



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

April 29, 2008

U. S. Army Corps of Engineers
Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587

ATTENTION: Mr. Eric Alsmeyer
NCDOT Coordinator, Division 5

Dear Sir:

SUBJECT: **Application for Section 404 Nationwide Permits 23 & 33 and Section 401 Water Quality Certification.** Replacement of Bridge No. 133 on SR 1412 over Grassy Creek, Granville County, North Carolina. Federal Aid Project No. BRZ-1412(4), State Project No. 8.2371701, WBS Element 33749.1.1, TIP No. B-4525.

\$240.00 Debit from WBS Element 33749.1.1

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 133 on SR 1412 (Dick Blackwell Rd.) over Grassy Creek, in Granville County. The existing 70-foot 3-span bridge was constructed in 1960 and received a sufficiency rating of 27.6 out of a possible 100 for a new structure. Based on this rating, the bridge is considered structurally deficient and functionally obsolete. The project proposes to demolish the existing bridge and replace with a three span, cored slab structure crossing Grassy Creek. The new bridge will be approximately 145 feet long with approximately 24 feet of clear roadway width. During construction, traffic will be detoured off-site. The proposed detour route is approximately 3.7 miles in length. Please see the enclosed Pre-Construction Notification (PCN), permit drawings, design plans, and email from the North Carolina Wildlife Resource Commission (WRC) for the subject project. A Programmatic Categorical Exclusion was completed for this project in February 2007 and distributed shortly thereafter. Additional copies are available upon request.

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in sub basin 03-02-06 of the Roanoke River Basin in Granville County. This area is part of Hydrologic Cataloging Unit 03010102. The project area is located within the Central Piedmont ecoregion of North Carolina.

There are two jurisdictional streams located within the project study area and have been assigned Stream Index Number 23-2-(1) by the North Carolina Division of Water Quality (DWQ). Grassy Creek and an

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
NATURAL ENVIRONMENT UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-715-1334 or
919-715-1335
FAX: 919-715-5501

LOCATION:
2728 CAPITAL BLVD. SUITE 240
RALEIGH NC 27604

WEBSITE: WWW.NCDOT.ORG

unnamed tributary to Grassy Creek both lie within the construction limits of the project. Grassy Creek enters the study area as a well-defined fourth order perennial stream. Grassy Creek is described as having a substrate consisting primarily of sand, silt, and cobble, flowing northeastward towards John H. Kerr Reservoir and eventually into the Roanoke River. Within the project study area, Grassy Creek is approximately 30 feet wide with banks ranging from 2 to 6 feet. The substrate of the unnamed tributary is comprised of sand and gravel with some cobbles. The tributary is a perennial stream and has a channel ranging from 6 to 10 feet wide and the banks from 2-4 feet high. This tributary flows into Grassy Creek on the southern bank, just west of the bridge. The unnamed tributary and the stretch of Grassy Creek in the project study area have been assigned a Best Usage Classification of C.

The North Carolina Wildlife Resource Commission had requested a moratorium for Grassy Creek from April 1 to June 30 due to the sunfish fishery within the project area. However, per an email from Travis Wilson on January 28, 2008, NCWRC will not require an in-stream work moratorium for sunfish.

No portion of Grassy Creek, its tributaries, or other surface waters within 1.0 mile of the project are listed on the North Carolina Division of Water Quality's (NCDWQ) 2006 Final 303(d) List of Impaired Waters.

No waters classified as High Quality Water (HQW), Water Supplies (WS-I or WS-II), nor Outstanding Resource Waters (ORW) occur within 1.0 mile of the project study area.

Permanent Impacts: There are 103 linear feet of permanent impacts to surface waters associated with this project. At Site 1, two bents will be constructed in the channel of Grassy Creek, at an angle paralleling the creek's natural banks. The piers associated with these bents will impact approximately 14 linear feet of stream channel. An additional 11 linear feet of stream will be impacted by rip rap placed at the mouth of the unnamed tributary being relocated.

Site 2 is the relocation of the unnamed tributary to Grassy Creek, just south west of the bridge. This will directly result in 78 linear feet of jurisdictional channel being permanently impacted (0.01 ac). NCDOT will relocate the tributary outside of current design fill slopes, and tie back into Grassy Creek west of the existing confluence.

There are no permanent impacts to jurisdictional wetlands anticipated with the construction of this project.

Temporary Impacts: There will be approximately 0.04 acres of jurisdictional impacts associated with the construction of two temporary causeways. The causeways will be constructed of Class II rip rap for the base and Class A rip rap as the crest. The causeways will be located on each bank of Grassy Creek.

No temporary wetland impacts are associated with this project.

Bridge Demolition: The existing structure has a timber deck with an asphalt wearing surface, on a steel beam and steel floor beam system. The substructure is composed of timber caps and piles with concrete mud sills. Temporary causeways will be constructed to allow removal of existing mud sills. The existing bridge will be removed without dropping components into Grassy Creek. Currently there are two bents located within the channel of Grassy Creek. All guidelines for Bridge Demolition and Removal will be followed in addition to Best Management Practices for the Protection of Surface Waters.

Utility Impacts: There are no anticipated utility impacts associated with this project.

RESTORATION PLAN

The stone materials used as temporary fill in the construction of the causeways will be removed from the streambed. The temporary fill areas will be restored back to their pre-project elevations. NCDOT will also restore the streambed to its pre-project contours.

REMOVAL AND DISPOSAL PLAN

The temporary causeways will be removed from the stream after the in-water bents of the new structure are constructed. All stone material placed in the stream for construction of the causeways will be removed by the contractor using excavation equipment. The contractor will be required to submit a reclamation plan for the removal of and disposal of all material off-site at an upland location. The contractor will have the option of reusing any of the materials that the engineer deems suitable in the construction of project.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. The United States Fish and Wildlife Service (USFWS) lists three Federally Protected species, as of January 31, 2008, for Granville County. Table 1 lists the species and their federal status.

Table 1. Federally Protected Species in Granville County, NC

Common Name	Scientific Name	Federal Status	Biological Conclusion	Habitat Present
Dwarf wedgemussel	<i>Alasmidonta heterodon</i>	E	No Effect	Yes
Harperella	<i>Ptilimnium nodosum</i>	E	No Effect	Yes
Smooth coneflower	<i>Echinacea laevigata</i>	E	No Effect	Yes

Dwarf wedgemussel (DWM) has never been found or identified in the Roanoke River Basin, however, a mussel species survey was performed to ensure the protected species was not present. The DWM survey was conducted for this project on July 27, 2005 by Alderman Environmental Services, Inc. Biologists John Alderman, Logan Williams, and Karen Lynch performed a visual and tactile survey from the subject bridge down stream 400 meters. No DWM were found in 1.5 man-hours of survey time. Livestock have unlimited access to the stream. At the time of survey, the water was heavily polluted with animal wastes. Given the results of the survey, degradation of the reach of stream surveyed, and the absence of a known population occurring in the river basin, it can be concluded that this project will not effect the DWM.

An initial survey for harperella was conducted in July of 2004. The survey resulted in a biological conclusion of "No Effect", as no specimens were identified. An additional survey was performed on August 2, 2007. NCDOT biologists Ashley Cox, Deanna Riffey, James Mason, and Duncan Quinn surveyed the project area for harperella. The potential habitat consisted of Grassy Creek and an unnamed tributary, during the survey, no individuals of harperella were observed. A search of the Natural Heritage Program database (updated September 28, 2007) showed no populations of harperella within one mile of the project area, nor are there any known occurrences of the species upstream of the proposed project, thus warranting a biological conclusion of "No Effect".

A survey for smooth coneflower was conducted in July of 2004 where no individuals were observed. An additional survey was performed on August 2, 2007 by NCDOT biologists, Ashley Cox, Deanna Riffey, James Mason, and Duncan Quinn. Although potential habitat is present within the project study area in the form of regularly maintained roadside shoulders and fields, no individuals of smooth coneflower were observed. A search of the Natural Heritage Program database, updated on September 28, 2007, revealed no occurrences of the species within one mile of the project area. Therefore, a biological conclusion for smooth coneflower of "No Effect" is warranted.

AVOIDANCE, MINIMIZATION and MITIGATION

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design.

According to the Clean Water Act (CWA) §404(b)(1) guidelines, NCDOT must avoid, minimize, and mitigate, in sequential order, impacts to waters of the US. The following is a list of the project's avoidance/minimization activities proposed or completed by NCDOT:

Avoidance/ Minimization: Avoidance examines all appropriate and practicable possibilities of averting impacts to "Waters of the US". The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts and to minimize impacts as part of the project design.

- Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of stringent erosion control methods and use of Best Management Practices (BMPs) highlighted in NCDOT's "Best Management Practices for Construction and Maintenance Activities".
- Best Management Practices for Protection of Surface Waters and Bridge Demolition and Removal will be implemented during the entirety of this project.
- During construction, traffic will utilize an off-site detour.
- Bents constructed in channel will parallel natural stream banks, maximizing unobstructive flow while avoiding potential disruption of natural stream functions.
- Preformed scour holes will be constructed for this project.

Compensatory Mitigation: NCDOT proposes no mitigation for this bridge replacement because stream impacts to both sites are minimal (103 feet). The 25 linear feet of impacts to Grassy Creek will be a result of rip rapping 11 feet of the channel where the tributary had once entered Grassy Creek, and pier impacts account for the remaining 14 feet. There is no foreseeable loss of aquatic habitat due to the rip rap being placed along the channel.

Anticipated impacts associated with the relocation of the unnamed tributary are 78 linear feet. In addition to scoring a 41 on the Army Corps Stream Quality Assessment Worksheet, the tributary is impacted by a residential home and cattle upstream of the proposed relocation.

SCHEDULE

The project calls for a let date of November 18, 2008 and a review date of September 30, 2008. This project has a date of availability of December 30, 2008. It is expected that the contractor will begin construction shortly after that date.

REGULATORY APPROVALS

Section 404 Permit: This project has been processed by the Federal Highway Administration as a “Categorical Exclusion” (CE) in accordance with 23 CFR 771.115(b). The NCDOT requests that activities described in this application be authorized by a Nationwide Permit 23 (72 FR 11092-11198; March 12, 2007).

A request is also hereby submitted for Nationwide Permit 33, issued under Section 404 of the CWA, authorizing activities associated with this project that will result in temporary impacts to jurisdictional waters.

Section 401 Permit: We anticipate Section 401 General Water Quality Certifications (WQC) 3701 and 3688 and written concurrence will be required for this project. In compliance with Section 143-215.3D(e) of the NCAC, we will provide \$240.00 to act as payment for processing the Section 401 permit application previously noted in this application (see Subject line). In accordance with 15A NCAC 2H, Section .0500 (a) and 15A NCAC 2B, Section .0200, we are providing five copies of this application to the North Carolina Department of Environment and Natural Resources (NCDENR), NCDWQ, for review.

A copy of this permit application will be posted on the NCDOT website at:
<http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html>. If you have any questions or need additional information, please contact Ashley Cox at 919-715-5534 or acox@dot.state.nc.us.

Sincerely,



for

Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA

Cc:

w/attachment

Mr. Brian Wrenn, NCDWQ (5 copies)
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS

w/o attachment (see website for attachments)

Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Greg Perfetti, P.E., Structure Design
Mr. Wally Bowman, P.E., Division Engineer
Mr. Chris Murray, DEO
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Tracy Walter, PDEA Project Planning Engineer

USACE Action ID No. _____ DWQ No. _____

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

I. Processing

- 1. Check all of the approval(s) requested for this project:

<input checked="" type="checkbox"/> Section 404 Permit	<input type="checkbox"/> Riparian or Watershed Buffer Rules
<input type="checkbox"/> Section 10 Permit	<input type="checkbox"/> Isolated Wetland Permit from DWQ
<input checked="" type="checkbox"/> 401 Water Quality Certification	<input type="checkbox"/> Express 401 Water Quality Certification
- 2. Nationwide, Regional or General Permit Number(s) Requested: Nationwides 23 and 33
- 3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here:
- 4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here:
- 5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here:

II. Applicant Information

- 1. Owner/Applicant Information

Name: Gregory J. Thorpe, Ph.D., Environmental Management Director

Mailing Address: North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, NC 27699-1598

Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794

E-mail Address: _____
- 2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)

Name: _____

Company Affiliation: _____

Mailing Address: _____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____

III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: Replacement of Bridge No. 133 over Grassy Creek on SR 1412 (Dick Blackwell Rd.) in Granville County.
2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4525
3. Property Identification Number (Tax PIN): N/A
4. Location
County: Granville Nearest Town: Oak Hill
Subdivision name (include phase/lot number): N/A
Directions to site (include road numbers/names, landmarks, etc.): Take I-85 North to Granville County, in Oxford take NC 96 West. SR 1415 bares off to the right, follow to SR 1412 which will be on your left.
5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
Decimal Degrees (6 digits minimum): _____°N _____°W
6. Property size (acres): N/A
7. Name of nearest receiving body of water: Grassy Creek
8. River Basin: Roanoke River Basin
(Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at <http://h2o.enr.state.nc.us/admin/maps/>.)
9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Bridge 133 is approximately 70 feet long and was constructed in 1960. Land use in the area is mainly agricultural and forestry-based, with some residential development.

10. Describe the overall project in detail, including the type of equipment to be used: The project proposes to demolish the existing bridge and construct a three span, cored slab superstructure on the existing alignment. The two interior bents of the structure will be located within the area of normal stream flow in Grassy Creek. The new bridge will be 145 feet long and will have a clear roadway width of approximately 24 feet. During construction, SR 1412 will be closed near the existing bridge and traffic will be re-routed using an offsite detour. Heavy duty excavation equipment will be used such as trucks, dozers, cranes and other various equipment necessary for roadway construction

11. Explain the purpose of the proposed work: The current 70-foot bridge was constructed in 1960 and has a sufficiency rating of 27.6 out of a possible 100 (for a new structure). It is therefore considered structurally deficient and functionally obsolete and eligible for FHWA's Highway Bridge Replacement Program.

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules. N/A

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.
N/A

VI. Proposed Impacts to Waters of the United States/Waters of the State

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from rip rap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for

wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: Please refer to Application Cover Letter.
2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
Total Wetland Impact (acres)					0.0

3. List the total acreage (estimated) of all existing wetlands on the property: NA
4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent ?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
1 (Perm)	Grassy Creek	In-water piers, rip rap	Perennial	30	25	<0.01
1 (Temp)	Grassy Creek	Temp. Causeways	Perennial	30	77	0.03
2 (Perm)	Unnamed Tributary to Grassy Creek	Relocation	Perennial	10	78	0.01
2 (Temp)	Unnamed Tributary to Grassy Creek	Relocation	Perennial	10	9	<0.01
Total Stream Impact (by length and acreage)					189	<0.06

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
Total Open Water Impact (acres)				0.0

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	<0.06
Wetland Impact (acres):	0
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	<0.06
Total Stream Impact (linear feet):	189

7. Isolated Waters

Do any isolated waters exist on the property? Yes No

Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.

N/A

8. Pond Creation

If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.

Pond to be created in (check all that apply): uplands stream wetlands

Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.): _____

Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.): _____

Current land use in the vicinity of the pond: _____

Size of watershed draining to pond: _____ Expected pond surface area: _____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts

were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. See cover sheet.

VIII. Mitigation

DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCEEP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at <http://h2o.enr.state.nc.us/ncwetlands/strmgide.html>.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.

N/A

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP

website at <http://h2o.enr.state.nc.us/wrp/index.htm>. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

Amount of stream mitigation requested (linear feet): 0
 Amount of buffer mitigation requested (square feet): 0
 Amount of Riparian wetland mitigation requested (acres): 0.0
 Amount of Non-riparian wetland mitigation requested (acres): 0.0
 Amount of Coastal wetland mitigation requested (acres): 0.0

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes No
2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes No
3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes No

X. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify _____)? Yes No
2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		3 (2 for Catawba)	
2		1.5	
Total	0.0		0.0

* Zone 1 extends out 30 feet perpendicular from the top of the near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. N/A
-
-

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. N/A

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. N/A

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes No

Is this an after-the-fact permit application? Yes No

XIV. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes No

If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at <http://h2o.enr.state.nc.us/ncwetlands>. If no, please provide a short narrative description: _____

N/A

XV. Other Circumstances (Optional):

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on

work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).

N/A

E. L. Luke

4-28-08

Applicant/Agent's Signature

Date

(Agent's signature is valid only if an authorization letter from the applicant is provided.)

Subject: [Fwd: sunfish moratoriums]

Date: Tue, 29 Jan 2008 09:20:26 -0500

From: Rachelle Beauregard <rbeauregard@dot.state.nc.us>

Organization: North Carolina Department of Transportation

To: Ashley Cox <acox@dot.state.nc.us> , "James S. Mason" <jsmason@dot.state.nc.us> ,
Sara Easterly <seeasterly@dot.state.nc.us>

CC: Elizabeth Lee Lusk <ellusk@dot.state.nc.us>

Please update warehouse based on this WRC email.

E,
I updated the let list moratorium spreadsheet with this info.

Subject: RE: sunfish moratoriums

Date: Mon, 28 Jan 2008 15:18:54 -0500

From: "Travis Wilson" <travis.wilson@ncwildlife.org>

To: "Rachelle Beauregard" <rbeauregard@dot.state.nc.us>

B-4613: Commitments associated with reducing impacts to the Cape Fear Shiner will suffice in lieu of the previous requested moratorium

B-4218: WRC agreed to remove this moratorium in November 2007

B-4525: WRC no longer request the in-water work moratorium of April 1 to June 30 as stated in our memo dated March 1, 2004.

B-4592: The SR/FSC Roanoke bass is located at this project site. We request NCDOT utilize Erosion and Sediment Control BMP as well as BMP for Bridge Demolition and Removal.

B-4216: The SR/FSC Roanoke bas is location immediately downstream of the project site. We request NCDOT utilize Erosion and Sediment Control BMP as well as BMP for Bridge Demolition and Removal.

