

9/18 RIP RAP OUTLET PROTECTION DETAIL
NTS

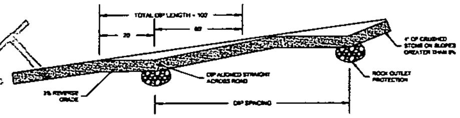


Sediment must be removed when accumulations reach 1/2 the height of the outlet.

10/18 ROCK FILTER OUTLET DETAIL
NTS



11/18 TURN OUT DETAIL
NTS



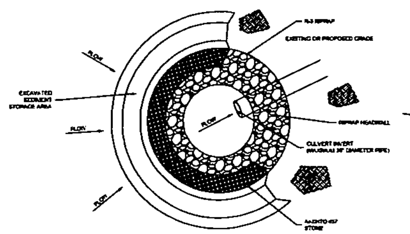
DESIGN CRITERIA
1. MAXIMUM ROAD GRADE ON WHICH DIPS CAN BE CONSTRUCTED IS 10%.
2. A 3% REVERSE GRADE SHOULD BE CONSTRUCTED IN THE EXISTING ROADBED BY CUTTING UPGRADE OF THE DIP LOCATION.
3. BROADBASED DIP SHOULD BE ARMORED WITH STONE TO WITHSTAND EXPECTED TRAFFIC.
4. DRAINAGE OUTLET PROTECTION SHALL BE PROVIDED WITH APPROPRIATE SEDIMENT BARRIER STRUCTURES.

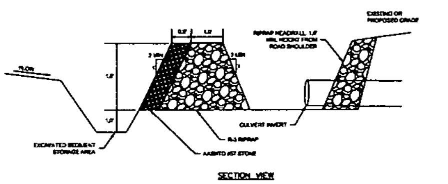
SPACING OF CROSS DRAINS

ROAD GRADE (%)	DISTANCE BETWEEN DRAINS (FT)
2	300
3	233
4	200
5	180
6	165
7	155
8	150
9	143
10	140

12/18 BROAD-BASED DIP DETAIL
NTS

DRAFT





DESIGN CRITERIA AND CONSTRUCTION SPECIFICATIONS
1. MAXIMUM STONE HEIGHT SHOULD BE UP WITH SIDE SLOPES NO STEEPER THAN 2:1. THE STONE "HORSESHOE" AROUND THE PIPE INLET SHOULD BE CONSTRUCTED OF R-3 RIPRAP WITH A MINIMUM CREST WIDTH OF 1.0'. THE OUTSIDE FACE OF THE RIPRAP SHOULD BE COVERED WITH A 6" THICK LAYER OF #57 STONE.
2. THE EMBANKMENT OVER THE PIPE MUST BE PROTECTED FROM OVERTOPPING. THE TOP OF THE STONE SHOULD BE A MINIMUM OF 1.0' BELOW THE TOP OF THE FILL OVER THE PIPE AND TIE INTO THE FILL ON BOTH SIDES OF THE PIPE. THE INSIDE TOE OF THE RIPRAP SHOULD BE NO CLOSER THAN 2' FROM THE CULVERT OPENING TO ALLOW PASSAGE OF HIGH FLOWS.
3. THE SEDIMENT STORAGE AREA SHOULD BE EXCAVATED UPSTREAM OF THE ROCK PIPE INLET PROTECTION, WITH A MINIMUM DEPTH OF 1.0' BELOW GRADE.
4. CLEAR THE AREA OF ALL DEBRIS THAT MIGHT HINDER EXCAVATION AND DISPOSAL OF SPOIL.
5. INSTALL THE R-3 RIPRAP IN A SEMI-CIRCLE AROUND THE PIPE INLET. THE STONE SHOULD BE BUILT UP HIGHER ON EACH END WHERE IT TIES INTO THE EMBANKMENT. ADJUST CREST AND BOTTOM WIDTH AS NECESSARY TO FACILITATE PLACEMENT WITHIN THE DITCH/CHANNEL. THE MINIMUM HEIGHT SHOULD BE 1.0', BUT ALSO LOWER THAN THE SHOULDER OF THE EMBANKMENT OR DIVERSIONS.
6. THE SEDIMENT STORAGE AREA SHOULD BE EXCAVATED AROUND THE OUTSIDE OF THE STONE HORSESHOE 1.0' BELOW NATURAL GRADE.
7. WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, FILL DEPRESSION AND ESTABLISH FINAL GRADING ELEVATIONS, COMPACT AREA PROPERLY, AND STABILIZE WITH GROUND COVER.

13/18 ROCK PIPE INLET DETAIL
NTS

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

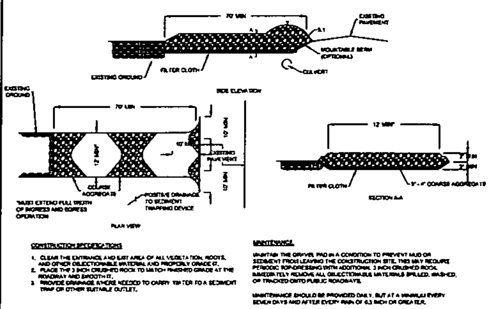
PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

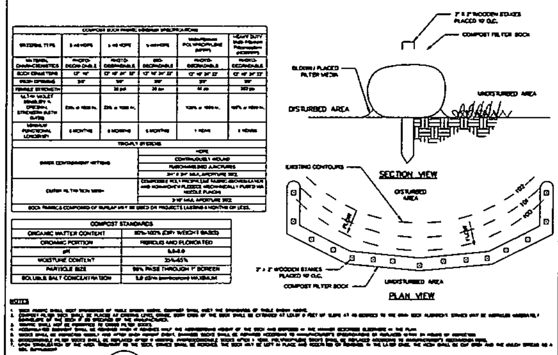
18

SHEET 18 of 25

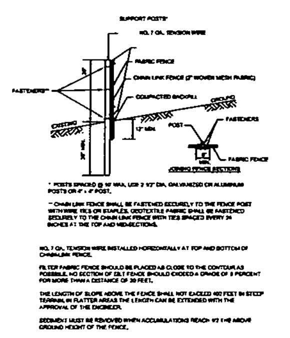
CAD FILE: ... CPT-10_NOTES_DETAILS.dwg LAYOUT: DETAILS (2) PLOTTED: 7/1/2015



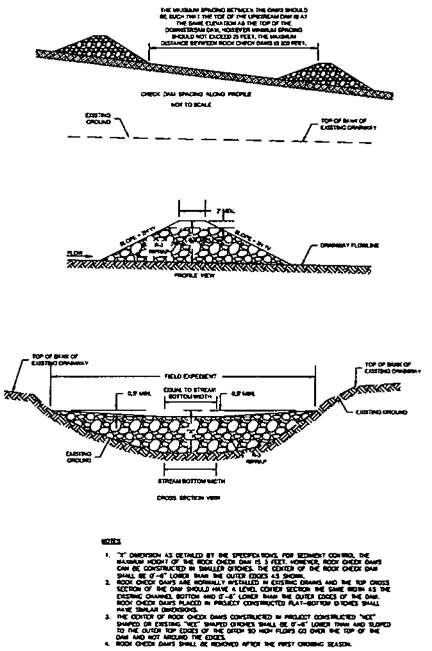
14 STONE CONSTRUCTION ENTRANCE DETAIL
19 NTS



15 COMPOST FILTER SOCK DETAIL
19 NTS



16 SUPER SILT FENCE DETAIL
19 NTS

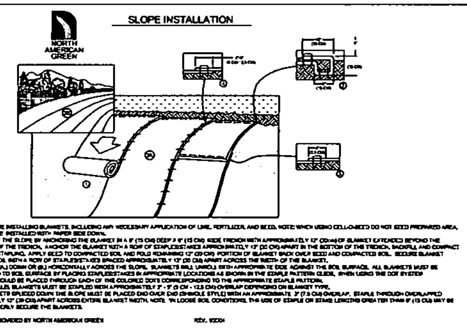


17 ROCK CHECK DAM DETAIL
19 NTS

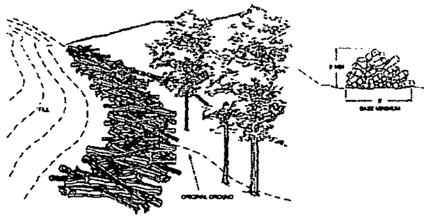
ID #	CFS (LF)	DIAMETER (IN)
1	100	18
2	95	18
3	50	18
4	100	24
5	100	32
6	110	32
7	120	32
8	140	18
9	105	32
10	90	32
11	90	32
12	115	18
13	120	18
14	70	24
15	150	24
16	240	18
17	70	18
18	125	12
19	165	12
20	65	12
21	255	24
22	40	12
23	115	12
24	225	12
25	110	18
26	200	12
27	165	18
28	70	12

ID #	SSF (LF)
29	55
30	100
31	80
32	50
33	125
34	45
35	165
36	200
37	135
38	75
39	90
40	180
41	140
42	40
43	60
44	160
45	105
46	95
47	100
48	110
49	110
50	460
51	75
52	65
53	250
54	220
55	90
56	400

18 SUPER SILT FENCE & FILTER SOCK TABLES
19 NTS



19 SLOPE PROTECTION INSTALLATION DETAIL
19 NTS



20 BRUSH PILE SEDIMENT BARRIER DETAIL
19 NTS

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

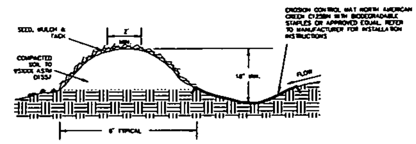
19

SHEET 19 of 25

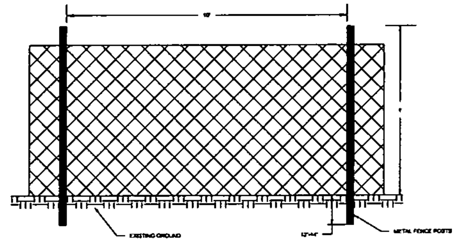
INSTALLATION

1. WHEN CLEARING THE LOCATION FOR THE DIVERSION, ONLY CLEAR ENOUGH ROOM FOR CONSTRUCTION AND MAINTENANCE EQUIPMENT ACCESS. DO NOT CLEAR ANY ADDITIONAL AREA UNTIL ALL EROSION CONTROL DEVICES ARE IN PLACE.
2. REMOVE ALL STUMPS, ROOTS AND OTHER DEBRIS AND DISPOSE OF THEM PROPERLY.
3. INSTALL DIVERSION AND COMPACT AS SHOWN IN DETAIL. INSURE POSITIVE DRAINAGE DURING CONSTRUCTION OF BERM.
4. SCARIFY, SEED, MULCH AND TACK DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF BERM.
5. INSTALL EROSION CONTROL MAT N.A.G. C125BN PER MANUFACTURER'S RECOMMENDATIONS AND KEY INTO SIDES OF CHANNEL TO PREVENT WATER UNDERMINING OR DAMAGING CHANNEL LINER.

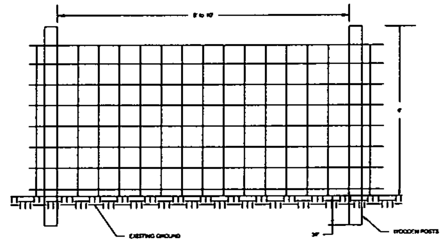
INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED. WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH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



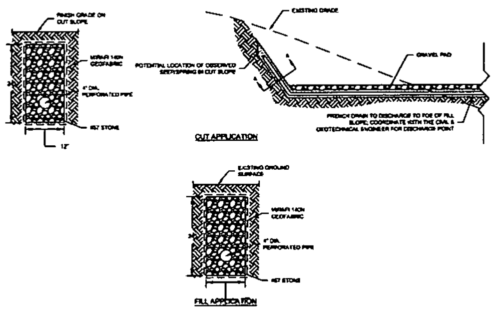
21 / 20 TEMPORARY DIVERSION BERM DETAIL
NTS



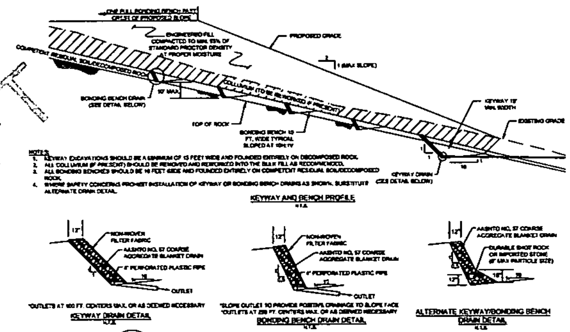
22 / 20 TYPICAL CONSTRUCTION FENCE DETAIL
NTS



23 / 20 TYPICAL WOVEN WIRE FENCE DETAIL
NTS

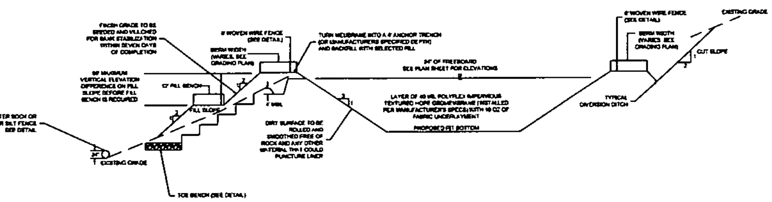


24 / 20 SEEP/SPRING FRENCH DRAIN DETAIL
NTS



25 / 20 TYPICAL KEYWAY, BENCH, AND DRAINAGE DETAIL
NTS

DRAFT



26 / 20 TYPICAL PIT EMBANKMENT DETAIL
NTS

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY
REGISTERED
20711
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

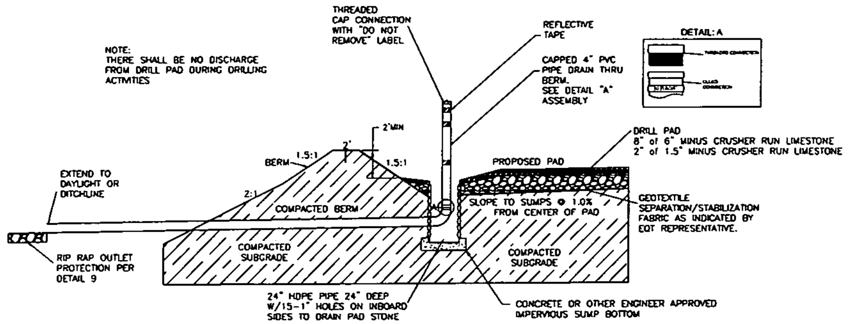
CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

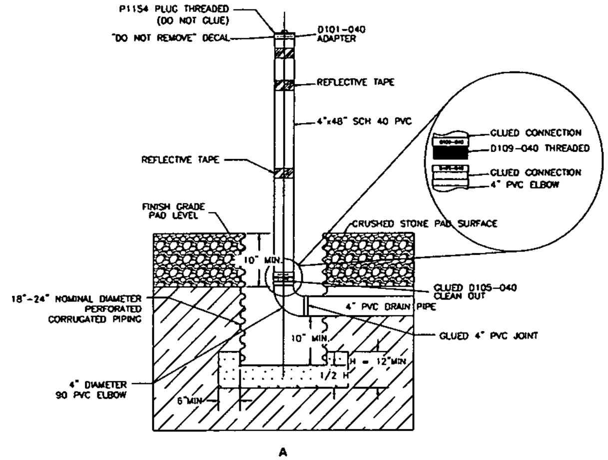
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

20

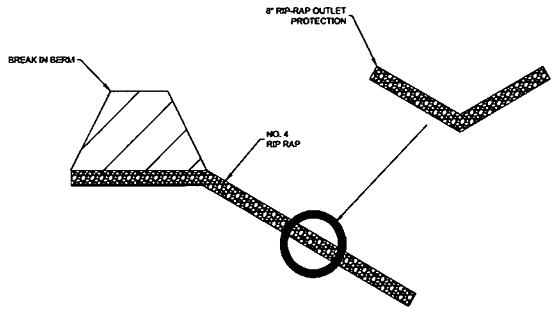


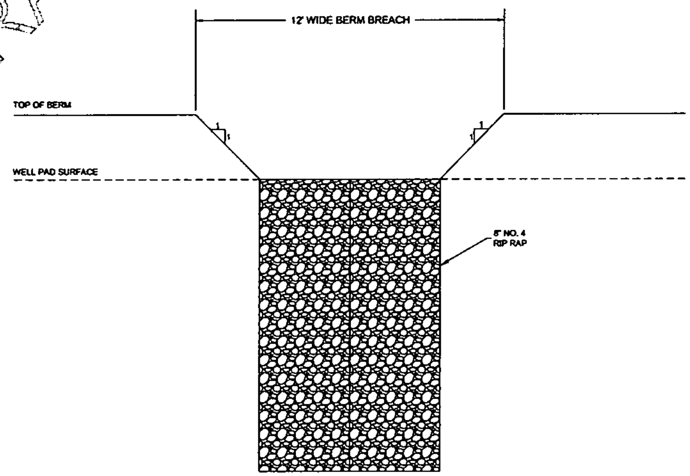


27/21 **PAD SUMP TYPICAL DETAIL**

NOT TO SCALE

DRAFT





28/21 **TYPICAL BERM BREACH**

NTS

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSHUA M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

SHEET 21

21 of 25

CAD FILE: C:\pwworking\...\EQT_CPT-10_NOTES_DETAILS.dwg LAYOUT: DETAILS (5) PLOTTED 7/1/2015

ROLLMAX™
ROLLED EROSION CONTROL

Specification Sheet – BioNet® C125BN™ Erosion Control Blanket

DESCRIPTION

The long-term double net erosion control blanket shall be a machine-produced mat of 100% coconut fiber with a functional longevity of up to 24 months. [illegible]

The C125BN shall meet Type 4 specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.17

Index Property	Test Method	Typical
Thickness	ASTM D6525	0.23 in. (5.84 mm)
Resiliency	ECTC Guidelines	85%
Water Absorbency	ASTM D1117	365%
Mass/Unit Area	ASTM 6475	9.71 oz/sy (330 g/m²)
Swell	ECTC Guidelines	40%
Smolder Resistance	ECTC Guidelines	Yes
Stiffness	ASTM D1388	[illegible]
Light Penetration	ASTM D6567	16.2%
Tensile Strength - MD	ASTM D6818	206.4 lbs/ft (3.06 kN/m)
Elongation - MD	ASTM D6818	15.7%
Tensile Strength - TD	ASTM D6818	145.2 lbs/ft (2.15 kN/m)
Elongation - TD	ASTM D6818	12.9%
Biomass Improvement	ASTM 7322	473%

Material Content

Matrix	100% Coconut Fiber	0.5 lbs/sq yd (0.27 kg/m²)
Netting	Leno Woven 100% biodegradable jute	9.3 lbs/1000 sq ft (4.5 kg/100 m²)
	100% Biodegradable Jute	7.7 lb/1000 sq ft (3.75 kg/100 m²)
Thread	Black polypropylene	

Design Permissible Shear Stress

Unvegetated Shear Stress	2.35 psf (112 Pa)
Unvegetated Velocity	10.0 fps (3.05 m/s)

Slope Design Data: C Factors

	Slope Gradients (S)		
Slope Length (L)	≤ 3:1	3:1 - 2:1	≥ 2:1
≤ 20 ft (6 m)	0.001	0.029	0.050
20-50 ft	0.001	0.043	0.063
≥ 50 ft (15.2 m)	0.007	0.070	0.070

Standard Roll Sizes

Width	6.67 (2.03 m)	8.0 ft (2.4 m)
Length	108 ft (32.92 m)	112 ft (34.14 m)
Weight ± 10%	42.22 lbs (19.15 kg)	65.75 lbs (29.82 kg)
Area	80 sq yd (66.9 m²)	100 sq yd (83.61 m²)
	Leno woven top only	Leno weave top and bottom

Roughness Coefficients - Unveg.

