

NOA OK.
GOOD CANDIDATE.

PREDESIGN-PRESURVEY REPORT

County Alexander

Project# _____
TIP# _____
Let Date _____
WBS# 17BP.12.R.29

Bridge# 010137
Road# SR 1608
Name Old Landfill Rd
Stream Glade Creek

Type Of Request: POC Force Account TIP NCMA

Date 8/1/2011 Name Sungate Design Assigned To _____

Checked By WHW

Prior Survey Date April 1978 (attach copy of prior survey)

Study By Scour Section No

Flood Zone Yes Detail Study Limited Date 12/18/07 Panel# 3758

B.M. Info N/A

Quad Map Taylorsville Drainage Area 5.5 Sq Miles From USGS Quad Map
Q25 1510 cfs Q50 1840 cfs Q100 2140 cfs Method Rural Regression Eqs

EXISTING BRIDGE INFORMATION

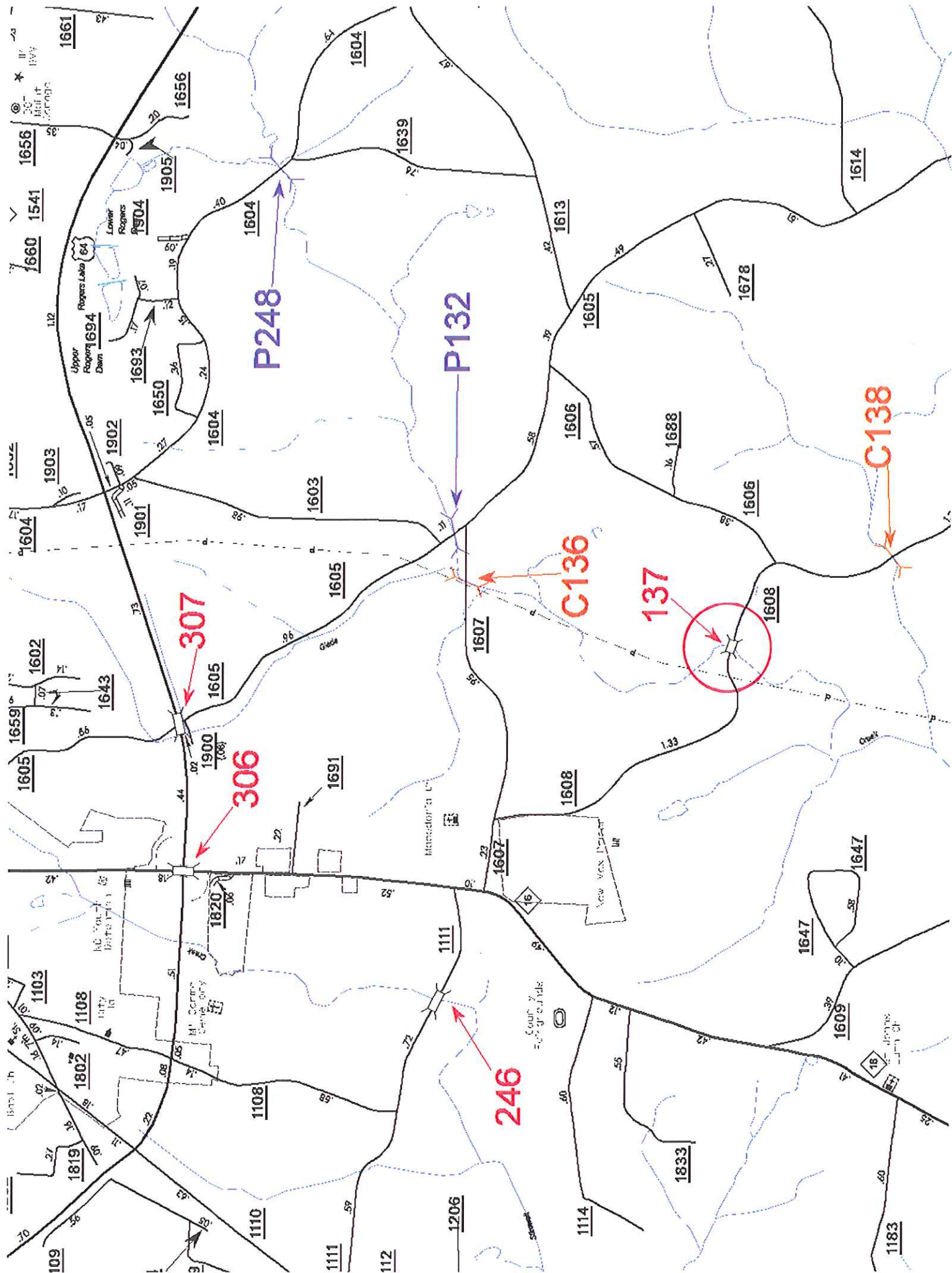
Location 0.4 miles west of junction with SR 1606
Average Daily Traffic 690
Length 90'-10" Bed- To Crown 17' Water Depth 1'
Type Structure Steel plank on I-beams on steel caps and steel piles
Type Spans 1 @ 30'-6", 1 @ 30'-0", 1 @ 30'-4"
Upstream Structure Single 24'-7"x 9'-9" Aluminum Box Culvert, 54'-0" Along CL
Location SR 1607
Bed- To Crown 13' Prior Survey _____
Downstream Structure 1 @ 35'-6"
Location SR 1609
Bed- To Crown 11' Prior Survey _____
SCS Watershed _____

