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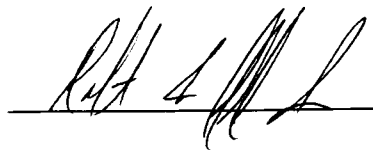
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RURAL CHARACTER PRESERVATION, PROTECTION, AND ENHANCEMENT: A PROGRAM FOR KNOX COUNTY, TENNESSEE

A Thesis

Presented for the

Master of Science in Planning Degree

The University of Tennessee, Knoxville

Robert S. Cowell, Jr.

December, 1994

This thesis is dedicated to my mother and father, Robert and Karen, whom have always supported me in all that I do. To my grandmother, Lillian, who taught me to always seek more knowledge. To my sister, Keri, who brought a child's fresh perspective on life into my life at just the right time. To my wife, Ellen, who has brought more love, support, and happiness into my life than I ever thought possible. And most of all to God, who placed all these wonderful people into my life.

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ABSTRACT

Rural character preservation is a subject that has received a fair amount of recent attention in both the planning profession and the general press. This thesis explores ways that the programs and policies that have been used elsewhere in the United States might be applied to Knox County.

Rural character is defined and the justification for its preservation is presented. A number of conceptual studies and applied rural character preservation programs are described and their applicability to Knox County is analyzed.

The rural lands of Knox County are delineated and the elements that contribute to their character are identified. A number of figures are presented to graphically display the rural character elements found in Knox County.

A model rural character preservation program is presented. The program is based on the situation Knox County is currently facing and on the resources it has at its disposal. Staff members at Knoxville-Knox County Metropolitan Planning Commission were consulted to provide guidance and information in the development of the model program.

The study concludes with a graphic presentation of how the model program might be applied to an actual tract of land in Knox County.

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PART 1
GENERAL INTRODUCTION AND OVERVIEW

CHAPTER 1
INTRODUCTION

FOREWORD

The past few decades have seen suburban sprawl consume historically rural lands at an alarming rate. Farm fields have become residential subdivisions, wooded slopes are cleared for chalets, and river banks are carved away for marinas. In this process historical features are lost, environmental quality is degraded, and an area's sense of place and unique aesthetic qualities are compromised.

Many communities have found themselves ill-equipped to handle growth in a way that accommodates economic development while preserving rural character. Communities are finding that existing land use practices, zoning ordinances, subdivision regulations, and public infrastructure policies are unable to protect the rural character, and may actually contribute to its demise.

Many communities have in the past turned to large-lot zoning, thinking that it might help protect rural character. What most communities have found is that these practices have supplanted suburban sprawl with a type of rural sprawl that accomplishes little in the way of character preservation. Homes sit on their two acre lots along roadways with similar setbacks, views are blocked, farmfields are lost, etc.

A few communities have begun to take a proactive stance on the preservation of rural character. These communities

have combined new ways of thinking about development with new land use regulations to achieve their goals. New zoning ordinances have been adopted, standards have been adjusted for rural situations, strict guidelines have been put in place, and environmental protection has been given high priority.

Communities that have enacted strong comprehensive rural character preservation programs have made a significant step forward in the protection of their community's sense of place and aesthetic beauty. Communities wanting to accomplish the same must themselves enact similar programs, adopt new ways of thinking and new ways of accommodating growth, or risk losing a valuable part of their community forever.

STATEMENT OF THE PROBLEM

The Knoxville metropolitan area finds itself in a situation similar to many metropolitan areas throughout the United States. Suburban sprawl has consumed a sizeable portion of the historically rural lands in and around Knoxville, some 100,000 acres of formerly agricultural uses have been developed since 1950. Over 90,000 acres of vacant or agricultural land has been developed in the past 25 years alone (MPC, 1994b p. 17).

Over the last few decades Knoxville has experienced a period of moderate growth. Knox County's population grew

15.7% between 1970 and 1980, and it grew 5% between 1980 and 1990 (MPC, 1993a). Accommodating new jobs and residents has forever altered the landscape of Knoxville and Knox County. Growth has created employment and opportunity, but it has done so at the cost of some of Knoxville and Knox County's character and identity. Commercial strip development, residential sprawl, seemingly endless miles of asphalt, and loss of open space and historic structures are all results of accommodating this economic growth.

Historically rural areas of Knox County are currently facing the same pressures that other portions of the County and City have already succumbed to. Property values are increasing, major developments have been proposed, major transportation improvements are being carried out, and utility extensions are being contemplated. Two thousand two hundred and fifty of the 2807 building permits issued in Knox County in 1992, were issued for areas outside of the city of Knoxville (MPC, 1993a p. 2). Portions of the new Pellissippi Corridor Extension have been completed and may place additional development pressures on currently rural areas in the southwest section of Knox County. The General Plan for Knox County recognizes the likelihood of further sewer and natural gas extensions into currently rural areas and has begun to plan for the resulting growth in those areas (MPC, 1994b p. 75). These pressures could easily lead to the suburban style growth that has occurred elsewhere in

Knox County, threatening to compromise the sense of place and visual qualities that have evolved since Knoxville's founding nearly 200 years ago.

Few legal tools exist to prevent further loss of the remaining rural lands in Knox County. In the past, Knoxville and Knox County have found themselves both uninterested and unprepared to preserve their rural land's character. Recently, via the Knoxville-Knox County General Plan public hearings and Knox Vision meetings some Knox County residents have expressed an interest in the preservation of their remaining rural areas (MPC, 1994b). Though Knox County may now be recognizing character preservation as a goal, it is still largely unprepared to achieve this challenging goal.

Knox County's existing land use regulations inadequately provide for economic development, housing, and transportation improvements that are appropriate for rural areas. Large-lot zoning, transportation standards designed for suburban areas, and existing design guidelines all accommodate suburban expansion leading to further suburban sprawl and eventual demise of rural character.

If Knoxville is to achieve its goal of preserving rural character it, like communities elsewhere in the United States, must develop a comprehensive rural character preservation program. This program must be designed to accommodate growth and offer a reasonable financial return

to property owners while protecting environmental quality, aesthetic quality, and historical features. New zoning ordinances may be needed, standards will need to be adjusted for rural areas, and strict design guidelines must be put in place.

These actions will be difficult to implement and will require new ways of thinking about accommodating growth. Knoxville must enact such a program and adopt new ways of thinking if it is to retain the sense of place, identity, and unique character of its remaining rural areas.

PURPOSE OF THIS STUDY

The purpose of this study is to gather information from various sources on the methods available to preserve rural character. Based on the information gathered this study develops and proposes a comprehensive rural character preservation program for Knox County.

VALUE OF THE STUDY

As an application thesis, this study has practical merits in addition to theoretical merits. In practical terms, it could provide the basis for a comprehensive rural character preservation program for Knox County. The Knoxville-Knox County 1994 General Plan Draft states that the preservation of rural character is a priority in the development of Knox County (MPC, 1994b). A comprehensive implementation program to accomplish this goal does not currently exist in Knox County. This study could serve as

the basis to accomplish this goal. As a result of Knoxville's importance to the East Tennessee region an established rural character program may result in similar actions in the surrounding rural areas.

The issue of rural character preservation has received a fair amount of attention in certain portions of the country. A number of communities have enacted or are studying preservation programs. Most communities have found themselves forced into action as a result of impending development pressures. By adding to the literature, a very practical and applicable preservation program may assist metropolitan areas similar to Knoxville in quickly addressing the issue of the loss of rural character.

This study should also contribute to the understanding of why communities have chosen certain courses of action to preserve rural character and to what degree of success have these actions been able to achieve.

Finally, this study builds upon the existing body of knowledge and will help define areas where further study may be necessary, thereby serving as a guide to further research.

RESEARCH QUESTION

The central research question addressed in this study is: How can Knox County preserve the character of its rural areas?

Secondary questions that may help answer this central

question include:

- What development management tools are available for rural character preservation?
- What tools have been used by other communities? To what success have these tools been used?
- Can the tools used by other communities be adapted for use in Knox County? Why or Why not?

METHODOLOGY

The research design for this thesis is a study of possible applications of current and potential rural character preservation programs for Knox County. The research is conducted as an exploratory applications thesis, documenting the policies and programs that are available for application in a rural character preservation program by Knox County.

Research is conducted in the following manner: First, as a foundation the author analyzed the situation that Knox County is currently facing. This is accomplished through research in two areas.

1. A description of Knox County's development pattern.
2. A description of Knox County's remaining rural lands and the development pressures being placed upon them.

The next phase of research is to identify specific rural character preservation policies and programs that could be applied in Knox County. This is accomplished

primarily through a review of the literature, analysis of general plans, and an analysis of zoning ordinances and design guidelines.

Upon identification of possible programs, the next phase is to narrow the field of policies and programs. This is accomplished through a situation assessment. The needs assessment is based upon the demand for a preservation program, the amount and type of development pressure Knox County is facing, geographical variables, and historical/cultural variables. The needs assessment is conducted primarily through interviews with key personnel in the Knoxville Metropolitan Planning Agency. By conducting this assessment, some programs and policies were removed from consideration for the rural character preservation for Knox County. As an example, some communities have been forced into action as a result of intense development pressures and their preservation program reflects that pressure. This may not be the case in Knox County and therefore portions of that program may not be applicable in Knox County.

The situation assessment analyzed the political will, attitude towards innovation, and financial resources available to implement a rural character preservation program. This again removed some policies and programs from consideration. Examples may include communities that have had a strong popular support for a rural character

preservation program and that strength is reflected in the policies of the program. Knoxville may or may not have similar popular support for such a program and its policies. Another example may include communities that have large amounts of funds available for rural character preservation, either locally or through the federal government or other agencies. Knox County may be unable to secure similar funds and therefore may not be able to participate in certain programs.

Upon completion of the situation assessment the author identified current policies relevant to rural character preservation policies in Knox County. Existing policies may be accommodated in a comprehensive rural character preservation program or they may be deemed in conflict with such a program. This identification was done primarily through reviewing Knox County's zoning ordinance, subdivision regulations, utility extensions and road improvement policies, as well as any design standards accompanying zones. The Knoxville-Knox County General Plan Draft was consulted to help clarify policy positions.

The next step is the actual preparation of a model rural character preservation program for Knox County. Based upon the fore-mentioned steps, a comprehensive program was drafted. This program includes the introduction of new zoning classifications, subdivision regulations, design standards, and policy recommendations.

The model program was presented to personnel at the Knoxville Metropolitan Planning Commission for review and comment. Essentially, the author was interested in whether MPC finds the model program practical and implementable, and why or why not. Subsequent to the feedback from MPC a final proposed program was drafted and represents the final product of this thesis.

ORGANIZATION OF THE THESIS

The thesis is organized into nine chapters. Chapter one is an introduction providing background material critical to the understanding of the purpose of this thesis and what it's accomplishments are to be. The second chapter deals with the definition of rural character and why it is important that it be preserved. The third chapter provides a review of the literature providing an insight into previous studies conducted on or about rural character preservation. The fourth chapter addresses how an area's rural character can be identified and delineated. The fifth chapter addresses methods that can be utilized to protect and preserve the variables that make up rural character (identified in chapter three). The second part of the thesis addresses Knox County specifically, beginning with chapter six. The sixth chapter identifies Knox County's rural lands, and the variables that make up its character. The seventh chapter then looks at the programs that were identified in the fifth chapter and analyzes their

applicability and potential to Knox County. This is accomplished through an assessment study involving MPC, and agencies that have used these methods before. The eighth chapter outlines a model rural character preservation program that could be applied both to Knox County and to areas facing similar situations. The final chapter presents conclusions drawn from the research and suggest areas for further research.

CHAPTER 2
DEFINING RURAL CHARACTER AND THE IMPORTANCE OF ITS PROTECTION

Before an agency can begin to enact any programs or policies to protect rural character, that character must be defined and delineated. Decision-makers must know what it is that they are to protect and preserve. Policies and programs that are designed to protect agricultural lands as a viable commercial activity will differ greatly from those designed to protect agricultural lands as open space.

A number of features make up an area's rural character, as is the case with the character of any area, be it rural, urban, or suburban. Kevin Lynch deals with this issue of character or sense of place in his book Managing the Sense of a Region (Lynch, 1976). Lynch defines a sense of place as what one can see, how it feels, how it smells, how it sounds, and how the patterns of these sensations combine to form a unique quality of place. Lynch states that this combination of sensations affects our immediate well-being, our actions, our feelings, and our understanding. These sensations; sight, smell, sound, and feel are fairly abstract and do not easily lend themselves to a program to protect that unique sense of place.

Other studies have attempted to formalize these sensations that Lynch has listed. Studies have attempted to identify these senses with concrete real-world examples that could then be placed into a preservation program. A study

done by the National Park Service in 1990 on rural historic landscapes is one such example (NPS, 1990). The study translates Lynch's "sensations" into eleven variables that contribute to an area's sense of place or character. The eleven characteristics are as follows:

1. land uses and activities;
2. patterns of spatial organization;
3. response to the natural environment;
4. cultural traditions;
5. circulation networks;
6. boundary demarcations;
7. vegetation related to land use;
8. buildings, structures, and objects;
9. building clusters;
10. archeological sites; and
11. small-scale elements.

These characteristics are used to summarize what the National Park Service views as a rural historic landscape, the definition of which is as follows:

> Landscape characteristics are the tangible evidence of the activities and habits of the people who occupied, developed, used, and shaped the land to serve human needs; they may reflect the beliefs, attitudes, traditions, and values of these people. (NPS, 1990 p. 3).

The study continues, further delineating the eleven characteristics into two groups; processes and physical components. Processes are defined as those characteristics

that have been instrumental in shaping the land, such as the response of farmers to fertile soils. Physical components are evident on the land, in such items as barns or orchards.

A study conducted by Frederic O. Sargent (Sargent, et al., 1991) outlines a similar set of characteristics as being integral to the makeup and understanding of rural areas. They include the following:

1. physical setting;
2. land-ownership patterns;
3. soils;
4. agricultural lands;
5. wetlands;
6. forested lands;
7. wildlife habitats;
8. elevations and slopes;
9. historic sites;
10. landscapes; and
11. buildings.

The study continues, defining the characteristics. An inventory of a physical setting is a general geological, meteorological, and geographic description of an area. Agricultural lands are defined and described by how suitable the lands are for various crops. Forested lands are viewed as to their type, acreage, ownership, and market value. Historic sites are viewed as reminders to current residents of their cultural heritage; identifying them adds an

attractive dimension to a rural area, village, or town. This study, in contrast to the NPS study, was written with a concentration on the environmental aspects of rural areas, as is obvious from the characteristics listed above.

The combination of the National Park study and the Sargent study begin to allow one to see what it is that makes rural areas unique in terms of their physical components and the man-made aspects of these areas.

A third study, conducted by the Vermont Natural Resources Council divides rural characteristics into five categories (Vermont Natural Resources Council, 1971). The five categories are as follow:

1. land forms;
2. geologic phenomena;
3. hydrologic phenomena;
4. biologic-flora, and
5. biologic-fauna.

As with the Sargent study this study tends to concentrate on the environmental aspects of rural areas, helping to strengthen the position already identified by Sargent.

The studies begin to form a pattern of what one should look for in order to understand and comprehend the sense of place or character of a rural area. First, we are able to see that physical elements are obviously very important. These elements were quite often responsible for dictating

how people got to an area, where they settled, and how they made a living once they settled. The physical makeup of the land is very often the foundation of the sensation that Lynch describes as "what one sees" in rural areas. Rolling pastureland, distant mountains, rugged slopes, etc. all conjure up images of rural landscapes.

As mentioned in the National Park Study, what people have done with the physical land contributes significantly to the character of an area. Here we are beginning to address the sensations Lynch describes as "the feel", "sounds", and "smells" of a place. Take the physical component, a rolling pasture, add the sights, smells, and sounds of grazing cattle. Take the rugged slopes and dot them with barns huddled at their base. These images help to further formalize what rural character is. What people have left behind is a significant contribution to character. Buildings, arrangement of those buildings, layout of farm fields, etc. all contribute to that character. As a concrete local example one can look at a cantilever barn and instantly identify it as belonging to east Tennessee. The unique physical characteristics in combination with settlement patterns, needs and knowledge of settlers all evolved into a structure that is forever linked with an area, contributing significantly to the character of that area.

Quite often rural character can be identified as what

is not present rather than what is present. Rural areas typically do not have the congestion common in urban and suburban areas, they do not have the density nor the population of urban areas, they do not have developments carried out at a non-human scale, and most have escaped the commercial strip developments common to suburban areas. It is these characteristics that in combination with abundant vacant land help to make rural areas very attractive for development. The combination of what rural areas do not have; congestion, strip commercial, etc., with what rural areas do have, (scenic beauty, historic structures, natural resources, and open space), make them the potential target of what Randall Arendt identifies as the fifth migration of population in the United States (Arendt et al., 1994 preface).

Essentially, it is the things that rural areas do have that decision-makers should seek to protect and preserve, and it is the things that rural areas do not have that decision-makers should seek to prevent from occurring.

As this section has suggested perhaps the best way to define and understand what rural character is, is to break it down into identifiable components or characteristics. Once these characteristics are defined and understood then programs and policies can be enacted to protect and preserve them, resulting in protection of the overall rural character of an area.

CHAPTER 3
LITERATURE REVIEW

A limited number of studies have been conducted on the conceptual aspects of rural character preservation. However, the conceptual studies that have been carried out tend to be the foundation of many of the applications of rural character programs. Additionally, the conceptual studies have significantly contributed to furthering the cause of rural character preservation, often being the first source of information for many planners, decision-makers, residents, students, etc. Most of the available literature exists in the form of specific applications of rural character preservation programs. This literature generally exists in the form of local comprehensive plans, zoning ordinances, subdivision regulations, and design guidelines.

Aside from literature dealing specifically with rural character a great deal of attention has been paid to the preservation of agricultural lands. Agricultural preservation goals are different from those of rural character preservation, but many of the programs and policies used in agricultural preservation can serve a purpose in the preservation of rural character, as agricultural lands are significant to rural character.

This literature review will concentrate on the conceptual aspects and the application of rural character preservation programs. The available literature on the conceptual aspects of rural character preservation has been

written traditionally by academics and presented in professional journals such as The Journal of the American Planning Association and publications such as the Urban Land Institute's Urban Land. The available literature on the application of rural character preservation programs has been largely written by practicing planners within planning organizations, private consulting firms, or some other governmental organization. The two areas, conceptual and applications, often borrow ideas from one another, thereby building on the existing knowledge. The literature available on agricultural preservation follows essentially the same patterns of research, with the most significant difference being that agriculture preservation has been practiced for a much longer period of time in many more communities.

CONCEPTUAL RURAL CHARACTER PRESERVATION

One example of a theoretical study of rural character preservation is Fred Heyer's Preserving Rural Character (Heyer, 1990). In this study, Heyer explains how a community should define and preserve rural character. Heyer explains that the community's master plan should define specifically which elements of rural character the community finds most desirable. They should then focus on the methods available to preserve those elements. Goals are derived from the master plan and the zoning ordinance serves as the legal tool through which these goals can be implemented.

Throughout the study Heyer emphasizes the importance of the design manual for site and subdivision regulations. Essentially, the design manual outlines in graphic and narrative form the differences between conventional and creative development alternatives. Heyer then outlines what components are needed in the design manual including clustering techniques, building envelope design, and other aesthetic considerations.

The classic example of a design manual and a significant contribution to the conceptual literature is Robert Yaro's Dealing With Change in the Connecticut River Valley: A Design Manual for Conservation & Development (Yaro, et al., 1990) This design manual was established to help provide methods that communities in the Connecticut River Valley might use to preserve the character of their traditional New England landscape while accommodating economic growth. The design manual follows a long-standing approach used by landscape designers dating back at least to the 18th Century with Capability Brown and Andrew Jackson Downing, and most recently espoused by Fred Heyer; providing examples of both traditional and innovative design in both graphic and narrative form. The study goes into significant graphic detail on design standards, setting a high-quality standard for all such future endeavors. The study, like Heyer's, espouses clustering of structures, preservation of open space, incorporation of rural features into new

developments, and landscape guidelines. A fair amount of space is devoted to applying the design guidelines to commercial developments, something mentioned very briefly in Heyer's study. The design standards for commercial developments are similar to the standards outlined in the residential guidelines, with additional guidelines for curb cuts, parking lots and signage. The design manual has served as a guide for many communities in the development of their rural character preservation programs. The Knoxville/Knox County Metropolitan Planning Commission itself, has used materials from Yaro's study in some of its public presentations.

The book Rural By Design: Maintaining Small Town Character (Arendt, et al., 1994) written by Randall Arendt and others who worked on the Design Manual for the Connecticut River Valley is a sequel of sorts, based on Yaro's book. The book evolved from Arendt's numerous slide presentations across the United States espousing the merits of creative rural planning techniques. The book is in response to the requests for further details and more specific information about implementation techniques. Basically, the book takes the ideas expressed in Yaro's book and puts them into a form that may prove more useful to local land use planners. The book is divided into four parts, the first describing the character of towns. This section outlines how communities can familiarize themselves

with their town's form, its evolution into that form, and where that form may be headed. This section would prove very helpful to any community in further understanding what their community looks like, how it got to look like it does, and how they can both anticipate it's change and direct that change to a desired outcome.

The second section deals with alternative scenarios for conservation and development. This section is a direct descendant of the earlier works that Arendt was involved in. Four case studies are utilized ranging from residential to commercial to industrial development projects. As in the Yaro study these cases are analyzed in a three step process; existing conditions, conventional development scenario, and creative development scenario. As in the Yaro study the accompanying graphics in this section are outstanding and provide an excellent opportunity to enlighten land owners, developers, planners, citizens, and decision-makers on alternative ways of thinking about development.

