

Hydraulics Unit Pre-Design Report (Pre-Scoping) for Structure #: 980010

Date: 06/08/2017

County: Yadkin	Stream: SOUTH DEEP Creek	Assigned to:	
Road #: SR 1710	Road Name: OLD STAGE Rd	Prepared By: wsh/REL	
Division: 11	Location: 0.4 M S JCT US 421	Hydro Mgr: PFF	Hydro Reviewer: MTS
Latitude: 36.10664	Longitude: -80.58768	Project Type: B-4686	
Decimal degrees, a min of 5 decimal points			

Existing Structure

Structure Type: Cored Slab	Yr Built: 1963			
Span Arrangement: <input ,="" 1@="" 30',="" 30'3"="" 3@="" type="text" value="1@30'3"/>	OAL (ft): 151.0	Skew: 90	Abutment Type: Vertical	
Number of Barrels:	@ Span (ft):	x Rise (ft):		
Bed to Crown (ft): 21.0	Clear Roadway (ft): 24.0	Water Depth (ft): 3.0	Superstructure Depth:	
ADT: 1500	Year ADT: 2013	Scour Code (item113): U	Prior Survey Completed: ☐	Survey Date:
Drainage Area: 63.1	Sq. Mi.	Drainage Area Source: Sel.-Sites	Roadway Overtops at Q100: ☐	
Discharge Method: USGS Regression Equations	USGS Region:	Stream Gage Number(if applicable):		
Q10 (cfs):	Q25 (cfs): 6,300	Q50 (cfs): 7,600	Q100 (cfs): 8,900	QBFE (cfs):
☐ Structure in Flood Hazard Zone Panel #: 5836 Panel Date: 05/18/2009 Type of FIS: REDELINEATED Date of FIS:				

Enviromental

Quad Map: FARMINGTON, NC	River Basin: Yadkin-Pee Dee	Buffer Rule:			
Primary Stream Classification		Other Stream Classification			
☐ Class B	☐ Class C	☐ SA	☐ SB	☐ Anadromous Fish	☐ Area of Environmental Concern
☐ SC	☐ SWL	☐ WL	☐ WS I	☐ CAMA County	☐ Federal Wild & Scenic Rivers
☐ WS II	☐ WS III	☒ WS IV	☐ WS V	☐ HSB Required	☐ NC Natural & Scenic Rivers
Supplemental Stream Classification				☐ Impaired [303d]	☐ Primary Nursery Area
☐ FWS	☐ HQW	☐ NSW	☐ ORW	☐ TVA	☐ Designated Shellfish Harvesting Area
☐ Sw	☐ Tr	☐ UWL	☐ w/in 0.5mi. of CA	☐ Designated Public Mountain Trout Waters	

Up/Down Stream Features

Upstream Feature: Bridge	Structure Type: Bridge				
Location: 0.2 M S JCT SR 1150	Span Arrangement: 1 @ 65', 1@80', 1@ 65'	OAL (ft): 211.0			
Structure #: 980030	Route: US 601	Number of Barrels:	@ Span (ft):	x Rise (ft):	
Latitude: 36.10520	Longitude: -80.65702	Bed to Crown (ft):			Year Built: 2006
Prior Survey Completed: ☐	Survey Date:				
Downstream Feature: Bridge	Structure Type: RC Deck/I Beams				
Location: 0.2 M W JCT US 421	Span Arrangement: <input ,="" 1@="" 2@50',="" 49'7"="" 65',="" type="text" value="1@44'8"/>	OAL (ft):			
Structure #: 980012	Route: SR 1711	Number of Barrels:	@ Span (ft):	x Rise (ft):	
Latitude: 36.11409	Longitude: -80.54649	Bed to Crown (ft): 36.0			Year Built: 1997
Prior Survey Completed: ☐	Survey Date:				

Preliminary Structure Estimate [Office Estimate]

Structure Type:	Skew:
Dimensions/Spans:	

Notes

Stream Assigned # 12-84-2-(5.5)

OFFICE ESTIMATE

PREDESIGN-SCOPING REPORT

Project# B-4686
 TIP# _____
 Let Date _____
 WBS# _____

County YADKIN (DIV. 11)

Bridge# 980010
 Road# SR 1710 OLD STAGE RD.
 Stream SOUTH DEEP CRK.

Type Of Request: POC Force Account TIP NCMA

Date 5/4/17 Name Wsh

Assigned To PFF/MTS

Checked By REL 5-5-17

BRN: 5030 CO: NONE
 BKI: 6-63 FILE: NONE

Prior Survey Date 6-1963 (attach copy of prior survey)

Study By Scour Section NO CODE: U PDR: NO BSR: NO

Flood Zone AE Detail Study REDEVELOP Date 5-18-09 Panel# 5836

B.M. Info N/A STREAM STATS ESM-DA = 63.5 Sq Mi

Quad Map FARMINGTON Drainage Area 63.1 Sq Mi From PASS STA 21559.000

Q25 6300 cfs Q50 7600 cfs Q100 8900 cfs Method REG EQU. 2014-5030 (Pg 28 C2)

LONG: -80.587682

IA = 1.62 %

LAT: 36.106636

EXISTING BRIDGE INFORMATION YEAR BUILT: 1963

Location 0.4 M S JCT US 421

CLEAR ROADWAY WIDTH: 24'

Average Daily Traffic 1500 (2013) 6% TRK

Length 151' Bed-To Crown 2' Water Depth 3'

Type Structure PRESTRESSED CONC. CHANNELS

Type Spans 1c 30' 3", 3c 30', 1c 30' 3"

Upstream Structure 980030 RC FLR ON PPC GRDERS YR. BUILT: 2006

Location 0.2 M S JCT SR 1150 (1c 65', 1c 80', 1c 65') LONG: -80.657618

Bed-To Crown _____ Prior Survey N/A LAT: 36.10520

Downstream Structure 980012

Location SR 1711 / 0.2 M S JCT US 421 YR. BUILT: 1997

Bed-To Crown 36' (3' Deep) Prior Survey N/A LONG: -80.546489

RC FLR ON DECK PANELS LAT: 36.114093

(1c 44' 8", 1c 65', 2c 50', 1c 49' 7")

ENVIRONMENTAL

TVA: No

Trout Stream No

Anadromous Fish _____

Primary Nursery Area No

High Quality Waters No

Nutrient Sensitive Waters No

Near Water Supply Intake No

CAMA County NO

Stream Classification WS IV

STREAM #: 12-84-2-(5.5)

