1 Introduction

Buck Engineering performed a technical assessment in the United States Geological Survey Cataloging Unit (CU) 06010105, a division of the French Broad River Basin, as part of the development of a local watershed plan for the NC Ecosystem Enhancement Program (EEP). Local watershed planning is a comprehensive effort initiated by the EEP to investigate sources of water quality pollution and habitat degradation in a local watershed and recommend a comprehensive strategy for improving watershed functions. The EEP works to replace functional watershed losses through stream, buffer, and wetland improvement and protection projects. Other policy and educational recommendations are included in the plan but are outside the scope of the EEP to implement.

The French Broad Local Watershed Planning effort consisted of a CU-wide GIS-based assessment to analyze the potential for restoration, enhancement, and preservation sites as well as a more focused study on a single Hydrologic Unit (HU) within the CU, the South Hominy watershed (HU 06010105060020). The CU-wide GIS-based assessment resulted in Technical Memorandum 2; the South Hominy Creek effort resulted in Technical Memorandums 1, 3, and 4. (Figure ES.1). Technical Memorandum 2 summarized potential stream and wetland restoration, enhancement, and preservation opportunities throughout the 1,660 square mile CU. Technical Memorandum 1 summarized existing watershed and land use information collected within the South Hominy Creek study area. Technical Memorandum 3 presented a functional status overview of the South Hominy Creek study area in terms of habitat, hydrology, and water quality and suggested potential sources of observed degradation. Technical Memorandum 4 presented and prioritized recommendations for management actions within the South Hominy Creek watershed.

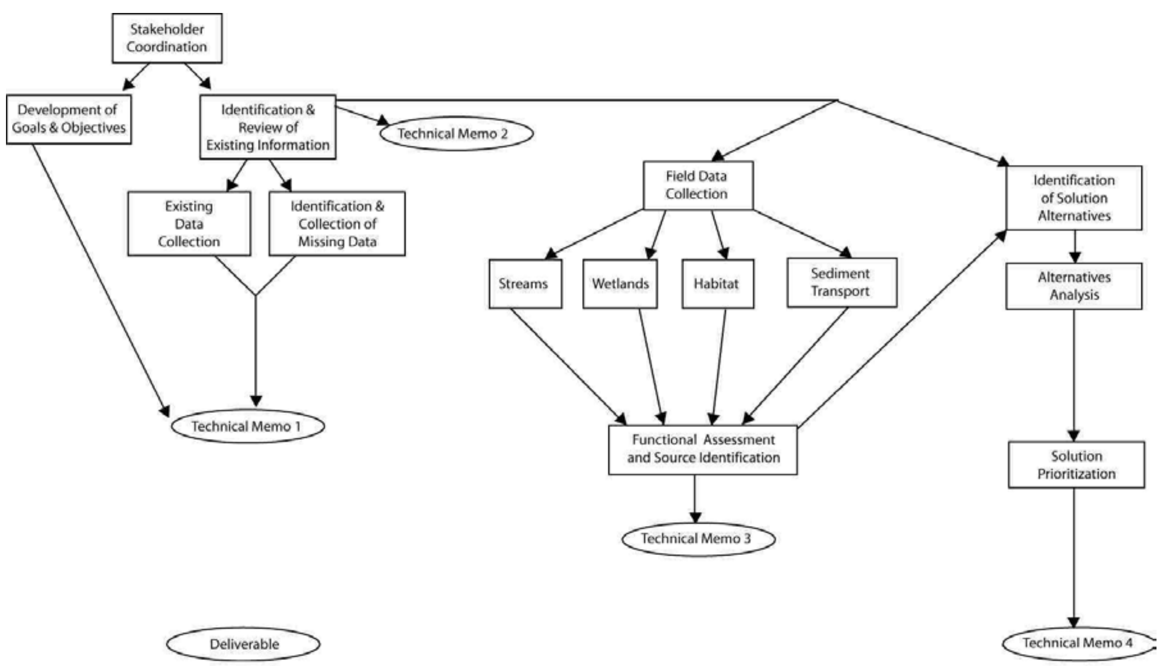

Figure ES.1 Local Watershed Plan Project Flow Chart

2 CU Wide Screening (Technical Memorandum 2)

2.1 Watershed Overview

The total land area of CU 06010105 is approximately 1,660 square miles and includes portions of Buncombe, Haywood, Henderson, Madison and Transylvania counties (Figure ES.2). The CU is comprised of 54 14-digit HUs. The four 14-digit HUs that drain Mud Creek and South Hominy Creek were excluded from this screening process because of more comprehensive efforts in those areas. The combined area of these excluded drainages is approximately 150 square miles.