The third section deals with specific implementation techniques. This section represents a significant addition to the existing literature on the subject of rural character preservation, as it provides very real-world useful information for land owners, planners, and decision makers. The section includes creative development techniques that address rural highway development, affordable housing, rural subdivision development, scenic roads, sewage disposal, the

encouragement of open space, greenways, and the retention of farmland. Each category is peppered with examples of development techniques that have been used in communities throughout the United States. The examples give a brief description of the situation, the potential solutions, and the eventual technique that was implemented. This section should prove invaluable to local decision-makers who are anxious to implement creative design techniques but simply aren't sure how.

The final section of the book also represents a departure from Yaro's study, consisting of some 38 case studies of locations that have employed creative design techniques to preserve as well as create character. The case studies range from Radburn, New Jersey to a housing development in Washington to a shopping plaza in California. Most of the cases are located in New England as this is the area most accessible to the author. There is however, enough variation in the types of cases offered to prove valuable and useful. This section is especially significant in its ability to display to land owners, developers, and decision-makers that there are alternative ways of thinking about growth.

This book adds considerably to the existing literature on rural character preservation through supplying substantive material that should prove very useful to residents and local officials in rural and suburbanizing

areas.

A study entitled Site Planning and Community Design for Great Neighborhoods (Jarvis, 1992) written by Frederick D. Jarvis of LDR International, Inc. provides valuable information as to the evolution and merits of clustering techniques. The study explains alternative methods of sewer disposal and drinking water provision that may be applicable to rural areas. The study concludes with an analysis of various community development patterns, listing their assets and limitations. These development patterns range from post World War Two suburbs to new towns to rural villages. The analysis provides an interesting insight into the "good" and "bad" of various development patterns. Though the study does not deal specifically with rural character it provides information on variables that contribute to rural character that cannot be found in other sources, and is thus included in this review.

The study titled Rural Environmental Planning for Sustainable Communities written by Frederic O. Sargent and others (Sargent, et al., 1991) examines the ways that communities can determine, develop, and implement creative plans in rural areas. Main ideas expressed in this work include the idea that long-term sustainability of a rural environment is achieved when citizens guide economic development according to the "physical carrying capacities" of the ecosystem. Consideration of the physical ecosystem

assumes that although efficiency of use can vary, physical and natural resources are finite and can bear only so much use. Obviously this work has an emphasis upon environmental issues in rural areas. It is of use because of the significant role that environmental features have played and continue to play in rural areas. Soils, slopes, watercourses, wildlife, etc. have always been key to the survival of rural areas.

The study notes that planning for rural self-reliance, human, animal, and plant ecologies must be understood to be the prime interdependent systems. The rural community must be seen as the conservator of its own resources, habitat, and culture. Conventional planning and development often assume that growth is inevitable and must be accommodated. This study suggests that must not be the case, that it is not only legitimate but imperative that residents determine what they want to see happen and what the land can accommodate and only then should development begin to occur. In essence, the book proposes that the planning process be reversed for rural areas, beginning not with population projections, growth projections and needs, infrastructure developments, and ending with "left-over" open space; but rather beginning with the land that should be kept as open space, removed from development consideration. This land may be removed either because of the residents preferences or because of its inability to accommodate growth. Land

left over after this process is then submitted to the normal planning process.

The study concludes by outlining the specifics involved in inventorying these "conservation zones" and then accommodating the desired growth. This study provides an interesting view toward the conceptual idea of how planning should take place in rural areas, and proposes ways of thinking that radically differ from the way most residents and local officials are used to thinking.

The book entitled Saving America's Countryside: A guide to Rural Conservation written by Samuel Stokes with Elizabeth A. Watson and Genevieve Keller and J. Timothy Keller provides yet another conceptual guide for communities wishing to preserve their rural character (Stokes, et al., 1989). The intent of the book can be summarized in the following passage:

> Each rural area has groups of buildings and landscapes its residents consider important because they are pleasant to look at, because they have been an integral part of a rural way of life, or because they evoke familiar and comforting associations of family and community. Protecting these buildings and landscapes conserves tangible and visible links with a community's past, preserves places that are important parts of a community's identity, and retains important resources that may provide historical information about how an area was settled, developed, or declined (Stokes, et. al., 1989 p. 37-38).

The study continues to outline steps that should be taken to recognize the variables mentioned above and how to protect them once they have been identified. The study suggests

inventorying and mapping geologic resources, soil resources, water resources, wildlife habitats, agricultural resources, architectural and historical resources, recreational resources, and visual resources. The study outlines how these steps were actually carried out in Cazanovia, New York as part of a rural conservation program.

The study recommends that new developments should be designed sensitively to minimize "visual infusions". Stream crossings, significant vegetation, and distinct village entrances should all be protected. They continue, emphasizing that in most rural areas the building patterns and road layouts were greatly influenced by the natural environment, and that new buildings and roads need to follow this pattern. They take this issue one step further, to the individual buildings themselves, stating that most rural communities have characteristic building types that occur more frequently than others. New buildings and changes to existing buildings should be compatible with the community's existing buildings in terms of massing, gable orientation, use of porches, etc.

The study stresses the need for design guidelines to address the aesthetics of new buildings and their compatibility within the existing built environment. The design guidelines should also consider patterns of land use, access and circulation, location of building envelope, utility placement, vegetation, and open space.

The study concludes by outlining a number of methods that could be employed to carry out the recommendations of the authors. These methods range from notification programs to conservation easements to outright acquisition. The study lists advantages and disadvantages of the methods used for protection and preservation that could prove useful to local decision-makers.

The studies mentioned above vary considerably in their content and approach, some are specifically geared toward the preservation and protection of variables key to rural character or are directly applicable to a comprehensive rural character program. Though the studies vary, they begin to set a precedent and serve as examples for local communities to follow in establishment of their own rural character preservation program.

APPLICATIONS OF RURAL CHARACTER PRESERVATION

Much more literature exists on the application of rural character preservation programs. The literature exists in a couple of different formats. Primarily, it exists in the form of master plans, zoning ordinances, subdivision regulations, and design manuals. Some literature also exists in the form of articles appearing in professional journals. These articles often summarize what a community's rural character preservation program entails and then summarizes the community's goals and the tools they used to achieve these goals. Not all the programs were designed

specifically with rural character preservation as the central goal. Some programs were established to address the protection of agricultural land, preservation of open space, or the accommodation of growth in areas with little infrastructure. As these areas are significant components of rural character, these programs will also be reviewed.

An example of an article appearing in a professional journal is the article written by David C. Nielsen and Phillip R. Pryde "Providing for Rural Land in San Diego County", (Nielsen, 1980) appearing in The Journal of the American Planning Association. The article summarizes the conditions that San Diego faced in it's rural areas, concentrating on the intense development pressures that existed, lack of public water, spot development, and the lack of public sanitary facilities. San Diego elected to extend their existing regional growth management plan to include rural character preservation. As part of this program San Diego officials designated certain areas to remain non metropolitan and established policies and regulations to ensure growth occurred only in areas deemed appropriate. Essentially, the tool that San Diego elected to use to preserve rural character was large-lot zoning, a tool they possessed at the time. Large-lot zoning has recently been criticized as doing little in the way of preserving rural character (Yaro et al., 1990, Heyer, 1990). San Diego also linked groundwater policies and agricultural

preservation programs to the large-lot zoning which resulted in a small-scale loosely defined rural character preservation program. A fair amount of opposition to the program existed and hindered successful rural character preservation. The authors suggested that more understanding of the political process and more involvement of the general public would have helped to increase the likelihood of success.

An example of an application of a program designed to specifically protect rural character is found in the Loudon County, Virginia General Plan (Loudon County Planning Commission, 1991). This plan represents a major achievement in rural character preservation, earning recognition by the American Planning Association in 1994 as The Best in Comprehensive Planning: Small Jurisdictions (American Planning Association, 1994). The plans policies, programs, and ideas have been used by many other communities to start their own program. The plan outlines the existing conditions in Loudon County, Virginia, a traditionally rural landscape in the hinterlands around Washington, D.C. Due to its close proximity to Washington the community faces strong development pressures. The plan identified areas that the community deemed appropriate for urban growth and then sought to contain growth within those areas. The plan seeks to preserve the beauty of its rural areas, focusing on the preservation of open space, farmland, the protection of the

agricultural industry, and the preservation of traditional settlement patterns.

Recognizing the political difficulties associated with mandating agricultural land use, Loudon County elected to go with a plan that provides encouragement and incentives to continue agricultural activities. Many other communities have enacted strict regulations upon land that requires that they remain in agricultural use (Daniel, 1986, Porter, 1981, Nelson, 1992).

The County's primary method of open space preservation is to encourage rural residential development and low intensity uses that preserve open space while providing opportunity for farming to continue. The plan calls for clustering of structures and the retention of natural and rural features, among other policies. The County has also linked its public infrastructure development with the rural character preservation program. The County allows for alternative methods of wastewater disposal including communal septic systems. This is done to limit the range of sewer extensions while still accommodating growth.

The County has also recognized the role that roads play in urban or suburban development. Rural roads have been identified and are slated for safety improvements only. The County made the decision that rural roads are only to be brought up to safety standards, trading improved accessibility for the preservation of rural character. The

plan's narrative is supplemented by graphic descriptions of what the County is seeking in terms of design standards. This small-scale design manual is similar in style to those of Heyer, Yaro, and Arendt.

Livingston County, Michigan is another community that has enacted a rural character preservation program (Livingston County Planning Department, 1991). The program's title "Preservation of Environmental and Rural Lands" (PEARL), quickly summarizes the goals of the program. The plan consists of a general description of the purpose of the program, the goals, specific policies, and actions of the program, as well as a design manual to ensure compliance to the program's policies. The plan, much like the Loudon County plan, addresses alternative forms of development including clustering of structures and the preservation of open space. This plan does not go into the level of detail the Loudon County plan does concerning villages and hamlets, as they do not play as significant a role in Livingston County as in Loudon County. The PEARL document does however concentrate a great deal on environmental features present in rural areas including woodlots, farmland, wooded slopes, watercourses, etc.

The accompanying design manual draws heavily on the concepts espoused in Yaro's work, but adapts them to the situation Livingston County is specifically facing. The graphic work in the plan again provides clear and concise

information to residents and local decision makers as to what it is that PEARL is to accomplish.

Bucks County, Pennsylvania introduced a plan that concentrates solely on villages and towns and the open land surrounding them (Bucks County Planning Commission, 1989). The report is presented in a very concise very well done design manual. The design manual addresses such issues as the maintenance of scenic views and vistas, the preservation of open space via clustering, and other design guidelines specific to its situation. As with Yaro's work, a good deal of space is devoted to architectural details and signage in the village. This is given so much consideration because in the dense small villages characteristic of the area, drastic alterations in the traditional patterns can quickly compromise character. Much of the information on open space protection, protection of views and vistas, and even some of the architectural and signage guidelines could prove very useful to any rural character preservation program.

Pierce County, Washington is just beginning to address the issue of rural character preservation (American Planning Association, 1994 p. 4). An area consisting of 580,000 people in the Tacoma region has recently begun to take on the issue as a result of the Washington State Growth Management Act of 1990. The plan includes proposals allowing creative rural subdivision design, preservation of agricultural lands, protection of woodlands, and even the

possible establishment of a permanent rural area.

The New Castle County, Delaware Department of Planning took a slightly different approach to a rural character preservation program. Rather than concentrating on the entire county they focused on the Red Clay Valley Scenic River in their study The Red Clay Scenic River and Highway Study (New Castle Planning Department, 1989). The study was to evaluate the historic, natural, and scenic attributes of the valley to suggest a variety of methods to protect those resources. The study consisted of three main components: inventory and analysis of natural, historic, and scenic resources; evaluating, refining, and prioritizing of resources; and recommendation of specific techniques to protect those resources. A number of design guidelines, incentives, and regulations resulted from the study.

A number of other communities have enacted similar programs, choosing to concentrate their character preservation programs on corridors either following roads or valleys, (much the same as Yaro following the Connecticut River Valley). Lexington, Kentucky and Spotsylvania, Virginia are two such communities (Arendt, et al., 1994 p. 196-197).

Montgomery County, Pennsylvania has enacted a rural character preservation program through an open space design development guideline outlined in their work The land Preservation District: Model Zoning Provisions (Montgomery

County Planning Commission, 1991). This plan, as with many rural character preservation plans seeks to preserve open space while accommodating growth. That growth is primarily allowed to exist in the form of clustered structures. This study built on the study conducted by neighboring Bucks County, Pennsylvania. The central policy of this study is that it allows conventional two-acre developments to occur only as conditional uses. The design guidelines include very stringent open space requirements and ensure that new developments link to create neighborhoods.

As with many of the rural character preservation programs, the Montgomery County plan has accompanying graphics to help formalize the narrative sections of the plan. The graphic information in this plan is carried out in a manner similar to Yaro's conventional versus innovative technique. Montgomery County utilizes the technique known as build-out to display the existing conditions and then to compare the conventional development against development carried out under the land preservation district requirement.

CHAPTER 4
DELINEATION OF RURAL CHARACTER

This section of the study will take the ideas that have been outlined in Chapters two and three and describe a course of action that a community might take to delineate the rural character of their community. This section draws heavily on the variables outlined in Guidelines for Evaluating and Documenting Rural Historic Landscapes (NPS, 1990), using the characteristics outlined in that report to help delineate the rural character. This section also draws from the numerous rural character preservation programs that have been enacted across the United States.

As identified in Preserving Rural Character by Fred Heyer (Heyer, 1990 p. 1-2) the first step for any community in beginning a rural character preservation program is declaration of that goal in the community's master or general plan. This step can be accomplished in a number of ways by a number of different people. The idea may be initiated by decision-makers, planners, residents, etc. Regardless of who initiates the idea of a rural character preservation program, a number of decisions must be made and then a number of actions must be undertaken. Numerous studies have identified the need for building a consensus to ensure success of a rural character preservation program (Horton, 1991 foreword; Dubbink, 1984 p. 417; Stokes et al., 1989 p. 66). This consensus need not be all the residents of a community but it must be representative of the affected

stake-holders, which is likely to be a very broad cross-section of the citizenry. Land-owners, developers, planners, decision-makers, and farmers are but a few of the stake-holders that need to be represented in a rural character preservation program.

This consensus is vital as a number of programs may on the surface seem to place severe limitations on certain parties with little or no reward. For example, developers will likely have a number of new restrictions placed upon them regarding how they develop land. An uninformed developer would be unaware of the benefits of a rural character preservation program if he were not involved in setting up such a program. While a consensus will not guarantee success some programs would surely have failed without it and some programs have had limited success because of not securing it (Dubbink, 1984 p. 417).

Once the idea of rural character preservation has been brought to the table Heyer notes the next step should be deciding what that idea means. This is where many communities have stumbled and thus failed to produce a workable program. Knox County itself potentially represents this situation. A number of existing and proposed documents note the importance of rural character and even call for its protection (MPC, 1994abc). These programs fall short in that the Knoxville Metropolitan Planning Commission has failed to completely identify what exactly it is that they

mean by rural character. Some variables such as scenic views, agricultural lands, and open space have been identified but they represent only a fraction of the relevant components.

This step of identifying what the community means by rural character can be a difficult process and thus a great deal of literature exists on the topic. Communities have used public meetings, visioning, workshops, and a whole host of other techniques to try and identify their community's rural character. The best solution may be to combine a number of these techniques.

Public meetings are quite often needed as the first step. This is especially true if the initiating group is small, such as the planning department or a number of activists. The technique of holding the public meetings will obviously vary dependent upon who the initiators are. Quite possibly the recommended course of action should be that if the initiators are a group outside of the planning department the first meeting should be a presentation to the planning department. A number of reasons exist to support this idea. First, the planning department is likely to be the organization that drafts the final rural character preservation program and its components and presents it to local decision makers. Therefore they will need to be included at some point anyway. Second, the planning department should already be well versed in handling public

meetings and presentations and should have a good list of contacts available. Finally, the planning department should have a staff that is knowledgeable in many areas that would be used in a rural character preservation program. These areas may include inventorying resources, drafting of maps, legal issues, etc.

If the initiating group is inside the planning department itself the issue should not be viewed as simply making public presentations as with other routine issues, (e.g. here are our recommendations what do you think?). The planning department needs to ensure that they posses the knowledge needed to conduct a comprehensive study on rural character preservation. This may involve getting assistance from architects, historians, farmers, developers, environmentalists, etc. Again, this is to ensure that all stakeholders are represented.

Once the presenting group has been assembled then public meetings need to be held, first to introduce the idea of rural character preservation and then to gather the ideas and concerns of residents. This first step, introducing the idea of rural character preservation, should be carried out in a systematic manner. First, the importance of character should be discussed, perhaps local examples of items that are often identified with the community should be displayed, a champion tree, a historic structure, a river, etc. Then perhaps these images could be contrasted with areas that are

generally perceived as having little unique character or a negative character; commercial strips, endless residential subdivisions filled with identical homes, etc. Care should be used so as not to isolate anyone in the meeting during this presentation, such as someone who owns a business on a commercial strip or someone who lives in the "characterless" subdivision. Examples of the negative character should perhaps be selected from outside the community so as to minimize the chances of offending anyone.

Once these examples of good character and bad character have been displayed then meeting participants may be asked to identify areas they consider representative of good rural character in their community and why they believe them to be so. These items will serve as a basis for future meetings. Residents should be encouraged to use any means to describe these areas, written or verbal descriptions, sketches, pictures, etc. This should be encouraged due to the possibility that someone's verbal description of a place may differ considerably from the way they sketch it or photograph it, and thus may yield further information.

Upon completion of this first series of public meetings the preservation group should set out to find some consensus of what the community is viewing as contributing to the community's character. This compilation will by no means represent the final definition of the community's character program but will serve as the basis for future meetings and

workshops. Once these items have been identified then the preservation group should prepare the items for presentation. This may be accomplished by photographing all the areas mentioned by residents and preparing a slide presentation. Sketches may be used in place of, or in combination with, photographs if desired. The main idea here is to get the information into a similar format that will be easily presentable.

It is likely that the items residents have selected will vary considerably in type, size, context, etc. There will likely be houses, trees, distant views of mountains, rivers, cows, etc presented by the residents. The next series of meetings and workshops will attempt to solidify the definition of the community's rural character. This will partially be accomplished by specifically identifying what it is about the items selected by the residents in the first series of meetings that contribute to this character. Is it simply the house, or is it the field the house is located in? Is it merely the tree, or is it the large open pasture that the tree is located in? Is it just the distant mountain views, or is it the fact that the view is framed by roadside trees?

A number of methods have been used to try and answer these types of questions. In Pittman Center, Tennessee a program is being conducted by the East Tennessee Design Center of Knoxville, the Tennessee Valley Authority, and

landscape architects to try and help protect a cove located on the fringes of the Great Smoky Mountains National Park and all of its surrounding commercial developments. In many areas landscape architects have used a technique where photographs are altered by computer to remove variables and the residents responses are recorded. For example, hay bales, or structures, may be removed. From the responses it is hoped that the landscape architects will be able to identify those items that the residents deem significant to the overall character of the landscape.

One community that has used such a techniques to gather resident responses is Davie Settlement, a development in Broward County, Florida. They utilized a computer technique where different types of development are placed on a currently vacant site and the resident response is recorded (Arendt, et al., 1994 p. 122-124). Again, this is being done to try and identify what it is that residents find favorable in a community.

The final example of such a technique is provided in Robert Yaro's Design Manual for the Connecticut River Valley. The technique used is similar to the Broward County technique mentioned above, except that sketches are used instead of photographs. Sketches are presented representing "good" developments and others representing "bad" developments. This technique could prove useful in evaluating resident responses, especially in communities

that are unable to acquire the computer equipment or expertise mentioned in the other examples.

Once the residents responses have been gathered and evaluated the preservation group should have a fairly good grasp on what the community deems integral to the rural character of their community. This information should then be organized and made available to all the residents of the community in an attempt to gather further comments and possibly reduce any future conflicts.

The next step will be to inventory the characteristics that have been identified by the residents to help better understand the situation the community is facing. Other inventories and studies should be undertaken here as well, such as the severity of development pressures, geological studies, etc. As this step is likely to be time consuming and personnel intensive, this is a logical place for the preservation group to expand. A number of resident volunteers may be necessary to conduct the analyses, indeed some studies suggest that by involving residents in this step they will view the program more as their own thereby increasing its chances of success (Horton, 1991, Stokes et al., 1989 p. 66).

These analysis teams should be headed up by members of the preservation group and should include individuals knowledgeable in the inventory area. For example a team inventorying historic structures should include any

architects, historians, etc. from the community on the team.

Primarily what these teams and the planning staff will be accomplishing is a systematic inventory of character variables, thus enabling easier goal-setting and courses of action. The inventories should include maps, photographs, and sketches as a minimum, to provide an easy to understand synopsis of the resources in question. If at all possible a written report should accompany the graphics. The written report should help explain the graphics and what it is that the picture is telling the audience. Throughout this process it is of great importance that all products be carried out in a manner that relates to one another. The written document should help to clarify the graphics, and the graphics should provide a quick and comprehensible overview of the written material.

