

OFFICE ESTIMATE

1 @ 45' Bridge

PREDESIGN-PRESURVEY REPORT

Project# _____
TIP# _____
Let Date _____
WBS# 17BP.14.R.98

County HAYWOOD (DIV. 14)

Bridge# 430020
Road# SR1809 ✓ SUNNY SIDE ROAD
Stream RACCOON CREEK ✓

Type Of Request: POC Force Account TIP NCMA

Date 8/27/13 Name Wsh

Assigned To RCH

Checked By _____

Prior Survey Date AUG '83 (attach copy of prior survey)

BRN: 3066" x 51' CO. FILE YES (attached)
BK: 8-83

Study By Scour Section NONE

Flood Zone AE Detail Study REDEVELOPMENT Date _____ Panel# 8625

B.M. Info N/A

Quad Map _____ Drainage Area 3.8 SQ. MI From STREAM STATS

Q25 = 1000 cfs Q50 = 1300 cfs Q100 = 1500 cfs Method RURAL REGION 2
REG. EQU.

EXISTING BRIDGE INFORMATION

Location 0.2 MI. W. JCT. SR 1812

Average Daily Traffic 520 (2008) 6% TRK.

Length 21' Bed- To Crown 6' Water Depth 1'

Type Structure TIMBER FLR, ON I-BEAMS, TIMBER E. BTS, CAPS, POST, SILLS

Type Spans 1 @ 20' 6"

Upstream Structure UNNUMBERED XING @ TEST FARM RD.

Location _____

Bed- To Crown _____ Prior Survey _____

Downstream Structure 430019 (SR1818) BRG -1 @ 30' 6" L=31'

Location 0.1 MI FROM RACCOON RD. / 0.2 MI E JCT US 23B

Bed- To Crown 7' (H₂O = 1' deep) Prior Survey _____

SCS Watershed _____

YELLOW-UNDESIGNATED

ENVIRONMENTAL

TVA: YES ✓

Trout Stream NO

Anadromous Fish NO

Primary Nursery Area NO

High Quality Waters NO

Nutrient Sensitive Waters NO

Near Water Supply Intake NO

CAMA County NO ✓

Stream Classification B

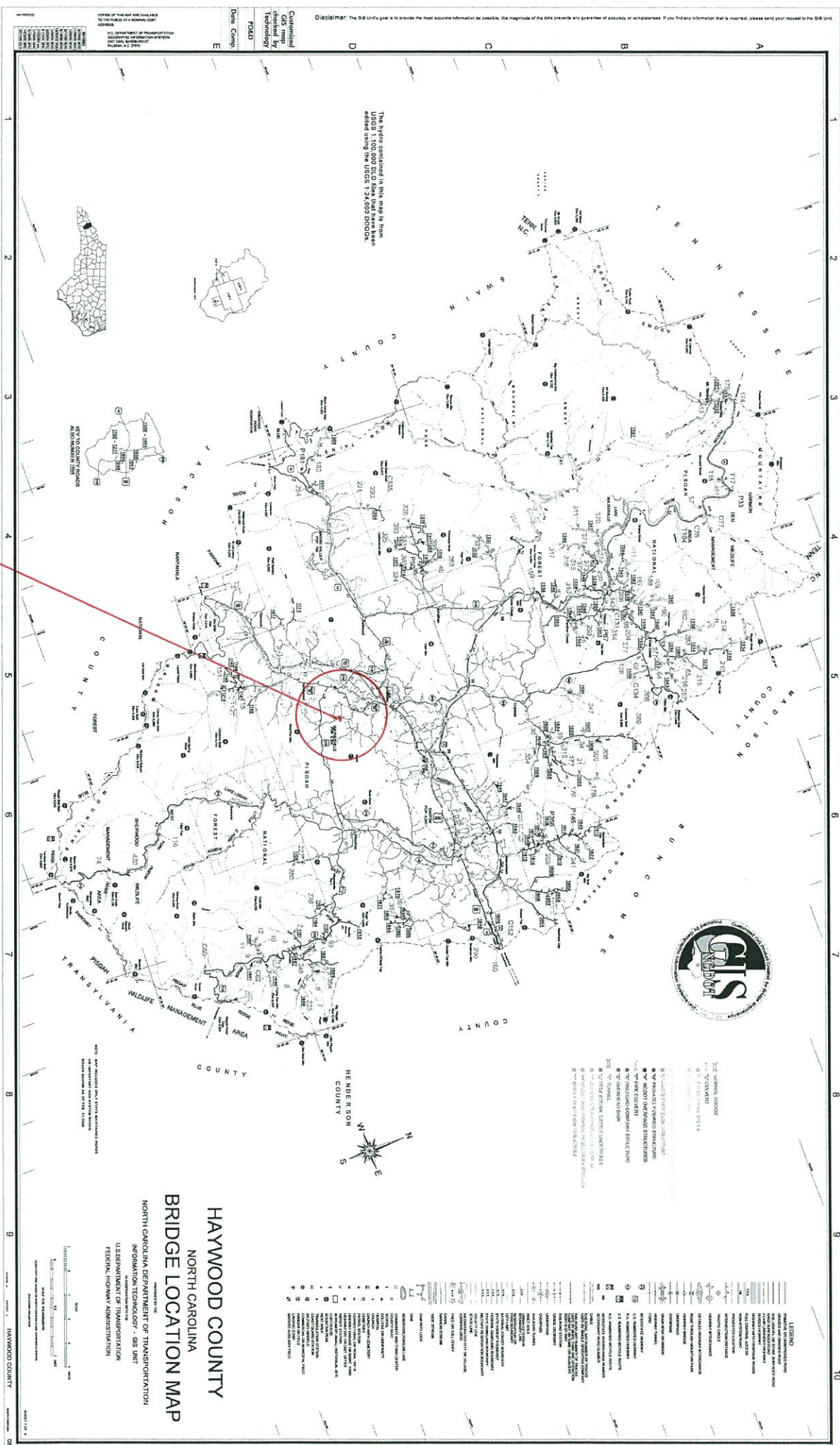
#5-16-14 (FROM SOURCE

DENR River Basin Info. FRENCH BROOK

TO RICHMAN CRK)

