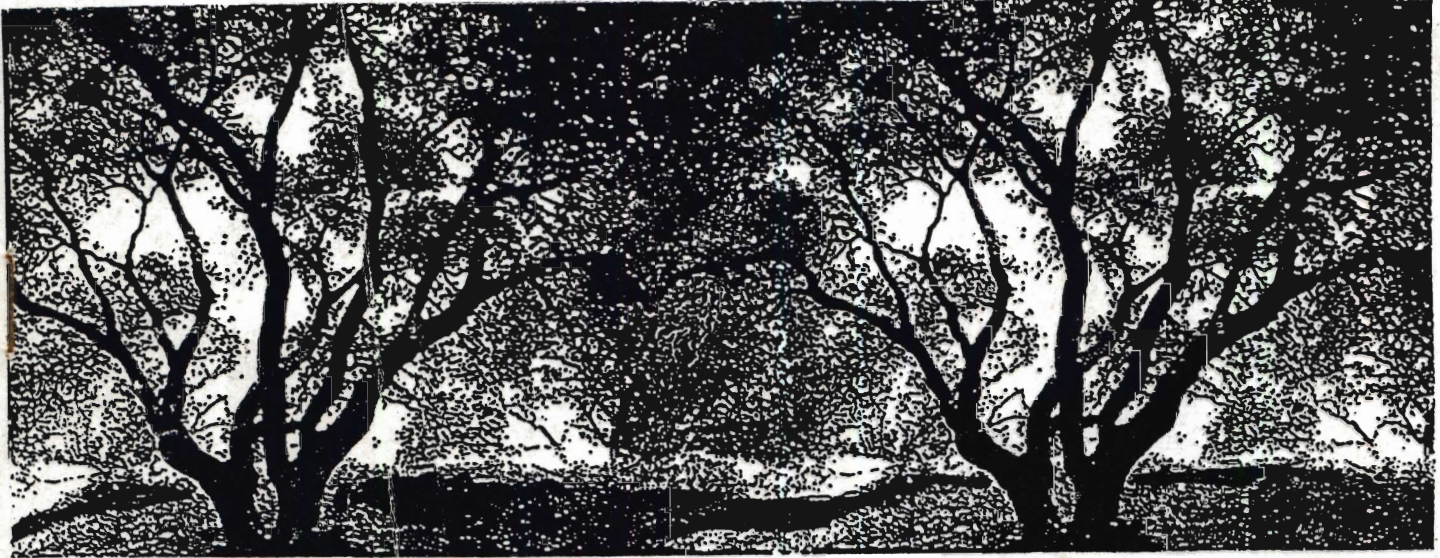


Technical Appendices (TA)



NEW HOPE CORRIDOR OPEN SPACE MASTER PLAN

**COULTER ASSOCIATES, Landscape Architects & Land Planners
and
NEW HOPE CORRIDOR ADVISORY COMMITTEE**

for

**The City of Durham
Durham County
Orange County
and
The Town of Chapel Hill**

April, 1991

New Hope Corridor Open Space Master Plan

Technical Appendices

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**Coulter Associates, Landscape Architects & Land Planners
and
New Hope Corridor Advisory Committee**

for

**The City of Durham
Durham County
Orange County
and
The Town of Chapel Hill**

April, 1991

APPENDIX A
Inventory and Analysis
of Existing Conditions

Appendix A:
Inventory and Analysis of Existing Conditions

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Landforms

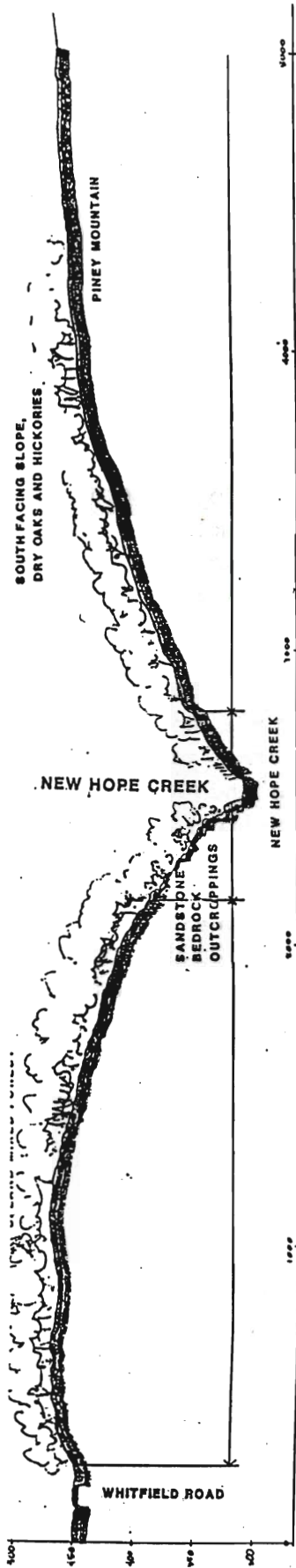
Landform types, characteristic of geology, vary significantly along the New Hope Creek Open Space Corridor. The overall landscape is representative of the Piedmont ("foothill") physiographic province of North Carolina. Two main types of geomorphologic formations are crossed by the corridor: the Carolina Slate Belt and the Durham-Deep River Triassic Basin. The transition between these two formations coincides roughly with the Orange-Durham County line.

The Carolina Slate Belt is composed of diverse, generally metamorphosed volcanic rocks. Most of the terrain of the Slate Belt is broad, upland ridges, with low energy streams cutting narrow floodplains (Sather & Hall, Orange County Inventory, 1988). River and stream valleys tend to be narrow and steep-walled, with frequent rock outcroppings along streams, and rocky rapids in the streams themselves. Interfluves (ridges and land areas between stream beds) are generally not more than one-half to three-quarters of a mile in width.

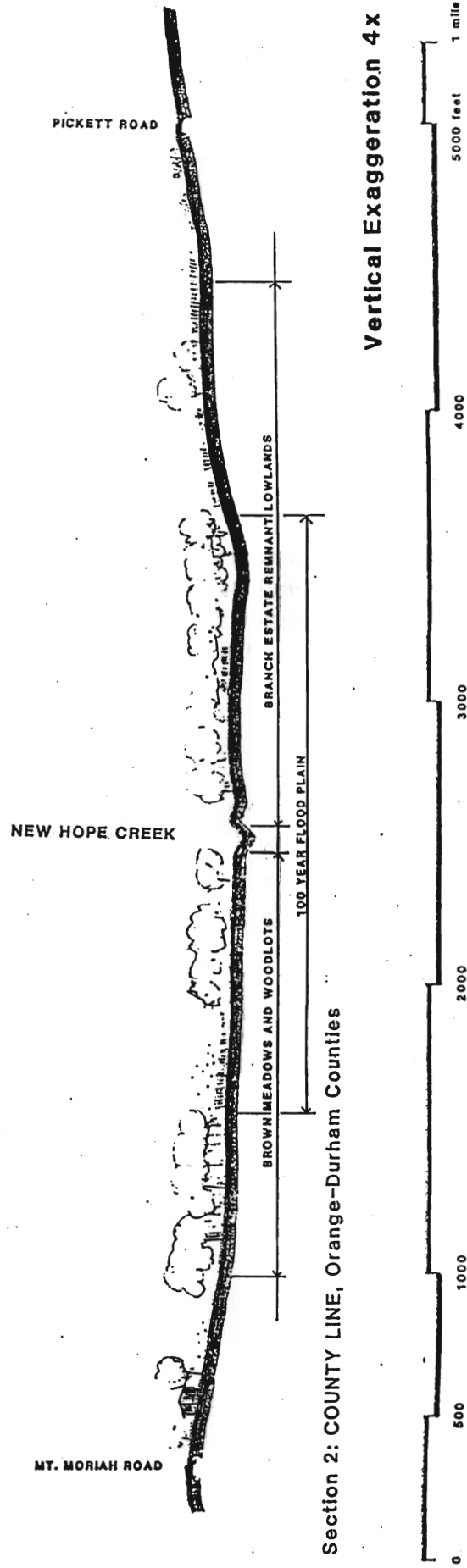
New Hope Creek, like the Eno River, passes important and dramatic points in its course when it leaves the Slate Belt and flows onto the Triassic Basin. On New Hope Creek, this occurs in the Korstian Division of Duke Forest, at Erwin Road in the vicinity of Hollow Rock Store. On the Eno River, the transition takes place downstream of the Corridor study area, below West Point on the Eno Park in Durham. At these points where the streams flow out of the Slate Belt into the Triassic Basin, the floodplains widen significantly as the streams dissipate their energies in the softer sedimentary rocks and alluvial soils. New Hope Creek, Mud Creek, and Sandy Creek which joins them west of South Square and south of 15-501, become hidden in the wide, flat, forested floodplains.

A pair of cross-sections is displayed in Figure 1. These illustrations help to understand three-dimensional landform character, and how it influences other natural and manmade phenomena from place to place.

Small-scale characteristics of regional landforms include steepness of slope, slope orientation to points of the compass, relationship of slopes to soil types, and outcroppings of parent rock material, most commonly found on steep slopes and in stream beds.



Section 1: RHODODENDRON BLUFFS Korstian Division, Duke Forest, Orange County



Section 2: COUNTY LINE, Orange-Durham Counties

Vertical Exaggeration 4x

CROSS SECTIONS - NEW HOPE CREEK

Figure 1

Steep slopes and rock outcrops are frequently considered to be "constraints" to land planning. However in an open space/ preservation endeavor such as this, they may be interpreted as positive opportunities to be protected for their own intrinsic values.

Hydrology

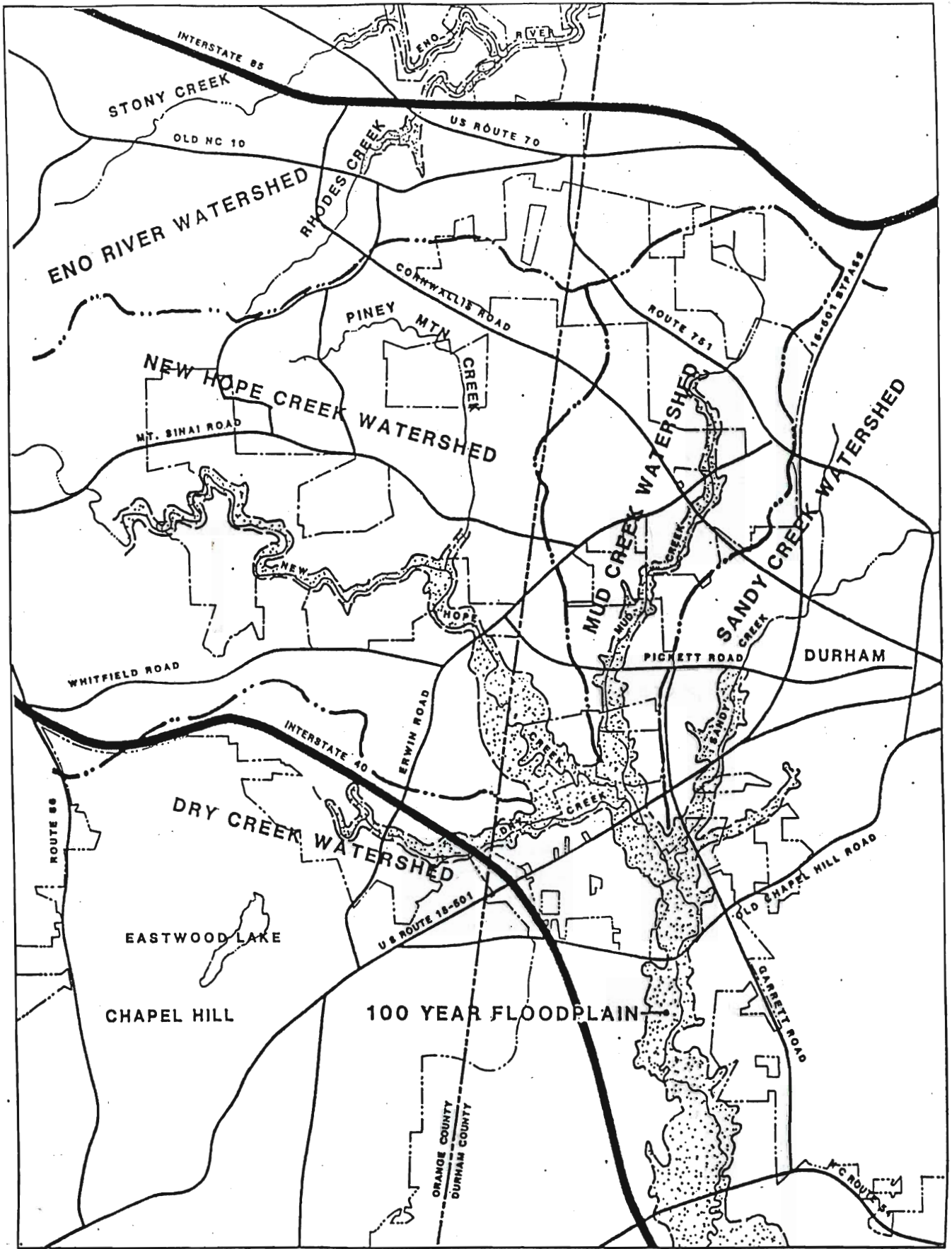
Both the New Hope and the Eno are important streams in the hydrologic pattern of the Triangle, and drain significant portions of the local landscape. Both flow directly into impoundments created by the U.S. Army Corps of Engineers, one for an existing major drinking water source (Falls of the Neuse Reservoir) and one which may some day become the same (B. Everett Jordan Reservoir). Both the Eno River and the New Hope Creek flow in stream channels which originate in the Carolina Slate Belt, on metamorphosed resistant rocks which form narrow, twisted valleys. They both then flow onto the Triassic Basin, on softer erodible sedimentary and metasedimentary rocks which allow the formation of wider floodplains and associated meanders and oxbows. Mud Creek lies in the Triassic Basin. (See Map 1: Hydrology)

The Eno River merges with the Little and Flat Rivers northeast of Durham, and a short distance later into Falls of the Neuse Reservoir. Below the dam north of Raleigh, the Neuse River flows from the Reservoir eastward into Pamlico Sound. Prior to the construction of B. Everett Jordan Reservoir, New Hope Creek flowed into the now-flooded New Hope River. Below the Reservoir dam, the Haw River meets the Deep River near Sanford, there forming the Cape Fear River which flows to Wilmington and the Atlantic Ocean.

Soils

Soils vary in their characteristics from place to place. The largest-scale classification of the soils found in the New Hope Corridor would be based on whether the soil in question originated from the decomposition of parent rock material found directly beneath it (a residual or saprolitic soil), or it was transported by water or wind from parent material found in another location (a transported or alluvial soil). Referring to Map 2: Soil Associations, and Table 1: Key to General Soils Map of the New Hope Corridor, soil associations 1, 2, 3, 4, and 5 contain primarily residual soils, and soil association 6 contains primarily transported soils.

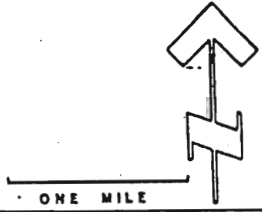
For land planning purposes, these soil associations imply constraints on different types of development activities. Specific data on each association, obtainable from the County Soil Surveys, USDA Soil Conservation Service, must be analyzed for excavation, roadway, building, flooding, wildlife habitat, and other potentials. It is beyond the scope of this report to correlate specific locations within the corridor with precise interpretative data.

