Comprehensive Transportation Plan

McDowell County

July 2013

Comprehensive Transportation Plan

McDowell County

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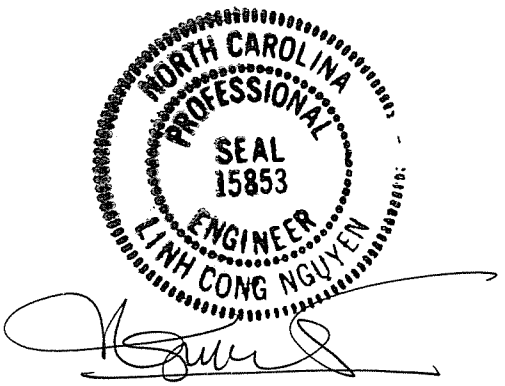
Transportation Planning Branch
N.C. Department of Transportation

In Cooperation with: McDowell County
Town of Old Fort
Isothermal Rural Planning Organization

July 2013



Linh C. Nguyen, PE

Executive Summary

In January of 2010, the Transportation Planning Branch of the North Carolina Department of Transportation and McDowell County initiated a study to cooperatively develop the McDowell County Comprehensive Transportation Plan (CTP), which includes the Town of Old Fort. A separate CTP will be developed for the City of Marion. The boundary for this study is shown on the McDowell County CTP maps. This is a long range multi-modal transportation plan that covers transportation needs through 2040. Modes of transportation evaluated as part of this plan include: highway, public transportation and rail, bicycle, and pedestrian. This plan does not cover routine maintenance or minor operations issues. Refer to Appendix A for contact information on these types of issues.

Findings of this CTP study were based on an analysis of the transportation system, environmental screening, and public input. Refer to Figure 1 for the CTP maps, which were mutually endorsed/adopted in 2012/2013. Implementation of the plan is the responsibility of McDowell County, Old Fort, and NCDOT. Refer to Chapter 2 for information on the implementation process.

This report documents the recommendations for improvements that are included in the McDowell County CTP. The major recommendations for improvements are listed below. Prior to constructing any of the recommendations, a more detailed and thorough environmental study will need to be completed. More detailed information about these and other recommendations can be found in Chapter 2.

- **Batcave Road (SR 1103):** Widen to a 3-lane facility from I-40 to Old Fort-Sugar Hill Road (SR 1135) in Old Fort.

- **Sugar Hill Road (SR 1001):** Widen to a five-lane cross-section from Goose Creek Road (SR 1153) to Marion CTP boundary.

- **Old Fort Pedestrian Plan:** This CTP includes all bicycle and pedestrian recommendations in the Old Fort Pedestrian Master Plan (April 2011).

- **US 70 Improvement:** Widen paved shoulder along US 70 from Orchard Street in Old Fort to Marion CTP boundary to accommodate bicycle travel.

- **Multi-use path along Catawba River from Old Fort to Marion**: Construct a multi-use path from Old Fort greenway just south of I-40 to Deerfield Road (east of Marion) along the Catawba River.

Adopted by:

McDowell County
Date: November 5, 2012

Town of Old Fort
Date: January 14, 2013

NCDOT
Date: April 4, 2013

Endorsed by:

Isothermal RPO
Date: February 27, 2013

Recommended by:

Transportation Planning Branch
Date: February 28, 2013

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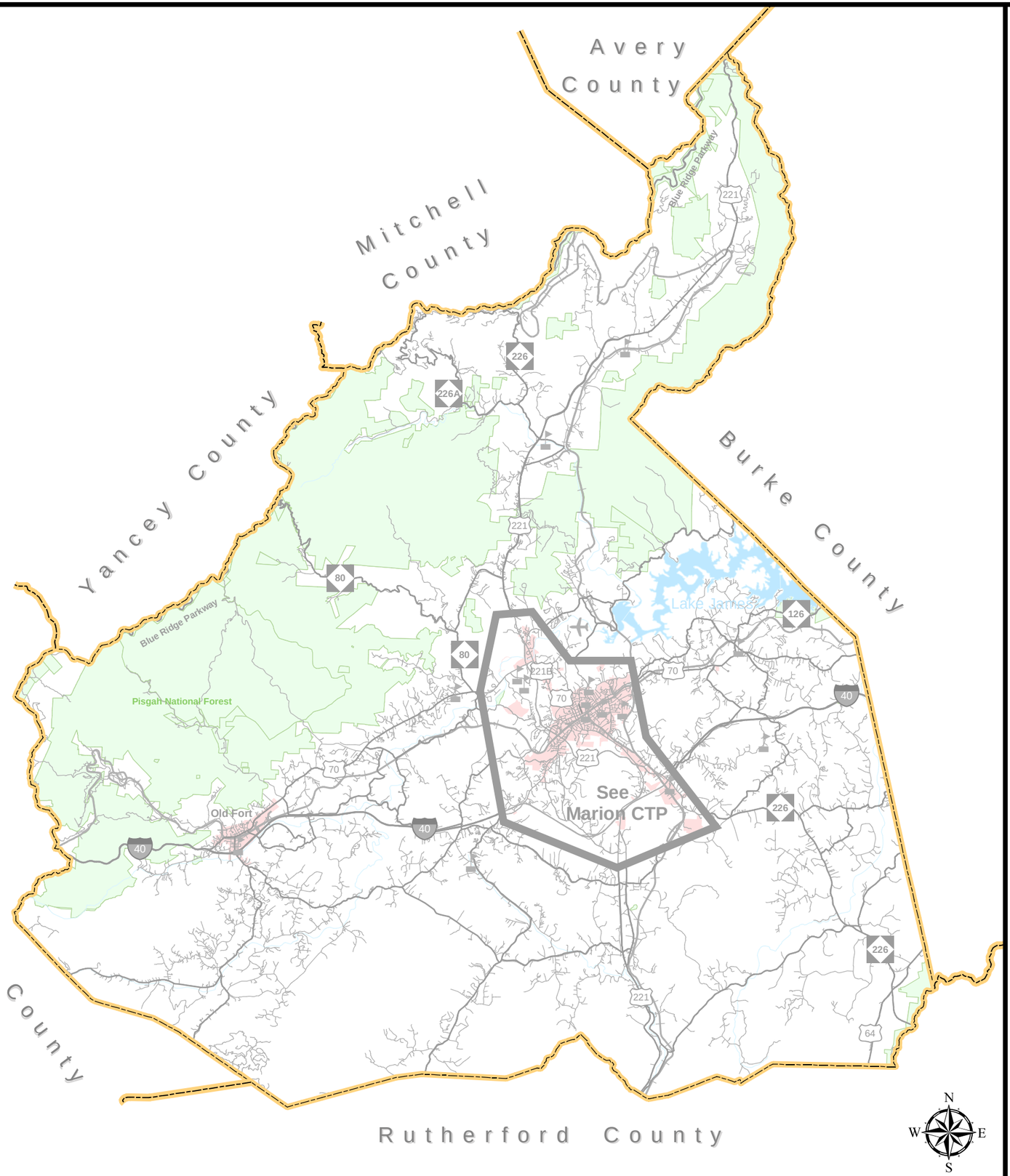
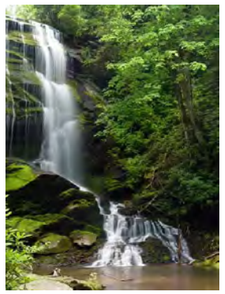




McDowell County

Comprehensive Transportation Plan

Plan date: June 26, 2012

Sheet 1	**Adoption Sheet**
Sheet 2	**Highway Map**
Sheet 3	**Public Transportation and Rail Map**
Sheet 4	**Bicycle Map**
Sheet 5	**Pedestrian Map**

Legend

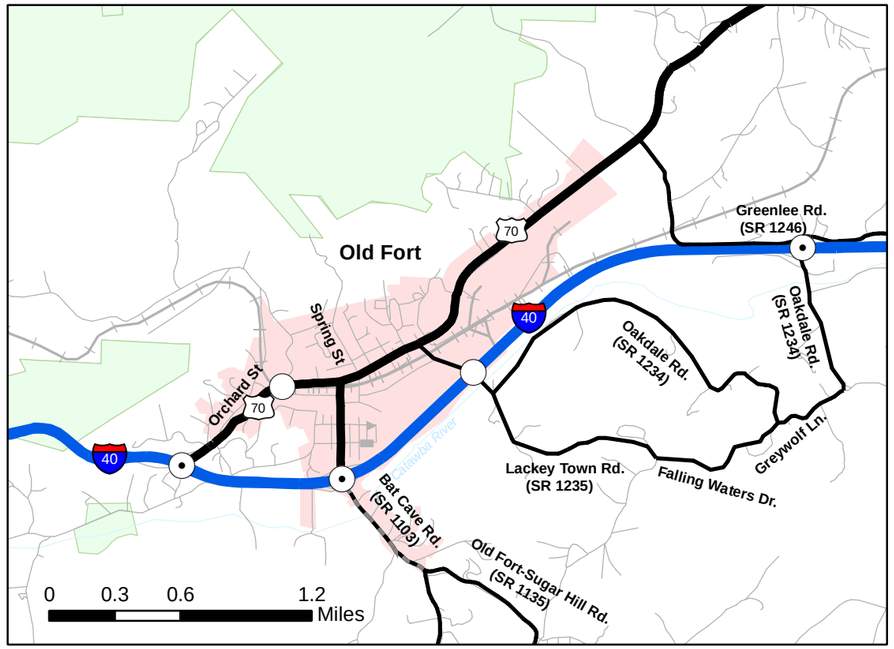
- Roads
- Railroad
- School
- Airport
- County Boundary
- Rivers and Streams
- Municipal Boundary
- Water Bodies
- National Forest

0 1 2 4 Miles

Sheet 1 of 5

Base map date: 10-12-2010

Refer to CTP document for more details



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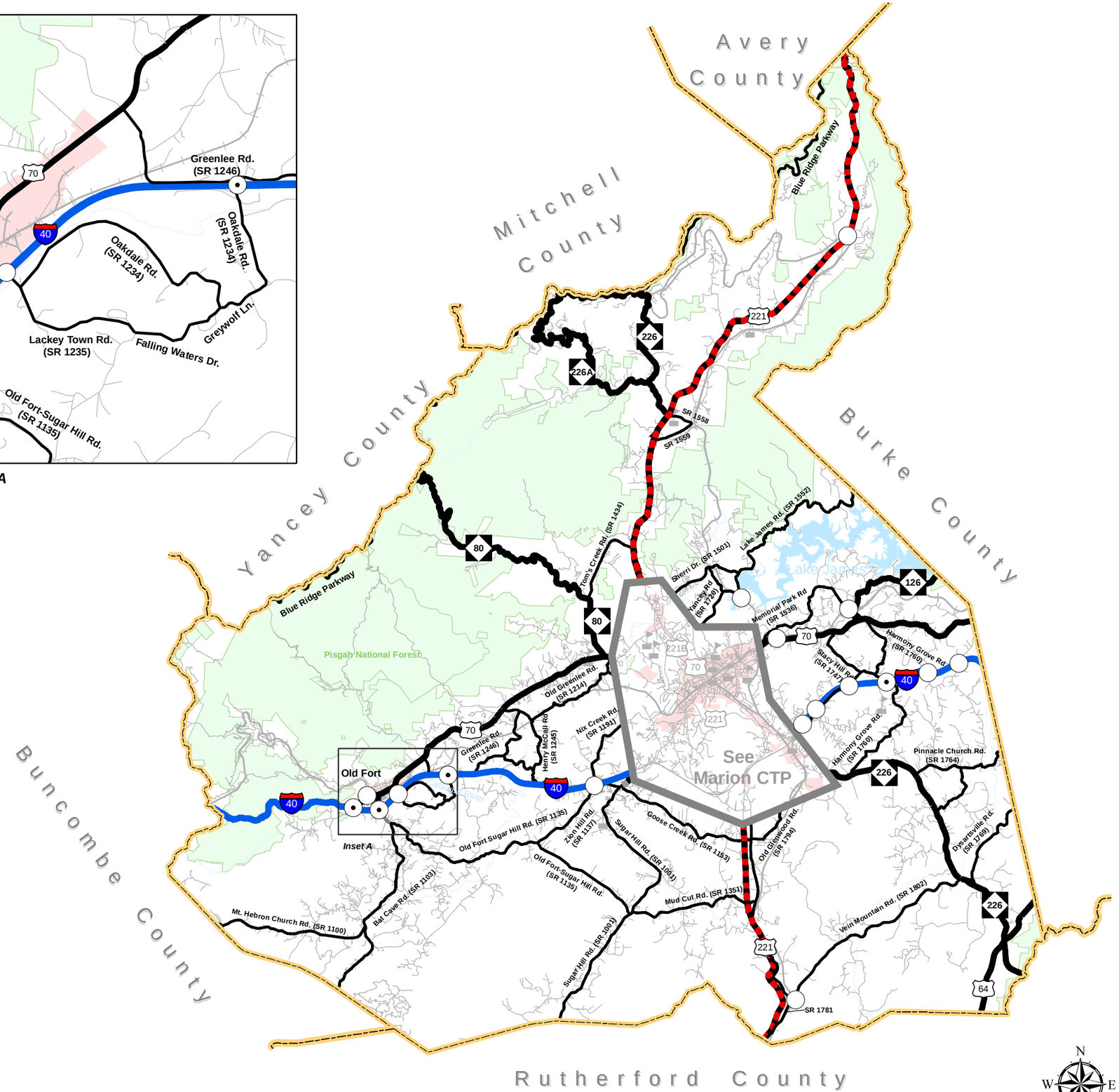


Highway Map

McDowell County

Comprehensive Transportation Plan

Plan date: June 26, 2012

Freeways
- Existing
- Needs Improvement
- Recommended

Expressways
- Existing
- Needs Improvement
- Recommended

Boulevards
- Existing
- Needs Improvement
- Recommended

Other Major Thoroughfares
- Existing
- Needs Improvement
- Recommended

Minor Thoroughfares
- Existing
- Needs Improvement
- Recommended

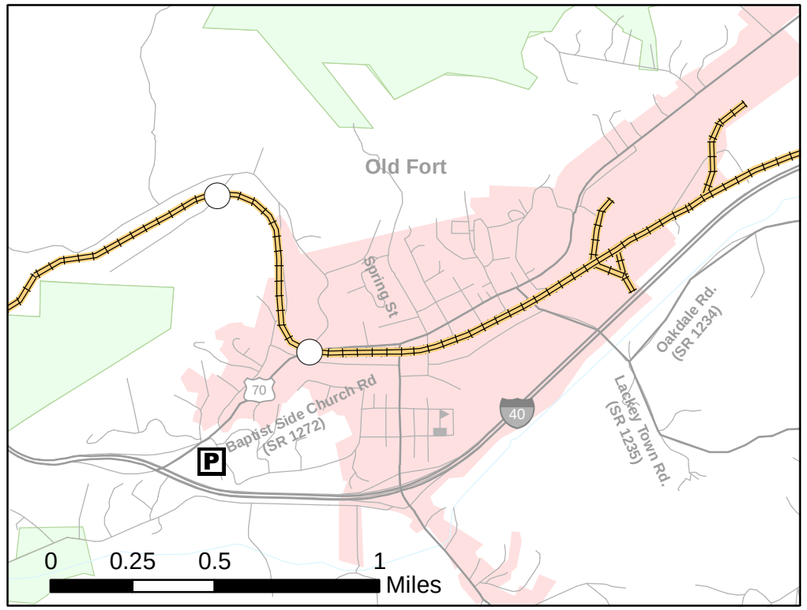
- Existing Interchange
- Proposed Interchange
- Existing Grade Separation
- Proposed Grade Separation

0 1 2 4 Miles

Sheet 2 of 5

Base map date: 10-12-2010

Refer to CTP document for more details



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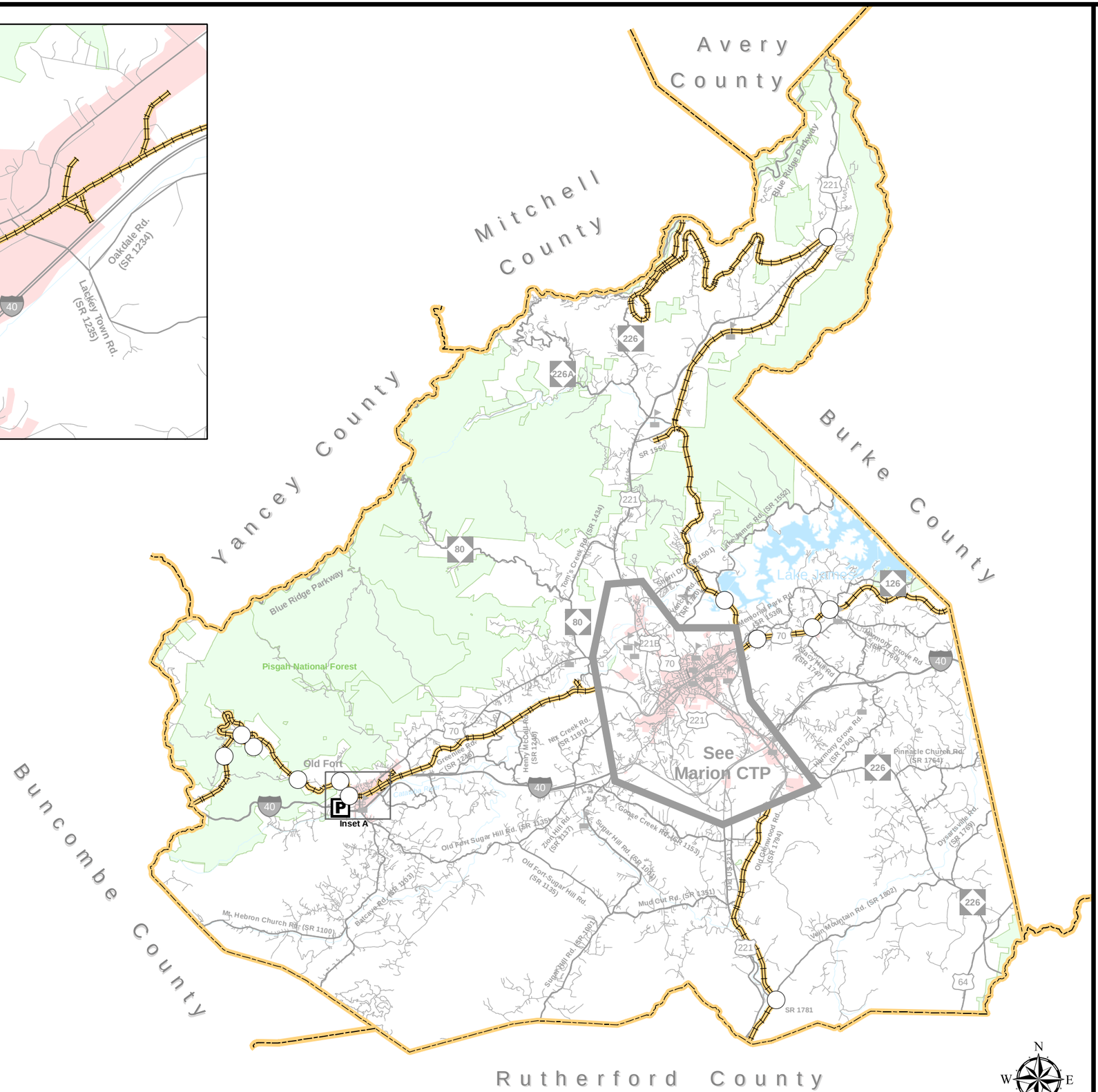


Public Transportation and Rail Map

McDowell County

Comprehensive Transportation Plan

Plan date: June 26, 2012

Bus Routes
- Existing
- Needs Improvement
- Recommended

Fixed Guideway
- Existing
- Needs Improvement
- Recommended

Operational Strategies
- Existing
- Needs Improvement
- Recommended

Rail Corridor
- Active
- Inactive
- Recommended

High Speed Rail Corridor
- Existing
- Recommended

Rail Stops
- Existing
- Recommended

Intermodal Connector
- Existing
- Recommended

Park and Ride Lot
- Existing
- Recommended

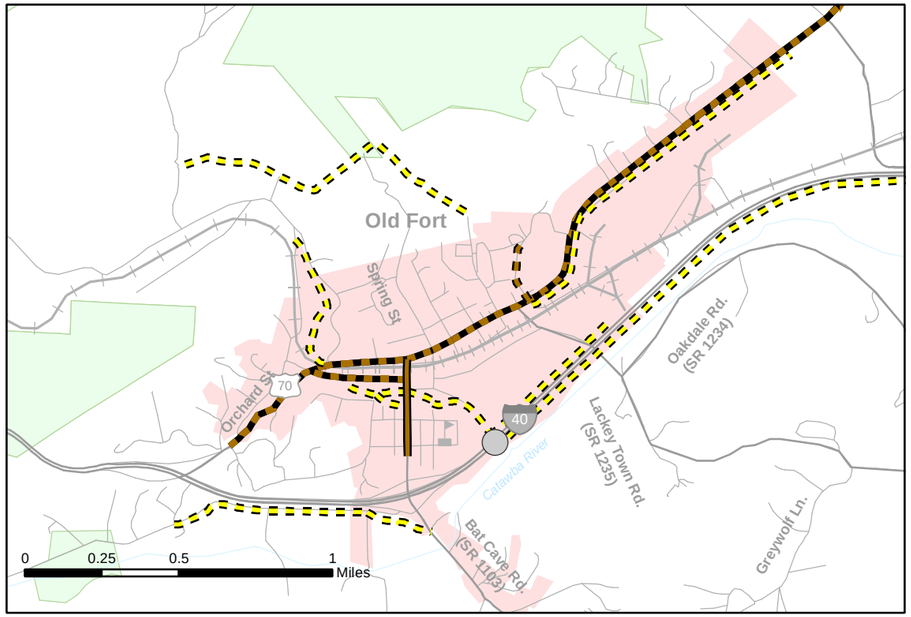
- Existing Grade Separation
- Proposed Grade Separation

0 0.75 1.5 3 Miles

Sheet 3 of 5

Base map date: 10-12-2010

Refer to CTP document for more details



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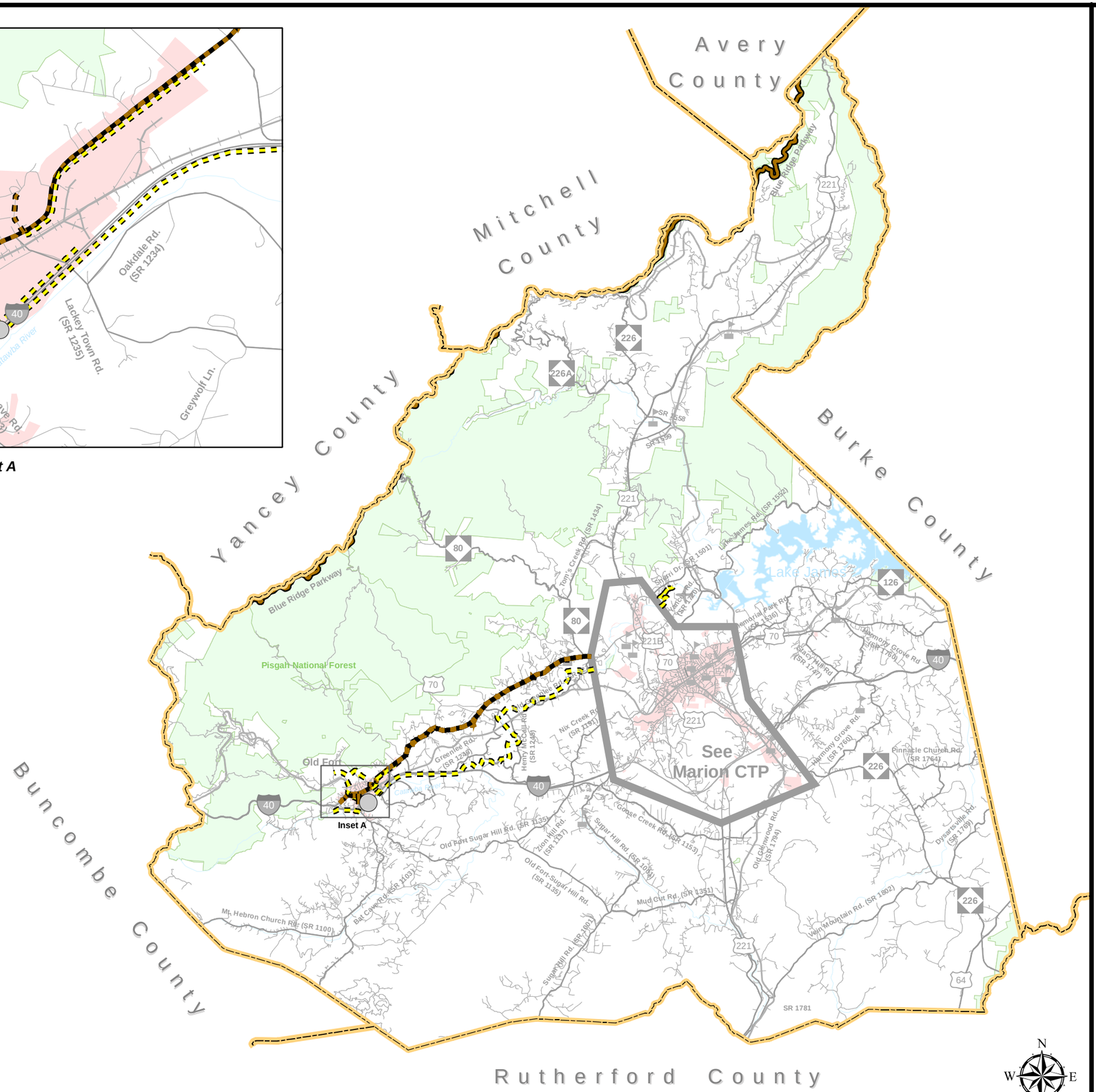


Bicycle Map

McDowell County

Comprehensive Transportation Plan

Plan date: June 26, 2012

On-road
- Existing
- Needs Improvement
- Recommended

Off-road
- Existing
- Needs Improvement
- Recommended

Multi-Use Paths
- Existing
- Needs Improvement
- Recommended

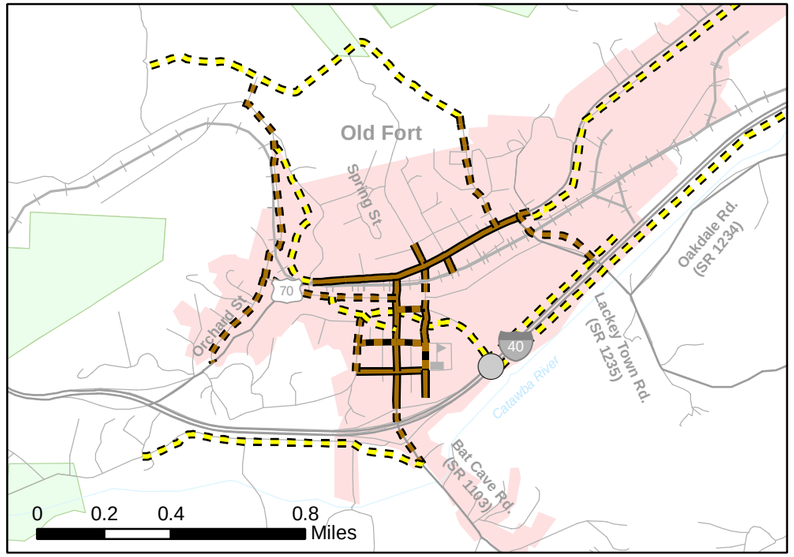
- Existing Grade Separation
- Proposed Grade Separation

