

### Commercial/Industrial Floodplain **Development Permit**

Doddridge County, WV Floodplain Management

This permit has been issued to **Doddridge County Park.**, 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 #:15-350

Date Approved:

07/20/2015

**Expires: 07/20/2016** 

Issued to:

**Doddridge County Park** 

POC:

Company Address: 600 White Oaks Boulevard, Bridgeport, WV

Project Address: 1252 Snowbird Rd, West Union, WV

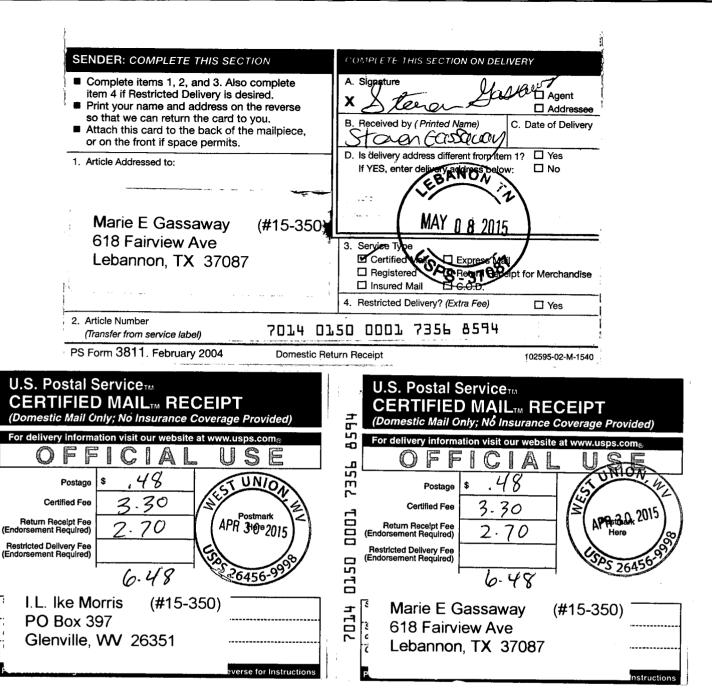
Firm:

Lat/Long:

Purpose of development: New Bridge

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

Date: 20 July, 2015



7356

01.50

|   | <u> </u>  |
|---|---|
| SENDER: COMPLETE THIS SECTION   | COMPLETE THIS SECTION ON DELIVERY   |
| Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.  Print your name and address on the reverse so that we can return the card to you.  Attach this card to the back of the mailpiece, or on the front if space permits.  1. Article Addressed to:  I.L. Ike Morris (#15-350) | A. Signature  A. Signature  Agent  Addressee  B. Feceived by (Printed Name)  C. Date of Delivery  Jackie Suizer 5-14-15  D. Is delivery address different from item 1?  If YES, enter delivery address below:  No |
| PO Box 397  | 3. Service Type   |
| Glenville, W 26351  | ☐ Certified Mail ☐ Express Mail ☐ Registered ☐ Return Receipt for Merchandise ☐ Insured Mail ☐ C.O.D.   |
|   | 4. Restricted Delivery? (Extra Fee) ☐ Yes   |
| 2. Article Number (Transfer from service label) 7014 0  | 150 0001 7356 8600  |
| PS Form 3811. February 2004 Domestic Retu   | urn Receipt 102595-02-M-1540  |

United States Postal Service

14 May 15

The Day



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

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

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#### Legal Advertisement:

#### **Doddridge County**

#### Floodplain Permit Application

Please take notice that on the 9<sup>th</sup> day of March, 2015

#### **Doddridge County Parks**

filed an application for a Floodplain Permit to develop land located at or about:

#### **New Milton & West Union Districts**

@ Doddridge County Park

Permit #15-350 Meathouse Fork Bridge, Project #101-030-2478

The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by **April 27, 2015,** delivered to:

Clerk of the County Court

118 E. Court Street, West Union, WV 26456

Beth A Rogers, Doddridge County Clerk

Edwin L. "Bo" Wriston. Doddridge County Flood Plain Manager



15-350

Land Care

2015 MAR 23 PM 1: 05

ETT ALGERTAS CHARTY CLEVA BOBBABBE COUNTY, WV

March 20, 2015

Mr. Bo Wristen Doddridge County Commission 118 East Court Street West Union, WV 26456

RE:

Doddridge County Floodplain Development Permit

**Doddridge County Parks** 

Doddridge County, West Virginia Thrasher Project #101-030-2478

Mr. Wristen:

On behalf of Doddridge County Parks, The Thrasher Group, Inc. (Thrasher) is submitting to your office, for review and approval, a proposed bridge crossing over Meathouse Fork in Doddridge County, West Virginia.

The proposed bridge crossing located off Snow Bird Road (County Route 50/16) will provide access to approximately 200 acres that the park could develop into camp grounds and recreational facilities. The proposed bridge has a 100 feet long (span) and is only a single lane at 15 feet wide.

The site is located in FEMA designated zone "AE" were a known flood elevation of 799'. A hydraulic and hydrologic analysis was performed and is included for your review. FEMA's standards allow 1 foot of increase outside of a designated floodway for a 100-year storm event. In the Doddridge Flood Insurance Study no floodway was established, therefore allowing up to a 1 foot increase. Based on our analysis the backwater increases by 0.35 feet immediately upstream of the bridge and returns to existing condition (zero backwater) prior to leaving the park limits.

We believe that the new construction of the bridge will not have an effect on the surrounding property, and recommend the approval for the floodplain development permit.

Please find attached the Doddridge County Floodplain Development Permit and a Hydraulic and Hydrologic Report. If any questions arise, please feel free to contact me at your convenience at (304)624-4108 or jgola@thrashereng.com.

Sincerely,

THE THRASHER GROUP, INC.

JEFFREY L. GOLA, P.E.

Project Manager



C:\Users\ewolfe\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\5AX3CASF\Letter to Doddridge Floodplain Permit.docx

## DODDRIDGE COUNTY FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

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

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

| APPLICANT'S SIGNATURE_ | any Amber las |  |
|------------------------|---------------|--|
| DATE                   | 30600         |  |

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 THE APPLICANT TO RECEIVE NOTICE PURSUANT TO ANY PROVISION OF THE CURRENT DODDRIDGE COUNTY FLOODPLAIN ORDINANCE.

| APPLICANT'S NAME: Doddridge Co. Park Dire | ector (Jin Messenger)   |
|---|-------------------------|
| ADDRESS: 1252 Snowbird Rd., PO Box 421    | 6. West Union, WV 26456 |
| TELEPHONE NUMBER: 304-873-/663            |                         |

| BUILDER'S NAME: To Be Determined  |
|---|
| ADDRESS:  |
| TELEPHONE NUMBER:   |
|   |
| ENGINEER'S NAME: Jeffrey Gola, PE   |
| ADDRESS: 600 White Oaks, Blvd, Bridgeport, WV 26330   |
| TELEHONE NUMBER: 304-624-4108   |
| PROJECT LOCATION: Project is located off of Snow Bird Road (CR 50/16 at the Doddridge County Park |
| NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)   |
| ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)  |
| DISTRICT: New Milton / West Union   |
| DATE/FROM WHOM PROPERTY   |
| PURCHASED: Lone Pine Operating INC. (Parcel 7)  |
| LAND BOOK DESCRIPTION:  |
| DEED BOOK REFERENCE: DB163, PG687 and DB304, PG437  |
| TAX MAP REFERENCE: 1 / 16   |
| EXISTING BUILDINGS/USES OF PROPERTY: Recreational   |
| NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT                    |
| PROPERTY  |
| ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE                         |
| SUBJECT PROPERTY  |
|   |
|   |

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

|                                      |   | AC   | TIVITY  |   |   |                       | STRUCT                          | URAL TYPE  |   |
|--------------------------------------|---|--|---|---|---|-----------------------|---------------------------------|--|---|
| [3*<br>[]]<br>[]]<br>[]]             |   | New Struct<br>Addition<br>Alteration<br>Relocation<br>Demolition<br>Manufact | 1   | bil Home  |   | 0<br>0<br>0<br>0<br>0 | Residentia<br>Non-resid         | al (1 – 4 Family)<br>al (more than 4 Fam<br>ential (floodproofin<br>I Use (res. & com.)<br>ent |   |
| В                                    | • | OTHER DE   | VEOPL   | MENT ACTIV  | /ITIES:                                 |                       |                                 |  |   |
| 0<br>Q<br>0<br>0<br>0<br>0<br>0<br>0 |   | Watercour<br>Drainage In<br>Road, Stree<br>Subdivision                       | se Alterc<br>mprovem<br>et, or Brid<br>(includion<br>Water or | Mining for STRUCTUF ation (includin lents (includin dge Construct ng new expan Sewer Systen fy) | ng dredgi<br>ng culvert<br>ion<br>sion) | ng and ch             | T checked :                     |  | : |
| C.                                   |   | STANDAR  | RD SITE   | PLAN OR SK  | KETCH                                   |                       |                                 |  |   |
|                                      |   | IF STANDA<br>SKETCH ON   | <b>RD SITE F</b><br>I A SEPAR                                 |   | NOT BEEN<br>INCH SHE                    | N PREPAR              | E <mark>D:</mark><br>APER THE S | ARED.  HAPE AND LOCATIO  TION OR LAND USE  |   |

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 \$ 400,000

INDICATING BUILDING SETBACKS, SIZE & HEIGHT. IDENTIFY EXISTING BUILDINGS,

D. ADJACENT AND/OR AFFECTED LANDOWNERS:

STRUCTURES OR LAND USES ON THE PROPERTY.

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

| NAME: 1 L (IKE) MOTTIS   | NAME: Marie E. Gassaway    |  |
|--|----------------------------|--|
| ADDRESS: P.O. Box 397  | ADDRESS: 618 Fairview Ave. |  |
| Glenville, WV 26351  | Lebannon, TN 37087         |  |
| NAME:  | NAME:                      |  |
| ADDRESS:   | ADDRESS:                   |  |
| LOCATED UPON ANY ADJACENT APPLICATION IS FILED AND THE RESIDING IN ANY HOME ON ANY IS DEMONSTRATED BY A FLOOD NAME: ADDRESS: | NAME:                      |  |
| 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): CRAFG L HAWTERER PORS.   |
|--|
| SIGNATURE: Day of futer for DATE: 3-16-18  |
| 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 <u>NOT</u> located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and <b>NO FLOOPLAIN DEVELOPMENT PERMIT IS REQUIRED</b> ). |
| [] 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  |
|-------------|--|
| SEC<br>Floc | ION 4: ADDITIONAL INFORMATION REQUIRED (To be completed by deplain Administrator/Manager or his/her representative)  |
| The proc    | pplicant must submit the documents checked below before the application can be ssed.   |
| 0,          | A plan showing the location of all existing structures, water bodies, adjacent roads, lot dimensions and proposed development.   |
| 0           | Development plans, drawn to scale, and specifications, including where applicable: details for anchoring structures, storage tanks, proposed elevation of lowest floor, (including basement or crawl space), types of water resistant materials used below the first floor, details of flood proffing of utilities located below the first floor and details of enclosures below the first floor. Also |
| []          | Subdivision or other development plans (If the subdivision or development exceeds 50 lots or 5 acres, whichever is the lesser, the applicant must provide 100-year flood elevations if they are not otherwise available).  |
| []          | Plans showing the extent of watercourse relocation and/or landform alterations.  |
| C)          | Top of new fill elevationFt. NGVD (MSL).  For floodproofing structures applicant must attach certification from registered engineer or architect.  |
| []          | Certification from a registered engineer that the proposed activity in a regulatory  |

[]

[]

[]

[]

[]

[]

floodway will not result in any increase in the height of the 100-year flood. A copy of all

Contractor's License and a Manufactured Home Installation License as required by the

data and calculations supporting this finding must also be submitted.