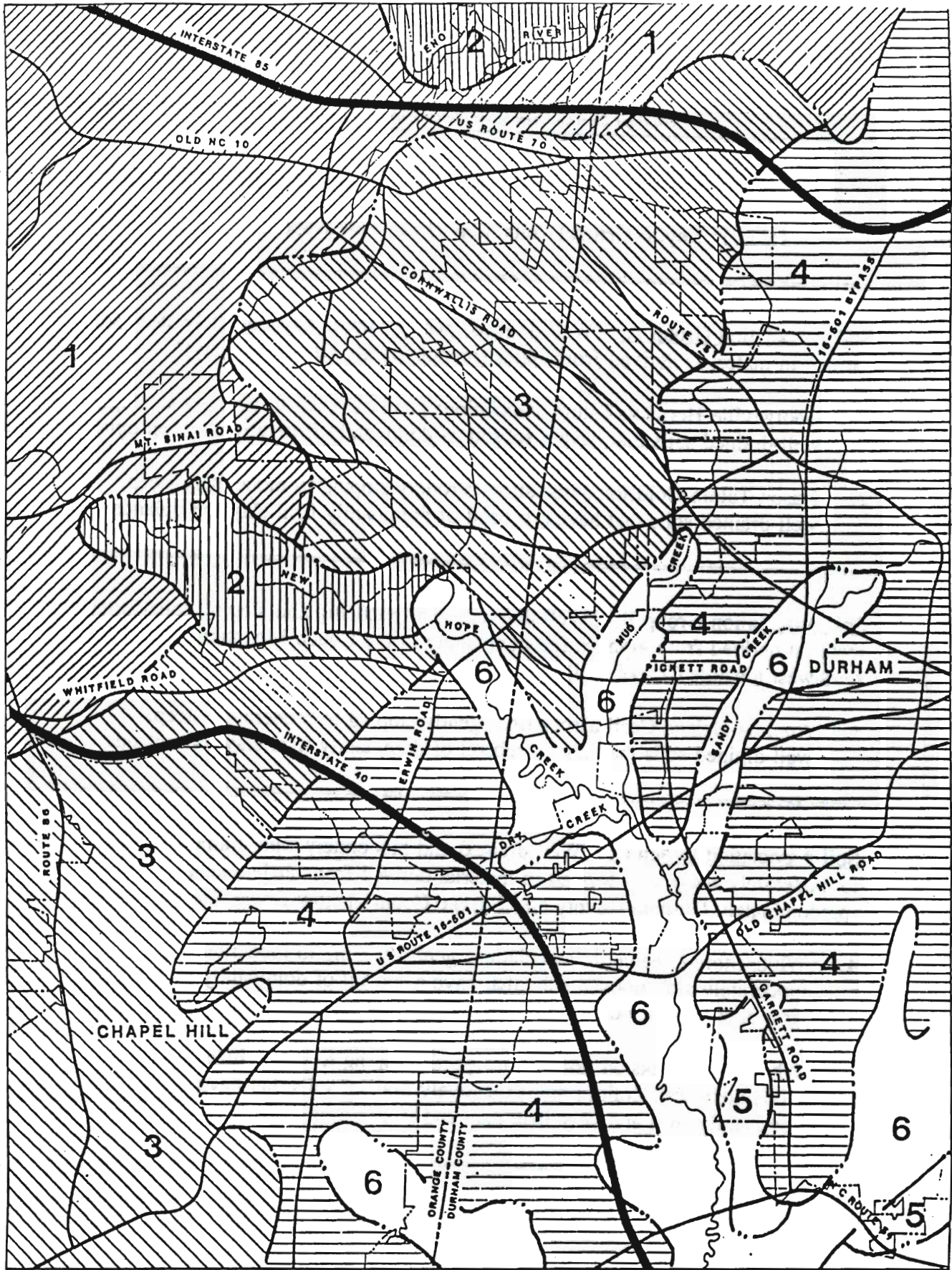


**NEW HOPE CORRIDOR
OPEN SPACE MASTER PLAN**

**MAP 1
HYDROLOGY**

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**MAP 2
SOIL ASSOCIATIONS**

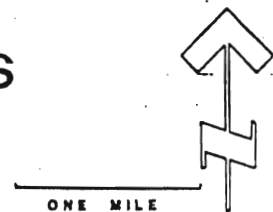


Table 1: Key to General Soils Map of the New Hope Corridor

Soil Association Group A: "Well-drained, gently sloping to moderately steep soils formed in materials derived from slates (predominantly Orange County)"

1. Georgeville-Herndon-Tatum association: gently sloping to strongly sloping, well-drained soils that have a subsoil of dominantly firm silty clay; on uplands.
2. Nason-Tatum-Goldston association: strongly sloping to moderately steep, well-drained soils that have a subsoil of dominantly firm clay; on uplands.

Soil Association Group B: "Well-drained, gently sloping and sloping soils formed in material derived from granites (predominately in the Couch Mountain vicinity and southwest towards Chapel Hill)"

3. Appling-Helena-Cecil association: gently sloping to moderately steep, well-drained soils that have a subsoil of dominantly firm clay; on uplands.

Soil Association Group C: "Well-drained and moderately well-drained, nearly level to moderately steep soils formed in material derived from shale and sandstone (predominately Durham County and Orange County below Erwin Road)"

4. White Store-Creedmore association: gently sloping to moderately steep, moderately well-drained soils that have a subsoil of dominantly firm and very firm clay; on uplands.
5. White Store-Pinkston association: gently sloping to moderately steep, moderately well-drained and excessively drained soils that have a subsoil of dominantly firm and very firm clay and friable fine sandy loam; on uplands.

Soil Association Group D: "Dominantly somewhat poorly drained and poorly drained, nearly level soils subject to flooding: formed in alluvial material (predominantly on the New Hope and Mud Creek floodplains)"

6. Chewacla-Wehadkee-Congaree Association: somewhat poorly drained and poorly drained soils that have a subsoil of dominantly silty clay loam and well-drained soils that are dominantly silt loam throughout; on flood plains.

However, it should be noted that soils represent an extremely interactive medium in terms of other environmental phenomena:

- Atmospheric and air quality characteristics affect soil chemistry and purity, further affecting plant, animal, and human well-being. Atmospheric gases represent approximately 25% of an average surface soil volume.
- Soils affect water quality. Undisturbed soil expanses have a beneficial filtering effect to chemically-tainted surface water runoff. Thus the New Hope basin, especially the broad floodplains in its lower reaches, acts as an enormous filter to the waters which flow southward towards the Jordan Reservoir.
- Vegetation alters soil texture through root action and the decomposition of organic matter in the upper layers of the soil. Vegetation in turn is extremely sensitive to other soil characteristics such as density, pH, moisture and texture.

Vegetation

The protection of natural communities was one of the compelling reasons to commission the master plan for the New Hope Corridor Open Space. The planning team derived its data on natural communities from published reports and studies, including the Durham and Orange County Inventories, and original field reconnaissance (Harrison, 1989; Appendix E).

Much research and numerous written articles on the vegetation and animal life of the New Hope Corridor and Duke Forest testify to the biological importance of this open space corridor. Natural habitats, whether rare or common, bear the mark of human influence to some extent.

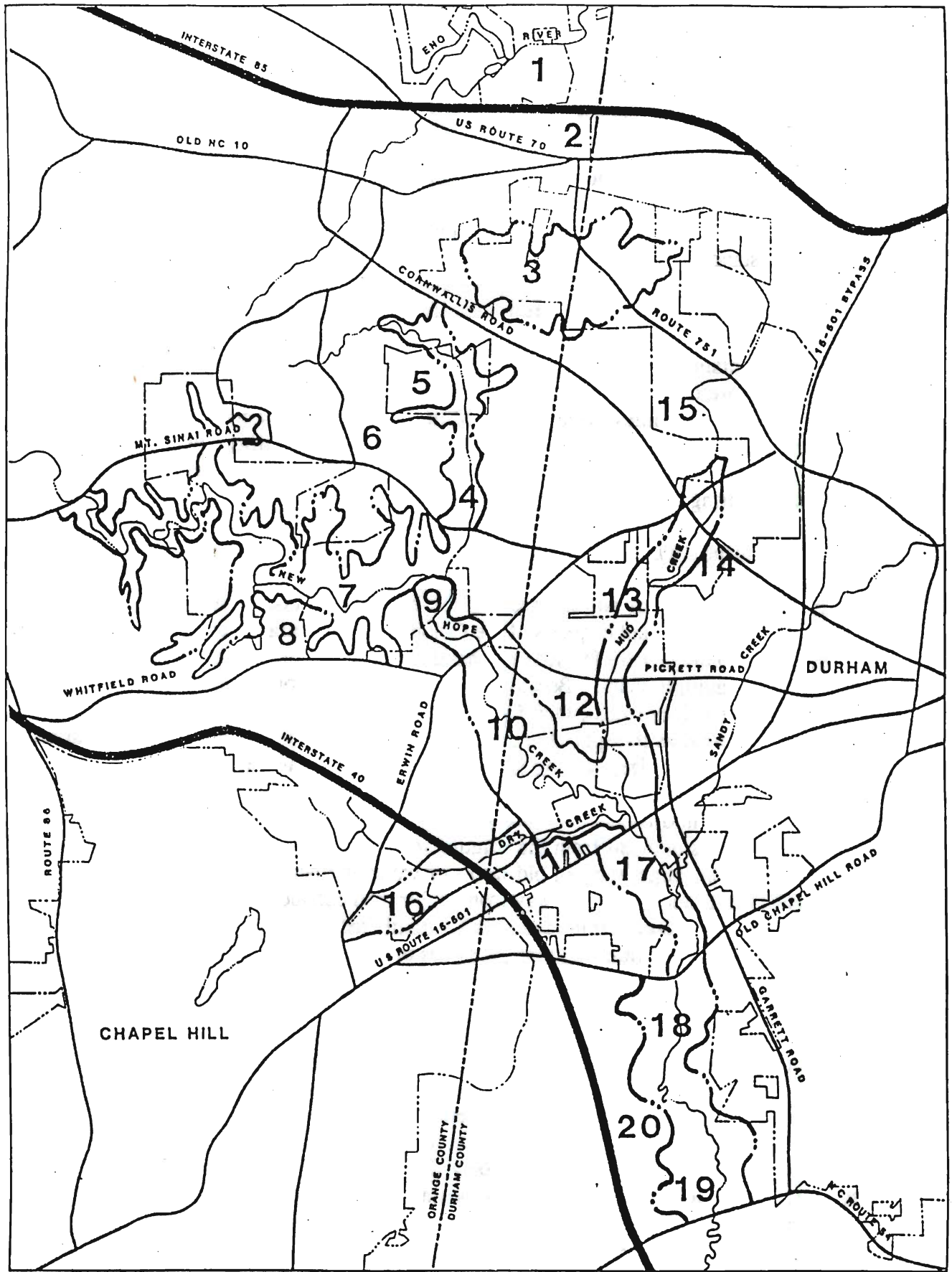
To quote A Directory to North Carolina's Natural Areas;

....The Piedmont is the most extensively modified of the state's regions. Three centuries of use eliminated most of the original natural habitats. Nearly all of the region has been farmed or timbered at one time or another. More than half of the Piedmont is abandoned farmland in some stage of reforestation by the process of plant succession. Pine forests reveal where land was once cleared and are slowly succeeding to hardwood forests, which prevailed over the Piedmont before colonial settlement.

Today, most of the Piedmont is paved, plowed, or in some stage of vegetational succession. Gone is the once ubiquitous hardwood forest, whose giant chestnuts, oaks, hickories, beech, and tulip trees dominated the Piedmont's hilly terrain. Gone also are the bottomland hardwood forests that once bordered the rivers of the region. Only a few, isolated pockets of these once dominant forest types survive....In general, only the steepest slopes, rocky outcrops, some permanently wet depressions, and a few bottomlands escaped human disturbance. These places have become the refuges for the Piedmont's mature forest communities and rare plant and animal species. (Roe, 1987)

A few words about the "scale" of mapped information may be in order. At a very minute scale of information, one might examine the detailed field notes of the botanist--the "original" data gathered on the occurrence and size of individual species, sizes, environmental conditions, soils, moisture, pathogens, and the like. These original data are important to form the basis for interpretations, classifications, and ultimately justifications for recommended protection tactics. However they are limited in usefulness, specifically because of their great degree of detail, in seeing larger scale landscape values for planning purposes. In addition, they are not easily mapped at a size which typically accompanies reports distributed to large audiences.

At the other end of mapping scale, vegetation/landscape units involves the description of large areas and the various associations of natural communities which occur therein. This may be the most preferable way of describing vegetation for planning purposes. Landscape is defined as an expanse of natural scenery seen in one view. For example, one could describe an area defined as "New Hope Creek Bottomland Forest and Tributary Wetlands," located between Old Chapel Hill Road and N.C. Route 54. Here occurs a large land unit with overall plant and visual characteristics which are generally similar in nature. For purposes of this project, the New Hope Corridor was divided into 20 large units with similar general characteristics (Map 3: Vegetation/Landscape Units).



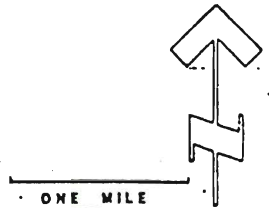
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MAP 3

**VEGETATION /
LANDSCAPE UNITS**



An intermediate mapping scale, called the "Vegetation Site," attempts to cluster individual occurrences of plant species, age, soils, etc. into areas which have similar biological characteristics. This represents one level of interpretation of the original field data, combined with an understanding of how and why plants grow where they do. It is still site-specific, but enables the botanist and planner to delineate landscape units by descriptive categories. Vegetation sites are used in this report to identify places of some particular botanical interest.

Appendix E. contains a detailed report on vegetation in the New Hope Corridor. Twenty large landscape units are delineated. Many sites within the units are recognized for their significant plant species or communities. Sites identified in Units 1-9 are Inventory sites from the Orange County Inventory. All sites in Units 10 through 20 were identified by Edward Harrison, a specialist retained with funds from the Durham County Inventory through the Triangle Land Conservancy, during field work conducted during the summer of 1989.

Land Development Patterns

As in most settled areas of North Carolina, the history of property ownership began with the original charters, deeds, and bequests of the Colonial era. In rural areas of Orange and Durham counties, large holdings were farmed, and handed down to sons and their families, often being divided among multiple heirs. Because of historical and geographical factors, town centers developed first at Hillsborough, then Chapel Hill, and finally at Durham. The importance of these towns increased as transportation, manufacturing, educational, and governmental centers; they grew physically in size, causing greater land areas to be urbanized.

In the early and mid-twentieth century, land division and development followed major transportation routes outward from the original town centers. To meet the housing needs of a growing population, large tracts of old farms or woodland began to be subdivided, outside the original town limits and generally away from major road corridors. The form which subdivided housing tracts has taken from the 1950's until today has been due largely to local zoning/subdivision regulations, and the pressures of the housing marketplace. Commercial and retail centers have clustered where regional highways make access easiest and business volumes the greatest.

An additional and important factor in the Durham and Orange County area land ownership picture is Duke University. The Duke University campus proper occupies considerable land areas in west and southwest Durham City. However, about 8,000 acres of additional land was purchased beginning in 1931 by Dr. Clarence Korstian of what is now the School of Forestry and Environmental Studies. This acquisition was to provide lands largely in their natural wooded state for teaching and research purposes by the university. We know these areas as Duke Forest. While surrounding land continued to develop for commercial, residential, and even industrial use over the years, Duke Forest has remained as a wooded vestige of open space, enjoyed and

appreciated by thousands. Although owned by Duke University, a private entity (and therefore legally private property), the Forest is used by many people on a regular basis for walking, nature observation, and informal leisure activities.

One large landowner is the U.S. Government, specifically the U.S. Army Corps of Engineers. In the 1960's, the Corps began acquiring land for the construction of the B. Everett Jordan Reservoir on the lower New Hope Creek and New Hope River (now inundated). Today this land area is either under water permanently, seasonally flooded in sub-impoundment areas, or within the peripheral lands adjacent to the above.

Another large landowner is the State of North Carolina, at Eno River State Park. The park, presently comprised of several parcels, is not yet entirely contiguous, and is dependent on further State funding for complete acquisition of the land areas described in a 1979 master plan.

Subdivision and commercial land development have been occurring at an extremely rapid pace throughout the 1980's. Once considered out in the hinterlands, the floodplains of the New Hope and Mud Creeks, Duke Forest, the Corps land, and Eno River State Park are being crowded to their boundaries. Except for the wide swath of trees on the New Hope, Sandy Creek and Mud Creek floodplains, property along the drive from Durham to Chapel Hill along U.S. 15-501 has become almost completely built out.

Outdoor Recreation

An important focus of the Master Plan is the corridor's potential for providing recreational opportunities. Existing and planned recreation/open space facilities were inventoried and mapped and are shown in Map 4: Outdoor Recreation.

The City of Durham Parks and Recreation Department operates park sites as shown (Map 4), with "active", intensively programmed, facilities for community participation. Southwest Durham, included in the project study area, has been targeted for an increase in per capita acreage of neighborhood and district parks in the Department's long range plans. This issue has also been addressed in the City/County Planning Department's Southwest Durham Plan.

The Durham Urban Trails and Greenways (DUTAG) Commission plans acquisition and/or negotiation for public trails in the New Hope corridor, as shown. Importantly, these main branches have the potential for lateral connections into other trail systems and recreational/cultural sites.

A report by the Chapel Hill Trails and Greenways Commission shows potential trail connections to the New Hope Corridor through the Dry Branch Creek/Interstate 40 vicinity. The details of how this connection would work have not been

resolved. Another Chapel Hill connection might be a route shown coming north from Cedar Falls Park (Chapel Hill Parks & Recreation Department), with an I-40 crossing and a New Hope Creek link in the Duke Forest.

Although Orange County does not have a greenway/open space component in its Recreation and Parks Master Plan, potential recreational connections are being examined as a part of this project, particularly in the Orange County-Chapel Hill Joint Planning Area. Sections of trails have actually been constructed by volunteer labor under the auspices of the Triangle Greenways Council. These segments are located in the vicinity of the Carolina Friends School and the Couch Tract of Duke Forest.