0 1 2 4 Miles

Sheet 4 of 5

Base map date: 10-12-2010

Refer to CTP document for more details



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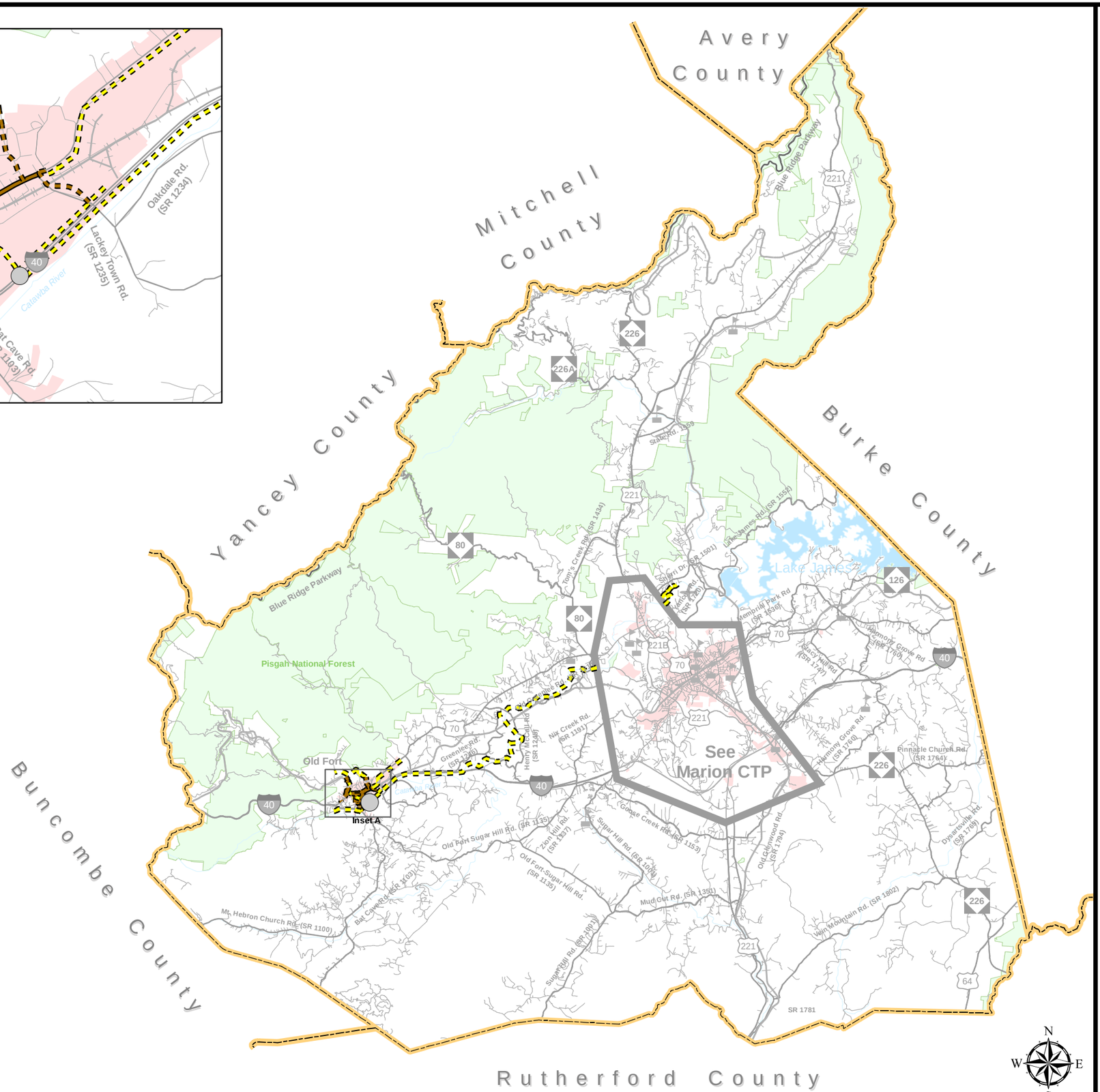
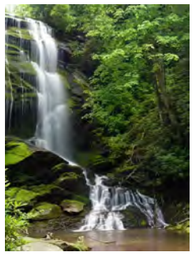


Pedestrian Map



McDowell County

Comprehensive Transportation Plan

Plan date: June 26, 2012

Sidewalks
- Existing
- Needs Improvement
- Recommended

Off-road
- Existing
- Needs Improvement
- Recommended

Multi-Use Paths
- Existing
- Needs Improvement
- Recommended

- Existing Grade Separation
- Proposed Grade Separation

Sheet 5 of 5

Base map date: 10-12-2010

Refer to CTP document for more details

Table of Contents

Executive Summary

I. Analysis of the Existing and Future Transportation System I-1

Analysis Methodology and Data Requirements .. I-1
Roadway System Analysis I-1
Traffic Crash Analysis .. I-3
Bridge Deficiency Assessment I-3
Public Transportation and Rail .. I-13
Public Transportation I-
Rail
Bicycle and Pedestrians .
Land Use
Consideration of the Natural and Human Environment . I-18
Public Involvement

II. Recommendations II-1

Implementation
Problem Statements
Highway
Public Transportation and Rail .. II-5
Bicycle
Pedestrian

Appendices

Appendix A – Resources and Contacts . A
Appendix B – Comprehensive Transportation Plan Definitions . B-1
Appendix C – CTP Inventory and Recommendations . C-1
Appendix D – Typical Cross-Sections
Appendix E – Level of Service Definitions E-
Appendix F – Traffic Crash Analysis ..
Appendix G – Bridge Deficiency Assessment .. G-1
Appendix H – Public Involvement

List of Figures

Figure 1 Comprehensive Transportation Plan . iii
Figure 2 Existing Roadway Deficiency . I-5
Figure 3 Future Roadway Deficiency I-7
Figure 4 Crash Locations Map
Figure 5 Deficient Bridges .
Figure 6 Existing Land Development Plan of McDowell County I-21
Figure 7 Future Land Development Plan of McDowell County .. I-23
Figure 8 Environmental Features .. I-
Figure 9 Typical Cross Sections .
Figure 10 Level of Service Illustrations E-
Figure 11 Public Input Session Advertisement .. H-15

List of Tables

Table 1 Environmental Features
Table 2 Restricted Environmental Features I-19
Table 3 CTP Inventory and Recommendations . C-3
Table 4 Crash Locations
Table 5 Deficient Bridges

I. Analysis of the Existing and Future Transportation System

A Comprehensive Transportation Plan (CTP) is developed to ensure that the progressively developed transportation system will meet the needs of the region for the planning period. The CTP serves as an official guide to providing a well-coordinated, efficient, and economical transportation system for the future of the region. This document should be utilized by the local officials to ensure that planned transportation facilities reflect the needs of the public, while minimizing the disruption to local residents, businesses and environmental resources.

In order to develop a CTP, the following are considered:

- Analysis of the transportation system, including any local and statewide initiatives;
- Impacts to the natural and human environment, including natural resources, historic resources, homes, and businesses;
- Public input, including community vision and goals and objectives.

Analysis Methodology and Data Requirements

Reliable forecasts of future travel patterns must be estimated in order to analyze the ability of the transportation system to meet future travel demand. These forecasts depend on careful analysis of the character and intensity of existing and future land use and travel patterns.

An analysis of the transportation system looks at both current and future travel patterns and identifies existing and anticipated deficiencies. This is usually accomplished through a capacity deficiency analysis, a traffic crash analysis, and a system deficiency analysis. This information, along with population growth, economic development potential, and land use trends, is used to determine the potential impacts on the future transportation system.

Roadway System Analysis

An important stage in the development of a CTP is the analysis of the existing transportation system and its ability to serve the area's travel desires. Emphasis is placed not only on detecting the existing deficiencies, but also on understanding the causes of these deficiencies. Roadway deficiencies may result from inadequacies such as pavement widths, intersection geometry, and intersection controls; or system problems, such as the need to construct missing travel links, bypass routes, loop facilities, additional radial routes or infrastructure improvements to meet statewide initiatives.

One of those statewide initiatives is the Strategic Highway Corridor (SHC) Vision Plan adopted by the Board of Transportation on September 2, 2004 and last revised on July

10, 2008. The purpose of the SHC Vision Plan is to protect and maximize the mobility and connectivity on a core set of highway corridors throughout North Carolina, while promoting environmental stewardship through maximizing the use of existing facilities to the extent possible, and fostering economic prosperity through the quick and efficient movement of people and goods.

The primary purpose of the SHC Vision Plan is to provide a network of high-speed, safe, reliable highways throughout North Carolina. The primary goal to support this purpose is to create a greater consensus towards the development of a genuine vision for each corridor – specifically towards the identification of a desired facility type (Freeway, Expressway, Boulevard, or Thoroughfare) for each corridor. Individual Comprehensive Transportation Plans shall incorporate the long-term vision of each corridor. Refer to Transportation Planning Branch (TPB) in Appendix A for information.

In the development of this plan, travel demand was projected from 2010 to 2040 using a trend line analysis based on Annual Average Daily Traffic (AADT) from 1993 to 2010. In addition, local land use plans and growth expectations were used to further refine future growth rates and patterns. The travel demand projection methodology and the land use plan growth were endorsed by the McDowell County CTP Steering Committee on February 23, 2012 and by the McDowell County Board of Commissioners on April 16, 2012 and by the Town of Old Fort on September 17, 2012.

Existing and future travel demand is compared to existing roadway capacities. Capacity deficiencies occur when the traffic volume of a roadway exceeds the roadway's capacity. Roadways are considered near capacity when the traffic volume is at least eighty percent of the capacity. Refer to Figures 2 and 3 for existing and future capacity deficiencies.

Capacity is the maximum number of vehicles which have a "reasonable expectation" of passing over a given section of roadway, during a given time period under prevailing roadway and traffic conditions. Many factors contribute to the capacity of a roadway including the following:

- Geometry of the road (including number of lanes), horizontal and vertical alignment, and proximity of perceived obstructions to safe travel along the road;
- Typical users of the road, such as commuters, recreational travelers, and truck traffic;
- Access control, including streets and driveways, or lack thereof, along the roadway;
- Development along the road, including residential, commercial, agricultural, and industrial developments;
- Number of traffic signals along the route;
- Peaking characteristics of the traffic on the road;
- Characteristics of side-roads feeding into the road; and

- Directional split of traffic or the percentages of vehicles traveling in each direction along a road at any given time.

The relationship of travel demand compared to the roadway capacity determines the level of service (LOS) of a roadway. Six levels of service identify the range of possible conditions. Designations range from LOS A, which represents the best operating conditions, to LOS F, which represents the worst operating conditions.

LOS D indicates system wide "practical capacity" of a roadway or the capacity at which the public begins to express dissatisfaction. The practical capacity for each roadway was developed based on the 2000 Highway Capacity Manual using the NCLOS program. Recommended improvements and overall design of the transportation plan were based upon achieving a minimum LOS D on existing facilities and a LOS C for new facilities. Refer to Appendix E for detailed information on LOS.

Traffic Crash Analysis

Traffic crashes are often used as an indicator for locating congestion and roadway problems. Crash patterns obtained from an analysis of crash data can lead to the identification of improvements that will reduce the number of crashes. A crash analysis was performed for the McDowell County CTP for crashes occurring in the planning area between January 1, 2007 and December 31, 2009. During this period, a total of thirty-five intersections were identified as having 10 or more crashes or 2 crashes with a severity average index greater than that of the state's index. The crash locations are illustrated in Figure 4. Refer to Appendix F for a detailed crash analysis.

Bridge Deficiency Assessment

Bridges are a vital and unique element of a highway system. First, they represent the highest unit investment of all elements of the system. Second, any inadequacy or deficiency in a bridge reduces the value of the total investment. Third, a bridge presents the greatest opportunity of all potential highway failures for disruption of community welfare. Finally, and most importantly, a bridge represents the greatest opportunity of all highway failures for loss of life. For these reasons, it is imperative that bridges be constructed to the same design standards as the system of which they are a part.

The NCDOT Structures Management Unit inspects all bridges in North Carolina at least once every two years. Bridges having the highest priority are replaced as Federal and State funds become available. Seventy five deficient bridges were identified within the planning area and are illustrated in Figure 5. Refer to Appendix G for more detailed information.

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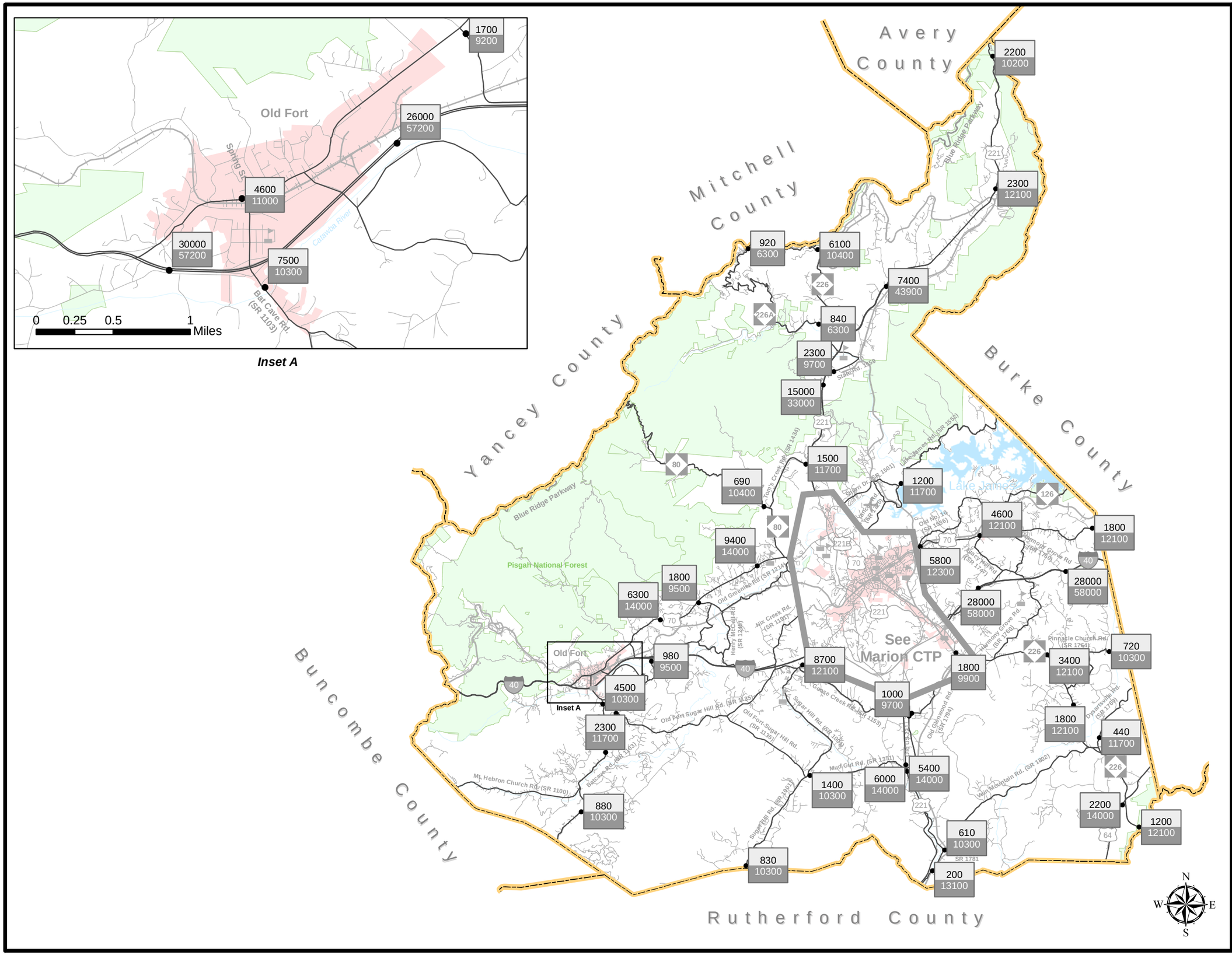


Figure 2

2010
Volumes and Capacity Deficiencies

McDowell County

Comprehensive Transportation Plan

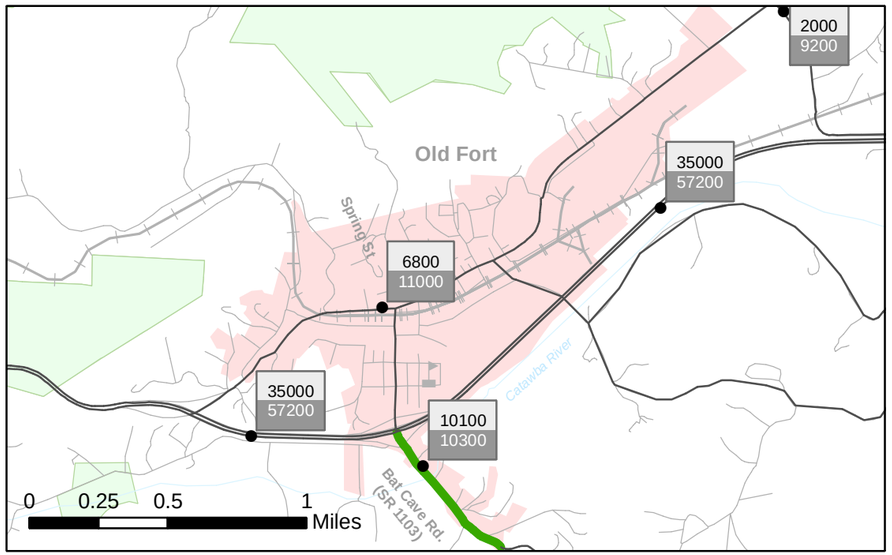
Legend

2010 Volumes (AADT)
2010 Capacity

- Near Capacity
- Over Capacity
- Roads
- Study Roads
- Railroad
- School
- Airports
- County Boundary
- Rivers and Streams
- Municipal Boundary
- National Forest

0 1 2 4 Miles

Base map date: 10-12-2010



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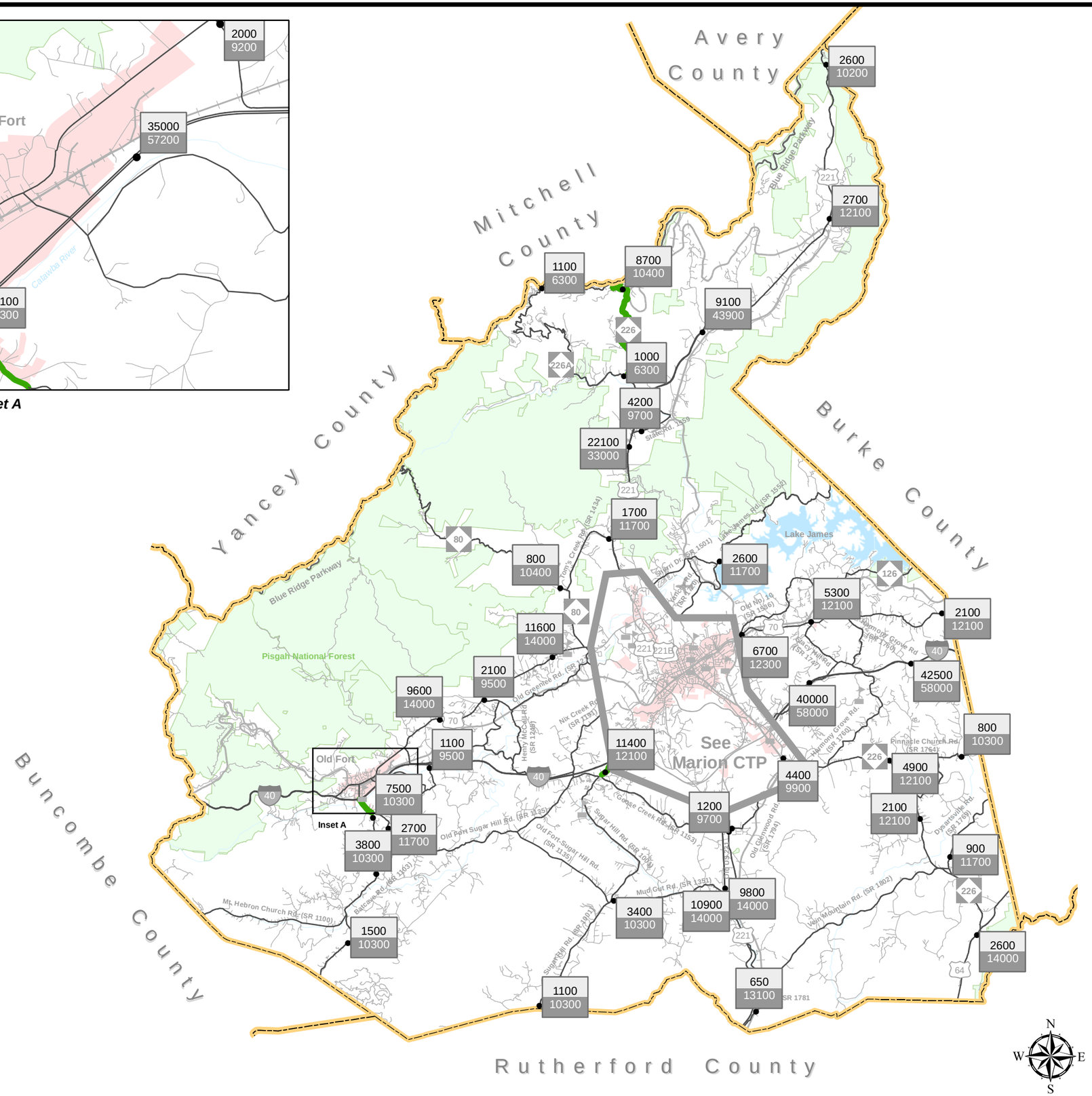

Figure 3

2040 Volumes and Capacity Deficiencies

McDowell County

Comprehensive Transportation Plan

Legend

2040 Volumes (AADT)
2010 Capacity

- Near Capacity
- Over Capacity
- Roads
- Study Roads
- Railroad
- School
- Airports
- County Boundary
- Rivers and Streams
- Municipal Boundary
- National Forest

0 1 2 4 Miles

Base map date: 10-12-2010

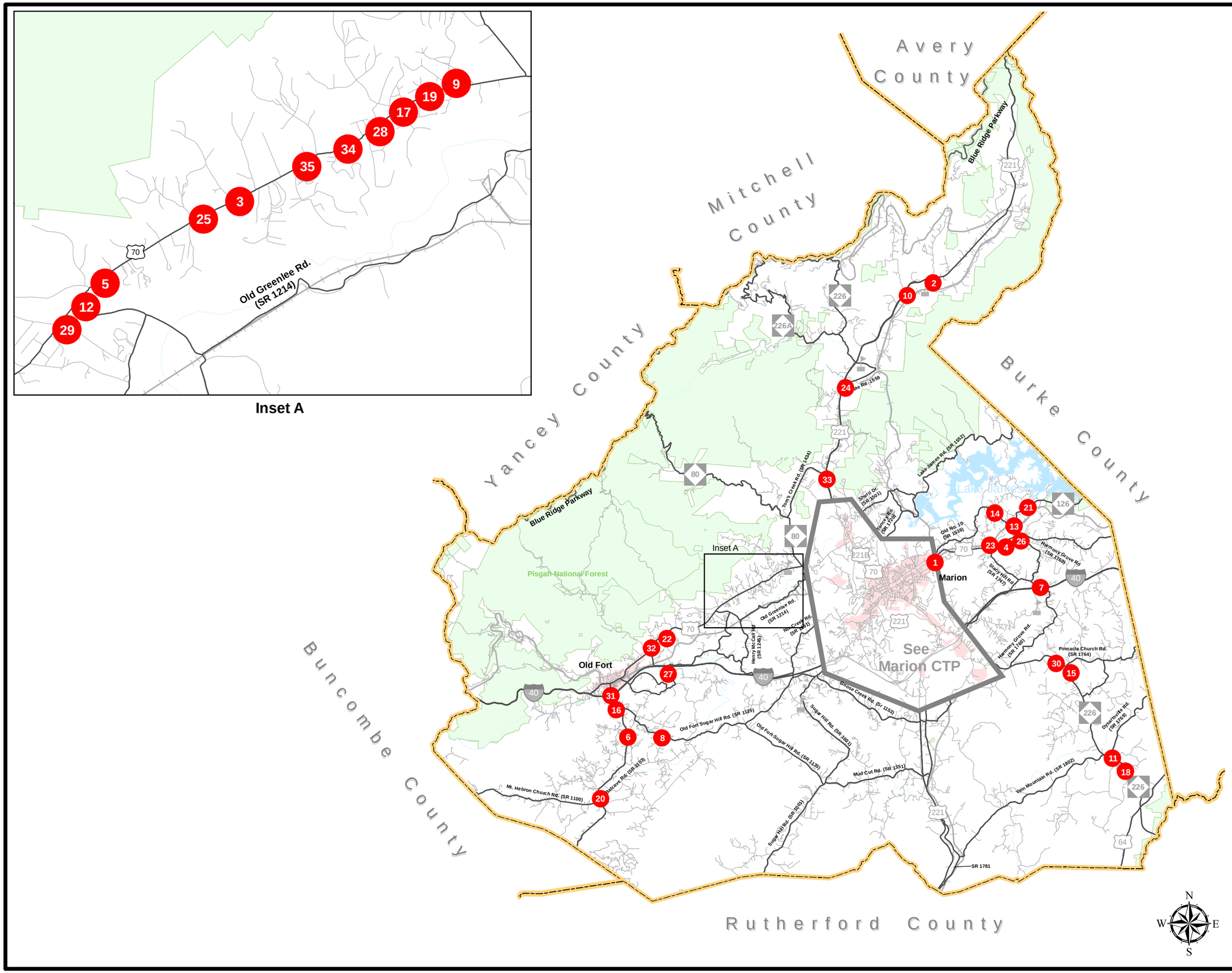

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Figure 4

Crash Locations

January 1, 2007 - December 31, 2009

Planning Area

McDowell County
North Carolina

Comprehensive Transportation Plan

Legend

- # Crash Locations (# Map Index)
- Roads
- Railroad
- School
- Airports
- County Boundary
- Rivers and Streams
- Major Water Bodies
- Municipal Boundary
- Marion Boundary
- National Forest

Base map date: 10-12-2010

Refer to CTP Appendix F for more details

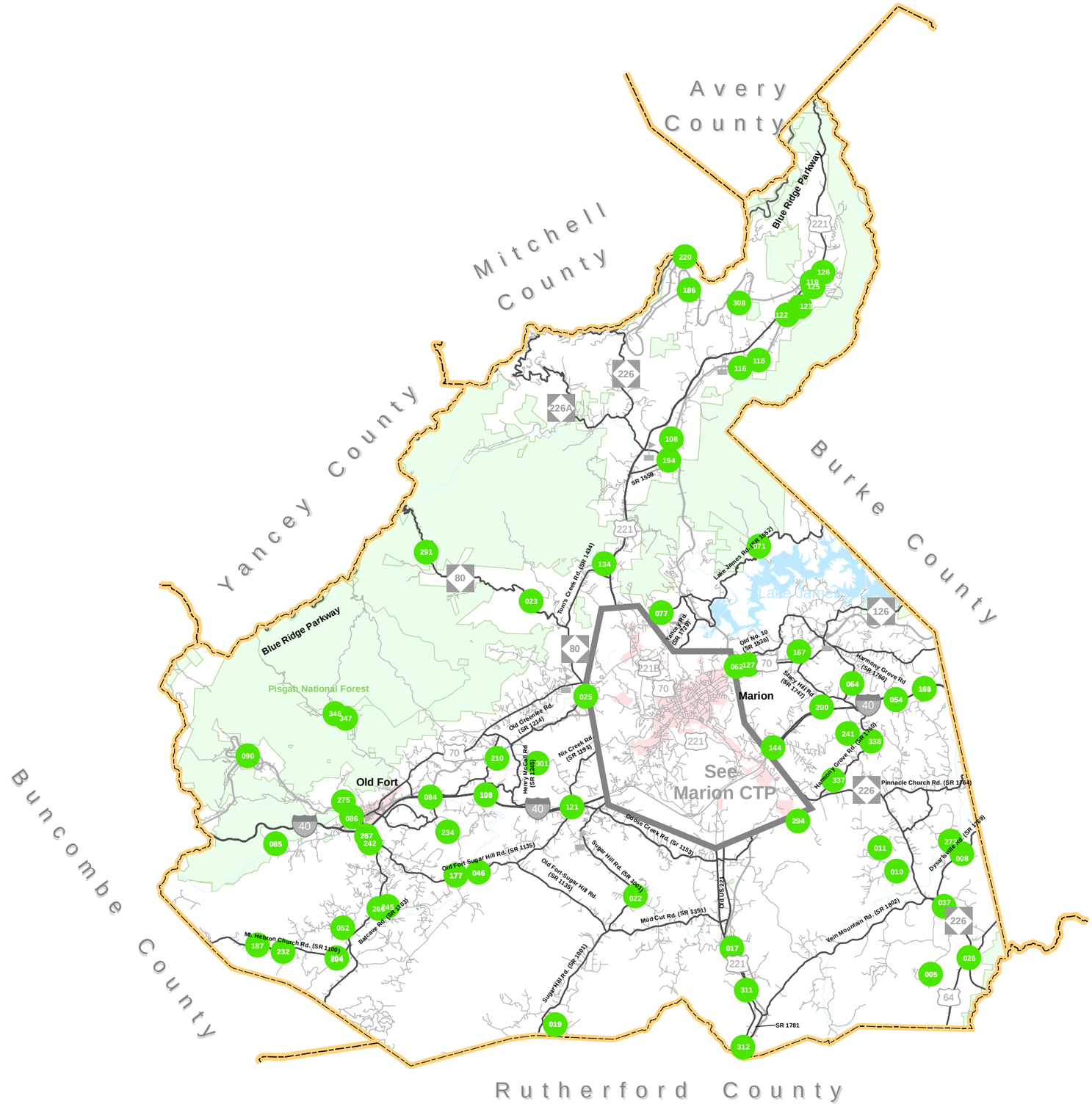

Figure 5

Deficient Bridges

Planning Area

McDowell County

North Carolina

Comprehensive Transportation Plan

Legend

- Deficient Bridge (# Bridge Number)
- Roads
- Railroad
- School
- Airports
- County Boundary
- Rivers and Streams
- Major Water Bodies
- Municipal Boundary
- Marion Boundary
- National Forest

Miles
0 0.5 1 2 3

Base map date: 10-12-2010

Refer to Appendix G for more details

Public Transportation and Rail

Public transportation and rail are vital modes of transportation that give alternative options for transporting people and goods from one place to another.

Public Transportation

North Carolina's public transportation systems serve more than 50 million passengers each year. Five categories define North Carolina's public transportation system: community, regional community, urban, regional urban and intercity.