DENR River Basin Info. YADKIN Pee Dee

*FRIS "FLOOD MODEL NOT
 AVAILABLE, FOR THIS AREA"
 MODEL IN HEC-2

1, 100, 103, 129

u/s 33

o/s 32

5/17/17

PRE SCOPING DATE: _____

SCOPING
NOTES

COUNTY: YAKIMA BRIDGE #: 10 DATE: 5/10/17 MTS/RAIL

REALIGNED - OVERTOPPING - NO STRUCTURES IN
IMMEDIATE FLOODPLAIN UPSTREAM

OAL: 50' 30" _____ OPENING:

CLEAR ROADWAY: 24.4'

CLEAR ROADWAY ALONG SKEW: 24.4'

TOP OF RAIL TO BED: 23.1'

TOP OF RAIL TO SEAT: 4.3'

HEIGHT OF RAIL: 2.9

NORMAL WATER DEPTH: 3.0'

STREAM WIDTH (NWSEL): 40'

WATERWAY OPENING: _____

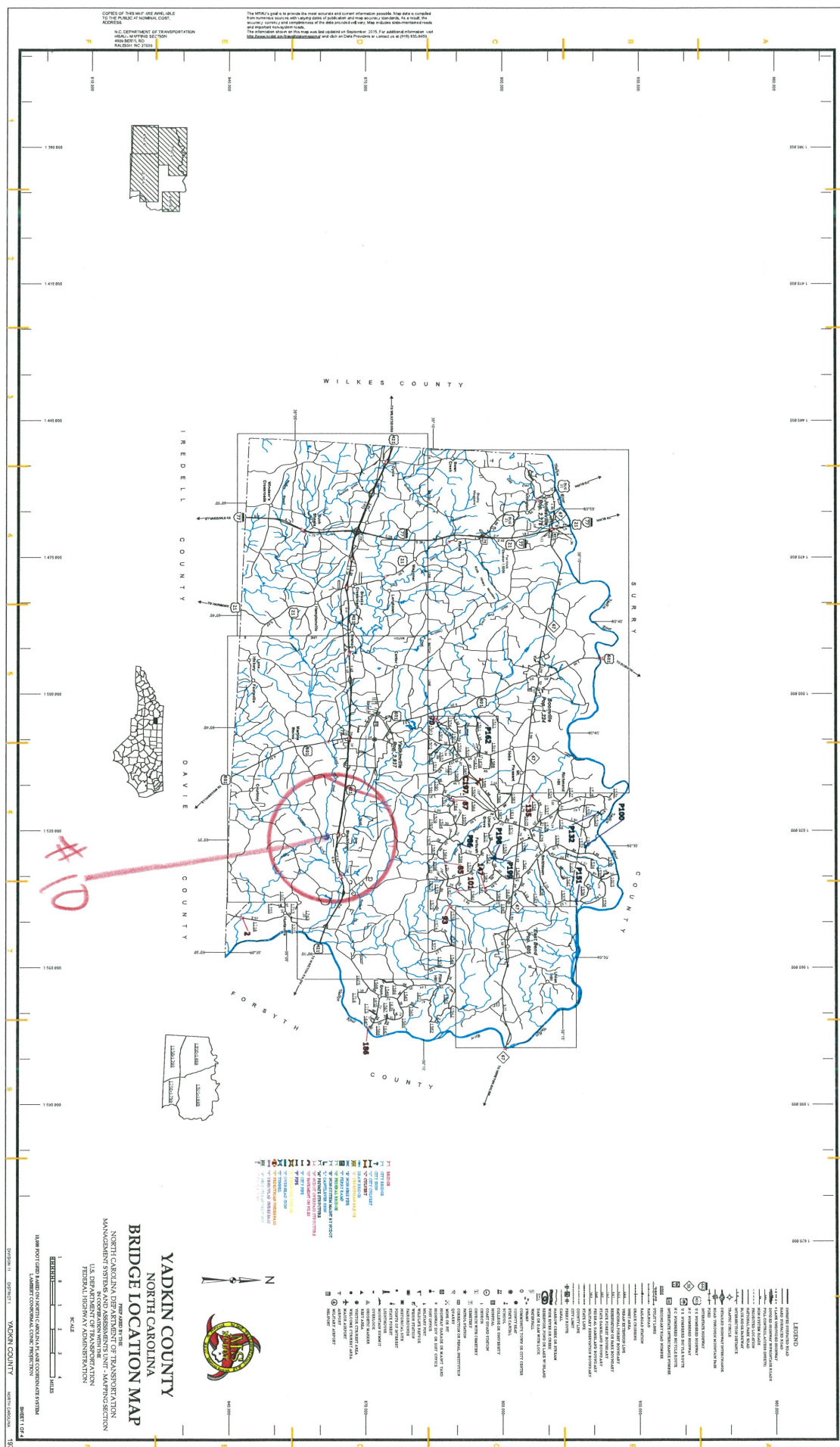
DETOUR: STAGE CONSTRUCT

CREEK UPSTREAM RT

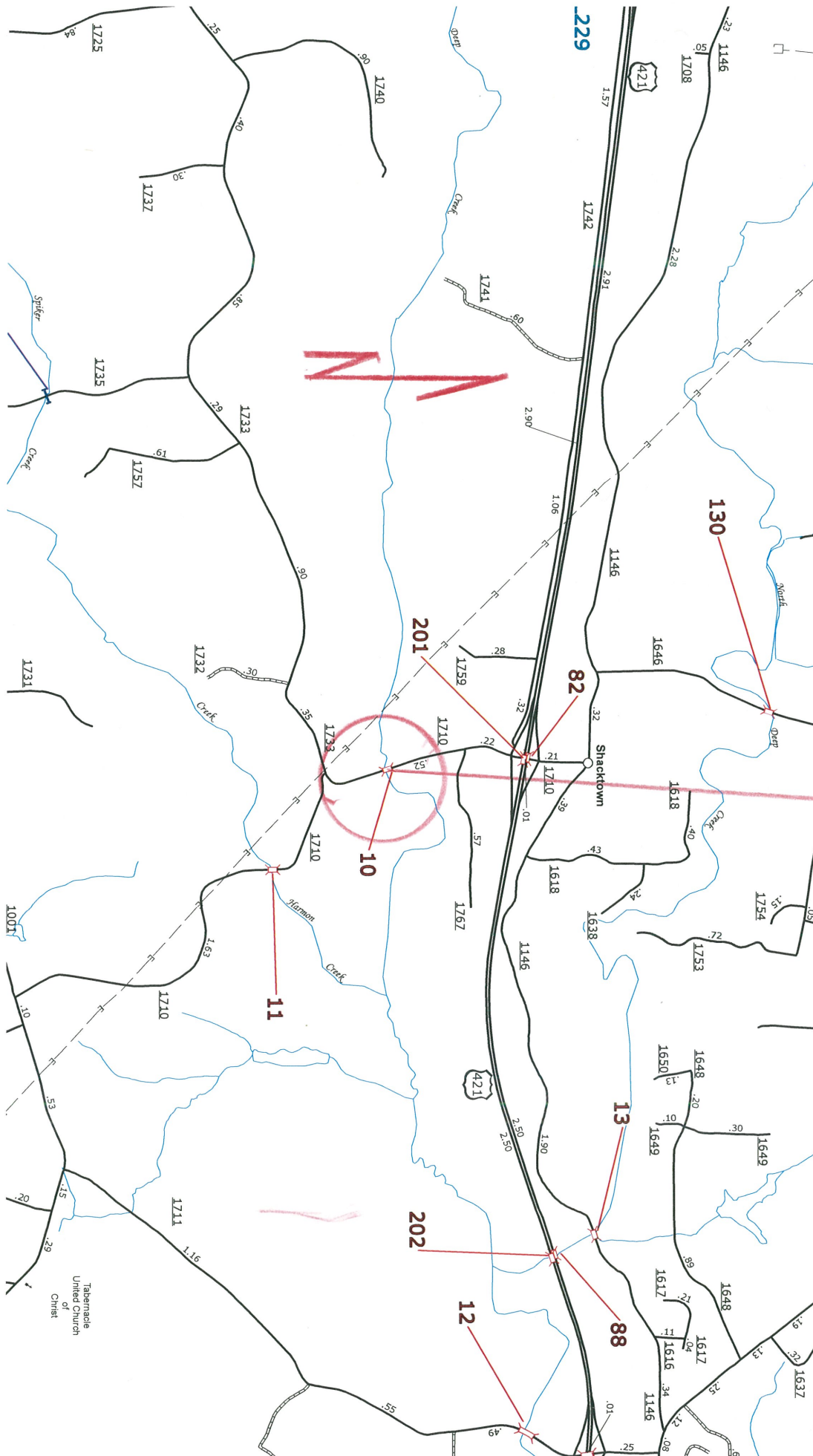
1450; 1470; 1440 SLOPING ABUTMENTS

CLMR

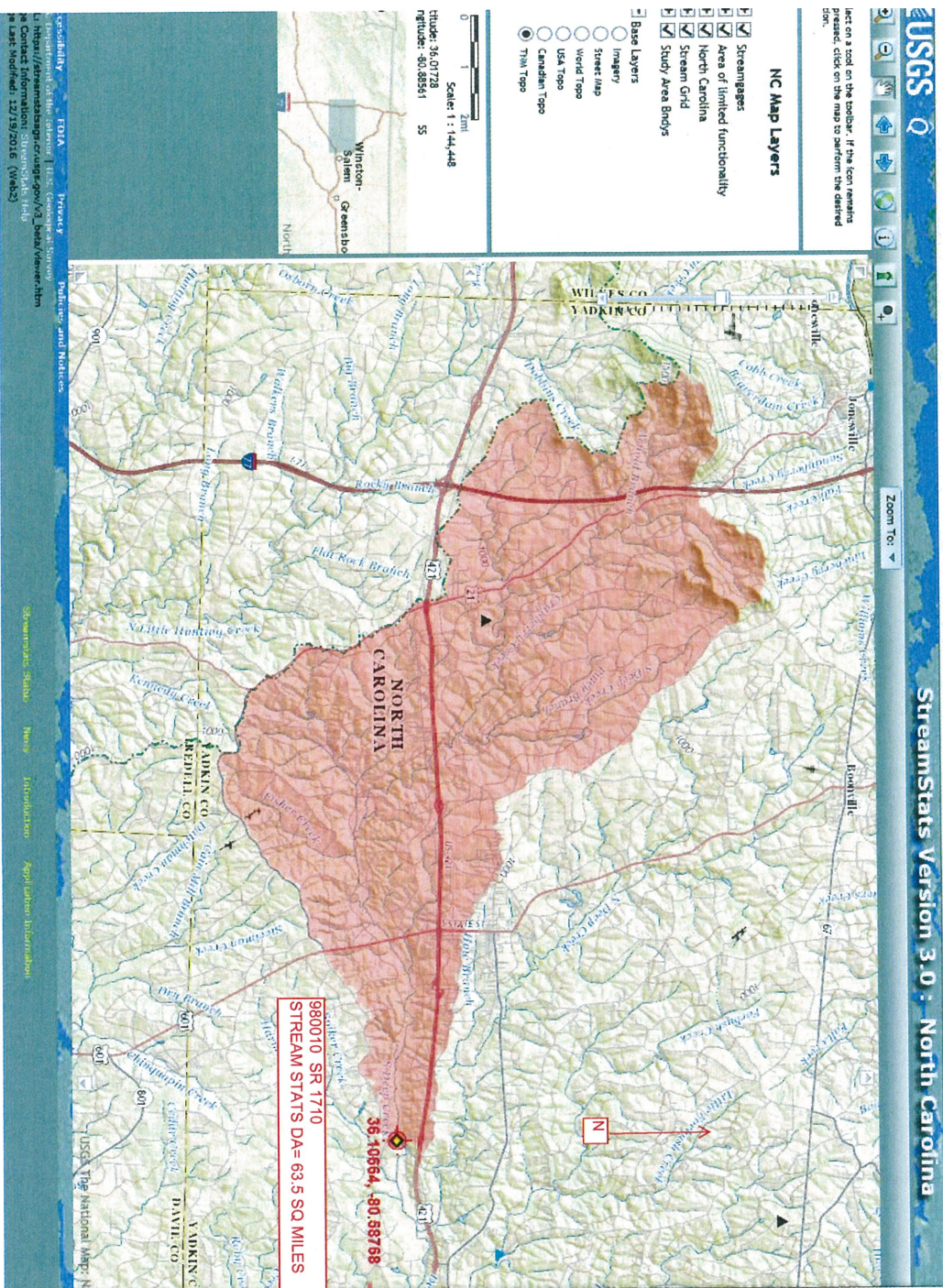
The MRA's goal is to provide the most accurate and current information possible. Map data is compiled from numerous sources with varying dates of publication and map accuracy standards. As a result, the accuracy, currency, and completeness of the data provided will vary. Map includes state-maintained roads and important non-highway roads.