Travis W. Wilson
Eastern Region Highway Project Coordinator
Habitat Conservation Program
NC Wildlife Resources Commission
1142 I-85 Service Rd.
Creedmoor, NC 27522
Phone: 919-528-9886
Fax: 919-528-9839
Travis.Wilson@ncwildlife.org

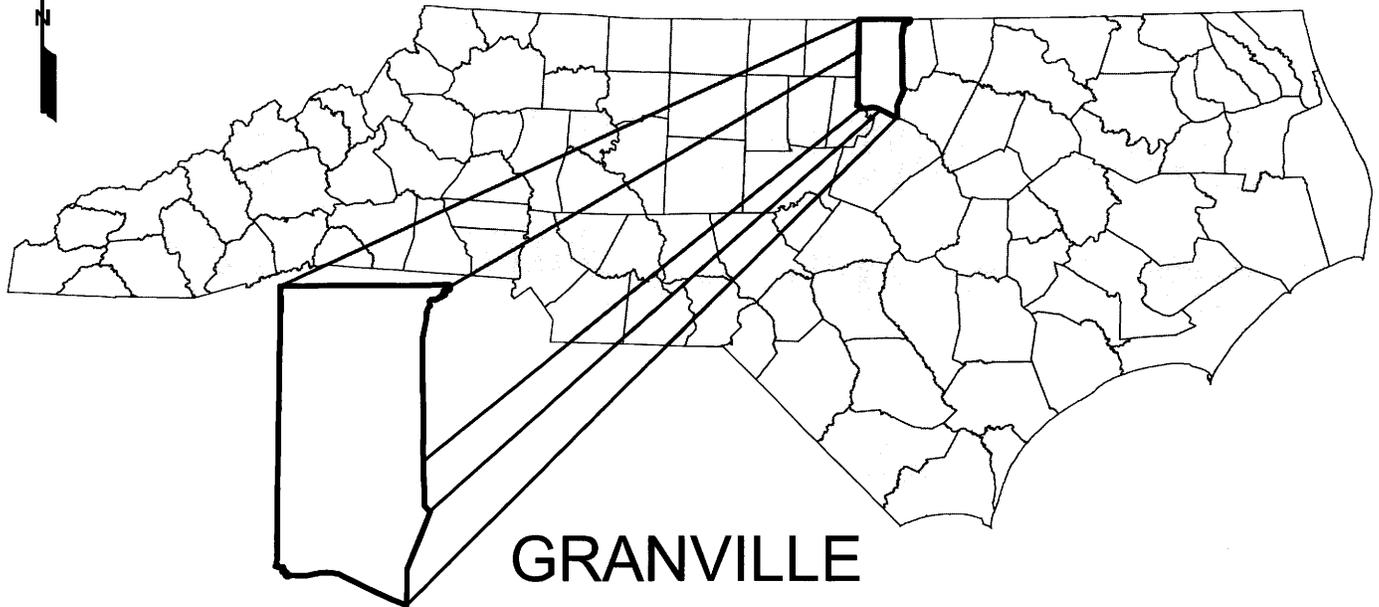
-----Original Message-----

From: Rachelle Beauregard [mailto:rbeauregard@dot.state.nc.us]
Sent: Friday, December 14, 2007 3:07 PM
To: David.cox@ncwildlife.org
Cc: Travis Wilson; Rachelle Beauregard
Subject: sunfish moratoriums

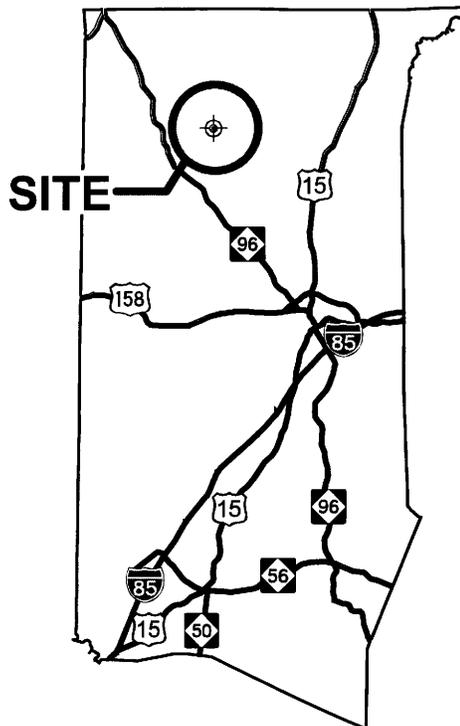
David,

The WRC has requested sunfish moratoriums from 4/1 to 6/30 for the following projects in the central region:

NORTH CAROLINA



GRANVILLE

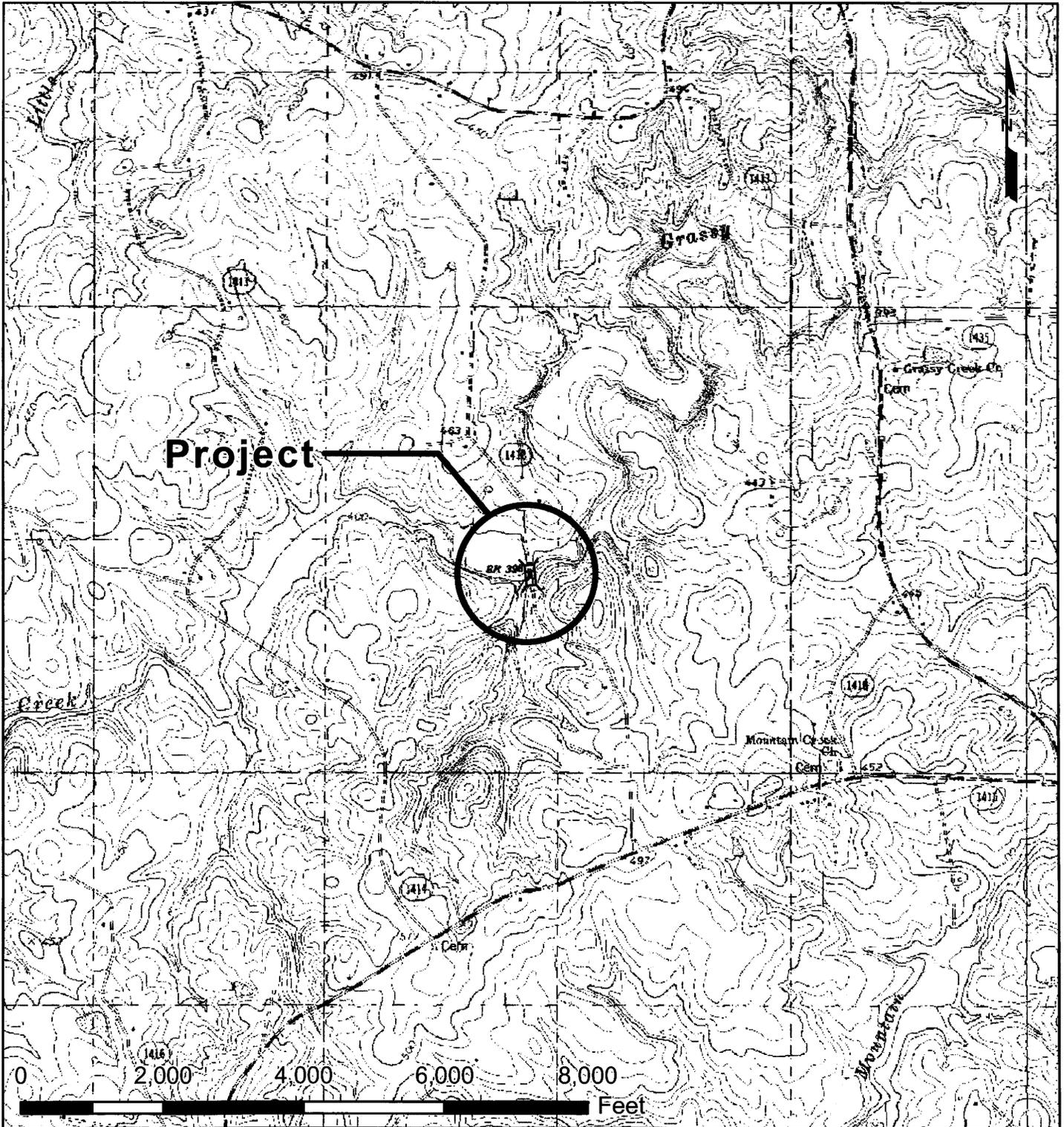


VICINITY MAPS

Permit Drawing
Sheet 1 of 6

NCDOT
DIVISION OF HIGHWAYS
GRANVILLE COUNTY
PROJECT: 33749.1.1 (B-4525)
REPLACEMENT OF BRIDGE NO. 133
ON SR 1412
OVER GRASSY CREEK

01/29/08



1 inch equals 2,000 feet

LOCATION

Permit Drawing
Sheet 2 of 6

NCDOT

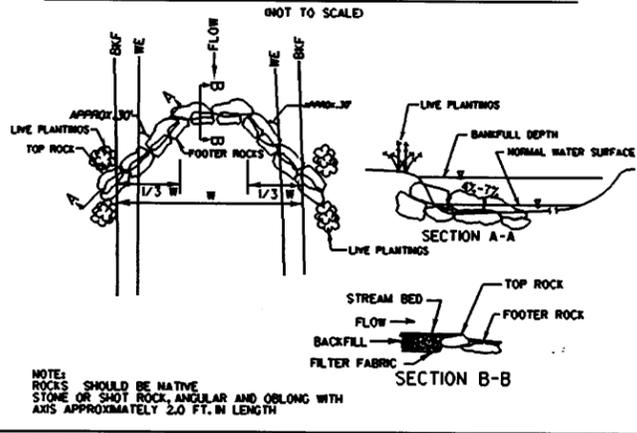
DIVISION OF HIGHWAYS
GRANVILLE COUNTY
PROJECT: 33749.1.1 (B-4525)
REPLACEMENT OF BRIDGE NO. 133
ON SR 1412
OVER GRASSY CREEK

01/29/08

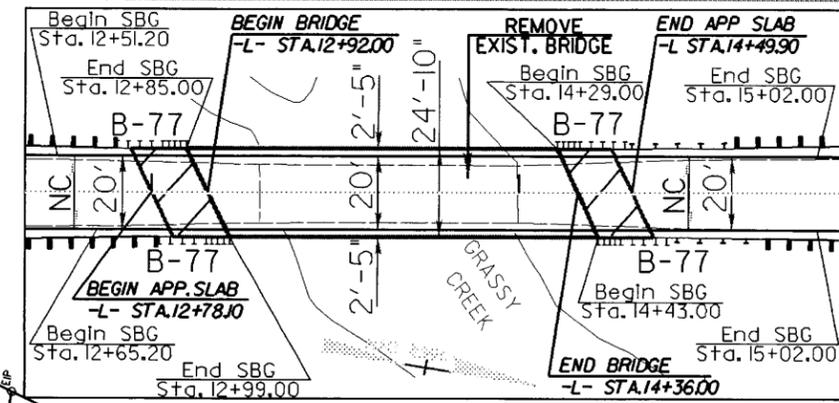
PROP. NO.	PROPERTY OWNER NAME	DEED BOOK & PAGE
2	William Mark Blackwell	DB 887 PG 266, PB 16, PG 174
		N.C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS GRANVILLE COUNTY PROJECT: 33749.1.1 (B-4525) 11/7/2007

BEGIN TIP PROJECT B-4525
Sta. 11+80.00 -L-

ROCK CROSS VANE DETAIL G



-L- STA. 12+59 LT
-L- STA. 13+23 LT



RELATIONSHIP BETWEEN STRUCTURE AND APPROACHES
(Drawing Not to Scale)

B-4525 4
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 5 of 6

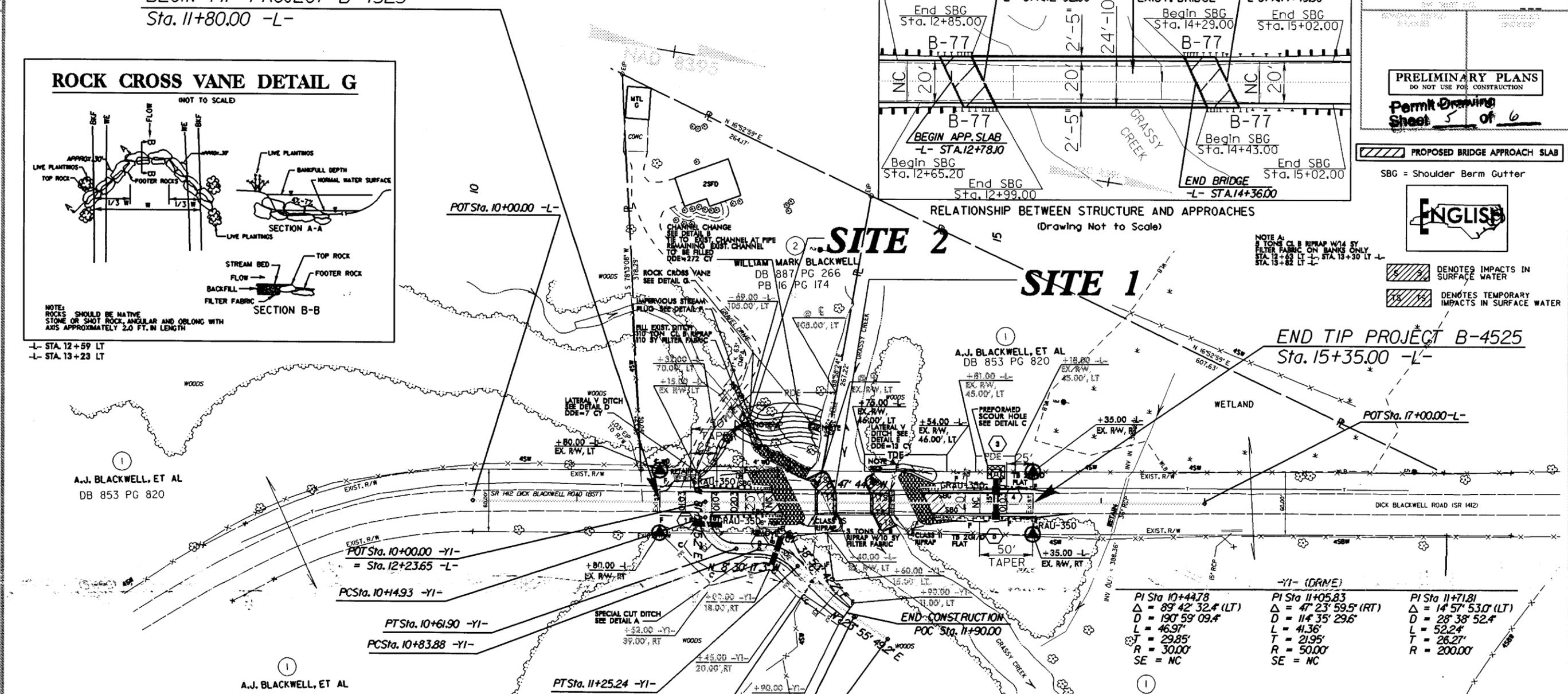
PROPOSED BRIDGE APPROACH SLAB

SBG = Shoulder Berm Gutter



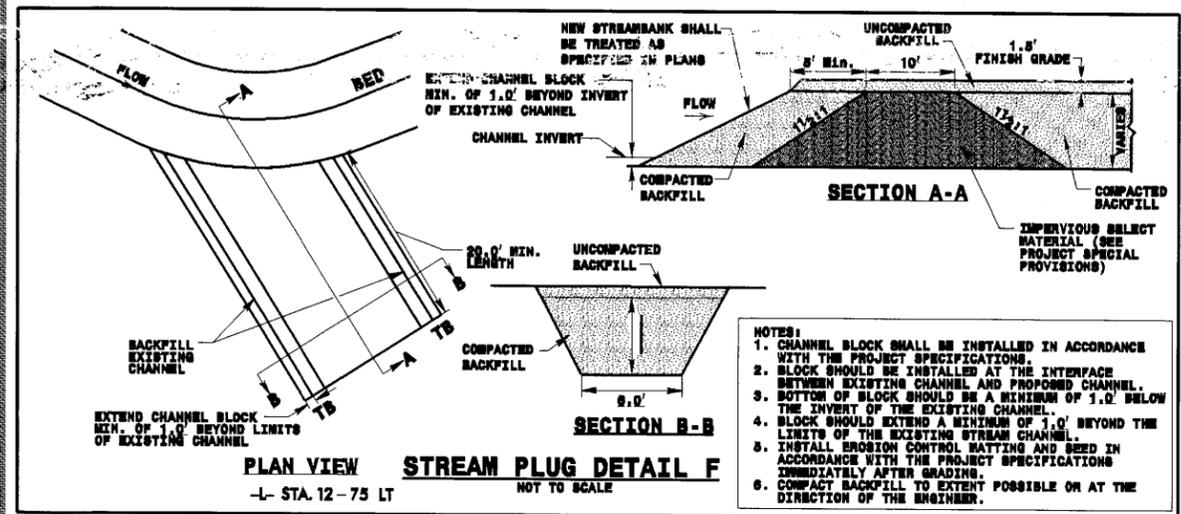
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 2
SITE 1



END TIP PROJECT B-4525
Sta. 15+35.00 -L-

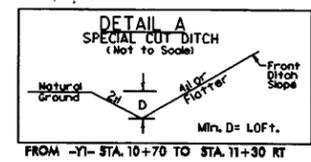
-YI- (DRIVE)		
PI Sta 10+44.78	PI Sta 11+05.83	PI Sta 11+71.81
$\Delta = 89^\circ 42' 32.4''$ (LT)	$\Delta = 47^\circ 23' 59.5''$ (RT)	$\Delta = 14^\circ 57' 53.0''$ (LT)
D = 190' 59' 09.4"	D = 114' 35' 29.6"	D = 28' 38' 52.4"
L = 46.97'	L = 4.36'	L = 52.24'
T = 29.85'	T = 2.95'	T = 28.27'
R = 30.00'	R = 50.00'	R = 200.00'
SE = NC	SE = NC	SE = NC



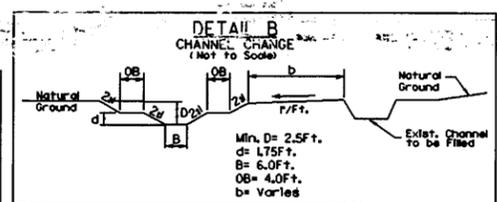
STREAM PLUG DETAIL F

-L- STA. 12-75 LT

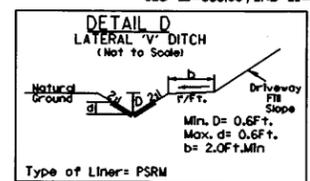
- NOTES:
1. CHANNEL BLOCK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 2. BLOCK SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
 3. BOTTOM OF BLOCK SHOULD BE A MINIMUM OF 1.0' BELOW THE INVERT OF THE EXISTING CHANNEL.
 4. BLOCK SHOULD EXTEND A MINIMUM OF 1.0' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
 5. INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
 6. COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.