- Community Transportation - Local transportation efforts formerly centered on assisting clients of human service agencies. Today, the vast majority of rural systems serve the general public as well as those clients.

- Regional Community Transportation - Regional community transportation systems are composed of two or more contiguous counties providing coordinated / consolidated service. Although such systems are not new, the NCDOT Board of Transportation is encouraging single-county systems to consider mergers to form more regional systems.

- Urban Transportation – There are currently nineteen urban transit systems operating in North Carolina, from locations such as Asheville and Hendersonville in the west to Jacksonville and Wilmington in the east. In addition, small urban systems are at work in three areas of the state. Consolidated urban-community transportation exists in five areas of the state. In those systems, one transportation system provides both urban and rural transportation within the county.

- Regional Urban Transportation - Regional urban transit systems currently operate in three areas of the state. These systems connect multiple municipalities and counties.

- Intercity Transportation - Intercity bus service is one of a few remaining examples of privately owned and operated public transportation in North Carolina. Intercity buses serve many cities and towns throughout the state and provide connections to locations in neighboring states and throughout the United States and Canada. Greyhound/Carolina Trailways operates in North Carolina. However, community, urban and regional transportation systems are providing increasing intercity service in North Carolina.

An inventory of existing and planned fixed public transportation routes for the planning area is presented on Sheet 3 of Figure 1. Currently, there is no fixed-route transit service within the county. McDowell County receives funding from the Rural Operating Assistance Program (ROAP) to run the County's existing Transit Program. This program operates through the McDowell County Department of Social Services and the McDowell Senior Center. Following is the description of these operations:

The McDowell County Department of Social Services (DSS) coordinates Human Service transportation in McDowell County. The agency provides transportation or gas vouchers to assist Medicaid recipients in going to medical appointments. Medicaid clients are transported using agency vehicles on a first come, first serve basis. Gas vouchers are issued per mile, round-trip from the address on a client's Medicaid card to their doctor's office.

The McDowell Senior Center, a department under McDowell County DSS, offers transportation primarily to individuals 60 years and older. These services include transportation to and from the Marion and Old Fort Senior Center sites, bill paying, shopping and to points of interest. Medical transportation is provided through the Senior Center to disabled adults in addition to those 60 years and older.

The County has requested the Division of Public Transportation (PTD) of NCDOT to update the County's Public Transportation Plan. According to PTD, McDowell County Plan is on schedule for updating in 2014. The McDowell CTP Steering Committee recommends McDowell County Transportation Advisory Board to continue to coordinating with the PTD of NCDOT to update the County Transit Plan in an expeditious manner. The results of this plan will guide future transit operations in the County. The CTP will be updated at the most appropriate time to reflect the recommendations in the updated County Transit Plan.

A park and ride lot is recommended in the CTP. It is located off of Baptist Side Church Road (SR 1272) just south of US 70 in Old Fort. This park and ride lot would be used for carpool/vanpool services. All recommendations for public transportation were coordinated with the local governments and the Public Transportation Division of NCDOT. Refer to Appendix A for contact information.

Rail

Today North Carolina has 3,684 miles of railroad tracks throughout the state. There are two types of trains that operate in the state, passenger trains and freight trains.
The North Carolina Department of Transportation sponsors two passenger trains, the Carolinian and Piedmont. The Carolinian runs between Charlotte and New York City, while the Piedmont train carries passengers from Raleigh to Charlotte and back every day. Combined, the Carolinian and Piedmont carry more than 200,000 passengers each year.

There are two major freight railroad companies that operate in North Carolina, CSX Transportation and Norfolk Southern Corporation.

An inventory of existing and planned rail facilities for the planning area is presented on Sheet 3 of Figure 1. Currently, there is no passenger rail service in McDowell County. NCDOT Rail Division has planned to close and remove the existing at-grade crossing at Lackey Town Road (SR 1235) (Crossing number 729 451W) and Mauney Avenue (Crossing number 729 448N), and widen and improve South Railroad Street between the two crossings. A new at-grade crossing will be constructed at South Spring Street

Extension to replace the closure at Lackey Town Road and Mauney Avenue. The new crossing will be protected with signals and gates. Once implementation of this project is completed, the improvements will be incorporated into the next CTP update.

Bicycles & Pedestrians

Bicyclists and pedestrians are a growing part of the transportation equation in North Carolina. Many communities are working to improve mobility for both cyclists and pedestrians.

NCDOT's Bicycle Policy, updated in 1991, clarifies responsibilities regarding the provision of bicycle facilities upon and along the 77,000-mile state-maintained highway system. The policy details guidelines for planning, design, construction, maintenance, and operations pertaining to bicycle facilities and accommodations. All bicycle improvements undertaken by the NCDOT are based upon this policy.

The 2000 NCDOT Pedestrian Policy Guidelines specifies that NCDOT will participate with localities in the construction of sidewalks as incidental features of highway improvement projects. At the request of a locality, state funds for a sidewalk are made available if matched by the requesting locality, using a sliding scale based on population.

NCDOT's administrative guidelines, adopted in 1994, ensure that greenways and greenway crossings are considered during the highway planning process. This policy was incorporated so that critical corridors which have been adopted by localities for future greenways will not be severed by highway construction.

Inventories of existing and planned bicycle and pedestrian facilities for the planning area are presented on Sheets 4 and 5 of Figure 1. The 2011 Old Fort Pedestrian System Plan was utilized in the development of these elements of the CTP. Currently, there are no state designated bicycle routes in the county.

Inventories of existing pedestrian facilities were developed by the Isothermal RPO staff during the development of the CTP. A proposed bicycle project was recommended in the CTP in addition to all proposed pedestrian projects in the Old Fort Pedestrian System Plan. The proposed pedestrian improvement was recommended by the CTP Steering Committee. Inventories of existing and planned pedestrian facilities for the planning area are presented on sheets 5 of Figure 1.

All recommendations for bicycle and pedestrian facilities were coordinated with the local governments and the NCDOT Division of Bicycle and Pedestrian Transportation. Refer to Appendix A for contact information.

Land Use

G.S. §136-66.2 requires that local areas have a current (less than five years old) land development plan prior to adoption of the CTP. For this CTP, the 1993 McDowell

County Land Use and Development Plan (reaffirmed by the County Board of Commissioner in July 14, 2010) was used to meet this requirement and is illustrated in Figures 6 and 7, respectively.

Land use refers to the physical patterns of activities and functions within an area. Traffic demand in a given area is, in part, attributed to adjacent land use. For example, a large shopping center typically generates higher traffic volumes than a residential area. The spatial distribution of different types of land uses is a predominant determinant of when, where, and to what extent traffic congestion occurs. The travel demand between different land uses and the resulting impact on traffic conditions varies depending on the size, type, intensity, and spatial separation of development. Additionally, traffic volumes have different peaks based on the time of day and the day of the week. For transportation planning purposes, land use is divided into the following categories:

- Residential: Land devoted to the housing of people, with the exception of hotels and motels which are considered commercial.

- Commercial: Land devoted to retail trade including consumer and business services and their offices; this may be further stratified into retail and special retail classifications. Special retail would include high-traffic establishments, such as fast food restaurants and service stations; all other commercial establishments would be considered retail.

- Industrial: Land devoted to the manufacturing, storage, warehousing, and transportation of products.

- Public: Land devoted to social, religious, educational, cultural, and political activities; this would include the office and service employment establishments

- Agricultural: Land devoted to the use of buildings or structures for the raising of non-domestic animals and/or growing of plants for food and other production.

- Mixed Use: Land devoted to a combination of any of the categories above.

Anticipated future land development is, in general, a logical extension of the present spatial land use distribution. Locations and types of expected growth within the planning area help to determine the location and type of proposed transportation improvements.

McDowell Land Use and Development Plan stratified the County's future growth in 7 different classifications. Following is the classification definition:

1. Developed: The purpose of the Develop class is to provide for continued development and redevelopment of existing cities, towns and their urban

environments. Areas meeting the intent of the Developed classification are scheduled for the timely provision of the usual municipal or public services.

2. Urban Transition: The purpose of the Urban Transition class is to provide for those areas outside of the existing municipalities that will continue to be developed for urban purposes. Urban Transition areas are primarily commercial and industrial in character and have either private or public utility services.

3. Limited Transition: The purpose of the Limited Transition class is to provide for development in areas that will have some services but that are only suitable for lower densities than those associated with the Urban Transition class and/or areas that are geographically remote from existing towns and municipalities. Areas meeting the intent of the Limited Transition classification will experience increased development (primarily residential) during the planning period. They will be in a state of development necessitating some municipal type services such as community water or sewage systems.

4. Community: The purpose of the Community class is to provide for clustered mixed land uses in areas with low densities to help meet the housing, shopping and employment needs of rural areas. Areas meeting the intent of the Community classification are presently developed at low densities that are suitable for private septic tank use. Municipal type services should be anticipated only to correct existing or projected public health hazards.

5. Rural: The purpose of the Rural class is to provide for agriculture, forestry, mineral extraction and other allied land uses. Areas meeting the intent of the Rural classification are appropriate for or presently used for agriculture, forestry, mineral extraction and other uses that, due to their hazardous or noxious nature, should be located in a relatively isolated and undeveloped area. Very low density dispersed single family residential users are also appropriate within the Rural class.

6. Rural with Services: The purpose of the Rural with Services class is to provide for very low density land uses including residential use where limited water services are provided to avert an existing or projected health problem. Areas meeting the intent of the Rural with Services classification are appropriate for very low density residential uses and where provision of services will not disrupt the rural character of the land.

7. Conservation: The purpose of the Conservation class is to provide for effective long-term management and protection of significant, limited or irreplaceable areas. Management is needed due to the natural, cultural, recreational, scenic or natural productive values of both local and more than local concern. Areas meeting the intent of the Conservation classification include lands significant because of their natural role in the integrity of the mountain region such as ridge tops, areas of excessive slope, floodplains, wetlands, areas with a high potential for wildlife habitat and areas that contain significant productive, natural, scenic, cultural or recreational resources.

Developed growth is expected to continue in the Old Fort downtown with Urban and Limited Transition growth expanding west and south of the town. Urban and Limited Transition growth is also expected along US 70 east of Marion planning area. Limited Transition growth is anticipated along US 226 south of Marion planning area and in the Nebo/Lake James area. Community growth is expected to continue in the Glenwood, Sugar Hill, Moffie Hill and Dysartville areas in south and southwest part of the County and in the Hankins, Woodlawn, Pitts, North Cove and Little Switzeland areas in the northern part of the County.

Consideration of Natural and Human Environment

Environmental features are a key consideration in the transportation planning process. Section 102 of the National Environmental Policy Act (NEPA) requires consideration of impacts on wetlands, wildlife, water quality, historic properties, and public lands. While a full NEPA evaluation was not conducted as part of the CTP, potential impacts to these resources were identified as a part of the project recommendations in Chapter 2 of this report. Prior to implementing transportation recommendations of the CTP, a more detailed environmental study would need to be completed in cooperation with the appropriate environmental resource agencies.

A full listing of environmental features that were examined as a part of this study is shown in the following tables utilizing the best available data. Environmental features occurring within McDowell County are shown in Figure 8.

Table 1 – Environmental Features

- **Airport Boundaries**
- Anadromous Fish Spawning Areas
- Beach Access Sites
- Bike Routes (NCDOT)
- Coastal Marinas
- **Colleges and Universities**
- **Conservation Tax Credit Properties**
- Emergency Operation Centers
- **Federal Land Ownership**
- Fisheries Nursery Areas
- **Geology (including Dikes and Faults)**
- **Hazardous Substance Disposal Sites**
- Hazardous Waste Facilities
- **High Quality Water and**
- North Carolina Coastal Region Evaluation of Wetland Significance (NC-CREWS)
- Paddle Trails – Coastal Plain
- **Railroads (1:24,000 scale)**
- **Recreation Projects – Land and Water Conservation Fund**
- **Sanitary Sewer Systems – Discharges, Land Application Areas, Pipes, Pumps and Treatment Plants**
- **Schools – Public and Non-Public**
- Shellfish Strata
- **Significant Natural Heritage Areas**
- **State Parks**
- Submersed Rooted Vasculars
- **Target Local Watersheds - EEP**
- **Trout Streams (DWQ)**

- **Outstanding Resource Water Management Zones**
- Hospital Locations
- **Hydrography (1:24,000 scale)**
- **Land Trust Priority Areas**
- **National Heritage Element Occurrences**
- **National Wetlands Inventory**
- **Trout Waters (WRC)**
- **Water Distribution Systems – Pipes, Pumps, Tanks, Treatment Plants, and Wells**
- **Water Supply Watersheds**
- Wild and Scenic Rivers

Additionally, the following environmental features were considered but are not mapped due to restrictions associated with the sensitivity of the data.

Table 2 – Restricted Environmental Features

- Archaeological Sites
- Historic National Register Districts
- Historic National Register Structures
- Macrosite Boundaries
- Managed Areas
- Megasite Boundaries

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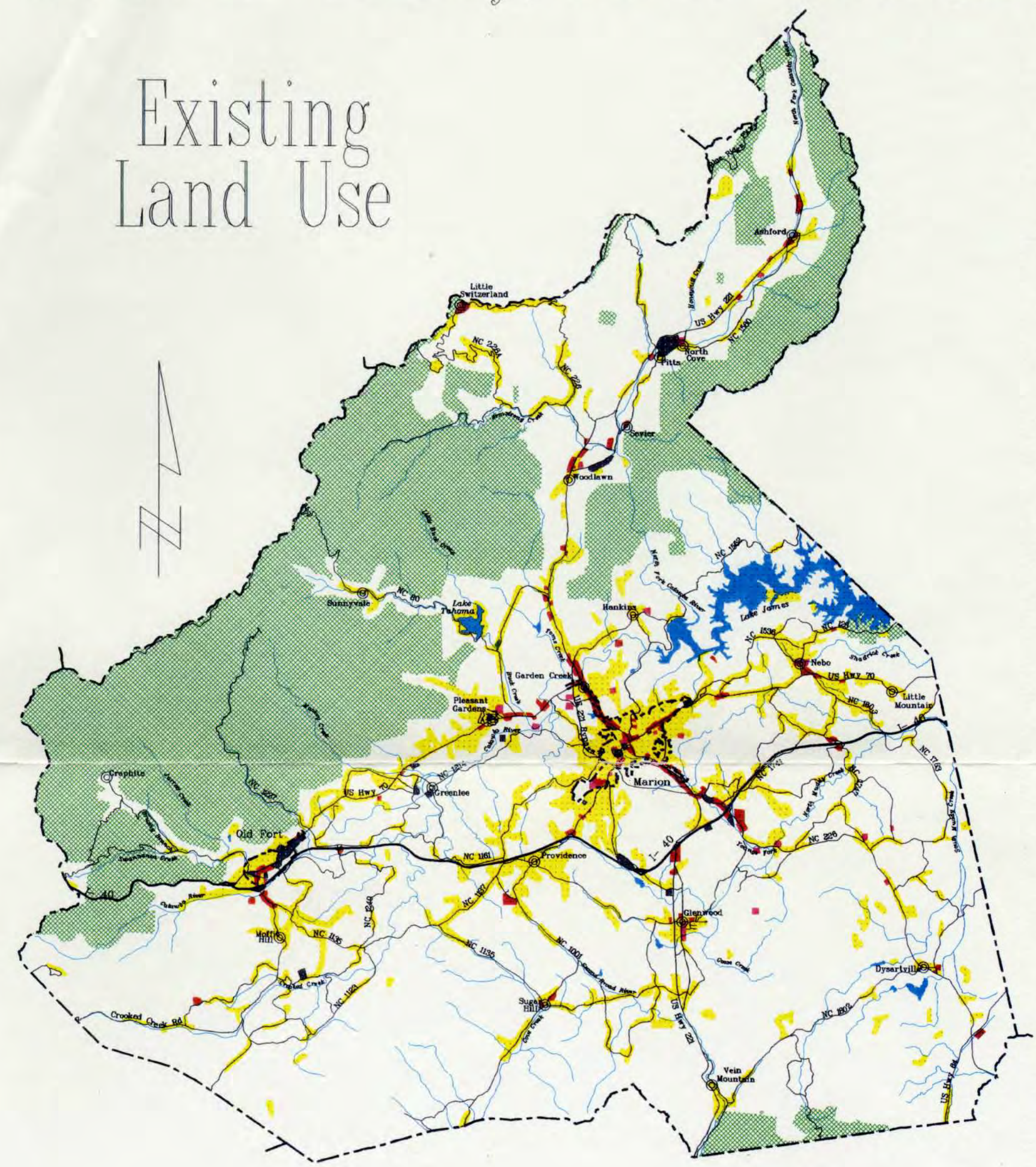
McDowell County, North Carolina

Existing Land Use



County Boundary
Municipal Boundaries
Primary U.S. & State Hwys
Secondary U.S. & State Hwys
County Roads
Rivers, Streams or Creeks
Lakes or Reservoirs

Residential
Commercial
Industrial
Institutional
Conservation
Rural/Agricultural

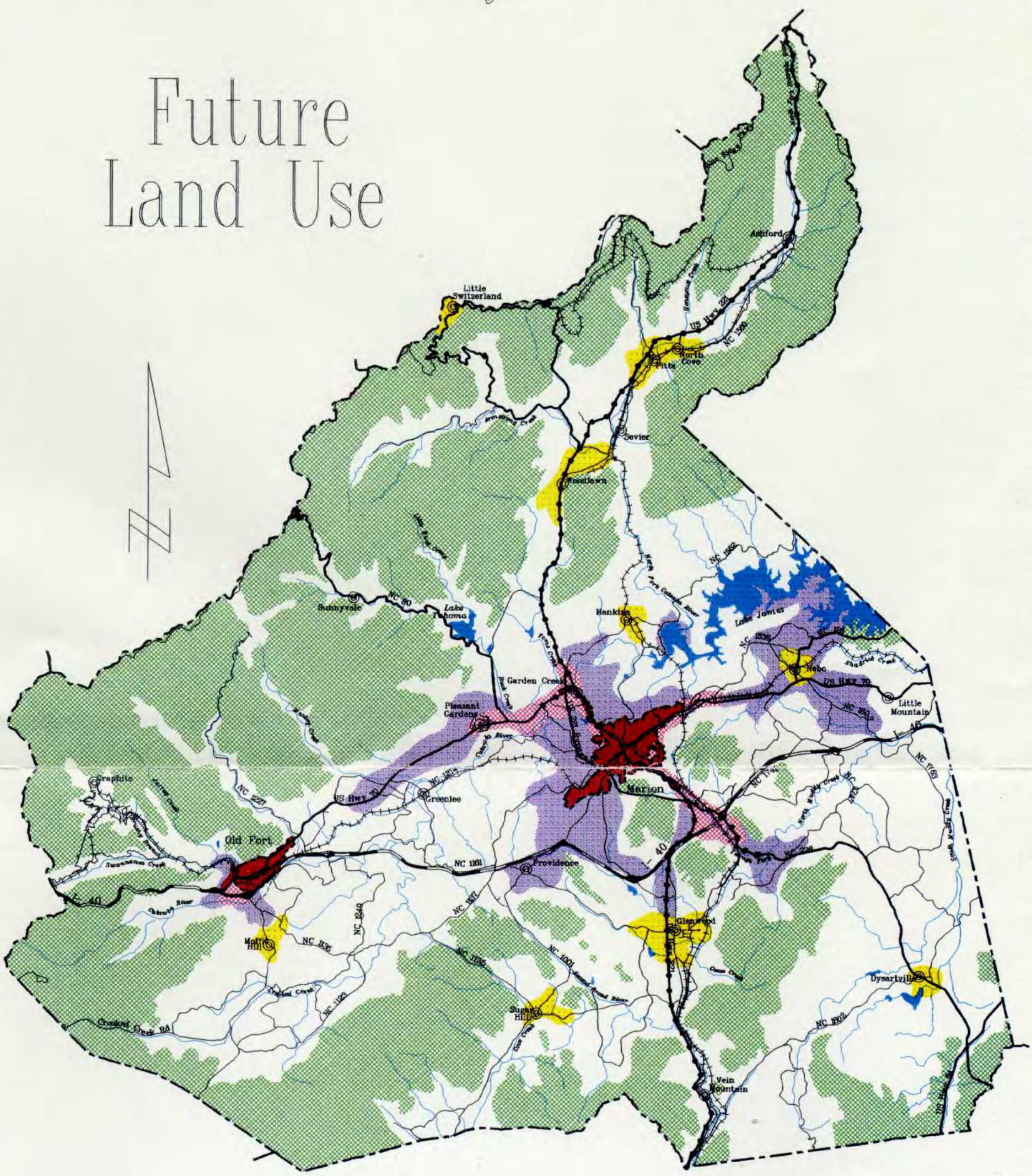
SCALE 1:180,000

0 20000 40000 60000 FEET

Figure 6

McDowell County, North Carolina

Future Land Use

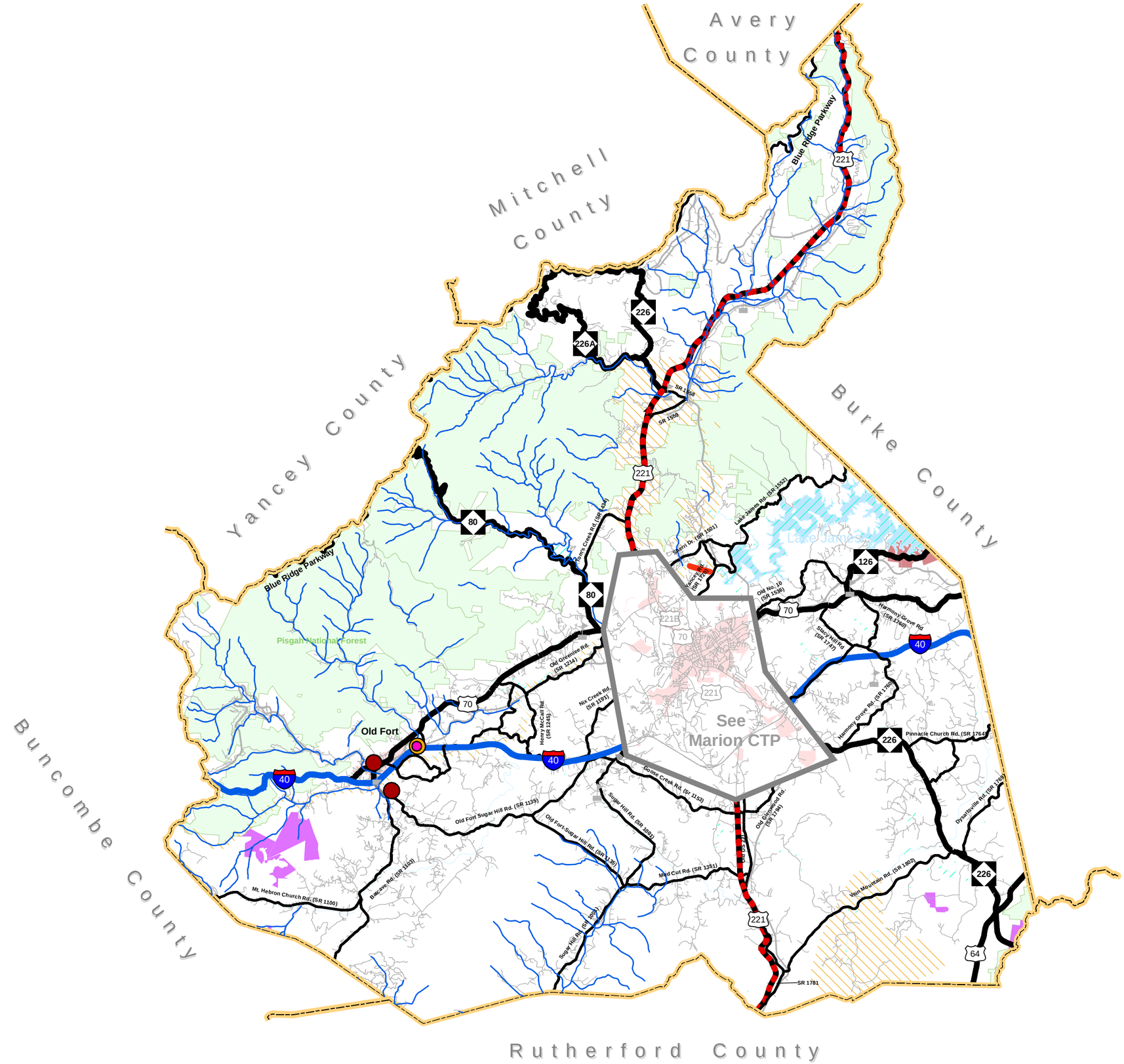


- County Boundary
- Municipal Boundaries
- Primary U.S. & State Hwys
- Secondary U.S. & State Hwys
- County Roads
- Rail Lines
- Rivers, Streams or Creeks
- Lakes or Reservoirs
- Developed
- Urban Transition
- Limited Transition
- Community
- Rural
- Conservation
- Proposed New Roadway
- Proposed Road Widening

SCALE 1:180,000

0 20000 40000 60000 FEET

Figure 7



Environmental Features

McDowell County
Comprehensive Transportation Plan

Figure 8, Sheet 1

Legend

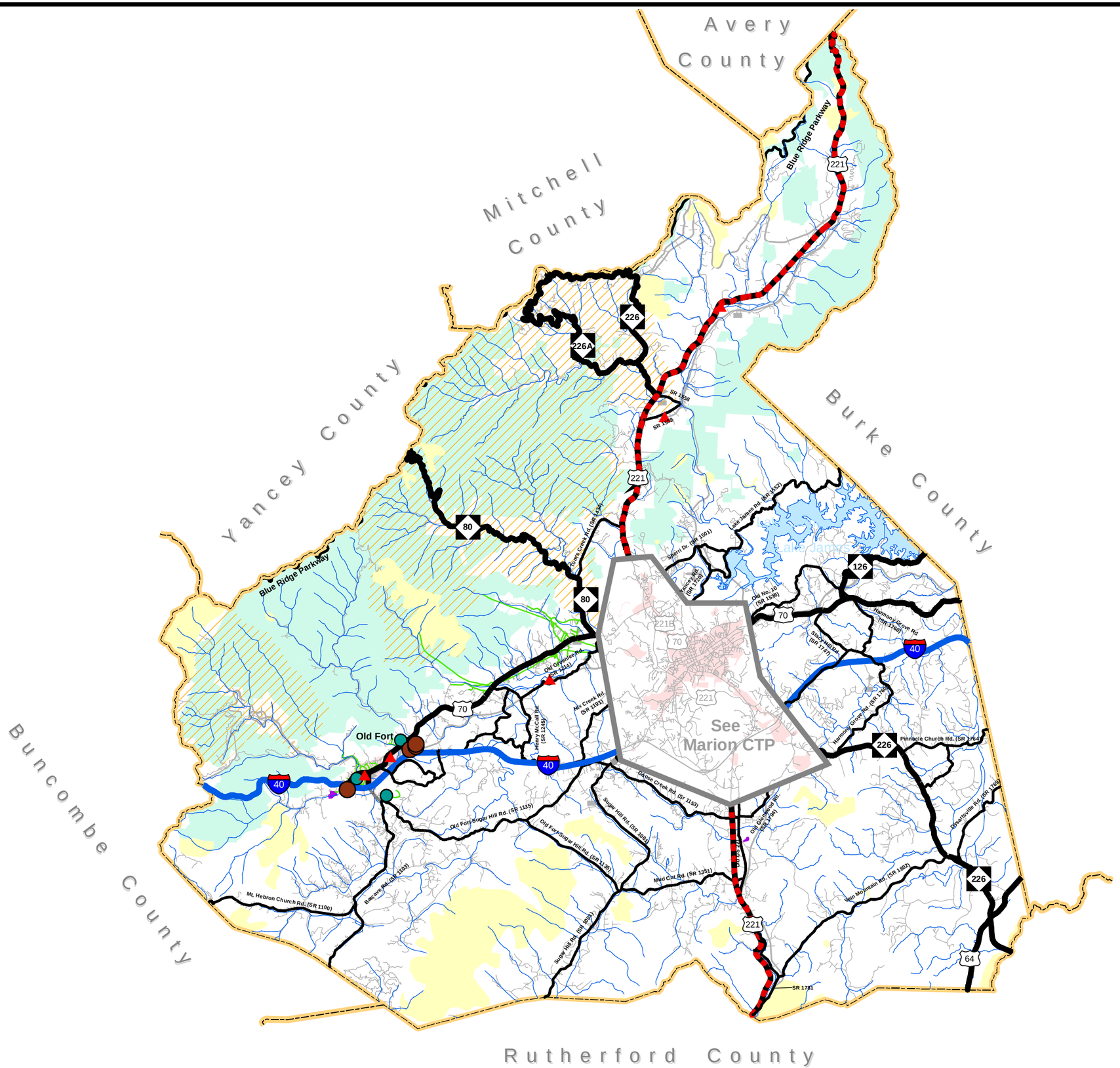
- Roads
- Railroad
- School
- Airports
- Sanitary Sewer System - Treatment Plants
- Sanitary Sewer System - Discharges
- Water Distribution System - Pumps
- TroutStreamsDWQ_arcs
- Airport_Boundaries
- National Wetlands Inventory
- Conservation Tax Credit Properties
- LandTrustPriorityAreas
- StateParks
- National Forest
- Rivers and Streams
- Major Water Bodies
- Marion Boundary
- Municipal Boundary
- County Boundary

