

Commercial/Industrial Floodplain Development Permit

Doddridge County, WV Floodplain Management

This permit has been issued to **Crestwood Marcellus Midstream, LLC**, 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: #15-332 ~ Crestwood Marcellus Midstream, LLC ~
Tar 13/14 Permanent Bridge**

Date Approved: 03/04/2015

Expires: 03/04/2016

Issued to: Crestwood MM, LLC

**POC: Ryan Boustany, Thrasher
304-326-6144**

**Company Address: P. O. Box 940; 600 White Oaks Boulevard
Bridgeport, WV 26330**

**Project Address: Greenbrier District
Lat/Long: 39.245306N/80.598189W**

Purpose of development: Permanent bridge construction.

Issued by: Edwin L. "Bo" Wriston, Doddridge County FPM (*or designee*)

Date: 03/04/2015

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

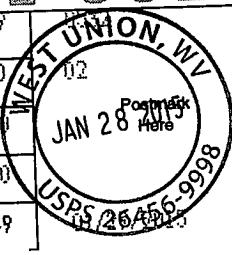
7014 0150 0001 7356 9737

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

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

OFFICIAL USE

Postage	\$	\$0.49
Certified Fee		\$3.30
Return Receipt Fee (Endorsement Required)		\$2.70
Restricted Delivery Fee (Endorsement Required)		\$0.00
		\$6.49



#15-332
 Rosalie Clark
 87 Clark Farm Drive
 Salem, WV 26426

See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- 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:

#15-332

Rosalie Clark

87 Clark Farm Drive
Salem, WV 26426

2. Article Number

(Transfer from service label)

7014 0150 0001 7356 9737

PS Form 3811, July 2013

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X *Within a clock* Agent AddresseeB. Received by *(Printed Name)**W. Clark*

C. Date of Delivery

*11/3/11*D. Is delivery address different from item 1? Yes

If YES, enter delivery address below:

 No

3. Service Type

 Certified Mail® Priority Mail Express™ Registered Return Receipt for Merchandise Insured Mail Collect on Delivery4. Restricted Delivery? *(Extra Fee)* Yes

Domestic Return Receipt

UNITED STATES POSTAL SERVICE



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

• Sender, ~~PLEASE~~ print your name, address, and ZIP+4® in this box •



Doddridge County FPM
118 East Street STE 102
West Union, WV 26456-1262

Doddridge County, West Virginia

RECEIPT NO: 4538

DATE: 2015/04/20

FROM: THE THRASHER GROUP INC

AMOUNT: \$ 500.00

FIVE HUNDRED DOLLARS AND 00 CENTS

FOR: FP BUILDING PERMITS

00000086943 FP-BUILDING PERMITS

020-318 TOTAL: \$500.00

MICHAEL HEADLEY

SHERIFF & TREASURER

PMS

CLERK

Customer Copy

THE THRASHER GROUP, INC.

86943

Re.

Check Total: \$500.00

01/16/2015

Check No. 86943

Pay To DODDRIDGE COUNTY COMMISSION

Invoice No.	Invoice Date	Invoice Amount	Amount Due	Discount	Apply	Balance
16JAN15	01/16/2015	500.00	500.00	0.00	500.00	0.00

DODDRIDGE CO. LOCATION IMPROVEMENT FEE / CRESTWOOD MARCELLUS MIDSTREAM TAR 13/14 PERMANENT BRIDGE PROJECT NO. 101-070-0320

#15-332

Letter of Transmittal

TO: Doddridge County
Commission
Floodplain Dept.
118 East Court Street
West Union, WV 26456

DATE 1/16/2015 PROJECT # 101-070-0320
 ATTN: Bo Wristen
 RE: Crestwood Marcellus Midstream, LLC
TAR 13/14 Permanent Bridge
DCLIP

WE ARE SENDING _____ ATTACHED X ENCLOSED
 _____ UNDER SEPARATE COVER VIA _____

THE FOLLOWING ITEMS

SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 COPY OF LETTER CHANGE ORDER REPORTS OTHER

COPIES	DATE	NO.	DESCRIPTION
1	1/16/2015		DCLIP Submittal

THESE ARE TRANSMITTED AS CHECKED BELOW:

For Approval Approved as Submitted Resubmit Copies for Approval
 For Your Use Approved as Noted Submit Copies for Approval
 As Requested Returned for Corrections Return Corrected Prints
 For Signature and Processing

FOR BIDS DUE _____

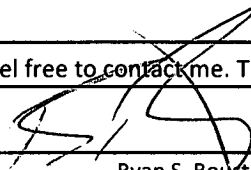
PRINTS RETURNED AFTER LOAN TO US

REMARKS Please see the attached information as it related to the DCLIP general permit submittal
for the TAR 13/14 Permanent Bridge.

If you should have any questions, please feel free to contact me. Thank you,

CC: _____

SIGNED



Ryan S. Boustany

HAND DELIVERED

RECEIVED BY: _____

DATE: _____

#15-332

THRASHER

FILED

2015 JAN 20 AM 11:48

DETHA H. HARRIS
COUNTY CLERK
DODDRIDGE COUNTY, WV

January 15, 2015

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

**RE: Doddridge County Location Improvement Permit
Crestwood Marcellus Midstream, LLC
TAR 13/14 Permanent Bridge
Doddridge County, West Virginia
Thrasher Project #101-070-0320**

Greenbrier District

Mr. Wristen:

On behalf of Crestwood Marcellus Midstream, LLC (Crestwood), The Thrasher Group, Inc., is submitting to your office for review and approval an application package for a Doddridge County Location Improvement Permit to your office for a proposed permanent bridge construction project in the USGS Big Isaac 7.5 minute quadrangle of Doddridge County, WV.