Federal Emergency Management Agency (FEMA).

Manufactured homes located in a floodplain area must have a West Virginia

| ON 5: PERI                  | MIT DETERMINATION (To be completed by Floodplain ator/Manager or his/her representative)   |
|-----------------------------|--|
| provisions o<br>County on M | mined that the proposed activity (type is or is not) in conformance of the Floodplain Ordinance adopted by the County Commission of D 1 ay 21, 2013. The permit is issued subject to the conditions attache f this permit. |
| SIGNED                      | DATE   |
| with the pro                | lain Administrator/Manager found that the above was not in conforvisions of the Doddridge County Floodplain Ordinance and/or denie<br>the applicant may complete an appealing process below.                               |
| APPEALS:                    | Appealed to the County Commission of Doddridge County? [] Yes Hearing Date:  |
|                             | County Commission Decision - Approved [] Yes [] No   |
|                             |  |

## 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 isFT. NGVD (MSL)  |
|---------------|---|
| 2             | Actual (As Built) elevation of floodproofing isFT. NGVD (MSL)   |
| Note<br>appli | : Any work performed prior to submittal of the above information is at risk of the cant.  |
| SECT          | FION 7: COMPLIANCE ACTION (To be completed by the Floodplain  |
| Adm           | ninistrator/Manager or his/her representative).   |
| as ap         | loodplain Administrator/Manager or his/her representative will complete this section plicable based on inspection of the project to ensure compliance with the Doddridge ty Floodplain Ordinance. |
| IN            | ISPECTIONS:   |
|               | DATE:BY: DEFICIENCIES ? Y/N   |
| cc            | DMMENTS   |
|               |   |
|               |   |
|               |   |
|               |   |
|               |   |
| <u>SECTI</u>  | ON 8: CERTIFICATE OF COMPLIANCE (To be completed by Floodplain  |
| <u>Admi</u>   | nistrator/Manager or his/her representative).   |
| Certific      | cate of Compliance issued: DATE:BY:   |

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

|                       | PERMIT NUMBER:   |  |
|-----------------------|--|--|
|                       | PERMIT DATE:   |  |
| PURP                  | OSE -  |  |
| CONSTRUCTION LOCATION | ON:  |  |
|                       |  |  |
| OWNER'S ADDRESS:      |  |  |
|                       |  |  |
|                       |  |  |
|                       | ·  |  |
|                       |  |  |
|                       | •  |  |
| THE FOLLOWING ARROWS  | , ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;  |  |
| ADMINISTRATOR/MANAG   | E COMPLETED BY THE FLOODPLAIN GER OR HIS/HER AGENT.                            |  |
| COMPLIANCE IS HE      | RERV CERTICIED WITH THE RECUIRED   |  |
| FLOODPLAIN ORDINANCE  | REBY CERTIFIED WITH THE REQUIREMENT OF THE ADOPTED BY THE COUNTY COMMISSION OF |  |
| DODDRIDGE COUNTY ON   | MAY 21, 2013.  |  |
|                       |  |  |
| SIGNED                | DATE   |  |

### STREAM CROSSING FLOODPLAIN ANALYSIS

### DODDRIDGE COUNTY PARK MEATHOUSE FORK DODDRIDGE COUNTY, WV

#### **MARCH 2015**



PREPARED FOR:

DODDRIDGE COUNTY PARKS

#### DODDRIDGE COUNTY PARKS MEATHOUSE FORK DODDRIDGE COUNTY, WV

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|                     |   |
|                     | SECTION  PROJECT DESCRIPTION HYDROLOGIC ANALYSIS HYDRAULIC ANALYSIS CONCLUSIONS |

#### **APPENDICES**

- 1 SITE HYDROLOGY CALCULATIONS
- 2 HEC-RAS SUMMARY TABLE
- 3 HEC-RAS CROSS SECTIONS
- 4 SITE PLAN

## DODDRIDGE COUNTY PARK MEATHOUSE FORK DODDRIDGE COUNTY, WEST VIRGINIA

#### **1.0 PROJECT DESCRIPTION**

The Thrasher Group has been contracted by Doddridge County Park to perform a hydrologic and hydraulic (H&H) study for a permanent bridge crossing. This crossing would provide access to approximately 200 acres the park could develop into camp grounds and recreational facilities. The proposed bridge crossing is positioned opposite of the livestock facility in the park which is located off Snow Bird Road (County Route 50/16).

#### 2.0 HYDROLOGY ANALYSIS

A hydrology study was not performed since FEMA's Flood Insurance Study provided flows for Meathouse Fork. According to the study, Meathouse Fork at the confluence with Middle Island Creek has a flow of 9,600 cfs which is just downstream from our proposed construction.

#### 3.0 HYDRAULIC ANALYSIS

The hydraulic analysis was performed using HEC-RAS and the hydrologic information provided by FEMA's Doddridge County Flood Insurance Study (F.I.S.). A known water surface elevation of 799' was used for the program's boundary condition since the stream is located in a FEMA designated zone "AE". The Stream and floodplain roughness coefficients used in the analysis were also described in the F.I.S as listed below.

| Channel    | 0.07 | sluggish reaches, weedy, deep pools |
|------------|------|-------------------------------------|
| Floodplain | 0.10 | heavy stand of timber               |
|            | 0.03 | pasture no brush; short grass       |

The surrounding area of the bridge was surveyed by The Thrasher Group. Additional mapping of Meathouse Fork was used from the GIS database to create an overall existing surface. Cross sections were created and inserted into HEC-RAS. Subsequently a hydraulic model was produced to analyze the effect of the bridge in the stream.

#### **4.0 CONCLUSION**

After analyzing the effects of the proposed bridge, it will increase the flood elevation by approximately 4.2 inches immediately upstream of the bridge at station 1378.89. This increase is within FEMA standards which allows up to 1 foot. By the time the backwater wraps around the park and reaches the upstream park limits, the increase will be back to existing elevations.

## APPENDIX 1 SITE HYDROLOGY CALCULATIONS

#### 3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the county.

Discharge-frequency curves were developed on a regional basis that applies to West Virginia (References 3 and 4). For the streams studied by detailed methods, 1-percent-annual-chance flood elevations were determined through discharge-frequency relations and the Manning equation. Within the Town of West Union, flood elevations were determined through streamflow-station data relationships and the Manning's equation.

Peak discharge-drainage area relationships for each stream studied by detailed methods are presented in Table 2, "Summary of Discharges".

Table 2 – Summary of Discharges

| FLOODING SOURCE AND LOCATION                  | DRAINAGE<br>AREA<br>(SQ. MILES) | PEAK DISCHARGE (CFS)<br>1-PERCENT-<br>ANNUAL- CHANCE |
|---|---------------------------------|--|
| MIDDLE ISLAND CREEK                           |                                 |  |
| Upstream of Doddridge-Tyler County boundary   | 134.78                          | 15,200   |
| Approximately 0.1 mile downstream of          |                                 |  |
| confluence of Piggin Run                      | 120.06                          | 13,080   |
| BUCKEYE CREEK                                 |                                 |  |
| At confluence with Middle Island Creek        | 38.62                           | 7,350  |
| Downstream of confluence of Long Run          | 22.62                           | 5,150  |
| Upstream of confluence of Greenbrier Creek    | 9.41                            | 3,050  |
| Downstream of confluence of Traugh Fork       | 1.52                            | 1,310  |
| MEATHOUSE FORK                                |                                 |  |
| At confluence with Middle Island Creek        | 66.84                           | 9,600  |
| Downstream of confluence of Toms Fork         | 50.47                           | 8,200  |
| Downstream of confluence of Brushy Fork       | 29.87                           | 6,050  |
| Downstream of confluence of Laurel Run and    |                                 |  |
| Big Isaac Creek                               | 3.76                            | 2,230  |
| MCELROY CREEK                                 |                                 |  |
| Upstream of confluence of Flint Run           | 61.95                           | 9,250  |
| Upstream of confluence of Rigging Run         | 51.23                           | 8,300  |
| Downstream of confluence of Talkington Fork   | 39.18                           | 7,100  |
| Downstream of confluence of Robinson Fork and |                                 |  |
| Big Battle Run                                | 20.75                           | 4,900  |

using the USACE HEC-2 step-backwater computer program, and the results were published in a special flood hazard information report (References 5 and 6). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Channel roughness factors (Manning's "n") used in the hydraulic computations were assigned on the basis of field surveys of the stream and floodplain areas. For Middle Island Creek, channel "n" values range from 0.040 to 0.045 and overbank "n" values range from 0.050 to 0.070. For Buckeye Creek and Meathouse Fork, channel "n" values range from 0.055 to 0.080.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Qualifying benchmarks within a given jurisdiction that are catalogued by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Benchmarks catalogued by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation (e.g. mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation (e.g. concrete bridge abutment)
- Stability C: Monuments which may be affected by surface ground movements (e.g. concrete monument below frost line)
- Stability D: Mark of questionable or unknown vertical stability (e.g. concrete monument above frost line, or steel witness post)

In addition to NSRS benchmarks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

To obtain current elevation, description, and/or location information for benchmarks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their Web site at <a href="https://www.ngs.noaa.gov">www.ngs.noaa.gov</a>.

It is important to note that temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

## APPENDIX 2 HEC-RAS SUMMARY TABLES

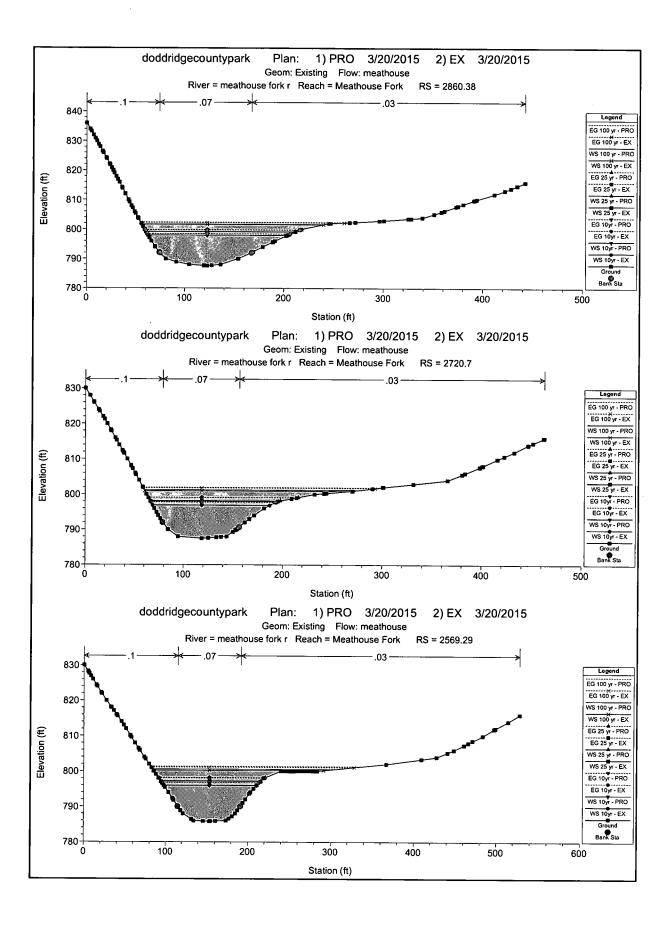
HEC-RAS River: meathouse fork r Reach; Meathouse Fork