Flow Depth	Manning's n
≤ 0.50 ft (0.15 m)	0.022
0.50 - 2.0 ft	0.022-0.014
≥ 2.0 ft (0.60 m)	0.014

Tensar.
NORTH AMERICAN GREEN®

Propex International Corporation [illegible]

29/22 NORTH AMERICAN GREEN C125BN TURF REINFORCEMENT MATTING (OR EQUIVALENT)
NTS

ROLLMAX™
ROLLED EROSION CONTROL

Specification Sheet – VMax® C350® Turf Reinforcement Mat

DESCRIPTION

The composite turf reinforcement mat (C-TRM) shall be a machine-produced mat of 100% coconut fiber matrix incorporated into permanent three-dimensional turf reinforcement matting. [illegible]

The C350 shall meet Type 5A, B and C specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.18.

Index Property	Test Method	Typical
Thickness	ASTM D6525	0.73 in. (18.54 mm)
Resiliency	ASTM D6524	80%
Density	ASTM D792	[illegible]
Mass/Unit Area	ASTM D6566	[illegible]
UV Stability	ASTM D4355/1000 HR	85%
Porosity	ECTC Guidelines	99%
Stiffness	ASTM D1388	[illegible]
Light Penetration	ASTM D6567	7.7%
Tensile Strength - MD	ASTM D6818	[illegible]
Elongation - MD	ASTM D6818	45.1%
Tensile Strength - TD	ASTM D6818	[illegible]
Elongation - TD	ASTM D6818	11.5%
Biomass Improvement	ASTM D7322	380%

Material Content

Matrix	100% Coconut Fiber	0.5 lb/sy (0.27 kg/m²)
Netting	Top and Bottom, UV-Stabilized Polypropylene	[illegible]
	Middle, Corrugated UV-Stabilized Polypropylene	24 lb/1000 sf [illegible]
Thread	Polypropylene, UV Stable	

Design Permissible Shear Stress

	Short Duration	Long Duration
Phase 1 Unvegetated	3.2 psf (153 Pa)	3.0 psf (144 Pa)
Phase 2 Partially Veg.	10.0 psf (480 Pa)	10.0 psf (480 Pa)
Phase 3 Fully Veg.	12.0 psf (576 Pa)	10.0 psf (480 Pa)
Unvegetated Velocity	10.5 fps (3.2 m/s)	
Vegetated Velocity	20 fps (6.0 m/s)	

Standard Roll Sizes

Width	6.5 ft (2.0 m)
Length	55.5 ft (16.9 m)
Weight ± 10%	37 lbs (16.8 kg)
Area	40 sy (33.4 m²)

30/22 NORTH AMERICAN GREEN C350 TURF REINFORCEMENT MATTING (OR EQUIVALENT)
NTS

KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
IF DISTANCE BELOW PLOTS DIFFERENTLY, SCALE ACCORDINGLY
1 INCH

ORIGINAL DRAWING SIZE IS 22 x 34

DETAILS

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

22

SHEET 22 of 25

LEGEND

(line symbol)	EXISTING PROPERTY LINE
—G—G—	EXISTING GAS LINE
—E—E—	EXISTING OVERHEAD ELECTRIC SERVICE
(symbol)	EXISTING UTILITY POLE
(symbol)	EXISTING TREE LINE
(symbol)	EXISTING STRUCTURE
(W)	EXISTING WELL
(symbol)	DELINEATED STREAM
(symbol)	DELINEATED WETLAND
(symbol)	DELINEATED DRAINAGE FEATURE
(symbol)	EXISTING ROAD
—X—X—X—	EXISTING FENCE
(symbol)	FEMA FLOODPLAIN (N/A)
1360	EXISTING MAJOR CONTOUR (10')
	EXISTING MINOR CONTOUR (2')
—1360—	PROP. MAJOR CONTOUR (10')
(line symbol)	PROP. MAJOR CONTOUR (10')
(symbol)	PROP. LIMITS OF DISTURBANCE
(symbol)	PROP. PAD & ROAD EDGE
(symbol)	PROP. CULVERT
(symbol)	PROP. PAD PERIMETER SUMP
(W)	PROP. WELL HEAD
(symbol)	PROP. BREACHES
(symbol)	PROP. CHECK DAM
(symbol)	PROP. RIP RAP APRON
(symbol)	PROP. TOP OF SLOPE BERM

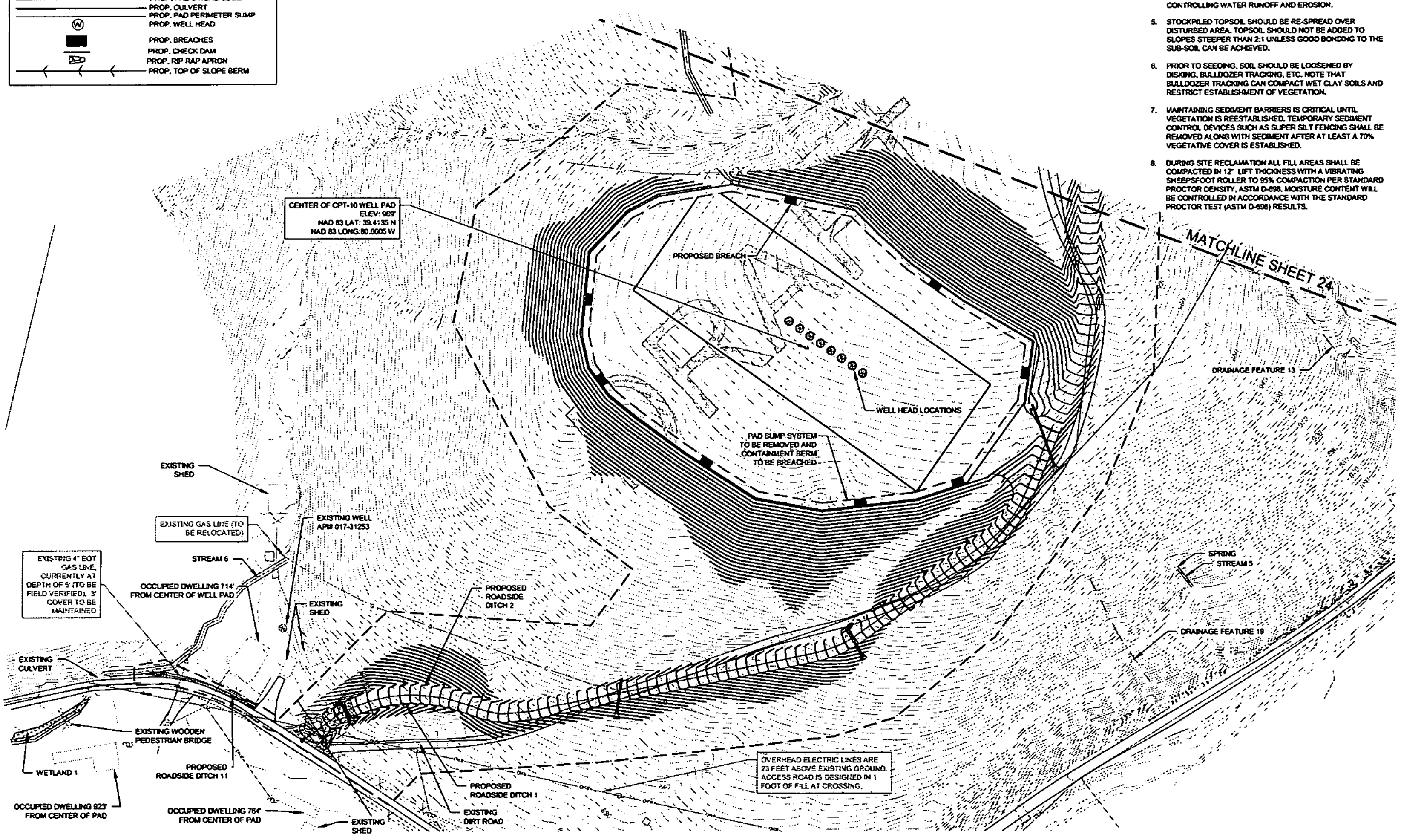
NOTES:

1. MUNICIPAL BOUNDARY LINES SHOWN ARE APPROXIMATE IN LOCATION, BASED ON MAPS BY OTHERS, AND MAY NOT CORRESPOND TO THE LEGAL LOCATION.
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE.
3. NO PERMANENT PUBLIC SANITARY SEWER NOR POTABLE WATER IS PROPOSED AT THE SITE.
4. NO BUFFER AREAS, PLANTINGS, OR LANDSCAPING ARE PROPOSED AT THE SITE. NO PERMANENT OPEN SPACE OR PUBLIC USE AREAS ARE PROPOSED AT THE SITE.
5. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE (FIRM) PANEL 54017C0045C INDICATE NO SPECIAL FLOOD HAZARD AREAS WITHIN THE PROJECT AREA.
6. ALL PROPOSED SLOPES ARE 2H:1V EXCEPT WHERE NOTED.
7. FILL OVER 50 VERTICAL FEET ON SPOIL PAD NEEDS A 12' BENCH.
8. FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 19.

NOTE:
ALL EROSION AND SEDIMENT DEVICES SHALL BE REMOVED UPON COMPLETION OF FINAL VEGETATION AND SITE STABILIZATION.

SITE RECLAMATION NOTES:

1. FLOWBACK PIT AND COMPLETION PIT, ALONG WITH THEIR ASSOCIATED TRUCK QUEUES SHALL BE RECLAIMED TO SURFACE OWNER'S SPECIFICATIONS OR AS CLOSE TO PRE-DISTURBED GRADES AS POSSIBLE. THE PIT LINER AND ANY REMAINING FLUID SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.
2. DRILL CUTTINGS, DRILLING MUD AND LINER, FOR WELLS PERMITTED UNDER WV CODE 22-6A AND 35CSR-8, MUST BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED SOLID WASTE FACILITY OR IF THE SURFACE OWNER CONSENTS THE DRILL-CUTTINGS AND ASSOCIATED DRILLING MUD MAY BE MANAGED ON SITE IN A MANNER APPROVED BY THE SECRETARY.
3. THE OPERATOR SHALL GRADE OR TERRACE AND PLANT, SEED OR SOD THE AREA DISTURBED THAT IS NOT REQUIRED IN PRODUCTION OF THE WELL IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.
4. INSTALL ALL PERMANENT WATER DRAINAGE AND DIVERSION DITCHES. IN AREAS OF LONG SLOPES, IT MAY BE DESIRABLE TO INSTALL ANGLED DIVERSION DITCHES TO AID IN CONTROLLING WATER RUNOFF AND EROSION.
5. STOCKPILED TOPSOIL SHOULD BE RE-SPREAD OVER DISTURBED AREA. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS GOOD BONDING TO THE SUB-SOIL CAN BE ACHIEVED.
6. PRIOR TO SEEDING, SOIL SHOULD BE LOOSENED BY DISKING, BULLDOZER TRACKING, ETC. NOTE THAT BULLDOZER TRACKING CAN COMPACT WET CLAY SOILS AND RESTRICT ESTABLISHMENT OF VEGETATION.
7. MAINTAINING SEDIMENT BARRIERS IS CRITICAL UNTIL VEGETATION IS REESTABLISHED. TEMPORARY SEDIMENT CONTROL DEVICES SUCH AS SUPER SILT FENCING SHALL BE REMOVED ALONG WITH SEDIMENT AFTER AT LEAST A 70% VEGETATIVE COVER IS ESTABLISHED.
8. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 12" LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698. MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM D-698) RESULTS.



KLEINFELDER
Bright People. Right Solutions.

230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60'   SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

RECLAMATION PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

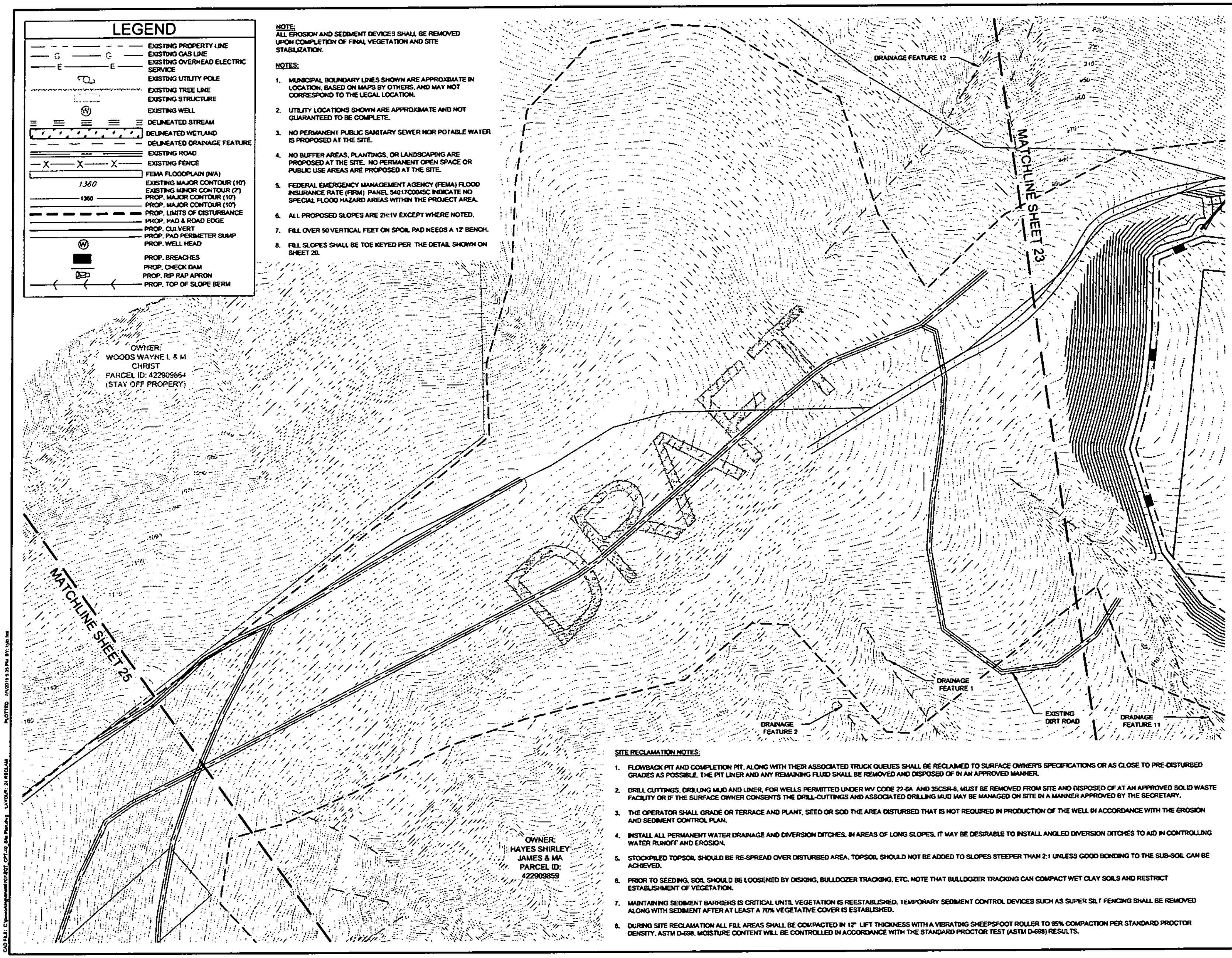
EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137353
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

23

SHEET 23 of 25



LEGEND

- EXISTING PROPERTY LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC SERVICE
- EXISTING UTILITY POLE
- EXISTING TREE LINE
- EXISTING STRUCTURE
- EXISTING WELL
- DELINEATED STREAM
- DELINEATED WETLAND
- DELINEATED DRAINAGE FEATURE
- EXISTING ROAD
- EXISTING FENCE
- FEMA FLOODPLAIN (N/A)
- 1360 — EXISTING MAJOR CONTOUR (10')
- EXISTING MINOR CONTOUR (2')
- 1360 — PROP. MAJOR CONTOUR (10')
- PROP. MAJOR CONTOUR (10')
- PROP. LIMITS OF DISTURBANCE
- PROP. PAD & ROAD EDGE
- PROP. CULVERT
- PROP. PAD PERIMETER SUMP
- PROP. WELL HEAD
- PROP. BREACHES
- PROP. CHECK DAM
- PROP. RIP RAP APRON
- PROP. TOP OF SLOPE BERM

NOTE:
ALL EROSION AND SEDIMENT DEVICES SHALL BE REMOVED UPON COMPLETION OF FINAL VEGETATION AND SITE STABILIZATION.

