

PROJECT COMMITMENTS

T.I.P. No. I-5508
Stabilization of Slope along I-40 near Mile marker 7
Haywood County
Federal Aid Project No. IMS-040-1(245)7
W.B.S. No. 55057

Division 14 Construction – Tree Clearing Moratorium

All tree cutting and clearing activities for the project will be completed during winter months (October 15-April 15) so that habitat for the Northern long-eared bat is not disturbed during the roosting season.

Project Development and Division 14

Coordination is in progress with the US Forest Service (USFS) due to encroachment onto USFS property. Any additional commitments developed during project design will be included in the project contract.

NCDOT PROGRAMMATIC CATEGORICAL EXCLUSION (PCE)
ACTION CLASSIFICATION FORM

NCDOT STIP I-5508
Slope Stabilization
Haywood County, NC
February 2014

For use by a Local Government Agency

TIP Project No.	<u>I-5508</u>
WBS Element	<u>55057</u>
Federal Project No.	<u>IMS-040-1(245)7</u>

A. Project Description:

This project proposes a series of slope stabilization improvements near milepost 7 on Interstate 40 (I-40) in Haywood County, North Carolina, including rock excavation, rock bolting, and installation of rock-fall barrier fence and mesh. Improvements will involve re-cutting the existing slope, creating a ditch for rock-fall catchment, and installing spot rock bolting and rock-fall barrier fence and mesh to be used as an attenuator and drape. Traffic control, widening, resurfacing, barrier removal/replacement, and temporary catchment are anticipated. (Refer to Figure 3 in Appendix A)

B. Purpose and Need:

The proposed project is located in an area that is historically prone to rock slides. It is unstable and poses a safety hazard.

C. Proposed Improvements – Select ALL Activities that apply to the Project, regardless of TYPE

Circle one or more of the following Type I activities:

1. Non-construction activities (program activities).
2. Approval of utility installations along or across a transportation facility.
3. Construction of bicycle and pedestrian lanes, paths, and facilities.
4. Activities included in the State's "highway safety plan" under 23 USC 402 (programs administered by the Division of Motor Vehicles).
5. Transfer of Federal lands pursuant to 23 USC 317 when the subsequent action is not a FHWA action.
6. The installation of noise barriers or alterations to existing publicly owned buildings to provide for noise reduction.
7. Landscaping.
8. Installation of fencing, signs, pavement markings, small passenger shelters, traffic signals, and railroad warning devices.
9. Emergency repairs under 23 USC 125 (Governor Declared Emergency).
10. Acquisition of scenic easements.

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11. Determination of payback under 23 CFR Part 480 for property previously acquired with federal-aid participation.
12. Improvements to existing rest areas and truck weigh stations.
13. Ridesharing activities.
14. Bus and Rail car rehabilitation.
15. Alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons.
16. Program administration, technical assistance activities, and operating assistance to transit authorities to continue existing service or increase service to meet changes in routine demand.
17. The purchase of vehicles by the applicant where the use of these vehicles can be accommodated by existing facilities or by new facilities which themselves are within a CE.
18. Track and rail bed maintenance and improvements when carried out within the existing right of way.
19. Purchase and installation of operating or maintenance equipment to be located within the transit facility and with no significant impacts off the site.
20. Promulgation of rules, regulations and directives.
21. Replacement of guardrail.

Circle one or more of the following Type II activities:

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

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- 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: Investigations and Findings

1. Threatened & Endangered (T&E) Species

Potential project effects on T&E species were evaluated in the Natural Resources Technical Report (NRTR) and associated field investigations. Evaluation involved a review of the U.S. Fish and Wildlife Service's (USFWS) list of Federal T&E Species in North Carolina for Haywood County, and review of the North Carolina Natural Heritage Program (NCNHP) database for known T&E species occurrences and Critical Habitat Designations. Nine (9) T&E species are listed for Haywood County, and suitable habitat and/or known occurrences near the project area were identified for three (3) of the species. Based on further field investigation of these species, the following biological conclusions were rendered (Please refer to the NRTR and NRTR Addendum in Appendix D for more detail):

- a) Gray bat (*Myotis grisescens*). No Effect.
A habitat assessment for this species was conducted in April 2013. This species roosts in caves and abandoned mines year-round, and forages over open waterways surrounded by forest. Since no caves or mines will be affected by the project, and no trees are expected to be cut in riparian areas adjacent to the River, the project will have no effect on gray bats.
- b) Small whorled pogonia (*Isotria medeoloides*). No Effect.
Systematic surveys were conducted in all areas of suitable habitat in June 2013 and no individuals were observed. The project will have no effect on the small whorled pogonia.
- c) Northern long-eared bat (*Myotis septentrionalis*). N/A.
A US Fish and Wildlife Service proposal for listing the Northern Long-eared Bat (*Myotis septentrionalis*) as an Endangered species was published in the Federal Register in October 2013. The listing may become effective as soon as October 2014. Furthermore, this species is included in USFWS's current list of protected species for Haywood County. NCDOT has been working closely with the USFWS to understand how this proposed listing may impact NCDOT projects and the I-5508 project in particular. Should the Northern-long eared bat gain federal protection under Section 7 of the Endangered Species Act prior to the I-5508 project LET date of January 2015, NCDOT will commit to clearing trees during the winter months (October 15-April 15) as a measure to further minimize potential impacts to this species. NCDOT will continue to coordinate with USFWS if the species gains federal protection, and will update USFWS on the project status at that time. Furthermore, if the project schedule changes, and winter tree clearing is not feasible, NCDOT will notify USFWS.

2. Cultural Resources

National Historic Preservation Act

A review of Cultural Resources in the project study area was completed in November 2012, including review of Historic Preservation Office (HPO) quad maps, relevant background reports, historic designations roster, and indexes. Based on this review, no existing NR, SL, LD, DE, or SS properties were found in the Area of Potential Effects (APE). There are no structures or historic resources in the project area. No survey is required for historic architecture. (Please refer to Appendix E for more detail.)

Archaeological Resources

Office of State Archaeology maps were examined in November of 2012 and failed to yield any record of archaeological sites within the project's Area of Potential Effects (APE). A soil map of the APE indicates slopes far greater than 50%. Slopes this steep would have little likelihood of cultural evidence. No Archaeological Survey is required. (Please refer to Appendix E for more detail.)

3. Right of Way/Easements

The existing right of way spans a total width of 260 feet (130 feet from the centerline in each direction). All construction activities occurring on the south side of I-40, including tree clearing and travel lanes, will occur within the existing right of way limits. Construction activities occurring on the north side of I-40, including tree clearing and slope cutting, will extend beyond existing right of way limits and require use of a temporary construction easement. This easement boundary will extend into property owned by the United States Forest Service (USFS). NCDOT has coordinated extensively with USFS throughout the planning stage of this project. (Please refer to Figure 3 in Appendix A.)

4. Section 4(f)

As noted, project construction will require use of a temporary construction easement that includes USFS property located within the Pisgah National Forest boundary. Due to terrain and its location adjacent to I-40, the property does not have a high value for recreational use. No impacts are anticipated.

5. Section 6(f)

No Section 6(f) protected properties are located in or near to the project area.

6. Environmental Commitments

All tree cutting and clearing activities for the project will be completed during winter months (October 15 – April 15) so that habitat for the Northern long-eared bat is not disturbed during the roosting season.

Coordination is in progress with the US Forest Service (USFS) due to encroachment onto USFS property. Any additional commitments developed during project design will be included in the project contract.

7. Permits Required

As there are no jurisdictional resources identified in the project impact area, no Section 404 or Section 401 permits will be required for this project.

8. Community Resources

Potential project impacts on the surrounding community were assessed in the form of a Community Impact Assessment (CIA), completed in January of 2014. A Newsletter was distributed to project area residents in December of 2013 providing details on the project and requesting public comments. No community impacts are anticipated as a result of this project. (Please refer to Appendix E for more detail.)

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E. Threshold Criteria

The following evaluation of threshold criteria must be completed. See *Local Programs Management Handbook* for more guidance on how to answer these questions.

<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 checked="" type="checkbox"/>	<u> </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>	 <u>YES</u>	 <u>NO</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?	<input type="checkbox"/>	<u> X </u>

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<u>SOCIAL, ECONOMIC, AND CULTURAL RESOURCES</u>	<u>YES</u>	<u>NO</u>
(15) Will the project induce substantial impacts to planned growth or land use for the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(16) Will the project require the relocation of any family or business?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(17) Will the project have a disproportionately high and adverse human health and environmental effect on any minority or low-income population?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(18) If the project involves the acquisition of right of way, is the amount of right of way acquisition considered minor?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(19) Will the project involve any changes in access control?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(20) Will the project substantially alter the usefulness and/or land use of adjacent property?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(21) Will the project have an adverse effect on permanent local traffic patterns or community cohesiveness?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(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)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(23) Is the project anticipated to cause an increase in traffic volumes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(24) Will traffic be maintained during construction using existing roads, staged construction, or on-site detours?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(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?	N/A	
(26) Is there substantial controversy on social, economic, or environmental grounds concerning the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(27) Is the project consistent with all Federal, State, and local laws relating to the environmental aspects of the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(28) Will the project have an "effect" on structures/properties eligible for or listed on the National Register of Historic Places?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(29) Will the project affect any archaeological remains which are important to history or pre-history?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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- (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)? _____
- (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? X
- (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? X

F. Additional Documentation Required for Unfavorable Responses in Part E
(Discussion regarding all unfavorable responses in Part E should be provided below. Additional supporting documentation may be attached, as necessary.)

(2) The project area contains suitable habitat for three federally listed T&E species: the Gray Bat, the Small whorled pogonia, and the Northern long-eared Bat. The project will have no effect on these species. (Please refer to Section D (1) and Appendix D for more detail.)

(5) Project construction will require use of a temporary construction easement that encroaches on US Forest Service (USFS) property located within the Pisgah National Forest boundary. Coordination is in progress with USFS and any additional commitments developed during project design will be included in the project contract. (Refer to Section D (6) for details regarding Environmental Commitments.)

(30) While construction easement property is located within a National Forest, the property has no recreational value due to its steeply sloping terrain and its location adjacent to I-40. No impacts are anticipated.

NCDOT PROGRAMMATIC CATEGORICAL EXCLUSION (PCE)
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NCDOT STIP I-5508
Slope Stabilization
Haywood County, NC
February 2014

G. PCE Approval

TIP Project No. I-5508
WBS Element 55057.1.1
Federal-Aid Project No. IMS-040-1(245)7

Project Description:


This project proposes a series of slope stabilization improvements near milepost 7 on Interstate 40 (I-40) in Haywood County, North Carolina, including rock excavation, rock bolting, and installation of rock-fall barrier fence and mesh. Improvements will involve re-cutting the existing slope, creating a ditch for rock-fall catchment, and installing spot rock bolting and rock-fall barrier fence and mesh to be used as an attenuator and drape. Traffic control, widening, resurfacing, barrier removal/replacement, and temporary catchment are anticipated. (Refer to Figure 3 in Appendix A)

Categorical Exclusion Action Classification: (Check one)

<input type="checkbox"/>	TYPE I (A)	NO BOXES Checked	} refer to Section E
<input type="checkbox"/>	TYPE I (B)	ANY BOX Checked	
<input type="checkbox"/>	TYPE II(A)	NO BOXES Checked	
<input checked="" type="checkbox"/>	TYPE II(B)	ANY BOX is Checked	

Prepared By:

2/26/2014
Date


Martha Hodge, Senior Planner
SEPI Engineering & Construction, Inc., (919) 789-9977

NOTE: Form needs to be completed by either a Professional Engineer (PE),
Biologist, Planner, or AICP

Prepared For: North Carolina Department of Transportation

NCDOT PROGRAMMATIC CATEGORICAL EXCLUSION (PCE)
ACTION CLASSIFICATION FORM

NCDOT STIP I-5508
Slope Stabilization
Haywood County, NC

Reviewed:

02-28-2014 Zahid Baloch
Date Zahid Baloch, PE, Project Planning Engineer
Project Development & Environmental Analysis Unit
North Carolina Department of Transportation

02-28-2014 John Conforti
Date John Conforti, REM, Western Project Development Section
Group Leader
Project Development & Environmental Analysis Unit
North Carolina Department of Transportation

2.28.2014 Jennifer Harris
Date Jennifer Harris, PE, Western Region/Turnpike Section Head
Project Development & Environmental Analysis Unit
North Carolina Department of Transportation

Approved: For Type I(B) or II(B) projects only:

3-4-14 Mitch Batuzich
Date Mitch Batuzich, Western Preconstruction & Environmental
Specialist (Division 10, 11, 12, 13, 14)
Federal Highway Administration

Appendices

Appendix A: Project Figures

Figure 1: I-5508 Project Vicinity Map

Figure 2: USGS Topological Survey of I-5508 Project Area

Figure 3: I-5508 Aerial Study Area Map & Preliminary Design

Appendix B: Traffic Data & Projections, July 2013

Appendix C: Geotechnical Report – Design & Construction Recommendations, April 2013

Appendix D: Natural Environment Information

Natural Resources Technical Report (NRTR), March 2013

NRTR Addendum Memorandum (Axiom Environmental), June 2013

Biological Evaluation Report prepared for USFS, December 2013

Appendix E: Human Environment Information

Archaeological Resources Evaluation, November 2012

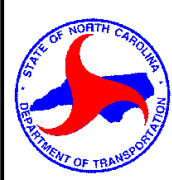
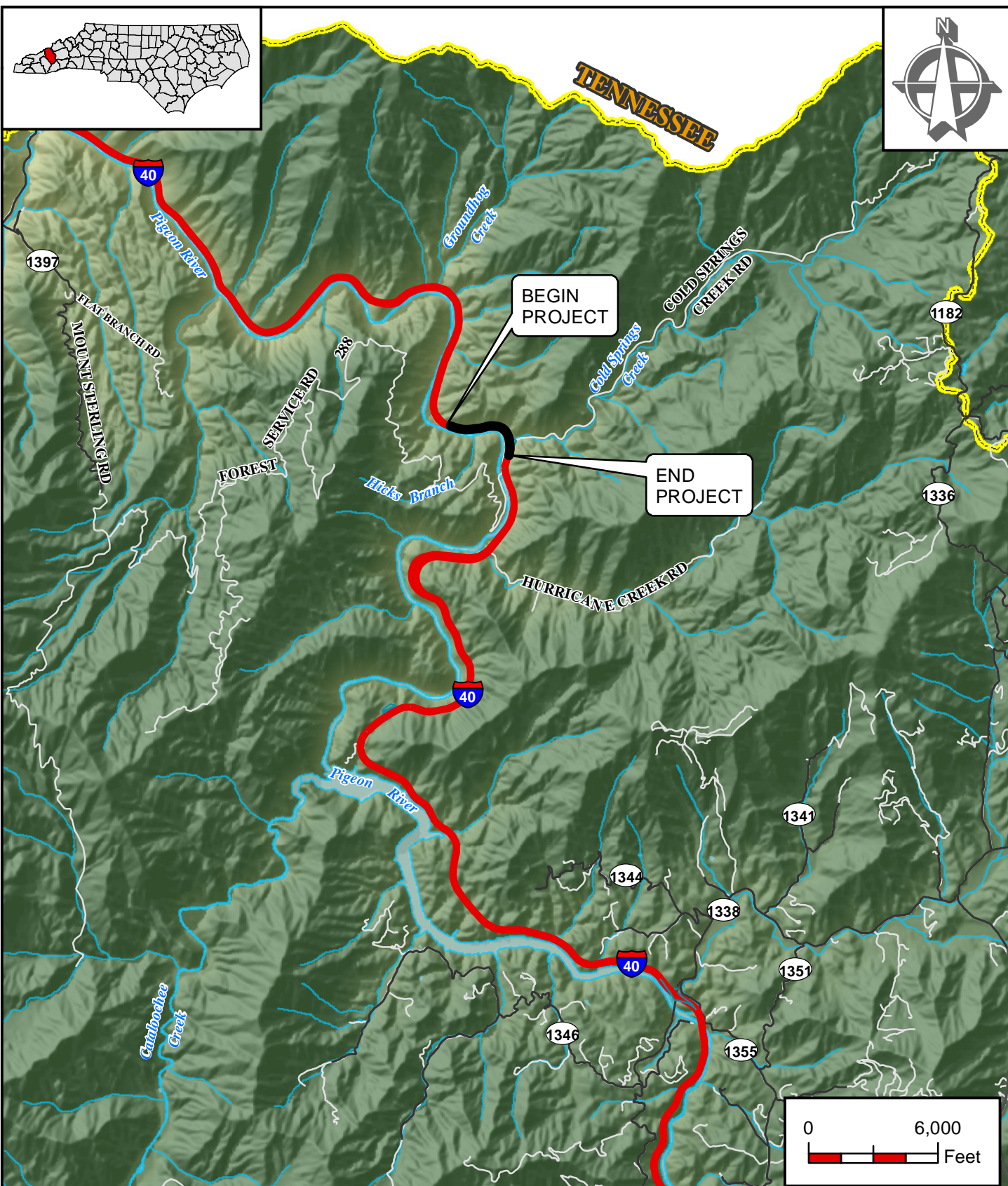
Historic Resources Evaluation, November 2012

Community Impact Assessment, February 2014

Public Involvement Newsletter and Comments Received, December 2013

NCDOT PROGRAMMATIC CATEGORICAL EXCLUSION (PCE)
ACTION CLASSIFICATION FORM

Appendix A: Project Figures

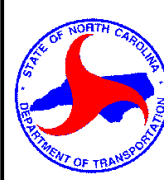
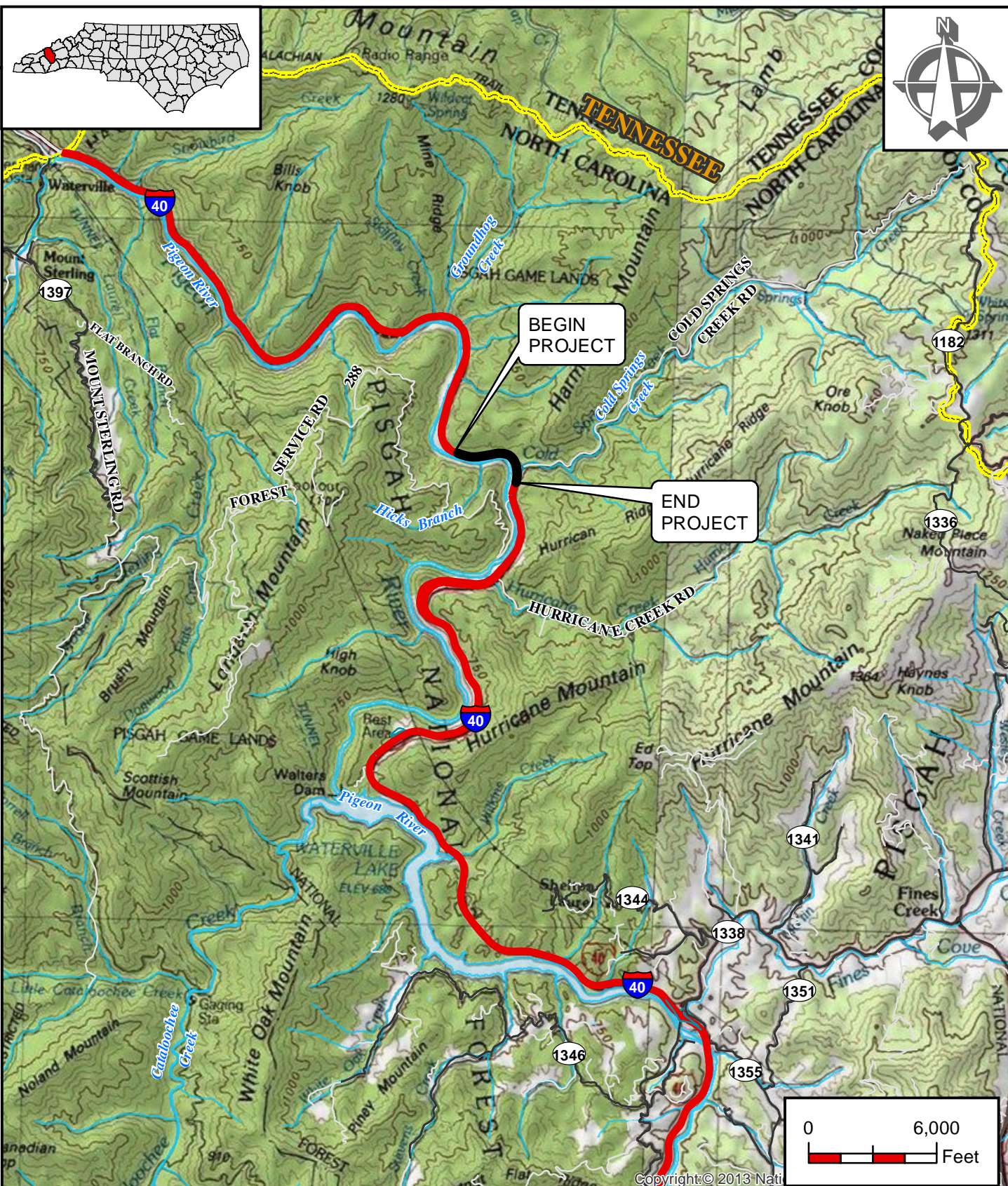


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT

VICINITY MAP
PROPOSED SLOPE STABILIZATION, ROCK BOLTING AND ROCKFALL BARRIER FENCE AND MESH NEAR MILEPOST 7 ON I-40 HAYWOOD COUNTY STIP PROJECT I-5508

County: HAYWOOD	
Div: 14	TIP# I-5508
WBS: 55057.1.1	
Date: February 2014	

Figure 1

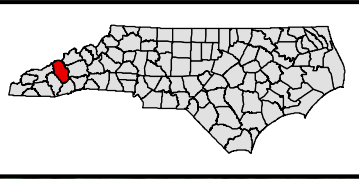


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT

TOPO MAP
PROPOSED SLOPE STABILIZATION, ROCK BOLTING AND ROCKFALL BARRIER FENCE AND MESH NEAR MILEPOST 7 ON I-40 HAYWOOD COUNTY STIP PROJECT I-5508

County: HAYWOOD	
Div: 14	TIP# I-5508
WBS: 55057.1.1	
Date: February 2014	

Figure 2



- Proposed Construction Easement Limit
- Proposed Tree Clearing Limits
- Proposed Temporary Center Line During Construction
- Proposed Construction Limits
- Proposed Edge of Pavement

BEGIN PROJECT

Proposed Construction Easement Limit & Proposed Tree Clearing Limits

END PROJECT

Proposed Tree Clearing Limits

EXISTING R/W

260'

EXISTING R/W

PIGEON RIVER

PIGEON RIVER



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

AERIAL STUDY AREA MAP
PROPOSED SLOPE STABILIZATION, ROCK BOLTING AND ROCKFALL BARRIER FENCE AND MESH NEAR MILEPOST 7 M ON I-40
 HAYWOOD COUNTY
 STIP PROJECT I-5508

County:	HAYWOOD		
Div:	14	TIP#	I-5508
WBS:	55057.1.1		
Date:	February 2014		

Figure 3

NCDOT PROGRAMMATIC CATEGORICAL EXCLUSION (PCE)
ACTION CLASSIFICATION FORM

Appendix B: Traffic Data & Projections



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

July 2, 2013

MEMORANDUM TO: Zahid Baloch, PE
PDEA – Project Development

FROM: Bryan D. Johnson
Transportation Planning Branch

SUBJECT: Traffic Forecast for TIP Project I-5508
Haywood County
Slope Stabilization on I-40

Please find attached the 2013 / 2035 Traffic Forecast for the above mentioned project. Project I-5508 is defined as slope stabilization, rock bolting, and rock-fall barrier fence and mesh near Milepost 7 on I-40. I-5508 is scheduled for construction in 2015 in the Draft 2013-2023 STIP. This is the first forecast for this project. This project lies within the Land-of-Sky RPO area.

Linh Nguyen, PE, NCDOT Transportation Planning Branch; Kris Boyd, Haywood County Planning Department; Josh King, Land-of-Sky RPO; and Jonathan Woodard, PE, NCDOT Division 14; were consulted during the development of this forecast.