0 0.5 1 2 3 Miles

N W E S

Base map date: 10-12-2010

Refer to CTP document for more details



Environmental Features

McDowell County
Comprehensive Transportation Plan

Figure 8, Sheet 2

Legend

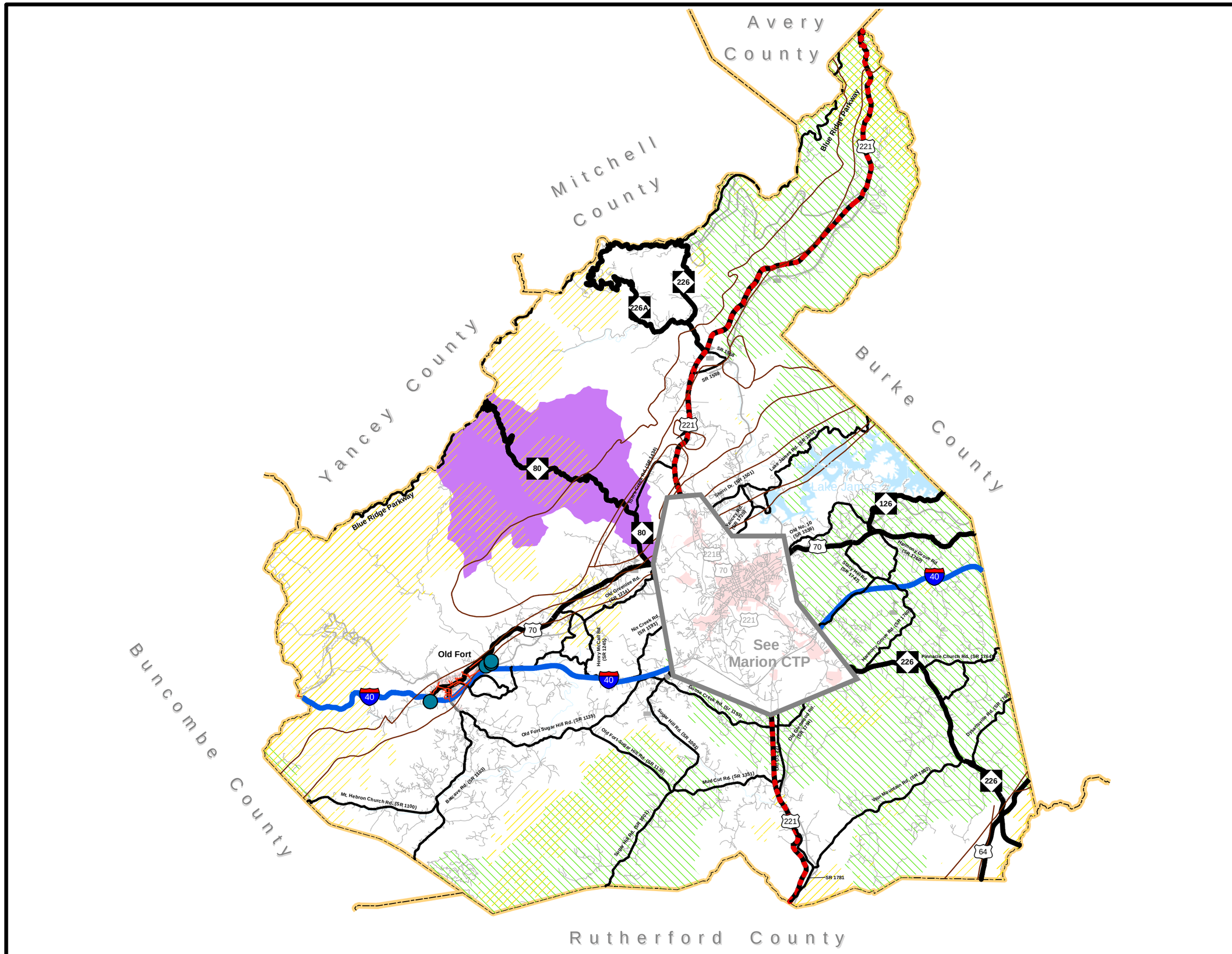
- Marion Boundary
- Water Distribution System - Wells
- HazardousSubstanceDisposalSites_points
- Water Distribution System - Tanks
- TroutWatersWRC_arcs
- Water Distribution - Pipes
- Recreation Projects - Land Water Conservation Fund
- County Boundary
- Significant Natural Heritage Areas
- Roads
- High Quality Water and Outstanding Resource Water Management Zones
- Federal Land Ownership
- Airports
- School
- Railroad
- Rivers and Streams
- Municipal Boundary
- Major Water Bodies

0 0.5 1 2 3 Miles

N W E S

Base map date: 10-12-2010

Refer to CTP document for more details



Environmental Features

McDowell County
Comprehensive Transportation Plan

Figure 8, Sheet 3

Legend

- Marion Boundary
- Water Distribution System - Treatment Plants
- Sanitary Sewer Systems - Pipes
- Geology - Faults
- National Heritage Element Occurences
- Target Local Watersheds
- Water Supply Watersheds
- County Boundary
- Roads
- Airports
- School
- Railroad
- Rivers and Streams
- Municipal Boundary
- Major Water Bodies

0 0.5 1 2 3 Miles

N W E S

Base map date: 10-12-2010

Refer to CTP document for more details

Public Involvement

Public involvement is a key element in the transportation planning process. Adequate documentation of this process is essential for a seamless transfer of information from systems planning to project planning and design.

Isothermal RPO requested the development of a comprehensive transportation plan for the County through a prioritized list of regional needs. A meeting was held with the CTP Steering Committee in January 2011 to formally initiate the study, provide an overview of the transportation planning process, and to gather input on area transportation needs.

Throughout the course of the study, the Transportation Planning Branch cooperatively worked with the CTP Steering Committee, which included a representative from each municipality, county staff, the RPO and others, to provide information on current local plans, to develop transportation vision and goals, to discuss population and employment projections, and to develop proposed CTP recommendations. Refer to Appendix H for detailed information on the vision statement, the goals and objectives survey and a listing of committee members.

The public involvement process included holding two public drop-in sessions in McDowell County to present the proposed CTP to the public and solicit comments. The first meeting was held from 3:00-7:00 pm on July 23, 2012 at the County Administration Building in Marion; the second meeting was held from 4:00-7:00 pm on August 27, 2012 at the Old Fort Depot. Each session was publicized in the local newspaper and flyers were placed at the public libraries in Marion and Old Fort. Flyers were also posted in DMV office, Old Fort Town Hall (Utility payment center), Marion City Hall and to every supermarket in the area throughout the County. A total of 16 citizens attended these drop-in sessions. A sample of the advertisement is illustrated in Figure 11 in Appendix H.

Public hearings were held on November 5, 2012 during the McDowell County Board of Commissioners meeting and January 14, 2013 during the Old Fort Town Board meeting.

The Isothermal RPO endorsed the CTP on February 27, 2013. The North Carolina Department of Transportation mutually adopted the McDowell County CTP on April 4, 2013.

II. Recommendations

This chapter presents recommendations for each mode of transportation in the 2012 McDowell County CTP as shown in Figure 1. More detailed information on each recommendation is tabulated in Appendix C. For information on areas that were not included as a part of this CTP, refer to Marion CTP[1].

Unaddressed Deficiencies

The following deficiency was identified during the development of the CTP, but it remains unaddressed.

NC 226

The section of NC 226 from US 226A to Mitchell County will be approaching capacity by 2040. The 2012-2018 TIP includes project R-5002 that includes upgrading US 221/NC 226 to improve safety from Woodlawn Community (just south of US 221/NC 226 intersection) to Spruce Pine in Mitchell County. Some of the improvements have been completed including adding a passing lane on NC 226 from 2.33 miles north of the intersection of NC 226/NC 226A to 2.82 miles north of the intersection of NC 226/NC 226A. The completion of TIP project R-5002 will improve mobility along the existing facility and may impact the future deficiency along this corridor. Therefore, no improvements for this section of NC 226 are recommended in the CTP. However, the county should pay close attention to the future traffic growth on this section of NC 226. Improvements may be warranted in the subsequent CTP update if the traffic conditions continue to deteriorate.

Implementation

The CTP is based on the projected growth for the planning area. It is possible that actual growth patterns will differ from those logically anticipated. As a result, it may be necessary to accelerate or delay the implementation of some recommendations found within this plan. Some portions of the plan may require revisions in order to accommodate unexpected changes in development. Therefore, any changes made to one element of the CTP should be consistent with the other elements.

Initiative for implementing the CTP rests predominately with the policy boards and citizens of the county and its municipalities. As transportation needs throughout the state exceed available funding, it is imperative that the local planning area aggressively pursue funding for priority projects. Projects should be prioritized locally and submitted to the Isothermal RPO for regional prioritization and submittal to NCDOT. Refer to Appendix A for contact information on regional prioritization and funding. Local governments may use the CTP to guide development and protect corridors for the

[1] *For information on the Marion CTP, visit: https://connect.ncdot.gov/projects/planning/Pages/CTP-Details.aspx?study_id=Marion*

recommended projects. It is critical that NCDOT and local governments coordinate on relevant land development reviews and all transportation projects to ensure proper implementation of the CTP. Local governments and NCDOT share the responsibility for access management and the planning, design and construction of the recommended projects.

Prior to implementing projects from the CTP, additional analysis will be necessary to meet the National Environmental Policy Act (NEPA) or the North Carolina (or State) Environmental Policy Act[2] (SEPA). This CTP may be used to provide information in the NEPA/SEPA process.

Problem Statements

The following pages contain problems statements for each recommendation, organized by CTP modal element. The information provided in the problem statement is intended to help support decisions made in the NEPA/SEPA process. A full, minimum or reference problem statement is presented for each recommendation, with full problem statements occurring first in each section. Full problem statements are denoted by a gray shaded box containing project information. Minimum problem statements are more concise and less detailed than full problem statements, but include all known or readily available information. Reference problem statements are developed for TIP projects where the purpose and need for the project has already been established.

HIGHWAY

Bat Cave Road (SR 1103), LOCAL ID: MCDO0001-H

Bat Cave Road (SR 1103) between I-40 and Old Fort-Sugar Hill Road (SR 1135) south of Old Fort is projected to be near capacity by 2040. Improvements are needed to accommodate projected traffic volumes in order to maintain a Level of Service (LOS) D. The segment of Bat Cave Road (SR 1103) between I-40 and Old Fort-Sugar Hill Road (SR 1135) has two 10 foot lanes with a LOS D capacity of 10,300 vehicles per day (vpd). The 2010 Annual Average Daily Traffic volume along this facility is 7,500 vehicles per day (vpd). The 2040 traffic volume is projected to be 10,100 vpd. In addition, two locations in the county with accident severity ratings higher than the state average (4.56) are on this segment of Bat Cave Road (SR 1103). A crash study from 2007 to 2009 was carried out for McDowell County, and the following locations were identified:

- Bat Cave Road and I-40 westbound ramp experienced 2 crashes with an average severity index of 4.70.
- Bat Cave Road and I-40 eastbound ramp experienced 2 crashes with an average severity index of 8.40.

The CTP project proposal (MCDO0001-H) is to widen Bat Cave Road (SR 1103) to a 3 lane facility with curb and gutter from I-40 to Old Fort-Sugar Hill Road (SR 1135). The

[2] *For more information on SEPA, go to: http://www.doa.nc.gov/clearing/faq.aspx.*

proposed widening of Bat Cave Road will reduce future congestion and provide better efficiency for through traffic. With the implementation of the proposed improvement, the capacity of the road will improve to 13,200 vpd which will be sufficient to handle the 2040 projected volume.

Based on a planning level environmental assessment using available GIS data, the proposed project is within the vicinity of the following features: land trust priority areas, trout waters, water distribution pipes, and sanitary sewer pipes. A detailed study to minimize the project impact on these environmental features will be examined during the project planning phase. Additionally, bridge # 267 over the Catawba River has been identified as both structurally deficient and functionally obsolete by NCDOT's Structure Management Unit.

This project has not been identified on any previous transportation plan.

US 221, TIP No. R-0204 (Section E)

US 221 from Goose Creek Road (SR 1153) continuing north into Marion planning area is projected to be over capacity by 2040. Additionally, this section of US 221 is designated as a boulevard in the NCDOT's Strategic Highway Corridor (SHC) Vision Plan adopted on September 2, 2004. The 2012-2018 TIP includes project R-0204 (Section E) that will address this problem.

The proposed project includes widening the existing facility to a four lane divided boulevard from Goose Creek Road (SR 1153) to I-40 in the Marion planning area. This project is currently in the project development process for environmental analysis. For additional information about this project, including Purpose and Need, contact NCDOT's Project Development and Environmental Analysis Branch (PDEA).

US 221, TIP No. R-2597

US 221 from Goose Creek Road (SR 1153) to Rutherford County does not meet the future mobility and connectivity needs in western North Carolina. This facility is intended to provide mobility in McDowell County and, ultimately, connectivity between Spartanburg, SC and Boone, NC. The 2012 – 2018 TIP includes project R-2597 that will address this problem.

This section of US 221 is designated as a boulevard in the NCDOT's Strategic Highway Corridor (SHC) Vision Plan adopted on September 2, 2004. TIP Project R-2597 includes widening US 221 to a multi-lane boulevard from north of Roper Loop Road (SR 1366) in Rutherford County to Goose Creek Road (SR 1153) in McDowell County. This project is currently in the project development process for environmental analysis. For additional information about this project, including Purpose and Need, contact NCDOT's Project Development and Environmental Analysis Branch (PDEA).

US 221, MCDO0002-H

US 221 from the Marion planning boundary south of Tom's Creek Road (SR 1434) to NC 226 does not meet the future mobility and connectivity needs in western North

Carolina. This facility is intended to provide mobility between Spartanburg, SC and Boone, NC.

US 221 is designated as a boulevard in NCDOT's Strategic Highway Corridor (SHC) Vision Plan adopted on September 2, 2004. This section of US 221 is currently a 5 lane facility with 12 foot lanes. The CTP project proposal is to upgrade this segment of US 221 to a multi-lane boulevard. As development occurs along this corridor every effort should be made to limit access in order to maintain mobility and connectivity.

Based on a planning level environmental assessment using available GIS data, the proposed project may potentially impact trout streams, land trust priority areas, federal land ownership areas, high quality water and outstanding resource water management zones, and will cross several geology faults.

This project has not been identified on any previous transportation plan.

US 221, TIP No. R-2596

US 221 from NC 226 to Avery County does not meet the future mobility and connectivity needs in western North Carolina. This facility is intended to provide mobility between Spartanburg, SC and Boone, NC.

US 221 is designated as a boulevard in NCDOT's Strategic Highway Corridor (SHC) Vision Plan adopted on September 2, 2004. TIP project R-2596 includes widening US 221 to a multi-lane boulevard from NC 226 in McDowell County to NC 194 in Avery County. As development occurs along this corridor every effort should be made to limit access in order to maintain mobility and connectivity.

Based on a planning level environmental assessment using available GIS data, the proposed project may potentially impact trout streams, land trust priority areas, federal land ownership areas, high quality water and outstanding resource water management zones, significant natural heritage areas, target local watersheds, and national heritage element occurrences. The proposed project is also in the vicinity of a hazardous substance disposable site which is located north of Pepper Creeks Road (SR 1566), and it will cross several geology faults.

This project has not been identified on any previous transportation plan.

Sugar Hill Road (SR 1001), Local ID: MCDO0003-H

The section of Sugar Hill Road (SR 1001) between Goose Creek Road (SR 1153) and I-40 is projected to be near capacity by 2040. Improvements are needed to accommodate projected traffic volumes in order to maintain a Level of Service (LOS) D.

Sugar Hill Road (SR 1001) is currently a 2 lane facility with 10 foot lanes. The 2010 Annual Average Daily Traffic (AADT) is 7,500 vpd and is projected to increase to 11,400 vpd by 2040. The existing capacity (LOS D) is 12,100 vpd. Sugar Hill Road (SR 1001) is in a projected high growth corridor as defined by the 2011 Marion Comprehensive

Plan. A mix of commercial, business and residential growth is anticipated. Approximately half of Sugar Hill Road (SR 1001) is inside the Marion planning boundary. This portion will be included in the Marion CTP[3] study which has recently begun. The CTP project proposal (MCDO0003-H) is to widen Sugar Hill Road (SR 1001) to a five lane major thoroughfare.

Based on a planning level environmental assessment using available GIS data, the proposed project may potentially impact trout waters and target local watersheds.

This project has not been identified on any previous transportation plan.

PUBLIC TRANSPORTATION AND RAIL

The public transportation and rail element of the McDowell County CTP is shown in Figure 1, Sheet 3.

NCDOT Rail Division has planned to close and remove the existing at-grade crossing at Lackey Town Road (SR 1235) (Crossing number 729 451W) and Mauney Avenue (Crossing number 729 448N), and widen and improve South Railroad Street between the two crossings. A new at-grade crossing will be constructed at South Spring Street Extension to replace the closure at Lackey Town Road and Mauney Avenue. The new crossing will be protected with signals and gates. Once implementation of this project is completed, the improvements will be incorporated into the next CTP update.

A park and ride lot is recommended off of Baptist Side Church Road (SR 1272) just south of US 70 in Old Fort. This park and ride lot would be used for carpool/vanpool services.

BICYCLE

The 2011 Old Fort Comprehensive Pedestrian Master Plan was used in the development of the bicycle element of the CTP as shown on Figure 1, Sheet 4. The plan was cooperatively developed by Old Fort and NCDOT's Division of Bicycle and Pedestrian Transportation. In addition, the following bicycle improvements within the county were recommended during the development of the CTP:

MCDO0001-B: Add paved shoulders along US 70 from Orchard Street in Old Fort to Marion planning boundary.

MCDO0001-M: Construct a multi-use path from the Old Fort greenway just south of I-40 to Deerfield Road (east of Marion) along the Catawba River.

[3] *For more information on the Marion CTP, visit: https://connect.ncdot.gov/projects/planning/Pages/CTP-Details.aspx?study_id=Marion*

PEDESTRIAN

The 2011 Old Fort Comprehensive Pedestrian Master Plan was used in the development of the pedestrian element of the CTP as shown on Figure 1, Sheet 5. The plan was cooperatively developed by Old Fort and NCDOT's Division of Bicycle and Pedestrian Transportation. In addition, the following pedestrian improvements within the county were recommended during the development of the CTP:

MCDO0001-M: Construct a multi-use path from the Old Fort greenway just south of I-40 to Deerfield Road (east of Marion) along the Catawba River. The recommendation was made to connect the Old Fort Greenway system to the Marion Greenway system.

APPENDICES

Appendix A
Resources and Contacts

North Carolina Department of Transportation

Customer Service Office

Contact information for other units within the NCDOT that are not listed in this appendix is available by calling the Customer Service Office or by visiting the NCDOT directory:

1-877-DOT-4YOU (1-877-368-4968)
https://apps.dot.state.nc.us/dot/directory/authenticated/ToC.aspx

Secretary of Transportation

1501 Mail Service Center Raleigh, NC 27699-1501 (919) 707-2800
http://www.ncdot.org/about/leadership/secretary.html

Board of Transportation

1501 Mail Service Center Raleigh, NC 27699-1501 (919) 707-2820
http://www.ncdot.gov/about/board/

Highway Division

55 Orange St. Asheville, NC 28801 (828) 251-6171
https://connect.ncdot.gov/letting/Pages/Letting-List.aspx?let_type=13

Contact the:

- Division Engineer with general questions concerning NCDOT activities within each Division and for information on Small Urban Funds.
- Division Construction Engineer for information concerning major roadway improvements under construction.
- Division Traffic Engineer for information concerning traffic signals, highway signs, pavement markings, and crash history.
- Division Operations Engineer for information concerning facility operations.
- Division Maintenance Engineer information regarding maintenance of all state roadways, improvement of secondary roads and other small improvement projects. The Division Maintenance Engineer also oversees the District Offices, the Bridge Maintenance Unit and the Equipment Unit.
- District Engineer for information on outdoor advertising, junkyard control, driveway permits, road additions, subdivision review and approval, Adopt-A-Highway program, encroachments on highway right of way, issuance of oversize/overwidth permits, paving priorities, secondary road construction program and road maintenance.

  3931 NC 226S Marion, NC 28752 (828) 652-3344

Transportation Planning Branch (TPB)

Contact the Transportation Planning Branch for information on long-range multi-modal planning services.

1554 Mail Service Center Raleigh, NC 27699-1554 (919) 707-0900
http://www.ncdot.gov/doh/preconstruct/tpb/

Isothermal Rural Planning Organization (RPO)

Contact the RPO for information on long-range multi-modal planning services.

111 West Court St. Marion, NC 28139 (828) 287-2281
www.regionc.org/ipdc

Strategic Planning Office

Contact the Strategic Planning Office for information concerning prioritization of transportation projects.

1501 Mail Service Center Raleigh, NC 27699-1501 (919) 707-4740
http://www.ncdot.gov/performance/reform/prioritization/

Project Development & Environmental Analysis (PDEA)

Contact PDEA for information on environmental studies for projects that are included in the TIP.

1548 Mail Service Center Raleigh, NC 27699-1548 (919) 707-6000
https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx

Secondary Roads Unit

Contact the Secondary Roads Unit for information regarding the status for unpaved roads to be paved, additions and deletions of roads to the State maintained system and the Industrial Access Funds program.

1535 Mail Service Center Raleigh, NC 27699-1535 (919) 707-2500
https://connect.ncdot.gov/resources/stateroads/Pages/default.aspx

Program Development Branch

Contact the Program Development Branch for information concerning Roadway Official Corridor Maps, Feasibility Studies and the Transportation Improvement Program (TIP).

1534 Mail Service Center Raleigh, NC 27699-1534 (919) 707-4610
https://connect.ncdot.gov/projects/planning/Pages/default.aspx

Public Transportation Division

Contact the Public Transportation Division for information public transit systems.

1550 Mail Service Center Raleigh, NC 27699-1550 (919) 707-4670
http://www.ncdot.org/transit/nctransit/

Rail Division

Contact the Rail Division for rail information throughout the state.

1553 Mail Service Center Raleigh, NC 27699-1553 (919) 707-4700
http://www.bytrain.org/

Division of Bicycle and Pedestrian Transportation

Contact this Division for bicycle and pedestrian transportation information throughout the state.

1552 Mail Service Center Raleigh, NC 27699-1552 (919) 707-2600
http://www.ncdot.gov/bikeped/

Structures Management Unit

Contact the Structures Management Unit for information on bridge management throughout the state.

1581 Mail Service Center Raleigh, NC 27699-1581 (919) 707-6400
http://www.ncdot.gov/doh/operations/dp_chief_eng/maintenance/bridge/

Roadway Design Unit

Contact the Roadway Design Unit for information regarding design plans and proposals for road and bridge projects throughout the state.

1582 Mail Service Center Raleigh, NC 27699-1582 (919) 707-6200
https://connect.ncdot.gov/projects/Roadway/Pages/default.aspx

Transportation Mobility and Safety Division

Contact the Traffic Safety Unit for information regarding crash data throughout the state.

1561 Mail Service Center Raleigh, NC 27699-1561 (919) 773-2800
https://connect.ncdot.gov/resources/safety/Pages/default.aspx

Other State Government Offices

Department of Commerce – Division of Community Assistance

Contact the Department of Commerce for resources and services to help realize economic prosperity, plan for new growth and address community needs.

http://www.nccommerce.com/cd

Appendix B
Comprehensive Transportation Plan Definitions

Highway Map

For visual depiction of facility types for the following CTP classification, visit http://www.ncdot.gov/doh/preconstruct/tpb/SHC/facility/.

Facility Type Definitions

- **Freeways**
  - Functional purpose – high mobility, high volume, high speed
  - Posted speed – 55 mph or greater
  - Cross section – minimum four lanes with continuous median
  - Multi-modal elements – High Occupancy Vehicles (HOV)/High Occupancy Transit (HOT) lanes, busways, truck lanes, park-and-ride facilities at/near interchanges, adjacent shared use paths (separate from roadway and outside ROW)
  - Type of access control – full control of access
  - Access management – interchange spacing (urban – one mile; non-urban – three miles); at interchanges on the intersecting roadway, full control of access for 1,000ft or for 350ft plus 650ft island or median; use of frontage roads, rear service roads
  - Intersecting facilities – interchange or grade separation (no signals or at-grade intersections)
  - Driveways – not allowed

- **Expressways**
  - Functional purpose – high mobility, high volume, medium-high speed
  - Posted speed – 45 to 60 mph
  - Cross section – minimum four lanes with median
  - Multi-modal elements – HOV lanes, busways, very wide paved shoulders (rural), shared use paths (separate from roadway but within ROW)
  - Type of access control – limited or partial control of access;
  - Access management – minimum interchange/intersection spacing 2,000ft; median breaks only at intersections with minor roadways or to permit U-turns; use of frontage roads, rear service roads; driveways limited in location and number; use of acceleration/deceleration or right turning lanes
  - Intersecting facilities – interchange; at-grade intersection for minor roadways; right-in/right-out and/or left-over or grade separation (no signalization for through traffic)
  - Driveways – right-in/right-out only; direct driveway access via service roads or other alternate connections

- **Boulevards**
  - Functional purpose – moderate mobility; moderate access, moderate volume, medium speed
  - Posted speed – 30 to 55 mph
  - Cross section – two or more lanes with median (median breaks allowed for U-turns per current NCDOT *Driveway Manual*
  - Multi-modal elements – bus stops, bike lanes (urban) or wide paved shoulders (rural), sidewalks (urban - local government option)
  - Type of access control – limited control of access, partial control of access, or no control of access
  - Access management – two lane facilities may have medians with crossovers, medians with turning pockets or turning lanes; use of acceleration/deceleration or right turning lanes is optional; for abutting properties, use of shared driveways, internal out parcel access and cross-connectivity between adjacent properties is strongly encouraged
  - Intersecting facilities – at grade intersections and driveways; interchanges at special locations with high volumes
  - Driveways – primarily right-in/right-out, some right-in/right-out in combination with median leftovers; major driveways may be full movement when access is not possible using an alternate roadway

- **Other Major Thoroughfares**
  - Functional purpose – balanced mobility and access, moderate volume, low to medium speed
  - Posted speed – 25 to 55 mph
  - Cross section – four or more lanes without median *(US and NC routes may have less than four lanes)*
  - Multi-modal elements – bus stops, bike lanes/wide outer lane (urban) or wide paved shoulder (rural), sidewalks (urban)
  - Type of access control – no control of access
  - Access management – continuous left turn lanes; for abutting properties, use of shared driveways, internal out parcel access and cross-connectivity between adjacent properties is strongly encouraged
  - Intersecting facilities – intersections and driveways
  - Driveways – full movement on two lane roadway with center turn lane as permitted by the current NCDOT *Driveway Manual*

- **Minor Thoroughfares**
  - Functional purpose – balanced mobility and access, moderate volume, low to medium speed
  - Posted speed – 25 to 55 mph
  - Cross section – ultimately three lanes (no more than one lane per direction) or less without median
  - Multi-modal elements – bus stops, bike lanes/wide outer lane (urban) or wide paved shoulder (rural), sidewalks (urban)
  - ROW – no control of access

- Access management – continuous left turn lanes; for abutting properties, use of shared driveways, internal out parcel access and cross-connectivity between adjacent properties is strongly encouraged
- Intersecting facilities – intersections and driveways
- Driveways – full movement on two lane with center turn lane as permitted by the current NCDOT *Driveway Manual*

Other Highway Map Definitions

- **Existing** – Roadway facilities that are not recommended to be improved.
- **Needs Improvement** – Roadway facilities that need to be improved for capacity, safety, or system continuity. The improvement to the facility may be widening, other operational strategies, increasing the level of access control along the facility, or a combination of improvements and strategies. *"Needs improvement" does not refer to the maintenance needs of existing facilities.*
- **Recommended** – Roadway facilities on new location that are needed in the future.
- **Interchange** – Through movement on intersecting roads is separated by a structure. Turning movement area accommodated by on/off ramps and loops.
- **Grade Separation** – Through movement on intersecting roads is separated by a structure. There is no direct access between the facilities.
- **Full Control of Access** – Connections to a facility provided only via ramps at interchanges. No private driveway connections allowed.
- **Limited Control of Access** – Connections to a facility provided only via ramps at interchanges (major crossings) and at-grade intersections (minor crossings and service roads). No private driveway connections allowed.
- **Partial Control of Access** – Connections to a facility provided via ramps at interchanges, at-grade intersections, and private driveways. Private driveway connections shall be defined as a maximum of one connection per parcel. One connection is defined as one ingress and one egress point. These may be combined to form a two-way driveway (most common) or separated to allow for better traffic flow through the parcel. The use of shared or consolidated connections is highly encouraged.
- **No Control of Access** – Connections to a facility provided via ramps at interchanges, at-grade intersections, and private driveways.

