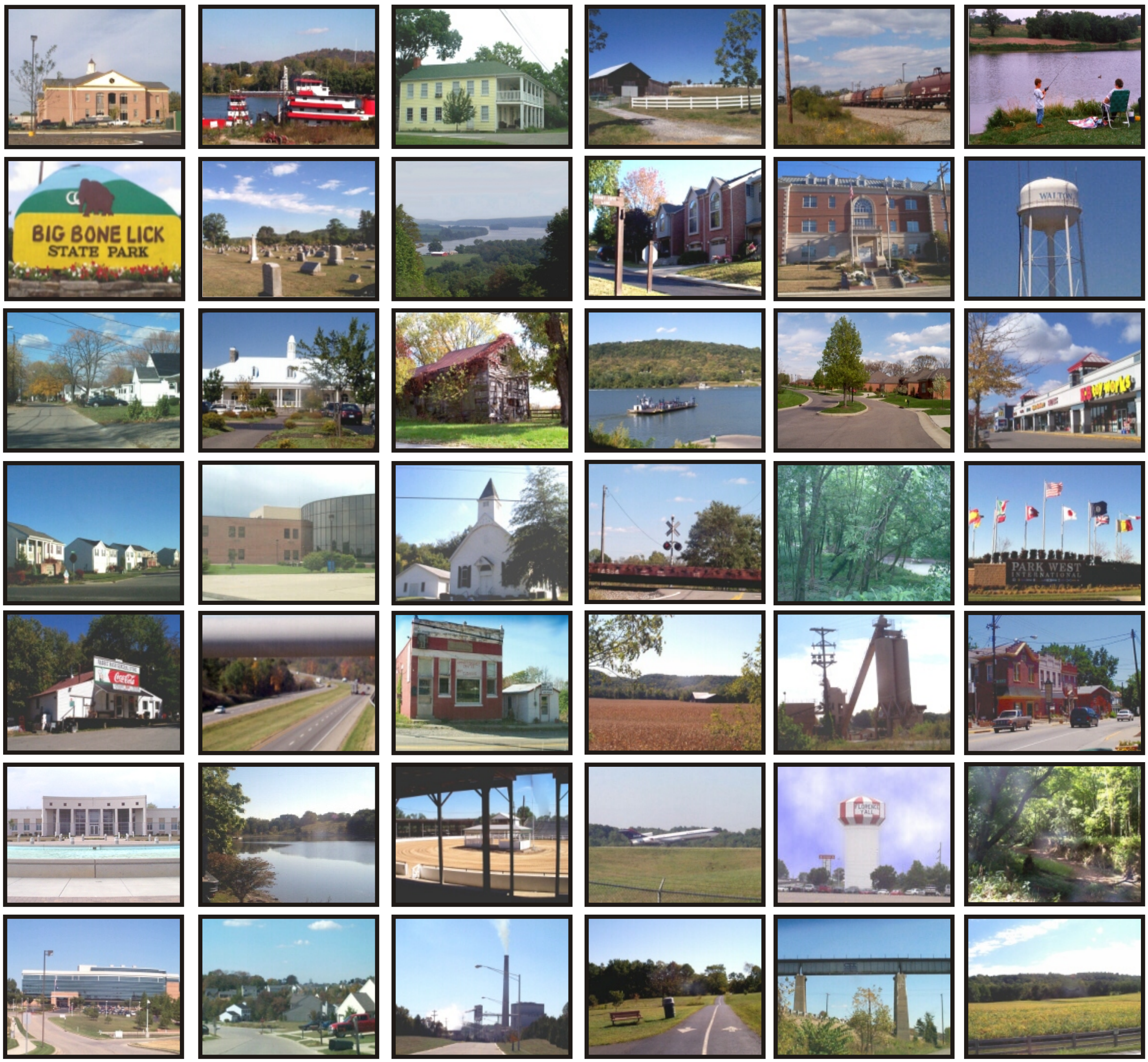
2000 Boone County Comprehensive Plan

A VISION FOR THE YEAR 2025



Boone County Planning Commission

2000 BOONE COUNTY COMPREHENSIVE PLAN

"A Vision for the Year 2025"

February, 2001

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ACKNOWLEDGEMENTS

The Boone County Planning Commission would like to thank all the organizations and individuals who participated in the five year update of the Boone County Comprehensive Plan. The Planning Commission would also like to express its appreciation to former staff member John Huth, as well as to former Long Range Planning/Comprehensive Plan Committee members Larry Brown, Phil Damstrom, and William R. Viox. Also, thanks go to Ken Hund and John Stanton for their work on the Boone County Parks and Recreation Master Plan.

CITIZEN PARTICIPATION

In March of 1999, The Boone County Planning Commission authorized the Long Range Planning/Comprehensive Plan Committee to oversee the 2000 Boone County Comprehensive Plan update. During several stages of the process, the Planning Commission has sent introductory letters to a list of 73 organizations and individuals that have been, or would likely be involved in planning issues.

During the update of the Goals and Objectives, the Planning Commission conducted two public workshops, May 3, 1999 and June 9, 1999 at the Ellis Cooperative Extension Center. Many of the Long Range Planning/Comprehensive Plan Committee meetings were well attended by the public. The Planning Commission maintains files containing notes and attendance records of these meetings. The Goals and Objectives for the 2000 Boone County Comprehensive Plan have been adopted by the Planning Commission and the four legislative units in Boone County.

During the update of the Comprehensive Plan elements, a public workshop was held at the Ellis Cooperative Extension Center on May 31, 2000 to obtain initial comments from public organizations, utilities, and agencies, and from private organizations and groups on the drafting of the Comprehensive Plan. The intent of this double session workshop was to receive suggested direction for the Planning Commission Staff to begin work on the Elements. The consensus at this meeting was for staff to proceed and produce a first draft over the summer of 2000.

The staff work on drafting the Comprehensive Plan Elements was reviewed with public organizations, utilities, and agencies on September 13, 2000 in an afternoon session and with private organizations and groups in an evening session. Comments from these meetings were presented to the Long Range Planning/Comprehensive Plan Committee at subsequent committee meetings.

An "Initial Preliminary Draft" was made available for public review on September 15, 2000. Next, a series of community workshops to discuss the future land use plan was conducted at various locations around Boone County. These were held September 18, 2000 at Kelly Elementary School, September 19, 2000 at Conner Middle School, September 25, 2000 at the Florence Municipal Building, and September 26, 2000 at the Walton City Building.

After several Long Range Planning/Comprehensive Plan Committee meetings, a second draft was prepared and made available for public review on December 13, 2000. The Planning Commission then sponsored two "open house" sessions at the Florence Municipal Building on December 13, and December 20, 2000. A comment period extended to January 2, 2001 to allow public review and comment on the second complete draft of the Land Use Element text and maps before presenting the Comprehensive Plan to the Planning Commission as an official business item. Comments that were received were reviewed by the Long Range Planning/Comprehensive Plan Committee, and resulted in changes to the draft. Between the acceptance of the Plan as a new business item on January 3, 2001 and the official public hearing on January 31, 2001, more written comments were received. These were reviewed at the public hearing and by the Committee in subsequent meetings.

During the drafting of the Goals and Objectives and the Elements of the Comprehensive Plan from March, 1999 to present, The Long Range Planning/Comprehensive Plan Committee met numerous times. Each of these meetings has been open to public attendance and involvement. Numerous meetings have been held between staff and interested citizens and organizations. In addition to legal advertisements, the Kentucky Post, Kentucky Enquirer, and Boone County Recorder newspapers have contained many special stories, interviews, and meeting announcements throughout the process.

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INTRODUCTION

This introduction to the 2000 Boone County Comprehensive Plan is provided to orient the user or reader to the process by which the Comprehensive Plan has been developed, as well as and to provide a summary of each Element. The reader is also encouraged to review the detailed Elements, including the Tables and Figures within each element.

PLANNING PROCESS

The Comprehensive Plan is formulated from an extensive and continuing planning process. The process includes four components. The first component is inventory, reconnaissance, and analysis of background information on existing and projected conditions affecting growth and development. The second component involves policy decisions by public agencies and bodies on how best to influence future growth and development. Third is the preparation and adoption of plans which embody the public policies; and, fourth, the development and refinement of tools to implement the plans. The process is continuous and evolving, as each of the steps is re-evaluated periodically to respond to changing conditions.

The Boone County Planning Commission is the public body charged with initiating and overseeing the comprehensive planning process in Boone County. The success of the process is largely dependent on those public agencies and bodies who can implement the plan through their day-to-day decision-making activities. Success is also dependent on the cooperation of the citizens of the community and developers who respect the Comprehensive Plan's intentions and seek to improve the Comprehensive Plan in accordance with changing community policies, goals, and objectives.

While this document is the statement of a plan at one point in time, its full value will be in its flexibility to respond to changing conditions and its evolution within the context of a continuing comprehensive planning process.

Reconnaissance

The Reconnaissance portion of the plan is an inventory of existing conditions in Boone County. The Reconnaissance covers ten planning elements. These are: Population, Environment, Economy, Business Activity, Housing, Recreation, Agriculture, Historic Preservation, Public Facilities, and Transportation.

Goals and Objectives

The adopted planning Goals and Objectives for guiding preservation and development in the County are included in this document and are the basis for the remaining Elements. They were developed and adopted by the Boone County Planning Commission; and adopted by the Boone County Fiscal Court and the legislative bodies of the Cities of Florence, Union, and Walton; prior to the writing of the remaining Elements of the Comprehensive Plan.

Planning Process

The Comprehensive Plan was developed through a multi-stage process designed to integrate the Goals and Objectives, and to create consistency between the various Elements of the Comprehensive Plan. The Reconnaissance provided the foundation for the Comprehensive Plan.

From the conditions of the County, as outlined in the Reconnaissance, Goals and Objectives were formulated. There are a set of these for each of the ten elements. The Reconnaissance and the Goals and Objectives in turn set the direction for the Comprehensive Plan Elements.

The final step in the Comprehensive Plan's multi-stage process is the Land Use Element, which consists of text and a series of maps. The provisions of the previous ten elements are represented spatially and in detailed written form to project the County's land use by the year 2025. The Goals and Objectives of the previous ten elements are incorporated in the remaining Land Use Element. The Land Use Element is developed in conjunction with its chief implementation tool, the Zoning Regulations and Map, to insure a sufficient degree of consistency.

Comprehensive Plan Elements

The Population Element describes the growth patterns in Boone County. The history of Boone County is explained, along with key population trends from 1950-2000. The Population Element also demonstrates the changes in the age and sex distribution of residents, racial composition, poverty levels, educational attainment, and in the number of households in Boone County. Population projections are later given from the Kentucky Data Center and from the Ohio-Indiana-Kentucky Regional Council of Governments, as well as from the Boone County Planning Commission. A summary of some of the findings are found in the first portion of the Population Element.

The Environment Element begins with a detailed explanation of the methodology used in preparing the Element. Physical Factors Classifications and Social Factors Classifications are described along with a complete inventory of physical factors such as stream drainage, soil drainage, soil foundation and erosion, and other hazards. An inventory of social factors is also given. This inventory includes agricultural land, wildlife habitat, woodlands, parks and recreation, historic/cultural, and scenic assets. This element also includes a description of several land conservation tools that may be considered for Boone County.

The Economy Element examines the local economy in two components. The first component reviews the economic factors related to individuals in the county or resident work force, such as, income, unemployment, poverty, types of jobs, commuting patterns, population and employment. The second component of this Element examines economic factors related to the County in general. These factors are the types of jobs available, employment levels, the number of employees by industrial sector and employment trends. The Element introduces the concept of Sustainability.

The Business Activity Element examines the industry classifications of businesses in Boone County from 1970 to the present. Comparisons are made with base and non-base industries. In addition, areas of future industrial and commercial activity are identified to supplement the Land Use Element's recommendations. Overall, existing trends show that Boone County will continue to grow in both base and non-base industries. The Element discusses the nature of commercial and industrial development at specific locations in Boone County.

The Housing Element contains three sections. The first section is an analysis of the housing market demand. The second section of this Element includes a study of the current housing supply and planned housing development. The final section combines both findings of demand and supply in order to determine future housing needs of Boone County. Consequently, areas of future residential development are identified to supplement the Land Use Element's recommendations. Concepts, such as Neo-traditional and Open Space Subdivision styles of housing development are discussed in the Element.

The Recreation Element is a condensed version of the 2000 Boone County Parks and Recreation Master Plan. The Recreation Element includes an analysis of the County's present and future population and both the supply and demand of county recreational facilities. Recommendations in the form of policies, strategies, and land acquisition are presented.

The Agriculture Element includes the significance of the number of farms, the amount of land devoted to farming activity and the average size of a farm in Boone County. In this Element, the history of farm production in Boone County is described along with the economic impact of agricultural or farm related businesses in Boone County. Future strategies for agricultural activity are presented.

The Historic Preservation Element discusses the County's historical, archaeological, architectural, and cultural resources and outlines methods to preserve them. A history of Boone County is mentioned in the beginning portion of the Element. Specific historic preservation plans and documents are described.

The Public Facilities Element discusses the public facilities and services located within unincorporated Boone County and the Cities of Florence, Union, and Walton. Water distribution, sanitary sewage collection and treatment, gas, electric, municipal/public services, education, health care, and public communications are the services described in detail. This Element also presents current data and future expansion plans for each utility or public service. Conclusions are made as to the various facility impacts on the future land use pattern.

The Transportation Element discusses the various modes of transportation used in Boone County. These modes refer to roadway systems, mass transportation, pedestrian/biking systems, railroads, the Airport, and water transport. The Transportation Element describes the existing conditions of each mode and recommended future improvements. Important components of this Element are access management control and Airport noise. The Element contains a condensed version of the 1996 Boone County Transportation Plan.

The Land Use Element is the culmination of the preceding ten elements of the 2000 Boone County Comprehensive Plan. The Land Use Element recommendations (both text and maps) are based upon the specific data and recommendations of the other Elements of the Comprehensive Plan. Both the text and accompanying maps are consistent with each other, and both provide a written and graphic documentation for future development and preservation of the County in a 25 year planning horizon. The text of the Land Use Element further details the impact of the other ten Elements on the land area in Boone County. Compliance with the other Elements of the Comprehensive Plan will result in the development or preservation of Boone County's specified in the Land Use Element.

In the Land Use Element, the existing land use and future land use classifications are explained. The Land Use Element also includes development guidelines which relate to key development and preservation concerns: utilization of existing vegetation and topography, buffering, landscaping, stormwater management and erosion control, access management, transportation and pedestrian network and design, signs, and historic preservation. Finally, both the text and maps of the Land Use Element assure that the 2000 Boone County Comprehensive Plan is a guide for the controlled future growth, development, and preservation of Boone County, Kentucky.