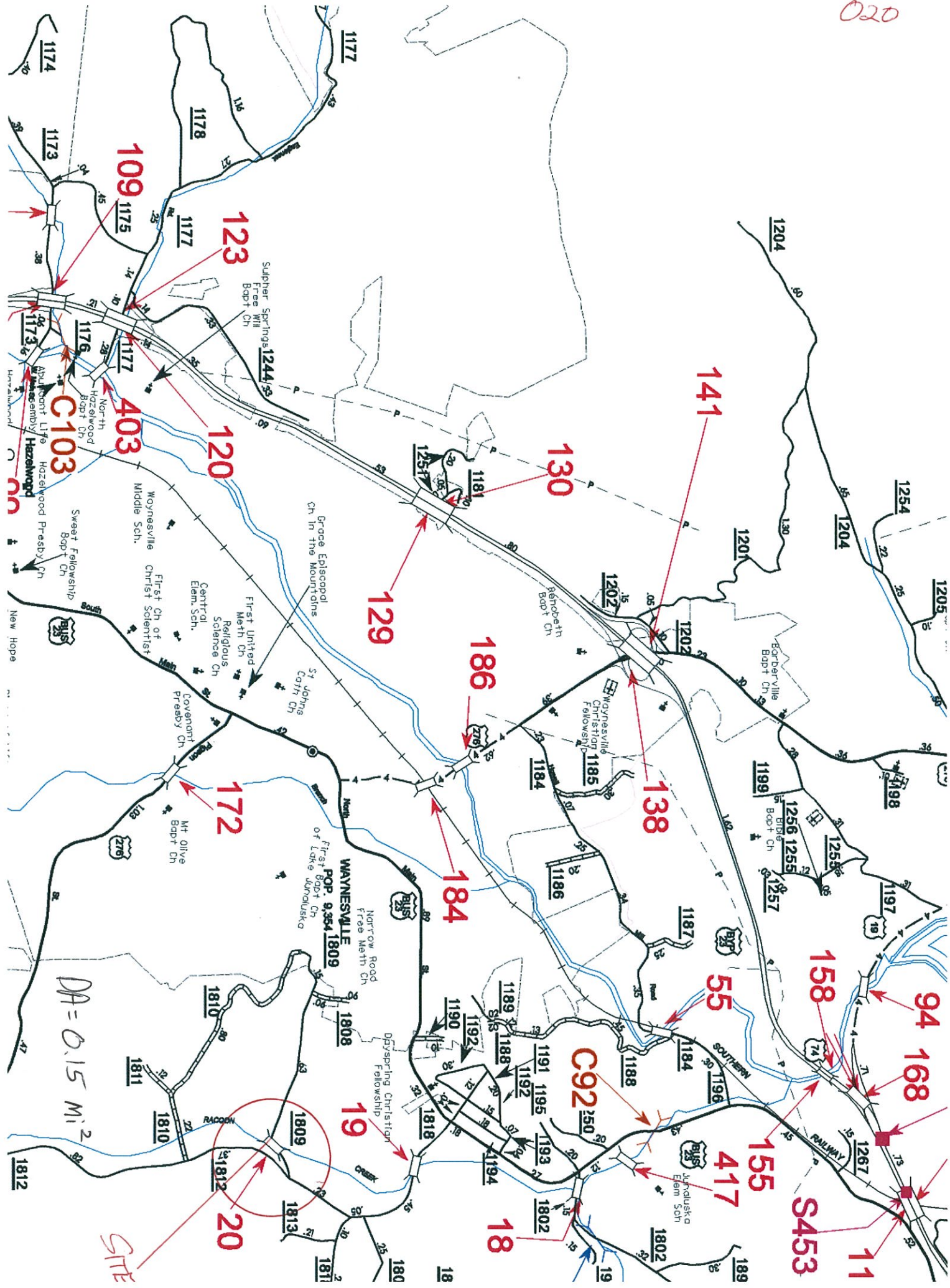
LAT: 35-2928.45

LONG: 82-5753.41



#20

020



DA = 0.15 Mi²

SITE



North Carolina StreamStats

Streamstats Ungaged Site Report

Date: Tue Aug 27 2013 12:00:24 Mountain Daylight Time

Site Location: North_Carolina

NAD27 Latitude: 35.4910 (35 29 28)

NAD27 Longitude: -82.9650 (-82 57 54)

NAD83 Latitude: 35.4911 (35 29 28)

NAD83 Longitude: -82.9649 (-82 57 54)

Drainage Area: 3.81 mi²

Percent Urban: 12.0 %

Percent Impervious: 0.8 %

Peak Flows Region Grid Basin Characteristics			
100% Peak Southeast US 2009 5158 (3.81 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	3.81	1	9000
Percent Area in Region 1 (percent)	0.000	0	100
Percent Area in Region 2 (percent)	100.000	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