Public Transportation and Rail Map

- **Bus Routes** – The primary fixed route bus system for the area. Does not include demand response systems.
- **Fixed Guideway** – Any transit service that uses exclusive or controlled rights-of-way or rails, entirely or in part. The term includes heavy rail, commuter rail, light rail, monorail, trolleybus, aerial tramway, included plane, cable car, automated guideway transit, and ferryboats.

- **Operational Strategies** – Plans geared toward the non-single occupant vehicle. This includes but is not limited to HOV lanes or express bus service.
- **Rail Corridor** – Locations of railroad tracks that are either active or inactive tracks. These tracks were used for either freight or passenger service.
  - Active – rail service is currently provided in the corridor; may include freight and/or passenger service
  - Inactive – right of way exists; however, there is no service currently provided; tracks may or may not exist
  - Recommended – It is desirable for future rail to be considered to serve an area.
- **High Speed Rail Corridor** – Corridor designated by the U.S. Department of Transportation as a potential high speed rail corridor.
  - Existing – Corridor where high speed rail service is provided (there are currently no existing high speed corridor in North Carolina).
  - Recommended – Proposed corridor for high speed rail service.
- **Rail Stop** – A railroad station or stop along the railroad tracks.
- **Intermodal Connector** – A location where more than one mode of transportation meet such as where light rail and a bus route come together in one location or a bus station.
- **Park and Ride Lot** – A strategically located parking lot that is free of charge to anyone who parks a vehicle and commutes by transit or in a carpool.
- **Existing Grade Separation** – Locations where existing rail facilities and are physically separated from existing highways or other transportation facilities. These may be bridges, culverts, or other structures.
- **Proposed Grade Separation** – Locations where rail facilities are recommended to be physically separated from existing or recommended highways or other transportation facilities. These may be bridges, culverts, or other structures.

Bicycle Map

- **On Road-Existing** – Conditions for bicycling on the highway facility are adequate to safely accommodate cyclists.
- **On Road-Needs Improvement** – At the systems level, it is desirable for **an existing** highway facility to accommodate bicycle transportation; however, highway improvements are necessary to create safe travel conditions for the cyclists.
- **On Road-Recommended** – At the systems level, it is desirable for **a recommended** highway facility to accommodate bicycle transportation. The highway should be designed and built to safely accommodate cyclists.

- **Off Road-Existing** – A facility that accommodates only bicycle transportation and is physically separated from a highway facility either within the right-of-way or within an independent right-of-way.
- **Off Road-Needs Improvement** – A facility that accommodates only bicycle transportation and is physically separated from a highway facility either within the right-of-way or within an independent right-of-way that will not adequately serve future bicycle needs. Improvements may include but are not limited to, widening, paving (not re-paving or other maintenance activities), and improved horizontal or vertical alignment.
- **Off Road-Recommended** – A facility needed to accommodate only bicycle transportation and is physically separated from a highway facility either within the right-of-way or within an independent right-of-way.
- **Multi-use Path-Existing** – An existing facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that serves bicycle and pedestrian traffic. Sidewalks should not be designated as a multi-use path.
- **Multi-use Path-Needs Improvement** – An existing facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that serves bicycle and pedestrian traffic that will not adequately serve future needs. Improvements may include but are not limited to, widening, paving (not re-paving or other maintenance activities), and improved horizontal or vertical alignment. Sidewalks should not be designated as a multi-use path.
- **Multi-use Path-Recommended** – A facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that is needed to serve bicycle and pedestrian traffic. Sidewalks should not be designated as a multi-use path.
- **Existing Grade Separation** – Locations where existing “Off Road” facilities and “Multi-use Paths” are physically separated from existing highways, railroads, or other transportation facilities. These may be bridges, culverts, or other structures.
- **Proposed Grade Separation** – Locations where “Off Road” facilities and “Multi-use Paths” are recommended to be physically separated from existing or recommended highways, railroads, or other transportation facilities. These may be bridges, culverts, or other structures.

Pedestrian Map

- **Sidewalk-Existing** – Paved paths (including but not limited to concrete, asphalt, brick, stone, or wood) on both sides of a highway facility and within the highway right-of-way that are adequate to safely accommodate pedestrian traffic.

- **Sidewalk-Needs Improvement** – Improvements are needed to provide paved paths on both sides of a highway facility. The highway facility may or may not need improvements. Improvements do not include re-paving or other maintenance activities but may include: filling in gaps, widening sidewalks, or meeting ADA (Americans with Disabilities Act) requirements.
- **Sidewalk-Recommended** – At the systems level, it is desirable for a recommended highway facility to accommodate pedestrian transportation **or** to add sidewalks on an existing facility where no sidewalks currently exist. The highway should be designed and built to safely accommodate pedestrian traffic.
- **Off Road-Existing** – A facility that accommodates only pedestrian traffic and is physically separated from a highway facility usually within an independent right-of-way.
- **Off Road-Needs Improvement** – A facility that accommodates only pedestrian traffic and is physically separated from a highway facility usually within an independent right-of-way that will not adequately serve future pedestrian needs. Improvements may include but are not limited to, widening, paving (not re-paving or other maintenance activities), improved horizontal or vertical alignment, and meeting ADA requirements.
- **Off Road-Recommended** – A facility needed to accommodate only pedestrian traffic and is physically separated from a highway facility usually within an independent right-of-way.
- **Multi-use Path-Existing** – An existing facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that serves bicycle and pedestrian traffic. Sidewalks should not be designated as a multi-use path.
- **Multi-use Path-Needs Improvement** – An existing facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that serves bicycle and pedestrian traffic that will not adequately serve future needs. Improvements may include but are not limited to, widening, paving (not re-paving or other maintenance activities), and improved horizontal or vertical alignment. Sidewalks should not be designated as a multi-use path.
- **Multi-use Path-Recommended** – A facility physically separated from motor vehicle traffic that is either within the highway right-of-way or on an independent right-of-way that is needed to serve bicycle and pedestrian traffic. Sidewalks should not be designated as a multi-use path.
- **Existing Grade Separation** – Locations where existing “Off Road” facilities and “Multi-use Paths” are physically separated from existing highways, railroads, or other transportation facilities. These may be bridges, culverts, or other structures.

- **Proposed Grade Separation** – Locations where “Off Road” facilities and “Multi-use Paths” are recommended to be physically separated from existing or recommended highways, railroads, or other transportation facilities. These may be bridges, culverts, or other structures.

Appendix C
CTP Inventory and Recommendations

Assumptions/ Notes:

- **Local ID:** This Local ID is the same as the one used for the Prioritization Project Submittal Tool. If a TIP project number exists it is listed as the ID. Otherwise, the following system is used to create a code for each recommended improvement: the first 4 letters of the county name is combined with a 4 digit unique numerical code followed by '-H' for highway, '-T' for public transportation, '-R' for rail, '-B' for bicycle, '-M' for multi-use paths, or '-P' for pedestrian modes. If a different code is used along a route it indicates separate projects will probably be requested. Also, upper case alphabetic characters (i.e. 'A', 'B', or 'C') are included after the numeric portion of the code if it is anticipated that project segmentation or phasing will be recommended.

- **Jurisdiction:** Jurisdictions listed are based on municipal limits, county boundaries, and MPO Metropolitan Planning Area Boundaries (MAB), as applicable.

- **Existing Cross-Section:** Listed under '(ft)' is the approximate width of the roadway from edge of pavement to edge of pavement. Listed under 'lanes' is the total number of lanes, with the letter 'D' if the facility is divided.

- **Existing ROW:** The estimated existing right-of-way is based on the Roadway Pavement Conditions Database. These right-of-way amounts are approximate and may vary.

- **Existing and Proposed Capacity:** The estimated capacities are given in vehicles per day (vpd) based on LOS D for existing facilities and LOS C for new facilities. These capacity estimates were developed using the NCLOS, as documented in Chapter I.

- **Existing and Proposed AADT** (Annual Average Daily Traffic) volumes, given in vehicles per day (vpd), are estimates only based on a systems-level analysis. The '2040 AADT E+C' is an estimate of the volume in 2035 with only existing plus committed projects assumed to be in place, where committed is defined as projects programmed for construction in the 2012 - 2018 Transportation Improvement Program (TIP). The '2040 AADT with CTP' is an estimate of the volume in 2040 with all proposed CTP improvements assumed to be in place. The '2040 AADT with CTP' is shown in bold if it exceeds the proposed capacity, indicating an unmet need. For additional information about the assumptions and techniques used to develop the AADT volume estimates, refer to Chapter I.

- **Proposed Cross-section:** The CTP recommended cross-sections are listed by code; for depiction of the cross-section, refer to Appendix D. An entry of 'ADQ' indicates the existing facility is adequate and there are no improvements recommended as part of the CTP.

- **CTP Classification:** The CTP classification is listed, as shown on the adopted CTP Maps (see Figure 1). Abbreviations are F= freeway, E= expressway, B= boulevard, Maj= other major thoroughfare, Min= minor thoroughfare.

- **Tier:** Tiers are defined as part of the North Carolina Mulitmodal Investment Network (NCMIN). Abbreviations are Sta= statewide tier, Reg= regional tier, Sub= subregional tier.

- **Other Modes:** If there is an improvement recommended for another mode of transportation that relates to the given recommendation, it is indicated by an alphabetic code (H=highway, T= public transportation, R= rail, B= bicycle, and P= pedestrian).

Table 3 - CTP INVENTORY AND RECOMMENDATIONS

HIGHWAY																		
					2010 Existing System						2040 Proposed System							
Local ID	Facility	Section (From - To)	Jurisdiction	Dist. (mi)	Cross-Section (ft)	Cross-Section lanes	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2010 AADT	2040 AADT E+C	2040 AADT with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)	CTP Classifi-cation	Tier	Other Modes
	I 40	Buncombe Co. Line - <0.1 Mile E. of Buncombe Co. Line	McDowell Co.	<0.1	72	6D	175	65	73600	30000	41700	41700	ADQ	ADQ	ADQ	F	Sta	
		<0.1 Mile E. of Buncombe Co. Line - US 70	McDowell Co.	4.9	72	6D	175	55	73600	30000	41700	41700	ADQ	ADQ	ADQ	F	Sta	
		US 70 - Oakdale Rd (SR 1240)	McDowell Co.	3.2	48	4D	175	65	57200	26000	35000	35000	ADQ	ADQ	ADQ	F	Sta	
		Oakdale Rd (SR 1240) - Marion CTP West Boundary	McDowell Co.	5.8	48	4D	175	65	58000	28000	40000	40000	ADQ	ADQ	ADQ	F	Sta	
		Marion CTP East Boundary - Harmony Grove Rd (SR 1760)	McDowell Co.	3.3	48	4D	175	65	58000	28000	40000	40000	ADQ	ADQ	ADQ	F	Sta	
		Harmony Grove Rd (SR 1760) - Burke Co. Line	McDowell Co.	3.1	48	4D	175	65	58000	28000	42500	42500	ADQ	ADQ	ADQ	F	Sta	
	US 64	Rutherford Co. Line - NC 226	McDowell Co.	2.3	22	2	60	55	14000	2200	2600	2600	ADQ	ADQ	ADQ	Maj	Reg	
		NC 226 - Burke Co. Line	McDowell Co.	1.6	22	2	60	55	14000	2800	3300	3300	ADQ	ADQ	ADQ	Maj	Reg	
	US 70	Buncombe Co. Line - US 70/I-40 interchange	McDowell Co.	4.7	Concurrent with I-40													
		US 70/I-40 interchange - Old Fort WCL	Old Fort	0.2	24	2	60	35	12700	3900	5900	5900	ADQ	ADQ	ADQ	Maj	Reg	
		Old Fort WCL - Railroad	Old Fort	0.4	34	2	60	35	11600	3800	4400	4400	ADQ	ADQ	ADQ	Maj	Reg	B
		Railroad - Catawba Ave (SR 1103)	Old Fort	0.3	34	2	0	30	11000	4600	6800	6800	ADQ	ADQ	ADQ	Maj	Reg	B
		Catawba Ave. (SR 1103) - Lackey Town Rd. (SR 1235)	Old Fort	0.4	34	2	0	20	11000	4600	6800	6800	ADQ	ADQ	ADQ	Maj	Reg	B
		Lackey Town Rd. (SR 1235) - Delaware Ave (SR 1405)	Old Fort	0.8	22	2	0	35	12700	4600	6800	6800	ADQ	ADQ	ADQ	Maj	Reg	B
		Delaware Ave (SR 1405) - Old Fort ECL	Old Fort	1.3	22	2	60	45	14000	6300	9600	9600	ADQ	ADQ	ADQ	Maj	Reg	B,P
		Old Fort ECL - Paxton Creek Rd (SR 1417)	McDowell Co.	3.7	22	2	60	45	14000	6300	9600	9600	ADQ	ADQ	ADQ	Maj	Reg	B
		Paxton Creek Rd (SR 1417) - SR 1225	McDowell Co.	0.5	24	2	60	55	14000	6300	9600	9600	ADQ	ADQ	ADQ	Maj	Reg	B
		SR 1225 - Marion CTP West Boundary	McDowell Co.	1.8	22	2	100	45	14000	9400	11600	11600	ADQ	ADQ	ADQ	Maj	Reg	B
		Marion CTP East Boundary - Stacy Hill Rd (SR 1747)	McDowell Co.	2.5	22	2	60	45	12300	5800	6700	6700	ADQ	ADQ	ADQ	Maj	Reg	

Table 3 - CTP INVENTORY AND RECOMMENDATIONS

HIGHWAY																		
					2010 Existing System						2040 Proposed System							
Local ID	Facility	Section (From - To)	Jurisdiction	Dist. (mi)	Cross-Section (ft)	Cross-Section lanes	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2010 AADT	2040 AADT E+C	2040 AADT with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)	CTP Classifi-cation	Tier	Other Modes
		Stacey Hill Rd (SR 1747) -NC 126	McDowell Co.	0.7	22	2	60	55	12100	4600	5300	5300	ADQ	ADQ	ADQ	Maj	Reg	
		NC 126 - Harmony Grove Rd (SR 1760)	McDowell Co.	0.3	24	2	130	55	12100	2700	3100	3100	ADQ	ADQ	ADQ	Maj	Reg	
		Harmony Grove Rd (SR 1760) - Watson Rd (SR 1762)	McDowell Co.	2.3	24-35	2	130	55	12100	2700	3100	3100	ADQ	ADQ	ADQ	Maj	Reg	
		Watson Rd (SR 1762) - Burke Co. Line	McDowell Co.	1.4	35	2	130	55	12100	1800	2100	2100	ADQ	ADQ	ADQ	Maj	Reg	
R-2597	**US 221**	Rutherford Co. Line - Mud Cut Rd. (SR 1351)	McDowell Co.	4.6	24	2	50	55	14000	5400	9800	9800	44500	4B	150	Maj	Reg	
R-2597		Mud Cut Rd. (SR 1351) - Goose Creek Rd. (SR 1153)	McDowell Co.	1.9	24	2	50	55	14000	6000	10900	10900	44500	4B	150	Maj	Reg	
R-0204E		Goose Creek Rd. (SR 1353) - Marion CTP South Boundary	McDowell Co.	0.5	24	2	50	55	14000	7800	14000	14000	43900	4B	150	Maj	Reg	
MCDO0002-H		Marion CTP North Boundary-American Thread Rd (SR 1559)	McDowell Co.	4.5	60-68	5	120-150	50	34500	15000	22100	22100	43900	4B	150	Maj	Reg	
MCDO0002-H		American Thread Rd. (SR 1559) - NC 226	McDowell Co.	0.9	60-68	5	120-150	50	34500	13000	23500	23500	43900	4B	150	Maj	Reg	
R-2596		NC 226- 0.4 Mile N. of Peppers Creek Rd. (SR 1566)	McDowell Co.	3.6	48	4D	150	55	43900	8200	13600	13600	44500	4B	150	Maj	Reg	
R-2596		0.4 Mile N. of Peppers Creek Rd. (SR 1566) - Old Linville Rd. (SR 1560)	McDowell Co.	4.6	20	2	60	55	43900	7400	9100	9100	44500	4B	150	Maj	Reg	
R-2596		Old Linville Rd. (SR 1560) - English Rd (SR 1571)	McDowell Co.	1.8	20	2	60	55	12100	2300	2700	2700	44500	4B	150	Maj	Reg	
R-2596		English Rd. (SR 1571) - Avery Co. Line	McDowell Co.	4.0	20	2	60	55	10200	2200	2600	2600	44500	4B	150	Maj	Reg	
	NC 80	US 70 - Tom's Creek Rd. (SR 1434)	McDowell Co.	1.9	20	2	60	45	13600	2600	3000	3000	ADQ	ADQ	ADQ	Maj	Reg	
		Tom's Creek Rd. (SR 1434) - 0.1 Mile N. of Little Buck Creek Rd. (SR 1436)	McDowell Co.	2.0	18	2	60	35	10400	690	800	800	ADQ	ADQ	ADQ	Maj	Reg	
		0.1 Mile N. of Little Buck Creek Rd. (SR 1436) - Yancey Co. Line	McDowell Co.	8.3	18	2	60	35	10400	690	800	800	ADQ	ADQ	ADQ	Maj	Reg	

Table 3 - CTP INVENTORY AND RECOMMENDATIONS

HIGHWAY																		
					2010 Existing System						2040 Proposed System							
Local ID	Facility	Section (From - To)	Jurisdiction	Dist. (mi)	Cross-Section (ft)	Cross-Section lanes	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2010 AADT	2040 AADT E+C	2040 AADT with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)	CTP Classifi-cation	Tier	Other Modes
	NC 126	US 70 - Old Number 10 Rd. (SR 1536)	McDowell Co.	0.3	20	2	60	45	13600	2200	3900	3900	ADQ	ADQ	ADQ	Maj	Reg	
		Old Number 10 Rd. (SR 1536) - Wildlife Rd. (SR 1548)	McDowell Co.	1.2	20	2	60	45	13600	1100	1300	1300	ADQ	ADQ	ADQ	Maj	Reg	
		Wildlife Rd. (SR 1548) - SR 1595	McDowell Co.	1.9	20	2	60	55	11700	1000	1200	1200	ADQ	ADQ	ADQ	Maj	Reg	
		SR 1595 - Burke Co. Line	McDowell Co.	0.5	24	2	60	55	12100	630	700	700	ADQ	ADQ	ADQ	Maj	Reg	
	NC 226	Mitchell Co. Line - Begin of 3-lane	McDowell Co.	1.3	18	2	50	45	10400	6100	8700	8700	ADQ	ADQ	ADQ	Maj	Reg	
		Begin of 3-lane - End of 3-lane	McDowell Co.	0.5	36	2	50	45	11600	6100	8700	8700	ADQ	ADQ	ADQ	Maj	Reg	
		End of 3-lane - NC 226A	McDowell Co.	2.3	20	2	50	45	10800	6100	8700	8700	ADQ	ADQ	ADQ	Maj	Reg	
		NC 226A - US 221	McDowell Co.	1.2	22	2	40	55	14100	6500	8800	8800	ADQ	ADQ	ADQ	Maj	Reg	
		NC 226A - Marion CTP North Boundary	McDowell Co.	5.4	Concurrent with US 221													
		Marion CTP South Boundary - Harmony Grove Rd. (SR 1760)	McDowell Co.	0.7	22	2	60	55	12100	4300	7300	7300	ADQ	ADQ	ADQ	Maj	Reg	
		Harmony Grove Rd. (SR 1760) - Pinacle Church Rd. (SR 1764)	McDowell Co.	3.4	22	2	60	55	12100	3400	4900	4900	ADQ	ADQ	ADQ	Maj	Reg	
		Pinacle Church Rd. (SR 1764) - Drucilla Chruch Rd. (SR 1758)	McDowell Co.	1.2	22	2	60	55	12100	1800	2100	2100	ADQ	ADQ	ADQ	Maj	Reg	
		Drucilla Chruch Rd. (SR 1758) - US 64	McDowell Co.	4.8	22	2	60	55	12100	1800	2100	2100	ADQ	ADQ	ADQ	Maj	Reg	
		US 64 - Rutherford Co. Line	McDowell Co.	1.4	22	2	60	55	12100	1200	1400	1400	ADQ	ADQ	ADQ	Maj	Reg	
	NC 226A	NC 226 - Wild Acres Rd. (SR 1421)	McDowell Co.	7	18	2	60	40	6300	840	1000	1000	ADQ	ADQ	ADQ	Maj	Reg	
		Wild Acres Rd. (SR 1421) - 0.3 Mile S. of Bearwallow Rd. (SR 1446)	McDowell Co.	2.3	18	2	60	35	6300	1100	1800	1800	ADQ	ADQ	ADQ	Maj	Reg	
		0.3 Mile S. of Bearwallow Rd. (SR 1446) - NC 226	McDowell Co.	6.2	18	2	60	35	6300	920	1100	1100	ADQ	ADQ	ADQ	Maj	Reg	

Table 3 - CTP INVENTORY AND RECOMMENDATIONS

HIGHWAY																		
					2010 Existing System						2040 Proposed System							
Local ID	Facility	Section (From - To)	Jurisdiction	Dist. (mi)	Cross-Section (ft)	Cross-Section lanes	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2010 AADT	2040 AADT E+C	2040 AADT with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)	CTP Classifi-cation	Tier	Other Modes
	Bat Cave Rd. (SR 1103)	Buncombe Co. Line - Mt Hebron Church Rd. (SR 1100)	McDowell Co.	2.5	18	2	60	55	10300	880	1500	1500	ADQ	ADQ	ADQ	Min	Sub	
		Mt Hebron Church Rd. (SR 1100)- Silver Welch Rd. (SR 1128)	McDowell Co.	1.5	20	2	60	55	10300	2000	2200	2200	ADQ	ADQ	ADQ	Min	Sub	
		Silver Welch Rd. (SR 1128) - Campground Rd. (SR 1258)	McDowell Co.	1.2	20	2	60	55	10300	2400	3800	3800	ADQ	ADQ	ADQ	Min	Sub	
		Campground Rd. (SR 1258) - Old Fort-Sugar Hill Rd. (SR 1135)	McDowell Co.	1.0	20	2	60	55	10300	4500	7500	7500	ADQ	ADQ	ADQ	Min	Sub	
MCDO0001-H		Old Fort-Sugar Hill Rd. (SR 1135) - I-40	Old Fort	0.5	20	2	60	55	10300	7500	10100	10100	13200	3A	80	Min	Sub	P
	Catawba Ave. (SR 1103)	US 70 - I-40	Old Fort	0.5	50	4	60	35	22200	6600	7700	7700	ADQ	ADQ	ADQ	Min	Sub	
	Columbia Carolina Rd. (SR 1228)	Old Greenlee Rd. (SR 1246) - Greenlee Rd. (SR 1246)	McDowell Co.	0.5	18	2	60	35	9200	1700	2000	2000	ADQ	ADQ	ADQ	Min	Sub	
	Drucilla Church Rd. (SR 1758)	NC 226 - Pinnacle Church Rd. (SR 1764)	McDowell Co.	1.9	20	2	60	55	11700	420	500	500	ADQ	ADQ	ADQ	Min	Sub	
	Dysartville Rd. (SR 1769)	Burke Co Line - Trinity Church Rd. (SR 1770)	McDowell Co.	2.8	20	2	60	55	11700	440	900	900	ADQ	ADQ	ADQ	Min	Sub	
	Fairview Rd. (SR 1747)	Stacy Hill Rd (SR 1747) - Harmony Grove Rd. (SR 1760)	McDowell Co.	0.5	18	2	60	35	9200	1600	6300	6300	ADQ	ADQ	ADQ	Min	Sub	
	Fairview Church Rd. (SR 1741)	Fairview Rd. (SR 1747) - Toney Rd. (SR 1736)	McDowell Co.	1.8	18	2	60	35	9200	930	1100	1100	ADQ	ADQ	ADQ	Min	Sub	
		Toney Rd. (SR 1736) - NC 226	McDowell Co.	1.3	18	2	60	35	9200	3500	6300	6300	ADQ	ADQ	ADQ	Min	Sub	
	Falling Waters Dr.	Lackey Town Rd. (SR 1235) - Greywolf Ln.	McDowell Co.	0.5	18	2	60	35	9200	200	300	300	ADQ	ADQ	ADQ	Min	Sub	
	Glenwood Dr. (SR 1766)	Old US 221 (SR 1786) - Old Glenwood Rd. (SR 1794)	McDowell Co.	0.4	20	2	60	35	9500	1000	1200	1200	ADQ	ADQ	ADQ	Min	Sub	

Table 3 - CTP INVENTORY AND RECOMMENDATIONS

HIGHWAY																		
					2010 Existing System						2040 Proposed System							
Local ID	Facility	Section (From - To)	Jurisdiction	Dist. (mi)	Cross-Section (ft)	Cross-Section lanes	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2010 AADT	2040 AADT E+C	2040 AADT with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)	CTP Classifi-cation	Tier	Other Modes
	Goose Creek Rd. (SR 1153)	Old US 221 (SR 1786) - US 221	McDowell Co.	0.2	18	2	60	35	10300	900	1100	1100	ADQ	ADQ	ADQ	Min	Sub	
		US 221 - Sugar Hill Rd. (SR 1001)	McDowell Co.	4.4	18	2	60	45	10300	1800	3100	3100	ADQ	ADQ	ADQ	Min	Sub	
	Greenlee Rd. (SR 1246)	US 70 - Oakdale Rd. (SR 1240)	McDowell Co.	1.1	18	2	60	35	9200	1700	2000	2000	ADQ	ADQ	ADQ	Min	Sub	
		Oakdale Rd. (SR 1240) - Columbia Carolina Rd. (SR 1228)	McDowell Co.	3.4	18	2	60	35	9200	840	1000	1000	ADQ	ADQ	ADQ	Min	Sub	
	Greywolf Ln.	Oakdale Rd. (SR 1234) - Falling Waters Dr.		0.2	18	2	60	35	9200	200	300	300	ADQ	ADQ	ADQ	Min	Sub	
	Hankins Rd. (SR 1501)	Lake James Rd. (SR 1552) - Lentz Rd. (SR 1550)	McDowell Co.	1.0	20	2	50	35	9500	480	700	700	ADQ	ADQ	ADQ	Min	Sub	
		Lentz Rd. (SR 1550) - Marion CTP East Boundary	McDowell Co.	1.8	20	2	50	45	9500	2200	4600	4600	ADQ	ADQ	ADQ	Min	Sub	
	Harmony Grove (SR 1760)	US 70 - Creek Rd. (SR 1803)	McDowell Co.	0.9	20	2	60	35	9500	2900	3800	3800	ADQ	ADQ	ADQ	Min	Sub	
		Creek Rd. (SR 1803) - Fairview Rd (SR 1747)	McDowell Co.	1.3	20	2	60	35	9500	3100	6500	6500	ADQ	ADQ	ADQ	Min	Sub	
		Fairview Rd. (SR 1747) - I-40	McDowell Co.	0.4	18	2	60	35	9500	3500	4600	4600	ADQ	ADQ	ADQ	Min	Sub	
		I-40 - NC 226	McDowell Co.	5.5	18	2	60	55	10300	2600	5400	5400	ADQ	ADQ	ADQ	Min	Sub	
	Henry McCall Rd. (SR 1245)	Old Greenlee Rd. (SR 1214) - Lytle Mountain Rd. (SR 1161)	McDowell Co.	1.9	18	2	60	35	9200	1700	2000	2000	ADQ	ADQ	ADQ	Min	Sub	
	Lackey Town Rd. (SR 1235)	US 70 - Oakdale Rd. (SR 1234)	McDowell Co.	0.4	20	2	60	35	9500	1100	1300	1300	ADQ	ADQ	ADQ	Min	Sub	R
		Oakdale Rd. (SR 1234) - Falling Waters Rd.	McDowell Co.	1.0	20	2	60	35	9500	900	1100	1100	ADQ	ADQ	ADQ	Min	Sub	
	Lake James Rd. (SR 1552)	Yancey Rd. (SR 1501) - Burke Co. Line	McDowell Co.	6.4	20	2	50	55	11700	1200	2600	2600	ADQ	ADQ	ADQ	Min	Sub	
	Lentz Rd (SR 1550)	Hankins Rd. (SR 1501) - Yancey Rd. (SR 1501)	McDowell Co.	0.9	20	2	50	35	9700	300	350	350	ADQ	ADQ	ADQ	Min	Sub	