The following scenarios are provided:

- 2013 Base Year No-Build
- 2035 Future Year Build

Certain assumptions were made in the development of the forecast:

Fiscal Constraint: In areas outside an MPO, future year forecasts assume construction of projects listed within the State Transportation Improvement Plan (STIP) which include construction money. According to the Draft 2012 STIP, STIP project I-5508 is scheduled for construction in 2015. There are no other projects in the STIP that will affect this project.

Development Activity: Based upon information provided by Linh Nguyen, PE, NCDOT Transportation Planning Branch; Kris Boyd, Haywood County Planning Department; and Jonathan Woodard, PE, NCDOT Division 14; there are currently no specific plans for development what would significantly affect traffic within the project area.

Methodology: The Base Year No-Build estimate was developed based upon traffic counts taken for this forecast, as well as historic traffic counts and trends.

The 2035 Build forecast was developed based on traffic growth rates obtained from historic traffic count trends.

Base Year No-Build volumes may be used as a surrogate for the Base Year Build volumes (i.e., travel demand is the same for 2013 Build and No-Build conditions). Future Year Build volumes may be used as a surrogate for the Future Year No-Build volumes (i.e., travel demand is the same for 2035 Build and No-Build conditions). The slope stabilization on I-40 is not expected to substantially change travel demand.

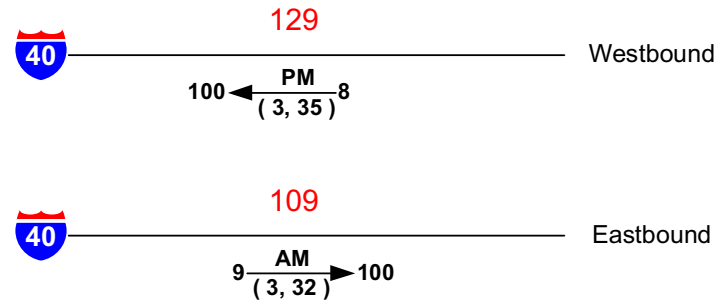
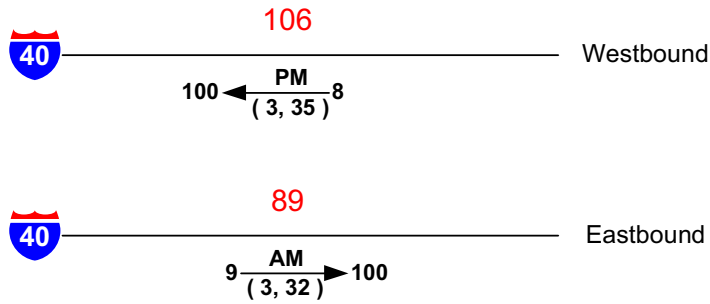
Interpolation: To determine any intermediate years, straight-line interpolation may be used. AADT volumes may be extrapolated for up to two years immediately following 2035.

If it is determined that any of these assumptions have become inconsistent with the project and surrounding area activity, please request updated projections at this location.

For future reference this forecast will be saved in Project Store in the LongRangePlanning\ Traffic Forecasts\ folder under I5508. If you have any questions, or I can be of further assistance, please do not hesitate to call me at (919) 707-0985, or e-mail me at bdjohnson3@ncdot.gov.

cc: FILE (Haywood County, TIP Project I-5508)

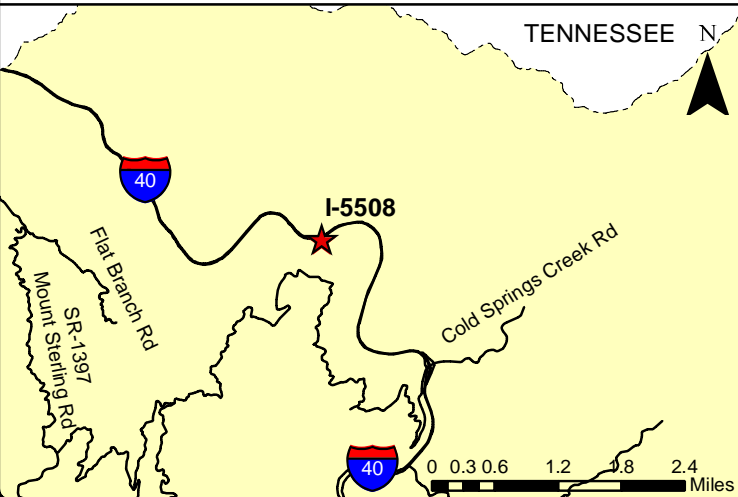
cc: *(via e-mail as PDF attachments):*
Jay Bennett, PE, Roadway Design Unit
Deborah Hutchings, PE, Transportation Planning Branch
Pam Cook, PE, Transportation Planning Branch
James Dunlop, PE, Congestion Management Section
Don Chen, PE, Pavement Management Unit



Due to the unique nature of this project, this forecast provides an AM peak for the Eastbound lanes and PM peak for the Westbound lanes

2013 No Build

2035 Build



2013/2035 AVERAGE ANNUAL DAILY TRAFFIC **SHEET 1 OF 1**

LEGEND

- ### No. of Vehicles Per Day in 100s
- 1- Less than 50 vpd
- X Movement Prohibited
- K $\frac{PM}{(d, t)} \rightarrow D$ Design Hour Factor (%)
- PM PM Peak Period
- D Peak Hour Directional Split (%)
- \rightarrow Indicates Direction of D
- (d, t) Duals, TT-STs (%)

TIP: I-5508		WBS: 55057.1.1	
COUNTY: Haywood		DIVISION: 14	
DATE: 07-02-2013			
PREPARED BY: Bryan D. Johnson			
LOCATION: I-40 near Milepost 7			
PROJECT: Slope stabilization, rock bolting, and rock-fall barrier fence and mesh			

NCDOT PROGRAMMATIC CATEGORICAL EXCLUSION (PCE)
ACTION CLASSIFICATION FORM

Appendix C: Geotechnical Report – Design & Construction Recommendations



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

April 11, 2013

MEMORANDUM TO: Jimmy Goodnight, P.E.
Roadway Design Project Engineer

ATTENTION: Mark Hussey
Project Design Engineer

FROM: John Pilipchuk, L.G., P.E.
State Geotechnical Engineer

STATE PROJECT: 55057.1.1 (I-5508)
F.A. Project: IMS-040-1(247)7

COUNTY: Haywood

DESCRIPTION: I-40 Slope Remediation for Failing Rock Slope at
Milepost 7

SUBJECT: Geotechnical Report - Design and Construction
Recommendations

The Geotechnical Engineering Unit has completed the investigation for this project and presents the following recommendations.

I. Slope/Embankment Stability

- A. We recommend all roadway cut slopes be constructed at 1:1 (H:V) utilizing pre-split blasting techniques to limit fracturing of the finished slope (24,500 SY) .
- B. We recommend that 400 feet of 20 foot long, spot located, tensioned, 1", 75 kip rockbolts be included as a contingency to be located by the Engineer.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

TELEPHONE: 919-707-6850
FAX: 919-250-4237

LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

- C. We recommend that 800 feet of untensioned rock anchors be included as a contingency to be located by the Engineer.
- D. We recommend that the contractor reclaim and stage existing 4,000 SY of Type 2 wire mesh and 2,000 SY of Type 1 wire net for reuse. 1,000 SY of each will be attached later to untensioned rock anchors as detailed in subsection E.
- E. We recommend a surface drape (which consists of 1,000 SY of each Type 2 wire mesh and Type 1 wire net, wire boundary rope, etc.) be included as a contingency to be located by the Engineer. See Wiremesh plansheet.
- F. We recommend a 850' long, 10' high, 250 KJ rockfall barrier. See Rock Slope Materials Special Provision. Stations 332+50 to 341+00.

II. Borrow Specifications

- A. Shrinkage/Swell Factor
We recommend using a swell factor in rock of 20%.

III. Miscellaneous

- A. Reclamation and handling for reuse: existing materials (Type 1 wire net) from lightweight attenuator. See Reclaiming and Staging wire mesh and net Special Provision. Stations 331+00 to 341+00.
- A. Reclamation and handling for reuse: existing materials (Type 2 wire mesh) from mesh surface drape. See Reclaiming and Staging wire mesh and net Special Provision. Stations 331+00 to 341+00.

Respectfully submitted,

Respectfully submitted,

Shane Clark, P.E.
Regional Design Engineer

Matt Mullen, P.E.
Project Engineering Geologist

Attachments

Special Provision for Rock Slope Materials
 Special Provision for Rock Blasting
 Special Provision for Tensioned Spot Rock bolts – 75 Kips
 Special Provision for Reclaiming and Staging wire mesh and net

NCDOT PROGRAMMATIC CATEGORICAL EXCLUSION (PCE)
ACTION CLASSIFICATION FORM

Appendix D: Natural Environment Information

NATURAL RESOURCES TECHNICAL REPORT

**Proposed Slope Stabilization Near Milepost 7 on Interstate 40
Haywood County, North Carolina**

TIP I-5508

Federal Aid Project No. IMS-040-1(425)7

WBS Element No. 55057.1.1



**THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Project Development and Environmental Analysis Unit
Natural Environment Section**

March 2013

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1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) proposes to stabilize a failing slope near Milepost 7 on Interstate 40 (I-40) in Haywood County (Figure 1). The following Natural Resources Technical Report (NRTR) has been prepared to assist in the preparation of a Categorical Exclusion (CE) for the proposed project.

2.0 METHODOLOGY AND QUALIFICATIONS

All work was conducted in accordance with the NCDOT Natural Environment Unit standard operating procedures and July 2012 NRTR template. Field work was conducted on January 29, 2013. No jurisdictional areas were identified in the study area, so no field verification by resource agencies is needed. The principal personnel contributing to this document were:

Principal

Investigator: Alexander P. (Sandy) Smith

Education: B.S. Biology, 1983
M.S. Marine Biology, 1988

Experience: Senior Project Manager, Axiom Environmental, 2008-present
Senior Project Manager, Vice-President, EcoScience Corporation, 1998-2008
Senior Project Manager, Environmental Services, Inc., 1993-1998
Scientist, CZR, Inc., 1988-1993

Responsibilities: Project coordination, wetland/stream delineations, document preparation, natural community identification and assessment, T&E species surveys, wildlife (fish, amphibian, reptile, bird, and mammal) surveys, and botanical surveys.

Investigator: Scott G. Davis

Education: B.S. Environmental Science - Ecology

Experience: Senior Scientist, Axiom Environmental, 2008-present
Project Scientist, Senior Scientist, EcoScience Corporation, 2004-2008

Responsibilities: Wetland/stream delineations, GIS, figure preparation, document preparation, natural community identification and assessment, T&E species surveys, benthic invertebrate surveys, amphibian surveys, and botanical surveys.

Investigator: Edward C. Swab

Education: B.A. Chemistry, Clarion State College, 1965
M.S. Botany, North Carolina State University, 1990

Experience: Project Scientist, Axiom Environmental, 2004-present
Independent biological consultant 1998 – Present
Project Scientist, Environmental Services, Inc., 1993-1998

Responsibilities: Natural community identification and assessment, T&E species surveys, botanical surveys, rare plant surveys.

3.0 PHYSICAL RESOURCES

The study area lies in the mountain physiographic region of North Carolina. Topography in the project vicinity is comprised of steep, south-facing slopes, with several narrow topographic crenulations (Figure 2). Elevations in the study area range from 1890 to 2090 feet above sea level. Land use in the project vicinity consists primarily of forest land, with some bare rock, and maintained road shoulder along I-40.

3.1 Soils

The Haywood County Soil Survey identifies two soil types within the study area (Table 1).

Table 1. Soils in the study area

Soil Series	Mapping Unit	Drainage Class	Hydric Status
Udorthents-Urban land complex	Ut	Well Drained	Nonhydric
Soco-Cataska-Rock outcrop complex	Sm	Well Drained	Nonhydric

3.2 Water Resources

The study area vicinity is part of the French Broad River Basin [U.S. Geological Survey (USGS) Hydrologic Unit 06010106]. No streams were identified in the study area. Runoff from the study area drains to the Pigeon River, which is on the opposite side of the interstate from the study area. This portion of the Pigeon River has been designated a best usage classification of C.

There are no designated anadromous fish waters or Primary Nursery Areas (PNA) present in the study area. There are no designated High Quality Waters (HQW) or water supply watersheds (WS-I or WS-II) within 1.0 mile downstream of the study area. The North Carolina 2012 Final 303(d) list of impaired waters does not identify this reach of the Pigeon River.

4.0 BIOTIC RESOURCES

4.1 Terrestrial Communities

Two terrestrial communities were identified in the study area: maintained/disturbed and a combination of Dry Oak-Hickory Forest. The maintained disturbed community occurs on the I-40 road shoulder and long areas of recently exposed rock. The remaining vegetated areas within the study area are Dry Oak-Hickory Forest. A brief description of each community type follows. Scientific names of all species identified are included in Appendix B.

4.1.1 Maintained/Disturbed

Maintained/disturbed areas are located on the regularly mowed road shoulder and the bare rock faces within the study area. The vegetation in this community is primarily comprised of low-growing grasses and herbs, including fescue, clover, broomsedge, Japanese stilt grass, dock, woolly mullein, sericea, and hairy bittercress. Scattered shrubs in this area included black locust, smooth sumac, and princess-tree.

4.1.2 Dry Oak-Hickory Forest

The Dry Oak-Hickory Forest community occurs throughout the study area off the road shoulder and bare rock faces and has some characteristics of Chestnut Oak Forest. This area includes primarily dry, south-facing slopes. Rock chestnut oak, southern red oak, scarlet oak, pignut hickory, black gum, red maple, and American beech dominate the canopy, while eastern hemlock, white pine, shortleaf pine, yellow poplar, American hop-hornbeam, flowering dogwood, great laurel, mountain laurel, and sourwood occur in the understory. The groundcover was sparse during our winter visit and included Christmas fern, maidenhair spleenwort, pipsissewa, whiteleaf greenbriar, and poison ivy.

4.1.5 Terrestrial Community Impacts

Terrestrial communities in the study area may be impacted by project construction as a result of cutting back and stabilizing the slope within portions of the study area. At this time, decisions regarding the final design of the stabilization project have not been made. Therefore, community data are presented in the context of total coverage of each type within the study area (Table 2). Once a final alignment and preliminary design have been determined, probable impacts to each community type will be calculated.

Table 2. Coverage of terrestrial communities in the study area

Community	Coverage (acres)
Maintained/ Disturbed	2.6
Dry Oak-Hickory Forest	4.4
Total	7.0

4.2 Terrestrial Wildlife

Terrestrial communities in the study area are comprised of both natural and disturbed habitats that may support a diversity of wildlife species (those species actually observed are indicated with *). Mammal species that commonly exploit forested habitats found within the study area include species such as eastern cottontail, raccoon, Virginia opossum, and white-tailed deer. Birds that commonly use forest and forest edge habitats include the blue jay, Carolina chickadee*, tufted titmouse*, Carolina wren*, white-breasted nuthatch*, and yellow-rumped warbler. Birds that may use the open habitat within the study area include American kestrel, American crow*, eastern bluebird, and turkey vulture*. Reptile and amphibian species that may

use terrestrial communities located in the study area include the eastern milk snake, eastern box turtle, eastern fence lizard, five-lined skink, and American toad.

4.3 Aquatic Communities

The study area contains no stream or ponds, so this project involves no aquatic communities.

4.4 Invasive Species

Three species from the NCDOT Invasive Exotic Plant List for North Carolina were found to occur in the study area, all within the maintained/disturbed community along the I-40 road shoulder. The species identified were princess tree (Threat), sericea (Threat), and Japanese stilt grass (Threat). NCDOT will manage invasive plant species as appropriate.

5.0 JURISDICTIONAL ISSUES

5.1 Clean Water Act Waters of the U.S.

No jurisdictional streams or wetlands were identified in the study area.

5.2 Clean Water Act Permits

The study area contains no areas subject to the Clean Water Act; therefore, no Clean Water Act permit will be required for the proposed project.

5.3 Coastal Area Management Act Areas of Environmental Concern

The study area is not located within the 20 designated coastal counties, and no Coastal Area Management Act (CAMA) Areas of Environmental Concern (AEC) were identified in the study area.

5.4 Construction Moratoria

The study area contains no environmental features subject to construction moratoria.

5.5 N.C. River Basin Buffer Rules

The study area contains no streams; therefore, no N.C. river basin buffer rules are applicable.

5.6 Rivers and Harbors Act Section 10 Navigable Waters

The study area contains no streams; therefore, the proposed project involves no Navigable Waters under Section 10 of the Rivers and Harbors Act.

5.7 Wetland and Stream Mitigation

5.7.1 Avoidance and Minimization of Impacts

The study area contains no wetlands or streams; therefore, the proposed project will avoid impacts to these resources.

5.7.2 Compensatory Mitigation of Impacts

The proposed project will avoid impacts to wetlands and streams; therefore, no mitigation requirements will result from the project.

5.8 Endangered Species Act Protected Species

As of March 4, 2013 the United States Fish and Wildlife (USFWS) lists nine federally protected species for Haywood County (Table 3). A brief description of each species' habitat requirements follows, along with the Biological Conclusion rendered based on survey results in the study area. Habitat requirements for each species are based on the current best available information from referenced literature and/or USFWS.

Table 3. Federally protected species listed for Haywood County.

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
<i>Glyptemys muhlenbergii</i>	Bog turtle	T(S/A)	No	Not Required
<i>Glaucomys sabrinus coloratus</i>	Carolina northern flying squirrel	E	No	No Effect
<i>Myotis grisescens</i>	Gray bat	E	No	No Effect
<i>Myotis sodalis</i>	Indiana bat	E	Yes	Unresolved
<i>Alasmidonta raveneliana</i>	Appalachian elktoe	E	No	No Effect
<i>Microhexura montivaga</i>	Spruce-fir moss spider	E	No	No Effect
<i>Isotria medeoloides</i>	Small whorled pogonia	T	Yes	Unresolved
<i>Geum radiatum</i>	Spreading avens	E	No	No Effect
<i>Gymnoderma lineare</i>	Rock gnome lichen	E	No	No Effect

E - Endangered

T - Threatened

T(S/A) - Threatened due to similarity of appearance

Bog turtle

USFWS optimal survey window: April 1 – October 1 (visual surveys); April 1-June 15 (optimal for breeding/nesting); May 1 – June 30 (trapping surveys)

Habitat Description: Bog turtle habitat consists of open, groundwater-supplied (spring fed), graminoid-dominated wetlands along riparian corridors or on seepage slopes. These habitats are designated as mountain bogs by the N.C. Natural Heritage Program (NCNHP), but they are technically poor, moderate, or rich fens that may be associated with wet pastures and old drainage ditches that have saturated, muddy substrates with open canopies. Plants found in bog turtle habitat include sedges, rushes, marsh ferns, herbs, shrubs (tag alder, hardhack, blueberry, etc.), and wetland tree species (red maple and silky willow). These habitats often support sphagnum moss and may contain carnivorous plants (sundews and pitcher plants) and rare orchids. Potential habitats may be found in western Piedmont and Mountain counties from 700 to 4500 feet elevation in North Carolina. Soil types (poorly drained silt loams) from which bog turtle habitats have been found include Arkaqua, Chewacla, Dellwood, Codorus complex, Hatboro, Nikwasi, Potomac – Iotla complex, Reddies, Rosman, Tate – Cullowhee complex, Toxaway, Tuckasegee – Cullasaja complex, Tusquitee, Watauga, and Wehadkee.

Biological Conclusion: Not Required

Species listed as threatened due to similarity of appearance do not require Section 7 consultation with the USFWS. However, this project is not expected to affect the bog turtle because no suitable habitat is present within the study area. No freshwater wetlands occur within the study area. A review of NCNHP records, updated January 3, 2013, indicates no known bog turtle occurrence within 1.0 mile of the study area.

Carolina northern flying squirrel

USFWS recommended survey window: May-October; coldest days in coldest winter months (nest box surveys)

Habitat Description: There are several isolated populations of the Carolina northern flying squirrel in the mountains of North Carolina. This nocturnal squirrel prefers the ecotone between coniferous (red spruce, Fraser fir, or hemlock) and mature northern hardwood forests (American beech, yellow birch, maple, hemlock, red oak, and buckeye), typically at elevations above 4500 feet mean sea level. In some instances, these squirrels may be found on narrow, north-facing valleys above 4000 feet mean sea level. Both forest types are used to search for food and the hardwood forest is used for nesting sites. Mature forests with a thick evergreen understory and numerous snags are most preferable. In winter, squirrels inhabit tree cavities in older hardwoods, particularly yellow birch.

Biological Conclusion: No Effect

Suitable habitat for the Carolina northern flying squirrel does not exist in the study area. Study area elevations are much lower than those preferred by this species. A review of NCNHP records, updated January 3, 2013, indicates no known Carolina northern flying squirrel occurrence within 1.0 mile of the study area.

Gray bat

USFWS recommended survey window: May 15-August 15 (summer); January 15-February 15 (winter)

Habitat Description: Gray bats are known mainly from the cave regions of the Southeast and Midwest. They live in colonies in caves, utilizing different caves for summer roosting and winter hibernating. Summer caves are usually within 0.5 mile of a river or reservoir, which provides foraging habitat. During the summer, females give birth and rear the young in maternity caves, while males and yearlings roost in separate bachelor caves. Caves preferred for hibernation are typically deep, vertical caves with a temperature between 42 and 52 degrees Fahrenheit. Gray bats are highly selective in choosing suitable caves, and nine known caves are thought to provide hibernation space for 95 percent of the population. Migration from summer to winter caves begins in September and is mainly complete by the beginning of November.

Biological Conclusion: Unresolved

Suitable roosting habitat for the gray bat does not exist in the study area. The study area contains no caves of any kind. A review of NCNHP records, updated January 3, 2013, indicates a gray bat occurrence within the study area. The documented captures were foraging bats; there are no known roosts for them in the area (personal correspondence, Mary Frazer, NCDOT biologist, March 26, 2013). NCDOT's Biological Surveys Group will be conducting a habitat assessment and developing a biological conclusion for the gray bat. A memorandum will be distributed once the survey is complete.

Indiana bat

USFWS recommended survey window: May 15-August 15 (summer); January 15-February 15 (winter)

Habitat Description: The range of the Indiana bat centers on cavernous limestone regions in the eastern United States. The Indiana bat has different summer and winter requirements. Winter habitat is in caves and abandoned mines that usually have standing water on the floor. The bats migrate to the winter habitat between September and November; they stay there with occasional periods of activity until they emerge in mid-March to early May. Hibernation only occurs in regions where winter temperatures are stable and around 40 degrees Fahrenheit. Suitable summer habitat includes roosting, foraging, and commuting areas. Summer roosting habitat includes forests and woodlots containing potential roost trees, which have exfoliating bark, cracks, or crevices in trees (alive or dying), or snags that are greater than 3 inches diameter-at-breast height (dbh). Roosting habitat may contain dense or loose aggregates of trees with variable amounts of canopy closure. (While any tree greater than 3 inches dbh has the potential to be Indiana bat summer roosting habitat, solid stands of 3-inch dbh and smaller trees are not considered suitable roosting habitat; suitable roosting habitat would generally consist of forest patches with larger trees also present.) Bridges are occasionally used for roosting by Indiana bats in the summer.

Biological Conclusion: Unresolved

Suitable winter habitat for the Indiana bat does not exist in the study area. The study area contains no caves of any kind. However, suitable summer habitat for Indiana bat does exist in the study area in the form of a mature forest with potential roost trees. A review of NCNHP records, updated January 3, 2013, indicates no known Indiana bat occurrence within 1.0 mile of the study area. NCDOT biologists will conduct Indiana bat surveys in April 2013.

Appalachian elktoe

USFWS recommended survey window: year round

Habitat Description: The Appalachian elktoe is known from the French Broad River watershed in North Carolina. The Appalachian elktoe has been observed in moderate- to fast-flowing water, in gravelly substrates often mixed with cobble and boulders, in cracks of bedrock, and in relatively silt-free, coarse, sandy substrates. Apparently, stability of the substrate is critical to this species, as it is seldom found in stream reaches with accumulations of silt or shifting sand, gravel, or cobble.

