

OFFICE ESTIMATE

1 @ 70' Bridge

PREDESIGN-PRESURVEY REPORT

Project# _____

TIP# _____

Let Date _____

WBS# 17 BP. 11. R. 81

County Ashe

Bridge# 040061

Road# SR 1352 (Long branch Rd.)

Stream little Horse Creek

Type Of Request: POC Force Account TIP NCMA

Date 7/3/13 Name M. G. S. Assigned To R. C. H.

Checked By Wsh 7-22-13

Prior Survey Date NONE ✓ (attach copy of prior survey) BRN BK: NO ✓ CD FILE NO ✓

Study By Scour Section NONE ✓

Flood Zone AE Detail Study LIMITED ✓ Date 11/4/09 Panel# 2051 ✓

B.M. Info _____

Quad Map Park Drainage Area 21 SQ MI. From USGS / Stream Stats ✓
Q25 3610 cfs ✓ Q50 4260 cfs Q100 5040 cfs Method Regression EQU. ✓
3600 4300 5000 ✓ RURAL, REGION ✓

EXISTING BRIDGE INFORMATION

Location 25 Ft. S. JCT. SR 132A ✓

Average Daily Traffic 310 YR 2009. (6% TRK)

Length 46 ft. Bed-To Crown 15 ft. Water Depth 1 ft.

Type Structure Timber floor on I-beams

Type Spans 1 @ 45'-8" single span

Upstream Structure 040062 Prestressed Conc. channels 1 @ 30'-3" 1 @ 30'-1" 1 @ 30'-3"

Location 25 ft. S. JCT. SR 132A

Bed-To Crown 13 ft. WD = 1 ft. Prior Survey 7-68 3 @ 30' (from BRN BK)

Downstream Structure 040023 ✓ (NC 194 OLD FIELD CREEK)