The proposed TAR 13/14 Permanent Bridge will involve the removal of a temporary bridge and the construction of a permanent bridge over Greenbrier Creek located at the approximate coordinates: 39.245306°N / 80.598189°W. The proposed permanent bridge will be constructed in the same location as the temporary bridge. The proposed 14' x 60' permanent bridge will be located downstream and parallel of an existing permanent bridge owned and maintained by the property owner. The existing permanent bridge maintained by the property owner will remain in place and not be affected by construction. The existing bridge is only used by the property owner; however the proposed permanent bridge will be owned and maintained by Crestwood. Once constructed, the proposed permanent bridge will provide access to Crestwood's existing Tichenal to Midpoint Pipeline. Please see attached HEC-RAS report.

Enclosed is a check for \$500.00 which covers the permit fee. The permit fee was calculated by the following:

Bridge construction in floodplain: (\$22,000) = \$22,000
Total construction cost in floodplain = \$22,000

Per Doddridge Counties Floodplain Permit Fee Sheet, if the projects construction cost do not exceed \$100,000.00 then there is a flat fee of \$500.00.

THRASHER

Mr. Wristen
January 15, 2015
Page 2 of 2

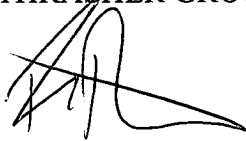
The USGS topographical map, aerial imagery map, FIRM map, and WV Flood Tool Map contained herein depict the proposed limits of disturbance associated with the proposed construction. Additionally, please see attached permit application, and permit fee worksheet, as well as copies of all required federal and state permit applications. No above-ground structures are proposed to be constructed within the 100 year floodplain.

Note that all required federal and state permit applications have been submitted for the project and are attached. Approvals will be forwarded to your office upon receipt.

If any further documentation is required for this project, or if any questions should arise, please feel free to contact me at your convenience at (304) 624-4108 or rboustany@thrashereng.com.

Sincerely,

THRASHER GROUP, INC.



Ryan S. Boustany
Staff Engineer

Enclosures

DODDRIDGE COUNTY FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

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

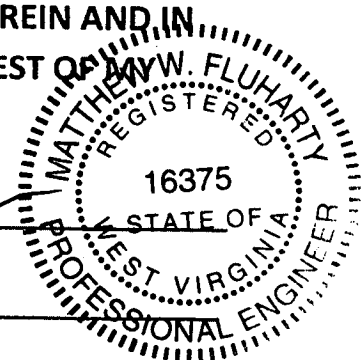
1. No work may start until a permit is issued.
2. The permit may be revoked if any false statements are made herein.
3. If revoked, all work must cease until permit is re-issued.
4. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no 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 _____

Matthew W. Fluharty

DATE _____

1/16/15



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: Crestwood Marcellus Midstream LLC

ADDRESS: 801 Cherry St., Suite 3800 Fort Worth, TX 76102

TELEPHONE NUMBER: (817) 339-5400

BUILDER'S NAME: _____

ADDRESS: _____

TELEPHONE NUMBER: _____

ENGINEER'S NAME: MATTHEW W. FLUHARTY, PE, The Thrasher Group, Inc.

ADDRESS: 600 White Oaks Blvd., Bridgeport, WV 26330

TELEPHONE NUMBER: (304) 624-4108

PROJECT LOCATION:

NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT) Please see attached. _____

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

DISTRICT: _____

DATE/FROM WHOM PROPERTY

PURCHASED: _____

LAND BOOK DESCRIPTION: _____

DEED BOOK REFERENCE: _____

TAX MAP REFERENCE: _____

EXISTING BUILDINGS/USES OF PROPERTY: _____

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

ACTIVITY

STRUCTURAL TYPE

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

B. OTHER DEVELOPMENT ACTIVITIES:

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

C. STANDARD SITE PLAN OR SKETCH

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

ACTUAL TOTAL CONSTRUCTION COSTS OF THE COMPLETE DEVELOPMENT IRRESPECTIVE OF WHETHER ALL OR ANY PART OF THE SUBJECT PROPOSED CONSTRUCTION PROJECT IS WITHIN THE FLOODPLAIN \$ \$22,000

D. ADJACENT AND/OR AFFECTED LANDOWNERS:

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

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

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

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

E. CONFIRMATION FORM

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

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

Surface Owner

Dist. Name	Dis.	Map	Par	Sub	Owner	Address	City,St.,Zip	Location	Book	Page
Greenbrier	4	4	26		CLARK ROSALIE (LIFE)	87 CLARK FARM DR	SALEM, WV 26426		287	593

Downstream Owner

Dist. Name	Dis.	Map	Par	Sub	Owner	Address	City,St.,Zip	Location	Book	Page
Greenbrier	4	4	26		CLARK ROSALIE (LIFE)	87 CLARK FARM DR	SALEM, WV 26426		287	593

Upstream Owners

Dist. Name	Dis.	Map	Par	Sub	Owner	Address	City,St.,Zip	Location	Book	Page
Greenbrier	4	4	26		CLARK ROSALIE (LIFE)	87 CLARK FARM DR	SALEM, WV 26426		287	593

- (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): _____

SIGNATURE: _____ DATE: _____

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 FLOODPLAIN DEVELOPMENT PERMIT IS REQUIRED**).

Is located in Special Flood Hazard Area.

FIRM zone designation _____

100-Year flood elevation is: _____ NGVD (MSL)

Unavailable

The proposed development is located in a floodway.

FBFM Panel No. _____

Dated _____

See section 4 for additional instructions.