Biological Conclusion: No Effect

Suitable habitat for the Appalachian elktoe does not exist in the study area. The study area contains no streams of any kind. A review of NCNHP records, updated January 3, 2013, indicates no known Appalachian elktoe occurrence within 1.0 mile of the study area.

Spruce-fir moss spider

USFWS recommended survey window: May-August

Habitat Description: This species is known only from spruce-fir forests in the Appalachian mountains of North Carolina and Tennessee. The spruce-fir moss spider occurs in well-drained moss and liverwort mats growing on rocks or boulders. These mats are found in well-shaded areas in mature, high-elevation (≥ 5000 feet mean sea level) Fraser fir, and red spruce forests. The spruce-fir moss spider is very sensitive to desiccation and requires environments of high and constant humidity. The need for humidity relates to the moss mats, which cannot become too parched or else the mats become dry and loose. Likewise, the moss mats cannot be too wet because large drops of water can also pose a threat to the spider. The spider constructs its tube-shaped webs in the interface between the moss mat and the rock surface. Some webs have been found to extend into the interior of the moss mat.

Biological Conclusion: No Effect

Suitable habitat for the spruce-fir moss spider does not exist in the study area. The study area contains no elevations ≥ 5000 feet mean sea level or appropriate forest communities. A review of NCNHP records, updated January 3, 2013, indicates no known spruce-fir moss spider occurrence within 1.0 mile of the study area.

Small whorled pogonia

USFWS recommended survey window: mid-May-early July

Habitat Description: Small whorled pogonia occurs in young as well as maturing (second to third successional growth) mixed-deciduous or mixed-deciduous/coniferous forests. It does not appear to exhibit strong affinities for a particular aspect, soil type, or underlying geologic substrate. In North Carolina, the perennial orchid is typically found in open, dry deciduous woods and is often associated with white pine and rhododendron. The species may also be found on dry, rocky, wooded slopes; moist slopes; ravines lacking stream channels; or slope bases near braided channels of vernal streams. The orchid, often limited by shade, requires small light gaps or canopy breaks, and typically grows under canopies that are relatively open or near features like logging roads or streams that create long-persisting breaks in the forest canopy.

Biological Conclusion: Unresolved

Suitable habitat for the small whorled pogonia does exist in the study area. A review of NCNHP records, updated January 3, 2013, indicates no known small whorled pogonia occurrence within 1.0 mile of the study area. Systematic surveys will be performed in all areas of suitable habitat during the survey window to determine presence or absence of this species.

Spreading avens

USFWS recommended survey window: June-September

Habitat Description: Spreading avens occurs in areas exposed to full sun on high-elevation cliffs, outcrops, and bases of steep talus slopes. This perennial herb also occurs in thin, gravelly soils of grassy balds near summit outcrops. The species prefers a northwest aspect, but can be found on west-southwest through north-northeast aspects. Forests surrounding known occurrences are generally dominated by either red spruce-Fraser fir, northern hardwoods with scattered spruce, or high-elevation red oaks. Spreading avens typically occurs in shallow, acidic soil (such as the Burton series) in cracks and crevices of igneous, metamorphic, or metasedimentary rocks. Soils may be well drained but almost continuously wet, with soils at some known occurrences subject to drying out in summer due to exposure to sun and shallow depths. Known populations occur at elevations ranging from 4296 to 6268 feet above mean sea level. Blue Ridge goldenrod, Heller's blazing star, and Roan Mountain bluet are a few of its common associate species.

Biological Conclusion: No Effect

Suitable habitat for the spreading avens does not exist in the study area. The study area contains no elevations ≥ 4296 feet mean sea level or moisture conditions suitable for this species. A review of NCNHP records, updated January 3, 2013, indicates no known spreading avens occurrence within 1.0 mile of the study area.

Rock gnome lichen

USFWS recommended survey window: year round

Habitat Description: Rock gnome lichen occurs in high elevation coniferous forests (particularly those dominated by red spruce and Fraser fir) usually on rocky outcrop or cliff habitats. This squamulose lichen only grows in areas with a great deal of humidity, such as high elevations above 5000 feet mean sea level where there is often fog, or on boulders and large outcrops in deep river gorges at lower elevations. Habitat is primarily limited to vertical rock faces where seepage water from forest soils above flows only at very wet times. The species requires a moderate amount of sunlight, but cannot tolerate high-intensity solar radiation. The lichen does well on moist, generally open sites with northern exposures, but requires at least partial canopy coverage on southern or western aspects because of its intolerance to high solar radiation.

Biological Conclusion: No Effect

Suitable habitat for rock gnome lichen does not exist in the study area. The study area contains no elevations ≥ 5000 feet mean sea level. A review of NCNHP records, updated January 3, 2013, indicates no known rock gnome lichen occurrence within 1.0 mile of the study area.

5.9 Bald Eagle and Golden Eagle Protection Act

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water. Suitable habitat for bald eagle does not exist within the study area; however, suitable habitat does exist along the nearby Pigeon River. Surveys for nest trees were conducted on January 29 within the study area and to a distance of 660 feet to all sides. No nest trees were identified within 660 feet of the study area. Additionally, a review of the NCNHP database on March 4, 2013 revealed no known occurrences of this species within 1.0 mile of the project study area. Due to the lack of nests, known occurrences, and impacts to suitable habitat, it has been determined that this project will have no effect on this species.

5.10 Endangered Species Act Candidate Species

As of March 5, 2013, the USFWS lists no Candidate species for Haywood County.

5.11 Essential Fish Habitat

The study area contains no National Marine Fisheries Service (NMFS) Essential Fish Habitat; therefore, the proposed project will have no impact on these resources.

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Appendix A

Figures



Prepared for:



Project:

I-5508

**PROPOSED WIDENING,
SLOPE STABILIZATION,
ROCK BOLTING, AND
BARRIER FENCE
NEAR MILEPOST 7
OF INTERSTATE 40**

Haywood County, NC

Title:

**VICINITY
MAP**

Notes:

Background imagery sources:
Cove Creek Gap, NC (2003)
and Waterville, NC (xxxx) 7.5-
minute topographic quadrangles
(primary window) and Knoxville,
TN-NC 30 x 60-minute
topographic quadrangle (lower
inset) provided by the U.S.
Geological Survey; and Natural
Earth physical map (upper inset)
provided by the National Park
Service.

Drawn by: SGD

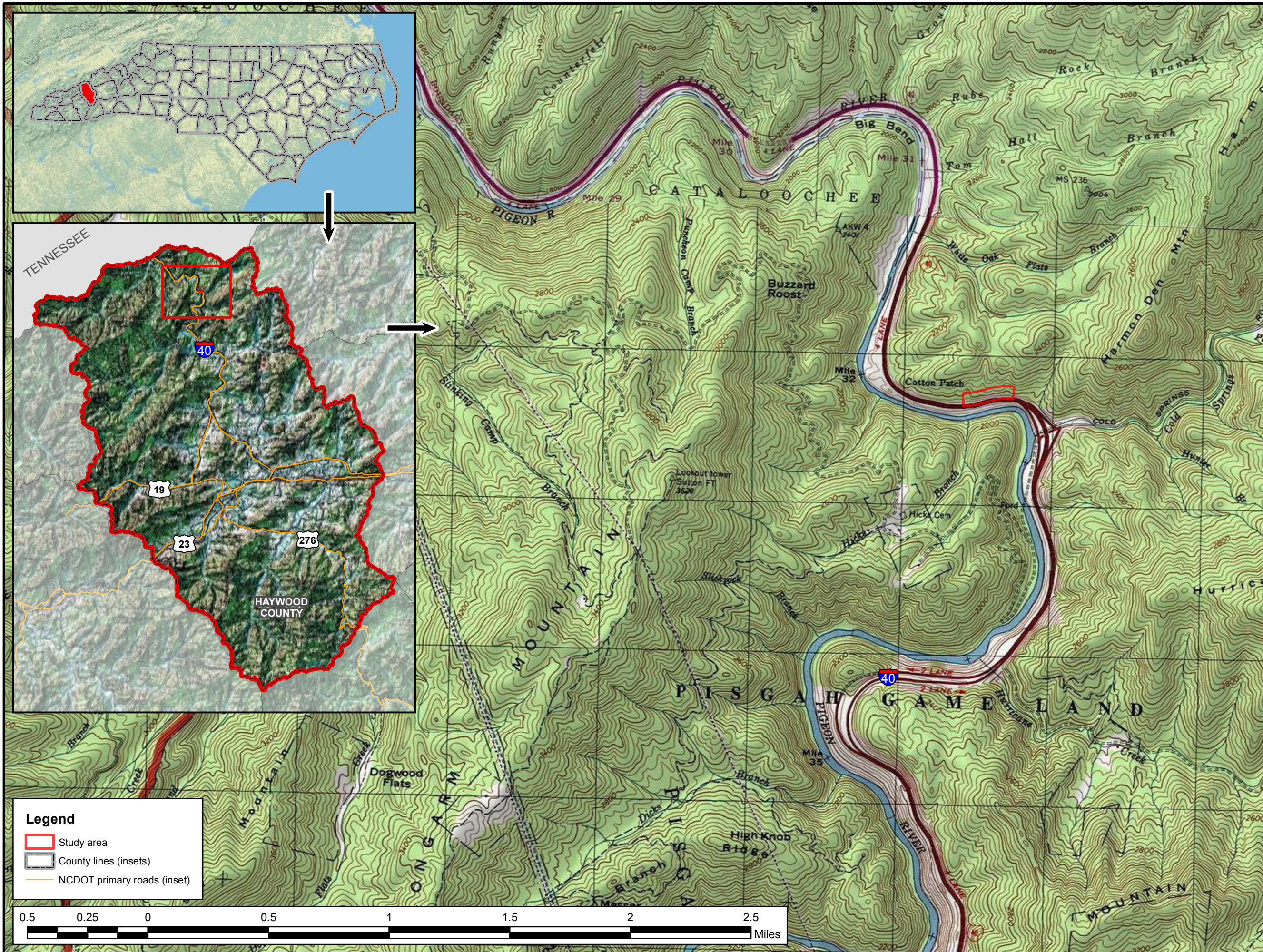
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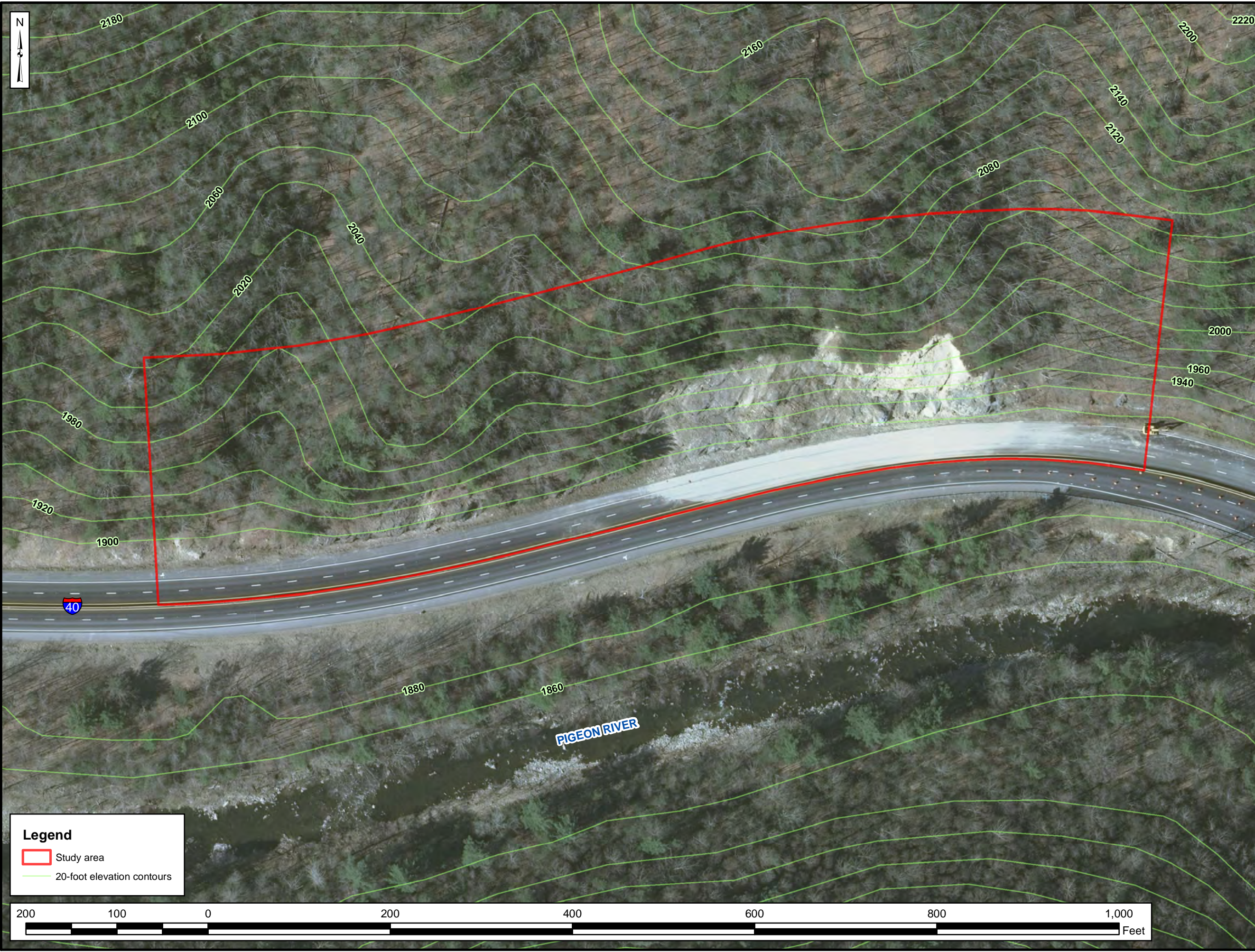
Scale: As shown

Project No.: 12-014.03

FIGURE

1





Axiom Environmental, Inc.

Prepared for:



Project:

I-5508

**PROPOSED WIDENING,
SLOPE STABILIZATION,
ROCK BOLTING, AND
BARRIER FENCE
NEAR MILEPOST 7
OF INTERSTATE 40**

Haywood County, NC

Title:

**PROJECT
STUDY AREA
MAP**

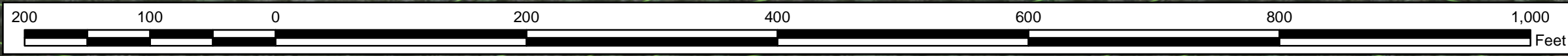
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1. Background imagery source:
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provided by the NC OneMap
program (online, supported by
the NC Geographic Information
Coordination Council).

Legend

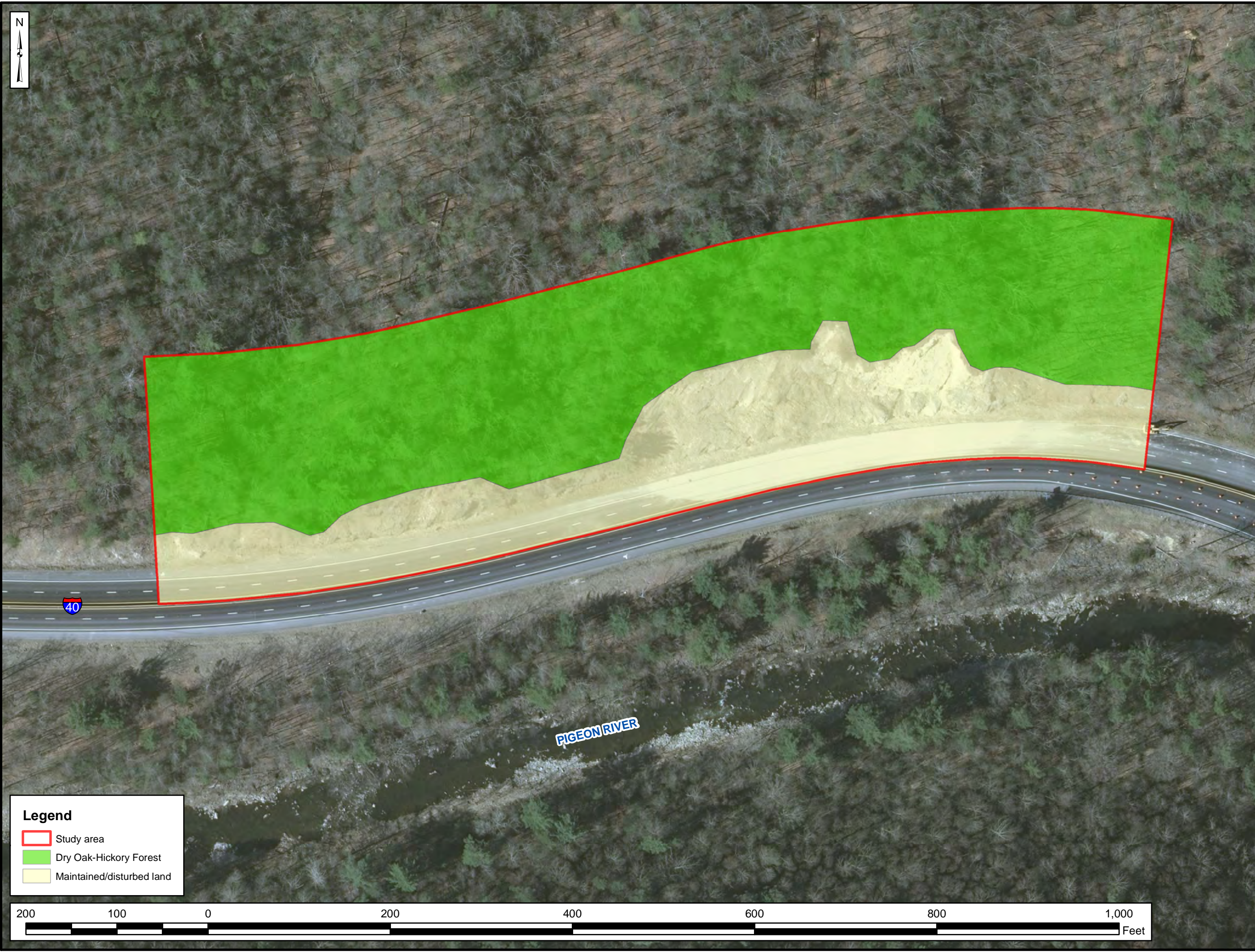
Study area

— 20-foot elevation contours



Drawn by:	SGD
Date:	JAN 2013
Scale:	1:1200
Project No.:	12-014.03

**FIGURE
2**



Axiom Environmental, Inc.

Prepared for:



Project:

I-5508

**PROPOSED WIDENING,
SLOPE STABILIZATION,
ROCK BOLTING, AND
BARRIER FENCE
NEAR MILEPOST 7
OF INTERSTATE 40**

Haywood County, NC

Title:

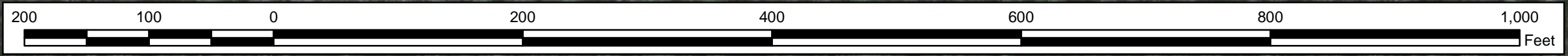
**TERRESTRIAL
COMMUNITIES
MAP**

Notes:

1. Background imagery source:
2010 aerial photography
provided by the NC OneMap
program (online, supported by
the NC Geographic Information
Coordination Council).

Legend

- Study area
- Dry Oak-Hickory Forest
- Maintained/disturbed land



Drawn by:	SGD
Date:	JAN 2013
Scale:	1:1200
Project No.:	12-014.03

**FIGURE
3**

Appendix B

Scientific Names of Species Identified in Report

Plants

<u>Common Name</u>	<u>Scientific Name</u>
American beech	<i>Fagus grandifolia</i>
American hop-hornbeam	<i>Ostrya virginiana</i>
Black gum	<i>Nyssa sylvatica</i>
Black locust	<i>Robinia pseudoacacia</i>
Blueberry	<i>Vaccinium</i> sp.
Blue Ridge goldenrod	<i>Solidago spithamea</i>
Broomsedge	<i>Andropogon virginicus</i>
Buckeye	<i>Aesculus</i> sp.
Christmas fern	<i>Polystichum acrostichoides</i>
Clover	<i>Trifolium</i> sp.
Dock	<i>Rumex</i> sp.
Eastern hemlock	<i>Tsuga canadensis</i>
Fescue	<i>Festuca</i> sp.
Flowering dogwood	<i>Cornus florida</i>
Fraser fir	<i>Abies fraseri</i>
Great laurel	<i>Rhododendron maximum</i>
Hairy bittercress	<i>Cardamine hirsuta</i>
Hardhack	<i>Spiraea</i> sp.
Heller's blazing star	<i>Liatris helleri</i>
Hemlock	<i>Tsuga</i> sp.
Japanese stilt grass	<i>Microstegium vinimeum</i>
Maidenhair spleenwort	<i>Asplenium trichomanes</i>
Maple	<i>Acer</i> sp.
Mountain laurel	<i>Kalmia latifolia</i>
Pignut hickory	<i>Carya glabra</i>
Pipsissewa	<i>Chimaphila maculata</i>
Pitcherplants	<i>Sarracenia</i> spp.
Poison ivy	<i>Toxicodendron radicans</i>
Princess-tree	<i>Paulownia tomentosa</i>
Red maple	<i>Acer rubrum</i>
Red oak	<i>Quercus</i> sp.
Red spruce	<i>Picea rubens</i>
Rhododendron	<i>Rhododendron</i> sp.
Roan Mountain bluet	<i>Houstonia montana</i>
Rock chestnut oak	<i>Quercus montana</i>
Rock gnome lichen	<i>Gymnoderma lineare</i>
Rushes	<i>Juncus</i> spp.
Scarlet oak	<i>Quercus coccinea</i>

Common Name

Sedges
Sericea
Shortleaf pine
Silky willow
Small whorled pogonia
Smooth sumac
Sourwood
Southern red oak
Sphagnum moss
Spreading avens
Spruce
Sundews
Tag alder
Whiteleaf greenbriar
White pine
Woolly mullein
Yellow birch
Yellow poplar

Scientific Name

Carex spp.
Lespedeza cuneata
Pinus echinata
Salix sericea
Isotria medeoloides
Rhus glabra
Oxydendron arboreum
Quercus falcata
Sphagnum sp.
Geum radiatum
Picea sp.
Drosera spp.
Alnus serrulata
Smilax glauca
Pinus strobus
Verbascum thapsis
Betula alleghaniensis
Liriodendron tulipifera

Animals

Common Name

American crow
American kestrel
American toad
Appalachian elktoe
Bald eagle
Blue jay
Bog turtle
Carolina chickadee
Carolina northern flying squirrel
Carolina wren
Eastern bluebird
Eastern box turtle
Eastern cottontail
Eastern fence lizard
Eastern milk snake
Five-lined skink
Gray bat
Indiana bat
Raccoon
Spruce-fir moss spider
Tufted titmouse
Turkey vulture
Virginia opossum

Scientific Name

Corvus brachyrhynchos
Falco sparverius
Bufo americanus
Alasmidonta raveneliana
Haliaeetus leucocephalus
Cyanocitta cristata
Glyptemys muhlenbergii
Poecile carolinensis
Glaucomys sabrinus coloratus
Thryothorus ludovicianus
Sialia sialis
Terrapene carolina
Sylvilagus floridanus
Sceloporus undulatus
Lampropeltis triangulum
Eumeces fasciatus
Myotis grisescens
Myotis sodalis
Procyon lotor
Microhexura montivaga
Baeolophus bicolor
Cathartes aura
Didelphis virginiana

Common Name

White-breasted Nuthatch

White-tailed deer

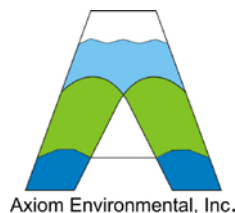
Yellow-rumped warbler

Scientific Name

Sitta carolinensis

Odocoileus virginianus

Dendroica coronata



Axiom Environmental, Inc.