The landcover in the CU is predominantly forested (80 percent), with significant portions of pasture and managed rangelands (16 percent). Urban areas, surface water, and cultivated lands comprise the remaining 4 percent of the area (NCDENR, 2003). The CU includes approximately 320 square miles of state forest, national forest, and gameland. Resources in the CU include Pisgah National Forest, DuPont State Forest, Holmes State Forest, Mt. Mitchell State Park, and Gorges State Park. The CU includes 15 municipal areas, the largest of which are Asheville, Black Mountain, Hendersonville, Fletcher, and Brevard.

Major streams draining to the French Broad River within the CU include: Big Laurel Creek, Ivy Creek, Spring Creek, Swannanoa River, Hominy Creek, Mills River, Mud Creek, Turkey Creek, and Sandymush Creek.

2.2 Methodology

Several GIS datasets were used in the screening process to identify and prioritize feasible stream and wetland restoration and preservation sites: NC GAP land use, hydrography, hydric soils, National Wetlands Inventory (NWI), aerial photography, parcels, and USGS 7.5" quads. For both streams and wetlands, the site screening implemented hierarchical GIS-based protocols whereby the full population of potential sites considered was systematically reduced through several levels of analysis. Each dataset served a primary screening function to filter low priority sites and promote higher priority sites to subsequent levels of analysis.

The first step in the screening analysis was to determine whether streams or wetlands were located on forested or non-forested land. Stream reaches and wetland areas on forested areas were assumed to be available only as preservation sites. Stream reaches and wetland areas in non-forested areas were assumed to be available only as restoration sites. The NC GAP dataset was used to designate non-forested land.

Stream restoration sites were prioritized by selecting those reaches located on non-forested land, with stream lengths greater than 1,500 feet, an average valley slope less than 10 percent, and drainage areas less than 20 square miles. Stream preservation sites were prioritized by selecting those reaches located on forested land, coinciding with parcels greater than 50 acres in area, and having stream lengths greater than 5,000 contiguous feet. Wetland restoration sites were prioritized by selecting those hydric A soil or NWI wetland areas located on non-forested land that were greater than 5 acres in area. Wetland preservation sites were prioritized by selecting those hydric A soil or NWI wetland areas located on forested land that were greater than 5 acres in area. Each of these final sites was overlaid with county tax parcel data to determine the number of potential easements needed for each site.

INSERT FIGURE ES.2

2.3 Results

The CU-wide GIS screening analysis resulted in a total of 107 high priority potential sites for stream restoration and 95 high priority potential sites for stream preservation totaling approximately 70 miles and 147 miles in stream length, respectively. The CU-wide GIS screening analysis also resulted in a total of 89 high priority potential sites for wetland restoration and 46 high priority potential sites for wetland preservation totaling approximately 2,400 acres and 500 acres in area, respectively.

3 South Hominy Watershed (Technical Memorandums 1, 3 and 4)

3.1 Watershed Overview

The South Hominy watershed, HU 06010105060020, is located in the southwest portion of Buncombe County and has a drainage area of 38.4 square miles (Figure ES.3). The watershed includes the communities of Beaverdam, South Hominy, Stony Fork, Glady, Dunsmore, and portions of Candler. Pisgah National Forest spans the southern and southwestern periphery of the watershed and composes approximately 22% of the total watershed area. There are four major tributaries in the watershed: Beaverdam Creek, Stony Fork, Glady Fork, and Warren Creek.

