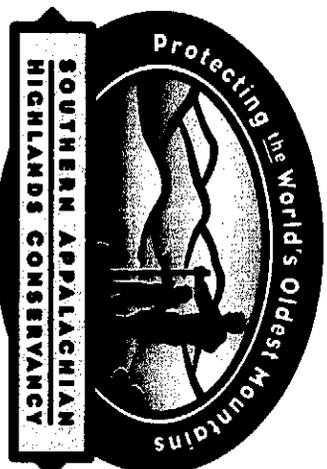


**DRAFT**



# HICKORY NUT GAP FARM CONSERVATION EASEMENT Baseline Documentation Report

Buncombe County, NC  
82.619 acres  
December, 2006



Performed by staff of the  
Southern Appalachian Highlands Conservancy  
34 Wall St., Suite 502, Asheville, NC 28801  
(828) 253-0095  
[www.appalachian.org](http://www.appalachian.org)

Conservation Easement Baseline Documentation Report  
**HICKORY NUT GAP FARM**  
Buncombe County, NC

*This conservation easement baseline documentation report is intended to document the conditions of the protected property at the time of the easement closing. This baseline is subordinate to the conservation easement.*

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ACKNOWLEDGEMENT OF BASELINE DOCUMENTATION REPORT

The undersigned, being the grantor(s) of a conservation easement granted to the Southern Appalachian Highlands Conservancy ("SAHC") with respect to 82.619 acres of land identified by Buncombe County PINs 9695.00-91-4291 and 9695.02-85-5891, located off of Sugar Hollow Road in the Fairview Township, Buncombe County, of North Carolina ("the Property"), hereby certifies to SAHC that the accompanying Baseline Documentation Report which includes the "relevant documents" listed below and is dated December, 2008, is an accurate representation of the Property and its condition on the date hereof and on the date on which the conservation easement was executed. The undersigned agrees that the conditions documented in this Baseline Documentation Report do not necessarily represent all aspects of the Property to which the terms of the conservation easement relates, and that in providing this easement documentation, SAHC in no way waives any rights, either at law or in equity, to enforce the provisions of the conservation easement.

Executed under seal this \_\_\_\_ day of December, 2008.

James and Elspeth Clarke Family Limited Partnership

By: CFLP, Inc., a North Carolina corporation

By:

Dumont Clarke IV, President

Susie Clarke Hamilton

William McClure Clarke

William Godfrey Hamilton

Cindy Clarke

James Gore King McClure Clarke

Douglas Dixon Clarke

Francine Clarke

Betsy Hutchison Clarke

Dumont Clarke IV

Shirley Jean Linn

Annie McClure Clarke Ager

John Curtis Ager

Acknowledged by:  
Southern Appalachian Highlands Conservancy

By: \_\_\_\_\_  
Hanni Muerdter, Stewardship & Conservation Planning Director

**Relevant Documents:**

- Description of Land Use & Existing Human Modifications
- Description of Natural Features
- Management Issues of Concern
- Photographic Record of Property
- Contextual Map of Property
- USGS Topographic Map of Property
- Orthographic Map of Property
- Natural and Anthropomorphic Features Map
- GAP Land Cover Map
- Soils Map
- Farmstead Area Map
- Map of Building Locations
- Transaction Screen Findings
- Morgan Survey

## Acknowledgement of Designated Baseline Photograph Signer

The undersigned, being the grantor(s) of a conservation easement granted to the Southern Appalachian Highlands Conservancy ("SAHC") with respect to 82.619 acres of land identified by Buncombe County PINs 9695.00-91-4291 and 9695.02-85-5891, located off of Sugar Hollow Road in the Fairview Township, Buncombe County, of North Carolina ("the Property"), hereby certifies to SAHC that they are designating Dumont Clarke IV as the designated baseline photograph signer for the Hickory Nut Gap Farm Conservation Easement. By signing below, the undersigned agree that the signature of Dumont Clarke IV on the photograph pages in the baseline documentation report acknowledges the accuracy of the photographs on behalf of all the grantors.

Executed under seal this \_\_\_\_ day of December, 2008.

James and Elspeth Clarke Family Limited Partnership

By: CFLP, Inc., a North Carolina corporation

By:

Dumont Clarke IV, President

Susie Clarke Hamilton

William McClure Clarke

William Godfrey Hamilton

Cindy Clarke

James Gore King McClure Clarke

Douglas Dixon Clarke

Francine Clarke

Betsy Hutchison Clarke

Dumont Clarke IV

Shirley Jean Linn

Annie McClure Clarke Ager

John Curtis Ager

Acknowledged by:

Southern Appalachian Highlands Conservancy

By:

Hanni Muerdter, Stewardship & Conservation Planning Director

SEAL-STAMP

**NORTH CAROLINA,** \_\_\_\_\_ **County**

The undersigned, a Notary Public for said State and County, does hereby certify that Dumont Clarke IV personally came before me and acknowledged that he is President of CFLP, Inc., a North Carolina corporation, and that he, as President, being authorized to so, executed the foregoing on behalf of the corporation as the General Partner of **James McClure Clarke and Elspeth McClure Clarke Family Limited Partnership**, a North Carolina Limited Partnership. Witness my hand and seal, this \_\_\_\_ day of \_\_\_\_\_, 2008.

\_\_\_\_\_  
Notary Public

My commission expires:

\_\_\_\_\_

SEAL-STAMP

**NORTH CAROLINA,** \_\_\_\_\_ **County**

The undersigned, a Notary Public for said State and County, does hereby certify that **Susie Clarke Hamilton** personally came before me and acknowledged ..... Witness my hand and seal, this \_\_\_\_ day of \_\_\_\_\_, 2008.

\_\_\_\_\_  
Notary Public

My commission expires:

\_\_\_\_\_

SEAL-STAMP

**NORTH CAROLINA,** \_\_\_\_\_ **County**

The undersigned, a Notary Public for said State and County, does hereby certify that **William Godfrey Hamilton** personally came before me ..... Witness my hand and seal, this \_\_\_\_ day of \_\_\_\_\_, 2008.

\_\_\_\_\_  
Notary Public

My commission expires:

\_\_\_\_\_

SEAL-STAMP	<p style="text-align: center;"><b>NORTH CAROLINA, _____ County</b></p> <p>The undersigned, a Notary Public for said State and County, does hereby certify that <b>James Gore King McClure Clarke</b> personally came before me and acknowledged .....          Witness my hand and seal, this _____ day of _____, 2008.</p> <p style="text-align: center;">_____          Notary Public</p> <p>My commission expires: _____</p>
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SEAL-STAMP	<p style="text-align: center;"><b>NORTH CAROLINA, _____ County</b></p> <p>The undersigned, a Notary Public for said State and County, does hereby certify that <b>Francine Clarke</b> personally came before me and acknowledged ..... Witness my hand and seal, this _____ day of _____, 2008.</p> <p style="text-align: center;">_____          Notary Public</p> <p>My commission expires: _____</p>
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SEAL-STAMP	<p style="text-align: center;"><b>NORTH CAROLINA, _____ County</b></p> <p>The undersigned, a Notary Public for said State and County, does hereby certify that <b>Dumont Clarke IV</b> personally came before me and acknowledged ..... Witness my hand and seal, this _____ day of _____, 2008.</p> <p style="text-align: center;">_____          Notary Public</p> <p>My commission expires: _____</p>
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SEAL-STAMP	<p><b>NORTH CAROLINA,</b> _____ <b>County</b></p> <p>The undersigned, a Notary Public for said State and County, does hereby certify that <b>Shirley Lynn Clarke</b> personally came before me and acknowledged ..... Witness my hand and seal, this ____ day of _____, 2008.</p> <p style="text-align: center;">Notary Public _____</p> <p>My commission expires: _____</p>
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SEAL-STAMP	<p><b>NORTH CAROLINA,</b> _____ <b>County</b></p> <p>The undersigned, a Notary Public for said State and County, does hereby certify that <b>Annie McClure Clarke Ager</b> personally came before me and acknowledged ..... Witness my hand and seal, this ____ day of _____, 2008.</p> <p style="text-align: center;">Notary Public _____</p> <p>My commission expires: _____</p>
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SEAL-STAMP	<p><b>NORTH CAROLINA,</b> _____ <b>County</b></p> <p>The undersigned, a Notary Public for said State and County, does hereby certify that <b>John Curtis Ager</b> personally came before me and acknowledged ..... Witness my hand and seal, this ____ day of _____, 2008.</p> <p style="text-align: center;">Notary Public _____</p> <p>My commission expires: _____</p>
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SEAL-STAMP	<p><b>NORTH CAROLINA,</b> _____ <b>County</b></p> <p>The undersigned, a Notary Public for said State and County, does hereby certify that <b>William McClure Clarke</b> personally came before me and acknowledged ..... Witness my hand and seal, this ____ day of _____, 2008.</p> <p>_____ Notary Public</p> <p>My commission expires: _____</p>
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SEAL-STAMP	<p><b>NORTH CAROLINA,</b> _____ <b>County</b></p> <p>The undersigned, a Notary Public for said State and County, does hereby certify that <b>Cindy Clarke</b> personally came before me and acknowledged ..... Witness my hand and seal, this ____ day of _____, 2008.</p> <p>_____ Notary Public</p> <p>My commission expires: _____</p>
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SEAL-STAMP	<p><b>NORTH CAROLINA,</b> _____ <b>County</b></p> <p>The undersigned, a Notary Public for said State and County, does hereby certify that <b>Douglas Dixon Clarke</b> personally came before me and acknowledged ..... Witness my hand and seal, this ____ day of _____, 2008.</p> <p>_____ Notary Public</p> <p>My commission expires: _____</p>
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SEAL-STAMP

**NORTH CAROLINA,** \_\_\_\_\_ **County**

The undersigned, a Notary Public for said State and County, does hereby certify that **Betsy Hutchison Clarke** personally came before me and acknowledged ..... Witness my hand and seal, this \_\_\_\_ day of \_\_\_\_\_, 2008.

\_\_\_\_\_  
Notary Public

My commission expires: \_\_\_\_\_

## A. Summary Information

### 1. General Property Information

Property Name: Hickory Nut Gap Farm Conservation Easement  
PINs: 9695.00-91-4291 and 9695.02-85-5891  
Total Acreage: 82.619 acres  
Location: Fairview Township, Buncombe County, North Carolina  
Located off Sugar Hollow Road

Landowner: Susie and Will Hamilton  
Address: 1858 Charlotte Highway  
Fairview NC 28730  
Phone Numbers: (828) 628 3546

Landowner: Jim and Francine Clarke  
Address: 621 Georgetown Drive NW  
Concord, NC 28027  
Phone Numbers: (704) 782-8057

Landowner: Dumont Clarke  
Address: 2124 Kenmore Avenue  
Charlotte NC 28204  
Phone Numbers: (704) 334-0286

Landowner: Annie and John Ager  
Address: 15 Clarke Lane  
Fairview NC 28730  
Phone Numbers: (828) 628-2616

Landowner: Billy and Cindy Clarke  
Address: 103 Dumont Court  
Fairview NC 28730  
Phone Numbers: (828) 628-2487

Landowner: Douglas and Betsy Clarke  
Address: 11 Clarke Lane  
Fairview NC 28730  
Phone Numbers: (828) 628-4448

## **2. Description of the General Vicinity & Nearby Conservation Lands**

The Hickory Nut Gap Farm Property is approximately 14.3 driving miles southeast of Asheville, NC (see Contextual Map in Section G-1). The Hickory Nut Gap Farm Conservation Easement Tract encompasses the entirety of Buncombe County Parcel Identification Number (PIN) 9695.00-91-4291 and the entirety of Buncombe County PIN 9695.02-85-5891 hereby referred to as “The Property”, and was placed under Conservation Easement in December, 2008, with the Southern Appalachian Highlands Conservancy (SAHC).

The Property is located within the southern Blue Ridge Mountain Physiographic Province, and more specifically, within the Blue Ridge Mountains. The Property has northerly, westerly and southerly aspects. Elevations on the Property range from approximately 2280 feet along the Sugar Hollow Creek bed in the eastern portion of the Property to approximately 2680 feet at the top of the southernmost forested area.

The Property is within the French Broad River Watershed and includes tributary streams and a section of Ashworth Creek. Conservation of the Property helps protect tributary streams of the French Broad River Watershed from sources of sedimentation and other types of pollution.

The Property is directly adjacent to the +/- 207.5 acre Hickory Nut Gap property, which lies to the south and will be placed in a conservation easement with SAHC in December of 2008. The +/-28 acre Hickory Nut Gap Farm II property, which will be placed in a conservation easement with SAHC in 2009 is directly adjacent to the Property to the west. The Property is also in close proximity to several other protected tracts within the surrounding area, including: the +/-110 acre, SAHC held Drover’s Road Conservation Easement (650 feet to the west), the +/- 68 acre, SAHC held Earle/Flat Top Mountain Conservation Easement (3.6 miles to the north), and the +/- 232.07 acre, SAHC held Simmonds Conservation Easement (4.0 miles to the east). (See Recital E-4 for deed book and page numbers of the mentioned protected properties, and the Contextual Map in Section G-1 for their locations).

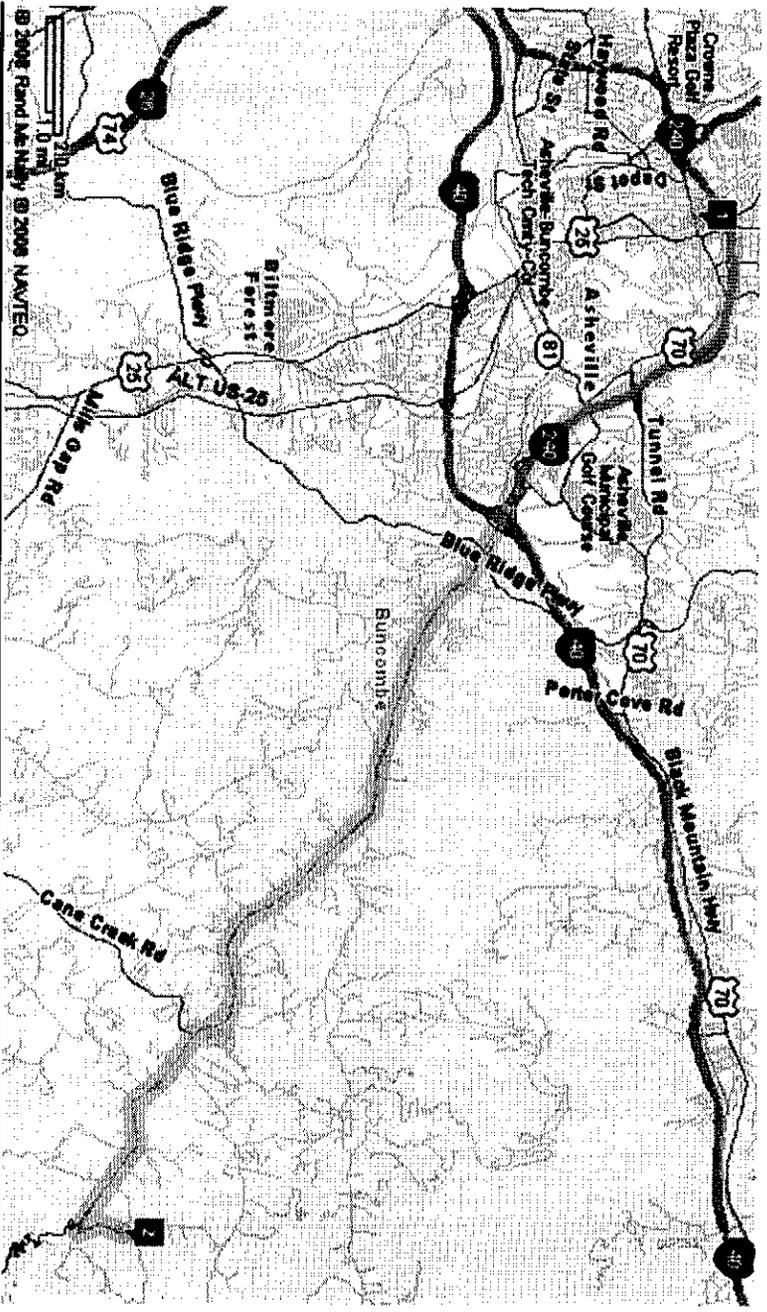
Conservation of the Property adds to a significant contiguous protected landscape within the Blue Ridge Mountains. The vast connectivity of all forested land in the general vicinity of the Property is profoundly important for plant and animal diversity. This is due to many factors, some of which include: the accommodation of large ranges of some species, the importance of corridors between various natural communities and forest types, and the viability of entire ecosystems.