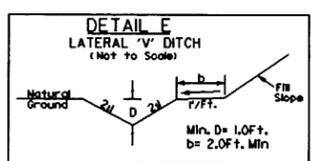
FROM -YI- STA. 10+70 TO STA. 11+30 RT



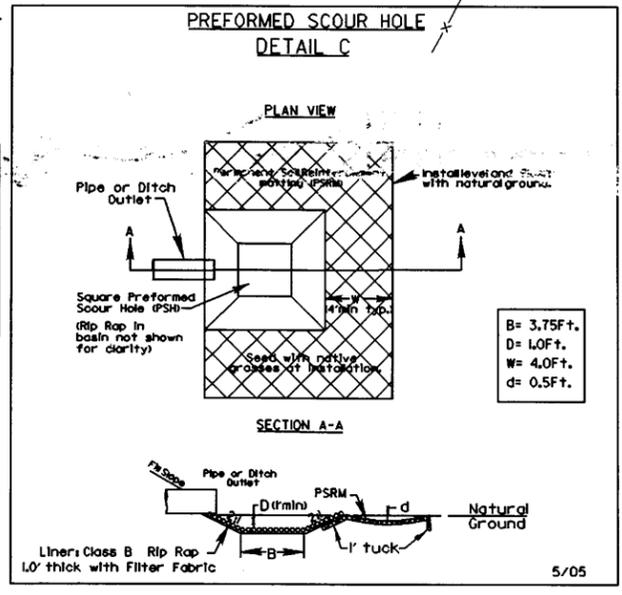
-L- STA. 12+58 LT
LENGTH = 75.0'
S = 0.50% W/1.0' STEP ROCK CROSS VANE
BEG EL = 386.00', END EL = 384.63'



-L- STA. 12+20 LT
LENGTH = 70.0', S = 15.87%
BEG EL = 397.06', END EL = 385.95'



FROM -L- STA. 13+75 TO STA. 14+40 LT

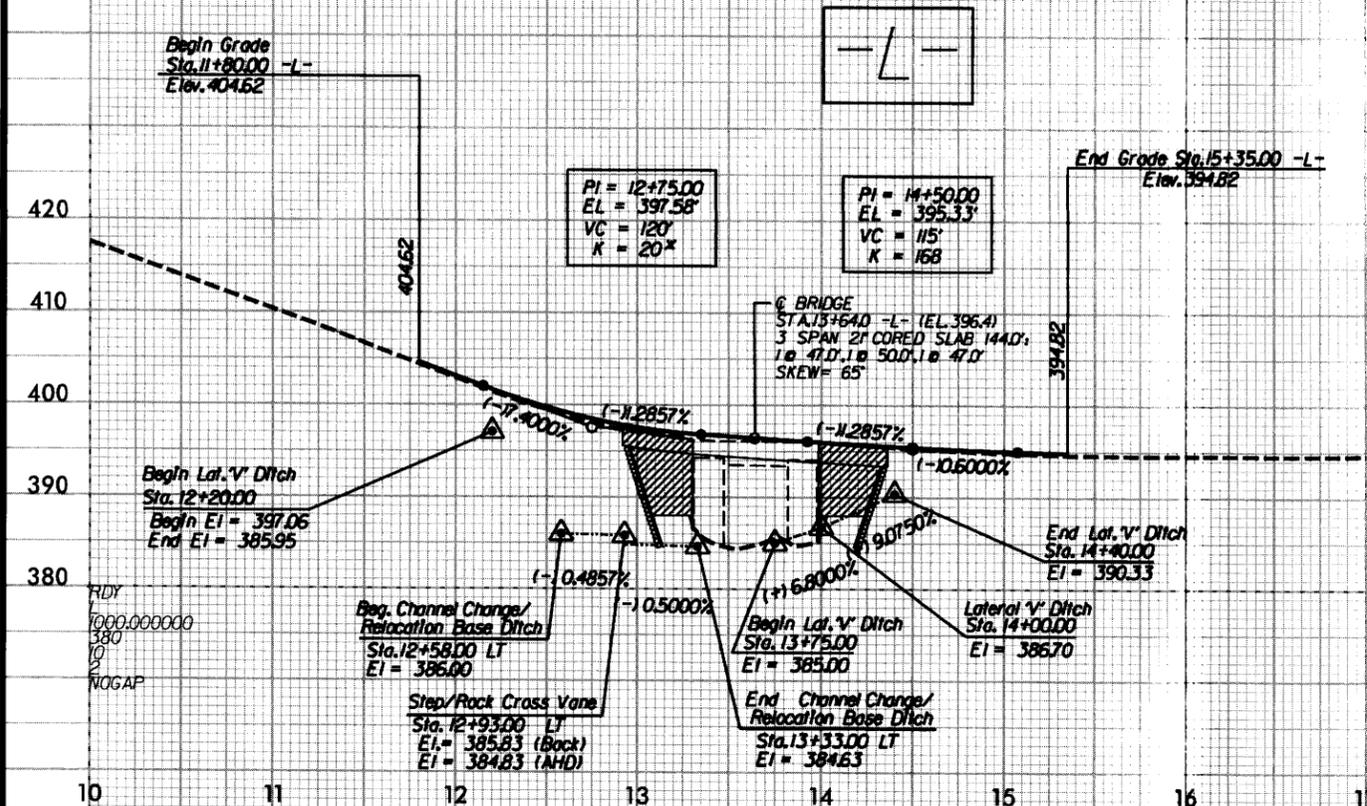


SEE SHEET 5 FOR -L- & -YI- PROFILE
SEE SHEET S-1 THRU S- FOR STRUCTURE PLANS

5/14/99

* Design Exception Required for Sag Curve K Factor and Vertical Curve Stopping Sight Distance

PROJECT REFERENCE NO. B-4525	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



BMI ELEVATION = 456.44'
N 984210 E 2094600
BL STATION 5+00
S 45° 37' 36.9" E Dist 501.61 =
-L- STA 10+00
S 37° 13' 13" E Dist 690'
B RR SPIKE IN B SQUIRWOOD

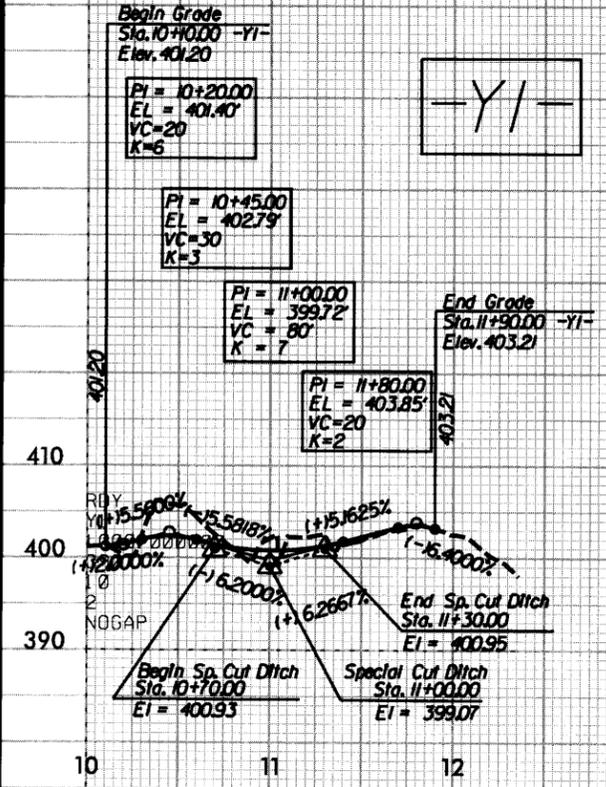
BM2 ELEVATION = 391.70'
N 985151 E 2094011
BL STATION 11+26 91' LEFT
-L- STA 14+12.56, 110.35' LT
RR SPIKE IN 20' OAK

UNCL. STRUC. EXCAVATION TO ELEVATION 388.00' EST. 1,100 CY

LEFT DITCH -----
RIGHT DITCH -----

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 3200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 396J	FT
BASE DISCHARGE	= 4700	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 397.4	FT
OVERTOPPING DISCHARGE	= 3080	CFS
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING ELEVATION	= 395.6	FT

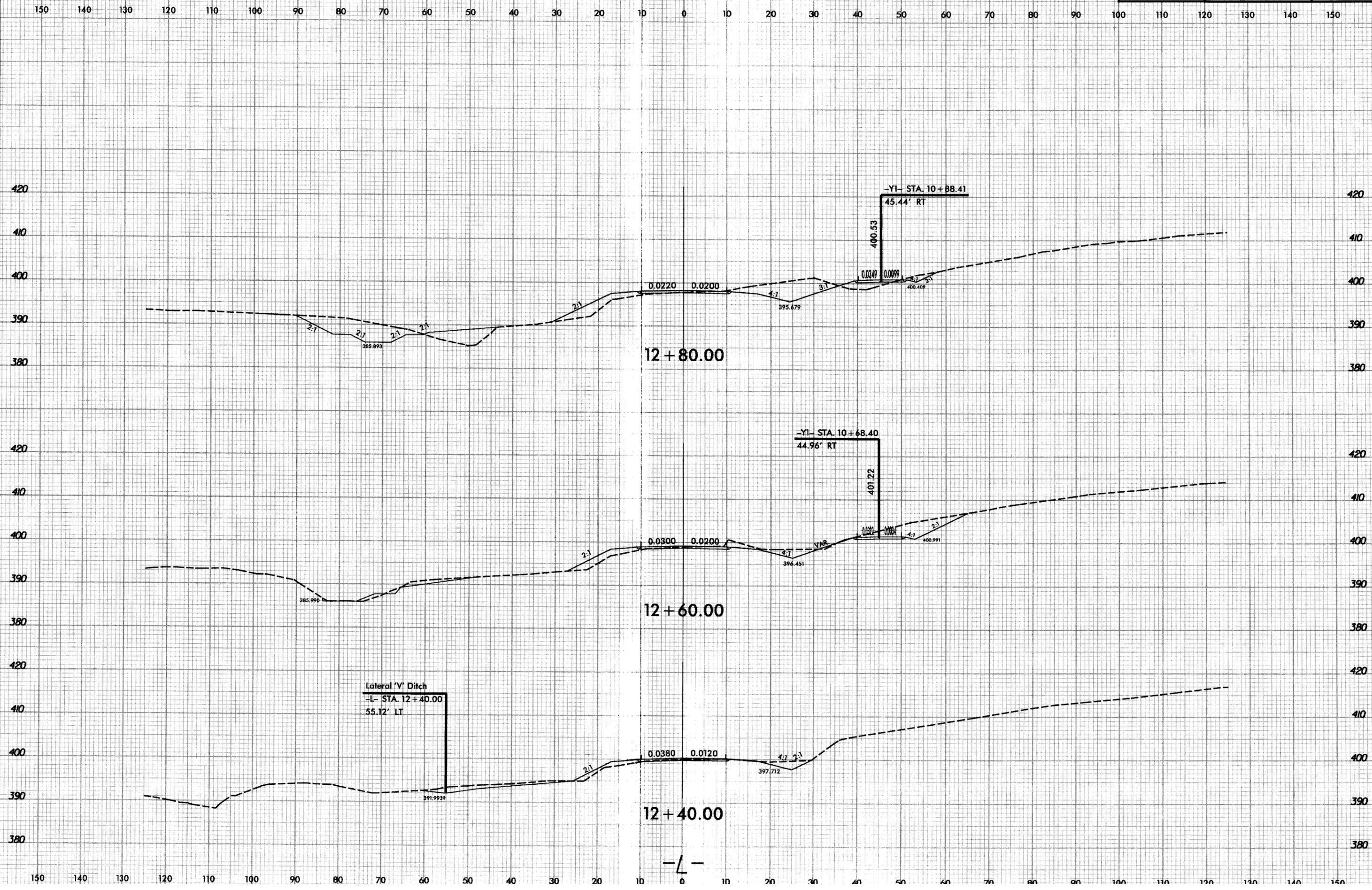


Z:\B\01_09\37\47\Roadway\N\PoJ\B-4525_rdy_p1.dgn

8/23/99



PROJ. REFERENCE NO.	SHEET NO.
B-4525	X-3



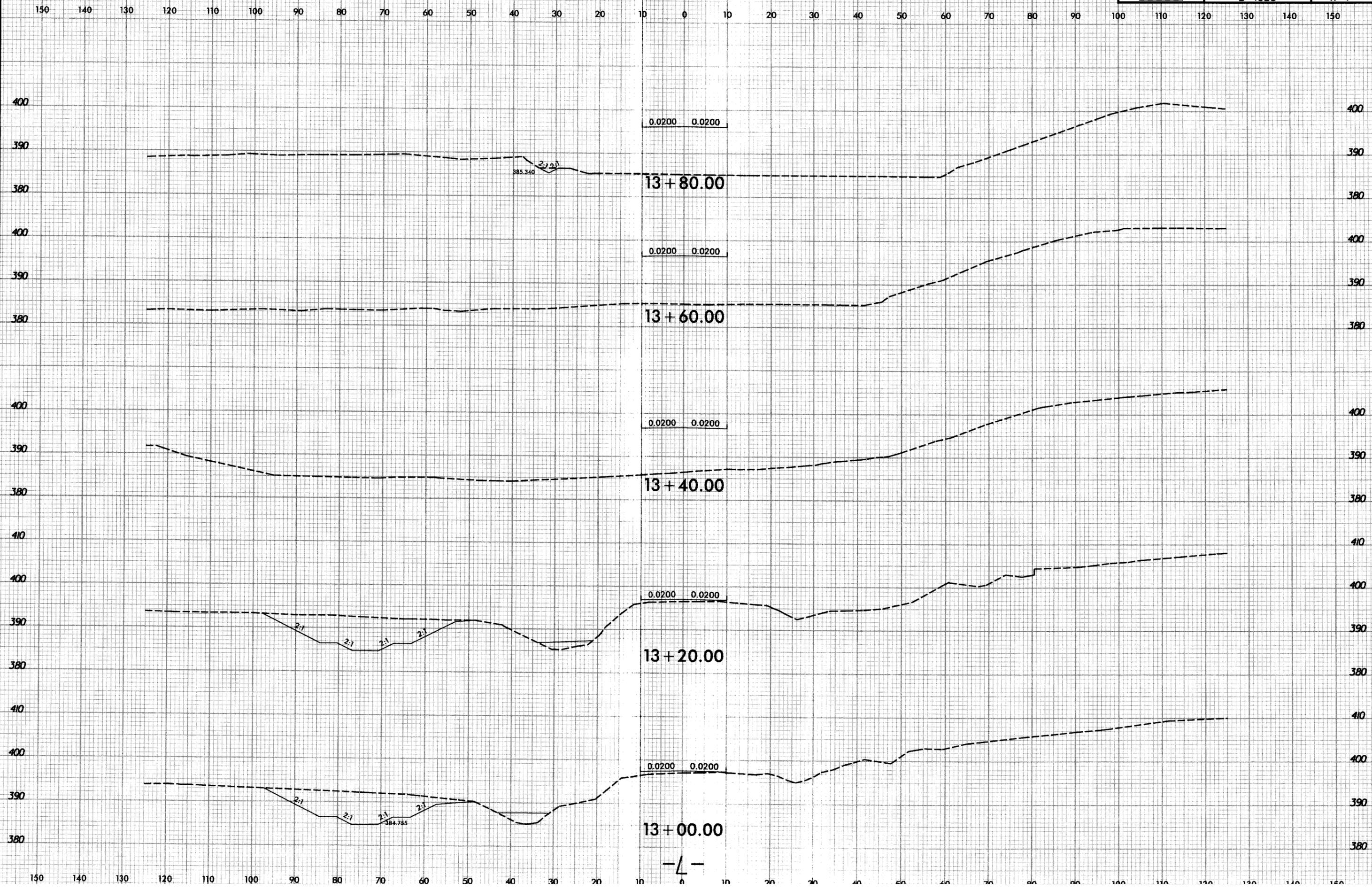
2:\9\07_09\3842\Roadway\Xsec\b4525_rdy_xp1_1.dgn
mcoak

8/23/99



PROJ. REFERENCE NO.
B-4525

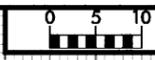
SHEET NO.
X-4



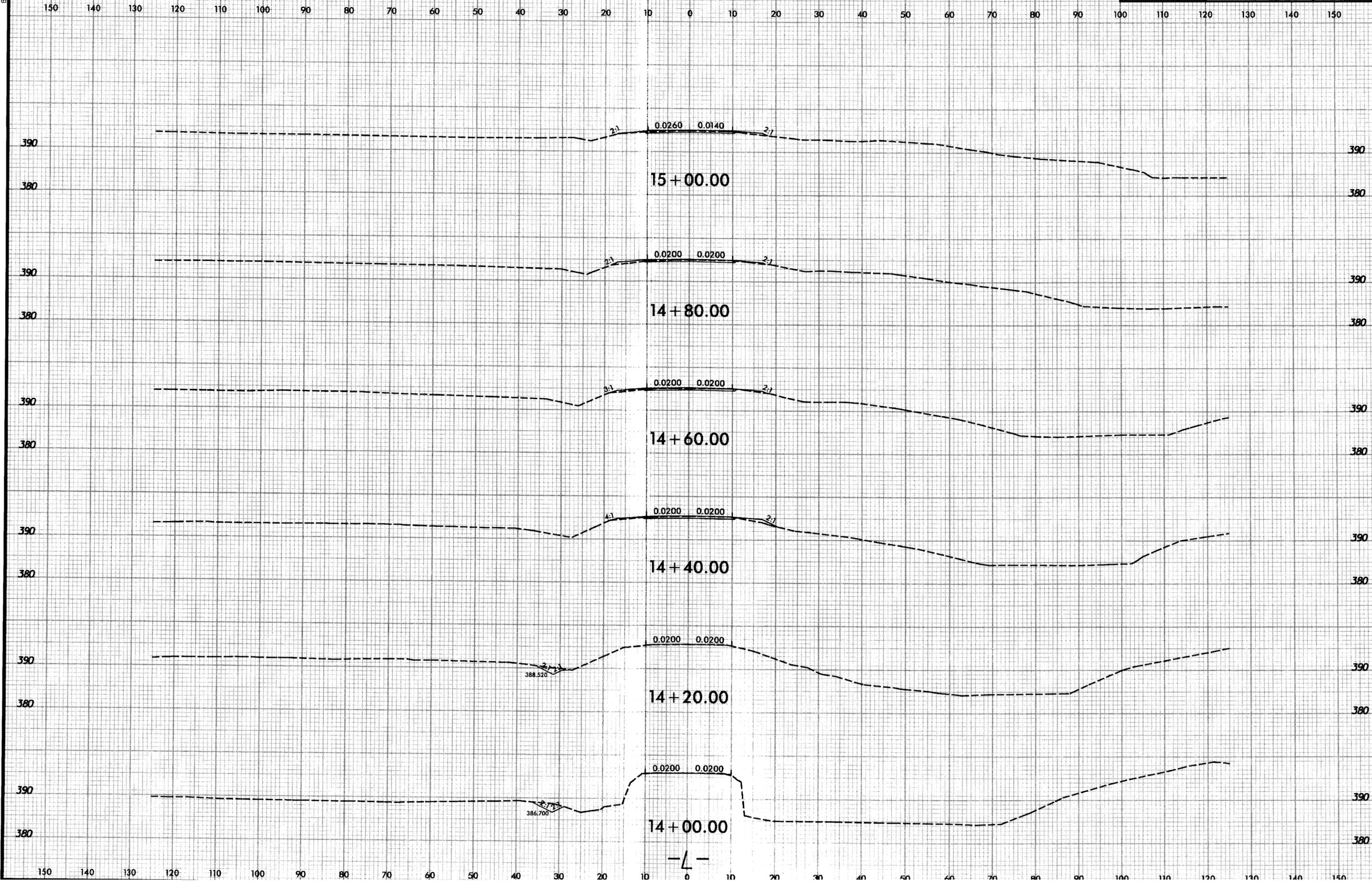
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:\Roadway\Xsc\4525_rdy_xpl_1.dgn
book

-L-

8/23/99



PROJ. REFERENCE NO.	SHEET NO.
B-4525	X-5



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 r:\Roadway\Xsc\B4525-r.dwg_xpl.l.dgn
 meoak

CATEGORICAL EXCLUSION ACTION CLASSIFICATION FORM

TIP Project No.	<u>B-4525</u>
State Project No.	<u>8.2371701</u>
W.B.S. No.	<u>33749.1.1</u>
Federal Project No.	<u>BRZ-1412 (4)</u>

A. Project Description:

The purpose of this project is to replace Granville County Bridge No. 133 on SR 1412 over Grassy Creek. Bridge No. 133 is 70 feet long. The replacement structure will be a bridge approximately 144 feet long providing a minimum 24 feet clear deck width. The bridge will include two 10-foot lanes and 2-foot offsets. The roadway grade of the new structure will be approximately the same as the existing structure.

The approach roadway will extend approximately 110 feet from the south end of the new bridge and 100 feet from the north end of the new bridge. The approaches will be widened to include a 20-foot pavement width providing two 10-foot lanes. Four-foot grass shoulders will be provided on each side (seven-foot shoulders where guardrail is included). The roadway will be designed as a Rural Local Route using Guidelines for Geometric Design of Very Low-Volume Local roads (< 400 ADT) with a 50 mile per hour design speed.

Traffic will be detoured off-site during construction (see Figure 1).

B. Purpose and Need:

NCDOT Bridge Maintenance Unit records indicate Bridge No. 133 has a sufficiency rating of 27.6 out of a possible 100 for a new structure. The bridge is considered structurally deficient and functionally obsolete due to a structural appraisal and a deck geometry rating of 2 out of a possible 9 according to Federal Highway Administration (FHWA) standards and therefore eligible for FHWA's Bridge Replacement Program.

The substructure of Bridge No. 133 has timber elements that are forty-six year old. Timber components have a typical life expectancy between 40 to 50 years due to the natural deterioration rate of wood. Rehabilitation of a timber structure is generally practical only when a few elements are damaged or prematurely deteriorated. However, past a certain degree of deterioration, most timber elements become impractical to maintain and upon eligibility are programmed for replacement. Timber components of bridge No. 133 are experiencing an increasing degree of deterioration that can no longer be addressed by reasonable maintenance activities, therefore the bridge is approaching the end of its useful life.