The Orange County Recreation and Parks Master Plan does identify the service areas of future community and district parks. Potential connections to those park sites in the Corridor vicinity should be considered.

The Triangle Greenways Council is also working on the long-term goals of establishing two important trail corridors in this area: the Mountains-to-Sea Trail and the Circle-the-Triangle Trail. In addition to the existing trail segments noted above, the Council has constructed several trails along Falls Lake shorelines. The potential connections to these trail systems and the corridors of the New Hope and Eno systems should be carefully studied.

Public recreational use of the privately owned Duke Forest is an issue receiving much current attention. Existing forest fire roads and footpaths are very popular as walking trails for many Triangle residents. In addition, a great deal of the length of the New Hope Creek Master Plan corridor lies within the two divisions (Korstian and Durham) of Duke Forest.

These trails often lead to places of outstanding beauty in Duke Forest -- the mature oak forests at Couch Mountain, and the Rhododendron Bluffs in the Korstian Division are but two examples. However, Duke Forest was established as, and remains, an important research and teaching facility of the School of Forestry and Environmental Studies at Duke University. As such it is extremely sensitive to the impacts which continued public access will bring to it. The Duke administration has directed that a plan of action be drawn on the future use and management of the Forest. A report by the Duke Land Resources Committee (1989) contains specific policy recommendations on continued public recreational use of Duke Forest (see Appendix D: Report Summaries).

Eno River State Park, at the northern terminus of the Corridor, is administered by the North Carolina Department Of Natural Resources and Community Development (NRCD), Division of Parks and Recreation. At present, the park exists as fragments of land along the river. The State is continuing acquisition activities for additional parcels. The Eno River Association has

been the driving force in fund raising for this purpose. The Eno is a natural "anchor" for the northern end of the Corridor, because of its popularity and visibility. It may, in the future, lead to additional connections at the state or national level . . . the Mountain to Sea Trail is an enticing example.

At the southern end of the Corridor lies the land of the U.S. Army Corps of Engineers. This Federally-owned land surrounds the impoundment and flood zones of the B. Everett Jordan Reservoir. While the lake itself is being enhanced for fishing and camping activities, little exists of formal trails in the northerly reaches of the Corps land. This is perhaps partially due to the overgrown, swampy nature of the wide floodplain landscape in this vicinity. However, as with the Eno State Park, the Corps land represents an important potential recreational connection to a major regional facility.

APPENDIX B
Resolutions Passed by
the Governing Boards

Appendix B:

Resolutions Adopted by Elected Boards

**Resolution to Preserve a Corridor of Open Space
Connecting New Hope Creek with the Eno River
Through Orange and Durham Counties**

- Whereas, The rural and natural beauty of Orange and Durham Counties is prized by our residents; and
- Whereas, The urban areas of Orange and Durham Counties are experiencing unprecedented growth; and
- Whereas, The citizens of Durham County and Orange County have shown concern for preservation of open space through the Chapel Hill Greenway Commission, the Durham Urban Trails and Greenways Commission and the Durham County Open Space Advisory Committee; and
- Whereas, Preservation of open space as an accompaniment to growth can mitigate the impacts of growth and help retain natural beauty; and
- Whereas, Preservation of open space provides environmental benefits such as protecting water quality and providing habitat for native plant species and wildlife; and
- Whereas, Open space could form an aesthetic link between Durham and Chapel Hill, while allowing the two communities to remain distinct; and
- Whereas, An open space corridor can serve as a recreational resource providing a place for walking and jogging, becoming part of the regional trail network; and
- Whereas, An open space corridor can provide opportunity for environmental education and observation of nature;

Therefore, **Be It Resolved** that the jurisdictions of the Town of Chapel Hill, the City of Durham, Durham County and Orange County support the following:

1. The preservation of a corridor of public open space linking New Hope Creek with the Eno River, including the 100-year floodplain of New Hope and Mud Creeks and a 200' wide corridor connecting the Duke Forest Divisions to the Eno River State Park through Orange and Durham counties, as shown conceptually on the attached map.
2. Each County and the municipalities within will support and fund the project in a proportionate manner.
3. The Administration of each jurisdiction is directed to prepare more detailed plans for this project, including identifying the exact route, the amount and location of land and easements to be preserved, developing a preservation plan, identifying possible funding sources, and preparing a timetable for completion.
4. These plans are to be completed so that they can be included for consideration as early as the 1989-90 budget for each jurisdiction.

Adopted by the Chapel Hill Town Council: September 25, 1989

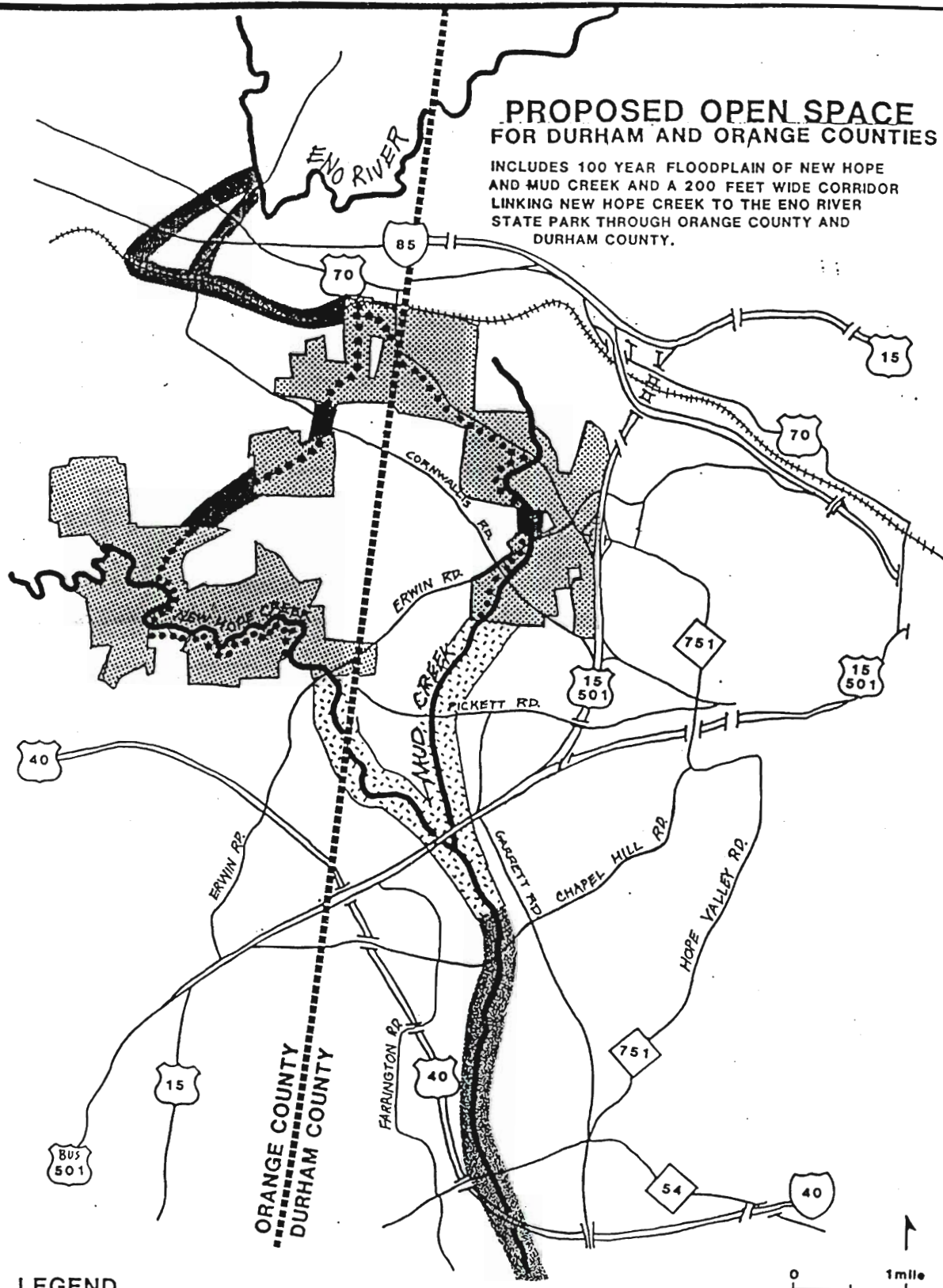
Adopted by the Durham City Council: April 13, 1989

Adopted by the Durham Board of County Commissioners: April 24, 1989






Adopted by the Orange Board of County Commissioners: May 1, 1989

PROPOSED OPEN SPACE FOR DURHAM AND ORANGE COUNTIES

INCLUDES 100 YEAR FLOODPLAIN OF NEW HOPE
AND MUD CREEK AND A 200 FEET WIDE CORRIDOR
LINKING NEW HOPE CREEK TO THE ENO RIVER
STATE PARK THROUGH ORANGE COUNTY AND
DURHAM COUNTY.



LEGEND

-  U.S. ARMY CORPS OWNERSHIP
JORDAN LAKE
-  OPEN SPACE CORRIDOR:
MUD CREEK AND
NEW HOPE CREEK
100 YEAR FLOODPLAIN
-  CORRIDOR
- WITHIN DUKE FOREST
-  200FEET WIDE
- ALTERNATIVE ROUTES
-  DUKE FOREST

0 1 mile

APPENDIX C
**Advisory Committee Goal-Setting
Process and Rating Sheets**

Appendix C:

Goal-Setting Process and Rating Sheets

The Advisory Committee discussed goals and values for the New Hope Corridor. These values were listed and ranked by each member of the Committee. The following materials present the list of values and the form used to rank the values. The values ranking highest were Environmental Quality and Passive Recreation; these values became the primary goals of the project. The rankings are summarized in the table on page 23.

**Developing Criteria and Priorities
for Preserving Lands
in the New Hope Creek-Eno River Corridor**

Instructions

Column A: Rank each of the five major goals in order, 1 through 5, with number 1 as your highest goal and number 5 as your lowest priority goal. Within each major category, rank each value alphabetically with A as the highest value.

Column B: Rank each value, as follows....

- 1 = Very important to me
- 2 = Important to me
- 3 = Not so important to me

Use each number as often as is necessary to reflect your feelings about the goals of this project, while making distinctions where they do exist. Rank the five major goals as well as the specific ones.

**Developing Criteria and Priorities
for Preserving Lands
in the New Hope Creek-Eno River Corridor**

Goals (Values):	A	B
Passive Recreation		
■ Walking and hiking;		
■ Observing nature;		
■ Trail linkages to urban destinations;		
■ Fishing.		
Aesthetics		
■ Viewsheds, overlooks;		
■ Visual beauty of nature.		
Environmental Quality		
■ Improvement of water quality;		
■ Protection of wildlife and wildlife habitat;		
■ Natural diversity, aquatic and terrestrial;		
■ Preservation of species and communities.		
Education		
■ Environmental and nature education;		
■ Historic resources.		
Urban Form		
■ Visual contrast of natural areas with built areas;		
■ Natural corridor defining the Town of Chapel Hill, Orange County, Durham County and the City of Durham.		

Additional comments:

Summary of Results of Values Ranking

Summary of the Five Major Values. The following table is a tabulation of votes and points for the 1-through-5 ranking (the A column on the ranking form). For each value the first row of numbers is the number of votes for each rank. The second row of numbers is the point value for the votes, with a rank of 1 being worth 1 point, a rank of 2 being worth 2 points, etc. The average rank is the sum of all points for that value divided by the total number of votes for that value. **The lowest average number is the highest priority value and the highest average number is the lowest priority value.**

Value		Rank					Total Votes Total Points	Average Rank
		1	2	3	4	5		
Passive Recreation	Votes	3	2	6	0	0	11	2.3
	Points	3	4	18	0	0	25	
Aesthetic	Votes	0	5	4	1	1	11	2.8
	Points	0	10	12	4	5	31	
Environmental Quality	Votes	7	2	2	1	0	12	1.8
	Points	7	4	6	4	0	21	
Education	Votes	0	1	0	8	3	12	4.1
	Points	0	2	0	32	15	49	
Urban Form	Votes	2	1	0	2	7	12	3.9
	Points	2	2	0	8	35	47	

APPENDIX D
Report Summaries

Appendix D:
Report Summaries

Table of Contents

Land Use Guidelines, Triangle J Council of Governments, 1989

Public Comment and Final Recommendations, Durham-Chapel Hill-Carrboro Urban Area Transportation Study, 1989

Durham County Open Space Plan, 1989

Orange County Inventory, 1988

Report and Recommendations of the Land Resources Committee, Duke Forest, 1988

Southwest Durham Plan, 1988 (Draft)

A Directory to North Carolina's Natural Areas, 1987

Durham County Inventory, 1987

Duke Forest Natural Areas, 1986

Report of the Durham City and County I-40 Land Use and Appearance Committee, 1985

Land Use Guide -- Durham County NC, 1979

Research Triangle Region Development Guide, Research Triangle Regional Planning Commission, 1969

Introduction

These Report Summaries have been prepared to assist the public and decision-makers in understanding the many efforts made to preserve the New Hope Creek corridor over the years. Each Summary identifies the Document, the location covered in the report, date, authors, background, and applications to the New Hope Creek Corridor Master Plan.

1. Land Use Guidelines, Triangle J Council of Governments (Draft)

Location Covered: Triangle J Region--Chatham, Durham, Johnston, Lee, Orange, and Wake Counties

Date: May 5, 1989

Authors: Land Use Priorities Team, Triangle J Council of Governments

Background: As part of the World Class Region program, eight teams were formed to develop land use priorities "including a consensus land use plan for the municipalities." The Land Use Guidelines are the results of a year's efforts and were presented by the team to the Triangle J region in December 1988. The report is presented as information which the Triangle J Council of Governments believes will be "useful to local governments in their land use planning efforts."

Document Description: The draft report contains 12 pages of text followed by 4 Appendices. The text is divided into 7 sections: Regional Form, The Need for Open Space, Efficient Use of Land, Transportation, Housing, Data and Economic Development.

Applications to the New Hope Corridor Open Space Master Plan

The Need for Open Space

- "Forests, streams, fields and other undeveloped lands are among the features that make this an attractive place to live. If the quality of life is to be preserved, a balance must be maintained between urban development and open space. Parks, playgrounds and natural areas are needed not only to delight the eye, but for recreation, exercise, wildlife habitat, environmental protection, the study and enjoyment of nature, and simply to relieve the pattern of development. The need for these amenities is especially critical if the cities grow together."

- "Linear Open Space. The region is laced with streams. They are important wildlife habitats, they feed the region's water supply systems and, in cities, they provide welcome breaks in the intensive development that goes on around them. They can provide all these benefits only if they are free from sediment and other pollution. The stream pattern makes an excellent framework for open space in cities and in rural areas."

- "Conservation Corridors. One of the most effective ways to protect streams is to establish conservation corridors, where buildings or other urban development would not be allowed. The corridors should be wide enough to serve adequately as wildlife habitat, provide a break in the pattern of development, allow a meaningful experience of the natural environment and filter out sediment which might otherwise reach the stream. The width of each corridor would depend on the topography and land use, but a desirable minimum width is 200 feet on each side of the stream."

- "Hiking Trails. In urban areas, hiking trails should be established in the conservation corridors.... While streams are an excellent place for trails, there will usually be a need for connecting links that do not follow streams. The objective should be a community-wide system of greenways that are convenient to everyone. One technique to help meet that objective is to acquire greenway or conservation easements when sewer line easements are acquired."

- "Water Supply Reservoirs. Although their primary purpose is to protect the water, publicly owned lands surrounding reservoirs are also important open spaces. The Council urges all those with jurisdiction over reservoirs to continue and increase their programs of acquisition and protection of land around public water supply reservoirs."

- "Protection of Inventoried Resources. Often, the protection of open spaces and corridors can be coordinated with the protection of areas of natural, historic, scenic or cultural significance."

Efficient Use of Land

"Some land should not be developed at all. Examples are open space, prime agricultural land, areas needed to protect water quality and future water supplies, and areas where the necessary infrastructure cannot be provided."

Economic Development

"Several of the recommendations brought forth in the preceding sections of this report would also contribute to the orderly economic development of the region. For example, higher densities (of residential development in existing urban areas) would preserve more land for agriculture, an important contributor to the region's economy. In addition, higher densities make more land available for open space, thus making the area more attractive to potential employers."

2. Durham-Chapel Hill-Carrboro Urban Area 1985-2010 Transportation Study, Report #3, Public Comment and Final Recommendations

Location Covered: Durham-Chapel Hill-Carrboro Urban Area

Date: March 8, 1989

Authors: Transportation Study Group of the Durham-Chapel Hill-Carrboro Urban Area Technical Coordinating Committee and NCDOT Planning and Research Branch, Statewide Planning Group

Background: The report was prepared as part of the documentation for the first consolidated thoroughfare plan for the Durham-Chapel Hill-Carrboro Urban Area. The document is third in a series of three. Its purpose was to address public comment on the recommended Thoroughfare Plan which was released in January 1988 and discussed at a series of public meetings in the spring of 1988.