The Property is highly visible from North Carolina Scenic Byway NC-74A (Drovers Road) and lies less than 80 feet from the road. Protection of properties within the area helps ensure the rural scenic quality for visitors and local residents.

### 3. Directions to Property with Road Map

From Downtown Asheville: 14.3 miles, approximately 20 minutes drive time

From downtown Asheville, take I-240 heading east. Exit at exit 9 for US-74 E / Blue Ridge Parkway toward I-40 W / Knoxville. Stay left at the fork in the exit ramp and continue toward US-74, merging onto it. After 9.5 miles turn left on Sugar Hollow Road. A yellow sign for Hickory Nut Gap Farm is posted opposite the correct turn. Follow Sugar Hollow Road for 0.3 miles until you come to the sign For Hickory Nut Gap Farm on the right. The farm store is visible on the right from the road and there is a parking area in front of it. Additional, seasonal parking is located across the road in a dirt lot.



## B. Baseline Methods

### 1. Baseline Preparer's Qualifications

- Baseline Preparer: Hanni Muerdter, Stewardship & Conservation Planning Director, SAHC
- B.A., Biology; Environmental Studies, Oberlin College 2006
  - Two years experience in land trust stewardship, including baseline documentation: *Sept. 07 – present: Stewardship & Conservation Planning Director, SAHC; Sept. 06-July 07: AmeriCorps Land Protection & Stewardship Member, High Country Conservancy, Boone, NC*

Baseline Preparer: Neal Maker, AmeriCorps Stewardship Member, SAHC

- B.S., Environmental Studies, conc. in forestry, Warren Wilson College 2007

### 2. Field Assessment Personnel & Field Dates

The Field Assessment Team for the Hickory Nut Gap Farm Baseline Documentation included the following people:

Hanni Muerdter – Stewardship and Conservation Planning Director, SAHC, baseline field leader

Neal Maker – AmeriCorps Stewardship Member, SAHC  
David Flood – Outreach and Stewardship Intern, SAHC  
William Hamilton – Farmland Program Director, SAHC  
Cameron Farlow – AmeriCorps Farmland Outreach Member, SAHC

Members of this team performed baseline field work on 3 days in 2008: Oct 21, Oct 31, and Nov 20.

October 21: Neal Maker, David Flood  
October 31: Hanni Muerdter, Neal Maker, William Hamilton, Cameron Farlow  
November 20: Neal Maker

### 3. Data Collection Methods

The Field Assessment Team spent 2.5 days in the field walking through the Property in an effort to get a solid overview of the area. The team walked the interior of the Property and portions of the boundaries. A Garmin GPSmap 60CSx Global Positioning System (GPS) was used to mark waypoints (or latitude/longitude coordinates) at various locations throughout the Property including Farmstead Area boundaries, photo points, and significant natural features. The private paved and gravel roadbeds were mapped using aerial photographs and GIS software. The most heavily used soil roads were mapped using the GPS tracking system. All existing structures on the Property were also measured in the field with a measuring tape.

SAHC obtained and utilized: county produced aerial photographs of the area, the Black Mountain USGS topographic quadrangle map, and maps developed by SAHC from previous work performed on nearby tracts. The Webb A. Morgan survey (Recorded Buncombe County, date, Book xx, Pages xx) was also used to determine property boundaries and road and structure locations.

The waypoints and coordinates recorded in this Easement Baseline Documentation Report provide standard and consistent locations from which to monitor the easement over time. A

monitor can use a GPS unit to track latitude and longitude coordinates manually to find the specific locations documented.

At each waypoint, the area described and documented with a photograph should remain the same over time, or if changed, this should be through a natural evolutionary process. Anthropomorphic (human) changes or alterations in the current status of an area, as described at each waypoint or coordinate, must be allowed by the conservation easement. Those observations of neighboring properties are meant for reference only. Neighboring properties are not restricted by the terms of the easements but future activities from the neighboring lands could infringe upon the status of the conservation values protected by the easement and should also be accounted for over time.

It should be noted that the field team posted "Conservation Area" easement boundary marker signs along portions of the conservation easement boundaries. We recommend the remaining property boundaries be marked in the future, especially at areas of high access.

### **C. Purpose and Conservation Values of the Conservation Easement**

*The following text was adapted from Section 2 and from Recital E. of the conservation easement, and is meant for reference only. The baseline is subordinate to the conservation easement; refer to original conservation easement for full conservation values.*

The purposes of this Conservation Easement are, in order of priority, to permanently preserve and protect the Conservation Values of the Property through (1) managing the land for agricultural production and for forest products in the most ecologically sound manner possible; (2) maintaining permanently the scenic values of the Property; (3) maintaining the Open Space values of the Property; and (4) preventing any other use of the Property that will significantly impair or interfere with the Conservation Values of the Property.

Grantors and Grantee recognize that the Property in its present state possesses agricultural, natural, scenic, open space, recreational, historic, and educational values (collectively, the “Conservation Values”) of great importance to Grantors, Grantee, and the general public that have not been subject to significant development... The Conservation Values of the Property include:

1. a natural capacity of the Property and its soils to support healthy agricultural uses;
2. scenic working lands including pasture and forest;
3. Open Space (defined herein as undeveloped land), which offers relief from sprawl-type development pressure, and which is enhanced through this Conservation Easement because of its proximity to land and conservation easements held by Grantee including tracts and conservation easements recorded in the Buncombe County Registry of Deeds at Deed Book 3498, page 612-626 (Drovers Road Preserve conservation easement); and in Henderson County the Florence Preserve owned by Carolina Mountain Lands Conservancy; and because this property will serve as a visual gateway for visitors coming from Asheville to visit the Chimney Rock State Park in the Hickory Nut Gorge; and because the Clarke family is also in the process of placing a conservation easement on approximately 190 acres adjacent to the 110 acre farmland tract.
4. a variety of forest types mostly healthy and productive, including mixed hardwoods in different stages of succession;
5. wildlife habitat for large mammal species such as black bear, deer, and bobcat; smaller mammal species such as fox and beaver; large birds such as wild turkey, ruffed grouse, and birds of prey; woodpeckers and small birds, including migratory species; and a variety of species of amphibians and reptiles.

## **D. Description of the Protected Property**

The Property contains working farmland, significant wildlife habitat, tributaries and a section of Ashworth Creek, and intact riparian corridors. The Property is also visible from North Carolina Scenic Byway NC 74-A and adds to a contiguous permanently protected landscape, as specified in “Description of the General Vicinity & Nearby Conservation Lands” in Section A-2 and the Contextual Map in Section G-1). Based on these findings the Hickory Nut Gap Farm Property is a high quality property worthy of permanent protection.

### **1. Land Use and Existing Human Modifications** Overview & Land Use History

The Property contains a mixture of bottomland and terrestrial uplands. The Property is approximately 47% forested, with the exception of the existing trails, road beds, and streams. The remaining approximately 53%, or approximately 44 acres of the Property is in pasture or developed residential/farmstead land (used as pasture for livestock, cropland, and developed land for farm buildings and for two residences). *See Natural and Anthropomorphic Features Map, Section G-4*

Hickory Nut Gap Farm has a long and significant history, dating back to the first settlers crossing the Blue Ridge after the Revolutionary War. The current owners, now five generations, date back to 1916 when Jim and Elizabeth McClure bought the old Sherrill's Inn. The old Inn is the centerpiece of the farm today, a magnificent tangible interpreter of the history of Western North Carolina. The McClures initially raised various grains, apples, hogs, sheep and beef cattle. The farm shifted to a dairy operation soon after World War II, which continued until 1988. Apples, eggs, and hogs continued to be sold off the farm. For the past eight years, Spring House Natural Meats, started by the McClure's great grandson Jamie Ager and his wife Army, have created a viable natural meats business based on grass fed beef, pastured pork, turkeys and chickens, and sheep. For the past eight years McClure's great granddaughter Annie Louise and husband Isaiah Perkinson have created a viable diverse farming operation. Flying Cloud Farm raises a wide variety of vegetables for Community Supported Agriculture and Tailgate market sales in Asheville. It should be added that Jim McClure was a giant in the history of Western North Carolina agriculture, creating in 1920 the Farmers Federation. You can read the history in the book *WE PLOW GOD'S FIELDS*. The farm is also the site of a summer camp, fund raisers, and straddles along the designated Drovers Road scenic highway, along 74A, from Asheville to Bat Cave. The drovers and other travelers lodged at Sherrill's Inn.

### Current Agriculture & Working Lands

Working Lands in North Carolina are a critical part of our culture and economy. They supply us with food and other products, as well as many other benefits. The preservation of working lands is supported by the American Farmland Trust ('Planning for an Agricultural Future: A Guide for North Carolina Farmers and Local Governments,' 2007):

*“Working farms and forests provide communities with a broad set of benefits, some immediate and tangible, and others more subtle and long lasting. At minimal cost, local citizens enjoy the economic, environmental, cultural, open space and fiscal amenities that agriculture provides, in addition to a safe and abundant supply of locally produced food.” (Planning for an Agricultural Future, p. 3)*

### ***“The Benefits of Working Lands***

- *Economic: Farming and forestry are major economic activities in North Carolina. According to the North Carolina Department of Agriculture and Consumer Services (NCDA&CS) agriculture provides \$7 billion in direct sales and contributes a total of \$62 billion in economic activity to the state’s economy. The forestry sector adds an additional \$19 billion in economic activity.*
- *Environmental: North Carolina’s farm and forest landowners manage 23 million acres, over 83 percent of the non-federal land base in the state. All citizens depend on farmers to be stewards of our natural resources, providing clean water and wildlife habitat across the state.*
- *Rural Heritage: Agriculture is a major part of the state’s cultural heritage, with farm families anchoring rural communities and providing an important piece of North Carolina’s unique historical character.*
- *Open Space: Farms and forests provide wildlife habitat, green space and beautiful views. North Carolina’s well-known scenic beauty attracts tourist dollars from around the world.*
- *Tax Savings: Privately owned working lands provide fiscal benefits, helping keep property taxes low due to their minimal need of public services.*
- *Local Food: North Carolina farms are increasingly valued as a source of fresh, safe and healthy food. The growth of farmers’ markets, Community Supported Agriculture and farm-to-school programs around the state point to strong consumer demand for locally grown fruits, vegetables, wines, meats and dairy products.” (Planning for an Agricultural Future, p. 5)*

The owners of the Hickory Nut Gap Farm Conservation Easement Property are members of the Buncombe County Voluntary Farmland Preservation Program.

Livestock on the Property (at the time of this writing) include:  
horses, cattle, sheep, goats, pigs, turkeys, and chickens

Crops on the Property (at the time of this writing) include:  
sorghum, pumpkins, and hay

#### Structures

There are 14 structures on the Property, including two residences. For this baseline, we interpret structures to be any impervious surface or permanent or semi-permanent shelter with a roof. There were two portable outhouses and several small, mobile shelters that were not counted as “structures”. However, the concrete pad below the portable outhouses was counted as a “structure”. Brief descriptions of each structure, as well as their approximate dimensions and footprint area follow (a picture of each structure can be found in Section F-1; locations of each structure are also noted on the Structure Location Map, Section G-9):

- A (farm store): 32’ x 28’—896 ft<sup>2</sup> (the farm store has changed in size since the 2006 aerial photo)
- B (farm store storage): 58’ x 18’—1044 ft<sup>2</sup>
- C (multi-purpose barn): 52’ x 65’—3380 ft<sup>2</sup>
- D (tack and storage barn): 46’ x 49’—2254 ft<sup>2</sup>
- E (horse barn): 98’ x 116’—11368 ft<sup>2</sup>
- F (silo): 40’ circumference—127 ft<sup>2</sup>
- G (baby chicks’ house): 16’ x 10’—160 ft<sup>2</sup>
- H (pig and turkey shed): 14’ x 28’—392 ft<sup>2</sup>

- I (concrete pad for outhouse): 12' x 20'—240 ft<sup>2</sup>
- J (DOT house): 45' x 27' with a 14' x 12' unroofed porch—1383 ft<sup>2</sup>
- K (Sherrill house): 29' x 32'—928 ft<sup>2</sup>
- L (woodshed): 18' x 11'—198 ft<sup>2</sup>
- M (pump house): 4.5' x 4.5'—20 ft<sup>2</sup>
- N (outbuilding): 4.5' x 4.5'—20 ft<sup>2</sup>

Total square footage of structures (please note that in the case of two-story structures, the figure represents only total enclosed ground, not necessarily square footage of living space): 22410 square ft

#### Roads & Trails

There are two paved roads on the Property. Sugar Hollow Road passes through the middle of the Property and Ambience Way marks the western boundary of the Hickory Nut Gap Farm Property. Sugar Hollow Road is a North Carolina secondary road. There are also three short gravel roads on the Property. Two of these act as driveways for the two residences and the third loops through the farmstead area and accesses the farm store and other farm buildings.

The remaining roads on the property are soil, most of which appear to be currently used farming roads. They are primarily used by foot, by tractor, and/or for horseback riding with occasional other vehicle use.

See the Natural & Anthropomorphic Features Map in Section G-4 for the locations of all the roads.

#### Other Human Modifications

A small picnic area with a number of picnic tables exists near Ashworth Creek across from the farm store. Along with the store, there are a number of other commercial enterprises on the Property that are directed toward visitors. At the time of our visit, a 'corn' maze, a pick-your-own pumpkin patch and a Frisbee golf course were observed in the field to the north of Sugar Hollow Road.

## **2. Natural Features**

The forest, pastureland, and riparian corridors offer habitat for a diversity of wildlife. The size of the Property, complemented by its close proximity to several other protected properties (see Contextual Map in Section G-1) adds to the Property's biological significance. The Property also hosts significant water resources.

#### Natural Communities & Wildlife:

In the approximately 39 acres of forested land within the Property, the primary forest types are South-Central Interior Small Stream and Riparian Forest, Southern & Central Appalachian Cove Forest, and Southern & Central Appalachian Oak Forest, as identified by Neal Maker, SAHC AmeriCorps Stewardship Member, B.A. Environmental Studies, conc. in Forestry, and confirmed by GAP Analysis Project GIS data (see GAP Natural Community Type Map, Section G-5).

#### **South-Central Interior Small Stream and Riparian Forest**

Many of the riparian corridors within the Property host South-Central Interior Small Stream and Riparian Forests.

Montane Floodplain Forests such as these provide habitat for a broad array of species and help to protect water quality. Protection of this significant forest type is supported by the North Carolina Wildlife Action Plan (NCWAP, 2005, *North Carolina Wildlife Resources Commission, Raleigh, NC*):

*"Floodplain forests of the Southern Blue Ridge physiographic province in western North Carolina are ecologically rich and diverse." (NCWAP, p 143)*

*"Protection and restoration of the remaining floodplain forest in the region needs to be a high priority for conservation agencies and organizations from numerous perspectives, including both maintenance of water quality, as well as aquatic and floodplain forest wildlife." (NCWAP, p 146)*

Priority species associated with Montane Floodplain Forests (NCWAP, p 143) include:

*Myotis sodalist* --- Indiana Bat (E-E)  
*Ambystoma talpoideum* --- Mole Salamander (SC)  
*Desmognathus aeneus* --- Seepage Salamander (SR)  
*Eurycea junaluska* --- Junaluska Salamander (T)  
*Eurycea longicauda* --- Longtail Salamander (SC)  
*Hemidactylum scutatum* --- Four-toed Salamander (SC)  
*Pseudacris brachyphona* --- Mountain Chorus Frog (SC)  
*Clemmys muhlenbergii* --- Bog Turtle (T-T)  
*Crotalus horridus* --- Timber Rattlesnake (SC)

For a complete list of priority species associated with Montane Floodplain Forests, see Appendix I-4.