ENVIRONMENTAL

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 Class C
DENR River Basin Info. Catawba
State Stormwater Permit Not Required

Estimated Min. Bridge Length = 110'

$$91' + 3(6') = 109' \sim 110'$$





NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION (PMN) ISSUED; (LONGITUDINAL BEAMS)

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY ALEXANDER BRIDGE NUMBER 010137 INSPECTION CYCLE 2 YRS
ROUTE SR1608 ACROSS GLADE CREEK M.P. 0

LOCATION 0.4 MI. W. JCT. SR1606

SUPERSTRUCTURE STEEL PLANK DECK ON I-BEAMS

SUBSTRUCTURE END & INTERIOR BENTS: STEEL CAPS ON STEEL PILES, TIM. BULKHEADS

SPANS 1@30'6", 1@30'0", 1@30'4"

LONGITUDE 81° 9' 55.6"

LATITUDE 35° 52' 58.4"

PRESENT CONDITION POOR

INVENTORY RATING

INSPECTION DATE 11/15/2010

OPERATING RATING

PRESENT POSTING Not Posted

PROPOSED POSTING

COMPUTER UPDATE

ANALYSIS DATE

POSTING LETTER DATE

SUFFICIENCY RATING

OTHER SIGNS PRESENT 4 DELINEATORS



SOUTH TO NORTH

SIGN NOTICE
ISSUED FOR

NUMBERED
REQUIRED

<u>No</u>	WEIGHT LIMIT	<u></u>
<u>No</u>	DELINEATORS	<u></u>
<u>No</u>	NARROW BRIDGE	<u></u>
<u>No</u>	ONE LANE BRIDGE	<u></u>
<u>No</u>	LOW CLEARANCE	<u></u>

BRIDGE MANAGEMENT UNIT
DATA ON EXISTING STRUCTURE

Run Date: 12/03/2010

COUNTY : ALEXANDER		DIV : 12		DIST : 2		STRUCTURE NUMBER : 010137		LENGTH : 91 FEET	
ROUTE CARRIED : SR1608				FEATURE INTERSECTED : GLADE CREEK					
LOCATED : 0.4 MI. W. JCT. SR1606				BRIDGE NAME :				CITY :	
FUNC. CLASS : 09		SYST.ON : NFA		SYST.UNDER : NFA		ADT & YR : 690 2009		RAIL TYPE : LT 253 RT 253	
BUILT : 1979		BY : BMU		PROJ : 6.782109		FED.AID PROJ :		DESIGN LOAD : Other or Unknown	
REHAB :		BY :		PROJ :		ALIGNMENT : TAN		SKREW : 90	
								LANES : ON 2 UNDER	
NAVIGATION : VC 0.0 FT HC 0.0 FT				HT. CRN. TO BED : 17 FT				WATER DEPTH : 1 FT	
SUPERSTRUCTURE : STEEL PLANK DECK ON I-BEAMS									
SUBSTRUCTURE : END & INTERIOR BENTS:STEEL CAPS ON STEEL PILES,TIM.BULKHEADS									
SPANS : 1@30'6", 1@30'0", 1@30'4"									
BEAMS OR GIRDERS : 12 LINES OF W18X50 I-BEAMS @ 2'5 3/8" CENTERS									
FLOOR : STL.PLK,2" AWS		ENCROACHMENT :				DECK (OUT TO OUT) : 28.2 FT			
CLEAR ROADWAY : 28.2 FT		BETWEEN RAILS : 28.2 FT				SIDEWALK OR CURB : LT 0.0 FT RT 0.0 FT			
VERT.CL.OVER : 99 FT 99 IN		VERT.CL.UNDER : 00 FT 00 IN				HOR.CL.UNDER : 0.0 FT			
INV.RTG. : HS-8		OPE.RTG. : HS-13		CONTR.MEMBER : I.Bs7& 11SpC		POSTED : SV 15 TTST 19		DATE 12/02/2010	
SYSTEM : Secondary S.R. Route						GREEN LINE ROUTE : N			
2ND OPENING :		3RD OPENING :		4TH OPENING :		5TH OPENING :			
REMARKS :									