The posted weight limit on the bridge is down to 8 tons for single vehicles and 12 tons for truck-tractor semi-trailers. The bridge is approaching the end of its useful life. Replacement of the bridge will result in safer traffic operations.

C. Proposed Improvements:

Circle one or more of the following Type II improvements which apply to the project:

1. Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (e.g., parking, weaving, turning, climbing).
 - a. Restoring, Resurfacing, Rehabilitating, and Reconstructing pavement (3R and 4R improvements)
 - b. Widening roadway and shoulders without adding through lanes
 - c. Modernizing gore treatments
 - d. Constructing lane improvements (merge, auxiliary, and turn lanes)
 - e. Adding shoulder drains
 - f. Replacing and rehabilitating culverts, inlets, and drainage pipes, including safety treatments
 - g. Providing driveway pipes
 - h. Performing minor bridge widening (less than one through lane)
 - i. Slide Stabilization
 - j. Structural BMP's for water quality improvement

2. Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting.
 - a. Installing ramp metering devices
 - b. Installing lights
 - c. Adding or upgrading guardrail
 - d. Installing safety barriers including Jersey type barriers and pier protection
 - e. Installing or replacing impact attenuators
 - f. Upgrading medians including adding or upgrading median barriers
 - g. Improving intersections including relocation and/or realignment
 - h. Making minor roadway realignment
 - i. Channelizing traffic
 - j. Performing clear zone safety improvements including removing hazards and flattening slopes
 - k. Implementing traffic aid systems, signals, and motorist aid
 - l. Installing bridge safety hardware including bridge rail retrofit

3. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings.
 - a. Rehabilitating, reconstructing, or replacing bridge approach slabs
 - b. Rehabilitating or replacing bridge decks
 - c. Rehabilitating bridges including painting (no red lead paint), scour repair, fender systems, and minor structural improvements
 - d. Replacing a bridge (structure and/or fill)

4. Transportation corridor fringe parking facilities.
5. Construction of new truck weigh stations or rest areas.
6. Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.
7. Approvals for changes in access control.
8. Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and located on or near a street with adequate capacity to handle anticipated bus and support vehicle traffic.
9. Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.
10. Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.
11. Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.
12. Acquisition of land for hardship or protective purposes, advance land acquisition loans under section 3(b) of the UMT Act. Hardship and protective buying will be permitted only for a particular parcel or a limited number of parcels. These types of land acquisition qualify for a CE only where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.
13. Acquisition and construction of wetland, stream and endangered species mitigation sites.
14. Remedial activities involving the removal, treatment or monitoring of soil or groundwater contamination pursuant to state or federal remediation guidelines.

D. Special Project Information:

The estimated costs, based on 2006 prices, are as follows:

Structure	\$ 250,000
Roadway Approaches	\$ 134,500
Detour Structure and Approaches	- 0 -
Structure Removal	\$ 26,500
Misc. & Mob.	\$ 74,000
Eng. & Contingencies	\$ 90,000
Total Construction Cost	\$ 575,000
Utility & Right-of-way Costs	\$ 10,500
Total Project Cost	\$ 585,500

Estimated Traffic:

Current	-	110 vpd
Year 2030	-	200 vpd
TTST	-	1%
Dual	-	2%

Accidents: There were no reported accidents in the area during the study of a recent three-year period.

Design Exceptions: There are no anticipated design exceptions for this project.

Bridge Demolition: Bridge No. 133 is constructed entirely of timber and steel and should be possible to remove with no resulting debris in the water based on standard demolition practices.

Alternatives Discussion:

No Build – The no build alternative would result in eventually closing the road.

Rehabilitation – The bridge was constructed in 1960 and the timber materials within the bridge are reaching the end of their useful life. Rehabilitation would require replacing the timber components which would constitute effectively replacing the bridge.

Offsite Detour – Bridge No. 133 will be replaced on the existing alignment. Traffic will be detoured offsite (see Figure 1) during the construction period. NCDOT Guidelines for Evaluation of Offsite Detours for Bridge Replacement Projects considers multiple project variables beginning with the additional time traveled by the average road user resulting from the offsite detour. The offsite detour for this project would include SR 1410 (Oak Hill Road), SR 1300 (Cornwall Road), and SR 1415 (Mountain Creek Road). The majority of traffic on the road is through traffic.

The detour for the average road user would result in four minutes additional travel time (two miles additional travel). Up to a nine-month duration of construction is expected on this project.

Based on the Guidelines, the criteria above indicate that on the basis of delay alone the detour is acceptable. Granville County Emergency Services along with Granville County Schools Transportation have also indicated that the detour is acceptable. NCDOT Division 5 has indicated the condition of all roads, bridges and intersections on the offsite detour are acceptable without improvement and concurs with the use of the detour.

Onsite Detour – An onsite detour was not evaluated due to the presence of an acceptable offsite detour.

Staged Construction – Staged construction was not considered because of the availability of an acceptable offsite detour.

New Alignment – Given that the alignment for SR 1412 is acceptable, a new alignment was not considered as an alternative.

Other Agency Comments:

The **N.C. Wildlife Resource Commission** and **U.S. Fish & Wildlife Service** in standardized letters provided a request that they prefer any replacement structure to be a spanning structure.

Response: The replacement structure is a spanning structure.

The **N.C. Wildlife Resource Commission** also requested an in-stream moratorium for sunfish from April 1 to June 30.

Response: Since this moratorium is not a regulatory requirement, it will be honored only if the project schedule allows.

Public Involvement:

A letter was sent by the Location & Surveys Unit to all property owners affected directly by this project. Property owners were invited to comment. No comments have been received to date.

A newsletter has been sent to all those living along SR 1412 between the intersection with SR 1410 and the intersection with SR 1415. No comments have been received to date.

Based on no responses to the newsletter, a Citizen's Informational Workshop was determined unnecessary.

E. Threshold Criteria

The following evaluation of threshold criteria must be completed for Type II actions

<u>ECOLOGICAL</u>	<u>YES</u>	<u>NO</u>
(1) Will the project have a substantial impact on any unique or important natural resource?	<input type="checkbox"/>	<u>X</u>
(2) Does the project involve habitat where federally listed endangered or threatened species may occur?	<input checked="" type="checkbox"/>	<u> </u>
(3) Will the project affect anadromous fish?	<input type="checkbox"/>	<u>X</u>
(4) If the project involves wetlands, is the amount of permanent and/or temporary wetland taking less than one-tenth (1/10) of an acre and have all practicable measures to avoid and minimize wetland takings been evaluated?	<u>X</u>	<input type="checkbox"/>
(5) Will the project require the use of U. S. Forest Service lands?	<input type="checkbox"/>	<u>X</u>
(6) Will the quality of adjacent water resources be adversely impacted by proposed construction activities?	<input type="checkbox"/>	<u>X</u>
(7) Does the project involve waters classified as Outstanding Water Resources (OWR) and/or High Quality Waters (HQW)?	<input type="checkbox"/>	<u>X</u>
(8) Will the project require fill in waters of the United States in any of the designated mountain trout counties?	<input type="checkbox"/>	<u>X</u>
(9) Does the project involve any known underground storage tanks (UST's) or hazardous materials sites?	<input type="checkbox"/>	<u>X</u>
 <u>PERMITS AND COORDINATION</u>		
(10) If the project is located within a CAMA county, will the project significantly affect the coastal zone and/or any "Area of Environmental Concern" (AEC)?	<input type="checkbox"/>	<u>X</u>
(11) Does the project involve Coastal Barrier Resources Act resources?	<input type="checkbox"/>	<u>X</u>
(12) Will a U. S. Coast Guard permit be required?	<input type="checkbox"/>	<u>X</u>
(13) Will the project result in the modification of any existing regulatory floodway?	<input type="checkbox"/>	<u>X</u>

(14) Will the project require any stream relocations or channel changes? _____

SOCIAL, ECONOMIC, AND CULTURAL RESOURCES

YES NO

(15) Will the project induce substantial impacts to planned growth or land use for the area? X

(16) Will the project require the relocation of any family or business? X

(17) Will the project have a disproportionately high and adverse human health and environmental effect on any minority or low-income population? X

(18) If the project involves the acquisition of right of way, is the amount of right of way acquisition considered minor? X

(19) Will the project involve any changes in access control? X

(20) Will the project substantially alter the usefulness and/or land use of adjacent property? X

(21) Will the project have an adverse effect on permanent local traffic patterns or community cohesiveness? X

(22) Is the project included in an approved thoroughfare plan and/or Transportation Improvement Program (and is, therefore, in conformance with the Clean Air Act of 1990)? X

(23) Is the project anticipated to cause an increase in traffic volumes? X

(24) Will traffic be maintained during construction using existing roads, staged construction, or on-site detours? X

(25) If the project is a bridge replacement project, will the bridge be replaced at its existing location (along the existing facility) and will all construction proposed in association with the bridge replacement project be contained on the existing facility? X

(26) Is there substantial controversy on social, economic, or environmental grounds concerning the project? X

(27) Is the project consistent with all Federal, State, and local laws relating to the environmental aspects of the project? X

(28) Will the project have an "effect" on structures/properties eligible for or listed on the National Register of Historic Places? X

- | | | | |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|
| (29) | Will the project affect any archaeological remains which are important to history or pre-history? | <input type="checkbox"/> | <u> X </u> |
| (30) | Will the project require the use of Section 4(f) resources (public parks, recreation lands, wildlife and waterfowl refuges, historic sites, or historic bridges, as defined in Section 4(f) of the U. S. Department of Transportation Act of 1966)? | <input type="checkbox"/> | <u> X </u> |
| (31) | Will the project result in any conversion of assisted public recreation sites or facilities to non-recreation uses, as defined by Section 6(f) of the Land and Water Conservation Act of 1965, as amended? | <input type="checkbox"/> | <u> X </u> |
| (32) | Will the project involve construction in, across, or adjacent to a river designated as a component of or proposed for inclusion in the National System of Wild and Scenic Rivers? | <input type="checkbox"/> | <u> X </u> |

F. Additional Documentation Required for Unfavorable Responses in Part E

Question 2: Granville County has three federally listed endangered species. The Dwarf Wedgemussel, the Harperella and the Smooth coneflower; all of which have a biological conclusion of "No Effect".

Granville County has one federally listed threatened species. The Bald eagle, which has a biological conclusion of "No Effect".

Question 14: To reduce the length of bridge structure required, seventy-five to one hundred feet of an unnamed tributary to Grassy Creek will be relocated to the west of its existing location.

G. CE Approval

TIP Project No.	<u>B-4525</u>
State Project No.	<u>8.2371701</u>
W.B.S. No.	<u>33749.1.1</u>
Federal Project No.	<u>BRZ-1412 (4)</u>

Project Description:

The purpose of this project is to replace Granville County Bridge No. 133 on SR 1412 over Grassy Creek. Bridge No. 133 is 70 feet long. The replacement structure will be a bridge approximately 144 feet long providing a minimum 24 feet clear deck width. The bridge will include two 10-foot lanes and 2-foot offsets. The roadway grade of the new structure will be approximately the same as the existing structure.

The approach roadway will extend approximately 110 feet from the south end of the new bridge and 100 feet from the north end of the new bridge. The approaches will be widened to include a 20-foot pavement width providing two 10-foot lanes. Four-foot grass shoulders will be provided on each side (seven-foot shoulders where guardrail is included). The roadway will be designed as a Rural Local Route using Guidelines for Geometric Design of Very Low-Volume Local roads (< 400 ADT) with a 50 mile per hour design speed.

Traffic will be detoured off-site during construction (see Figure 1).

Categorical Exclusion Action Classification:

 TYPE II(A)
 X TYPE II(B)

Approved:

<u>2/14/07</u> Date	<u>William T. Goodwin</u> Bridge Project Development Engineer Project Development & Environmental Analysis Branch
<u>2/15/07</u> Date	<u>Bryan D. Kline</u> Project Engineer Project Development & Environmental Analysis Branch
<u>2/15/07</u> Date	<u>Sean Walden</u> Project Planning Engineer Project Development & Environmental Analysis Branch

For Type II(B) projects only:

<u>2/27/2007</u> Date	<u>Thomas D. R. [Signature]</u> for John F. Sullivan, III, PE, Division Administrator Federal Highway Administration
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PROJECT COMMITMENTS:

**Granville County
Bridge No. 133 on SR 1412
Over Grassy Creek
Federal Aid Project No. BRZ-1412(4)
State Project No. 8.2371701
W.B.S. No. 33749.1.1
T.I.P. No. B-4525**

Division 5 Construction, Resident Engineer's Office – Offsite Detour

In order to have time to adequately reroute school busses, Granville County Schools should be contacted at least one month prior to road closure.

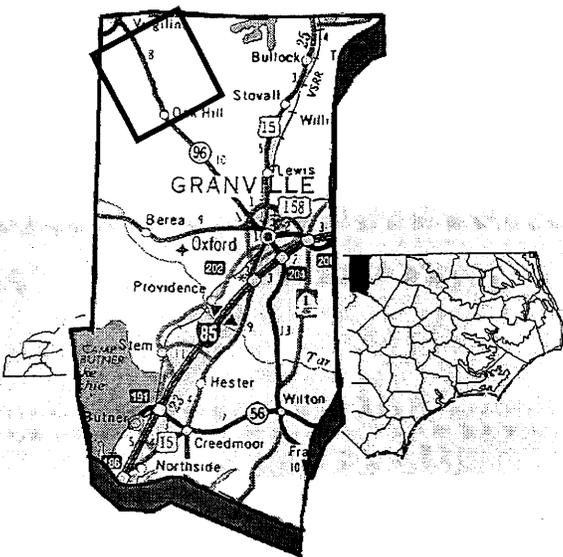
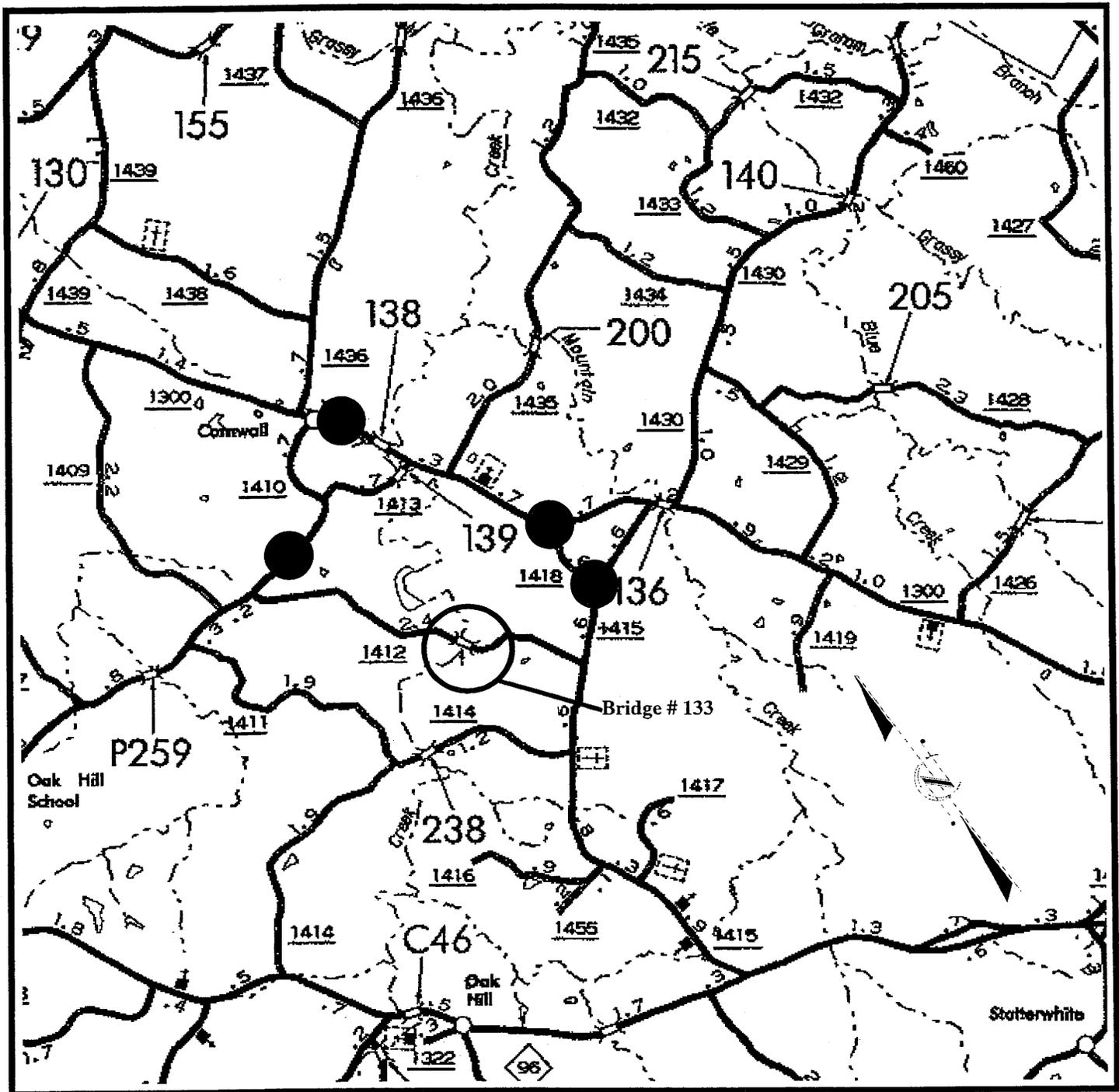
Granville County Emergency Services needs to be contacted at least one month prior to road closure to make the necessary temporary reassignments to primary response units.

Division 5 Construction, Resident Engineer's Office

If project schedule allows, construction should allow for an in-stream moratorium from April 1 – June 30 for sunfish.

Roadway Design, Division 5 Traffic Engineering

The existing roadway in this area is not designed for a 55-mph statutory speed limit. A 50-mph design speed was used to make the roadway safer for the traveling public. Division 5 will post the speed limit at 45 mph in the area of the bridge.