#### **Southern & Central Appalachian Cove Forest**

The Property's Southern & Central Appalachian Cove Forest is located along some riparian areas.

Southern & Central Appalachian Cove Forests support habitat for a diverse variety of species. Protection of this significant forest type is supported by the North Carolina Wildlife Action Plan (NCWAP, 2005, *North Carolina Wildlife Resources Commission, Raleigh, NC*):

*"Appalachian Cove hardwood forests represent some of the most diverse ecosystems in the world outside of tropical zones." (Hunter et al 1999, NCWAP, p 107)*

*"An amazing assortment of trees and herbaceous vegetation, coupled with topographic, microclimatic, and soil characteristics combine to provide an extremely productive habitat for numerous mammals, amphibians, and birds." (NCWAP, p 107)*

“... human population growth and its associated development is consuming or altering cove hardwood habitat rapidly. We must continue to add to our base of conservation ownership for future generations of the wildlife species associated with the habitat, as well as the use and enjoyment of them by future generations of North Carolinians.” (NCWAP, p. 109)

Priority species associated with Southern and Central Appalachian Cove Forest (NCWAP, p 107) include:

*Accipiter cooperii* --- Cooper's Hawk (SC)  
*Accipiter striatus* --- Sharp-shinned Hawk (SR)  
*Certhia americana* --- Brown Creeper (SC)  
*Coccyzus erythrophthalmus* --- Black-billed Cuckoo (SR)  
*Dendroica cerulea* --- Cerulean Warbler (SR)  
*Sphyrapicus varius* --- Yellow-bellied Sapsucker (SC)  
*Aneides aeneus* --- Green Salamander (E)  
*Desmognathus aeneus* --- Seepage Salamander (SR)  
*Desmognathus wrighti* --- Pigny Salamander (SR)  
*Plethodon aureolus* --- Tellico Salamander (SR)

For a complete list of priority species associated with Cove Forests, see Appendix I-4.

#### **Southern & Central Appalachian Oak Forest**

Southern & Central Appalachian Oak Forest is the primary forest type for the remaining slopes farther uphill from the streams on the Property.

Protection of this significant forest type is supported by the North Carolina Wildlife Action Plan (NCWAP, 2005, *North Carolina Wildlife Resources Commission, Raleigh, NC*):

“The importance of oak forest to wildlife of the region cannot be overstated, due to the overwhelming predominance of the habitat across the landscape, the variety of conditions encompassed, and the mast production capacity of this habitat. By virtue of the production of vast quantities of acorns, hickory nuts, and a wide variety of soft mast associates, the wildlife food production capacity of oak forests is immense. Coupled with the sheer amount of this habitat available, these factors make oak forests one of the most important habitats of the region to a significant variety of wildlife species.” (NCWAP, p. 122)

“We must also recognize opportunities to act as soon as possible to protect landscape scale oak forests through both acquisition and other protection measures (voluntary incentives, cooperative agreements, easement programs) focused upon large tracts that will preclude future fragmentation or promote connectivity between existing conservation ownerships.” (NCWAP, p. 125)

Priority species associated with Oak Forests (NCWAP, p 123) include:

*Accipiter cooperii* --- Cooper's Hawk (SC)  
*Accipiter striatus* --- Sharp-shinned Hawk (SR)  
*Certhia americana* --- Brown Creeper (SC)  
*Coccyzus erythrophthalmus* --- Black-billed Cuckoo (SR)  
*Dendroica cerulea* --- Cerulean Warbler (SR)  
*Poecite atricapilla* --- Black Capped Chickadee (SC)

*Sphyrapicus varius* --- Yellow-bellied Sapsucker (SC)  
*Vermivora chrysoptera* --- Golden-winged Warbler (SR)  
*Muscipla nivalis* --- Least Weasel (SR)  
*Sciurus niger* --- Eastern Fox Squirrel (SR)  
*Aneides aeneus* --- Green Salamander (E)  
*Desmognathus aeneus* --- Seepage Salamander (SR)  
*Hemidactylium scutatum* --- Four-toed Salamander (SC)  
*Plethodon aureolus* --- Tellico Salamander (SR)  
*Plethodon longicrus* --- Crevice Salamander (SC)  
*Plethodon richmondi* --- Southern Ravine Salamander (SC)  
*Plethodon ventralis* --- Southern Zigzag Salamander (E)  
*Plethodon whrlei* --- Wehrle's Salamander (T)  
*Pseudacris brachyphona* --- Mountain Chorus Frog (SC)  
*Crotalus horridus* --- Timber Rattlesnake (SC)  
*Pituophis melanoleucus melanoleucus* --- Northern Pinesnake (SC)

For a complete list of priority species associated with Oak Forests, see Appendix I-4.

#### Other Forest Types

The following forest types/land uses were also identified on the Property by GAP data:

- Pasture/Hay
- Row Crop
- Successional Shrub/Scrub (Utility Swath)
- Developed Open Space
- Other – Herbaceous
- Appalachian Hemlock-Hardwood Forest

#### Natural Heritage Areas and Element Occurrences

See North Carolina Natural Heritage Element Occurrences (Attachment I-2) for significant species of wildlife and vegetation recorded in the surrounding vicinity. Though not directly observed, it is likely some of these species exist on the Property by cause of near location. The Property is also within close proximity to the following fifteen North Carolina State Natural Heritage Areas: Bald Mountain/Round Top Mountain, Bald Top Mountain, Bank Mountain, Bat Cave/Bluerock Mountain, Bead and Lace Falls, Blue Ridge Assembly, Broad River Natural Area, Burntshirt Mountain, Face Rock/Bearwallow Mountain, Flat Top Mountain/Swannanoa Cove, Hooper's Creek/Bearwallow Mountain, Little Bearwallow Mountain, Little Pisgah Slopes, Rattlesnake Knob, and Raven Rock.

#### Exotic Invasive Species

A variety of invasive exotic species exist on the Property, primarily along forest edges. Hemlock Woolly Adelgid (*Adelges tsugae*), Multiflora Rose (*Rosa multiflora*), Wineberry (*Rubus phoenicolasius*), Japanese stilt grass (*Microstegium vimineum*), Tree of Heaven (*Ailanthus altissima*), and Japanese Honeysuckle (*Lonicera japonica*) were all found on the Property (Refer to photographs in Section F-1).

#### Aquatic Resources

A network of streams, seeps, and springs exists on the Property and feed Ashworth Creek. A section of Ashworth Creek that is over 2300 linear feet passes through the Property as well (see Natural and Anthropomorphic Features Map, Section G-4 for location of streams). Ashworth Creek flows into Cane Creek, which then flows to the French Broad River. Ashworth Creek and Cane Creek have both been classified as a Class C streams by the North Carolina Division of Water Quality, indicating that they are protected for recreation, fishing, wildlife, biological integrity, and agriculture.

Though streams were not mapped in the field in 2008, a calculation of NC Stream Mapping Program's French Broad River NHD Flowline shows over 12,000 linear feet of stream exist on the Property.

Riparian corridors are intact, with the exception of short sections of stream within some of the open/cleared areas of the Property.

#### Soils

According to NRCS SSURGO spatial data (source: Soil Data Mart), various Tate loam soils are inter-fingered across much of the Property (2-8% slopes: TaB, 8-15% slopes: TaC, and 15-30% slopes: TaD). In addition, Tocane and Tusquitee complexes exist south of Sugar Hollow Road (8-15% slopes: ToC, and 15-30% slopes: TpD), as well as Edneyville and Chestnut soils (15-30% slopes, EDD). Evard and Cowee soils are found in some northern and eastern portions of the Property (8-15% slopes: EwC and 15-30% slopes: EwD), and Unison loams are found along one ridge in the north central portion of the Property (8-15% slopes, UnC). Tusquitee and Whiteside soils also exist on the Property (8-15%, TwC).

## **E. Resource Management and Recommendations**

### Invasive Exotic Species

As noted in Section D-2, Multiflora Rose (*Rosa multiflora*), Japanese Stilt Grass (*Microstegium vimineum*), and other invasive exotic species have been observed on the tract. Invasive plants are a major threat to habitat diversity within many of the region's protected lands because they can out-compete and displace native plants and alter entire plant communities. It is thought that invasive plant infestations are one of the most significant threats to long term natural heritage protection. Once established, invasive plants can become extremely difficult to control and eradicate. Therefore the best control of invasive plants is to prevent them from becoming established anywhere on the Property. Activities such as trail building and camping shelter construction which cause soil to be disturbed and exposed can allow colonization by invasive plants. Therefore, any soil disturbances should be reseeded with native or non-invasive exotic species immediately after the disturbance has occurred. Additionally, we recommend any outside equipment used for soil disturbances to be thoroughly cleaned before entering the Property, as outside equipment commonly transports invasive species seeds or roots.

Signature of baseline field leader  
Hanni Muerdter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008



Photo 1: Structure B, farm store storage shed



Photo 2: Structure A, farm store

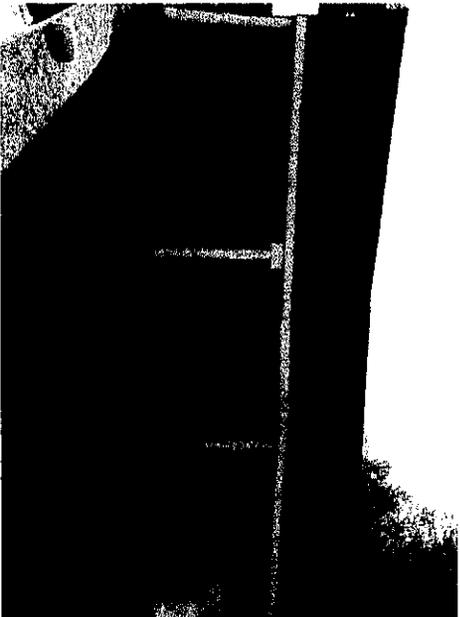


Photo 3: Structure C, multi-purpose barn

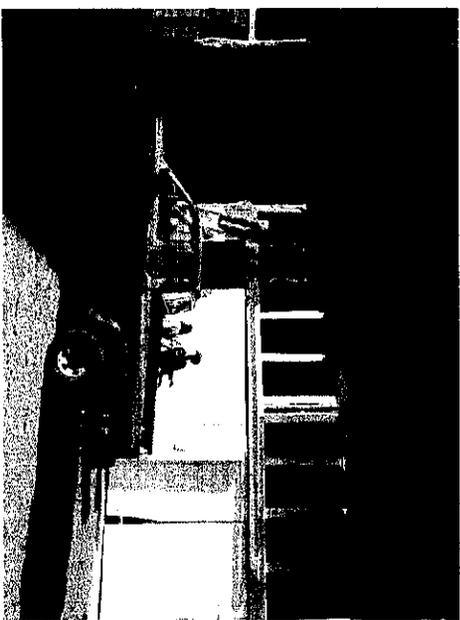


Photo 4: Structure D, tack and storage barn



Photo 5: Structure E, horse barn

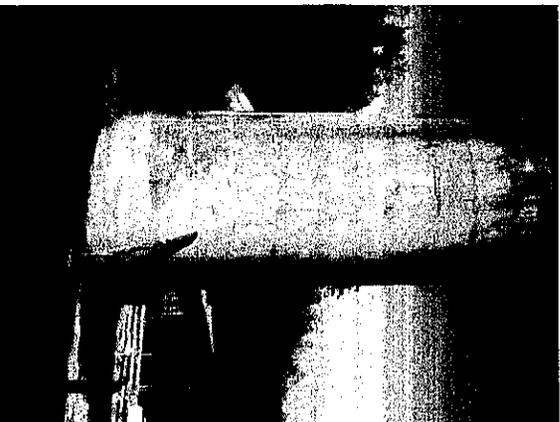


Photo 6:  
Structure F,  
silo

Dumont Clarke IV

date

Signature of baseline field leader  
Hanni Muerdter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008

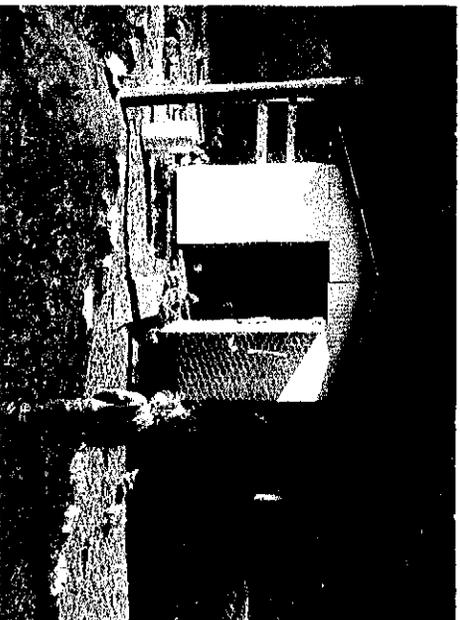


Photo 7: Structure G, baby chicks' house



Photo 8: Structure H, pig and turkey shed



Photo 9: Structure I, concrete pad under Port-a-johns

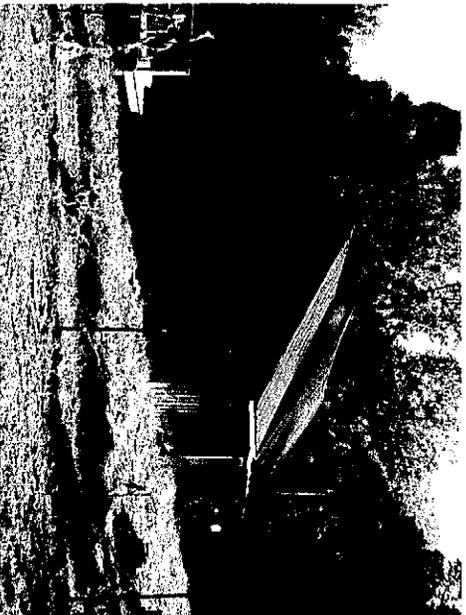


Photo 10: Structure J, DOT house

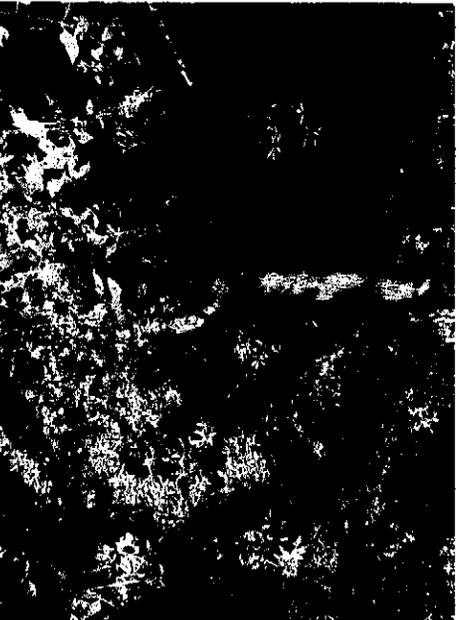


Photo 11: Neal near corner of conservation easement property, property approximately in front and to the right of tree trunk



Photo 12: Exotic invasive, hemlock woolly adelgid

Dumont Clarke IV

date

Signature of baseline field leader  
Hanni Muerdter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008



Photo 13: Exotic invasive, multiflora rose



Photo 14: Exotic invasive, wineberry



Photo 15: Exotic invasive, Japanese stilt grass



Photo 16: View of southwestern field, structure to picture right is Structure J, utility line passes through conservation easement property



Photo 17: Capped pin below blue steak, conservation easement property is to the left of the stream channel center

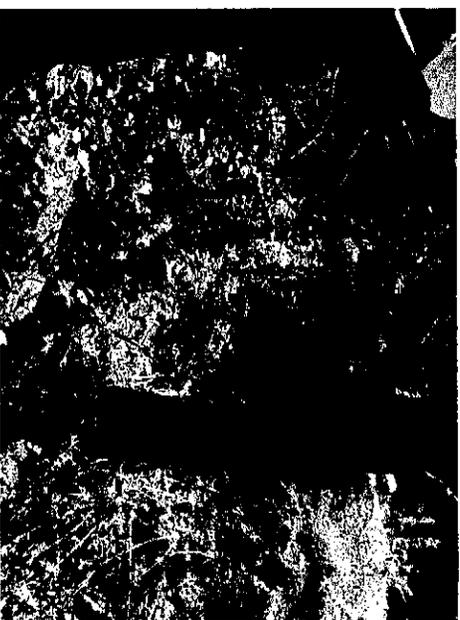


Photo 18: Stream channel on easement property

Dumont Clarke IV

date

Signature of baseline field leader  
Hanni Muerdter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008