Upon completion of the inventory the next step is to assemble a summary of the methods available to protect, preserve, and enhance the character variable in question. This summary of methods should draw heavily from the sources cited in the literature review section of this study. Conceptual studies on rural character preservation and implemented rural character preservation programs should be consulted. Essentially, what is being sought is not all the ways that items that contribute to the rural character can be protected, preserved, or enhanced, but ways that the items that have been identified by the community can be

protected, preserved, or enhanced. Certain programs and policies will be seen as obviously inappropriate immediately. A program designed to maintain the character of a rural Maine fishing port will obviously not work for an area in Iowa characterized by rolling farmland. Certain portions of the program in Maine however may prove useful in Iowa, or anywhere else for that manner. As an example, the Maine program included guidelines on how new buildings can architecturally blend into the existing community. The information presented in terms of building massing, setback, gable orientation, etc. may prove very useful in the Iowa community.

Many factors need to be considered at this point. This is very often a good opportunity for the preservation group to step back and assess the situation. The community should have already identified the goals of the rural character preservation program and will have already identified and inventoried the variables the community considers significant to the rural character of their community. These essentially outline the needs of the community. Now the community must assess its financial resources (both existing and potential), its political will towards a rural character preservation program, its legal resources (enabling legislation, etc.), and its ability to technically implement a rural character preservation program (technical ability of the planning staff, volunteers,

etc.). Essentially this assessment will record the community's resources that will enable or limit meeting the already identified needs of the community and thereby achieve its goals.

Identification of financial resources can be both an easy and complex process. Identifying the money that is on hand and can be devoted to the programs involved in rural character preservation should be fairly easy. Studying a community's budget should provide most of the information needed for identifying existing financial resources. The more difficult component of identifying financial resources is identifying potential sources of funding for a rural character preservation program. A number of planners and consultants have devoted entire careers to just such searches. A good search should include obvious sources (state and federal programs on historic preservation, water cleanup, etc.) as well as more obscure sources (USDA, Land Trusts, etc.) (Melnick, 1984). A thorough and in-depth search requires a great deal of knowledge and ability. The knowledge and ability of the community should be seriously considered in this process and the possibility of bringing in outside help should be considered.

The legal resources available to the community should be considered at this stage as well. Certain programs used in communities in one state may not be legally permissible in another state. For example, communities in many states

have used transfer of development rights to protect a number of resources. This method may not be permissible in other states. At this time the community must decide whether they should attempt to remove the legal barrier. This could prove to be a very difficult and time-consuming process but may prove necessary to enact a comprehensive rural character program. A number of other legal issues may arise as well. Changes in the zoning ordinances and subdivision regulations may need to be carried out. The legal process enacted in accomplishing this must be fully understood by the community. Perhaps rural character preservation programs may involve changes in the tax code of the community. The legal issues involved in such a change again, must be seriously considered by the community.

Technical ability of the planners, decision-makers, and volunteers will play a significant role in every aspect of the rural character preservation program. The importance of technical ability has already been identified in the search for funds. The legal issues mentioned above will require a team well-versed in the planning laws impacting the community. The team will need to understand the local, state, and federal tax codes and their impacts upon the program. The carrying out of the goal identification process, identification of character variables, and implementation policies will require a diversified and knowledgeable team. At this point any technical short-

comings should be identified and resolved if possible. Consultants, university students, federal and state agencies, etc. may be able to provide personnel to fill any technical gaps.

Once the above-mentioned issues have been addressed and resolved then the community can move forward in the identification of potential programs and policies that can be enacted to help protect, preserve, and enhance the community's rural character.

This step could be accomplished by conducting a literature review similar to the one conducted in this report. Conceptual studies and implemented programs should be reviewed. The reviewers should be paying particular attention to the programs and policies enacted to protect, preserve, or enhance variables which their community has identified as significant to its character. The end product should be a list of potential programs and policies that could be enacted to implement the rural character preservation program. The list should include a brief description of the program or policy, what its goals are, what its needs are, and how it can be applied to the community in question. This list should then be compared against the previously mentioned situation assessment. Programs and policies that call for funds that are beyond what currently exists, or call for legislative changes, or call for a great deal of technical ability should be

highlighted for further analysis.

With completion of the list of potential programs and policies the community should have a better grasp on the course of action they are going to undertake. The next step should be an even more detailed analysis of this list of programs and policies.

Programs and policies which call for legislative changes, high levels of funding, etc. should be reviewed as to the significance of their contributions towards the rural character preservation program. Programs and policies which may cost a great deal but will yield little, should probably be given a lesser priority than other programs and policies. This will hold true for all the issues mentioned earlier (taxes, laws, etc.). At the same time programs and policies that appear to yield a great deal while posing some difficulties, should still be given serious consideration. Programs and policies that seem to yield a great deal while posing few or no difficulties should be given the highest rating. Programs and policies that appear to yield little but have few to no associated difficulties should receive a slightly lower rating.

These programs and policies along with their descriptions and associated yields and difficulties and their ratings should be presented to the community at large. This may again be done in public meetings, through mailings, advertisements in the newspaper, etc. The main purpose for

this step is to ascertain public feedback on the various programs and policies. This feedback will help to serve as a second rating, further refining the list of programs and policies to be implemented in the rural character preservation program.

Following the public feedback section a completed and refined list of programs and policies that are to be implemented should be available for decision-makers to act on. It is likely that the final programs and policies that are recommended to the local decision-makers will vary considerably in scope and difficulty to implement. For example, there may be programs calling for tree plantings along a rural road, a program that may be implemented fairly quickly and easily. On the other hand there may be a policy calling for changes in the way agricultural land is zoned. This may require a longer process and may prove more difficult to implement. Because of the variations in the scope and difficulty of the policies and programs, various aspects of the rural character preservation program may be phased in at different times. While trees are being planted the planning commission should be working with the town council to change the zoning ordinance, etc.

Through phasing of the various programs and policies, the rural character preservation program should be implemented at a pace that will prove most acceptable to all the parties involved in the community.

An integral part of the implementation procedure of the rural character preservation program is the review and feedback portion. It is vital that the community have scheduled into its phasing program the review and evaluation of implemented programs and policies. If the trees were planted, have they accomplished what they were supposed to? If not, why not? Could the program be improved, and how? This review and evaluation is very important in that it enables the community to identify successes as well as areas that need improvement. This step can provide valuable insight into both programs and policies yet to be phased in and future community planning efforts. Incidently, a review and evaluation of the entire rural character preservation program from conception to implementation could prove to be invaluable to the community and to the planning profession at large.

This section has outlined in very conceptual form the steps that a community should take in conducting a rural character preservation program of its own. The procedure draws heavily upon the traditional planning approach while incorporating many innovative ideas that have been recently used by communities in various planning activities. Obviously the steps identified above will vary in their scope, value, and thoroughness from community to community depending upon their particular situations. This chapter serves as the guideline for part two of this study. Part

two involves taking the portions of the implementation procedure identified above and applying it specifically to Knox County. The process identified above will be carried out as realistically and completely as allowable under the constraints imposed in a thesis. The constraints include time, expertise, and financial resources.

The following chapter provides an overview of some of the preservation and protection techniques that have been employed by communities or identified in conceptual studies. The techniques do not represent an exhaustive list of possible techniques but rather serve as examples of the types of techniques that might be involved in a rural character preservation program.

CHAPTER 5
RURAL CHARACTER PRESERVATION, PROTECTION, AND ENHANCEMENT TECHNIQUES

The following are examples of the design guidelines established by various sources to preserve, protect, and enhance elements essential to rural character. The design guidelines are taken from both conceptual studies of rural character and actual implemented programs on rural character preservation. These are meant to provide an introduction to some of the common elements in design guidelines, and are not presented as an exhaustive description of design guidelines for rural character, which is beyond the scope of this project.

A summary of some of the programs and policies that are used by communities and their applicability to Knox County is located in Appendix A.

RURAL CHARACTER ELEMENTS

Preservation of Open Space

Quite possibly the one variable that is the most important and most common in any rural area is the open space. That open space may be in the form of rolling pastureland, wooded slopes, steep mountains, or scorching desert. The open space often is seen as providing the separation between man-made and natural. Even if the land has been sculpted by man for hundreds or thousands of years, as is often the case, open space is still associated with natural. Because of the perceived importance of open space,

its protection and preservation is central to many rural character preservation programs.

Fred Heyer's study on rural character preservation (Heyer, 1991) suggests that residences should be located adjacent to tree lines and wooded field edges. He also states that clustering of structures should be used whenever possible. Finally, he recommends that structures not be placed in open fields.

Bucks County, Pennsylvania (Bucks County Planning Commission, 1989) suggests the use of cluster design either in the form of a detached dwelling cluster subdivision or as a performance standard development to retain open space. Detached dwelling subdivisions would be made up of detached single family residences on small lots which are clustered on a portion of the site with the remainder of the site being left as open space. A variety of dwelling types are permitted in the performance standard development. Both development types are subject to maximum densities, minimum open space ratios, and maximum impervious surface ratios. They also suggest the use of a buffer zone in the form of an overlay surrounding existing villages to help preserve the surrounding open space.

Yaro suggests in his study of the Connecticut River Valley (Yaro et al., 1990) the use of clustered structures along tree lines at the edge of woods as the best means of protecting open space.

Livingston County, Michigan through it's PEARL program (Livingston County Planning Commission, 1991) has suggested the use of clustered structures either at the edge of fields and woodplots or in the woodplots themselves. They also propose that traditionally large-lot sizes be replaced with smaller lot sizes that can accommodate clustering.

Agricultural lands

As mentioned earlier, open land in any form is deemed a very important variable in rural character of an area. Land in agricultural use is a very common form of that open space. Farms have traditionally been located near metropolitan areas so as to gain access to an immediate market. As a result of urban sprawl many of the traditionally agricultural lands are facing intense development pressures. Many acres of open space that most urban dwellers have taken for granted are at risk. A possibly even more important issue than loss of open space is the loss of food-producing lands. Along with the loss of this important open space resource prime agricultural soils are being lost. This could prove devastating to metropolitan areas that depend heavily on farming activities either for food or for economic growth. Communities that do not depend heavily on local agriculture for either food or economic growth still face the loss of future agriculture use. As well, the loss of prime agricultural land forces an area to become dependent on outside sources for their food

supply, something that may not be desirable should that source become unreliable. Because of the importance and the existence of agricultural lands around metropolitan areas many rural character programs include policies and programs aimed at the protection and preservation of those lands.

In Heyer's study he also recommends the use of clustering to preserve agricultural lands, going as far as to suggest that this technique may be required for agricultural lands.

Loudon County, Virginia has either implemented or is studying a number of regulations and incentives to keep agriculture an economically viable operation, while acknowledging it's contribution to the area's character (Loudon County Planning Commission, 1991)

In a study conducted by Samuel Stokes for the National Trust for Historic Preservation (Stokes et al., 1989) the suggestion for mandating very large lot zoning is made to essentially make farming the only viable use of the land.

Livingston County, Michigan suggests the use of clustered structures to preserve open space for agricultural use. They also suggest keeping development off of lands with a less than 6% slope, lands immediately surrounding an active farmstead, active orchards, high quality soils, and blocks of land that are not fragmented by other development or environmental constraints. They also have sought to minimize conflicts between residences and

farms through vegetative screening between residences and farms and suggesting the location of residences "upwind" of farming activities.

Yaro suggests clustering of structures at the edges of agricultural fields as a way to allow farming to continue.

Transportation

As urban or suburban residents move into historically rural areas the first thing they often notice is the transportation network, or specifically, the inefficiency of that network. Rural roads are often narrow, twisting, poorly aligned, and at times dangerous. As suburban style growth occurs, infrastructure improvements usually follow (though sometimes that infrastructure improvement is actually what accommodated the growth). Roads are often widened, curves are straightened, and intersections are realigned. In essence, the rural roads are made into suburban roads at the expense of their character. While serious safety problems need to be addressed, rural roads should not become suburban in character. A number of rural character preservation programs have dealt with this issue.

Heyer suggests that existing farmroads be incorporated into new subdivision designs. He also suggests that new roads follow existing contours and that standards should be more flexible based on the site characteristics.

Bucks County, Pennsylvania suggests the reduction of speeds and the removal of truck traffic in village districts

as possible rural transportation policies.

Loudon County has actively pursued modifications of the Virginia Department of Transportation road standards to obtain increased design flexibility. Loudon County has also suggested that some rural roads should be preserved intact as an example of historical road building. Loudon County has called for road improvements for safety reasons be sensitive to their surroundings and the character of the existing roadway.

Livingston County, Michigan has suggested the requirement of an undeveloped, undisturbed buffer 100 feet wide along primary access routes. The buffer should be designated as part of the permanent open space system and encourage the planting and maintenance of trees in the buffer to provide a sense of closure.

Yaro's study targets parking lots, as does Bucks County and Fred Heyer. All the studies suggested that parking lots should be located either to the rear or at the sides of buildings. Yaro continues to suggest that these lots then be further screened from the roadway via plantings.

Wooded areas

As mentioned earlier, wooded areas can make up a significant portion of an area's open space. In addition to large tracts of woodlands, small woodlots and treelines can be significant contributors to rural character. Because many developers view trees as a nuisance to development they

are often at risk of being destroyed with new developments. Many rural character preservation programs have addresses this issue, proposing design guidelines and policies dealing with wooded areas of various sizes.

Heyer states that treelines should be preserved whenever possible. Residences should be located adjacent to tree lines and wooded field edges. Heyer also recommends that trees on ridges not be removed. Finally, he suggests that treed areas between the principle structure and the roadway be retained.

Bucks County suggests woodlands located on steep slopes, in the 100 year flood plain or the wetland margins should be retained as at least 80% open space. Other woodlands should be retained as at least 50% open space.

Livingston County suggests that woodlots be preserved whenever possible, especially high-quality woodlots. Dwellings should be clustered on the edges of woodlots with an emphasis on reforestation and landscaping to blend homes to appear as if they are in the woods. If the woodland area is not considered to be of high quality and soils are good, development might be encouraged within the woodlands, preserving fields and pastures as open space.

Yaro cites the need for clustering homes adjacent to wooded areas and calls for the preservation of existing tree lines.

Lakes, rivers, and watercourses

Lakes, creeks, and rivers have traditionally played a very important role in rural areas. They have provided transportation, drinking water, irrigation, food, and recreation for years. In many rural areas they still provide most of these. In addition to these practical uses water provides a valuable aesthetic element. A river running through rolling farmland or a creek running through pastureland filled with cattle are synonymous with rural. Through channelization, pollution, and clearing of adjoining vegetation this resource is put at risk. Loss of water purity and quality is a serious issue everywhere as it puts all the uses of lakes, creeks, and rivers at risk. Many rural character preservation programs have recognized the importance of water in its many forms and have enacted programs aimed at protecting, preserving, and improving its quality.

Heyer recommends a minimum setback from lakes and ponds be established. A maximum amount of shoreline disturbance per lot should be stated. High quality water should be identified and monitored to maintain and enhance water quality. Finally, he states that on-site wastewater treatment facilities should be designed to efficiently protect surface water and groundwater.

Bucks County recommends that floodplains, floodplain soils and wetlands, lakes, and streams should all be maintained as 100% open space. Wetland margins should be at

least 80% open space.

Livingston County suggests that no development take place within 100 feet of a lake, pond, stream, or wetland. Within this buffer no vegetation should be removed or altered. Developments should also provide for water runoff collection facilities separate from existing wetlands.

Yaro suggests establishing buffers along watercourses and enforcing setbacks within those buffers.

Slopes

Slopes and ridgelines have traditionally been left as open space as they proved difficult to build on and next to impossible to farm on. Often only the extraction of trees proved financially rewarding, often leading to clear cut slopes and subsequent serious erosion problems. As technology improved people began placing homes on steep slopes and ridgelines to capture the views offered by them. What many residents found too late is that their mountain view is now a view of another house set on an opposing ridgeline. As people drove through rural areas instead of seeing uninterrupted views of ridgelines and slopes they now saw what in effect were subdivisions in the sky. As roads are built to reach these residences erosion may prove to be a serious problem and the scars they leave on the slopes indeed prove aesthetically unpleasing. Because of the presence of steep slopes and ridgelines in many rural areas a number of programs have addressed their preservation and

protection.

Heyer states that to preserve slopes and ridgelines, structures should not be placed upon the steep slopes nor the ridge lines. He also recommends that building envelopes not be drawn into steep slope areas.

Bucks County recommends that 70% of slopes between 15%-25% grade should be kept as open space. Slopes exceeding 25% grade should be kept as 80% open space.

In Stokes study he stresses the need to keep structures off of steep slopes. Additionally, he pays particular attention to the potential damage roads may have to slopes. He stresses that roads should run with the contours rather than across slopes.

Livingston County suggests that slopes exceeding 12% should be free of structures, roadways, and trails. They also stress that their best use is as open space.

Significant Views

Through the combination of open space, small compact developments, and natural features; rural areas often contain a number of significant views and vistas. These views and vistas may be seen from the roadway, from buildings, or any number of other locations. Quite often these views and vistas are easily compromised. The removal of some trees, the placement of a structure, the realigning of a roadway, etc. may destroy or greatly change the view or vista. Because of their sensitivity to change many rural

character programs have included the protection and preservation of significant views and vistas in their programs.

Heyer recommends the following to protect significant views: Maintain open space wherever possible via the use of clustering; residences should not front directly on off-site streets; existing agriculture structures should be preserved where feasible; and structures should be kept off of ridgelines.

Bucks County recommends that a large-lot size should be required for detached single family residences, possibly one or two acres. They also recommend that maximum building height should not exceed 35 feet. The intent of these policies is to preserve the viewshed around existing villages.

Stokes recommends the clustering of structures and the placement of that cluster out of the viewshed. He also recommends that utility lines not interfere with significant views. He states that if the lines must run above ground then they should be either set well in front of roadside trees or far enough back to avoid rows of half-trees, resulting from frequent pruning.

Livingston County targets the protection of natural habitats as a means to protecting significant views. Homes should be placed back from the summit of hills and clustered adjacent to open space. Roads should be aligned so that the

scenic qualities of the landscape change as one travels down the road. A sequence of different natural colors, features, textures, and open and closed views should be sought. Roadways should not be located next to a watercourses edge. Billboards, dangerously derelict buildings, and utilities should all be removed when possible. When removal of these features is impossible they should be screened from view via vegetation or by architectural features.

Yaro recommends the clustering of structures adjacent to open spaces. He also recommends the preservation of existing structures and features.

PART 2
KNOX COUNTY'S RURAL CHARACTER PRESERVATION, PROTECTION, AND ENHANCEMENT PROGRAM

CHAPTER 6
KNOX COUNTY'S RURAL CHARACTER

The steps involved in identifying Knox County's rural character and the variables that contribute to that character follow the procedure that was outlined in Chapter four of this document. The steps are again as follows:

1. Identify the goal of the rural character preservation program.
2. Identify the community's definition of rural character.
3. Identify and inventory the variables that contribute to the community's rural character.
4. Conduct a situation assessment for the community.
5. Identify and rank-order preservation, protection and enhancement techniques available to the community.
6. Recommend techniques to be implemented.
7. Implement preservation, protection, and enhancement techniques.
8. Review and evaluate the techniques that have been implemented in the rural character preservation program.

This chapter will address the first six steps listed above as it applies to Knox County. As mentioned earlier some of the steps will be limited due to the constraints that exist and provide the basis for further research that

that is elaborated on later in this report.

GOAL IDENTIFICATION

According to Fred Heyer the very first step in any rural character preservation program must be the identification of the goals that are to be achieved (Heyer, 1990). Indeed, this step is integral to the planning process in itself. Patton and Sawicki's book Basic Methods of Policy Analysis and Planning (Patton and Sawicki, 1993 p. 109) identify the goal setting stage as a must-do proposition or "run the risk that the problem will be ill-defined". In other words, the community must know what it is that they are wanting to do before they can set out to do it, or they are likely to accomplish little.

There are steps that usually must occur even before the goal identification can take place. As identified in Chapter Four, someone must bring this idea of rural character preservation to the forefront. In other words, someone must identify a need for rural character preservation and identify the problems that the community is currently facing. Carl Patton outlines the following steps in The Practice of Local Government Planning (So and Getzels, 1988 p. 473).

1. Define the problem. How important is the problem? Who is interested in having it solved?
2. Specify the boundaries of the problem. Is the problem local or regional? How long has it

existed? Is it part of a larger problem?

3. Develop a fact base.

Though Patton's outline was written specifically for planners the steps can be used by anyone interested in initiating a rural character preservation program. As with any problem solving methodology it is vitally important that the importance and scope of the problem be identified and outline whom is affected. Quite possibly the most important step is the development of the fact base. A strong logical analysis of the problem will prove much more useful and convincing to decision-makers than a weak, poorly substantiated one.

Upon completing the three steps listed above and assuming the idea of a rural character preservation program has been accepted, and at least initially supported, the goals can be identified. The goals will be derived directly from the problem statements and their analysis.

In Knox County the concept of rural character preservation seems to have evolved over time. No one person or group suddenly came to local representatives or the Metropolitan Planning Commission and started demanding that rural character preservation be put in place. As with many things, the idea of rural character preservation quite possibly started with residents in the rural areas of Knox County wanting to keep certain types of development away. As MPC and local leaders became involved in regularly

scheduled public meetings, including drafting of a new General Plan and Sector Plans, they began to hear residents yet again stress they did not want to see "Cedar Bluff" or "West Knoxville" occur in their community (MPC, 1994b SOP, 1994).

What residents began to identify specifically was that they did not want the sprawling commercial strips, traffic congestion, and endless residential subdivisions that existed elsewhere in Knoxville (SOP, 1994). What residents did want was to retain the natural beauty of their community and their sense of community. Residents also wanted to see infrastructure improvements in their communities and wanted to be ensured of getting "their fair share" of amenities that are dispersed in Knox County (SOP, 1994).