This study is the first attempt at comprehensive transportation planning for Durham, Chapel Hill and Carrboro as a single area. Each municipality,

however, has developed at least two previous transportation plans of their own. Chapel Hill and Carrboro, working with NCDOT, mutually adopted a community thoroughfare plan in 1984.

Document Description: The document is approximately 25 pages and is divided into four sections: Introduction, Public Comments and Staff Responses, Thoroughfare Plan Approval Procedure and Recommendations. The appendix contains five Thoroughfare Plan maps for the study area, one overall plan plus a larger scale plan for each quadrant of the planning area.

Applications to New Hope Corridor Open Space Master Plan

Bikeways and Greenways

Public comments were made in favor of including bikeways in thoroughfare planning as an efficient means of transportation.

Protection of Critical Watershed Areas

Concern was expressed that, "The construction of roads in critical watershed areas will lower the water quality in several ways: the danger of hazardous chemical spills will be present, pressures for development will become a constant problem to elected officials, construction will cause sedimentation and siltation in streams and lakes and the run-off will be increased and will result in petroleum and other pollutants in the water."

Protection of the Eno River, Duke Forest, Park Lands and Other Natural Areas

"Comments were made that road construction will have adverse impacts on the Eno River, Duke Forest, and other natural areas."

Southwest Quadrant, Farrington Road, NC 54 to US 15-501, I-40 Interchange

- Laurel Hill Parkway planned to provide relief for US 15-501 between Durham and Chapel Hill. Interchange proposed at US 15-501 and Watkins Road/Mt. Moriah Road.
- Community is concerned that an interchange would change the rural character of the area, encouraging rezoning and intense development.

- Additional concern is that highway construction will cause sedimentation in New Hope Creek and B. Everett Jordan Lake. (Staff response did not address sedimentation concern.)

Additional Plans for Southwest Quadrant

- US 15-501-Pope Road-Mount Moriah Road Interchange
- Jack Bennett Road-US 15-501 to Farrington Road
- Neville Road-Hickory Grove Church Road Connector
- Whitfield Road and Whitfield-Eubanks Connector
- Proposed UNC Roadway Changes

Northwest Quadrant

Outer Loop (Northern Freeway). Segment from I-40 to I-85. "Residents of neighborhoods along NC 86, Trinkus Manor, Hills of New Hope, and Hideaway Estates voiced concern over the damage that the Freeway would cause to neighborhoods in their area. In addition, concerns for the environmental impact on New Hope Creek, Duke Forest, and the Orange County rural buffer were expressed."

3. Durham County Open Space Plan, Draft #6 Comprehensive Program and Action Plan

Location Covered: Durham County

Date: March 1, 1989 (draft), adopted August 1989

Authors: Hunter, Reynolds and Jewell, PA

Background: In September 1987, the County Manager received authorization from the Durham County Board of County Commissioners to proceed with the development of a County-wide Open Space Plan. In January 1988, the County contracted with Hunter, Reynolds and Jewell; Greenways, Inc. and Community Development by Design to develop the Open Space Plan. A fifteen member Advisory Committee was appointed by the County Manager to assist in the planning process. Plan preparation took place from February 1988 to March 1989.

Document Description: The document contains 58 pages of text plus seven Appendices. The text is divided into four chapters: Planning Process and

Summary Findings of Data Collection, Goals and Definitions of Open Space Land Types, Action Plan and Establishing the Program.

Applications to New Hope Corridor Open Space Master Plan

Intent of the Durham County Open Space Plan

- "Identify and recommend ways to protect the County's watercourses, critical environmental lands and natural resources."
- "Recommend ways to preserve open space close to where citizens live and work for general recreational purposes and greenway linkages to parks, schools and other significant points of interest within the County."

Open Space Advisory Committee

Members of the Open Space Advisory Committee felt County residents want:

- Protection of the rural character of Durham County;
- Protection of environmentally sensitive lands and natural resources of the County;
- More opportunities for pedestrian linkages from homes to parks, schools, shopping centers and other destination points throughout the County; and
- An open space/greenway system which can give spatial definition to the County's urban growth pattern.

Summary of Findings from Task I: Data Collection

"Lands which are currently controlled by the County, such as open space in flood prone areas, offers the potential for linking residential neighborhoods to educational, cultural and retail destination points. These resources are currently underutilized."

Lands which are recommended to be included in the Plan

- "Land and waters defined by the Federal Emergency Management Agency (FEMA). This land type includes all stream courses and floodplain lands within the County...."
- "Lands described in the Inventory of Natural Areas and Rare Species of Durham County. This land type includes 52 environmentally

significant sites defined by the Inventory which contain rare species of plant communities, habitat for aquatic ecosystems, breeding habitat for birds and animals, corridors for animal migration and scenic areas for recreation."

- "The Durham Urban Trails and Greenways System. This land type includes property currently owned by the City of Durham as part of the Urban Trails and Greenway Program. It also includes....lands which are proposed in the City's Master Plan."
- "Strategic lands within developing areas of the County. This land type includes both publicly and privately owned lands which do not presently contain urban development and which are located within developing areas of the County. The intent of including this land category is to protect land of special significance and to insure that recreational open space and pedestrian linkages to community destination points are reserved during the land development process."

Detailed Description of Lands to be Included in the Open Space Plan

- Lands and waters defined by the Federal Emergency Management Agency. Includes all stream courses and floodplain lands within the County. Among the 36 major and minor streams listed are: New Hope Creek, 8 miles; Morgan Creek, 2 miles; Little Creek, 4 miles; Third Fork Creek, 8.3 miles; Sandy Creek, 5 miles and Mud Creek, 3 miles.
- Lands described within the Durham County Inventory of Natural Areas and Rare Species. Four Duke Forest sites are listed: Nestronia Woodlands, Brownings Branch Bottomlands, Oak-Hickory Uplands and Gate 9 Ponds. Four New Hope Creek sites are listed: Bottomland Forest, Overcup Oak Forest, Levee Forest and New Hope Creek Corridor.
- Federal, State, County and City owned open space and park and recreation lands. B. Everett Jordan Lake Wildlife Area and New Hope Creek covering 5,432 acres are listed as Federally owned lands.
- The Durham Urban Trails and Greenway System. Lists four trails of the New Hope Creek Greenway: New Hope Creek Trail, Sandy Creek Trail, Sandy Creek Tributary Trail and Mud Creek Trail.

Action Plan for Lands and Waters Defined by the Federal Emergency Management Agency

- "Evaluate each stream corridor and the land area surrounding public lakes. Study these land areas for possible designation as conservation corridors for the purpose of protecting the environmentally sensitive areas, scenic qualities and natural resources of these properties."
- "Prepare a property inventory of all lands that lie within the designated floodplain areas, particularly those designated as high priority for acquisition or protection."
- "Work with individual property owners to provide for the right of public access within flood hazard lands where greenways are desired."
- "Consider purchasing the rights of public access within flood hazard lands when specified parcels of land are critical to a proposed pedestrian corridor system and cannot be controlled by other means."

4. Report and Recommendations of the Land Resources Committee

Location Covered: Duke Forest

Date: December 9, 1988

Authors: Land Resources Committee, Duke University; assisted by Wallace, Roberts and Todd, Philadelphia, Pennsylvania

Background: This report of the Land Resources Committee was put forward in response to the February 1987 report by the Urban Land Institute concerning long-range planning for Duke University's extensive non-campus land holdings. The Land Resources Committee was formed in June 1987 to evaluate non-campus land resources and develop and recommend long-range plans for their use.

Duke Forest is the largest and most diverse of the non-campus land holdings, exceeding 8,000 acres in six divisions. The University began purchasing farms and woods in the 1920's, and placed them under the directorship of Dr. Clarence F. Korstian for purposes of forestry research and education in 1931. Since that time, Duke Forest has been a research laboratory for the School of Forestry and Environmental Studies and other disciplines.

Document Description: The report is a 54 page document summarizing the planning process undertaken by the Land Resources Committee, proposing and mapping four major classifications for future land use, and making policy and management recommendations. Appendix II of the report includes a detail analysis of Forest Sections.

Applications to New Hope Corridor Open Space Master

Classifications of Future Land Use

- **Permanent Research Forest:** Land dedicated for academic research purposes for 50 years.
- **Research Project Land:** Like Class 1, but less intensive academic usage. Proposals which would change a land use for more than a 5-year period would be reviewed by Board of Trustees.
- **Institutional Use Land:** To be used for eventual campus expansion. May remain wooded indefinitely; forest-related research to be phased out. No longer considered part of Duke Forest.
- **Residual Endowment Land:** Priority of these lands will be to generate financial return to benefit Duke University. Not necessarily to be commercially developed. Lease or trade considered as alternatives to outright sale.

Divisions relevant to New Hope Creek Corridor: Korstian, Durham and Oosting. The majority of land area in Durham and Korstian divisions falls under Class 1.

Wallace Roberts and Todd Report

- Report indicates that 40 to 50 percent of the land area is constrained by steep slopes, floodplains and unique natural communities.
- Remainder of land is developable and is identified as "Base Land Area."
- Report suggested short-term and long-term land use options.
- Economic/real estate analysis of Duke Forest prepared by Hammer, Siler, George Associates was factored into proposed land use options.

Policy Recommendations (pertinent to New Hope Study)

- "In planning for the future use of the lands, Duke University should be sensitive to features such as open space, floodplains, wet soils, steep slopes, historic and archaeological resources, and unique natural areas."
- "Develop a recreational management plan that ensures that public recreation does not conflict with academic or other institutional uses of forest lands. Work with the parent counties to accommodate

compatible recreational uses, by dedicating, leasing or selling certain areas of limited academic value for this purpose."

- "Work with all appropriate governmental bodies to establish suitable zoning and ensure proper land planning for university holdings while vigorously defending Duke's rights as a private property owner."

5. Southwest Durham Plan (Draft)

Location Covered: Southwestern Durham area, bounded by US 15-501 and Chapel Hill Road to the north; Barbee Chapel Road and Stagecoach Road to the south; Third Fork Creek to the east and the Orange County Line to the west.

Date: March 1988

Authors: City of Durham Department of Planning and Community Development

Background: The land within Durham's Urban Growth Area boundaries has been divided into fifteen Community Planning Areas, one of which is the Southwest Durham area. For the purposes of growth management, small area plans are being drafted for each of the fifteen areas. The Southwest Durham Plan responds to two main concerns: "conservation and protection of environmentally significant areas," and "the type, density and extent" of current and future development in this area."

The planning process was initiated in October 1986 by the City's Department of Planning and Community Development. A Planning Advisory Committee was established consisting of community residents and business owners to work in conjunction with planning staff. Major issues as well as minor concerns confronting the Southwest Durham community were identified and included the environment, land use, transportation, housing, etc., and meetings were held on each topic. Discussion results for each **topic** were refined into a set of policies by the Planning Department and **incorporated** into the Southwest Durham Plan.

A previous "Plan for Southwest Durham" had been adopted by the Durham City Council in 1974 and updated in 1979.

Document Description: The document is a 148 page book organized into four Sections. Section I introduces the plan and planning process; Section II discusses the development history of Southwest Durham; Section III presents policies to guide future development in this area; and Section IV describes some of the

mechanics for implementing the policies set forth. A Future Land Use Map for the Southwest Durham area is included in the document.

Applications to New Hope Corridor Open Space Master Plan

Environmental Characteristics

- "Southwest Durham has an abundance of environmental resources, many of which are quite fragile and require careful management and protection."
- Preservation efforts are critical in Southwest Durham since current and projected development is very urban in character.
- A creek "is not counted as part of a site's developable area."

Water Resources

- New Hope and Third Fork Creeks are the largest in Southwest Durham. Classified as "Class C" streams suitable for fishing and wading.
- Both creeks discharge into B. Everett Jordan Reservoir which is a future source of drinking water.
- There is extensive flooding along both creeks. Land uses in the 100-year floodplain are controlled by both City and Federal regulations. Most of the New Hope Creek floodplain is owned and controlled by the US Army Corps of Engineers.
- "Additional restrictions on construction in the floodway fringe are currently being studied by the City Planning Staff."
- The "Critical Watershed" overlay district limits certain uses.

Applicable Portions of the Durham Zoning Ordinance

- "Development is regulated in the floodplain areas of the New Hope, Third Fork, Little, and Mud Creeks."
- "Stream buffers have been established in relation to the New Hope, Third Fork, Little and Mud creeks, and their tributaries, in which development is totally disallowed."

Wetlands

- "Development in wetland areas is regulated solely by the US Army Corps of Engineers."
- It is the responsibility of the landowner, not the government to determine whether wetlands exist on his or her property.

Natural Areas and Ecology

- Mesic woodland and swamp forest are abundant along the creeks, providing good habitat for a number of birds and small mammals, including beaver and possibly otter.
- The Durham County Inventory has identified four "significant ecological resources" in Southwest Durham:
 - a. "The New Hope Bottomland Forest, an old-growth Piedmont bottomland forest natural community, rare in North Carolina, containing *Panax trifolius*, a plant species that is rare statewide;
 - b. The New Hope Overcup Oak Forest, a Piedmont swamp forest natural community;
 - c. The New Hope corridor, as-a-whole, regionally significant as a wildlife habitat for breeding and migrating birds, for its natural plant communities, sites of rare plant species, and for its recreational significance to hikers and bird-watchers; and
 - d. The New Hope Creek greenway, locally significant as a link between Duke Forest and the B. Everett Jordan Reservoir..."

Proposed Thoroughfare Improvements

"Alternative Transportation Facilities. In keeping with the "Durham 2005 Comprehensive Plan," bikeways are being planned to encourage alternative modes of transportation between certain points. Routes along selected thoroughfares and public greenways are among those currently being considered."

Parks and Recreation

- Two parks exist in Southwest Durham. However, as the population of this area is growing rapidly the City is planning for the eventual development of additional recreational facilities.
- A series of bikeways, greenway corridors and hiking trails have been identified on the Durham Urban Trails and Greenways Master Plan. Land within the floodplain of the Third Fork and New Hope Creeks is earmarked for greenway corridors.

Environmental Policies

- General
 - a. "Identify and protect environmentally sensitive areas in Southwest Durham. Appropriate restrictions on development in those areas should be enacted and enforced."
 - b. "Floodway, floodway fringe, and stream buffer areas in Southwest Durham should be identified. Restrictions applicable to those areas should be routinely enforced."
- Recreation Policies
 - a. "Adequate space, services and facilities should be provided to sufficiently address both current and projected recreational needs of Southwest Durham."
 - b. "Assess impact fees on residential development projects of five (5) acres or more to assist in the financing of public park property and related facilities."
 - c. "The urban trails and greenways system should be utilized to improve the amenities available in Southwest Durham."
 - d. "Develop segments of the Urban Trails and Greenway System in the mode of linear parks, with facilities for passive recreational activities."

6. A Directory to North Carolina's Natural Areas

Location Covered: State of North Carolina (Piedmont)

Date: 1987

Authors: Charles E. Roe, sponsored by the North Carolina Natural Heritage Foundation

Background: "The Natural Heritage Program was established in 1976 by the North Carolina department of Natural Resources and Community Development with the assistance of the Nature Conservancy. It is a unit of the Division of Parks and Recreation.... The Natural Heritage inventory focuses on the state's natural features that are exemplary, unique, or endangered on a statewide or national basis....the program catalogs the State's vulnerable plant and animal species, natural and plant communities, aquatic features, outstanding geologic landforms and critical habitats."

Document Description: The directory is a 92 page paperbound booklet. The State is divided up into four regions and an inventory is listed for each region: Southern Appalachian Mountains, Piedmont, Coastal Plain and Barrier Islands and Sounds.

Applications to New Hope Corridor Open Space Master Plan

Piedmont

- Duke Forest natural areas. "Ten areas identified within the forest--the New Hope Creek corridor, Oosting natural area, Couch Mountain, loblolly pine alluvial site, loblolly-shortleaf pine stand, post oak-blackjack oak site, and upland depression bog, Meadow Flats, Blackwood Mountain and Bald Mountain--encompass a full range of successional and mature forest habitats and landforms of the eastern Piedmont. Among the forest communities present are upland oak-hickory, mesic mixed hardwoods, beech slopes, rhododendron bluffs, chestnut oak-heath and other xeric types on ridge tops and monadnocks and successional loblolly and shortleaf pine stands. The New Hope Creek floodplain and slopes harbor many splendid spring wildflower sites."
- Jordan Lake natural areas. "The natural areas associated with Jordan Lake, a Corps of Engineers reservoir, are representative of a variety of Piedmont habitats. These range from bottomland wetland forests to upland hardwood and pine forests....They are important resources for environmental education, scientific research, natural history interpretation and enjoyment.