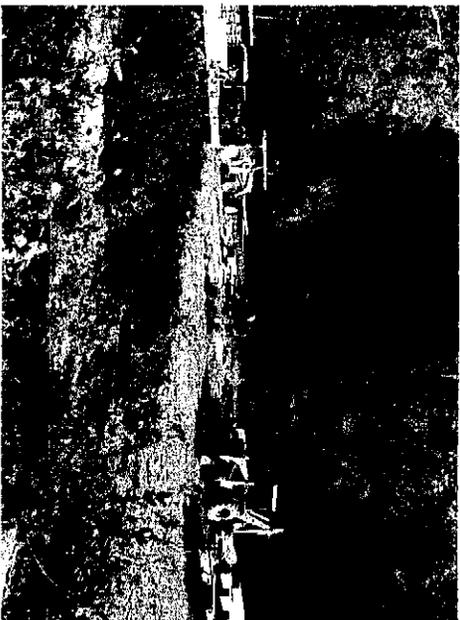


Photo 19: Lumber mill, machinery, and stacked lumber in southeast field on conservation easement property



Photo 20: Ford in stream used by livestock



Photo 21: Contextual view of southeastern field and watering cistern (circled), lumber mill is behind cistern



Photo 22: Exotic invasive, tree of heaven



Photo 23: Neal points to capped pin, conservation easement property approximately right of fence line



Photo 24: Private residence near conservation easement property, property is approximately in front of hemlocks

Dumont Clarke IV

date

Signature of baseline field leader  
Hanni Muendter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008



Photo 25: Neal on capped corner pin, conservation easement property approximately behind arms



Photo 26: Dry stream channel



Photo 27: Neal on capped corner pin, conservation easement property left of stream channel centerline



Photo 28: Exotic invasive, japanese honeysuckle



Photo 29: Neal approximately on conservation easement property, property is roughly behind him

Dumont Clarke IV

date

Signature of baseline field leader  
Hanni Muertler, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008



Photo 30: culvert emptying onto conservation easement property and piping



Photo 31: Unused settling tank inside Farmstead Area 2



Photo 32: Soil roadbed  
crosses Ashworth Creek



Photo 33: Cultivated area,  
currently being used as a  
'corn maze'

Dummont Clarke IV

date

Signature of baseline field leader  
Hanni Muerdter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008



Photo 34: Neal at flagged steak that marks corner, conservation easement property approximately inside arms



Photo 35: Contextual view of pasture



Photo 36: Looking down boundary, conservation easement property approximately to left of Neal and tree line



Photo 37: Looking down conservation easement property boundary, property is to left of paved road centerline (Ambiance Way)



Photo 38: sheep pen and cattle chute

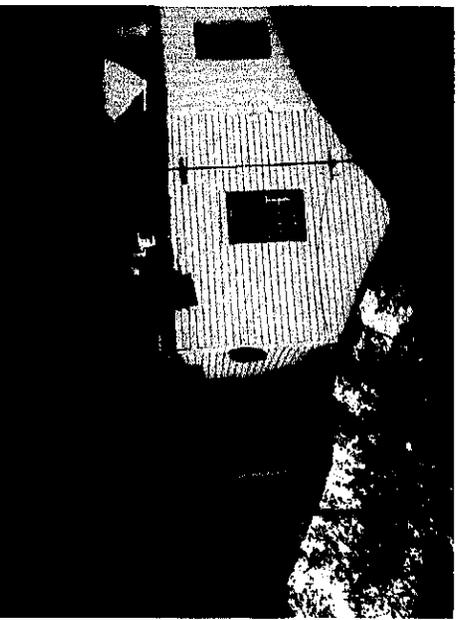


Photo 39: Structure K, Sherrill house

Dumont Clarke IV

date

Signature of baseline field leader  
Hanni Muerdter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008



Photo 40: Structure L, woodshed



Photo 41: Structure M, pumphouse



Photo 42: Farmstead Area 1 corner (F1) at capped pin under flagging, looking down Farmstead Area line, Farmstead Area 1 approximately left of Hammi (circled)



Photo 43: Farmstead Area 1 approximately behind Neal, Area corner (F2) is marked by circled tree



Photo 44: Farmstead Area 1 is approximately behind Neal and fence line (circled)



Photo 45: Neal (circled) stands next to tree that marks the inside corner of Farmstead Area 1 (F3), Area is behind Neal's arms

Dumont Clarke IV

date

Signature of baseline field leader  
Hanni Muerdter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008



Photo 46: Hanni on Farnstead Area 1 corner (F4), Area is within her arms, in front of stream channel



Photo 47: Farnstead Area 1 approximately behind Neal, concrete pad is in Farnstead Area



Photo 48: unused silage pit



Photo 49: Photo taken from Farnstead Area 2 corner (F5), Neal on another Farnstead Area 2 corner (F6), Area is approximately inside his arms, left of roadbed



Photo 50: Neal on Farnstead Area 2 corner (F7), Area is approximately inside his arms, left of fence



Photo 51: Neal at Farnstead Area 2 corner (F8), Area approximately behind fencelines

Dumont Clarke IV

date

Signature of baseline field leader  
Hanni Muerdter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008



Photo 52: Photo taken from corner of conservation easement property, property is to the right of the wooden stakes (circled)



Photo 53: Clipboard approximately at Conservation Easement Property corner, Property is left of the stream channel and right of the blue stake (circled)



Photo 54:  
Stream crossing on Property



Photo 55: Capped pin (indicated) marks corner of Conservation Easement Property, Property is approximately behind the stream channel and right of the circled flagging



Photo 56: Looking down boundary of Conservation Easement Property, easement approximately left of fence

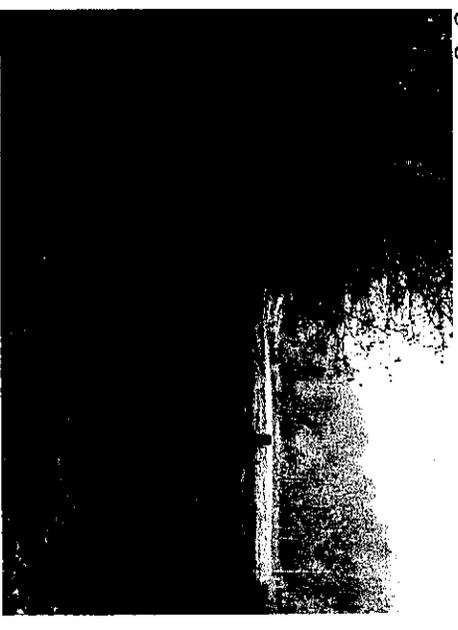


Photo 57: Capped corner pin (indicated) at corner of Conservation Easement Property, Property is behind gate and very roughly right of treeline

Dumont Clarke IV

date

Signature of baseline field leader  
Hanni Muerdter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008

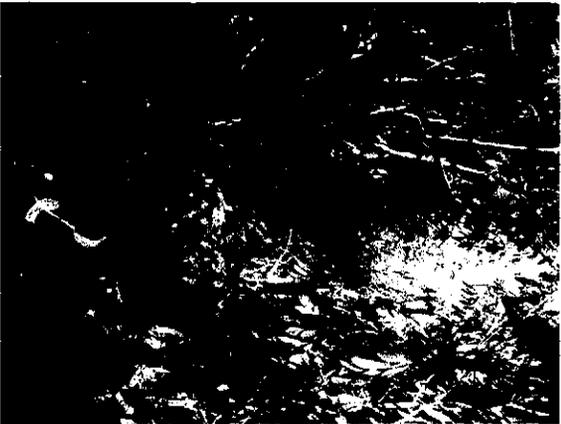


Photo 58:  
Capped pin  
below orange  
flagging at cor-  
ner of Conser-  
vation Ease-  
ment Property,  
field in distance  
is on the Prop-  
erty



Photo 59: Capped pin on Conservation  
Easement Property in front of clipboard. Property ap-  
proximately to the left and behind pin



Photo 60: Structure N, unused outbuilding



Photo 61: Pig pen



Photo 62: Capped pins (indicated) next to blue stakes,  
Conservation Easement Property left of pins

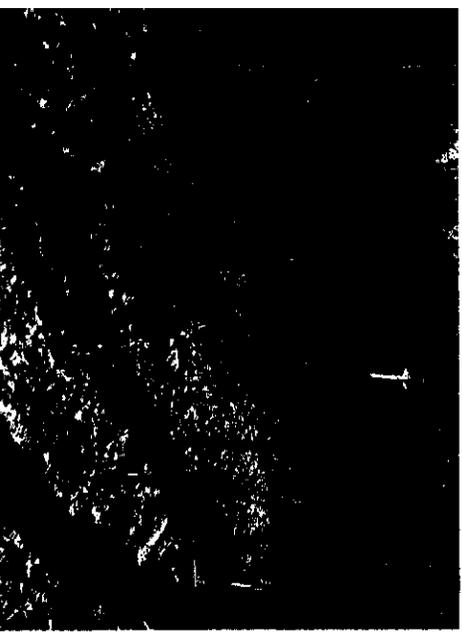


Photo 63: Capped pin in front of clipboard to photo  
right, Conservation Easement Property approximately  
behind pin and right of stream channel

Dumont Clarke IV

date

Signature of baseline field leader  
Hanni Muerdter, SAHC

Date

Photos 1-41 taken on 10/21/2008, 42-51 on 10/31/2008  
and 52-65 on 11/20/2008



Photo 64: capped pin below orange flagging, Conservation Easement Property right of stream channel center line



Photo 65: capped pin in front of clipboard, Conservation Easement Property approximately behind pin

Dumont Clarke IV

date



**F-3: TABLE WITH PHOTOGRAPHIC WAYPOINT COORDINATES  
HICKORY NUT GAP FARM CONSERVATION EASEMENT  
2008 BASELINE DOCUMENTATION REPORT**

PHOTOGRAPH #	BEARING (in degrees)	LATITUDE (in degrees)	LONGITUDE (in degrees)
1	180	35.49633047	-82.36470723
2	180	35.49642418	-82.36474344
3	160	35.49669030	-82.36483857
4	230	35.49633047	-82.36470723
5	60	35.49642418	-82.36474344
6	280	35.49669030	-82.36483857
7	250	35.49633047	-82.36470723
8	180	35.49642418	-82.36474344
9	590	35.49669030	-82.36483857
10	90	35.49645000	-82.36383333
11	600	35.49633047	-82.36470723
12	N/A	35.49642418	-82.36474344
13	N/A	35.49669030	-82.36483857
14	N/A	35.49669030	-82.36483857
15	N/A	35.49699356	-82.36470412
16	160	35.49811170	-82.36450707
17	160	35.49798606	-82.36469172
18	180	35.49876214	-82.36370249
19	60	35.49876055	-82.36340694
20	270	35.49851756	-82.36374607
21	0	35.49692784	-82.36245962
22	360	35.49683992	-82.36163693
23	270	35.49680555	-82.36162193
24	50	35.49684545	-82.36142932
25	140	35.49702474	-82.36034805
26	100	35.49668334	-82.35983139
27	110	35.49634472	-82.35954624
28	N/A	35.49736756	-82.36105599
29	260	35.49822788	-82.36091835
30	350	35.49921946	-82.36408479
31	300	35.49936295	-82.36422518
32	20	35.49951291	-82.36425854
33	270	35.50008045	-82.36379293
34	80	35.50383252	-82.36276413
35	270	35.50334117	-82.36392830

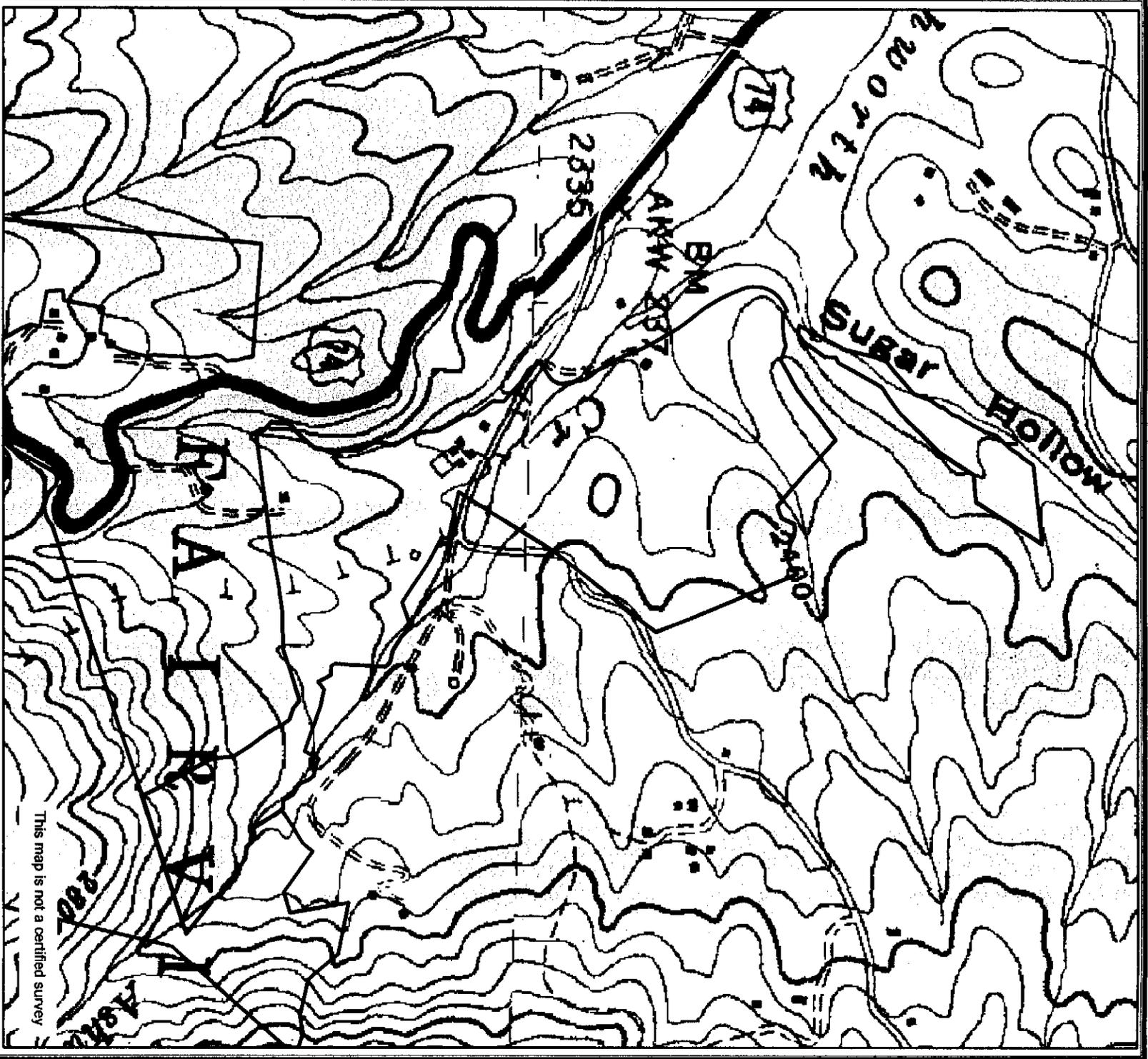
PHOTOGRAPH #	BEARING (in degrees)	LATITUDE (in degrees)	LONGITUDE (in degrees)
36	310	35.50396238	-82.36439609
37	170	35.50315107	-82.36757518
38	100	35.50041664	-82.36579084
39	130	35.50163914	-82.36623374
40	60	35.50166840	-82.36595831
41	40	35.50170796	-82.36615721
42	80	35.49796502	-82.36482088
43	0	35.49811539	-82.36387163
44	140	35.49825755	-82.36385738
45	60	35.49870816	-82.36388119
46	70	35.49874881	-82.36379771
47	30	35.49867991	-82.36382771
48	240	35.49868930	-82.36419124
49	340	35.49926941	-82.36420942
50	60	35.49962875	-82.36428595
51	270	35.49949572	-82.36459793
52	110	35.50365273	-82.36708182
53	70	35.50377091	-82.36700546
54	30	35.50428959	-82.36643415
55	80	35.50708738	-82.36479197
56	270	35.50728679	-82.36360006
57	250	35.50727212	-82.36342815
58	340	35.50636302	-82.36408118
59	30	35.50627417	-82.36460547
60	320	35.50163412	-82.36624489
61	100	35.50151283	-82.36622217
62	280	35.49838613	-82.36199761
63	140	35.49855569	-82.36169511
64	100	35.49732347	-82.35942277
65	20	35.49600122	-82.35920568