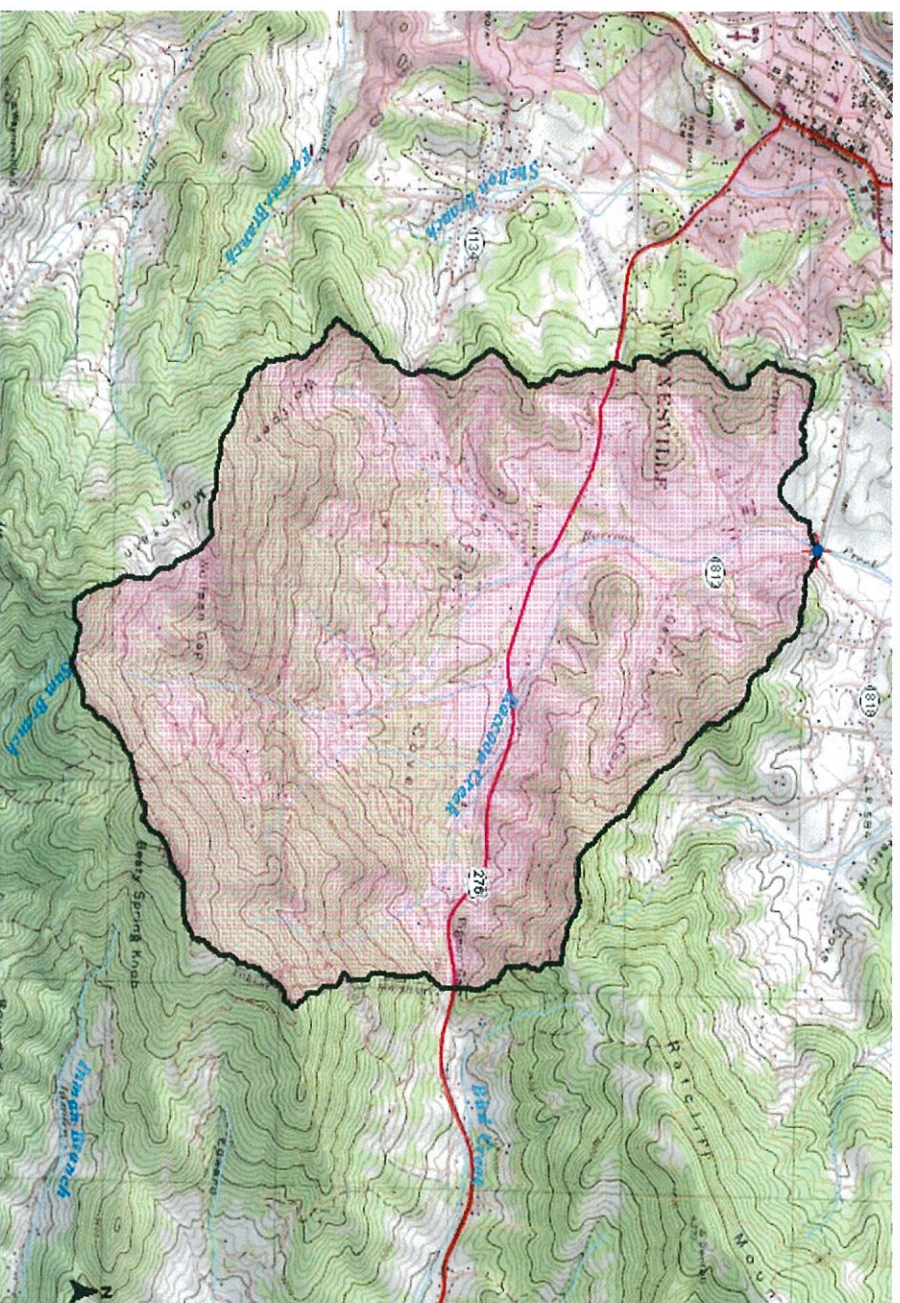
Urban Flows Region Grid Basin Characteristics			
100% Peak urban Blue Ridge-Piedmont FS007-00 (3.81 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	3.81	0.04	41
Area of Impervious Surfaces (percent)	0.77 (below min value 2)	2	54.6

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Peak Flows Region Grid Streamflow Statistics					
Statistic	Flow (ft ³ /s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2	311	35		177	545
PK5	569	34		327	992
PK10	772	35		435	1370
PK25	1050	38		569	1930
PK50	1250	40		657	2380
PK100	1490	42		758	2940
PK200	1710	44		834	3490
PK500	2040	48		947	4380

Urban Flows Region Grid Streamflow Statistics					
Statistic	Flow (ft ³ /s)	Standard Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2U	74.8				
PK5U	169				
PK10U	256				
PK25U	461				
PK50U	597				
PK100U	753				