SIGNED

Matthew S. Hill

DATE

11/16/15

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

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

- A plan showing the location of all existing structures, water bodies, adjacent roads, lot dimensions and proposed development.
- Development plans, drawn to scale, and specifications, including where applicable: details for anchoring structures, storage tanks, proposed elevation of lowest floor, (including basement or crawl space), types of water resistant materials used below the first floor, details of flood proffing of utilities located below the first floor and details of enclosures below the first floor. Also _____

- Subdivision or other development plans (If the subdivision or development exceeds 50 lots or 5 acres, whichever is the lesser, the applicant must provide 100-year flood elevations if they are not otherwise available).
- Plans showing the extent of watercourse relocation and/or landform alterations.
- Top of new fill elevation _____ Ft. NGVD (MSL).
For floodproofing structures applicant must attach certification from registered engineer or architect.
- Certification from a registered engineer that the proposed activity in a regulatory floodway will not result in any increase in the height of the 100-year flood. A copy of all data and calculations supporting this finding must also be submitted.
- Manufactured homes located in a floodplain area must have a West Virginia Contractor's License and a Manufactured Home Installation License as required by the Federal Emergency Management Agency (FEMA).

Other:

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

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

SIGNED _____ DATE _____

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

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

CONDITIONS: _____

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

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

COMPLETE 1 OR 2 BELOW:

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

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

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

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

INSPECTIONS:

DATE: _____ BY: _____
DEFICIENCIES ? Y/N

COMMENTS _____

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

Certificate of Compliance issued: DATE: _____ BY: _____

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

PERMIT NUMBER: _____

PERMIT DATE: _____

PURPOSE –

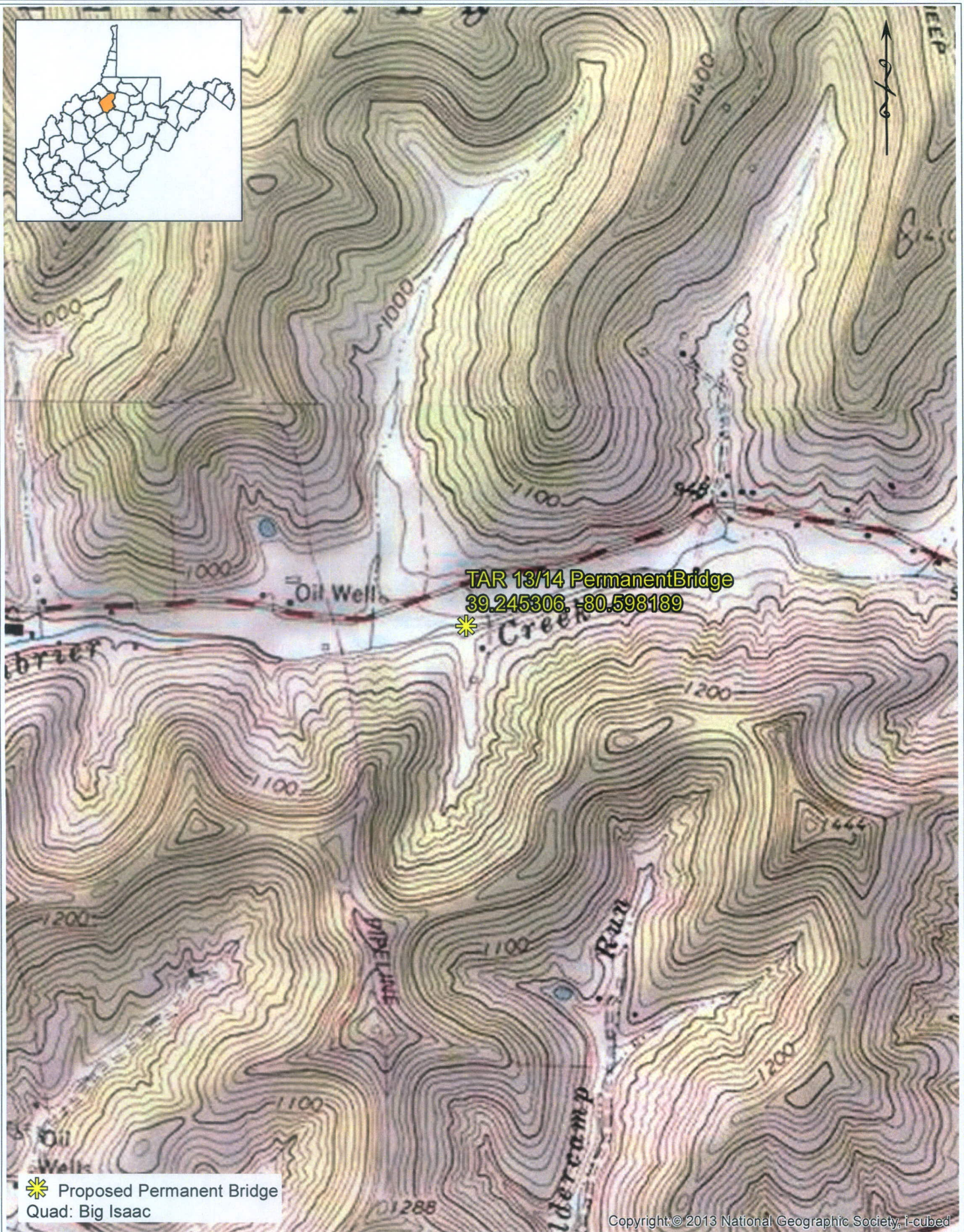
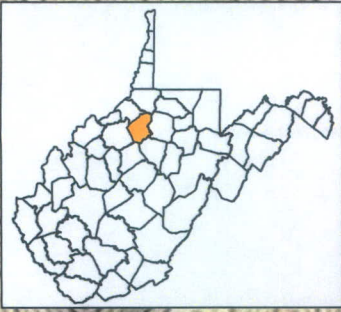
CONSTRUCTION LOCATION: _____