The South Hominy Creek watershed is a diverse watershed consisting of high elevation mountain coves as well as flat, broad valleys. Agricultural and residential land uses tend to be heavily concentrated within the valleys while large tracts of relatively undisturbed forest land typically occupy the upland areas. The watershed lies within a quickly growing rural region of Buncombe County. The study area has been historically dominated by agricultural, forestry and grazing lands, but much of the agricultural open space has been converted into residential uses during the last few decades. The proximity of the city of Asheville to the northern 25 percent of the watershed is where the most intensive residential development continues to occur in the watershed. Much of the new and existing development has taken place along the streamside riparian areas.

The South Hominy Creek main stem and all the major tributaries have a DWQ Trout Waters designation, a supplemental classification intended to protect freshwaters for natural trout propagation and survival of stocked trout. The South Hominy Creek main stem was listed on North Carolina's 2000 Clean Water Act Section 303(d) list of impaired waters, but has recently been recommended for removal from the 2006 303(d) list by DWQ as a result of improved bioclassifcation ratings and local watershed initiatives. There is one National Pollution Discharge Elimination System (NPDES) permit in the study watershed involving a small, residential package wastewater treatment plant. Generally, the impacts to stream systems in this watershed appear to be caused by adjacent agricultural and residential land uses, clearing of the riparian buffer, channelization, and excess sediment due to bank erosion, land development and/or unpaved road runoff.

3.2 Methodology

3.2.1 <u>Watershed Functions</u>

The study area was assessed in terms of three principal watershed functions: habitat, hydrology, and water quality.

INSERT FIGURE ES.3

- *Habitat* function includes both aquatic and terrestrial components. Functioning aquatic habitat provides a setting in which aquatic communities, such as fish and benthic invertebrates, can be both diverse and balanced. Good aquatic habitat in the study area has abundant and diverse microhabitat (sticks, leaf packs, logs, vegetated mats, and root masses), limited embeddedness (covering of channel by fine sediment), stable streambanks, and a variety of bottom substrate (sand, gravel, cobbles and boulders). For terrestrial habitat, a functioning system allows wildlife to move about more easily to find necessary resources (food, shelter, and community) and does not endanger or threaten native species. Properly functioning systems in the study area have minimally fragmented forest land cover that promotes wildlife travel and provides resources.

- *Hydrologic* function addresses whether streams effectively transport water and sediment. Good hydrologic function is most apparent in the stream channel, but extends to the riparian and upland areas, as well. A functioning stream channel has low bank height ratios (vertical stability), reasonably stable streambanks (lateral stability), higher base flows, and lower peak flows. Riparian zones in catchments that display good hydrologic function promote groundwater recharge and store stormwater discharge and deposited sediment. Upland areas have higher amounts of pervious cover that encourage infiltration, as opposed to rapid runoff to stormwater conveyance systems. Infiltration provides surface water storage and delivers water to the stream channel network slowly, if at all (due to uptake by vegetation, loss to deep groundwater, and soil field capacity).

- *Water quality* function is exemplified by contaminant levels that do not prevent a stream from attaining its designated uses, such as biological integrity, recreation, or water supply. Practices that lead to good water quality are also considered part of a functioning system. For example, functioning riparian areas filter overland flow and are not circumvented by stormwater conveyance systems. Instream pollutant levels are a key indicator of water quality function; however, these quantities may be highly dynamic and difficult to characterize without extensive monitoring data over a full range of stream flows. Alternatives include benthic invertebrate or other biological monitoring that provide long term indicators of water quality. Sediment bioassays and chemistry also provide continuing data on evidence of water quality, as many toxic pollutants adhere to fine-grained, organic-rich sediment.

3.2.2 Existing Data Collection

Existing data collected within the study area include local government planning information, GIS data layers, NCDWQ monitoring data, US Census data, National Forest Service data, and aerial photography. Local experts were also queried about examples of intact as well as non-functioning resources within the watershed. These data were supplemented with the development of a digitized streams, unpaved roads, and wetlands GIS layers, all of which were verified with several field visits to the study area.