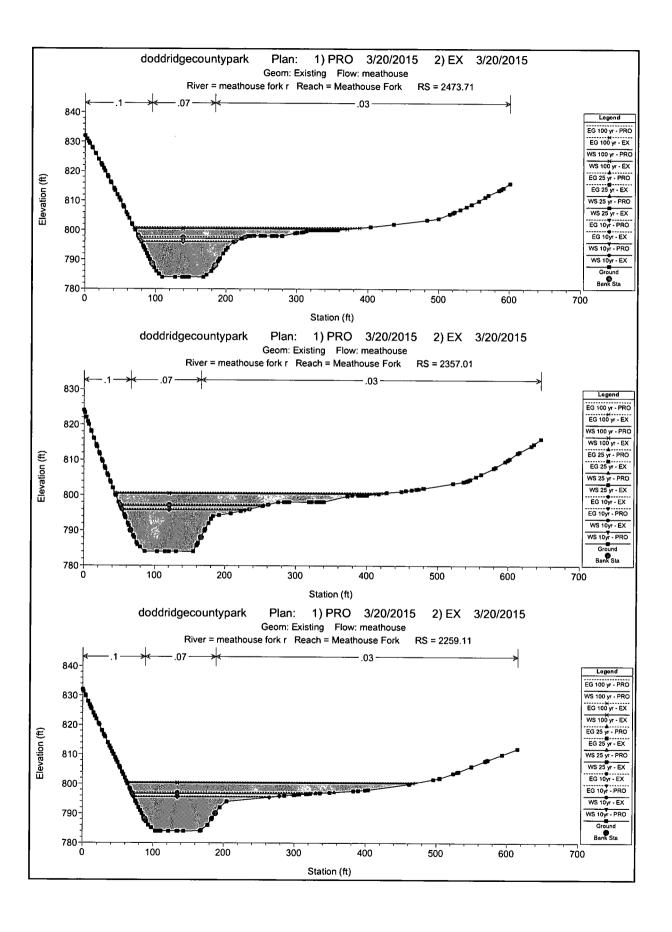
| Reach   | River Sta   | Profile  | Plan                    | Q Total   | Min Ch El                                      | W.S. Elev                            | Crit W.S. | E.G. Elev                                      | E.G. Slope                                   | Vel Chril                              | Flow Area   | Top Width                                      | Froude # Chl                         |
|---|---|--|-------------------------|---|--|--------------------------------------|-----------|--|--|--|---|--|--------------------------------------|
| a 10 10 10 10 10  |   | 41 27 44   | n dellar P              | (cfs)   | (ft)   | (ft) +                               | (ft)      | (ft)   | (ft/ft)                                      | (ft/s)                                 | (sq ft)   | (ft)   | 110000 # 011                         |
| Meathouse Fork  | 2860.38   | 100 yr   | PRO                     | 9600.00   | 787.57   | 801.79                               |           | 802.39   |  |  | 1592.41   | 186.66   | 0.3                                  |
| Meathouse Fork  | 2860.38   | 100 yr   | EX                      | 9600.00   | 787.57   | 801.60                               |           | 802.23   | 0.003029                                     | <del></del>                            |   |  |                                      |
| Meathouse Fork  | 2860.38   | 25 yr  | PRO                     | 7149.00   | 787.57   | 799.21                               |           |  |  | 6.30                                   | 1557.24   | 183.71   | 0.3                                  |
| Meathouse Fork  | 2860.38   | 25 yr  | EX                      |   |  |                                      |           | 799.83   | 0.003928                                     |  | 1160.79   | 151.76   | 0.3                                  |
| Meathouse Fork  |   |  |                         | 7149.00   | 787.57   | 799.13                               |           | 799.76   | 0.004063                                     | 6.30                                   | 1147.85   | 150.99   | 0.3                                  |
|   | 2860.38   | 10yr   | PRO                     | 5593.00   | 787.57   | 797.96                               |           | 798.49   | 0.004041                                     | 5.80                                   | 978.28  | 140.61   | 0.3                                  |
| Meathouse Fork  | 2860.38   | 10yr   | EX                      | 5593.00   | 787.57   | 797.93                               |           | 798.46   | 0.004107                                     | 5.83                                   | 973.14  | 140.32   | 0.3                                  |
| - W. A., 1107 t.  | 11  | (A. 111.11   |                         |   |  |                                      |           |  |  |  |   |  |                                      |
| Meathouse Fork  | 2720.7  | 100 yr   | PRO                     | 9600.00   | 787.48   | 801.19                               |           | 801.92   | 0.003824                                     | 7.13                                   | 1446.10   | 217.73   |                                      |
| Meathouse Fork  | 2720.7  | 100 yr   | EX                      | 9600.00   | 787.48   | 800.92                               |           | 801.71   |  |  |   |  | 0.3                                  |
| Meathouse Fork  | 2720.7  | 25 yr  | PRO                     |   |  |                                      |           |  | 0.004244                                     | 7.41                                   | 1389.32   | 209.22   | 0.3                                  |
|   |   |  |                         | 7149.00   | 787.48   | 798.14                               |           | 799.10   | 0.006519                                     | 7.77                                   | 933.55  | 132.13   | 0.4                                  |
| Meathouse Fork  | 2720.7  | 25 yr ::   | EX                      | 7149.00   | 787.48   | 798.00                               |           | 799.00   | 0.006876                                     | 7.90                                   | 914.34  | 129.12   | 0.4                                  |
| Meathouse Fork  | 2720.7  | 10yr   | PRO                     | 5593.00   | 787.48   | 796.91                               |           | 797.74   | 0.006801                                     | 7.25                                   | 778.94  | 119.42   | 0.4                                  |
| Meathouse Fork  | 2720.7  | 10yr   | EX                      | 5593.00   | 787.48   | 796.84                               |           | 797.69   | 0.007006                                     | 7.32                                   |   |  |                                      |
| Hall Mark the   |   |  |                         |   | 1 471.10                                       | 7,00.01                              |           | 707.00   | 0.007000                                     | 7.32                                   | 771.26  | 118.86   | 0.4                                  |
| Meathouse Fork  | 2569.29   | 100 yr   | PRO                     | 0000.00   | 705 70   |                                      |           |  |  |  |   |  |                                      |
|   |   |  |                         | 9600.00   | 785.78   | 800.52                               |           | 801.32   | 0.003981                                     | 7.63                                   | 1442.24   | 219.88   | 0.3                                  |
| Meathouse Fork  | 2569.29   | 100 уг   | EX                      | 9600.00   | 785.78   | 800.22                               |           | 801.10   | 0.004417                                     | 7.92                                   | 1380,18   | 206.64   | 0.3                                  |
| Meathouse Fork  | 2569.29   | 25 yr  | PRO                     | 7149.00   | 785.78   | 797.19                               |           | 798.14   | 0.006169                                     | 7.89                                   | 950.82  | 122.28   |                                      |
| Meathouse Fork  | 2569.29   | 25 yr  | EX                      | 7149.00   | 785.78   | 797.06                               |           | 798.04   | 0.006477                                     |  |   |  | 0.4                                  |
| Meathouse Fork  | 2569.29   | 10yr   | PRO                     | 5593.00   | 785.78   |                                      |           |  |  | 8.02                                   | 935.06  | 121.28   | 0.4                                  |
| Meathouse Fork  | 2569.29   |  |                         |   |  | 795.95                               |           | 796.76   | 0.006126                                     | 7.23                                   | 805.94  | 112.84   | 0.4                                  |
| Weautouse Fork  | 2369.29   | 10yr   | EX                      | 5593.00   | 785.78   | 795.92                               |           | 796,73   | 0.006208                                     | 7.26                                   | 802.34  | 112.63   | 0.4                                  |
|   |   | 11.0   | 2 111                   |   |  |                                      |           |  | ,  |  |   |  |                                      |
| Meathouse Fork  | 2473.71   | 100 yr   | PRO                     | 9600.00   | 783.99   | 800.60                               |           | 800.97   | 0.001532                                     | 5.22                                   | 2093.52   | 212.44   |                                      |
| Meathouse Fork  | 2473.71   | 100 yr   | EX                      | 9600.00   | 783.99   | 800.34                               |           | 800.74   | 0.001532                                     |  |   | 312.41   | 0.2                                  |
| Meathouse Fork  | 2473.71   | 25 yr  | PRO                     |   |  |                                      |           |  |  | 5.41                                   | 2015.46   | 300.95   | 0.2                                  |
| Meathouse Fork  |   |  |                         | 7149.00   | 783.99   | 797.18                               |           | 797.65   | 0.002401                                     | 5.56                                   | 1339.26   | 146.06   | 0.2                                  |
|   | 2473,71   | 25 yr  | EX                      | 7149.00   | 783.99   | 797.08                               |           | 797.56   | 0.002474                                     | 5.62                                   | 1325.16   | 144.90   | 0.2                                  |
| Meathouse Fork  | 2473.71   | 10yr   | PRO                     | 5593.00   | 783.99   | 795.92                               |           | 796.30   | 0.002179                                     | 4.94                                   | 1165.48   | 131,47   | 0.2                                  |
| Meathouse Fork  | 2473.71   | 10уг   | EX                      | 5593.00   | 783.99   | 795.92                               |           | 796.30   | 0.002184                                     |  |   |  |                                      |
| STATE OF  |   | Tribbertal   | 17 (19)                 | 1   | . 55.55  | 7.55.52                              |           | 7 80.30  | 0.002184                                     | 4.95                                   | 1164.65   | 131.42   | 0.20                                 |
| Meathouse Fork  | 2357.01   | 100 15   | 000                     | <del></del>   |  |                                      |           |  |  |  |   |  |                                      |
| *****   |   | 100 yr   | PRO                     | 9600.00   | 783.98   | 800.55                               |           | 800.79   | 0.000994                                     | 4.17                                   | 2531.87   | 378.23   | 0.11                                 |
| Meathouse Fork  | 2357.01   | 100 yr   | EX                      | 9600.00   | 783.98   | 800.32                               |           | 800.57   | 0.001089                                     | 4.33                                   | 2446.32   | 368.97   | 0.19                                 |
| Meathouse Fork  | 2357.01   | 25 yr  | PRO .                   | 7149.00   | 783.98   | 796.99                               |           | 797.36   | 0.002050                                     | 5.06                                   | 1493.68   |  |                                      |
| Meathouse Fork  | 2357.01   | 25 yr  | EX                      | 7149.00   | 783.98   | 796.91                               |           | 797.29   |  |  |   | 203.22   | 0.25                                 |
| Meathouse Fork  | 2357.01   | 10yr   | PRO                     | 5593.00   |  |                                      |           |  | 0.002111                                     | 5.11                                   | 1477.73   | 201.42   | 0.26                                 |
| Meathouse Fork  |   |  |                         |   | 783.98   | 795.72                               |           | 796.04   | 0.002023                                     | 4.67                                   | 1253.93   | 173.93   | 0.25                                 |
| Westings Fork   | 2357.01   | 10yr   | EX                      | 5593.00   | 783.98   | 795.73                               |           | 796.05   | 0.002014                                     | 4.67                                   | 1255.93   | 174.21   | 0.25                                 |
| de d'Adriche  |   |  | 10-15-00                |   |  |                                      |           |  |  |  |   |  |                                      |
| Meathouse Fork  | 2259.11   | 100 yr   | PRO                     | 9600.00   | 783,97   | 800.50                               |           | 800.69   | 0.000768                                     | 3.65                                   | 2024.00   | 100.00   |                                      |
| Meathouse Fork  | 2259.11   | 100 yr   | EX                      | 9600.00   | 783.97   | 800.24                               |           |  |  |  | 2824.30   | 409.88   | 0.16                                 |
| Meathouse Fork  | 2259.11   | 25 yr  | PRO                     |   |  |                                      |           | 800.44   | 0.000858                                     | 3.82                                   | 2719.44   | 403.79   | 0.17                                 |
|   |   |  |                         | 7149.00   | 783.97   | 796.77                               |           | 797.15   | 0.002225                                     | 5.19                                   | 1518.26   | 260.39   | 0.26                                 |
| Meathouse Fork  | 2259.11   | 25 уг  | EX                      | 7149.00   | 783.97   | 796.66                               | 1         | 797.06   | 0.002324                                     | 5.28                                   | 1490.20   | 252.32   | 0.27                                 |
| Meathouse Fork  | 2259.11   | 10yr   | PRO                     | 5593.00   | 783.97   | 795.48                               |           | 795.83   | 0.002275                                     | 4.87                                   | 1231.51   | 192.43   |                                      |
| Meathouse Fork  | 2259.11   | 10yr   | EX                      | 5593.00   | 783.97   | 795.48                               |           | 795.83   | 0.002273                                     |  |   |  | 0.26                                 |
|   | 1 4 4 7 7 7 9 7 7 7   |  |                         |   | 700.07   | 700,40                               |           | 793.63   | 0.002273                                     | 4.87                                   | 1231.81   | 192.50   | 0.26                                 |
| Meathouse Fork  | 2159.14   | 400  |                         |   |  |                                      |           |  |  |  |   |  |                                      |
|   |   | 100 yr   | PRO                     | 9600.00   | 783.92   | 800.42                               |           | 800.61   | 0.000684                                     | 3.39                                   | 2779.34   | 375.66   | 0.15                                 |
| Meathouse Fork  | 2159,14   | 100 yr   | EX                      | 9600.00   | 783.92   | 800.16                               |           | 800.37   | 0.000764                                     | 3.54                                   | 2681.82   | 371.78   | 0.16                                 |
| Meathouse Fork  | 2159.14   | 25 yr  | PRO                     | 7149.00   | 783.92   | 796.56                               |           | 796.92   | 0.002172                                     | 4.99                                   | 1508.16   | 263.87   |                                      |
| Meathouse Fork  | 2159.14   | 25 yr  | EX .                    | 7149.00   | 783.92   | 796.45                               |           | 796.82   |  |  |   |  | 0.26                                 |
| Meathouse Fork  | 2159.14   | 10yr   | PRO                     |   |  |                                      |           |  | 0.002293                                     | 5.09                                   | 1477.53   | 259.01   | 0.26                                 |