Location 100' SO. JCT. SR 1523

Bed-To Crown 11' (H₂O 1' DEEP) Prior Survey _____

SCS Watershed N/A

ENVIRONMENTAL TVA NO ✓

Trout Stream Yes ✓

Anadromous Fish NO ✓ Primary Nursery Area NO ✓

High Quality Waters NO

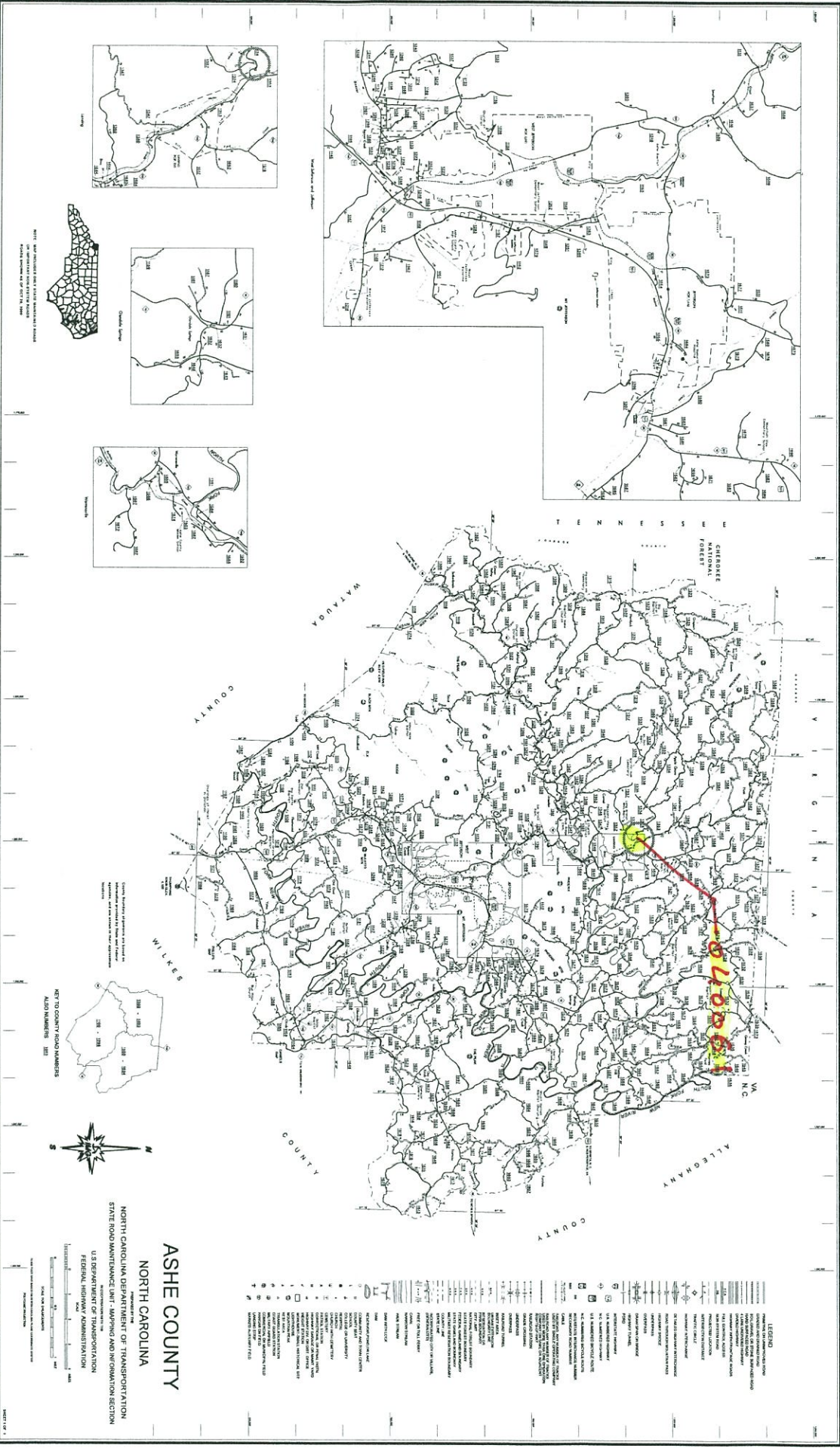
Nutrient Sensitive Waters NO ✓

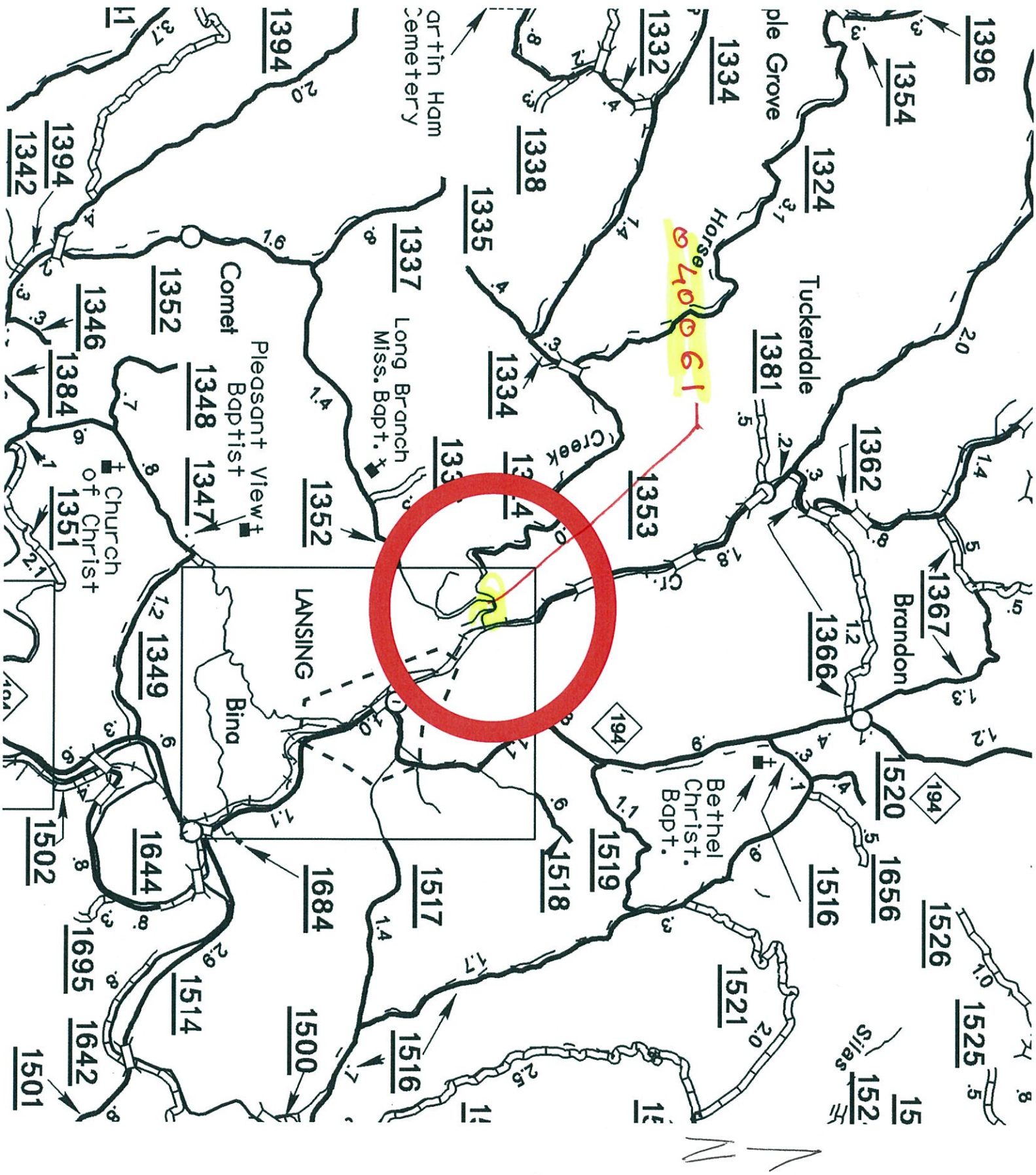
Near Water Supply Intake NO

CAMA County NO ✓

Stream Classification C Tr: ORW(+) (#10-2-21-8) (FROM SOURCE TO

DENR River Basin Info. NEW (BIG HORSE CREEK)