Table 3 - CTP INVENTORY AND RECOMMENDATIONS

HIGHWAY																		
					2010 Existing System						2040 Proposed System							
Local ID	Facility	Section (From - To)	Jurisdiction	Dist. (mi)	Cross-Section (ft)	Cross-Section lanes	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2010 AADT	2040 AADT E+C	2040 AADT with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)	CTP Classifi-cation	Tier	Other Modes
	Lytle Mountain Rd. (SR 1161)	Greenlee Rd. (SR 1246) - Henry McCall Rd. (SR 1245)	McDowell Co.	1.3	18	2	60	35	9200	1200	1700	1700	ADQ	ADQ	ADQ	Min	Sub	
		Henry McCall Rd. (SR 1245) - Nix Creek Rd. (SR 1191)	McDowell Co.	2.4	18	2	60	35	9200	1200	1700	1700	ADQ	ADQ	ADQ	Min	Sub	
	Memorial Park Rd. (SR 1536)	US 70 - Roland's Church Rd. (SR 1539)	McDowell Co.	2.0	18	2	60	55	10300	2300	4800	4800	ADQ	ADQ	ADQ	Min	Sub	
	Mud Cut Rd. (SR 1351)	Sugar Hill Rd. (SR 1001) - US 221	McDowell Co.	3.9	18	2	60	45	10300	1400	3400	3400	ADQ	ADQ	ADQ	Min	Sub	
	Mud Cut Rd. (SR 1785)	US 221 - Old US 221	McDowell Co.	0.3	18	2	60	45	10300	390	500	500	ADQ	ADQ	ADQ	Min	Sub	
	Mt Hebron Church Rd. (SR 1100)	Buncombe Co. Line - Bat Cave Rd. (SR 1103)	McDowell Co.	5.1	18	2	60	55	10300	610	800	800	ADQ	ADQ	ADQ	Min	Sub	
	Nebo School Rd. (SR 1536)	NC 126 - US 70	McDowell Co.	0.4	18	2	60	35	9200	3000	3500	3500	ADQ	ADQ	ADQ	Min	Sub	
	Nix Creek Rd. (SR 1191)	Zion Hill Rd. (SR 1137) - Lytle Mountain Rd. (SR 1161)	McDowell Co.	0.2	18	2	60	45	10300	2100	3400	3400	ADQ	ADQ	ADQ	Min	Sub	
		Lytle Mountain Rd. (SR 1161) - Marion CTP West Boundary	McDowell Co.	2.3	18	2	60	45	10300	1500	2000	2000	ADQ	ADQ	ADQ	Min	Sub	
	Oakdale Rd. (SR 1234)	Parker Padgett Rd. (SR 1240) - Souther Rd. (SR 1241)	McDowell Co.	0.5	20	2	60	35	9500	400	500	500	ADQ	ADQ	ADQ	Min	Sub	
		Souther Rd. (SR 1241) - Lackery Town Rd. (SR 1235)	McDowell Co.	2.2	20	2	60	55	9500	200	300	300	ADQ	ADQ	ADQ	Min	Sub	
	Oakdale Rd. (SR 1240)	Greenlee Rd. (SR 1246) - I-40	McDowell Co.	0.1	20	2	60	35	9500	1000	1200	1200	ADQ	ADQ	ADQ	Min	Sub	
		I-40 - Parker Padgett Rd. (SR 1240)	McDowell Co.	0.2	20	2	60	55	9500	1000	1200	1200	ADQ	ADQ	ADQ	Min	Sub	
	Old Fort-Sugar Hill Rd. (SR 1135)	Bat Cave Rd. (SR 1103) - Wildlife Lake Rd. (SR 1237)	McDowell Co.	0.7	20	2	60	55	11700	2600	3000	3000	ADQ	ADQ	ADQ	Min	Sub	

Table 3 - CTP INVENTORY AND RECOMMENDATIONS

HIGHWAY																		
					2010 Existing System						2040 Proposed System							
Local ID	Facility	Section (From - To)	Jurisdiction	Dist. (mi)	Cross-Section (ft)	Cross-Section lanes	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2010 AADT	2040 AADT E+C	2040 AADT with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)	CTP Classifi-cation	Tier	Other Modes
		Wildlife Lake Rd. (SR 1237) - Zion Hill Rd. (SR 1137)	McDowell Co.	4.6	20	2	60	55	11700	2300	2700	2700	ADQ	ADQ	ADQ	Min	Sub	
		Zion Hill Rd. (SR 1137) - Sugar Hill Rd (SR 1001)	McDowell Co.	3.7	20	2	60	55	11700	610	800	800	ADQ	ADQ	ADQ	Min	Sub	
	Old Glenwood Rd. (SR 1794)	Glenwood Dr. (SR 1766) - Marion CTP Boundary	McDowell Co.	2.8	22	2	60	45	9900	1800	4400	4400	ADQ	ADQ	ADQ	Min	Sub	
	Old Greenlee Rd. (SR 1214)	US 70 - Columbia Carolina Rd. (SR 1228)	McDowell Co.	0.5	20	2	60	35	9500	1700	2000	2000	ADQ	ADQ	ADQ	Min	Sub	
		Columbia Carolina Rd. (SR 1228) - Henry McCall Rd. (SR 1245)	McDowell Co.	0.5	20	2	60	35	9500	1100	1300	1300	ADQ	ADQ	ADQ	Min	Sub	
		Henry McCall Rd. (SR 1245) - Resistoflex Rd. (SR 1221)	McDowell Co.	3.0	18	2	60	35	9200	860	1700	1700	ADQ	ADQ	ADQ	Min	Sub	
		Resistoflex Rd. (SR 1121) - Marion CTP Boundary	McDowell Co.	0.1	18	2	60	35	9200	2000	2900	2900	ADQ	ADQ	ADQ	Min	Sub	
	Old Number 10 (SR 1536)	Roland's Chapel Rd. (SR 1539) - Wildlife Rd. (SR 1548)	McDowell Co.	1.5	18	2	60	55	10300	900	1900	1900	ADQ	ADQ	ADQ	Min	Sub	
		Wildlife Rd. (SR 1548) - NC 126	McDowell Co.	1.0	18	2	60	35	9200	870	1500	1500	ADQ	ADQ	ADQ	Min	Sub	
	Old US 221 (SR 1786)	US 221 - Glenwood Dr. (SR 1766)	McDowell Co.	1.5	20	2	60	55	11700	1500	2200	2200	ADQ	ADQ	ADQ	Min	Sub	
		Glenwood Dr. (SR 1766) - US 221	McDowell Co.	1.4	18	2	60	35	10300	1500	3200	3200	ADQ	ADQ	ADQ	Min	Sub	
	Pinnacle Church Rd. (SR 1764)	NC 226 - Drucilla Church Rd. (SR 1758)	McDowell Co.	1.6	18	2	60	55	10300	1500	2600	2600	ADQ	ADQ	ADQ	Min	Sub	
		Drucilla Church Rd. (SR 1758) - Burke Co. Line	McDowell Co.	1.7	18	2	60	55	10300	720	800	800	ADQ	ADQ	ADQ	Min	Sub	
	Resistoflex Rd. (SR 1221)	US 70 - Old Greenlee Rd. (SR 1214)	McDowell Co.	0.5	20	2	60	35	9500	1500	2000	2000	ADQ	ADQ	ADQ	Min	Sub	
	SR 1558	US 221 - SR 1559	McDowell Co.	0.8	22	2	60	35	9900	370	430	430	ADQ	ADQ	ADQ	Min	Sub	

Table 3 - CTP INVENTORY AND RECOMMENDATIONS

HIGHWAY																		
					2010 Existing System						2040 Proposed System							
Local ID	Facility	Section (From - To)	Jurisdiction	Dist. (mi)	Cross-Section (ft)	Cross-Section lanes	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2010 AADT	2040 AADT E+C	2040 AADT with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)	CTP Classifi-cation	Tier	Other Modes
	SR 1559	US 221 - SR 1558	McDowell Co.	1.27	20	2	60	35	9500	2300	4200	4200	ADQ	ADQ	ADQ	Min	Sub	
	SR 1781	US 221 - Vein Mountain Rd. (SR 1802)	McDowell Co.	1.7	18	2	60	45	13100	500	800	800	ADQ	ADQ	ADQ	Min	Sub	
		Vein Mountain Rd. (SR 1802) - US 221	McDowell Co.	1.7	18	2	60	45	13100	200	650	650	ADQ	ADQ	ADQ	Min	Sub	
	Stacy Hill Rd. (SR 1747)	US 70 - Fairview Church Rd. (SR 1747)	McDowell Co.	1.7	18	2	60	35	9200	1600	2700	2700	ADQ	ADQ	ADQ	Min	Sub	
	Sugar Hill Rd. (SR 1001)	Rutherford Co. Line - Hensley Rd (SR 1144)	McDowell Co.	2.7	18	2	60	55	10300	830	1100	1100	ADQ	ADQ	ADQ	Min	Sub	
		Hensley Rd (SR 1144) - Mud Cut Rd (SR 1351)	McDowell Co.	1.5	20	2	60	55	11700	830	1100	1100	ADQ	ADQ	ADQ	Min	Sub	
		Mud Cut Rd. (SR 1351) - Dink Cannon Rd (SR 1163)	McDowell Co.	1.6	20	2	60	55	11700	1900	2300	2300	ADQ	ADQ	ADQ	Min	Sub	
		Dink Cannon Rd (SR 1163) - Marler Rd (SR 1257)	McDowell Co.	2.3	20	2	60	55	11700	2100	2700	2700	ADQ	ADQ	ADQ	Min	Sub	
		Marler Rd (SR 1257) - Goose Creek Rd (SR 1153)	McDowell Co.	1.3	20	2	60	55	11700	3500	4100	4100	ADQ	ADQ	ADQ	Min	Sub	
MCDO0003-H		Goose Creek Rd (SR 1153) - Marion CTP South Boundary	McDowell Co.	0.5	20	2	60	55	12100	8700	11400	11400	27600	5A	100	Maj	Sub	
	Toms Creek Rd. (SR 1434)	NC 80 - US 221	McDowell Co.	2.6	20	2	60	45	11700	1500	1700	1700	ADQ	ADQ	ADQ	Min	Sub	
	Trinity Chuch Rd. (SR 1770)	NC 226 South of KC Lane Dr. - NC 226 North of Landis Ln. (SR 1777)	McDowell Co.	0.5	18	2	60	35	9200	440	500	500	ADQ	ADQ	ADQ	Min	Sub	
	Vein Mountain Rd. (SR 1802)	NC 226 - SR 1781	McDowell Co.	6.9	18	2	60	55	10300	610	2000	2000	ADQ	ADQ	ADQ	Min	Sub	
	Yancey Rd. (SR 1501)	Airport Rd. (SR 1500) - Lentz Rd. (SR 1550)	McDowell Co.	2.6	18	2	50	35	9200	1200	1700	1700	ADQ	ADQ	ADQ	Min	Sub	
		Lentz Rd. (SR 1550) - Lake James Rd. (SR 1552)	McDowell Co.	1.5	18	2	50	35	9200	850	1000	1000	ADQ	ADQ	ADQ	Min	Sub	
	Zion Hill Church Rd. (SR 1137)	Old Fort - Sugar Hill Rd. (SR 1135) - Marler Rd. (SR 1257)	McDowell Co.	2.0	18	2	60	45	10300	2100	3300	3300	ADQ	ADQ	ADQ	Min	Sub	

Table 3 - CTP INVENTORY AND RECOMMENDATIONS

HIGHWAY																		
					2010 Existing System						2040 Proposed System							
Local ID	Facility	Section (From - To)	Jurisdiction	Dist. (mi)	Cross-Section (ft)	Cross-Section lanes	ROW (ft)	Speed Limit (mph)	Existing Capacity (vpd)	2010 AADT	2040 AADT E+C	2040 AADT with CTP	Proposed Capacity (vpd)	Cross-Section	ROW (ft)	CTP Classifi-cation	Tier	Other Modes
		Marler Rd. (SR 1257) - Nix Creek Rd (SR 1191)	McDowell Co.	0.5	18	2	60	45	10300	2700	4600	4600	ADQ	ADQ	ADQ	Min	Sub	
		Nix Creek Rd. (SR 1191) - Sugar Hill Rd. (SR 1001)	McDowell Co.	0.8	18	2	60	45	10300	4200	6400	6400	ADQ	ADQ	ADQ	Min	Sub	

PUBLIC TRANSPORTATION AND RAIL

RAIL												
				Speed		Existing System			Proposed System			
Local ID	Facility/ Route	Section (From - To)	Class	Limit (mph)	Distance (mi)	Type	ROW (ft)	Trains per day	Type	ROW (ft)	Trains per day	Other Modes
	Norfolk Southern Railroad (TR Line)	Mitchell County Line - Rutherford County Line	I	5-30	31	Freight	25-100	15	--	--	--	--
	CSX Railroad (TR Line)	Buncombe County Line - Burke County Line	I	5-30	76	Freight	25-100	12	--	--	--	--

BICYCLE AND PEDESTRIAN

BICYCLE								
				Existing System		Proposed System		
				Cross-Section				Other
Local ID	Facility/ Route	Section (From - To)	Distance (mi)	(ft)	lanes	Type	Cross-Section	Modes
Old Fort								
MCDO0001-B	**US 70**	Orchard St (local Road) - Catawaba Ave	0.07			On Road	2C	
	US 70	Catawaba Ave - Greenlee Rd	1.09			On Road	2B	
	US 70	Greenlee Rd - Twin Lake Drive	4.77			On Road	2A	
	US 70	Twin Lake Dr - NC-80	3.96			On Road	3A	
	US 70	NC-80 - Marion CTP Boundary	0.18			On Road	3A	

MULTI-USE PATH								
				Existing System		Proposed System		Other
Local ID	Facility/ Route	Section (From - To)	Distance (mi)	Side of Street	Cross-Section	Side of Street	Cross-Section	Modes
MCDO0001-M	McDowell Greenway	0.4 Mi west of Lackeytown Rd - Marion CTP West Boundary	9.1				MA	
		Marion CTP East Boundary - Deerfield Road	1.14				MA	

Appendix D
Typical Cross Sections

Cross section requirements for roadways vary according to the capacity and level of service to be provided. Universal standards in the design of roadways are not practical. Each roadway section must be individually analyzed and its cross section determined based on the volume and type of projected traffic, existing capacity, desired level of service, and available right-of-way. These cross sections are typical for facilities on new location and where right-of-way constraints are not critical. For widening projects and urban projects with limited right-of-way, special cross sections should be developed that meet the needs of the project.

The typical cross sections were updated on December 7, 2010 to support the Department's "Complete Streets" policy that was adopted in July 2009. This guidance established design elements that emphasize safety, mobility, and accessibility for multiple modes of travel. These "typical" cross sections should be used as preliminary guidelines for comprehensive transportation planning, project planning and project design activities. The specific and final cross section details and right of way limits for projects will be established through the preparation of the National Environmental Policy Act (NEPA) documentation and through final plan preparation.

On all existing and proposed roadways delineated on the CTP, adequate right-of-way should be protected or acquired for the recommended cross sections. In addition to cross section and right-of-way recommendations for improvements, Appendix C may recommend ultimate needed right-of-way for the following situations:

- roadways which may require widening after the current planning period,
- roadways which are borderline adequate and accelerated traffic growth could render them deficient, and
- roadways where an urban curb and gutter cross section may be locally desirable because of urban development or redevelopment.
- roadways which may need to accommodate an additional transportation mode

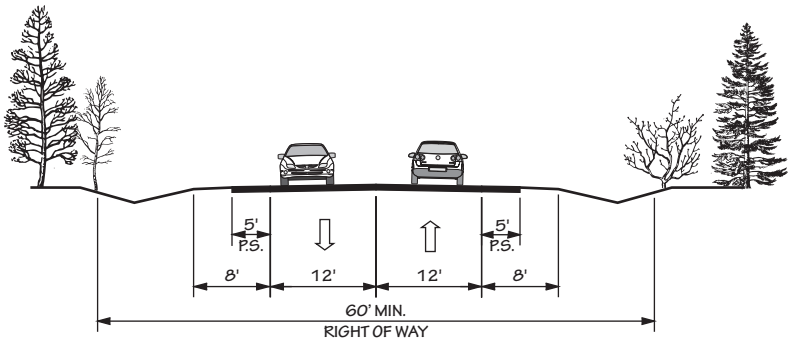
FIGURE 9

TYPICAL HIGHWAY CROSS SECTIONS

2 LANES

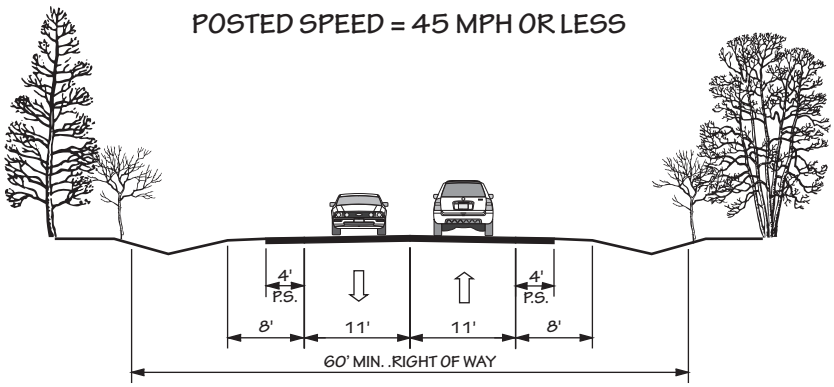
2 A

WIDE PAVED SHOULDERS
POSTED SPEED = 55 MPH



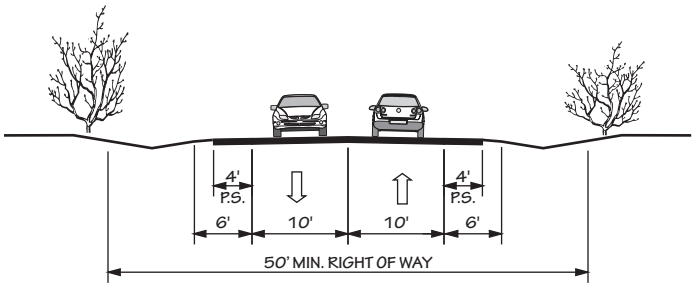
2 B

WIDE PAVED SHOULDERS
POSTED SPEED = 45 MPH OR LESS



2 C

WIDE PAVED SHOULDERS
POSTED SPEED = 35 MPH OR LESS



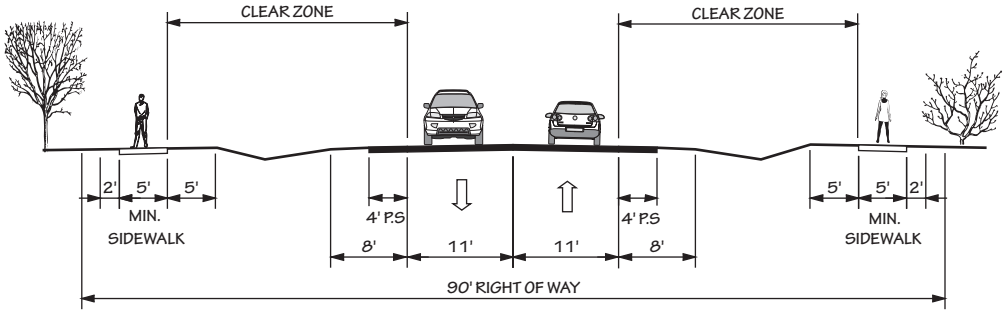
Revised 12/07/2010

TYPICAL HIGHWAY CROSS SECTIONS

2 LANES

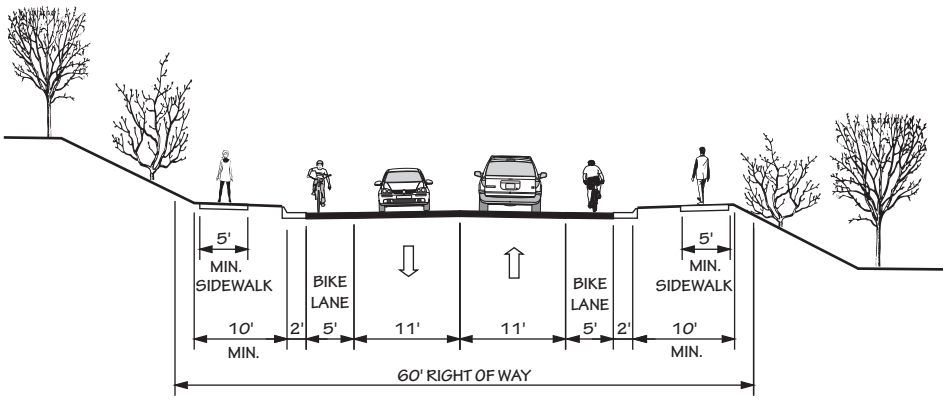
2 D

SIDEWALK PLACEMENT BEHIND A ROADWAY DITCH



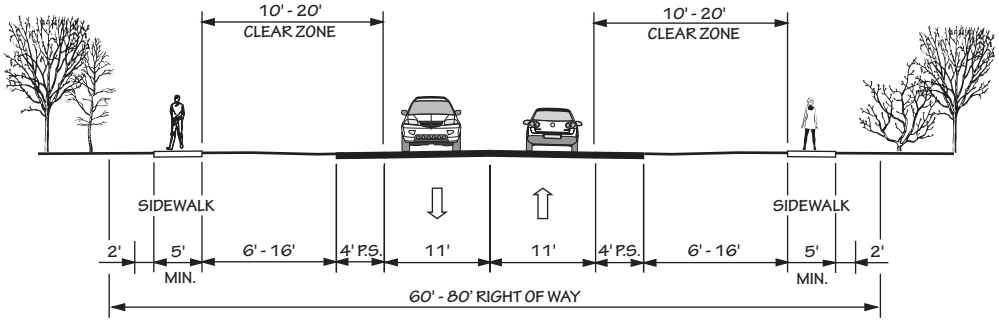
2 E

CURB AND GUTTER
WITH BIKE LANES AND SIDEWALKS



2 F

BUFFERS AND SIDEWALKS WITHOUT A ROADWAY DITCH
(20 MPH TO 45 MPH)
(TYPICALLY COASTAL AREA MANAGEMENT ACT COUNTIES)