StreamStats Print Page



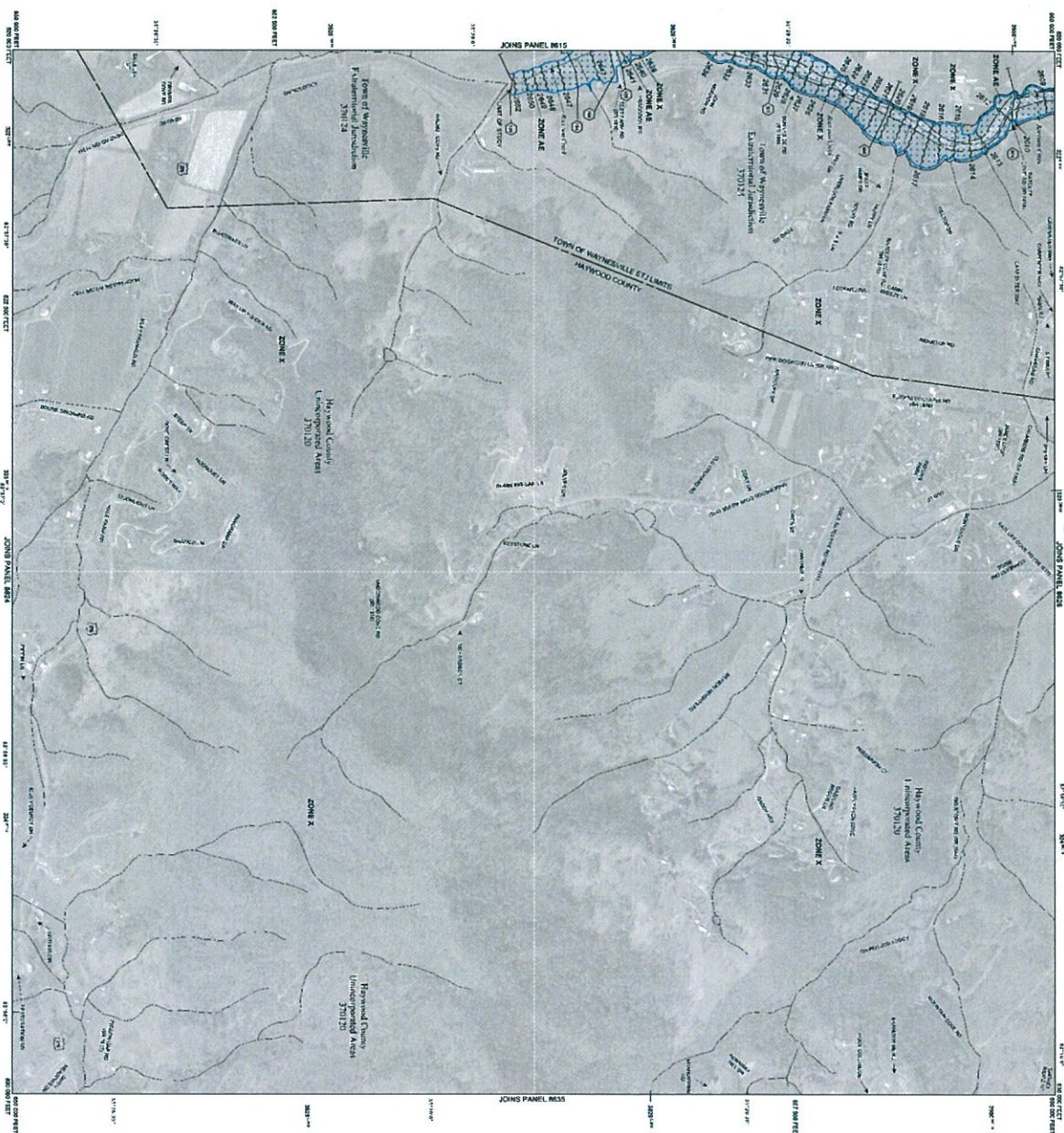
Explanation

- ★ Global Watershed Point
- SLP1085P Point
- NCDOT Points
- Local Gages
- ▲ Gauging Station, Continuous Record
- ▲ Low Flow, Partial Record
- ▲ Peak Flow, Partial Record
- ▲ Peak and Low Flow, Partial Record
- ▲ Stage Only
- ▲ Low Flow, Partial Record, Stage
- ▲ Miscellaneous Record
- ▲ Unknown
- Local NHD2
- Longest Flow Path SD
- Stream Grid
- Global Watershed
- Pilot Study Area
- Inupoly

8/27/2013 12:12:09 PM

[illegible]FLOOD HAZARD DATA TABLE

* October 1973 (rev)



NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly turn back drainage sources of small size. The emergency map responsibility should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where State Food Inspections (SFI) and Foodways have been determined, users are encouraged to consult the Food Inspection Handbook (FIB), *United States Food Inspection Service*, or the *Food Inspection Handbook* contained within the Food Inspection SFI (FIS) module. The correspondence to the FIS, Users should be aware that the FIS is a 1984 reprint of the original document. There are a number of items that have been added to the FIS, including the following:

- The FIS has been updated to reflect the current state of food inspection.
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Identification of regulatory frameworks (RFRs) for flood sources related to urban areas was completed in three phases and transpired between two sessions. The floodways were based on hydraulic conditions not related to operations of the National Floodway System. Floodways within the first phase (RFRs) were for flood sources not related to floodway operations, such as riverine-influenced wetlands, flood sources related to floodway operations, and flood sources related to floodway management activities in conjunction with the FFRs for purposes of construction versus floodway management.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.4 "Flood Protection Measures" of the Flood Insurance Study report for information on the flood control structures in this jurisdiction.

[illegible]

But many features shown on this map, such as corporate limits, are based on the most up to date data available at the time of publication. Changes in the corporate limits may have occurred since this map was published. Map users should consult the appropriate commission office or website to verify current conditions of jurisdictional boundaries and state map boundaries. This map file contains roads that were not considered in the hydraulic analysis of streams where no flow hydraulic model was studied during the watershed runoff HMA.

This may reflect more diverse and up-to-date Western ethical considerations (as these studies are the products of that jurisdiction). The bioethics and research that were transferred from the United States may have been adjusted to conform to their own strong ethical considerations. In contrast, the United States may have been more conservative in the past, due to a much more limited ethical

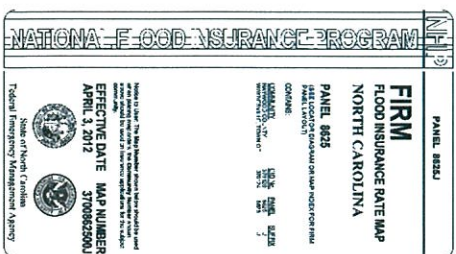
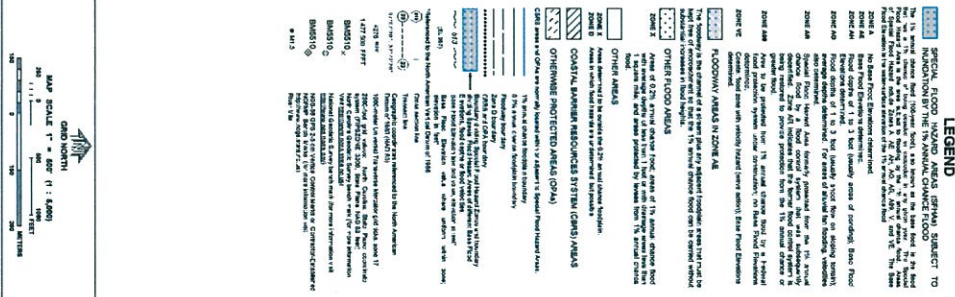
Please refer to the separately printed Map Index for an overview map of the country showing the local area guides, community maps, especially addresses, and a Listing of Communities under certain National Place Insurance Program areas for each community as well as a listing of the people on who each community is based.