|   |   |  |                         | 5593.00   | 783.92   | 795.24                               |           | 795.59   | 0.002491                                     | 4.93                                   | 1192.14   | 214.35   | 0.27                                 |
| Meathouse Fork  | 2159.14   | 10уг   | EX                      | 5593.00   | 783.92   | 795.24                               |           | 795.59   | 0.002485                                     | 4.92                                   | 1193.27   | 214.53   | 0.27                                 |
|   | . 14.1  |  | 0.0904.5                |   |  |                                      |           |  |  |  |   |  |                                      |
| Meathouse Fork  | 2059.08   | 100 ут   | PRO                     | 9600.00   | 783,87   | 800.33                               |           | 800.54   | 0.000771                                     | 3.58                                   | 2680.12   | 250.00   |                                      |
| Meathouse Fork  | 2059.08   | 100 yr   | EX                      | 9600.00   | 783.87   | 800.05                               |           | 800.27   | 0.000872                                     |  |   | 358.99   | 0.16                                 |
| Meathouse Fork  | 2059.08   | 25 yr  | PRO                     |   |  |                                      |           |  |  | 3.76                                   | 2578.41   | 355.75   | 0.17                                 |
| Meathouse Fork  |   |  |                         | 7149.00   | 783.87   | 796.21                               |           | 796.66   | 0.002938                                     | 5.66                                   | 1363.83   | 250.01   | 0.30                                 |
|   | 2059.08   | 25 yr  | EX                      | 7149.00   | 783.87   | 796.04                               |           | 796.53   | 0.003178                                     | 5.83                                   | 1322.82   | 242.97   | 0.31                                 |
| Mealhouse Fork  | 2059.08   | 10уг   | PRO                     | 5593.00   | 783.87   | 794.84                               |           | 795.29   | 0.003359                                     | 5.54                                   | 1064.54   | 185.63   | 0.31                                 |
| deathouse Fork  | 2059.08   | 10уг   | EX                      | 5593.00   | 783.87   | 794.83                               |           | 795.29   | 0.003370                                     | 5,55                                   | 1063.17   |  |                                      |
|   |   |  | 1.675.000               |   |  |                                      |           | . 55.25  | 0.003370                                     | 5,55                                   | 1003.17   | 185.27   | 0.31                                 |
| Meathouse Fork  | 1945.71   | 100 yr   | PRO                     | 0800.00   | 700.04   | 000.00                               |           |  |  |  |   |  |                                      |
|   |   |  |                         | 9600.00   | 783.81   | 800.25                               |           | 800.45   | 0.000752                                     | 3.55                                   | 2696.11   | 352.09   | 0.16                                 |
| Meathouse Fork  | 1945.71   | 100 yr   | EX                      | 9600.00   | 783.81   | 799.97                               |           | 800.19   | 0.000840                                     | 3.71                                   | 2599.85   | 347.63   | 0.17                                 |
| Meathouse Fork  |   | 25 yr  | PRO                     | 7149.00   | 783.81   | 795.89                               |           | 796.33   | 0.002870                                     | 5.55                                   | 1373.30   | 240.08   | 0.30                                 |
| Aeathouse Fork  | 1945.71   | 25 yr  | EX                      | 7149.00   | 783.81   | 795.72                               |           | 796.19   | 0.003100                                     | 5.70                                   | 1333,33   | 233.24   |                                      |
| deathouse Fork  | 1945.71   | 10уг   | PRO                     | 5593.00   | 783.81   | 794.48                               |           | 794.91   |  |  |   |  | 0.31                                 |
| deathouse Fork  | 1945.71   | 10yr   | EX                      | 5593.00   | 783.81   |                                      | +         |  | 0.003246                                     | 5.38                                   | 1079.68   | 172.81   | 0.31                                 |
|   |   |  |                         | 3333.00   | 103.01   | 794.49                               |           | 794.92   | 0.003237                                     | 5.38                                   | 1080.79   | 173.15   | 0.31                                 |
| Anathor C   | 1044 17   | 100  | 220                     |   |  |                                      |           |  |  |  |   |  |                                      |
| deathouse Fork  |   |  | PRO                     | 9600.00   | 783.76   | 80.08                                |           | 800.35   | 0.001062                                     | 4.13                                   | 2318.27   | 291.76   | 0.19                                 |
| deathouse Fork  | 1841.47   | 100 уг   | EX                      | 9600.00   | 783.76   | 799.75                               |           | 800.05   | 0.001197                                     | 4.32                                   | 2225.43   | 284.97   | 0.20                                 |
| deathouse Fork  | 1841.47   | 25 уг  | PRO                     | 7149.00   | 783.76   | 795.35                               |           | 795.96   | 0.004220                                     | 6.38                                   | 1168.79   |  |                                      |
| deathouse Fork  |   |  | EX                      | 7149.00   | 783.76   | 795.09                               |           |  |  |  |   | 189.24   | 0.35                                 |
| Asathouse Fork  |   |  | PRO                     | 5593.00   |  |                                      |           | 795.74   | 0.004745                                     | 6.65                                   | 1119.62   | 181.36   | 0.37                                 |
|   |   |  |                         |   | 783.76   | 793.90                               |           | 794.48   | 0.004904                                     | 6.20                                   | 925.51  | 147.30   | 0.37                                 |
| deathouse Fork  | 1841.47   | 10yr   | EX                      | 5593.00   | 783.76   | 793.89                               |           | 794.47   | 0.004945                                     | 6.22                                   | 922.84  | 146.98   | 0.37                                 |
|   | L   |  |                         |   |  |                                      |           |  |  | —————————————————————————————————————— |   |  | - 5.57                               |
| leathouse Fork  | 1696.67   | 100 yr   | PRO                     | 9600.00   | 782.00   | 799.96                               |           | 800.21   | 0.000829                                     | 3,84                                   | 2508.34   | 200 70   |                                      |
| feathouse Fork  | 1696.67   |  | EX                      | 9600.00   | 782.00   | 799.64                               |           |  |  |  |   | 280.76   | 0.17                                 |
| leathouse Fork  |   |  | PRO                     |   |  |                                      |           | 799.90   | 0.000918                                     | 3,98                                   | 2418.31   | 273.48   | 0.18                                 |
|   |   |  |                         | 7149.00   | 782.00   | 794.96                               |           | 795.42   | 0.002790                                     | 5.48                                   | 1330.86   | 181.47   | 0.29                                 |
| leathouse Fork  |   |  | EX                      | 7149.00   | 782.00   | 794.65                               |           | 795.16   | 0.003159                                     | 5.72                                   | 1275.90   | 177,11   | 0.31                                 |
|   |   | 10yr   | PRO                     | 5593.00   | 782.00   | 793.44                               |           | 793.87   | 0.003229                                     | 5.34                                   | 1071.36   | 159.55   | 0.31                                 |
|   | 1696.67   | 10yr   | EX                      | 5593.00   | 782.00   | 793.42                               |           | 793.86   | 0.003247                                     | 5.35                                   |   |  |                                      |
|   |   |  |                         |   |  |                                      |           | 7.50.00  | 5.005247                                     | 5.35                                   | 1069.40   | 159.39   | 0.31                                 |
|   |   |  | PRO                     | 9600.00   |  |                                      |           |  |  |  |   |  |                                      |
| deathouse Fork  |   | 100 vr   |                         |   | 780.34   | 799.90                               |           | 800.13   | 0.000690                                     | 3.59                                   | 2586.39   | 292.30   | 0.15                                 |
| leathouse Fork  | 1596.54   |  |                         |   |  |                                      |           | 799.81   |  |  |   |  |                                      |
| leathouse Fork leathouse Fork   | 1596.54<br>1596.54  | 100 уг   | ĘΧ                      | 9600.00   | 780,34   | 799,57                               |           | 100.01   | 0.000776                                     | 3.76                                   | 2489.64   |  |                                      |
| leathouse Fork<br>leathouse Fork<br>leathouse Fork  | 1596.54<br>1596.54  | 100 yr   |                         |   | 780.34<br>780.34                               | 799.57                               |           | 795.16   |  |  |   | 289.19   | 0.16                                 |
| leathouse Fork<br>leathouse Fork<br>leathouse Fork  | 1596.54<br>1596.54<br>1596.54   | 100 yr<br>25 yr                                    | ĘΧ                      | 9600.00<br>7149.00                                  | 780.34   | 794.69                               |           | 795.16   | 0.002537                                     | 5.42                                   | 1308.53   | 289.19<br>173.68                               | 0.16<br>0.27                         |
| leathouse Fork leathouse Fork leathouse Fork leathouse Fork   | 1596.54<br>1596.54<br>1596.54<br>1596.54                                  | 100 yr<br>25 yr<br>25 yr                           | EX<br>PRO<br>EX         | 9600.00<br>7149.00<br>7149.00                       | 780.34<br>780.34                               | 794.69<br>794.34                     |           | 795.16<br>794.85                               | 0.002537<br>0.002921                         | 5.42<br>5.71                           | 1308.53<br>1248.76                                  | 289.19<br>173.68<br>168.40                     | 0.16<br>0.27<br>0.29                 |
| leathouse Fork leathouse Fork leathouse Fork leathouse Fork leathouse Fork  | 1596.54<br>1596.54<br>1596.54<br>1596.54<br>1596.54                       | 100 yr<br>25 yr<br>25 yr<br>10yr                   | EX<br>PRO<br>EX<br>PRO  | 9600.00<br>7149.00<br>7149.00<br>5593.00            | 780.34<br>780.34<br>780.34                     | 794.69<br>794.34<br>793.12           |           | 795.16<br>794.85<br>793.56                     | 0.002537<br>0.002921<br>0.002977             | 5.42<br>5.71<br>5.36                   | 1308.53   | 289.19<br>173.68                               | 0.16<br>0.27                         |
| leathouse Fork leathouse Fork leathouse Fork leathouse Fork leathouse Fork  | 1596.54<br>1596.54<br>1596.54<br>1596.54<br>1596.54                       | 100 yr<br>25 yr<br>25 yr<br>10yr                   | EX<br>PRO<br>EX         | 9600.00<br>7149.00<br>7149.00                       | 780.34<br>780.34                               | 794.69<br>794.34                     |           | 795.16<br>794.85                               | 0.002537<br>0.002921                         | 5.42<br>5.71                           | 1308.53<br>1248.76                                  | 289.19<br>173.68<br>168.40                     | 0.16<br>0.27<br>0.29                 |
| feathouse Fork leathouse Fork leathouse Fork leathouse Fork leathouse Fork leathouse Fork   | 1596.54<br>1596.54<br>1596.54<br>1596.54<br>1596.54<br>1596.54            | 100 yr<br>25 yr<br>25 yr<br>10yr<br>10yr           | EX PRO EX PRO EX EX     | 9600.00<br>7149.00<br>7149.00<br>5593.00            | 780.34<br>780.34<br>780.34                     | 794.69<br>794.34<br>793.12           |           | 795.16<br>794.85<br>793.56                     | 0.002537<br>0.002921<br>0.002977             | 5.42<br>5.71<br>5.36                   | 1308.53<br>1248.76<br>1053.61                       | 289.19<br>173.68<br>168.40<br>151.51           | 0.16<br>0.27<br>0.29<br>0.29         |
| feathouse Fork                | 1596.54<br>1596.54<br>1596.54<br>1596.54<br>1596.54<br>1596.54            | 100 yr<br>25 yr<br>25 yr<br>10yr<br>10yr           | EX<br>PRO<br>EX<br>PRO  | 9600.00<br>7149.00<br>7149.00<br>5593.00            | 780.34<br>780.34<br>780.34                     | 794.69<br>794.34<br>793.12<br>793.11 |           | 795.16<br>794.85<br>793.56<br>793.55           | 0.002537<br>0.002921<br>0.002977<br>0.002995 | 5.42<br>5.71<br>5.36<br>5.37           | 1308.53<br>1248.76<br>1053.61<br>1051.45            | 289.19<br>173.68<br>168.40<br>151.51<br>151.30 | 0.16<br>0.27<br>0.29<br>0.29<br>0.29 |
| deathouse Fork | 1596.54<br>1596.54<br>1596.54<br>1596.54<br>1596.54<br>1596.54            | 100 yr<br>25 yr<br>25 yr<br>10yr<br>10yr           | EX PRO EX PRO EX PRO EX | 9600.00<br>7149.00<br>7149.00<br>5593.00<br>5593.00 | 780.34<br>780.34<br>780.34<br>780.34<br>779.55 | 794.69<br>794.34<br>793.12<br>793.11 |           | 795.16<br>794.85<br>793.56<br>793.55<br>800.04 | 0.002537<br>0.002921<br>0.002977<br>0.002995 | 5.42<br>5.71<br>5.36<br>5.37           | 1308.53<br>1248.76<br>1053.61<br>1051.45<br>2716.05 | 289.19<br>173.68<br>168.40<br>151.51<br>151.30 | 0.16<br>0.27<br>0.29<br>0.29<br>0.29 |
| deathouse Fork | 1596.54<br>1596.54<br>1596.54<br>1596.54<br>1596.54<br>1596.54<br>1476.77 | 100 yr<br>25 yr<br>25 yr<br>10yr<br>10yr<br>100 yr | EX PRO EX PRO EX EX     | 9600.00<br>7149.00<br>7149.00<br>5593.00<br>5593.00 | 780.34<br>780.34<br>780.34<br>780.34           | 794.69<br>794.34<br>793.12<br>793.11 |           | 795.16<br>794.85<br>793.56<br>793.55           | 0.002537<br>0.002921<br>0.002977<br>0.002995 | 5.42<br>5.71<br>5.36<br>5.37           | 1308.53<br>1248.76<br>1053.61<br>1051.45            | 289.19<br>173.68<br>168.40<br>151.51<br>151.30 | 0.16<br>0.27<br>0.29<br>0.29<br>0.29 |