OWNER'S ADDRESS: _____

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

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

SIGNED _____ **DATE** _____



✱ Proposed Permanent Bridge
 Quad: Big Isaac

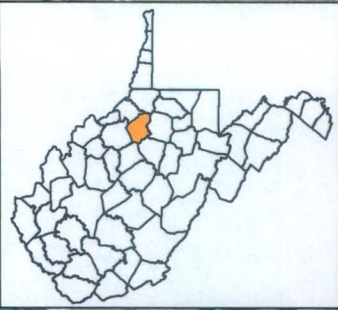





1 inch = 1,000 feet

Figure 1: Project Location

TAR 13/14 Permanent Bridge
 Doddridge County - West Virginia





-  NWI
-  Existing Permanent Bridge
-  Proposed Permanent Bridge

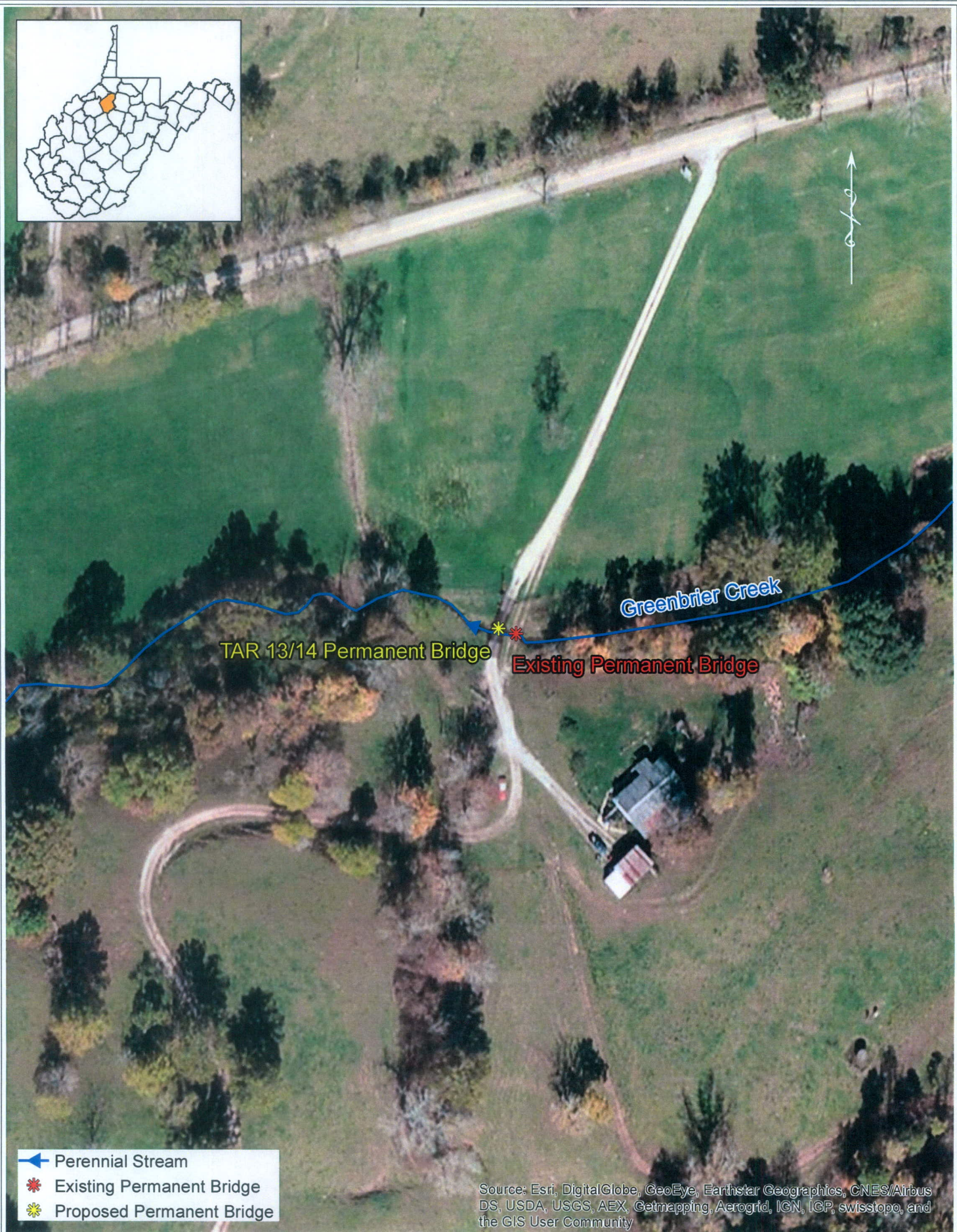
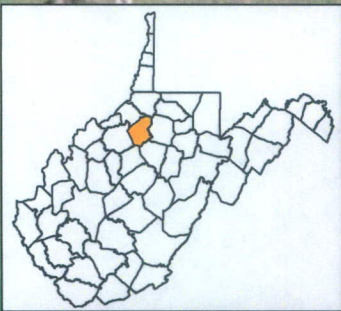
Note: NWI data is downloaded from the US Fish & Wildlife website and used without any edits or modifications. There are no wetland areas near this location according to this data.




Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Figure 2: NWI Mapper
TAR 13/14 Permanent Bridge
Doddridge County - West Virginia