GOALS AND OBJECTIVES

Pursuant to Sections 100.187 and 100.193 of the Kentucky Revised Statutes and other applicable laws, the following statement of goals and objectives has been prepared by the Boone County Planning Commission. Each Element of the Comprehensive Plan contains at least one goal which serves as a future desired condition or result, and is, therefore, described as an attainment not an action. Each goal for a planning element contains a series of objectives. An objective is an achievable action statement about where a community wishes to go. When an objective is met, the community is a step closer to reaching its goal. These Goals and Objectives are intended to be general but provide a solid framework for the remaining Comprehensive Plan Elements to be conducted. The Elements address specific land use impacts and provide recommendations regarding future growth within the planning unit. The Goals and Objectives help guide the formation of public policies, however, are not designed to solve specific problems.

The *italicized/bold* text in the following Goals and Objectives represents language adopted by the Boone County Fiscal Court on March 27, 2000. This text only applies to land located in Unincorporated Boone County. In the Goals and Objectives where the text has two versions, the portion that is <u>not</u> depicted in *italicized/bold* print is in effect for land physically located in the Cities of Florence, Union and Walton.

OVERALL

Goal: Proper future growth management for Boone County is implemented.

Objectives:

1. Boone County shall be viewed as an integral part of the Cincinnati Metropolitan Area.

2. Development issues shall be viewed in terms of promoting overall quality of life. Mixing of residential and other land uses shall be encouraged, within appropriately planned and designed neighborhood developments.

3. Proper design principles shall be applied in development.

4. Future growth shall be accompanied by adequate infrastructure and services. Existing infrastructure and services shall be maintained or improved as needed.

5. A public process of visioning, which shall include the selection of specific areas of Boone County, shall be pursued as a means of recommending a theme or character for future land use planning and development design.

5. A public process of visioning, which shall include the selection of specific areas of Boone County, shall be explored as a means of establishing a theme or character for future land use planning and development design.

6. Boone County shall strive to achieve both a diversity and balance in land use. Land uses and zoning decisions shall strive to balance the rights of landowners with the rights of the general public.

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7. The elements of the Comprehensive Plan shall include an analysis and evaluation of the potential impacts of total development (maximum build-out) as well as minimum development (no growth) of Boone County.

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8. The future land use plans shall be based on the research and analysis completed in all the elements.

9. Boone County, as a community, shall examine and support through incentives, innovative development design methods to facilitate well-designed urban and rural development in conformance with the adopted Comprehensive Plan.

9. Boone County, as a community, shall examine and support through incentives, innovative development design methods to allow a well-designed urban to rural development transition in conformance with the adopted Comprehensive Plan.

POPULATION

Goal: The needs of Boone County's population are measured and fulfilled through the provision of orderly growth.

Objective: Boone County's development policies shall provide equal opportunity for the establishment of a balanced population regardless of age, race, or socio-economic status.

ENVIRONMENT

Goal: ***New development or redevelopment within Boone County is designed, constructed and operated in such a way that the quality of the existing physical environment and social environment are maintained and enhanced. Development within Boone County preserves and promotes a better quality of life.***

New development or redevelopment within Boone County is designed, constructed and operated in such a way that the quality of the existing physical environment and social environment are protected and enhanced. Development within Boone County preserves and promotes a better quality of life.

Objectives:

Physical

1. Future development and redevelopment of areas shall include an evaluation of the physical factors identified in this Plan as part of the review of the site being considered for development. The suitability ratings identified in the Environment Element for each physical factor shall be taken into consideration as part of any development review process.

2. New development or redevelopment shall attempt to design sites utilizing existing topography and vegetation, and encourage preservation of the existing character of the land. New development shall be designed in harmony with the physical environment in such a way that each site's existing physical assets are used. Residential development design in particular shall minimize grading work as opposed to clearing the entire site. Existing trees and pasture land shall be evaluated during the design and construction process as a visual and economic benefit to the community.

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3. Developmentally sensitive areas and scenic areas shall be identified, mapped, and minimum standards shall be established for the preservation and restoration of these areas. Developments that are proposed in any of these areas shall be carefully reviewed according to these standards to assure negative environmental impacts are minimized.

4. The overall integrity of Boone County's natural or ecological system, such as wildlife habitats, air and water shall be considered when selecting the location and design of development.

4. The overall integrity of Boone County's natural or ecological system, such as wildlife habitats, air, and water, shall be protected by implementing regulations which affect the location and design of development.

5. Developmentally Sensitive hillsides in Boone County must be given special consideration. The preservation of these hillsides is a primary objective, and any proposed development on hillsides designated Developmentally Sensitive shall be carefully reviewed to mitigate negative impacts and maintain the environmental integrity of the hillsides.

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6. Watersheds shall be studied, monitored and protected as to the quality and quantity of storm water runoff so as to prevent flooding and erosion and also promote habitats for wildlife.

Social

1. Future development and redevelopment of areas shall include an evaluation of the social factors identified in this Plan as part of the review of sites being considered for development. The suitability ratings for each social factor shall be taken into consideration as part of any development review process.

2. Existing information regarding environmental characteristics such as wildlife and wildlife habitat, historical, cultural, archaeologically significant, and scenic areas shall be compiled and supplemented to form a centralized document. The document shall be used to aid developers in a thorough environmental review of specific sites under consideration for development.

3. Areas possessing unique environmental characteristics, as determined by the above described inventory/assessment, shall be preserved; used as passive or active recreational areas or appropriately incorporated into development design.

4. Existing vegetation shall be considered as both an important site characteristic and a community resource.

5. Minimum standards shall be established to specify methods during construction to properly manage the impacts of dust, erosion, noise, or other nuisances or environmental hazards. When problems are encountered the proper agencies will be notified and corrective measures taken.

6. A Comprehensive Environmental Plan (that addresses both short and long range issues) shall be developed for Boone County that establishes Boone County's environmental role and responsibilities in the metropolitan region. It will incorporate existing and future studies, such as Airport Environmental Assessments, FAR Part 150 Supplemental Studies, the Cincinnati/Northern Kentucky International Airport Master Plan Update and also generate new information. This Environmental Plan shall promote the concept of sustainable development; propose ways of implementing state and federal legislation and address energy conservation, water quality, etc.

6. A Comprehensive Environmental Plan (that addresses both short and long range issues) shall be developed for Boone County that establishes Boone County's environmental role and responsibilities in the metropolitan region. It will incorporate existing and future studies, such as Airport Environmental Assessments FAR Part 150 Supplemental Studies, the Cincinnati/Northern Kentucky International Airport Master Plan Update and also generate new information. This Environmental Plan shall establish the concept of sustainable development; propose ways of implementing state and federal legislation and address energy conservation, water quality, etc.

7. The incremental effects of developments on the environment, including, but not limited to storm water, erosion, woodlands, streams, and views shall be evaluated and addressed.

ECONOMY

Goal: Boone County shall have a sustainable economy that both restores and protects the environment and also brings forth innovation and prosperity with meaningful employment opportunities for all its citizens.

Objectives:

1. Employment opportunities shall be encouraged for the citizens of Boone County.

2. Base industries (agriculture, mining and manufacturing activities) and non-base industries (education, commerce, service, health, government, etc.) shall be promoted in suitable locations exemplifying how the county is a vital part of a strong regional, metropolitan economy.

3. The benefits of an international airport shall be optimized to promote appropriate economic development.

4. Support of local agriculture and local business products and services shall be encouraged.

5. The establishment of recycling programs and recycled materials industries shall be encouraged.

6. Maximizing energy conservation and the proper use of local renewable resources shall be encouraged.

7. Boone County shall seek an overall combination of land uses (residential, commercial, industrial, public, transportation, etc.) that yields a balance between the public revenues generated from those uses and the public expenditures required to support those uses.

8. Telecommuting and home computer-generated business shall be encouraged where negative impacts to the adjacent neighborhood can be adequately minimized.

BUSINESS ACTIVITY

Goal: Boone County businesses are developed in appropriate locations and are compatible with their surrounding areas.

Objectives: Compact, efficient development patterns shall be encouraged for business districts (e.g. industrial, commercial and office) with appropriately sized and well maintained buffer spaces between the business use and other land usage.

Commercial (Retail and Office)

1. Commercial uses shall be limited to strategic locations serving trade areas and neighborhood needs and shall have safe and effective access and ample parking space.

2. The large scale mixing of commercial and non-commercial uses shall occur in planned developments or in areas where consideration has been given to assure compatibility with surrounding land uses. The location of large scale commercial uses shall take into consideration existing or planned infrastructure conditions so as to protect the existing and future population and businesses. Small scale mixing of commercial uses within residential areas shall be carefully assessed and properly placed so as to enhance the neighborhood. Architectural Design Review and consistent sign standards shall be implemented on a corridor by corridor basis, when justified by legitimate land use planning principles.

3. Highway commercial uses shall be in close proximity to highway interchanges for maximum convenience and economy to the traveling public, while minimizing impact to the community in terms of traffic congestion, local commuting patterns and access.

Industrial

1. Industrial development shall be encouraged to locate near railroad lines, highways, the Ohio River, the Airport and on Airport owned land. Future Industrial development must be located where infrastructure exists or is planned. Future Industrial districts shall be identified in advance of residential development so that the potential impacts are known and can be addressed.

2. Effective site placement, architectural design and landscape design for industrial uses shall enable a favorable relationship with adjoining uses. Industrial nuisances such as smoke, dust, noise and odor shall be kept at a minimum, and site development and enforcement shall be carefully coordinated with necessary approvals of other regulatory agencies.

3. Provisions shall be made for proper control of industrial uses, which have processes or make products that could be hazardous to human life and property. (Examples of such products are explosives and flammable or corrosive chemicals). New and existing industrial uses shall comply with federal and state air and water pollution requirements.

4. Steps shall be taken to initiate a system of sustainable commerce and production where waste products of one industrial production process actually become the raw materials for another. In this system, every act shall become restorative of the environment and society and therefore sustainable, instead of toxic and environmentally degrading.

HOUSING

Goal: Safe, environmentally sound, and sanitary housing exists for all Boone County residents.

Objectives:

1. A broad range of housing opportunities shall be provided which meet the needs and desires for all household types.

2. No housing policy shall have the effect of causing discrimination against any person on the basis of age, race, color, religion, sex, familial status, disability, or national origin.

3. The maintenance of sound existing housing, as well as, the rehabilitation of deteriorating housing shall be encouraged.

4. Housing supply in Boone County shall be balanced against present and planned commercial, industrial and primary and secondary education bases.

4. Housing supply in Boone County shall be balanced against present and planned commercial, industrial and education bases. Primary and Secondary education capacity shall be a component of housing development review.

5. In order to offer the citizens of Boone County maximum choice in living environment, residential development shall be judged primarily on density, impact on infrastructure, and development design with only secondary consideration given to the type of dwelling unit.

6. Residential development shall be regulated as to basic health and safety considerations, including: a) proper connections to appropriate public water and sanitary sewer service, sewage disposal units, and telephone and electric lines, and b) properly designed and constructed storm water drainage according to location and use.

7. Airport noise levels are among those legitimate land use impacts to be evaluated when new residential development is proposed. New residential development shall not occur in areas with existing or proposed noise levels of 65 DNL or higher as identified on official Noise Exposure Maps adopted and approved by the Kenton County Airport Board and the Federal Aviation Administration, unless acceptable measures are taken by builders to reduce adverse noise impacts.

8. The interior street system of new residential developments shall insure continuity with adjacent built or planned neighboring areas. Residential developments shall be encouraged to provide interconnections between sections of their developments and with adjacent developments to promote safe and easy transportation access and a sense of neighborhood interaction. Based on certified traffic analysis, collector and sub-collector streets shall be evaluated to determine design without individual lot or driveway access. Lot and home buyers shall have access to approved plans regarding future connections. The interior street system shall also coordinate with and continue the evolving multi-modal transportation system (pedestrian and bicycle facilities, mass transit stops).

9. New or redeveloped residential areas shall be designed to establish clearly defined neighborhoods with a mix of retail, public and recreational uses. Established neighborhoods shall be protected and enhanced and deteriorated neighborhoods shall be regenerated.

10. Mixed use, higher density neighborhoods shall be encouraged to locate at proposed mass transit stations near commercial districts and public facilities (i.e. parks) and also have convenient access to major streets and highways.

11. In order to support the densities needed to sustain mass transit (as recommended by OKI's Regional Transportation Plan) and to foster new affordable housing options, average minimum densities shall be encouraged for mixed-use planned developments. This would allow a variety of housing types but also assure a logical progression of intensities. The highest densities would be in the activity centers of the mixed-use developments where there would also be commercial, retail and public (i.e. parks) uses. The activity centers would not necessarily be the geographic centers of the developments. Residential densities would lessen farther away from the center with conventional lot single-family homes at the edges. This progression of housing types could provide a needed alternative to the usual affordable housing alternative-manufactured homes, but at the same time maintain home ownership patterns and private yard features of the single family home.

12. Clustering (increasing net density while not altering overall gross usable density) shall be promoted by appropriate incentives in order to preserve green space, scenic views, other identified significant site features, and land for public facilities or recreation. The usability of green space must be carefully reviewed, and the provision of green space shall not in itself guarantee an increase of density. Clustered housing, or Open Space Subdivisions shall be permitted not only in planned developments, but in appropriately designed subdivisions under conventional zoning.

13. Residential developments shall be encouraged to plan and build in a manner which is compatible not only with the general housing density and design planned for the area but also with the existing conditions of the site, including the suitability of adjoining lands for appropriate access, and significant site features.

14. Where existing infrastructure, services and the public school system are not adequate, developers shall phase construction to facilitate the provision of these items to support their developments.

14. Where existing infrastructure, services, and the public school system are not adequate, developers shall phase construction to ensure the provision of these items to support their developments.

RECREATION AND OPEN SPACE

Goal: Adequate recreation facilities and programs are provided, significant natural features and historic sites are preserved, and open space for public use is provided.

Objectives:

1. Land acquisition for parks and open space creation shall be used to preserve scenic and natural areas of significant and unique qualities and provide activity centers close to or within established and developing residential areas. This land acquisition should be done in a timely manner to avoid increased land costs and loss of potential recreational land to private uses. Major view sheds shall be mapped to help identify scenic and natural areas that should be preserved.

2. Extra-regional or interstate tourist oriented-commercial facilities shall be allowed in appropriate areas when the final mitigated impact is minimal on other land uses.

3. Historically and culturally significant sites and structures of Boone County that are part of recreational or education facilities, shall be protected. Park areas that make use of existing historic structures or features shall be encouraged.

4. Recreation areas shall be centrally located in their service areas and easily and safely accessible to the population groups they are designed to serve.

5. Major parks with an emphasis on accessibility shall serve each major area of Boone County. Legislative bodies shall be active in creating new parks.