3.2.3 Field Data Collection Protocol – RACs and FAUs

In order to develop more manageable units for field data collection, analysis, and management, stream reaches throughout the study area were categorized into 17 different representative reach types according to riparian buffer condition, land use, and valley slope using GIS. These representative reach types, or Riparian Assessment Classifications (RACs), provided a means to extrapolate field data collected from a sample of RAC monitoring sites to other uniform RACs throughout the watershed; thus enabling the assessment of over 112 miles of perennial stream channel that would otherwise not have been feasible given time and budget constraints.

A total of 52 representative RAC monitoring sites were selected to undergo a combination of qualitative and quantitative in-field assessments so that a minimum of 10 percent of the total stream length for each individual RAC was sampled (Figure ES.4). The RAC monitoring sites were carefully identified to capture the full range of watershed and local conditions of each RAC. The qualitative portion of the assessment was performed at each monitoring site and consisted of the evaluation of habitat, bank stability, geomorphic form, and riparian buffer condition. The quantitative geomorphic surveys, which measured dimension, pattern, and profile, and sediment composition, were only conducted at 17 monitoring sites, one per RAC. Field data was collected, post-processed, and extrapolated to the remaining stream reaches sharing similar RACs throughout the project watershed. Field data results occasionally varied substantially at different sites with the same RAC, but generally, the overall condition was well predicted by the RAC.

To continue the analysis of the South Hominy watershed on a more practical geographic scale, Buck Engineering divided the project boundary into six functional assessment units (FAUs): Pisgah Highlands, Lower Beaverdam, Western Highlands, Central South Hominy Valley, Lower South Hominy Valley, and Northern Coves (Figure ES.4). The divisions were based on similarity of land use, landform, and drainage area.

3.2.4 Functional Assessment

A "strength of evidence" approach was used to determine a rating for the watershed functions of habitat, hydrology, and water quality in each RAC and subsequently each FAU. Levels of function are described as follows:

- Functioning - existing conditions indicate that function is achieved without immediate risk of alteration.
- Functioning at Risk - existing conditions indicate that function is minimally achieved, though immediate risk of alteration exists.
- Not Functioning - existing conditions indicate that function is not being achieved.

The assessment considered all lines of evidence developed during the course of the study using a process that incorporated existing scientific knowledge and best professional judgment in order to consider the strengths and limitations of each source of information. Lines of evidence (metrics) considered for the habitat function included land use, field assessment of terrestrial and aquatic habitat, riparian corridor condition, and substrate analysis. For hydrologic function, channel incision, riparian corridor condition, Bank Erosion Hazard Index (BEHI), degree of erosion, land use, bank height ratio, and width/depth ratio were examined. The lines of evidence used to assess water quality function were water quality and benthic/fish monitoring data from NCDWQ, riparian corridor condition, BEHI, degree of erosion, and land use. After each of the 17 RAC designations were assigned functional ratings for habitat, hydrology, and water quality, FAUs were then assigned functional ratings based on the percent stream length of each type of RAC composed within that respective FAU.

3.2.5 Stakeholder Involvement

Stakeholder involvement was an integral part of the watershed planning effort in the South Hominy basin. A Technical Advisory Committee (TAC) was developed as a group of stakeholders made up of governmental and non-profit employees with an interest in the

INSERT FIGURE ES.4

environmental strategies and having the environmental resources which could contribute to the Watershed Plan. A local stakeholders group was also developed and consisted of a group of landowners from the watershed who gave input to what communication strategies they thought would be effective in their community. Both, the TAC and the stakeholders group, participated in several meetings and their feedback was integrated into the process.

3.2.6 Prioritization of Watershed Opportunities

Opportunities to protect or restore watershed functions were prioritized based on a number of factors, including the functional assessment status of the FAU where the opportunity is located, opportunity feasibility, expected benefit, and input from local stakeholders group and the TAC. A priority matrix was used as the primary decision tool or framework for determining the effectiveness of the following management opportunities at the riparian corridor scale: preservation, buffer planting, stream channel enhancement, and stream channel restoration. BMP and wetland opportunities were identified strictly from the analysis of field data and remote sensing of GIS data.