-  Perennial Stream
-  Existing Permanent Bridge
-  Proposed Permanent Bridge

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

By: MWWilliams



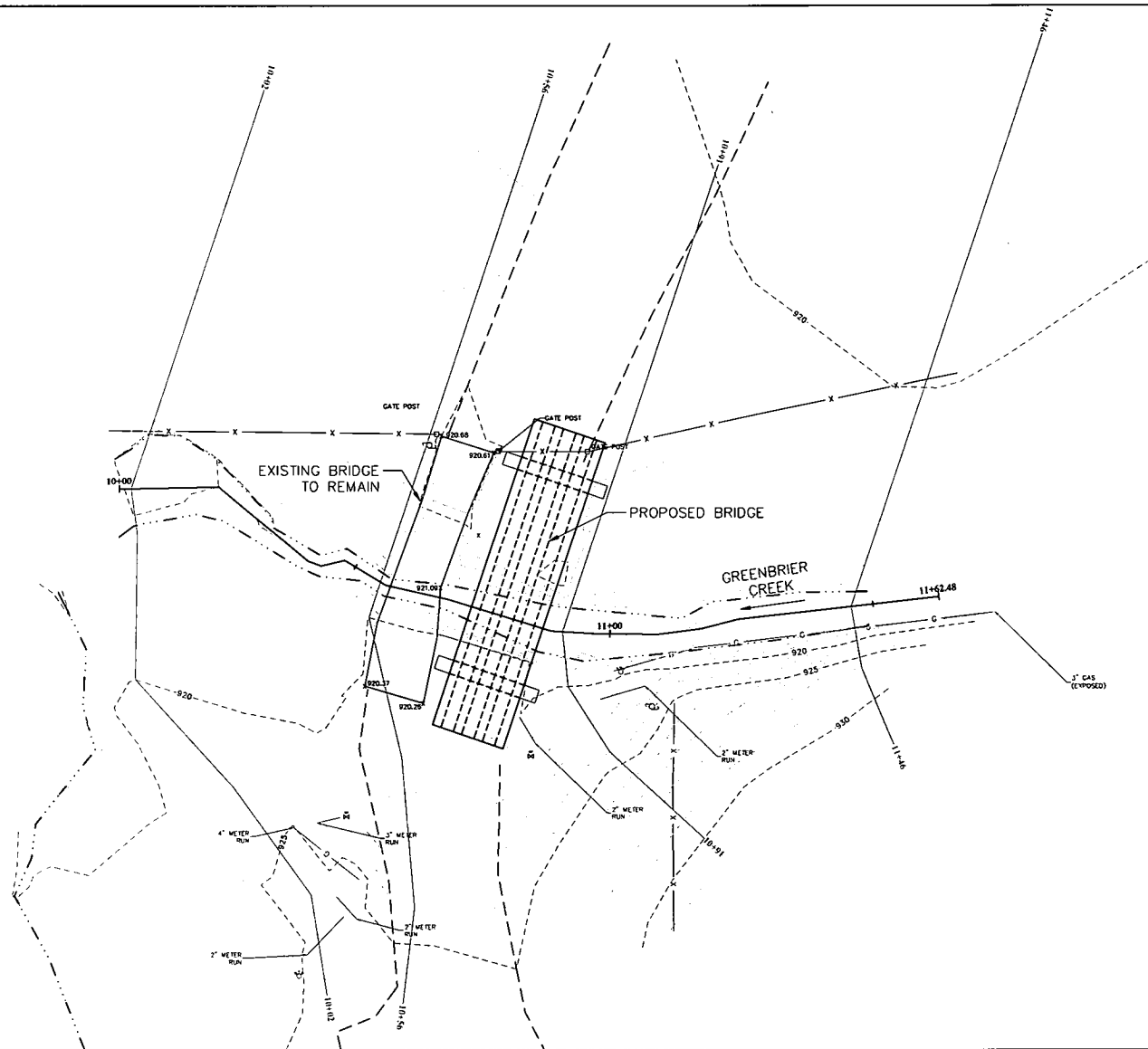
1 inch = 100 feet

Figure 3: Delineation
TAR 13/14 Permanent Bridge
Doddridge County - West Virginia

THRASHER

1/14/2015

CAD FILE: R:\070-030 - Crestwood Marcellus - TAR 13-14 Permanent Bridge\Drawings\1301st.dwg
 PLOT DATE/TIME: 1/16/2019 9:00 AM
 USER: ryan.s.boulety
 LAYOUT: Layout1



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NO.	BY	DATE	DESCRIPTION

SCALE:	DATE:
DRAWN:	DATE:
CHECKED:	DATE:
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK NO.:	