North Carolina StreamStats

Streamstats Ungaged Site Report

Date: Tue Jul 2 2013 11:16:25 Mountain Daylight Time

Site Location: North_Carolina

NAD27 Latitude: 36.5070 (36 30 25)

NAD27 Longitude: -81.5212 (-81 31 16)

NAD83 Latitude: 36.5072 (36 30 26)

NAD83 Longitude: -81.5211 (-81 31 16)

Drainage Area: 21 mi² — 13440

Percent Urban: 3.7 %

Percent Impervious: 0.1 %

Peak Flows Region Grid Basin Characteristics			
100% Peak Southeast US 2009 5158 (21 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	21	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 (21 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	21	0.04	41
Area of Impervious Surfaces (percent)	0.14 (below min value 2)	2	54.6

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

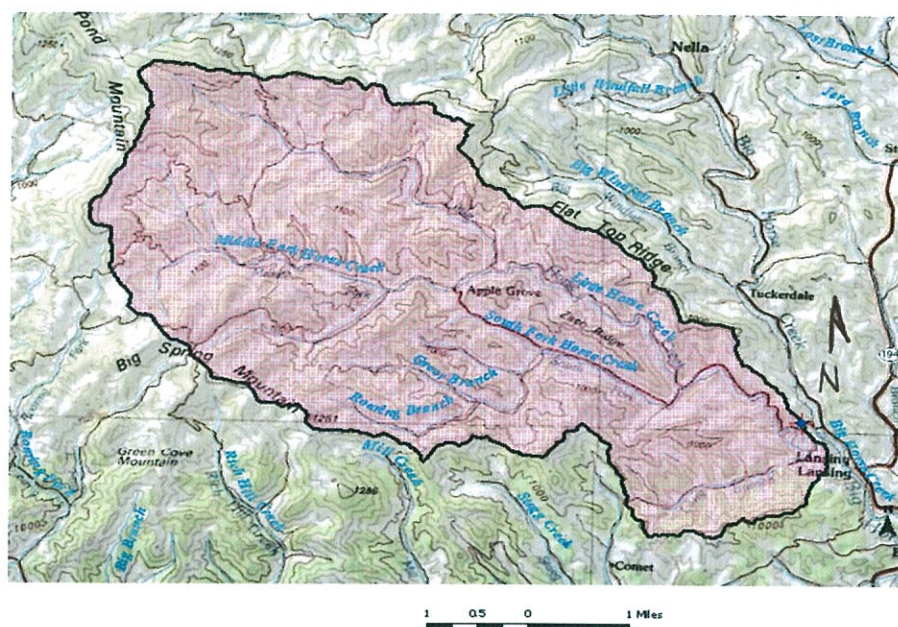
Peak Flows Region Grid Streamflow Statistics					
Statistic	Flow (ft ³ /s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2	1170	35		675	2040
PK5	2040	34		1180	3530
PK10	2710	35		1540	4770
PK25	3610	38		1980	6580
PK50	4260	40		2260	8020
PK100	5040	42		2590	9830
PK200	5720	44		2830	11600
PK500	6770	48		3190	14400

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	82				
PK5U	204				
PK10U	326				
PK25U	622				
PK50U	849				
PK100U	1130				



North Carolina StreamStats

StreamStats Print Page



7/2/2013 11:16:33 AM

Explanation

- | | |
|------------------------|-------------------------------------|
| ★ GlobalWatershedPoint | ▲ Gaging Station, Continuous Record |
| ◆ Slp1085Point | ▲ Low Flow, Partial Record |
| ◆ NCDOT Points | ▲ Peak Flow, Partial Record |
| ▲ LocalGages | ▲ Peak and Low Flow, Partial Record |
| — LocalNHD2 | ▲ Stage Only |
| — LongestFlowpath3D | ▲ Low Flow, Partial Record, Stage |
| ■ Stream Grid | ▲ Miscellaneous Record |
| ■ GlobalWatershed | ▲ Unknown |
| ■ Pilot Study Area | |
| □ hucpoly | |



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION

TEMP REPAIR

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY ASHE BRIDGE NUMBER 040061 INSPECTION CYCLE 2 YRS

ROUTE SR1352 ACROSS LITTLE HORSE CREEK M.P. 0

LOCATION 25 FT.S.JCT.SR1324

SUPERSTRUCTURE TIMBER FLOOR ON I-BEAMS

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

SPANS 1 @ 45'-8

LONGITUDE 81° 31' 10.0"

LATITUDE 36° 30' 34.7"

PRESENT CONDITION FAIR

INVENTORY RATING

INSPECTION DATE 05/23/2012

OPERATING RATING

PRESENT POSTING SV 18 TTST 22

PROPOSED POSTING

COMPUTER UPDATE

ANALYSIS DATE

POSTING LETTER DATE

SUFFICIENCY RATING

OTHER SIGNS PRESENT 4 DELIN.