Second growth bottomland forests, some in mature condition and with great diversity of swamp or alluvial vegetation and wildlife, extend upstream from the reservoir along sections of New Hope Creek, Morgan Creek and the Haw River.... A large, summertime concentration of bald eagles roosts on the peninsula between Morgan and New Hope Creeks,.... one of only four major roosting places for eagles in the mid-Atlantic region."

7. Duke Forest Natural Areas

Location Covered: Duke Forest properties located in Durham and Orange Counties, NC

Date: June 1986

Authors: Document is a revision by Michael Schafale of a 1981 version by Charles Roe, NC Natural Heritage Program, Division of Parks and Recreation, NC Dept. of Natural Resources and Community Development, P.O. Box 27687, Raleigh, NC 27611.

Background: "In 1979-1980, an analysis by the Duke University School of Forestry and Environmental Studies was conducted to identify outstanding natural communities and rare plant species habitats in Duke Forest. The study attempted to locate those areas that, on the basis of their floristic resources, should be preserved for research, education, and other non-consumptive uses. The data collection component of the study consisted of a review of the pertinent literature, the collection of information from secondary sources and vegetation sampling and observations in the field. Recommendations of sites to be protected as natural areas were based on the following selection criteria:

- Critical habitat for a rare plant species;
- Natural community or plant community unique or unusual to the Duke Forest and/or North Carolina Piedmont; and
- An exemplary climax community or stage in succession.

Each site's condition, or "quality", was also considered in the selection process. Recommendations of the sites were made to and approved by the Forest Resource Manager, integrated into a Duke Forest multiple-use management plan, reviewed (with site visits) by the NC Natural Heritage Program and reviewed and approved by the Dean of the School of Forestry and Environmental Studies. Eleven areas were recommended for registry with the Natural Heritage Program.

Document Description: The report consists of eight pages of text, three pages referencing data sources and one page with tables of endangered and rare plant and animal species in Duke Forest natural areas. Six maps of Natural Heritage Areas are attached.

Applications to New Hope Corridor Master Plan

Ownership, Administration and Use:

The property is owned by Duke University and is administered by the School of Forestry and Environmental Studies. Duke University uses the forest for educational and scientific purposes, including forest management training and biological/ecological research. More than 400 graduate theses in forestry, plant and animal ecology have been written on the basis of research done in the Forest. The Forest was a research site for the International Biological Program for 10 years.

Duke Forest is accessible to the public for hiking, horseback riding, picnicking and similar recreation. Parts of the forest are used for timber production.

Current management goals for Duke Forest include:

- To provide and maintain an adequate cross-section of Piedmont vegetation, timber stands, habitats and study areas suitable for study by a varied set of disciplines including forestry, botany, zoology, ecology, anthropology, hydrology, etc.;
- To assure protection and long term existence of various natural features, including unique flora, fauna and associated habitats;
- To provide adequate records and information relating to the natural resources base, management activities and research and teaching areas in order that vital documentation will exist for future research and educational activities.
- To provide, consistent with the above objectives, an important "green space" for future research and educational activities.

Eleven designated Natural Heritage Areas comprise 820 acres of the 8500 acres of Duke Forest lands. Areas relevant to the New Hope Creek study are as follows:

Korstian Division

New Hope Creek Natural Area, Compartments 5, 6,
7, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 23, 25,
26, 37, 38 and 39 374.7 Acres

Durham Division

Loblolly Pine Alluvial Site (on Mud Creek), Compartments 55 and 59	3.7 Acres
Loblolly-Shortleaf Pine Stand (on Mud Creek), Compartment 57	7.4 Acres
Couch Mountain, Compartments 74, 75, 76 and 77	95.9 Acres

Significance

Duke Forest contains some of the best examples of mature, second-growth forest communities remaining in the North Carolina Piedmont region. The University-managed Forest is one of the few extensive tracts of Piedmont woodlands protected for research, recreational, and educational purposes. The Forest has been the principal research location for the development of theories on old-field plant succession in the Piedmont, as well as for numerous other biological studies. A wide variety of research projects are currently going on in the Forest. The following areas have been identified as the Duke Forest sites best exemplifying Piedmont natural communities:

- New Hope Creek Natural Area
 - a. This tract of land on either side of New Hope Creek contains a variety of distinct habitats on the north- and south-facing rocky bluffs, the flooded depressions, the alluvial terraces, adjacent slopes and uplands. The area is underlain by both acidic and basic rock, and contains a variety of soil types. The vegetation includes alluvial forest, mesic hardwood forest, upland oak-hickory forest, mesic and xeric bluff forest, shrub, rock outcrop communities and mature successional forest.
 - b. The Wooden Bridge Bluff supports the highest herbaceous species diversity known in the Duke Forest, making this steep, 110 foot high north-facing bluff one of the most interesting botanical features in the forest. Part of the area is underlain by a diabase dike, which weathers to a richer soil than is typical for the Piedmont. The well-developed mixed mesic hardwood forest community on the Wooden Bridge Bluff is one of the least disturbed communities in Duke Forest; the canopy is dominated by tulip poplar, mockernut hickory, red oak, and beech with white oak and red maple also in abundance. Indian Physic (*Gillenia stipulata*), a significantly rare species in North Carolina, was collected on Wooden Bridge Bluff by Ebert in 1957.

- c. The steep north-facing Rhododendron Bluffs support a pure understory stand of Purple laurel (*Rhododendron catawbiense*). This association is not common in the Piedmont and is generally considered to be a "relic" of an age when a colder climate prevailed throughout North America. The bluffs area also contains a representative beech forest community with scattered shortleaf pine. Sweet pinesap (*Monotropsis odorata*), a significantly rare plant species, has been collected on Rhododendron Bluffs.
- d. Several uncommon ferns are reported from rock outcrops in the New Hope Creek Natural Area, including the lip ferns (*Cheilanthes lanosa* and *Cheilanthes tomentosa*) which are near the eastern limits of their distribution.
- e. Upland sites within the composite New Hope Creek Natural Area include several permanent forest study plots which contain examples of nature hardwoods and mature, though successional, shortleaf-loblolly pine stands.
- B. Loblolly Pine Alluvial Site--Representative of mature, well-developed 110 year old mixed stands of loblolly and shortleaf pine.
- C. Loblolly-Shortleaf Pine Stands--Representative of mature, well-developed 100 year old mixed stands of loblolly and shortleaf pine.
- D. Couch Mountain Tract--Relatively undisturbed upland tract of oak-hickory forest is the largest expanse of this community type in Duke Forest and is characteristic of much of the Piedmont uplands prior to settlement. White oak dominates the tract. Also of importance are black oak, red oak, mockernut hickory and pignut hickory. Scattered oaks exceed 300 years in age.

Outstanding Natural Areas

"Eleven sites have been selected as the most outstanding and highest quality natural areas in Duke Forest. The following descriptive summary was prepared by Norm Christensen (1981). More detailed floristic and soil analysis is available on each site.

The acreage in the Duke forest proposed for designation to the Registry of Natural Heritage Areas encompasses the full range of successional and mature communities found on the eastern Piedmont. The Duke Forest is situated on a complex of soil types weathered from Triassic sediments as well as acid igneous, basic igneous, and metamorphic (Carolina slate) rocks.

Within its boundaries are included the range of site moisture conditions from riparian and poorly-drained swamp habitats to austere monadnocks. As in much of this region, land use practices of the eighteenth and nineteenth century are still evident in many of the forests. The ongoing process of forest development is certainly a most interesting and important aspect of our natural heritage.

Much of the area designated along New Hope Creek represents some of the richest riparian and mesic ("cove") habitats extant in the Piedmont. Soils in this area are generally base-rich and moisture conditions favorable, resulting in strikingly diverse plant communities. Bluffs along the Creek support many species which are more typical of mountain habitats.

The large tract near Couch Mountain in the Durham Division has also been designated as it represents a continuous expanse of white oak-hickory forest which was probably characteristic of much of the Piedmont prior to colonization. Within this area exist small remnants of that original forest with oaks exceeding 300 years in age. This forest type is typical of upland sites on soils derived from acid igneous rocks and Triassic sediments.

In both Durham and Korstian Division, considerable acreage of pine has also been included. These pine stands range from 30 to over 100 years old and are exemplary of the process of secondary succession which is occurring on more than 90 percent of the forested land on the Piedmont. For each of these stands there exists an extensive data base so that this process can be monitored in a statistically meaningful way into the future.

While a few rare species do occur in the area designated, this is not the primary justification for preservation. Rather, these areas are representative of assemblages of species which typify the range of habitats and land use histories in the eastern Piedmont. Furthermore, there exists for each of the forest stands here designated an extensive data base involving permanently located plots. Thus, these areas have a long-term value bordering on priceless. Their proximity to urban areas and several universities have already made them incredibly important teaching tools.

Dangers to Integrity

The most serious threats to Duke Forest and its natural areas are from encroaching urban development and land use pressures from increased populations.

Protection and Management Recommendations

The eleven Duke Forest Natural Areas should be added to the North Carolina Registry of Natural Heritage Areas."

8. I-40 in Durham, Report of the Durham City and County I-40 Land Use and Appearance Committee

Location Covered: I-40 Corridor through Durham and Durham County

Date: August 1985

Authors: Durham County and the City of Durham I-40 Land Use and Appearance Committee

Background: "In early September 1983,....the City Council and the Board of County Commissioners voted unanimously to endorse and support an I-40 Land Use and Appearance Committee to assist the City and County in making adequate preparation for economically and aesthetically pleasing development along the I-40 corridor.... Each governmental body made five appointments to the committee.... The committee recommended and endorsed City and County ordinances which established an overlay district [the Major Transportation Corridor District] on the I-40 corridor." The ordinances "provide specific development standards for locations where development could have posed a significant threat to a sensitive visual and physical environmental resource."

Document Description: The document is a 15 page report with recommendations for land use policies; proposed standards for landscaping, parking and utilities; and protection of environmentally sensitive areas along the I-40 corridor. Appendices include an area map and Major Transportation Corridor District Ordinances.

Applications to New Hope Corridor Open Space Master Plan

Protection of Environmentally Sensitive Areas Along the I-40 Corridor

"As development pressures mount along the I-40 corridor, identification, protection and preservation of environmentally sensitive areas becomes critical. The I-40 Committee recognizes that maintaining a stable and varied natural environment with functional physical and biological processes is necessary for human life and welfare. Likewise, the protection

and appreciation of historical, archaeological and cultural resources is essential to a healthy society. Current development patterns in the Triangle area suggest that natural beauty is part of the high quality of life which attracts new development. For these reasons, the I-40 Committee believes that local jurisdictions should adopt policies supporting the identification, protection and preservation of environmentally sensitive areas along the I-40 Corridor.

There is no generally accepted definition of an environmentally sensitive area, but the Committee believes that at least the following should be included:

- Lakes and watercourses;
- Floodplains;
- Wetlands;
- Historic, archaeological and cultural sites;
- Habitats of rare, threatened and endangered plants and animals;
- Unusual geological formations;
- Scientific research areas;
- Prime agricultural land;
- Unusual plant specimens;
- Scenic rock outcrops;
- stands of mature vegetation;
- Access routes to public amenities;
- Wildlife corridors between refuge areas;
- Scenic overlooks; and
- Urban entryways and scenic views of urban areas.

The New Hope Corridor meets all of the 15 criteria for protection and preservation listed above.

The Committee recommends that:

- Descriptions and definitions included in Appendix III of the report (Environmentally Sensitive Areas of the I-40 Corridor) should be used by local governments to identify areas in these categories.

The uniqueness of the resource, its replacement possibilities, its function in the overall ecosystem and possible mitigating actions should all be considered in determining the appropriate protection measures for a particular area. The Committee recognizes that absolute

prohibition of development is not an appropriate level of protection for every category listed. General guidelines for protection of each category are suggested in the matrix attached as Appendix IV of the report.

- Local jurisdictions should participate in and support a county-wide inventory of fragile lands which will compile previous inventories and generate new data. As a starting point for the I-40 Corridor the following are to be included:
 - a. Forty Oaks. East side of SR 1110, 1.1 mile south of junction with NC 54, Blands vicinity.
 - b. House. Southeast corner junction of SR 1192 and NC 751, Blands vicinity.
 - c. Jones Place. Southeast corner of junction of SR 1110 and SR 1113, Durham vicinity.
 - d. Leigh Farm. East side of SR 1110, 0.2 mile south of junction with SR 1276, Chapel Hill vicinity.
 - e. Lowes Grove School. East side of SR 1945, 0.1 mile north of junction with NC 54, Lowes Grove vicinity.
 - f. Massey's Chapel United Methodist Church. East side of SR 1106, opposite junction with SR 1118, Blands vicinity.
 - g. Page Farm Complex. Junction of SR 1972 and SR 1973, Nelson vicinity.
 - h. Patterson House. North side of SR 1110, 0.2 mile east of junction with SR 1113, Durham vicinity.
 - i. Research Triangle Park of North Carolina.
 - j. New Hope Swamp, from NC 54 to Chapel Hill Road in the B. Everett Jordan Reservoir property.

Some environmental and historical inventories are available for Durham County, but additional data is needed to adequately plan for the protection of environmentally sensitive areas.

- Local jurisdictions should incorporate planning for protection of environmentally sensitive areas in their overall land use planning, and that close coordination with private and public organizations be maintained.

Following identification of environmentally sensitive areas, decisions must be made concerning the appropriate tools for protection, the agency responsible for implementation, a schedule for implementation, and implementation details such as available funds, needed ordinance revisions, etc. While some of this work can (and probably will) be undertaken by private and public groups such as the Triangle Land Conservancy and the NC Natural Heritage Program, overall coordination by City and County staff persons will be required to maintain long-term consistency and broader coverage."

9. Land Use Guide, Durham County, North Carolina

Location Covered: Durham County

Date: November 1979

Authors: The Durham County Planning Department and the North Carolina Department of Natural Resources and Community Development, Division of Community Assistance, Raleigh Regional Office

Background: Durham County began a comprehensive planning process in January 1975 by contracting with the North Carolina Department of Natural and Economic Resources (now Natural Resources and Community Development) for assistance in developing a plan for Southeast Durham County and in revising land use control ordinances. This report presents background data collected by the Durham County Planning Department, and a proposed land use guide for the land within the County's planning and zoning jurisdiction.

Document Description: The Land Use Guide contains 80 pages of text and tables, interspersed with 35 foldout maps. The document is broken down into three primary sections: The Natural Environment, including geology, soils, drainage, vegetation, etc.; the Manmade Environment, including history, population, economy, land use, etc.; and a Land Use Guide, including citizen opinions, goals and objectives, land use maps, etc.

Applications to New Hope Corridor Open Space Master Plan

The Natural Environment

County-wide documentation of soils, geology, drainage, etc. Useful as reference material.

History

"The earliest known inhabitants of the Durham County area were the Indians.... (they) had a large village on New Hope Creek at Patterson's Mill." "Toward the middle of the Eighteenth Century the first white settlers came to what is now Durham County but was then Orange County.... The settlers who came were primarily of Scottish, Irish or English descent."

8. Research Triangle Region Development Guide

Location Covered: Research Triangle Region (Orange, Durham, Wake Counties, portions of Chatham, Granville, Franklin, Johnson and Harnett Counties.)

Date: April 1969

Authors: Research Triangle Regional Planning Commission

Background: This document represents the first regional look at comprehensive planning for the Triangle area. The project was undertaken prior to the massive urbanization of the 1970's and 1980's. Emphasis was placed on "a good fusion of town and country," including open space as an integral part of the planning strategy.

Document Description: The 109 page Guide presents maps, tables and text in an 18" x 24" format. The Research Triangle region is divided into 39 sections. For each section the document provides systematic inventory maps, Urban Land Use maps (existing), Existing Water and Sewer Systems, Future Urban Areas/transportation corridors, Proposed Open Space and Projected Water and Sewer Systems maps.

The document includes 30 pages of text, putting forward and expanding upon 17 objectives to achieve the goal of "fusion of town and country." Eleven pages of tables are included dealing with population projections and projected water and sewer requirements. Four pages of appendices cover such items as future urban land requirements, organization of utilities, open space standards and criteria, regional agricultural patterns, etc.

Applications to New Hope Corridor Open Space Master Plan

Introduction

"The Research Triangle Planning Commission has used a pat phrase "a good fusion of town and country", to summarize its objectives. What is meant by this? Good agricultural land protected and used. Woodlands encouraged and managed. Residences in rural areas well spaced, on large parcels to maintain the country areas as country. Open spaces in ample supply to secure urban-rural differentiation, including land around residential developments kept unbuilt upon by such areas as stream valleys, woodland strips...."

Objective Six

Determine what open space is. "Passive and active recreation remains a basic need and is to be found in many ways and many places.... Essentially a wise and balanced use of the Region's natural resources is needed. Some land now rural and agricultural must be used for urban development, but land that is better suited for other necessary purposes than urban, or that contains irreplaceable natural features should not be developed needlessly, blindly...."