For a complete listing of the 1997-1998 *Journal of Management Education* articles, please visit the *Journal* website at <http://jme.sagepub.com>. For more information on the *Journal*, please contact the *Journal* Editor, Dr. Robert L. Lippert, at rlippert@jme.sagepub.com or call (818) 542-2664.

MAP REPOSITORY
 Refer to *Index of Maps Repository* on Map Index for visit <http://index.maphouse.com>

EFFECTIVE DATE OF FLOOD INSURANCE RATE MAP PANEL
APRIL 3 2012
EFFECTIVE DATE OF NOTIFICATION TO THIS PANEL

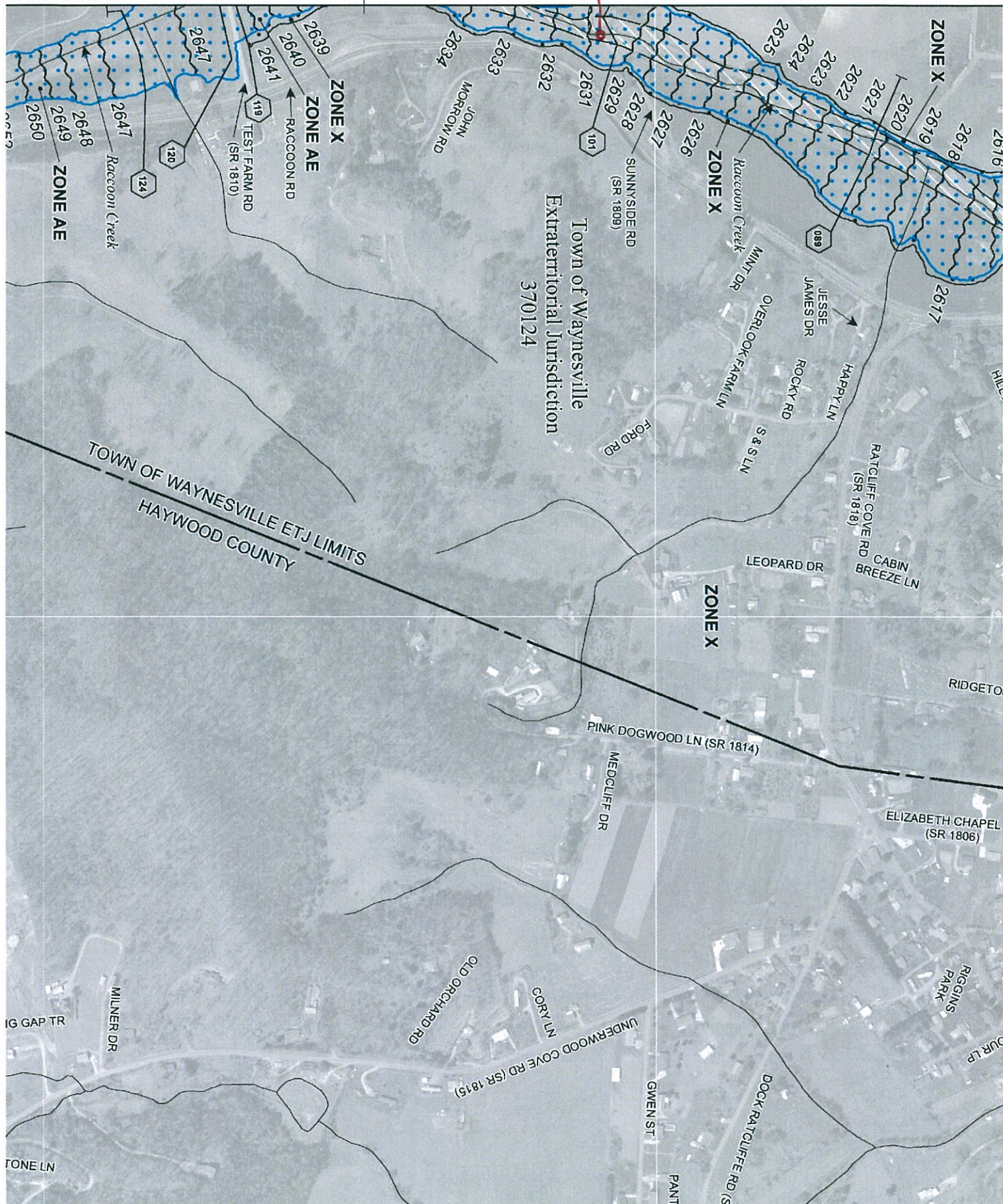
For continuously and seasonally healthy food, it's all about shipping, close to the Community Map location. Because of the food's proximity to the Community Map location, it's all about shipping, close to the Community Map location.



S PANEL 8615

3929 000 M

35°29'30"





NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION

PRI. MAINT. ISSUED.
TEMP. REPAIR - SUPPLEMENT ABUTMENT POST.