218 Snow Avenue, Raleigh, North Carolina 27603 919-215-1693

June 27, 2013

MEMORANDUM TO: Michael Turchy, NCDOT, PD&EA, Natural Environment Section
FROM: Sandy Smith, Axiom Environmental, Inc.
SUBJECT: Survey findings for Federally Protected Species with a Biological Conclusion of “No Effect” in the Project NRTR Dated March 2013, TIP project I-5508, Widening and Stabilization of I-40, Pisgah National Forest, Haywood County

Axiom Environmental, Inc. (Axiom) submitted a final Natural Resources Technical Report (NRTR) for the above-mentioned project to the N.C. Department of Transportation (NCDOT) in March 2013. In that document, the biological conclusion of “Unresolved” was listed for the following federally protected species: Indiana bat (*Myotis sodalis*), and small whorled pogonia (*Isotria medeoloides*). Subsequently, NCDOT biologist, Heather Wallace has provided Axiom with a memo updating the biological conclusion for the Indiana bat, and Axiom, with assistance from NCDOT biologists, has conducted a survey within suitable habitat for small whorled pogonia. Following are revisions of the Indiana bat and small whorled pogonia write-ups in the Final NRTR (dated March 2013).

Indiana bat

USFWS recommended survey windows: May 15-August 15 (summer); January 15-February 15 (winter)

Habitat Description: The range of the Indiana bat centers on cavernous limestone regions in the eastern United States. The Indiana bat has different summer and winter requirements. Winter habitat is in caves and abandoned mines that usually have standing water on the floor. The bats migrate to the winter habitat between September and November; they stay there with occasional periods of activity until they emerge in mid-March to early May. Hibernation only occurs in regions where winter temperatures are stable and around 40 degrees Fahrenheit. Suitable summer habitat includes roosting, foraging, and commuting areas. Summer roosting habitat includes forests and woodlots containing potential roost trees, which have exfoliating bark, cracks, or crevices in trees (alive or dying), or snags that are greater than 3 inches diameter-at-breast height (dbh). Roosting habitat may contain dense or loose aggregates of trees with variable amounts of canopy closure. (While any tree greater than 3 inches dbh has the potential to be Indiana bat summer roosting habitat, solid stands of 3-inch dbh and smaller trees are not considered suitable roosting habitat; suitable roosting

habitat would generally consist of forest patches with larger trees also present.) Bridges are occasionally used for roosting by Indiana bats in the summer.

Biological Conclusion: No Effect

Suitable winter habitat for the Indiana bat does not exist in the study area. The study area contains no caves of any kind. However, suitable summer habitat for Indiana bat does exist in the study area in the form of a mature forest with potential roost trees. A review of NCNHP records, updated January 3, 2013, indicates no known Indiana bat occurrence within 1.0 mile of the study area. NCDOT biologists conducted Indiana bat surveys in April 2013. One potential roost tree (a dead pine with sloughing bark) was located within the project activity area. However, this tree is in close proximity to the interstate, so it is unlikely that bats would tolerate the noise associated with passing traffic and use this tree as a roost. No Indiana bats were captured during the netting conducted by the N.C. Wildlife Resources Commission/NCDOT near the project area in 2006. The closest record is from October 2008, 22 miles south of the project (N.C. Natural Heritage Program, last update April 13, 2013). It should be noted that U.S. Fish and Wildlife Service considers Haywood County a “winter county” for this species since the only county record is from a “winter” month. Due to the lack of records for the species within the project vicinity, and a lack of suitable winter habitat, the project will have no impact on Indiana bats.

Small whorled pogonia

USFWS recommended survey window: mid-May-early July

Habitat Description: Small whorled pogonia occurs in young as well as maturing (second to third successional growth) mixed-deciduous or mixed-deciduous/coniferous forests. It does not appear to exhibit strong affinities for a particular aspect, soil type, or underlying geologic substrate. In North Carolina, the perennial orchid is typically found in open, dry deciduous woods and is often associated with white pine and rhododendron. The species may also be found on dry, rocky, wooded slopes; moist slopes; ravines lacking stream channels; or slope bases near braided channels of vernal streams. The orchid, often limited by shade, requires small light gaps or canopy breaks, and typically grows under canopies that are relatively open or near features like logging roads or streams that create long-persisting breaks in the forest canopy.

Biological Conclusion: No Effect

Suitable habitat for the small whorled pogonia does exist in the study area in the form of mixed deciduous/coniferous forest, particularly in ravines lacking streams and near the bluff edge where sunlight is abundant and persistent. A review of NCNHP records, updated January 3, 2013, indicates no known small whorled pogonia occurrence within 1.0 mile of the study area. Systematic surveys were performed in all areas of suitable habitat by Axiom and NCDOT biologists on June 24, 2013. No individuals of small whorled pogonia were observed during this survey.

BIOLOGICAL EVALUATION REPORT
FOR THE
PROPOSED SLOPE STABILIZATION NEAR MILEPOST 7 ON INTERSTATE 40
PISGAH NATIONAL FOREST
HAYWOOD COUNTY
NORTH CAROLINA
NCDOT DIVISION 14
TIP NO. I-5508

DECEMBER 2013

Contact Person:
Dennis Herman
Environmental Program Consultant
North Carolina Department of Transportation
Natural Environment Section
Biological Surveys Group

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 Figure 1: Project location and analysis area
 Figure 2: Activity area

I. INTRODUCTION

This report identifies the potential effects and impacts on botanical, aquatic, and terrestrial resources of N.C. Department of Transportation (NCDOT) Division 14 project, WBS Element No. 55057.1.1, Slope Stabilization near Milepost 7 on Interstate 40 (I-40) in northern Haywood County, North Carolina (Figure 1, Appendix 1). The project area is within the Appalachian Ranger District of the Pisgah National Forest and is located within sub-basin 06010106 of the French Broad River Basin (USGS 1974).

The NCDOT proposes to stabilize the slope along the north side of the westbound lanes of I-40 near Milepost 7. The existing interstate is a four-lane highway divided by a central concrete barrier. The slope along the north side of Interstate 40 was cut in the 1950s during interstate construction, and has been subject to repeated sloughing as the rock formation underlying this slope tends to foliate toward the Pigeon River on the opposite side of I-40. Slope failures and the associated rock slides have resulted in a large area characterized by steep to vertical slopes and exposed bedrock. Slope stabilization measures will include the blasting of rock to ease the angle of the slope, the installation of bolts to secure surface strata to underlying material, and the placement of fencing to contain future rock movement. Temporary fill from project activities will be placed in a small, level area located between Buzzard Roost Road [National Forest Service Road (NFSR) 288] and the Pigeon River on the south side of I-40 approximately 1000 feet south of slope stabilization activities (Figure 1, Appendix 1).

II. SPECIES CONSIDERED AND METHODS

In this report, the potential effects on rare species (including federally Threatened and Endangered [T&E] species and USFS Sensitive [S] species) are evaluated. USFS Forest Concern (FC) species are evaluated in separate resource reports. Potential direct and indirect effects to T&E and S species in the activity area are analyzed.

An updated, comprehensive rare species list for all national forests in North Carolina was provided by the USFS (May 2012). The Pisgah National Forest species list was separated from the comprehensive list, and this list was further refined to include only those species known from Haywood County based on N.C. Natural Heritage Program (NCNHP) and regional USFS elements of occurrence. The “Revised Forest Service Sensitive and Forest Concern list of species in Pisgah National Forest, Haywood County, NC (dated March 2012)” was generated by NCDOT staff (Dennis Herman). The individual aquatic, botanical, and terrestrial species lists are available as Appendix 2 in their respective resource reports.

Potentially affected rare species were identified by the following methods:

1. Reviewing the list of T&E, S, and FC species of the Pisgah National Forest in Haywood County and streamlining this list to include only the species that exist within the natural communities found in the activity area.
2. Consulting element occurrence records as maintained by the NCNHP.

3. Consulting with USFS personnel who are knowledgeable of the area and the associated flora and fauna.
4. Conducting multiple field surveys within the activity area.

Surveys were conducted within the USFS property that may be impacted by the proposed road improvements. While the biological survey inventory assessed all species encountered, particular focus was directed towards species listed with T&E, S, and FC statuses.

III. EXISTING BIOLOGICAL CONDITION

A. ANALYSIS AREA

The project “analysis area” (Figure 1, Appendix 1) comprises an ellipse, approximately 1.3 to 1.4 miles (2.1 to 2.4 kilometers) in diameter, extending 1.0 kilometer from the project activity area (Figure 2, Appendix 1), the area anticipated to be disturbed by the proposed project. The analysis area is located in the Blue Ridge level III ecoregion, and the Southern Metasedimentary Mountains level IV ecoregion (Griffith et al. 2002). Elevations within the analysis area range from a low of approximately 1820 feet in the Pigeon River to approximately 2960 feet on the ridge of Harmon Den Mountain to the east of the activity area.

A portion of the analysis area is occupied by the Pigeon Ford Rare Species Habitat Significant Natural Heritage Area (SNHA) (NCNHP 2008), which occurs on the west side of the Pigeon River approximately 1000 feet south of the activity area. The dominant natural community within this SNHA is Dry Oak-Hickory Forest, which typically occurs on ridge tops, upper slopes, steep, south-facing slopes, and other relatively dry upland areas on acidic soils. Also included in this SNHA are moister areas of cove forests (Rich Cove Forests and Acidic Cove Forests), which tend to occur on low to moderate elevation sites, often along stream corridors. According to the Natural Areas Inventory of Haywood County, high quality examples of the following natural communities occur within a mile radius of the project activity area: Rich Cove Forest in the Salt-Bin-Mount Sterling Creek Yellowwood Slopes SNHA to the west of the activity area; Rich Cove Forest and Montane Mafic Cliff communities in the Salt Bin Bluffs SNHA to the west of the activity area; Montane Oak-Hickory Forest, Rich Cove Forest, Acidic Cove Forest and White Pine Forest in the Slick Rock Branch Coves SNHA to the south of the activity area; and Chestnut Oak Forest, Montane Oak-Hickory Forest, and Rich Cove Forest in the Hurricane Ridge SNHA to the east of the activity area.

The slope proposed for stabilization occurs on the opposite side of I-40 from the Pigeon River, a perennial, greater than third-order stream. The Pigeon River drains a large, primarily forested watershed punctuated by small areas of agriculture, silviculture, and townships. The Pigeon River flows to a confluence with the French Broad River approximately 33 miles downstream of the proposed project and is characterized by a series of riffles, pools, and rapids over a bed of bedrock, boulders, and cobble.

B. ACTIVITY AREA

The activity area (Figure 2, Appendix 1) is the area anticipated to be directly disturbed by the proposed slope stabilization project. The activity area is approximately 1100 feet in length, extending 300 feet from the centerline of I-40 and generally centered on the failing slope. Included in the activity area are two westbound lanes of I-40, a 10- to 15-foot maintained roadside shoulder, and wooded slopes surrounding the exposed bedrock. Elevations in the activity area range from 1890 to 2090 feet above sea level. This is considered to be “low elevation” in natural community descriptions according to Schafale and Weakley (1990). The land surface is very steep to vertical above the road, with several narrow topographic crenulations. The entirety of the activity area occupies 7.0 acres and is located entirely within USFS property.

One Schafale and Weakley (1990) natural community type and one ruderal community type were identified in the activity area: Dry Oak-Hickory Forest, and anthropogenic land. Dry Oak-Hickory Forest dominates the activity area along wooded slopes adjacent to and above the exposed rock face. Oaks, including Rock Chestnut Oak, dominate the canopy and various sapling species such as Flowering Dogwood and Sourwood and shrubs such as Great Laurel and Mountain Laurel occur in the understory. The groundcover is sparse and includes Christmas Fern, Maidenhair Spleenwort, and Pipsissewa. Anthropogenic land occurs along the generally narrow, maintained shoulder immediately adjacent to I-40 and includes the exposed rock face. The maintained roadside is dominated by grasses and weedy forbs typical of disturbed environments. Shrubby species are present in greater numbers along forest edges. The exposed rock face supports scattered individuals of herbaceous and woody species including Virginia Pine, Princess Tree, and Alumroot.

Two potential activity areas are present within the analysis area: a potential haul lane located between I-40 and the Pigeon River, and a temporary rock storage area located between Buzzard Roost Road [National Forest Service Road (NFSR) 288] and the Pigeon River (Figure 2, Appendix 1). The potential haul lane is located directly across I-40 from the activity area and extends south to the intersection of the I-40 access ramps with Buzzard Roost Road and Cold Spring Creek Road (NFSR 148). This area is approximately 2000 feet in length and 70 to 170 feet in width, occupying approximately 5.0 acres. The temporary rock storage area is approximately 1200 feet in length and ranges to 170 feet in width, occupying approximately 3.4 acres. This area is located in the floodplain of the Pigeon River, and elevations range from 1856 feet to 1880 feet above sea level. Both of these areas are composed entirely of disturbed, early secondary-growth species characteristic of maintained roadsides and disturbed areas.

One ruderal community type was identified in the potential activity areas, anthropogenic land. Both the potential haul lane and the temporary rock storage area include maintained shoulders adjacent to roadways and shrubby, disturbed forest areas located immediately adjacent to the Pigeon River. Canopy trees are scattered outside of maintained areas and include red maple, Sweetgum, and River Birch. The sub-canopy and shrub layers are occasionally thick along the edges of maintained areas and immediately adjacent to the Pigeon River, including Honey Locust, Chinese Privet, and Thimbleberry. The maintained roadsides are dominated by grasses, weedy forbs, and vines typical of disturbed environments, including Fescue, Henbit, Queen Anne’s Lace, and American Hog-peanut.

C. TIMING OF FIELD SURVEYS

Three field surveys were conducted in 2013. Biologists with expertise in various fields participated in the surveys. Qualifications of principle investigators are included in this report.

Survey Dates: April 22, June 24, and September 17, 2013.

A list of species observed during the surveys can be found in Appendix 3 of the associated botanical and terrestrial animal resource reports. No T&E, S, or FC species were found during the site visits.

D. THREATENED, ENDANGERED, AND SENSITIVE SPECIES

The revised Forest Service Sensitive and Forest Concern list of species in Pisgah National Forest, Haywood County, NC (March 2012) (generated by NCDOT) includes eight T&E species (one aquatic, four terrestrial animals, and three botanical), and 44 S species (one aquatic, seven terrestrial animals, and 36 botanical). Analyses of listed species included systematic identification of natural community types, elevations, and geological characteristics within the activity area, and a subsequent determination of suitable habitat followed by systematic surveys for listed species within the activity area. Detailed discussions of each listed species with ranges extending into Haywood County are provided below.

Threatened and Endangered Species

Mollusks

1. *Alasmidonta raveneliana* (Appalachian Elktoe) is federally Endangered and occurs in the Tennessee River drainages. The species is most often found in riffles, runs, and shallow flowing pools; stability of the substrate appears to be critical to the Appalachian Elktoe. Current records are known in Haywood County. The activity area does not contain any streams; therefore, suitable habitat does not exist in the activity area, and the project will have no effect on this species.

Invertebrates

1. *Microhexura montivaga* (Spruce-fir Moss Spider) is federally Endangered and occurs in moss and liverwort mats of spruce-fir forests at and above 5400 feet. Current records are known in Haywood County. Suitable habitat does not exist in the activity area; therefore, the project will have no effect on this species.

Mammals

1. *Glaucomys sabrinus coloratus* (Carolina Northern Flying Squirrel) is federally Endangered and prefers the ecotone between coniferous and mature northern hardwood forests, typically at elevations above 4500 feet. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no individuals of *Glaucomys sabrinus coloratus* were observed during activity area surveys; therefore, the project will have no effect on this species.
2. *Myotis grisescens* (Gray Myotis) is federally Endangered, roosts in caves and abandoned mines year-round, and forages over open waterways surrounded by forest. Current records are known in Haywood County. Netting conducted by the N.C. Wildlife

Resources Commission (NCWRC) and the NCDOT approximately 1.0 mile south of the project site in 2005, 2006, and 2010 resulted in the capture of individuals in 2005 and 2006. There are four abandoned mines within 5 miles of the project site, the closest being approximately 2 miles south; however, none of these mines will be affected by the proposed project. Adjacent to the activity area, the Pigeon River provides suitable foraging habitat for this species. Suitable habitat within the activity area was searched during field visits, and no suitable roosting habitat or individuals of *Myotis grisescens* were observed. The mountainside directly across the Pigeon River from the activity area and the potential activity areas was surveyed for potential roost trees as part of the air-blast zone that may experience acoustic disturbance during rock blasting within the activity area. No suitable roost trees were located in this area. Since no caves or mines will be affected by the project, and no trees are expected to be cut in riparian areas adjacent to the River, the project will have no effect on *Myotis grisescens*.

3. *Myotis sodalis* (Indiana Bat) is federally Endangered and roosts in hollow trees or under loose bark in warmer months and in limestone caves in winter. Current records are known in Haywood County, which is considered a “winter county,” as the only NCNHP record of this species is from a “winter” month (October 2008). This occurrence is located approximately 22 miles south of the project site. There are four abandoned mines within 5 miles of the project site, the closest being approximately 2 miles south; however, none of these mines will be affected by the proposed project. One potential roost tree (a dead pine with sloughing bark) was located within the activity area; however, this tree is in close proximity to the interstate, so it is unlikely that bats would tolerate the noise associated with passing traffic and use this tree as a roost. The mountainside directly across the Pigeon River from the activity area and the potential activity areas was surveyed for potential roost trees as part of the air-blast zone that may experience acoustic disturbance during rock blasting within the activity area. No suitable roost trees were located in this area. Due to the lack of records for the species within the project vicinity, and a lack of suitable winter habitat, the project will have no effect on *Myotis sodalis*.

Nonvascular Plants

1. *Gymnoderma lineare* (Rock Gnome Lichen) is federally Endangered and occurs on high-elevation rock outcrops and outcrops in humid gorges. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no individuals of *Gymnoderma lineare* were observed during activity area surveys; therefore, the project will have no effect on this species.

Vascular Plants

1. *Geum radiatum* (Spreading Avens) is federally Endangered and occurs on high elevation rocky summits over 4300 feet. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no individuals of *Geum radiatum* were observed during activity area surveys; therefore, the project will have no effect on this species.
2. *Isotria medeoloides* (Small-whorled Pogonia) is federally Threatened. This species is found on acidic soils, in dry to mesic second-growth, deciduous or deciduous-coniferous forests (especially with *Pinus strobus*). Typical habitat includes light to moderate leaf

litter, an open herb layer, moderate to light shrub layer, and relatively open canopy. Systematic surveys were completed June 24, 2013 within the activity area, but no individuals of *Isotria medeoloides* or potential habitat were observed; therefore, the project will have no effect on this species.

Sensitive Species

Fish

1. *Percina squamata* (Olive Darter) occurs in the Tennessee River drainages in fast riffles among boulders in small to medium-sized rivers, over a bottom of gravel and rubble. Current records are known in Haywood County. Suitable habitat does not exist in the activity area and the project will have no impact on this species.

Amphibians

1. *Desmognanthus santeetlah* (Santeetlah Dusky Salamander) prefers stream headwaters and seepage areas in the southwest North Carolina mountains. Current records are known in Haywood County. Suitable habitat is not present within the activity area; therefore, the project will have no impact on this species.

Birds

1. *Falco peregrinus* (Peregrine Falcon) prefers cliffs (for nesting), and coastal ponds and mudflats for foraging in winter (nesting evidence and regular wintering sites). Current records are known in Haywood County. NCNHP documents *Falco peregrinus* approximately 0.5 mile northwest of the activity area. Suitable nesting habitat within the activity area was evaluated, and no nesting sites or individuals of *Falco peregrinus* were observed; therefore, the project will have no impact on this species.
2. *Haliaeetus leucocephalus* (Bald Eagle) prefers mature forests near large bodies of water (for nesting), and lakes and sounds for nesting sites and regular non-breeding sites. Current records are known in Haywood County. Suitable nesting habitat is not present within the activity area; therefore, the project will have no impact on this species.
3. *Thryomanes bewickii altus* (Appalachian Bewick's Wren) prefers high elevation in the breeding season only. This species is listed as historical or extinct in Haywood County. Suitable habitat is not present within the activity area; therefore, the project will have no impact on this species.

Mammals

1. *Microtus chrotorrhinus carolinensis* (Southern Rock Vole) prefers rocky areas at high elevations above 3800 feet, forests, or fields. Current records are known in Haywood County. Suitable habitat within the activity area was searched during field visits, and no individuals of *Microtus chrotorrhinus carolinensis* were observed; therefore, the project will have no impact on this species.
2. *Myotis leibii* (Eastern Small-footed Myotis) roosts in hollow trees (warmer months), usually in hemlock forests, and in caves and mines (winter). Current records are known in Haywood County. NCNHP database records (2013) indicate that this species was reported in 2004 from a dead bat brought into the county health department for a rabies test sometime after 1994. Netting conducted by the NCWRC and the NCDOT approximately 1.0 mile south of the project area in 2005, 2006, and 2010 resulted in the

capture of one individual of *Myotis leibii* in 2010. There are four abandoned mines within 5 miles of the project site, the closest being approximately 2 miles south; however, none of these mines will be affected by the proposed project. Suitable habitat is present within the activity area in the form of a sunny rock outcrop. This outcrop will be destroyed by blasting activities, but a new rock face will be created in the process, resulting in no net loss of roosting habitat for this species within the activity area. The mountainside directly across the Pigeon River from the activity area and the potential activity areas was surveyed for potential roost trees as part of the air-blast zone that may experience acoustic disturbance during rock blasting within the activity area. No suitable roost trees were located in this area. There is potential roost habitat for this species in the form of crevices created within piles of broken concrete in the potential activity areas, but this material is unlikely to be preferable to nearby natural rock outcrops. Due to the minimal amount of roosting habitat within the activity area, the abundance of suitable roosting habitat within the surrounding National Forest, and the low capture numbers during netting activities, the proposed project will have no impact on *Myotis leibii*.

3. *Sorex palustris punctulatus* (Southern Water Shrew) prefers stream banks in montane forests. Current records are known in Haywood County. Suitable habitat is not located within the activity area; therefore, the project will have no impact on this species.

Non-Vascular Plants

1. *Acrobolbus ciliatus* (a liverwort) occurs on moist rocks, in spray zones of waterfalls in humid gorges or in high elevation Red Spruce-Fraser Fir Forest. This species is listed as historical or extinct in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Acrobolbus ciliatus* were observed during activity area surveys; therefore, the project will have no impact on this species.
2. *Diplophyllum apiculatum* var. *taxifolioides* (a liverwort) occurs in moist soil or on rocks. This species is listed as historical or extinct in Haywood County. Systematic surveys were completed April 22, 2013 and June 24, 2013 in suitable habitat present within the activity area, and no individuals of *Diplophyllum apiculatum* var. *taxifolioides* were observed; therefore, the project will have no impact on this species.
3. *Frullania appalachiana* (a liverwort) occurs on the bark of hardwood trees in Red Spruce-Fraser Fir Forest. This species is listed as historical or extinct in Haywood County. Suitable Red Spruce-Fraser Fir Forest habitat does not exist in the activity area, and no specimens of *Frullania appalachiana* were observed during activity area surveys; therefore, the project will have no impact on this species.
4. *Leptodontium excelsum* (Grandfather Mountain Leptodontium) occurs on bark in Red Spruce-Fraser Fir Forest. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Leptodontium excelsum* were observed during activity area surveys; therefore, the project will have no impact on this species.
5. *Leptohymenium sharpii* (Mount LeConte Moss) occurs on moist rocks in Red Spruce-Fraser Fir Forest. This species is listed as historical or extinct in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Leptohymenium sharpii* were observed during activity area surveys; therefore, the project will have no impact on this species.