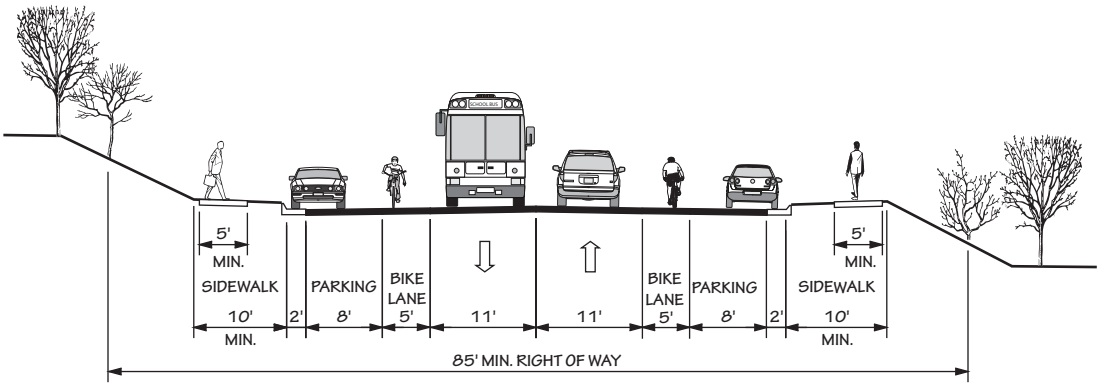
Revised 12/07/2010

TYPICAL HIGHWAY CROSS SECTIONS

2 LANES

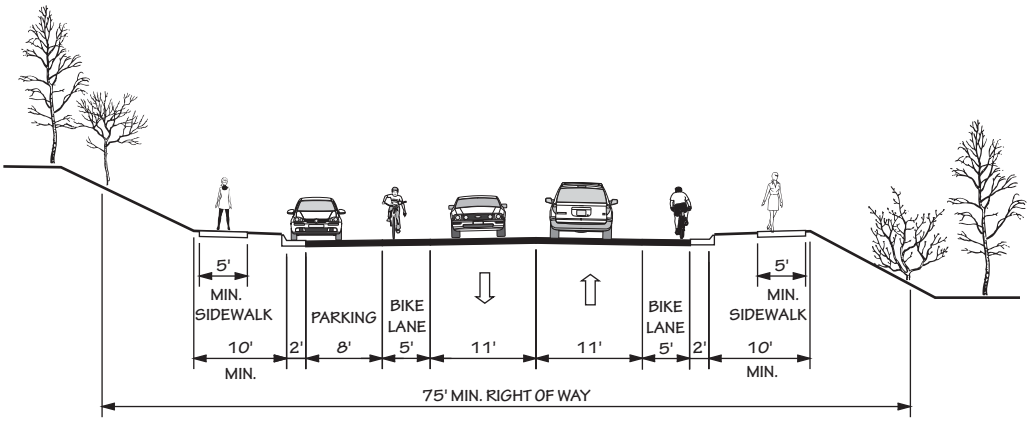
2 G

CURB & GUTTER - PARKING ON EACH SIDE



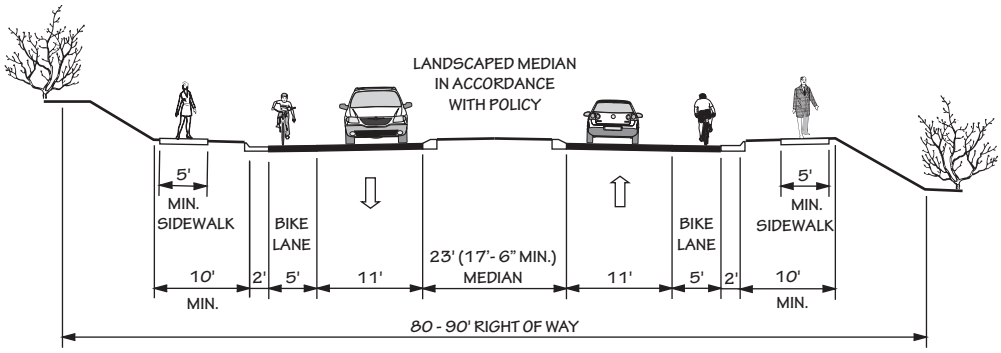
2 H

CURB & GUTTER - PARKING ON ONE SIDE



2 I

RAISED MEDIAN WITH CURB & GUTTER



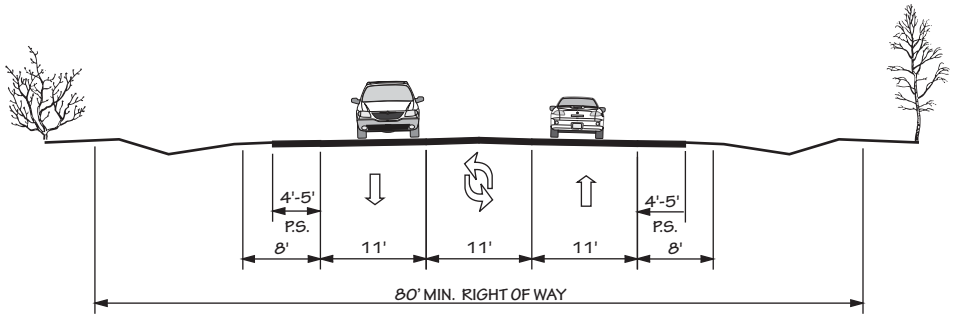
Revised 12/07/2010

TYPICAL HIGHWAY CROSS SECTIONS

3 LANES

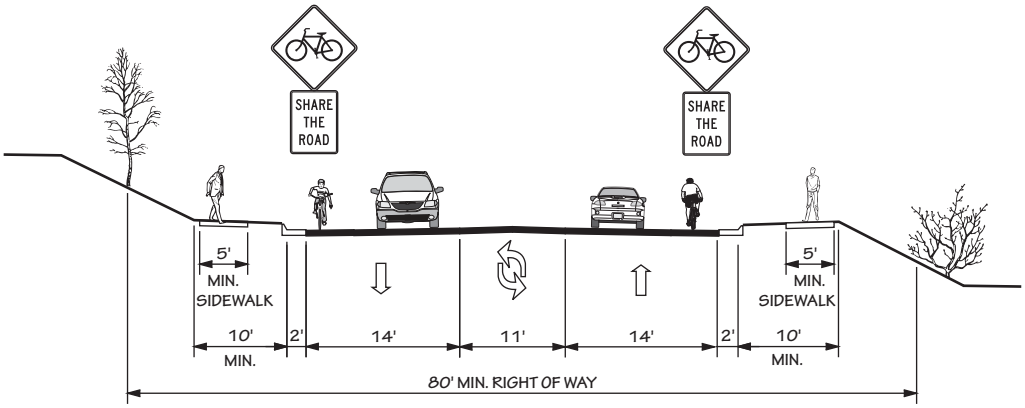
3 A

WIDE PAVED SHOULDERS



3 B

CURB & GUTTER WITH WIDE OUTSIDE LANES AND SIDEWALKS



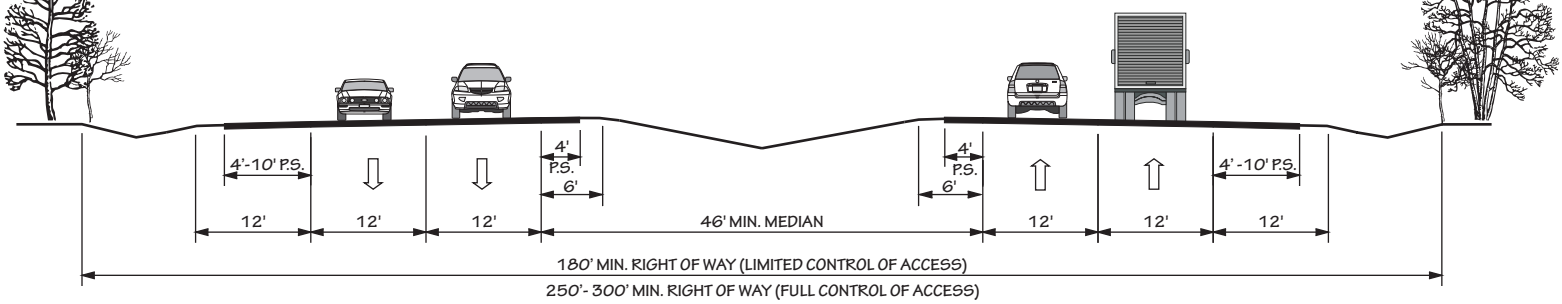
Revised 12/07/2010

TYPICAL HIGHWAY CROSS SECTIONS

4 LANES

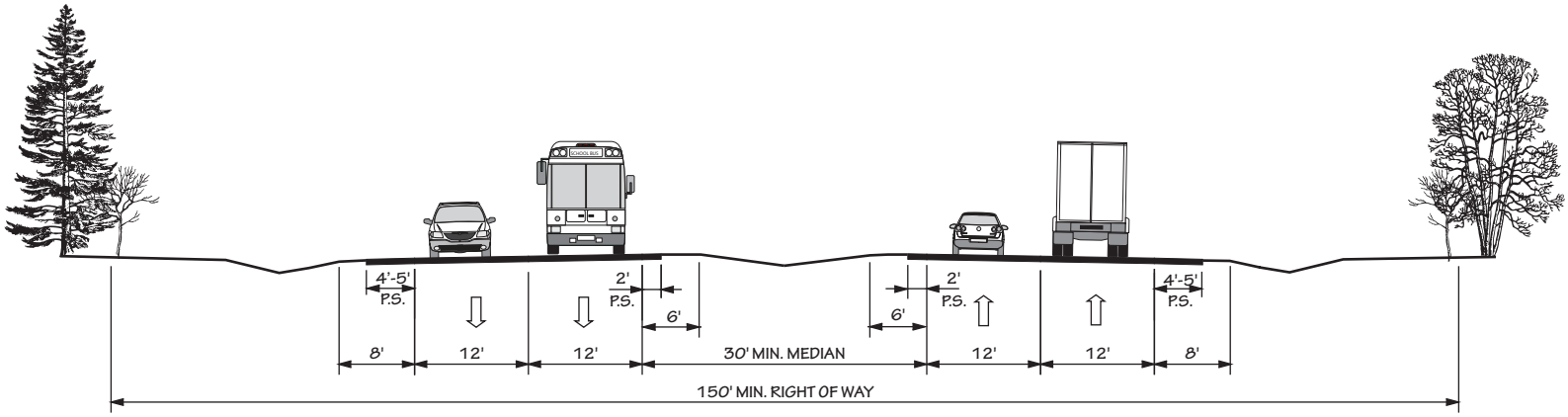
4 A

DIVIDED WITH MEDIAN
FULL OR LIMITED CONTROL OF ACCESS



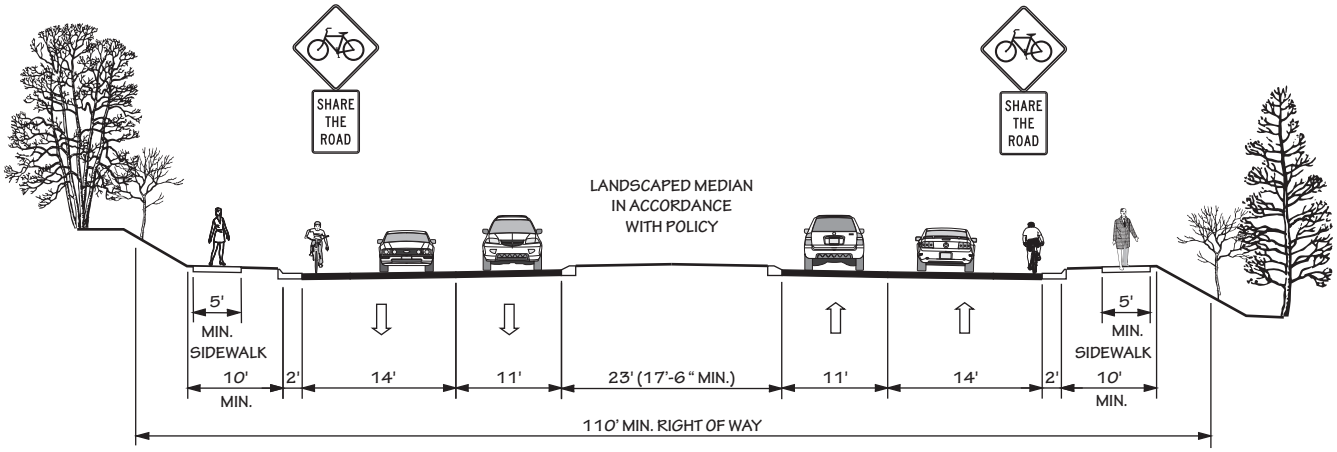
4 B

DIVIDED WITH MEDIAN - NO CURB & GUTTER
PARTIAL CONTROL OF ACCESS



4 C

RAISED MEDIAN WITH WIDE OUTSIDE LANES AND SIDEWALKS



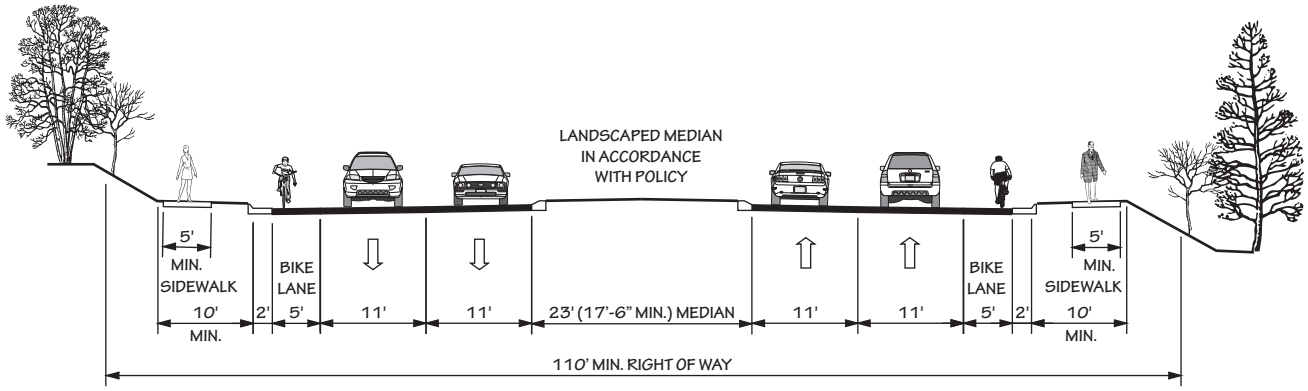
Revised 12/07/2010

TYPICAL HIGHWAY CROSS SECTIONS

4 LANES

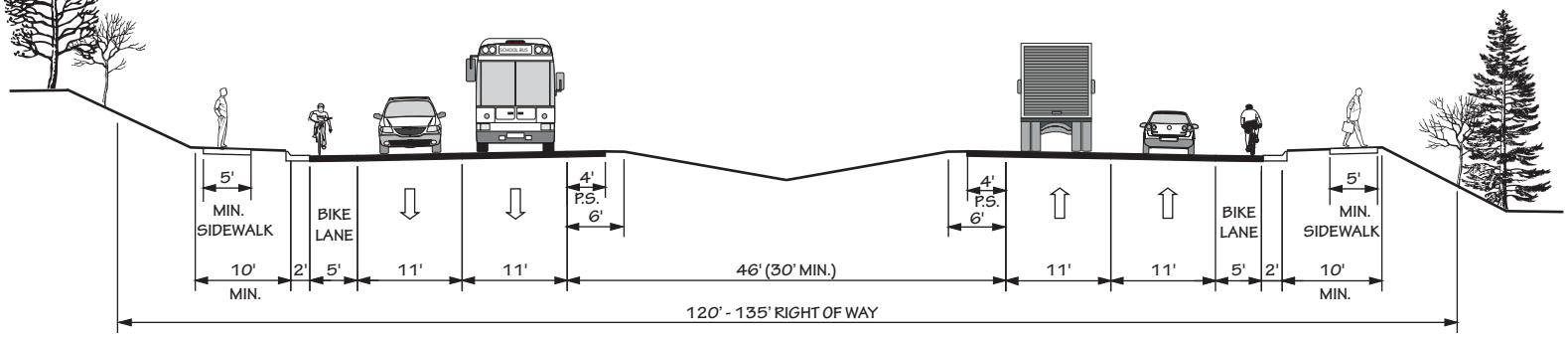
4 D

RAISED MEDIAN - CURB & GUTTER WITH BIKE LANES AND SIDEWALKS



4 E

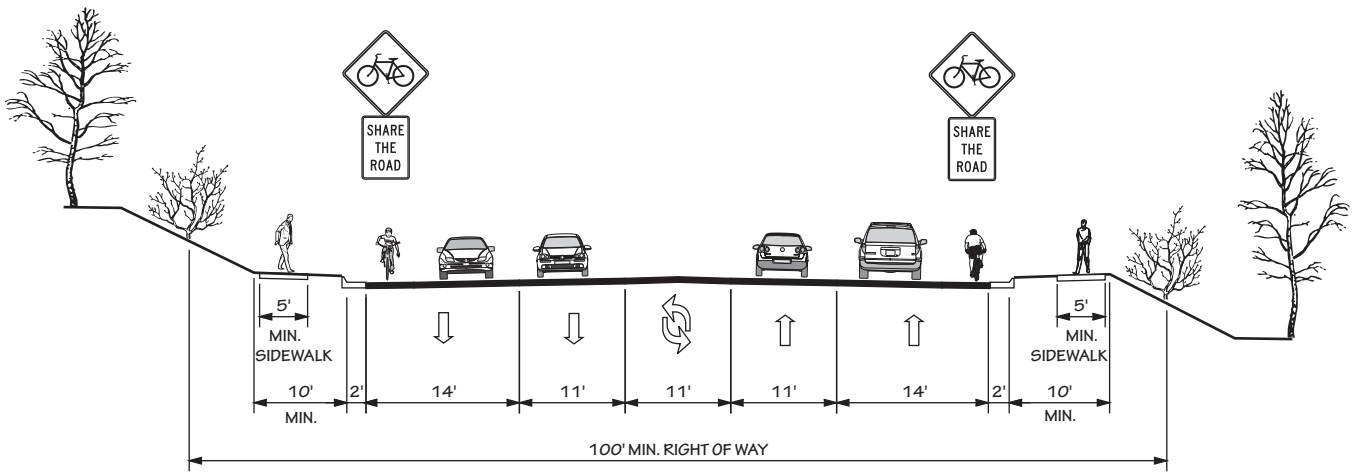
GRASS MEDIAN WITH BIKE LANES AND SIDEWALKS



5 LANES

5 A

WIDE OUTSIDE LANES



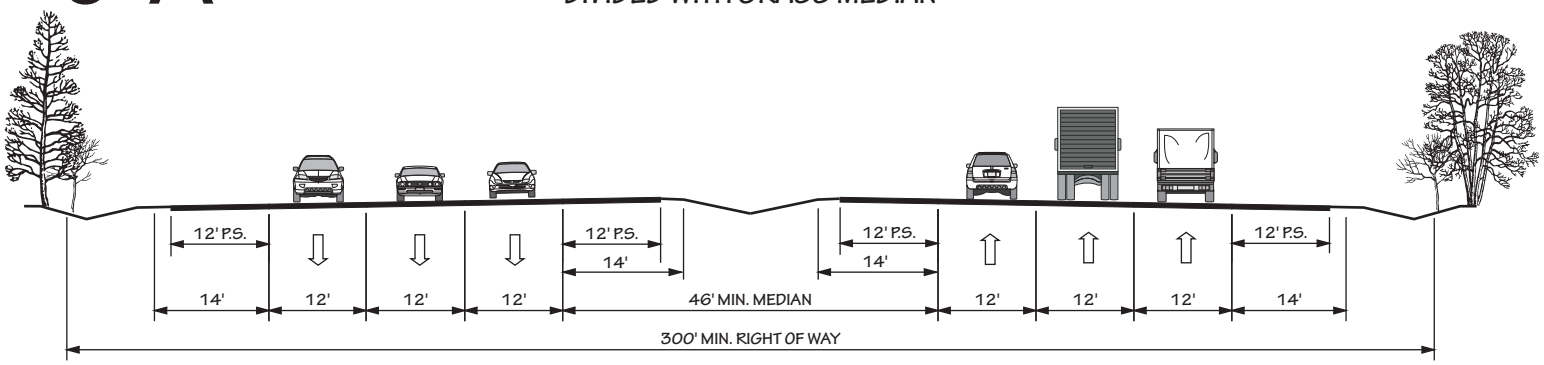
Revised 12/07/2010

TYPICAL HIGHWAY CROSS SECTIONS

6 LANES

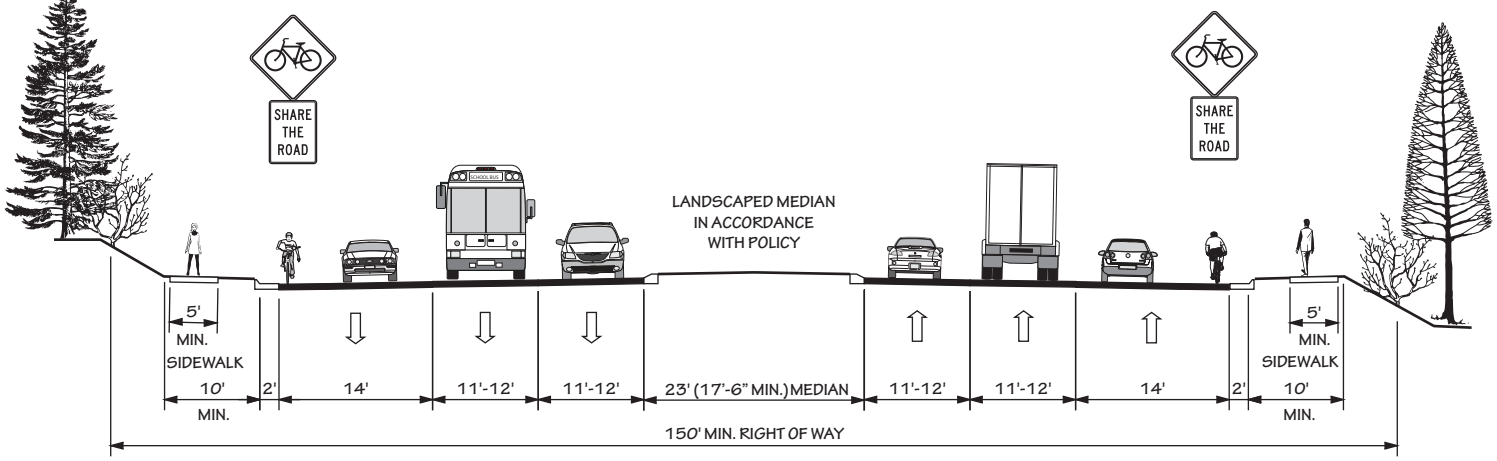
6 A

DIVIDED WITH GRASS MEDIAN



6 B

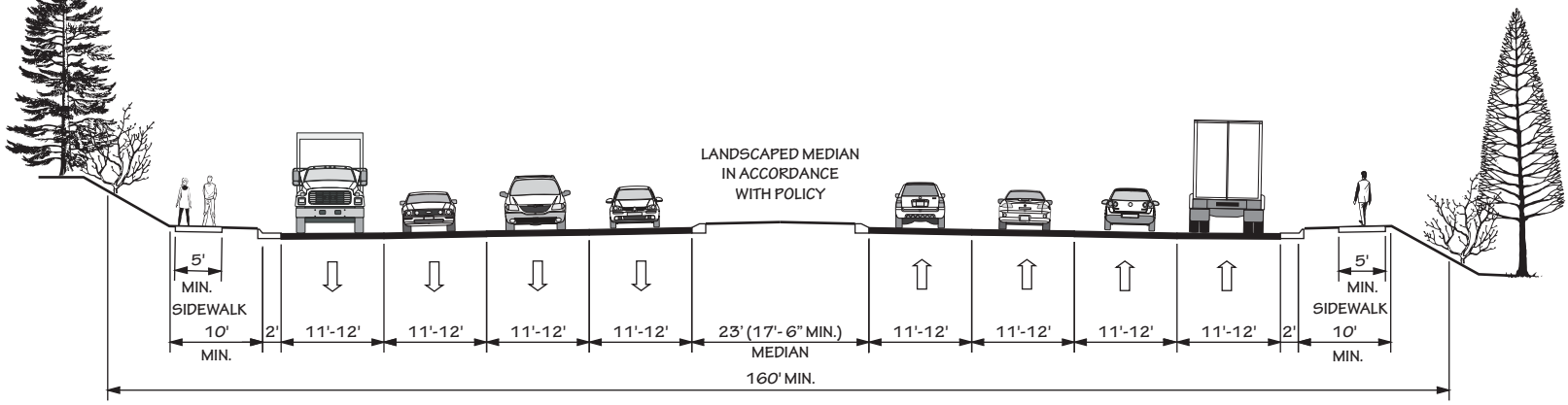
RAISED MEDIAN - CURB & GUTTER WITH WIDE OUTSIDE LANES AND SIDEWALKS



8 LANES

8 A

RAISED MEDIAN - CURB & GUTTER WITH SIDEWALKS

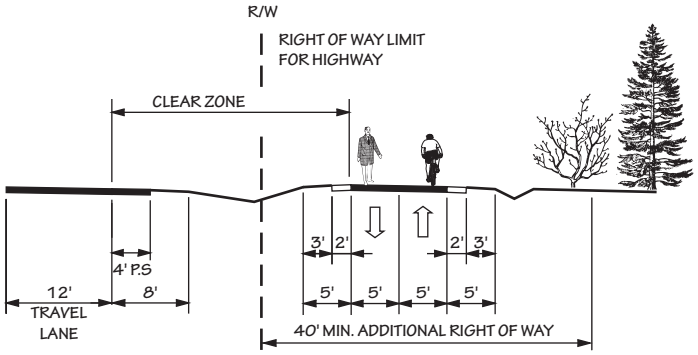


Revised 12/07/2010

TYPICAL MULTI - USE PATH

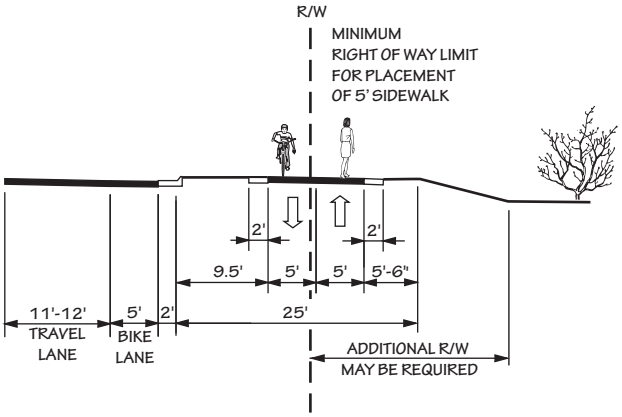
MULTI - USE PATH
ADJACENT TO RIGHT OF WAY OR SEPARATE PATHWAY

M A



MULTI - USE PATH ADJACENT TO CURB AND GUTTER

M B



Appendix E
Level of Service Definitions

The relationship of travel demand compared to the roadway capacity determines the level of service (LOS) of a roadway. Six levels of service identify the range of possible conditions. Designations range from LOS A, which represents the best operating conditions, to LOS F, which represents the worst operating conditions.

Design requirements for roadways vary according to the desired capacity and level of service. LOS D indicates “practical capacity” of a roadway, or the capacity at which the public begins to express dissatisfaction. Recommended improvements and overall design of the transportation plan were based upon achieving a minimum LOS D on existing facilities and a LOS C on new facilities. The six levels of service are described below and illustrated in Figure 10.

- **LOS A**: Describes free-flow operations. Free Flow Speed (FFS) prevails and vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The effects of incidents or point breakdowns are easily absorbed.
- **LOS B**: Represents reasonably free-flow operations, and FFS is maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and point breakdowns are still easily absorbed.
- **LOS C**: Provides for flow with speeds near the FFS. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service quality will be significant. Queues may be expected to form behind any significant blockages.
- **LOS D**: The level at which speeds begin to decline with increasing flows, with density increasing more quickly. Freedom to maneuver within the traffic stream is seriously limited and drivers experience reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.
- **LOS E**: Describes operation at capacity. Operations at this level are highly volatile because there are virtually no usable gaps within the traffic stream, leaving little room to maneuver within the traffic stream. Any disruption to the traffic stream, such as vehicles entering from a ramp or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic flow. At capacity, the traffic stream has no ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious breakdown and substantial queuing. The physical and psychological comfort afforded to drivers is poor.
- **LOS F**: Describes breakdown, or unstable flow. Such conditions exist within queues forming behind bottlenecks.

Figure 10 - Level of Service Illustrations

Source: 2010 Highway Capacity Manual, Exhibit 11-4

Appendix F
Traffic Crash Analysis

A crash analysis performed for the McDowell County CTP factored crash frequency, crash type, and crash severity. Crash frequency is the total number of reported collisions and contributes to the ranking of the most problematic intersections. Crash type provides a general description of the crash and allows the identification of any trends that may be correctable through roadway or intersection improvements. Crash severity is the crash rate based upon injuries and property damage incurred.

The severity of every crash is measured with a series of weighting factors developed by the NCDOT Division of Highways (DOH). These factors define a fatal or incapacitating crash as 47.7 times more severe than one involving only property damage and a crash resulting in minor injury is 11.8 times more severe than one with only property damage. In general, a higher severity index indicates more severe accidents. Listed below are levels of severity for various severity index ranges.

Severity	Severity Index
low	< 6.0
average	6.0 to 7.0
moderate	7.0 to 14.0
high	14.0 to 20.0
very high	> 20.0

Table 4 depicts a summary of the crashes occurring in the planning area between January 1, 2007 and December 31, 2009. The data represents locations with 10 or more crashes or 2 crashes and a severity average index a greater than that of the state's index. The state index for the most recent 3 year span (2007-2009) was 4.57 for primary routes and 4.93 for secondary routes. The "Total" column indicates the total number of crashes reported within 150-ft of the intersection during the study period. The severity listed is the average crash severity for that location.

The NCDOT is actively involved with investigating and improving many of these locations. To request a more detailed analysis for any of the locations listed in Table 1, or other intersections of concern, contact the Division Traffic Engineer. Contact information for the Division Traffic Engineer is included in Appendix A.

Table 4 - Crash Locations

Map Index	Intersection	Average Severity	Total Collisions
1	I US 70 and SR 1536 (Old Number 10 Rd)	3.47	15
2	US 221 and SR 1569 (North Cove School Rd)	38.90	2
3	US 70 and SR 1417 (Paxton Creek Rd)	16.10	6
4	US 70 and SR 1539 (Roland's Chapel Rd)	8.40	4
5	US 70 and SR 1413 (Burnette Rd)	8.40	2
6	SR 1103 (Bat Cave Rd) and SR 1258 (Camp Ground Rd)	8.40	2
7	SR 1759 (Lawing Rd) and (SR 1760 (Harmony Grove Chuch Rd)	16.10	2
8	SR 1135 (Old Fort-Sugar Hill Rd) and SR 1238 (Golfcourse Rd)	8.40	2
9	US 70 and SR 1429 (Clear Creek Rd)	8.40	3
10	US 221 and SR 1566 (Pepper Creek Rd)	8.40	2
11	NC 226 and SR 1771 (Dairy Rd)	8.40	2
12	US 70 and SR 1214 (Old Greenlee Rd)	8.40	4
13	NC 126 and SR 1536 (Memorial Park Rd)	8.40	2
14	SR 1536 (Memorial Park Rd) and SR 1544 (Ned McGrimsey Rd)	8.40	2
15	NC 226 and SR 1764 (Pinnacle Church Rd)	8.40	3
16	I-40 and SR 1103 (Bat Cave Rd)	8.40	2
17	US 70 and SR 1223 (Walnut St)	8.40	3
18	NC 226 and SR 1777 (Landis Ln)	8.40	2
19	US 70 and SR 1427 (Padgett Dr)	6.92	5
20	SR 1100 (Mt Hebron Rd) and SR 1103 (Bat Cave Rd)	5.93	3
21	NC 126 and SR 1548 (Wildlife Rd)	5.93	3

Table 4 - Crash Locations

Map Index	Intersection	Average Severity	Total Collisions
22	US 70 and SR 1232 (Ebenezer Church Rd)	5.93	3
23	US 70 and SR 1747 (Stacy Hill Rd)	5.44	5
24	US 221 and SR 1556 (American Tread Rd)	5.44	5
25	US 70 and SR 1415 (Johnson Hollow Rd)	4.70	2
26	US 70 and NC 126	4.70	2
27	I-40 and SR 1246 (Greenlee Rd)	4.70	2
28	US 70 and SR 1449 (Circle Dr)	4.70	2
29	US 70 and SR 1412 (Mackey Creek Rd)	4.70	2
30	NC 226 and SR 1755 (Gaddy Rd)	4.70	2
31	I-40 and SR 1103 (Catawba Ave)	4.70	2
32	US 70 and SR 1410 (Can Creek Rd)	4.70	4
33	US 221 and SR 1434 (Tom's Creek Rd)	4.70	4
34	US 70 and SR 1280 (Forest Hill Dr)	4.70	2
35	US 70 and SR 1225 (Shuford Dr)	4.70	2

Appendix G
Bridge Deficiency Assessment

The Transportation Improvement Program (TIP) development process for bridge projects involves consideration of several evaluation methods in order to prioritize needed improvements. A sufficiency index is used to determine whether a bridge is sufficient to remain in service, or to what extent it is deficient. The index is a percentage in which 100 percent represents an entirely sufficient bridge and zero represents an entirely insufficient or deficient bridge. Factors evaluated in calculating the index are listed below.

- structural adequacy and safety
- serviceability and functional obsolescence
- essentiality for public use
- type of structure
- traffic safety features

The NCDOT Structure Management Unit inspects all bridges in North Carolina at least once every two years. A sufficiency rating for each bridge is calculated and establishes the eligibility and priority for replacement. Bridges having the highest priority are replaced as Federal and State funds become available.

A bridge is considered deficient if it is either structurally deficient or functionally obsolete. Structurally deficient means there are elements of the bridge that need to be monitored and/or repaired. The fact that a bridge is "structurally deficient" does not imply that it is likely to collapse or that it is unsafe. It means the bridge must be monitored, inspected and repaired/replaced at an appropriate time to maintain its structural integrity. A functionally obsolete bridge is one that was built to standards that are not used today. These bridges are not automatically rated as structurally deficient, nor are they inherently unsafe. Functionally obsolete bridges are those that do not have adequate lane widths, shoulder widths, or vertical clearances to serve current traffic demand or to meet the current geometric standards, or those that may be occasionally flooded.

A bridge must be classified as deficient in order to qualify for Federal replacement funds. Additionally, the sufficiency rating must be less than 50% to qualify for replacement or less than 80% to qualify for rehabilitation under federal funding. Deficient bridges within the planning area are listed in Table 5.

Table 5 - Deficient Bridges

Bridge Number	Facility	Feature	Condition	Local ID
17	US221	SECOND BROAD RIVER	SD/FO	B-3673
19	SR1143	COVE CREEK	SD/FO	
22	SR1001	SECOND BROAD RIVER	FO	
23	NC80	BUCK CREEK	FO	
25	SR1221	CATAWBA RVR & PRIVATE RD	FO	
46	SR1135	CROOKED CREEK	SD/FO	
52	SR1105	CREEK	SD	
54	SR1803	NORTH MUDDY CREEK	SD/FO	
62	SR1536	CREEK	FO	
64	SR1760	CREEK	SD/FO	
67	SR1741	CREEK	FO	
71	SR1552	CREEK	FO	
77	SR1501	CREEK	SD/FO	
84	SR1234	I-40	FO	
85	SR1274	CATAWBA RIVER	SD/FO	
86	SR1116	MILL CREEK	FO	
90	SR1407	MILLS CREEK	SD	
100	I-40 EBL	CROOKED CR.,PRIVATE DR.	FO	
108	SR1560	NORTH FORK RIVER	SD	
116	SR1560	CREEK	SD	
118	SR1560	CREEK	SD	
119	US221	NORTH COVE CREEK	FO	R-2596
121	SR1191	I-40	FO	
122	SR1560	CREEK	SD	
123	SR1560	CREEK	SD	
125	SR1560	CREEK	SD	
126	SR1560	CREEK	SD	
127	US70	SOUTHERN RR	FO	
134	SR1433	CREEK	SD	
144	SR1741	I-40	FO	
160	I-40 EBL	SR1763,MUDDY CREEK	FO	
167	SR1539	CREEK	SD	
177	SR1240	CREEK	SD/FO	
186	SR1566	PEPPER'S CREEK	SD/FO	
187	SR1100	CROOKED CREEK	FO	
194	SR1559	CREEK	FO	
200	SR1741	CREEK	FO	

.