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY HAYWOOD BRIDGE NUMBER 430020 INSPECTION CYCLE 2 YRS
ROUTE SR1809 ACROSS RACoon CREEK M.P. 0

LOCATION .2 MI.W.JCT.SR1812

SUPERSTRUCTURE TIMBER FLOOR ON I-BEAMS

SUBSTRUCTURE E.BTS:TIMBER CAPS/TIMBER POST&SILLS @ VAR. CENTERS

SPANS 1 @ 20'-6

LONGITUDE 82° 57' 53.3"

LATITUDE 35° 29' 28.1"

PRESENT CONDITION POOR

INVENTORY RATING

INSPECTION DATE 04/26/2011

OPERATING RATING

PRESENT POSTING SV 39 TTST 99

PROPOSED POSTING

COMPUTER UPDATE

ANALYSIS DATE

POSTING LETTER DATE

SUFFICIENCY RATING

OTHER SIGNS PRESENT DELINEATORS [4]

SIGN NOTICE
ISSUED FOR

NUMBERED
REQUIRED

No

WEIGHT LIMIT

No

DELINEATORS

No

NARROW BRIDGE

No

ONE LANE BRIDGE

No

LOW CLEARANCE



LOOKING EAST

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Update Date: 01/20/2012

COUNTY : HAYWOOD DIVISION : 14 DISTRICT : 2 STRUCTURE NUMBER : 430020 LENGTH : 21 FEET

ROUTE CARRIED : SR1809 FEATURE INTERSECTED : RACCOON CREEK

LOCATED : .2 MI.W.JCT.SR1812 BRIDGE NAME : CITY :

FUNC. CLASS : 09 SYST.ON : NFA SYST.UNDER : NFA ADT & YR : 520 2008 RAIL TYPE : LT 227 RT 227

BUILT : 1952 BY : BMU PROJ : FED.AID PROJ : DESIGN LOAD : Other or Unknown

REHAB : BY : BMU PROJ : ALIGNMENT : TAN SKEW : 110 LANES : ON 2 UNDER

NAVIGATION : VC 0 FT HC 0 FT HT. CRN. TO BED : 6 FT WATER DEPTH : 1 FT

SUPERSTRUCTURE : TIMBER FLOOR ON I-BEAMS

SUBSTRUCTURE : E.BTS:TIMBER CAPS/TIMBER POST&SILLS @ VAR. CENTERS

SPANS : 1 @ 20'-6

BEAMS OR GIRDERS : 10 LINES 12 I-BEAMS @ 2' CENTERS

FLOOR : Rated PMs and inspection report: repair/replace bulkhead timbers @ both abutments and cap @ abutment #2 ENCROACHMENT : DECK (OUT TO OUT) : 20 FT

CLEAR ROADWAY : 19.2 FT BETWEEN RAILS : 19.8 FT SIDEWALK OR CURB : LT .3 FT RT .3 FT

VERT.CL.OVER : 999.9 FT

INV.RTG. : HS-1 OPE.RTG. : HS-1 CONTR.MEMBER : Cap-Abt#2 POSTED : SV TTST DATE 01/19/2012

SYSTEM : Secondary S.R. Route GREEN LINE ROUTE : N

UNDER ROUTES AND CLEARANCES

REMARKS :