6. Marginal development land that contains excessive slopes or is prone to flooding, shall be considered for its value as open space. The Ohio River shoreline shall be studied for its potential for recreational development. This development shall both retain the ecological integrity of the river area and create sustainable economic opportunities for the citizens of the county.

7. School and recreation facilities shall be combined in order to provide the mutual benefits of service, safety, convenience, economy and neighborhood strengthening.

8. Greenways or greenbelts located along creek valleys or abandoned country roads shall be promoted as a possible linear park system that would serve the multiple purposes of recreation, ecological conservation and alternative transportation. Development of public hunting areas shall be investigated.

9. A non-profit Recreation Foundation shall be considered, and the general public and landholding agencies shall be informed of the possibility of donating land, providing easements, or arranging leases that would allow the legislative bodies of Boone County to economically provide recreation facilities.

10. Throughout Boone County, recreation facilities shall be encouraged through the cooperative efforts and funding of the legislative bodies, developers, landowners, volunteers, and appropriate public or semi-public agencies.

11. Creation of a separate parks board with taxing ability shall be examined.

AGRICULTURE

Goal:

Appropriate land for agricultural practices and agricultural related uses is protected.

Appropriate land for agricultural and agricultural related uses is protected.

Objectives:

1. Specific areas, and innovative land use planning concepts and incentives shall be identified to encourage the preservation of existing agricultural lands.

1. Specific areas and innovative land use planning concepts shall be identified to encourage the preservation of existing agricultural lands.

2. Diversification of agricultural uses shall be encouraged. Markets for locally grown food crops shall be promoted.

3.Creative ways of funding preservation of agricultural land for agricultural uses shall be investigated.

3. Preservation of agricultural land, in the face of potential development, shall be evaluated based on the overall economic, environmental, social, infrastructure, and rural landscape characteristics of the area.

PRESERVATION

Goal: Significant historic buildings, structures and sites, archeological sites and natural features in Boone County are preserved.

Objectives:

1. Priorities shall be established for the conservation, restoration, preservation and protection of natural features, historic buildings, structures and sites, archeological sites, and cemeteries.

2. An inventory of historic, archeological, funerary and natural resources shall be maintained.

3. Significant sites which meet established criteria shall be encouraged for nomination to the National Register of Historic Places.

4. Plans for new or redeveloped commercial, industrial, institutional and residential sites shall be reviewed, and reasonable measures taken, to ensure identification and protection of significant historical, archeological and architectural sites.

5. The use of legal, financial and land use regulatory tools shall be encouraged to preserve significant sites.

6. Historically and culturally significant sites shall be identified for further study and/or scientific investigation.

7. The development of tourism as a catalyst for historic preservation and non-intrusive economic development shall be encouraged.

8. Significant sites shall be requested or encouraged for inclusion under historic preservation zoning.

9. Historic sites and features shall be mapped and considered for inclusion in potential park land development to serve as an educational and recreational resource for the community.

10. The public and private sectors' awareness of historic preservation efforts and philosophy shall be encouraged.

PUBLIC SERVICES AND FACILITIES

Goal: Safe, efficient and environmentally sound public services and facilities shall exist for all development.

Objectives:

1. Existing infrastructure and services (e.g. systems and facilities for: water treatment and distribution, wastewater collection and treatment, natural gas distribution, electric power distribution, communication lines, police and fire services and associated municipal buildings, schools, public roads and storm water management) shall be utilized efficiently. The phasing of proposed development shall be examined as a means of addressing significant impacts on existing infrastructure and services.

2. New infrastructure systems shall be built to definite planned and balanced capacities and for definite urban and rural forms.

3. Priorities for growth within any individual infrastructure system shall be based on the predicted needs of specific areas as prescribed by the future land use projections of this plan. No infrastructure system shall commit the county to excessive growth by the system's expansion.

4. The efficient coordination of sanitary sewer, storm sewer, water, school and fire jurisdictions shall be promoted. This coordination shall be facilitated through computer technology, including Geographic Information Systems (GIS).

5. Public facilities and services shall be in locations that are accessible to the population being served. Public information shall be easily accessible through the Internet and similar technology.

6. Public sanitary sewer systems shall be strongly encouraged in place of individual treatment plants or septic systems. Opportunities for regional/combined stormwater management system(s) shall be examined and developed if appropriate.

7. Efficient communication between public service agencies shall be maintained or increased by using the latest technology.

8. Desirable library sites shall be within or near business or shopping centers, or other public facilities, which are located in close proximity to the surrounding residential areas.

9. Libraries shall be accessible by means of public and private transportation and the Internet.

10. Fire stations shall be located near or along major arterials so that adequate ingress and egress can be provided.

11. The heaviest concentration of law enforcement, fire and rescue services shall be located near central business districts, large industrial areas, and near residential areas where the potential loss of life and property is greatest. Emergency response shall be coordinated with the Geographic Information System.

12. Barriers to fire station service, such as hills, rivers, flooding land, railroad tracks and yards, freeways, airports, shopping centers, and general traffic congestion, shall be avoided in selecting a site.

13. Creative ways of funding the expansion and improvement of public services and facilities shall be sought and insure costs are fairly distributed. Cooperative funding agreements between the private and public sectors shall be encouraged to fund future utility extension. It is essential that the legislative bodies establish a Capital Improvement Plan, to better manage growth in the county through appropriate phasing of new public infrastructure and to maintain and improve existing infrastructure and public facilities.

14. Adequate health care and emergency facilities shall be promoted at accessible locations.

15. The elimination of overhead utility services shall be encouraged.

16. A balanced approach shall be sought between an annual increase in revenue and an annual improvement in all services and facilities.

17. The public education system shall be improved as needed. Post-secondary educational facilities shall be explored, and an emphasis shall be placed on computer and communications technologies.

18. Installation of utilities and development around utilities shall occur in a manner that protects the safety of the general public. Wireless Communications (Cellular towers) and similar facilities shall not be obtrusive to residential or scenic areas, and co-location shall be implemented wherever possible.

19. The incremental effects of developments on public facilities and services shall be evaluated and addressed.

TRANSPORTATION

Goal: Boone County shall continue as vital member of an evolving, regional transportation system that needs active cooperation between the private and public sectors to enable the transition to an economically and energy efficient yet environmentally sound and equitable multimodal (automobile, rail, air, river, bus, bicycles, pedestrian) transportation system.

Objectives:

1. Planning for Light-Rail and feeder bus corridors and stations shall be encouraged.

2. Airport master planning and the community comprehensive plan shall be coordinated to allow greater efficiency in the local transportation system as well as the regional system.

3. Alternative commuting such as carpooling, vanpooling, and bus ridership shall be encouraged.

4. Multimodal interfaces such as Park and Ride Lots and pedestrian and bicycle accommodations on bus and rail transit and at Park and Ride Lots shall be promoted.

5. Employer trip reduction incentives and flexible and/or staggered work hours shall be promoted.

6. Efficient coordination between local, county, regional, and state jurisdictions for transportation improvements shall be promoted.

7. Transportation facilities and services shall support opportunities for economic development.

8. Transportation facilities and services shall provide equitable levels of service to transportation disadvantaged and transit dependent people.

9. Mixed use, higher density neighborhoods shall be designed to accommodate safe pedestrian access to mass transit, access to major streets and highways, public facilities, and parks.

10. Transportation opportunities for pedestrians and bicyclists shall be provided by the development of a network of sidewalks, pathways and roadway lanes.

11. Priority shall be given towards maintaining, protecting and improving the capacity and safety of the existing road system.

12. Existing and future arterial roadways shall be targeted for operational studies to address access management and signalization.

13. Air quality impacts from transportation improvements and the existing network shall be minimized.

14. Noise impacts from transportation improvements and the existing network shall be minimized.

15. Fuel consumption shall be minimized.

16. The movement of hazardous material transported through Boone County shall be monitored.

17. The displacement of people, the relocation of businesses and community facilities, and the disruption of communities shall be minimized.

18. Roadways under County or City jurisdiction shall be designed to recognize the planned character of an area, and provide space for landscaping and entry features.

Goal: The local transportation system in Boone County shall be maintained and improved so that overall safety and level of service will be enhanced. Inefficiencies in the system will be identified and addressed. New land development shall be closely coordinated with the local transportation system to assure efficiency and continuity with the regional multimodal transportation system.

Objectives:

1. Roadway capacity shall be preserved by enforcement of the access management policies and guidelines.

2. New connector streets shall be developed where needed and feasible thus lessening the total dependence on arterial, collector, and local streets. Existing connector streets shall be improved where needed.

3. Proper access to adjoining property shall be provided and/or retained when a property develops or redevelops.

4. Intersection improvements, signal system enhancements and maintenance, and other types of operational improvements shall be made.

5. Roadways shall be properly classified and designed.

6. Existing street systems and retail areas shall be studied to identify for deficient pedestrian/bicycle facilities. Improvement plans shall be developed for areas of highest need.

7. Transportation Planning and development efforts shall provide for sufficient right-of-way to allow for road improvements or future roads.

8. Based on demonstrated development impacts and adopted transportation planning documents, new and improved roadways shall include pedestrian and bicycle facilities to advance legitimate government interests regarding multi-modal transportation. As a design consideration, preference should be given to bike and pedestrian paths that are separated from the roadway for safety.

9. The Boone County Transportation Plan shall be updated as necessary.

10. It is essential that the legislative bodies establish a Capital Improvement Plan, to maintain and improve the level of service of the transportation system in Boone County and to better manage growth in the county through appropriate phasing of new public infrastructure. This Capital Improvement Plan would be an integral part of the Transportation Plan described in Objective #9 above.

11. Creative ways of funding the expansion and improvement of the transportation system shall be examined.

12. Efficient coordination between local, county and state jurisdictions for transportation improvements shall be promoted.

13. The Ohio River shall be studied to ascertain its potential for various land uses such as business, residential, resort and port operations, and to determine the needed surface transportation connections to such uses.

Goal: The interdependence between transportation systems and land use patterns is recognized and used to assure future development and redevelopment is planned with multimodal transportation facilities.

Objectives:

1. Developers of planned, mixed-use neighborhoods shall design such projects so that residential, retail, office, compatible light-industrial land uses can be served by transit stations or stops, pedestrian and bicycle facilities, open space and public uses.

2. Transit corridors shall be recognized as attractors for new economic development.

3. Redevelopable and infill sites shall be encouraged to develop as walkable, mixed-use districts.

4. The incremental effects of developments on the transportation system shall be evaluated and provided for.

POPULATION

SUMMARY

The following statements summarize the findings within the population element:

- Boone County's rapid growth since 1940 is anticipated to continue and even grow more rapidly through the year 2020 when an estimated 139,000 people will live in Boone County, compared to the approximately 64,000 residents in 1994.
- Florence has experienced rapid growth since 1940, however, its growth is anticipated to be modest unless the City continues to annex residential areas.
- Boone County's population is increasingly being characterized as suburban in nature.
- Boone County is characterized by a high proportion of young and middle aged persons. Boone County's median (average) population is projected to grow older as these young and middle aged persons move into older age groups.
- The percentage of Boone County's households characterized by married couples is anticipated to continue to decrease as a percentage of total households.
- Boone County's greatest areas of future population growth are anticipated to occur along KY 237 north of I-275, east of Camp Ernst Road and west of U.S. 42 through the Union Area. The western areas of Boone County are anticipated to experience modest population growth in the form of non-subdivision single family residences.
- Boone County's population will become more diverse, including racial mix, as is typical of urbanizing areas.

The latest socio-economic data available at the time of this writing is a conglomeration of data provided by the Kentucky State Data Center, OKI Regional Council of Governments, 1990 U.S. Census data and 1998 U.S. Census estimates as well as the Boone County Planning Commission. The publication of the 2000 Census will provide further evidence of these estimates and trends.

Impact on Future Land Use

The overall need for greater population densities in the eastern portion of Boone County and lower densities in the western portions will affect where the population growth is to occur. During the last five years, development has occurred at a lower density than recommended in the 1995 Comprehensive Plan, however it has occurred at a higher density than previous development. Staff had estimated in 1995 that the developable land would hold approximately 190,000 people at the developed area density of 1.66 people per acre. Based on 1999 existing land use and population statistics, the development density has increased to 1.95 people per developed acre. Projecting this out to include all developable land (not including Developmentally Sensitive Land) yields a simple population projection of 236,183. This build-out estimate includes only the land suitable for development and excludes the areas primarily in the western portion of the county that are not suitable for development (i.e. hillsides and bodies of water), which are identified in future elements in this plan.

The continuing low-density development in Boone County does not match some of the higher density residential land use areas recommended on the 2020 Land Use Map during the 1995 Comprehensive Plan Update. The 2020 Future Land Use Map's recommendations calling for higher residential densities are not being implemented. The result is that additional land outside the 2020 recommended urban land uses may need to be considered for suburban or urban development for the 2025 Land Use Plan. These conclusions have been drawn in order to assist in the drafting of other elements in this plan including the Land Use element.

HISTORY

Boone County was established in 1798 and was inhabited by 1,500 persons. From the early 1800's until the 1850's Boone County experienced relatively steady population growth. This population growth was related to the County's position on the Ohio River and the dominant form of travel at the time, the steamboat. The steamboat era resulted in the growth and prosperity of Boone County's rivertowns, such as Belleview, Petersburg, and Taylorsport. The inland crossroad towns of Burlington, Florence, Walton, Union, and Verona were dominated by farming activities and the harvesting of hardwood forests.

In the mid to late 1800's, Boone County's population growth began to stagnate and experience losses. The dominant form of travel was shifting from the steamboat to the locomotive. The rail lines that transversed Boone County only passed through Florence, Walton, and Verona. Accordingly those areas and towns that were served by the railroads prospered and gained population, while the unserved areas stagnated and lost population.

The 1940's marked the beginning of the automobile era, and Boone County subsequently reversed its decline in population into positive population growth. Boone County's population has increased dramatically since the early 1960's to the present due in large part to the readily available automobile access provided by the interstates and related roadways, as well as from the airport. Unincorporated Boone County has experienced the greatest population growth, while the City of Florence is the Boone County city that has experienced the greatest level of population growth. Most of this growth is due to in-migration rather than natural population growth. **Table 2.1** describes Boone County's population by municipality since 1950.