NOTES:

1. MUNICIPAL BOUNDARY LINES SHOWN ARE APPROXIMATE IN LOCATION, BASED ON MAPS BY OTHERS, AND MAY NOT CORRESPOND TO THE LEGAL LOCATION.
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE.
3. NO PERMANENT PUBLIC SANITARY SEWER NOR POTABLE WATER IS PROPOSED AT THE SITE.
4. NO BUFFER AREAS, PLANTINGS, OR LANDSCAPING ARE PROPOSED AT THE SITE. NO PERMANENT OPEN SPACE OR PUBLIC USE AREAS ARE PROPOSED AT THE SITE.
5. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE (FIRM) PANEL 54017C0045C INDICATE NO SPECIAL FLOOD HAZARD AREAS WITHIN THE PROJECT AREA.
6. ALL PROPOSED SLOPES ARE 2H:1V EXCEPT WHERE NOTED.
7. FILL OVER 50 VERTICAL FEET ON SPOIL PAD NEEDS A 12' BENCH.
8. FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 20.

SITE RECLAMATION NOTES:

1. FLOWBACK PIT AND COMPLETION PIT, ALONG WITH THEIR ASSOCIATED TRUCK QUEUES SHALL BE RECLAIMED TO SURFACE OWNER'S SPECIFICATIONS OR AS CLOSE TO PRE-DISTURBED GRADES AS POSSIBLE. THE PIT LINER AND ANY REMAINING FLUID SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.
2. DRILL CUTTINGS, DRILLING MUD AND LINER, FOR WELLS PERMITTED UNDER WV CODE 22-6A AND 35CSR-8, MUST BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED SOLID WASTE FACILITY OR IF THE SURFACE OWNER CONSENTS THE DRILL-CUTTINGS AND ASSOCIATED DRILLING MUD MAY BE MANAGED ON SITE IN A MANNER APPROVED BY THE SECRETARY.
3. THE OPERATOR SHALL GRADE OR TERRACE AND PLANT, SEED OR SOD THE AREA DISTURBED THAT IS NOT REQUIRED IN PRODUCTION OF THE WELL IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.
4. INSTALL ALL PERMANENT WATER DRAINAGE AND DIVERSION DITCHES. IN AREAS OF LONG SLOPES, IT MAY BE DESIRABLE TO INSTALL ANGLED DIVERSION DITCHES TO AID IN CONTROLLING WATER RUNOFF AND EROSION.
5. STOCKPILED TOPSOIL SHOULD BE RE-SPREAD OVER DISTURBED AREA. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS GOOD BONDING TO THE SUB-SOIL CAN BE ACHIEVED.
6. PRIOR TO SEEDING, SOIL SHOULD BE LOOSENED BY DISKING, BULLDOZER TRACKING, ETC. NOTE THAT BULLDOZER TRACKING CAN COMPACT WET CLAY SOILS AND RESTRICT ESTABLISHMENT OF VEGETATION.
7. MAINTAINING SEDIMENT BARRIERS IS CRITICAL UNTIL VEGETATION IS REESTABLISHED. TEMPORARY SEDIMENT CONTROL DEVICES SUCH AS SUPER SILT FENCING SHALL BE REMOVED ALONG WITH SEDIMENT AFTER AT LEAST A 70% VEGETATIVE COVER IS ESTABLISHED.
8. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 12" LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698. MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM D-698) RESULTS.

KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

RECLAMATION PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets innovation.

PERMITTING

PROJECT NO.	137355
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

24

SHEET 24 of 25

NOTES:

1. MUNICIPAL BOUNDARY LINES SHOWN ARE APPROXIMATE IN LOCATION, BASED ON MAPS BY OTHERS, AND MAY NOT CORRESPOND TO THE LEGAL LOCATION.
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE.
3. NO PERMANENT PUBLIC SANITARY SEWER NOR POTABLE WATER IS PROPOSED AT THE SITE.
4. NO BUFFER AREAS, PLANTINGS, OR LANDSCAPING ARE PROPOSED AT THE SITE. NO PERMANENT OPEN SPACE OR PUBLIC USE AREAS ARE PROPOSED AT THE SITE.
5. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE (FIRM) PANEL 54017C0045C INDICATE NO SPECIAL FLOOD HAZARD AREAS WITHIN THE PROJECT AREA.
6. ALL PROPOSED SLOPES ARE 2H:1V EXCEPT WHERE NOTED.
7. FILL OVER 50 VERTICAL FEET ON SPOIL PAD NEEDS A 12' BENCH.
8. FILL SLOPES SHALL BE TOE KEYED PER THE DETAIL SHOWN ON SHEET 20.

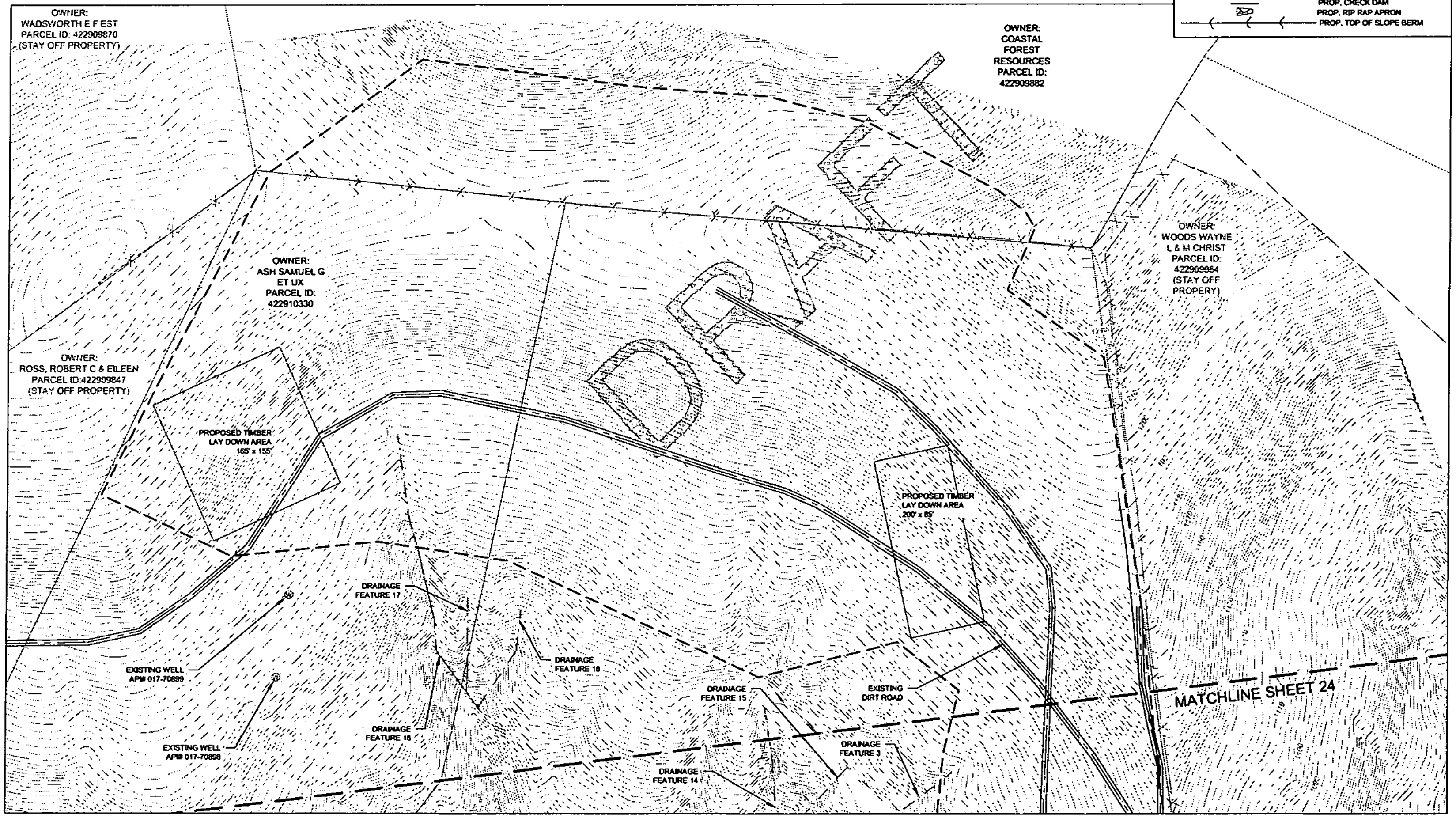
NOTE:
ALL EROSION AND SEDIMENT DEVICES SHALL BE REMOVED UPON COMPLETION OF FINAL VEGETATION AND SITE STABILIZATION.

SITE RECLAMATION NOTES:

1. FLOWBACK PIT AND COMPLETION PIT, ALONG WITH THEIR ASSOCIATED TRUCK QUEUES SHALL BE RECLAIMED TO SURFACE OWNER'S SPECIFICATIONS OR AS CLOSE TO PRE-DISTURBED GRADES AS POSSIBLE. THE PIT LINER AND ANY REMAINING FLUID SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.
2. DRILL CUTTINGS, DRILLING MUD AND LINER, FOR WELLS PERMITTED UNDER WV CODE 22-6A AND 35CSR-8, MUST BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED SOLID WASTE FACILITY OR IF THE SURFACE OWNER CONSENTS THE DRILL-CUTTINGS AND ASSOCIATED DRILLING MUD MAY BE MANAGED ON SITE IN A MANNER APPROVED BY THE SECRETARY.
3. THE OPERATOR SHALL GRADE OR TERRACE AND PLANT, SEED OR SOD THE AREA DISTURBED THAT IS NOT REQUIRED IN PRODUCTION OF THE WELL IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.
4. INSTALL ALL PERMANENT WATER DRAINAGE AND DIVERSION DITCHES. IN AREAS OF LONG SLOPES, IT MAY BE DESIRABLE TO INSTALL ANGLED DIVERSION DITCHES TO AID IN CONTROLLING WATER RUNOFF AND EROSION.
5. STOCKPILED TOPSOIL SHOULD BE RE-SPREAD OVER DISTURBED AREA. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS GOOD BONDING TO THE SUB-SOIL CAN BE ACHIEVED.
6. PRIOR TO SEEDING, SOIL SHOULD BE LOOSENED BY DISKING, BULLDOZER TRACKING, ETC. NOTE THAT BULLDOZER TRACKING CAN COMPACT WET CLAY SOILS AND RESTRICT ESTABLISHMENT OF VEGETATION.
7. MAINTAINING SEDIMENT BARRIERS IS CRITICAL UNTIL VEGETATION IS REESTABLISHED. TEMPORARY SEDIMENT CONTROL DEVICES SUCH AS SUPER SILT FENCING SHALL BE REMOVED ALONG WITH SEDIMENT AFTER AT LEAST A 70% VEGETATIVE COVER IS ESTABLISHED.
8. DURING SITE RECLAMATION ALL FILL AREAS SHALL BE COMPACTED IN 12" LIFT THICKNESS WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTOR DENSITY, ASTM D-698. MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM D-698) RESULTS.

LEGEND

- EXISTING PROPERTY LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC SERVICE
- EXISTING UTILITY POLE
- EXISTING TREE LINE
- EXISTING STRUCTURE
- EXISTING WELL
- DELINEATED STREAM
- DELINEATED WETLAND
- DELINEATED DRAINAGE FEATURE
- EXISTING ROAD
- EXISTING FENCE
- FEMA FLOODPLAIN (N/A)
- 1360 EXISTING MAJOR CONTOUR (10')
- EXISTING MINOR CONTOUR (2')
- 1360 PROP. MAJOR CONTOUR (10')
- PROP. MAJOR CONTOUR (10')
- PROP. LIMITS OF DISTURBANCE
- PROP. PAD & ROAD EDGE
- PROP. CULVERT
- PROP. PAD PERIMETER SUMP
- PROP. WELL HEAD
- PROP. BREACHES
- PROP. CHECK DAM
- PROP. RIP RAP APRON
- PROP. TOP OF SLOPE BERM



KLEINFELDER
Bright People. Right Solutions.
230 Executive Drive, Suite 122
Cranberry Township, PA 16066
Phone: 724-772-7072
www.kleinfelder.com

JOSH M. FARLEY REGISTERED 20711 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signed By: JOSHUA M. FARLEY, W.V. P.E. # 20711

REVISIONS

REV	DESCRIPTION	DSN / DWN	CHK / APP	DATE

ISSUED FOR PERMITTING
NOT RELEASED FOR CONSTRUCTION

SCALE VERIFICATION
1 INCH
ADJUST SCALE ACCORDINGLY IF DISTANCE PLOTS DIFFERENTLY

0 60 120 180
SCALE: 1" = 60' SCALE IN FEET
ORIGINAL DRAWING SIZE IS 22 x 34

RECLAMATION PLAN

CPT-10 WELL PAD
DODDRIDGE COUNTY
WEST VIRGINIA

EQT
Where energy meets Innovation.

PERMITTING

PROJECT NO.	137353
ISSUE DATE	07/01/2015
CURRENT REVISION	-
DESIGNED BY	AER
DRAWN BY	AER
CHECKED BY	JMF
APPROVED BY	JMF

25

SHEET 25 of 25

APPENDIX D

Agency Correspondence Letters

- USFWS
- WVSHPO

KLEINFELDER
Bright People. Right Solutions.

July 24, 2015

Mr. John Schmidt
Endangered Species Biologist
United States Fish and Wildlife Service
West Virginia Field Office
694 Beverly Pike
Elkins, West Virginia 26241

Re: Threatened and Endangered Species Consultation
CPT-10 Well Pad Project
Doddridge County, West Virginia
EQT Production Company

Dear Mr. Schmidt:

Kleinfelder, Inc. (Kleinfelder) is submitting this consultation on behalf of EQT Production Company (EQT) for the CPT-10 Well Pad Project (Project).

1.0 PROJECT DESCRIPTION

EQT is proposing to construct a well pad, completion pit, flowback pit, and associated access roads in Doddridge County, West Virginia (WV) (Figure 1). Site location maps are provided as Figure 1 (Project Location Map) and Figure 2 (Aerial Imagery Map). A review of the United States Fish and Wildlife Service (USFWS) Terrestrial and Aquatic buffer shapefiles, provided to Kleinfelder by the USFWS on June 25, 2015 and July 1, 2015, respectively, indicates no buffers occur within the 110.0-acre area of interest (AOI) (Figures 1 and 2). No National Wetland Inventory wetlands or National Hydrography Dataset streams occur in the AOI. Additionally, the AOI is not located within any known Federal Emergency Management Agency (FEMA) 100-year flood zones. The entire AOI is within the Middle Ohio North watershed, HUC-05030201. In order to protect on-site water quality, EQT will implement erosion and sediment controls within the limit of disturbance (LOD).

2.0 DELINEATION FINDINGS

Kleinfelder biologists conducted stream and wetland investigations and habitat assessments on October 30 – 31, 2013, August 19, 2014, February 2, 2015, and June 8, 2015 within the 110.0-acre AOI surrounding the Project. Seven (7) aquatic features were identified which consisted of one (1) intermittent stream, five (5) ephemeral streams and one (1) palustrine emergent (PEM) wetland (Figure 2).

3.0 SITE DESCRIPTION

Land cover types within the AOI consist primarily of deciduous forest and open pasture. The forested community is dominated by American beech (*Fagus grandifolia*), eastern white pine (*Pinus strobus*), shagbark hickory (*Carya ovata*), red oak (*Quercus rubra*), sugar maple (*Acer saccharum*), and white oak (*Quercus alba*).

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 p | 724.772.7072 f | 724.772.7079

4.0 THREATENED AND ENDANGERED SPECIES IN DODDRIDGE COUNTY, WEST VIRGINIA

The USFWS lists 18 animal species occurring within WV as either endangered or threatened. The table below summarizes the species that are known to occur within Doddridge County or are not defined at a county level.