For the Research Triangle Region ten categories of open space are listed that "are of significance and require public and private concern and action":

- The urban open area "proper fusion" network. The small, fairly restricted stretches of land permanently reserved as open in, through and around urban development.
- Urban parks and recreation centers.
- Regional parks.
- Wilderness.
- Unique natural areas.
- Regional open space network. The physical connection and continuity of various open spaces (the whole is greater than the sum of its parts) and the separation of portions of the urban area.
- The countryside.
- Major functional areas, such as reservoirs, universities, airports, etc.
- Private and commercial recreation.
- Circulation and view. Scenic development or preservation of areas adjacent to vehicle and pedestrian circulation and of vantage points for significant views of the landscape, intimate as well as heroic.

Objective Seven

Determine the actions for the urban portion of the Region that can help provide an open-space network for a proper fusion of town and country to help achieve the desired residential area pattern. Determine what natural features can be utilized.

Flood Plains. "Should be recognized and kept out of urban development.... Basically, however, keeping development out of flood plains is a recognition that flash floods in urban areas are bound to get worse in the future, not better.

Stream Valleys. "Stream valleys and drainageways should be kept open....the many stream courses in the Region could be a superb network of open spaces surrounding and protecting residential areas. Some of them could provide a system of park walkways and public spaces throughout the urban area.

"Such actions concerning natural features, flood plain zoning combined with building credits, proper valuation, stream valley park acquisition, extensive recreation zoning, stream valley open spaces combined with high ground building credit, public leadership, and other actions, can do a great deal in making possible wonderful residential areas for every group."

Objective Eight

Determine what urban park and recreation areas the people of the region need and how the areas can be secured. "Wherever possible, urban parks should be located adjacent or in relation to other public owned facilities, in great particular, schools, and the joint development of all public facilities coordinated."

Objective Ten

Determine what wilderness areas, if any, can be maintained; "...the need and value of wilderness areas remains and action taken now will have an ever increasing value for future generations. Four areas in or near the Region have wilderness area potential, the Eno Wilderness, Camp Butner Forest, Edwards Mountain and Big Woods."

Eno Wilderness: "The Eno Wilderness is located on both sides of the Eno River between Hillsborough and Durham, in part contained within the surrounding highway access loop formed by US 70 and State Roads 1562,

1002, and 1567 and in part extending southwest across I-85 to the Eno Division of Duke Forest.

Objective Eleven

Determine if there are any unique areas of outstanding natural significance. "Natural areas are the unique areas of outstanding scenic splendor, natural woods or scientific importance; they may serve an educational purpose as well. The Region is not blessed with such areas, all the more reason for the proper treatment of those few that there are."

- "Blackwood and Bald Mountains (Orange):They are covered with fairly well developed hardwood forests and are of interest for preservation from a scientific and natural history point of view. Portions of these mountains are owned by Duke University as part of Duke Forest."
- "Hollow Rock (Orange): Of considerable geologic interest this area along the New Hope Creek to the north of Chapel Hill, shows a good meander. The rock types show cross-bedding of the Triassic Age."
- "Duke Forest Natural Area (Orange): This area, north of Chapel Hill to the east of NC 86, has been set aside by Duke University to be maintained in an undisturbed condition."
- "Korstian Rhododendron Bluffs (Orange): In the Korstian Division of Duke Forest, along New Hope Creek, this area is an especially scenic and valuable area where rhododendron and azaleas, both ordinarily found in the mountains, occur in abundance."
- "Catsburg Diabase Sill (Durham): South of Fairntosh, along the Eno River, there is a localized area of soil which includes a number of plants that are extremely rare in North (or South) Carolina. This small area....is of considerable scientific interest."

"....These and other efforts to secure permanent protection for natural areas should be encouraged and intensified."

Objective Twelve

Determine how the various Regional open space areas are linked.

APPENDIX E
New Hope Creek Corridor
Vegetation Inventory Site Descriptions

Appendix E:

New Hope Creek Corridor
Vegetation Studies, Site Descriptions, and Field Maps

cf. MA pp
26, 29, 38

Part I. Units 1-9
Prepared by Charles Burger
for Coulter Associates

Part II. Units 10-20
Prepared by Edward Harrison
October 17, 1989
for The Durham County Inventory of Natural and
Cultural Resources, and the
Triangle Land Conservancy

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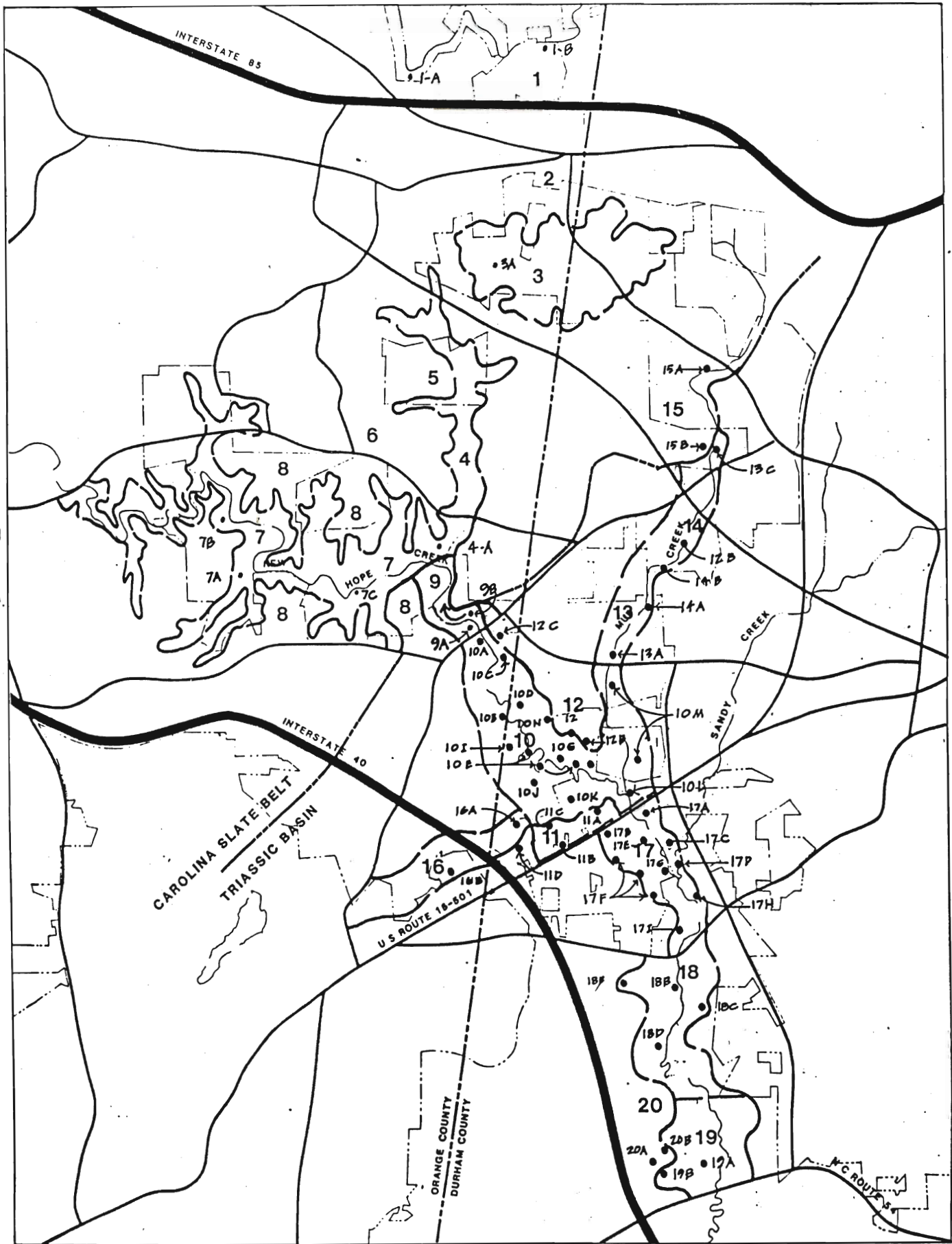


Fig. 1 : Vegetation/Landscape Units

MAP SHOWING LOCATIONS OF INVENTORY SITES,

UNITS 1-9: ORANGE COUNTY INVENTORY, 1988

UNITS 10 - 20: E. HARRISON, 1989



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Part I. Units 1-9

The main study area for the New Hope Corridor was divided into 20 large units (Map page 54). Units 1-9 were in the northern part of the area and did not include New Hope Creek itself. A few hikes were taken in this northern study area, but no extensive field work was done specifically for this study. The Orange County Inventory was reviewed to identify any Inventory sites which occur within the New Hope Corridor study area. These are listed for Units 1-9. Some units did not contain any Inventory sites.

Unit 1:

- Eno River State Park vicinity
- Land area(s) owned by State of North Carolina, and adjacent privately-owned lands, north of Interstate 85.
- Inventory Sites:
 - 1-A: Eno River State Park Mountain Spleenwort and Rhododendron Bluffs (Orange County Natural Areas Survey site E14)
 - 1-B Eno River State Park Cabelands and Rhododendron Slope (Orange County Natural Areas Inventory site E15)

Unit 2:

- U.S. Route 70 vicinity
- Urbanizing lands between Interstate 85 and the northern boundaries of Duke Forest Durham Division. Developed areas accessed from Route 70, Old N.C. Route 10.
- Inventory Sites:
 - none

Unit 3:

- Couch Mountain
- Duke Forest lands, some adjacent privately-owned lands, in the vicinity of Couch Mountain. Extent shown on Map are land above 500 foot contour. Unit contains stands of exceptionally mature hardwood forests.
- Inventory Sites:
3-A: Couch Mountain (Orange County Natural Areas Inventory site N17)

Unit 4:

- Piney Mountain Creek valley
- Steep slopes adjacent to Piney Mountain Creek and its main tributaries, south to Mt. Sinai Road. Includes portions of Duke Forest Durham Division south of Cornwallis Road.
- Inventory Sites:
4-A: Piney Mountain (Orange County Natural Areas Inventory site N18)

Units 5 and 6:

- Duke Forest between Cornwallis & Mt. Sinai (5)
- Friends School Vicinity (6)
- Farm lands, old fields, woodlots, and scattered low density residential development in the Carolina Friends School/Mt. Sinai Road vicinity.
- Inventory Sites:
none

Unit 7:

- New Hope Stream Valley & Bluffs
- Land areas, largely within the Korstian Division of Duke Forest, characterized by steeply sloping stream valleys and stream channels of the New Hope Creek and several small tributaries.
- Inventory Sites:
7-A: Gate 24 Purse Web Spider Ravine (Orange County Natural Areas Survey site N12)
7-B: Wooden Bridge Bluff (Orange County Natural Areas Survey site N13)

7-C: New Hope Creek Rhododendron Bluffs (Orange County Natural Areas Survey site N14)

Unit 8:

- Korstian upland forests
- Duke Forest lands, and some adjacent privately-owned lands, between Mt. Sinai Road and Whitfield Road, above the stream valleys of New Hope Creek and its tributaries.
- Inventory Sites:
none

Unit 9:

- Hollow Rock Alluvial Forest
- Duke Forest lands, and some adjacent privately-owned lands, northwest of Erwin Road, where the widening of the New Hope Creek floodplain begins.
- Inventory Sites:
9-A: Hollow Rock Rhododendron Bluff (Orange County Natural Areas Survey site N15)
9-B: New Hope Alluvial Forest (Orange County Natural Areas Survey site N16)

Part II. Units 10-20

Format of Descriptions

Vegetative/Landscape Units are similar to the individual listings in County-wide inventories as done by Natural Heritage Programs. Vegetation Sites are sub-areas which are grouped under these units (Map: Vegetation/Landscape Units). They are comprised of either individual forest stands, rural properties in diverse management uses or selected utility access corridors. In some cases, a rural property or utility corridor can be comprised of or pass through several different forest types of varied age and quality. Differentiation of soil types or rock types within a landscape unit sometimes results in separate inventory sites.

Described and summarized are:

- Name (property owner, location, or natural feature);
- Location relative to closest publicly-maintained road or maintained private access;
- Brief description of land cover, with appropriate Natural Heritage community type (Schafale and Weakley, 1985) or successional plant community (Moore, 1973);
- Apparent site quality, spring-summer 1989;
- Scenic or natural highlights, in brief; and
- Recommendations for further study, by individual site.

Primary attention is paid to land cover and data summarized under highlights. Site ratings are listed in a separate section after the site descriptions.

The report summarized here is available in full in the Planning Department of each jurisdiction participating in the Plan.

Unit 10: New Hope Creek-Dry Creek-Mud Creek Lowlands

Site 10-A, Dickson Property Alluvial Forests and Thickets

Erwin Road, on west side New Hope Creek for several hundred feet south from bridge at Hollow Rock Store. Access from parking lot at Hollow Rock and along gated driveway or through creekside thickets. Land cover: continuation of New Hope Alluvial Forest (Orange Co. Inventory) community, with inclusion of overgrown low-lying fields. Highlights: sizable and diverse habitat for bottomland wildlife with little human interference. Re-examine flora/fauna in early spring.

Site 10-B, Crabtree Farmlands

Mt. Moriah and Erwin Roads, on west side New Hope Creek at Orange-Durham line. (This is northernmost part of Durham's Southwest Durham Planning Area, and partly in other jurisdictions). Land cover: mix of sizable levee, bottomland and alluvial forests, most with groundcover severely restricted by grazing. Also includes heavily managed open pastures. Highlights: park-like forest with open floor, and by very well-drained creekside levees with uncommonly large beeches.

Site 10-C, Penny Lowlands

Pickett Road, east side New Hope Creek. Known to birders as Rose Farm (former owners). Easiest access from parking at Wade Penny's house (by permission) and then across field. Land cover: managed pasture dropping off upland, and alluvial and bottomland forests of mixed age. Highlights: wildlife benefits of habitat juxtaposition-- open pasture next to lowland and upland forests of varied age. Chapel Hill Bird Club members should be invited to include not only the managed field and edges in spring and Christmas counts, but also lowlands and adjacent upland site, Lower Hollow Rock Upland Forest.

Site 10-D, Branch Estate Remnant Lowlands

Pickett Road and Cambridge Road, east side New Hope Creek. Heirs to Dallas Branch require access permission. House on upland is currently rented out. This property contains sizable acreage outside the floodplain. Site is in ecological unit with other lowlands on east side of Creek. Land cover: mix of lowland forest types. In winter 1988-1989, most mature pines and some other hardwoods were cut, and logging roads built, with much disruption of overall vegetation and hydrology. First-growth sweetgums were cut and left. Some creekside sites are

very well-drained levee forest (Congaree soils) with open floor; other creekside areas have ground cover of stinging nettle; others are tributary wetlands. Highlights: diversity of lowland habitat types, increased by logging; extent of floodplain acreage, up to half-mile deep from creek in some locations. Re-inventory for spring flora.

Site 10-E, Garrett Farms Levees and Fields

Garrett Road and Hulon Road, east side of New Hope Creek, west side of Mud Creek. Includes only areas on Garrett Farms development. No areas appear posted against access. Land cover: a variety of lowland forest types of differing ages, located in the dramatically curving meanders of the main New Hope Creek channel. Site is distinguished by several very well-drained and fertile areas of Congaree loam soils, some of which are narrow creekside bands of first-growth levee forest. Away from the Creek channel are fields, some of which are currently used (on lease) for haying. Unused fields are succeeding to levee species such as boxelder. Most valuable parts of site are highest-lying levee sites with mature beech and red oak trees and open grassy floor, actually mesic hardwood forest. This site is delineated by upper boundaries of floodway fringe, and includes lots planned for residential development. Some of historic farm road system may be covered up. Highlights: high-quality, first-growth, attractive levee forest next to the Creek channel, and small areas of bottomland forest away from the Creek; habitat diversity offered by successional fields; extensive remnants of old farm road system; landmarks such as "Crossroads Oak" (immense white oak) and freshwater supply system ditch (for still?). Re-inventory for spring flora, and for trails visible in winter only.

Site 10-F, Garrett Farms Block D Alluvial Forest

Off subdivision road under construction, from Garrett Road. On tributary running south into east side New Hope Creek. Adjoins attractive second-growth beech forest on development lots. Land cover: mature sweetgum-tuliptree alluvial forest. Stream is crossed by farm road. Site is mostly within development lots in floodway fringe. Highlights: maturity of forest; immediate adjacency to lots under development fall 1989.

Site 10-G, Garrett Farms Block C Mixed Mesic Forest

Off Hulon Road, via abandoned farm road. At upper edge of floodplain centering on lots 17 and 18. Land cover: mature second-growth hardwood forest with mesic hardwoods and some loblolly pine. Highlights: open floor and pleasant aspect of

forest; extensive farm road system descending from uplands, which may be covered up entirely as lots are developed.