TABLE 2.1 - BOONE COUNTY POPULATION BY MUNICIPALITY, 1950-2000

	1950		1960		1970		1980		1990		2000*	
	Persons	% Total	Persons	% Total	Persons	% Total	Persons	% Total	Persons	% Total	Persons	% Total
Florence	1,325	10.2%	5,837	26.6%	11,457	34.9%	15,586	34.0%	18,624	32.4%	23,035	27.1%
Walton	1,358	10.4%	1,530	7.0%	1,801	5.5%	1,651	3.6%	2,034	3.5%	2,517	3.0%
Union	n/a	n/a	n/a	n/a	n/a	n/a	601	1.3%	1,001	1.7%	2,314	2.7%
Unincorporated	10,332	79.4%	14,573	66.4%	19554	59.6%	28,004	61.1%	35,930	62.4%	57,206	67.2%
Boone County Total	**13,015**		**21,940**		**32,812**		**45,842**		**57,589**		**85,072**	

*Source: US Census Bureau, Kentucky State Data Center; *Source: Boone County Planning Commission*

POPULATION TRENDS

Population Trends, 1950-2000

Since 1950, the population of Boone County increased from 13,015 persons to an estimated year 2000 population of 85,072 persons (see **Table 2.1**). Boone County's population represents a continuance of phenomenal growth. The sharpest increase, in terms of growth rate, occurred in the 1950-60 time period when the population increased by 68.6%. The sharpest increase, in terms of absolute increase in the number of persons, occurred in the 1990-2000 time period when the population increased by an estimated 27,483 persons. Boone County's population increased by 47.7% from 1990 to 2000 and a total of 554% from 1950 to 2000.

The three incorporated municipalities in Boone County - Florence, Walton, & Union have demonstrated steady population growth since 1950. Florence, the largest municipality, has experienced the greatest increases in number of persons. Florence's population size is a reflection of its proximity to the Interstate and related roadways. Its population has continued to increase through infill housing and annexations.

The population of both Florence and Walton increased by 23.7% from 1990 to 2000. However, the greatest increase in Boone County's population has occurred in the unincorporated areas of the County. It is estimated that the unincorporated areas have grown to 57,206 persons. Union has more than doubled its population since 1990.

Although Boone County only makes up a small percentage of the OKI Regional population, it has been growing faster than any other county in the region, which includes Butler, Clermont, Hamilton, and Warren counties in Ohio; Dearborn County in Indiana; and Boone, Kenton, and Campbell counties in Kentucky (**Table 2.2**). Between 1980 and 1990, neighboring Kenton County grew at a 3.7 percent rate, Campbell County grew at a 0.9 percent rate increase. Population in the state of Kentucky grew 4.2% during this period. Boone County's growth from 1980 to 1990 occurred at a 25.6 percent rate. **Table 2.1** also shows that percentage-wise Boone County is the fastest growing county in the OKI Greater Cincinnati region. In fact, the region as a whole grew at a 5.1% rate from 1980 to 1990.

TABLE 2.2 - POPULATION CHANGE IN OKI REGION, 1950-1990

COUNTY	1950		1960		1970		1980		1990	
	Population	Change	Population	Change	Population	Change	Population	Change	Population	Change
Boone	13,015	N/A	21,940	68.6%	32,812	49.6%	45,842	39.7%	57,589	20.4%
Campbell	76,196	N/A	86,803	13.9%	88,704	2.2%	83,317	-6.1%	84,035	0.9%
Kenton	104,254	N/A	120,700	15.8%	129,440	7.2%	137,058	5.9%	142,166	3.7%
Butler	147,203	N/A	199,076	35.2%	226,207	13.6%	258,787	14.4%	291,479	12.6%
Clermont	42,182	N/A	80,530	90.9%	95,372	18.4%	128,483	34.7%	150,187	16.9%
Hamilton	723,952	N/A	864,121	19.4%	925,944	7.2%	873,204	-6.0%	866,228	-0.8%
Warren	38,505	N/A	65,711	70.7%	85,505	30.1%	99,276	16.1%	113,909	14.7%
Dearborn	25,141	N/A	28,674	14.1%	29,430	2.6%	34,291	16.5%	38,835	13.3%
Total	**1170448**	**N/A**	**1467555**	**25.4%**	**1613414**	**9.9%**	**1660258**	**2.9%**	**1744962**	**5.1%**

Source: OKI Regional Council of Governments

Boone County is the second fastest growing county by percentage in the Commonwealth of Kentucky and has had the largest total population increase within the last ten years. **Table 2.3** breaks down the population growth in some of the surrounding counties including Campbell, Kenton, Gallatin and Grant, the counties which contain the two largest cities in Kentucky: Fayette and Jefferson, and two of the fastest growing counties in the State located near Louisville: Oldham and Spencer.

TABLE 2.3 - POPULATION CHANGE IN KENTUCKY COUNTIES, 1990-2000

COUNTY	1990	2000		
	Population	Population	Increase	% Change
Boone	57,589	85,072	27,830	47.7%
Campbell	76,196	88,580	12,384	5.1%
Fayette	226,279	242,564	16,285	3.7%
Gallatin	5,428	7,522	2,094	27.8%
Grant	15,913	21,833	5,920	27.1%
Jefferson	665,480	669,722	4,242	0.6%
Kenton	142,166	147,230	5,064	3.4%
Oldham	33,568	46,036	12,468	27.1%
Spencer	6,846	10,646	3,800	35.7%
Kentucky	**3,692,470**	**3,988,188**	**295,718**	**7.4%**

Source: OKI Regional Council of Governments

The majority of the population growth in the county has occurred in the Florence, Oakbrook, Burlington, Richwood, Hebron and Union areas. **Figure 2.1** is the official 1990 Census Tract Map showing tract boundaries. **Table 2.4** examines the population growth Boone County experienced from 1980 to 1990 in each census tract. The Oakbrook area (1990 Census Designation 703.98) more than doubled in that decade. Data for the 2000 Census Count will be available in 2001.

Figure 2.1 - 1990 Census Tracts

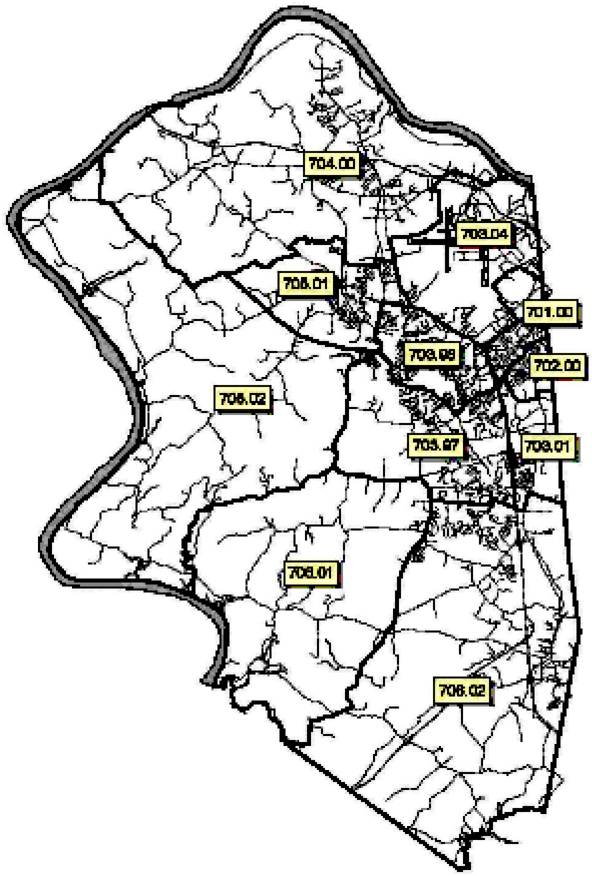


TABLE 2.4 - CENSUS POPULATION 1980-1990

1990 Census Designation	1980	1990	Growth
Boone County	45,842	57,589	26%
Florence	15,553	18,624	20%
Union	634	1,001	58%
Walton	1,651	2,034	23%
701.00	6,622	6,707	1%
702.00	6,798	7,138	5%
703.01	2,583	3,035	18%
703.97 (703.02 in 1980)	3,570	5,207	46%
703.98 (703.03 in 1980)	4,506	9,070	101%
703.04	2,356	2,972	26%
704.00	4,750	5,589	18%
705.00	6,951	8,758	26%
705.01 (part of 705 in 1980)	N/A	5,123	N/A
705.02 (part of 705 in 1980)	N/A	3,635	N/A
706.01	1,666	1,813	9%
706.02	6,040	7,300	21%

OKI Traffic zones are also used to track population growth. These zones produced by the Ohio, Kentucky and Indiana Regional Council of Governments provide a more detailed look at where the population growth has occurred (**Figure 2.2, Figure 2.3,** and **Table 2.5**). In calculating the population for each traffic zone, OKI's information was used in conjunction with zoning permit and site plan data. In general, all of the airport zones have lost population between 1990-2000 due to airport buyouts and the development of manufacturing and industrial parks. Sections of Florence have also experienced population decline where commercial and industrial growth have replaced residential neighborhoods. Older sections of Florence and Walton have experienced a very slow growth rate. The Richwood area has experienced a 50% population increase in the last decade. The rural areas of Big Bone and Rabbit Hash have also seen slow growth. The most significant growth areas are the Union and North areas. Parts of Union have increased over 300% within the last 10 years. Likewise, part of the North area along Northbend Road has increased over 150%.

POPULATION DENSITY, 1950-2000

Population density refers to the number of persons per square mile of land area. The level of population density serves as an indicator of the degree of settlement in an area. Boone County's population density has steadily increased since 1950. **Table 2.6** lists the population densities for Boone, Kenton, and Campbell counties and the state of Kentucky since 1950. In 1950, the population density of Kentucky exceeded that of Boone County and continued to do so until 1960 when Boone County's population density surpassed the population density of the state. The increase in Boone County's population density is directly correlated with the tremendous growth in the County's total population.

Figure 2.2 - 1990 Traffic Zone Pop.

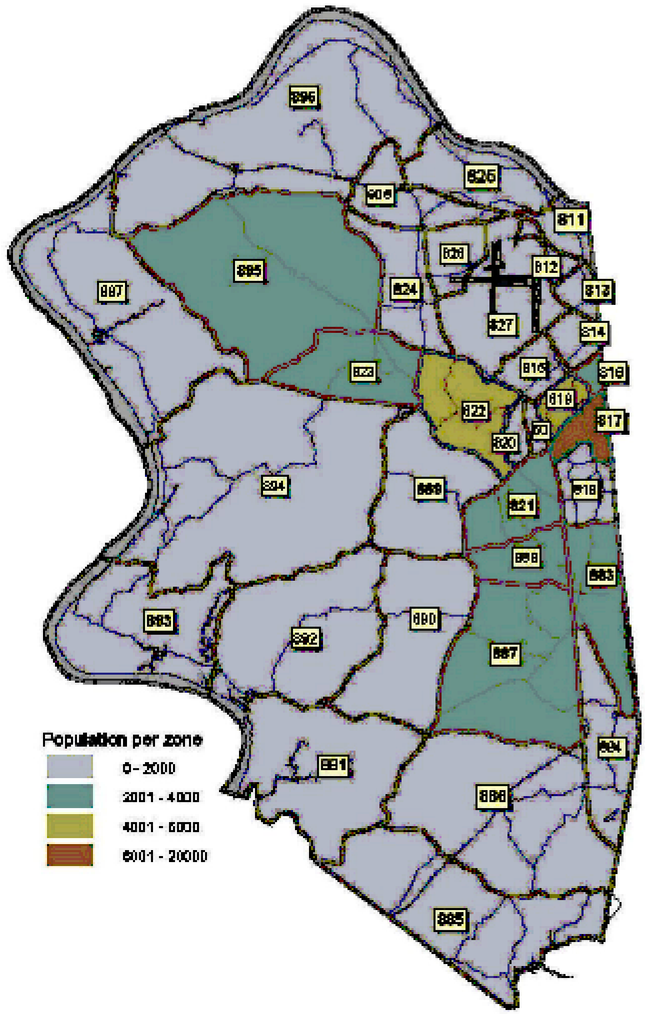


Figure 2.3 - 2000 Traffic Zone Pop.

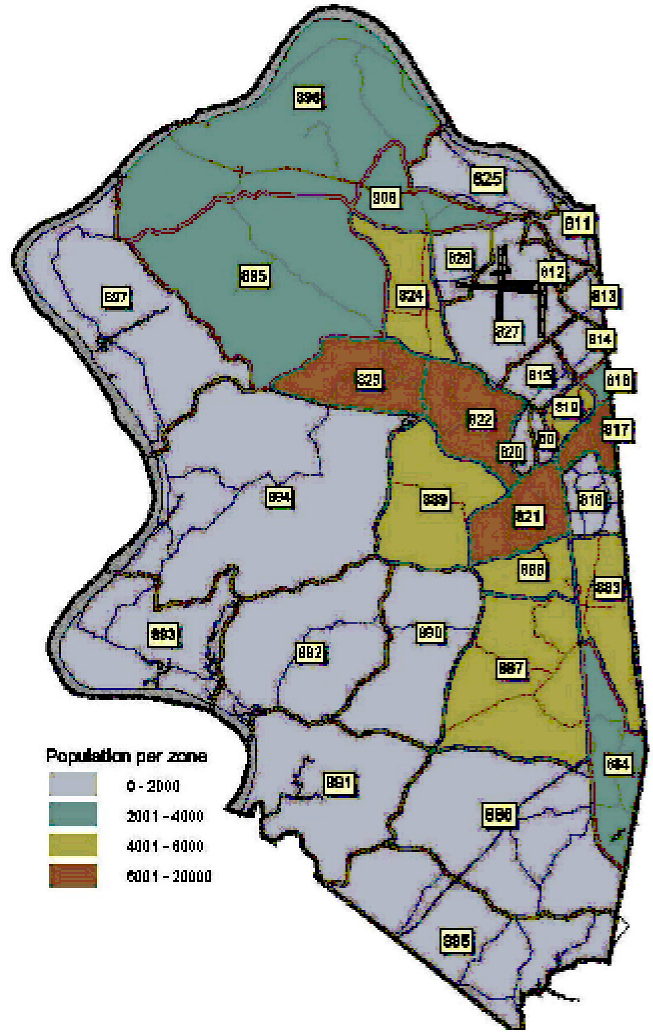


TABLE 2.5 - POPULATION BY TRAFFIC ZONE, 1980-2020

Traffic Zone		1980	1990	2000	% Change 1990-2000
Airport	811	359	341	323	-5.3%
	812	232	266	0	-100.0%
	825	653	531	522	-1.7%
	826	570	600	639	6.5%
	827	333	261	189	-27.6%
	906	867	1,249	2,554	104.5%
Latonia/ Turfway	813	732	905	1,078	19.1%
	814	104	216	432	100.0%
	815	850	1,106	1,162	5.1%
Florence	816	2,086	2,495	2,525	1.2%
	817	6,943	7,113	7,141	0.4%
	818	421	672	602	-10.4%
	819	3,648	4,057	4,161	2.6%
Mall	60	434	407	390	-4.4%
	820	1,628	1,756	1,991	13.4%
	821	1,836	3,169	6,465	104.0%

Traffic Zone		1980	1990	2000	% Change 1990-2000
Richwood	883	2,732	3,040	4,349	43.1%
	887	1,872	3,560	5,973	67.8%
	888	1,151	2,723	4,150	52.4%
Walton	842	1,606	1,857	2,107	13.5%
	885	785	791	797	0.8%
	886	996	1,204	1,211	0.6%
Big Bone	890	501	851	1,201	41.1%
	891	611	633	654	3.3%
	892	641	689	711	3.2%
Union	822	2,844	4,028	7,611	89.0%
	823	1,774	2,721	6,305	131.7%
	889	796	1,301	5,229	301.9%
Rabbit Hash	893	1,014	1,061	1,108	4.4%
	894	1,125	1,275	1,426	11.8%
	897	1,024	1,084	1,144	5.5%
North	824	1,490	1,901	4,116	116.5%
	895	1,758	2,193	2,867	30.7%
	896	1,426	1,533	3,939	156.9%
Total		**45,842**	**57,589**	**85,072**	**47.7%**

Source: OKI Regional Council of Governments, Boone County Planning Commission, 1996 Boone County Transpotation Plan.