Table 2: Threatened and Endangered Species Potentially Occurring or Known to Occur in Doddridge County

Common Name	Scientific Name	Status
gray bat	*Myotis grisescens*	Endangered
Indiana bat	*Myotis sodalis*	Endangered
northern long-eared bat	*Myotis septentrionalis*	Threatened
clubshell	*Pleurobema clava*	Endangered
sheepnose mussel	*Plethobasus cyphyus*	Endangered
snuffbox mussel	*Epioblasma triquetra*	Endangered
spectaclecase (mussel)	*Cumberlandia monodonta*	Endangered
diamond darter	*Crystallaria cincotta*	Endangered
rufa red knot	*Calidris canutus rufa*	Threatened

5.0 POTENTIAL THREATENED AND ENDANGERED SPECIES HABITAT IN PROJECT AOI

Gray Bat

The gray bat roosts in caves year-round. A desktop review was conducted within a 2-mile radius of the proposed Project using topographic and aerial maps, historic mine data, and posted surface and underground mining permits within WV. The desktop review concluded there are no active surface or underground mining permits occurring within the AOI or 2-mile buffer of the Project. In addition, Kleinfelder staff biologists did not identify any caves or mine portals within the Project AOI during the site reviews. As a result, no impacts are proposed to caves or mine portals. Project-related activities will be confined to the permitted LOD.

Indiana Bat

During the site reviews, Kleinfelder assessed the on-site bat habitat and collected three (3) bat habitat sample points (Figure 2). The majority of the Project AOI contains mature upland forest with tree sizes ranging from approximately 10 to 30 inches diameter at breast height. Fourteen (14) potentially suitable secondary roost trees were observed within the AOI and two (2) of these potentially suitable secondary roosts were found within the LOD. No potentially suitable primary roost trees were identified within the AOI or proposed LOD. Kleinfelder Biologists referenced the *USFWS 2007 Indiana Bat (Myotis sodalis) Draft Recovery Plan* and USFWS WV Field Office's *Guidance on Developing and Implementing a Myotid Bat Conservation Plan* for guidance on distinguishing primary roost trees from secondary roost trees (Attachment A). Open access roads, county roads, and tree-lined pastures were observed and could potentially serve as flight corridors and foraging habitat. In addition, a large perennial stream, Broad Run, occurs adjacent to the AOI and could serve as a potentially suitable flight corridor and foraging habitat. Due to the presence of potentially suitable roost trees, migratory habitat, and foraging habitat, the proposed Project AOI contains good habitat for the Indiana bat.

The Indiana bat roosts in caves during the winter. A desktop review was conducted within a 2-mile radius of the proposed Project using topographic and aerial maps, historic mine data, and posted underground and surface mining permits within WV. The desktop review concluded there are no active surface or underground mining permits occurring within the AOI or 2-mile buffer of the Project. In addition, Kleinfelder staff biologists

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 p | 724.772.7072 f | 724.772.7079

did not identify any caves or mine portals within the Project AOI during the site reviews. As a result, no impacts are proposed to caves or mine portals. Project-related activities will be confined to the permitted LOD.

The proposed Project LOD will be 40.4 acres, of which approximately 32.1 acres are forested (based on GIS reviews of aerial photography). There are 8,042 pre-construction acres of land within a 2-mile radial buffer surrounding the proposed center point of the Project, of which 7,357 acres are forested. The post-construction forested land would be 7,324.9 acres within the 2-mile radial buffer. In Kleinfelder's professional opinion, sufficient forested habitat will remain on the post-construction landscape and the Project will not have an adverse effect on the Indiana bat or its habitat. Additionally, EQT proposes to conduct winter clearing between November 15, 2015 and March 31, 2016 while the Indiana bat is in hibernation.

Northern Long-Eared Bat

Since the time of the initial bat assessment, the northern long-eared bat (NLEB) was listed as threatened with an interim 4(d) rule under the Endangered Species Act. The final listing and interim rule became effective on May 4, 2015. The NLEB shares similar ecological needs to the Indiana bat and the assessment of the Project's potential effects on Indiana bats provided above are also applicable to the NLEB. However, the NLEB prefers to forage on forested hillsides and ridge-tops.

The Project AOI provides the NLEB with forested hillsides that could potentially serve as suitable foraging habitat. Due to the presence of potentially suitable migratory habitat, potentially suitable foraging habitat, and the presence of potential roost trees within the AOI, the proposed Project AOI contains good habitat for the NLEB. As such, EQT proposes to conduct winter clearing between November 15, 2015 and March 31, 2016 while the NLEB is in hibernation. The post-construction forested land would be 7,324.9 acres of the 7,357 acres of pre-construction forested land within the 2-mile radial buffer.

Mussels

There are no federal or state listed mussel streams within the Project AOI; therefore, impacts to mussel species are not anticipated by the proposed Project. The closest USFWS aquatic buffer is approximately 0.35 mile southwest of the proposed LOD and is associated with McElroy Creek. EQT will implement erosion and sediment control plans within the LOD in order to protect on-site water quality.

Diamond Darter

The diamond darter prefers sand and gravel dominated riverbeds. There are 122.5 miles of river that is considered critical habitat for this species. The only known population in WV exists in the lower Elk River of Clay and Kanawha Counties. The proposed Project is approximately 58.8 miles northeast of this critical habitat. The streams within the AOI do not have a direct hydrologic connection to Elk River; therefore impacts to the diamond darter resulting from the proposed Project are not anticipated.

Rufa Red Knot

The range of the rufa red knot includes coastal and inland habitats located in several regions within the western hemisphere. This species migrates between its breeding grounds in the Canadian Artic to several wintering regions annually. These wintering regions include the southeast United States, the northwest Gulf of Mexico, northern Brazil and Tierra del Fuego at the southern tip of South America. The proposed Project is located within the range for this species, but is not located within known breeding or wintering habitat. The nearest known habitat for the rufa red knot is Delaware Bay and is located approximately 282.1 miles east of the Project. Currently no critical habitat has been designated for this species. Impacts to the rufa red knot resulting from the proposed Project are not anticipated.

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 p | 724.772.7072 f | 724.772.7079

6.0 PROPOSED IMPACTS

The Project proposes impacts to potentially suitable foraging, migratory, and roosting habitat for the Indiana bat and NLEB. The Conservation Plan provided in Appendix A describes the proposed impacts as well as proposed avoidance and minimization measures. EQT proposes to conduct winter clearing of 32.1 forested acres between November 15, 2015 and March 31, 2016 while the Indiana bat and NLEB are in hibernation. Forested habitat remaining within a 2-mile buffer of the proposed Project would be approximately 7,324.9 acres (99.6% of forest remaining within a 2-mile buffer). Based on the proposed compensation measures (Appendix A) and the lack of state or federally listed mussel streams within the AOI, the Project is not anticipated to adversely affect the Indiana bat, NLEB, or other state or federally listed species.

7.0 AVOIDANCE & MINIMIZATION

To the extent practicable, the location of the proposed Project was developed to avoid and minimize aquatic feature, foraging, and migratory impacts as well as minimize forest clearing. Field data collected during stream and wetland delineations provided the basis for adjusting the Project location in a manner that minimized and avoided impacts to aquatic habitats and biological features. As result, project overlap with Broad Run and a USFWS aquatic buffer was avoided. However, EQT plans to implement erosion and sediment controls plans to protect on-site water quality within the LOD. Two (2) potentially suitable secondary roost trees identified within the LOD will be impacted by the proposed Project; therefore, minimal impacts to the potential roosting habitat of the Indiana bat and NLEB are anticipated (Figure 2). Additionally, forested clearing will be conducted between November 15, 2015 and March 31, 2016, to avoid any potential impacts to the Indiana bat and NLEB.

8.0 CONCLUSION

Kleinfelder requests any additional information concerning the potential occurrence of threatened and endangered species and their critical habitat within a 0.5-mile radius of the proposed Project and concurrence that the CPT-10 Well Pad Project will not adversely affect endangered species.

We appreciate your timely review of this request. Please contact Matthew Albright (724-831-5101) of Kleinfelder or Lacoa Corder (304-848-0066) of EQT with any questions.

Respectfully submitted,

Matthew Albright
Project Manager

Enclosures (3)
- Figure 1 –Project Location Map
- Figure 2 – Aerial Imagery Map
- Appendix A – Myotid Conservation Plan

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 **p** | 724.772.7072 **f** | 724.772.7079

MYOTID CONSERVATION PLAN
FOR THE
CPT-10 WELL PAD PROJECT

DODDRIDGE COUNTY, WEST VIRGINIA

PREPARED FOR:

EQT

Where energy meets innovation.

EQT PRODUCTION COMPANY
120 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330

PREPARED BY:

KLEINFELDER
Bright People. Right Solutions.

KLEINFELDER, INC.
230 EXECUTIVE DRIVE, SUITE 122
CRANBERRY TOWNSHIP, PA 16066

JULY 24, 2015

Indiana Bat/Northern Long-Eared Bat Summary Sheet for Option 1: Assumption of Presence

Project Name: CPT-10 Well Pad Project

Project Location: 39.411532°, -80.661258°

County: Doddridge County

Project type: non-linear

(**2-mile buffer** from centerpoint for non-linear; **¼-mile buffer** around centerline for linear)

 # acres within Limits-of-Disturbance (LOD): 40.4

 # acres forest in LOD prior to project construction: 32.1

 # acres forest in LOD following to project construction: 0.0

Total # acres in buffer area: 8,042

(**2-mile buffer** from centerpoint for non-linear; **¼-mile buffer** around centerline for linear)
(2-mile buffer area is always 8,042 acres for non-linear projects)

 # forested acres in buffer area prior to project construction: 7,357

 # forested acres in buffer area after project construction: 7,324.9

Caves/mine portal presence? No

***If yes,* suitable habitat?** N/A

 # Potential Indiana Bat Primary Roost Trees within clearing limits: 0

 # Potential Indiana Bat Primary Roost Trees to be avoided: 0

 # Potential Indiana Bat Secondary Roost Trees within clearing limits: 2

 # Potential Indiana Bat Secondary Roost Trees to be avoided: 12

#Potential NLEB Primary Roost Tree within clearing limits: 2 (same trees identified for Indiana Bat)

#Potential NLEB Primary Roost Trees to be avoided: 12 (same trees identified for Indiana Bat)

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 p | 724.772.7072 f | 724.772.7079

Avoidance and Minimization Measures to be Applied on Project

- X Seasonal tree clearing (all trees greater than 3" DBH) **REQUIRED**
- X Avoid cutting potential roost trees
- ☐ Avoid high quality foraging areas
- X Minimize limits of disturbance (narrowed LOD or ROW)
- X Minimize impacts (clearing) around suitable swarming and summer habitat and wetland/riparian zones
- ☐ 50-foot or greater forested buffer left along both sides of streams
- X Collocate project features with previously disturbed or cleared areas
- ☐ Phase tree clearing over multiple years
- ☐ Reforest disturbed areas
- ☐ Restore or enhanced riparian/wetland areas
- X Strong erosion and sedimentation best management practices
- X Pollution control plan in place
- ☐ Suitable habitat acreage permanently preserved within or adjacent to the project site
- ☐ Other:_____
- ☐ Other:_____
- ☐ Other:_____
- ☐ Other:_____

Conservation Measures to be Applied on Project

- X Girdling trees on a 1:1 ratio for each potential roost tree that is lost during project development
- ☐ Erecting artificial roosting structures on a 1:1 ratio for each potential primary roost tree that is lost during project development (a 2-year minimum monitoring plan of artificial structures)
- ☐ Erecting artificial bark, bat boxes, or other artificial roosting structures (a 2-year minimum monitoring plan of artificial structures)
- ☐ Preservation of suitable Indiana bat and/or NLEB habitat off-site
- ☐ Creation of watering areas, wetlands, or ponds
- ☐ Other:_____
- ☐ Other:_____
- ☐ Other:_____

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 p | 724.772.7072 f | 724.772.7079

1.0 PROJECT DESCRIPTION

EQT is proposing to construct a well pad, completion pit, flowback pit, and associated access roads in Doddridge County, West Virginia (WV) (Figure 1). Site location maps are provided as Figure 1 (Project Location Map) and Figure 2 (Aerial Imagery Map). A review of the United States Fish and Wildlife Service (USFWS) Terrestrial and Aquatic buffer shapefiles, provided to Kleinfelder by the USFWS on June 25, 2015 and July 1, 2015, respectively, indicates no buffers occur within the 110.0-acre area of interest (AOI) (Figures 1 and 2). No National Wetland Inventory wetlands or National Hydrography Dataset streams occur in the AOI. Additionally, the AOI is not located within any known Federal Emergency Management Agency (FEMA) 100-year flood zones. The entire AOI is within the Middle Ohio North watershed, HUC-05030201. In order to protect on-site water quality, EQT will implement erosion and sediment controls within the limit of disturbance (LOD).

2.0 DELINEATION FINDINGS

Kleinfelder biologists conducted stream and wetland investigations and habitat assessments on October 30 – 31, 2013, August 19, 2014, February 2, 2015, and June 8, 2015 within the 110.0-acre AOI surrounding the Project. Seven (7) aquatic features were identified which consisted of one (1) intermittent stream, five (5) ephemeral streams and one (1) palustrine emergent (PEM) wetland (Figure 2).

Table 1: Aquatic Features Identified in the Project AOI

Feature Name	Classification	Local Waterway	OHWM[1] Width (feet)	Location within AOI
Streams				
Stream 1	Ephemeral	Unnamed Tributary (UNT) to Broad Run	4.5	Southwest
Stream 2	Ephemeral	UNT to Broad Run	4.5	Southwest
Stream 3	Ephemeral	UNT to Broad Run	5	Southwest
Stream 4	Ephemeral	UNT to Broad Run	4.5	Southwest
Stream 5	Ephemeral	UNT to Broad Run	0.7	East
Stream 6	Intermittent	UNT to Broad Run	4	Southeast
Wetlands				
Wetland 1	PEM	N/A	N/A	Southeast

Notes:

1. Ordinary High Water Mark

3.0 SITE DESCRIPTION

Land cover types within the AOI consist primarily of deciduous forest and open pasture. The forested community is dominated by American beech (*Fagus grandifolia*), eastern white pine (*Pinus strobus*), shagbark hickory (*Carya ovata*), red oak (*Quercus rubra*), sugar maple (*Acer saccharum*), and white oak (*Quercus alba*).

4.0 PROPOSED IMPACTS

The proposed Project LOD will impact approximately 40.4 acres, of which 32.1 acres are forested (based on GIS reviews of aerial photography). There are 8,042 acres of land within a 2-mile radial buffer surrounding the proposed center point of the Project. The wooded acreage of this buffer area is 7,357 acres. Post-construction wooded acreage would be 7,324.9 acres, which would amount to 99.6% forested land remaining

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 **p** | 724.772.7072 **f** | 724.772.7079

within a 2-mile buffer. To avoid impacts to the Indiana bat and northern long-eared bat (NLEB), EQT proposes to complete winter tree clearing between November 15, 2015 and March 31, 2016 while these species are in hibernation. It is Kleinfelder's professional opinion that sufficient forested habitat will remain on the post-construction landscape to support the Indiana bat and NLEB.

5.0 POTENTIAL HABITAT IN PROJECT AOI

Caves and Mine Portals

The Indiana bat and NLEB roosts in caves during the winter. A desktop review was conducted within a 2-mile radius of the proposed Project using topographic and aerial maps, historic mine data, and posted surface and underground mining permits within WV. The desktop review concluded there are no active surface or underground mining permits occurring within the AOI or 2-mile buffer of the Project. In addition, Kleinfelder staff biologists did not identify any caves or mine portals within the Project AOI during the site reviews. As a result, no impacts are proposed to caves or mine portals. Project-related activities will be confined to the permitted LOD.

Forested Habitat

During the stream and wetland delineation activities performed on October 30 – 31, 2013, August 19, 2014, February 2, 2015, and June 8, 2015, Kleinfelder assessed the on-site bat habitat. Vegetative cover was evaluated for potentially suitable summer habitat. The *2015 Range-Wide Indiana Bat Summer Survey Guidelines* along with habitat specifications outlined in the *USFWS 2007 Indiana Bat (Myotis sodalis) Draft Recovery Plan* and USFWS WV Field Office's Guidance on Developing and Implementing a Myotid Bat Conservation Plan were used as a reference to determine potential summer and winter habitats. Kleinfelder Biologists assessed potentially suitable roost trees within the AOI and characterized roost trees and/or snags as either primary or secondary. Primary roost trees, also known as maternity roost trees, typically have an average diameter at breast height (DBH) of 18 inches, direct sunlight for more than half the day, are in the early-to-mid stages of decay, and contain large, thick slabs of exfoliating bark. In addition to these conditions, primary roost trees suitable for the NLEB may also contain cavities underneath the bark, crevices, or hollows of both live and dead trees and/or snags. Secondary roost trees do not meet the primary specifications listed above; however have the potential to support roosting habitat for the Indiana bat and NLEB. The NLEB shares similar ecological needs with the Indiana bat and the assessment of the Project's potential effects on the summer roosting, migratory habitats, and winter hibernacula of the Indiana bat provided in this plan are also applicable to the NLEB. In addition to riparian areas, the NLEB utilizes forested hillsides and ridge-tops as foraging habitat. Therefore, the foraging habitat of the NLEB is discussed separately in this conservation plan.