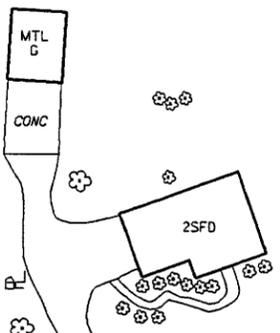
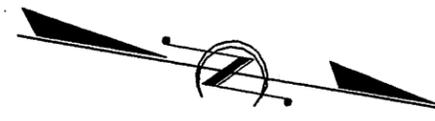


●—●
Denotes off-site detour

	<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH</p>
<p>GRANVILLE COUNTY REPLACE BRIDGE NO. 133 ON SR 1412 OVER GRASSY CREEK B-4525</p>	
<p>Figure 1</p>	

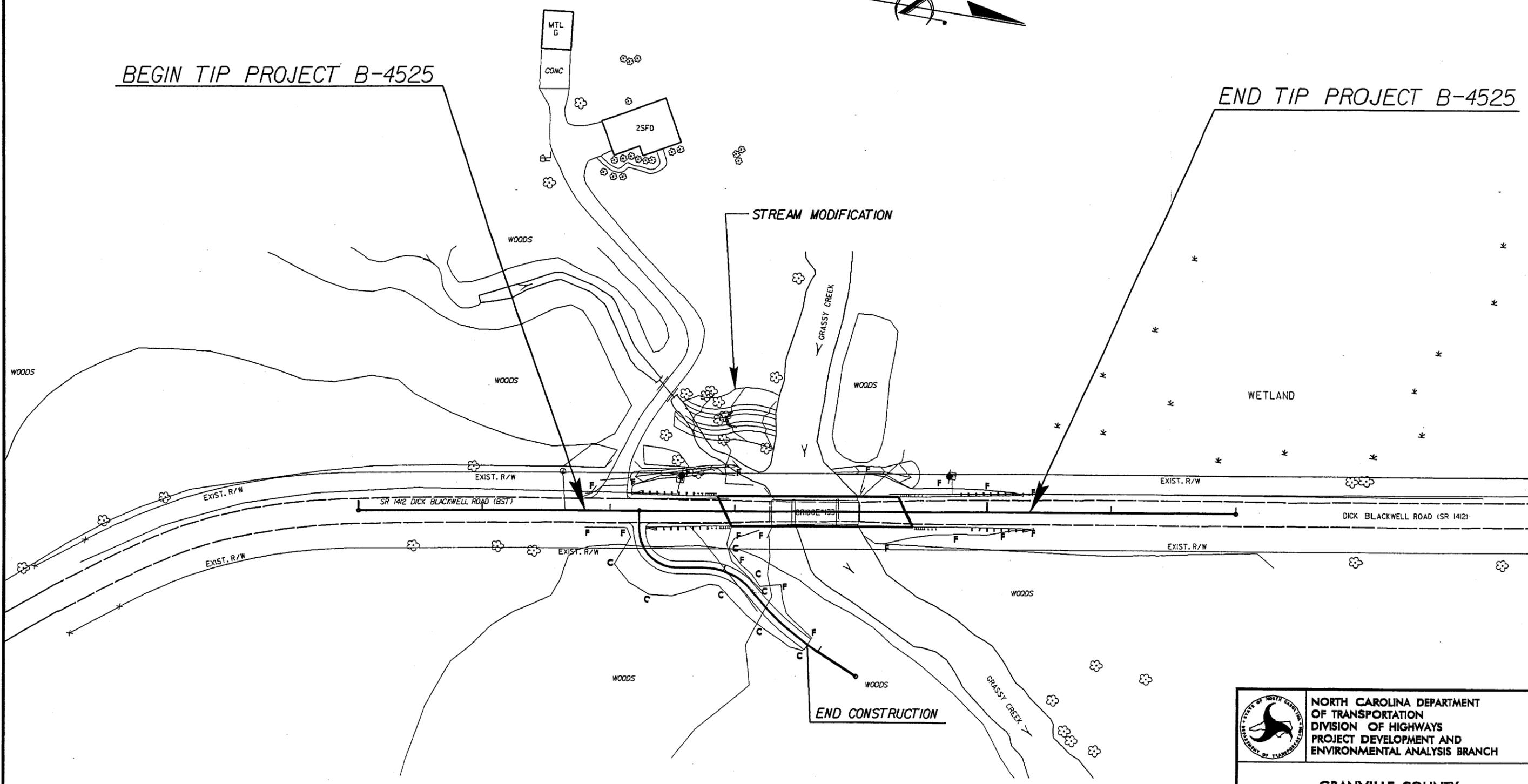
BEGIN TIP PROJECT B-4525

END TIP PROJECT B-4525



STREAM MODIFICATION

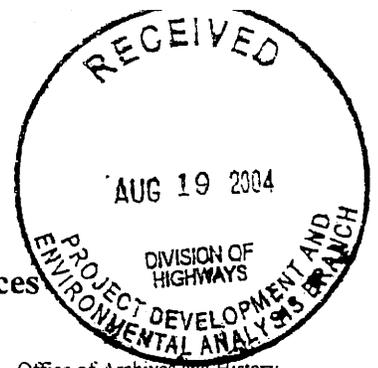
END CONSTRUCTION




 NORTH CAROLINA DEPARTMENT
 OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 PROJECT DEVELOPMENT AND
 ENVIRONMENTAL ANALYSIS BRANCH

GRANVILLE COUNTY
 REPLACE BRIDGE NO. 133 ON SR 1412
 OVER GRASSY CREEK
 B-4525

FIGURE 2



North Carolina Department of Cultural Resources
State Historic Preservation Office
 Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
 Lisbeth C. Evans, Secretary
 Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
 Division of Historical Resources
 David Brook, Director

August 12, 2004

MEMORANDUM

TO: Gregory Thorpe, Ph.D., Director
 Project Development and Environmental Analysis Branch
 NCDOT Division of Highways

FROM: Peter B. Sandbeck *PBS for Peter Sandbeck*

SUBJECT: 2004 Bridge Projects, including B-3492, B-4408, B-4409, B-4410, B-4446, B-4466, B4469, B-4518, B-4545, B-4573, B-4631, B-4423, B-4424, B-4454, B-4520, B-4538, B-4540, B-4548, B-4549, B-4567, B-4578, B-4648, B-4664, B-4665, B-4504, B-4560, B-4587, B-4618, B-4644, B-4649, B-4651, B-4658, B-4671, B-3624, B-3819, B-3911, B-4404, B-4552, B-4613, B-4646, B-4675, B-3169, B-3606, B-3802, B-3803, B-3804, B-4523, B-4524, B-4525, B-4526, Multi-county, ER 04-1280-ER 04-1330

On July 28, 2004, Sarah McBride, our preservation specialist for transportation projects, met with the North Carolina Department of Transportation (NCDOT) staff for a meeting of the minds concerning the above projects. We reported on our available information on historic architectural and archaeological surveys and resources along with our recommendations. NCDOT provided project descriptions, area photographs, and aerial photographs at the meeting.

Based on our review of the photographs and the information discussed at the meeting, we have included our comments for each bridge project on a spreadsheet attached to this letter. These comments are provided for each project as proposed.

If an archaeological survey is requested on the spreadsheet, a separate memorandum from the Office of State Archaeology, explaining whether a general survey is required or if the survey is predicated upon an off-site detour or new location, is attached.

Having provided this information, we look forward to receipt of either a Categorical Exclusion or Environmental Assessment which indicates how NCDOT addressed our comments.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-4763/733-8653
RESTORATION	515 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6547/715-4801
SURVEY & PLANNING	515 N. Blount Street, Raleigh, NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6545/715-4801



North Carolina Department of Cultural Resources
State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

August 12, 2004

MEMORANDUM

TO: Gregory Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: Peter B. Sandbeck *PBS* Peter Sandbeck

SUBJECT: Bridge 133 on SR 1412 over Grassy Creek, Granville County,
TIP B-4525, ER 04-1321

Thank you for your letter of April 29, 2004, concerning the above project. We apologize for the delay in responding; however, project location maps were not included in the initial submission. Based on the topographic and hydrological situation we have determined that there is a very high probability that archaeological sites exist in the project area. We therefore we recommend that a comprehensive archaeological survey be conducted by an experienced archaeologist to identify and evaluate the significance of any archaeological remains that may be damaged or destroyed by the proposed project. Potential effects on unknown resources must be assessed prior to the initiation of any earth moving activities.

Two copies of the resulting archaeological survey report, as well as one copy of the appropriate site forms, should be forwarded to us for review and comment as soon as they are available and well in advance of any further earth moving activities.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and considerations. If you have any questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

PBS:w

cc: Matt Wilkerson, NCDOT

ADMINISTRATION
RESTORATION
SURVEY & PLANNING

Location
507 N. Blount Street, Raleigh NC
515 N. Blount Street, Raleigh NC
515 N. Blount Street, Raleigh, NC

Mailing Address
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Thank you for your cooperation and considerations. If you have any questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

PBS:w

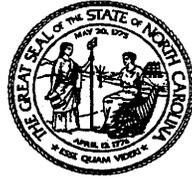
Attachments

1 Spreadsheet

16 Memos

cc: Matt Wilkerson, NCDOT
Mary Pope Furr

	TIP	BRIDGE	COUNTY	DIVISION	BUILT	PDE	Architecture	Archaeology	
04	1314	B-3492	580056	McDOWELL	13	1962	Hancock	Yes	No
R04	1285	B-4408	030265	ANSON	10	1961	Hancock	No	No
R04	1286	B-4409	030308	ANSON	10	1922	Hancock	No	No
R04	1287	B-4410	030307	ANSON	10	1931	Hancock	Yes	No
R04	1301	B-4446	100227	BUNCOMBE	13	1956	Hancock	No	No
R04	1290	B-4466	210004	CLAY	14	1952	Hancock	No	No
R04	1291	B-4469	220219	CLEVELAND	12	1952	Hancock	No	No
R04	1288	B-4518	350110	GASTON	12	1962	Hancock	No	No
R04	1307	B-4545	440072	HENDERSON	14	1963	Hancock	No	No
R04	1300	B-4573	540183	LINCOLN	12	1965	Hancock	No	No
R04	1306	B-4631	800526	RUTHERFORD	13	1970	Hancock	No	No
R04	1329	B-4423	060067	BEAUFORT	2	1965	Capps	No	No
R04	1320	B-4424	060068	BEAUFORT	2	1966	Capps	No	No
R04	1302	B-4454	150043	CARTERET	2	1963	Capps	No	No
R04	1292	B-4520	360032	GATES	1	1952	Capps	Yes	No
R04	1284	B-4538	410025	HALIFAX	4	1965	Capps	No	No
R04	1287	B-4540	410142	HALIFAX	4	1962	Capps	Yes	Yes
R04	1308	B-4548	450002	HERTFORD	1	1960	Capps	No	Yes
R04	1309	B-4549	450042	HERTFORD	1	1960	Capps	Yes	Yes
R04	1299	B-4567	530069	LENOIR	2	1971	Capps	Yes	Yes
R04	1298	B-4578	570008	MARTIN	1	1974	Capps	No	No
R04	1325	B-4648	880017	TYRRELL	1	1977	Capps	No	No
R04	1317	B-4664	920025	WARREN	5	1957	Capps	Yes	Yes
R04	1318	B-4665	920036	WARREN	5	1955	Capps	No	Yes
R04	1305	B-4504	320052	EDGEcombe	4	1964	Johnson	No	Yes
R04	1312	B-4560	500102	JOHNSTON	4	1956	Johnson	Yes	Yes
R04	1297	B-4587	630082	NASH	4	1961	Johnson	No	Yes
R04	1325	B-4618	770445	ROBESON	6	1955	Johnson	Yes	No
R04	1284	B-4644	830057	STANLY	10	1961	Johnson	No	No
R04	1324	B-4649	890377	UNION	10	1962	Johnson	No	No
R04	1323	B-4651	890251	UNION	10	1957	Johnson	No	No
R04	1315	B-4658	910345	WAKE	5	1960	Johnson	No	No
R04	1313	B-4671	950035	WAYNE	4	1961	Johnson	No	Yes
R04	1327	B-3624	130190	CALDWELL	11	1981	Pipkin	No	No
R04	1328	B-3819	130184	CALDWELL	11	1962	Pipkin	No	No
R04	1321	B-3911	850038	SURRY	11	1923	Pipkin	Yes	No
R04	1286	B-4404	000102	ALAMANCE	7	1968	Pipkin	Yes	No
R04	1310	B-4552	480100	IREDELL	12	1963	Pipkin	Yes	No
R04	1295	B-4613	750415	RANDOLPH	8	1959	Pipkin	No	Yes
R04	1274	B-4646	850132	SURRY	11	1962	Pipkin	Yes	No
R04	1311	B-4675	960034	WILKES	11	1960	Pipkin	No	No
R04	1293	B-3169	310158	DURHAM	5	1960	Williams	Yes	No
R04	1303	B-3806	040070	ASHE	11	1963	Williams	Yes	No
R04	1282	B-3802	040229	ASHE	11	1960	Williams	No	No
R04	1304	B-3803	040334	ASHE	11	1966	Williams	Yes	No
R04	1283	B-3804	040296	ASHE	11	1964	Williams	Yes	No
R04	1319	B-4523	380164	GRANVILLE	5	1955	Williams	No	Yes
R04	1320	B-4524	380193	GRANVILLE	5	1956	Williams	No	Yes
R04	1321	B-4525	380133	GRANVILLE	5	1960	Williams	No	Yes
R04	1322	B-4526	380200	GRANVILLE	5	1957	Williams	No	Yes



CITIZENS PARTICIPATION
RECEIVED

MAY 12 2005

North Carolina Department of Cultural Resources
State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

May 10, 2005

MEMORANDUM

TO: Matt Wilkerson
Office of Human Environment
NCDOT

FROM: Peter Sandbeck *PBS for PBS*

SUBJECT: Archaeological Survey and Evaluation of Replacement of Bridge No. 133 on SR 1412 over
Grassy Creek, TIP No.B-4525, Granville County, ER 04-1321

Thank you for your letter of April 25, 2005, transmitting the archaeological survey and evaluation report for the above project.

The report author noted that no cultural resources were discovered during the archaeological survey and that no further archaeological investigations are necessary and/or warranted. We concur with this recommendation.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and considerations. If you have any questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919.733.4763. In all future communication concerning this project, please cite the above referenced tracking number.

ADMINISTRATION
RESTORATION
SURVEY & PLANNING

Location
507 N. Blount Street, Raleigh NC
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Natural Resources Technical Report

**Proposed Bridge Replacement
SR 1226 Bridge No. 13 over Grassy Creek
Granville County**

**TIP No. B-4525
State Project No. 8.2371701
FAP No. BRZ-1412 (4)**

North Carolina Department of Transportation
Division of Highways
Project Development and Environmental Analysis Branch



April 2004

Natural Resources Technical Report

**Proposed Bridge Replacement
SR 1226 Bridge No. 13 over Grassy Creek
Granville County**

**TIP No. B-4525
State Project No. 8.2371701
FAP No. BRZ-1412 (4)**

Prepared for:

North Carolina Department of Transportation
Division of Highways
Project Development and Environmental Analysis Branch

Issued by:

Earth Tech, Inc.
701 Corporate Center Drive, Suite 475
Raleigh, North Carolina 27607

Earth Tech Project No. 73566

April 2004

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Note: Highlighted text denotes items not included in this draft that will be added later by NCDOT personnel once alignments are developed.

1.0 INTRODUCTION

This Natural Resources Technical Report (NRTR) is submitted to the North Carolina Department of Transportation (NCDOT) preliminary to the preparation of a Categorical Exclusion (CE) for the proposed project. The purpose of this technical report is to inventory, catalog, and describe the various natural resources likely to be impacted by the proposed action. The report also attempts to identify and estimate the likely consequences of the anticipated impacts to these resources. These descriptions and estimates are relevant only in the context of the preliminary design concepts. It may become necessary to conduct additional field investigations should design parameters and criteria change.

1.1 Project Description

The proposed project involves the replacement of Bridge No. 133 on Dick Blackwell Road (SR 1412), which spans Grassy Creek. The project is located in northern Granville County about 11 miles (17.7 kilometers [km]) north of Oxford, NC (**Figure 1**). The bridge was constructed in 1960.

Alternate 1

(Insert description of Alternate here)

Alternate 2

(Insert description of Alternate here)

1.2 Project Purpose

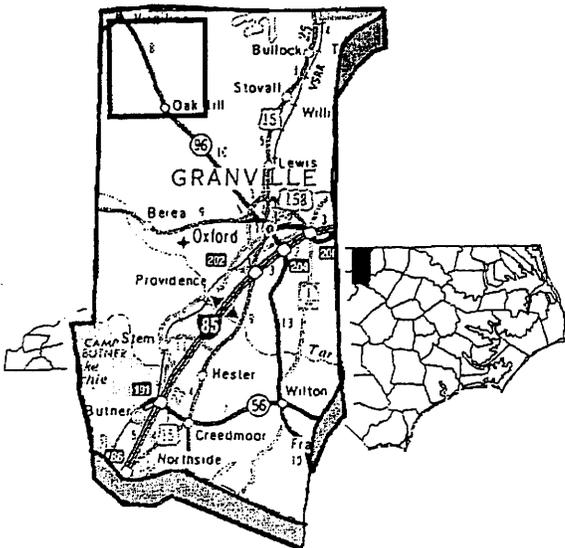
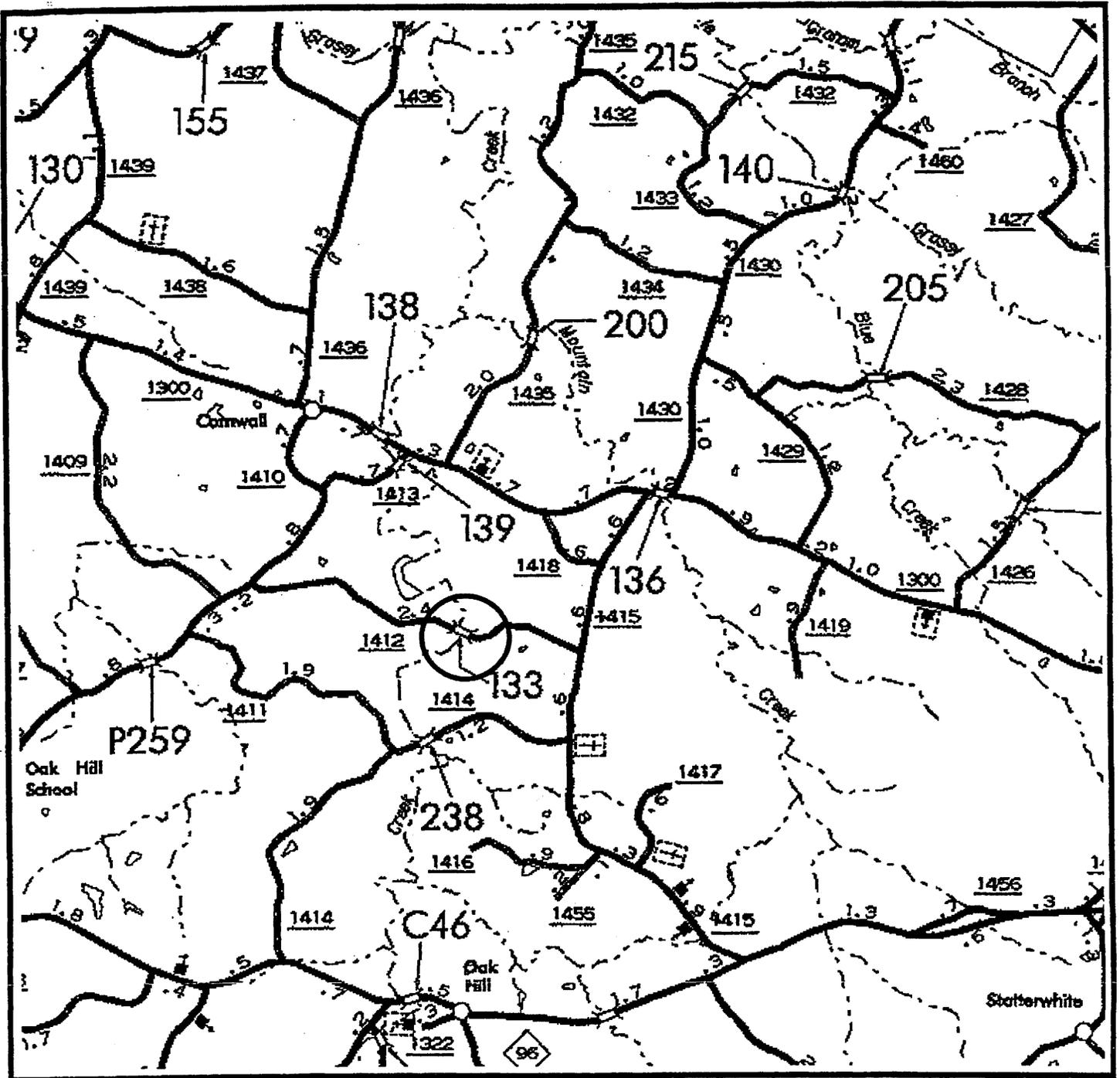
The purpose of this technical report is to inventory, catalog, and describe the various natural resources likely to be impacted by the proposed action. This report attempts to identify and estimate the probable consequences of the anticipated impacts to these resources. Recommendations are made for measures that will minimize resource impacts.