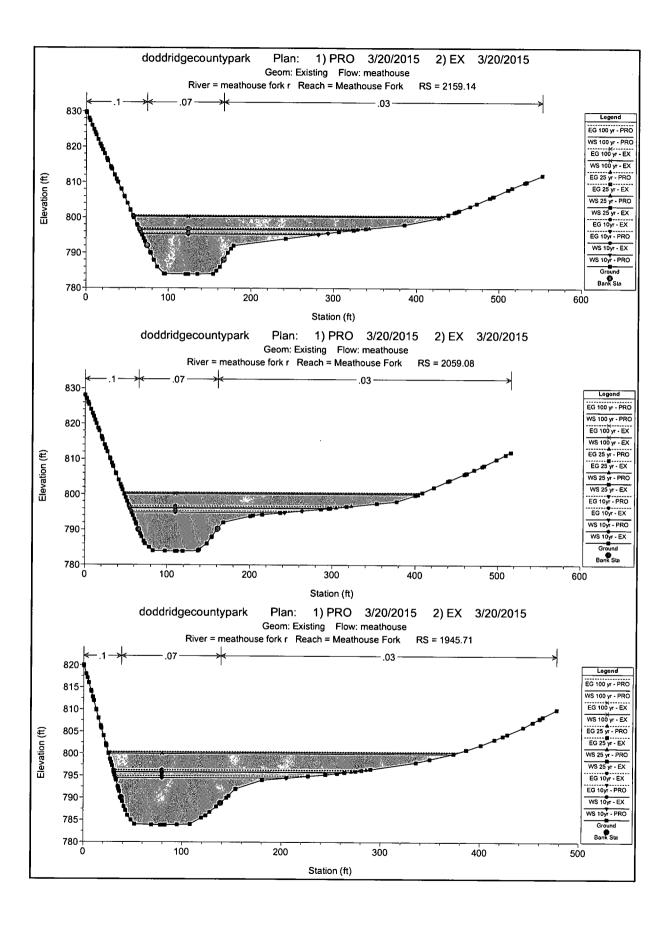
HEC-RAS River: meathouse fork r Reach: Meathouse Fork (Continued)