Fourteen (14) potentially suitable secondary roost trees were identified within the AOI (Figure 2, Table 2). No potentially suitable primary roost trees were identified within the AOI. Of the 14 potentially suitable secondary roost trees, two (2) potentially suitable secondary roost trees were located within the proposed LOD and 12 potentially suitable secondary roost trees were located outside of the LOD, in areas not proposed for tree clearing. Potentially suitable secondary roost trees proposed for cutting (inside LOD) are located within a forested landscape on relatively steep hillsides, which provide potentially suitable foraging habitat for the NLEB. However, most of the potentially suitable secondary roost trees have limited exposure to sun and wind and are located in areas where the overall usable habitat is low. Most of these trees are located near travel corridors and the potentially suitable foraging and migratory habitat provided by Broad Run, a large perennial stream adjacent to the Project.

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 **p** | 724.772.7072 **f** | 724.772.7079

Open access roads, county roads, and tree-lined pastures were observed and could potentially serve as flight corridors and foraging habitat. In addition, a large perennial stream, Broad Run, runs along the south border of the AOI and could serve as a potentially suitable flight corridor and foraging habitat. Due to the presence of potentially suitable roost trees, migratory and foraging habitat, the proposed Project AOI contained good habitat for the Indiana bat and NLEB. The table below summarizes the results of the habitat assessment including the average DBH of tree species.

Table 2: Potential Roost Tree (PRT) Information

Tree Location ID #	*Species*	Classification	DBH (in)	Live/Dead	Coordinates		Trees Cut in LOD/ Trees Avoided[1]
					Latitude	Longitude	
PRT-01	*Carya ovata*	Secondary	30	Live	39.411657	-80.660318	Avoid
PRT-02	*Carya ovata*	Secondary	18	Live	39.411885	-80.660116	Avoid
PRT-03	*Carya ovata*	Secondary	18	Live	39.412816	-80.659052	Avoid
PRT-04	*Carya ovata*	Secondary	10	Live	39.412888	-80.659051	Avoid
PRT-05	*Carya ovata*	Secondary	14	Live	39.412960	-80.659018	Avoid
PRT-06	*Carya ovata*	Secondary	12	Live	39.413124	-80.659281	Cut
PRT-07	*Carya ovata*	Secondary	10	Live	39.413260	-80.658964	Avoid
PRT-08	*Carya ovata*	Secondary	12	Live	39.413318	-80.658654	Avoid
PRT-09	*Carya ovata*	Secondary	12	Live	39.414434	-80.659229	Avoid
PRT-10	*Carya ovata*	Secondary	10	Live	39.414691	-80.659287	Avoid
PRT-11	*Carya ovata*	Secondary	10	Live	39.414473	-80.659467	Avoid
PRT-12	N/A	Secondary	12	Dead	39.416599	-80.663275	Avoid
PRT-13	N/A	Secondary	30	Dead	39.416700	-80.662464	Cut
PRT-14	*Carya ovata*	Secondary	12	Live	39.413075	-80.658861	Avoid

Notes:

1. Trees listed as Avoid are located within the AOI, but outside the LOD. Trees identified outside of the AOI are not included.

Habitat Impacts

Roosting

Fourteen (14) potentially suitable secondary roost trees were observed within the AOI. Of the 14 potentially suitable secondary roost trees, two (2) are located within the LOD. The remaining 12 potentially suitable secondary roost trees are found outside of the LOD and are not proposed for cutting. No potentially suitable primary roost trees were observed within the AOI.

Foraging

No suitable streams or open-water resources were found within the AOI. However, Broad Run, a large perennial stream, is located directly adjacent to the south border of the AOI and provides potentially suitable foraging and migratory habitat for the Indiana bat and NLEB. No impacts are proposed to Broad Run; however, EQT plans to implement erosion and sediment controls plans to protect on-site water quality within the LOD. The two (2) potentially suitable secondary roost trees located within the LOD occur on forested hillsides which provide potentially suitable foraging habitat for the NLEB. One (1) of these potentially suitable secondary roost

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 **p** | 724.772.7072 **f** | 724.772.7079

tree is in close proximity to open-water, which provides potentially suitable foraging habitat. The other potentially suitable roost tree is in proximity to Broad Run, which serves as potentially suitable foraging habitat outside of the AOI.

Migratory

Observed access roads, county roads, and tree-lined pastures within the AOI offer numerous potentially suitable flight corridors for the Indiana bat and NLEB, in addition to providing potential foraging habitat.

In summary, most of the observed potentially suitable roost trees were located near, but not directly adjacent to potentially suitable open-water foraging habitat. Additionally, they were located on forested hillsides that are optimal NLEB foraging habitat. Most of the potentially suitable roost trees were located near or adjacent to travel corridors. As a result of the observed conditions above, the potential on-site summer habitat for the Indiana bat and NLEB was qualified as good. Based on the proposed conservation measures, limited impacts are proposed to the potential roosting and migratory habitats for the Indiana bat and NLEB within the LOD and 2-mile buffer established for the proposed Project. However, a majority of the 40.4 acre LOD is potentially suitable NLEB foraging habitat that will be impacted by the proposed Project. Broad Run, a large perennial stream, is located outside of the AOI; therefore no impacts are proposed to open-water. However, since Broad Run is directly adjacent to the Project, potentially suitable foraging habitat exists for both the Indiana bat and NLEB.

6.0 CUMULATIVE PROJECT CLEARING SUMMARY

Table 3: EQT Project(s) Occurring within the 2-mile Buffer of the Proposed Project

Project Title	Type of Project	Year of Concurrence	Year of Project Completion/To Be Completed	Coordinates	Tentative Amount of Tree Clearing
CPT-10 Well Line	Pipeline	N/A	To be completed in the next 5 years	N/A	<10 acres

No EQT projects have occurred within the 2-mile buffer surrounding the proposed Project in the past five (5) years. However, EQT plans to install a well line to the proposed CPT-10 Well Pad, currently known as the CPT-10 Well Line, within the 2-mile buffer in the next five (5) years. It is estimated that the CPT-10 Well Line will clear less than ten (10) acres of trees.

7.0 PROPOSED AVOIDANCE AND MINIMIZATION

EQT proposes to complete winter tree clearing of 32.1 forested acres between November 15, 2015 and March 31, 2016 while the Indiana bat and NLEB are in hibernation. During the on-site habitat analysis two (2) potentially suitable secondary roost trees were observed within the proposed LOD. The LOD was designed to minimize roost tree impacts; therefore, minimizing impacts to potentially suitable roosting habitat of the Indiana bat and NLEB. In order to further reduce potentially suitable habitat impacts for both bat species, erosion and sediment controls throughout the site will be enhanced per the EQT internal guidance for the purpose of protecting on-site water quality.

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 **p** | 724.772.7072 **f** | 724.772.7079

8.0 COMPENSATION MEASURES

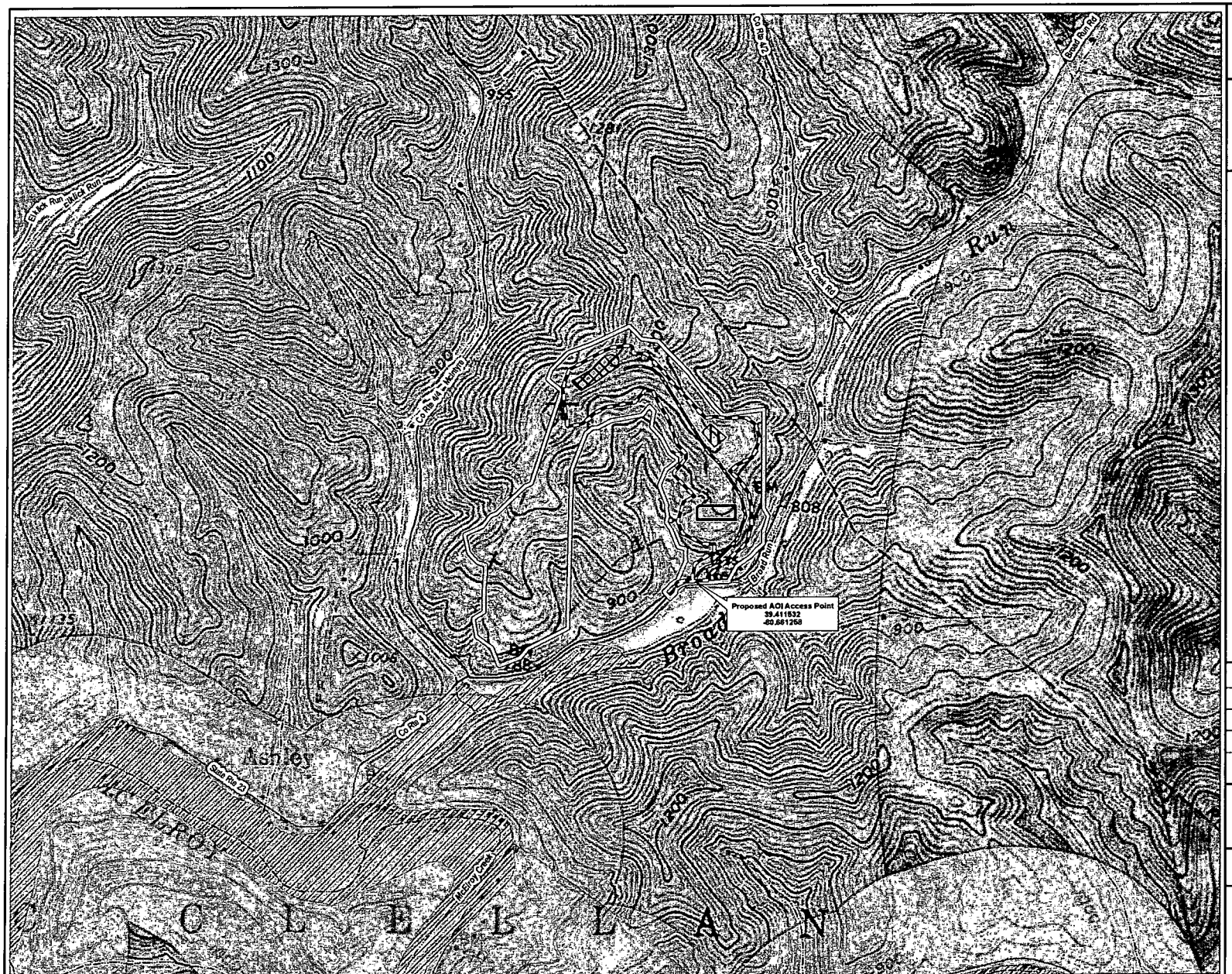
EQT proposes to provide additional roosting habitat at a 1:1 ratio by girdling two (2) replacement trees at a USFWS-approved conservation parcel in Ritchie County, WV (Figure 3). This conservation parcel is approximately 16.5 miles southwest of the Project AOI. Girdling, in regards to Indiana bat or NLEB habitat mitigation, is defined as the cutting of the bark and a portion of the underlying cambium layer to create a ring-like groove encircling the base of the trunk. The trees proposed for girdling will be field located and their suitability determined by a qualified biological consultant or forester. In addition, no caves or mine portals were observed in the vicinity of the Project; therefore, the proposed Project will not result in adverse impacts to these features that require mitigation. Due to the amount of forested habitat left within a 2-mile buffer (7,324.9 acres) surrounding the proposed center point, coupled with the implementation of the proposed compensation measures, it is unlikely that the proposed impact to two (2) potentially suitable secondary roost trees will result in adverse impacts to Indiana bat or NLEB habitat.

9.0 SUMMARY

EQT proposes to conduct winter clearing of 32.1 forested acres between November 15, 2015 and March 31, 2016 while the Indiana bat and NLEB are in hibernation. Forested habitat remaining within a 2-mile buffer of the proposed site is approximately 7,324.9 acres (99.6% of total forested land remaining within a 2-mile buffer). Kleinfelder is requesting concurrence with the implementation of the proposed compensation measures that sufficient forested habitat will remain on the post-construction landscape; therefore, the Project will not adversely affect the Indiana bat or NLEB.

230 Executive Drive, Suite 122, Cranberry Township, PA 16066 **p** | 724.772.7072 **f** | 724.772.7079

FIGURE 1
Project Location Map

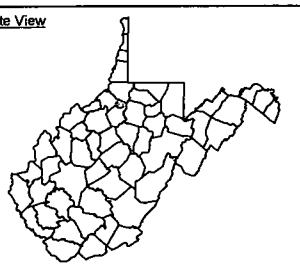


Center Point, WV 7.5' USGS Quadrangle

FIGURE 1
PROJECT LOCATION MAP

CPT-10 Well Pad
EQT Production Company
Doddridge County, WV

State View



Legend

- AOI (110.0 ac)
- Proposed LOD (40.4 ac)
- Proposed Well Pad
- Proposed Access Road
- Proposed Completion Pit
- Proposed Flow Back Pit
- NHD Stream
- NWI Wetland (N/A)
- USFWS Aquatic Buffer
- USFWS Terrestrial Buffer
- FEMA 100 Year Flood Zone
- Existing Road

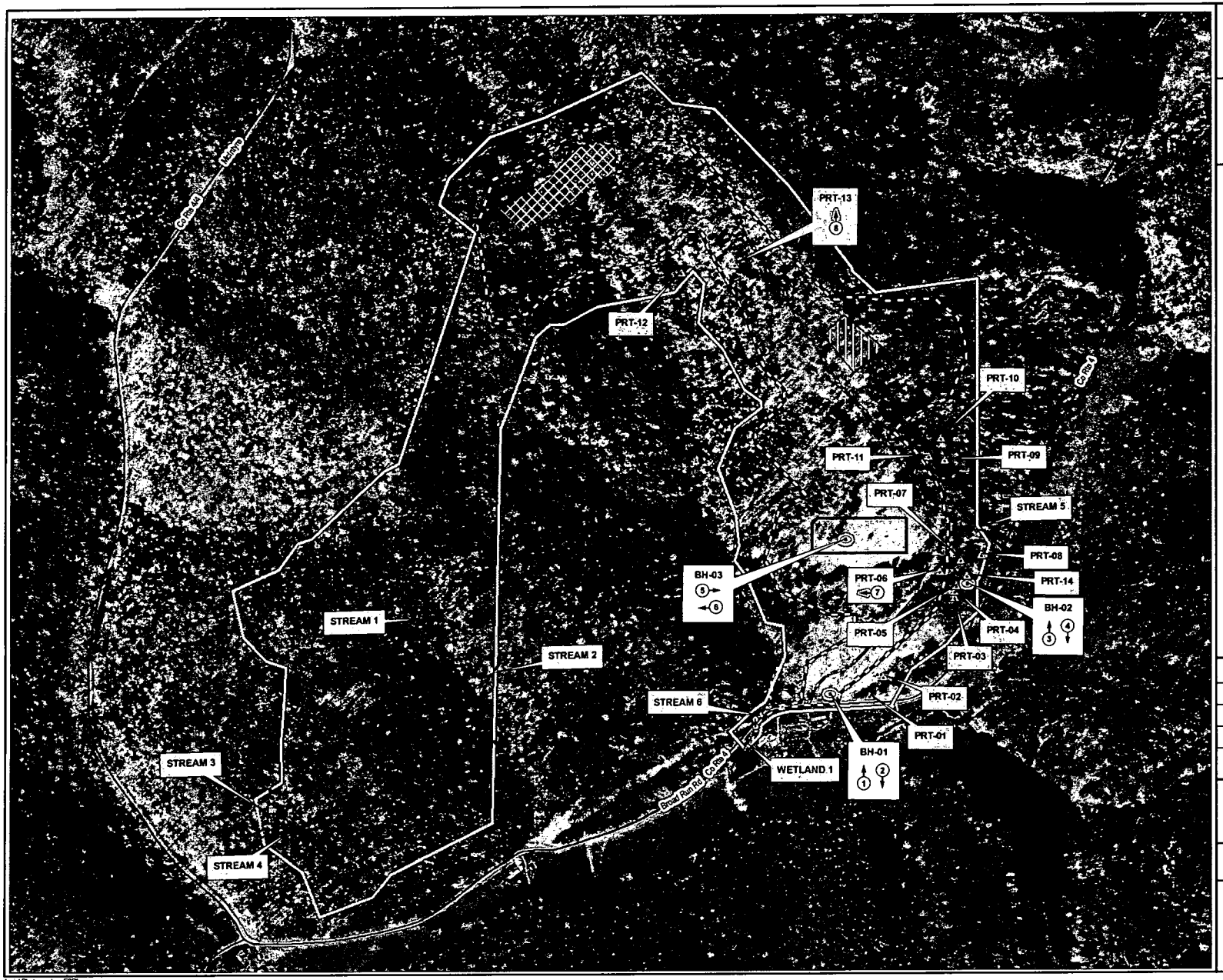
PROJECT #:	00137355.000A
DRAWN:	7/15/2014 **PRINTED:** 7/17/2015
DRAWN BY:	GHB
CHECKED BY:	MA
FILE NAME:	G:\GIS\PROJECTS\EQT\Production\CPT-10-137355\MXD\Task\EQT-10_TE_Fig1.mxd

0 1,000 2,000
Feet

EQT Where energy meets innovation.

KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com

FIGURE 2
Aerial Imagery Map

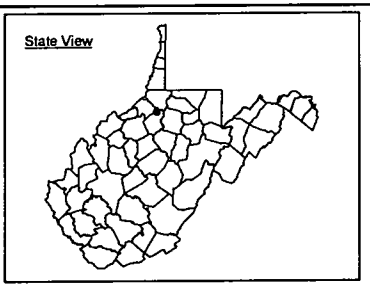


Aerial Photography - ESRI

FIGURE 2
AERIAL IMAGERY MAP

CPT-10 Well Pad
EQT Production Company
Doddridge County, WV

State View



- AOI (110.0 ac)
- Proposed LOD (40.4 ac)
- Proposed Well Pad
- Proposed Access Road
- Delineated Intermittent Stream
- Delineated Ephemeral Stream
- Delineated PEM Wetland
- Bat Habitat Point
- Potential Primary Roost Tree (N/A)
- Potential Secondary Roost Tree
- Existing Culvert
- Proposed Completion Pit
- Proposed Flow Back Pit
- Existing Road
- USFWS Aquatic Buffer (N/A)
- USFWS Terrestrial Buffer (N/A)
- Photo Number and View Direction (Corresponds to Photo Summary)

PROJECT #: 00137355.000A

DRAWN: 7/15/2014 PRINTED: 7/23/2015

DRAWN BY: KLH

CHECKED BY: GHB

FILE NAME:
G:\GIS\PROJECTS\EQT\Production\CPT-10-137355\MXD\TendEICPT-10_TE_Fig2.mxd

0 400 800
Feet

EQT
Where energy meets innovation.

KLEINFELDER
Bright People. Right Solutions.
www.kleinfelder.com

FIGURE 3
Conservation Map

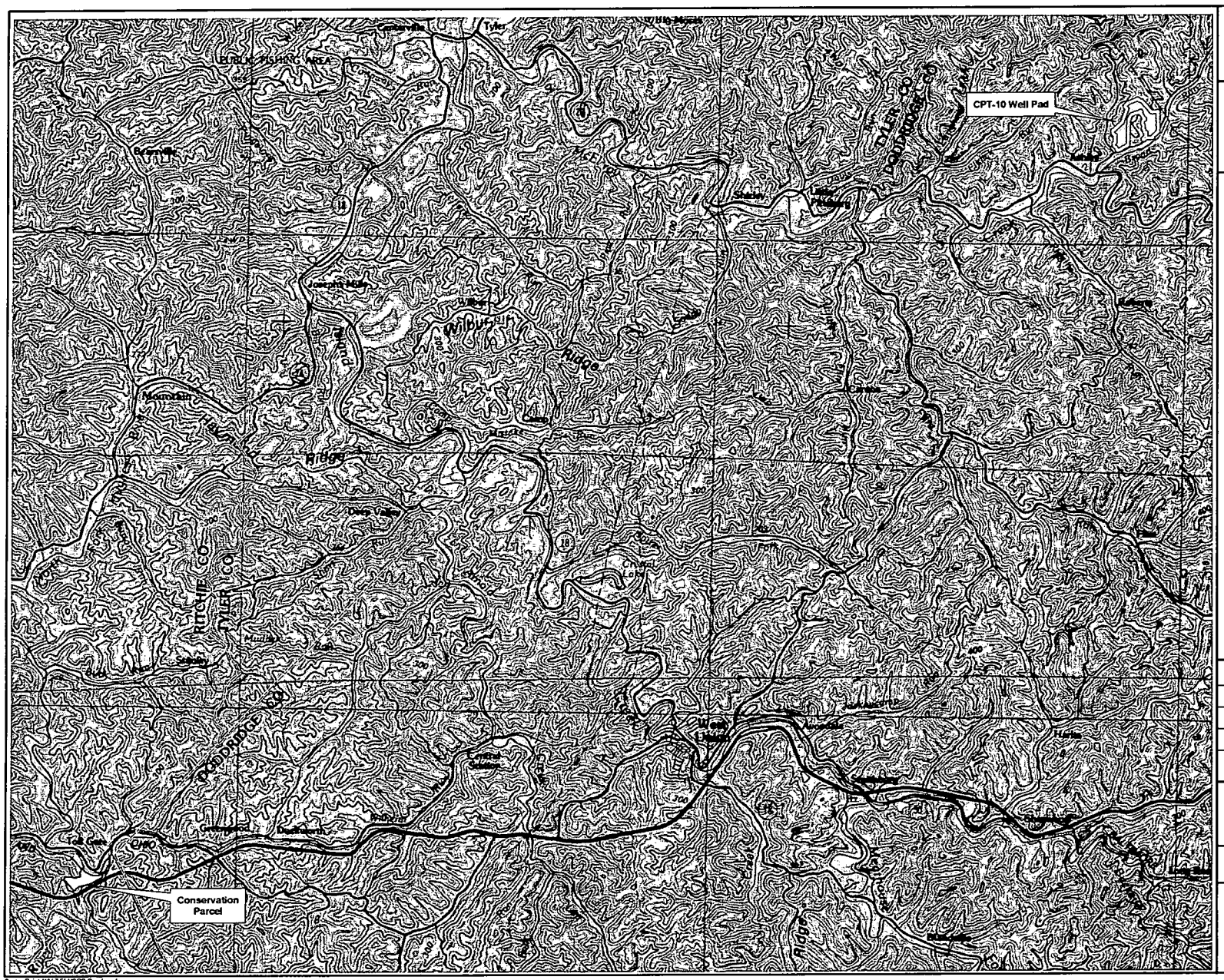
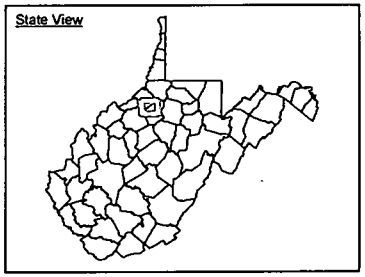


FIGURE 3
CONSERVATION MAP

CPT-10 Well Pad
EQT Production Company
Doddridge County, WV

State View



Legend

- Proposed CPT-10 Well Pad
- Conservation Parcel

PROJECT #:	00137355.000A
DRAWN: 7/15/2014	PRINTED: 7/23/2015
DRAWN BY:	GHB
CHECKED BY:	MA
FILE NAME:	G:\GIS\PROJECTS\EQT\Production\CPT-10-137355\MXD\CPT-10_ConservationMap.mxd

0 1 2
Miles

EQT Where energy meets innovation.

KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com

FIGURE 4
Bat Habitat Photographs and Datasheets

Photograph 1 - KLF-BH01 – Facing North

Photograph 2 - KLF-BH01 – Facing South

Photograph 3 - KLF-BH02 – Facing North

Photograph 4 - KLF-BH02 – Facing South

Photograph 5 - KLF-BH03 – Facing East

Photograph 6 - KLF-BH03 – Facing West

Photograph 7 – PRT-06 – Facing West

Photograph 8 – PRT-13 – Facing North

KLEINFELDER

INDIANA BAT FIELD HABITAT ASSESSMENT DATASHEET

Project Client/Name: EQT Production Company/CPT-10 Well Pad Date: **2/2/2015**

Sample site number(s): BH-01

Latitude, Longitude: 39.411765, -80.660755 Surveyor: John Lewis/Mitch Fleming

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area.

Brief Project Description

Stream and wetland delineations conducted in an approximately 56.1-acre area of interest proposed for an access road and well pad.

Land Use/Vegetation Assemblages in Project AOI	**Landscape within 1-mile radius**
Describe the Site. Land use inside the AOI consists of two large agriculture fields, a recovering selective-cut forest, and a small portion of mature secondary growth forest in the northern portion of the AOI.	Flight corridors to other forested areas? Within a 1-mile radius there are several county roads that could facilitate bat movement. Describe Adjacent Properties (e.g. forested, grassland, development, water) Adjacent properties consist primarily of forested ridges and hill slopes with some agricultural lands.

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
	1	0	0	
Pools/Ponds (# and size)	0	Open and accessible to bats?		There is a large perennial stream (Broad Run) that runs just outside the southern border of the AOI. It is accessible to bats.
		N/A		
Wetlands (approx. ac.)	Permanent	Seasonal		
	0	0		

Forest Resources at Sample Site

Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	4	4	3	
% Trees w/ Exfoliating Bark	10%	0	0	
Size Composition of Live Trees (%)	Small (3-8 in DBH)	Med (9-15 in DBH)	Large (>15 in DBH)	
	20	60	20	
Dominant Species of Mature Trees	*Carya ovata , Quercus alba , Pinus strobus , Quercus rubra*			
No. of Suitable Snags	2			

Suitable snags are standing dead trees with exfoliating bark, cracks, crevices or hollows. Snags without these characteristics are not considered suitable.

AT THE SAMPLE POINT, IS THERE POTENTIAL:

Summer roosting habitat? x

Foraging habitat? x

Travel corridors? x

KLEINFELDER

INDIANA BAT FIELD HABITAT ASSESSMENT DATASHEET

Detailed Habitat Information

Potential Maternal Roost Trees (MRTs)	Potential Roost Trees (PRTs)
Are there any potential MRTs? Describe (include number, species, and size). Must meet the following criteria: 1) ≥ 16 in DBH; significant areas of peeling bark, crack, or crevices; and 3) must receive significant solar exposure on southern facing slopes.	Describe, including live and dead (snag) trees. (PRTs must have DBH ≥ 3 in. PRTs should always be indicated when the trees do not meet all the criteria for MRTs. **Include number, species, and size of potential PRTs .**
No potential maternal roost trees were observed.	Yes, please reference Table 2 in the Indiana Bat and Northern Long-Eared Bat Conservation Plan.

Travel corridors	Foraging habitat
Describe (Are there tree-lined paths, wooded corridor, riparian corridors, e.g.?)	Describe (are there open wooded areas, forest edges, riparian areas, e.g.?
Broad Run Road could facilitate bat movement and act as a travel corridor to other foraging habitat and roost trees.	The southern portion of the AOI offers strong potential for foraging habitat. There are active open pastures that surround Broad Run, a large perennial stream.

Summer roosting habitat

Is there suitable summer roosting habitat? Yes x No

Habitat Rating:

Good	x	Forest/woodlot containing potential roost trees and/or snags ≥5 inches DBH.
Marginal		No potential roost trees and/or snags ≥5 inches DBH. Habitat includes other trees > inches DBH and any combination of emergent wetlands, edge habitat along agricultural fields, fencerows, wooded corridors, and/or riparian forests.
Poor		None of the features listed above. This category may include ≥20 acres of early successional habitat with trees 3-5 inches DBH. This may serve as suitable foraging habitat and require surveys by the USFWS and/or state agencies.
Not available		None of the features listed above. No suitable trees or other roosting habitat available within the sample point/project area.

Winter Hibernacula

Are there any portals or mines? Describe and photograph. Are there openings, shafts, crack/crevices? There should be horizontal openings >6 inches with air flow, vertical shafts >1 foot, passages that continue > 50 ft., and/or any other openings that may lead to deeper cavities/fissures.

No winter hibernacula was observed.

KLEINFELDER

INDIANA BAT FIELD HABITAT ASSESSMENT DATASHEET

Project Client/Name: EQT Production Company/CPT-10 Well Pad Date: **2/2/2015**

Sample site number(s): BH-02

Latitude, Longitude: 39.412992, -80.658886 Surveyor: John Lewis/Mitch Fleming

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area.

Brief Project Description

Stream and wetland delineations conducted in an approximately 56.1-acre area of interest proposed for an access road and well pad.

Land Use/Vegetation Assemblages in Project AOI	**Landscape within 1-mile radius**
Describe the Site. Land use inside the AOI consists of two large agriculture fields, a recovering selective-cut forest, and a small portion of mature secondary growth forest in the northern portion of the AOI.	Flight corridors to other forested areas? Within a 1-mile radius there are several county roads that could facilitate bat movement. Describe Adjacent Properties (e.g. forested, grassland, development, water) Adjacent properties consist primarily of forested ridges and hill slopes with some agricultural lands.

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
	1	0	0	
Pools/Ponds (# and size)	0	Open and accessible to bats?		There is a large perennial stream (Broad Run) that runs just outside the southern border of the AOI. It is accessible to bats.
		N/A		
Wetlands (approx. ac.)	Permanent	Seasonal		
	0	0		

Forest Resources at Sample Site

Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	4	4	3	
% Trees w/ Exfoliating Bark	10%	0	0	
Size Composition of Live Trees (%)	Small (3-8 in DBH)	Med (9-15 in DBH)	Large (>15 in DBH)	
	25	50	25	
Dominant Species of Mature Trees	*Carya ovata , Quercus alba , Pinus strobus , Quercus rubra*			
No. of Suitable Snags	2			

Suitable snags are standing dead trees with exfoliating bark, cracks, crevices or hollows. Snags without these characteristics are not considered suitable.

AT THE SAMPLE POINT, IS THERE POTENTIAL:

Summer roosting habitat? x

Foraging habitat? x

Travel corridors? x

KLEINFELDER

INDIANA BAT FIELD HABITAT ASSESSMENT DATASHEET

Detailed Habitat Information

Potential Maternal Roost Trees (MRTs)	Potential Roost Trees (PRTs)
Are there any potential MRTs? Describe (include number, species, and size). Must meet the following criteria: 1) ≥ 16 in DBH; significant areas of peeling bark, crack, or crevices; and 3) must receive significant solar exposure on southern facing slopes.	Describe, including live and dead (snag) trees. (PRTs must have DBH ≥ 3 in. PRTs should always be indicated when the trees do not meet all the criteria for MRTs. **Include number, species, and size of potential PRTs .**
No potential maternal roost trees were observed.	Yes, please reference Table 2 in the Indiana Bat and Northern Long-Eared Bat Conservation Plan.

Travel corridors	Foraging habitat
Describe (Are there tree-lined paths, wooded corridor, riparian corridors, e.g.?)	Describe (are there open wooded areas, forest edges, riparian areas, e.g.?
Broad Run Road could facilitate bat movement and act as a travel corridor to other foraging habitat and roost trees.	The southern portion of the AOI offers strong potential for foraging habitat. There are active open pastures that surround Broad Run, a large perennial stream.

Summer roosting habitat

Is there suitable summer roosting habitat? Yes x No

Habitat Rating:

Good	x	Forest/woodlot containing potential roost trees and/or snags ≥5 inches DBH.
Marginal		No potential roost trees and/or snags ≥5 inches DBH. Habitat includes other trees > inches DBH and any combination of emergent wetlands, edge habitat along agricultural fields, fencerows, wooded corridors, and/or riparian forests.
Poor		None of the features listed above. This category may include ≥20 acres of early successional habitat with trees 3-5 inches DBH. This may serve as suitable foraging habitat and require surveys by the USFWS and/or state agencies.
Not available		None of the features listed above. No suitable trees or other roosting habitat available within the sample point/project area.

Winter Hibernacula

Are there any portals or mines? Describe and photograph. Are there openings, shafts, crack/crevices? There should be horizontal openings >6 inches with air flow, vertical shafts >1 foot, passages that continue > 50 ft., and/or any other openings that may lead to deeper cavities/fissures.

No winter hibernacula was observed.

KLEINFELDER

INDIANA BAT FIELD HABITAT ASSESSMENT DATASHEET

Project Client/Name: EQT Production Company/CPT-10 Well Pad Date: **2/2/2015**

Sample site number(s): BH-03

Latitude, Longitude: 39.413471, -80.660781 Surveyor: John Lewis/Mitch Fleming

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area.

Brief Project Description

Stream and wetland delineations conducted in an approximately 56.1-acre area of interest proposed for an access road and well pad.

Land Use/Vegetation Assemblages in Project AOI	**Landscape within 1-mile radius**
Describe the Site. Land use inside the AOI consists of two large agriculture fields, a recovering selective-cut forest, and a small portion of mature secondary growth forest in the northern portion of the AOI.	Flight corridors to other forested areas? Within a 1-mile radius there are several county roads that could facilitate bat movement. Describe Adjacent Properties (e.g. forested, grassland, development, water) Adjacent properties consist primarily of forested ridges and hill slopes with some agricultural lands.

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
	1	0	0	
Pools/Ponds (# and size)	0	Open and accessible to bats?		There is a large perennial stream (Broad Run) that runs just outside the southern border of the AOI. It is accessible to bats.
		N/A		
Wetlands (approx. ac.)	Permanent	Seasonal		
	0	0		

Forest Resources at Sample Site

Closure/Density	Canopy (>50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	3	3	4	
% Trees w/ Exfoliating Bark	10%	0	0	
Size Composition of Live Trees (%)	Small (3-8 in DBH)	Med (9-15 in DBH)	Large (>15 in DBH)	
	50	40	10	
Dominant Species of Mature Trees	*Carya ovata , Quercus alba , Pinus strobus , Quercus rubra*			
No. of Suitable Snags	2			

Suitable snags are standing dead trees with exfoliating bark, cracks, crevices or hollows. Snags without these characteristics are not considered suitable.

AT THE SAMPLE POINT, IS THERE POTENTIAL:

Summer roosting habitat? x

Foraging habitat? x

Travel corridors? x

KLEINFELDER

INDIANA BAT FIELD HABITAT ASSESSMENT DATASHEET

Detailed Habitat Information

Potential Maternal Roost Trees (MRTs)	Potential Roost Trees (PRTs)
Are there any potential MRTs? Describe (include number, species, and size). Must meet the following criteria: 1) ≥ 16 in DBH; significant areas of peeling bark, crack, or crevices; and 3) must receive significant solar exposure on southern facing slopes. No potential maternal roost trees were observed.	Describe, including live and dead (snag) trees. (PRTs must have DBH ≥ 3 in. PRTs should always be indicated when the trees do not meet all the criteria for MRTs. **Include number, species, and size of potential PRTs .** Yes, please reference Table 2 in the Indiana Bat and Northern Long-Eared Bat Conservation Plan.