TABLE 2.6 - POPULATION DENSITY BY COUNTIES, 1950-2000

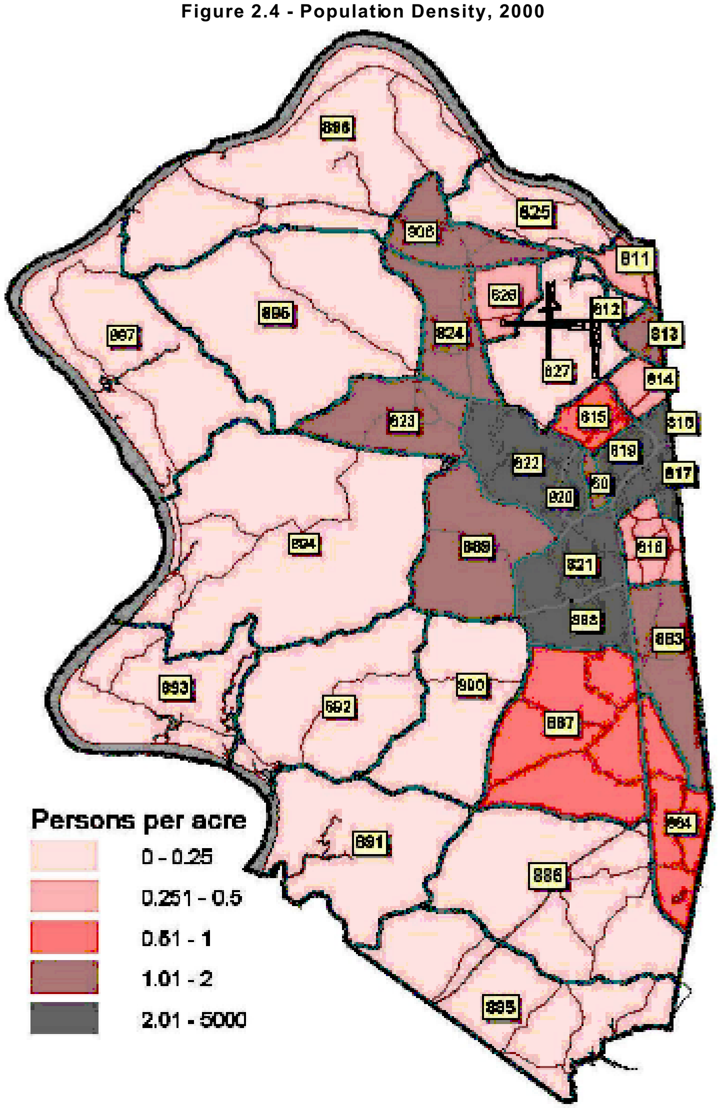
	Population Per Square Mile					
	1950	1960	1970	1980	1990	2000
Boone	53.0	89.2	133.4	186.3	233.8	343.0
Kenton	639.5	740.5	794.1	840.8	873.5	904.6
Campbell	501.3	571.1	582.2	548.1	553.2	586.6
Kentucky	74.2	76.6	81.1	92.3	92.8	NA

Source: Kentucky State Data Center, U.S. Census

Boone County's population density increased from 53.0 persons per square mile in 1950 to 343.0 persons per square mile in 2000. Although this is a substantial increase in population density, Boone County's population density is still considerably less than that of the more heavily urbanized Kenton and Campbell counties. In 2000, Kenton and Campbell counties had population densities of 904.6 and 586.6, respectively.

Figure 2.4 shows that the majority of the higher density population in Boone County is located in the eastern portion of the County near the I-71/75 corridor. The established sections of Florence contain the highest population density up to 7.8 persons per acre. Areas that have been recently built including Pleasant Valley Road and Oakbrook have been developing at just under 3.0 persons per acre. The lowest density areas are located in western Boone County. Most of these areas have less than one person per ten acres.

Figure 2.4 - Population Density, 2000



DAYTIME POPULATION

In 1996, Boone County had a day-time estimated population of 143,855 persons. Daytime Population is defined as the total number of people coming into the county (including those who do not leave the county) minus the number of people who leave the county. Of the 88,719 non-resident people who came into the County daily in 1996, 34% came to work, 29% were airport travelers, 25% were retail customers, 9% were restaurant patrons, 2% were Turfway Racetrack patrons, 1% stayed in hotels and .5% were movie theater patrons (see **Table 2.7**).

Rural to Rural Non-Farm & Urban Shift, 1940 - 2000

The United States Bureau Of The Census classifies a county's population as either urban, rural farm, or rural non-farm (suburban). This classification is based on the location of an individual's home and the amount of an income that is earned from agricultural activities.

In 1940, Boone County's population was classified as completely rural, however a distinction was made between rural farm and rural non-farm (or suburban). The suburban portion comprised 40.8% of the county's population, while 59.2% of the population was rural farm. Therefore, in 1940 Boone County was considered primarily agricultural in nature. By 1950 the suburban nature of the population surpassed the rural farm population, providing an indication of Boone County's changing character.

TABLE 2.7 DAYTIME POPULATION*, 1996	
Category	**Average Daily Population**
2000 Population Less Residents Employed Outside the County	55,136
1995 Non-Residents Working in Boone County	29,929
1994 Airport Travelers	25,873
Non-Resident Florence Mall Customers	19,329
Non-Resident Fast Food Restaurant Customers	6,589
Non-Resident Major Retail Customers	2,448
Non-Resident Turfway Racetrack Patrons	1,514
Non-Resident Major Destination Restaurant Customers	1,300
Hotels (Daily Occupancy Load)	1,214
Non-Resident Movie Theater Patrons	523
Total Daytime Populatio	**143,855**

*Source: Daytime Population Study, Boone County Planning Commission; **

In 1960, Boone County's population was characterized as both urban and rural. The urban portion comprised 26.4% of the population, the suburban portion comprised 47.4% of the population, and the rural farm portion comprised 26.2% of the population. The shift in the rural farm portion of Boone County's population was completely characterized by urbanization and suburbanization. In 1990, the urban portion comprised 61.3% of the population, the suburban portion comprised 36.4% of the population, and the rural farm portion comprised only 2.3% of the population. **Table 2.8** provides 1990 population composition data for Boone County.

In a regional context, Boone County is less urban than neighboring Kenton and Campbell Counties, but more so than the Commonwealth of Kentucky. Boone County is characterized by a population that is more rural non-farm than both Kenton and Campbell Counties. **Table 2.8** provides 1990 urban, rural farm, and non-farm (suburban) composition data for the three counties, and Kentucky. The 2000 census count will provide information on how these numbers have changed since 1990.

Table 2.8 Urban, Rural Farm, and Non-Farm Composition, 1990

	Total Population	Urban		Rural Farm		Rural Non-Farm	
		Number	Percent	Number	Percent	Number	Percent
Boone County	57,589	35,302	61.3	1,350	2.3	20,937	36.4
Kenton County	142,031	131,549	92.6	688	.5	9,794	6.9
Campbell County	83,866	69,137	82.4	967	1.2	13,762	16.4
Kentucky	3,685,296	1,910,028	51.8	174,204	4.7	1,601,064	43.55

Source: U.S. Census

Migration, 1950-1990

Migration is a basic indicator of the economic situation within an area. Generally, if the local economic climate is poor, a negative migration is experienced as local residents immigrate to areas with brighter economic situations. If the local economic climate is good, a positive migration is experienced as outside residents immigrate to the area to take advantage of the promising economic situation. As previously mentioned, Boone County experienced a period of stagnated and negative growth, or out-migration, from the late 1800's to the mid 1900's due to the relatively poor economic situation resulting from the lack of rail line service and the fact that machinery enabled farmers to have larger farms. However, in the 1950 to 2000 time period, Boone County experienced a significant positive migration rate due to the County's bright economic situation, desired residential amenities, its proximity to downtown Cincinnati, and the subsequent suburban growth patterns.

In a regional context, Boone County's positive migration rates are different than Kenton and Campbell Counties and the overall state, as these areas have generally experienced negative migration rates. It should be noted that an area can experience negative migration but still have increases in population due to birth rates that compensate for the out-migration. A detailed look at recent migration (**Table 2.9**) reveals that over 40% of Boone County's population is coming from neighboring Kenton County. The remainder of the Greater Cincinnati area brings in just under 20% of the in-migration. Less than 2% of the total in-migration comes from Louisville and Lexington, Kentucky. The south region is another large source of in-migration at just over 10%.

Table 2.9 - Sources of In-Migration To Boone County, 1991-1995

County and State of Origin	Percentage Migrating From Each Area		
	1991-1992	1992-1993	1994-1995
Kenton County, KY	42.1	44.3	42.1
Campbell County, KY	5.5	5.3	5.3
Hamilton/Butler/Clermont/ Warren County (Cincinnati) OH	10.5	10.8	10.4
Dearborn County, IN	0.6	0.9	0.8
Gallatin/Grant/Pendelton/Carroll/Owen County, KY	4.5	4.8	5.7
Louisville, KY	1.2	0.9	0.8
Lexington, KY	0.8	0.7	0.9
Dayton/Columbus , OH	1.5	1.1	0.7
Indianapolis/Chicago/Detroit,	1.0	0.7	1.2
Los Angeles, CA	0.9	1.0	1.5
OTHER AREAS BY REGION:			
Northeast (ME, VT, CT, MA, RI, NH, NY, NJ, PA, DE, MD, WV, OH, IN, IL, WI, MI)	3.5	3.5	2.3
Midwest (MN, IA, MO, AR, LA, TX, OK, KS, NE, SD, ND, MT, WY, CO, NM)	8.5	7.7	9.5
South (VA, NC, SC, TN, GA, FL, MS, AL)	11.4	10.0	12.0
West (ID, UT, AZ, NV, CA, OR, WA)	2.6	3.5	3.4
All other Counties in Kentucky	4.6	3.9	3.0
Foreign Countries	0.8	0.6	0.4

Source: Boone County Planning Commission

POPULATION CHARACTERISTICS

Age and Sex Distribution

The relative youthfulness of Boone County's median age is evident in the breakdown of its age groups. However, the effects of an aging population are evident as the older age groups increase their proportion of the total population at the expense of the younger age groups. Since 1980 the 0-24 age bracket showed a significant decrease in the percentage of the total population. Coincidentally, the 25 and older age bracket all showed a significant increase in the percentage of the total population. People are having less children while living longer.

Due to the strong presence of the 19-64 age group, the dependency ratio for Boone County is relatively low. The 1980 and 1990 dependency ratios are 71.9 and 60.3 respectively. The dependency ratio measures the number of dependent persons, defined as those that fall into the age groups of 0-18 and

65 and older, against the number of productive persons, defined as those who fall into the age group of 19-64. The closer the dependency ratio approaches 100, the greater the tax burden on the area's economy to provide necessary community facilities and services. The proportion of Boone County's male population to female population is essentially even.

For 1980, the male population comprised 49.2% of the total population and the female population comprised 50.8% of the total population. The 1990 male population to female population remained essentially the same with the females picking up a percent and the males losing a percent. **Table 2.10** provides 1980-1998 age and sex distribution data for Boone County.

TABLE 2.10 - AGE AND SEX DISTRIBUTIONS, 1980 - 1998

	1980		1990		1998	
Age	Number	%	Number	%	Number	%
0-4	4,090	8.9	4,675	8.1	6,430	8.1
5-17	10,998	24.2	12,238	21.3	16,165	20.3
18-24	5,658	12.4	5,437	9.4	7,099	8.9
25-44	14,026	30.6	20,151	35.0	26,433	33.2
45-64	7,944	17.3	10,338	18.0	16,854	21.1
65 +	3,125	6.8	4,750	8.2	6,690	8.4
Male	22,557	49.2	28,007	48.6	n/a	n/a
Female	23,285	50.8	29,582	51.4	n/a	n/a

source: KY State Data Center

Racial Composition

Boone County's population is relatively homogeneous in racial composition with the majority of the population defined as white. Boone County's 1980 non-white population (Black, American Indian, Eskimo, Asian, etc.) comprised 1% of the total population. The non-white population is rising slightly as the percentage of non-white population in 1998 was 2.4%. The largest concentration of non-white persons, as a percentage of total population, in Boone County for 1998 existed in the City of Florence. Florence's non-white population comprised 2.4 percent of its total population. Walton's non-white population comprised 2.3% of its total population, and Union's total population contained 1.5% of non-white residents. Unincorporated Boone County's non-white population comprised 1.1% of the total population of unincorporated Boone County. **Table 2.11** provides 1980 - 1998 racial composition data for Boone County.

TABLE 2.11 - RACIAL COMPOSITION OF BOONE COUNTY, 1980 - 1998

Race	1980	% Total	1990	% Total	1994	% Total	1998	% Total
White	45,392	99.0%	56,716	98.5%	66,502	97.9%	78,317	97.6%
African-American	219	0.5%	361	0.6%	443	0.7%	533	0.7%
Indian	31	0.1%	88	0.2%	96	0.1%	111	0.1%
Asian	117	0.2%	355	0.6%	500	0.7%	710	0.9%
Hispanic	NA	NA	NA	NA	401	0.6%	600	0.7%
Other	83	0.2%	69	0.1%	NA	NA	NA	NA
Total	**45,842**	**100%**	**57,589**	**100%**	**67,942**	**100%**	**80,271**	**100%**

Source: US Census Bureau

In a regional context, Boone County's percentage of non-white population was smaller than Kenton County and Kentucky, but it was larger than that of Campbell County. Kenton and Campbell Counties' 1990 non-white population was 3.5 percent and 1.5 percent of the total population, respectively. Northern Kentucky as a whole has a relatively small non-white population. Kentucky's 1990 non-white population comprised 8.0 percent of the State's total population.