Table 5 - Deficient Bridges

Bridge Number	Facility	Feature	Condition	Local ID
204	SR1102	CREEK	SD/FO	
210	SR1246	CANE CREEK	FO	
232	SR1101	CREEK	SD/FO	
234	SR1241	CREEK	SD	
241	SR1750	BRANCH N.MUDDY CREEK	SD	
242	SR1112	CREEK	SD	
245	SR1128	CREEK	SD	
266	SR1103	LITTLE CROOKED CREEK	FO	
267	SR1103	CATAWBA RIVER	SD/FO	
275	SR1401	MILL CREEK	FO	
291	SR1438	BUCK CREEK	SD	
294	SR1796	BRANCH N.MUDDY CREEK	SD/FO	
301	SR1247	CREEK	FO	
308	SR1568	CREEK	FO	
311	SR1781	SECOND BROAD RIVER	FO	
312	SR1781	SECOND BROAD RIVER	SD	
337	SR1760	CREEK	SD	
338	SR1760	CREEK	SD	
346	SR1227	NEWBERRY CREEK	FO	
347	SR1227	CURTIS CREEK	FO	

FO – Functionally Obsolete
SD – Structurally Deficient

Appendix H
Public Involvement

Include in this appendix are the following:

- Listing of committee members; page H-1
- Vision statements; page H-2
- G/O survey with summation of results; page H-4; and
- Summary of each public involvement opportunity including the types of information presented, number of attendees, and any major/potentially controversial issues; page H-14

Committee Members

The Madison County CTP Steering Committee served as the CTP coordinating committee to guide development of the plan. Listed below are the members of the Madison CTP Steering Committee during the CTP process.

Ron Harmon
McDowell County Planning Administrator

Weyland Prebor
McDowell Senior Center

Joy Shuford
Manager, Town of Mars Hill

Jerry Broome
McDowell County Workforce

Mary Smith
Health Department

Bill Hendley
McDowell Trails

Garland Norton
Mayor, Town of Old Fort

MEDA
Division 13 Project Manager

Chuck Abernathy
Manager, McDowell County

Joy Shuford
Footfills Industries/Transit

Asheley Wooten
Assistant Manager, McDowell County

Doug McNeal
District Engineer, Division 13

Mr. Lloyd Cuthbertson
McDowell School/Marion

Jay Swain
Division Engineer Division 13

Freedie Killough
Marion Downtown

Fay B. Wright
Realtors Association

Pat Perry
Public Transportation Division, NCDOT

Ron Birdsong
McDowell Chamber

McDowell County Vision Statement:

McDowell County provides a safe, efficient, accommodating, multi-modal transportation system that preserves and promotes the quality of life and economic vitality of the area.

Goal – Provide an efficient transportation system.

1. Objective – Able to access major arterials without having to use local streets to access them. (Connectivity between major arterials)
2. Objective –Main Street to serve primarily local traffic and not through traffic in order to maintain the walkability and character of Marion's central business district (CBD).

Goal – Provide an accommodating transportation system.

3. Objective –Designated truck routes should also accommodate other modes of transportation e.g. mopeds, bicycles, pedestrians.)
4. Objectives – Bike lanes on facilities that connect the central business district to major residential areas and major residential areas to schools.
5. Match land use with the design of the road and vice versa.

Goal – Provide a multi-modal transportation system.

6. Objective – Sidewalks to connect residential areas 2 miles to schools and to the downtown area within municipality boundaries.
7. Objective – Increase the amount of multi-modal paths to offer non-road alternatives to key destinations: recreational, educational, employment, and shopping.
8. Objective – Fifty Percent of the population to have access to multi-modal options based on need and time of day by 2040.
9. McDowell County supports the availability of rail service through it.

Goal: A transportation system that supports economic development

10. Objective – Access to businesses from roads.
11. Objective –Industries have direct access to a major thoroughfare when feasible.
12. Objective – Designated truck routes that are also signed well, and trucks are encouraged to use bypass.

Goal – A transportation system that preserves and promotes the quality of life in McDowell County

13. Objective – Residential areas within municipal boundaries have access to sidewalks.
14. Objective – A street network that allows vehicles to use major thoroughfares to get to key destinations in the area (e.g. schools and businesses) without having to primarily use residential streets.
15. Objectives – Have crosswalks at all major intersections within the CBD and, within 2 miles of schools within municipal boundaries.

16. Objective – Improve physical attributes of existing roads by installing guardrails at drop-off locations, and replacing long center turn lanes with a median with specific turn locations.
17. Objective – Add lighting at major intersections.

The following Goals/Objectives are not CTP specific but came from the CTP Committee and should be taken into consideration during the appropriate planning phase:

1. Objective – An efficient traffic signal system that allows traffic to flow at a LOS D.
2. Objective – Match design of road to desired speed limit of users.
3. Objective – Initiate a countywide education program by 2015 on the rights of bicyclist and pedestrians.
4. Objective – Have at least one electric vehicle charging station in the county by 2015 to accommodate electric vehicles.
5. Objective - Develop a transit system to assist aging by having a transit system that serves 45% of the population over the age of 62 by 2020.
6. Objective: Attractive, well-maintained shoulders, fencing, culverts, railing, and railroad right of way in CBD areas.
7. Objective – Local municipalities to develop a local collector street plan (responsibility of local officials)
8. Objective – Add appropriate, energy efficient lighting along sidewalks in town/city limits and on greenways with a goal.

Goals and Objectives Survey

The McDowell County's Comprehensive Transportation Plan (CTP) Survey was composed by McDowell County, Isothermal Rural Planning Organization (RPO), and NCDOT's Transportation Planning Organization. The purpose of the survey was to determine what transportation modes needed improvement within the county. The survey consisted of 29 questions that included multiple choice, ranking and short answer. The survey was distributed in two ways: electronically and paper. The Survey was advertised through press release to McDowell News and Mountain Xpress; links via County, City, IPDC, and NCDOT websites; and continuous Facebook Group. Paper survey copies available at:

McDowell Senior Center (with drop box)
McDowell County Public Library (with drop box)
Marion Davis Memorial Branch Library (with drop box)
County Administration Building (with drop box)
DSS/Section 8 office (including paper survey in Spanish)
RPM Health Department (including paper survey in Spanish with drop box)
Marion City Hall (with drop box)
Old Fort Town Hall (with drop box)

A total of 141 people completed the survey, even though 170 people started the survey. Each question is summarized below.

Question 1: Do you live in McDowell County?

A total of 169 people answered this question. 152 (89.9%) people responded with a "Yes", while 17 (10.1%) people responded with a "No". One respondent skipped this question.

Question 2: In which zip code do you live?

The 5 options that were given were: 28749, 28737, 28761, 28762, & 28752. There were a total of 149 responses for these options. There were 2 (1.3%) residents in 27849. There was 1 (0.7%) resident in 28737. There were 19 (12.8%) residents in 28761. There were 16 (10.7%) residents in 28762. There were 111 (74.5%) residents in 28752. There were 3 residents who specified a different zip code in the response. The other three zip codes were: 28709, 28777, & 28752. Twenty one respondents skipped this question.

Question 3: Do you work in McDowell County?

A total of 169 people answered this question. 116 (68.6%) people responded with a "Yes", while 53 (31.4%) people responded with a "No". One respondent skipped this question.

Question 4: The fourth question was asked in two parts:

Part 1: In which county do you work?

There were a total of 30 responses for this question. The answers were: Burke (6), Avery (1), Buncombe (6), Mitchell (1), Alexander (1), Rutherford (4), Retired (7), Hayes Texas County (1), N/A (3).

Part 2: What is the primary route you take to work?

There were a total of 21 responses for this question. The answers were: I-40 (9), US-221 (3), US 74(4), US 19E (1), US 70 (2), Retired (1), N/A (1).

One hundred and forty respondents skipped this question.

Question 5: What is your occupation?

There were a total of 150 responses for this question. A few answers out of the 150 answers were: Retired, Hair Stylist, Nurse (RN), County Employee, Case Worker, Retail, Fast Food, School System Employee, Data Coordinator, CPA, Board Member, Instructor, Business Coordinator, Receptionist, Biologist, Clerical/Receptionist, Engineer, Student, Dental Hygienist, Pastor, House Wife, Employed Artist, Cook. Twenty respondents skipped this question.

Question 6: Do you find yourself driving out of McDowell County for anything other than work on a daily basis?

A total of 160 people answered this question. 114 (71.3%) people responded with a “No”, while 46 (28.8%) people responded with a “Yes”. Ten respondents skipped this question.

Question 7: Would you use the following transportation facilities instead of your own personal vehicle if they were provided?

The total responses given were 156. The five options given for this question were: sidewalks, off-road trails or greenways for walking and biking, on-road facilities such as bike lanes and wide shoulders, bus/transit service, & rail service (throughout the county and to nearby towns). The sidewalk had a total of 144 responses; 127 (88.2%) said “Yes” while 17 (11.8%) said “No”. The off-road trails or greenways for walking and biking had a total of 149 responses; 135 (90.6%) said “Yes” while 14 (9.4%) said “No”. The on-road facilities such as bike lanes and wide shoulders had a total of 136 responses; 78 (57.4%) said “Yes” while 58 (42.6%) said “No”. The bus/transit service had a total of 137 responses; 86 (62.8%) said “Yes” while 51 (37.2%) said “No”. The rail service (throughout the county and to nearby towns) had a total of 146 responses; 113 (77.4%) said “Yes” while 33 (22.6%) said “No”.

The second part of this question asks for further comments: If you answered "Yes" to Bus/transit service, to and from what locations would you use it? There were 63 responses to this question. A few of the answers that were given were: Old Fort to Marion/ Morganton/Asheville, Black Mountain Asheville, Doctors, Shopping, Medical, City Hall/YMCA/Senior Center/ Hospital/Wal-Mart, Old Fort to Downtown Asheville, Route 221 & Route 70, Work, Grocery Stores, Everywhere. Fourteen respondents skipped this question.

Question 8: If transit service were available how much additional time would you be willing to add to your trip? Would you use it? (Note: Transit service can include bus routes, van routes, vanpools, scheduled passenger pick-up, park-and-ride lots). The options given were: would not use, less than 15 minutes, between 15 and 29 minutes, between 30 and 44 minutes, between 45 and 59 minutes, and one hour or more.

The “would not use” got 43 (29.1%) responses. The “less than 15 minutes” got 20 (13.5%) responses. The “between 15 and 29 minutes” got 51 (34.5%) responses. The “between 30 and 44 minutes” got 20 (13.5%) responses. The “between 45 and 59 minutes” got 3 (2%) responses. The “one hour or more” got 11 (7.4%) responses. Twenty two respondents skipped this question.

Question 9: Please rank which type of transportation needs are greatest in McDowell County. (1 is needed most, 4 is needed least – please use each number only once).

There were four options given: new bicycle travel facilities, improved access to industry and shopping area, greater access to residential areas, and new sidewalks. These were rated from 1 to 4. The total responses given were 154. New bicycle travel facilities had a total response of 141, with a rating average of 2.51. The ranking was between 1 (needed the most) to 4 (needed the least). The 1 rating got 43 (30.5%) responses, the 2 rating got 26 (18.4%) responses, the 3 rating got 29 (20.6%) responses, and the 4 rating got 43 (30.5%) responses. Improved access to industry and shopping areas had a total response of 130, with a rating average of 2.11. The ranking was between 1 (needed the most) to 4 (needed the least). The 1 rating got 51 (39.2%) responses, the 2 rating got 28 (21.5%) responses, the 3 rating got 37 (28.5%) responses, and the 4 rating got 14 (10.8%) responses. Greater access to residential areas had a total response of 133, with a rating of 2.83. The ranking was between 1 (needed the most) to 4 (needed the least). The 1 rating got 16 (12%) responses, the 2 rating got 37 (27.8%) responses, the 3 rating got 33 (24.8%) responses, and the 4 rating got 47 (35.3%) responses. New sidewalks had a total response of 144, with a rating of 2.27. The ranking was between 1 (needed the most) to 4 (needed the least). The 1 rating got 40 (27.8%) responses, the 2 rating got 48 (33.3%) responses, the 3 rating got 33 (22.9%)

responses, and the 4 rating got 23 (16%) responses. Sixteen respondents skipped this question.

Question 10: Please rank the following major roadways in McDowell County in the order by which they need to be improved (meaning providing better traffic movement not maintenance issues): (1 needs most improvement; 10 needs least - please use each number only once). These were rated from 1 to 10.

The total response given was 134. The options given for choices were: I-40, US 64, US 70, US 221, US 221B, NC 80-Lake Tahoma Road, NC 126- Lake James Road, NC 226, NC 226A, and SR 1001- Sugar Hill Rd/West Henderson Street. The total response count for I-40 is 113. The total response count for US 64 is 105. The total response count for US 70 is 123. The total response count for US 221 is 114. The total response count for US 221B is 107. The total response count for NC 80-Lake Tahoma Road is 107. The total response count for NC 126- Lake James Road is 105. The total response count for NC 226 is 113. The total response count for NC 226A is 108. The total response count for SR 1001- Sugar Hill Rd/West Henderson Street is 109.

The second part of the question is: If you have another location in mind, or a specific part of any option listed above, please share your thoughts/details below. There were 12 responses to this question, but the one that repeated was Hankins Road.

Question 11: Identify any secondary roads that you feel need improvement (i.e. widening, guardrail, turn lanes / non-maintenance improvements). (Note: secondary roads are non-major roads and are not mentioned in the previous question).

There were a total of 55 responses given. The road that had the most responses was Hankins Road. Old Greenlee and Old No. 10 tied at number 2.

Question 12: Are you concerned with safety or crash problems at specific locations?

There were a total of 137 responses. 79 (57.7%) people responded with a “Yes”, while 58 (42.3%) people responded with a “No”.

Second part of the question asks to list those certain locations. The majority of the responses were US 221. The second highest response was US 70. Main Street got the third highest response.

Question 13: Do you use a lot of back roads/local roads because the main ones are too congested?

There were a total of 140 responses. 63 (45%) people responded with a “Yes”, while 77 (55%) people responded with a “No”.

The second part of the question asks to list congested location(s) avoided. There were a total of 32 responses. An overwhelming amount of people said that Main Street is congested. Following Main Street, the second most congested place is said to be US 70. Downtown Marion was third on the list.

Question 14: Is truck traffic a problem in the area?

There were a total of 142 responses. 59 (41.5%) people responded with a “Yes”, while 83 (58.5%) people responded with a “No”.

The second part of the question asks to list locations as a free response section. The answers were all very different. However, a few of the roads/highways mentioned more than once were: I-40, US 221, US 226, US 70, and Main Street.

Question 15: Identify any sidewalks that you feel need improvement or new.

There were 59 responses for this question. There were two areas that were repeated the most --- Carson Street and US 70. Following behind the top two, were Blue Ridge Terrace and Main Street.

Question 16: Identify any at-grade railroad (RR) crossings that are of concern to you.

There were a total of 38 responses. The RR crossings that were repeated the most were South Garden Street and Baldwin Avenue. One hundred and thirty two respondents skipped this question.

Question 17: How important are each of the following when considering transportation improvements for McDowell County (includes facilities for automobiles, pedestrians, bicycles, and transit)? (1 is most important; 5 is least important – please use each number only once).

There were a total of 137 individuals who responded. A total of 33 people skipped this question. Everyone was asked to rank each facility; the ranking was from 1 to 5. 1 was the most important, while 5 was the least important facility. The options for the facilities given on the survey were: Environmental preservation, travel choices (providing a range of auto, transit, biking and walking choices), community and cultural preservation, new economic development growth, and individual home or business preservation.

The environmental preservation had a total of 127 responses. 1 got a total of 19.7% (25) responses. 2 got a total of 26.8% (34) responses. 3 got a total of 14.2% (18) responses. 4 got a total of 11% (14). 5 got a total of 28.3% (36).

The travel choices (providing a range of auto, transit, biking and walking choices) had a total of 133 responses. 1 got a total of 37.6% (50) responses. 2 got a total of 20.3% (27) responses. 3 got a total of 9.8% (13) responses. 4 got a total of 12.8% (17). 5 got a total of 19.5% (26).

The community and cultural preservation had a total of 124 responses. 1 got a total of 8.9% (11) responses. 2 got a total of 13.7% (17) responses. 3 got a total of 36.3% (45) responses. 4 got a total of 33.9% (42). 5 got a total of 7.3% (9).

The new economic development growth had a total of 127 responses. 1 got a total of 26% (33) responses. 2 got a total of 24.4% (31) responses. 3 got a total of 22% (28) responses. 4 got a total of 21.3% (27). 5 got a total of 6.3% (8).

The individual home or business preservation had a total of 131 responses. 1 got a total of 13.7% (18) responses. 2 got a total of 16% (21) responses. 3 got a total of 16.8% (22) responses. 4 got a total of 19.1% (25). 5 got a total of 34.4% (45).

Question 18: Which of the following methods do you think are most effective to get traffic moving? (Please rank from 1 (most effective) to 5 (least effective) - Use each number only once). There were a total of 134 responses.

A total of 36 people skipped this question. There was a total of 5 options given for the different methods to get traffic moving, they included: Building additional travel lanes (widening a road); Controlling the frequency and locations of driveways and side streets that access the road/limit commercial land developed where each individual establishment has direct access to the road and parking areas (strip development); Improving intersections: better traffic signal timing, adding turn lanes and creating roundabouts; Encourage people to ride together or to use public transportation; Providing an alternative means of transportation (on-street bicycle lanes, park-and-ride lots, sidewalks, bike and pedestrian paths off road). Everyone was asked to rank each method; the ranking was from 1 to 5. 1 was the most effective, while 5 was the least effective method. The Building additional travel lanes (widening a road) got a total response of 126. 1 got a total of 23.8% (30) responses. 2 got a total of 18.3% (23) responses. 3 got a total of 16.7% (21) responses. 4 got a total of 19% (24). 5 got a total of 22.2% (28).

The Controlling the frequency and locations of driveways and side streets that access the road/limit commercial land developed where each individual establishment has direct access to the road and parking areas (strip development) got a total response of 122. 1 got a total of 10.7% (13) responses. 2 got a total of 16.4% (20) responses. 3 got a total of 17.2% (21) responses. 4 got a total of 26.2% (32). 5 got a total of 29.5% (36).

The Improving intersections: better traffic signal timing, adding turn lanes and creating roundabouts got a total response of 122. 1 got a total of 46.8% (59) responses. 2 got a total of 31.7% (40) responses. 3 got a total of 15.1% (19) responses. 4 got a total of 4.8% (6). 5 got a total of 1.6% (2).

The Encourage people to ride together or to use public transportation got a total response of 125. 1 got a total of 10.4% (13) responses. 2 got a total of 15.2% (19) responses. 3 got a total of 18.4% (23) responses. 4 got a total of 26.4% (33). 5 got a total of 29.6% (37).

The Providing an alternative means of transportation (on-street bicycle lanes, park-and-ride lots, sidewalks, bike and pedestrian paths off road) got a total response of 127. 1 got a total of 13.4% (17) responses. 2 got a total of 20.5% (26) responses. 3 got a total of 31.5% (40) responses. 4 got a total of 21.3% (27). 5 got a total of 13.4% (17).

Question 19: Which of the following are acceptable ways to you for addressing transportation deficiencies in McDowell County?

There were a total of 137 responses. A total number of 33 people skipped this question. There were a total of 6 options given for acceptable ways for addressing transportation deficiencies, they included: Carpooling/vanpooling; Restriction of access along major streets (example: right in and right out turns only allowed at some locations); Expanding/implementing transit service; Construction of new roads; Improving streets and highways through existing neighborhoods; Improving streets and highways through downtown business districts. The Carpooling/vanpooling had a total response of 122. “Yes” had a total of 62.3% (76) responses. “No” had a total of 37.7% (46) responses. The Restriction of access along major streets (example: right in and right out turns only allowed at some locations) had a total response of 121. “Yes” had a total of 51.2% (62) responses. “No” had a total of 48.8% (59) responses. The Expanding/implementing transit service had a total response of 132. “Yes” had a total of 86.4% (114) responses. “No” had a total of 13.6% (18) responses. Construction of new roads had a total response of 119. “Yes” had a total of 37% (44) responses. “No” had a total of 63% (75) responses. The Improving streets and highways through existing neighborhoods had a total response of 125. “Yes” had a total of 81.6% (102) responses. “No” had a total of 18.4% (23) responses. The Improving streets and highways through downtown business districts had a total response of 125. “Yes” had a total of 88.8% (111) responses. “No” had a total of 11.2% (14) responses.

Question 20: If additional money were needed to fund multi-modal transportation projects, would you vote in favor of the following? (Note: multi-modal transportation projects can include transit services, pedestrian accommodations,

on- and off-road accommodations for bicycles, greenways). This question required a Yes or No answer.

There were a total of 133 responses. A total number of 37 people skipped this question. There were a total of 4 options given for multi-modal transportation projects, they included: A gasoline tax increase; Charging developers impact fees to develop properties; A local bond referendum; New/additional parking fees. The “A gasoline tax increase” had a total of 123 responses. “Yes” had a total of 18.7% (23) responses. “No” had a total of 81.3% (100) responses. The “Charging developers impact fees to develop properties” had a total of 129 responses. “Yes” had a total of 89.1% (115) responses. “No” had a total of 10.9% (14) responses. “A local bond referendum” had a total of 124 responses. “Yes” had a total of 66.9% (83) responses. “No” had a total of 33.1% (41) responses. “The New/additional parking fees” had a total of 124 responses as well. “Yes” had a total of 48.4% (60) responses. “No” had a total of 51.6% (64) responses.

Question 21: Would you vote for bonds that would be used for the following: Maintenance of existing streets and highways; Construction of new major streets and highways; Sidewalk construction/improvements; Bus service; Construction of greenways; Bicycle lanes; Traffic signal improvements/coordination; Preserving lands for future roads; Landscaping/highway beautification. This question required a Yes or No answer.

There were a total of 131 people who responded. A total number of 39 people skipped this question. The Maintenance of existing streets and highways had a total of 118 responses. “Yes” had a total of 70.3% (83) responses. “No” had a total of 29.7% (35) responses. The Construction of new major streets and highways had a total of 112 responses. “Yes” had a total of 34.8% (39) responses. “No” had a total of 65.2% (73) responses. The Sidewalk construction/improvements had a total of 115 responses. “Yes” had a total of 70.4% (81) responses. “No” had a total of 29.6% (34) responses. The Bus service had a total of 124 responses. “Yes” had a total of 67.7% (84) responses. “No” had a total of 32.3% (40) responses. The Construction of greenways had a total of 118 responses. “Yes” had a total of 72.9% (86) responses. “No” had a total of 40% (48) responses. The Bicycle lanes had a total of 120 responses. “Yes” had a total of 60% (72) responses. “No” had a total of 40% (48) responses. The Traffic signal improvements/coordination had a total of 113 responses. “Yes” had a total of 65.5% (74) responses. “No” had a total of 34.5% (39) responses. The Preserving lands for future roads had a total of 110 responses. “Yes” had a total of 34.5% (38) responses. “No” had a total of 65.5% (72) responses. The Landscaping/highway beautification had a total of 115 responses. “Yes” had a total of 46.1% (53) responses. “No” had a total of 53.9% (62) responses.

Question 22: What level of congestion will you accept and live with daily before improvements should be made? (Please check only one).

There were a total of 134 responses. A total number of 36 people skipped this question. There were a total of 6 options given for level of congestion that is acceptable, they included: No delay or congestion at any time of the day (free flowing traffic); Little delay during rush hours. Wait of more than one red light occurs occasionally; Some congestion during rush hours. Frequent wait of more than one red light; Moderate congestion even in non-rush hours. Short traffic delays during much of the day; Heavy congestion. Long traffic delays during much of the day; Extreme congestion. Stop and go traffic throughout the day. Gridlock conditions in many areas. The “No delay or congestion at any time of the day (free flowing traffic)” had a total of 4 (3%) votes. The Little delay during rush hours. Wait of more than one red light occurs occasionally had a total of 45 (33.6%) votes. The “Some congestion during rush hours. Frequent wait of more than one red light” had a total of 61 (45.5%) votes. The “Moderate congestion even in non-rush hours. Short traffic delays during much of the day” had a total of 17 (12.7%) votes. The “Heavy congestion. Long traffic delays during much of the day” had a total of 3 (2.2%) votes. The “Extreme congestion. Stop and go traffic throughout the day. Gridlock conditions in many areas” had a total of 4 (3%) votes.

Question 23: How can transportation for business and industry be improved in McDowell County?

There was a total of 79 responses. A total number of 91people skipped this question. The top two answers were bus/shuttle service and any form of public transit/transportation.

Question 24: Do you have any other comments or concerns regarding the transportation system in McDowell County?

There were a total of 52 free responses. A total of 118 people skipped this question. There were a lot of various responses, but there were many that were constantly repeated in different ways. The one response that repeated the most is that the county needs all forms of public transportation (bus, van, shuttle, taxi etc.). The second request was to provide public transit for elders, veterans and the disabled.

Question 25: How would you classify your race? (Please check all that apply). There was a total of 6 options given, they were: Asian, Black, Hispanic, Native American, White & Other.

There were a total of 130 responses. A total number of 40 people skipped this question. The ‘Asian race” had a total of 2 (1.5%) responses. The “Black race” had a total of 1 (0.8%) response. The “Hispanic & Native American race” had a total of 0 responses. The White race had a total of 126 (96.9%) responses. The “Other” had a total of 2 (1.5%) responses.

Question 26: How many people live in your household, including yourself? The total options given were 7, they included: 1, 2, 3, 4, 5, 6, & 7.

There were a total of 132 people who answered the questions. A total of 38 people skipped this question. The people who had 1 member in their household had a total of 28 responses (21.2%). The people who had 2 members in their household had a total of 60 responses (45.5%). The people who had 3 members in their household had a total of 22 responses (16.7%). The people who had 4 members in their household had a total of 13 responses (9.8%). The people who had 5 members in their household had a total of 5 responses (3.8%). The people who had 6 members in their household had a total of 2 responses (1.5%). The people who had 7 members in their household had a total of 2 responses (1.5%).

Question 27: What was your household income last year? There were 6 options given, they included: Below $30,000; $30,000 - $49,999; $50,000 - $69,999; $70,000 - $89,999; $90,000 or above; I choose not to answer.

There were a total of 127 answered questions. A total of 43 people skipped this question. The Below $30,000 had a total of 16 (12.6%) responses. The $30,000 - $49,999 had a total of 28 (22%) responses. The $50,000 - $69,999 had a total of 22 (17.3%) responses. The $70,000 - $89,999 had a total of 16 (12.6%) responses. The $90,000 or above had a total of 28 (22%) responses. The “I choose not to answer” had a total of 17 (13.4%) responses.

Question 28: What is your age group? There were 4 options given, they were: 20 or under; 21-40; 41-60; and 61 or over.

There were a total of 134 answered questions. A total of 36 people skipped this question. The 20 or under got a total of 1 (0.7%) response. The 21-40 got a total of 25 (18.7%) responses. The 41-60 got a total of 69 (51.5%) responses. The 61 or over got a total of 39 (29.1%) responses.

Question 29: How did you hear about this survey?

There were a total of 108 responses. The response that was repeated the most was email. After email, the second amount of responses was Facebook. Others learned from a friend or from online (3rd most response).

Summary of Public Information Sessions

The public involvement process included holding two public drop-in sessions in McDowell County to present the proposed CTP to the public and solicit comments. The first meeting was held from 3:00-7:00 pm on July 23, 2012 at the County Administration Building in Marion; the second meeting was held from 4:00-7:00 pm on August 27, 2012 at the Old Fort Depot. Each session was publicized in the local newspaper and flyers were placed at the public libraries in Marion and Old Fort. Flyers were also posted in DMV office, Old Fort Town Hall (Utility payment center), Marion City Hall and to every supermarket in the area throughout the County. A total of 16 citizens attended these drop-in sessions. A sample of the advertisement is illustrated in Figure 10.

During the session in Old Fort, many citizens expressed a desire for expanding the County's Transit Program to include an On-Demand Public Transportation system. This subject was brought up in the CTP Steering Committee meeting on September 18, 2012. In response to this issue, the Committee recommends McDowell County Transportation Advisory Board to coordinate with the PTD of NCDOT to update the County Transit Plan in an expeditious manner. The results of the County Transit Plan will guide future transit operations in the County. The CTP will be updated at the most appropriate time to reflect the recommendations in the updated County Transit Plan.

Public hearings were held on November 5, 2012 during the McDowell County Board of Commissioners meeting and January 14 2013 during the Old Fort Town Board meeting. The CTP was adopted during each of these meetings.

The Isothermal RPO endorsed the CTP on February 27, 2013. The North Carolina Board of Transportation voted to mutually adopt the McDowell County CTP on April 4, 2013.

Public Workshop

McDowell County, Town of Old Fort, NCDOT, and the Isothermal Rural Planning Organization

invite you to a public workshop on the results of the

McDowell County Comprehensive Transportation Plan (CTP).

This plan will help us guide McDowell County's transportation investments for the next 30 years!

Monday August 27th

4PM to 7PM

Old Fort Depot

25 West Main Street

Old Fort, NC 28762

Representatives will be on hand to discuss any of the recommendations outlined in the plan

Disponible en Español or ***Large Print:***

Call (828)-287-2281

Figure 11