Stream Bed Soundings

(See next sheet for profile sketch)

Bridge No: 010137 County: ALEXANDER Date: 11/15/2010 By: MF

Record sounding from top of rail. Other location if needed: _____

Distance from Highwater Mark to top of rail: _____ Location of Highwater Mark: _____

DOWNSTREAM			UPSTREAM		
Distance (Station) (ft)	Sounding (ft)	Description	Distance (Station) (ft)	Sounding (ft)	Description
0	2.5	TOP OF FILLFACE			
0.28	2.5	TOP OF FILLFACE			
0.29	4.3	TOP OF CAP			
0.3	5.8	FACE OF ABUT	0.3	6	FACE OF ABUT
14	9	SLOPE			
30.5	15	PIER 1	30.5	18.6	PIER 1
39	19	WSWE			
45	19.8	BED			
51	19	WSWE			
60.5	18.3	PIER 2	60.5	15.3	PIER 2
66	14.5	SLOPE			
73	7.5	SLOPE			
90.5	6	FACE OF ABUT	90.5	6	FACE OF ABUT
90.51	4.3	TOP OF CAP			
90.52	2.5	TOP OF FILLFACE			
90.8	2.5	TOP OF FILLFACE			

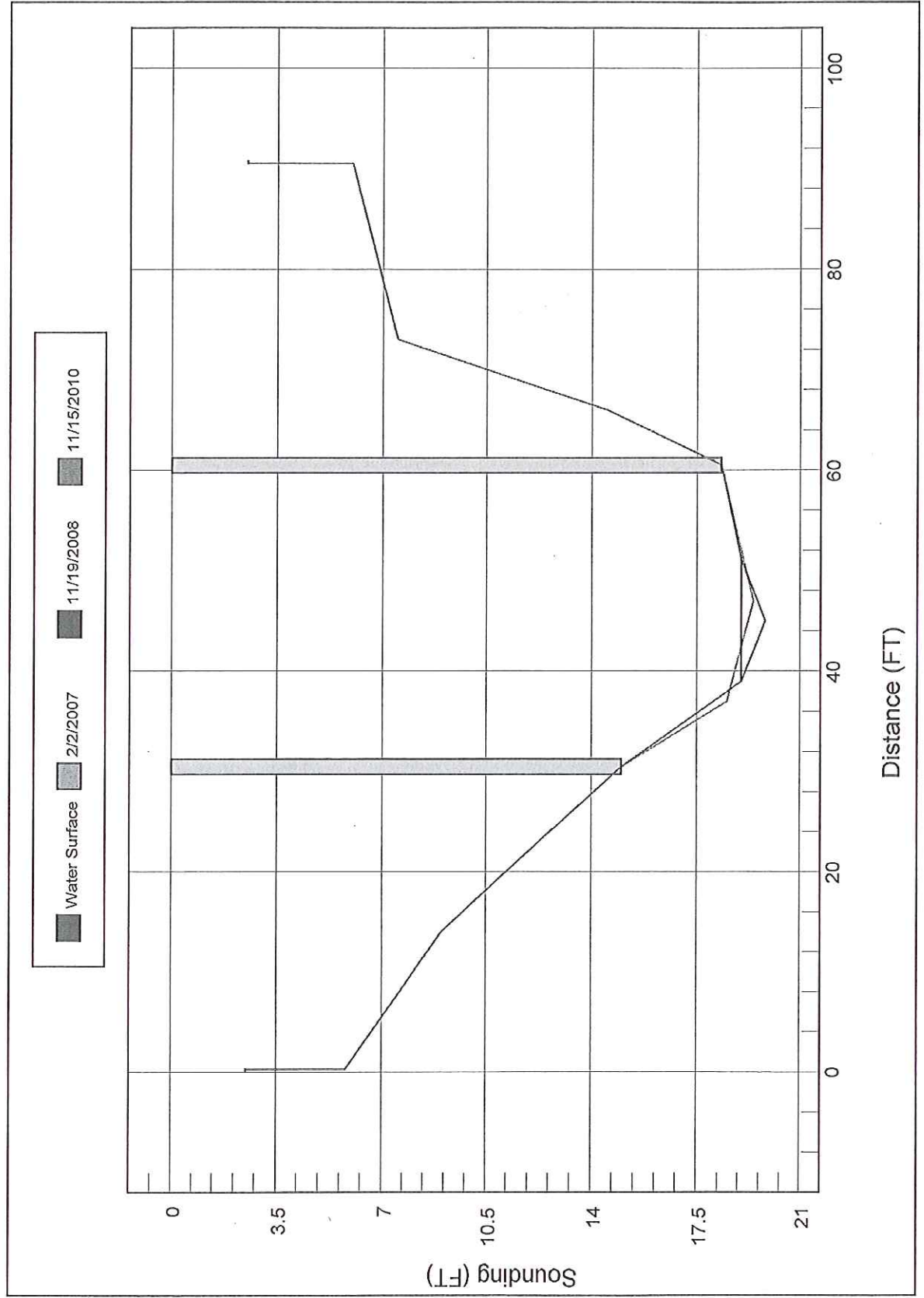
Bridge: 010137

County ALEXANDER

Date: 11/15/2010

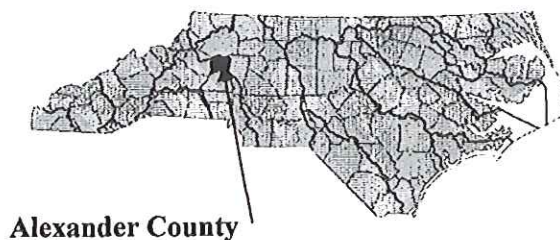
STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)



FLOOD INSURANCE STUDY

A Report of Flood Hazards in
**ALEXANDER COUNTY,
NORTH CAROLINA**
AND INCORPORATED AREAS



Community Name	Community Number	River Basin
Alexander County (Unincorporated Areas)	370398	Catawba/Yadkin
Taylorsville, Town of	370479	Catawba/Yadkin