Educational Attainment

Educational attainment is primarily measured in terms of the percentage of high school graduates for persons who are 25 years old and older. Boone County's 1990 percent of high school graduates was 76.4 percent. **Table 2.12** provides 1990 educational attainment data for Boone County. In a regional context, Boone County's percent of high school graduates for persons 25 years old and older was higher than neighboring Kenton and Campbell counties and Kentucky.

TABLE 2.12 - EDUCATIONAL ATTAINMENT, 1990

	Persons 25	High School	College (Assoc.)	College (Bachelor)
Boone County	35,347	12,866	1,803	3,435

Source: U.S. Census

Poverty

The level of poverty in an area reflects, to a certain degree, the degree of economic stress in an area. The U.S. Bureau of the Census defines the level of poverty by the cost of food consumption for a family of three or more. The poverty rate represents the percentage of the population that is living at or below the established poverty level. Boone County's poverty rate for the 1980-90 time period was relatively low, providing an indication of a strong economy. The highest poverty rate was 8.5 percent recorded in 1982, reflecting the presence of a national economic downturn. In a regional context, Boone County's poverty rate was lower than neighboring Kenton and Campbell Counties, and significantly lower than Kentucky. The state's poverty rate for 1990 was 19.0 percent. **Table 2.13** provides 1980-90 poverty rate data for Boone, Kenton, and Campbell counties, and Kentucky.

TABLE 2.13 POVERTY RATES, 1980-90
(PERCENT BELOW POVERTY LEVEL)

	1980	1985	1990
Boone County	7.8%	7.3%	7.4%
Kenton County	11.0%	9.9%	9.9%
Campbell County	10.5%	10.1%	11.0%
Kentucky	19.3%	18.7%	19.0%

Source: U.S. Census

Households and Family

The basic reporting unit, in terms of demographic data is the household. The household is also the most prevalent living arrangement in American society. A household can either be classified as a family household or a non-family household. A family household is comprised of two persons or more who are related by blood, legal adoption, or marriage. According to Census results, the average household size in 1990 was 2.85 persons. The average household size will most likely decrease with the 2000 Census count.

In 1990, Boone County's total number of households equaled 20,127. Family households comprised 78.1 percent of the total number of households (down from 1980's percentage of 83.7) and non-family households comprised 21.9 percent of the total number of households (up from 16.3 percent in 1980). Family households generally represent married persons who are more likely to remain in the area in which they are currently residing. Non-family households generally represent single persons who are relatively transitory and career mobile. Therefore, Boone County's population is relatively stable due in part to the high percentage of family households. The continued high percentage of family households further suggests that Boone County's population is relatively stable and nontransitory.

The 1980 total number of families in Boone County was 12,428. The percentage of those families who were married couples totaled 87.4 percent. The 87.4 percent of married couples were comprised of 51.6 percent of married couples with children and 35.8 percent of married couples with no children. The area with the greatest percentage of married couples was Union, followed by unincorporated Boone County, Florence, and Walton. **Table 2.14** shows the family structure for Boone County in 1990.

	TABLE 2.14 HOUSEHOLD CHARACTERISTICS BY TRACT											
	701.00	702.00	703.01	703.02	703.03	703.04	704.00	705.01	705.02	706.01	706.02	County
Total Persons	6,707	7,138	3,035	5,207	9,070	2,972	5,589	5,123	3,635	1,813	7,300	57,589
Persons in Households	6,567	7,138	3,035	5,207	9,070	2,823	5,589	5,005	3,635	1,813	7,295	57,177
Total Households	2,694	2,844	1,088	1,641	3,186	1,044	1,777	1,650	1,164	580	2,459	20,127
Persons Per Household	2.4	2.5	2.8	3.2	2.8	2.7	3.1	3.0	3.1	3.1	3.0	2.8

Source: US Census Bureau

POPULATION PROJECTIONS

Population projections are derived from statistical analysis procedures that consider both recent and historical population trends. The population forecast for a political entity, such as Boone County, is generally considered realistic. Population forecasts for political entities such as Florence, Walton, or Union, are generally considered somewhat questionable due to the possibility that annexations may affect the population growth.

Population forecasts for Boone County are derived from two separate sources. The first source of population forecast is the Kentucky State Data Center at the University of Louisville. The Kentucky State Data Center provides the official population forecasts for Kentucky. The second source of population forecast is the Ohio-Kentucky-Indiana Regional Council of Governments (OKI). In addition, the Boone County Planning Commission staff has updated population data and has generated its own forecasts.

Kentucky State Data Center Forecasts

The Kentucky State Data Center's population forecasts for Boone County were made by utilizing the age-sex cohort survival population forecasting methodology. This particular methodology generates population forecasts for County residents by sex and age groups through the examination of the three components of population change: births, deaths, and migration. The age-sex cohort survival population forecasting methodology is the most commonly utilized population forecasting model and is considered to be relatively accurate. The Urban Studies Center has forecasted Boone County's 2010 and 2020 populations at 112,000 and 139,000 persons respectively.

Boone County's population is forecasted to become more elderly in proportion, following a national population trend. The shift is due to a large proportion of individuals moving into the 45-64 years old age group and the 65+ years old age group. From 1990 to 2020 the 0-4 years old age group, the 5-19 years old age group, and the 20-44 years old age group gradually decline in their percentage of total population. Conversely from 1990 to 2020 the 45-64 years old age group and the 65 and older years old age group gradually increase in their percentage of the total population.

OKI Traffic Zones Forecast

The Ohio-Kentucky-Indiana Regional Council of Governments (OKI) divided Boone County into separate transportation analysis zones (due to transportation being OKI's main planning function) and generated population projections for each zone to the years 2010 and 2020. **Table 2.15** shows OKI's population projections for each of the traffic zones through 2020. **Figure 2.5** graphically depicts the traffic zones and the projected 2020 population of each (total population of each traffic zone is written on the map). **Figure 2.6** indicates where the future population densities are projected to be in the Year 2020.

Specifically, traffic zones 811, 812, 825, 826 and 827 are expected to decline due to the impact of the expanding airport. The western and southern portions of the county as well the established portions of Florence are expected to increase only slightly. The expected high growth areas are North Bend, Burlington and Union.

Table 2.15 Population and Projections by Traffic Zone, 1980-2020

Traffic Zone		2000	2010	2020	Percent Change	
					2000-2010	1980-2020
Airport	811	323	269	293	-20.1%	-10.2%
	812	0	0	0	0.0%	0.0%
	825	522	513	504	-1.7%	-3.6%
	826	639	839	964	31.3%	50.9%
	827	189	143	1	-24.3%	-100.0%
	906	2,554	3,002	3,282	17.5%	28.5%
Latona	813	1,078	1,263	1,425	17.6%	32.2%
	814	432	864	1,761	100.0%	307.6%
	815	1,162	1,218	1,275	4.8%	9.7%
Florence	816	2,525	2,555	2,616	1.2%	3.6%
	817	7,141	7,169	7,197	0.4%	0.8%
	818	602	542	460	-11.1%	-30.9%
	819	4,161	4,265	4,369	2.5%	5.0%
Florence Mall	60	390	368	387	-6.0%	-1.0%
	820	1,991	2,166	2,710	8.8%	36.1%
	821	6,465	7,584	8,435	17.3%	30.5%
Richwood	883	4,349	4,891	5,236	2.0%	20.4%
	887	5,973	8,402	9,459	40.7%	58.4%
	888	4,150	5,001	5,687	20.5%	37.0%
Walton	884	2,107	3,206	4,206	52.2%	99.6%
	885	797	799	1,399	0.3%	75.5%
	886	1,211	1463	3,065	20.8%	153.1%
Big Bone	890	1,201	4,001	6,445	233.1%	436.6%
	891	654	650	944	-0.6%	44.3%
	892	711	733	921	3.1%	29.5%
Union	822	7611	9437	12788	24.0%	68.0%
	823	6305	8418	9436	33.5%	49.7%
	889	5229	9772	12455	86.9%	138.2%
Rabbit Hash	893	1108	1155	1203	4.2%	8.6%
	894	1426	3073	4388	115.5%	207.7%
	897	1144	1145	1145	0.1%	0.1%
North	824	4116	5789	7000	40.6%	70.1%
	895	2867	4483	6667	56.4%	132.5%
	896	3939	6822	10878	73.2%	176.2%
Total		**85,072**	**112,000**	**139,000**	**31.7%**	**63.4%**

Source: OKI Regional Council of Governments, Boone County Planning Commission, Boone County 1996 Transportation Plan.

Figure 2.5
Projected 2020 Population by Traffic Zone

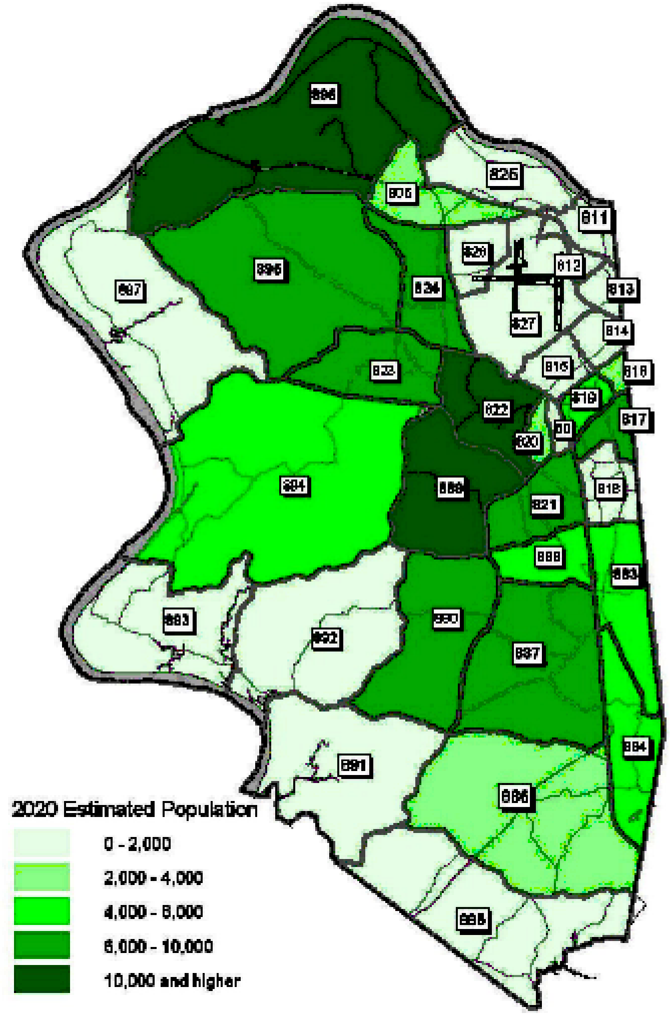
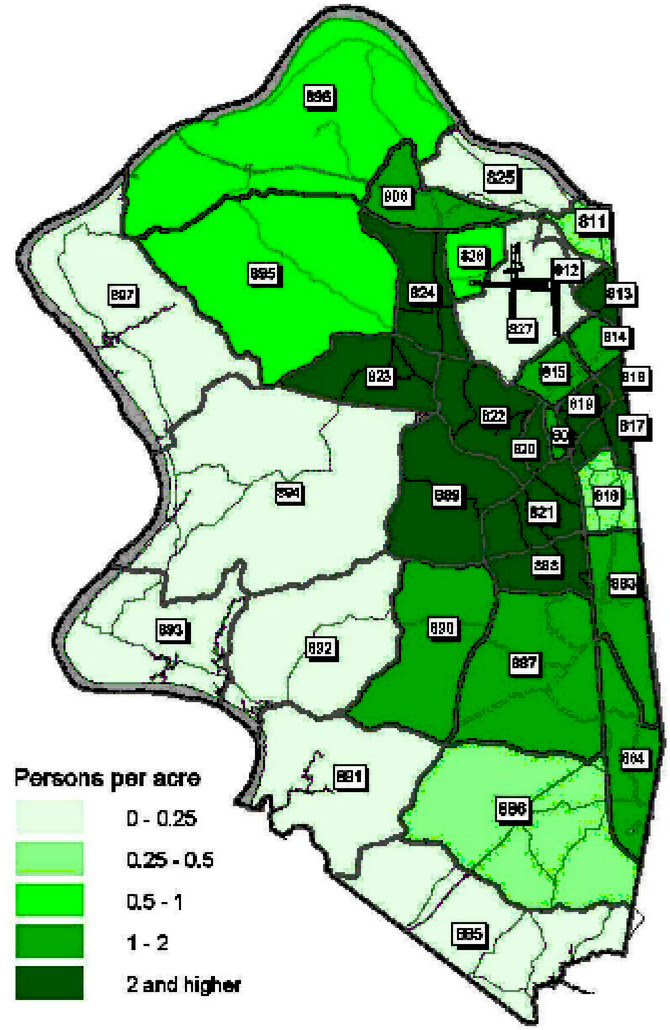


Figure 2.6
Projected 2020 Density by Traffic Zone



Over the next 20 years suburban growth of approximately 3.0 persons per acre will continue to spread westward into western Boone County. Established sections of Florence will maintain their current densities. The northern section of the County and the middle section including Burlington and the Pleasant Valley Road and Camp Ernst Road areas will also experience an increase in population density. The land in the western portions of the county should remain rural at less than one person per 5 acres and less than 1 person per 10 acres in some areas.