1.3 Methodology

Published information and resources were collected prior to the field investigation. Information sources used to prepare this report include the following:

- United States Geological Survey (USGS) 7.5' quadrangle map (Satterwhite, 1981)
- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map (Satterwhite, 1994)
- *Soil Survey of Granville County Area* (Natural Resources Conservation Service [NRCS] 1997)
- North Carolina Department of Environment and Natural Resources (NCDENR) basin-wide assessment information (NCDENR 2000)
- USFWS list of protected and candidate species

SATTERWHITE



	<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH</p>
<p>GRANVILLE COUNTY REPLACE BRIDGE NO. 133 ON SR 1412 OVER GRASSY CREEK B-4525</p>	

Figure 1

- North Carolina Natural Heritage Program (NHP) files of rare species and unique habitats
- North Carolina Wildlife Resources Commission (WRC) Proposed Critical habitats for aquatic species.

Water resource information was obtained from publications posted on the World Wide Web by NCDENR Division of Water Quality (DWQ). Information concerning the occurrence of federally protected species in the study area was obtained from the USFWS list of protected and candidate species (January 16, 2004), posted on the World Wide Web by the Ecological Services branch of the USFWS office in North Carolina. Information concerning species under state protection was obtained from the NHP database of rare species and unique habitats. NHP files were reviewed for documented sightings (January 13, 2004) of species on state or federal lists and locations of significant natural areas.

A general field survey was conducted along the proposed project route by Earth Tech biologists on February 5 and 11, 2004. Water resources were identified and their physical characteristics were recorded. For the purposes of this study, a brief habitat assessment was performed within the project area of Grassy Creek. Plant communities and their associated wildlife were identified using a variety of observation techniques, including active searching, visual observations, and identifying characteristic signs of wildlife (sounds, tracks, scats, and burrows). Terrestrial community classifications generally follow Schafale and Weakley (1990) where appropriate and plant taxonomy follows Radford *et al.* (1968) and nomenclature follows National Plant Data Center PLANTS Database (USDA, NRCS 2004). Vertebrate names follows Rohde *et al.* (1994), Conant *et al.* (1998), the American Ornithologists' Union (2001), Thorpe and Covich (1991), and Webster *et al.* (1985). Vegetative communities were mapped using aerial photography of the project site. Predictions regarding wildlife community composition involved general qualitative habitat assessment based on existing vegetative communities.

Jurisdictional wetlands, if present, were delineated and evaluated based on criteria established in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (USACE, 1987). Wetlands were classified based on Cowardin *et al.* (1979).

1.4 Qualifications of the Principal Investigators

Investigator:	George Lankford, PSS
Education	M.S., Botany, North Carolina State University
Experience	North Carolina Licensed Soil Scientist, Biologist, Earth Tech 3 years
Expertise	Botany, Soils, Wetland Delineation

Investigator: Ron Johnson
Education M.S., Biological Sciences, Illinois State University
Experience Biologist, Earth Tech 17 years
Expertise Natural resources surveys, wetland and stream mitigation

1.5 Terminology and Definitions

For the purposes of this report, the following terms are used for describing the limits of natural resources investigations. "Project area" denotes an area with a width of 500 feet (152.4 m) along the full length of the project alignment. The "project vicinity" is an area extending 1 mile (1.6 km) on all sides of the project area, and "project region" is an area equivalent in size to the area represented by a 7.5-minute USGS quadrangle map (about 61.8 sq miles or 163.3 sq km) with the project study area occupying the central position.

2.0 PHYSICAL RESOURCES

The project area lies in the extreme north-central portion of North Carolina within the Piedmont physiographic province. Elevations in the project area are approximately 390 to 450 feet (119 to 137 m) (National Geodetic Vertical Datum 1929). The topography of the project vicinity ranges from nearly level within the floodplain to moderately steep slopes in the adjacent uplands.

The proposed project is in a rural area in Granville County about 11 miles (17.7 km) northwest of Oxford, NC. Granville County's major economic resources are forestry and agriculture. The population of Granville County in 2000 was 48,498 (U. S Census Bureau, 2000).

2.1 Soils

Information about soils in the project area was taken from the *Soil Survey of Granville County, North Carolina* (USDA 1997). The map units in the project area are Chewacla and Wehadkee soils, 0 to 2 percent slopes, frequently flooded, and Georgeville silt loam 2 to 10 percent slopes. Chewacla and Wehadkee soils are mapped along Grassy Creek and are considered hydric soils by the NRCS.

- **Chewacla and Wehadkee soils, 0 to 2 percent slopes**, frequently flooded, are mapped along the floodplain of Grassy Creek. Chewacla soils are on the slightly higher ridges on floodplains and Wehadkee soils are on the lower swales on floodplains. Chewacla is somewhat poorly drained and Wehadkee is poorly drained. Both soils have moderate permeability and moderate natural fertility. The seasonal high water table for Chewacla is 0.5 to 1.5 feet and for Wehadkee is 0 to 1 foot. Chewacla is frequently flooded for long periods and Wehadkee is frequently flooded for brief periods. Surface runoff is slow to very slow. The NRCS classifies Chewacla and Wehadkee soils as hydric.

- **Georgeville silt loam, 2 to 10 percent slopes**, is mapped on the broad ridge and narrow hill slopes at both ends of the project area. This soil is well drained, has moderate permeability, and the shrink-swell potential is low. The natural fertility is low. The seasonal high water table is greater than six feet. The erosion potential is moderate to severe. The NRCS classifies Georgeville soils as non-hydric.

Site index is a measure of soil quality and productivity. The index is the average height, in feet, that dominant and co-dominant trees of a given species attain in a specified number of years (typically 50). The site index applies to fully stocked, even-aged, unmanaged stands. The soils in the project area have the following site indices:

- The Chewacla soils have a site index of 95 for loblolly pine (*Pinus taeda*), 96 for yellow poplar (*Liriodendron tulipifera*), and 78 for green ash (*Fraxinus pennsylvanica*).
- The Wehadkee soils have a site index of 93 for loblolly pine, 100 for yellow poplar, and 89 for green ash.
- The Georgeville soils have a site index of 81 for loblolly pine, 66 for shortleaf pine (*Pinus echinata*), and 72 for white oak (*Quercus alba*).

2.2 Water Resources

This section contains information concerning water resources likely to be impacted by the proposed project. Water resource assessments include the physical characteristics (determined by field survey), best usage classifications, and water quality aspects of the water resources. Probable impacts to surface waters are also discussed, as well as means to minimize impacts.

2.2.1 Physical Characteristics of Surface Waters

The project is located in the Roanoke River basin (ROA06) sub-basin, USGS Hydraulic Unit Code (HUC) 03010102, Middle Roanoke). Grassy Creek originates about 6.0 miles (9.7 km) from the project site. Within the project site, Grassy Creek flows from west to east. From the project area, the creek meanders in a northwesterly direction about 6.2 miles (10 km) to the Grassy Creek Arm of John H. Kerr Reservoir. The Grassy Creek Arm of John H. Kerr Reservoir flows into Virginia before joining the main stem of the reservoir. In addition to Grassy Creek, one unnamed tributary is located within the project area.

Grassy Creek is a perennial stream approximately 30 feet (9.1 m) wide at the bridge crossing. The banks of Grassy Creek are 2 to 6 feet (0.6 to 1.8 m) in height and are generally stable. On the day of the site visit the water was moderately turbid with a moderate flow. The substrate is sand, silt, and cobbles. The canopy cover is approximately 50 percent. Large woody debris was observed in the stream

An unnamed tributary to Grassy Creek is present within the southwestern portion of the project area. This perennial stream flows in a northerly direction, joining Grassy Creek just upstream of the bridge. The channel is 6 to 10 feet (1.8 to 3 m) wide and banks up to 2 to 4 feet (0.6 to 1.2 m) high. It has good sinuosity and the substrate is cobbles with sand and gravel. On the day of the site visit, the water was slightly turbid and flows were moderate. The canopy cover is approximately 60 percent. Within the project area cattle and a residential home impact this stream.

2.2.2 Best Usage Classification

Surface waters in North Carolina are assigned a classification by the Division of Water Quality (DWQ) that is designed to maintain, protect, and enhance water quality within the state. Grassy Creek [Index # 23-2-(1)] is classified as a *Class C* water body (NCDENR 2004). *Class C* waters are protected for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner. There are no restrictions on watershed development activities. The unnamed tributary present within the project area has not been classified individually by DWQ, therefore it carries the same *C* rating as its receiving stream.

No waters classified as High Quality Waters (HQW), Water Supplies (WS-I or WS-II) or Outstanding Resource Waters (ORW) occur within 1.0 mile (1.6 km) of the project study area.

2.2.3 Water Quality

This section describes the quality of the water resources within the project area. Potential impacts to water quality from point and non-point sources are evaluated. Water quality assessments are based upon published resource information and field study observations.

2.2.3.1 General Watershed Characteristics

The project area is in a forested and agricultural watershed. Bordering the project area is a dairy farm having large pastures with cattle. Most waterways and wetlands within the watershed remain forested. Potential threats to water quality in this area are agricultural and forestry practices, which may contribute to soil erosion and increases in chemical runoff and nutrient input.

2.2.3.2 Basin-wide Assessment Report

Basin-wide water quality assessments are conducted by the Environmental Sciences Branch, Water Quality Section of the DWQ. The program has established monitoring stations for sampling selected benthic macroinvertebrates, which are known to have

varying levels of tolerance to water pollution. An index of water quality can be derived from the number of taxa present and the ratio of tolerant to intolerant taxa. Streams can then be given a bioclassification ranging from Poor to Excellent.

There are no macroinvertebrate monitoring stations within this drainage above the John H. Kerr Reservoir. The reservoir was sampled in the summer of 1999 and rated as mesotrophic. Sampling was confined to the Nutbush Creek Arm of the reservoir. The Nutbush Creek Arm is located to the east of the Grassy Creek Arm. An invasive aquatic macrophyte, *Hydrilla*, was observed in the Grassy Creek Arm.

2.2.3.3 Impaired Waters

North Carolina's §303(d) List (NCDENR 2000) is a comprehensive public accounting of all impaired waterbodies. An impaired waterbody is one that is damaged by pollutants, such as nitrogen, phosphorus, and fecal coliform bacteria, and by pollution such as hydromodification and habitat degradation. The source of impairment might be from point sources, non-point sources, and atmospheric deposition. The standards violation might be due to an individual pollutant, multiple pollutants, or an unknown cause of impairment. This list is compiled by the DWQ and submitted to the Environmental Protection Agency (EPA) by April 1 of every even year.

None of the water resources described in Section 2.2.1 are designated as biologically impaired water bodies regulated under the provisions of the Clean Water Act (CWA) §303(d).

2.2.3.4 Point Source Discharge Permits

Point source discharges in North Carolina are regulated through the National Pollutant Discharge Elimination System (NPDES) program administered by the DWQ. All dischargers are required to obtain a permit to discharge. There are no permits issued to discharge in Grassy Creek as of January 13, 2004 (NCDENR 2004).

2.2.3.5 Non-Point Source Discharge

Unlike pollution from industrial and sewage treatment, non-point source (NPS) pollution comes from many non-discrete sources. As rainfall or snowmelt runoff moves over the earth's surface, natural and man-made pollutants are picked up, carried, and ultimately deposited into lakes, rivers, wetlands, coastal waters, and groundwater. Non-point source pollution includes fertilizers, herbicides, and insecticides from farms and residential areas; hydrocarbons and chemicals from urban runoff; sediments from construction sites, land clearing, and eroding stream banks; bacteria and nutrients from livestock, animal wastes, and faulty septic systems; and atmospheric deposition. The effects of NPS pollutants on water resources vary, and in many instances, may not be known. These

pollutants generally have harmful effects on drinking water supplies, recreation, wildlife, and fisheries.

Earth Tech biologists conducted a visual observation of potential NPS discharges located within and near the project study area. Atmospheric deposition from passing vehicles; fertilizers, herbicides, and insecticides from nearby residential and agricultural areas; and hydrocarbon and chemical runoff from nearby residential driveways were identified as potential sources of NPS pollution near the project area. Overall, the threat of non-point source discharge is average because of the moderately sized riparian buffer along much of Grassy Creek.

2.2.4 Summary of Anticipated Impacts

Any action that affects water quality can adversely affect aquatic organisms. Temporary impacts during construction may result in long-term impacts to the aquatic community. In general, replacing an existing structure in the same location with an off-site detour is the preferred environmental approach. Bridge replacement at a new location results in more severe impacts, and physical impacts are incurred at the point of bridge replacement. If an onsite detour is planned, placement of the detour to the east of the existing bridge would reduce impacts to the unnamed tributary. **(Insert description of anticipated impacts for Alternates here)**

Project construction may result in the following impacts to surface water resources:

- Increased sediment loading and siltation as a consequence of watershed vegetation removal, erosion, and/or construction.
- Decreased light penetration/water clarity from increased sedimentation.
- Changes in water temperature with vegetation removal.
- Changes in the amount of available organic matter with vegetation removal.
- Increased concentration of toxic compounds from highway runoff, construction activities and construction equipment, and spills from construction equipment.
- Alteration of water levels and flows as a result of interruptions and/or additions to surface and groundwater flow from construction.

Construction impacts may not be restricted to the communities in which the construction activity occurs, but may also affect downstream communities. NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters will be implemented, as applicable, during the construction phase of the project to ensure that no sediment leaves the construction site.

3.0 BIOTIC RESOURCES

Terrestrial and aquatic communities are included in the description of biotic resources. Living systems described in the following sections include communities of associated

plants and animals. These descriptions refer to the dominant flora and fauna in each community and the relationships of these biotic components. Descriptions of the terrestrial systems are presented in the context of plant community classifications. These classifications follow Schafale and Weakley (1990) where possible. They are also cross-referenced to *International Classification of Ecological Communities* (ICEC) (NatureServe, 2002), which has been adopted as the standard land cover classification by the Federal Geographic Data Committee. Representative animal species that are likely to occur in these habitats (based on published range distributions) are also cited. Scientific nomenclature and common names (when applicable) are used for the plant and animal species described. Subsequent references to the same species are by the common name only. Fauna observed during field investigations are denoted with an asterisk (*).

3.1 Terrestrial Communities

Three terrestrial communities were identified within the project area: a disturbed community, a bottomland hardwood forest, and an upland hardwood forest (**Figure 2**). Dominant faunal components associated with these terrestrial areas will also be discussed.

3.1.1 Disturbed Community

This community includes types of habitat that have recently been or are currently impacted by human disturbance including regularly maintained roadside shoulder, agricultural fields, and a residential area. These habitats are kept in a low-growing, early successional state. The maintained roadside shoulder is mowed frequently and is dominated by herbaceous vegetation. The dominant species include white clover (*Trifolium repens*), English plantain (*Plantago lanceolata*), and various grasses. The pastures, containing grasses and weeds, were mowed or cropped close by livestock. Along the field edges, Japanese honeysuckle (*Lonicera japonica*), blackberry (*Rubus* sp.), and various weeds were the dominant vegetation. The residential area includes maintained lawns and waste places near outbuildings. The residential areas are dominated by various turf grasses, ornamental shrubs, and loblolly pines.

3.1.2 Bottomland Hardwood Forest

This community occurs along the floodplain and banks north of Grassy Creek. This forest is mature but lacks a dense understory of shrub and woody vegetation. Cattle have impacted this community. The canopy height is 60 to 70 feet (18 to 21 m). This community includes a wetland. Canopy species include tulip poplar, sycamore (*Platanus occidentalis*), and sweetgum (*Liquidambar styraciflua*). The shrubs and vines are scattered. Many of the shrubs are saplings of the canopy trees, but also include red maple (*Acer rubrum*), American hornbeam (*Carpinus caroliniana*), and paw-paw (*Asimina triloba*). Poison ivy (*Toxicodendron radicans*), Japanese honeysuckle, and grape (*Vitis* sp.) are the dominant woody vines. Herbaceous vegetation was lacking or unidentifiable



B-4525
Scale: 1:200

because of dormancy and cattle impacts. This community probably represents a marginal example of a Piedmont/Low Mountain Alluvial Forest as described by Schafale and Weakley (1990). The ICEC classification is most likely I.B.2.N.d.12 *Liquidambar styraciflua* - (*Liriodendron tulipifera*, *Acer rubrum*) temporarily flooded forest alliance (Piedmont Small Stream Sweetgum Forest).

3.1.3 Upland Hardwood Forest

An upland hardwood forest is located on the uplands both southwest and east of the bridge. This is a mature forest reaching to 80 feet (24 m). The canopy species in this community include white oak, northern red oak (*Quercus rubra*), and sweetgum. Understory species include red maple, American beech (*Fagus grandifolia*), eastern red cedar (*Juniperus virginiana*), and sourwood (*Oxydendrum arboreum*). Some areas contain pines in the canopy. These mature pines are most likely remnants of the earlier successional community. Vines of green briar (*Smilax rotundifolia*) and poison ivy are also present. Herbaceous vegetation was not observed because of dormancy and leaf litter.

This community represents an example of a Dry-Mesic Mixed Oak-Hickory Forest as described by Schafale and Weakley (1990). The ICEC equivalent is most likely I.B.2.N.a.27 *Quercus alba* - (*Quercus rubra*, *Carya* spp.) Forest Alliance (Dry-Mesic Piedmont Oak - Hickory Forest).

3.1.4 Faunal Component

Species that prefer open areas to feed and nest in can be found in the disturbed communities. The animal species present in these disturbed habitats are opportunistic and capable of surviving on a variety of resources, ranging from vegetation to both living and dead faunal components. The European starling (*Sturnus vulgaris*), northern flicker* (*Colaptes auratus*), and American robin (*Turdus migratorius*) are common birds that use these habitats to find insects, seeds, or worms. The American crow* (*Corvus brachyrhynchos*) and the Virginia opossum (*Didelphis virginiana*) are true opportunists and will eat virtually any edible items including vegetation, fruits, seeds, insects, and carrion.

Many species are highly adaptive and may utilize the edges of forests and clearings or prefer a mixture of habitat types. The Eastern cottontail* (*Sylvilagus floridanus*) and the dark-eyed junco* (*Junco hyemalis*) prefer a mix of herbaceous and woody vegetation and may be found in the dense shrub vegetation or out in the roadside and residential areas. White-tailed deer* (*Odocoileus virginianus*) will utilize the forested areas as well as the adjacent open areas. The black rat snake (*Elaphe obsoleta*) will come out of forested habitat to forage on rodents in open areas. Indigo bunting (*Passerina cyanea*) and common yellowthroat (*Geothlypis trichas*) are Neotropical migrants that inhabit dense, shrubby vegetation along transitional areas. Blue jays (*Cyanocitta cristata*), song

sparrows* (*Melospiza melodia*), white-throated sparrows* (*Zonotrichia albicollis*), northern cardinal* (*Cardinalis cardinalis*), and bluebirds (*Sialia sialis*) also utilize edge habitat.

Forested areas are important habitat for many species. Neotropical migratory birds, in particular, are dependent on these areas. Species such as prothonotary warbler (*Protonotaria citrea*) and Louisiana waterthrush (*Seiurus motacilla*) thrive in wooded wetland locations, while black-and-white warbler (*Mniotilta varia*) and red-eyed vireo (*Vireo olivaceus*) prefer the upland woods. In the leaf litter of the forested habitats, the Northern short-tailed shrew (*Blarina brevicauda*) and the white-footed mouse (*Peromyscus leucopus*) may be found. Gray squirrels* (*Sciurus carolinensis*) are often observed in wooded areas. The spring peeper (*Hyla crucifer*) can be found under forest litter and in brushy undergrowth. The Eastern box turtle (*Terrapene carolina*) is a terrestrial turtle but will be found near streams in hot, dry weather. The five-lined skink (*Eumeces fasciatus*) may also be found in forested communities. The forested wetland is especially appealing to mud salamanders (*Pseudotriton montanus*), southern cricket frogs (*Acris gryllus*), and the mud snake (*Farancia abacura*).