December 18, 2007

**Federal Emergency Management Agency
State of North Carolina**

**Flood Insurance Study Number
37003CV000A**

www.fema.gov and www.ncfloodmaps.com



Section 4.0 – Area Studied

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

Source	Riverine Sources		Affected Communities
	From	To	
Beaver Branch	The confluence with Lambert Creek	Approximately 500 feet upstream of SR 1307	Alexander County (Unincorporated Areas)
Beaverdam Creek	The confluence with Big Branch into South Yadkin River	Approximately 2.5 miles upstream of Vashti Road (SR 1403)	Alexander County (Unincorporated Areas)
Big Branch	The confluence with Elk Shoals Creek	Approximately 550 feet upstream of SR 1619	Alexander County (Unincorporated Areas)
Big Branch into South Yadkin River	The confluence with South Yadkin River	Approximately 0.5 mile upstream of Vashti Cemetery Road (SR 1430)	Alexander County (Unincorporated Areas)
Catawba River	Approximately 0.9 mile upstream of confluence of Elk Shoal Creek	Lake Hickory/ Oxford Dam	Alexander County (Unincorporated Areas)
	NC 127	The Alexander / Caldwell County boundary	Alexander County (Unincorporated Areas)
Elk Shoals Creek	The confluence with Catawba River	Approximately 350 feet upstream of SR 1631	Alexander County (Unincorporated Areas)
Elk Shoals Creek Tributary 1	The confluence with Elk Shoals Creek	Approximately 0.5 mile upstream of the confluence with Elk Shoals Creek	Alexander County (Unincorporated Areas)
Elk Shoals Creek Tributary 2	The confluence with Elk Shoals Creek	Approximately 0.5 mile upstream of confluence with Elk Shoals Creek	Alexander County (Unincorporated Areas)
Glade Creek	The confluence with Lower Little River	Approximately 1.1 miles upstream of SR 1604	Alexander County (Unincorporated Areas)
Glade Creek Tributary 1	The confluence with Glade Creek	Approximately 0.8 mile upstream of SR 1607	Alexander County (Unincorporated Areas); Town of Taylorsville
Grassy Creek	The confluence with Lower Little River	Approximately 0.4 mile upstream of SR 1344	Alexander County (Unincorporated Areas)
Grassy Creek Tributary 1	The confluence with Grassy Creek	Approximately 0.7 mile upstream of the confluence with Grassy Creek	Alexander County (Unincorporated Areas)
Grassy Creek Tributary 2	The confluence with Grassy Creek	Approximately 0.7 mile upstream of NC 16	Alexander 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
Elk Shoals Creek (continued)	Approximately 0.8 mile upstream of confluence of Guys Branch	5.5	*	*	2,610	*