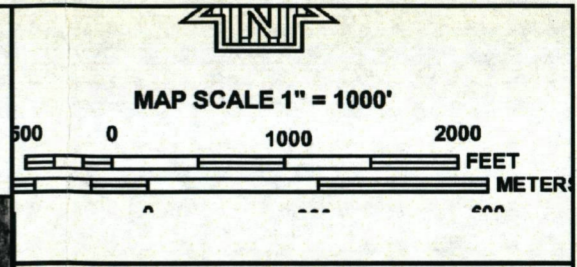
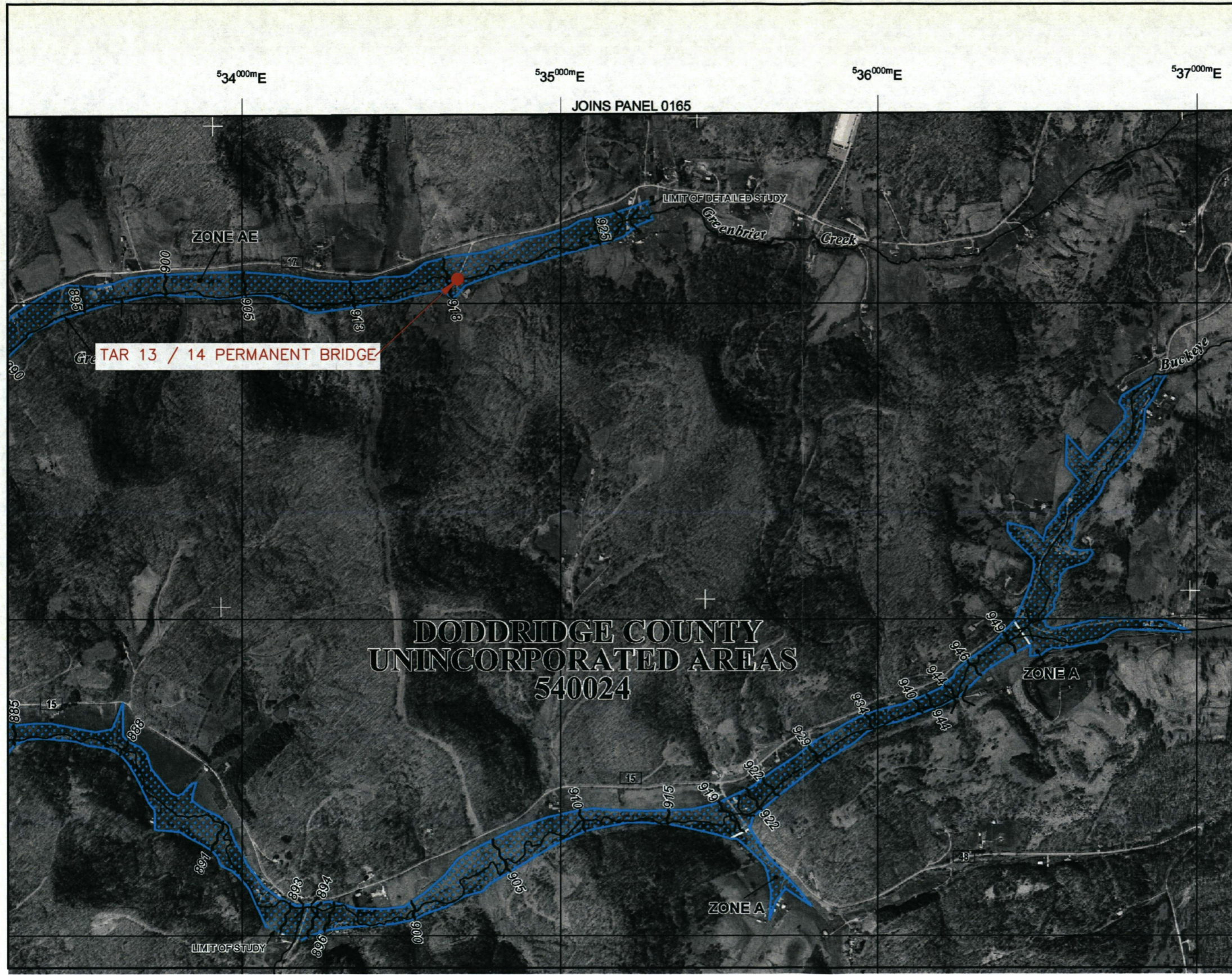
PHASE No.	
CONTRACT No.	
PROJECT No.	

THRASHER
 600 WHITE OAKS BLVD., P.O. BOX 940
 BRIDGEPOST, WV, 26100
 www.thrasherinc.com
 PHONE: (304) 824-4100 FAX: (304) 824-7831

PHASE No.	
CONTRACT No.	
PROJECT No.	

**TAR13-14 PERMANENT BRIDGE CROSSING
 CRESTWOOD MARCELLUS MIDSTREAM LLC
 DODDRIDGE COUNTY, WEST VIRGINIA
 STREAM CROSS SECTIONS OF
 GREENBRIER CREEK**

SHEET No.
SL



NFIP

PANEL 0255C

FIRM

FLOOD INSURANCE RATE MAP

DODDRIDGE COUNTY, WEST VIRGINIA

AND INCORPORATED AREAS

PANEL 255 OF 325
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DODDRIDGE COUNTY	540024	0255	C

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

MAP NUMBER
54017C0255C

MAP REVISED
OCTOBER 4, 2011

Federal Emergency Management Agency


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

WV Flood Map



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

Map Created on 1/13/2015

 Location of the mouse click

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

User Notes:

Disclaimer:

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

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

Flood Hazard Area:

Elevation: N/A

Location (long, lat):

Location (UTM 17N):

FEMA Issued Flood Map:

Contacts:

CRS Information:

Parcel Number:



TAR 13 / 14 PERMANENT BRIDGE

	<p>Legend</p> <ul style="list-style-type: none"> --- Right of Way --- Easement --- Road --- Road Right of Way --- Road Right of Way 	<p>Notes</p> <ul style="list-style-type: none"> ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>1</td><td>2</td></tr> <tr><td>3</td><td>4 5</td></tr> <tr><td>6</td><td>7 8</td></tr> </table>	1	2	3	4 5	6	7 8	<p>STATE OF WEST VIRGINIA DODDRIDGE COUNTY Office of Assessor</p>	<p>GREENBRIER SHEET NO. 4 Date of Preparation _____ Date of Sale _____</p>
1	2										
3	4 5										
6	7 8										

**STREAM CROSSING
FLOODPLAIN ANALYSIS**

**TAR13-14 PERMANENT BRIDGE
GREENBRIER CREEK
DODDRIDGE COUNTY, WV**

JANUARY 2015

PREPARED FOR:

CRESTWOOD MARCELLUS MIDSTREAM LLC

**TAR13-14 PERMANENT BRIDGE
GREENBRIER CREEK
DODDRIDGE COUNTY, WV**

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- 2 HEC-RAS SUMMARY TABLE
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- 4 SITE PLAN

**TAR13-14 PERMANENT BRIDGE
GREENBRIER CREEK
DODDRIDGE COUNTY, WV**

1.0 PROJECT DESCRIPTION

The Thrasher Group has been contracted by Crestwood Midstream to perform a hydrologic and hydraulic (H&H) study for a permanent bridge crossing. The crossing is located off of County Route 17 (Greenbrier Rd) approximately 1.5 miles from County Route 15. An existing bridge currently spans Greenbrier Creek, and Crestwood is proposing to construct a permanent bridge directly upstream due to property conflicts.

The proposed bridge will be 14 feet wide with a 6" reinforced concrete on top of steel decking all over top of (4) 20" pipe for a total height of 26".