6. *Marsupella emarginata* var. *latiloba* (a liverwort) occurs on moist rocks in humid gorges, in spray zones of waterfalls, or in high elevations. This species is listed as historical or extinct in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Marsupella emarginata* var. *latiloba* were observed during activity area surveys; therefore, the project will have no impact on this species.
7. *Megaceros aenigmaticus* (a hornwort), occurs on rocks in streams. Current records are known in Haywood County. No streams/suitable habitat are present within the activity area; therefore, the project will have no impact on this species.
8. *Metzgeria temperata* (Whiskered Veilwort) occurs on high elevation rocky summits and on moist rocks in Red Spruce-Fraser Fir Forest. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Metzgeria temperata* were observed during activity area surveys; therefore, the project will have no impact on this species.
9. *Plagiochila caduciloba* (Gorge Leafy Liverwort) occurs on rocks and stream banks in humid gorges and spray zones of waterfalls at elevations of 1000-5000 feet. This species is listed as historical or extinct in Haywood County. Suitable habitat does not occur within the activity area, and no individuals of *Plagiochila caduciloba* were identified during activity area surveys; therefore, the project will have no impact on this species.
10. *Plagiochila sharpii* (Sharp's Leafy Liverwort) occurs on damp rock faces in humid gorges, High Elevation Rocky Summits, and Rich Cove Forests restricted to elevations at 1180-4430 feet. This species is listed as historical or extinct in Haywood County. Suitable habitat does not occur within the activity area, and no individuals of *Plagiochila sharpii* were identified during activity area surveys; therefore, the project will have no impact on this species.
11. *Plagiochila sullivantii* var. *sullivantii* (Sullivant's Leafy Liverwort) occurs on moist rock faces in spray zones of waterfalls and within Red Spruce-Fraser Fir Forests. This species is listed as historical or extinct in Haywood County. Red Spruce-Fraser Fir Forest does not occur within the activity area, and no individuals of *Plagiochila sullivantii* var. *sullivantii* were identified during activity area surveys; therefore, the project will have no impact on this species.
12. *Riccardia jugata* (a liverwort) occurs on fallen, well-decayed logs in humid areas, especially gorges, in partial or complete shade. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Riccardia jugata* were observed during activity area surveys; therefore, the project will have no impact on this species.
13. *Sphenolobopsis pearsonii* (a liverwort) occurs on High Elevation Rocky Summits and on bark in Red Spruce-Fraser Fir Forests. This species is listed as historical or extinct in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Sphenolobopsis pearsonii* were observed during activity area surveys; therefore, the project will have no impact on this species.
14. *Xanthoparmelia monticola* (a rock-shield lichen) occurs on exposed rock on High Elevation Rocky Summits and in High Elevation Mafic Glades. This species is listed as historical or extinct in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Xanthoparmelia monticola* were observed during activity area surveys; therefore, the project will have no impact on this species.

Vascular Plants

1. *Aconitum reclinatum* (Trailing Wolfsbane) occurs in rich coves, seepage slopes, boulder fields, and rocky stream banks, mainly associated with mafic rocks, and rarely sandstone or granitic rocks. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Aconitum reclinatum* were observed during activity area surveys; therefore, the project will have no impact on this species.
2. *Berberis canadensis* (American Barberry) occurs in open forests and glades in basic soils. This species is listed as historical or extinct in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Berberis canadensis* were observed during activity area surveys; therefore, the project will have no impact on this species.
3. *Buckleya distichophylla* (Piratebush) occurs on bluffs, dry slopes, and in forests on lower slopes at elevation between 1500-3600 feet. Current records are known in Haywood County. NCNHP documents two occurrences of *Buckleya distichophylla* within 2 miles of the activity area with occurrences approximately 0.8 mile southwest and 0.4 mile south of the activity area. Systematic surveys were completed April 22, 2013 and June 24, 2013 in suitable habitat present within the activity area, and no individuals of *Buckleya distichophylla* were observed. Therefore, the project will have no impact on this species.
4. *Cardamine clematitis* (Mountain Bittercress) occurs in high elevation seeps, shaded outcrops, and along first-order stream banks typically of Northern Hardwood Forest above the elevation of 3280 feet. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Cardamine clematitis* were observed during activity area surveys; therefore, the project will have no impact on this species.
5. *Carex roanensis* (Roan Sedge) occurs in mid- to high-elevation cove forests. Current records are known in Haywood County. Systematic surveys were completed April 22, 2013 and June 24, 2013 in suitable habitat present within the activity area, and no individuals of *Carex roanensis* were observed. Therefore, the project will have no impact on this species.
6. *Danthonia epilis* (Bog Oatgrass) occurs in seepage bogs and wet seepy powerlines. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Danthonia epilis* were observed during activity area surveys; therefore, the project will have no impact on this species.
7. *Delphinium exaltatum* (Tall Larkspur) occurs on grassy balds, glades, and in woodlands, mostly over mafic rock. Current records are known in Haywood County. Systematic surveys were completed April 22, 2013 and June 24, 2013 in suitable habitat present within the activity area, and no individuals of *Delphinium exaltatum* were observed; therefore, the project will have no impact on this species.
8. *Dendrolycopodium dendroideum* (Prickly Ground-pine) occurs in openings and balds at high elevations. Current records are known in Haywood County. Systematic surveys were completed April 22, 2013 and June 24, 2013 in suitable habitat present within the activity area, and no individuals of *Dendrolycopodium dendroideum* were observed. Therefore, the project will have no impact on this species.
9. *Euphorbia purpurea* (Glade Spurge) occurs in forests, especially over mafic rock. Current records are known in Haywood County. Systematic surveys were completed April 22, 2013 and June 24, 2013 in suitable habitat present within the activity area, and

- no individuals of *Euphorbia purpurea* were observed. Therefore, the project will have no impact on this species.
10. *Glyceria nuigena* (Smoky Mountain Mannagrass) is an obligate wetland species that occurs in mid- to high-elevation bogs and seeps. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Glyceria nuigena* were observed during activity area surveys; therefore, the project will have no impact on this species.
 11. *Ilex collina* (Long-stalked Holly) occurs in bogs, wet streamsides, or high elevation forests at elevations of 2120-4815 feet. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Ilex collina* were observed during activity area surveys; therefore, the project will have no impact on this species.
 12. *Lilium grayi* (Gray's Lily), occurs in bogs, wet meadows, seeps, grassy balds, and medium- to high-elevation forests. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Lilium grayi* were observed during activity area surveys; therefore, the project will have no impact on this species.
 13. *Lysimachia fraseri* (Fraser's Loosestrife) occurs in wet forest borders, along roadsides and road banks, in alluvial meadows, hardwood forests, forest edges, and in thin soils around rock outcrops. This species is listed as historical or extinct in Haywood County. Systematic surveys were completed April 22, 2013 and June 24, 2013 in suitable habitat present within the activity area, and no individuals of *Lysimachia fraseri* were observed. Therefore, the project will have no impact on this species.
 14. *Micranthes caroliniana* (Carolina Saxifrage) occurs on high to middle elevation moist cliffs and rock outcrops often under overhangs. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Micranthes caroliniana* were observed during activity area surveys; therefore, the project will have no impact on this species.
 15. *Packera millefolium* (Divided-leaf Ragwort) occurs in granitic domes and other outcrops, cliffs, rocky woodlands over granite gneiss, schist, and amphibolite, and in calcareous glades. Current records are known in Haywood County. Systematic surveys were completed April 22, 2013 and June 24, 2013 in suitable habitat present within the activity area, and no individuals of *Packera millefolium* were observed. Therefore, the project will have no impact on this species.
 16. *Pycnanthemum torrei* (Torrey's Mountain-mint) occurs in dry upland forests and woodlands over mafic rocks. This species is listed as historical or extinct in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Pycnanthemum torrei* were observed during activity area surveys; therefore, the project will have no impact on this species.
 17. *Rhododendron vaseyi* (Pink-shell Azalea) occurs in High Elevation Oak Forests, Heath Balds, Red Spruce-Fraser Fir Forests, and rocky areas. Current records are known in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Rhododendron vaseyi* were observed during activity area surveys; therefore, the project will have no impact on this species.
 18. *Rugelia nudicaulis* (Rugel's Ragwort) occurs in Red Spruce-Fraser Fir Forests. Current records are known in Haywood County. Suitable habitat does not exist in the activity

area, and no specimens of *Rugelia nudicaulis* were observed during activity area surveys; therefore, the project will have no impact on this species.

19. *Silene ovata* (Mountain Catchfly) prefers rich slopes, cove forests, and Montane Oak-Hickory Forests especially over mafic or calcareous rocks, mostly at medium elevations. Current records are known in Haywood County. NCNHP documents two occurrences of *Silene ovata* within 2 miles of the activity area with occurrences approximately 0.8 mile and 1.5 mile southwest of the activity area. Suitable habitat does not exist within the activity area, and no individuals of *Silene ovata* were observed during activity area surveys; therefore, the project will have no impact on this species.
20. *Stachys clingmanii* (Clingman's Hedgenettle) occurs in Red Spruce-Fraser Fir Forests and Northern Hardwoods Forests. This species is listed as historical or extinct in Haywood County. Suitable habitat does not exist in the activity area, and no specimens of *Stachys clingmanii* were observed during activity area surveys; therefore, the project will have no impact on this species.
21. *Trillium pusillum* var. *ozarkanum* (Alabama Least Trillium) occurs in Rich Cove Forests and dry to mesic upland woods usually dominated by an oak-hickory assemblage, but is also reported from mixed hardwood-pine forests. This species is listed as historical or extinct in Haywood County. Systematic surveys were completed April 22, 2013 and June 24, 2013 in suitable habitat present within the activity area, and no individuals of *Trillium pusillum* var. *ozarkanum* were observed. Therefore, the project will have no impact on this species.
22. *Trillium simile* (Sweet White Trillium), prefers rich coves especially over mafic or calcareous rocks. Suitable habitat is not present within the activity area and no specimens of *Trillium simile* were observed during activity area surveys; therefore, the project will have no impact on this species.

IV. POTENTIAL DIRECT AND INDIRECT EFFECTS TO THREATENED, ENDANGERED, AND SENSITIVE SPECIES

A. DIRECT EFFECTS OF PROJECT

Proposed slope stabilization improvements will result in the following types of direct effects within terrestrial portions of the activity area: the removal of vegetation, blasting and grading of the ground surface, and temporary disturbances to vegetation and/or ground surfaces by construction equipment and temporary fill. Effects on natural resources from the proposed project are expected to be confined to the activity area (Figure 2, Appendix 1). Impacts will occur primarily to those species colonizing, or occurring adjacent to, the exposed rock face.

B. INDIRECT EFFECTS OF PROJECT

Sediment and Erosion Control plans for road improvements will be designed to implement NCDOT Best Management Practices (BMPs) in accordance with Design Standards in Sensitive Watersheds to reduce the risk of sediment and nutrient runoff on downhill slopes and to the Pigeon River. Stormwater Management Plans will be designed to treat stormwater runoff through BMPs as detailed in the most current version of NCDOT's Stormwater Best Management Practices.

C. DETERMINATION OF IMPACTS TO THREATENED, ENDANGERED, AND SENSITIVE SPECIES

There are no known effects or impacts (direct, indirect, or cumulative) to T&E or S species as a result of the NCDOT Division 14 Project TIP No. I-5508, Slope Stabilization near Milepost 7 on I-40.

A determination of “no effect” is given for the T&E species and "no impact" is given for S species. These conclusions are supported for the following reasons:

- 1) No T&E or S botanical, terrestrial, or aquatic species are known to occur within the activity area, nor were any found during the surveys.
- 2) There is a low potential for T&E or S species to occur within the activity area, and the project will not cause a trend toward federal listing or a loss of viability for any of these species.

A list of observed species is included in the attached botanical, terrestrial animal, and aquatic resources reports.

V. QUALIFICATIONS OF PRINCIPLE INVESTIGATORS:

Investigator: Alexander P. (Sandy) Smith
 Education: B.S. Biology, 1983
 M.S. Marine Biology, 1988
 Experience: Senior Project Manager, Axiom Environmental, 2008-present
 Senior Project Manager, Vice-President, EcoScience Corporation, 1998-2008
 Senior Project Manager, Environmental Services, Inc., 1993-1998
 Scientist, CZR, Inc., 1988-1993
 Expertise: Project coordination, wetland/stream delineations, wetland/stream assessment, document preparation, natural community identification and assessment, T&E species surveys, wildlife (fish, amphibian, reptile, bird, and mammal) surveys, and botanical surveys.

Investigator: Scott G. Davis
 Education: B.S. Environmental Science - Ecology
 Experience: Senior Scientist, Axiom Environmental, 2008-present
 Project Scientist, Senior Scientist, EcoScience Corporation, 2004-2008
 Expertise: Wetland/stream delineations, GIS, stream assessment, figure preparation, document preparation, natural community identification and assessment, T&E species surveys, benthic invertebrate surveys, amphibian surveys, and botanical surveys.

Investigator: Kenan Jernigan
 Education: B.A. Environmental Studies – Ecology, 2010
 Experience: Project Scientist, Axiom Environmental, 2010-present
 Expertise: Natural community identification and assessment, T&E species surveys, botanical surveys, rare plant surveys.

Investigator: Edward C. Swab
 Education: B.A. Chemistry, Clarion State College, 1965
 M.S. Botany, North Carolina State University, 1990
 Experience: Project Scientist, Axiom Environmental, 2004-present
 Independent biological consultant 1998 – Present
 Project Scientist, Environmental Services, Inc., 1993-1998
 Expertise: Natural community identification and assessment, T&E species surveys, botanical surveys, rare plant surveys.

Investigator: Dennis W. Herman
 Education: B.S. Biology, Western Carolina University
 Experience: Environmental Program Consultant, NCDOT, August 2004-present.
 Coordinator of Living Collections, NC Museum of Natural Sciences, June 1996-August 2004.
 Assistant Curator of Herpetology, Zoo Atlanta, 1981-1996.
 Senior Zoo Keeper of Herpetology & Mammals, Atlanta Zoological Park, 1972-1981.

Expertise: Section 7 investigations, protected species (terrestrial/aquatic) surveys, bog turtle & mountain bog specialist, ecological studies, rare plant identification, benthic macroinvertebrate collection, and reptile and amphibian surveys. Permitted to survey for the State and Federally Threatened Bog Turtle.

Investigator: Karen M. Kendig

Education: B.S. Wildlife Biology and Fisheries, North Carolina State University.

Experience: Environmental Supervisor, NCDOT July 2003- present.
Environmental Specialist, NCDOT, November 1998 – July 2003.
Environmental Biologist, NC Division of Water Quality, November 1984-October 1998.

Expertise: Section 7 field investigations; NEPA documentation, protected species (terrestrial/aquatic) surveys, benthic macroinvertebrate collection, water quality analyses, aquatic plant and submerged aquatic vegetation surveys, plant identification and invasive plant id. Permitted to survey for State and Federal Threatened and Endangered mussels. SCUBA certified.

Investigator: Mary E. Frazer

Education: B.S. Zoology, University of Wisconsin.
M.E.M. (Master of Environmental Management), Resource Ecology, Duke University.

Experience: Environmental Specialist, NCDOT, August 2000-present.
Water Regulation Specialist, Wisconsin Dept. of Natural Resources, 1998-2000.
Environmental Reviewer, Wisconsin Coastal Management Program, 1994-1998.
Biologist, Soil and Environmental Consultants, 1992-1994.

Expertise: Section 7 field investigations and conservation, NEPA documentation, wetland and aquatic investigations.

Investigator: Heather Wallace

Education: B.S. Ecology/Environmental Biology, Appalachian State University

Experience: Environmental Specialist, NCDOT, February 2007- present.
Environmental Biologist, H.W. Lochner, Inc., 2003-2007.
Biologist, Earth Tech, Inc., 2000-2003.

Expertise: Section 7 field investigations and documentation, benthic macroinvertebrate collection, 401/404 permitting, protected species (terrestrial/aquatic) surveys, NEPA documentation, wetland delineation, stream restoration, invasive species, avian ecology and behavior.

Investigator: David Danley

Experience: U.S. Forest Service, 1985-present
Pisgah National Forest Botanist

Expertise: Bryophytes and vascular plants

VI. REFERENCES

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Appendix 1

Figures



Prepared for:



Project:

I-5508

**PROPOSED WIDENING,
SLOPE STABILIZATION,
ROCK BOLTING, AND
BARRIER FENCE
NEAR MILEPOST 7
ON INTERSTATE 40**

Haywood County, NC

Title:

**PROJECT
LOCATION
AND
ANALYSIS
AREA**

Notes:

1. Background imagery source:
Knoxville, Tn (1974) 30 x 60 -
minute topographic quadrangle
provided by the U.S. Geological
Survey.

Drawn by: SGD

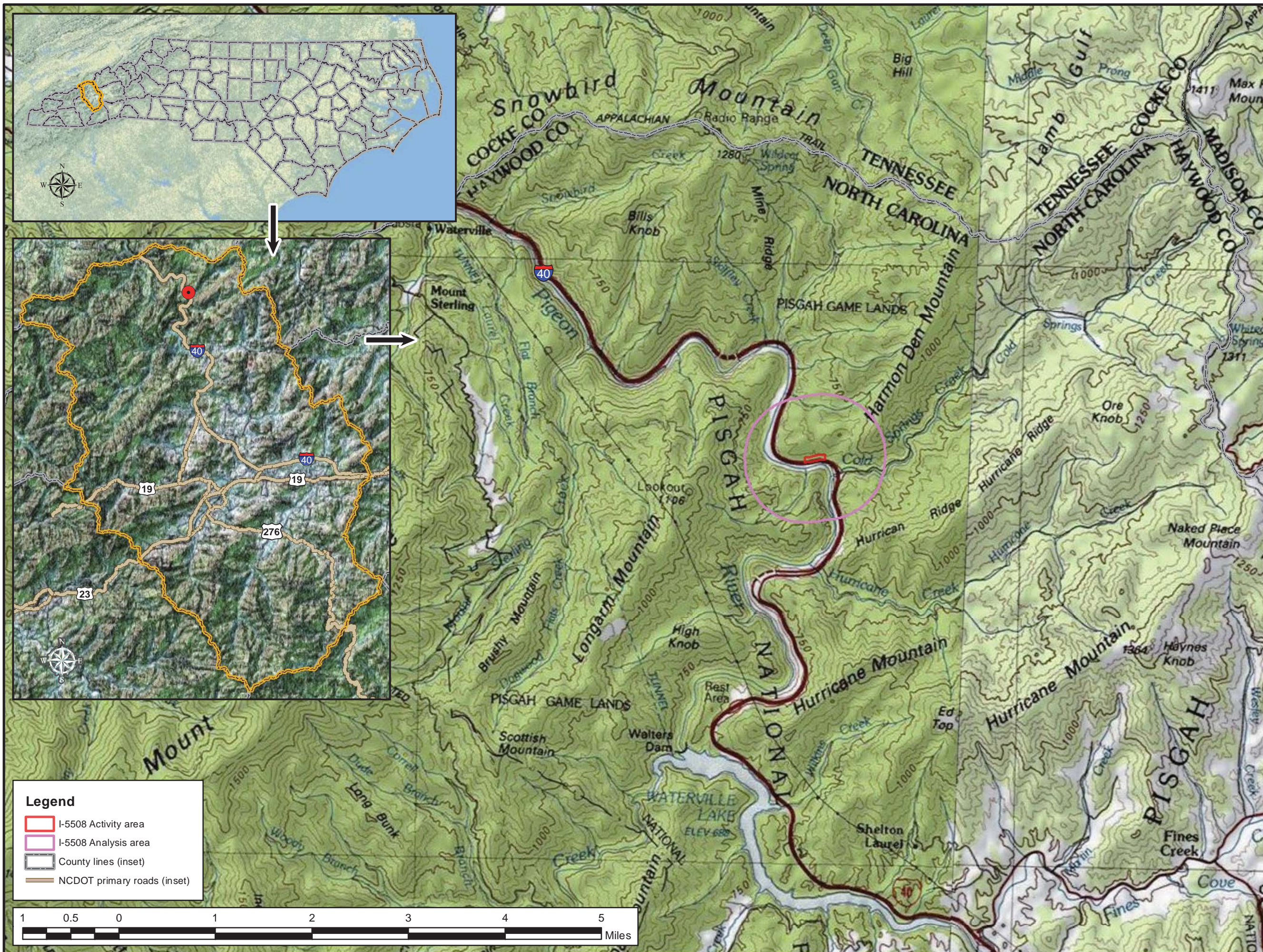
Date: OCT 2013

Scale: 1:60,000

Project No.: 12-014.05

FIGURE

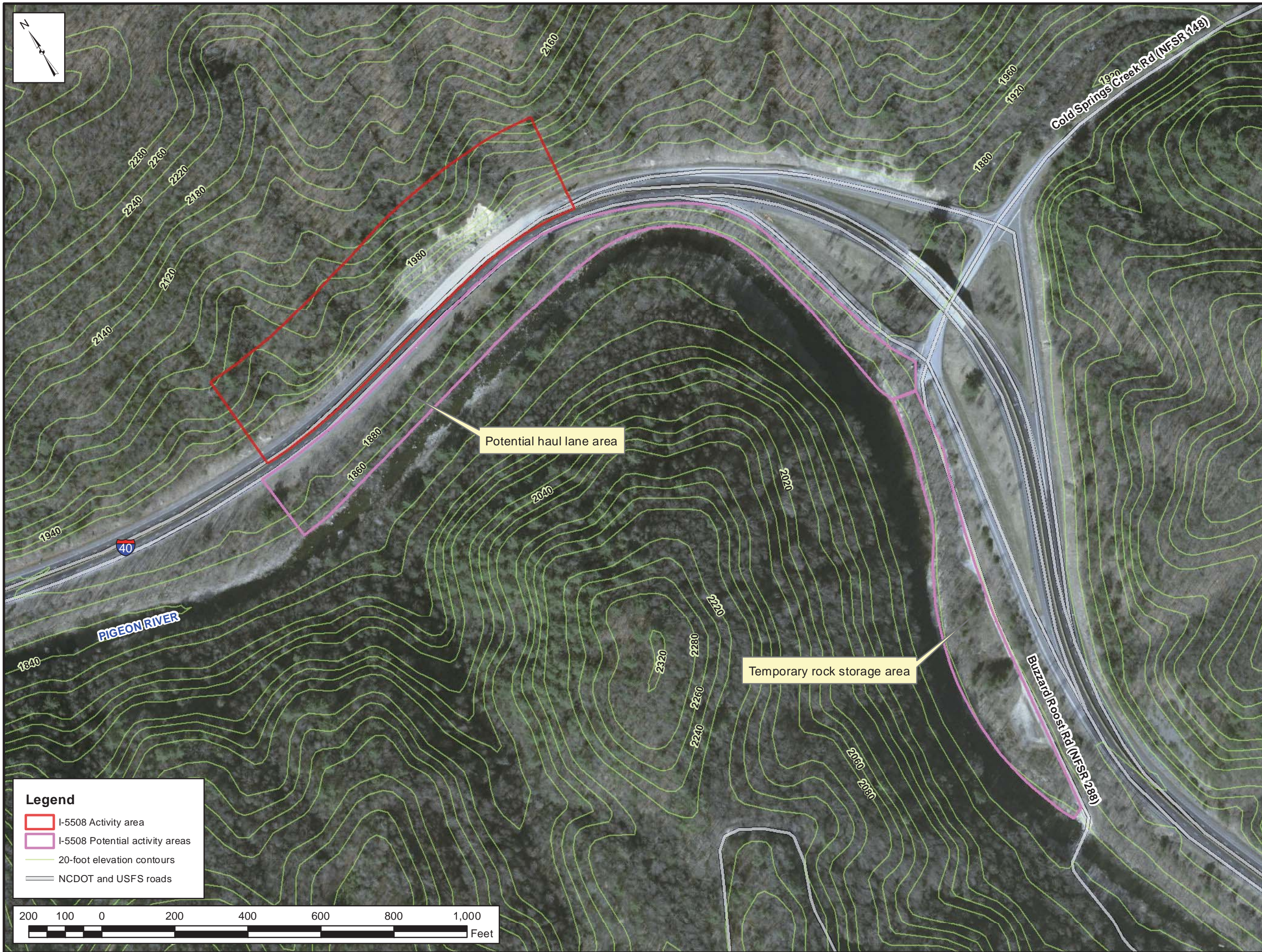
1



Legend

- I-5508 Activity area
- I-5508 Analysis area
- County lines (inset)
- NCDOT primary roads (inset)





Prepared for:



Project:

I-5508

**PROPOSED WIDENING,
SLOPE STABILIZATION,
ROCK BOLTING, AND
BARRIER FENCE
NEAR MILEPOST 7
ON INTERSTATE 40**

Haywood County, NC

Title:

**ACTIVITY AREA
AND
POTENTIAL
ACTIVITY
AREAS**

Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).