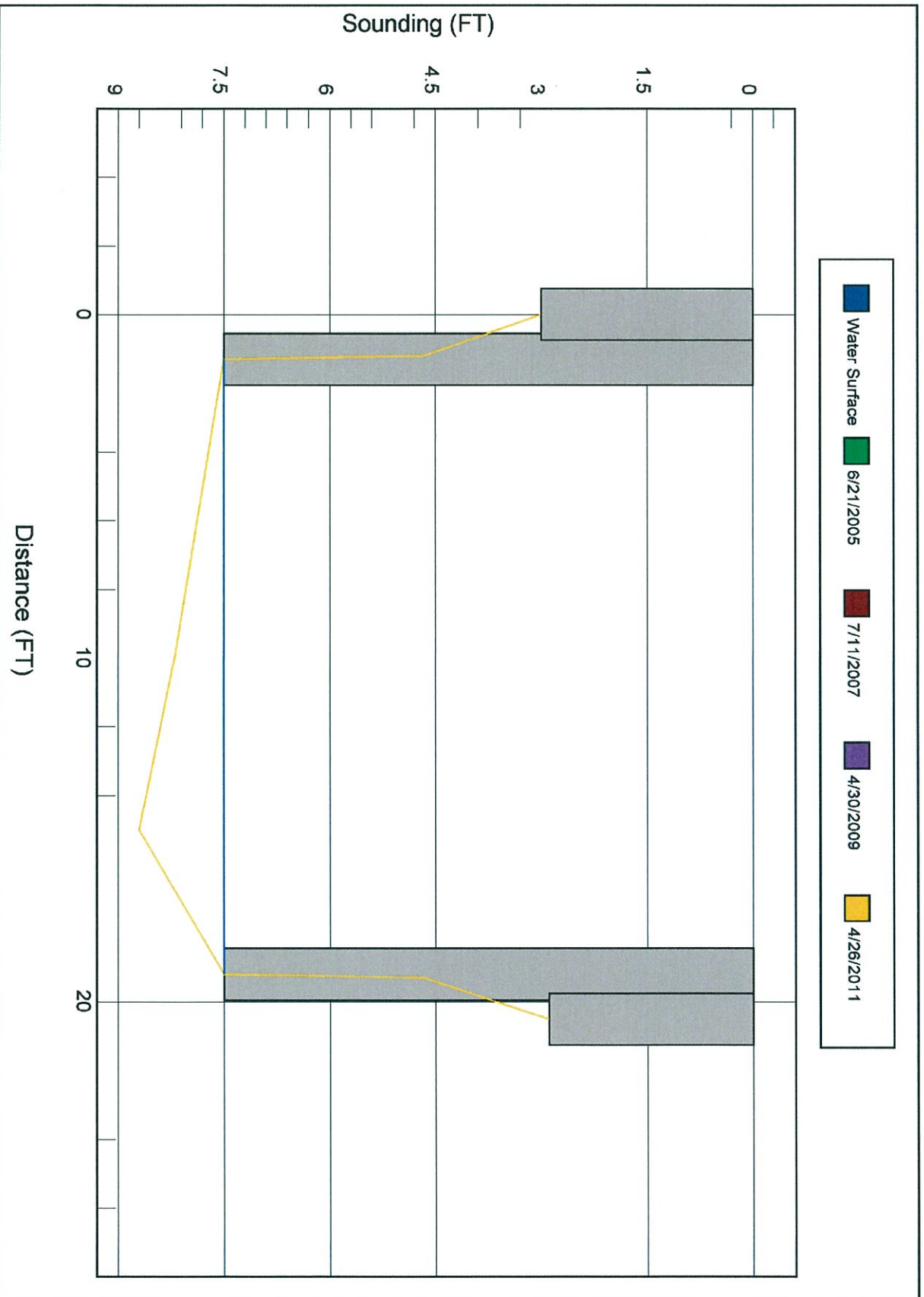
Bridge: 430020

County: HAYWOOD

Date: 04/26/2011

Top of Rail = 0 FT (Sounding)

STREAMBED PROFILE (Downstream)





UPSTREAM



ABUTMENT 1 - TEMP. REPAIR TO POST 1, 2, AND 3.

620
(1 of 5)

IF
S STRUCTURE IS LOCATED IN A DESIGNATED FLOOD HAZARD
VE WHERE A DETAILED STUDY HAS BEEN MADE. BY
NTAINING THE EXISTING ROADWAY GRADE AND INCREASING
AMOUNT OF WATERWAY OPENING, IT IS ASSURED THAT THE
EVATION OF THE 100-YEAR FLOOD WILL NOT BE APPRECI -
Y EFFECTED.

THIS IS A PARTIAL COPY
OF BSR : NOTES IN
HYDRAULICS CO. MAINT. FILE
8/27/13

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HAYWOOD COUNTY

REPLACEMENT OF BRIDGE # 20
ON SR 1809 OVER RACCOON
CREEK

SCALE: VERTICAL--1"=10'
HORIZONTAL--1"=50'