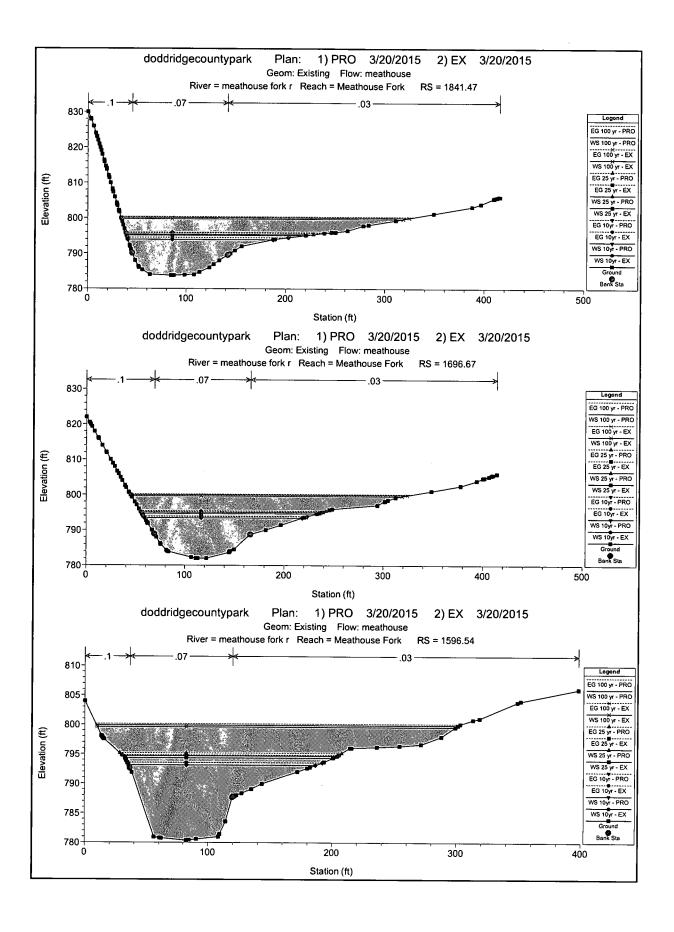
| Reach               | River Sta         | Profile | Plan   | Q Total | Min Ch El | W.S. Elev | 0-9-144-0 |           |            |           |           |           |              |
|---------------------|-------------------|---------|--|---------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|--------------|
|                     | 711101 012        | 7.000   | The state of the s | (cfs)   |           |           | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chril | Flow Area | Top Width | Froude # Chl |
| Meathouse Fork      | 1476,77           | 25 yr   | EX :::::   |         | (ft)      | (ft)      | (ft)      | (ft)      | (ft/ft)    | (ft/s)    | (sq ft)   | (ft)      | <u> </u>     |
| Meathouse Fork      | 1476.77           | 10yr    |  | 7149.00 | 779.55    | 793.98    |           | 794.50    | 0.002877   | 5.90      | 1259.45   | 168.14    | 0.29         |
| Meathouse Fork      | 1476.77           | 10yr    | PRO  | 5593.00 | 779.55    | 792.77    |           | 793.21    | 0.002801   | 5.45      | 1087.06   | 151.05    | 0.28         |
| Wood (COSC ) OIK    | 1470.77           | Troyi   |  | 5593.00 | 779.55    | 792.75    |           | 793.20    | 0.002822   | 5.46      | 1064.26   | 150.78    | 0.28         |
| Meathouse Fork      | 1378.89           | 400     | -  |         |           |           |           |           |            |           |           |           |              |
|                     |                   | 100 yr  | PRO  | 9600.00 | 779.77    | 799.76    | 789,33    | 799.96    | 0.000679   | 3.59      | 2708.54   | 363.44    | 0.15         |
| Meathouse Fork      | 1378.89           | 100 yr  | EX   | 9600.00 | 779.77    | 799.41    |           | 799.63    | 0.000776   | 3.78      | 2582.82   | 353.95    | 0.16         |
| Meathouse Fork      | 1378.89           | 25 yr   | PRO  | 7149.00 | 779.77    | 793.99    | 787.82    | 794.56    | 0.003471   | 6.23      | 1193.68   | 172.66    | 0.32         |
| Meathouse Fork      | 1378.89           | 25 yr   | EX   | 7149.00 | 779.77    | 793.49    |           | 794.16    | 0.004256   | 6.70      | 1109.63   | 164.86    | 0.35         |
| Meathouse Fork      | 1378.89           | 10уг    | PRO  | 5593.00 | 779.77    | 792.27    | 786.79    | 792.86    | 0.004296   | 6.24      | 918.30    | 145.39    | 0.34         |
| Meathouse Fork      | 1378.89           | 10yr    | EX   | 5593.00 | 779.77    | 792.25    |           | 792.85    | 0.004321   | 6.26      | 916.05    | 141,70    | 0.35         |
| 2 2 2 2 2 2 2 2 2   | . 1400.00         |         |  |         |           |           |           |           |            |           |           |           |              |
| Meathouse Fork      | 1357              |         | - 0 A  | Bridge  |           |           |           |           |            |           |           |           |              |
|                     |                   | 100000  |  |         |           |           |           |           |            |           |           |           |              |
| Meathouse Fork      | 1335.28           | 100 yr  | PRO  | 9600.00 | 779.69    | 799.38    |           | 799.59    | 0.000725   | 3.71      | 2647.77   | 372.16    | 0.15         |
| Meathouse Fork      | 1335.28           | 100 yr  | EX   | 9600.00 | 779.69    | 799.38    |           | 799.59    | 0.000724   | 3,71      | 2648,77   | 372.20    | 0.15         |
| Meathouse Fork      | 1335.28           | 25 yr   | PRO  | 7149.00 | 779.69    | 793.31    |           | 793.96    | 0.004013   | 6,63      | 1125.09   | 167.74    | 0.34         |
| Meathouse Fork      | 1335.28           | 25 yr   | EX   | 7149.00 | 779.69    | 793.31    |           | 793.96    | 0.004005   | 6.63      | 1125.99   | 167.87    | 0.34         |
| Meathouse Fork      | 1335.28           | 10yr    | PRO  | 5593.00 | 779.69    | 792.08    |           | 792.65    | 0.003952   | 6.12      | 937.42    | 138,51    | 0.33         |
| Meathouse Fork      | 1335.28           | 10yr    | EX   | 5593.00 | 779.69    | 792.08    |           | 792.65    | 0.003951   | 6.12      | 937.47    | 138,52    | 0.33         |
|                     | 18.5              | 1 4 4 5 | 14,007,00  |         |           |           |           |           |            |           | 307.47    | 130,32    | 0.33         |
| Meathouse Fork      | 1221.98           | 100 yr  | PRO  | 9600.00 | 779.25    | 799.23    |           | 799.48    | 0.000999   | 3.93      | 2493.43   | 393.66    |              |
| Meathouse Fork      | 1221.98           | 100 yr  | EX   | 9600.00 | 779.25    | 799.23    |           | 799.48    | 0.001000   | 3,94      | 2493.43   | 393.61    | 0.18         |
| Meathouse Fork      | 1221.98           | 25 yr   | PRO  | 7149.00 | 779.25    | 792.54    |           | 793.35    | 0.006301   | 7.29      | 998.66    |           | 0.18         |
| Meathouse Fork      | 1221.98           | 25 yr   | EX   | 7149.00 | 779.25    | 792.54    |           | 793.35    | 0.006300   | 7.29      | 998.68    | 137.20    | 0.41         |
| Meathouse Fork      | 1221.98           | 10yr    | PRO  | 5593.00 | 779.25    | 791.37    |           | 792.07    | 0.005989   | 6.70      |           | 137.20    | 0.41         |
| Meathouse Fork      | 1221.98           | 10yr    | EX   | 5593.00 | 779.25    | 791.37    |           | 792.07    | 0.005990   |           | 842.64    | 128,94    | 0.40         |
|                     | 1 1 1 1 2 2 2 2 2 | 120     |  |         |           | 701.07    |           | 762.07    | 0.003990   | 6,70      | 842.58    | 128.92    | 0.40         |
| Meathouse Fork      | 1122.53           | 100 yr  | PRO  | 9600.00 | 782.00    | 799.08    |           | 799.37    | 0.004404   |           |           |           |              |
| Meathouse Fork      | 1122.53           |         | EX   | 9600.00 | 782.00    | 799.08    |           | 799.37    | 0.001194   | 4.60      | 2371.00   | 382.60    | 0.20         |
| Meathouse Fork      | 1122.53           |         | PRO  | 7149.00 | 782.00    | 791.41    | 788.42    |           | 0.001195   | 4.60      | 2370.75   | 382.60    | 0.20         |
| Meathouse Fork      | 1122.53           | 25 yr   | EX   | 7149.00 | 782.00    | 791.41    | 788.42    | 792.54    | 0.009806   | 8.57      | 840.48    | 109.74    | 0.52         |
| Meathouse Fork      | 1122.53           | 10yr    | PRO  | 5593.00 | 782.00    |           |           | 792.54    | 0.009808   | 8.57      | 840.44    | 109.74    | 0.52         |
| Meathouse Fork      | 1122.53           | 10yr    | EX   | 5593.00 |           | 790.41    | 787.53    | 791.32    | 0.009238   | 7.65      | 734.01    | 104.47    | 0.49         |
| MODEL I GOOD TO THE | 1122.00           | TOYI    |  | 5593.00 | 782.00    | 790.41    | 787.53    | 791.32    | 0.009239   | 7.65      | 733.97    | 104.47    | 0.49         |
| Meathouse Fork      | 1019.29           | 100 yr  | PRO  | 0000.00 | 700.00    |           |           |           |            |           |           |           |              |
| Meathouse Fork      | 1019.29           |         | EX   | 9600.00 | 782.00    | 799.00    | 789.16    | 799.24    | 0.001021   | 4.23      | 2560.36   | 420.27    | 0.19         |
| Meathouse Fork      | 1019.29           | 25 yr   |  | 9600.00 | 782.00    | 799.00    | 789.16    | 799.24    | 0.001021   | 4.23      | 2560.36   | 420.27    | 0.19         |
| Meathouse Fork      |                   |         | PRO  | 7149.00 | 782.00    | 787.98    | 787.98    | 790.55    | 0.042662   | 12.86     | 556.11    | 108.68    | 1.00         |
| Meathouse Fork      |                   | 25 yr   | EX   | 7149.00 | 782.00    | 787.98    | 787.98    | 790.55    | 0.042662   | 12.86     | 556,11    | 108.68    | 1.00         |
|                     | 1019.29           |         | PRO  | 5593.00 | 782.00    | 787.13    | 787.13    | 789.38    | 0.044860   | 12.01     | 465.53    | 104.87    | 1.00         |
| Meathouse Fork      | 1019.29           | 10yr    | EX   | 5593.00 | 782.00    | 787.13    | 787.13    | 789.38    | 0.044860   | 12.01     | 465.53    | 104.87    | 1.00         |