	Approximately 1.2 miles upstream of confluence of Guys Branch	4.4	*	*	2,290	*
	Approximately 1.6 miles upstream of confluence of Guys Branch	3.8	*	*	2,070	*
	Approximately 2.3 miles upstream of confluence of Guys Branch	3.2	*	*	1,880	*
	Approximately 3.0 miles upstream of confluence of Guys Branch	3.0	*	*	1,590	*
	Approximately 3.5 miles upstream of confluence of Guys Branch	0.9	*	*	850	*
	Approximately 3.6 miles upstream of confluence of Guys Branch	0.7	*	*	720	*
Elk Shoals Creek Tributary 1	Approximately 0.5 mile upstream of confluence with Elk Shoals Creek	0.9	*	*	850	*
Elk Shoals Creek Tributary 2	Approximately 0.5 mile upstream of confluence with Elk Shoals Creek	0.3	*	*	420	*
Glade Creek	Approximately 0.5 mile upstream of SR 1609	13.3	*	*	4,550	*
	Approximately 1.0 mile downstream of SR 1608	11.4	*	*	4,030	*
	Approximately 0.6 mile downstream of SR 1608	10.7	*	*	3,000	*
	Approximately 1,500 feet downstream of SR 1607	6.6	*	*	2,760	*
	Approximately 500 feet upstream of SR 1607	5.1	*	*	2,500	*

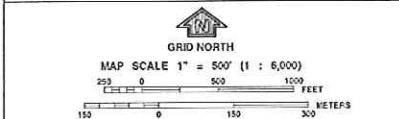
Section 5.0 – Engineering Methods

Table 9—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 (feet) ³
ELK SHOALS CREEK TRIBUTARY 2				
024	2,366	422	900.1	10 / 16
026	2,625	422	902.8	22 / 12
GLADE CREEK				
003	328	4,550	901.3 ⁴	57 / 57
008	766	4,550	905.2	30 / 53
013	1,318	4,550	918.4	43 / 31
014	1,418	4,550	923.4	41 / 39
017	1,662	4,550	924.1	27 / 43
027	2,656	4,550	929.6	29 / 29
037	3,744	4,550	933.4	50 / 49
046	4,610	4,550	937.1	67 / 39
051	5,093	4,550	939.1	51 / 50
060	6,022	4,550	942.0	47 / 46
069	6,921	4,550	947.6	26 / 71
075	7,486	4,550	951.4	58 / 114
076	7,610	4,550	951.4	58 / 97
077	7,658	4,550	953.2	59 / 96
080	7,988	4,550	954.1	33 / 39
085	8,524	4,550	956.1	45 / 45
094	9,434	4,550	959.4	48 / 26
100	10,049	4,550	961.7	37 / 32
107	10,670	4,550	963.8	60 / 32
115	11,540	4,030	966.4	36 / 34
121	12,076	4,030	968.4	205 / 38
128	12,807	4,030	970.1	40 / 39
138	13,780	4,030	973.6	50 / 20
145	14,528	3,000	975.9	46 / 44
153	15,284	3,000	977.4	19 / 19
158	15,765	3,000	979.6	28 / 46
162	16,207	2,760	980.9	28 / 34
169	16,915	2,760	983.4	36 / 38
176	17,625	2,760	986.4	31 / 19
182	18,227	2,760	989.8	31 / 23
189	18,916	2,760	993.1	24 / 38
191	19,109	2,760	993.6	27 / 36
192	19,193	2,760	995.0	57 / 55
195	19,500	2,760	995.3	83 / 24
204	20,395	2,760	997.8	25 / 20
211	21,114	2,760	1,003.5	23 / 26
217	21,713	2,760	1,005.7	27 / 96
225	22,544	2,760	1,007.8	30 / 84