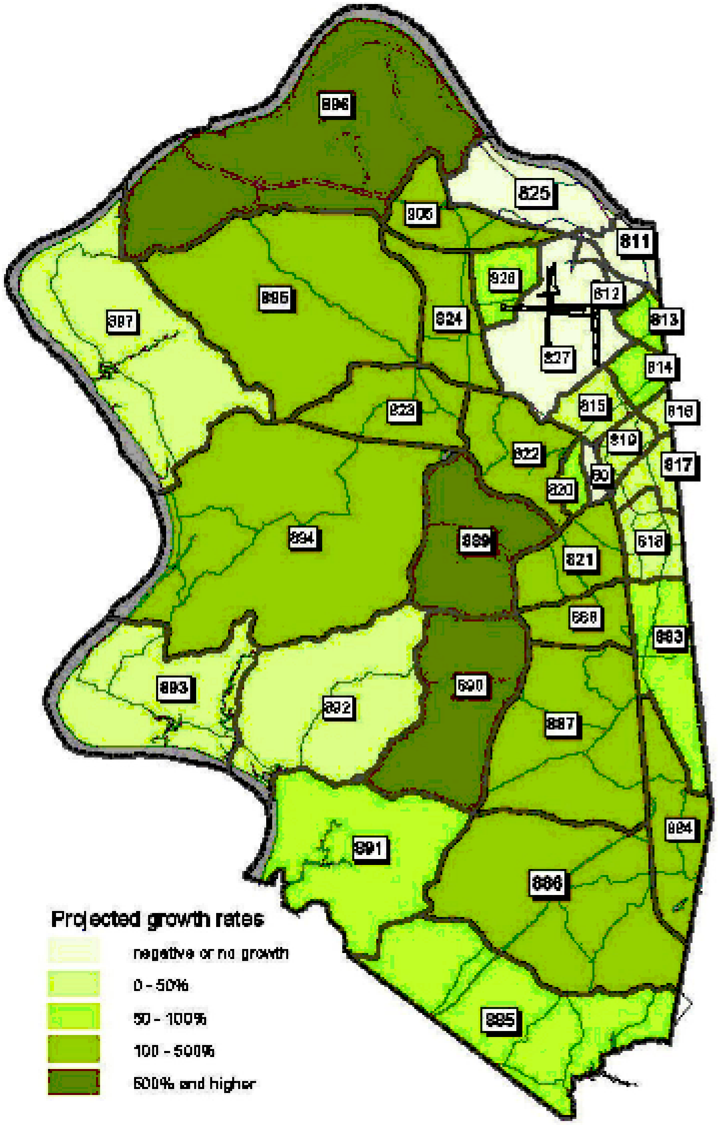
Figure 2.7 indicates in map form where the population is expected to increase, remain the same or, in some cases, decline from the year 1980 to 2020. The majority of projected population growth percentages throughout the county are astounding. The northern and middle sections of the county will have increased by over 500% between 1980 and 2020. The Western portions of the county, as well as the established sections of Florence, are expected to only increase slightly. Areas around the airport are expected to decrease in population as the airport expands. All other areas of the county are expected to continue to grow significantly.

The OKI population forecasts for Boone County were made for each population analysis zone by considering three factors:

1.Housing changes for a given period of time in order to determine the proportion of individual population analysis zone growth relative to overall County growth;

2.The existing land uses;

Figure 2.7
Projected Population Growth by Traffic Zone



3. The capability for future growth, based on location in the Cincinnati region, job growth, and infrastructure.

Determining the growth capability of a population analysis zone involved the physical constraints on available land and public facilities, Boone County planning studies, and local knowledge concerning the growth of Boone County. The population data compiled by the Planning Commission has been utilized in the <u>Boone County Transportation Plan</u> and other planning documents.

ENVIRONMENT

The Environment is defined by the dictionary as the circumstances, objects, or conditions that surround us and the aggregate of social and cultural conditions that influence the life of an individual or community. Natural features such as wooded hillsides, scenic valleys, rivers, creeks, and open fields are especially important in establishing a unique character and providing amenities, which make a community special. These amenities also provide additional, less visible qualities, such as cleaner air, recreational areas, and wildlife habitat that are equally important to a community. It can be argued that rapid growth and development has a very dramatic effect on the physical and social environment of a community. This growth can affect many of the characteristics which made the community unique, or that its residents feel are important. Therefore, development should preserve and promote an overall high quality of life while allowing a reasonable economic return.

ENVIRONMENT SUMMARY HIGHLIGHTS

While acting as an attraction to new residents, prime agricultural land, wooded hillsides, and stream corridors are the factors that are most impacted by new development.

Flooding caused by urban and suburban development is increasingly affecting both the major and minor tributaries. In the early 1990's only several creeks, such as Gunpowder and Elijah's Creeks experienced significant flooding, however, this Plan notes that many others now are affected, such as Sand Run, Woolper, Big Bone, and many smaller tributaries of the Gunpowder Creek watershed. Regional and local stormwater detention, as well as erosion control and enforcement, need to be addressed in more detail in local regulations.

Soils in Boone County are generally not well suited for septic leach activity. Extension of public water supply into rural areas must be carefully examined to determine its effect on water usage and resulting effect on septic performance.

Development and environmental conservation can benefit each other instead of being treated as opposing factors. There are innovative tools that can provide incentives, tradeoffs, or simply good design to result in development patterns that make use of or conserve natural resources instead of building over them. These objectives can be achieved without excessive regulation.

Special corridor studies need to be conducted on a continuing basis to consider natural areas in Boone County for innovative development design, conservation, recreation, or preservation.

BACKGROUND

The Greater Cincinnati Metropolitan Area has undergone dramatic changes over the last 40 years that have altered the natural landscape forever. The existing pattern of suburban development has continued to spread unabated during this 40 year period into most areas of Metropolitan Cincinnati. Boone County has been no exception to these suburban development patterns. In fact, Boone County has been one of the fastest growing Counties in the Metropolitan Statistical Area for more than two decades. This growth is projected to continue at a similar rate well into the future.

The county is located less than 15 miles from downtown Cincinnati, has three interstate highways, an international airport, a regional shopping mall, and almost 40 miles of river frontage, however, a significant part of the county can still be considered rural. The rural country character of Boone County is a desirable environmental quality which attracts people to become residents of Boone County. Ironically this quality, which attracts many new residents to Boone County, is threatened by the development built to accommodate those residents.

Prime agricultural land, woodland areas, scenic valleys, stream quality, and hillsides are the most significant features replaced by development. The extension of water and sanitary sewer lines determine the rate and location of growth as much as any other single factor. As Boone County growth continues and environmental issues become more critical, issues such as water quality, air quality, noise and light pollution, stormwater, and decreased open space all can combine to affect the quality of life within Boone County.

METHODOLOGY

The purpose of this Element is to identify development impacts on the environment within the twenty-five year planning horizon, and determine how Boone County can continue to develop without destroying the qualities that make Boone County a unique place to live. This element identifies the physical and social characteristics of the environment that should affect the nature of development. The degradation of these characteristics can have a significant impact on the quality of life within Boone County. Therefore, the physical and social factors which establish development restrictions for any particular site should be used to enhance the quality of a development and ensure proper integration with its surroundings. Physical factors specify the environment's capability of supporting development within the limits of engineering technology, while social factors indicate the suitability of a site for development based on culturally defined values. These two classifications are intended to constitute an inventory of the environment and are meant to be advisory rather than absolute. The classifications should affect the design of new development. They should not be used as a sole determinate of whether or not a specific site should develop, unless a specific study shows this to be the case. The Environment Element is intended to guide development, not stop it. The description of the characteristics for physical and social categories is as follows:

Physical Factors Classifications:

Capable - The characteristics of this physical factor of the environment can support all types and intensities of urban use, subject to some site specific restrictions on design.

Limited Capability - The characteristics of this physical factor have some restrictions in ability to support urban uses due to existing physical conditions; low to moderate density urban uses can be accommodated if designed and constructed within appropriate performance standards.

Very Limited Capability - The characteristics of this physical factor have serious environmental hazards regarding development, and have very little potential of being adapted for urban land uses .

Social Factors Classifications:

Suitable - The characteristics of this social factor are appropriate for all types and intensities of urban use, subject to site specific design restrictions.

Limited Suitability - The characteristics of this social factor have some restrictions for urban uses; low to moderate density uses are possible with appropriate design restrictions and performance standards.

Very Limited Suitability - The characteristics of this social factor have very little appropriateness for urban uses of any kind because of their high social value.

The following information on the environment of Boone County has been provided by and modified from the 1978 Reconnaissance Report 1. The analysis of the data involves physical and social factors that, when considered separately or jointly, result in quantities of land at specific locations throughout the county that have varying degrees of restrictions for development. Limits on the land development at higher densities can be due to one or more physical or social environmental constraints. The conclusions drawn from this analysis indicate potential future locations for development, as well as areas that need to be preserved or protected from development.

PHYSICAL FACTORS INVENTORY

This inventory of the physical factors of the environment examines 10 factors which affect development capabilities. The analysis is based upon the soil data contained in the United States Department of Agriculture Soil Conservation Service publication Soil Survey of Boone, Campbell, and Kenton Counties, Kentucky, published in August of 1973. **Table 3.1** consolidates in table form the development capability analysis for the 10 physical factors.

Table 3.1
Rating System for Boone County Environment Physical Capability Summary

Physical Criteria	1. Capable	2. Limited Capability	3. Very Limited Capability
1. Surface Drainage a. Tributary drainage system Source: designations on soil survey maps		150-300' from centerline or banks of perennial streams; 50-150' from centerline or banks of intermittent streams	150' from centerline or banks of perennial streams; 50' from centerline or banks of intermittent streams
b. Flood plains and flood buffers Source: soil survey properties noted plus overlay of Corps of Engineers USGS designated 1973 floodzone		500' control zone from all dams, levees and other floor embankments	1937 flood of record (includes intermediate regional flood)
c. Alluvial Soils subject to sheet flooding Source: soil survey maps			Following alluvial soils; AsA, AsB, Bo, Cg, Eg, Hn, Hu, Ln, Mk, No
d. Other surface drainage: Source: soil survey maps			Areas of standing water (i.e. lakes, ponds, perennial streams, springs) and lakes or ponds intermittently filled with water (i.e. marsh, swamp, wet spots and intermittent streams)
2. Soil Drainage a. Permeability Source: soil survey, table 4, page 40	All parts greater than 0.6 inch/hour	Any part 0.2-0.6 inch/hour	Any party below 0.2 inch/hour
b. Depth to seasonal high water table Source: soil survey, table 4, page 40	More than 1.5 feet from surface	.5-1.5 feet from surface	0-.5 foot from surface
3. Soil Foundation a. Soil Materials - comprehensive strength Source: soil survey, table 4, page 40	Sandy - silt GW, GP, SM, GM, GC, SC, SW, SP	Silt - clay ML, CL	Clay MH, CH, OH, OL
b. Depth to bedrock Source: soil survey, table 4, page 40	More than 3 feet from surface	2-3 feet from surface	0-2 feet from surface
4. Erosion and other hazards a. Slope/erosion Source: soil survey, table 4, page 40	Sand - gravel GW, GP, GM, GC, SW, SP, SC, SM, 0-1%	12-18/25%	18/25% and over
	Silt - clay ML, CL, 0-6%	6-12%	12% and over
	Clay MH, CH, OH, CL, 0-6%	6-12%	12% and over
b. Other Hazards Source: symbols on soil survey maps		Stoniness, rock outcrops, chart fragments, scabby land	Depressions, gullies, quarries, gravel pits, bedrock escarpments and others; severely eroded spot, blow-out, wind erosion, areas of gravel, clay spot, sand spot, all made land

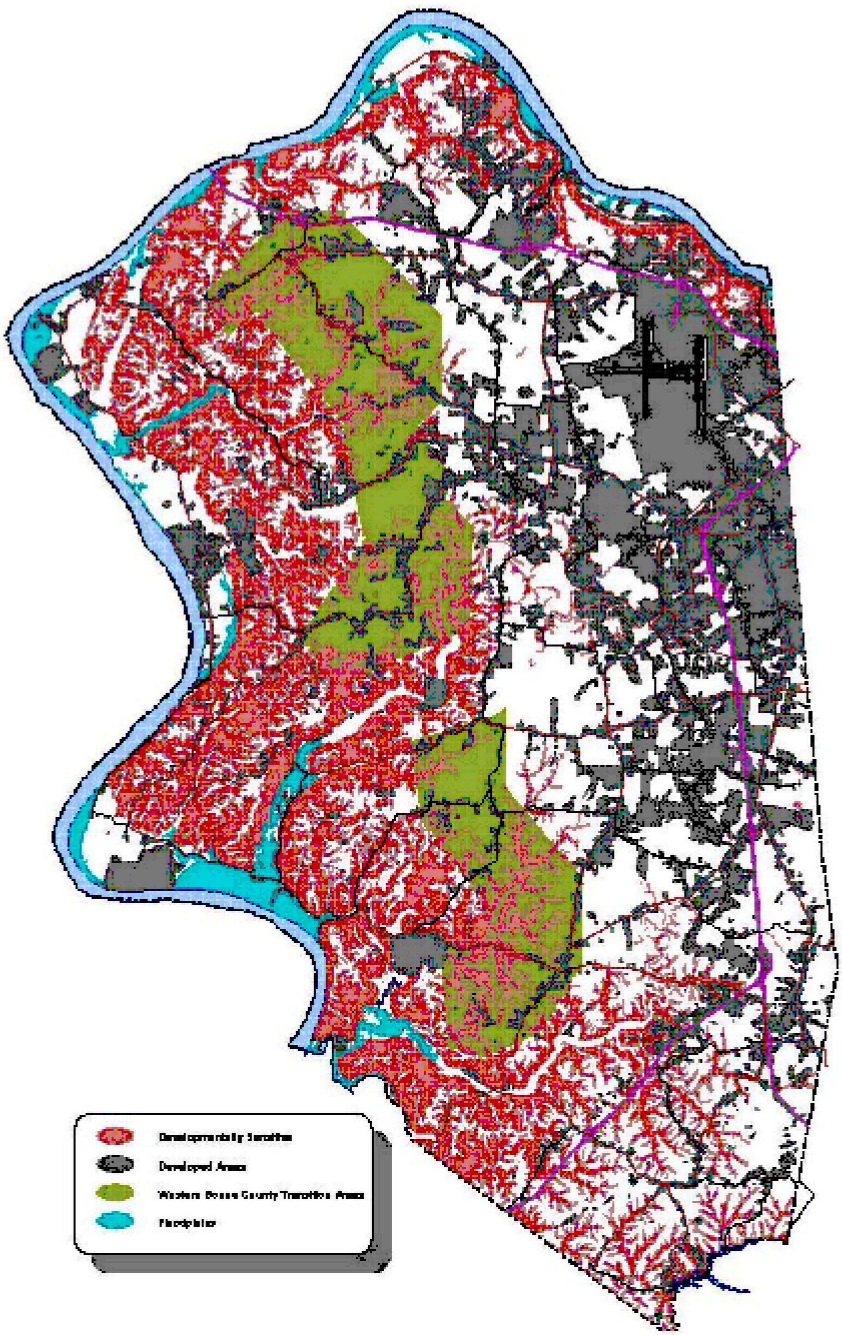
Source: KZF Incorporated

SURFACE DRAINAGE

Stream Tributaries - Natural drainage networks provide efficient storm water collection systems, and ultimately are the headwater system for a natural water supply. Runoff from urban and agricultural uses add suspended soil particles and chemicals which lower water quality and consequently increase water purification costs. Runoff from land uses sited close to a stream's natural drainage channel can irrevocably contaminate a stream's purity, fill stream channels with sediment, cause flooding and erosion, and destroy the aquatic and animal life balance, thereby permitting uncontrolled algae and bacteria development.

Artificial storm drainage systems can reduce overland runoff volumes, but cannot accomplish natural water filtering processes, or replenish local surface and underground water supplies. The effects of development on natural drainage systems should be further studied, as well as the benefits of maintaining natural vegetation as a filter along streams. Maximum runoff limits, as established through specific drainage basin calculations, can also keep stream pollution levels within manageable limits and reduce flooding.