The priority matrix was used in conjunction with functional ratings previously assigned to RAC designations in the functional assessment phase to arrive at management recommendations per RAC. Priority classifications (High, Medium, or Low) were applied to combinations of opportunity types (preservation, buffer planting, stream enhancement, and stream restoration) and functional status (functioning, functioning at risk, and not functioning) for each of the watershed functions (habitat, hydrology, and water quality). During development of the matrices, a high priority was placed on opportunities that would result in the greatest benefit per function level and a low priority on opportunities that would provide minimal benefit. Resulting opportunity types from the priority matrix were evaluated by comparison with those field-verified management recommendations and remotely sensed GIS data, and adjustments were made according to best professional judgment.

Land use and pollution source controls such as municipal ordinances, public education, and low impact development (LID) design practices were also considered. Local ordinances may be beneficial for the development of improved erosion and sediment control practices while education and outreach efforts could help teach residents to reduce and properly manage pesticide and fertilizer use. LID incorporates a suite of development practices to conserve natural systems and reduce infrastructure footprints and costs. Goals may include preserving open space, minimizing land disturbance, protecting natural features, and implementing processes that provide “green” infrastructure.

3.3 Results

3.3.1 Overview

The field assessment determined that streams in the South Hominy watershed generally show signs of departure from stability. Land use and riparian corridor condition seem to be the greatest source of functional loss in habitat, hydrology, and water quality. Lower elevation FAUs having broader valleys and closer proximities to the watershed outlet are naturally more prone to impacts to watershed functions due to the historical trend of land development within the floodplain for agriculture and residential housing. Many of the streams in these areas have undergone past channelization for irrigation and capitalization of tillable land. Such stream systems tend to become vertically unstable from streambed scour as a result of increased slope and flow velocities. Lateral stability also becomes compromised in these systems as banks reach critical heights from further downcutting causing banks and bank vegetation to fail. Flooding from heavy precipitation events associated with Hurricanes Ivan and Frances in the fall of 2004 have accelerated this process throughout the watershed, exacerbating stream bank erosion and incision, while impacting riparian vegetation in larger drainage areas.

Past and present agricultural and residential land use activities have fragmented habitat surrounding the South Hominy watershed outlet and impacted buffers from development within the floodplain. The widespread degradation of riparian vegetation has increased the potential for bank erosion and has permitted pollutant loads from agricultural and residential land uses to more rapidly enter the stream from a lack of infiltration. Bank erosion, unpaved roads and landslides are the largest sources of sediment within the watershed being supplied to stream channels. Aggraded channel sediment stemming from these sources have led to increased near bank stresses and stream channel embeddedness, thereby increasing channel instability and degrading habitat respectively.

3.3.2 Functional Status of FAUs

Table ES.1 summarizes the functional status overview for each of the six FAUs in terms of the three major functions assessed: habitat, hydrology, and water quality. The following sections summarize the existing conditions and recommended management strategies specific to each FAU.

Table ES.1 Habitat, Hydrology, and Water Quality Function by FAU

Functional Assessment Unit	Habitat	Hydrology	Water Quality
Pisgah Highlands	F	F	F
Western Highlands	F	F	F
Lower South Hominy Valley	FR	FR	FR
Lower Beaverdam	FR	FR	FR
Central South Hominy Valley	FR	FR	FR
Northern Coves	FR	FR	NF
Note: *F = Functioning, FR = Functioning at Risk, NF = Not Functioning*			

Pisgah Highlands

These upper sub-basins of the South Hominy watershed have relatively steep-gradient, high-energy streams and a high percentage of mature forested area. The majority of the runoff originates from over 4,000 feet elevation and enters headwater tributaries as seeps and springs. Over seventy-five percent of the Pisgah Highlands FAU is occupied by Pisgah National Forest and approximately eighty-nine percent of the streams are categorized as having an intact buffer. The Pisgah Highlands FAU received the highest assessment ratings in the entire watershed: habitat, hydrology, and water quality are all *Functioning*. The only notable impact within this FAU is excessive amounts of fine sediment in the stream substrate, which is likely due to unpaved forest roads and localized landslides caused by heavy precipitation events associated with Hurricanes Ivan and Frances in 2004.