*Photopoints 1-41 taken on October 21, 2008*

*Photopoints 42-51 taken on October 31, 2008*

*Photopoints 55-65 taken on November 20, 2008*





## G-2: Topographic Map of the Hickory Nut Gap Farm Property

HNAG 2008 Proposed Addition

HNAG 2008 Proposed Addition

HNAG 2008 Proposed Addition

MAY 1985

See Page North Carolina 1125 1200

Topog USGS 7.5 Minute Series, "Tahama"

property boundaries derived from

Walt & Associates, PA

survey, recorded Deaneville CA

Dec. 28, 2008, Book 11, Page 11



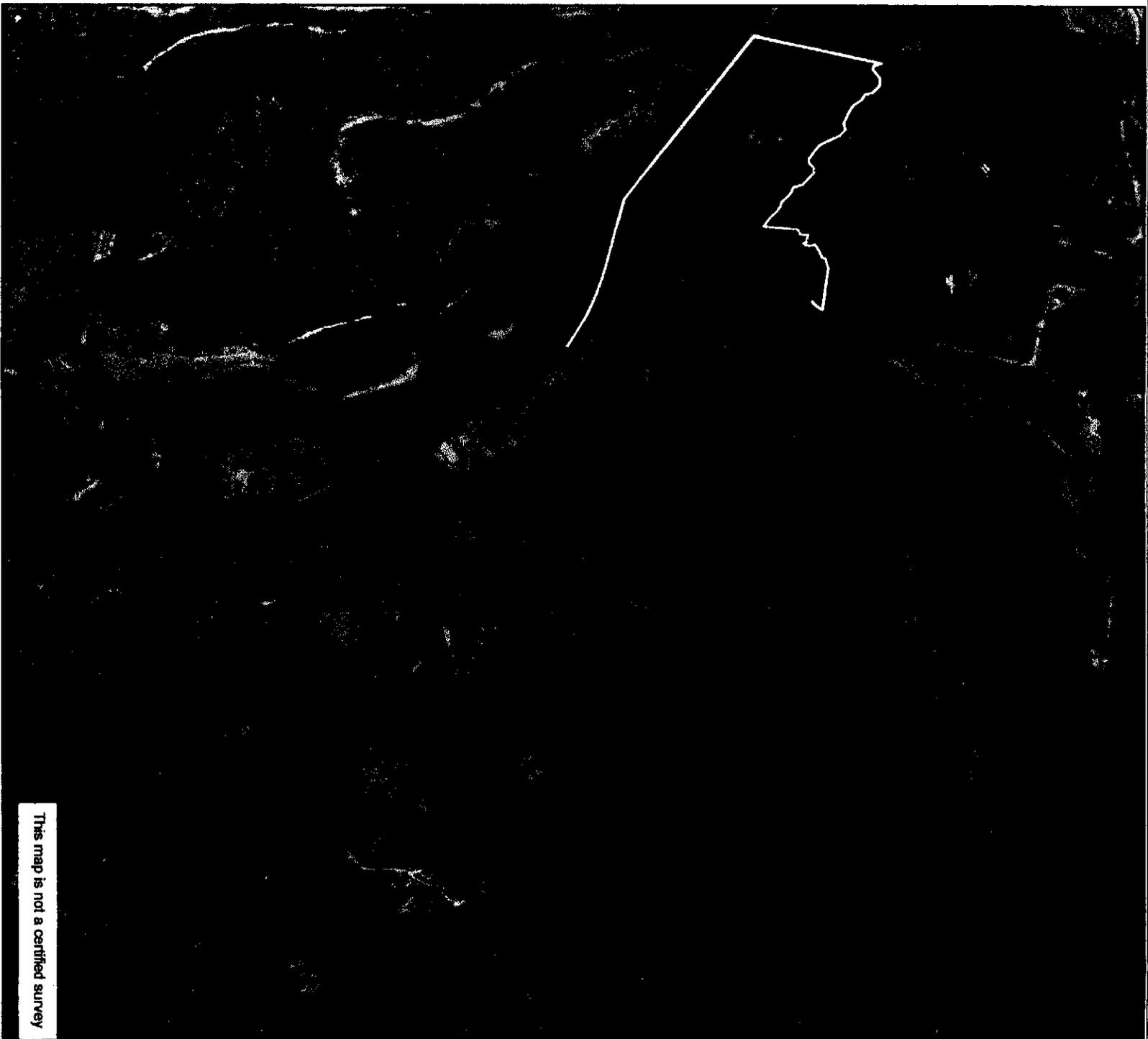
Map Created by Neal Maker

December 2008

Neal Maker, date

0 245 490 735

feet



This map is not a certified survey

# G-3: Orthographic Map of the Hickory Nut Gap Farm Property

1:400' Scale (not representative)

1:400' Scale (not representative)

1:400' Scale (not representative)

0 245 490 980

Feet



2010

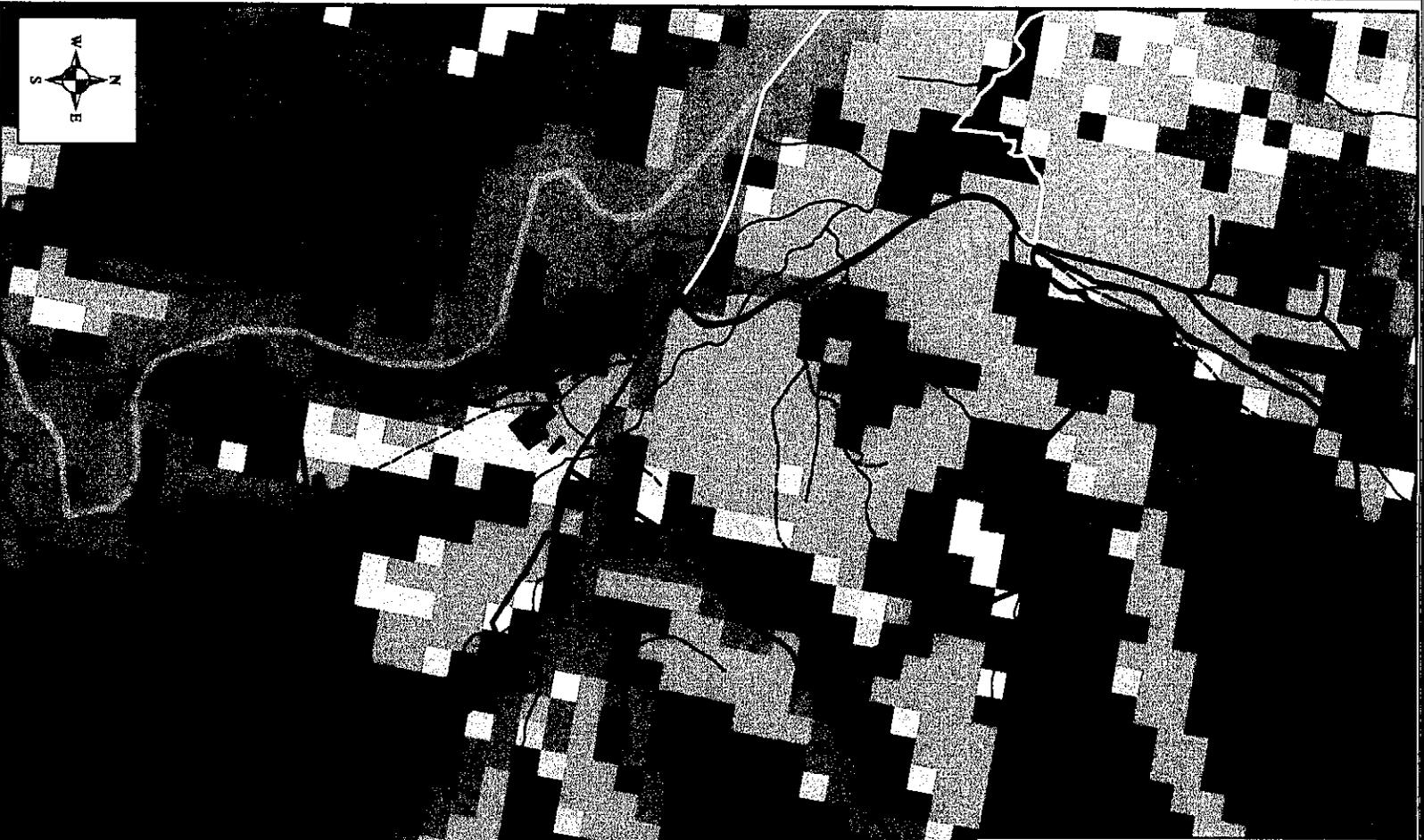
Map of Hickory Nut Gap Farm Property



Professional Surveyor

Scale: 1" = 400'





This map is not a certified survey  
 NAD 1983  
 State Plane North Carolina FIPS 3200  
 GAP data: "Southeast GAP Regional Land Cover  
 - North Carolina Subset", 05272008, Biodiversity  
 and Spatial Information Center, USGS North Carolina  
 Cooperative Fish and Wildlife Research Unit,  
 NC State University  
 property boundaries derived from  
 Webb A. Morgan & Associates, P.A.  
 surveys - recorded Blount Co.  
 Dec. xx, 2008, Book xx, Pages xx  
 structures, gravel, and paved roads mapped using aerial maps  
 soil roadbeds mapped with handfield GPS unit  
 primary and secondary roads from NCDOT data  
 Streams: NHD Flowline, NC Stream Mapping Program  
 "Upper French Broad & 'trenchroad.shp'"  
 0 250 500 1,000  
 Feet

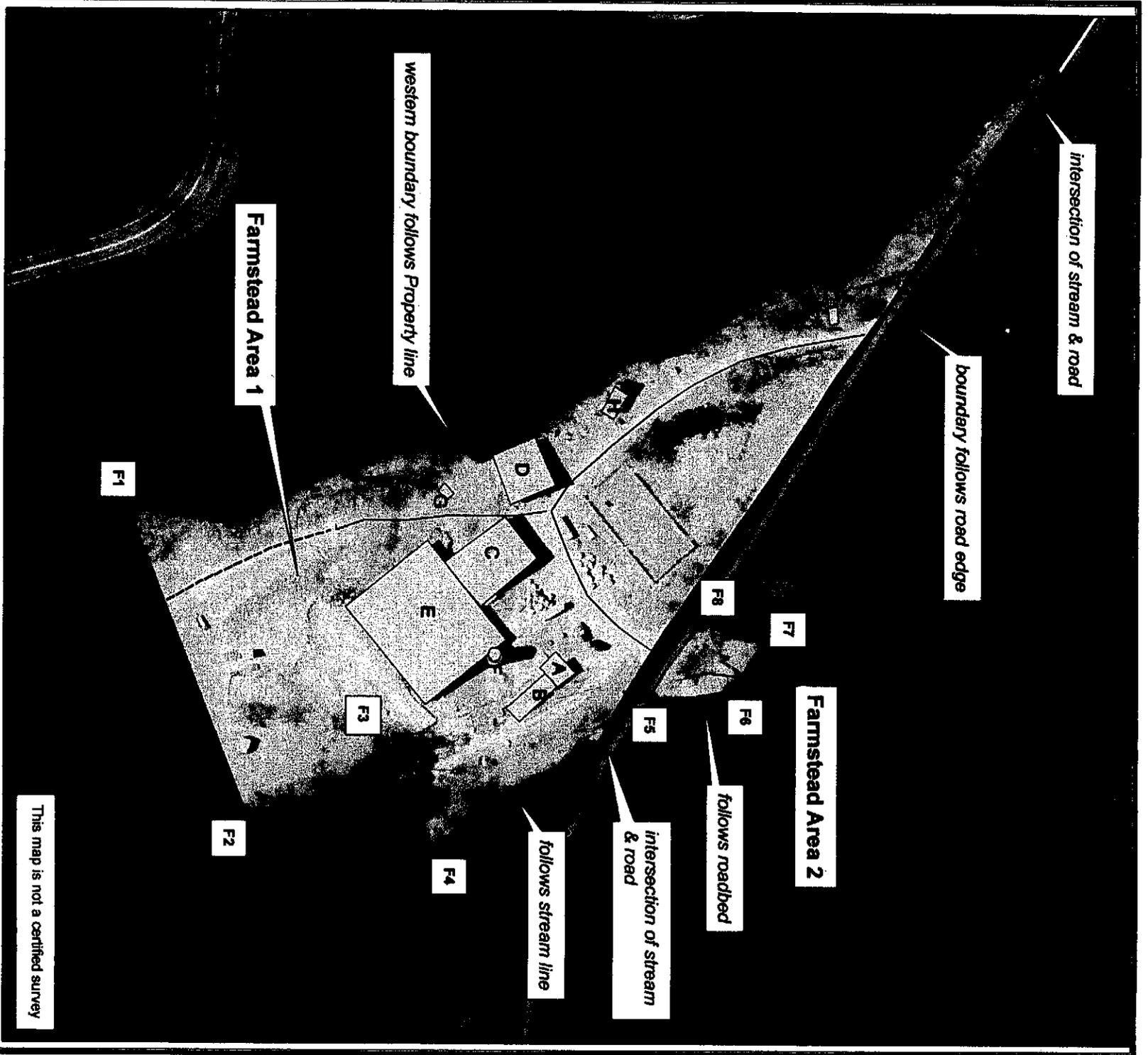
This map is not a certified survey

# G-5: GAP Landcover Map of the Hickory Nut Gap Farm Property

	Forest		Pasture
	Open Field		Water
	Developed		Road
	Bare Soil		Stream
	Shrubland		Wetland
	Grassland		Sand
	Deciduous Forest		Rock
	Conifer Forest		Snow
	Mixed Forest		Cloud Shadow

Map of the Hickory Nut Gap Farm Property  
 December 2008  
 NAD 1983  
 State Plane North Carolina FIPS 3200





This map is not a certified survey

## G-7: Farmstead Areas on the Hickory Nut Gap Farm Conservation Easement

**Map Symbols**

- Private Property
- Public Property
- Stream
- Road
- Boundary
- Property Line
- Easement

**Scale**

0 50 100 200 Feet

**Map Information**

Map Created by: [Name]

December, 2008

**North Carolina Department of Environment & Natural Resources**

Division of Parks and Recreation

100 North Salisbury Street, Raleigh, NC 27603

Phone: 919.719.7000

www.ncdnr.gov

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Map Number: [Number]



## G-8: Farmstead Area Waypoints

Waypoint	Latitude (degrees)	Longitude (degrees)
F1	35.497965	-82.364821
F2	35.498289	-82.363826
F3	35.498623	-82.364044
F4	35.498773	-82.363729
F5	35.499269	-82.364209
F6	35.499494	-82.364249
F7	35.499567	-82.364397
F8	35.499416	-82.364447

### Farmstead Area 1:

From the northwest corner of Farmstead Area 1 (where the Property boundary crosses Sugar Hollow Road) the boundary of Farmstead Area one follows the Property boundary south along the centerline of a stream channel until reaching F1, where there is a capped pin in the stream under some flagging. At this point the Farmstead Area 1 boundary makes a straight line to the east to F2. It follows a fenceline north to F3, at the intersection of two fencelines where an 18 inch diameter sugar maple stands. From F3, the boundary cuts straight across to F4 in the middle of a stream channel. It then follows the stream channel north to Sugar Hollow Road and follows Sugar Hollow Road back to the starting point.