2.0 HYDROLOGY ANALYSIS

A hydrology analysis was not performed since FEMA's Flood Insurance Study provided flows which can be found in Appendix A. According to the study, 1.9 miles upstream of the confluence with Buckeye Creek, Greenbrier Creek has a flow of 1080 cfs.

3.0 HYDRAULIC ANALYSIS

A hydraulic analysis was performed using HEC-RAS and the hydrologic information provided by the FEMA's Doddridge County Flood Insurance Study (F.I.S). The boundary condition used was a known water surface elevation of 918' since Greenbrier Creek is located in flood zone "AE". The Stream and floodplain roughness coefficients used in the analysis are described below.

Channel	0.035	weeds, and stones
Floodplain	0.03	short grass
	0.05	light brush and trees, in winter

The surrounding area of the bridge was surveyed by The Thrasher Group. Cross sections were created and inserted into HEC-RAS along with the existing bridge dimensions. Subsequently a hydraulic model was produced to analyze the effect of the proposed bridge in the stream.

4.0 CONCLUSION

After analyzing the effects of the proposed bridge, it will minimally increase the flood elevation by approximately 0.5 inch at station 1145.87(53' upstream). We believe that as you continue upstream a few hundred feet or less the water surface elevation will be back to existing conditions.

APPENDIX 1
SITE HYDROLOGY CALCULATIONS

Table 2 – Summary of Discharges

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (SQ. MILES)</u>	<u>PEAK DISCHARGE (CFS) 1-PERCENT-ANNUAL-CHANCE</u>
WILHELM RUN		
At confluence with Arnold Creek	3.29	2,070
Approximately 1.2 miles upstream of confluence with Arnold Creek	2.07	1,570
LONG RUN		
At confluence with Buckeye Creek	4.44	2,460
Approximately 2.4 miles upstream of confluence with Buckeye Creek	1.85	1,470
TOMS FORK		
At confluence with Meathouse Fork	15.27	4,100
Downstream of confluence of Little Toms Fork	12.58	3,650
GREENBRIER CREEK		
At confluence with Buckeye Creek	2.80	1,880
Approximately 1.9 miles upstream of confluence with Buckeye Creek	1.09	1,080
BIG ISAAC CREEK		
At confluence with Meathouse Fork	1.79	1,450
LAUREL RUN		
At confluence with Meathouse Fork	1.97	1,530
Upstream of confluence of Big Isaac Creek	1.57	1,340

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1) and the FIRM (Exhibit 2) where applicable.

Water-surface elevations of floods of the selected recurrence intervals were computed