980010



980010



Flow Statistics Ungaged Site Report

Date: Thurs May 4, 2017 9:49:13 AM GMT -4
 Study Area: North Carolina
 NAD 1983 Latitude: 36.1066 (-36 06 24)
 NAD 1983 Longitude: -80.5874 (-80 35 15)
 Drainage Area: 63.5 mi²

Peak Flows Region Grid Basin Characteristics

100% Peak Southeast US over 1 sqmi 2009 5158 (63.5 mi ²)			
Parameter	Value	Regression Equation	Valid Range
		Min	Max
Drainage Area (square miles)	63.5	1	9000
Percent Area in Region 1 (percent)	100.000	0	100
Percent Area in Region 2 (percent)	0.000	0	100
Percent Area in Region 3 (percent)	0.000	0	100
Percent Area in Region 4 (percent)	0.000	0	100
Percent Area in Region 5 (percent)	0.000	0	100

Urban Flows Region Grid Basin Characteristics

Area in square miles=63.5			
Percent Imperviousness of basin area 2006 NLCD-1.62			
100% Region 1 Urban over 3 sqmi 2014 5030 (63.5 mi ²)			
Parameter	Value	Regression Equation	Valid Range
		Min	Max
Drainage Area (square miles)	63.5	3	436
Percent Impervious NLCD2006 (percent)	1.62	0	47.9

Peak Flows Region Grid Statistics

Statistic	Value	Unit	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval
					Min Max
PW2	2340	ft ³ /s	35		1350 4060
PW5	3980	ft ³ /s	34		2320 6850
PW10	5160	ft ³ /s	35		2950 9020
PW25	6640	ft ³ /s	38		3670 12000
PW50	7970	ft ³ /s	40		4270 14900
PW100	9140	ft ³ /s	42		4730 17700
PW200	10300	ft ³ /s	44		5140 20600
PW500	12100	ft ³ /s	48		5740 23300

<https://labs.usgs.gov/ST/2009/5158/>
 Weaver, J.C., Foster, T.D., and Griggs, A.J., 2009. Magnitude and frequency of rural floods in the Southeastern United States, through 2006--Volume 2, North Carolina: U.S. Geological Survey Scientific Investigations Report 2009-5158, 111 p.

209

100%

980010



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STRUCTURE MANAGEMENT UNIT

ATTENTION: **PRIORITY MAINTENANCE FOR EXPOSED
PRESTRESSING CABLES. SHORING OF BOTH
SUBSTRUCTURE AND SUPERSTRUCTURE**

Structure Safety Report

Routine Element Inspection - Contract

COUNTY: YADKIN STRUCTURE NUMBER: 980010 FREQUENCY: 24 MONTHS

FACILITY CARRIED: SR1710 MILE POST:

LOCATION: .4 MI.S.JCT.US421

FEATURE INTERSECTED: SOUTH DEEP CREEK

LATITUDE: 36° 6' 23.61" LONGITUDE: 80° 35' 15.43"

SUPERSTRUCTURE: PRESTRESSED CONCRETE CHANNELS

SUBSTRUCTURE: E.BTS&BTS:PPC CAPS/TIM.PILES;HELPER BTS:STL.CAPS/H-PILES

1 @ 30'-3"; 3 @ 30'; 1 @ 30'-3"

SPANS: 1 @ 30'-3"; 3 @ 30'; 1 @ 30'-3"

☐ FRACTURE CRITICAL ☒ TEMPORARY SHORING ☐ SCOUR CRITICAL ☐ SCOUR PLAN OF ACTION

PRESENT CONDITION: Poor INSPECTION DATE: 06/10/2015

POSTED SV: 25 POSTED TTST: 29

OTHER SIGNS PRESENT: (4) DELINEATORS



Sign noticed issued for		Number Required
<u>NO</u>	WEIGHT LIMIT	<u>0</u>
<u>NO</u>	DELINEATORS	<u>0</u>
<u>NO</u>	NARROW BRIDGE	<u>0</u>
<u>NO</u>	ONE LANE BRIDGE	<u>0</u>
<u>NO</u>	LOW CLEARANCE	<u>0</u>

SOUTH APPROACH LOOKING NORTH

INSPECTED BY VW WRENN	SIGNATURE <i>VW Wrenn</i>	ASSISTED BY G GILLAND
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980010

Structure: 980010

County: YADKIN

Date: 06/10/2015

Structure Photos



BENT 3 LOOKING NORTH



BENT 4 LOOKING NORTH

980010

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 11/19/2015

COUNTY : YADKIN	DIVISION : 11	DISTRICT : 1	STRUCTURE NUMBER : 980010	LENGTH : 151 FEET
ROUTE CARRIED : SR1710		FEATURE INTERSECTED : SOUTH DEEP CREEK		
LOCATED : .4 MI.S.JCT.US421		BRIDGE NAME :		CITY :
FUNC. CLASS : 09	SYST.ON : NFA	SYST.UNDER : NFA	ADT & YR : 1500 2013	RAIL TYPE : LT 233 RT 233
BUILT : 1963	BY : BMU	PROJ :	FED.AID PROJ :	DESIGN LOAD : Unknown
REHAB :	BY :	PROJ :	ALIGNMENT : TAN	SKEW : 90
			LANES : ON 2 UNDER 0	
NAVIGATION : VC 0 FT	HC 0 FT	HT. CRN. TO BED : 21 FT	WATER DEPTH : 3 FT	
SUPERSTRUCTURE : PRESTRESSED CONCRETE CHANNELS				
SUBSTRUCTURE : E.BTS&BTS:PPC CAPS/TIM.PILES;HELPER BTS:STL.CAPS/H-PILES				
SPANS : 1 @ 30'-3; 3 @ 30'; 1 @ 30'-3				
BEAMS OR GIRDERS : 10 PRESTRESSED CONCRETE CHANNELS				
FLOOR : PPC.CH./1.5 AWS	ENCROACHMENT :	1 LN. UTILITY	DECK (OUT TO OUT) : 25.583 FT	
CLEAR ROADWAY : 24 FT	BETWEEN RAILS : 25 FT	SIDEWALK OR CURB : LT .5 FT RT .5 FT		
VERT.CL.OVER : 999.9 FT				
INV.RTG. : HS-1	OPE.RTG. : HS-1	CONTR.MEMBER : Ch (BroknCabl e)	POSTED : SV 20 TTST 26	DATE 11/19/2015
SYSTEM : Secondary S.R. Route		GREEN LINE ROUTE : N		
UNDER ROUTES AND CLEARANCES				
REMARKS :				