### Farmstead Area 2:

Farmstead Area 2 is located directly to the north of Sugar Hollow Road. From F5 at the road, its eastern boundary follows a soil roadbed to F6, then cuts straight across to F7. The boundary then follows a fenceline from F7 back to the road at F8.

\*See Section F-1 for photographs of Farmstead Area Waypoints



Structure A has changed since the 2006 aerial photograph

This map is not a certified survey

## G-9: Structure Locations on the Hickory Nut Gap Farm Conservation Easement

**Legend**

- Structure
- Stream
- Road
- Boundary

**Scale**  
0 250 500 1000 Feet

**Map Symbols**

- North Arrow
- Scale Bar

**Map Information**

Map Created by: **Nut Gap Farm Conservation Easement**  
 Date: **December 2006**

**Map Scale:** 1 inch = 100 feet

**Map Data:** Aerial photography from 2006, GIS data from 2006, and secondary maps from N.C. DDTI data.

**Map Contact:** NHD, 1000 N. Western Highway, Hickory, NC 28601  
 Output: Printed Map and Easement Map

**Map Symbols:** Nut Gap Farm Conservation Easement



## I. Attachments

### 1. Transaction Screen Findings (copy)

### 2. Natural Heritage Elements in Black Mountain Quad

Returned Elements: 23 using: BLACK MOUNTAIN  
 [Invertebrate Animal 2] [Natural Community 5] [Nonvascular Plant 1] [Vascular Plant 6] [Vertebrate Animal 9]

Major Group	Scientific Name	Common Name	State Status	Federal Status	State Rank	Global Rank	Quad - Status	Map - Habitat
Invertebrate Animal	<i>Cambarus reburys</i>	French Broad Crayfish	SR	FSC	S2S3	G3	Black Mountain-Historic	<a href="#">Link</a>
Invertebrate Animal	<i>Hypochilus coylei</i>	A Lamppshade Spider	SR	None	S3?	G3?	Black Mountain-Current	<a href="#">Link</a>
Natural Community	<i>Carolina hemlock bluff</i>	None	None	None	S2	G2G3	Black Mountain-Current	<a href="#">Link</a>
Natural Community	<i>Chestnut oak forest</i>	None	None	None	S5	G5	Black Mountain-Current	<a href="#">Link</a>
Natural Community	<i>Low elevation rocky summit</i>	None	None	None	S2	G2	Black Mountain-Current	<a href="#">Link</a>
Natural Community	<i>Montane oak-hickory forest</i>	None	None	None	S5	G5	Black Mountain-Current	<a href="#">Link</a>
Natural Community	<i>Rich cove forest</i>	None	None	None	S4	G4	Black Mountain-Current	<a href="#">Link</a>
Nonvascular Plant	<i>Hydrothyria venosa</i>	Waterfan Lichen	SR-P	None	S3	G3G5	Black Mountain-Current	<a href="#">Link</a>
Vascular Plant	<i>Coreopsis latifolia</i>	Broadleaf Coreopsis	SR-T	None	S3	G3	Black Mountain-Current	<a href="#">Link</a>
Vascular Plant	<i>Hexastylis contracta</i>	Mountain Heartleaf	E	FSC	S1	G3	Black Mountain-Current	<a href="#">Link</a>
Vascular Plant	<i>Liatris turgida</i>	Shale-barren Blazing-star	SR-T	None	S1S2	G3	Black Mountain-Historic	<a href="#">Link</a>

Vascular Plant	<i>Scutellaria galericulata</i>	Hooded Skullcap	SR-P	None	SH	G5	Black Mountain-Historic	<a href="#">Link</a>
Vascular Plant	<i>Solidago squarrosa</i>	Squarrose Goldenrod	SR-P	None	SH	G4?	Black Mountain-Historic	<a href="#">Link</a>
Vascular Plant	<i>Thermopsis fraxinifolia</i>	Ash-leaved Golden-banner	SR-T	None	S2?	G3?	Black Mountain-Current	<a href="#">Link</a>
Vertebrate Animal	<i>Ambystoma talpoideum</i>	Mole Salamander	SC	None	S2	G5	Black Mountain-Current	<a href="#">Link</a>
Vertebrate Animal	<i>Crotalus horridus</i>	Timber Rattlesnake	SC	None	S3	G4	Black Mountain-Current	<a href="#">Link</a>
Vertebrate Animal	<i>Cryptobranchus alleganiensis</i>	Hellbender	SC	FSC	S3	G3G4	Black Mountain-Obscure	<a href="#">Link</a>
Vertebrate Animal	<i>Dendroica cerulea</i>	Cerulean Warbler	SR	FSC	S2B	G4	Black Mountain-Current	<a href="#">Link</a>
Vertebrate Animal	<i>Glyptemys muhlenbergii</i>	Bog Turtle	T	T(S/A)	S2	G3	Black Mountain-Current	<a href="#">Link</a>
Vertebrate Animal	<i>Myotis grisescens</i>	Gray Myotis	E	E	S1	G3	Black Mountain-Current	<a href="#">Link</a>
Vertebrate Animal	<i>Myotis leibii</i>	Eastern Small-footed Myotis	SC	FSC	S2	G3	Black Mountain-Current	<a href="#">Link</a>
Vertebrate Animal	<i>Myotis septentrionalis</i>	Northern Myotis	W2	None	S3S4	G4	Black Mountain-Current	<a href="#">Link</a>
Vertebrate Animal	<i>Vireo gilvus</i>	Warbling Vireo	SR	None	S2B	G5	Black Mountain-Historic	<a href="#">Link</a>

NC NHP database updated on: Sunday, May 4th, 2008.  
Search performed on Wednesday, 19 November 2008 @ 12:48:29 EST

### 3. Plant, Animal Status & Rank

The following codes are explained below and have been taken directly from the NC Natural Heritage Program's web page <http://www.ncsparksnet/nhp/codes.html>

Plant status is determined by the Plant Conservation Program (NC Department of Agriculture) and the Natural Heritage Program (NC Department of Environment and Natural Resources). E, T, and SC species are protected by state law (Plant Protection and Conservation Act, 1979). C and SR designations indicate rarity and the need for population monitoring and conservation action. Note that some plants have a double status (e.g., E-SC, indicates that while the plant is endangered, it is collected or sold under regulation). See the *Natural Heritage Program List of the Rare Plant Species of North Carolina* for further explanation of these statuses.

Animal status that indicates state protection (E, T, and SC) is published in *Endangered Wildlife of North Carolina*, March 16, 1992, Nongame and Endangered Wildlife Program (NC Department of Environment and Natural Resources). SR and EX statuses are Natural Heritage Program designations. SR indicates rarity and the need for population monitoring and conservation action. See the *Natural Heritage Program List of the Rare Animal Species of North Carolina* for further explanation of these statuses.

CODE	STATUS	CODE	STATUS
E	Endangered	SR	Significantly Rare
T	Threatened	EX	Extirpated
SC	Special Concern	D	De-listed
C	Candidate	P_	Proposed (E, T, SC, EX or D)

#### FEDERAL STATUS

These statuses are designated by the US Fish and Wildlife Service. Federally listed Endangered and Threatened species are protected under the provisions of the Endangered Species Act of 1973, as amended through the 100th Congress. Unless otherwise noted, definitions are taken from the *Federal Register*, Vol. 56, No. 225, November 21, 1991 (50 CFR Part 17).

CODE	DEFINITION
LE	A taxon "in danger of extinction throughout all or a significant portion of its range." (Listed at the Federal level.)
LT	A taxon "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." (Listed at the Federal level.)
C	A taxon under consideration for which there is sufficient information to support listing. This category was formerly designated as a Candidate 1 (C1) species.
LEXN	Endangered, nonessential experimental population. The Endangered Species Act permits the reintroduction of endangered animals as "nonessential experimental" populations. Such populations, considered nonessential to the survival of the species, are managed with fewer restrictions than populations listed as endangered.
FSC	Federal "Species of Concern" (also called "Species at Risk"). Formerly defined as a taxon under consideration for which there is insufficient information to support listing; formerly designated as a Candidate 2 (C2) species. Currently, the US Fish and Wildlife Service does not recognize this as an official designation.
TS/A	Threatened due to Similarity of Appearance. The Endangered Species Act authorizes the treatment of a species (subspecies or population segment) as threatened even though it is not otherwise listed

as threatened if: (a) The species so closely resembles in appearance a threatened species that enforcement personnel would have substantial difficulty in differentiating between the listed and unlisted species; (b) the effect of this substantial difficulty is an additional threat to a threatened species; and (c) such treatment of an unlisted species will substantially facilitate the enforcement and further the policy of the Act. The American Alligator has this designation due to similarity of appearance to other rare crocodilians. The Bog Turtle (southern population) has this designation due to similarity of appearance to Bog Turtles in the threatened northern population.

PE Species has been proposed for listing as endangered.

PDL Species has been proposed for de-listing.

### GLOBAL AND STATE RANKS

These ranks are determined by The Nature Conservancy's system of measuring rarity and threat status. "Global" refers to worldwide ranks and "State" to statewide ranks.

STATE RANK	DEFINITIONS
S1	Critically imperiled in North Carolina because of extreme rarity or otherwise very vulnerable to extirpation in the state.
S2	Imperiled in North Carolina because of rarity or otherwise vulnerable to extirpation in the state.
S3	Rare or uncommon in North Carolina.
S4	Apparently secure in North Carolina, with many occurrences.
S5	Demonstrably secure in North Carolina and essentially ineradicable under present conditions.
SA	Accidental or casual; one to several records for North Carolina, but the state is outside the normal range of the species.
SH	Of historical occurrence in North Carolina, perhaps not having been verified in the past 25 years, and suspected to be still extant in the state.
SR	Reported from North Carolina, but without persuasive documentation for either accepting or rejecting the report.
SX	Believed to be extirpated from North Carolina.
SU	Possibly in peril in North Carolina, but status uncertain; more information is needed.
S?	Unranked, or rank uncertain.
S_B	Rank of breeding population in the state. Used for migratory species only.
S_N	Rank of non-breeding population in the state. Used for migratory species only.
SZ_	Population is not of significant conservation concern; applies to transitory, migratory species.

### **GLOBAL RANK DEFINITIONS**

G1	Critically imperiled globally because of extreme rarity or otherwise very vulnerable to extinction throughout its range.
G2	Imperiled globally because of rarity or otherwise vulnerable to extinction throughout its range.
G3	Either very rare and local throughout its range, or found locally in a restricted area.
G4	Apparently secure globally, although it may be quite rare in parts of its range (especially at the periphery).
G5	Demonstrably secure globally, although it may be quite rare in parts of its range (especially at the periphery).
GH	Of historical occurrence throughout its range.
GX	Believed to be extinct throughout its range.
GU	Possibly in peril, but status uncertain; more information is needed.

G? Unranked, or rank uncertain.  
 G\_Q Of questionable taxonomic status.  
 G\_T Status of subspecies or variety; the G rank refers to the species as a whole.

#### 4. NC Wildlife Action Plan Priority Species

Priority species associated with montane floodplain forest:

Status	Scientific Name	Common Name	State
Birds	( <i>Coccyzus americanus</i> )	Yellow-billed Cuckoo	
	( <i>Limnothlypis swainsonii</i> )	Swainson's Warbler	
	( <i>Oporornis formosus</i> )	Kentucky Warbler	
	( <i>Wilsonia citrine</i> )	Hooded Warbler	
	( <i>Myotis sodalis</i> )	Indiana Bat	
Mammals E (E)	( <i>Sorex fumeus</i> )	Smoky Shrew	
	( <i>Ambystoma maculatum</i> )	Spotted Salamander	
	( <i>Ambystoma opacum</i> )	Marbled Salamander	
Amphibians	( <i>Ambystoma talpoideum</i> )	Mole Salamander	
	SC		
	( <i>Desmognathus aeneus</i> )	Seepage Salamander	
	SR		
	( <i>Eurycea guttolineata</i> )	Three-lined Salamander	
T	( <i>Eurycea junaluska</i> )	Junaluska Salamander	
	T		
	( <i>Eurycea longicauda</i> )	Longtail Salamander	
	SC		
	( <i>Hemidactylium scutatum</i> )	Four-toed Salamander	
Reptiles T (T)	SC		
	( <i>Plethodon glutinosus</i> )	Northern Slimy Salamander	
	( <i>Pseudacris brachyphona</i> )	Mountain Chorus Frog	
	SC		
	( <i>Clemmys muhlenbergii</i> )	Bog Turtle	
SC	( <i>Crotalus horridus</i> )	Timber Rattlesnake	
	( <i>Heterodon platirhinos</i> )	Eastern Hog-nosed Snake	
	( <i>Lampropeltis getula getula</i> )	Eastern Kingsnake	
	( <i>Terrapene Carolina</i> )	Eastern Box Turtle	

Priority species associated with cove forest:

Status	Scientific Name	Common Name	State
Group Status)			(Federal

Birds	SC	( <i>Accipiter cooperii</i> )	Cooper's Hawk	
		( <i>Accipiter striatus</i> )	Sharp-shinned Hawk	
	SR	( <i>Certhia americana</i> )	Brown Creeper	
	SC	( <i>Coccyzus americanus</i> )	Yellow-billed Cuckoo	
		( <i>Coccyzus erythrophthalmus</i> )	Black-billed Cuckoo	
	SR	( <i>Colaptes auratus</i> )	Northern Flicker	
		( <i>Contopus virens</i> )	Eastern Wood-Pewee	
		( <i>Dendroica cerulea</i> )	Cerulean Warbler	
	SR	( <i>Helminthos vermivorus</i> )	Worm-eating Warbler	
		( <i>Hylocichla mustelina</i> )	Wood Thrush	
Mammals		( <i>Limnotheryptes swainsonii</i> )	Swainson's Warbler	
		( <i>Picoides villosus</i> )	Hairy Woodpecker	
		( <i>Sphyrapicus varius</i> )	Yellow-bellied Sapsucker	
	SC	( <i>Wilsonia citrine</i> )	Hooded Warbler	
		( <i>Mustela frenata</i> )	Long-tailed Weasel	
		( <i>Napaeozapus insignis</i> )	Woodland Jumping Mouse	
		( <i>Scalopus aquaticus</i> )	Eastern Mole	
		( <i>Sorex cinereus</i> )	Masked Shrew	
		( <i>Sorex fumeus</i> )	Smoky Shrew	
	Amphibians		( <i>Ambystoma maculatum</i> )	Spotted Salamander
		( <i>Ambystoma opacum</i> )	Marbled Salamander	
		( <i>Aneides aeneus</i> )	Green Salamander	
E		( <i>Desmognathus aeneus</i> )	Seepage Salamander	
SR		( <i>Desmognathus wrightii</i> )	Pigmy Salamander	
SR		( <i>Plethodon aureoles</i> )	Tellico Salamander	
SR		( <i>Plethodon chattahoochee</i> )	Chattahoochee Slimy Salamander	
		( <i>Plethodon glutinosus sensustricto</i> )	Northern Slimy Salamander	
		( <i>Plethodon longicrus</i> )	Crevice Salamander	
		( <i>Plethodon richmondi</i> )	Southern Ravine Salamander	
Reptiles		( <i>Plethodon ventralis</i> )	Southern Zigzag Salamander	
		( <i>Heterodon platirhinos</i> )	Eastern Hog-nosed Snake	
		( <i>Virginia valeriae valeriae</i> )	Eastern Smooth Earthsnake	

Priority species associated with montane oak & mixed hardwoods/pine forest:

Status	Group	Scientific Name	Common Name	State	(Federal Status)
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Birds		
SC	( <i>Accipiter cooperii</i> )	Cooper's Hawk
	( <i>Accipiter striatus</i> )	Sharp-shinned Hawk
	SR	
	( <i>Caprimulgus vociferus</i> )	Whip-poor-will
	( <i>Certhia americana</i> )	Brown Creeper
	SC	
	( <i>Coccyzus americanus</i> )	Yellow-billed Cuckoo
	( <i>Coccyzus erythrophthalmus</i> )	Black-billed Cuckoo
	SR	
	( <i>Colaptes auratus</i> )	Northern Flicker
	( <i>Contopus virens</i> )	Eastern Wood-pewee
	( <i>Dendroica cerulea</i> )	Cerulean Warbler
	SR	
	( <i>Helmitheros vermivorus</i> )	Worm-eating Warbler
	( <i>Hylocichla mustelina</i> )	Wood Thrush
	( <i>Melanerpes erythrocephalus</i> )	Red-headed Woodpecker
	( <i>Oporornis formosus</i> )	Kentucky Warbler
	( <i>Pheucticus ludovicianus</i> )	Rose-breasted Grosbeak
	( <i>Picoides villosus</i> )	Hairy Woodpecker
	( <i>Poecile atricapilla</i> )	Black-capped Chickadee
	SC	
	( <i>Sphyrapicus varius</i> )	Yellow-bellied Sapsucker
	SC	
	( <i>Vermivora chrysoptera</i> )	Golden-winged Warbler
	SR	
	( <i>Wilsonia canadensis</i> )	Canada Warbler
	( <i>Wilsonia citrina</i> )	Hooded Warbler
	( <i>Mustela frenata</i> )	Long-tailed Weasel
	( <i>Mustela nivalis</i> )	Least Weasel
	SR	
	( <i>Parascalops breweri</i> )	Hairy-tailed Mole
	( <i>Scalopus aquaticus</i> )	Eastern Mole
	( <i>Sciurus niger</i> )	Eastern Fox Squirrel
	SR	
	( <i>Sorex cinereus</i> )	Masked Shrew
	( <i>Sorex fumeus</i> )	Smoky Shrew
	( <i>Sorex hoyi winnemana</i> )	Southern Pygmy Shrew
	( <i>Ambystoma maculatum</i> )	Spotted Salamander
	( <i>Ambystoma opacum</i> )	Marbled Salamander
	( <i>Aneides aeneus</i> )	Green Salamander
	E	
	( <i>Desmognathus aeneus</i> )	Seepage Salamander
	SR	
	( <i>Hemidactylum scutatum</i> )	Four-toed Salamander
	SC	
	( <i>Plethodon aureoles</i> )	Tellico Salamander
	SR	
	( <i>Plethodon chattahoochee</i> )	Chattahoochee Slimy Salamander

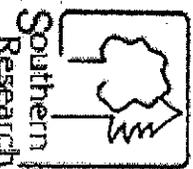
## Amphibians

## Mammals

	( <i>Plethodon glutinosus sensustricto</i> )	Northern Slimy Salamander
	( <i>Plethodon longicrus</i> )	Crevice Salamander
	SC	
	( <i>Plethodon richmondi</i> )	Southern Ravine Salamander
	SC	
	( <i>Plethodon ventralis</i> )	Southern Zigzag Salamander
	E	
	( <i>Plethodon wehrlei</i> )	Wehrle's Salamander
	T	
	( <i>Pseudacris brachyphona</i> )	Mountain Chorus Frog
	SC	
	( <i>Crotalus horridus</i> )	Timber Rattlesnake
Reptiles		
SC		
	( <i>Lampropeltis calligaster thombomaculata</i> )	Mole Kingsnake
	( <i>Ophisaurus attenuatus longicaudus</i> )	Eastern Slender Glass Lizard
	( <i>Pituophis melanoleucus melanoleucus</i> )	Northern Pinesnake
	SC	
	( <i>Terrapene carolina</i> )	Eastern Box Turtle
	( <i>Virginia valeriae valeriae</i> )	Eastern Smooth Earthsnake



State of North Carolina  
Michael F. Easley, Governor



USDA Forest Service,  
Southern Research Station,  
Coveeta Hydrologic Laboratory



North Carolina Division of Forest Resources  
Stanford Adams, Director



North Carolina Department of Environment and Natural Resources  
William G. Ross Jr., Secretary

**NC Forest Practices Guidelines Related To Water Quality (FPGs) - 15A NCAC II .0100 -.0209**

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- (8) "Ground Cover" means any natural vegetative growth or other natural or manmade material which renders the soil surface stable against accelerated erosion.
- (9) "Land-Disturbing Activity" means any use of the land by any person in residential, industrial, educational, institutional or commercial development, highway and road construction and maintenance that results in a change in the natural cover or topography and that may cause or contribute to sedimentation.
- (10) "Groundwater" means phreatic water or subsurface water in the zone of saturation.
- (11) "Log Deck" means a place where logs are gathered in or near the forest for further transport, sometimes called a "landing".
- (12) "Mill Site" means any place where forest products are stored, altered, or processed.
- (13) "Permanently Stabilized" means the site is protected to the state at which no further accelerated erosion is expected to occur from the forestry activities.
- (14) "Pesticides" means a chemical used to kill pests. The term includes insecticides, fungicides, herbicides, and rodenticides.
- (15) "Site Preparation" means a forest activity to prepare the site for reforestation.
- (16) "Skid Trail" means a temporary pathway principally used to drag or transport felled trees or logs or other material to a landing.
- (17) "Stream" means a body of concentrated flowing water in a natural low area of the land surface.
  - (a) "Ephemeral stream" means a stream that flows only during and for short periods following precipitation and flows in low areas that may or may not have a well-defined channel.
  - (b) "Intermittent stream" means a stream that flows only during wet periods of the year (30-90 percent of the time) and flows in a continuous well-defined channel.
  - (c) "Perennial stream" means a stream that flows throughout a majority of the year (greater than 90 percent of the time) and flows in a well-defined channel.
- (18) "Streamside Management Zone (SMZ)" means an area along both sides of intermittent and perennial streams and perennial waterbodies where extra precaution is used in carrying out forest practices in order to protect water quality.
- (19) "Visible Sediment" means solid particulate matter, both mineral and organic, which can be seen with the unaided eye that has been or is being transported by water, air, gravity, or ice from its site of origin. This does not normally include colloidal sized particles.
- (20) "Waterbody" means a natural or man-made basin that stores water, not including jurisdictional wetlands or beaver ponds.
- (18) "Working Days" means days exclusive of Saturdays and Sundays during which weather conditions or soil conditions permit land-disturbing activity to be undertaken.

*History Note: Authority G.S. 113-44.4; 113A-52; 113A-52.1;  
Eff. January 1, 1990.*

**NC Forest Practices Guidelines Related To Water Quality (FPGs) - 15A NCAC II .0100 -.0209**

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**15A NCAC 011 .0205 PROHIBITION / WASTE ENTERING STREAMS / WATERBODIES / GROUNDWATER**

Measures shall be taken to prevent equipment servicing waste, petroleum, fertilizers or other chemical waste from entering streams, perennial waterbodies, and groundwater which result in a violation of an adopted water quality standard of the Environmental Management Commission in Sections 15A NCAC 2B .0200 - Classifications and Water Quality Standards Applicable to Surface Waters of North Carolina, and 15A NCAC 2L .0200 - Classifications and Water Quality Standards (related to groundwater).

*History Note: Authority G.S. 113A-52.1; 143-214.1; Eff. January 1, 1990.*

**15A NCAC 011 .0206 PESTICIDE APPLICATION**

Application of pesticides shall be limited to those labeled for that intended use, shall be used in accordance with labeling and rules adopted by the N.C. Pesticide Board as set forth in 2 NCAC 9L .1005, Restricted Areas, and applied in a manner to prevent adverse impacts on water quality.

*History Note: Authority G.S. 113A-52.1; 143-214.1; 143-458; Eff. January 1, 1990.*

**15A NCAC 011 .0207 FERTILIZER APPLICATION**

When used, fertilizers shall be applied in a manner to prevent adverse impacts on water quality.

*History Note: Authority G.S. 113A-52.1; 143-214.1; Eff. January 1, 1990.*

**15A NCAC 011 .0208 STREAM TEMPERATURE**

Adequate shade within SMZs associated with natural perennial streams shall be retained to protect those streams from adverse temperature fluctuations which result in a violation of an adopted water quality standard of the Environmental Management Commission as contained in Rule 15A NCAC 2B .0211 - Fresh Surface Water Classifications and Standards.

*History Note: Authority G.S. 113A-52.1; 143-214.1; Eff. January 1, 1990.*

**15A NCAC 011 .0209 REHABILITATION OF PROJECT SITE**

Areas on the project site that have the potential for accelerated erosion, resulting in concentrated flow directly entering an intermittent or perennial stream or perennial waterbody, shall be provided with ground cover or other means of adequate sedimentation control within 30 working days after ceasing any phase of an operation or beginning a period of inactivity. Treatment and maintenance of those areas shall be sufficient to restrain accelerated erosion and prevent visible sediment from entering intermittent and perennial streams and perennial waterbodies until the site is permanently stabilized.

*History Note: Authority G.S. 113A-52.1; Eff. January 1, 1990.*



State of North Carolina  
Michael F. Easley, Governor



USDA Forest Service,  
Southern Research Station,  
Coweta Hydrologic Laboratory



North Carolina Division of Forest Resources  
Stanford Adams, Director



North Carolina Department of Environment and Natural Resources  
William G. Ross Jr., Secretary

## **(F 2) Hydroseeding**

Specify that the following materials be applied:

- 1,000 lbs. of agricultural lime per 1/4 acre or per soil test
- 250 lbs. of 10-10-10 per 1/4 acre (for grasses) or per soil test or 5-10-10 (for grass-legume mixtures) or per soil test
- Suitable seed according to the rates and season on the seeding tables.
- 270 lbs. of wood cellulose mulch or comparable material per 1/4 acre. (On south-facing slopes, mulch with additional small grain straw).

## **(G) Maintenance**

Even the best planned and constructed roads will require some maintenance.

### **(G 1) Maintaining Your Investment**

Schedule periodic inspections of the entire road in early March and August, especially after large storms. A suggested method is to walk the entire length of the road examining culverts, cut slopes and the roadbed itself. Make sure the drainage dips and out-sloped grades are still functioning and the roadbed is free of ruts and ridges. Then walk back along the toe of the fill slope examining the drainage outlets and the general condition of the fill slope. Check for excessive amounts of sediment leaving the roadway as indicating need for erosion control.

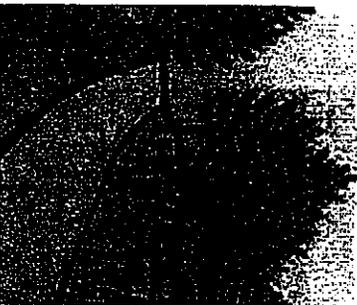
Any blockage or damage to culverts or drainage structures should be repaired immediately.

Bare or eroding areas should be reseeded according to Section F or stabilized by some other means. Where repairs are made in mid-winter, it may be best to only mulch the disturbed areas and perform the seeding later in the proper season. Rills 10 inches or less in size can be reshaped with hand tools. Larger rills or gullies will require that additional fill be hauled in and some may require machine shaping. Be sure to compact new fill very well to prevent it from being washed out by subsequent rains. At culvert outlets rock or rip rap, underlain by fabric filter cloth, may be needed.

Maintain all vegetation along roads (including road shoulders, cut and fill slopes and other areas), as follows:

- Apply 2 tons lime per acre (or per soil test) during late fall or winter every 4-5 years.
- Apply fertilizer annually per soil test or as follows:
  - Grasses alone:
    - 500 lbs. 10-10-10 per acre in early fall.
  - Legumes alone:
    - 500 lbs. 0-10-20 per acre in early spring.
  - Grass-legume mixture:
    - 500 lbs. 5-10-10 per acre in late winter or early spring.

Trim or remove vegetation that crowds the roadway, prevents surface water from flowing freely to drainage structures or shades problem areas.



Legumes or grass/legume mixture - 1,000 lbs. 5-10-10 per acre  
(25 lbs. per 1,000 sq. ft.)

Use the seeding table below to determine the proper type of vegetation and seeding rates  
in lbs.

### Seeding Table (G=Grass / L=Legumes)

	FEB	APR	JUN	AUG	OCT	DEC
<b>1) Permanent Plantings on Sunny, Dry Sites</b>						
Ky 31 Tall fescue (60 lb) *		G		G		
Weeping Lovegrass (5 lbs)		G				
Sericea Lespedeza (scarified) (50 lbs)		L				
Crownvetch (15 lbs)		G				
& Tall Fescue (20 lbs) or Lovegrass (3 lbs)						
Lathco Flatpea (20 lbs)		L				
& Tall Fescue (20 lbs) or Lovegrass (3 lbs)						
Sericea Lespedeza (scarified) (50 lbs)		G			G	
& Tall Fescue (30 lbs) or Lovegrass (5 lbs)						
Sericea Lespedeza (unscarified) (60 lbs)		L		L		
& Tall Fescue						
Tall Fescue (50 lbs)		G				
& White Clover (4 lbs)						
<b>2) Permanent Plantings on Shady, Dry Sites</b>						
Creeping Red Fescue (50 lbs) *		G				
<b>3) Permanent Plantings in Partial Shade</b>						
Ky 31 Tall fescue (30 lbs)		G				
& Creeping Red Fescue (20 lbs) *						
Creeping Red Fescue (30 lbs)		G				
& Lathco Flatpea (20 lbs)		L				
<b>4) Permanent Plantings on Wet Sites</b>						
Reeds Canarygrass (20 lbs)		G	G			
<b>5) Temporary or Short-Term Covers</b>						
Oats (3 Bu or 90 lbs)	G				G	
or Rye (3 Bu or 120 lbs)						
Ryegrass (40 lbs)	G				G	
Sudangrass (45 lbs)			G		G	
or Browntop Millet (40 lbs)						
Mulch With no Seeding						M

\*Also include 30 lbs. of Rye if a Quick Cover is Needed

Since the seeding list to control erosion was developed, many concerns over the use of exotic seed and wildlife beneficial seeding mixtures have arisen. In an effort to offer seeding alternatives to landowners with multiple-use goals or for any area where critical stublization is not warranted, please consider the following **seeding alternatives** highlighted on the next table.

#### **(D 4) Getting Started on the Right Foot**

**Discuss your plans and specifications with the contractor.** Establish the rules. Walk over the site with the contractor. Give him a copy of the specifications you have developed for your road and discuss each point. Resolve any questions. Consider his suggestions, but do not allow him to change the specifications to save money (his money) at the expense of quality (your money).

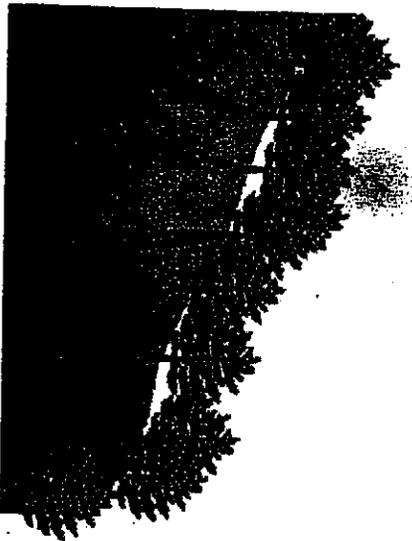
**Agree on the dollars and "sense."** Many earth-mowing contractors insist on payment by the hour. This relieves the contractor of any risk. Lump sum payment on a job-basis is usually advantageous to the landowner who knows the kind of finished product he wants and maintains close supervision of the contractor's work to ensure that quality work is performed. Using either payment method, never pay the contractor more than 50 percent of the agreed price until you are completely satisfied with the finished job. Usually, "you get what you pay for." If you hire the cheapest contractor in the county, don't be surprised if you receive a "cheap looking" job.

**Plan to have someone knowledgeable of your road specifications to supervise or periodically check the progress of construction.** This is one of the most neglected aspects of any type of construction. Supervision is imperative to ensure that you end up with a quality road. If you have no one capable of providing construction supervision, contact your local Soil and Water Conservation district office well in advance. Assistance may be available for construction supervision.

#### **(E) Constructing the Road**

##### **(E 1) Clearing the Way for Construction**

Clear the vegetation from a right-of-way at least wide enough for the roadbed and cut and fill slopes. Access roads in wooded areas require that trees and brush be removed prior to cutting in the road. Where deep cuts or fills are required, it will be necessary to clear a wider area. At curves, the area cleared should provide good visibility of traffic from both directions. Where snow and ice on the roadbed may present problems, it is a good practice to remove enough vegetation to allow maximum penetration of sunlight to the roadbed. This is known as "daylighting" the road.