Drawn by: SGD

Date: OCT 2013

Scale: 1:3000

Project No.: 12-014.05

FIGURE

2

NCDOT PROGRAMMATIC CATEGORICAL EXCLUSION (PCE)
ACTION CLASSIFICATION FORM

Appendix E: Human Environment Information

12-10-0051

NO ARCHAEOLOGICAL SURVEY REQUIRED FORM

This form only pertains to ARCHAEOLOGICAL RESOURCES for this project. It is not valid for Historic Architecture and Landscapes. You must consult separately with the Historic Architecture and Landscapes Group.

PROJECT INFORMATION

Project No:	55057	County:	Haywood
WBS No:	55057.1.1	Document:	PCE
F.A. No:	IMS-040-1(245)7	Funding:	<input type="checkbox"/> State <input checked="" type="checkbox"/> Federal
Federal Permit Required?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Type:	
<u>Project Description:</u> Slope stabilization, rock bolting and rock-fall barrier fence and mesh near mile post 7 on I-40. Project consists of recut approximately 1000 feet of existing slope to a 1:1 (H:V) slope with an additional 10 ft. of ditch width for rock-fall catchment. Also 1000 feet of rock barrier fence with 4000 SY mesh.			

SUMMARY OF ARCHAEOLOGICAL RESOURCES REVIEW


<u>Brief description of review activities, results of review, and conclusions:</u> Examination of Office of State Archaeology maps failed to yield any record of archaeological sites within the project's APE (11/5/2012). Soil map of the APE reveals slopes far greater than 50%.
<u>Brief Explanation of why the available information provides a reliable basis for reasonably predicting that there are no unidentified significant archaeological resources in the APE:</u> Slopes this steep would have little likelihood of cultural evidence. No further work is warranted.

SUPPORT DOCUMENTATION

Map(s) Previous Survey Info Photos Correspondence Notes

FINDING BY NCDOT ARCHAEOLOGIST

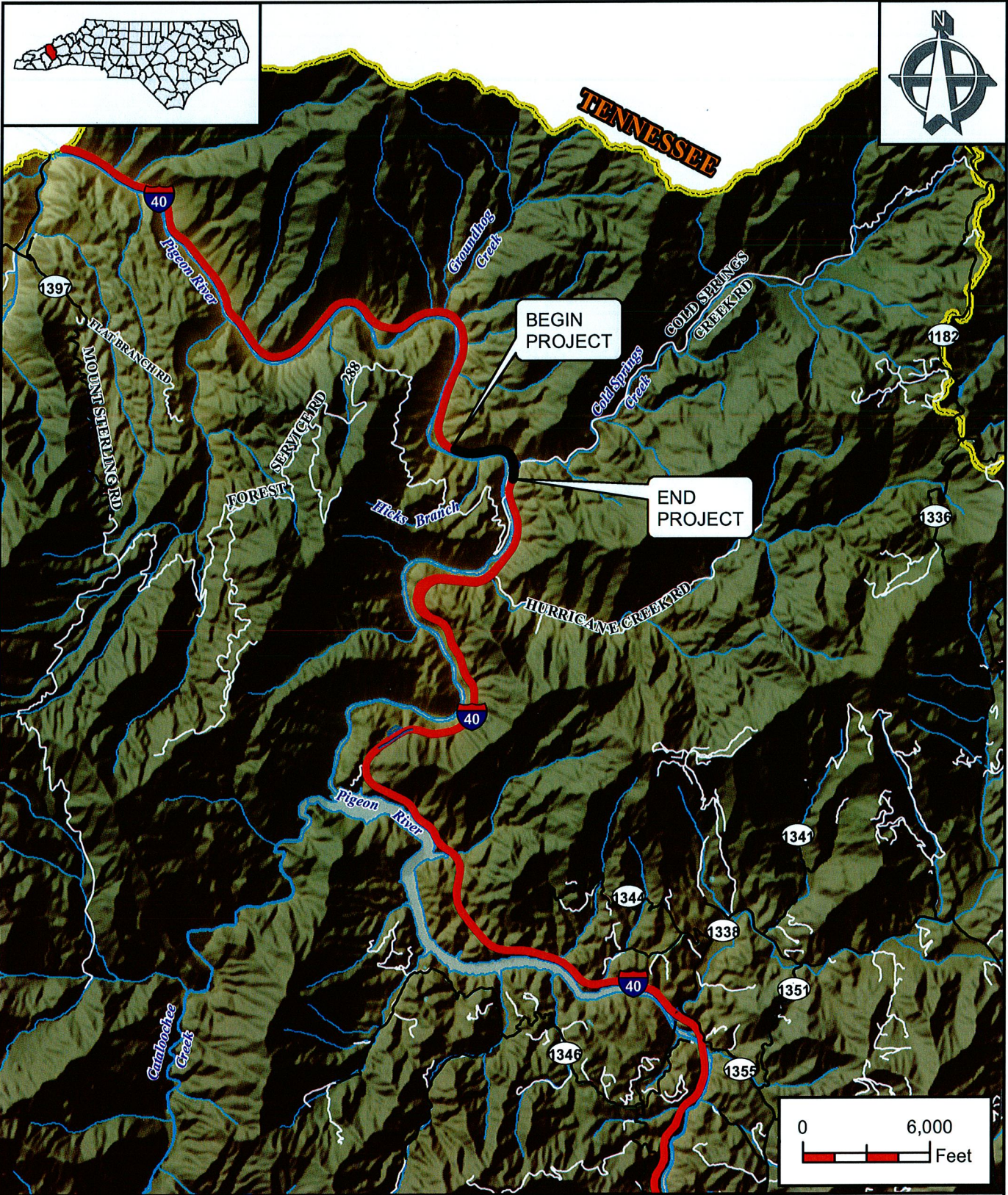
NO ARCHAEOLOGICAL SURVEY REQUIRED


Gerold F. Glover, PhD.

11/9/12

NCDOT ARCHAEOLOGIST II

DATE



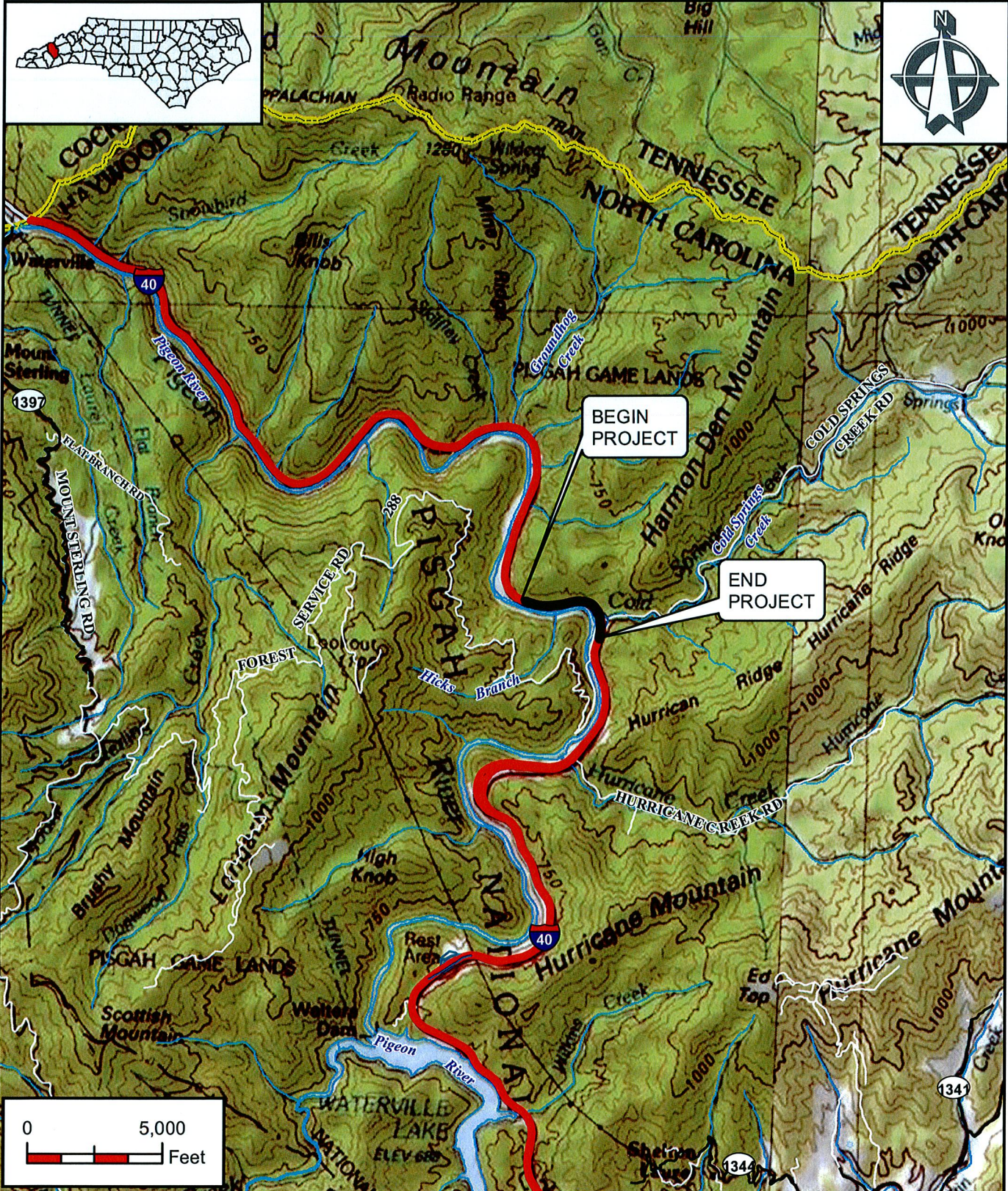
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT


**VICINITY MAP
 PROPOSED WIDENING OF
 I-40, NEAR MILE POST 7.
 SLOPE STABILIZATION, ROCK BOLTING
 AND ROCKFALL BARRIER FENCE
 AND MESH
 HAYWOOD COUNTY
 STIP PROJECT I-5508**

County: HAYWOOD	
Div: 14	TIP# I-5508
WBS: 55057.1.1	
Date: OCTOBER 2012	

**Figure
 1**

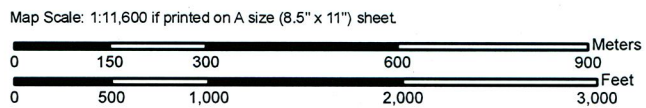
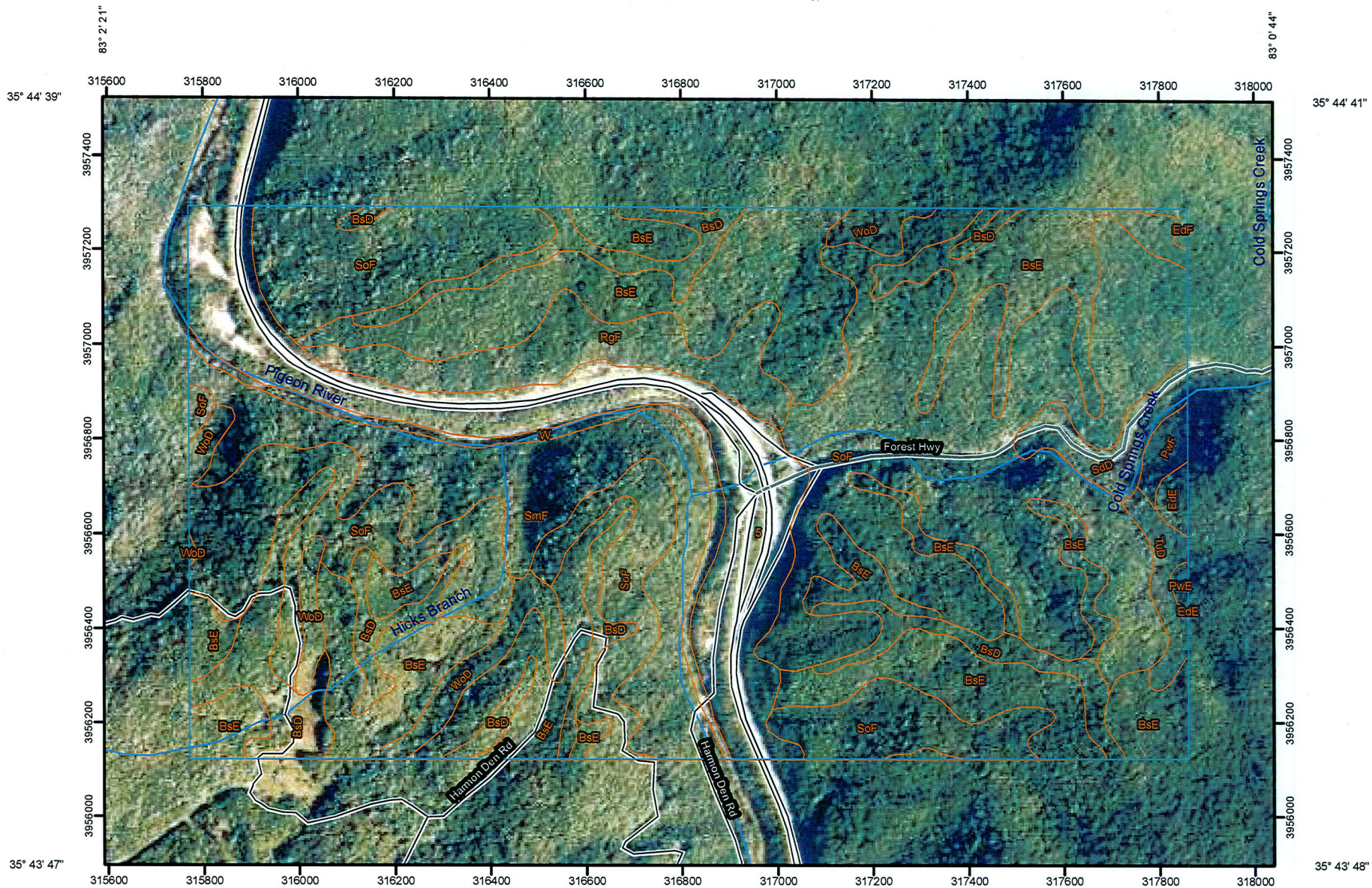
By: J.TORTORELLA



 <p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT</p>	<p>U.S. GEOLOGICAL SURVEY MAP PROPOSED WIDENING OF I-40, NEAR MILE POST 7. SLOPE STABILIZATION, ROCK BOLTING AND ROCKFALL BARRIER FENCE AND MESH HAYWOOD COUNTY STIP PROJECT I-5508</p>		<p>County: HAYWOOD</p>
	<p>Div: 14</p>	<p>TIP# I-5508</p>	<p>Figure 2</p>
	<p>WBS: 55057.1.1</p>	<p>Date: OCTOBER 2012</p>	

U.S. Geological Survey, Waterville, and Cove Creek Gap quadrangle, North Carolina [map]. 1:24,000. 7.5 Minute Series. Reston, Va: United States Department of the Interior, USGS, 1999.

Soil Map—Haywood County Area, North Carolina
(I-40 Slope Stabization, Rock Bolting)




Map Unit Legend

Haywood County Area, North Carolina (NC606)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5	Udorthents-Urban land complex, 2 to 50 percent slopes	61.4	10.2%
BsD	Brasstown-Junaluska complex, 15 to 30 percent slopes	46.9	7.8%
BsE	Brasstown-Junaluska complex, 30 to 50 percent slopes	155.0	25.6%
EdE	Edneyville-Chestnut complex, 30 to 50 percent slopes, stony	1.9	0.3%
EdF	Edneyville-Chestnut complex, 50 to 95 percent slopes, stony	0.7	0.1%
PwE	Plott fine sandy loam, 30 to 50 percent slopes, stony	0.7	0.1%
PwF	Plott fine sandy loam, 50 to 95 percent slopes, stony	3.0	0.5%
RgF	Rock outcrop-Cataska complex, 50 to 95 percent slopes	24.8	4.1%
SdD	Saunook loam, 15 to 30 percent slopes, stony	8.9	1.5%
SmF	Soco-Cataska-Rock outcrop complex, 50 to 95 percent slopes	52.7	8.7%
SoF	Soco-Stecoah complex, 50 to 95 percent slopes	217.2	35.9%
TuD	Tuckasegee-Cullasaja complex, 15 to 30 percent slopes, very stony	5.9	1.0%
W	Water	9.4	1.6%
WoD	Whiteoak cobbly loam, 15 to 30 percent slopes, stony	16.6	2.7%
Totals for Area of Interest		605.1	100.0%

Soil Map—Haywood County Area, North Carolina
(I-40 Slope Stabization, Rock Bolting)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot

-  Very Stony Spot
-  Wet Spot
-  Other

Special Line Features

-  Gully
-  Short Steep Slope
-  Other

Political Features

-  Cities

Water Features

-  Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

Map Scale: 1:11,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 17N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Haywood County Area, North Carolina
Survey Area Data: Version 11, Jul 16, 2012

Date(s) aerial images were photographed: 9/21/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

12-10-0051

NO SURVEY REQUIRED FORM**PROJECT INFORMATION**

Project No: 55057 *County:* Haywood
WBS No: 55057.1.1 *Document:* PCE
F.A. No: IMS-040-1(245)7 *Funding:* State Federal

Federal (USACE) Permit Required? Yes No *Permit Type:* NONE

Project Description:

Slope stabilization, rock bolting, and rack-fall barrier fence and mesh installation near Mile Marker 7 on I-40 in Haywood County.

SUMMARY OF CULTURAL RESOURCES REVIEW*Brief description of review activities, results of review, and conclusions:*

Review of HPO quad maps, relevant background reports, historic designations roster, and indexes was undertaken on November 2, 2012. Based on this review, there were no existing NR, SL, LD, DE, or SS properties in the Area of Potential Effects (APE). There are no structures or historic resources in the project area.

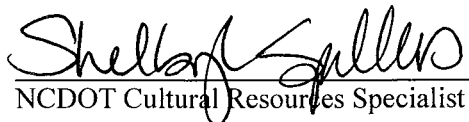
Brief Explanation of why the available information provides a reliable basis for reasonably predicting that there are no unidentified historic properties in the APE:

Using HPO GIS website provides reliable information regarding the structures in the APE. This utility is considered valid for the purposes of determining the likelihood of historic resources being present.

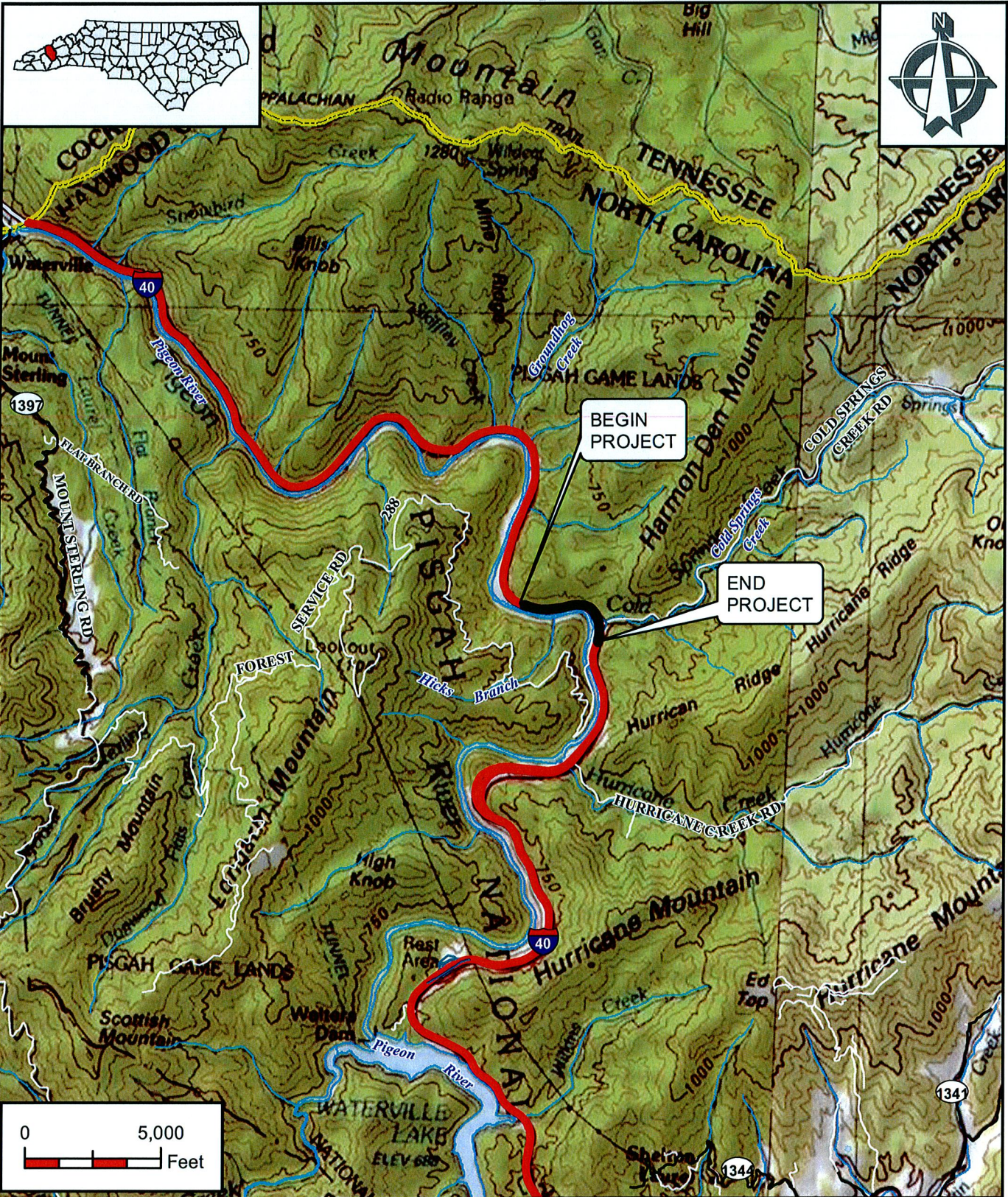
SUPPORT DOCUMENTATION

See attached: Maps

FINDING BY NCDOT CULTURAL RESOURCES PROFESSIONAL**NO SURVEY REQUIRED FOR HISTORIC ARCHITECTURE**


 NCDOT Cultural Resources Specialist

Nov 2, 2012
 Date



**U.S. GEOLOGICAL SURVEY MAP
PROPOSED WIDENING OF
I-40, NEAR MILE POST 7.
SLOPE STABILIZATION, ROCK BOLTING
AND ROCKFALL BARRIER FENCE
AND MESH
HAYWOOD COUNTY
STIP PROJECT I-5508**

County: HAYWOOD	
Div: 14	TIP# I-5508
WBS: 55057.1.1	
Date: OCTOBER 2012	

**Figure
2**

U.S. Geological Survey. Waterville, and Cove Creek Gap quadrangle, North Carolina [map]. 1:24,000. 7.5 Minute Series. Reston, Va: United States Department of the Interior, USGS, 1999.



HPOGIS Layers...