980010

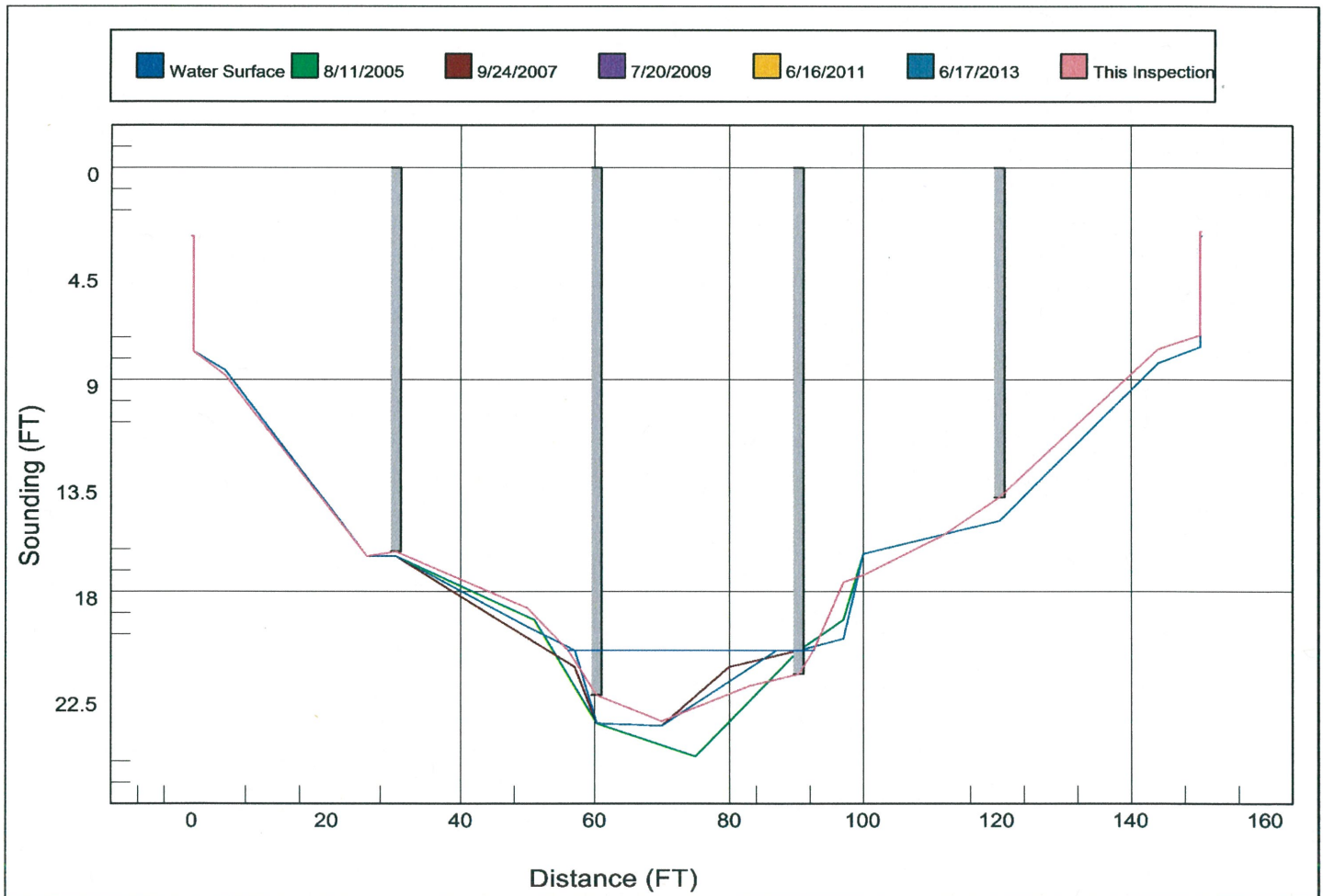
Bridge: 980010

County YADKIN

Date:

STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)



U/S STR.

980010

Structure: 980030

County: YADKIN

Date: 06/02/2015

Structure Photos



Bent 1, span 1 side, left half.



Bent 1, span 1 side, right half.

D/S STR

980010

Structure: 980012

County: YADKIN

Date: 05/07/2015

Structure Photos



BENT 1, OTHERS SIMILAR



SPAN 2 UNDERDECK, OTHERS SIMILAR

SITE: SR1710 980010
DATE: 5/4/2017

old regression equations:

	REGION 1	REGION 2
Q25	6618.995	8000.264
Q50	7947.29	9391.968
Q100	9100.791	11043.04

D.A. = 63.1 sq mi lpArea= 1.62

current regression equations:

UPDATED: .1 to 3mi

	REGION 1	REGION 2
Q25	13131.02	
Q50	16954.08	
Q100	21259.18	

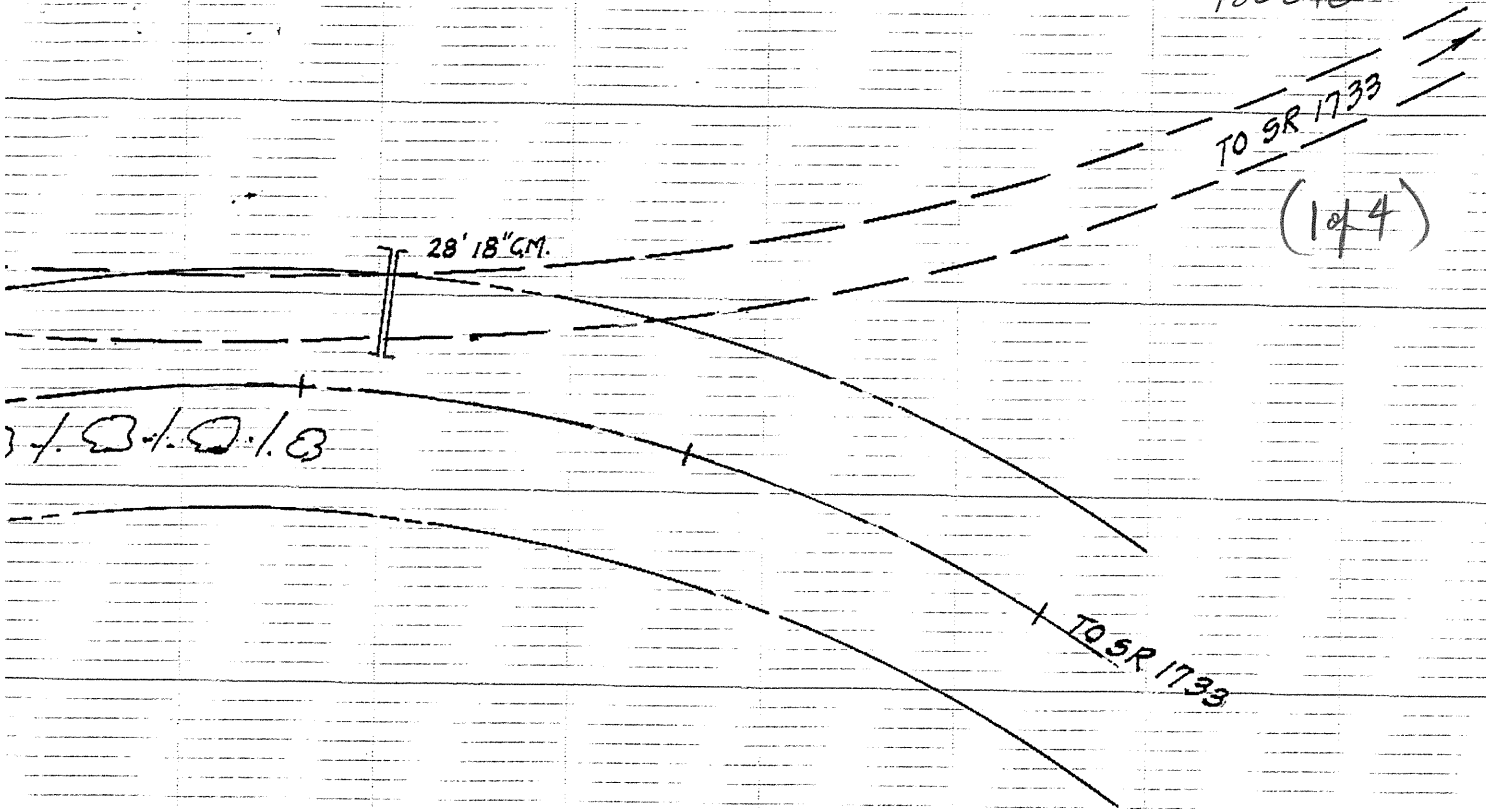
3mi TO 436mi

	REGION 1
Q25	6341.35
Q50	7636.08
Q100	8863.83

1.019967 Q25
Q50
Q100

Datum is assumed.

980010



FULL SURVEY/BSR AVAILABLE

IN HYDRAULICS FILES

NORTH CAROLINA STATE HIGHWAY COMMISSION
RALEIGH

YADKIN COUNTY

RELOCATION OF SR 1710 OVER SOUTH DEEP CREEK
BRIDGE No. 10 BETWEEN U.S. 421 AND SR 1733

SCALE:

C.A. RUTH

1" = 50' Horiz.

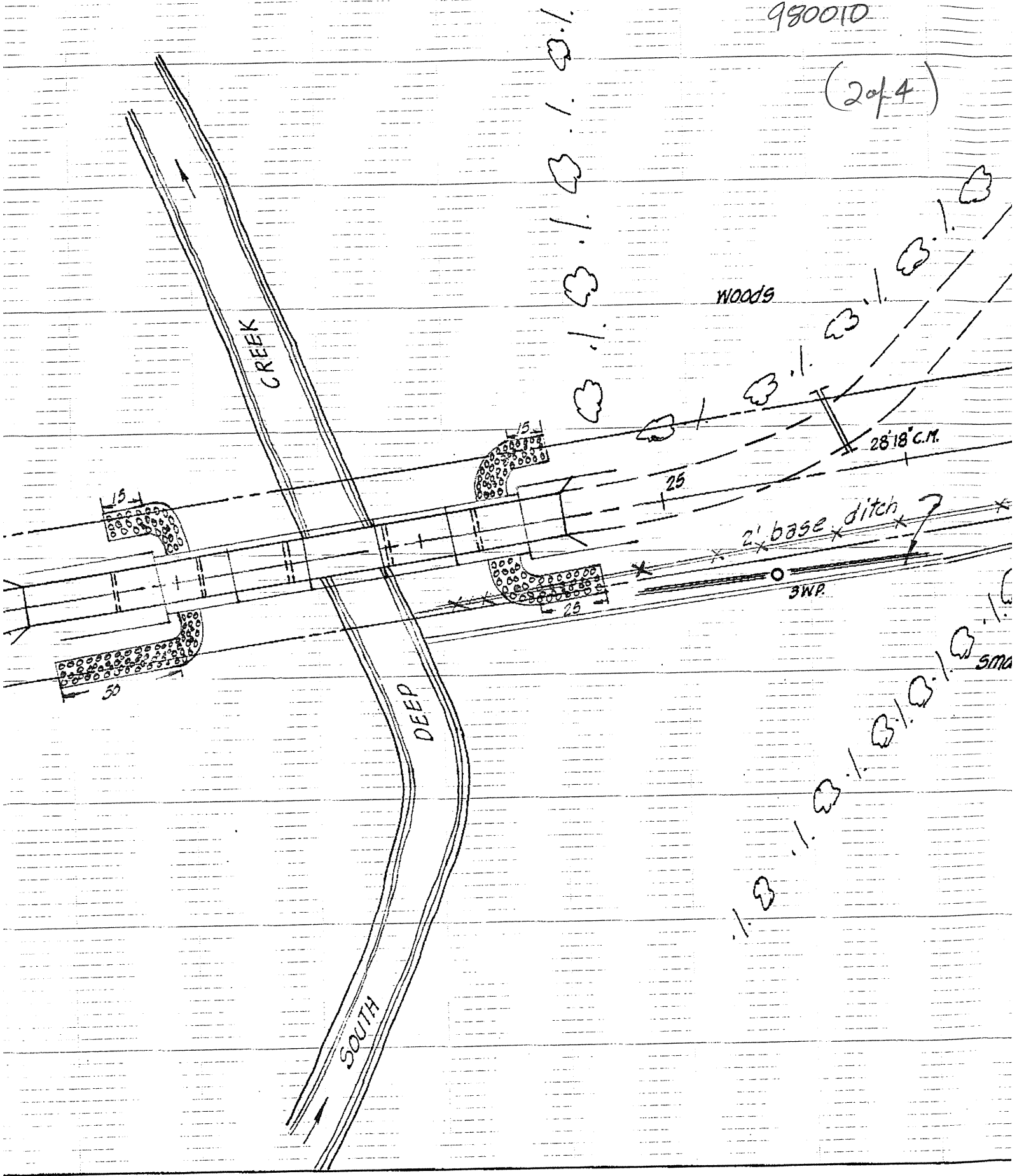
1" = 10' Vert.

June, 1963

Elev. 80.56 Datum is

980010

(2 of 4)



(3 of 4)

5 @ 30 prestressed 24' Rdwy 90°
 Cr Gr. Str. 86.0

100' V.C.