Travel corridors	Foraging habitat
Describe (Are there tree-lined paths, wooded corridor, riparian corridors, e.g.?) There are several old logging and farm access roads that run through the middle and southern portions of the AOI.	Describe (are there open wooded areas, forest edges, riparian areas, e.g.? The southern portion of the AOI offers strong potential for foraging habitat. There are active open pastures that surround Broad Run, a large perennial stream.

Summer roosting habitat

Is there suitable summer roosting habitat? Yes x No

Habitat Rating:

Good	x	Forest/woodlot containing potential roost trees and/or snags ≥5 inches DBH.
Marginal		No potential roost trees and/or snags ≥5 inches DBH. Habitat includes other trees > inches DBH and any combination of emergent wetlands, edge habitat along agricultural fields, fencerows, wooded corridors, and/or riparian forests.
Poor		None of the features listed above. This category may include ≥20 acres of early successional habitat with trees 3-5 inches DBH. This may serve as suitable foraging habitat and require surveys by the USFWS and/or state agencies.
Not available		None of the features listed above. No suitable trees or other roosting habitat available within the sample point/project area.

Winter Hibernacula

Are there any portals or mines? Describe and photograph. Are there openings, shafts, crack/crevices? There should be horizontal openings >6 inches with air flow, vertical shafts >1 foot, passages that continue > 50 ft., and/or any other openings that may lead to deeper cavities/fissures.

No winter hibernacula was observed.

July 17, 2015

Ms. Lora A. Lamarre-DeMott
Senior Archaeologist
West Virginia Division of Culture and History
The Cultural Center - Capitol Complex
1900 Kanawha Blvd., E
Charleston, WV 25305-0300
(304) 558-0220

Re: Cultural Resources Desktop Analysis
EQT Production Company
CPT-10 Well Pad Project
Doddridge County, West Virginia

Dear Ms. Lamarre-DeMott:

EQT Production Company (EQT) is proposing the installation of a drainage ditch along County Route 4 to support oil and gas activities associated with the proposed CPT-10 Well Pad Project (Project) in Doddridge County, West Virginia (Figures 1 and 2). Construction of the road side drainage ditch will result in less than 100 linear feet of impact to one (1) intermittent stream, which meets the terms and conditions of a non-reporting Nationwide Permit 14, therefore, no consultation with the United States Army Corps of Engineers (USACE) is required (Figure 3).

In order to comply with the requirements of Section 106 of the *National Historic Preservation Act*, on June 30, 2015, *Environment & Archaeology, LLC* was retained by Kleinfelder, Inc. to provide cultural resource consultation for the proposed Project. This consultation was conducted under the authority of the *National Historic Preservation Act of 1966* (PL 89-665), the *National Environmental Policy Act of 1969* (PL 91-190), the *Archaeological and Historic Preservation Act of 1974* (PL 92-291), the *Protection of Historic Cultural Properties* (36 CFR 800), and the *Guidelines for Phase I Surveys, Phase II Testing, Phase III Mitigation and Cultural Resource Reports* (WVDCH 2005). *Environment & Archaeology, LLC* is providing this cultural resources desktop analysis as part of EQT's Section 106 due diligence for the CPT-10 Well Pad Project.

The Project area is situated within the Western Allegheny Plateau Section of the Appalachian Plateau Physiographic Province and is located on steeply sloped hillslopes containing second growth forested lands above Broad Run with limited level ridgeline areas (Figures 3 and 4). Since the general soil maps for Doddridge County, West Virginia have not been digitized and are not available on the Web Soil Survey website, a discussion of the soil association(s) potentially present within the Project Area is not possible. However, there are approximately three (3) soil types present within the Project limits-of-disturbance (LOD) (Table 1, Figure 5).

Table 1. Soil Types Encountered by the Proposed Project in Doddridge County, West Virginia.

Soil Type	Description	Setting
GsE	Gilpin-Peabody complex, 15 - 35% slopes, very stony fine-loamy clayey residuum from shale and siltstone and interbedded sedimentary rock, well drained	Hillslopes, backslope, side slope
GsF	Gilpin-Peabody complex. 35 - 70% slopes, very stony fine-loamy clayey residuum from shale and siltstone and interbedded sedimentary rock, well drained	Hillslopes, backslope, side slope
SeB	Sensabaugh silt loam, 3 - 8% slopes, rarely flooded, gravelly fine-loamy alluvium from interbedded sedimentary rock, well drained	Flood plains, toeslopes

Historic maps and quadrangles were examined in an attempt to identify the potential for historic structures to be present within the Project LOD. The *1933 Doddridge County, West Virginia Atlas Page* from the *West Virginia State Atlas* published by the *Clarksburg Publishing Company* failed to turn up structures within the proposed Project LOD (Figure 6). The 1903 (1924 culture revised) USGS 15-minute Northwest Centerpoint, West Virginia, Quadrangle, also failed to turn up structures within the proposed Project LOD (Figure 7).

A Literature Review of the Restricted Data found online at the West Virginia State Historic Preservation Office (WVSHPO) Interactive Map Viewer Page was performed on July 9, 2015 by *Environment & Archaeology, LLC* Archaeology Project Manager/Principal Investigator Luke W. Erickson, M.A., RPA to determine the presence or lack of, previously inventoried prehistoric or historic sites, structures, features, bridges or Phase I Surveys (cultural resources) within the proposed Project LOD and to help evaluate the potential for the Project LOD to contain cultural deposits. As a result of this Literature Review, no previously inventoried cultural resources were identified within, immediately adjacent to, within 1,000-feet of or within a one-mile radius of the proposed Project LOD.

The aquatic feature to be impacted consists of an existing culverted stream located immediately adjacent to and crossing underneath County Route 4 (CR 4) (Photos 1 and 2). This stream is within a previously disturbed roadside ditch therefore any construction activities planned for this aquatic feature will not result in any new impacts to this resource. The Area of Potential Effect (APE) for this proposed Project consists of an area approximately 100-feet by 100-feet leading up to and away from each side of the stream as it enters and exits the culvert running underneath CR 4. However, this APE consists of disturbed soils, therefore it is the recommendation of *Environment & Archaeology, LLC* that a Phase I Cultural Resource Survey is not warranted for this feature.

Please submit a written response of your review of this letter. If you should have any questions, please feel free to contact me.

Sincerely,

Luke W. Erickson

Luke W. Erickson, M.A., RPA
Archaeology Project Manager/Principal Investigator

Cc:

Matt Albright, Project Manager, Kleinfelder Inc.
Lacoa Corder, EQT Production Company

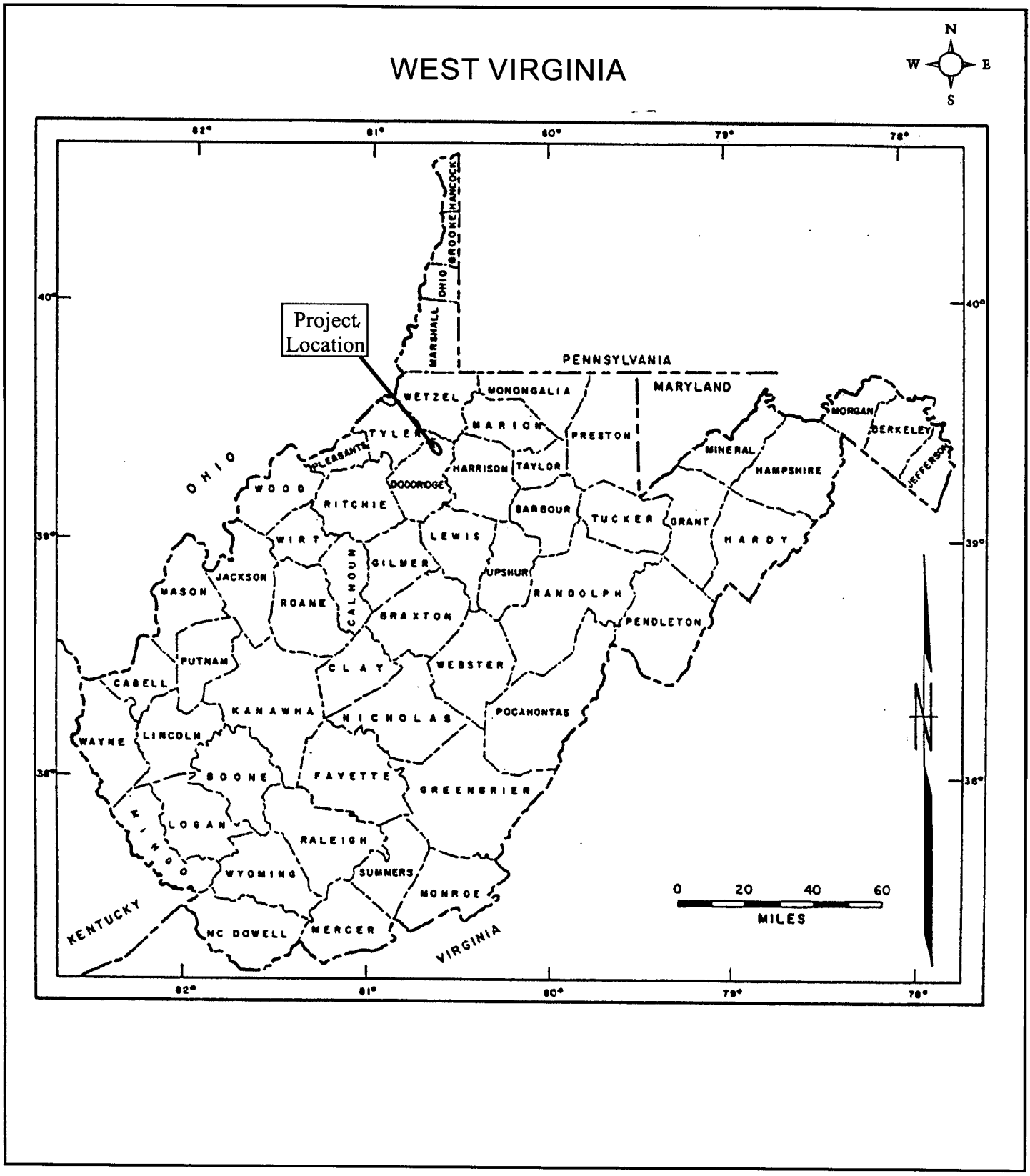


Figure 1. State Map of West Virginia Showing the Location of the Proposed EQT CPT-10 Well Pad Project in Doddridge County.

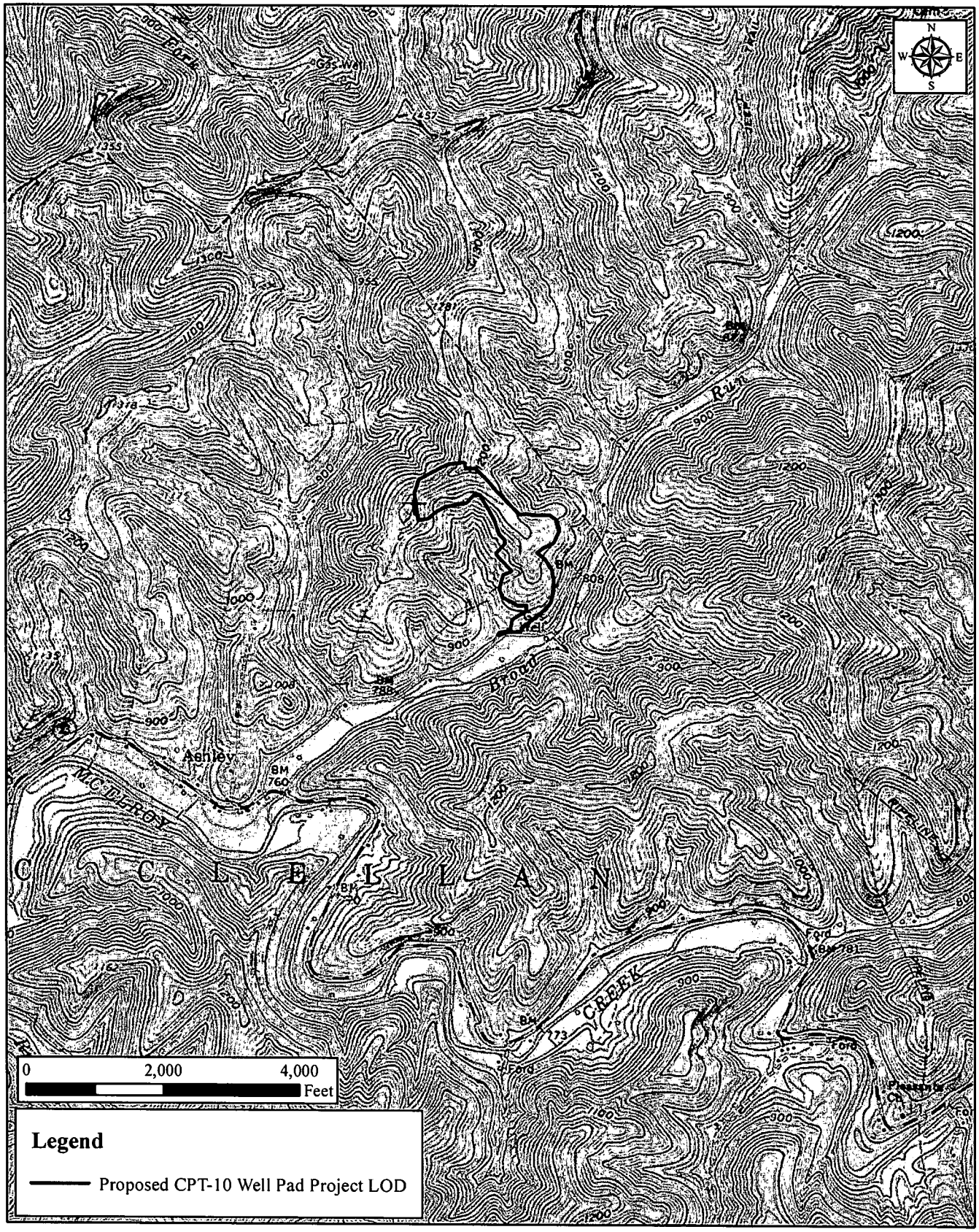


Figure 2. The Proposed EQT CPT-10 Well Pad Project in Doddridge County, West Virginia on the 7.5-minute USGS Center Point, West Virginia, Quadrangle. Quadrangle Courtesy of ESRI Online Mapping Services.

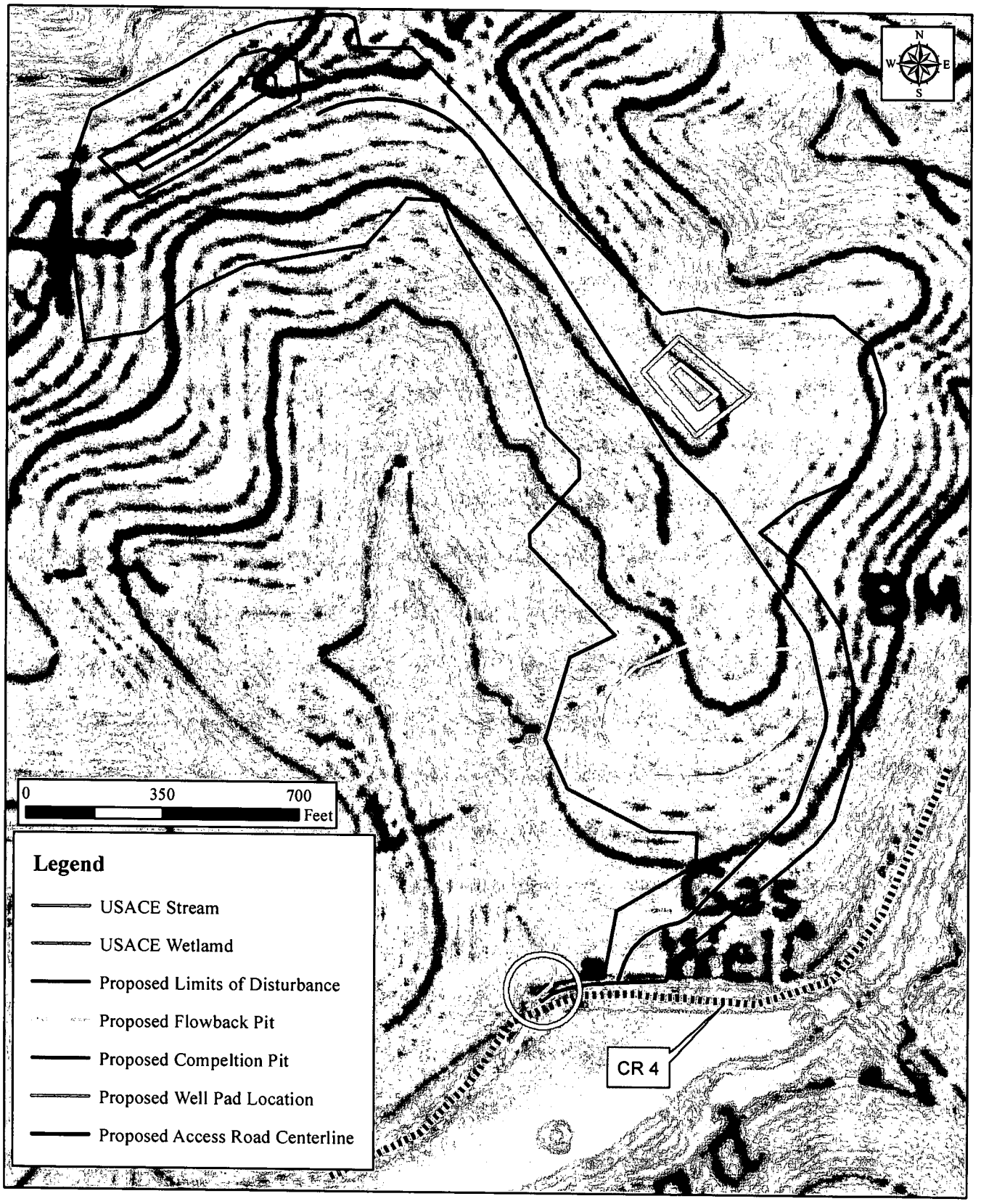


Figure 3. The Proposed EQT CPT-10 Well Pad Project Identifying the area-of-potential-effects (APE) (white circle) that will require the road side drainage ditch. Quadrangle Courtesy of ESRI Online Mapping Services.