LOOKING NORTH

SIGN NOTICE
ISSUED FOR

NUMBERED
REQUIRED

No	WEIGHT LIMIT	
No	DELINEATORS	
No	NARROW BRIDGE	
No	ONE LANE BRIDGE	
No	LOW CLEARANCE	

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 06/21/2012

COUNTY : ASHE DIVISION : 11 DISTRICT : 3 STRUCTURE NUMBER : 040061 LENGTH : 46 FEET

ROUTE CARRIED : SR1352 FEATURE INTERSECTED : LITTLE HORSE CREEK

LOCATED : 25 FT.S.JCT.SR1324 BRIDGE NAME : CITY :

FUNC. CLASS : 09 SYST.ON : NFA SYST.UNDER : NFA ADT & YR : 310 2009 RAIL TYPE : LT 227 RT 227

BUILT : 1965 BY : BMU PROJ : FED.AID PROJ : DESIGN LOAD : Unknown

REHAB : BY : PROJ : ALIGNMENT : TAN SKEW : 80 LANES : ON 2 UNDER

NAVIGATION : VC 0 FT HC 0 FT HT. CRN. TO BED : 15 FT WATER DEPTH : 1 FT

SUPERSTRUCTURE : TIMBER FLOOR ON I-BEAMS

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

SPANS : 1 @ 45'-8

BEAMS OR GIRDERS : 10 LINES 18 I-BEAMS @ 2'-7 CENTERS

FLOOR : 4X8 TIM/3 AWS ENCROACHMENT : DECK (OUT TO OUT) : 26 FT

CLEAR ROADWAY : 25 FT BETWEEN RAILS : 25.7 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 : IntBeam POSTED : SV 18 TTST 22 DATE 10/16/2008

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

UNDER ROUTES AND CLEARANCES

REMARKS :

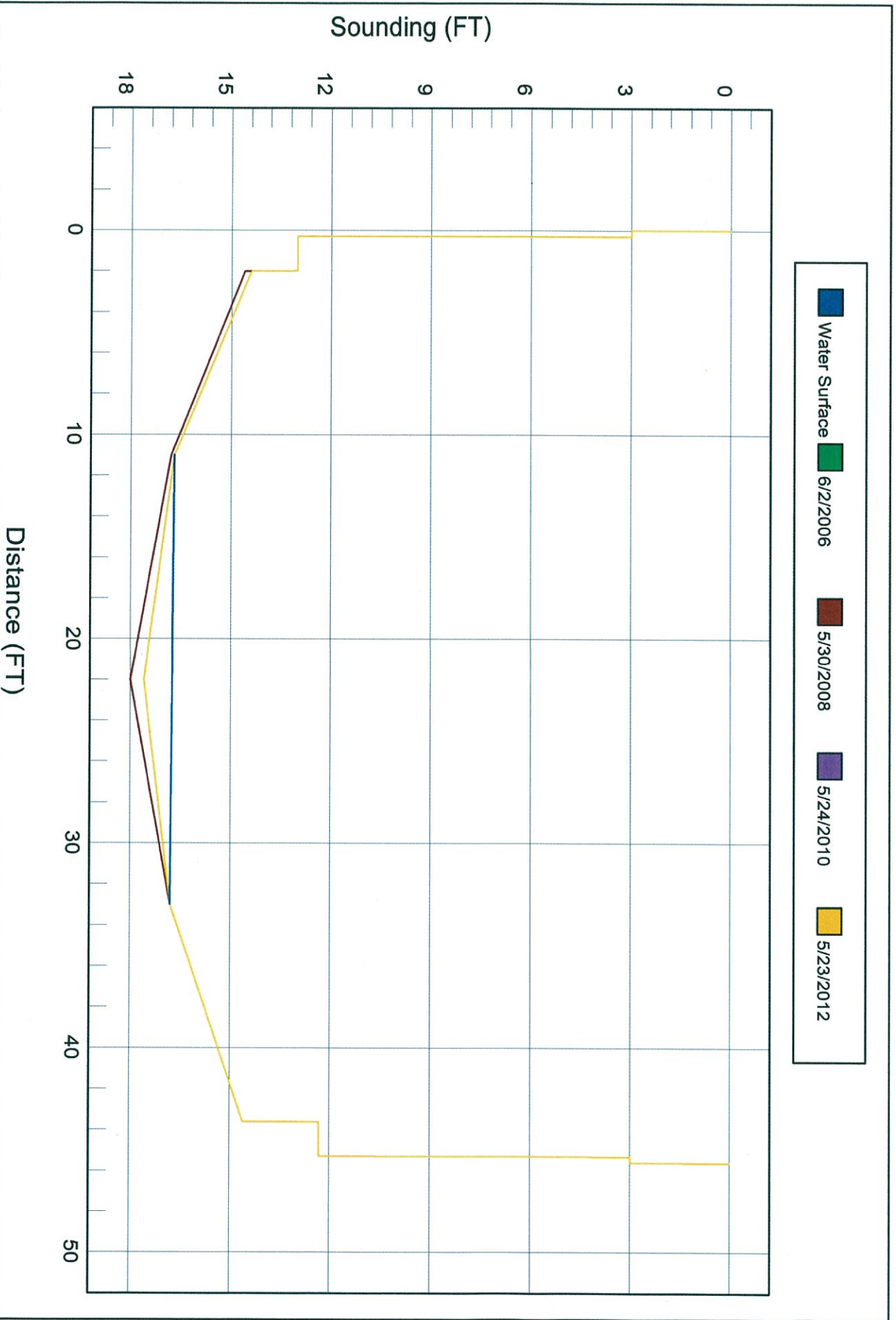
Bridge: 040061

County ASHE

Date: 05/23/2012

Top of Rail = 0 FT (Sounding)