Site 10-H, Garrett Farms High Levee Mesic Hardwood Forest

East side New Hope Creek, southeast side Garrett Farms subdivision. Access by old farm road from subdivision roads. Land cover: on one tiny site, probably the best example of a scenic high levee in this vegetation/landscape unit. It is an extension of the levee system described above. Trees such as beech, red oak and sourwood are not large, but overall aspect is exceptionally pleasant. Highlights: high-quality, mature mesic hardwood forest immediately next to New Hope Creek, including large beech and northern red oak; well-drained soils on site above most floods, and open aspect; potential high floristic diversity. Site should be re-inventoried in spring for flowering shrubs and herbs.

Site 10-I, Brown Meadows and Woodlots

East side Mt. Moriah Road, west side New Hope Creek. Easiest access is parking at house of Bruce Brown (farm manager), by permission, on west side of road, and walking east on farm roads and overland. There are no creekside trails. Land cover: uplands with mixed pine and hardwoods, farm fields and pastures. Lowlands are pastures, uncut as of summer 1989, selectively cut bottomland forest with ash and sycamore and first-growth levee forest with beech up to 4 foot diameter at breast height (dbh) in well-drained locations, also very large Shumard oak, sycamore, boxelder. Highlights: conservative management with little logging of woodlots and no hunting allowed; areas of well-drained Congaree soils in mature levee forest; unimpeded wildlife activity (deer, beaver).

Site 10-J, Mount Moriah Road Farms and Woodlots

A collection of properties fronting on the east side of Mt. Moriah Road and on west side of New Hope Creek. This includes also includes Oak Ridge 58 property north of Duke Power easement, generally draining into unnamed east-west tributary and away from Dry Creek. Directional drainage is probably effectively non-existent except in old ditches. Land cover: W.J. Hay property is major part of site, containing scattered wetlands with black willow and poplar, and some mixed pine/hardwood stands. The latter have been heavily logged in recent months. Site retains some old-growth bottomland (swamp chestnut oak dominates) and levee forest. Oak Ridge 58 property has abandoned field, old road (faint) and swamp, bottomland and levee forests. McFarland property

contains heavily-managed beef cattle pasture. Isley property appears mostly in lowland forest. Highlights: wide cross-section of lowland ecosystem types, including potential regulatory wetlands (Hay, Oak Ridge 58); development potential of uplands by road.

Site 10-K, Lower Dry Creek Bottomlands

Several properties on north side of US 15-501, including wetlands east of Mt. Moriah Road and south of east-west Duke Power easement. Hydrologically the lowest, flattest, and most poorly drained section of a seasonally-flooded wetland receiving overflow from New Hope Creek and Dry Creek, runoff from Boulevard Ridge, and conceivably by artificial impoundment by US 15-501 bridge fill. Site also includes alluvial forest along intermittent tributaries draining off Boulevard Ridge. Best accessed from SR 1242 service road and sewer line easement, from Mt. Moriah Road near Dry Creek bridge, or with more difficulty, overland across Boulevard ridge woodlots, or along powerline easement. Land cover: mixed lowland forests, with some swampy vegetation along braided watercourses of Dry Creek, including thousands of Lizardtail herbs on lowest parts of forest floor. Highlights: clearly distinguishable wetland forest; relatively large size of undisturbed forest in a single block (> 50 acres); large individual trees (>4' diameter cherrybark oak, also mature swamp chestnut oak, willow oak, red maple and hackberry >30" diameter); environmental quality benefits of managing upland runoff; potential incursion into floodplain of proposed Mt. Moriah Road connector.

Site 10-L, Spicebush Levee

East side New Hope Creek, just north of US 15-501. Easiest access from sewer line easement parallel to north side of the Durham-Chapel Hill Boulevard, reached by crossing Mud Creek from parking at Oak Creek Shopping Center. Property maps show primary ownership by Alma Hunt and Guaranty Service Corp. Land cover: sewer line easement is bottomland forest; levee itself is well-drained enough to be considered mesic in part, beech-dominated, with other, highly fertile sections in mixed levee forest with tulip poplar, sweetgum, elm and sugar maple. Highlights: apparent high fertility on well-drained site (Congaree loam soils); abundant spicebush; tentative identification of regionally-uncommon tree, alternate-leaved dogwood; high probability of abundant spring flora. Site should be re-inventoried in early-mid spring.

Site 10-M, Lower Mud Creek Forests

On both sides of Mud Creek north from US 15-501 to Pickett Road. Accessible from parking lot at Oak Creek Shopping Center, from Garrett Farms clubhouse parking and from Pickett Road. Land is in multiple ownership. Land cover: mix of lowland forest types, including alluvial, bottomland, some small sections of swamp, seasonally ponded. Sewer line easement along north-south Mud Creek Interceptor is open, with truck and foot bridge crossings of creek. Farm roads connect west into Garrett Farms. Highlights: relatively well-developed access routes; sizable floodway; nesting of red-shouldered hawk. Chapel Hill Bird Club should be asked to keep site as part of seasonal counts.

Site 10-N, Cambridge Road Tributary Wetland

North and south of Cambridge Road running south into Garrett Farms. Highest quality part of site is selectively cut area north of road. Land cover: willow oak and sweetgum, up to 24 inches dbh, and red maple up to 18 inches dbh. Soils are mapped as Pantod loam, most poorly-drained series in Durham, usually regulatory wetland soils, and this area appears not to drain. Highlights: exceptionally wet area with relatively mature bottomland forest, considerable distance, i.e., greater than one-half mile from creek, surrounded by lightly developed upland.

Unit 11: Boulevard Ridge Uplands

Site 11-A, Patterson Wildflower Slopes

Along north-facing front of ridge, north of US 15-501 and just west of New Hope Creek. Best access from Biscayne Road (service drive) parking at end of pavement and following sewer easement construction road around ridge by New Hope Creek. Primary site owned by Oak Ridge 58 partnership. Land cover: uneven-aged Basic Hardwood Forest, with sizable northern red oaks, smaller sugar maple and tulip poplar. Highlights: more than 50 species of flowering trees, shrubs and herbs; large and widely-distributed population of yellow lady slipper, regionally rare wildflower; high base soils suggested by extent upslope of ladyslipper, buckeye, etc., and by diabase boulders on ridge section near New Hope Creek. Site should be re-inventoried in spring.

Site 11-B, Biscayne Road White Oak Stand

Along Biscayne Road, about 0.2 to 0.4 mile east of Mt. Moriah Road. Multiple ownership, in city jurisdiction if annexed tract. Land cover: dry oak-hickory forest, with aspect dominance of white oaks, some more than 2 foot diameter. Individual trees estimated to be 100 to 120 years old. Low understory diversity characteristic of community type. Highlights: maturity of white oaks, easily visible from US 15-501, Durham-Chapel Hill Boulevard; potential development of site due to closeness to major thoroughfare; proposed new thoroughfare through site to connect Mt. Moriah to Watkins Road. Site should be inspected in company with road planners to determine potential conflicts with proposed thoroughfare corridor.

Site 11-C, Bassett Beech Slopes

East side Mt. Moriah Road, south side Dry Creek, approximately 0.2 mile north of US 15-501, Durham-Chapel Hill Boulevard. Former Bassett farm property, immediately next to swampy section of Creek and downhill from homesites. Land cover: mature second-growth mesic hardwood forest, dominated by beeches, with even-sized canopy, trees up to 18 inches diameter including northern red oak, white oak and hickory. May have abundance of representative mesic herbaceous species. Highlights: good example of attractive community; potential development; proposed new thoroughfare. Site should be re-inventoried for flowering plants in early- to mid-spring.

Site 11-D, Sanderson Hardwood Slopes

West side Mt. Moriah Road, immediately upstream on Dry Creek from Bassett Slopes. Land cover: uneven-aged hardwood forest, with mesic species on north-facing slopes and dryer species on west-facing slopes. Mesic community is in beech forest and white and northern red oaks to 30 inches diameter dominate the dryer sites. This is a small, attractive site surrounded by second-growth forest downslope and in the floodplain. Highlights: high quality attractive site in small area; potential development; association with other undeveloped sites.

Unit 12: Garrett Farms Peninsula Uplands

Site 12-A, Lower Hollow Rock Upland Forest

East side of New Hope Creek downstream from Erwin Road. Access by permission from Wade Penny overland from his homesite to the east or overland south from Hollow Rock Store. Land cover: uneven-aged hardwood forest, with aspect dominance in some sections by mature northern red oaks. Triangle Land

Conservancy volunteers have located colony of Dutchman's Breeches (*Dicentra cucullaria*) on this site. Highlights: maturity of upland forest; regionally uncommon wildflower.

Site 12-B, Garrett Farms Block E Oak-Hickory Forest

Several development lots in southeast section of subdivision (58, 61-71) off cul-de-sacs. Access from remnants of farm road system, overland from available paved subdivision roads or east-west sewer easement. Land cover: mature second-growth dry mesic oak-hickory forest, with relatively open understory. Apparently not subject to flooding, although some sections drain poorly. This site under development in the fall 1989.

Site 12-C, Garrett Farms Block D Beech Slopes

Several development lots on south end of subdivision, immediately adjacent to east of Block D Alluvial Forest, and on same lots (48-49-50). Land cover: mature second-growth mesic hardwood forest, mostly beech, with relatively open understory. Under development fall 1989.

Unit 13: Upper Mud Creek Triassic Lowlands

Site 13-A, Mud Creek Interceptor Wetlands

Lowland forests surrounding Mud Creek north of Pickett Road and generally south of Duke Forest property and including floodplain lots in Loch N'ora subdivision. Easiest access is from parking on Pickett Road or Pineview Circle and walking up Interceptor easement on east side of creek. Land cover: mixed lowland species, including first- or second-growth willow oak, sycamore, ash, sweetgum and loblolly pine. Many sections are seasonally flooded and contain wetland groundcover species such as netted chain fern, atamasco lily and bullrush. Highlights: numerous areas of relatively undisturbed bottomland or alluvial forest; habitat variety offered by open wet grassy easement; relative accessibility; relatively few landowners including Vatabuk, Chandler and Loch N'ora subdivision lot owners.

Site 13-B, Mud Creek Southern Duke Forest Compartments

On southeast side of Erwin Road, southwest side of Cornwallis Road, on either side of Mud Creek. (Compartments 43, 44, 45 and 46). Forest Manager Judson Edeburn advises parking off right-of-way on north quadrant of Erwin

Road-Cornwallis Road intersection and entering on trail going south from Cornwallis Road on the east side of the Creek, or east from Erwin Road (Graveyard Fire Trail) on west side of the Creek. This site is generally difficult to access by foot except for the graveled sections of the Fire Trail. Land cover: upland areas are cut-over pine, undergoing periodic logging for pine beetle or other reasons; floodplains are mixed age alluvial forest with red maple, ash and sycamore, or at the very southern end of the property, bottomland hardwoods grading uphill into the Mud Creek Tributary Rich Slopes. Highlights: small sections of undisturbed bottomland forest; nearness to developed areas.

Site 13-C, Mud Creek Duke Forest Triassic Edge Floodplain

Between NC 751 and Cornwallis Road, on either side of Mud Creek. (Compartments 56 and 57). Easiest access is from parking at Gate 3 on NC 751 and by foot down Fire Trail. Floodplain starts being evident south of truck bridge over Mud Creek where foot trails extend a small distance southward. Rocks along creek south of the bridge mark southern edge of hard rock ridges, in this case diabase sill boulders (Mecklenberg soils). Land cover: as mapped by Duke Forest, mesic pine and mixed mesic forest with second-growth. Narrow strip of alluvial forest next to creek includes large Umbrella magnolias. East side of Creek grades into alluvial thicket and west up onto the Diabase Ridge, Mixed Mesic Forest. Beaver impoundments have expanded wetland considerably on south of Duke property with some trees killed. Highlights: distinctly visible edge of Triassic basin; frequent and sizable Umbrella magnolia, relatively uncommon understory species.

Unit 14: Eastern Mud Creek Hardwood Slopes

Site 14-A, Camelot Court Rich Slopes

On slopes facing north from residences on Camelot Court, north of Pickett Road. Best access along Mud Creek Interceptor easement north from Pickett Road, with parking on Pickett Road or on Pineview Circle; also possible off residential land on Camelot Court. Land cover: mesic hardwood forest, first- and second-growth, with aspect dominance of beech and northern red oak. Soils are most sharply-drained Triassic series-Pinkston fine sandy loam, steep phase, and this may one of the best-preserved sites in the County of that soil on north face. Highlights: maturity of trees; soil series and aspect; immediate adjacency to undeveloped bottomland forest and sewer line easement access. Site should be examined February to April for spring ephemeral herbs.

Site 14-B, Mud Creek Tributary Rich Slopes

Southern end of Duke Forest, Compartment 44, northwest of Gretchmar Circle, on both sides of intermittent stream running west into Mud Creek. Access possible along Mud Creek Interceptor north from Pickett Road or, with permission, through residential land off Gretchmar Circle. Land cover: slopes facing north toward tributary; mature second-growth 18 inch diameter beech and northern red oak; upslope, similar sized white oak and red oak; at base of slope, at least one mature swamp chestnut oak. Overall, appears mix of mixed mesic and basic mesic forest, with latter suggested by downslope species higher on slope than beech. Highlights: maturity of some trees; potential for mesic hardwood herbs. Site should be examined for spring ephemerals.

Unit 15: Mud Creek Valley Hard Rock Slopes

Site 15-A, Duke Oak-Hickory Uplands

This site location, vegetation and biological significance are described in detail in the Durham Inventory, Site DF3. Part of Duke Forest Durham Division, accessed from NC 751 by Gate 7.

Site 15-B, Diabase Ridge Mixed Mesic Forest

On east-facing slope of ridge running roughly north-south, NE of Cornwallis Road, NW of Erwin Road, and most easily reached by traveling SW on Gate 3 Fire Trail of Duke Forest from NC 751. North section owned by Duke. Land cover: mature pine succeeding to mixed mesic hardwoods. Duke Forest classifies site as 80 to 120 year old loblolly pine; white oak and tulip poplar occur on slope to 24 inch dbh; understory is ironwood; sourwood; red maple; buckeye, upslope from normal habitat, and red cedar, mostly logged. Highlights: Based on underlying soils and rock (Iredell on ridge, Wilkes on slope and diabase dike underlying), potential for succession to community intermediate between basic mesic and basic oak forest. This is also suggested by occurrence of buckeye upslope in relatively dry situation; potential as well for species re-colonizing as acidity of soil litter changes. Site needs re-inventory for spring ephemeral herbs, which will give better indication of successional possibilities than from current evolving overstory.

Unit 16: Upper Dry Creek Lowlands

Site 16-A, Sanderson Lowland Forests

West side Mt. Moriah Road extending west to I-40, and on both sides of Dry Creek. Most substantial areas of floodplain appear to belong to Sanderson. Access off Mt. Moriah Road only; apparently not possible to cross under I-40, and powerline easement is too heavily vegetated with thicket for foot travel. Land cover: mostly second growth alluvial hardwood and pine forest on abandoned farmland, with some areas away from channel seasonally ponded. Highlights: part of remnant lowland corridor.

Site 16-B, Cedar Terrace Bottoms

Along Dry Creek downstream from Erwin Road to I-40. This site's location, vegetation and biological significance are described in detail in the Orange County Inventory, Site BO3. Based on grouping of sites by watersheds, the site numbering appears erroneous; it is listed as site BO3 within Bolin Creek Basin, but since Dry Creek is directly tributary to New Hope Creek, it would be more accurately listed as site N19. Highlights: seepages at base of north-facing slopes which provide habitat for rare Thorey's dragonfly; sizable, i.e., estimated 85 acres, of relatively mature bottomland and swamp forest.

Unit 17: Patterson Farm Lowlands and Slopes

Site 17-A, Mud Creek Confluence Lowlands

Immediately south of US 15-501 Durham-Chapel Hill Boulevard, including west end of Garrett Square Apartments property open space, consisting of an "island" surrounded by highway to the north, Mud Creek to east and New Hope Creek to west. Crossed by Boulevard Ridge Sewer Line Easement Corridor (see below). Access easiest from parking at Garrett Square. Foot-trail extends from north end of apartments into woods, by hand-made foot-bridge across Mud Creek and onto area at Creeks' confluence. Land cover: creekside woods are mixed alluvial and levee forest, depending on elevation above Creeks. Center of island is wetland of seasonally ponded red maple and ash forest. Highlights: mostly undisturbed lowland forests within short distance of high-density urban residential and commercial development at US 15-501; existence of one of the only extensive foot-trails immediately next to creek(s) in the entire Triassic section of New Hope Corridor.