In response to the statements made by residents MPC began to explore development ideas that were alternatives to the traditional ways that development had occurred in Knox County. The Knoxville-Knox County General Plan draft identifies the importance of the preservation of rural character in its Executive Summary and mentions rural character numerous times in the remainder of the plan (MPC, 1994b). During the course of public meetings and focus groups students from the University of Tennessee's School of Planning in conjunction with MPC presented a number of ideas that might be used to protect, preserve, or enhance rural character. The ideas included clustering of structures,

retention of historical and man-made features, etc. The ideas were generally well received by residents and many of them were incorporated into the final recommendations that the students presented to MPC (SOP, 1994).

Though the problem in Knox County has been loosely defined it has been brought to the attention of residents and local decision-makers. The problems associated with conventional development and the risks it poses to existing rural areas has been identified. Formalization of the problems has not really occurred and may pose a serious weakness in any rural character programs implemented in Knox County.

Knox County is in a very fortuitous position in that the County's Master Plan is still in it's draft stage, Sector Plans for the East Knox County Sector and the South Knox County Sector (two areas containing a significant amount of rural land) are being completed, and a number of public meetings are being conducted as part of the KnoxVision program. All of these present excellent opportunities for MPC to formalize a problem statement and produce real and workable goals for a rural character preservation program.

Completion of a final problem statement is beyond the ability and scope of this study in that will involve a number of public meetings held throughout Knox County. What will be presented in this study is a working problem

statement that is designed to provide a basis on which the goals may be identified. It is very likely that this working statement would be changed during the course of Knox County actually implementing a rural character preservation program.

The problem that Knox County faces is that it has a limited supply of rural land that has a low population density and retains much of the natural and man-made resources that were historically present throughout Knoxville. This land represents a resource in its natural beauty, its link to history, its production of agricultural products, and its potential for development. It is the accommodation of development while protecting, preserving, and enhancing the other resources that is at the core of the problem facing Knox County.

This problem is important in that it represents the only chance Knox County residents have to outline what the County will look like in twenty years or beyond. The problem is important in that it affects developers, farmers, landowners, visitors, etc. in one way or another. The problem is important in that it is real. Development has increased in the sectors containing the remaining rural lands. In the period of 1989-1993, there were nearly 4000 housing starts (almost one-third of all the housing starts for Knoxville-Knox County) in the areas of the County containing significant amounts of rural lands (MPC, 1994d p.

23). Landfills were proposed in these sectors, and a major theme park was rumored. In short, growth is occurring in these areas and the risk of conversion of rural lands to suburban and urban use is real.

The problem is not simply a local one. A very real possibility is that if Knox County acts to preserve its rural character that the development will skip over to surrounding counties. The surrounding counties contain a great deal more rural land and possess less restrictive development guidelines. The regional issue is a very important one and it is the belief of the author that Knox County could serve as an example in the region should it act now to preserve its rural character.

The problem very likely is part of a larger problem, that of development attitudes. Land has for too long been looked at simply as a commodity to be exploited. While development brings jobs, money, and homes it need not do so at the cost of natural resources and character. Indeed, we may have reached a point in portions of the United States that it must not do so. This is especially true in East Tennessee where the natural beauty of the area is so vitally important. Tourism is the number four industry in Tennessee, contributing an estimated $113.8 million to the Knox County economy (Tennessee Department of Tourism, 1993). A great deal of that tourism is a direct or indirect result of the natural beauty that exists in the region. Should

that beauty be compromised or lost surely this industry and all of East Tennessee will suffer. The Great Smoky Mountains National Park must not be allowed to become an island of beauty and character in the midst of commercial strips, billboards, and residential subdivisions.

While a rural character preservation program enacted in Knox County cannot change the attitude towards land development alone, it can make a contribution. One need only look at the attention given in planning journals and in the public press to see that people are anxious for a change in attitude. Knox County enacting a rural character preservation program in conjunction with several other communities enacting similar programs could make a difference.

The problem in Knox County can be seen as one of principally aesthetics and the protection of natural resources. The goal of the program should be to accomodate development that will offer economic opportunities and housing for the residents of Knox County and will allow land-owners and developers a reasonable return on their investments, while preserving, protecting, and enhancing open space, agricultural lands, environmental resources, and other componenets that contribute to the character of the rural areas of Knox County. This goal is significant in that it recognizes the importance and inevitability of development occurring (an attitude that has been expressed

by the residents of Knox County in public meetings [SOP, 1993 MPC, 1994b]). The goal statement also identifies the need for a change of attitude towards development, that conventional development will not do (This also is an attitude expressed by residents in public meetings held by MPC [SOP, 1993 MPC, 1994b]). Developers, land-owners, and residents must now make development accommodate to the site, not make the site accommodate to development.

It must be noted that this goal statement has been derived by the author through personal interpretation of the statements of the residents of Knox County and therefore is open to debate. As with the problem statement it is expected that this goal statement would change if and when Knox County actually conducts a comprehensive rural character preservation program and is presented here only to serve as a model goal statement on which to base the remainder of the model rural character preservation program for Knox County.

KNOX COUNTY'S DEFINITION OF RURAL CHARACTER

As with the above section, this section must also rely on information gathered for other purposes by MPC and then inferences can be made from that information, because MPC has never actually asked its residents to define Knox County's rural character. Based on information gathered at public meetings, focus groups, and workshops that MPC conducted in formulation of the Knoxville-Knox County

General Plan and Sector Plans, a reasonable estimation of what the residents of Knox County define as rural character can be ascertained (MPC, 1994b).

Some of the items that some of the residents of Knox County find undesirable about the suburban areas of Knoxville have already been identified above. These include endless commercial strips, sprawling residential subdivisions, traffic congestion, etc. As well, some of the items that some of the residents found desirable about the rural areas of Knox County were identified above. These include natural beauty, sense of community, etc. (SOP, 1993).

Some of the residents have also identified some items they find desirable about the suburban areas of Knoxville. These include public sewer, public water, safer roadways, better recreation, etc. (SOP, 1993).

From these items we can begin to assemble a definition of what it is that Knox County residents consider "suburban" and what they consider "rural". "Suburban", in general means an area with extensive residential development where major arterials are lined with commercial enterprises, and where these same arterials are often congested. These same suburban areas also offer safe and efficient waste disposal and drinking water systems, nearby libraries and recreation centers, and an extensive road network. "Rural", in general means an area with low density and scattered single family

residences surrounded by open space and scenic views and vistas. These areas offer direct links to history and nature. These same rural areas also possess failing on-site waste disposal and drinking water systems, limited economic opportunity, few organized recreational amenities, and a road network that is often far below standard.

The definitions we end up with are diverse and complex, with both suburban and rural areas offering much while each faces a particular set of problems. With these basic and very conceptual definitions in mind we can turn our focus to what it is specifically that Knox County residents view as rural. The basics have already been identified; scattered homesites, open space, and scenic views and vistas. These characteristics need to be further defined and expounded upon. This refinement will serve as step three in this process.

IDENTIFICATION AND INVENTORY OF RURAL CHARACTER VARIABLES

An exhaustive analysis requires expertise and time beyond the abilities of the author and the scope of this study. As identified in Chapter Four of this document a number of methods exist to identify specifically what items residents deem integral to rural character. None of these techniques have been used in Knox County. It is vitally important that should Knox County conduct an analysis concerning a rural character preservation program that some technique be used to ascertain this necessary information.

Due to the constraints placed upon the author, the decision was made to identify a number of "common" variables that can be found in most rural areas in the United States. Upon identifying these variables a limited inventory of such variables will be conducted for Knox County. The variables selected will draw from various sources identified earlier in this study, but will rely heavily upon the reports by the National Park Service entitled; Guidelines for Evaluating and Documenting Rural Historic Landscapes (NPS, 1990), and Cultural Landscapes: Rural Historic Districts in the National Park System (Melnick, 1984). As noted earlier in this study, the NPS study recognizes a number of common landscape characteristics. They include the following:

1. Land uses and activities;
2. Patterns of spatial organization;
3. Response to the natural environment;
4. Circulation networks;
5. Boundary demarcations;
6. Vegetation related to land use;
7. Buildings, structures, and objects;
8. Clusters; and
9. Small-scale elements.

These characteristics will be combined with those identified in other studies including the following:

1. Scenic views and vistas;
2. Geologic phenomena; and

3. Environmentally sensitive areas (woodlots, slopes, waterways, etc.).

(Stokes et al., 1989; Sargent et al., 1991)

These characteristics will be identified and described as they exist in Knox County and examples of each will be provided.

KNOX COUNTY'S PHYSICAL CHARACTERISTICS

For one to understand how Knox County's character evolved, how and where residents settled, the land uses that evolved, etc., one must have an understanding of the physical form that existed in Knox County at the time of European settlement. Soils, watercourses, and mountains have all played significant roles in the settlement of Knox County and hence its land uses and character. This section briefly describes the physical characteristics that existed in Knox County at the time of European settlement. It must be noted that some physical changes had already occurred by the time of European settlement, changes had already been made by the native americans living in the area. Largely, the physical characteristics of Knox County remained unaltered by man when the Europeans arrived and represented the major impetus for development as well as the major obstacle to that development.

Soils

The climate and physical features of the area are unfavorable for the accumulation of large amounts of organic

matter in the soil. The Knox County soils are naturally fertile and with proper care are highly productive. They are well adapted to general farming or dairying and produce excellent crops of hay, grain, and vegetables. Soils on the ridges contain much chert and are relatively poor. The most productive soils of Knox County are those that formed in flood plains and along the streams. These areas do not cover large areas but their great depth adds greatly to their fertility. They are durable and are not quickly impoverished by continuous planting in corn and forage crops. As a consequence, the first settlements in Knox County were located along the rivers where the fertile land was located.

Watercourses

Knox County contains and is partly bordered by rivers that represent transportation routes and recreational opportunities, but this is largely a result of work done by the Tennessee Valley Authority in recent decades. The rivers once served as the lifeblood to floodplains and their dependent ecosystem. Some floodplains in the smaller creeksheds still retain this purpose but for the most part water is a controlled resource in Knox County.

The Holston and French Broad Rivers enter Knox County from the east and join together at a point four and one-half miles northeast of downtown Knoxville to form the Tennessee River. The Clinch River forms approximately ten miles of

Knox County's northwest boundary.

Mountains and valleys

Knox County, as is much of East Tennessee, is surrounded by mountains. These mountains range in size from a few thousand feet to more than six thousand feet, and have greatly dictated where people settle. Coves, passes, gaps, and valleys have served as homes, and passageways for residents of East Tennessee for centuries. Ridges located in Knox County range from 1,200 feet to 2,100 feet. The ridges are arranged in long parallel strips, greatly affecting settlement patterns. The portion of Knox County that lies south and east of the French Broad and Tennessee Rivers does not have the characteristic long unbroken ridge line. The ridges are short and broken and quite often are not parallel to one another. The lowest point in Knox County is along the Clinch River at an elevation of 750 feet with the highest being House Mountain at 2,100 feet.

Climate

The Tennessee Valley has a mild or temperate climate relatively free from extremes and sudden changes in weather. In general, winds are mild and variable with southwesterly winds prevailing. The valley is in a region of abundant rainfall, averaging about 49 inches per year. The heaviest rains come in late winter or early spring. The driest season occurs in mid-fall. The summers are relatively long and warm. while the winters are generally mild and short.

The ground is rarely covered with snow for more than a few days at a time. The growing season averages 212 days. There are 124 clear and 122 partly cloudy days in the average year (Rothrock, 1946). This climatic information helps point out the favorable conditions that prevai. in Knox County and help to explain it's desirability for settlers.

SETTLEMENT OF KNOX COUNTY

With an understanding of the physical characteristics of Knox County one can begin to see the opportunities and challenges that faced early settlers in the area. The area had been occupied for centuries by native americans who had learned how to live with the natural resources of the area. The indians left few physical remnants of their existence in Knox County. A few burial mounds and some fishing traps are about all that remains of this distant culture. European settlers were to forever alter the area, culminating in what is today Knox County. Settlers would eventually harness the power of the rivers, farm the flood plains, build roads through the gaps, and develop communities in the coves. Unlike the indians, a number of physical remnants remain from the early European settlers. Buildings, ferry landings, trails, roadways, etc. remain from the early settlers. Understanding how this settlement occurred and where it occurred is an essential step in identifying and understanding Knox County's character. A complete history

of the settlement of Knox County is beyond the scope of this study, therefore only a very quick overview of that settlement history will be provided.

Rothrock's study of communities explains how, why, and where settlements occurred in Knox County. They do not offer an exhaustive historical account of the settlement patterns of Knox County but serve to establish a picture of early community development in Knox County. In Rothrock's work one can begin to see that early communities were generally formed around agricultural lands and transportation routes as these both were needed for survival of the residents. The communities were generally small in size and number. Most of the communities lost their importance as railroads and the automobile became more important and agriculture less important. A great deal of the original character of these areas has been replaced with new residential subdivisions and commercial centers. Only a few cemeteries, residences, and historic markers remain for the most part. One thing that has remained largely unchanged in the rural portions of the County is the natural landscape. It is this landscape and the characteristics that form it that must be protected to provide a necessary link to the communities of the past in Knox County.

Land uses and activities

Land uses or the activities that occur upon the land play a significant role in the character of an area. Land

uses represent the major forces that form, shape, and organize rural areas. Land that is primarily agricultural will greatly differ in character from land that is primarily industrial, for example. The principal land uses are essential to understanding the character of the area. The historic processes involved in land use are significant, as are adaptations of historical processes. This section will briefly discuss the land uses and activities in Knox County and then provide some examples of these activities.

The vast majority of Knox County is made up of suburban land uses, indicating the low demand for agricultural land and the dependence on the private automobile. These uses include residential subdivisions, commercial centers, and some public institutions (See Figure 1). West Knox County is almost completely suburban in character with only the extreme northwestern and southwestern edges remaining rural. South Knox County is approximately half suburban in character and half rural in character. The suburban land uses are similar to those found in west Knoxville, except that the residential subdivisions are somewhat older. The rural lands in both are made up primarily large-lot residences and agricultural lands. Some commercial activity is present and is primarily limited to major roadways. North and east Knox County are the only two sections of the County that have more rural lands than suburban lands. East

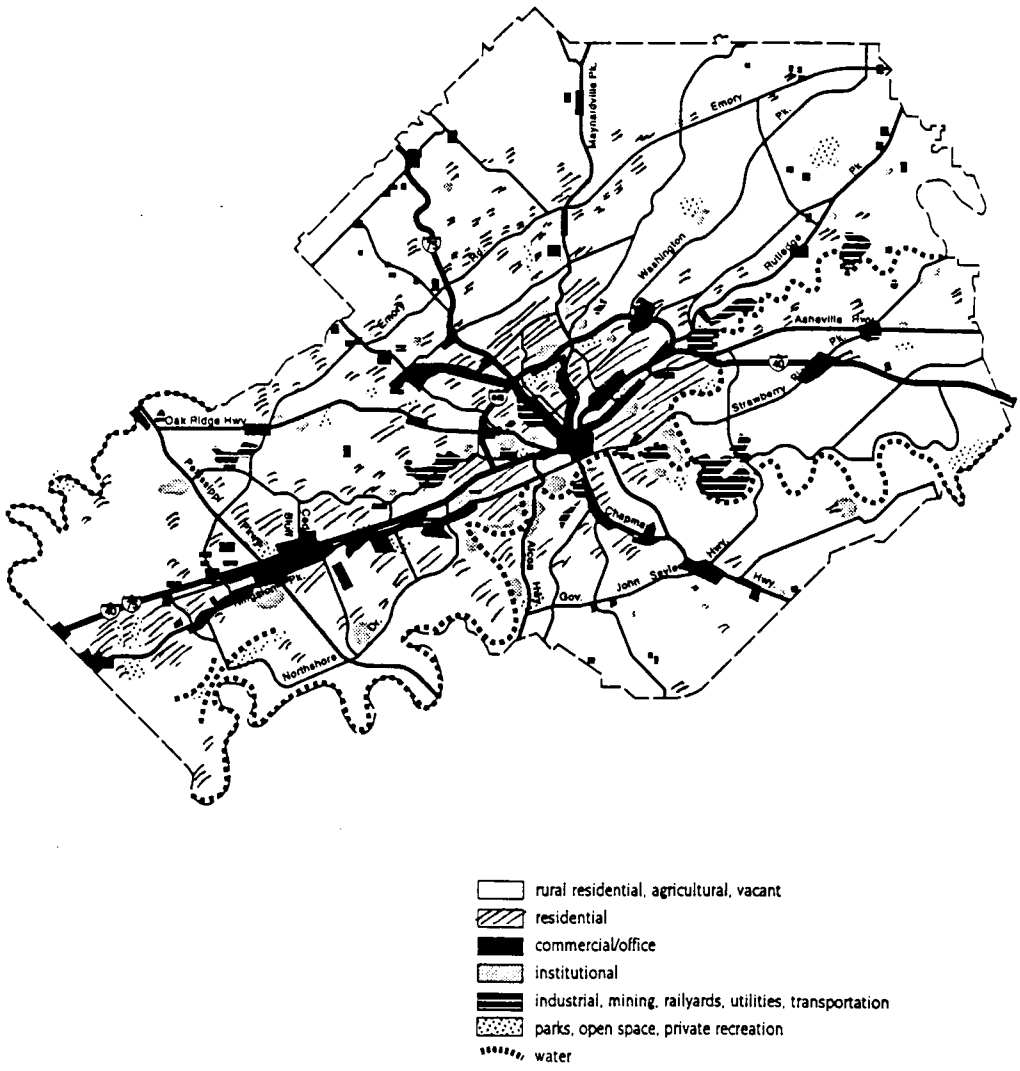


Figure 1
Generalized Land Uses

Source: Knoxville-Knox County
Metropolitan Planning Commission

Knox County is primarily agricultural lands and, again, large-lot residences. Northeast Knox County follows the same pattern with the addition of the mining activities that occur along the Holston River.

Examples of typical land uses that occur in the rural areas of Knox County include large-lot residences located along arterial roadways and major collectors, large crop farms located along the rivers, pasture located on rocky terrain, and strip commercial development located along major roadways. There also exist small pockets of highway commercial activity in the County in the far eastern and western sections of the County.

In terms of land use activities that occur in the area, the most significant is that of agriculture. Of importance, is the type of agriculture that occurs in the rural areas of the County. Hay production, corn production, and livestock still are the primary agricultural activities. For the most part corn is still produced along the rivers, hay is produced in fields scattered throughout the county, and livestock is raised on rough terrain unsuitable for other types of agricultural activities. Subdivision of land, grading of the land, and widening or realigning of roadways poses potential threats to the agricultural activities that have persisted in the County.

Patterns of spatial organization

The historical patterns of spatial organization in the

rural areas of the County have in many cases either been lost or are at great risk of being lost. Landscape organization is reflected in road systems, field patterns, distance between farmsteads, proximity to water sources, and orientation of structures. Farmland has primarily been organized along the major rivers and creeks, serving as a visual link between the rivers and the roadways. Small settlements and towns generally occurred at crossroads. Commercial activities in these crossroad communities have all but been replaced by commercial strips located on the major arterials. Some of the small communities still exist at least as residential enclaves, but are at risk as surrounding farmland is developed into suburban character residential developments. The ridges have long been preserved either as woodland or as grazing land. This has allowed the organization of long parallel strips of woodland, especially in the eastern portion of the county. This organization, as it is on a small scale, is easily compromised when development occurring on the ridgeline disrupts these strips. Flood corridors along smaller creeks have long been used for hay production and grazing land for cattle, creating an informal organization of small green fingers throughout the County.

On a smaller scale the spatial organizations of structures and property follows a pattern throughout most of the County. Property lines are generally marked by fences.

Some stone walls and tree lines still remain from earlier property demarcations. Structures are generally organized in a manner similar to the organization practiced historically. The farmhouse is generally set off the major road with outbuildings and barns clustered around it. Small gardens and orchards for the family's use are located adjacent to the house, and generally the entire grouping is set among a clump of trees. Old tree lines and stone walls and these clumps of trees are all items that are placed at risk with further subdivision and development of property. The tree lines are generally very narrow and consist of small trees and are thus easily removed in the course of development. Stone walls are a little more substantial but again prove little challenge to a bulldozer clearing the property. Modern residential development seldom follows a spatial organization similar to the historical organization. Homes are generally placed adjacent to the roadway and are seldom clustered but are rather arranged in a cookie-cutter fashion. Trees are often either non-existent or will take decades to mature.

Response to the natural environment

Major natural features in a region such as mountains, prairies, rivers, lakes, forests, and grasslands, influence both location and organization of components of the rural landscape. The primary response to the natural environment early in Knox County was the type of agricultural activities

undertaken by residents. The soils are generally poor except along the rivers and are therefore used for hay production or grazing, or were left undeveloped. The floodplains are intensively used for crop production.

The abundant rainfall in the area played a major role in the early development of the area. The cantilever barn was built in response to both the natural environment and as a result of local cultural knowledge and practices. Such a barn is still used in east Knox County. Structures and agricultural lands were built in the valleys that naturally occurred between the ridge lines which posed a significant deterrent to use in the past. Structures were generally kept out of floodplains as they tended to flood often, again as a result of the areas abundant rainfall. With new technologies the ridgelines no longer represent the obstacle they once did and they are threatened with development. Likewise, control of the rivers through the Tennessee Valley Authority now allows development to occur without the continual threat of floods, thereby changing a centuries-old response to the natural environment. As technology changes and development pressures increase there exists a significant possibility of losing the historical record of how early residents responded to the natural environment.