STREAMBED PROFILE (Downstream)

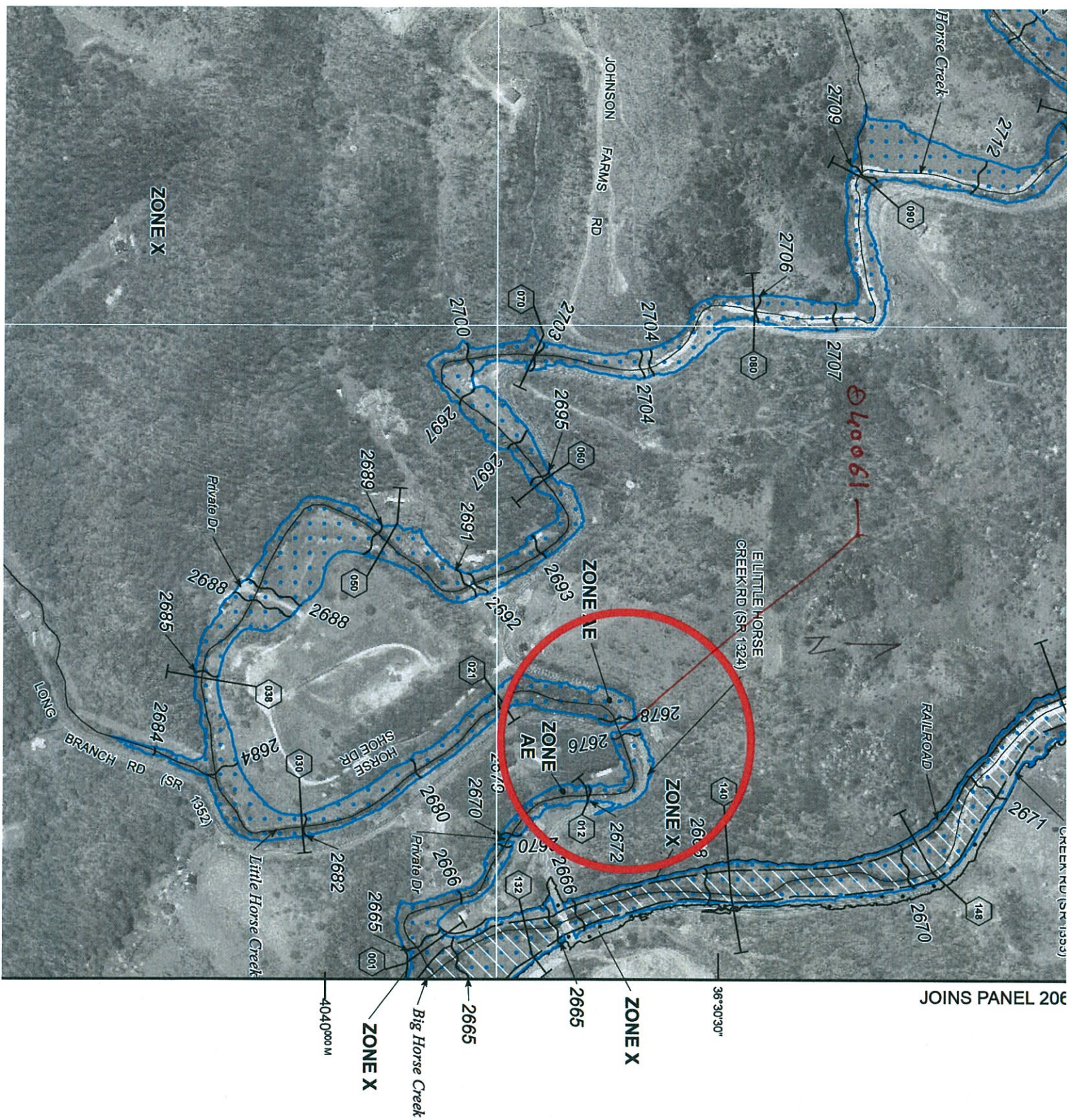




LOOKING SOUTH



LOOKING UPSTREAM



Section 4.0 – Area Studied

Table 5—Flooding Sources Studied by Detailed Methods: Limited Detailed

Source	Riverine Sources		Affected Communities
	From	To	
Greer Branch	The confluence with South Fork Little Horse Creek	Approximately 0.5 mile upstream Greer Hollow Road (SR 1333)	Ashe County (Unincorporated Areas)
Helton Creek Tributary 1	The confluence with Helton Creek	Approximately 0.5 mile upstream of the confluence of Helton Creek Tributary 1A	Ashe County (Unincorporated Areas)
Helton Creek Tributary 1A	The confluence with Helton Creek Tributary 1	Approximately 1,320 feet upstream of Spencer Branch Road (SR 1373)	Ashe County (Unincorporated Areas)
Jerd Branch	The confluence with Helton Creek	Approximately 1,093 feet upstream of upstream of NC State Highway 194	Ashe County (Unincorporated Areas)
Jones Branch	The confluence with Little Helton Creek	Approximately 550 feet upstream of NC State Highway 194	Ashe County (Unincorporated Areas)
Little Buffalo Creek	Approximately 749 feet upstream of Baker Shepherd Drive	Approximately 0.4 mile upstream of Dogget Road (SR 1153)	Ashe County (Unincorporated Areas)
Little Buffalo Creek Tributary 1	The confluence with Little Buffalo Creek	Approximately 0.4 mile upstream of the confluence with Little Buffalo Creek	Ashe County (Unincorporated Areas), Town of West Jefferson
Little Helton Creek	The confluence with Helton Creek	Approximately 760 feet upstream of the confluence of Little Helton Creek Tributary 2	Ashe County (Unincorporated Areas)
Little Helton Creek Tributary 1	The confluence with Little Helton Creek	Approximately 0.6 mile upstream of the confluence with Little Helton Creek	Ashe County (Unincorporated Areas)
Little Helton Creek Tributary 2	The confluence with Little Helton Creek	Approximately 0.4 mile upstream of the confluence with Little Helton Creek	Ashe County (Unincorporated Areas)
Little Horse Creek	The confluence with Big Horse Creek	Approximately 1.1 miles upstream of Little Horse Creek Road (SR 1324)	Ashe County (Unincorporated Areas)
Little Laurel Creek	The confluence with Big Laurel Creek	Approximately 880 feet upstream of the 5 th Little Laurel Road (SR 1310) crossing	Ashe County (Unincorporated Areas)
Little Peak Creek	The confluence with Peak Creek	Approximately 0.5 mile upstream of Little Peak Creek Road	Ashe County (Unincorporated Areas)
Little Phoenix Creek	The confluence with North Fork New River	Approximately 1.3 miles upstream of Jake Blackburn Road (SR 1577)	Ashe County (Unincorporated Areas)