- # LEGEND
-  **SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD**
- The 1% annual chance flood (100-year flood, also known as the base flood, is the flood that has a 1% chance of being equal or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones AE, AO, AH, A0, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevation determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding). Base Flood Elevation's determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually short flow on sloping terrain); average depths determined. For areas of substantial flooding, velocities also determined.
- Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently removed. Zone AH is identified, and the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevation's determined.
- ZONE VE** Potential flood zone with velocity hazard (wave action). Base Flood Elevation's determined.
-  **FLOODWAY AREAS IN ZONE AE**
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from the 1% annual chance flood.
-  **OTHER AREAS**
- ZONE D** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D0** Areas in which flood hazards are undetermined, but possible.
-  **COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs are normally located within or adjacent to a Special Flood Hazard Area.
- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBSA and OPA boundary
- Boundary dividing Special Flood Hazard Areas and boundary dividing Special Flood Hazard Areas of different Base Flood Elevation
- Flood depths or flood velocities
- Base Flood Elevation line and value, elevation in feet
- Base Flood Elevation value when uniform within zone, elevation in feet
- Referenced to the North American Vertical Datum of 1988
- Cross section line
- Transect line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 100-meter Universal Transverse Mercator grid box, coordinate
- 250-foot contour line, North Carolina State Plane coordinate system (NPS2000 2000). State Plane NAD 83 feet
- North Carolina Geographic Information System for more information Visit <http://www.ncgis.state.nc.us>
- National Geographic Survey benchmark (for more information visit <http://www.ngs.noaa.gov>)
- USGS GDS 25- or 20-foot Vertical Control Markers or Contractor Established INCMIP Benchmarks. (for more information visit <http://www.ngs.noaa.gov>)
- Buy Map
- Buy Map



This 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 of floodplain management to decrease the costs associated with flooding. This is demonstrated by the State's commitment to map floodplain areas at the local level. As a part of this effort, the State of North Carolina has joined in a Cooperating Technical State agreement with FEMA to produce and maintain this digital FIRM.

This 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. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles, Floodway Data, Limited Detailed Flood Hazard Data and/or Summary of Stream Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRF. Users should be aware that BFEs shown on the FIRF represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRF for purposes of construction and/or floodplain

Boundaries of **regulatory floodways** shown on the FIRM for flooding sources studied by detailed methods were compiled at cross sections and interpolated between cross sections. The floodways were based on hydrologic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data for flooding sources studied by detailed methods as well as non-enforcement widths for flooding sources studied by limited detailed methods are provided in the Flood Insurance Study (FIS) report for this jurisdiction. The FIS report also provides instructions for determining floodway widths for non-enforcement widths for flood sources studied by limited detailed methods.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4, "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in the jurisdiction.

FEMA recommends that a Flood Insurance Policy be purchased for structures in areas where levees are shown as providing protection from the 1% annual chance flood. Flooding is not covered by standard property fire dwelling insurance policies nor is it covered by Homeowners Insurance, Renters Insurance, Condominium Owners Insurance, or Commercial Property Insurance. Contact your insurance agent and local floodplain administrator for further information. Visit http://www.fema.gov/pdf/floods_easr.pdf for information on levees and the risk of flooding in areas shown as being protected by levees.

Base map information and geospatial data used to develop this FIRM were obtained from various organizations including the participating local community(ies), state and federal agencies, and/or other sources. The primary base for this FIRM is aerial imagery acquired by Alexander County. The time period of collection for the imagery is 2005. Information and geospatial data supplied by the local community(ies) that met FEMA base map specifications were considered the preferred source for development of the base map. See geospatial metadata for the associated digital FIRM for additional information about base map preparation.

Base map 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 community official or website to verify current conditions of jurisdictional boundaries and base map features. This map may contain roads that were not considered in the hydraulic analysis of streams where a non-hydraulic model was created during the production of this statewide format FEMA.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transformed from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

If you have questions about this map, or questions concerning the National Flood Insurance Program in general, please call 1-877-4-EMAP (1-877-356-2637) or visit the FEMA website at <http://www.fema.gov>.