Transportation networks

Transportation networks facilitate movement from one place to another or within a general area. The networks may

vary considerably in complexity or purpose. The networks can range in scale from livestock trails and footpaths to roads and major highways. Roads have always played a significant role in Knox County. Many of the roads first started as game paths or foot trails and eventually evolved into roads. Roads played such a significant role because of the inadequacy of the rivers in the area. The rivers generally were either too shallow or had too many obstructions to prove navigable for trade purposes most of the time. Certain roads such as Kingston Pike, Emory Road, Rutledge Pike, and others have played major roles since the initial founding of Knoxville. Roads have been the provider of markets for Knox County since its founding (Rothrock, 1946). Initially, the roads connected Knox County with Knoxville markets, then they connected it with markets in the north and south, and now via the interstate system they connect it with the entire country. Some of the roads have encouraged development in formerly rural areas. Kingston Pike is the primary example. Other roads, because they are sub-standard, have contributed to limiting the growth that has occurred in some areas. Kodak road in east Knox County is an example.

Today the waterways provide mainly recreational opportunities, with the Tennessee River also providing commercial activities. Both of these network systems are placed in jeopardy with uncontrolled growth. Access to the

rivers is already limited and could become more so with the further subdivision and development of land adjacent to the rivers. Roads that have helped to limit growth and also add to the character of the area are threatened as development pressures call for their realignment and widening.

Boundary demarcations

Boundary demarcations distinguish and define areas of control and use within a rural area. The demarcations may be in the form of fences, walls, planted tree lines, and hedge rows, or even natural features such as the use of a river to form a property boundary. As mentioned earlier land ownership in rural areas is primarily divided via the fence. The fence used ranges from chainlink to barbed-wire. The early settlers divided land with tree lines, stone walls, and split rail fences. Isolated examples of these division techniques still exist throughout Knox County. One significant change has been the separation of land uses. Historically, residences were located amidst farmland, with small communities being located at crossroads surrounded by a green swath of open space. The small communities often were composed of residences, churches, open space, industry, and commercial ventures all within walking distance of one another. Examples of this include Concord, Riverdale, and Mascot. Current practices find like uses concentrated together and separated from other uses. This is an essential difference between rural character and suburban

character. Major arterials now are the sites for commercial activities. Developed fields are now the sites for residences, and farmland is isolated away from both types of land uses. As mentioned earlier, the traditional types of boundary demarcations are at risk with new development. These demarcations include tree lines, stone walls, creeks, old roadways, etc. Should these traditional methods of boundary demarcations be replaced by chain-link fences and suburban style separation of uses the area's character will forever be compromised.

Vegetation related to land use

In any rural landscape various types of vegetation will bear a direct relationship to long established patterns of land use. These may include trees or shrubs planted for ornamental purposes, but may also include trees that have grown along fence lines, roadways, old walls, etc. Old gardens, wild rose bushes, and small stands of abandoned fruit orchards are all examples that may be present in a rural area. In Knox County the presence of tree lines that have grown up along fence lines and the presence of planted shrubs are the primary examples of vegetation that is related to land use.

Buildings, structures, and objects

Various types of structures and their formation, materials, and construction techniques contribute to the character of a rural landscape. Cemeteries, canals,

bridges, earthworks, and monuments should all be included in addition to buildings. The rural areas of Knox County contain many examples of historic structures and objects that are either listed for historical registration or are nominated for such listing. These significantly contribute to the historical aspect of the character of the area. The more common (not historically significant) types of structures and objects are quite often even more at risk than the historic structures as they are unprotected and are easily lost in the process of development. A number of fine farmhouses exist in Knox County and contribute significantly to the character of the area. Old barns and commercial structures also represent important links to the character of the area. Barns, farmhouses, mills, etc. all represent the response of local residents to the climate, terrain, and resources of the area. Materials used (fieldstones, wood, and brick) represent use of the resources available to local residents and the repetition of such materials and construction techniques helped to build the character of the area.

Building Clusters

Cluster arrangement is "the location of elements within a discrete landscape setting, such as a farmstead, ranch, or mining complex" (Melnick, 1984 p. 24). The arrangement of elements including buildings, fences, roads, etc., may reveal a fair amount about the historical and continuing use

of the cluster, as well as the impact of varying technologies and cultural preferences that may have changed over the generations. In Knox County the most readily available example of clusters lie in farmsteads and how their buildings are arranged on the site. Other examples include mining and quarrying operations, church sites, and ranches.

Small-scale elements

Small scale elements are important contributors to the rural landscape. They may vary from footbridges, to signs, to fence posts. The elements are generally long-lasting but some may be temporal or seasonal, such as bales of hay. Knox County contains isolated examples of many of these small-scale elements that when combined prove significant contributors to the character of the County. Old fence posts, stone walls, abandoned farm machinery, bales of hay, etc. may all be found in Knox County. Because many of these elements are seemingly forgotten items and some are temporal in nature they can easily be compromised with uncontrolled growth. Because these elements are at such a small-scale many residents fail to recognize their significance. It is much easier to recognize a farmhouse as a contributor to rural character that a bale of hay. It is because of this that special attention must be paid to these small-scale elements.

CHAPTER 7
APPLICABILITY OF PRESERVATION, PROTECTION, AND ENHANCEMENT TECHNIQUES TO KNOX COUNTY

In chapter five we looked at the ways that various communities throughout the U.S. have sought to protect their rural character. Earlier it was mentioned that not all programs and policies would be applicable to Knox County for a number of reasons. Reasons that include financial resources, political will, etc. This section will briefly discuss the situation in which Knox County finds itself. This discussion includes what the citizens of Knox County think about rural character preservation, what the planning department thinks about it, and what they are interested and able to do towards preserving, protecting, and enhancing it. This section also deals with the needs of Knox County in terms of what needs to be protected. This section leads into the development of the final recommendations concerning how Knox County could act to protect the character of its rural areas.

The primary techniques used in this section to ascertain information has been to conduct interviews with MPC staff and to consult various reports that have been compiled by that organization. Additional information was gathered during a number of public meetings held in East Knox County during the winter of 1993. The information presented is not meant to be exhaustive or to be statistically representative of the entire population of

Knox County, but merely is to serve as representative of the views of some of the citizens of Knox County and will serve as the foundation upon which Knox County could build a rural character preservation program.

THE NEED

Before one can begin to outline what should be protected one should first outline the need for such preservation and program. Earlier sections of this study outlined the value of character to rural areas in creating a sense of place for residents of the area. We must now ask if there is such a need in Knox County. Is the character of its rural areas truly in jeopardy? The answer to these questions is both yes and no. Yes, there is a need for the protection of rural character in Knox County because as with many other places in East Tennessee this character helps to form the particular sense of place or identity that one associates with the Knoxville metropolitan area, be they residents or visitors. There are demand pressures being placed upon the rural areas in Knox County. As outlined earlier some 100,000 acres of farmland have been lost in the past 40 years in Knox County. This loss has already significantly altered the character and landscape of much of west and north Knox County. The no portion of the answer deals with the fact that Knox County is not facing a situation that is critical. More than 50% of the acreage in the County is still undeveloped (MPC, 1994b p. 21). In east

Knox County alone, some 70% of the land remains vacant (MPC, 1994b p. 21). Population pressures are not expected to be that significant in the next twenty years and much of that growth is expected to occur in areas already suburban in character (MPC, 1994b p. 12).

The problem that may justify the need for a preservation program is the fragility of much of Knox County's rural lands. In many areas of the county rural lands are made up of a thin linear strip of farmland that separates areas of suburban development. Ridgelines are generally narrow and one or two major developments on them could seriously alter the character of an area. In short, it wouldn't take much development to seriously change the character of an area in Knox County. In 1993 residents in east Knox County and the rest of the Knoxville area became seriously alarmed when an unidentified theme park developer began purchasing options on rural land in east Knox County (Smith, August 11, 1993 p. 1). Though a theme park was never developed and the options eventually ran out, this situation sharply illustrated just how much one single development could alter the character of an area.

With the extension of urban services, road improvements, and continued subdivision of agricultural land, Knox County does indeed face the threat of loss or degradation of the character of it's rural areas. With the need for such a program outlined one can then turn to the

question of what support there is for such a program. The following section attempts to answer that question from the viewpoint of citizens and local decision makers.

SUPPORT

Throughout the process of establishing the General Plan for Knoxville/Knox County, planners and local leaders were told "protect the natural beauty of our surroundings" (MPC, 1994b p. 4). Again, in public meetings and focus groups held throughout east Knox County, residents told planners and decision makers the same thing (SOP, 1993). Based on the information obtained by the Metropolitan Planning Commission and the School of Planning it would appear there is a broad base of support for the idea of preserving the beauty and character of the rural areas of Knox County. This broad support of that goal however is much different from the support of policies and programs designed to accomplish such a goal. Many times the ideas of clustering homes, restricting sewer expansion, and limiting growth, ideas common to many rural character preservation programs, were met coolly by residents. Quite often this cool reception was due to an incomplete understanding of the techniques mentioned. Many people equate cluster housing with high-rise apartments crammed onto a site, sewer extension limits is thought to mean that residents must live with failing septic systems, and limiting growth is often seen as unwanted government intervention. Upon further

clarification of these terms and through the use of examples many residents were more receptive to the ideas (SOP, 1993).

On many issues the planning commission was found to be as hesitant to innovation as the residents. Changing long-held standards toward streets, design, and service extensions is not an easy process inside a relatively conservative organization. A number of innovative programs that have been utilized by communities across the U.S. were presented to members of the MPC staff for their feelings toward adoption of them (See Appendix B). The result was that some programs and policies were already used in Knox County, often on a very limited scale. Other programs were being considered by MPC, and still other programs were viewed as impractical in Knox County for various reasons. Through interviews and discussions with staff members of MPC it is easy to get the sense that they would like to try new ideas but deem their success unlikely and possibly being detrimental to the department and are therefore seldom attempted. The attitude that Knox County's political leaders, developers, and residents are simply too conservative to try many new ideas seems to be prevalent throughout the staff at MPC. Essentially, they feel that until the situation becomes warranted, either through outside regulation (such as the federal Clean Air and Clean Water Acts) or through a crisis (landfills, theme parks, etc.), little in the way of innovation will occur in Knox

County planning.

This support for the goal of rural character preservation and the hesitancy towards its implementation poses an interesting problem that will require leadership to achieve the goal. That leadership may come from MPC, local political leaders, or organized residents. At this time it is unclear where such leadership exists. MPC has begun the process by formalizing the goal of rural character preservation and residents have entered the process by thus far supporting the goal. Political leaders will get there chance when they choose to adopt or reject the General Plan which contains provisions to protect rural character. This, however, is just the beginning. The goal is worthless unless programs and policies are implemented to achieve the goal. This process must be directed by MPC in cooperation with residents and in agreement with local leaders. Chapter eight of this report provides a foundation on which public discussion might occur and upon which a comprehensive rural character program might be firmly established in Knox County.

CHAPTER 8
RURAL CHARACTER PRESERVATION, PROTECTION, AND ENHANCEMENT PROGRAM FOR KNOX COUNTY

This chapter presents the foundation for a rural character preservation, protection, and enhancement program in Knox County (hereafter referred to as "the program"). This program will reflect the particular needs and resources of Knox County. The program is based on what other communities have implemented in programs of their own and is tailored to meet Knox County's needs and to make full use of Knox County's resources. The program is arranged in the following form: First, the overall goal of the program is cited. This goal is derived from the goals already outlined by MPC in the Knoxville/Knox County General Plan draft, in combination with the goals of the various other rural character preservation programs throughout the U.S. Following the goal of the program more specific sub-goals are be identified. The final portion of the program involves presentation of suggested design guidelines for rural areas of Knox County.

GOAL: Preserving, protecting, and enhancing open space, agricultural lands, environmental resources and other components that contribute to the character of the rural areas of Knox County, while accomodating development that will offer economic opportunities and housing for the residents of Knox County.

Sub-goals

- Protect and preserve land uses and their associated activities that are integral to the character of rural areas.
- Protect and preserve patterns of spatial organization that are integral to the character of rural areas.
- Protect and preserve responses by residents to the natural environment that are integral to the character of rural areas.
- Protect and preserve the transportation networks that are integral to the character of the rural areas.
- Protect and preserve the boundary demarcations that are integral to the character of the rural areas.
- Protect and preserve the vegetation related to historical land uses that are integral to the character of the rural areas.
- Protect and preserve the buildings and objects that are integral to the character of the rural areas.
- Protect and preserve building clusters that are integral to the rural areas.
- Protect and preserve the small-scale elements that are integral to the character of the rural areas.
- Protect and preserve the views and vistas that are integral to the character of the rural areas.

- Protect and preserve the geologic phenomena that is integral to the character of the rural areas.
- Protect and preserve the environmentally sensitive areas that are integral to the character of the rural areas.
- Promote and require development that will contribute to and enhance the character of the rural areas.

The following section serves to further explain what the rural character preservation program is designed to accomplish for each of the policy statements mentioned above. The section outlines methods that are recommended to help ensure compliance with the policies and thus ensure implementation of the rural character program. Following these explanations are the design guidelines and new regulations or programs that are recommended to enable implementation of the program.

ELEMENTS OF THE PROGRAM

Land uses and their associated activities

To ensure that traditional patterns of land use and their associated activities continue, new zoning regulations and strengthened design guidelines will need to be implemented.

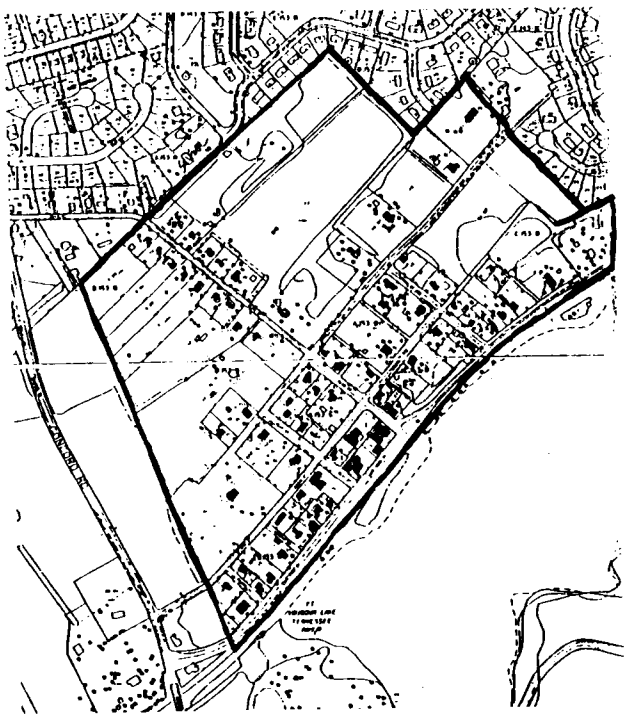
A great deal of the land that is vacant in the rural areas of the County is currently zoned agriculture. Not all this land is currently being farmed, nor should it be. Some

of the land simply cannot be economically farmed and is merely waiting for conversion to another use. In effect, the existing Agriculture zone in Knox County merely serves as a holding zone. As the agriculture zone currently stands there is no distinction between truly prime agricultural land and land that is merely in a holding pattern. The current zone allows for a wide variety of uses that may not be compatible with the character of the area. The uses allowed include residential subdivisions, museums, schools, churches, and landfills. The current zone allows for the subdivision of land into one acre lots, thereby providing the potential of carving up the farmland into suburban character residential subdivisions.

New agriculture zones need to be created and put in place. These zones need to be coupled with design guidelines and incentives that will enable farming to continue as a viable economic activity, will allow the retention of open space, and will protect, preserve, and enhance the other components that contribute to the character of the area.

Residential land uses make up a significant portion of land uses found in the rural portion of the County. The patterns of residential land use vary considerably throughout the area, from compact historical communities to dispersed homesites (See Figure 2).

A number of new zones should be created that will



- Structures with varying setbacks
- Irregular lot size
- Narrower streets
- Connecting Streets
- Open space

Figure 2
Settlement Pattern: Concord, Tennessee

strengthen the traditional patterns of residential land use in the area. The clustering of residences on portions of tracts will be the primary method of preserving open space in residential developments. Strict design guidelines that will enable the components that contribute to rural character to be preserved, protected, and enhanced should accompany these new zones.

Commercial activities have historically played a limited role in the rural areas of the County. Small stores, mills, and shops are examples of the historical commercial activities that occurred in the area. As the County changed, the needs of the residents also changed. Grocery stores, gas stations, and a host of other commercial activities are now sought by some residents.

This demand has been primarily met in two ways; the first being the long strips of commercial development that occur on major arterials such as Asheville highway. The second is the concentration of commercial activities at interstate interchanges and the intersection of major arterials. Examples include the I-40/Strawberry Plains interchange and the Emory Road/Maynardville Pike intersection. These patterns have for the most part evolved over the past few decades and bear little relationship to the traditional patterns of commercial location.

As a result of the lack of transportation and the emphasis placed on pedestrian access, most historical

commercial operations were located near where the residents lived, often inside the community itself. Examples of this pattern can be found in Concord and Riverdale (See figures 3 and 4). Small commercial operations were often placed at the intersection of major roads that passed through the community. This pattern differs from the current practice of locating commercial activities at the intersection of major arterials in that there are seldom adjacent residences, thereby reducing any chance at a sense of community.

As a result of the commercial patterns currently occurring, either new commercial zones should be created for rural areas or strict design guidelines should be placed upon the existing planned commercial zones. Knox County currently differentiates between activity centers based on the size of the area they serve. It is recommended that these designations be developed into new planned commercial zones to be applied in rural areas. These new zones should have accompanying design guidelines to help ensure the preservation, protection, and enhancement of the components contributing to the character of the area.

Office developments have only begun to play a role in land use in the rural sections of the County in recent decades. Office activities range from insurance agents, dentists, lawyers, etc. to major complexes (Magnavox offices in east Knox County).

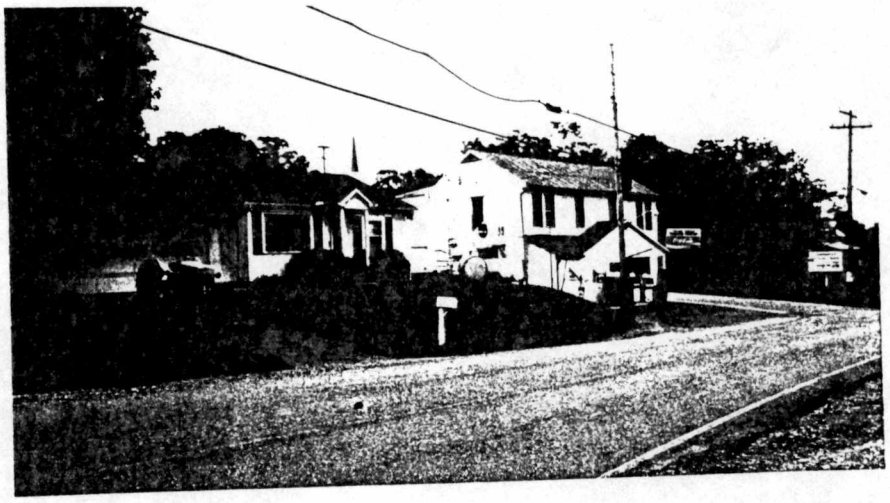


Figure 3
Commercial Operation: Thorngrove Community



Figure 4
Commercial Operation: Kodak Community

The contemporary pattern has been to locate these offices in the commercial strips along major roadways, again failing to play a positive role in community development. Office activities generally do not have the impact that commercial operations do and thus prove well-suited for residential areas. This makes them ideal for placement in or near compact communities, often serving as a transition between commercial centers and residences.

It is recommended that new rural zones be created that divide the office activities into classes similar to the commercial classes alluded to earlier. The new zones should have accompanying design guidelines that ensure the developments fit well into their surroundings and help to preserve, protect, and enhance the components making up the character of the area.

Traditional industrial uses have varied in the rural portions of the County from mining to quarrying, to mills. Recently light manufacturing, assembly, and fabrication operations have been added to the area. Much of today's industrial operations are located in industrial parks in the County. The existing industrial parks are located near areas of historical industrial activity (in east Knox County near quarries and in northeast Knox County near mines), and therefore bear a relationship to traditional use patterns.

The existing industrial parks should be the preferred location for additional industrial activities in the rural

areas of the County and their design should not detract from the character of the area. Industrial development not located in the parks should be highly restricted and subject to stringent design guidelines and performance standards.

Historical examples of industrial operations (mines and quarries), that are no longer in active use need to be examined as to the role they will play in the future development of the County. Little literature exists in this area and this situation poses an area of significant research opportunities.

The final land use that will be examined here is open space. Open space in the County has traditionally been made up of agricultural lands, ridgelines, and areas unsuitable for development. This open space has been continually identified as a significant component of rural character and should therefore be preserved, protected, and enhanced. This preservation, protection, and enhancement should come via the establishment of a greenway system, park system, and open space. This should be accomplished through stringent design guidelines, incentives, and a host of other programs ranging from outright purchase of lands to easements.

Environmental features including ridges, watercourses, views, etc., all need to be preserved, protected, and enhanced. This will be accomplished primarily through the placement and enforcement of stringent design guidelines upon all developments occurring in rural areas and through

programs similar to those mentioned above.