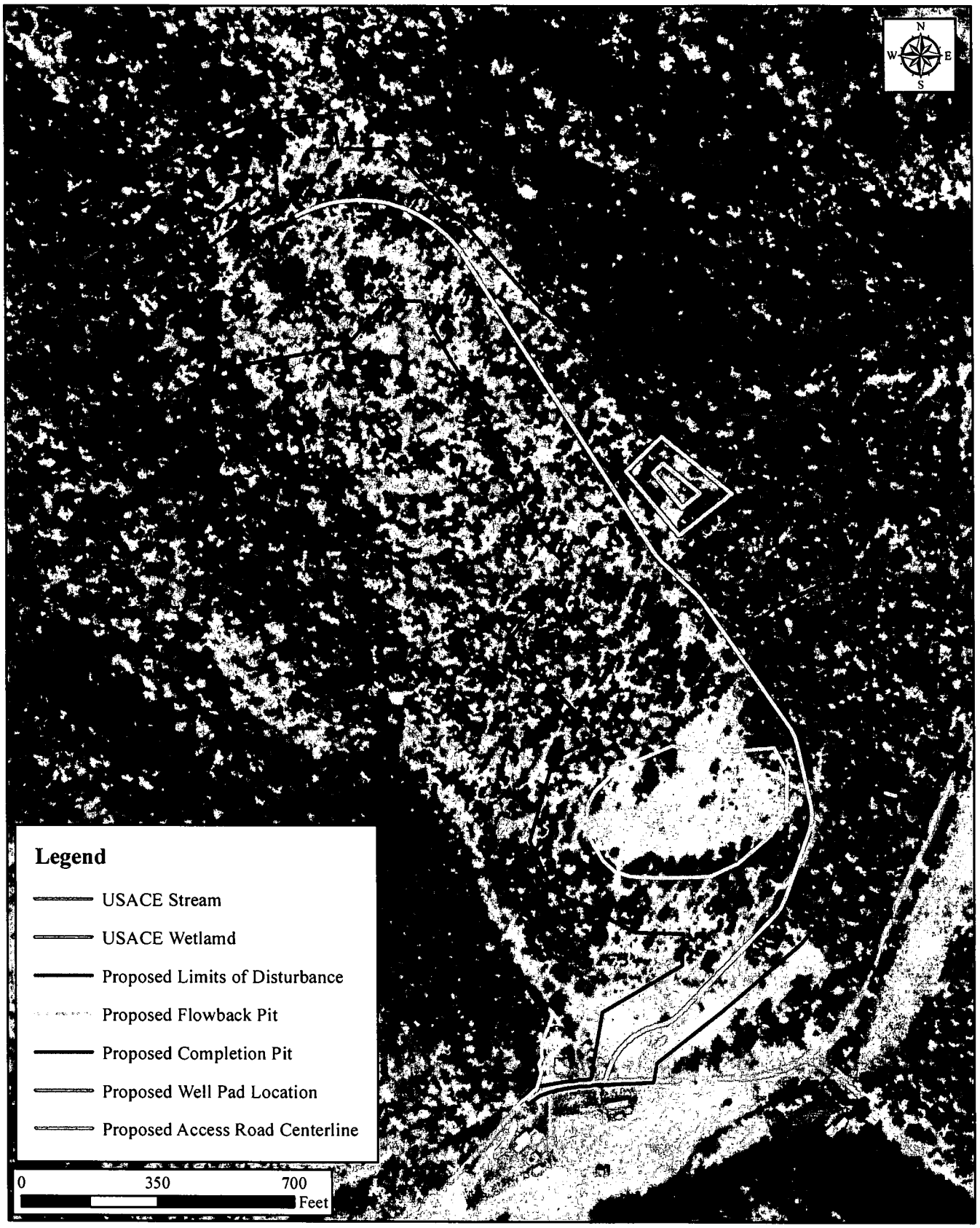


Figure 4. The Proposed EQT CPT-10 Well Pad Project. Aerial Imagery Courtesy of ESRI Online Mapping Services.

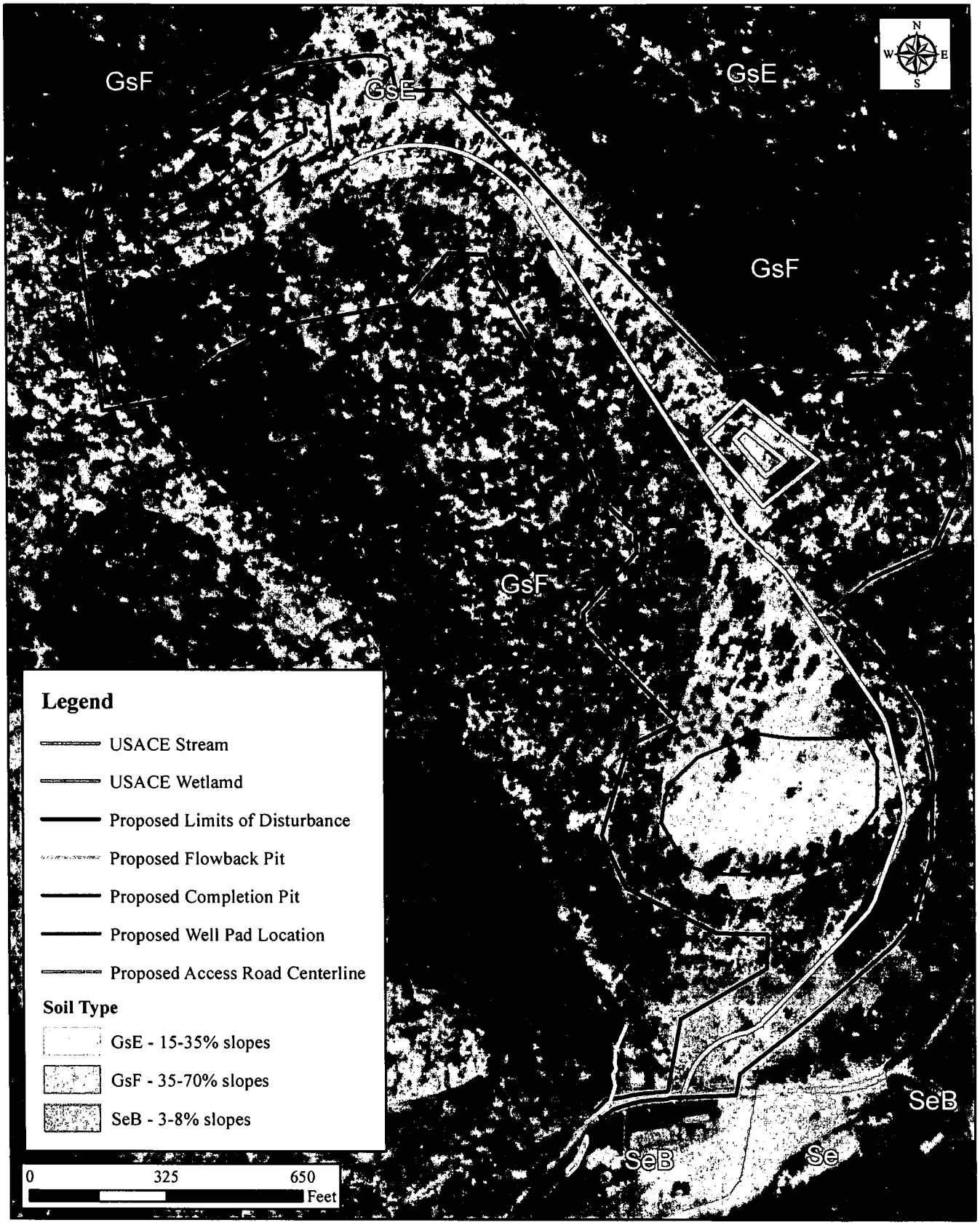


Figure 5. The Proposed EQT CPT-10 Well Pad Project with USDA Soil Overlay. Aerial Imagery Courtesy of ESRI Online Mapping Services.

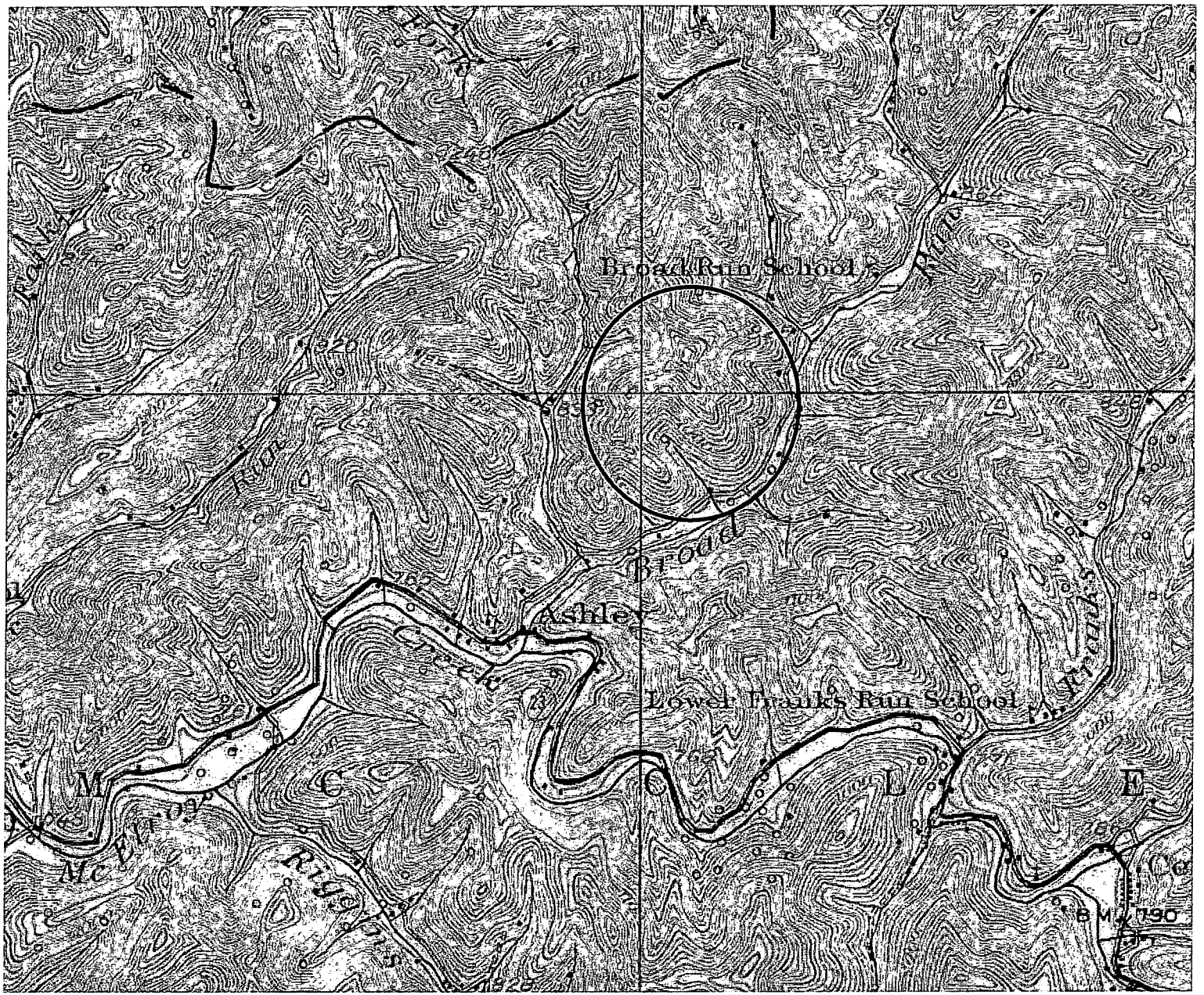


Figure 6. The Red Circle Identifies the area that the Proposed EQT CPT-10 Well Pad Project is located within. Background imagery is the 1924 USGS 15-minute Northwest Centerpoint, West Virginia, Quadrangle.

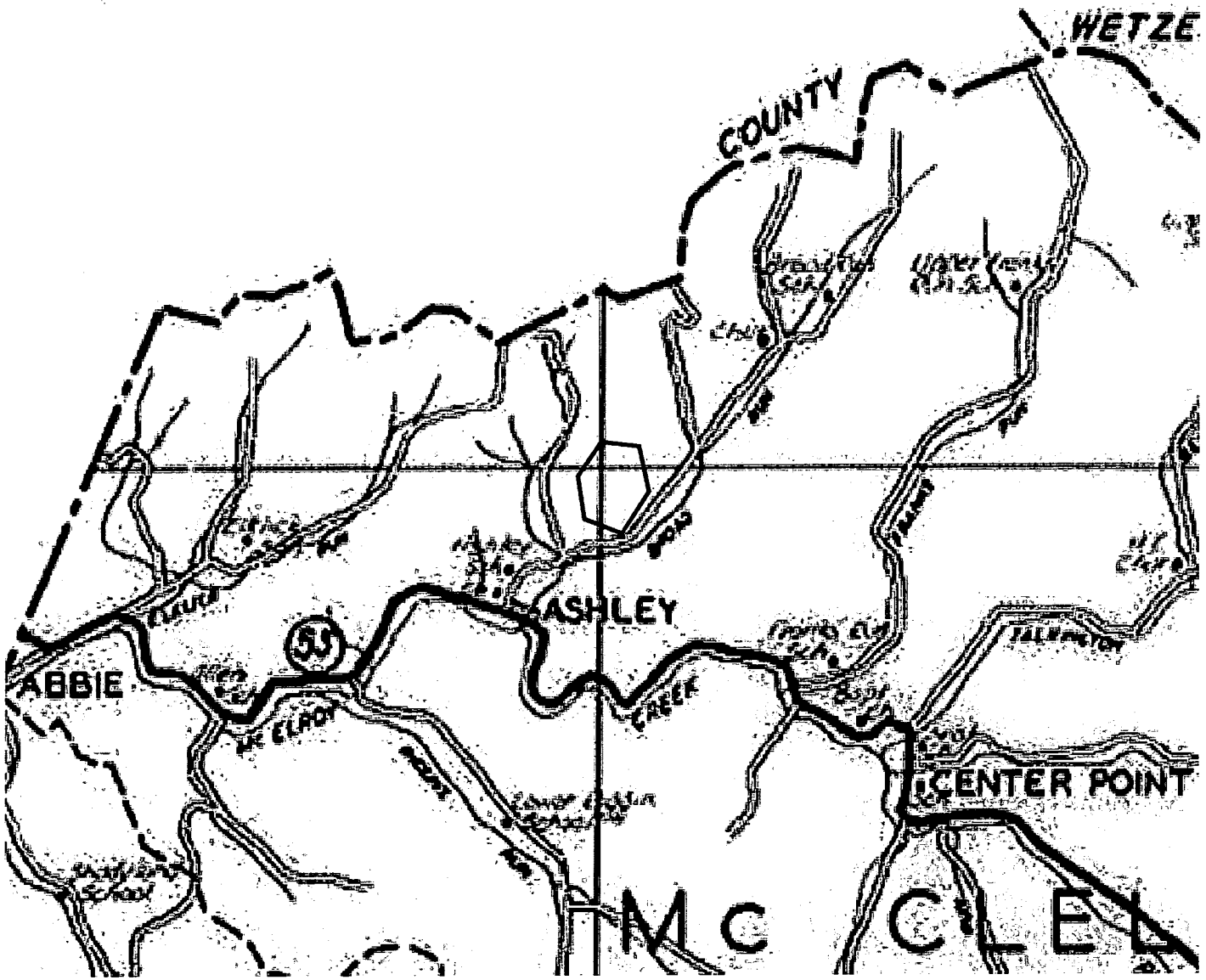


Figure 7. The Red Shape Identifies the area that the Proposed EQT CPT-10 Well Pad Project is located within. Background imagery is the 1933 Doddridge County Atlas Page from the 1933 *Clarksburg Publiching Company, West Virginia State Atlas*.

Photo 1. Facing South looking at the inlet for the existing, channelized, ditched stream to be upgraded.

Photo 2. Facing North looking at the outlet for the existing, channelized, ditched stream to be upgraded. County Route 4 can be seen in this photo.