In general, preservation was the management focus in this FAU since preserving high-quality headwaters adjacent to Pisgah National Forest was a priority for the TAC, and preservation will improve connectivity of high quality resources to adjacent enhancement reaches. One long reach of stream enhancement is a priority along a tributary to Upper Glady Fork. One small wetland adjacent to this reach should also be enhanced. Table 4.2, located in Technical Memo 4, provides a detailed list of the priority management recommendations for the Pisgah Highlands FAU. Figure B.2, located in Appendix B of Technical Memo 4, graphically presents the prioritization of all alternatives in the FAU.

Western Highlands
Like the Pisgah Highlands FAU, the Western Highlands FAU also has relatively steep-gradient, high-energy streams and a high percentage of forested area. Approximately ninety-three percent of the streams in this FAU have intact buffers. This land rises up to Pisgah Mountain, is privately owned, and is beginning to see signs of vacation home development. Much of the runoff enters streams through seeps and springs and is drinkable at the source.

Despite the encroaching residential development and the impacts from unpaved forest roads and localized landslides, the functional assessment phase of this study projected that habitat, hydrology, and water quality were *Functioning*. The primary cause of degradation within this FAU is sedimentation. Seventy-seven percent of the streams in the unit are classified as high-level *Functioning at Risk* for substrate analysis, suggesting a slight amount of embeddedness and an accumulation of a large proportion of finer grained particles throughout the channel.

Because the Western Highlands FAU contains a large amount of undeveloped, high-elevation land, it was especially targeted for preservation, with many parcels having a high priority for conservation. Several of these parcels that make up the northern slope of Mount Pisgah have natural areas that contain special or rare habitat. Much of the high elevation tracts are prime real estate for resort and vacation home development and part of the preservation tactic for local stakeholders may be to encourage conservation development with large-tract, low-impact home sites.

Several of the streams draining from these high elevations are priorities for enhancement and buffer improvement because they flow into lower elevation areas that have been more actively managed. These enhancement efforts will improve the connectivity of the high-quality uplands to areas of the Central South Hominy Valley FAU where more enhancement and restoration activities are needed. Table 4.3, located in Technical Memo 4, provides a detailed list of the priority management recommendations for the Western Highlands FAU. Figure B.3, located in Appendix B of Technical Memo 4, graphically presents the prioritization of all alternatives in the FAU.

Central South Hominy Valley
The Central South Hominy Valley FAU occupies a key location in the South Hominy Creek Watershed, where several major drainages combine to form the mainstem of South Hominy Creek. This flat, open valley is generally fed by high-quality waters originating at elevations of over 4,000 feet. Most of the South Hominy watershed's wetlands are found here, and a large portion of the agricultural development is located in this FAU. Due to these factors, the TAC supports a focus on this area as a priority in connecting the highly functioning upland to the mainstem of South Hominy Creek.

During the functional assessment phase of this study, habitat, hydrology, and water quality were projected to be *Functioning at Risk*. Typically, stream buffer impacts as well as impacts from past channelization were the causes of lower ratings for habitat and hydrology. Agricultural land use also contributes to a degradation of water quality. The fairly substantial amount of wetlands in the Central South Hominy Valley FAU and the substantial forested upland draining from the Pisgah Highlands FAU and Western Highlands FAU are important aspects of the health of the riparian systems which need to be protected.

Because the Central South Hominy Valley receives its inflow from the Western Highlands FAU and the Pisgah Highlands FAU, it has good water quality and has the unique opportunity to have its riparian corridors substantially restored. This FAU contains the largest number of high priority projects including several stream enhancement and restoration projects, numerous agricultural BMPs involving livestock exclusion from streams, and several wetland enhancement sites.

Combined with the upland conservation of the Western and Pisgah Highlands, enhancing the stream corridors and remaining wetlands as well as excluding livestock from the streams will substantially improve the mainstem of South Hominy Creek as a fishery.
Table 4.4, located in Technical Memo 4, provides a detailed list of the priority management recommendations for the Central South Hominy Valley FAU. Figure B.4, located in Appendix B of Technical Memo 4, graphically presents the prioritization of all alternatives in the FAU.