Rip Rap to El. 83.0

0.0 %

Bridge Floor

High Water 1916 & 1946 Elev. 82.5

underclearance Elev. 80.2'

Recent High Water 78.5'

creo. tim piles

APPROX. ROCK LINE

Drainage area

MAF 4.20

Q25 = 11.00

Q50 = 14.60

BM #2 Nail in

OF STA 25+37 ±

18

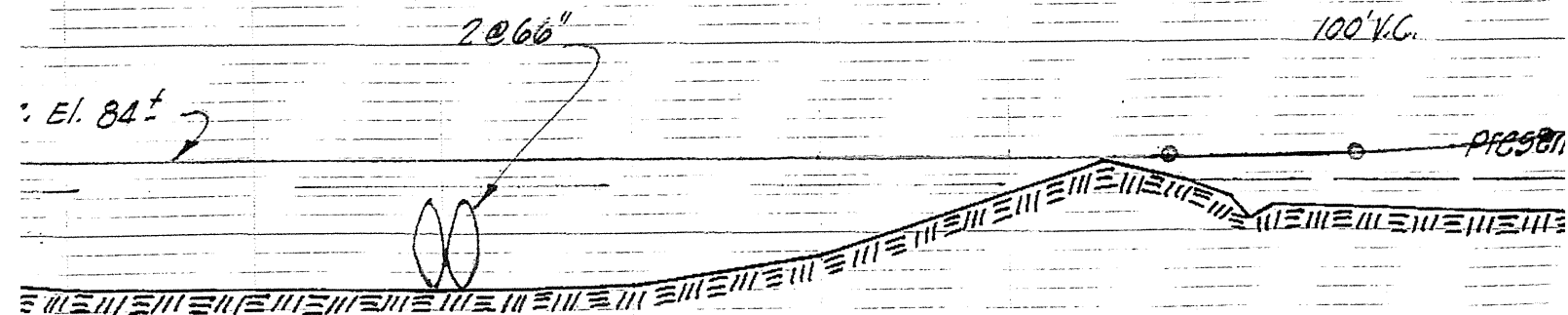
19

20

21

980010 22

(4 of 4)

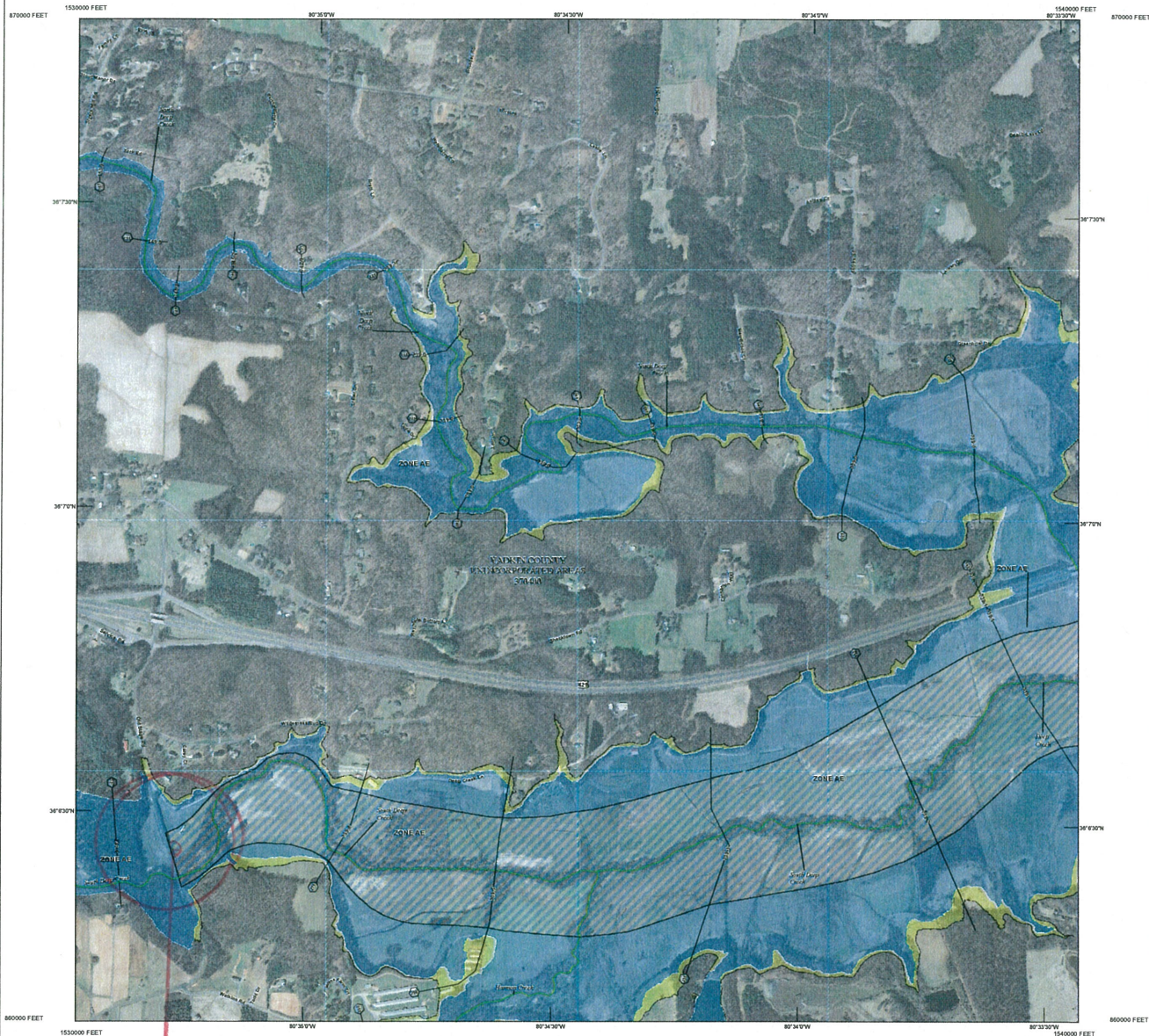


MATION

1r. Leslie Todd
2 & Mr. Jim

spans 3 @ 36.0 - 1 @ 40.0 - 2 @ 36.0
5 conc. piers conc. abutments
15.2' Cl. Rdwy. O.L. 221.2' 5-12" IBM's
2 channels 4" x 6" Tim deck ± 1,750
59. Ft. opening. posted 5 tons

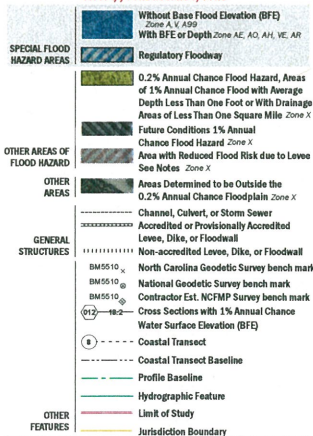
980010



The digital Flood Insurance Rate Map (FIRM) was produced through a unique cooperative partnership between the State of North Carolina and the Federal Emergency Management Agency (FEMA). The State of North Carolina has implemented a long-term approach to floodplain management to decrease the costs associated with flooding. This is accomplished by the State's commitment to map flood hazard areas at the local level. As a part of this effort, the State of North Carolina has joined in a Cooperative Floodplain Mapping Agreement with FEMA to produce and maintain this digital FIRM.

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
[HTTP://FRIS.NC.GOV/FRIS](http://fris.nc.gov/fris)



NOTES TO USERS

For information and questions about this map, available products, associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information Exchange at 1-877-FEMA-MAAP (1-877-362-6271) or visit the FEMA Map Service Center website at <http://www.fema.gov>. For information on flood insurance, please contact the National Flood Insurance Program at 1-800-368-6647.