Patterns of Spatial Organization

To ensure that traditional patterns of spatial organizations are preserved, protected, and enhanced a number of design guidelines should be established. In addition to guidelines and the earlier mentioned programs ensuring the continuity of traditional land uses will assist in maintaining this component of rural character. Guidelines must range in their scope as the patterns of spatial organization do. There are patterns on the regional level (farmland located along the major rivers) and at the site level (arrangement of structures). Guidelines should recognize these differences and be established accordingly.

Response to the Natural Environment

Examples of this component should be preserved, protected, and enhanced through design guidelines and through the maintenance of both traditional lands uses and traditional patterns of spatial organization. Examples of this component include size of farms, placement of farms, types of crops raised, etc.

Transportation Networks

Examples of this component should be preserved, protected, and enhanced through design guidelines attached to new developments. Adjustment of standards for road construction and redevelopment will also play major roles. Smaller-scale elements including farmroads and foot trails

will be preserved, protected, and enhanced through design guidelines and through the establishment of the greenway and park system. In very significant cases purchases or easements may be used to ensure the protection of these elements. The emphasis will be placed on safety for improvements in the circulation network in rural areas (See figures 5 and 6).

Boundary Demarcations

Examples of this component should be preserved, protected, and enhanced primarily through design guidelines in combination with the continuation of traditional land uses and patterns of spatial organization. Primary examples in the County include tree lines and fences. Significant examples may be protected through other means including purchase and easements (See figure 7).

Vegetation Related to Historical Land Uses

Examples of this component should be preserved, protected, and enhanced primarily through design guidelines and the continuation of traditional land uses and patterns of spatial organization. Primary examples in the County include tree lines, shrubs, and isolated trees. Significant examples may be protected through other means including purchase and easements.



Figure 5
Farmroad: Southwest Knox County



Figure 6
Kodak Road: East Knox County

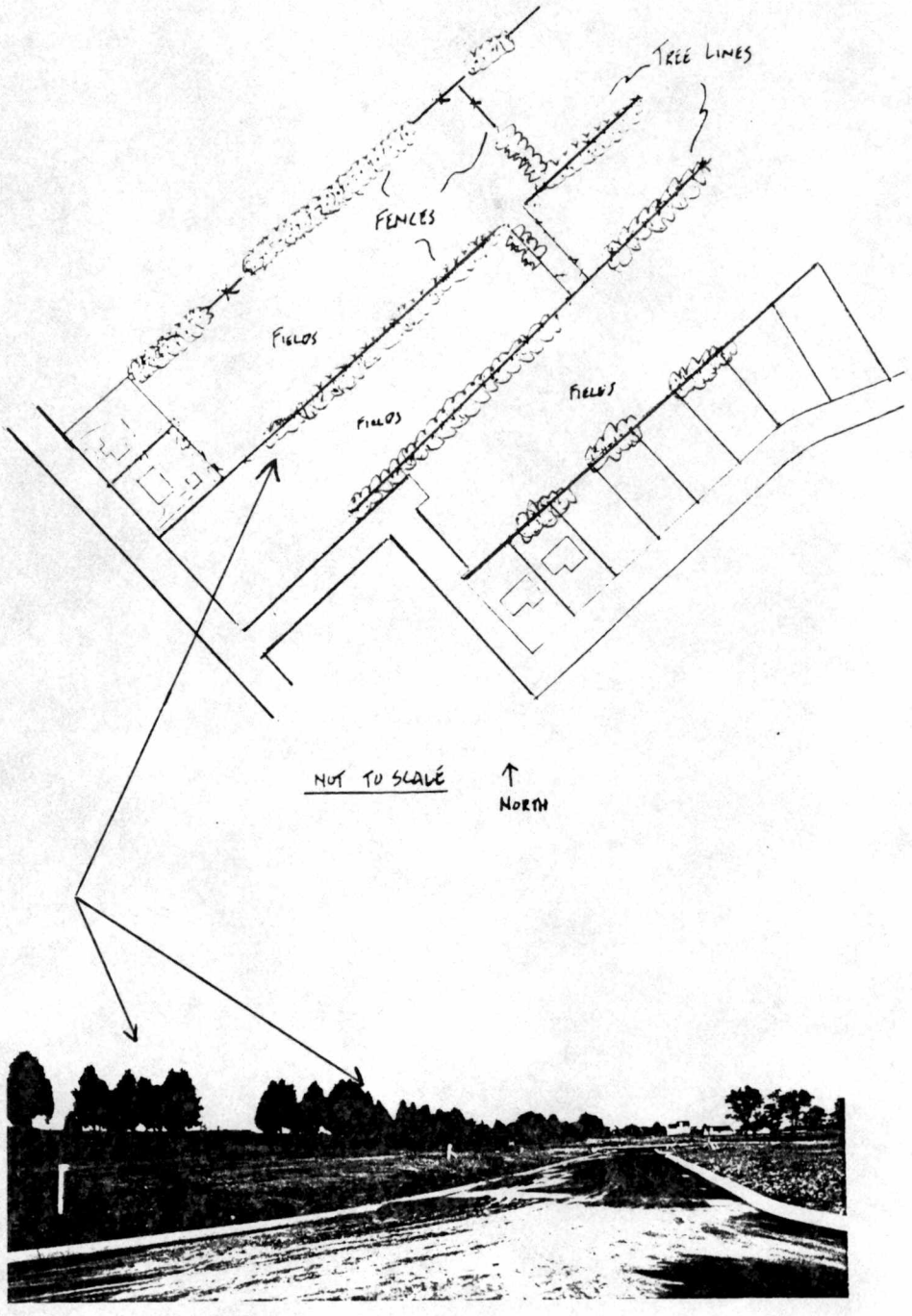


Figure 7
Tree Line: Southwest Knox County

Buildings and Objects

Examples of this component should be preserved, protected, and enhanced through design guidelines, continuation of traditional land uses and patterns of spatial organization. Examples include cantilever barns, farmhouses, historic sites, ferry landings, etc. Significant examples may be protected by means including purchase, state or federal protection, etc.

Building Clusters

Examples of this component should be preserved, protected, and enhanced through design guidelines and continuation of the traditional patterns of spatial organization. Examples in the County include the clustering of structures on farmsteads and the clustering of structures on church sites. Significant examples may be protected by other means including purchase or protection form outside sources such as state or federal organizations (See figures 8 and 9).

Small-scale Elements

Examples of this component should be preserved, protected, and enhanced through design guidelines. Examples of this component in the County include treelines, abandoned farm equipment, etc. Significant examples may be protected by other means including purchase or protection from sources at the state or federal level.

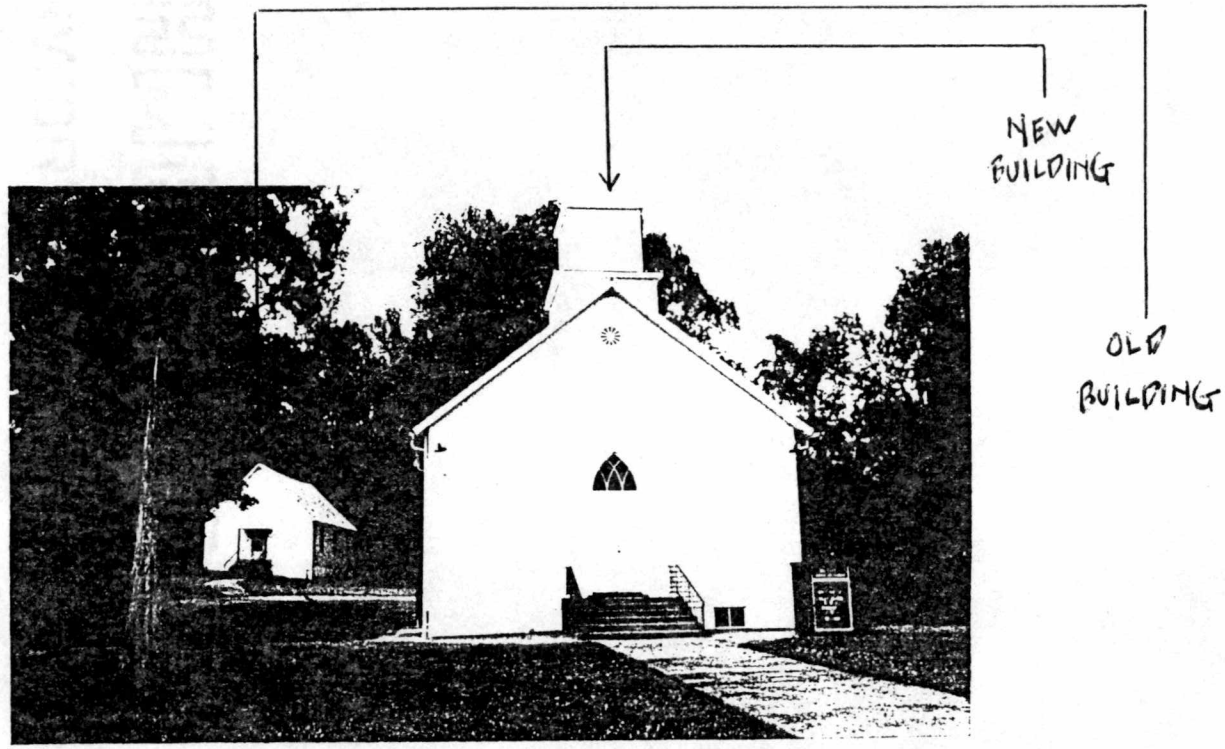


Figure 8
Church: Kodak Community

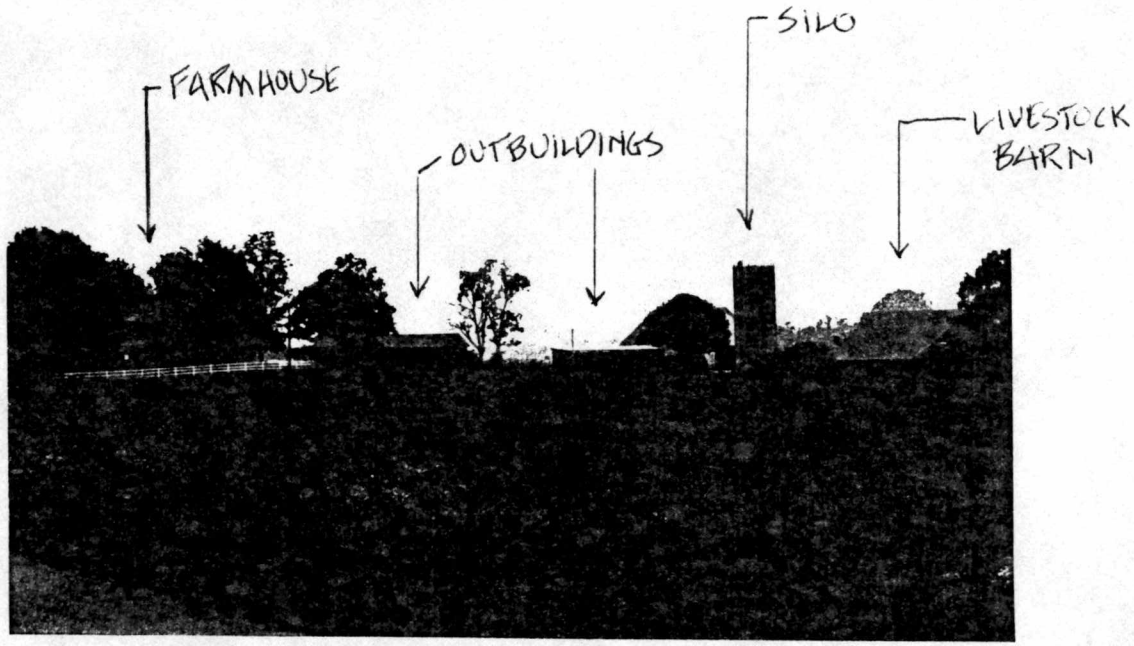


Figure 9
Farmstead: Kodak Community

Views and Vistas

Examples of this component should be preserved, protected, and enhanced through design guidelines and continuation of traditional land uses and patterns of spatial organization. As this component can involve regional issues (views of distant mountains, etc.) programs that involve cooperation between various local governments should be investigated as should the involvement of outside resources (state, federal, or private) (See figures 10 and 11).

Geologic Phenomena

Examples of this component should be preserved, protected, and enhanced through design guidelines. Examples in the County include bluffs, ridges, sinkholes, etc. Significant examples may be protected by other means including purchase or easement.

Environmentally Sensitive Areas

Examples of this component should be preserved, protected, and enhanced through design guidelines and performance standards. Examples in the County include streams, slopes, etc. Significant examples may be protected by other means including purchase or easement.

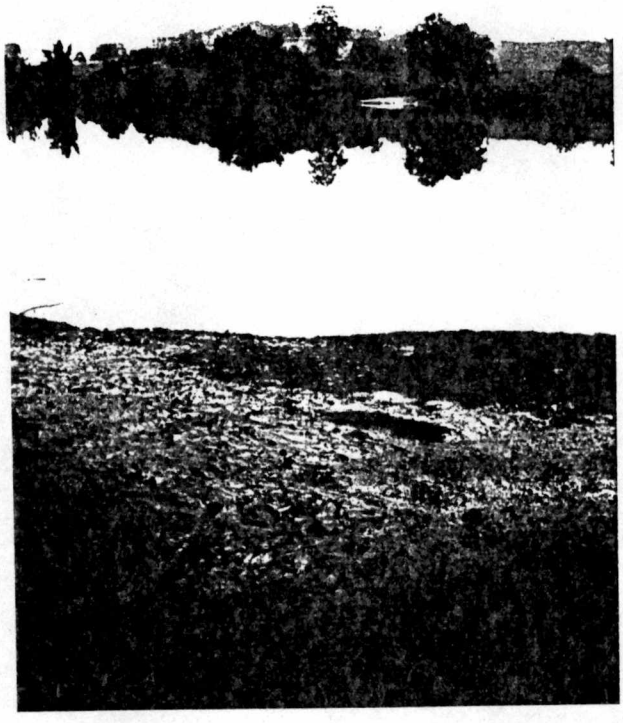


Figure 10
Significant View: East Knox County



Figure 11
Significant Vista : Thorngrove Community

ZONING RECOMMENDATIONS

As mentioned in the preceding section, it is recommended that a number of new zones be created in the rural areas of Knox County. New zones should be created for agricultural, residential, commercial, and office uses. This recommendation is based on three different factors. The first is that the existing zones, particularly in the case of the agriculture zone, are simply inefficient in providing for the preservation , protection, and enhancement of rural areas. The second is the weight that zones carry. Because zoning represents law, new zones must be adhered to unless rezoning or variances can be secured. This provides more weight than voluntary programs and incentives. The third is that MPC does not appear to have a negative view toward the creation of new zones; in fact they seem to be in favor of such a move (Carberry, 1994).

An alternative to creating new zones might be to create various "districts" of character to be combined with zone districts. Examples include creating a district that is to be suburban in character, a district that is to be rural in character, or a district that is to be urban in character. Policies, regulation, and incentives are then stated and implemented to ensure these areas are maintained as specified. Limiting or providing public utilities, changing taxation policies, design guidelines, etc. are examples of the types of programs and policies that would need to be

implemented to establish these areas. Reasons for not selecting this alternative include the high level of political involvement required and the perception of "big" government dictating a type of "social engineering". These programs would work best in areas with a very strong populace support (Loudon County, Virginia is an example where rural districts have been established that have a number of guidelines and regulation designed to preserve the rural character of those districts), and in areas where direct political involvement can be assured. Though Knox County has citizen support for a rural character preservation program it is rather limited at this point and likely does not represent the level needed to carry out such a large-scale effort. At no time has a political figure in Knox County publicly stated that a rural character preservation program was needed. This is not to suggest that political figures in Knox County would not support such a program, but merely that they do not view it as a matter so critical that they need to take a position publicly on it yet.

From a land use perspective the creation of various districts of use would prove very difficult to implement in Knox County. This is true because many portions of the county have pockets of rural lands imbedded in suburban areas. Land along Northshore Road is an example of this situation. Only the extreme edges of the County could be

said to be completely rural. Though the tracts are often found in suburban areas they play a very important role in the character of the area and if converted to suburban uses would dramatically alter that character

Based on the reasons mentioned above, and on the fact that a relatively conservative attitude prevails in MPC and in Knox County in general, the creation of new zones seems to be the most applicable in the situation currently faced by Knox County. Knox County has in the past created new zones and MPC is well versed in the procedures of doing so and should therefore have a high degree of success. The zones recommended to be created are as follows:

AP - Agriculture Prime - This zone should be reserved for land where the highest use is indeed agriculture. This zone should be applied to areas where soil conditions are prime for intensive agriculture (cropland, etc.), as defined by the Soil Conservation Service, and should be very limited in the uses allowed. Later sections of this report will specify the uses allowed and the design guidelines attached to this and the following zones.

AM - Agriculture Marginal - This zone should be reserved for land located on marginal soils as described by the U.S. Soil Conservation Service. Soils may support limited crop production and may accommodate grazing and the raising of livestock, poultry, etc.

AG - Agriculture General - This zone should be used for land

that may be located on soils that are marginal or below for crop production as defined by the U.S. Soil Conservation Service. The zone would be used for orchards, greeenhouses, nurseries, etc.

RN - Rural Neighborhood - This zone should be located in rural areas of the County on tracts of 15 acres or more and containing between 5 and 35 dwelling units. The purpose of this zone is to provide for residences that occur in a pattern based on historical patterns of community development in Knox County. The zone is to accommodate somewhat denser areas of development surrounded by open space.

RNC - Rural Neighborhood Commercial - This zone should be located adjacent to areas zoned Rural Neighborhood. The purpose of this zone is to provide commercial and institutional services to the immediate residents.

RCC - Rural Community Commercial - This zone should be located either adjacent to or in close proximity to an area zoned Rural Neighborhood. The purpose of this zone is to provide commercial, business, and institutional services to the residents of nearby neighborhoods.

GUIDELINES AND STANDARDS

The purpose of the guidelines and standards listed below is to preserve, protect, and enhance open land, natural areas, and rural character that would be lost under conventional development. The guidelines and standards are

designed to allow a reasonable amount of residential and commercial growth in the form of small compact neighborhoods of residences and businesses in a rural open setting. These developments should be located and designed in a manner so as to reduce the perceived intensity of development, preserve natural features, and provide a sense of community pride as well as a sense of place.

The guidelines and standards are designed so as to achieve the policies listed earlier in this document in achievement of the goal of the rural character program. In addition, they serve to clarify exactly what is appropriate development in the newly created rural zones listed above. The exact definition of guidelines and standards is to be determined by representatives of the subject municipality. The exact roles of the various governmental organizations in regard to the following guidelines and standards needs to be established by the subject municipality as well. The guidelines and standards draw heavily from the Land Preservation District that was created by the Montgomery County Planning Commission in Montgomery, Pennsylvania (Montgomery County Planning Commission, 1991). The guidelines and standards have been modified based upon Knox County's situation.

PERMITTED USES

Land in rural areas of Knox County may be used for the following purposes:

A. Single-family detached dwelling units:

1. On tracts of 15 acres or more, the following dwelling types are permitted under the new Rural Neighborhood (RN) residential zone, at a maximum of 1DU/3 net acres with at least 50% of the tract remaining as open space (excluding yard requirements).

a. Traditional single-family detached dwelling units.

b. Creative dwelling units (including village houses, zero lot-line houses, etc.).

2. On tracts of less than 15 acres in size, existing at the date of adoption of the rural character program.

a. Traditional single-family detached dwelling units at a maximum density of 1DU/3 acres, with 75% of the lot remaining as open space.

B. Two-family detached dwelling units.

C. Open space as specified above.

C. The following non-residential uses.

1. Agricultural activities of the following type.

a. Under the newly created Agriculture Prime (AP) zone.

i. The cultivation, harvesting, and sale of crops, and related farm products.

ii. Roadside stands for the sale of crops

and related farm products.

iii. Signs as permitted by the sign design guidelines established in this document.

iv. Public utilities, such as transmission lines, substations, railroad lines, public sewer, water, and natural gas lines.

v. Uses incidental to any of the above uses, including parking of not more than two commercial vehicles and trailers used by the residents in their farming activities.

vi. The raising and sale of livestock along with the associated pasture and grazing land.

b. Under the newly created Agriculture Marginal (AM) zone.

i. All uses allowed under the AP zone.

ii. Commercial dairies, rabbit, goat, and other animal or fishing raising farms, egg-producing ranches, and farms devoted to the hatching, of chickens, pigeons, turkeys, and other poultry.

c. Under the newly created Agriculture General (AG) zone.

i. All uses allowed under the AP and AM

zones.

ii. Nursuries, greenhouses, and related horticultural uses.

2. Open spaces uses, primarily passive in nature, including wildlife sanctuary, forest preserve, nature centers, etc.

3. Parks and recreation areas for non-intensive uses, including golf courses, hiking, bicycling, horse trails, picnic areas, athletic fields, etc.

4. Activities of the following type:

   a. Under the newly created Rural Neighborhood Commercial (CRN) zone (See figure 12).

      i. Neighborhood level commercial developments including small grocery stores, day care centers, etc.

      ii. Business offices including lawyers, dentists, real estate, etc.

      iii. Institutional uses including libraries.

   b. Under the newly created Rural Community Commercial (CRC) zone.

      i. Community level developments including shopping centers, office supply businesses, grocery stores, etc.

      ii. Business offices including telemarketing operations, company headquarters, etc.