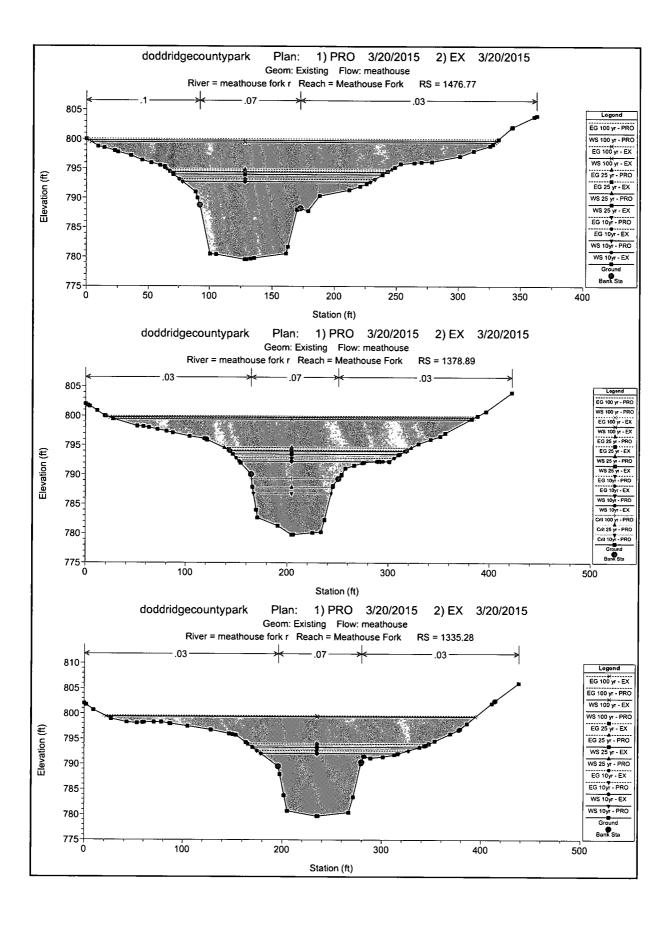
## APPENDIX 3 HEC-RAS CROSS-SECTIONS

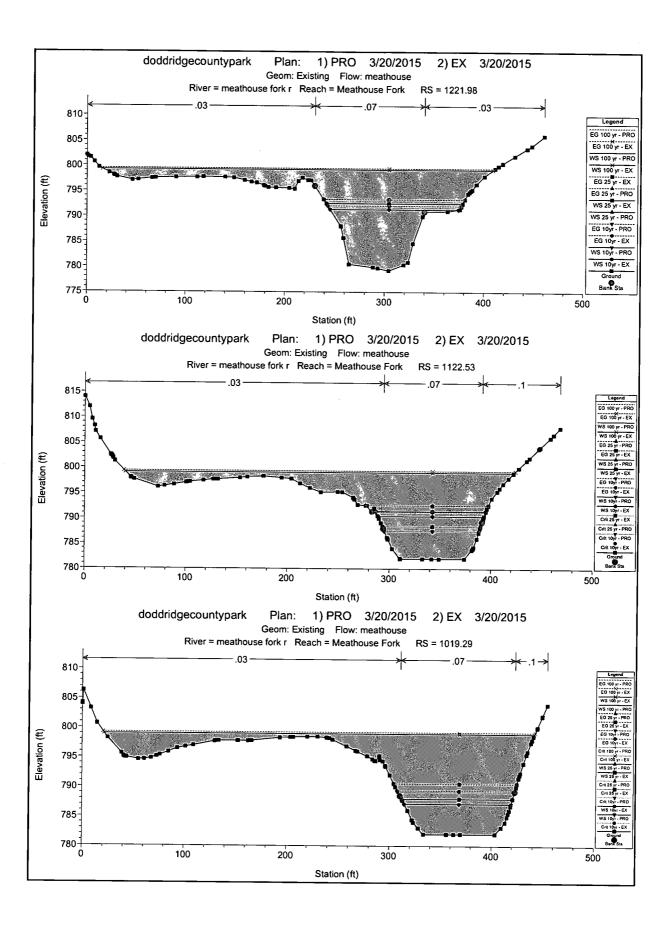


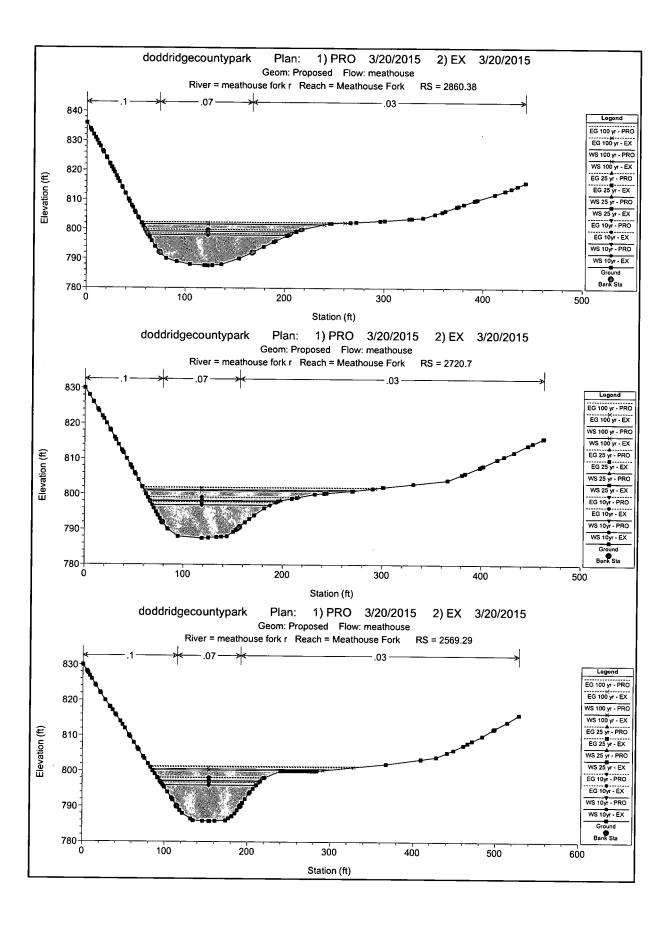


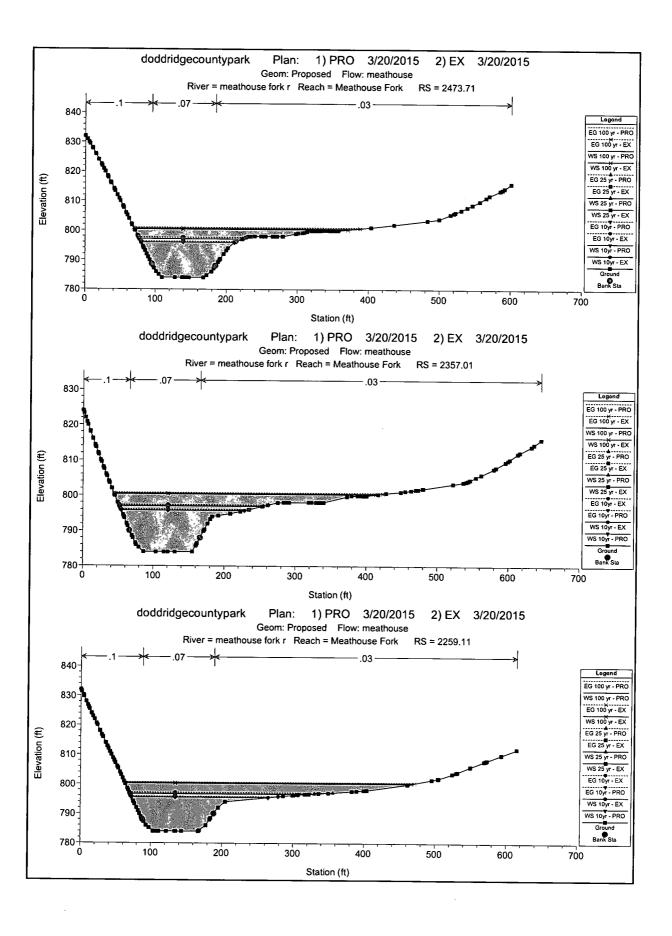


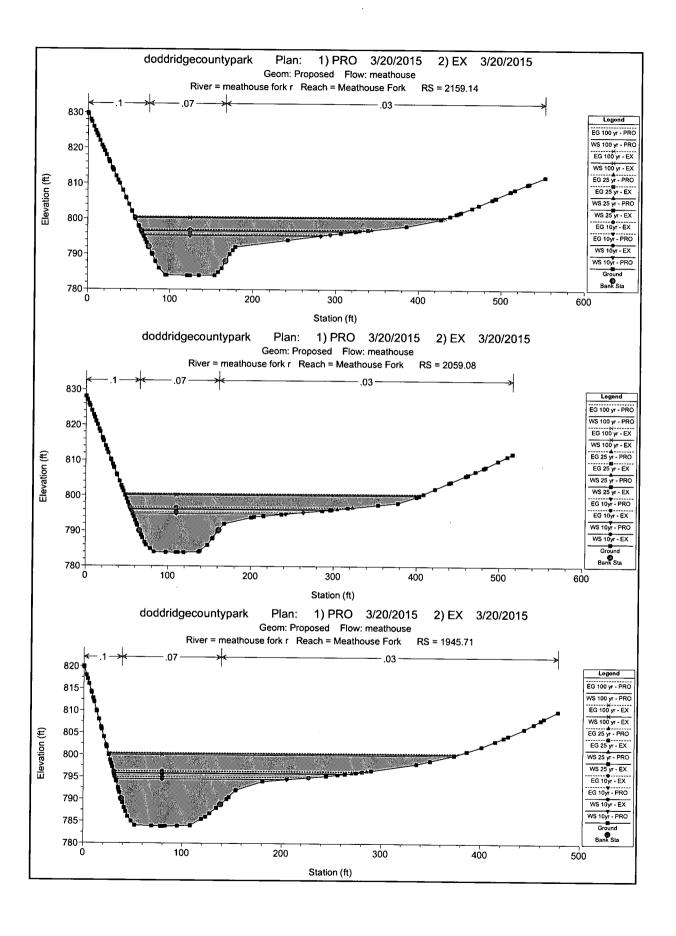


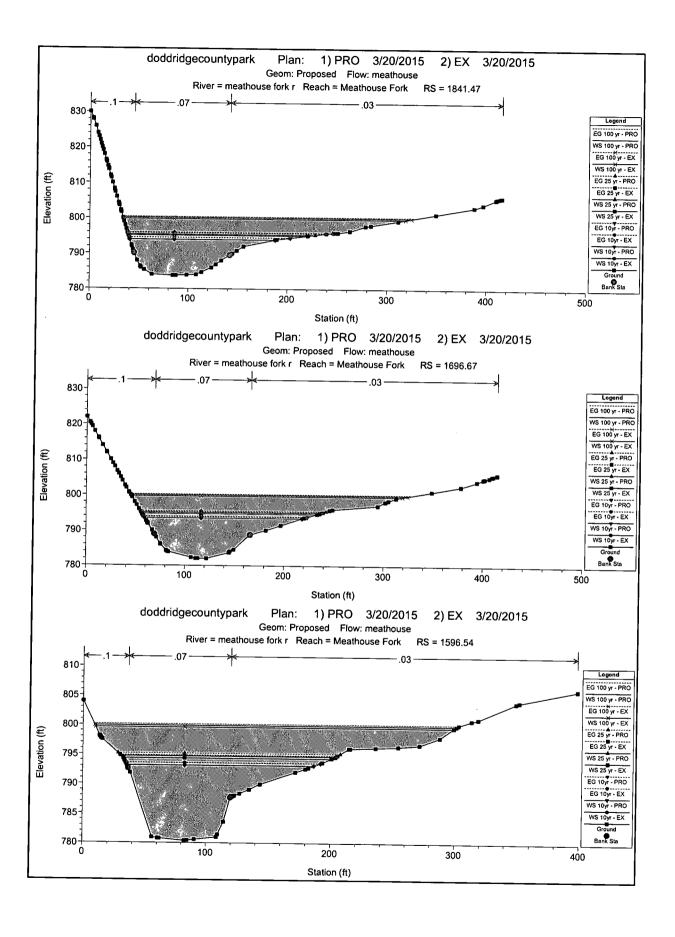


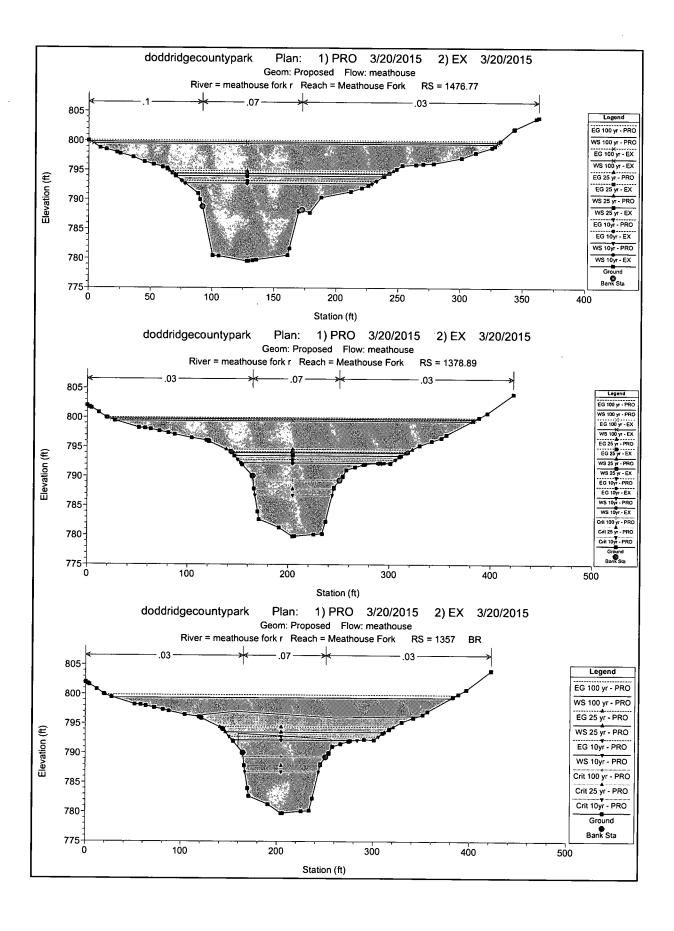


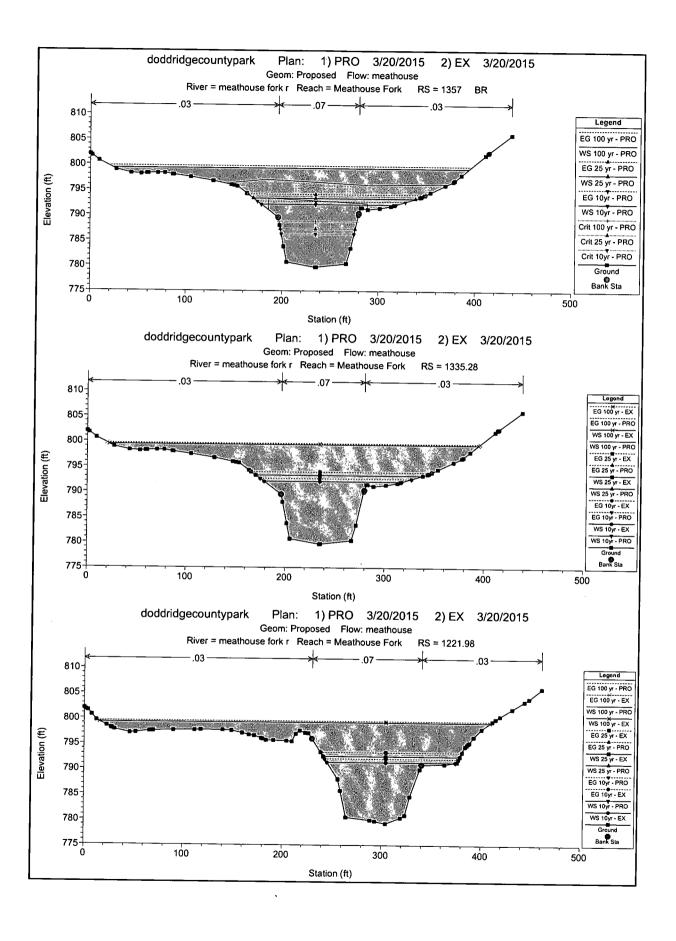


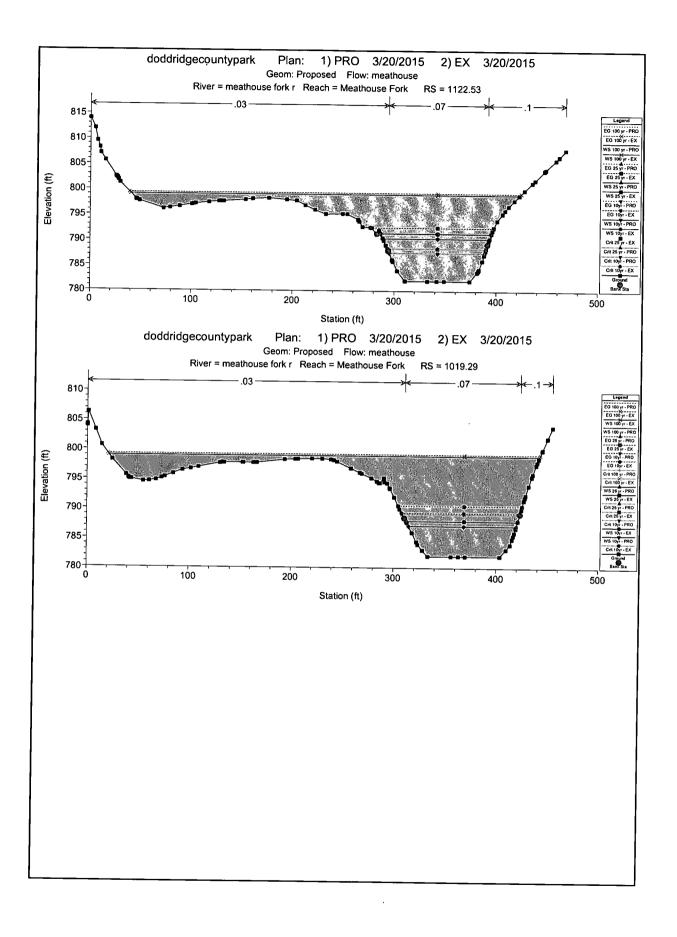




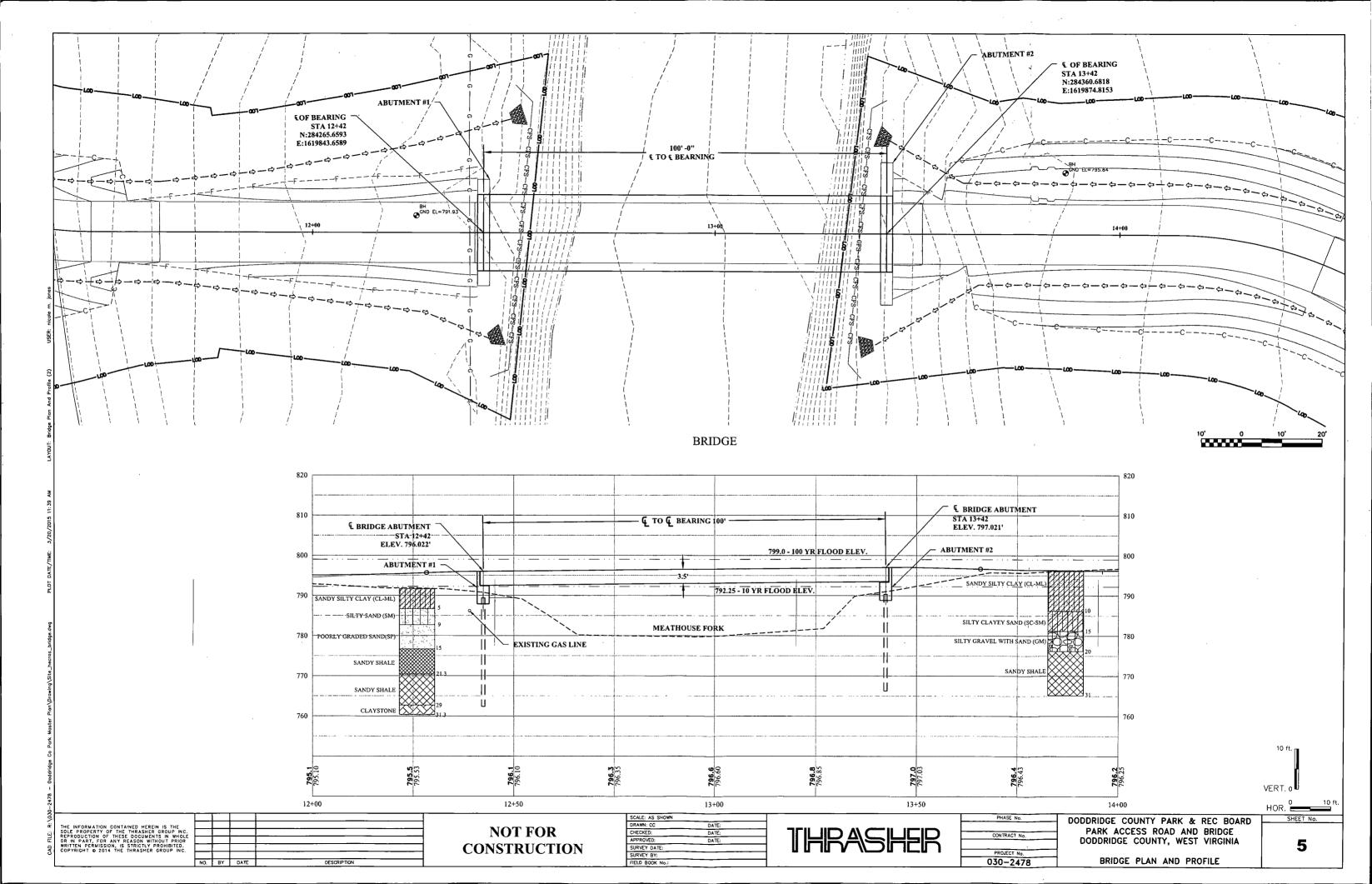


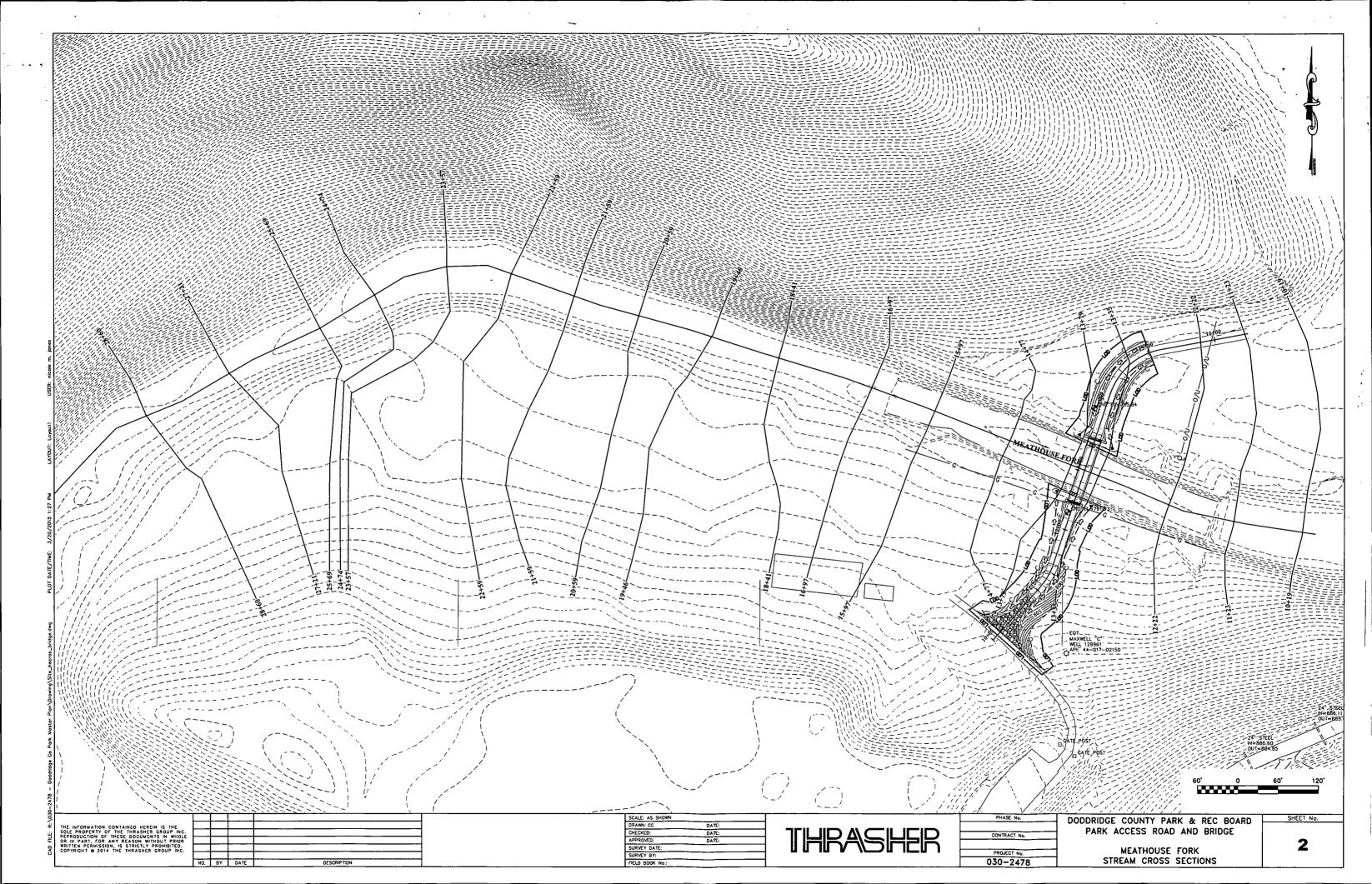






APPENDIX 4
SITE PLANS





#### LEGAL ADVERTISEMENT:

LEGAL ADVERTISEMENT:
Doddridge County
Floodplain Permit Application
Please take notice that on the 9th day of March, 2015
Doddridge County Parks filed an application for a
Floodplain Permit to develop land located at or about:
New Milton & West Union Districts @ Doddridge County
Park Permit #15-350 Meathouse Fork Bridge, Project
#101-030-2478. The Application is on file with the Clerk
of the County Court and may be inspected or copied
during regular business hours. Any interested persons
who desire to comment shall present the same in writing
by April 27, 2015.

Delivered to the:

Delivered to the:

Clerk of the County Court

118 E. Court Street, West Union, WV 26456

Beth A. Rogers, Doddridge County Clerk

Edwin L. "Bo" Wriston, Doddridge County Plood Plain

Manager

4.2.25

4-7-2xb

| STATE OF WEST VIRGINIA,<br>COUNTY OF DODDRIDGE, TO WIT  |
|---|
| I, Virginia Nicholson, Editor of THE HERALD RECORD, a weekly newspaper published regularly, in Doddridge County, West Virginia, Do Hereby Certify That the Accompanying Legal Notice Entitled:  [ |
| was published in said paper for   |
| successive weeks beginning with the issue   |
| ending with the issue of  |
| aprel 14 to 2015 and that said notice contains 189  |
| that said notice contains   |
| WORD SPACE at   |
| amounts to the sum of S A.L.J.Y.  |
| FOR FIRST PUBLICATION, SECOND PUBLICATION IS 75% OF THE FIRST PUBLICATION   |