For community and countywide map data refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-368-6647.

Base map information shown on this FIRM was provided in digital form by the North Carolina Floodplain Mapping Program (NCFMP). The source of this information can be determined from the metadata available in the digital FIRM database and the Technical Support Data Notebook (TSND).

ACCREDITED LEVEE NOTES TO USERS: If an accredited levee note appears on this panel (check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA website at <http://www.fema.gov/floodinsurance>.

PROVISIONALLY ACCREDITED LEVEE NOTES TO USERS: A provisionally accredited levee (PAL) note appears on this panel, check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA website at <http://www.fema.gov/floodinsurance>.

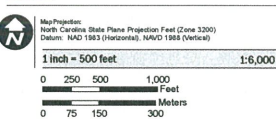
LIMIT OF MODERATE WAVE ACTION NOTES TO USERS: For some coastal buildings near the AE Zone category has been identified by a Limit of Moderate Wave Action (LMWA). The LMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LMWA, (or between the shoreline and the LMWA for areas where VE Zones are not identified), will be similar to, but less severe than those in the VE Zone.

Limit of Moderate Wave Action (LMWA)

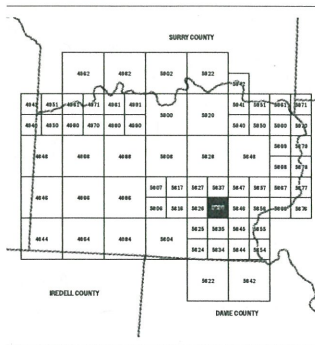
COASTAL BARRIER RESOURCES SYSTEM (CBRS) NOTE
This map may include approximate boundaries of the CBRS for informational purposes only. Flood insurance is not available within CBRS areas for structures that are not built or substantially improved on or after the date(s) indicated on the map. For more information see <http://www.fema.gov/floodinsurance> or contact FEMA, the FIRM Support, or call 1-877-FEMA-MAAP (1-877-362-6271) or FEMA Customer Service Center at 1-800-368-6647.

CBRS Area Otherwise Protected Area

SCALE



PANEL LOCATOR



FEMA
National Flood Insurance Program

NORTH CAROLINA FLOODPLAIN MAPPING PROGRAM
NATIONAL FLOOD INSURANCE RATE MAP
NORTH CAROLINA
Panel: 5836
Panel Suffix: J
Community: YADON COUNTY
OID: 370400 5836 J

5-18-09

MAP NUMBER: 3710583600J
MAP REVISED: 5/18/2009

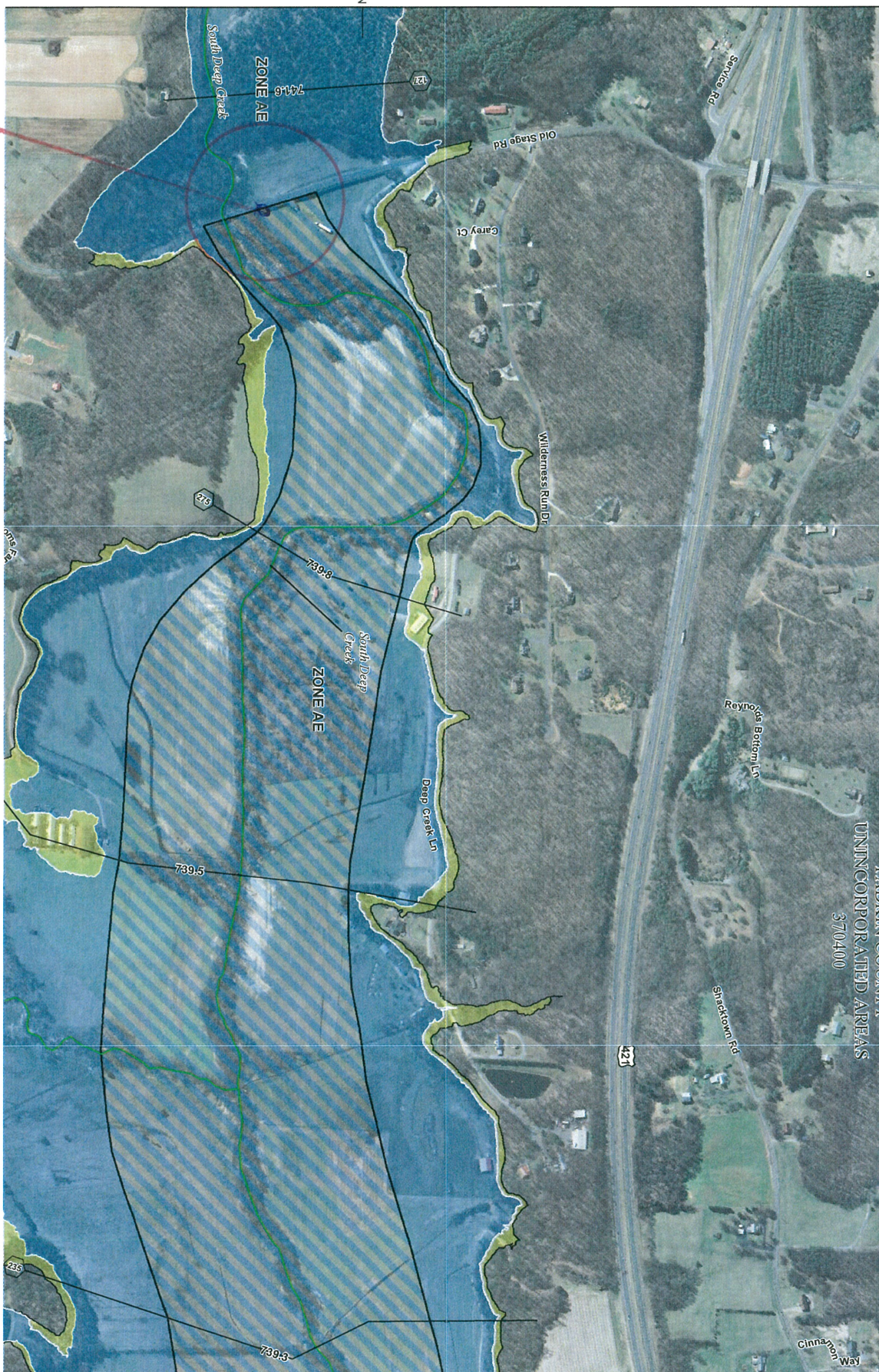
980010



36°03'0"N

#10

* UNABLE TO
LOCATE HEC-
RAS FOR
OLD STAGE RD.



UNINCORPORATED AREAS
370400