**Cleared Trees Allow  
Sunlight Through  
to Help Dry the  
Roadbed**

Make plans in advance to use or sell the timber, pulpwood or firewood cleared from the roadway if possible. If many large mature trees will be removed, consult a forester for an estimate of their value.

Hire a contractor experienced in mountain road building. Just because a contractor has heavy equipment does not mean he can build roads. Check around a bit:

- Get out and look at some roads built by different contractors.
- Talk to landowners who have hired the contractor in the past.

**If the contractor has any objections to the above, be suspicious!**

Hire a contractor with an attitude toward high quality. Find another contractor if the one you are thinking of choosing says:

- "I'm too busy to do the work in the months you want it done but, I can do it after Christmas!"
- "I know a lot of shortcuts to save you money..."
- "The standards you want just aren't needed for a good road ..."
- "I don't need or want anybody's help. I already know all there is to know about road-building ..."
- "I don't like to be supervised ..."
- "I'm not supposed to give you the names of people we have worked with in the past..."

### **Equipment Table Instructions**

1. The letters (A through H) in the table refer to specific types of construction equipment as shown below the table.
2. Letters in parentheses indicate equipment that is marginally acceptable when the desired equipment is unavailable.
3. Read the "Complicating Factors" vertically on the left side of the table. Check off those factors that will be involved in your road.
4. Determine the length of the road and find the proper column horizontally across the top of the table.
5. Copy all letters in the blocks at the intersection of the "Length of Road" column and the "Complicating Factors" rows that you checked. Eliminate duplicate letters.
6. Using these letters, determine the equipment that will be required. If your list contains the letters A or B or C together, use the larger pieces of equipment.

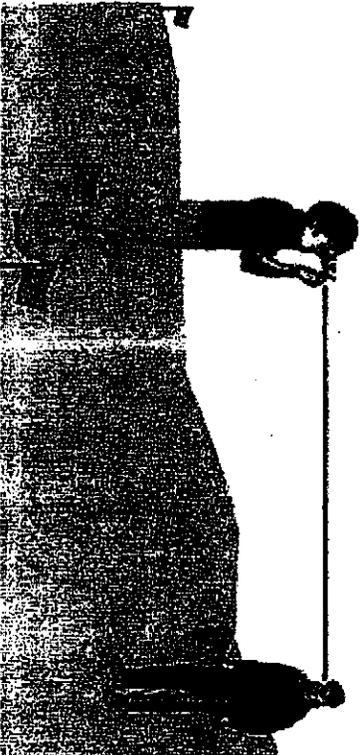
**The following equipment table helps determine the equipment that will be required to build a road with any complicating factors.**

sights forward out the proposed road to another person (the "flag person"). Before using this two-person method, the instrument person should locate his/her eye level on the flag person, and always sight this same spot on the flag person during the survey.

2. The instrument person directs the flag person to move up or down the hill and flag a position marking the desired road grade.

3. The flag person may mark the position (to be the centerline of the road) with plastic survey flags, wooden stakes, paint on trees or colored tape.

The desired end of the road may be missed following a planned grade or as a result of making adjustments to avoid obstacles. When this occurs, the road locators should work backward from the endpoint and connect the two surveys at the most convenient point. It may be necessary to repeat earlier surveys several times working in



both directions to find the best route. Nobody said it would be easy!

### (C 3) Marking the Proposed Road

Using plastic survey flags, wooden stakes, colored tape or paint, mark the following clearly:

- Centerline of the road
- Location of culverts and broad-based dips
- Curves and switchbacks
- Edges of cut and fill slopes on very steep areas
- Any planned turnouts, parking or passing areas

### (D) Getting Ready for Construction

When do I start? • What materials do I use? • Who do I get to do the work?

#### (D 1) Setting a Schedule

Plan the timing of the actual road construction to occur during the milder, drier seasons of the year.

#### Road Construction Calendar

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
BAD TIME		EXCELLENT TIME			BAD TIME		GOOD TIME		BAD TIME		

Snow and Ice Slows Construction  
Too Cold for Seeding

Good Weather  
Excellent Time for Seeding

Too Hot and Dry for Permanent Seeding

Good Weather  
Good for Seeding

Cold Weather Approaching  
Too Late for Permanent Seeding

(These seasons vary with altitude and rainfall pattern. Contact your local Soil and Water Conservation District office for specific guidance on construction in your locality).

Locate poorly drained soils on soil survey and watch for signs of subsurface drainage problems before and during construction. The following may be signs of wet soils with subsurface drainage problems:

- Soils that are grayish in color.
- Low areas or ground with a soft, mushy surface.
- Areas predominated by water-tolerant plants such as alders, black walnut, poplar, cattails, reeds, etc.

If drainage problems are encountered in the roadbed, it is recommended that the road be relocated to a drier site. If relocation is not feasible, consider one or more of the following in order to reduce the impact of poor drainage:

- Improve surface drainage.
- Remove nearby shade trees to let sunlight dry the road.
- Use large (3-inch) stone for the road surface.
- Install fabric filter cloth (geotextile or other porous road building fabric) under the surface gravel to prevent stone from sinking and disappearing into the soft soil.
- Install subsurface drainage.

### **(B 6) Curves and Switchbacks**

The minimum radius of curvature of the center line of the road should be as follows:

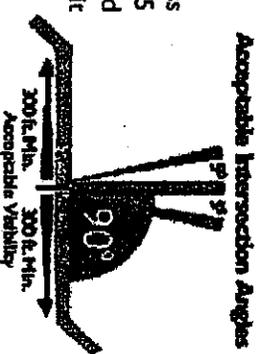
- 35 feet for short-bodied vehicles
- 50 feet for tractor trailers

Radius of curvature defines the "sharpness" of the turn. In recreational areas, the radius may need to be increased to accommodate towed or larger vehicles.

Plan switchbacks and curves on grades as flat as possible.

### **(B 7) Intersection with Public Highways**

For safety, the angle of intersection of a proposed access road and a public highway should be no less than 85 degrees, and the clear sight distance to each side should be no less than 300 feet. You will need a driveway permit from NC DOT.



### **(B 8) Surfacing**

Choose the type of surfacing material by considering traffic load, frequency of usage, grade of road, soil type in natural roadbed, available materials, cost and aesthetics.

Crushed rock or gravel surfacing should be applied as soon as possible after construction (while soil surface is still freshly disturbed and soft) to ensure a good bond between the soil and surfacing material and provide early protection against soil erosion.

- Corrugated Plastic Pipe
- Lightest, flexible and most easily handled
- Less expensive in the 12-inch to 18-inch sizes
- Very easily crushed by inadequate cover or poor compaction of fill material

Use the culvert design procedure to determine the proper culvert size. Many factors affect the culvert size, including size of drainage area, watershed land use, local rainfall, soil type, slope of pipe and fill over pipe. All culverts should be designed using the two-year, 24-hour storm as a minimum. The designers should also evaluate the impact of the 10-year, 24-hour storm.

**No culvert less than 15 inches in diameter should be used.**

To be eligible for state maintenance in North Carolina, culverts must carry a 25-year, 24-hour storm. For additional information on culvert design, consult your Soil and Water Conservation District or a private engineer.



**Overflow Channels should be approx. 12' wide and 6" deep.**

Where it is impractical to install the proper size of culvert, an adequate overflow area should be provided to allow stormwater to flow over the top of road and discharge on natural ground, not fill material. The overflow surface should be protected to prevent road washouts or erosion.

**How should culverts be installed?**

- **Install culverts with the inlets at or below natural ground.** The deeper the pipe inlet is installed (or the more fill over the pipe), the more water it will carry. In addition, pipes with shallow cover are easily crushed by heavy vehicles.
- **Extend culvert outlets to or beyond the toe of the slope.** Erosion protection, such as rock rip-rap, is often necessary at the outlet of culverts. Never allow a culvert outlet to flow directly on to fill material without such protective measures. It is usually less expensive to extend the culvert to stable natural ground than to protect the fill material against erosion by water falling from the culvert outlet.



**Right**



**Wrong**

## (B 4) Surface Drainage

No other aspect of road design is more important and less understood than surface drainage along the road. And unfortunately, this is the area where road-builders may try to "save money" -- an expensive mistake!

The surface water from all sources must be conveyed off the roadway at frequent locations to control roadbed soil erosion, maintain a stable road surface and reduce future maintenance and repairs. Surface drainage must be planned for water from the following sources:

- Rainfall on the roadbed, as well as on cut and fill slopes;
- Overland storm flows from the watershed above the road;
- Springs or live streams intercepted by the road.

If possible, shape the road to drain itself by means of out-sloping and broad-based dips. Out-sloping refers to the purposeful shaping of a road from the cut slope to the fill slope to allow surface water to flow across (and off) the road rather than down the length of the road. Out-sloping should be less than one-half inch in one foot or about six inches for a one-lane road. See the following chart for drainage suggestions.

Single-Family Access Roads or Other Seldom Used Roads		Single-Family Access Roads and All Development Access Roads	
<b>Out-sloped road without broad-based dips</b> 	<b>In-sloped road with broad-based dips (Not Recommended)</b> 	<b>Out-sloped or crowned road with roadside ditch and culverts</b> 	<b>In-sloped with roadside ditch and culverts</b> 
<b>Cross-section view of road</b>			
<b>Most acceptable design for low-use roads</b> Where overland flow from above road during storms is insignificant	<b>Only for short distances</b> Only where out-sloping is dangerous and overland flow from above road during storms is small	<b>Generally the most acceptable design</b> Where overland flow from above road during storms is expected or groundwater seeps are intercepted	<b>Where road grade is too steep for dips</b> Where overland flow from above road during storms is expected or groundwater seeps are intercepted
<b>Road water flows freely off outside edge of roadbed</b> Only requires culverts in the draws and low or wet areas	<b>Safer on roads that are often slippery, wet, frozen or icy</b> Often requires culverts in the draws and low or wet areas	<b>Road water flows freely off outside edge of roadbed</b> Requires culverts at draws or low areas and periodic culverts to remove ditch water	<b>Safer on roads that are often slippery, wet, frozen or icy</b> Requires culverts at draws or low areas and periodic culverts to remove ditch and road water

### Broad-based dips

Broad-based dips are an inexpensive way to carry surface water off the roadway. Properly constructed broad-based dips allow a smooth crossing without bumping or bottoming out. On sections of a road where broad-based dips are the primary means of surface drainage, construct dips at the following places:

- At the top of each downgrade to reduce downhill flow on roadbed.
- On either side of, and away from, each stream crossing to prevent stormwater from entering the stream.
- At side ridges, not in draws or wet areas.
- Use culverts instead of dips to drain roadside ditches, seeps and streams.

Add additional dips to assure that none are more than 200 feet apart in flat terrain. Consider closer spacing for steeper road grades, such as 150 feet apart for 3 to 6 percent road grades

**(A 4) Assistance is Available**

If at this point road construction already seems like an overwhelming task for the novice, don't give up! Help is available, but do not expect someone else to plan and construct your road for you unless you are willing to pay for it. Assistance is available to guide you through the decisions and actions that will lead to the desired properly constructed road. The table below is provided as a guide to locate sources of information or services helpful in planning, designing and constructing your road. The services of each source listed may vary somewhat on a county- to-county basis and this table should only be used as a general guide.

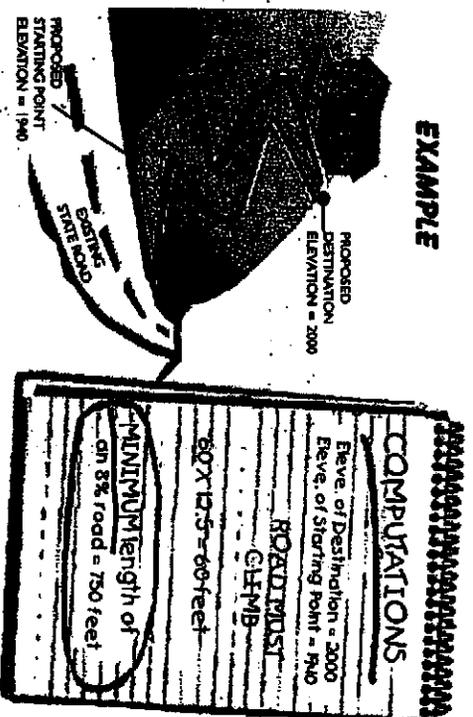
Suggested Source	GENERAL GUIDE TO AVAILABLE ASSISTANCE										
	Permits	Seeding, Vegetation	Weather	Aerial Photos	On-site Assistance	Erosion Control	Soils	Geology	Topography	Road	Property
<b>FEDERAL</b>											
Natural Resources Conservation Service		✓		✓		✓		✓			
US Forest Service		✓						✓			
Farm Service Agency				✓							
Geological Survey								✓		✓	
National Oceanic and Atmospheric Administration											
Army Corps of Engineers											
<b>STATE</b>											
NC Forest Service		✓		✓		✓		✓			
Geologic								✓			
Universities								✓			
Highway Department										✓	
Department of Environment and Natural Resources		✓				✓					
Soil and Water Conservation District		✓		✓		✓		✓			
<b>COUNTY</b>											
Register of Deeds											
Cooperative Extension Service		✓									
Road Department										✓	
Sediment/Erosion Control Agencies		✓				✓					
Government										✓	
<b>CITY</b>											
Library								✓		✓	
Government										✓	
<b>PRIVATE</b>											
Consultants, Engineers						✓		✓			
Land Surveyors										✓	
Bookstores		✓						✓			✓

GPS records real world coordinates of each feature (waypoint) or line (track). GPS data can be downloaded to a computer to produce a scale map or overlaid on aerial images and/or topographical images.

GIS can help automate the planning process. The GIS is a computer software package for compiling and analyzing various layers of feature and image data. The experienced GIS user can generate and analyze a scale map of the property and the proposed road location using digital aerial photography, topographical maps, GPS data, and other information.

Using the soil and topographic maps, identify problem areas that should be avoided if possible. These include very steep, wet or rocky areas, and soils that are shallow to rock, are highly erosive or that have a mass-movement (landslide) hazard. The high technology digital mapping tools do not take the place of careful and methodical on-site evaluation of the property.

### EXAMPLE



A soil map is an invaluable tool at this stage of planning. For assistance in interpreting the soils information, contact your local Soil and Water Conservation District. Soils information is also very helpful in locating alternative home sites.

Using the topographic map, determine the minimum length for the road. For example:

On a topographic map, locate control points -- places through which the road must pass. Examples are the home site and access entrance, or high and low points in the road's path. Determine the total elevation difference between consecutive control points. Multiply each elevation difference by 12.5 to determine the minimum length of road required between the control points. This length assumes a road constructed on an average grade of 8 percent. If you plan a road that will be shorter than this approximation, you may be headed for trouble. See Section B1 for more on road grades.

### (A 2) Points to Ponder as You Plan

Regulations may include land use zoning, subdivision ordinances, sediment and erosion control, or others. An erosion control plan on construction sites may be required in accordance with the State Sedimentation and Pollution Control Act and/or other applicable local ordinances. Off-site sediment damages are in violation of state and local laws and can result in civil suits.

Know the state and local laws, ordinances, and regulations. Ordinances and regulations regarding access roads vary from state to state and county to county.

Plan ahead for possible future state maintenance. If you plan for the state Department of Transportation to assume responsibility for the maintenance of your road, it should be constructed according to state standards. The state will not assume maintenance for a road that fails to meet its standards. This booklet is not intended to provide guidance to meet these standards, which are available from the office of the Division of Highways Engineer.

Be prepared to pay the cost of constructing a good road. The cost of constructing a road will vary greatly from site to site. The cost may increase due to the following:

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THE  
MAYOR  
OF  
CITY OF  
NEW YORK

IN SENATE  
JANUARY 15, 1913

REPORT  
OF THE  
COMMISSIONERS OF THE  
LAND OFFICE

FOR THE YEAR  
1912

NEW YORK  
1913