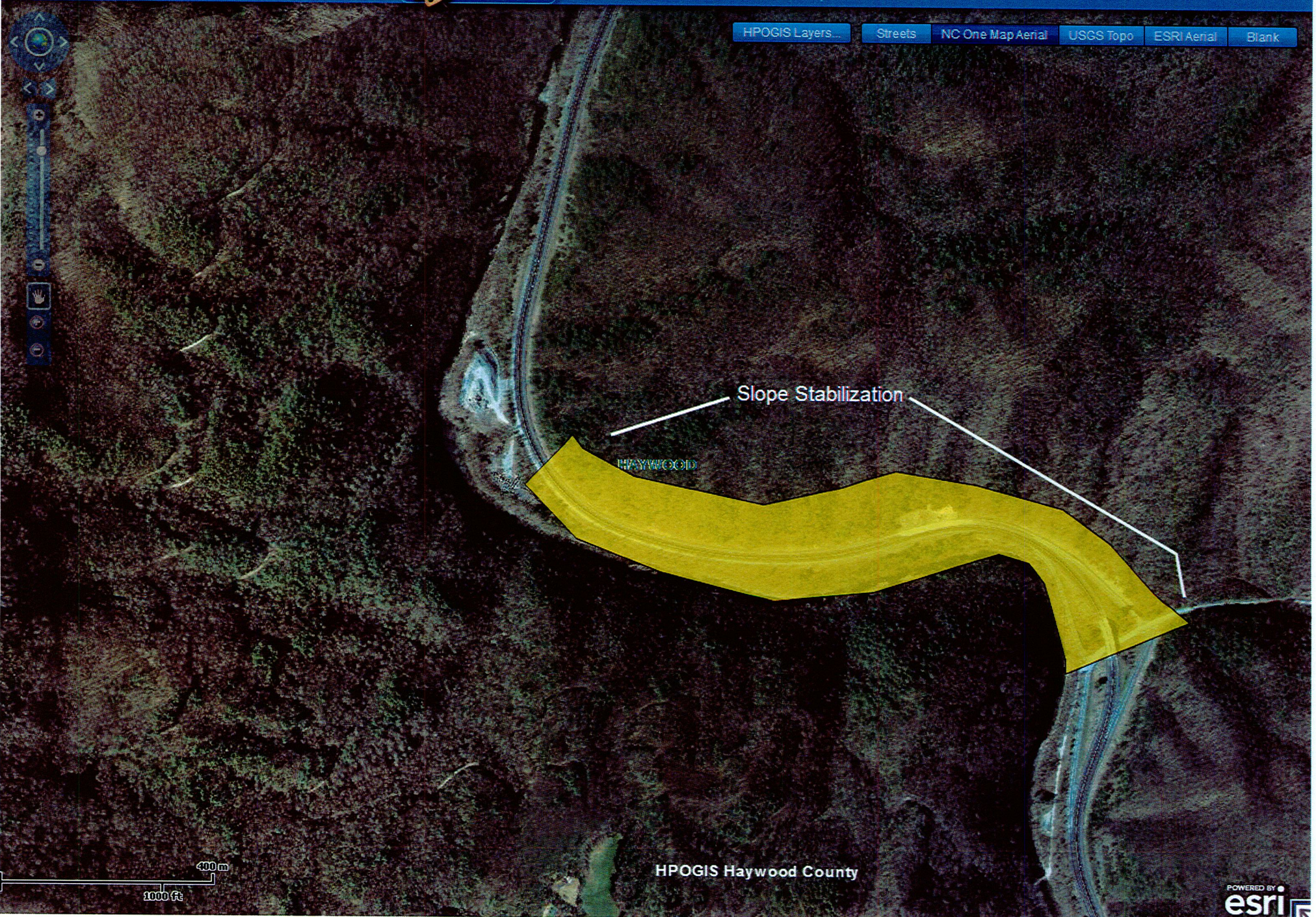
Streets

NC One Map Aerial

USGS Topo

ESRI Aerial

Blank



Slope Stabilization

HAYWOOD

HPOGIS Haywood County

400 m
1000 ft



I-5508 HAYWOOD COUNTY COMMUNITY IMPACT ASSESSMENT

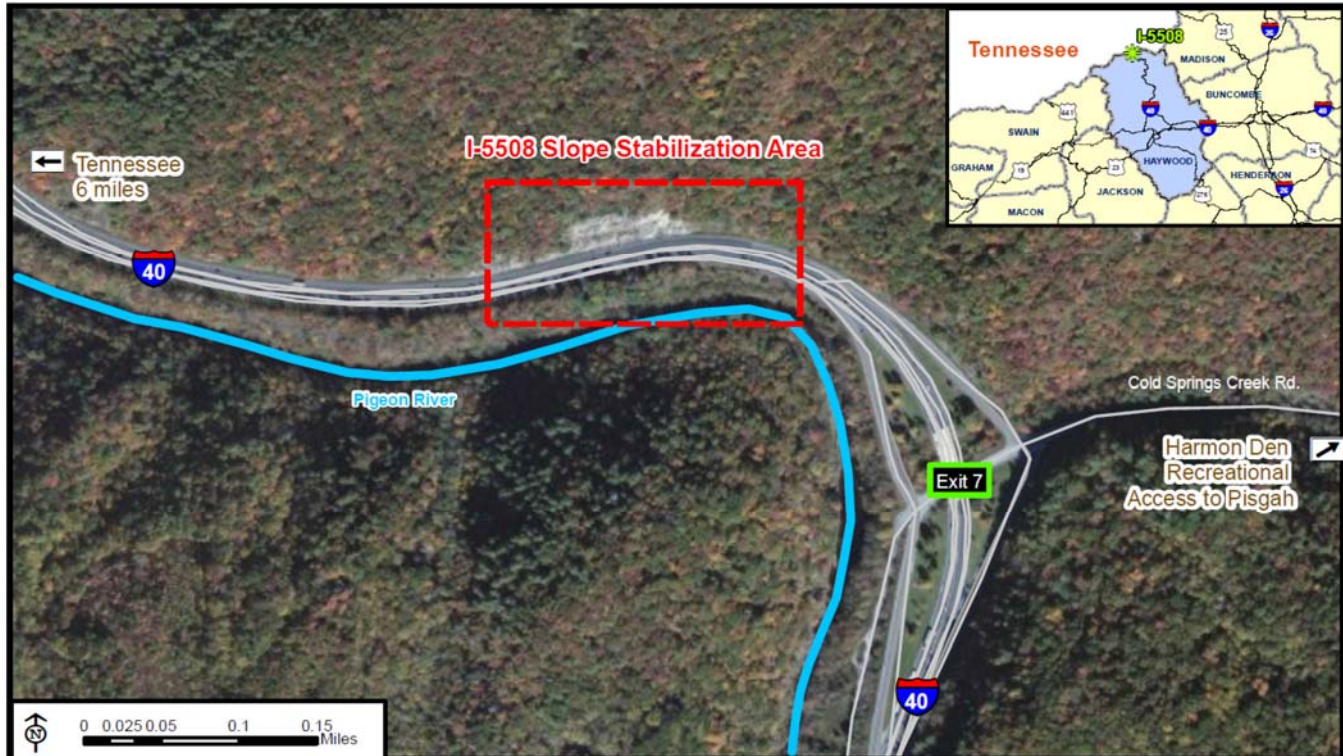
EXECUTIVE SUMMARY

PLANNER:	Martha Hodge, SEPI Engineering & Construction	DIVISION:	14	ROUTE:	I-40
PDEA ENGINEER:	Zahid Baloch, PE	WBS:	55057.1.1	AADTV:	20,000
PDEA GROUP LEADER:	John Conforti	PROJECT DESCRIPTION:	Slope stabilization, rock bolting, and rock-fall barrier fence and mesh near Milepost 7 in Haywood County.		
PICS PROJECT COORDINATOR:	Tris Ford				
PICS SUPER APPROVAL:	Harrison Marshall	Existing No. of Lanes:	4	<input type="checkbox"/>	Widening
		Existing Median:	Yes	<input type="checkbox"/>	Addition of Median(s)

- Record of Community Outreach or Public Involvement Activity:
Newsletter mailed in December 2013, no notable comments received.

Community Context

STIP project I-5508 is located on I-40 near Milepost 7 in Haywood County in the Appalachian Mountains of western North Carolina, just east of the Tennessee state line. A combination of improvements is proposed under the I-5508 project, including slope stabilization, rock bolting and installation of rock-fall barrier fence and mesh. This section of I-40, a length of approximately 1,300 feet, has been the site of numerous rock slides in recent years, the most recent occurring in August 2013. Due to topography, rock slide cleanup has typically required closure of the highway for various periods of time ranging from days to months. I-40 provides a critical east-west connection for freight and commerce in the region, thus the proposed improvements are a high priority. The I-5508 project limits on I-40 run parallel to the Pigeon River (to the west), and is surrounded by Pisgah National Forest property on all sides. The project area is generally rural and remote with very few permanent residents.



Notable Community Characteristics, Concerns

- The project limits are surrounded on all sides by Pisgah National Forest property. NCDOT is coordinating directly with the US Forest Service throughout the project planning process to avoid and/or minimize any potential access impacts to federal 4(f) recreational resources resulting from the I-5508 project.
- The Harmon Den Road interchange (Exit 7) is located just east of the rock excavation site and provides access to residences along Harmon Den Road (Forest Service Road 288), and access to Pisgah National Forest recreational areas located on Cold Springs Creek Road east of the interchange. NCDOT plans to close the westbound I-40 on-ramp to traffic during construction, while the eastbound on-ramp will remain open. The nearest interchange to the west of Harmon Den Road/Exit 7 is approximately 7.5 miles away, just inside the Tennessee state line. The nearest interchange to the east is approximately 9.5 miles away at Fines Creek Road/Exit 15.
- This segment of I-40 is a major east-west corridor for commerce and tourism in the region since it provides a critical connection between North Carolina and points west. Traffic data indicates that truck traffic (TTST) comprises 35% of the current total traffic volume.

Notable Community Impacts

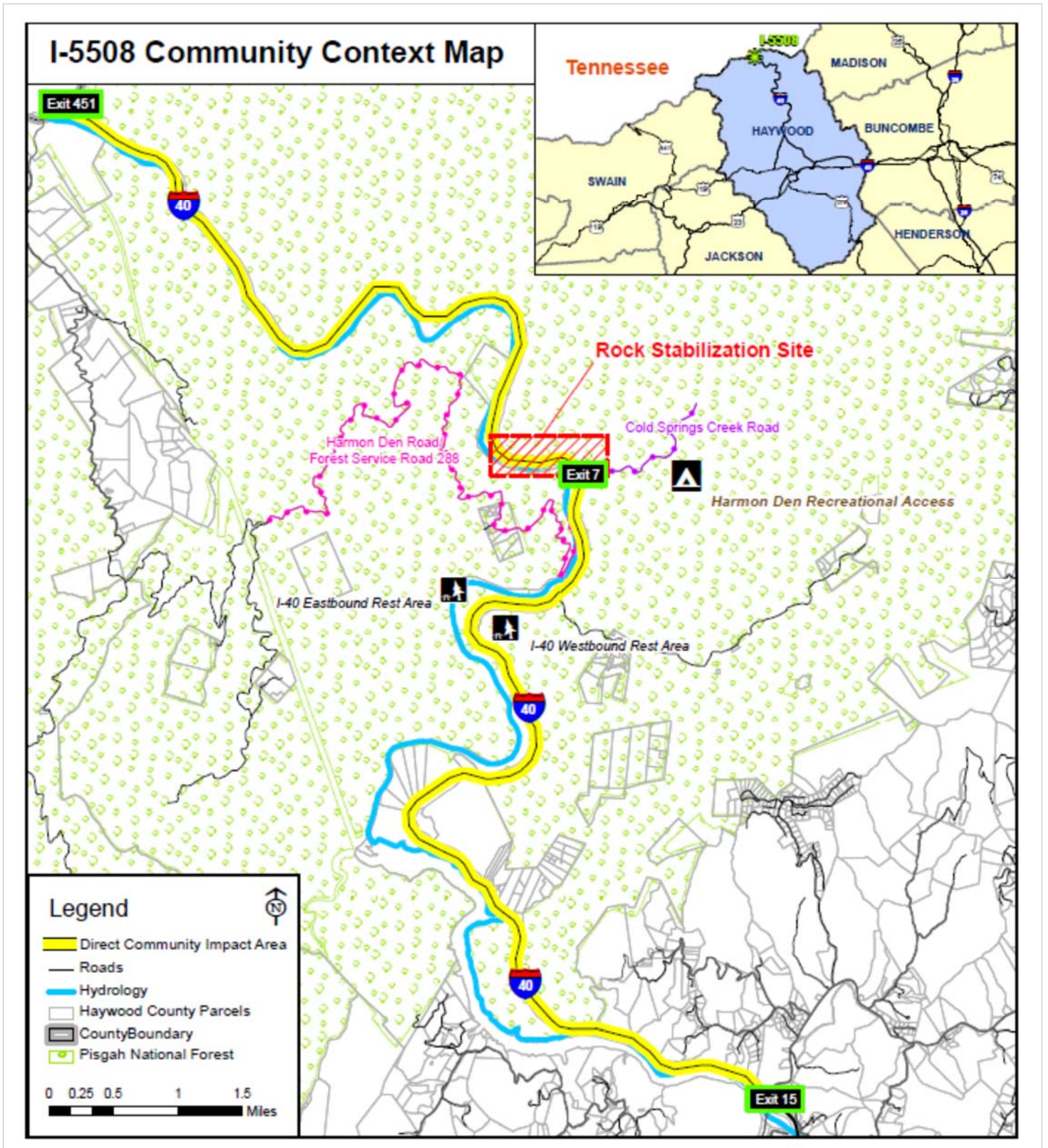
- Detouring could potentially affect mobility through the area, as well as access to the Pisgah National Forest Harmon Den Recreational Area. Emergency management response times may be higher during the construction, also due to detouring.

Options/Recommendations

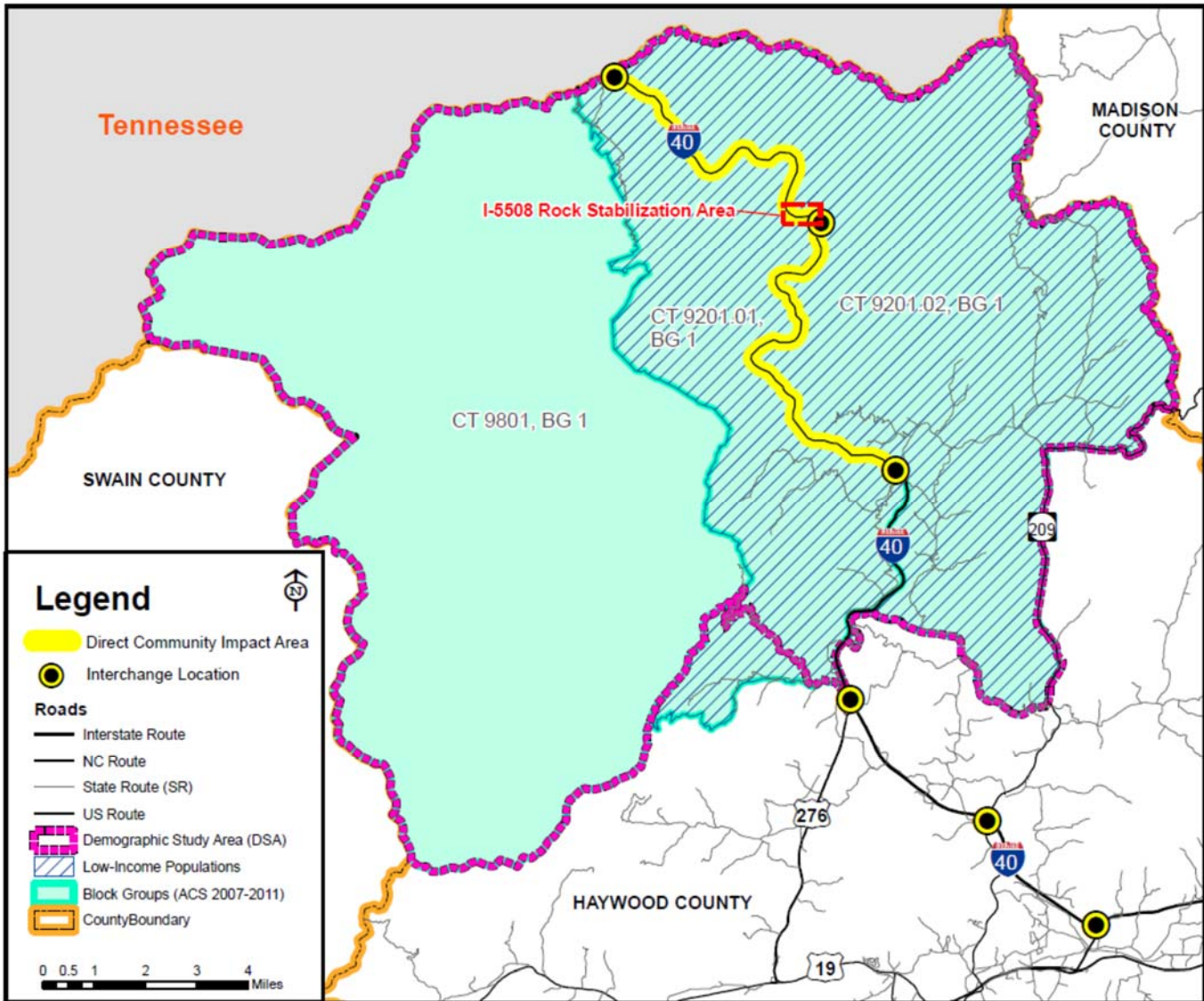
- The Project Planning Engineer should coordinate with NCDOT Public Involvement to notify project area residents, property owners and agencies of project details and proposed detours. Widespread public notice of the project and construction detouring is also recommended given the high volumes of traffic along this portion of I-40.
- The Project Planning Engineer should continue discussions with US Forest Service regarding access to Pisgah National Forest via the Harmon Den Recreational Area, coordinating throughout project construction to ensure access is maintained.

The project will not alter traffic capacity or travel patterns, reduce travel time, affect access to, or exposure of adjacent parcels, or create new transportation or land use nodes. Due to its minimal transportation impact causing activities this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect and cumulative effects study will not be necessary.





I-5508 DEMOGRAPHIC STUDY AREA



REGULATORY APPLICATIONS INVENTORY & SCREENING

AMERICAN INDIAN RELIGIOUS FREEDOM ACT [AIRFA]

Is the project located in a county claimed as "territory" by the Eastern Band of Cherokee Indians?

YES NO

ENVIRONMENTAL JUSTICE [EJ]

Presence: *Are there any populations living in the Demographic Study Area that meet the criteria for Environmental Justice? If so, for which EJ group(s) has the criteria been met (check all that apply):* Minority Low-Income

YES NO

ACS data indicate low-income populations (below the poverty level) living in both Census Tract 9201.01, Block Group 1 (adjacent to I-40 on the western side), and Census Tract 9201.02, Block Group 1 (adjacent to I-40 on the eastern side). Due to the remote nature of the project area and the relatively large size of Block Groups in Haywood County, it is not expected that a substantial number of these low-income individuals are living in the I-5508 Direct Community Impact Area, nor are any disproportionately high and adverse impacts expected as a result of the I-5508 project.

LIMITED ENGLISH PROFICIENCY [LEP]

Are there any populations living in the Demographic Study Area that meet the criteria for Limited English Proficiency?

YES NO



<p>POTENTIAL SECTION 4(F) PUBLIC RECREATIONAL RESOURCES <i>Are there any properties or areas that may be impacted by the project that are or may be protected under Section 4(f)?</i></p> <p>Pisgah National Forest property surrounds the project on all sides. NCDOT is coordinating directly with the US Forest Service throughout the project planning process to avoid and/or minimize any potential access impacts to federal 4(f) recreational resources resulting from the I-5508 project.</p>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
<p>National Trails System <i>Are there any trails designated as part of the National Trails System (NTS) – that are also within the boundaries of a National Park – located in the vicinity of the project?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>SECTION 6(F) LAND & WATER CONSERVATION FUND RESOURCES <i>Are there any areas protected under Section 6(f) in vicinity of the project?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>WILD & SCENIC OR NATIONAL RIVER INVENTORY [NRI] RIVERS <i>Is there a water body in the project area that is designated as Wild and Scenic River, or listed on the National River Inventory?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>North Carolina Natural & Scenic Rivers <i>Is the water body designated as a NC Natural & Scenic River?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>FARMLAND PROTECTION POLICY ACT [FPPA] SOILS <i>Are there any farmland soils eligible for protection under the US Farmland Protection Policy Act [FPPA] that may be notably impacted by the project? (See Appendix for NRCS Farmland Soils Screening)</i></p> <p>Prime farmland soils are located just south of Pigeon River, near the project corridor (see Farmland Figure in the Appendix for location). Direct impacts as a result of the project are expected to be contained within areas adjacent to I-40 and north of Pigeon River. Impacts to prime farmland soils are not anticipated.</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>AGRICULTURAL OPERATIONS <i>Are there any active agricultural operations located in the Direct Community Impact Area?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>VOLUNTARY & ENHANCED VOLUNTARY AGRICULTURE DISTRICTS [VAD/EVAD] <i>Is there a Voluntary Agricultural District or Enhanced Voluntary Agricultural District in the vicinity of the project?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
COMMUNITY CHARACTERISTICS & NOTABLE FEATURES		
<p>NOTABLE GROWTH RATE <i>Has the population living around the project area experienced notable growth or decline in recent years?</i> <input type="checkbox"/> Decline <input type="checkbox"/> 0.6% – 1% annual growth <input type="checkbox"/> Greater than 1% annual growth (in DSA)</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>LOCAL AREA PLANS/GOALS <i>Are there any local area plans, goals, or zoning initiatives specifically affecting the Direct Community Impact Area (e.g. bicycle, pedestrian, greenway, or transit plan; long range growth plan; thoroughfare plan; etc.)?</i></p> <p>Haywood County has a current Comprehensive Transportation Plan on file but it does not propose any changes in the vicinity of the I-5508 project.</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>KNOWN PLANS FOR DEVELOPMENT & NEARBY STIP PROJECTS <i>Are there any known plans for development activity in the vicinity of the project?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>BICYCLE, PEDESTRIAN AND/OR GREENWAY FACILITIES <i>Are bicycle, pedestrian, or greenway facilities located in the area?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>BICYCLE/PEDESTRIAN ACTIVITY <i>Were bicyclists or pedestrians observed in the area?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>TRANSIT ACTIVITY <i>Were bus routes observed in the area on the site visit? Were any special users observed using these facilities?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>COMMUNITY COHESION <i>Were any specific signs or indicators of community cohesion observed /found?</i></p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>WATER SUPPLY/WATERSHED <i>Is the project area located in a water supply/watershed district? If so, what is the designation?</i></p> <p><input type="checkbox"/> WS-I <input type="checkbox"/> WS-II <input type="checkbox"/> WS-III <input type="checkbox"/> WS-IV</p> <p><input type="checkbox"/> Protected <input type="checkbox"/> Critical</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO



<p>NOTABLE WATER RESOURCE Are there any other notable traits of, or issues regarding, waters in the area? Check all that apply: <input type="checkbox"/> 303(d) Impaired <input type="checkbox"/> Outstanding Resource Waters <input type="checkbox"/> High Quality Waters <input type="checkbox"/> Trout Waters <input type="checkbox"/> Applicable Basinwide Management Plan</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>FEMA BUYOUT PROPERTIES Are there any FEMA Buyout Properties in the vicinity of the project?</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>ACCESS Are there any driveways or intersections located in the direct impact area? How is Right-of-Way in the project area held? <input type="checkbox"/> No Control <input type="checkbox"/> Partial Control <input type="checkbox"/> Limited Control <input checked="" type="checkbox"/> Full Control</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>CEMETERY Is there a cemetery located in the project area?</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>OTHER RECREATIONAL RESOURCE(S) OR ACTIVITY Is there any other recreational resource or observed activity in the project area (that is not a potential 4(f))?</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>TRAFFIC GENERATING FACILITY OR NODE Is there a node or facility that generates a notable level of vehicular or pedestrian traffic located in the project area?</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>SPECIAL USERS Are there any documented special users in the project area (e.g. tractor trailers, logging trucks, tractors or other agricultural equipment, or industrial traffic)? Traffic data indicates that truck traffic (TTST) comprises 35% of the current total traffic volume.</p>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
<p>AIRPORT Is the project located within 1 mile of an airport?</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>AREA/COMMUNITY CONTROVERSY Are there any known community concerns or controversy relative to the project?</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>MARINAS/ MARINE REPAIR OPERATIONS Are there any marinas or marine repair operations in vicinity of the project?</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>OTHER NEARBY SOCIO-ECONOMIC RESOURCES Are there any other notable socio-economic resources located in the project area?</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>POTENTIAL COMMUNITY IMPACTS</p>		
<p>MOBILITY AND ACCESS Are there any mobility or access effects likely to be associated with this project (e.g. barrier effect, multi-modal accommodation, available detours, non-motorist access to properties and facilities)? NCDOT plans to close the westbound I-40 on-ramp to traffic during construction, while the eastbound on-ramp will remain open. The nearest interchange to the west of Harmon Den Road/Exit 7 is approximately 7.5 miles away, just inside the Tennessee state line. The nearest interchange to the east is approximately 9.5 miles away at Fines Creek Road/Exit 15. Detouring could potentially affect mobility through the area, as well as access to the Pisgah National Forest Harmon Den Recreational Area.</p>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
<p>COMMUNITY COHESION Is the project likely to alter the overall functioning of an identifiable district (e.g. interactions between, or isolation of, persons and groups; or change in the physical makeup of the community)?</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<p>COMMUNITY SAFETY Is the project likely to interact with any existing area crime issues (e.g. lighting, isolated areas)? Emergency management response times may be higher during the construction period due to detouring. A temporary agreement to dispatch emergency services from Tennessee during construction may be necessary.</p>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
<p>SOCIO-ECONOMIC RESOURCES Are there any notable socio-economic resources that may be impacted (e.g. churches, schools, employment centers, community facilities, historic districts or buildings, named neighborhoods, or other traffic/ pedestrian generators, etc.)?</p>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO



BUSINESS AND ECONOMIC RESOURCES <i>Are there any direct effects on area businesses or economic conditions likely to result from this project, including agricultural operations (e.g. business visibility)?</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
LOCAL LAND USE, CHARACTER & ECONOMIC DEVELOPMENT PLANS <i>Will the project have long term aesthetic effects (e.g. visual changes to the structure itself and/or on adjacent view-sheds) or change the existing character of the facility?</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
OTHER <i>Are there any other potential impacts associated with the project?</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
ENVIRONMENTAL JUSTICE <i>Is the project likely to have a disproportionately high and adverse impact on identified Environmental Justice populations in the project area?</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
Indirect and Cumulative Effects [Transportation Impact Causing Activities (TICAs)] *A confirmed TICA requires completion of the ICE screening tool. Absence of TICA(s) requires inclusion of the standard language ICE paragraph.		
TRAVEL TIMES <i>Will the project result in notable travel time savings?</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
TRAVEL PATTERNS <i>Will the project permanently alter the existing road network (i.e. new connections)?</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
PROPERTY ACCESS <i>Will the project alter any existing access points for properties (i.e. addition or removal of)?</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
PROPERTY EXPOSURE <i>Will the project permanently increase exposure (i.e. Average Daily Traffic Volume) to any properties in the area?</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
CREATION OF A TRANSPORTATION OR LAND USE NODE <i>Is the project likely to open new areas for either travel or growth?</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
RECOMMENDATIONS		
AVOIDANCE <i>Alter the project so an impact does not occur.</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
MINIMIZATION <i>Modify the project to reduce the severity of an impact.</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
MITIGATION <i>Undertake an action to alleviate or offset an impact or to replace an appropriated resource.</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
ENHANCEMENT <i>Add a desirable or attractive feature to the project to make it fit more harmoniously into the community.</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
COMMUNITY OUTREACH & PUBLIC INVOLVEMENT <i>Provide opportunities for early and continuing communication between the community and project staff.</i> The Project Planning Engineer should coordinate with NCDOT Public Involvement to notify project area residents, property owners and agencies of project details and proposed detours. Widespread public notice of the project and construction detouring is also recommended given the high volumes of traffic along this portion of I-40.	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
FURTHER DOCUMENTATION <i>The nature of potential impacts warrant additional analysis (i.e. completion of the ICE screening tool).</i>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
OTHER <i>Any other recommendations based on potential impacts discovered.</i> The Project Planning Engineer should continue discussions with US Forest Service regarding access to Pisgah National Forest via the Harmon Den Recreational Area, coordinating throughout project construction to ensure access is maintained.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO



SOURCES

US Census Bureau
American Community Survey

APPENDIX ITEMS

- A. Demographics Used in Tabular Form
- B. Site Photographs
- C. NRCS Farmland Soils Figure



APPENDIX A: SUMMARY OF DEMOGRAPHICS USED IN TABULAR FORM**TABLE 1: POPULATION CHANGE**

Geography 2000	Geography 2010	2000	2010	Difference	Percent Change	Annualized Growth Rate
CT 9801, BG 1	CT 9801, BG 1	1,585	10	590	37.2%	3.2%
	CT 9201.01, BG 1		776			
	CT 9201.02, BG 1		1,389			
DSA Aggregate		1,585	2,175	590	37.2%	3.2%
Haywood County		54,033	59,036	5,003	9.3%	0.9%
North Carolina		8,049,313	9,535,483	1,486,170	18.5%	1.7%

Source: US Census Bureau, Census 2010 and Census 2000, Summary File 1 100% Data, Table P1 and P001 "Total Population."

TABLE 2: RACE

Geography	Total Population	White		Black or African American		American Indian and Alaska Native Alone		Asian		Native Hawaiian/Pacific Islander		Some Other Race		Two or More Races		Total Non-White	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
CT 9201.01, BG 1	935	935	100.0%	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
CT 9201.02, BG 1	1,618	1,615	99.8%	3	0.2%	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	3	0.2%
CT 9801, BG 1	-	-	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
DSA	2,553	2,550	99.9%	3	0.1%	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	3	N/A
Haywood County	58,836	56,323	95.7%	556	0.9%	323	0.5%	211	0.4%	11	0.0%	633	1.1%	779	1.3%	2,513	4.3%

Source: US Census Bureau, American Community Survey 5-year Estimates (2007-2011), Table B02001, "Race."

TABLE 3: HISPANIC POPULATION

Hispanic or Latino Origin	Total Population	Hispanic		Not Hispanic	
		#	%	#	%
CT 9201.01, BG 1	935	0	N/A	935	100.0%
CT 9201.02, BG 1	1,618	64	4.0%	1,554	96.0%
CT 9801, BG 1	-	-	-	-	-
DSA	2,553	64	2.5%	2,489	97.5%
Haywood County	58,836	10,640	18.1%	48,196	81.9%

Source: US Census Bureau, American Community Survey 5-year Estimates (2007-2011), Table B03002, "Hispanic or Latino Origin by Race."

TABLE 4: MINORITY POPULATION

Geography	Total Population	White, Non-Hispanic		Minority Population*	
		#	%	#	%
CT 9201.01, BG 1	935	935	100.0%	-	N/A
CT 9201.02, BG 1	1,618	1,551	95.9%	67	4.1%
CT 9801, BG 1	-	-	-	-	-
DSA	2,553	2,486	97.4%	67	2.6%
Haywood County	58,836	55,327	94.0%	3,509	6.0%

* Minority population includes all races that are non-white and Hispanic populations that are also White.

Source: US Census Bureau, American Community Survey 5-year Estimates (2007-2011), Table B03002, "Hispanic or Latino Origin by Race."



TABLE 5: POVERTY DATA

Poverty	Total Population for whom Poverty Status is Determined	Below Poverty Level		Very Poor: Under 50% of Poverty Level		Near Poor: Between 100% and 149% of Poverty Level	
		#	%	#	%	#	%
CT 9201.01, BG 1	935	238	25.5%	135	14.4%	64	6.8%
CT 9201.02, BG 1	1,618	392	24.2%	67	4.1%	271	16.7%
CT 9801, BG 1	0	0	N/A	0	N/A	0	N/A
DSA	2,553	630	24.7%	202	7.9%	335	13.1%
Haywood County	57,839	8,248	14.3%	2,533	4.4%	5,742	9.9%

Source: US Census Bureau, American Community Survey 5-year Estimates (2007-2011), Table C17002, "Ratio of Income to Poverty Level in the Past 12 Months."

TABLE 6: LIMITED ENGLISH PROFICIENCY (LEP)

Geography	Total Adult Population, 18 years and older	Primary Language Group of Persons Who Speak English Less than Very Well							
		Spanish		Other Indo-Euro		Asian/Pacific		Other	
		#	%	#	%	#	%	#	%
CT 9201.01, BG 1	544	0	N/A	0	N/A	0	N/A	0	N/A
CT 9201.02, BG 1	1,213	0	N/A	0	N/A	0	N/A	0	N/A
CT 9801, BG 1	-	0	-	0	-	0	-	0	-
DSA Aggregate	1,757	0	N/A	0	N/A	0	N/A	0	N/A

Source: US Census Bureau, American Community Survey 5-year Estimates (2007-2011), Table B16004, "Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over."



TABLE 7: ZERO CAR HOUSEHOLDS

Geography	Total Households	No Vehicle Available		One Vehicle Available		Two or More Vehicles Available	
		#	%	#	%	#	%
CT 9801, BG 1	-	-	-	-	-	-	-
CT 9201.01, BG 1	309	18	5.8%	110	35.6%	181	58.6%
CT 9201.02, BG 1	779	101	13.0%	170	21.8%	508	65.2%
DSA	1,088	119	10.9%	280	25.7%	689	63.3%
Haywood County	26,659	1,242	4.7%	8,112	30.4%	17,305	64.9%

Source: US Census Bureau, American Community Survey 5-year Estimates (2007-2011), Table B08201, "Household Size by Vehicles Available."



APPENDIX B: SITE PHOTOS



Photo 1: I-5508 Project corridor, near rock stabilization site



Photo 2: I-40 Westbound on-ramp from Harmon Den Rd interchange (to be closed)



Photo 3: Sign limiting access to Forest Service Road 288/ Harmon Den Road

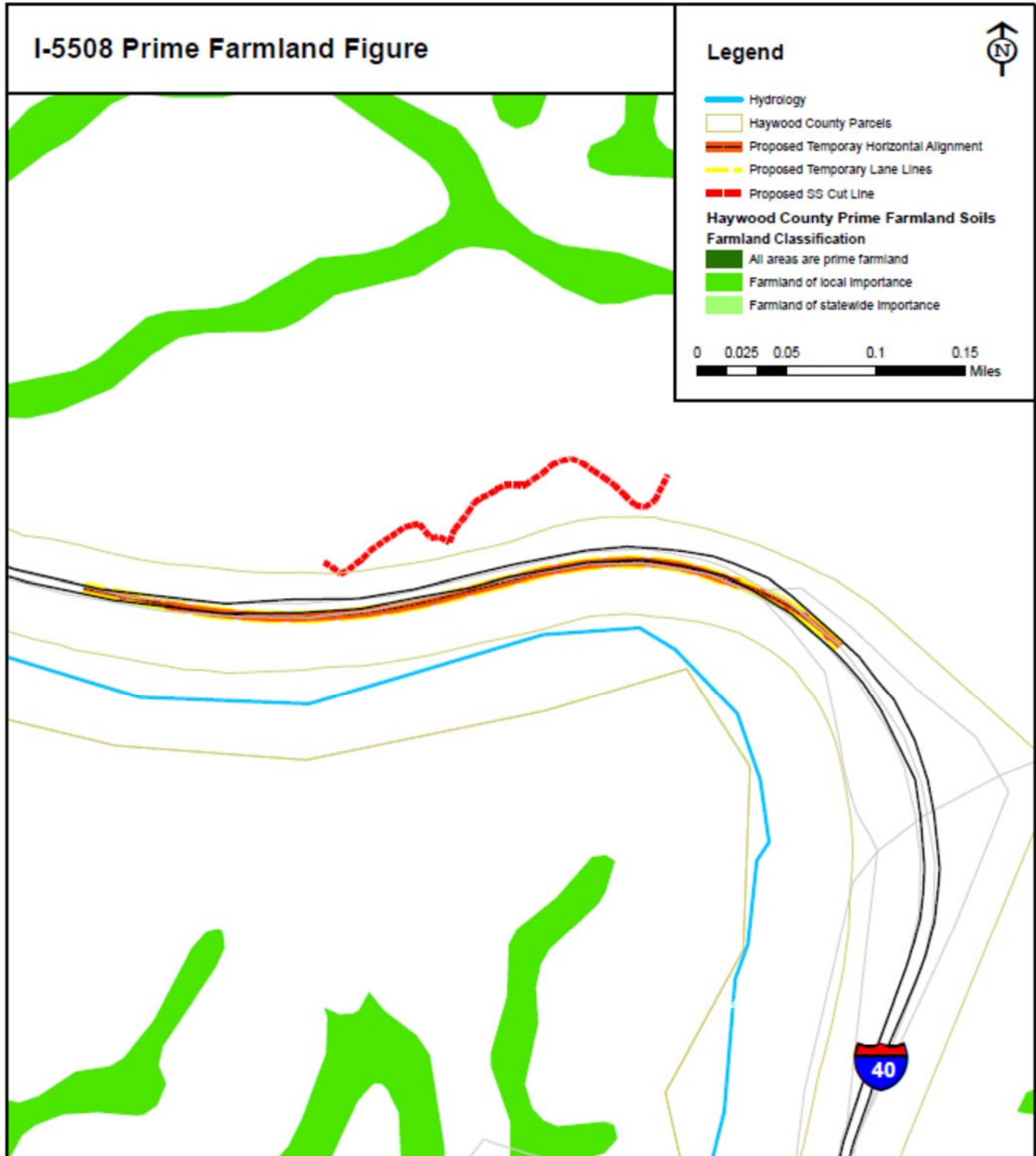


Photo 4: Signage at Exit 15/Fines Creek Road (detour location)



Photo 5: Typical Section of Forest Service Road 288/ Harmon Den Road

APPENDIX C: NRCS FARMLAND SOILS FIGURE



I-40 Slope Stabilization

Milepost 7 in Haywood County
NCDOT State Transportation Improvement Program Project I-5508



December 2013

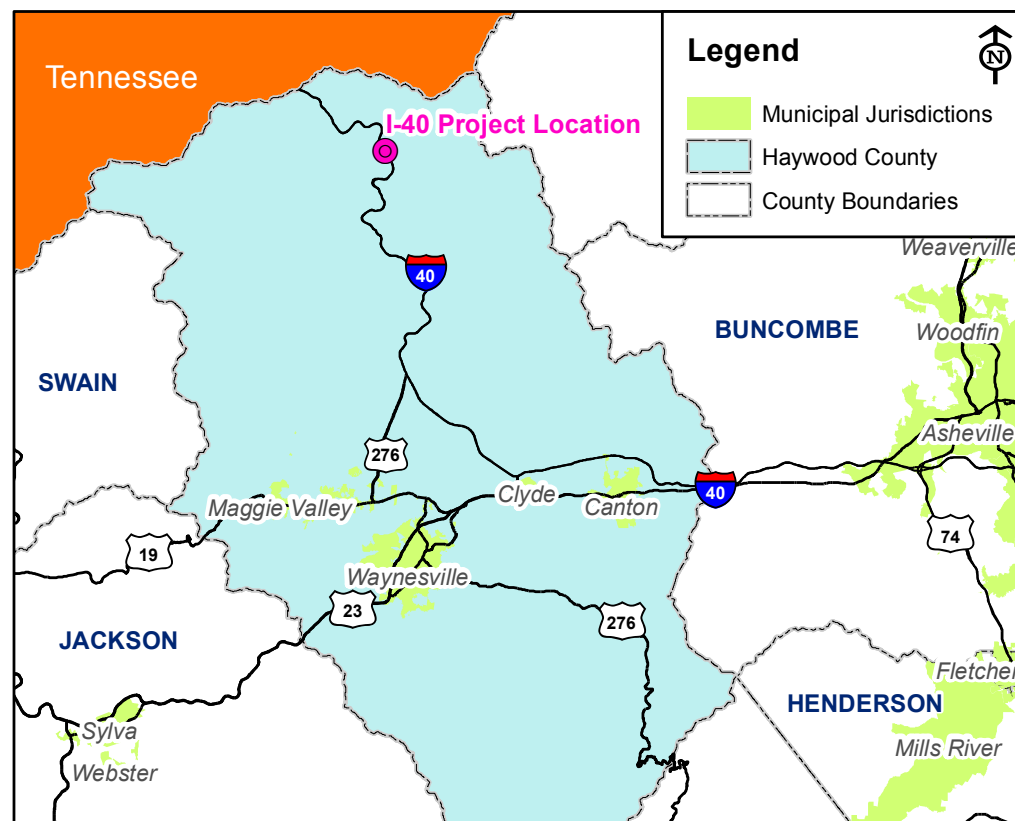


NCDOT Project Number I-5508
Mr. Zahid Baloch, PE
NCDOT Project Development
1548 Mail Service Center
Raleigh, NC 27699-1548



I-40 Slope Stabilization Project

A slope stabilization project has been proposed by NCDOT near Milepost 7, just west of the Harmon Den Road interchange on I-40 in Haywood County. The project area has a history of previous rock slides and its instability poses safety hazards. The proposed project includes re-cutting approximately 1,000 feet of the existing rock slope, using long anchor bolts (known as rock bolts) to 'knit' the unstable exterior rock to deeper, more stable rock; and installation of a barrier mesh to catch loose rocks if they fall.



Project Summary

A slope stabilization project has been proposed by NCDOT near Milepost 7, just west of the Harmon Den Road interchange on I-40 in Haywood County. The project area has a history of previous rock slides and its instability poses safety hazards. The proposed project includes re-cutting approximately 1,000 feet of the existing rock slope, using long anchor bolts (known as rock bolts) to 'knit' the unstable exterior rock to deeper, more stable rock; and installation of a barrier mesh to catch loose rocks if they fall. The project is located on US Forest Service (USFS) land and NCDOT is coordinating directly with USFS regarding right-of-way and other project design decisions.

Project Planning Process

The proposed improvements along I-40 are being studied in accordance with the National Environmental Policy Act (NEPA), a requirement of all federally funded projects. This process of planning and environmental analysis involves preparation of an environmental document that evaluates all of the potential impacts a proposed project may have on the surrounding human and natural environments. NCDOT is currently gathering information about the project area, including data on natural resources (such as streams, wetlands and wildlife) and community resources (such as neighborhoods and businesses). The information will be compiled with relevant engineering data (such as traffic and roadway design information) in the environmental document. A Categorical Exclusion/Programmatic Categorical Exclusion is the type of environmental document that will be prepared for this project.

The purpose of this Newsletter is to inform project area residents of the proposed project and invite your participation in the planning process -- YOU are a community resource and we want to hear from you! This Newsletter contains several figures showing the project location and surrounding area, including current plans for detouring traffic during construction. Please use the enclosed comment form to provide your input.

Public Involvement is an Important Part of the Planning Process

NCDOT encourages local residents' involvement in transportation projects and is committed to ensuring that citizens' concerns are considered and addressed. Please participate by submitting your comments to project personnel listed below. All comments received will be taken into consideration as the project develops. Comments are requested by January 15, 2014.

Mr. Zahid Baloch, PE
NCDOT Project Engineer
1548 Mail Service Center
Raleigh, NC 27699-1548
zbaloch@ncdot.gov
(919) 707-6012

Ms. Martha Hodge
Consultant Project Manager
SEPI Engineering & Construction
1025 Wade Avenue
Raleigh, NC 27605
mhodge@sepiengineering.com
(919) 573-9916

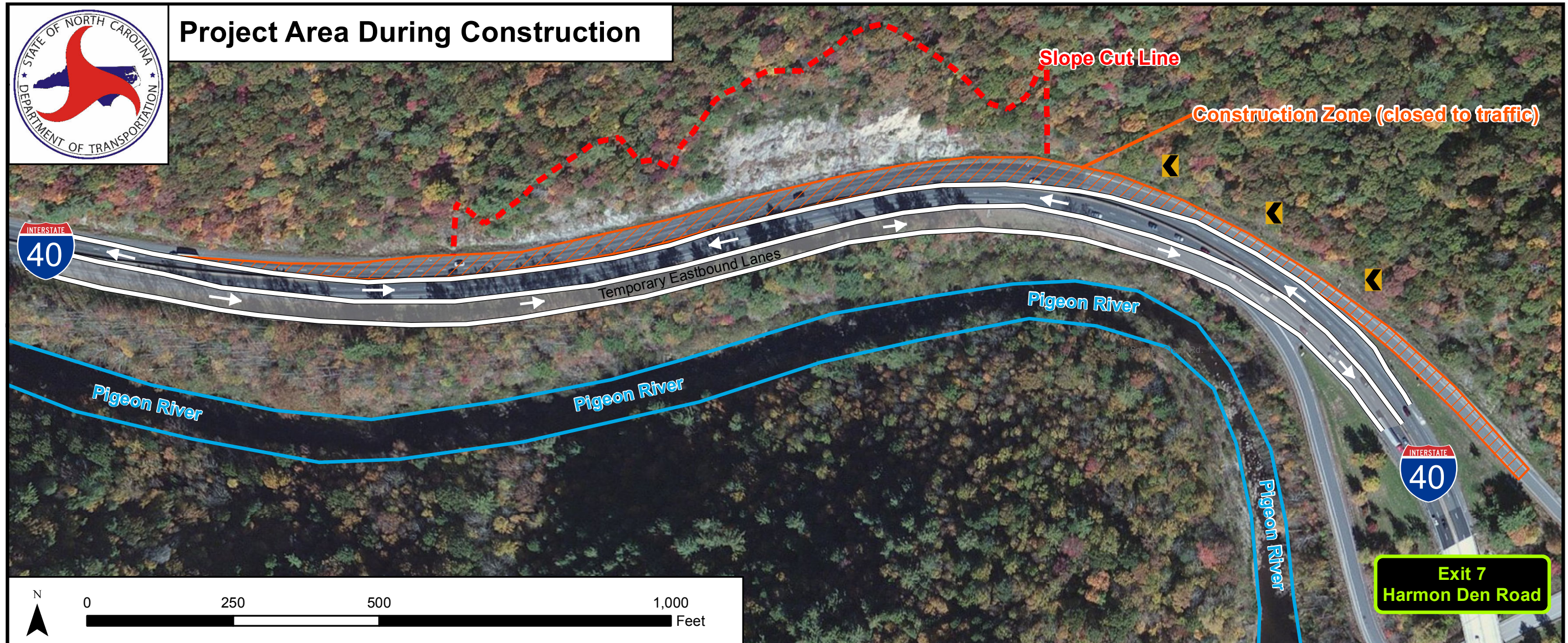
I-40 Slope Stabilization

How will traffic be maintained during construction?

- The westbound I-40 on-ramp from the Harmon Den Road interchange will be closed to all traffic.
- The two existing I-40 westbound lanes will also be closed to traffic for use as the construction zone.
- I-40 westbound traffic will be shifted onto the two existing eastbound lanes.
- Two temporary travel lanes will be constructed south of the existing road to carry eastbound traffic.

Project Schedule (subject to change)

	Begin Date	End Date
<i>Project Planning & Environmental Analysis</i>	Current	Feb 2014
<i>Design & Right-of-Way</i>	Spring 2014	Dec 2014
<i>Construction</i>	Jan 2015	Summer 2016



COMMENT SHEET

Proposed slope stabilization on I-40 near milepost 7 in Haywood County, including rock bolting and installation of rock-fall barrier mesh.

TIP Project No. I-5508

Haywood County

NAME:

Rick Stiles

ADDRESS:

401 Farmview Dr. Waynesville, NC 28786

EMAIL ADDRESS:

rstiles@haywood.k12.nc.us

COMMENTS AND/OR QUESTIONS:

Haywood Co. Schools has one Bus that runs this area Am and Pm. These students live on Mt. Sterling Rd and the only way to access them is by I-40. It appears we will still be able to travel this Rd.

Thanks

Rick Stiles

828-456-2421 Trans. Dir.

Haywood Co. Sch

Comments may be submitted by January 15, 2014 to:

Ms. Martha Hodge
SEPI Engineering & Construction
1025 Wade Avenue
Raleigh, NC 27605
Phone: 919.573-9916 FAX: 919.789-9519
Email: mhodge@sepiengineering.com