Lower South Hominy Valley
The Lower South Hominy Valley is a narrow, steep valley, dominated by the South Hominy Creek mainstem. There is minimal local drainage and relatively little change in water quality inputs to what drains from the Central South Hominy Valley. The exception to this is the Northern Coves drainage which enters this FAU mid-reach. Much of the mainstem in this FAU is entrenched and difficult to access.

The functional assessment phase of this study determined that habitat, hydrology, and water quality were projected to be *Functioning at Risk*. This FAU received one of the lowest ratings in the watershed for hydrologic function compared to other FAUs. Seventy-one percent of the streams within the Lower South Hominy Valley FAU are considered *Functioning at Risk*, primarily due to land use. This FAU has both development and agricultural land uses that, in combination, have led to poor overall habitat, hydrology, and water quality conditions. Benchmark concentrations of nitrate plus nitrite nitrogen (NO2+NO3) were exceeded, both upstream and downstream of the confluence with Beaverdam Creek. Aside from the Northern Coves and Lower Beaverdam FAUs, the Lower South Hominy Valley FAU has the lowest rating for water quality function within the watershed. However, the TAC recommends less focus on this FAU since it is located further from the higher quality areas of the watershed.

The priorities for the Lower South Hominy Valley FAU are to improve the riparian corridor through minor restoration, enhancement, and riparian buffer planting. In one location, removing livestock from the creek is also recommended. The South Hominy mainstem in this FAU is the receiving stream for all other FAUs, so water quality improvements are not as high a priority as local habitat improvement. These recommendations should help provide a thriving stream corridor for the improved water flowing from adjacent FAUs. Table 4.5, located in Technical Memo 4, provides a detailed list of the priority management recommendations for the Lower South Hominy Valley FAU. Figure B.5, located in Appendix B of Technical Memo 4, graphically presents the prioritization of all alternatives in the FAU.

Lower Beaverdam
The lower Beaverdam FAU has more agricultural land use and a higher percentage of forested lands than many of the other lower elevation FAUs within the South Hominy watershed. The large proportion of forested land within the headwaters allows for more infiltration of

precipitation and a longer basin lag time. Much of this FAU is dominated by the Beaverdam Creek mainstem whose floodplain is primarily used for passive agriculture and livestock grazing. Many of the channels appear to have been channelized, and there are minimal buffers and moderate bank erosion.

During the functional assessment phase of this study, habitat, hydrology, and water quality were projected to be *Functioning at Risk*. Aside from the Northern Coves FAU, the Lower Beaverdam FAU has the lowest water quality function in the watershed. Benthic monitoring along Smith Cove Branch revealed the presence of a fairly impact-tolerant community of baetid mayflies which are commonly found in organically enriched streams, like those downstream from pastures. Benchmark concentrations for fecal coliform bacteria were exceeded along the downstream portion of Beaverdam Creek due to a combination of stream access by cattle and horses, and runoff from actively grazed pastures. The TAC recommends concentrating effort on areas within this FAU that are adjacent to the Pisgah Highlands FAU.

The Lower Beaverdam FAU only has four high priority sites because substantial incision has not occurred in many of the streams and because multiple property owners often lessen the feasibility of projects. The major priority in this FAU is a large stream restoration and cattle exclusion project at the lower end of Beaverdam Creek which includes the relocation of a pesticide/fertilizer mixing station away from the stream. Several other moderate priority projects include preserving the uplands of Billy Cove and enhancing the buffer along much of the Beaverdam mainstem. Table 4.6, located in Technical Memo 4, provides a detailed list of the priority management recommendations for the Lower Beaverdam FAU. Figure B.6, located in the Appendix B of Technical Memo 4, graphically presents the prioritization of all alternatives in the FAU.

Northern Coves

The Northern Coves FAU received the lowest overall functional rating of all the FAUs in the South Hominy Watershed in terms of habitat, hydrology, and water quality. During the functional assessment phase of this study, habitat and hydrology were projected to be *Functioning at Risk*. Water quality was projected to be *Not Functioning*.