Site 17-B, Boulevard Sewer Line Easement Corridor

Immediately south of and parallel to US 15-501, extending east-west between back of commercial development at Garrett Road, to right-of-way on Barnyard property. Easiest access at present may be from parking on Biscayne Road service drive north of Durham-Chapel Hill Boulevard and across highway, or from Garrett Square or Darryl's from east. There is above-mentioned foot-bridge across Mud Creek, but no crossing of New Hope Creek besides highway bridge. Land cover: a cross-section from west to east of pine scrub and mesic pine; descending into bottomland forest, levee forest (next to New Hope Creek) and alluvial forest (along Mud Creek). One area appears to be head of wetland extending south toward Danziger Oxbow.

Site 17-C, Lower Sandy Creek Alluvial Forest

West of Garrett Road, on both sides of creek as it enters New Hope Creek. Access by parking at Garrett Square tennis courts, and by trail to creekside; alternate access by parking at Garrett Road Bridge and then bushwhacking. Land cover: mixed age alluvial forest including sycamore and river birch, with thick understory away from the short section of trail.

Site 17-D, Lone Branch Greenway

Site described here is only the floodplain west of Garrett Road, approximately half-mile south of 15-501 Durham-Chapel Hill Boulevard on both sides of watercourse. The name "Lone Branch" is shown on historic maps, but not on USGS or Army Corps maps. Access possible by parking on Garrett Road shoulder, or at Latta Landfill, by permission, and then bushwhacking downhill. Land cover: mapped mostly as perennially flooded wetlands by US Dept. of Interior, except for filled areas. Tree cover is mixed-age alluvial including river birch and ash, and swamp forest with Drummond red maple and, as major ground cover, lizardtail. Highlights: predominance of obligate wetland plants in floodplain, including Drummond red maple and lizardtail; frequent use by wildlife including blue heron and deer; closeness to commercial development.

Site 17-E, Danziger Oxbow

Floodplain surrounding, and wetland within, oxbow tributary of New Hope Creek immediately downstream from US 15-501 Durham-Chapel Hill Boulevard and east of Watkins Road. Access possible, by permission, from Patterson House residence on Danziger property and then bushwhacking, or from abandoned road

in bend of Watkins Road (Blackwood property at present). Abandoned farm roads offer access to Oxbow itself, parallel for several hundred feet. Land cover: by Creek and Oxbow, mature levee forest. Composition depending on levee height and drainage, from beech down into ash at 48 inch dbh maximum, and Shumard oak at 48 inch dbh for several individuals; several large hackberry, sycamore and red maple trees. Forest away from watercourses is second-growth bottomland, with some older alluvial forest next to tributaries. Pondered watercourse of Oxbow is filled in places with immense stands of wetland indicator lizardtail (*Saururus cernuus*). Large patches of deciduous ginger show high fertility of creekside areas. Powerline easement is impassable alluvial thicket. Highlights: high aesthetic quality and large extent of levee forest and natural pond communities; sizable extent of old farm road system; potential for diverse herbaceous layer. Site should be inventoried in winter for further extent of overgrown road segments and in spring for uncommon herbs.

Site 17-F, South Patterson Farm Mesic Slopes

At upper edge of floodplain of western floodplain of New Hope Creek, south of US 15-501 Durham-Chapel Hill Boulevard, north of Chapel Hill Road including three separate sites approximately 0.1, 0.4 and 0.7 mile ENE of Watkins Road, each 0.2 mile NE of Watkins Road at its nearest point. Access overland from driveways off Watkins Road. Land cover: second-growth mixed mesic forest with some stands of beech on northernmost, most mesic aspects. Highlights: high potential for increasing attractiveness with maturity, as beech assumes greater aspect dominance in communities and as mesic herb species re-colonize; immediate adjacency to extensive heavily-wooded floodplain; closeness to remnant Patterson farm road network; closeness to potential development sites off Watkins Road.

Site 17-G, Barnyard Bottomlands

Floodplain properties of the Barnyard Corp. which are between Danziger holdings (dominated by Oxbow) and northern end of Corps property. Access as to sites described immediately above, as well as overland from Chapel Hill Road. Remnants exist of heavily-overgrown farm road at upper edge of floodplain. Land cover: mostly uncut levee forest next to New Hope Creek with very similar characteristics to levee forest in Oxbow site. Some sites in and around powerline easement are dominated by wetland species with black willow and are characterized by braided, ponded, stream tributaries. Highlights: attractive first-growth levee forest, including well-drained sites with beech; sizable ponded areas; farm road in floodplain.

Site 17-H, Garrett Road Sewer Line Easement Corridor

Interceptor sewer line running roughly parallel to west side of Garrett Road from the south side of Latta landfill along the east side of New Hope Creek to Chapel Hill Road. A short collector line runs west from Garrett Road giving access from there. Easiest access may be from parking on right-of-way of Chapel Hill Road northeast of bridge. The main collector line runs at varying distance from Creek bank. Land cover: a cross-section of lowland forest types, depending on landscape position. Mature levee forest by Creek with 3 foot diameter red maple, also large hackberry and ash. Mixed-age bottomland forest on Corps lands below collector line. Understory along much of Creek is thick, unpleasant with nettle and greenbriar and has no trails. Mature second-growth hardwood forest, mesic and oak-hickory, buffers houses from easement. Highlights: attractive lowland hardwood forests and upland hardwood buffer around sewer line corridor; abundant evidence of wildlife activity; deer visible in daylight.

Site 17-I, Githens School Area Lowland Forests

North of Chapel Hill Road on west side of New Hope Creek, east of Githens Middle School. Access from parking lot southeast of school and overland or possibly on overgrown farm roads from Chapel Hill Road. Most of the site is Corps-owned with some now owned by Durham City Parks and upper edge by Durham County Schools. Land cover: depending on landscape position, bottomland, levee, alluvial, mixed mesic, mesic pine forests and scattered stands of alluvial thicket on and around powerline easement. Highlights: mature first- or second-growth "beech flat" on Altavista soils (well-drained floodplain), probably mostly on City park land; variety of forest types and, therefore, wildlife habitat types; abundant evidence of wildlife activity including deer and beaver. City and School properties should be re-inventoried for location of wetlands and mature vegetation.

Unit 18: New Hope Bottomland Forest and Tributary Wetlands

Site 18-A, New Hope Bottomland Forest

This site's location, vegetation and biological significance are described in detail in the Durham County Inventory, Site NH1. This area has a NC Wildlife Commission parking area at Chapel Hill Road, one of the only sections of creekside trail in the entire Corridor, and much firearm use in and out of hunting seasons. All Corps property between Chapel Hill Road and NC 54 is a Natural Heritage Registered Natural Area.

Site 18-B, Buck Branch Wetlands

South of Chapel Hill Road at the end of Buchanan Road and back to west across Farrington Road to the Five Oaks development. Includes all floodplain upstream from Corps property. Best access from parking at end of Buchanan Road pavement and on overgrown road right-of-way. Land cover: mixture of second-growth alluvial and bottomland communities, some heavily disturbed. Some sections of floodplain appear seasonally ponded and have wetland indicator species such as Drummond red maple and lizardtail. Highlights: extensive floodplain on private property upstream from Corps property.

Site 18-C, Woodberry Road/Trotter Ridge Road Sewer Line Easement Corridor

Interceptor sewer line running parallel to main subdivision roads at upper edge of floodplain east of New Hope Creek. Residents access easement from stub-out at north end of Woodberry Road and possibly through other private properties. Much of easement site is inside Corps boundaries and, therefore, in Heritage registry area. Land cover: cross-section of lowland communities of various ages, including seasonally-ponded sites with wetland indicator groundcover and trees. Highlights: potential access to Registered Natural Area from established residential subdivisions; remnant wetlands upstream from Corps property in subdivisions.

Site 18-D, Couch Low Grounds

East of Leigh Farm, west of Trotter Ridge; area includes lowlands on both east and west side of New Hope Creek; on east side, west of north-south sewer easement, and on west, approximately from east-flowing tributary east of large bend in Farrington Road down to where powerline easement turns east. This is a section of the New Hope Registered Natural Area not included in the Durham County Inventory site descriptions. Name is derived from historic owners (source: Curtis Booker). Access overland from Trenton Road or, at considerable distance, from Chapel Hill Road or NC 54. Land cover: a variety of second-growth lowland forests, including levee, bottomland and mixed mesic. Abundant loblolly pine shows history of Couch farming. Highlights: wildlife values as part of large forested area; abundant evidence of wildlife activity such as regionally-rare red-shouldered hawk and beaver; closeness to Couch's Bluff (see below) and other woodlands around Leigh Farm. This area should be examined for remnants of abandoned farm roads.

Unit 19: New Hope Swamp Forest and Tributary Wetlands

Site 19-A, New Hope Overcup Oak Forest

This site's location, vegetation and biological significance are described in detail in the Durham County Inventory, Site NH2. Site has a Corps Wildlife Sub-impoundment structure near NC 54, not mentioned in the Inventory. This area is included in the Natural Heritage Registered Natural Area.

Site 19-B, Leigh Farm Creek Lowlands

Tributary of New Hope Creek located to east of I-40, south and southwest of Trenton Road and east of Leigh Farm proper. Access available from parking in right-of-way of Trenton Road or from Leigh Farm, with no trail access apparent in either case. Land cover: mixed-age alluvial forest in upper sections, mostly second-growth, grading into bottomland forest and increasing in wetness as the stream moves toward the swamp surrounding the meanders of New Hope Creek. Highlights: relatively large extent of lowland forest, next to recovering upland forest on either side of floodplain; relatively small number of involved landowners with large-lot properties.

Unit 20: Leigh Farm Area Uplands

Site 20-A, Leigh Farm/Trenton Road Uplands

Immediately east of I-40, surrounding the Leigh Farm and Trenton Road. This encompasses mature second-growth hardwoods on ridges from the Leigh Farm north, some slopes near the historic structures at the farm and ridges immediately surrounding Trenton Road. A diabase ridge close to the north side of Trenton Road appears to have been sufficiently disturbed by Interstate construction and other tree removal to be removed from evaluation. Land cover: mixed-age oak-hickory, mixed mesic, mesic pine forest and individual mature hardwood trees associated with existing or destroyed homesites. Highlights: sizable extent of intact mature second-growth forest acreage, immediately adjacent to Leigh Farm historic sites; Leigh Farm Creek Lowlands; Corps property; and relatively small number of involved landowners.

Site 20-B, Couch's Bluff

Steep north-facing slope approximately 50 feet in height, ENE of the main bend in Trenton Road, approximately 0.4 mile east of I-40. Access through woods (no

trail) from Trenton Road. Slope itself is owned almost entirely by Corps. This site was not listed in Durham Inventory. Land cover: mesic and mixed mesic hardwood, with abundant and scenic herb layer in spring, inventoried in detail by Triangle Land Conservancy volunteers Jim and Liz Pullman. Highlights: recorded occurrence of regionally-rare wildflower, showy orchid (*Orchis spectabilis*); large population of crested iris (*Iris cristata*); many other species noted by Pullmans; bluff gives view of floodplain; site is immediately contiguous to all other Trenton Road/Leigh Farm area sites and to Couch Low Grounds.

Inventory Site Rankings

Based on the data known in the summer of 1989, each site described in this report is given a numerical ranking of overall significance, integrity, and threat status. A lower total suggests a higher priority for near-term protection.

Criteria

The ranking criteria used are those described in the Orange County Inventory, pages 23 to 25. The decision to use these was made in company with the project master planners. Reasons for using these criteria follow:

- The criteria for Significance allow a more precise classification of "local," county-level sites than offered in previous Natural Heritage Program inventory documents known to the author. They are, therefore, more useful in an intensive study of a large number of contiguous sites in a restricted area, as was made in this case.
- The criteria for Integrity are based on specific visual aspects of a site's vegetation, easily visible to the non-botanical observer. Along with approximate tree age and size, other visual factors such as roads, powerlines and development are incorporated in the ranking.
- The criteria for Threat Status make reference to specific types of threat and their apparent imminence.

Numerical Categories

Significance 1 = State;
2 = Regional;
3 = County High;
4 = County Medium;
5 = County General.

Integrity 1 = Prime;
 2 = Very Good;
 3 = Good;
 4 = Moderately good;
 5 = Fair.

Threat Status 1 = Extreme;
 2 = Strong;
 3 = Moderate;
 4 = Slight;
 5 = Negligible.

Individual Site Rankings

Sites are grouped by vegetation/landscape unit, and then listed under each unit by site number and name. On each line following the site number and name are the significance, integrity and threat status of each site, and then a total for each site. Individual rankings within each category which are 3 or lower indicate a relatively high-quality site in that particular respect, and indicate that the site needs further consideration. The lowest potential overall total is 3 (no sites of National significance are known in the New Hope Corridor) and highest is 15. Sites with total at the median, 9, or lower appear to deserve the most immediate consideration.

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Site	Site Name	Significance	Integrity	Threat Status	Total
Unit 10: New Hope Creek-Dry Creek-Mud Creek Lowlands					
10-A	Dickson Property Alluvial Forests and Thickets	4	4	4	12
10-B	Crabtree Farmlands	5	3	2	10
10-C	Penny Lowlands	5	4	4	13
10-D	Branch Estate Remnant Lowlands	5	4	2	11
10-E	Garrett Farms Levees and Fields	4	4	2	10
10-F	Garrett Farms Block D Alluvial Forest	5	4	1	10
10-G	Garret Farms Block C Mixed Mesic Forests	5	4	1	10
10-H	Garrett Farms High Levee Mesic Hardwood Forests	3	3	4	10
10-I	Brown Meadows and Woodlots	5	3	4	12
10-J	Mt. Moriah Farms and Woodlots	5	5	2	12
10-K	LOWER Dry Creek Bottomlands and Swamps	4	2	2	8
10-L	Spicebush Levee	4	3	3	11

Site	Site Name	Significance	Integrity	Threat Status	Total
10-M	Lower Mud Creek Forests	5	4	3	12
10-N	Cambridge Road Tributary Wetlands	5	4	2	11
Unit 11: Boulevard Ridge Uplands					
11-A	Patterson Wildflower Slopes	3	4	1	8
11-B	Biscayne Road White Oak Stand	4	3	1	8
11-C	Bassett Beech Slopes	5	3	1	9
11-D	Sanderson Hardwood Slopes	5	4	1	10
Unit 12: Garret Farms Peninsula Uplands					
12-A	Lower Hollow Rock Upland Forest	4	3	3	10
12-B	Garrett Farms Block E Oak-Hickory Forest	5	3	1	10
12-C	Garrett Farms Block D Beech Slopes	5	4	1	10
Unit 13: Upper Mud Creek Triassic Lowlands					
13-A	Mud Creek Interceptor Wetlands	5	3	2	10
13-B	Mud Creek Southern Duke Forest Compartments	5	4	4	13
13-C	Mud Creek Duke Forest Triassic Edge Floodplain	5	4	2	11
Unit 14: Eastern Mud Creek Hardwood Slopes					
14-A	Camelot Court Rich Slopes	4	3	2	9

Site	Site Name	Significance	Integrity	Threat Status	Total
14-B	Mud Creek Tributary Rich Slopes	4	3	2	9
Unit 15: Mud Creek Valley Hard Rock Slopes					
15-A	Duke Oak-Hickory Uplands	3	2	5	10
15-B	Diabase Ridge Mixed Mesic Forest	4	4	4	12
Unit 16: Upper Dry Creek Lowlands					
16-A	Sanderson Lowland Forests	5	5	3	13
16-B	Cedar Terrace Bottoms	4	1	3	8
Unit 17: Patterson Farm Lowlands and Slopes					
17-A	Mud Creek Confluence Lowlands	5	3	3	11
17-B	Boulevard Sewer Line Easement Corridor	5	4	2	11
17-C	Lower Sandy Creek Alluvial Forest	5	3	3	11
17-D	Lone Branch Greenway	5	3	3	11
17-E	Danziger Oxbow	4	2	3	9
17-F	South Patterson Farm Mesic Slopes	5	5	1	11
17-G	Barnyard Bottomlands	4	2	3	9
17-H	Garrett Road Sewer Line Easement Corridor	4	3	3	10
17-I	Githens School Area Lowland Forests	4	4	2	10
Unit 18: New Hope Bottomland Forest and Tributary Wetlands					

Site	Site Name	Significance	Integrity	Threat Status	Total
18-A	New Hope Bottomland Forest	1	2	3	6
18-B	Buck Branch Wetlands	5	4	2	11
18-C	Woodberry Road/Trotter Ridge Road Sewer Line Easement Corridor	5	3	3	11
18-D	Couch Low Grounds	4	3	3	10
Unit 19: New Hope Swamp Forest and Tributary Wetlands					
19-A	New Overcup Oak Forest	2	2	3	7
19-B	Leigh Farm Creek Lowlands	5	4	4	13
Unit 20: Leigh Farm Area Uplands					
20-A	Leigh Farm/Trenton Road Uplands	5	4	1	10
20-B	Couch's Bluff	4	2	4	10

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