| s 14,3(   |
| and each publication thereafter  S. 3.8.05  |
| EDITOR  |
| Virgina Micholson   |
| SWORN TO AND SUBSCRIBED   |
| BEFORE ME THIS THE 14 th DAY  |
| OF Gree 2015  |
| NOTARY PUBLIC   |
| OFFICIAL SEAL OFFICIAL SEAL   |
| Notary Public, State Of West Virginia LAURA J STICKEL 212 Edmond Street West Union, WV 26456 My Commission Expires June 14, 2023  |



### 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:

#### **Doddridge County Parks**

filed an application for a Floodplain Permit to develop land located at or about:

New Milton & West Union Districts

@ Doddridge County Park

Permit #15-350 Meathouse Fork Bridge, Project
#101-030-2478

was published in The Doddridge Independent 2 times commencing on Friday, April 17, 2015 and Ending on Friday, April 24, 2015 at the request of:

#### Edwin Wriston, Doddridge County Floodplain Manager& Doddridge County Commission

Given under my hand this Friday, April 24, 2015

The publisher's fee for said publication is:

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

Michael Of Zorn
Publisher of The Doddridge Independent

Subscribed to and sworn to before me on

this date:

Notary Public in and for Doddridge County

My Commission expires on

The 17 day of 197 Ay 20/19

### Garage Sale • Child Abuse

#### Public Notice • Legal Notice

Legal Advertisement:
Doddridge County
Floodplain Permit Application

4/13 - 4/20

Please take notice that on the 9th day of March, 2015 Doddridge County Parks

filed an application for a Floodplain Permit to develop land located at or about:

New Milton & West Union Districts

@ Doddridge County Park
Permit #15-350 Meathouse Fork Bridge, Project #101-030-2478

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 April 27, 2015, delivered to:

Clerk of the County Court

118 E. Court Street, West Union, WV 26456

Beth A Rogers, Doddridge County Clerk

Edwin L. "Bo" Wriston. Doddridge County Flood Plain Manager