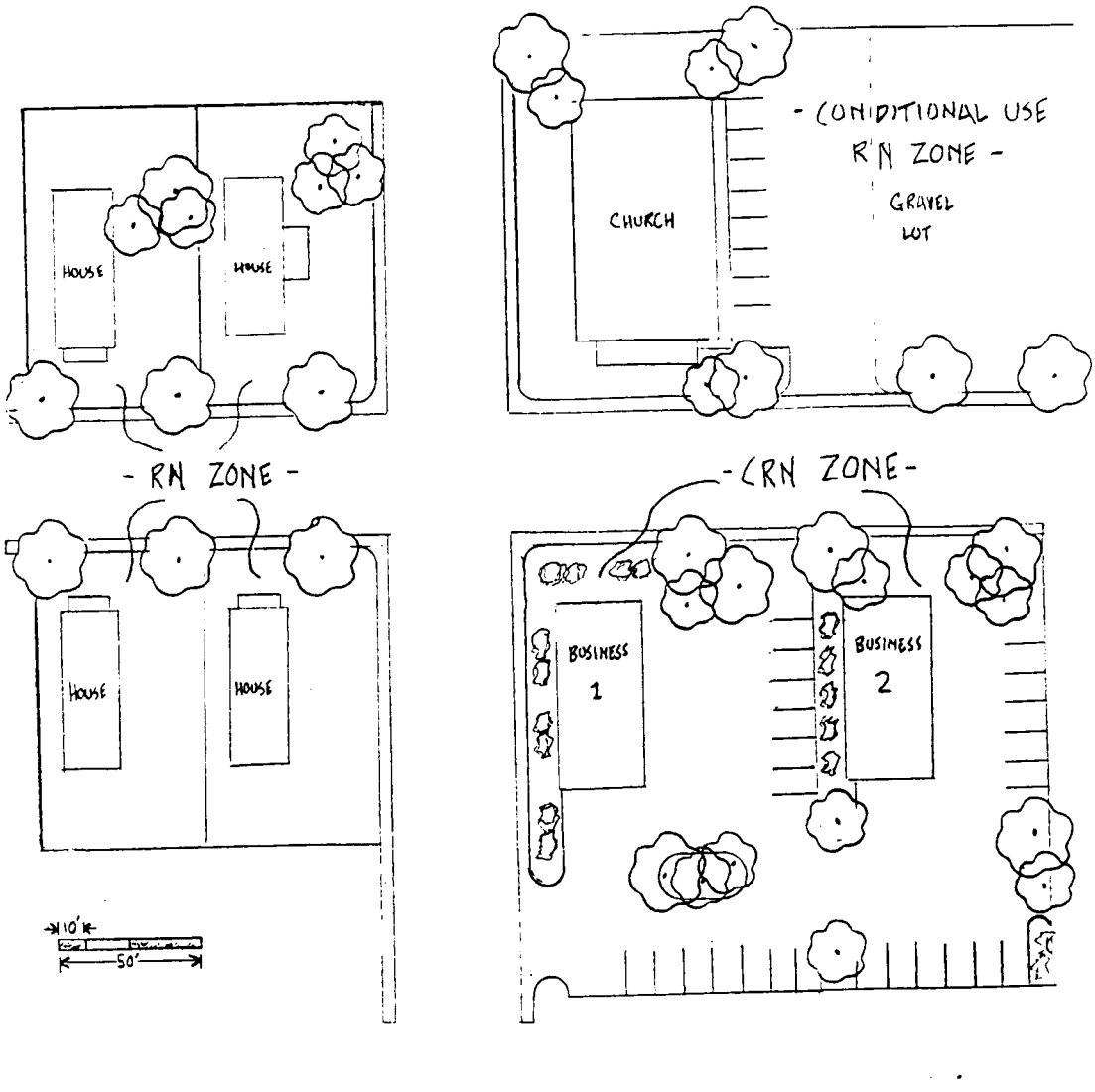


Figure 12
Spatial Organization of RN and CRN Zones

iii. Institutional uses including libraries, satellite health clinics, community recreation centers, etc.

iv. All uses permitted in the (CRN) zone.

C. Accessory uses on the same lot with and customarily incidental to any permitted use.

INVENTORY AND ANALYSIS

The initial application for any development, with the exception of traditional single-family detached developments on tracts of 5 acres or less, shall include an analysis and inventory of the site. The analysis and inventory shall come in the form of a written report and graphic representation. The following elements shall be inventoried and mapped in sufficient detail to allow evaluation of the plan by the planning staff relative to the goals and policies of the rural character program.

A. Physical Resources: Identification of resources associated with the natural environment of the tract, including geology, topography, soils, hydrology, and vegetation. These features shall be mapped at a scale of no smaller than one inch equals 100 feet and shall be briefly described. The maps shall include.

1. Topographic contours at two-foot intervals, showing slopes.
2. Soil types and a table identifying soil characteristics relating to agricultural

capability, seasonal high water table, depth to bedrock, and suitability for on-site waste disposal systems.

3. Hydrologic characteristics of the site, including surface waterbodies, floodplains, and wetlands.

4. Vegetation on the site, defining location and boundaries of woodland areas and vegetation associations in terms of species and size.

B. Land use and associated activities: Current land use occurring on the site, associated activities, and all buildings and structures and their arrangement on the site.

C. All transportation networks existing on the site including roads, trails, etc.

D. All boundary demarcations found on the site including tree lines, fences, stone walls, etc.

E. All small-scale elements of a non-temporal manner found on the site.

F. Visual Resources: Scenic views and vistas onto the tract from surrounding roads and public areas, as well as views of scenic features from within the tract.

G. Context: General outlines of buildings, land use, and natural features within 500 feet of the tract. Must be presented at a scale of no smaller than one inch equals 400 feet.

NEIGHBORHOOD DESIGN GUIDELINES

The following guidelines apply to all residential developments falling in the rural residential zone RN. This excludes tracts of less than 5 acres.

A. All lots shall be clustered into neighborhoods that shall contain at least five lots but should not exceed 35 dwelling units. The neighborhood shall be surrounded by open space.

B. Neighborhoods are defined by the outer perimeter of contiguous lotted areas or abutting roads, and may contain lots, roads, and neighborhood open space.

C. A development may contain one or more neighborhoods.

D. Neighborhoods shall be located on areas of the tract that are relatively free of sensitive environmental features. The structures in any neighborhood shall not be placed in or on:

    1. Floodplains or wetlands

    2. Excessively steep slopes (over 25%).

E. Disturbance to woodlots, hedgerows, trees, and other significant vegetation shall be minimized.

F. Neighborhoods shall be defined and separated by open space in order to provide direct access to open space and privacy to individual yards.

G. Views of the neighborhoods from exterior roads shall be minimized by the use of changes in topography, existing vegetation, or additional landscaping.

H. Neighborhood open space requirements (50% of the site)

can be partly met (not to exceed 50% of the required open space) by stormwater detention or retention systems, parks or greens, etc. May not include yard requirements.

I. Existing examples of traditional transportation networks should be incorporated into the design of the development (trails, farmroads, etc.).

J. Existing examples of boundary demarcations should be incorporated into the design of the development (treelines, stonewalls, fences, etc.).

K. Existing examples of vegetation related to land use should be incorporated into the design of the development (woodlots, orchards, hedgerows, etc.).

L. Existing structures and objects should be incorporated into the design of the development (farmhouses, barns, bridges, etc.).

K. The integrity of existing clusters of structures and objects should be protected in the design of the development.

L. Existing examples of small-scale elements that are non-temporal in nature should be incorporated into the design of the development.

M. Structures themselves should be built of materials traditionally used in the area and their massing, placement on the lot, and gable orientation should correspond to traditional practices of the area.

N. Churches may be allowed in the zone as a use on review.

Open Space Standards

Under the rural character program, 50% of each tract is required to be set aside as protected open space. This open space may be common land or lands protected with restricted convenants or with deed restrictions. The open space requirements shall not include the required yards or areas already designated as unbuildable due to environmental constraints. This open space shall meet the following standards:

A. The following uses are permitted in the open space:

1. Conservation of open land in its natural state (woodlots, managed meadows, etc.).
2. Agricultural uses, including the raising of crops or livestock, and associated farm buildings.
3. Parks, greens, etc.
4. Passive recreation including trails, picnic areas, community gardens, etc.
5. Sewage disposal systems for individual lots or the entire neighborhood.
6. Pasture for recreational horses and associated buildings.
7. Easements for drainage, access, sewer, or water lines, or other public purposes.
8. Stormwater detention or retention facility for the

subject development or as part of a regional system.

9. Parking areas of ten or fewer spaces where necessary to serve active recreation facilities.

10. Above ground utility and road rights of way, except that their land areas shall not count toward the required 50% minimum total open space requirement.

11. Estate lots, meeting the following standards:

    a. A minimum size of 5 acres, of which a maximum of one acre may be developed with a single family detached dwelling and associated uses. Only the undeveloped portion of the estate lot may be used to meet the 50% open space requirement.

    b. Estate lots shall be restricted by permanent deed restrictions against further subdivision.

    c. Dwellings on estate lots that are part of a neighborhood development, shall be counted toward the maximum density permitted on the tract.

    d. Dwellings on estate lots shall not encroach upon environmentally sensitive areas, and shall not infringe upon scenic views from exterior roads or from other dwellings located in the neighborhood.

B. Open space shall be located and designed to:

1. Protect site features identified in the inventory and analysis.
2. Maximize common boundaries with open space on adjacent tracts.

C. Safe and convenient pedestrian and maintenance access shall be provided to any common open space areas.
1. Each neighborhood shall provide at least one access point per 25 lots to any common space.
2. Access to common open space used for agricultural purposes may be restricted for public safety and to allow uninterrupted agricultural activities to occur.

D. The following are prohibited in common open space areas:
1. Use of motor vehicles except within approved driveways, parking areas, and designated trails. Maintenance, law enforcement, emergency, and farm vehicles are excluded from this restriction.
2. Cutting of healthy trees, regrading, topsoil removal, altering, diverting, or modifying water courses or sinkholes, except in compliance with a land management plan designed according to sound principles in accordance with common practices.

E. Natural features shall generally be maintained in their natural condition, but may be modified to improve their appearance, functioning, or overall condition, in accordance with common practices. Permitted

modifications might include:

1. Reforestation;
2. Woodland management;
3. Meadow management;
4. Buffer area landscaping;
5. Streambank protection;
6. Erosion control; and
7. Wetlands management.

F. Ownership and maintenance programs for common open space must be submitted with the preliminary and final plats of the development.

Ownership and Maintenance of
Common Facilities and Open Space

A. Ownership and maintenance of common facilities and open space shall be provided for in one or more of the following methods:

1. Fee simple dedication to the County or other recognized organization, though the County may reject the dedication.
2. A condominium association
3. A homeowners association
4. Dedication of easements to the County or other recognized organization, though the County may reject such dedications.
5. Transfer to a private conservation organization.
6. Deed restrictions and restrictive covenants.

B. Unless otherwise agreed to by the County, the cost and responsibility of maintaining common facilities and open space shall be borne by the property owners, condominium association, or homeowners association in a manner as described in the ownership and maintenance program submitted to the County with the development plats. Common wastewater treatment systems shall be constructed by the developer at his expense following guidelines established by the County planning department, the County health department, and the local utility provider. Upon successful completion, the system falls under the ownership of the property owners, homeowners association, or condominium association, whom will be solely responsible for ensuring its safe and efficient operation.

Density and Lot Dimension Standards

A. The following standards in Section A apply to traditional single-family detached lots either in neighborhoods or as a conditional use or on lots of 5 acres or less (See Table 1 and Figure 13).

The following standards in Section B apply to creative dwelling types allowed only in neighborhoods. Any of these dwelling types may be combined in a single neighborhood (See Table 2 and Figure 13).

B. Creative single-family detached dwellings: (Note: Two examples are provided, village house and zero lot-line

house, other forms exist and standards should be designed for them, when appropriate.

Table 1: Traditional Single-Family Detached Dwellings.

		Neighborhood	Non-Neighborhood
1.	Minimum Tract Size	5 Acres	---
2.	Minimum Open Space	50%	---
3.	Minimum Lot Size	10,000 sq. ft.	40,000 sq. ft. (unsewered) 25,000 sq. ft. (sewered)
4.	Minimum Lot Width	75 feet	150 feet
5.	Minimum Front Yard	25 feet	40 feet
6.	Minimum Side Yard	10 feet	25 feet
7.	Minimum Rear Yard	25 feet	40 feet
8.	Maximum Building Coverage (% of lot area)	18%	5%

Source: Montgomery County Planning Commission, "Land Preservation District: Model Zoning Provisions." 1991, p. 8.

Table 2: Creative Detached Dwellings.

		Village House	Zero Lot-Line House
1.	Minimum Tract Size	15 Acres	15 Acres
2.	Minimum Open Space	50%	50%
3.	Maximum Density	1DU/3 Net Acres	1DU/3 Net Acres
4.	Minimum Lot Size	6,000 sq. ft.	6,000 sq. ft.
5.	Minimum Lot Width	60 feet	50 feet
6.	Minimum Front Yard	20 feet	20 feet
7.	Minimum Side Yard	10 feet	0(*)
8.	Minimum Rear Yard	25 feet	25 feet
9.	Maximum Building Coverage (% of lot area)	18%	18%

(*) A five foot wide maintenance easement on the lot adjacent to the zero side yard is required, therefore one side yard of at least five foot may be required.

Source: Montgomery County Planning Commission, "Land Preservation District: Model Zoning Provisions." 1991, p. 8.

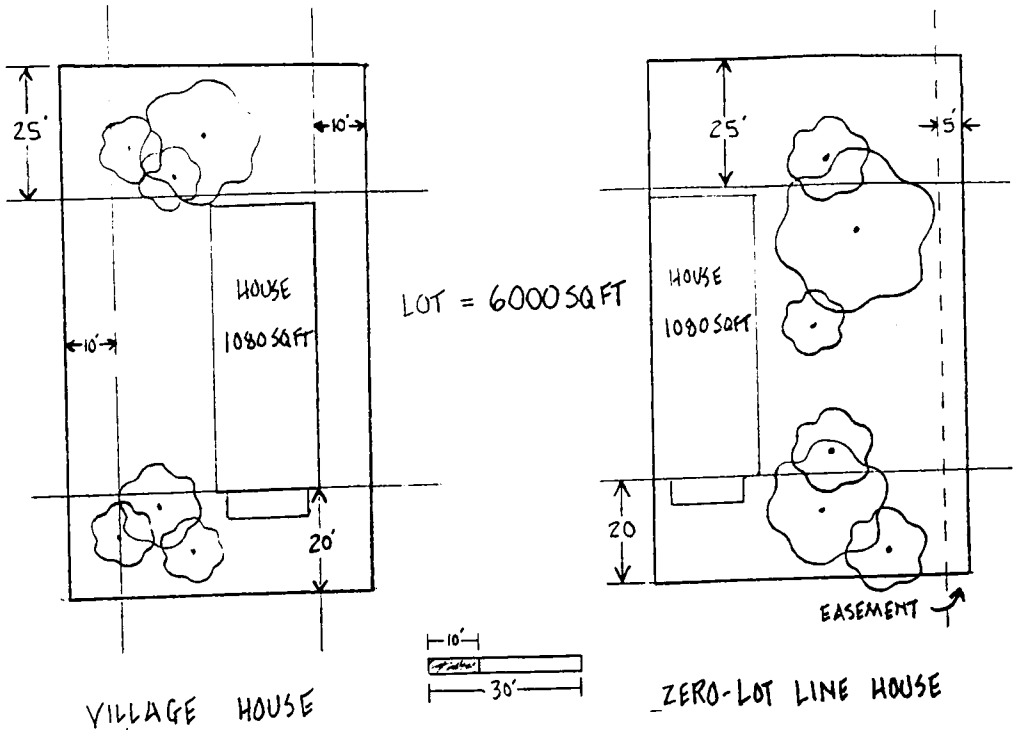


Figure 13
Lot and House at Minimum Standards

Sewage Treatment Facilities

A. All developments within rural areas of the County shall be provided with adequate treatment facilities in conformance with Knox County regulations and the alternatives allowed by Knox County.

Alternatives may include:

1. Public sewers;
2. Individual on-lot systems; and
3. Community systems.

B. All neighborhoods shall be served by a public water system of adequate capacity to serve all developments within it on an on-going basis.

Subdivision Street Design

Many of the residential subdivision street standards were created years ago and were designed to accommodate suburban growth. These standards, if applied to rural areas accomplish exactly that - suburban growth. It is recommended that new street design standards be established for the areas zoned under the new rural residential zone (See figure 14). The new standards shall include the following:

A. Pavement should be limited to 18-20 feet.

B. The road right-of-way should be limited to 26-28 feet.

C. Appropriately designed swales and drainage grates shall be allowed in place of curbs and gutters provided the following:

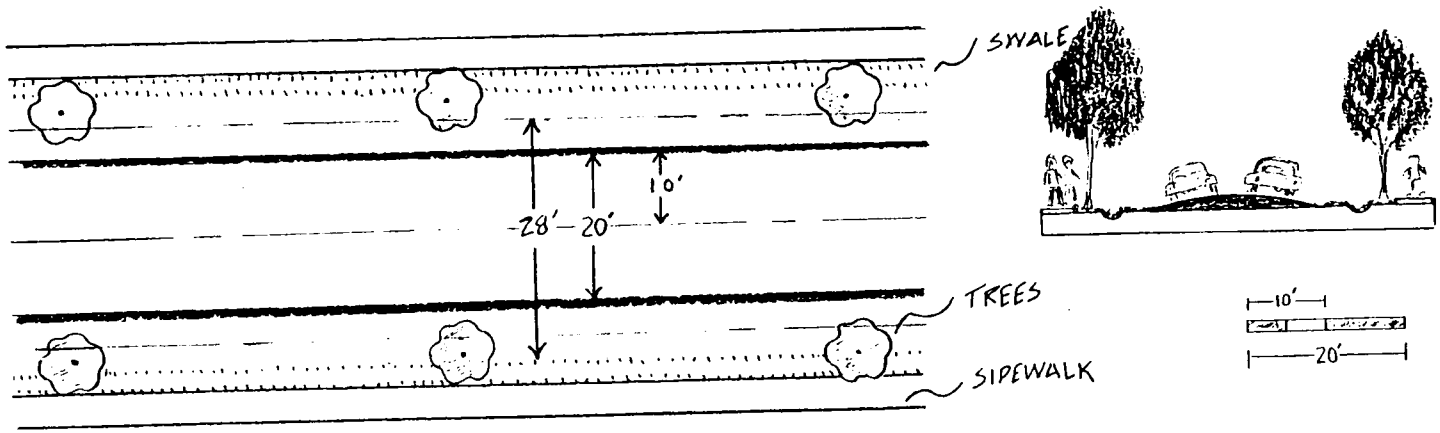


Figure 14
Rural Neighborhood Street Design

1. The swale is designed to minimize erosion.
2. Provisions for the maintenance of the swale have been stated and approved by Knox County officials.

E. The use of cul-de-sacs should be discouraged and streets should connect whenever possible.

F. Common drives shall be allowed for no more than four dwellings per driveway.

G. The installation of sidewalks should be encouraged. The sidewalks should be placed behind the tree plantings.

Conditional Uses

In order to develop single-family detached dwelling as a conditional use within rural areas of the County, zoned Rural Residential Neighborhood, the applicant must demonstrate to the County's satisfaction that all the following conditions are met, where applicable:

A. The tract in question is unsuitable for neighborhood development due to factors such as the size or shape of the tract or the location of natural features.

B. Where the property is wholly or partially in agricultural use, that the property is not feasible for continued or future agricultural use due to its physical characteristics. Existing features such as soil conditions, wooded areas, the tract's shape or size, past farming activities, and suitability for efficient use of farm machinery shall be considered.

C. The proposed development will not have a disruptive

effect on the existing topography, floodplains, wetlands, woodlands, or other natural features on the site.

D. A complete environmental and visual inventory of the site has been completed and submitted to the County.

E. The proposed development shall be designed so as to minimize views of the dwelling from exterior roads and to avoid strips of lots along roads.

F. The tract can be developed in a manner consistent with the goal and subgoals of the rural character program.

The following guidelines and standards apply to all commercial, office, and institutional developments in the rural sections of the County, that are identified by the newly created rural commercial zones.

A. All neighborhood level activities occurring under the newly established rural neighborhood commercial zone shall be located in the neighborhood or at the edge of the neighborhood so as to be within a reasonable walking distance of all residences in the neighborhood.

B. All community level activities occurring under the newly established rural community commercial zone shall be located on the edge of a neighborhood or in a stand-alone development located near a number of neighborhoods. The activities should to be located within a fifteen to thirty minute drive of all residences in the supporting neighborhoods.

C. A neighborhood may contain one or more commercial operations.

D. Activities shall be located on areas of the tract that are relatively free of sensitive environmental features and are most accessible to the residents of the neighborhood. Structures shall not be located in or on:

1. Floodplains or wetlands
2. Excessively steep slopes (over 25%)
3. Open space

E. Disturbance to woodlots, hedgerows, trees, or other significant vegetation shall be minimized.

F. Views of the activities from exterior roads shall be minimized by the use of changes in topography, existing vegetation, or additional landscaping.

G. Existing examples of boundary demarcations on the site should be incorporated into the design.

H. Existing structures and objects should be incorporated into the design.

I. Existing examples of small-scale elements on the site should be incorporated into the design.

J. Structures themselves, should be built of materials traditionally used in the area, and their massing, placement on the lots, and gable orientation should correspond to traditional practices of the area.