Little Phoenix Creek Tributary	The confluence with Little Phoenix Creek	Approximately 0.5 mile upstream of Old NC Highway 16 (SR 1573)	Ashe County (Unincorporated Areas)

Section 5.0 – Engineering Methods

Table 7—Summary of Discharges

Flooding Source	Location	Drainage Area (square miles)	Discharges (cfs)			
			10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Little Buffalo Creek	Approximately 0.63 mile upstream of Clearwater Drive	0.37	1	64	109	175
Little Buffalo Creek Tributary 1	Approximately 107 feet upstream of the confluence with Little Buffalo Creek	0.9	*	*	702	*
Little Helton Creek	At the confluence with Helton Creek	12.6	*	*	3,636	*
	Approximately 30 feet upstream of the confluence of Long Branch	9.7	*	*	3,079	*
	Approximately 30 feet upstream of the confluence of Little Helton Creek Tributary 1	8.1	*	*	2,759	*
	Approximately 30 feet upstream of the confluence of Jones Branch	5.8	*	*	2,235	*
	Approximately 30 feet upstream of the confluence of Shippy Branch	4.6	*	*	1,929	*
	Approximately 30 feet upstream of the confluence of Little Helton Creek Tributary 2	3.9	*	*	1,754	*
Little Helton Creek Tributary 1	At the confluence with Little Helton Creek	1.0	*	*	724	*
Little Helton Creek Tributary 2	At the confluence with Little Helton Creek	0.5	*	*	504	*
Little Horse Creek	At the confluence with Big Horse Creek	21.1	*	*	5,005	*
	Approximately 1,900 feet upstream of Long Branch Road (SR 1352)	19.1	*	*	4,710	*
	Approximately 0.8 mile downstream of the confluence of South Fork Little Horse Creek	18.5	*	*	4,613	*

Section 5.0 – Engineering Methods

Table 7—Summary of Discharges

Flooding Source	Location	Drainage Area (square miles)	Discharges (cfs)			
			10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Little Horse Creek	Approximately 30 feet upstream of the confluence of South Fork Little Horse Creek	13.4	*	*	3,770	*
	Approximately 0.7 mile upstream of the confluence of South Fork Little Horse Creek	13.0	*	*	3,710	*
	Approximately 1.6 miles upstream of the confluence of South Fork Little Horse Creek	12.6	*	*	3,623	*
	Approximately 1.3 miles downstream of the confluence of Middle Fork Little Horse Creek	12.1	*	*	3,533	*
	Approximately 30 feet upstream of the confluence of Middle Fork Little Horse Creek	4.4	*	*	1,886	*
	Approximately 0.5 mile upstream of the confluence of Middle Fork Little Horse Creek	4.1	*	*	1,803	*
	Approximately 1.0 mile upstream of the confluence of Middle Fork Little Horse Creek	3.6	*	*	1,665	*
Little Laurel Creek	At the confluence with Big Laurel Creek	3.4	*	*	1,600	*
	Approximately 0.6 mile upstream of the confluence with Big Laurel Creek	3.1	*	*	1,498	*
	Approximately 1,840 feet downstream of Pennington Branch Road	2.6	*	*	1,363	*
	Approximately 30 feet downstream of Pennington Branch Road	2.1	*	*	1,196	*