3.2 Aquatic Communities

Within the project area, Grassy Creek is a medium-gradient, second-order stream. The bed material consists silt, sand, gravel and cobbles. On the day of the site visit, the water was moderately turbid with a moderate flow. The riparian community is deciduous trees and shrubs, and is described in Section 3.1.2. No aquatic vegetation was observed in Grassy Creek.

According to a communication from Brian McRae, District 5 Biologist for the WRC, fishery survey data for Grassy Creek has been collected by the N.C. DWQ from two sites downstream from the project area (0.6 and 4.1 miles (1.0 and 6.6 km)). Grassy Creek supports populations of largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), and chain pickerel (*Esox niger*), as well as various catfish, perch, suckers, darters, sunfish, and shiners. Records indicate the occurrence of the Carolina darter (*Etheostoma collis*) in Grassy Creek. This is a federal species of concern and is a species of state special concern.

3.3 Summary of Anticipated Impacts

Project construction will have various impacts to the previously described terrestrial and aquatic communities. Any construction activities in or near these resources have the potential to impact biological functions. This section quantifies and qualifies potential impacts to the natural communities within the project area in terms of the area impacted and the plants and animals affected. Temporary and permanent impacts are considered here along with recommendations to minimize or eliminate impacts.

3.3.1 Terrestrial Communities

Terrestrial communities in the project area will be impacted permanently by project construction from clearing and paving. Estimated impacts are based on the length of the alternate and the entire study corridor width. **Insert Alternate dimensions here.** Table 1 describes the potential impacts to terrestrial communities by habitat type. Because impacts are based on the entire study corridor width, the actual loss of habitat will likely be less than the estimate. **Table 1 should be completed following project design.**

Table 1. Estimated Area of Impact to Terrestrial Communities

Community		Area of Impact in Acres (Hectares)			
		Alternate 1		Alternate 2	
Type	*Percent project area	Temporary	Permanent	Temporary	Permanent
Disturbed	63				
Bottomland Hardwood	11				
Upland Hardwood	16				
Total Impact	90				

*Does not include existing roadway

Destruction of natural communities along the project alignment will result in the loss of foraging and breeding habitats for the various animal species that utilize the area. Animal species will be displaced into surrounding communities. Adult birds, mammals, and some reptiles are mobile enough to avoid mortality during construction. Young animals and less mobile species, such as many amphibians, may suffer direct loss during construction. The plants and animals that are found in the upland communities are generally common throughout the outer Piedmont North Carolina.

Impacts to terrestrial communities, particularly in locations having steep to moderate slopes, can result in the aquatic community receiving heavy sediment loads as a consequence of erosion. Construction impacts may not be restricted to the communities in which the construction activity occurs, but may also affect downstream communities. Efforts should be made to ensure that no sediment leaves the construction site. Furthermore, tall fescue is not suitable for erosion controls along stream banks.

3.3.2 Aquatic Communities

Impacts to aquatic communities include fluctuations in water temperature as a result of the loss of riparian vegetation. Shelter and food resources, both in the aquatic and terrestrial portions of these organisms' life cycles, will be affected by losses in the

terrestrial communities. The loss of aquatic plants and animals will affect terrestrial fauna that rely on them as a food source.

Temporary and permanent impacts to aquatic organisms may result from increased sedimentation. Aquatic invertebrates may drift downstream during construction and recolonize the disturbed area once it has been stabilized. Sediments have the potential to affect fish and other aquatic life in several ways, including the clogging and abrading of gills and other respiratory surfaces, affecting the habitat by scouring and filling of pools and riffles, altering water chemistry, and smothering different life stages. Increased sedimentation may cause decreased light penetration through an increase in turbidity.

Wet concrete should not come into contact with surface water during bridge construction as it can adversely affect aquatic life. Potential adverse effects can be minimized through the implementation of NCDOT *Best Management Practices for Protection of Surface Waters*.

Given the diverse sunfish population in Grassy Creek, a moratorium on instream work from April 1 to June 30 is requested by WRC. This should minimize impacts to the sunfish and largemouth bass populations during the spawning season. Records from the NHP indicate the occurrence of the Carolina darter (*Etheostoma collis*) in Grassy Creek. This is a federal species of concern and is a species of state special concern. The known occurrence of this species is located approximately 1.4 miles (2.2 km) downstream from the project area. Therefore, in conjunction with general mitigation measures, stringent erosion and sedimentation controls should be implemented for all construction, and these measures should significantly exceed the state minimum requirements.

WRC made the following comments:

- The NCDOT should replace this bridge with a bridge and not a culvert.
- A significant fishery for sunfish exists at this site, therefore the WRC requests an in-water work moratorium for sunfish from April 1 to June 30.
- WRCs standard recommendations for bridge replacement projects apply.

4.0 JURISDICTIONAL TOPICS

This section provides inventories and impact analyses for two federal and state regulatory issues: “Waters of the United States” and rare and protected species.

4.1 Waters of the United States

Wetlands and surface waters fall under the broad category of “Waters of the United States” as defined in 33 CFR § 328.3 and in accordance with provisions of Section 404 of the CWA (33 U.S.C. 1344). These waters are regulated by the U.S. Army Corps of Engineers (USACE). Any action that proposes to dredge or place fill material into surface waters or wetlands falls under these provisions.

4.1.1 Characteristics of Wetlands and Surface Waters

Jurisdictional wetlands occur within the project area and may be impacted by project construction. The Satterwhite, NC NWI map shows a palustrine forested broadleaf deciduous seasonally flooded wetland (PFO1C) along the northwestern edge of the project area. The wetland extends into the project area on the northwest side of Grassy Creek (**Figure 2**). This wetland was given a DWQ rating of 51 out of a possible 100 points. These forested wetlands are described in Section 3.1.2. Grassy Creek and the unnamed tributary meet the definition of surface waters, and therefore, are classified as Waters of the United States. Grassy Creek is a perennial stream that is approximately 30 feet (9 m) wide within the project area. The unnamed tributary to Grassy Creek is a perennial stream that is 6 to 10 feet (1.8 to 3 m) wide within the project area.

4.1.2 Summary of Anticipated Impacts

A forested wetland was identified within the project area. Alternate 1 would impact XX acres (XX hectares [ha]) of the wetland community. Alternate 2 would impact XX acres (XX ha) of the wetland community. Project construction cannot be accomplished without infringing on the surface waters. Anticipated surface water impacts fall under the jurisdiction of the USACE and the DWQ. Within the project area, Grassy Creek is 30 feet (9.1 m) wide. Assuming a study corridor of XX feet (XX m) for each alternate, the construction of the new bridge will impact XX linear feet (XX m) of stream, and a total area of XX sq feet (XX sq m) of surface waters. **Table 2** lists the estimated area of impacts to surface waters. **Add information regarding stream impacts here.**

Table 2. Estimated Area of Impact to Surface Waters

Surface Waters	Area of Impact in Linear Feet (Meters)			
	Alternate 1		Alternate 2	
	Temporary	Permanent	Temporary	Permanent
Grassy Creek				
UT to Grassy Creek				
Total Impact				

A forested wetlands were identified within the project area. This wetland was given a DWQ rating of 51 out of a possible 100 points. **Add information regarding wetland impacts here.** **Table 3** lists the estimated area of impacts to wetlands.

Table 3. Estimated Area of Impact to Wetlands

	Area of Impact in Acres (Hectares)		
	Permanent	Temporary	Total
Alternative 1			
Alternative 2			

4.2 Permit Issues

Impacts to jurisdictional surface waters are anticipated from the proposed project. Permits and certifications from various state and federal agencies may be required prior to construction activities.

Construction is likely to be authorized by Nationwide Permit (NWP) No. 23, as promulgated under 67 FR 2020, 2092; January 15, 2002. This permit authorizes activities undertaken, assisted, authorized, regulated, funded, or financed in whole or in part, by another Federal agency or department where that agency or department has determined that, pursuant to the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA):

- the activity, work, or discharge is categorically excluded from environmental documentation because it is included within a category of actions that neither individually nor cumulatively have a significant effect on the human environment; and
- the Office of the Chief Engineer has been furnished notice of the agency's or department's application for the categorical exclusion and concurs with that determination.

Construction may also require authorization by NWP No. 33, also as promulgated under 67 FR 2020, 2092; January 15, 2002. This permit authorizes temporary structures, work, and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites; provided that the associated primary activity is authorized by the USACE or the U.S. Coast Guard (USCG), or for other construction activities no subject to the USACE or USCG regulations.

This project will also require a 401 Water Quality Certification No. 3403, from the DENR prior to issuance of the NWP 23. Section 401 of the CWA requires that the state issue or deny water certification for any federally permitted or licensed activity that results in a discharge into Waters of the U.S. Final permit decision rests with the USACE.

4.2.1 Mitigation

The function of avoidance, minimization, and mitigation is to restore and maintain the chemical, biological, and physical integrity of waters of the United States by avoiding impacts, minimizing impacts, and rectifying impacts. Each of these three aspects (avoidance, minimization, and compensatory mitigation) must be considered sequentially.

4.2.1.1 Avoidance

Avoidance mitigation examines all appropriate and practical possibilities of averting impacts to waters of the United States. According to a 1990 Memorandum of Agreement (MOA) between the EPA and USACE, in determining "appropriate and practical" measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practical in terms of costs, existing technology, and logistics in light of overall project purposes.

4.2.1.2 Minimization

Minimization includes the examination of appropriate and practical steps to reduce the adverse impacts to waters of the United States. Implementation of these steps will be required through project modifications and permit conditions. Practical means to minimize impacts to surface waters and wetlands impacted by the proposed project include:

- Decreasing the footprint of the proposed project through the reduction of median width, ROW widths, fill slopes, and/or road shoulder widths
- Installation of temporary silt fences, earth berms, and temporary ground cover during construction
- Strict enforcement of sedimentation and erosion control BMPs for the protection of surface waters and wetlands
- Reduction of clearing and grubbing activity in and adjacent to water bodies.
- Judicious pesticide and herbicide usage

4.2.1.3 Compensation

Compensatory mitigation is not normally considered until anticipated impacts to waters of the United States have been avoided and minimized to the maximum extent possible. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, creation, and enhancement of waters of the United States. Such actions should be undertaken in areas adjacent to or contiguous to the discharge site (*i.e.*, compensatory on-site mitigation). The only area for potential mitigation is the pasture adjacent to the project area and the forested wetland. Restoration may be possible because the wetland is degraded by cattle, tree clearing (pasture), and several shallow ditches. The wetland extends beyond the area investigated.

Because this project will likely be authorized under a NWP, mitigation for impacts to surface waters may or may not be required by the USACE. In accordance with the DWQ Wetland Rules [15A NCAC 2H .0506 (h)] "Fill or alteration of more than 0.1 acre of wetlands will require compensatory mitigation; and fill or alteration of more than 150 linear feet of streams may require compensatory mitigation." Written approval of the

final mitigation plan is required from DWQ before the regulatory agency issues a Water Quality Certification. Furthermore, in accordance with 67 FR 2020; 2092; January 15, 2002, the USACE requires compensatory mitigation when necessary to ensure that adverse effects to the aquatic environment are minimal. The size and type of proposed project impact and function and value of the impacted aquatic resource are factors considered in determining acceptability of appropriate and practicable compensatory mitigation. Final compensatory stream mitigation requirements will be determined by the USACE under the statutory provisions of CWA §404 and the January 15, 2002 Final Notice of Issuance of Nationwide Permits.

Impacts to Grassy Creek, the unnamed tributary, and its associated wetlands can be avoided by utilizing an off-site detour during bridge replacement. Because of the wetlands within the project area, it is recommended that an off-site detour be utilized to control traffic during bridge replacement. If an on-site detour or a new alignment is necessary, then placing it to the east of the existing bridge will avoid or minimize impacts to jurisdictional wetlands and the unnamed tributary to Grassy Creek. If it becomes necessary to construct an on-site detour through wetlands, degradation of certain wetland functions may occur though soil compaction or other distortion. These functions may include water storage capacity and erosion control capability, sediment removal, filtration of nutrients from agricultural areas, and biological productivity.

Add information regarding stream and wetland impact quantities here. If the final length of stream impact is greater than 150 linear feet (45.7 m), or if impacts to wetlands are greater than 0.1 acres (0.2 hectares), compensatory mitigation may be required. The environmental regulatory agencies will ultimately provide final permit and compensatory mitigation decisions for the project.

4.2.2 Bridge Demolition

Demolition and removal of a highway bridge over Waters of the United States must be addressed when applying to the USACE for a permit. A worst-case scenario of dropping components of the bridge in the water is assumed. Effective 9/20/99, this issue is included in the permit application for bridge reconstruction. The permit application henceforth will require disclosure of demolition methods and potential impacts to the body of water in the planning document for the bridge reconstruction.

Section 402-2 "Removal of Existing Structures" of NCDOT's Standard Specifications for Roads and Structures stipulates that the dropping of parts or components of structures into any body of water will not be permitted unless there is no other practical method of removal. The removal of the existing bridge should be by sawing or other non-shattering methods. The removal from the water of any part or component of a structure shall be done so as to keep any resulting siltation to a minimum. To meet these specifications, NCDOT shall adhere to Best Management Practices for the Protection of Surface Waters, as supplemented with Best Management Practices for Bridge Demolition and Removal.

In addition, all in-stream work shall be classified into one of three categories as follows:

Case 1) In-water work is limited to an absolute minimum, due to the presence of ORW or threatened and/or endangered species, except for the removal of the portion of the substructure below the water. The work is carefully coordinated with the responsible agency to protect the ORW or T&E species.

Case 2) No work at all in the water during moratorium periods associated with fish migration, spawning, and larval recruitment into nursery areas.

Case 3) No special restrictions other than those outlined in BMPs for Protection of Surface Waters and supplements added by the Bridge Demolition document, dated 9/20/99.

Grassy Creek flows into the Kerr Reservoir and is in the Roanoke Watershed. It has a water quality classification of C. Given the diverse sunfish population in Grassy Creek, a moratorium on instream work from April 1 to June 30 has been requested by North Carolina WRC. Therefore, Case 2 applies to the proposed replacement of Bridge No. 133 over Grassy Creek.

The existing superstructure consists of timber floor with steel girder floor beam system and I-beam. The substructure is made of timber caps on timber piles with end bents and internal bent on concrete sills. No fill is expected from bridge demolition.

The streambed in the project area is mostly sand, gravel, and cobbles. Therefore, conditions in the stream do not raise sediment concerns and a turbidity curtain is not recommended.

4.3 Rare and Protected Species

Some populations of plants and animals are declining either as a result of natural forces or their difficulty competing with humans for resources. Rare and protected species listed for Granville County, and any likely impacts to these species as a result of the proposed project construction, are discussed in the following sections.

4.3.1 Species Under Federal Protection

Plants and animals with a federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended.

The USFWS lists (List updated February 18, 2003) four species under federal protection for Granville County. These species are listed in **Table 4**.

Table 4. Species Under Federal Protection in Granville County

Common Name	Scientific Name	Federal Status
Vertebrates		
Bald eagle	<i>Haliaeetus leucocephalus</i>	T
Invertebrates		
Dwarf-wedge mussel	<i>Alasmidonta heterodon</i>	E
Vascular Plants		
Harperella	<i>Ptilimnium nodosum</i>	E
Smooth coneflower	<i>Echinacea laevigata</i>	E
Notes: E Endangered-A species that is threatened with extinction throughout all or a significant portion of its range. T Threatened-A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. T(S/A) Similarity of Appearance-A species that is listed as threatened due to similarity of appearance with other rare species. * Historic record—the species was last observed in the county more than 50 years ago. ** Incidental/Migrant record—the species was observed outside of its normal range or habitat.		
USFWS – List updated February 18, 2003		

A brief description of the characteristics and habitat requirements of each species follows, along with a conclusion regarding potential project impact. All surveys for federally protected species should be conducted at least one year prior to the scheduled construction let date. Surveys are valid for two years from the survey date. If the project is not constructed within those two years then the area may need to be resurveyed prior to the let date.

***Haliaeetus leucocephalus* (Bald eagle)**

Threatened

Family: Accipitridae
 Federally Listed: 1995
 Proposed for delisting

The bald eagle is a large raptor with a wingspan reaching 7 feet (2.1 m). Adults have a dark brown body with a pure white head and tail, whereas the juvenile plumage is chocolate brown to blackish with white mottling on the tail, belly and under wings. Adult plumage is fully acquired by the fifth or sixth year.

The bald eagle is primarily associated with coasts, rivers, and lakes, usually nesting near large bodies of water where it feeds. It preys primarily on fish, but will feed on birds, mammals, turtles, and carrion when fish are unavailable.

In the southeast, the nesting and breeding season runs from September to December. Large nests up to 6 feet (1.8 m) across and weighing hundreds of pounds are constructed from large sticks, weeds, cornstalks, grasses, and sod. Preferred nesting

sites are usually within one-half mile of water, have an open view of the surrounding area, and are in the largest living tree, usually a pine or cypress. Excessive human activity may exclude an otherwise suitable site from use. Wintering areas generally have the same characteristics as nesting sites, but may be farther from shores.

The bald eagle ranges throughout all of North America. Breeding sites in the southeast are concentrated in Florida, coastal South Carolina, and coastal Louisiana, and sporadically located elsewhere.

Biological Conclusion:

No Effect

No rivers or lakes exist within one-half mile (0.8 km) of the project area. The Grassy Creek arm of Kerr Reservoir is 6.2 miles (10 km) from the project area. The project has only a few moderately large conifers mixed within the forested areas. A search of the NHP database found no occurrence of this animal within the project vicinity. It can be concluded that the project will not impact this threatened species.

***Alasmidonta heterodon* (Dwarf-wedge mussel)**

Endangered

Family: *Unionidae*

Federally Listed: 1990

The dwarf-wedge mussel rarely exceeds 1.5 inches (3.8 cm) in length. It is the only American freshwater mussel that has two lateral teeth on the right valve, but only one on the left. The shell's outer surface is usually brown or yellowish brown in color, with faint green rays that are most noticeable in young specimens. The male and female shells differ slightly, with the female being wider to allow greater space for egg development.

The dwarf-wedge mussel inhabits creeks and rivers of varying sizes (down to approximately 6 feet (1.8 m) wide), with slow to moderate flow. A variety of preferred substrates have been described that range from coarse sand, to firm muddy sand to gravel (USFWS 2004). In North Carolina they often occur within submerged root mats along stable stream banks. The wide range of substrate types used by this species suggests that the stability of the substrate is likely as important as the composition. These areas must be silt free. The dwarf-wedge mussel occurs in at least 25 stream reaches along the Atlantic Coast from New Brunswick, Canada, to North Carolina.

Major factors contributing to the endangered status of the species include water quality degradation and loss of habitat. The mussel needs slow to moderate currents and a silt free environment, conditions that often are modified by dam construction. Another significant factor is the exclusion of its anadromous fish host from some habitat areas by impoundment and dams. Increased acidity, runoff of agricultural chemicals and fertilizers, and the mussel's sensitivity to potassium, zinc, copper,

cadmium and other elements associated with industrial pollution also contribute to its decline.

Biological Conclusion:

Unresolved

A search of the NHP files found no occurrences of the dwarf-wedge mussel in the project vicinity. The current is moderate and the stream appeared to have a minor silt load. It is also upstream of two dams (Kerr Reservoir and Roanoke Rapids Lake). Although Grassy Creek is not in a river basin where this mussel typically has been found, marginal habitat exists at the site. Therefore, the biological conclusion is unresolved pending a survey of the stream by NCDOT biologist.