K. 25% of the tract for all developments occurring in the rural commercial zones shall be maintained as open space

(This does not include areas of the site that are deemed undevelopable due to environmental constraints).

Sign Guidelines and Standards

Due to the fact that neighborhood and community level comercial activities will occur in close proximity to residences, stringent guidelines and standards for signs are needed. Signs placed in the rural commercial zones shall be subject to a review by the planning staff, who will use the following guidelines in their review:

A. The size of a sign should be in scale with surrounding buildings, and street and should be related to the speed of traffic on the adjacent roadway.

B. The colors used on the sign should bear a connection to those used on the structure.

C. The materials used in the construction of the sign should be compatible with the architecture of the building.

D. Signs located at the neighborhood and community level shall bear a resemblance with one another in terms of size, shape, and height.

E. Four types of signs are recommended for neighborhood level and community level activities. They are: freestanding signs, projecting signs, wall signs, and window signs.

   1. A freestanding sign shall be supported be an upright permanently anchored in the ground.

a. The size of the sign face shall be limited to a maximum of 10 sq.ft. Height of the sign face shall not exceed 7 feet.

2. Projecting signs shall be attached to the structure and project more than 18 inches from a wall of the building.

   a. The area of the sign face shall be limited to 10 sq.ft. and should project no more than 5 feet from the wall of the building. The bottom of the sign should be at least 10 feet above the ground.

3. Wall signs are parallel to any exterior wall of a building.

   a. Wall signs shall not exceed 8 sq.ft. The sign should be proportional to the wall space on which it is mounted.

4. Window signs are painted or attached to the inside surface of a window.

   a. Window signs shall be limited to 30% of total glass area of the building front.

Parking

Again, because of the close proximity of neighborhood and community level activities to residences, special attention needs to be given to parking areas (See Figure 15). Parking areas shall follow the regulations currently established by MPC with the following additions:

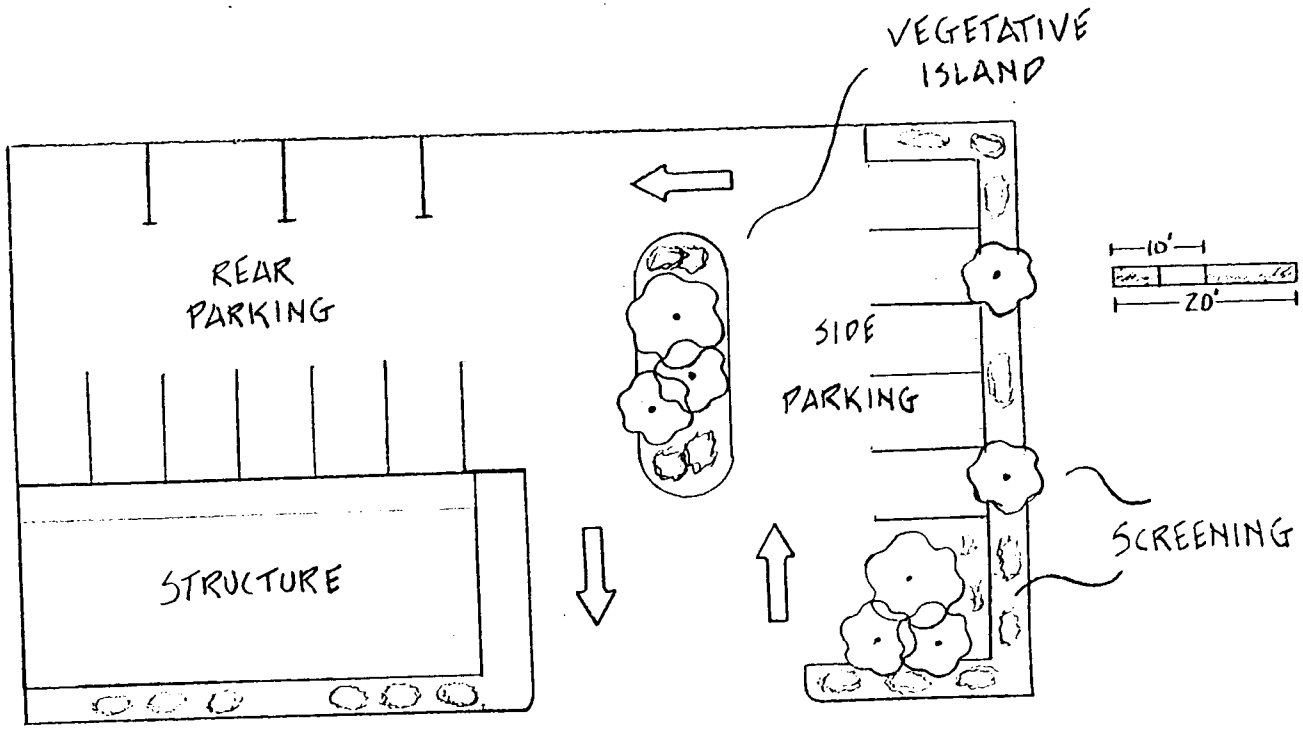


Figure 15
Parking Guidelines

A. Parking spaces shall be shielded from sight from the roadway and from the residences in the neighborhood.

1. This shielding should be accomplished through placement of the parking to the rear of the structure. If this is not possible, parking should be located to the side of the structure.

2. Parking lots shall be designed so as to minimize the uninterrupted expanse of paving. This shall be accomplished by breaking up the parking lot with vegetative islands that are planted in appropriate materials.

   a. Vegetative islands shall be a minimum size of at least one parking space.

3. Whenever appropriate, parking lots should be allowed to be constructed of permeable material.

   a. The use of permeable material shall be allowed as a use on review. The review shall be conducted by MPC and should include the following:

      i. Impact upon water runoff quality.

      ii. Impact upon erosion.

      iii. Maintenance plans.

Scenic Roads

The County shall clasify roads that are found to contribute significantly to the character of the area as Scenic Roads, upon completion of the following:

A. An inventory and analysis of the natural, historic, and visual resources that are either adjacent to the roadway or are visible from the roadway.

B. A list of recommendations on how the resources can be protected. The recommendations shall include organizations that may be consulted for aid by the County and a list of funding sources that may be available to the County.

Upon completion of the two above steps, if the County has successfully proven the value of the roadway and has provided for the protection of its future the following guidelines will be designated for the scenic road.

A. Maintain a 50 foot no-cut buffer adjacent to the road right-of-way.

B. Placement of signs of any type other than temporary road construction and emergency signs and historic markers shall be prohibited.

C. No structures or objects shall be allowed to obstruct or alter a significant resource as identified in the inventory and analysis conducted by the County.

D. The right-of-way shall not be altered except to ensure the safe passage of vehicles.

Greenways

Greenways serve as linear parks and can provide both access to common open space as well as a link between separate areas of common open space. Greenways may provide

recreational opportunities ranging from walking to running to bicycling. Greenways may also provide a transportation route for those seeking alternative ways to reach commercial centers, schools, and parks. It is recommended that MPC enact the following guidelines and standards.

A. The County should "officially" designate the greenways that are identified in the General Plan. This designation would elevate the level of greenways to that already held by roads, and other infrastructure. This would require developers to provide an easement for the development of an official greenway that runs through their property.

B. Common open spaces that are part of the 50% required open space in neighborhood developments should be connected via greenways whenever possible.

C. Construction and maintenance of a greenway shall be performed either by the developer, the County or an organization identified by the County.

D. Greenways shall be established along any streams that occur within the tract under development in rural residential zones and rural commercial zones. These greenways shall contribute toward the 50% open space requirement in the residential zones and the required open space in commercial developments.

CHAPTER 9
CONCLUSIONS AND AREAS FOR FURTHER RESEARCH

SUMMARY AND CONCLUSIONS

The intent of this thesis was to explain how Knox County could act to preserve, protect, and enhance the character of it's remaining rural areas. Through an analysis of the situation facing Knox County and a summary of the alternatives available to the County a number of alternatives were presented to the staff at MPC (See Appendix B).

The alternatives were presented to staff members in Comprehensive Planning and Engineering at MPC. Essentially, it was concluded that the staff of MPC had the technical ability to establish a rural character preservation program. MPC staff however appears to be very unsure as to how much support such a program would receive from the County Commission and the public at large. This is largely due to the conservative attitude that seems to permeate political decisions in Knoxville-Knox County.

The staff at MPC seems quite willing to recommend and encourage innovative ideas, but are rather unwilling to push the County to require that those ideas be carried out. This poses a problem in that it can lead to a very reactive rather than proactive situation. Developers are unlikely to follow the recommendations until the market demands it. As long as the market demands large single-family detached suburban homes, that is what will be built. There is

essentially nothing wrong with that, after all the U.S. prides itself on being a market-driven economy. The problem is that many home owners may be operating in ignorance, they simply are unaware that good alternatives exist. This presentation of alternatives is where MPC can play a significant role. In this role MPC has done a respectable job. A number of rural character goals made it into the final General Plan Proposal that was sent to the County Commission and staff at MPC has repeatedly used examples of the ideas espoused by Robert Yaro in their public presentations.

The problem is that staff at MPC seems content in stopping there. They have a proposal for changing the way that agricultural land is zoned, the creation of a local scenic roads program, and the preservation of open space, as well as the preservation of the character of rural communities. They currently have no programs or policies to achieve these goals, with the exception of new agriculture zones. The staff at MPC actually appears to be against many of the programs and policies that have been used throughout the country to accomplish the very goals that the staff itself has identified.

The author does not foresee MPC enacting a comprehensive rural character program under the existing situation. Until a large proportion of the populace or the local decision-makers demand that MPC take action, a

reactive attitude will continue to prevail. Another possibility is that staff members within MPC begin to push for rural character preservation themselves. Staff members have admitted that suburban subdivision standards are inappropriate for rural areas and that something needs to be done before there are no remaining rural areas in the County. The ideas are there and it may take only a couple of MPC staff members to act upon those ideas to get a program started. It is the hope of the author that the model ordinances, standards, and guidelines in this thesis will provide a basis for that action by MPC staff.

AREAS FOR FURTHER RESEARCH

Due to the fact that the preservation of rural character has only recently received a fair amount of attention in the planning community a number of areas for further research exist.

Current research has focused very little on the implementation of rural character preservation policies and goals. Very little information exists on developer reaction towards rural character preservation program. An in-depth study on developer attitudes and customer preferences should help to make rural character preservation programs more successful and easier to implement.

Another area that is lacking in available literature is the regional aspect of rural character. Areas that are rural in character genrally do not follow political

boundaries. Programs that are undertaken in one community to preserve their rural character may prove successful locally, but they may find themselves a rural community with distant views of buildings rather than mountains, or factories instead of farmfields. The possibility of enacting a statewide or regional rural character program needs to be studied. Perhaps this program could follow in the footsteps of the agricultural preservation program that a number of states have enacted. An in-depth study into various regional planning programs and how they could be adapted for a regional rural character preservation program could prove very valuable.

On the local level a couple of issues need to be addressed. First, a number of the components that contribute to rural character have yet to be fully inventoried and analyzed. A great deal is known about the historic structures and early settlements of Knox County, but very little is known about the vegetation that resulted from traditional land uses, boundary demarcations, and the spatial organization of structures and objects in Knox County. An in-depth study on any one of these components could prove very valuable to further understanding the character of Knox County.

The second issue that needs to be addressed is Knox County's landscape characteristcs. Again, a great deal is known about the physical characteristics of Knox County.

Very little is known about the visual aspect of the landscape of the County. An in-depth inventory and analysis of significant views and vistas that are present in Knox County would provide an excellent start. The visual resources of the County need to be inventoried and analyzed in terms of context, contrast, depth, texture, and in a number of other ways. This could prove very valuable in securing protection of these features.

The greatest need for further research is in the area of practical applications of the ideas expressed in books, journals, and presentations. Communities and local leaders need to know how to conduct programs that will ensure their goals can be achieved.

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APPENDICES

APPENDIX A

The following information is a summary of the programs and policies that communities across the country have used to preserve, protect, and enhance the rural character of rural lands. Following each technique is short explanation of the technique's relevance to Knox County and it's chances of success.

CLUSTERING OF STRUCTURES

This technique is espoused by Fred Heyer, Robert Yaro, Bucks County, and Livingston County. This technique should be considered of extreme importance to the success of a preservation program in Knox County. MPC staff seems quite favorable to the technique, though it's requirement is something that MPC may not enforce.

LOCATION OF STRUCTURES ADJACENT TO WOODLOTS OR IN THE WOODLOTS

This technique is espoused by Fred Heyer, Robert Yaro, and Livingston County. This technique is of less importance to Knox County as a great deal of it's wooded lands exist on steep slopes generally excluded from development anyway. MPC should at least recommend that this technique be followed.

RESTRICTING DEVELOPMENT ON PRIME AGRICULTURAL LANDS

This technique is espoused by both Loudon County and Livingston County. This should be considered very important

in Knox County due to the scarcity of prime agricultural lands in the County. MPC should restrict the placement of structures upon prime agriculture lands. This restriction should ideally be required though the staff at MPC favors voluntary compliance.

REQUIRING THE INCORPORATION OF SITE-SPECIFIC ELEMENTS INTO NEW DEVELOPMENTS

This technique is espoused by Fred Heyer and Robert Yaro. This should be considered to be of lesser importance to Knox County. MPC should recommend that elements such as farmroads and fencelines be incorporated into the new development.

CREATION OF RURAL ROAD STANDARDS

This technique is espoused by Fred Heyer, Robert Yaro, Loudon County, Bucks County, and Livingston County. This should be considered very important by Knox County. Few things can alter the character of rural areas more than roads built to suburban standards. MPC should closely study their existing standards and adapt them to the situation that exists in rural areas.

LIMITING THE ALTERATION OF SIGNIFICANT VIEWS AND VISTAS

This policy is espoused by Fred Heyer,Bucks County, Samuel Stokes, Livingston County, and Robert Yaro. This should be considered of great importance to Knox County, again due to the fragility of their significant views. A limited number of significant vistas exist in Knox County

and they should be strongly protected. More common are smaller views, they should be protected by requiring design of developments that will not significantly alter these views.

The policies and programs avaialable to Knox County may be ranked as follows:

1. Extremely significant-
    a. Clustering of Structures.
    b. Preservation of prime agricultural lands.
    c. Preservation of significant vistas.
2. Significant-
    a. Creation of rural road standards.
    b. Protection of significant views.
3. Important-
    a. Locating structures adjacent to woodlots.
    b. Incorporate site-specific elements into new developments.

APPENDIX B

The following information is a portion of the situation assessment that was conducted as part of the recommended rural character preservation program. The following questions were asked of staff members at MPC in the Comprehensive Planning Department and in Subdivision Review. The questionnaire used is presented first, then the answers given by MPC staff are provided.

Is MPC and its staff willing to support the following programs? Why or why not?

STREET DESIGN FOR RURAL SUBDIVISIONS

1. Change required street widths to 18-20 feet.
2. Do not require curbs.
3. Allow the replacement of curbs and gutters with natural swales and periodic grates.
4. Restrict the use of cul-de-sacs and require streets to connect.
5. Allow and encourage the use of common drives.

SCENIC ROADS

1. Expand the existing scenic roads program.
2. Establish a no-cut buffer at least 50 feet deep adjacent to the road right-of-way.
3. Restrict frontage lots.
4. Regulate signange, grading, and the removal of native vegetation.

SEWAGE DISPOSAL

1. Allow communal wastewater systems.
2. Allow alternative ways of treated sewage disposal.

OPEN SPACE DESIGN

1. Require developers to prepare conceptual sketch plans showing how their proposed developments could be laid out under the principles of open space development principles.
2. Grant density bonuses to developers following open space development principles.
3. Develop conservation zones consisting of lands that must be protected from development.
4. Require the clustering of structures.
5. Enact regulations requiring a set percentage of the tract to remain in open space.

GREENWAYS AND BUFFERS

1. Require greenway construction as part of developments (this would be done by creating an "official" map of greenways that would have to be built as the parcel was developed.
2. Require that greenways appearing on subdivision maps be built at the beginning of construction in the same manner as streets, sidewalks, and drainage facilities.
3. Establish a recommended greenway width.

FARMLAND PRESERVATION

1. Establish exclusive agriculture zones in areas of prime soils.
2. Establish very low density zones (20-40 acre lots) to serve as estate lots.
3. Establish a sliding scale ordinance to allow housing on agricultural lands.
4. Enact a transfer of development rights program.
5. Enact a purchase of development rights program.
6. Require clustering of structures on non-prime soils.

ADDITIONAL DESIGN GUIDELINES

1. Require the incorporation of historic structures and features (roads, barns, stone walls, etc.) into new developments.
2. Reduce front yard setbacks and/or establish maximum front yard setbacks.
3. Allow and encourage cluster housing via smaller lots.
4. Require devlopments to be landscaped and that the landscaping be done with native plants.
5. Do not allow homes to be fronted on major roadways.
6. Require commercial parking lots to be located to the rear or the sides and to be screened by vegetation.
7. Require structures to be similar in terms of front

setbacks, height, massing, roof pitch, and gable orientation to those of surrounding uses.

8. Allow a mix of uses (residential and commercial).
9. Restrict the placement of buildings on the ridge lines and excessive slopes.
10. Require structures to be set back from watercourses.
11. Require structures to be built at the edge of woodlots or within the woodlot.
12. Allow and encourage a variation of setbacks and lot sizes within a development.

RESULTS

STREET DESIGN FOR RURAL SUBDIVISIONS

1. Road width can be altered provided the issue of on-street parking is addressed. Not sure about the 18-20 foot standard.
2. Willing to reduce curb requirements, but noted that most developers insist that buyers want them.
3. Willing to allow natural swales in place of gutters, provided there are provisions for their proper design and maintenance.
4. MPC is currently pushing for the establishment of neighborhood units and are thus recommending that streets connect. They are not willing to go as far as restricting cul-de-sacs.
5. Not willing to require street plantings. Willing to push for the establishment of a Knox County Tree Board based on the Knoxville Tree Board to assist developers in tree planting.
6. MPC currently allows the use of common drives and has no problem with their continued use.

SCENIC ROADS

1. MPC is currently recommending in the Knoxville/Knox County General Plan the establishment of a local scenic roads program.
2. Possibly willing to establish vegetation retention

guidelines; not willing to commit to a no-cut buffer.

3. Not willing to restrict frontage lots.
4. MPC currently regulates signage, grading, and removal of native vegetation, and is pleased with the results of the existing guidelines and standards.

SEWAGE DISPOSAL

1. Knox County currently allows communal wastewater systems and is willing to continue the program provided the health department concurs.
2. MPC had no comment on alternaitve ways of treating sewage disposal.

OPEN SPACE DESIGN

1. Not willing to require developers to prepare conceptual sketch plans outlining open space development principles. May be willing to encourage such plans.
2. MPC currently grants density bonuses and is willing to support a program, provided strong checks and balances exist.
3. MPC is willing to enforce a program that keeps certain lands from development due to environmental constraints.
4. Not willing to require the clustering of structures. Very willing to encourage the

clustering of structures as a wayto protect natural resources and preserve open space.

5. MPC currently has standards for open space preservation.

GREENWAYS AND BUFFERS

1. Not in favor of requiring greenways to be built by developer, citing the program as overbearing.
2. Not in favor of having greenways constructed along with other infrastructure improvements; feel it is best if the greenway system is constructed entirely by the County or someone appointed by the County.
3. MPC currently follows national standards for greenway sizes.

FARMLAND PRESERVATION

1. Not willing to establish a zone that is exclusively for agricultural use, citing that it does not allow landowners enough options.
2. Estate lots would be allowed under the existing zone districts in Knox County.
3. Not in favor of a sliding scale program, citing its complexity.
4. Not in favor of a purchase of development rights program due to the scarcity of funds.
5. May be willing to encourage the clustering of structures on non-prime soils, but not willing to require it.

ADDITIONAL DESIGN ISSUES

1. Willing to require incorporation of structures and features that have received national designation, but not other elements.
2. Willing to alter front yard setbacks.
3. Very willing to allow and encourage cluster housing and the use of smaller lots.
4. Pleased with the existing landscaping guidelines in the County.
5. Not willing to restrict frontage lots, but already restrict the number of curb cuts allowed on major roadways.
6. Not willing to require commercial parking lots to be located in the rear or to the side of structures.
7. Not willing to require stuctures to be similar in terms of setbacks, height, massing, roof pitch, and gable orientation as those of surrounding uses.
8. MPC currently allows mixed-use developments.
9. MPC currently restricts the placement of structures on ridgelines and excessive slopes.
10. MPC currently has guidelines and standards to set buildings back from waterways. Primarily in floodplains.
11. Not willing to require structures to be built at the edge of woodlots or in clusters within the

woodlot. They are willing to recommend these guidelines.

12. MPC would rather see a consistent pattern of setbacks and lot sizes.

VITA

Robert Samuel Cowell, Jr. was born in St. Louis, Missouri on May 12, 1968. He attended elementary school at Rockport Elementary and graduated from Fox High School in May of 1986. The following September he entered Parks College of St. Louis University and in December of 1989 received the degree of Bachelor of Science in Aeronautics, specializing in Aviation Administration. He entered the University of Tennessee, Knoxville in August 1992 and in December 1994 received the Master of Science Degree in Planning, specializing in Land Use Planning.

At the University of Tennessee, Knoxville he held a graduate assistantship and received School of Planning awards for Academic Achievement and Professional Promise in 1994.

Robert is a member of the American Planning Association and is currently employed as a planner with the Jefferson County Planning and Zoning Department in Jefferson County, Missouri.