Section 5.0 – Engineering Methods

Table 9—Roughness Coefficients

Stream	Channel "n"	Overbank "n"
Cranberry Creek West	0.048	0.048 – 0.150
East Fork	0.052	0.080 – 0.150
Elk Creek (into South Fork New River)	0.055	0.070 – 0.150
Ezra Fork Creek	0.040	0.080 – 0.150
Fees Branch	0.047	0.060 – 0.140
Gap Creek	0.052 – 0.055	0.010 – 0.150
Grassy Creek	0.055 – 0.058	0.080 – 0.150
Greer Branch	0.048	0.060 – 0.140
Helton Creek	0.040 – 0.053	0.030 – 0.140
Helton Creek Tributary 1	0.048	0.060 – 0.140
Helton Creek Tributary 1A	0.050	0.080 – 0.150
Hoskins Fork	N/A	N/A
Jerd Branch	0.048	0.080 – 0.120
Jones Branch	0.050	0.060 – 0.120
Little Buffalo Creek	0.042 – 0.050	0.060 – 0.140
Little Buffalo Creek Tributary 1	0.050	0.060 – 0.140
Little Helton Creek	0.042 – 0.050	0.060 – 0.140
Little Helton Creek Tributary 1	0.050	0.070 – 0.080
Little Helton Creek Tributary 2	0.050	0.080 – 0.110
Little Horse Creek	0.045 – 0.050	0.060 – 0.140
Little Laurel Creek	0.050 – 0.058	0.080 – 0.150
Little Naked Creek	0.032 – 0.055	0.033 – 0.060
Little Peak Creek	0.050	0.060 – 0.140
Little Phoenix Creek	0.055	0.080 – 0.140
Little Phoenix Creek Tributary	0.050	0.080 – 0.150
Little Piney Creek	0.050 – 0.055	0.080 – 0.150
Long Branch	0.050	0.070 – 0.140
Long Branch South	0.047	0.020 – 0.140
Middle Fork Little Horse Creek	0.048 – 0.055	0.060 – 0.140
Middle Fork Little Horse Creek Tributary	0.050	0.080 – 0.150
Mill Creek	0.060	0.060 – 0.140
Mill Creek (South)	0.047 – 0.051	0.065 – 0.130
Naked Creek	0.042 – 0.070	0.030 – 0.150
Naked Creek Tributary 2	0.050 – 0.052	0.120 – 0.150
Nathans Creek	0.045 – 0.048	0.060 – 0.130
New River	0.040 – 0.045	0.045 – 0.150
North Fork New River	0.040 – 0.052	0.060 – 0.140
North Fork New River Tributary 1	0.055	0.100 – 0.150
Obids Creek	0.046 – 0.048	0.055 – 0.150
Old Field Branch	0.047	0.020 – 0.140
Old Field Creek	0.045	0.070 – 0.150