MAP REPOSITORY

EFFECTIVE DATE OF FLOOD INSURANCE RATE MAP PANEL:

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

Community map revision history prior to statewide mapping: refer to the Community Map and the Flood Insurance Study record for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent, the local office of Emergency Management or the National Flood Insurance Program at the following phone numbers:

Division of Emergency Management

PANEL 3758J

FIRM

PANEL 3758
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRST
PANEL LAYOUT)

<u>COMMUNITY</u>	<u>OID No.</u>	<u>PANEL</u>	<u>SUFF</u>
ALEXANDER COUNTY	37006	3758	J
TAYLORSVILLE, TOWN OF	37479	3758	J

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 subcommunity.

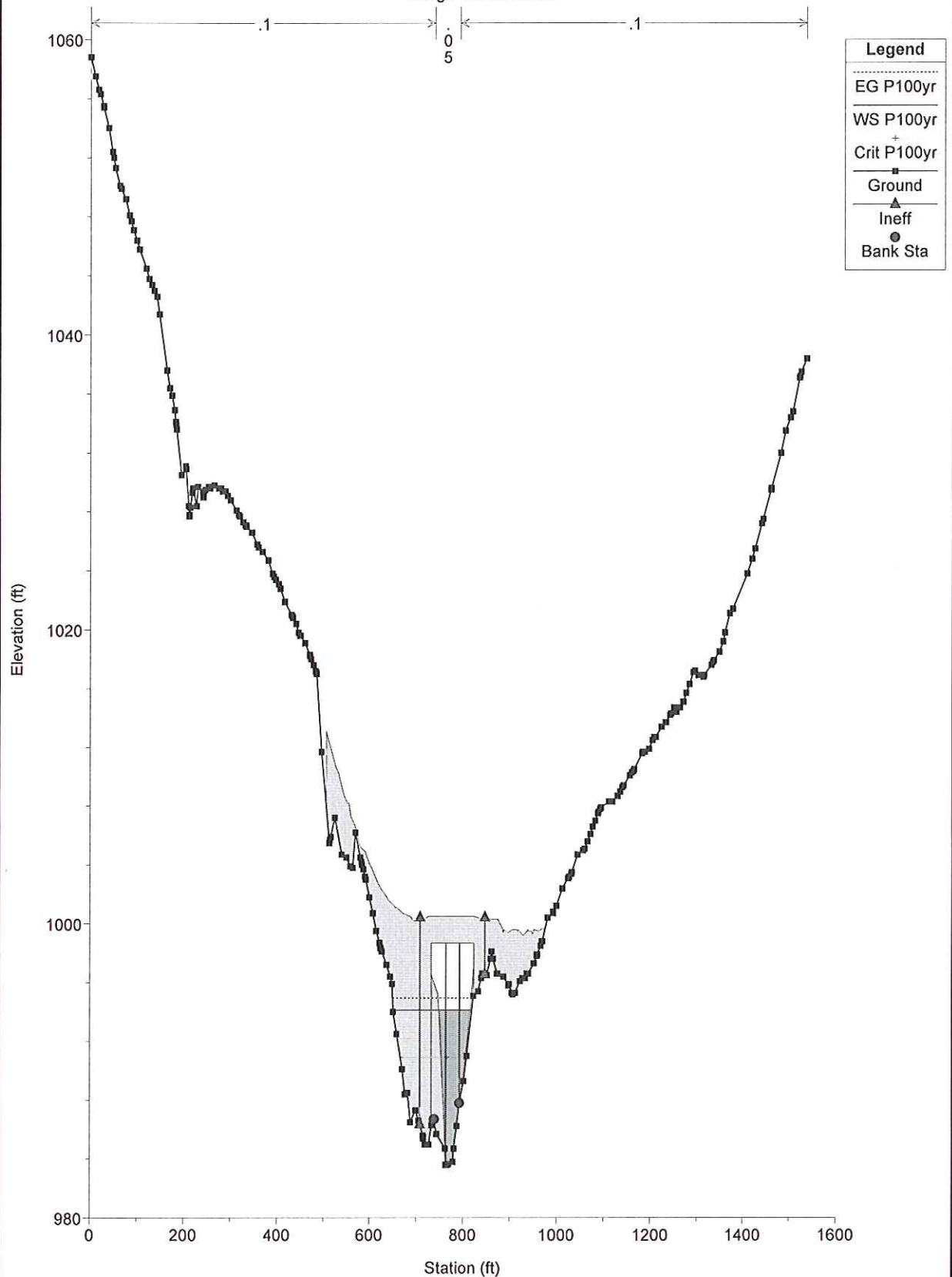
EFFECTIVE DATE	MAP NUMBER
DECEMBER 18, 2007	371037580