This FAU contains the highest density of land development within the overall watershed and is undergoing further development. The habitat, hydrology and water quality impacts are primarily related to the high density of development and its associated decrease in riparian buffer areas, decreased stormwater storage, increased peak flows and bank erosion in the streams, and limited habitat quality. Benchmark concentrations were exceeded for several water quality monitoring parameters, including nitrate plus nitrite nitrogen (NO2+NO3), phosphorus, fecal coliform bacteria, and specific conductance. Dissolved oxygen concentrations (DO) within the Northern Coves FAU were among the lowest in the watershed, while water temperatures were among the highest. Macroinvertebrate sampling reported a lack of taxa richness and abundance among benthic communities. Due to the level of impairment in this FAU, the TAC recommends a focus on preventative measures in FAUs where substantial impacts have yet to occur.

As the most developed FAU in the South Hominy Creek watershed, improvements here could be widespread but, due to the TAC's recommendations and numerous constraints, the Northern Coves FAU contains only a few high priority riparian enhancement and BMP sites. One substantial stream restoration project along Young's Cove Branch is a high priority site and another substantial stream restoration site along Morgan Branch is a medium priority site. Two locations have been prioritized to have livestock excluded from the creek. Other BMPs consist of a wetpond retrofit to treat agricultural runoff and the relocation of a pesticide/fertilizer mixing station away from the stream. Table 4.7, located in Technical Memo 4, provides a detailed list of the priority management recommendations for the Northern Coves FAU. Figure B.7, located in

Appendix B of Technical Memo 4, graphically presents the prioritization of all alternatives in the FAU.

3.4 Conclusions

A number of opportunities have been identified to restore and protect watershed function throughout the South Hominy Watershed. Given the vulnerable condition of these natural resources, it is vital to expedite implementation of the recommended efforts. Many watershed functions are already degraded or threatened by current development, and future development is likely to continue at the same or an accelerated pace. Failure to act will likely put watershed stakeholders in a reactive, rather than a proactive, position.

Many of the identified opportunities can be undertaken by the EEP, while others will need the involvement of local governments and other watershed stakeholders. The following action items are recommended:

- EEP can capitalize on mitigation opportunities to fund stream and wetland restoration projects, and possibly agricultural BMPs. EEP is in a good position to implement projects, having funded the development of the local watershed plan and formed relationships with watershed stakeholders. Initiating implementation can provide on-the-ground examples that contribute to community education and encourage additional restoration efforts.

- Local governments should undertake efforts to implement LID requirements. Since it will be necessary to obtain buy-in from county commissioners, meetings should be held to present the findings from the local watershed plan. If it is not possible to achieve community buy-in to implement aggressive LID practices throughout the towns and county, it may be feasible to adopt moderate LID practices with aggressive LID practices prescribed in key areas (e.g., headwaters).

- Local stakeholders should seek funding sources to implement watershed efforts which may be unable to be funded through EEP. These efforts may include upland forest preservation, water quality education initiatives, and a watershed manager position. Funding sources include the US Environmental Protection Agency's Section 319 funds for non-point source management or the NC Clean Water Management Trust Fund.

- Local stakeholders should become involved to decide how to allocate limited resources and choose which opportunities to pursue. They may work with EEP to contribute a local skew in the management priorities for the watershed. For instance, they may want to focus on a particular type of opportunity: preservation, restoration, or BMPs. Such decisions are value judgments that may vary among different local stakeholders. Limited resources may be spread between opportunity categories and locations (e.g., FAUs), or they may be combined for more targeted results.

- It will be important for all involved stakeholders to monitor before and after opportunity implementation. Documenting results validates the investment. It also allows adjustments to be made if the practice is not performing as expected. For example, maintenance or changes to vegetation types may be required.

- Efforts should be made to contact large landowners regarding preservation opportunities. These opportunities would ensure future watershed function in a number of areas. This practice is much more cost-effective than funding restoration efforts after development has occurred.

Local Watershed Plan
Table of Contents