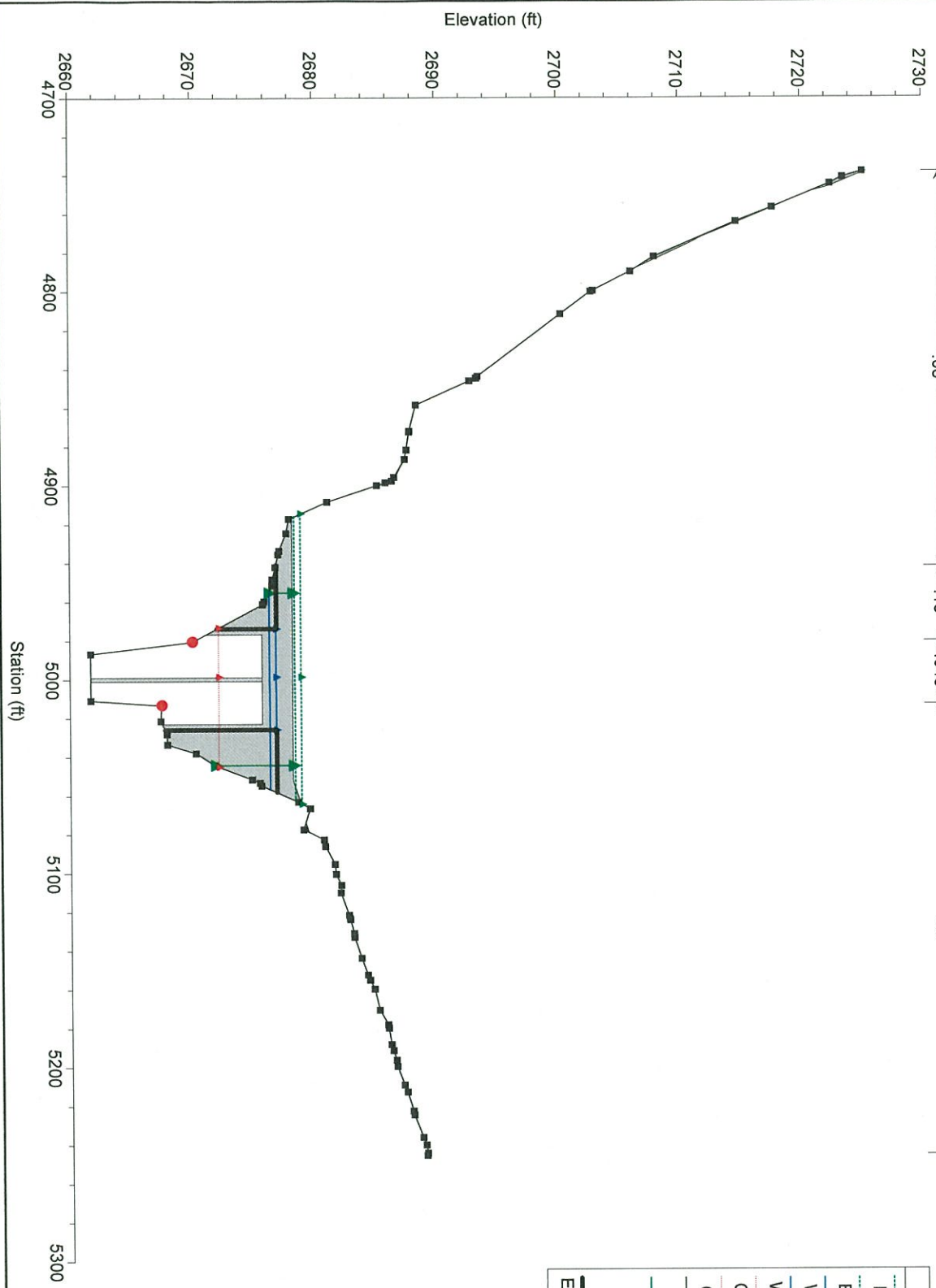
Section 5.0 – Engineering Methods

Table 10—Limited Detailed Flood Hazard Data

Cross Section ¹	Stream Station ²	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width ³ (feet)
LITTLE HELTON CREEK TRIBUTARY 2				
011	1,111	504	2,773.4	50 / 20
012	1,228	504	2,778.4	16 / 40
013	1,344	504	2,783.3	11 / 32
015	1,455	504	2,787.5	10 / 10
016	1,577	504	2,791.6	10 / 25
017	1,685	504	2,794.5	22 / 10
018	1,842	504	2,798.0	30 / 5
LITTLE HORSE CREEK				
001	99	5,005	2,665.0 ⁴	28 / 19
005	479	5,005	2,665.6	17 / 27
012	1,151	5,005	2,671.7	18 / 20
021	2,081	5,005	2,679.0	22 / 22
025	2,500	5,005	2,679.8	17 / 21
030	3,002	5,005	2,682.0	20 / 21
035	3,469	5,005	2,683.8	43 / 19
038	3,841	4,710	2,685.0	47 / 16
045	4,500	4,710	2,688.2	118 / 16
050	4,974	4,710	2,689.1	47 / 32
056	5,649	4,710	2,692.9	16 / 34
060	6,026	4,710	2,694.7	14 / 26
062	6,199	4,710	2,697.1	47 / 13
065	6,476	4,710	2,697.3	30 / 13
070	6,990	4,710	2,702.7	28 / 32
080	7,955	4,710	2,706.0	21 / 41
084	8,439	4,710	2,707.7	18 / 66
090	8,990	4,710	2,708.7	22 / 21
095	9,455	4,710	2,712.3	21 / 60
100	9,977	4,710	2,714.2	21 / 27
105	10,479	4,710	2,717.0	33 / 22
111	11,058	4,710	2,720.4	16 / 45
115	11,455	4,710	2,723.4	21 / 63
118	11,809	4,613	2,724.2	40 / 20
124	12,395	4,613	2,727.1	18 / 101
129	12,945	4,613	2,729.2	62 / 15
134	13,433	4,613	2,734.4	13 / 46
139	13,940	4,613	2,738.9	38 / 16
142	14,212	4,613	2,741.1	128 / 17
147	14,676	4,613	2,747.3	125 / 16
150	15,039	4,613	2,750.7	54 / 99
159	15,901	4,613	2,763.6	29 / 41
165	16,500	3,770	2,774.0	22 / 40
171	17,109	3,770	2,787.0	39 / 68
176	17,649	3,770	2,788.1	54 / 27
182	18,204	3,770	2,792.9	106 / 16
187	18,677	3,770	2,797.3	164 / 124
193	19,268	3,770	2,799.4	73 / 58
198	19,778	3,770	2,804.6	30 / 40

Little Horse Creek Limited Detail Study Plan: Floodway Run 2/4/2008
 Long Branch Rd/SR 1352 (LHC) for Structure ID: 1677/Approximate

0.08 0.13 0.045 0.13



Legend
EG 100-FW
EG 100-year
WS 100-FW
WS 100-year
Crit 100-year
Crit 100-FW
Ground
Ineff
Bank Sta
Encroachment