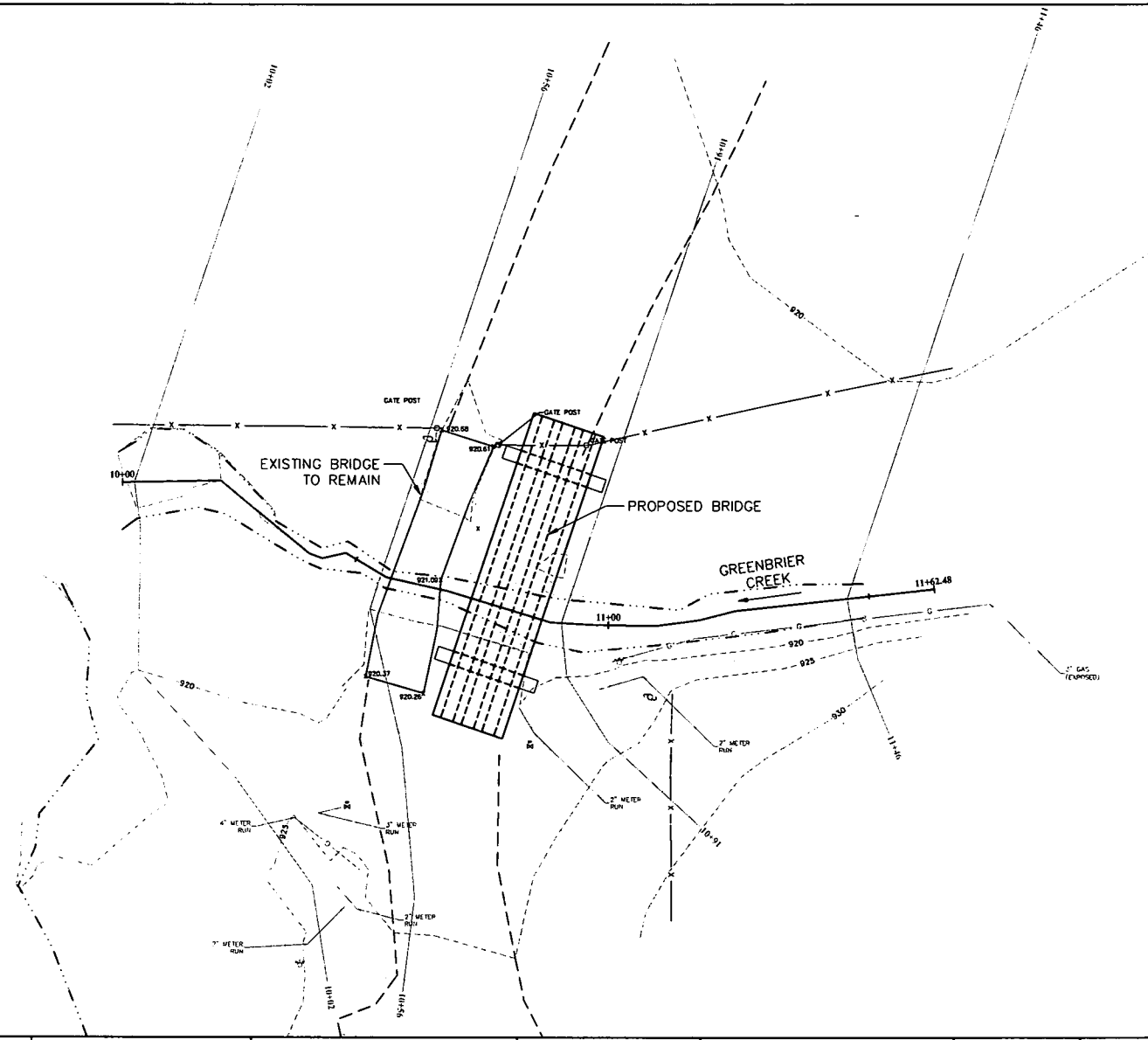
APPENDIX 2
HEC-RAS SUMMARY TABLES

HEC-RAS River: reach Reach: Greenbrier Creek Profile: PF 1

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Ch
Greenbrier Creek	1145.87	PF 1	EX	1080.00	918.91	922.09		922.42	0.002568	8.11	258.28	120.38	0.48
Greenbrier Creek	1145.87	100 yr	PRO	1080.00	918.91	922.13		922.45	0.002433	5.98	260.81	120.38	0.47
Greenbrier Creek	1091.09	PF 1	EX	1080.00	918.81	922.11	920.88	922.29	0.001185	3.93	327.01	110.95	0.31
Greenbrier Creek	1091.09	100 yr	PRO	1080.00	918.81	922.14	920.88	922.32	0.001123	3.87	330.92	111.05	0.31
Greenbrier Creek	1084			Bridge									
Greenbrier Creek	1055.5	PF 1	EX	1080.00	915.95	920.43	920.43	921.15	0.007841	8.92	175.03	110.99	0.79
Greenbrier Creek	1055.5	100 yr	PRO	1080.00	915.95	920.43	920.43	921.15	0.007841	8.92	175.03	110.99	0.79
Greenbrier Creek	1002.27	PF 1	EX	1080.00	914.33	918.13	919.13	919.87	0.008434	8.12	188.82	110.79	0.69
Greenbrier Creek	1002.27	100 yr	PRO	1080.00	914.33	918.13	919.13	919.87	0.008434	8.12	188.82	110.79	0.69

APPENDIX 3
HEC-RAS CROSS-SECTIONS

CAD FILE: R:\1710-0320 - Crestwood Marcellus - IAR 13-14 Permanent Bridge\Drawings\Map\Map.dwg PLOT DATE/TIME: 1/17/2015 1:44 PM LAYOUT: Layout1 USDS: none m. jones



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NO.	BY	DATE	DESCRIPTION

SCALE:	
DRAWN:	DATE:
CHECKED:	DATE:
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK NO.:	

THRASHER
 600 WHITE OAK BLVD., P.O. BOX 940
 BRIDGEPORT WV 26330
 www.thrashereng.com
 PHONE: (304) 824-4108 FAX: (304) 824-7931

PHASE No.	
CONTRACT No.	
PROJECT No.	

**TAR13-14 PERMANENT BRIDGE CROSSING
 CRESTWOOD MARCELLUS MIDSTREAM LLC
 DODDRIDGE COUNTY, WEST VIRGINIA
 STREAM CROSS SECTIONS OF
 GREENBRIER CREEK**

SHEET No.	3
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**Crestwood Marcellus
Midstream LLC**

TAR 13/14 Permanent Bridge

THRASHER GROUP, INC. PROJECT # 101-070-0320

DODDRIDGE COUNTY LOCATION
IMPROVEMENT PERMIT



January 2015

Legal Advertisement:
Doddridge County
Floodplain Permit Application

Please take notice that on the 20th day of January, 2015

Crestwood Marcellus Midstream, LLC

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

Greenbrier District

39.245306N/80.598189W

Permit #15-332 TAR 13/14 Permanent Bridge

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 **February 23, 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

STATE OF WEST VIRGINIA,
COUNTY OF DODDRIDGE, TO WIT

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

Floodplain Permit
15-332

was published in said paper for *2*

successive weeks beginning with the issue
of *February 3rd* 2015 and

ending with the issue of

February 10th 2015 and

that said notice contains *210*
WORD SPACE at *115* cents a word

amounts to the sum of \$ *24.15*

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

\$ *18.12*
and each publication thereafter

\$ *42.27* TOTAL

EDITOR

Virginia Nicholson

SWORN TO AND SUBSCRIBED

BEFORE ME THIS THE *13th* DAY
OF *February* 2015

NOTARY PUBLIC

Laura J. Stichel

LEGAL ADVERTISEMENT:

Doddridge County
Floodplain Permit Application

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39.245306N/80.598189W Permit #15-332 TAR 13/14
Permanent Bridge 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
February 23, 2015.

Delivered to the:

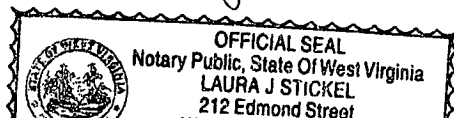
Clerk of the County Court

118 E. Court Street, West Union, WV 26456

Beith A. Rogers, Doddridge County Clerk

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

2-3-2xb



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:

Crestwood Marcellus Midstream, LLC

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

Greenbrier District

39.245306N/80.598189W

Permit #15-332 TAR 13/14 Permanent Bridge

was published in The Doddridge Independent 2 times commencing on Friday, February 6, 2015 and Ending on Friday, February 13, 2015 at the request of:

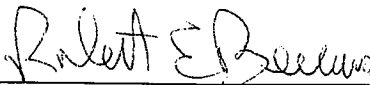
Edwin Wriston, Doddridge County Floodplain Manager & Doddridge County Commission

Given under my hand this Tuesday, February 17, 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: 21 17 2015


Notary Public in and for Doddridge County
My Commission expires on

The 16 day of MAY 20 19

Legal Advertisement:
Doddridge County
Floodplain Permit Application

2/6-2/13

Please take notice that on the 20th day of January, 2015
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