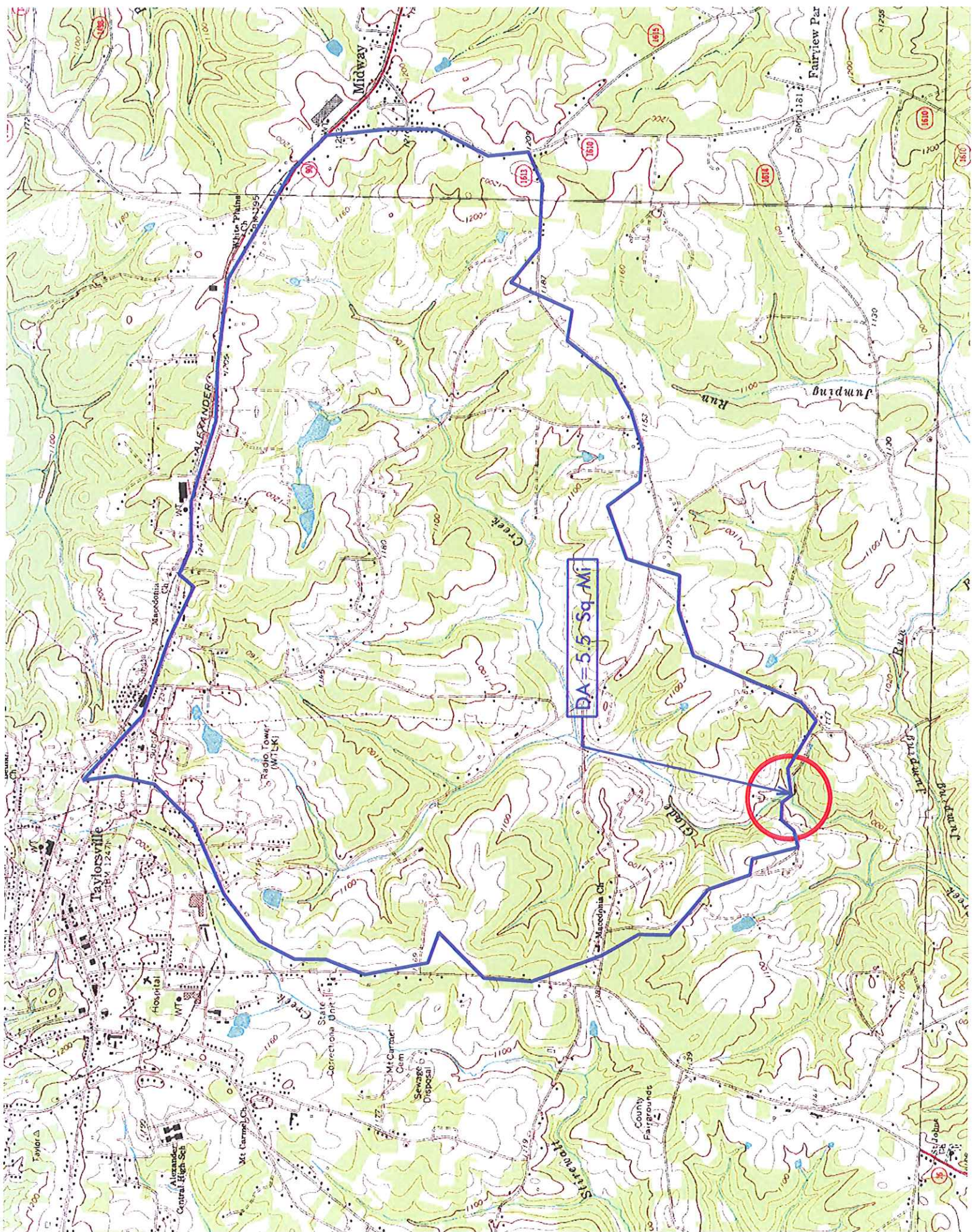




State of North Carolina

Glade Creek Plan: GladeCreek LDS 1/28/2008
Bridge : 37003-0059





DA = 5.5 Sq. Mi.

5

4

5

120

110

100

90

MAX H.W. ✓

EXISTING STRUCTURE

RIP RAP TO EL. 103.5

OPPOSED A

REF. 4

REF. 13

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
ALEXANDER CO.

SURVEY FOR REPLACEMENT
OF BRIDGE #137 ON SR 1608
OVER GLADE CREEK

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

T. P. HERRING

APRIL 1978