***Echinacea laevigata* (Smooth coneflower)**

Endangered

Family: Asteraceae

Federally Listed: 1992

The smooth coneflower is a rhizomatous perennial herb that grows up to 4.9 feet (1.5 m) tall. The largest leaves are the basal leaves, which reach 7.8 inches (19.8 cm) in length and 3 inches (7.6 cm) in width. The basal leaves have long stems, are elliptical to broadly lanceolate, tapering to the base, and smooth to slightly rough. The plant has smooth stems with few cauline leaves. The rays of the flowers (petal-like structures) are light pink to purplish, usually drooping, and 1.9 to 3.1 inches (4.8 to 7.9 cm) long. Flower heads are usually solitary. Flowering occurs from May through July.

The known range of *Echinacea laevigata* consists of 22 populations found now only in Virginia, North Carolina, South Carolina, and Georgia. Six of the populations are in North Carolina and are found in Durham and Granville counties. Most of the populations are small, containing less than 100 plants each. Four of the populations contain less than 10 plants each.

In North Carolina the habitat of smooth coneflower is open woods, cedar barrens, roadsides, clearcuts, dry limestone bluffs, and power line rights-of-way, usually on magnesium- and calcium-rich soils associated with gabbro and diabase. Optimal sites are characterized by full sunlight and little competition in the herbaceous layer (Gaddy 1991). Natural fires, as well as large herbivores, are part of the history of the vegetation in this species' range and many of the associated herbs are also sun-loving species, which depend on periodic disturbances to reduce the shade and competition of woody plants (Kral 1983 and Gaddy 1991).

The major factors contributing to the endangered status of this species are collecting, residential and industrial development, shade from woody vegetation, highway construction and improvement, and certain types of roadside and power line right-of-way maintenance. Like most coneflowers, this species is intolerant of dense shade.

Biological Conclusion:

Unresolved

A search of the NHP files found no occurrence of smooth coneflower in the project vicinity. Although open habitat is present along the sides of Dick Blackwell Road, the soils mapped in the project area are not typical of this species. However, it cannot be concluded that the project will not impact this endangered species. Therefore, the biological conclusion will remain unresolved pending a survey of the area at an appropriate survey time (late May through July).

***Ptilimnium nodosum* (Harperella)**

Endangered

Family: *Apiaceae*

Federally Listed: 1988

Harperella is an annual herb that grows to a height of 6 to 36 inches (15.2 to 91.4 cm). The leaves are hollow, quill-like structures. The small, white flowers occur in heads, or umbels, not unlike those of Queen Anne's lace (*Daucus carota*). It is found in pond and riverine habitats. Flowering begins in May in the pond habitats, late June or July in the riverine habitats, and continues until frost. Seed set is apparently profuse and populations in localized areas can achieve a high density and number of individuals each year.

Harperella appears to prefer periodically disturbed sites. It typically occurs in two habitat types: (1) rocky or gravel shoals and margins of clear, swift-flowing stream sections; and (2) edges of intermittent pineland ponds in the coastal plain. It does not compete well with other species without periodic disturbance.

Major factors contributing to the endangered status of this plant are its tolerance and possible requirement of a very specific and unusual water regime. This includes moderately intensive spring floods, which may reduce or eliminate competing vegetation. Harperella is readily eliminated from its habitat by alterations of the water regime resulting from impoundments, water withdrawal, and drainage or deepening of ponds. Other factors such as siltation, pollution, and shoreline development also threaten harperella populations.

Biological Conclusion:

Unresolved

Marginal habitat for harperella exists along the rocky margins of the stream bank within the project area. The stream has moderately intensive spring flows and does have rocky or gravelly shoals in the project area. A search of the NHP database found no occurrence of this plant within the project vicinity. However, it cannot be concluded that the project will not impact this endangered species. Therefore, it is unresolved pending a survey of the area at an appropriate survey time (late June or July).

4.3.2 Federal Species of Concern and State Status

Federal Species of Concern (FSC) are not legally protected under the Endangered Species Act and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. **Table 5** includes FSC species listed for Granville County and their state classifications. Organisms that are listed as Endangered (E), Threatened (T), or Special Concern (SC) on the North Carolina Natural Heritage Program list of Rare Plant and Animal Species are afforded state protection under the State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979. However, the level of protection given to state-listed species does not apply to NCDOT activities.

Table 5. Federal Species of Concern in Granville County

Common Name	Scientific Name	State Status	Habitat Present
Vertebrates			
Carolina darter	<i>Etheostoma collis lepidinion</i>	SC	Yes
Pinewoods shiner	<i>Lythrurus matutinus</i>	SR **	Yes
Invertebrates			
Atlantic pigtoe	<i>Fusconaia masoni</i>	E	Yes
Brook floater	<i>Alasmidonta varicosa</i>	E	Yes
Green floater	<i>Lasmigona subviridis</i>	E	Yes
Yellow lampmussel	<i>Lampsilis cariosa</i>	E	Yes
Yellow lance	<i>Elliptio lanceolata</i>	E	Yes
Vascular Plant			
Heller's trefoil	<i>Lotus helleri</i>	SR-T	Yes
Tall larkspur	<i>Delphinium exaltatum</i>	E-SC	No
Torrey's mountain-mint	<i>Pycnanthemum torrei</i>	SR-T *	No
T = Threatened E = Endangered SC = Special Concern SR = Significantly Rare -T = Fewer than 100 populations throughout the species' range * = Historic record; the species was observed over 20 years ago ** = Obscure record; the date and/or location of observation is uncertain			
Sources: Amoroso, ed., 2002; LeGrand, Hall, and Finnegan, 2001 NHP – list updated 1/04, FWS – list updated 2/18/03			

No FSC species were observed during the site visit, and only the Carolina darter is recorded at NHP as occurring within 2 miles (3.2 km) of the project area. The Carolina darter has been observed approximately 1.4 miles (2.2 km) downstream in Grassy Creek. In addition to a federal species of concern the Carolina darter is a species of state special concern.

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B-4525

B4525

USACE AID# _____	DWQ# _____	Site # _____ (indicate on attached map)
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STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Applicant's name: _____</p> <p>3. Date of evaluation: <u>2-5-04</u></p> <p>5. Name of stream: <u>Grassy Creek</u></p> <p>7. Approximate drainage area: _____</p> <p>9. Length of reach evaluated: _____</p> <p>11. Site coordinates (if known): prefer in decimal degrees.
Latitude (ex. 34.872312): _____</p> | <p>2. Evaluator's name: <u>R. Johnson</u></p> <p>4. Time of evaluation: <u>PM</u></p> <p>6. River basin: <u>Roanoke</u></p> <p>8. Stream order: <u>2nd</u></p> <p>10. County: <u>Granville</u></p> <p>12. Subdivision name (if any): <u>—</u></p> <p>Longitude (ex. -77.556611): _____</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
- Method location determined (circle): GPS Topo Sheet Ortho (Aerial) Photo/GIS Other GIS Other _____
13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
SR 1412 Bridge over Grassy Creek
14. Proposed channel work (if any): _____
15. Recent weather conditions: Rain 2/5/04
16. Site conditions at time of visit: 2/5/04
17. Identify any special waterway classifications known: Section 10 Tidal Waters Essential Fisheries Habitat
 Trout Waters Outstanding Resource Waters Nutrient Sensitive Waters Water Supply Watershed (I-IV)
18. Is there a pond or lake located upstream of the evaluation point? YES NO If yes, estimate the water surface area: _____
19. Does channel appear on USGS quad map? YES NO 20. Does channel appear on USDA Soil Survey? YES NO
21. Estimated watershed land use: _____% Residential _____% Commercial _____% Industrial _____% Agricultural
_____% Forested _____% Cleared / Logged _____% Other (_____)
22. Bankfull width: _____ 23. Bank height (from bed to top of bank): _____
24. Channel slope down center of stream: Flat (0 to 2%) Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight Occasional bends Frequent meander Very sinuous Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 63 Comments: _____

Evaluator's Signature _____ Date _____

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x26.

B-4525 - Grassy Creek

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	4
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	3
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	1
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	5
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	2
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	3
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	3
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	0
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	2
	10	Sediment input (extensive deposition = 0; little or no sediment = max points)	0-5	0-4	0-4	2
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	3
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	2
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	2
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	2
	15	Impact by agriculture, livestock, or timber production (substantial impact = 0; no evidence = max points)	0-5	0-4	0-5	3
HABITAT	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	4
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	4
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	3
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	3
BIOLOGY	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	3
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	3
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	3
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	4
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						63

* These characteristics are not assessed in coastal streams.

B-4525

USACE AID# _____ DWQ # _____ Site # _____ (indicate on attached map)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- 1. Applicant's name: _____
 - 2. Evaluator's name: R. Johnson
 - 3. Date of evaluation: 2-5-04
 - 4. Time of evaluation: PM
 - 5. Name of stream: UT to Grassy Creek
 - 6. River basin: Roanoke
 - 7. Approximate drainage area: _____
 - 8. Stream order: 1st
 - 9. Length of reach evaluated: _____
 - 10. County: Granville
 - 11. Site coordinates (if known): prefer in decimal degrees.
 - 12. Subdivision name (if any): _____
- Latitude (ex. 34.872312): _____ Longitude (ex. -77.556611): _____
- Method location determined (circle): GPS Topo Sheet Ortho (Aerial) Photo/GIS Other GIS Other _____
13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location): _____

- 14. Proposed channel work (if any): _____
- 15. Recent weather conditions: _____
- 16. Site conditions at time of visit: _____
- 17. Identify any special waterway classifications known: Section 10 Tidal Waters Essential Fisheries Habitat Trout Waters Outstanding Resource Waters Nutrient Sensitive Waters Water Supply Watershed (I-IV)
- 18. Is there a pond or lake located upstream of the evaluation point? YES NO If yes, estimate the water surface area: _____
- 19. Does channel appear on USGS quad map? YES NO
- 20. Does channel appear on USDA Soil Survey? YES NO
- 21. Estimated watershed land use: % Residential % Commercial % Industrial % Agricultural % Forested % Cleared / Logged % Other (_____)
- 22. Bankfull width: _____
- 23. Bank height (from bed to top of bank): _____
- 24. Channel slope down center of stream: Flat (0 to 2%) Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
- 25. Channel sinuosity: Straight Occasional bends Frequent meander Very sinuous Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 41 Comments: _____

Evaluator's Signature _____ Date _____

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

B-4525 UT to Grassy Creek
STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0-5	0-4	0-5	4
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0-6	0-5	0-5	1
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0-6	0-4	0-5	1
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0-5	0-4	0-4	2
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0-3	0-4	0-4	0
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0-4	0-4	0-2	2
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0-5	0-4	0-2	1
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0-6	0-4	0-2	0
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0-5	0-4	0-3	2
	10	Sediment input (extensive deposition = 0; little or no sediment = max points)	0-5	0-4	0-4	2
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0-4	0-5	3
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0-5	0-4	0-5	1
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0-5	0-5	0-5	2
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0-3	0-4	0-5	2
	15	Impact by agriculture, livestock, or timber production (substantial impact = 0; no evidence = max points)	0-5	0-4	0-5	3
HABITAT	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0-3	0-5	0-6	3
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0-6	0-6	0-6	2
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0-5	0-5	0-5	2
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0-4	0-4	2
BIOLOGY	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0-4	0-5	0-5	1
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	2
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0-4	0-4	0-4	0
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0-6	0-5	0-5	1
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)					41	

* These characteristics are not assessed in coastal streams.

WETLAND RATING WORKSHEET Fourth Version

Project Name: B 45 25 Nearest road: SR
 County: Granville Wetland area: _____ acres Wetland width: _____ feet
 Name of evaluator: G. Lankford Date: 2-16-04

<p>Wetland location</p> <p>_____ on pond or lake <input checked="" type="checkbox"/> on perennial stream _____ on intermittent stream _____ within interstream divide _____ other: _____</p> <p>Soil series _____</p> <p>_____ predominantly organic (humus, muck, or peat) <input checked="" type="checkbox"/> predominantly mineral (non-sandy) _____ predominantly sandy</p> <p>Hydraulic factors</p> <p>_____ steep topography <input checked="" type="checkbox"/> ditched or channelized <input checked="" type="checkbox"/> total riparian wetland width \geq 100 ft</p>	<p>Adjacent land use (within 1/2 mile upstream, upslope, or radius)</p> <p>_____ forested/natural vegetation <u>18 %</u> _____ agriculture, urban/suburban <u>80 %</u> _____ impervious surface <u>2 %</u></p> <p style="text-align: center;">Dominant vegetation</p> <p>1) <u>Sycamore</u> 2) <u>Sweet Gum</u> 3) <u>R. Maple</u></p> <p>Flooding and wetness</p> <p>_____ semipermanently to permanently flooded or inundated <input checked="" type="checkbox"/> seasonally flooded or inundated _____ intermittently flooded or temporary surface water _____ no evidence of flooding or surface water</p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Wetland type (select one)

- | | |
|----------------------------------------------------------------|-------------------------|
| <input checked="" type="checkbox"/> Bottomland hardwood forest | _____ Pine savanna |
| _____ Headwater forest | _____ Freshwater marsh |
| _____ Swamp forest | _____ Bog/fen |
| _____ Wet flat | _____ Ephemeral wetland |
| _____ Pocosin | _____ Carolina Bay |
| _____ Bog forest | _____ Other _____ |

*The rating system cannot be applied to salt or brackish marshes or stream channels.

R	Water storage	<u>2</u>	x	4.00 = <u>8</u>	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Total Score 51 </div>
A	Bank/Shoreline stabilization	<u>2</u>	x	4.00 = <u>8</u>	
T	Pollutant removal	<u>5</u> ¹	x	5.00 = <u>25</u>	
I	Low flow augmentation	_____	x	2.00 = _____	
N	Wildlife habitat	<u>2</u>	x	4.00 = <u>8</u>	
G	Aquatic life	<u>2</u>	x	1.00 = <u>2</u>	

¹Add 1 point if in sensitive watershed and >10% nonpoint disturbance within 1/2 mile radius.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>B-4525</u>	Date: <u>2-11-04</u>
Applicant/Owner: <u>NEDDY</u>	County: <u>Granville</u>
Investigator: <u>GL Hankford</u>	State: <u>MI</u>
Do Normal Circumstances exist on the site? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Community ID: <u>Wetland</u>
Is the site significantly disturbed (Atypical Situation)? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Transect ID: _____
Is the area a potential Problem Area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Plot ID: <u>DP 2</u>
(If needed, explain in remarks.)	

VEGETATION

Dominant Plant Species	Stratum	Indicator	
<u>Festuca arundinacea</u>	<u>H</u>	<u>FAC-</u>	
<u>Solidago sp.</u>	<u>H</u>	<u>---</u>	
<u>Juncus effusus</u>	<u>H</u>	<u>FACW+</u>	
<u>Blk Berry</u>	<u>H</u>	<u>---</u>	
<u>Doc - Rumex (R. crispus)</u>	<u>H</u>	<u>FAC</u>	
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) <u>MA</u> $\frac{2}{3} = 66\%$			
Remarks: <u>Data Point is in Pasture - herbaceous veg only - ≤ 6" height</u>			

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: <u>---</u> (in.)</p> <p>Depth to Free Water in Pit: <u>3"</u> (in.)</p> <p>Depth to Saturated Soil: <u>surface</u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input checked="" type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 in.</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
Remarks:	

Community ID: <u>Wetland</u>	Project/Site: <u>B-4525</u>
Transect ID:	Date: <u>2-11-04</u>
Plot ID: <u>DP-2</u>	

SOILS

Map Unit Name (Series and Phase): <u>Chenack and Wehadkoe Soil</u>		Drainage Class: <u>Some what poorly and poorly</u>			
Taxonomy Subgroup: <u>Fluvaquentic Dystruchrepts and Typic Fluvaquents</u>		Confirm Mapped Type? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1		5YR 3/4	—		SiL
1-8		5YR 4/6	7.5YR 6/4	med 30%	SiL
8-12		7.5YR 7/1	5YR 3/3	med 25%	SiL mottle is Mn concretions
12-20+		7.5YR 7/1	7.5YR 5/3	med + coarse 25%	SiCL
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions				
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils				
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils				
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List				
<input type="checkbox"/> Reducing Conditions	<input checked="" type="checkbox"/> Listed on National Hydric Soils List				
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)				
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Is this Sampling Point Within a Wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Remarks: <u>Data Point ~ 60' from W-12 ~ 16' from fence line</u>		

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>B-4525</u>	Date: <u>2-11-04</u>
Applicant/Owner: _____	County: <u>Granville</u>
Investigator: <u>G. Lankford</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Community ID: <u>Non-hydric</u>
Is the site significantly disturbed (Atypical Situation)? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Transect ID: _____
Is the area a potential Problem Area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If needed, explain in remarks.)	Plot ID: <u>DP 1</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
<i>Liquidambar styraciflua</i>	T	FAC+	<i>Poa</i> sp	H	—
<i>Plantanus occ.</i>	T	FACW-	<i>Vitis</i> (<i>paucifloracea</i>)	H	FAC
			<i>Alnus incana</i>	H	FACU
<i>Acer rubrum</i>	S	FAC	<i>Vitis</i> sp	UV	—
<i>Pinus strobus</i>	S	FAC	<i>Rubus</i> sp (<i>Blackberry</i>)	H	—
<i>Juniperus virginiana</i>	S	FACU-			
<i>Juglans nigra</i>	S	FACU			
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) <u>NA</u> $\frac{5}{8} = 62.5\%$					
Remarks: <u>Date point in wooded area outside pasture</u>					

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><input type="checkbox"/> Stream, Lake or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input type="checkbox"/> Saturated in Upper 12 inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 in.</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p>Field Observations:</p> <p>Depth of Surface Water: <u>NA</u> (in.)</p> <p>Depth to Free Water in Pit: <u>NA</u> (in.)</p> <p>Depth to Saturated Soil: <u>224</u> (in.)</p>	
Remarks: _____	

Community ID: <i>Non hydric</i>	Project/Site: <i>B-4525</i>
Transect ID:	Date: <i>2-11-04</i>
Plot ID: <i>DP-1</i>	

SOILS

Map Unit Name (Series and Phase): <i>Chewacla and Wehadkee Soil</i>		Drainage Class: <i>und poorly</i>		Somewhat poorly	
Taxonomy Subgroup: <i>Fluvaquentic Dystruchrepts and Typic Fluvaquents</i>		Confirm Mapped Type?		Yes <input checked="" type="checkbox"/> No	
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<i>0+1</i>		<i>7.5YR 5/3</i>			<i>Loam</i>
<i>1-7</i>		<i>7.5YR 5/3</i>	<i>7.5YR 4/6</i>	<i>mod 5%</i>	<i>silt loam</i>
<i>7-14</i>		<i>7.5YR 5/3</i>	<i>7.5YR 4/4</i>	<i>mod 18%</i>	
<i>14-24+</i>		<i>7.5YR 5/3</i>	<i>7.5YR 4/3</i>	<i>fin d mod 20%</i>	<i>S.L</i>
		<i>7.5YR 5/3</i>	<i>7.5YR 7/2</i>	<i>fin d mod 45%</i>	<i>S.L</i>
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol				<input type="checkbox"/> Concretions	
<input type="checkbox"/> Histic Epipedon				<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils	
<input type="checkbox"/> Sulfidic Odor				<input type="checkbox"/> Organic Streaking in Sandy Soils	
<input type="checkbox"/> Aquic Moisture Regime				<input type="checkbox"/> Listed on Local Hydric Soils List	
<input type="checkbox"/> Reducing Conditions				<input type="checkbox"/> Listed on National Hydric Soils List	
<input type="checkbox"/> Gleyed or Low-Chroma Colors				<input type="checkbox"/> Other (Explain in Remarks)	
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Wetland Hydrology Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hydric Soils Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Is this Sampling Point Within a Wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Remarks: <i>Between W-6 + W7 ~ 15 outside boundary</i>		