T.P. HERRING

AUG '83

V.P.T.V

10

11

12

13

14

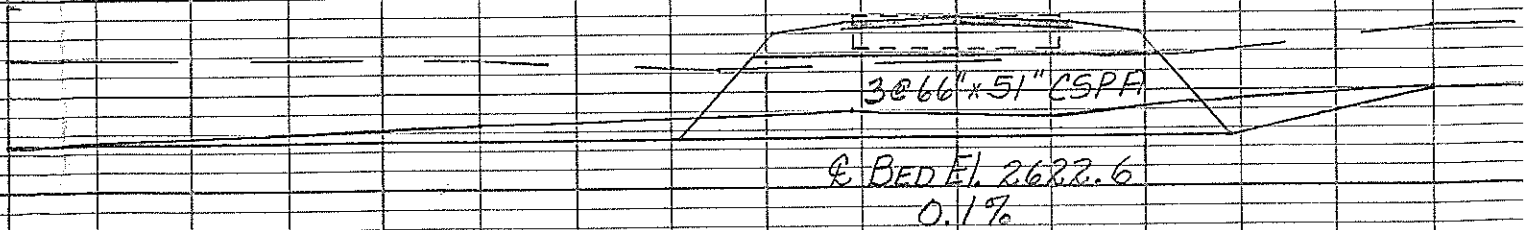
15

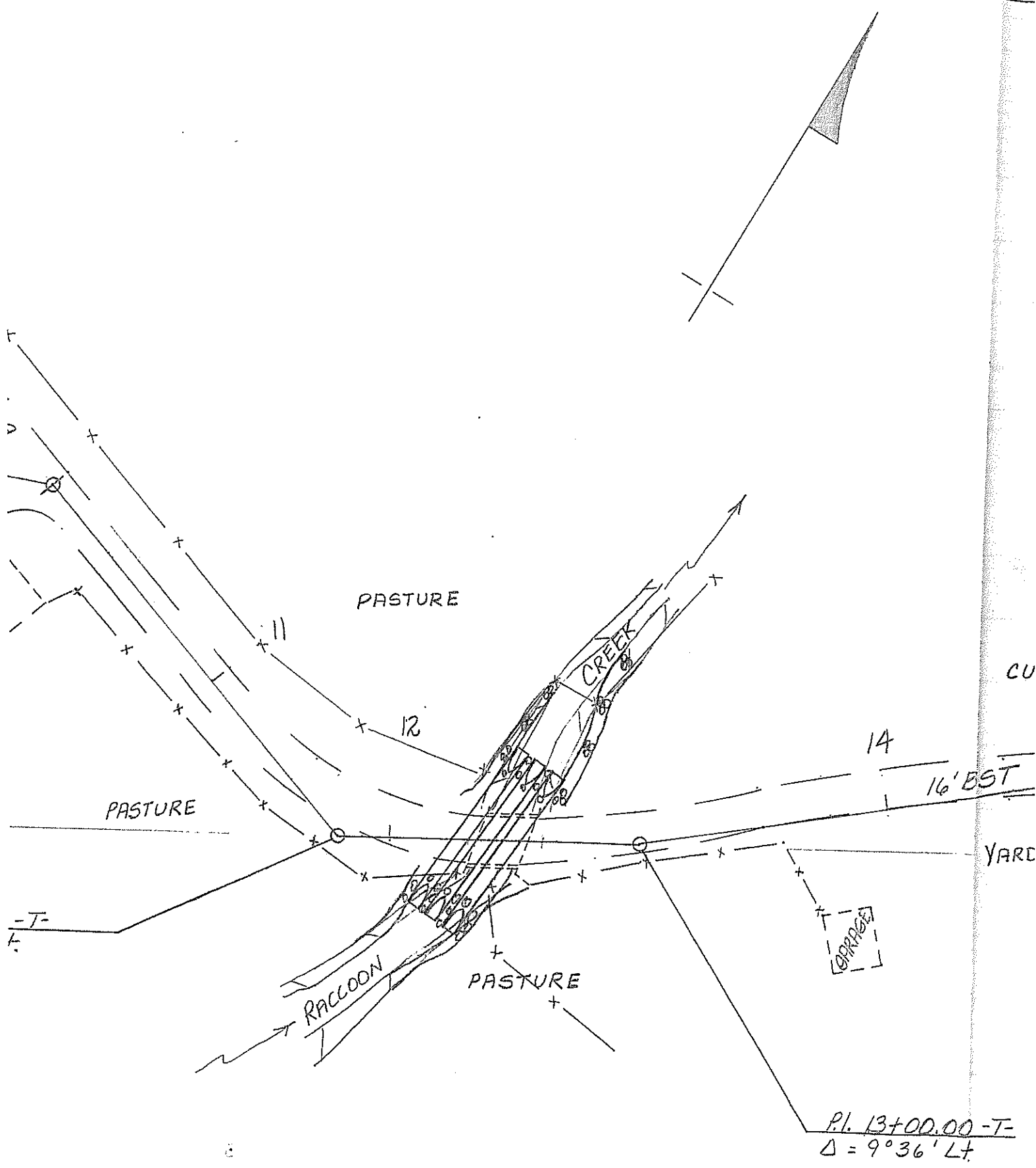
TBM -- NAIL IN ROOT OF TREE 38' RT
OF STA 13+64.5
EL. 2630.36 NGVD

STA 12+38.5 (2 of 5)
3 @ 66" x 51" CSPF -- 3" x 1" CORR
124° SKEW



100' 80' 60' 40' 20' 0' 20' 40' 60'





HAYWOOD CO. -- BR. #20 -- SR 1809 -- RACCOON CREEK

$$D.A. = 3.81 \text{ sq. mi.}$$

$$Q_{25} = 1,000 \text{ cfs}$$

$$Q_{100} = 1,600 \text{ cfs}$$

$$Q_2 = 350 \text{ cfs}$$

$$Q_5 = 575 \text{ cfs} \quad \text{UP} \quad \text{DOWN}$$

$$Q_{25} \text{ ELEV.} \quad 2630.0 \quad 2629.0$$

$$Q_{100} \text{ ELEV.} \quad 2630.4 \quad 2629.6$$

ALLOWABLE 100 YR DESIGN FLOOD ELEV. = 2630.6

EXISTING AREA BELOW STRUCTURE IS 51.5 sf

$$HW/D_2 = 0.98 \quad HW = 4.2$$

$$H = 1.5 \quad h_o = 3.6 \quad L_{so} = 0.1 \quad HW = \underline{\underline{5.0}}$$

$$HW/D_5 = 1.69 \quad HW = 7.2$$

$$t = 4.2 \quad h_o = 4.0 \quad L_{so} = 0.1 \quad HW = \underline{\underline{8.1}}$$

020
(545)
HAYWOOD Co. - BR#20

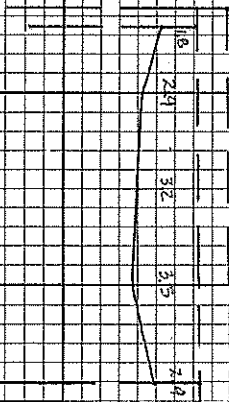
12+00 1+10 1+20 1+30 1+40 1+50 1+60

26.80

26.80

26.80

26.80



$$A = 7.99 + 15.25 + 10.75 + 14.75$$

$$A = 54.74$$

$$\text{REDUCE FOR SKEW} = 51.5 \text{ sq ft}$$

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Raccoon Creek								
008	845	85	688	4.1	2,578.5	2,578.5	2,579.5	1.0
011	1,109	70	486	5.8	2,579.5	2,579.5	2,580.4	0.9
014	1,373	115	1,271	2.2	2,584.7	2,584.7	2,585.0	0.3
026	2,640	50	348	8.1	2,586.6	2,586.6	2,587.1	0.5
027	2,746	50	637	4.4	2,592.2	2,592.2	2,593.0	0.8
034	3,432	130	895	3.1	2,593.9	2,593.9	2,594.9	1.0
043	4,330	130	640	3.0	2,596.9	2,596.9	2,597.6	0.7
050	5,016	55	299	6.2	2,597.8	2,597.8	2,598.8	1.0
060	6,019	80	426	4.2	2,603.7	2,603.7	2,604.6	0.9
074	7,392	125	543	3.2	2,611.4	2,611.4	2,612.4	1.0
089	8,923	100	258	6.4	2,620.1	2,620.1	2,620.6	0.5
101	10,085	130	476	3.4	2,630.3	2,630.3	2,631.1	0.8
111	11,088	150	304	5.3	2,636.0	2,636.0	2,636.6	0.6
119	11,880	80	207	7.7	2,640.7	2,640.7	2,641.4	0.7

¹Feet above mouth

TABLE 15

FEDERAL EMERGENCY MANAGEMENT AGENCY

HAYWOOD COUNTY, NC
AND INCORPORATED AREAS

FLOODWAY DATA

RACCOON CREEK

NO HEC RAS X SECTION