Figure 3.1 - Developmentally Sensitive Areas



Glaciers determined the topography of Boone County and also created a vast network of streams which cover the entire county. As the land descends to the Ohio River, major tributaries are formed, including Mud Lick, Big Bone, Gunpowder, Lick, Middle, and Woolper Creeks. Also included are many intermittent streams. This natural drainage system provides an efficient storm water collection system, as well as a natural water supply.

Flood Plains - Flood zones are defined by historical records of high flood water levels or by engineering estimates of the volume and channel changes which may affect, or be affected by urban improvements within the drainage network. **Figure 3.1** identifies the areas which flooded during the 1937 flood.

Although the highest flood of record occurred on the Ohio River in 1937, it is not the worst that could possibly occur. Since that time, the fourth and sixth greatest floods since 1858 occurred in 1945 and 1964 respectively. U.S. Army Corps of Engineers studies of the Ohio River Basin indicate that more critical combinations of storms and runoff can reasonably be anticipated to occur in the future.

Protective flood control structures do not alleviate all flood zone hazards. In fact, they may even increase high water levels upstream from a backwater dam, or alter the natural channel through which a flooding pattern would be expected, or alter the water table and underground drainage pattern serving local areas.

As was learned in the 1993 Mississippi River floods and the 1997 Ohio River and Licking River floods, flood plains and zones are not suitable for permanent urban uses. These areas must also be protected from urban improvements on adjacent lands which may alter drainage patterns and volumes.

In Boone County, the lands designated as flood zones include primarily bottom lands along the Ohio River and its major tributaries, however, minor tributaries are experiencing flooding problems as more impervious area is created in each watershed. The most extensive flood zone area is the lower East Bend Bottom at the mouth of Gunpowder Creek. Spots of moderate flood hazard from possible dam breaks are located downstream from small dammed lakes scattered throughout the county.

Alluvial Soils - Alluvial soils are composed of the remains of former stream beds and deposits of materials generated by natural water erosion. Such soils are found in designated flood zones of major rivers, and along the banks of tributary streams. Alluvial soils are highly permeable, are subject to high water tables, and are usually connected with underground streams or aquifers.

Urban uses aggravate the flood prone conditions and contribute pollutants to the stream or water table. Special care needs to be taken in developing urban land uses upstream from sensitive flood areas to avoid aggravating problems. Alluvial soils are often highly erodible, serve as aquifer recharge areas, and should be addressed in development.

SOIL DRAINAGE

Permeability - Soil permeability is a measure of the rate and depth to which a soil absorbs water. Permeability rates are determined by the soil's porosity, slope, depth to bedrock, depth to seasonal high water table, vegetation cover, and other factors.

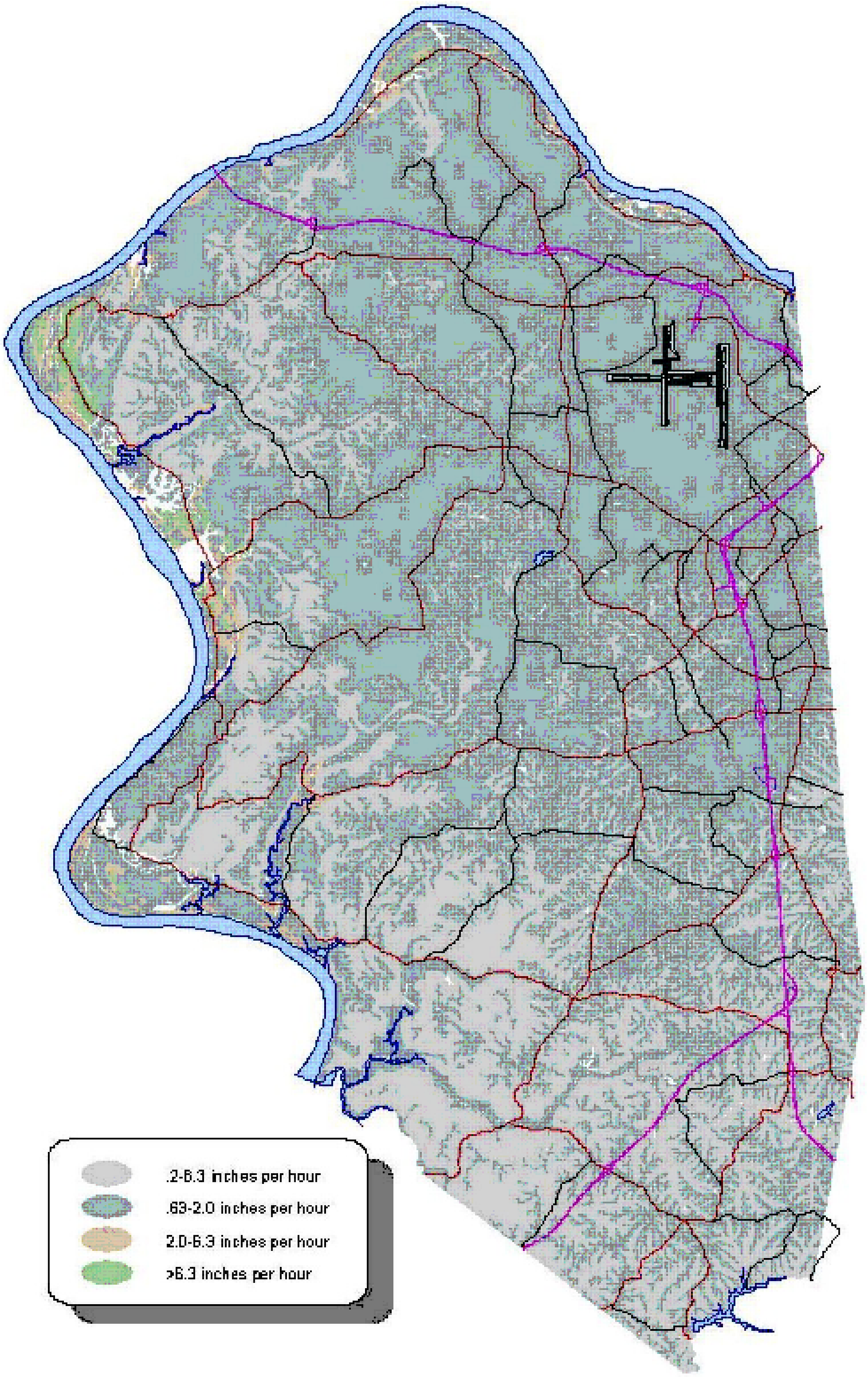
Soils of poor permeability are subject to ponding and runoff since the soil cannot absorb concentrated storm waters. Nonporous surfaces of urban uses, on or adjacent to impermeable soils, can significantly increase the runoff volume, and aggravate ponding, erosion, and surface water pollution.

Since soils of poor permeability will not filter water, neither will the soils filter or absorb septic effluent or other surface pollutants. An extreme health hazard can be created when such pollutants are directly mixed with storm and surface waters. When poor permeability is caused by high water tables, septic systems and general urban uses can transfer pollutants directly into the streams and the ground water supply. Major advancements have been achieved in Boone County by implementing the regional sewer system that has eliminated many individual treatment systems.

Finally, poorly drained soils are subject to frost action and settling which can crack foundations, fragment roads, displace utility lines, and generally damage or impair urban improvements. Public sewerage, artificial drainage systems, special road bed fills and foundation designs can overcome some permeability limitations through increased cost and exacting design criteria. Boone County Fiscal Court has assisted with the installation of sanitary sewers for existing subdivisions served by individual treatment systems by funding up to 1/3 of the assessment costs. This type of activity should be encouraged.

As shown in **Figure 3.2** almost all land in Boone County, except river and stream valley bottoms and a small number of isolated locations are subject to permeability limitations. This map shows that almost half or approximately 48.3% of the undeveloped land area within Boone County contains soils which have poor permeability of 0.63 inches per hour or lower. This land area which is located within the southern and western portion of the county, primarily has slopes of 20% or greater. The land area which has a permeability of 0.63 to 2.00 inches per hour covers approximately 50% of the county and is primarily

Figure 3.2 - Soils Permeability



comprised of slopes of less than 20%. These areas are usually prime agricultural land or agricultural land of state-wide importance. This also happens to be the part of Boone County which is projected to experience rapid residential development within the 25 year planning horizon. Severely impermeable soils are found primarily along ridgelines where the bedrock is near the surface and in low-lying areas where the water table is high.

Depth to Seasonal High Water Table - Water filters through porous soil until it reaches a substratum material with nonporous characteristics, normally bedrock or clay deposits. Water so entrapped will back up toward the surface forming a ground water table, or flow though underground bedrock fractures or limestone deposits until it is collected and filtered back up through natural stream beds. In both circumstances, ground water is an important resource since it provides a naturally filtered water supply. Areas of high water table are easily polluted since runoff from urban areas can pass pollutants directly into the ground water table. Heavy storms can also back the water table up to the surface and cause surface ponding and flooding. Urban uses provide additional storm runoff and aggravate this problem.

Soils of moderate water table depth are usable when subject to exacting design and performance standards. In Boone County, extremely high water tables occur in only a small number of thin belts along the Ohio River and a few other scattered areas. There are more areas of moderate depth water tables, concentrated primarily on ridgelines in the northeastern uplands of the county. The depth to a particular area's water table should always be addressed before developing on it. As the ground water level gets closer to the surface, potential pollution and construction problems increase. Very shallow water table depths are risky areas on which to develop, and should not contain urban uses. High and moderate depths are developable.

SOIL FOUNDATION

Strength of Soil - Soils vary considerably in compressive strength and stability. Sandy silts are the most stable; clays the least. Slope, depth to bedrock, vegetation cover and ground water drainage patterns are related factors which determine soil material use limits.

On flat to shallow sloped lands, all soils are usable for development (aside from water table limitations). Because all soil types are more subject to erosion when the ground cover is removed, erosion control measures are vital in preventing sediment from leaving the developing site. All soils will erode on moderately to steeply sloped lands, particularly where such lands have been stripped of tree and ground cover. Clay and silty clay soils, however, are particularly susceptible to mudslides when steeper slopes are present in areas with shallow bedrock depth and little tree cover.

According to the USDA Soil Survey (1989) all soils contain some form of limitation for urban uses. Ridgelines, stream beds of the lower reaches of major steams, sloping lands and the upper reaches of stream valleys are the most notable. The rugged terrain in some of the western and southwestern parts of Boone County contains broad areas of poor soil conditions for development. More moderate conditions prevail in the gentler topography of the northeastern portion of the county.

Depth to Bedrock - Like soil materials, bedrock characteristics have more impact when they occur with other factors, than when they exist alone. The presence of shallow bedrock conditions increase trenching and other utility placement costs. Select fill must sometimes be used to absorb storm runoff or provide pads for roadbeds, parking, and building foundations. While such actions are costly improvements, the resulting modifications are not environmentally hazardous. When shallow bedrock depths occur on impermeable flat lands, however, high water tables are likely to be created, which are subject to flooding and/or groundwater contamination. Steep slopes with shallow bedrock depths, Kope geologic formations, and unstable soils without tree cover are landslide prone. When these situations exist, the capability of the land to support urban uses without serious environmental hazards is minimal.

Major concentrations of extremely shallow bedrock depths are located in the northern portion of the county along the steep hillsides that overlook the Ohio River, and in some stream beds. The southeastern portion of the county between Walton, Richwood and Beaverlick also has a large area of shallow bedrock depth. In addition, the Gunpowder Creek Valley and Woolper Creek Valley have many areas which have shallow bedrock depths. Most of the land in the northeastern portion of the county, which includes the airport and most of the City of Florence, does not contain this limitation for development.

Erosion and Other Hazards

Slope/Erosion - Erosion hazard is caused by the combined effects of soil material characteristics and slope. Sands and gravel can support specially designed structures on steeper slopes, while silts and clay soils become unstable on steeper slopes.

Other factors contributing to erosion hazard at lower slope percentages include the absence of tree and ground cover, shallow depth to bedrock, low permeability, and shallow surface drainage channels. Erosion from improperly modified slopes often disrupts natural drainage channels, pollutes surface water runoff, and causes mudslides.

Steep slopes descending into stream valleys and bottom lands of small streams are highly erodible. These extend into the western and northern edges of the county. Less steep upper slopes near ridgelines are moderately erodible, while ridgelines, plateau, and large stream bed areas are free from significant erosion hazard.

Most soils within Boone County are considered to be highly erodible soils, therefore, during the construction of any site in which the ground cover has been removed erosion control measures are extremely important until such time as ground cover can be re-established. The sediment which is removed from sites diminishes the water quality, which not only affects drinking water, but inhibits the many recreational aspects that water provides, such as fishing. Sediment fills in drainage channels, which aggravates flooding and causes more property damage.

SOCIAL FACTOR INVENTORY

In this inventory of the social factors of the environment, six factors are presented and analyzed. Each factor includes important information which is meant to provide a guide when determining the environmental suitability of development within Boone County. Summaries of the results of this analysis are contained within **Table 3.2** and **Table 3.3**.

Table 3.2
Rating System for Boone County Environment
Social Capability Summary

Social Criteria	1. Suitable	2. Limited Suitability	3. Very Limited Suitability
1. Agricultural Values Source: soil survey capability units	All other soils	Some specialty and continuous row crops under general conservation practices of capability units 11w1, 11w2	Truck, specialty and continuous row crops with limited conservation practices of capability unit 1
2. Wildlife Habitat - Source: soil survey, Table 3, page 37		Well suited for wood land wildlife	Well suited for wetland wildlife
3. Woodlands - Source: USGS maps		Areas designated with woodland cover	Urban woodlands - i.e. woodland cover within urban areas
4. Parks, Recreation and Institutional Areas Source: property line maps, field surveys		All private golf courses, county clubs, cemeteries, hospitals, etc.	All existing or proposed publicly held land for recreation, conservation purposes
5. Historical/Cultural Source: property line maps, Corps of Engineers inventories and lists supplied by local organizations		Locally recognized historic sites, structures and settlements of over 100 years of age	Publicly designated landmarks; National Register of Historic Places, sites and districts
6. Scenic - Source: USGS maps, aerial field surveys		Ridgelines or other points, areas or corridors with offer natural vistas; broad areas of natural beauty	Ridgelines or other points, areas or corridors which offer unique and outstanding natural vistas; major scenic landmarks or areas

Source: KZF Incorporated

Table 3.3
Physical Capability / Social Suitability Summary, By Acres

	Social Suitability				
Physical Capability	Suitable	Limited	Unsuitable	n/a	Physical Total
Capable	970	1,270	1,720		3,960
Limited Capability	250	3,640	4,410		8,800
Incapable	41,470	102,750			144,220
Not Applicable				2,380	2,380
Social Total	43,190	107,660	6,130	2,380	159,360

Source: KZF Incorporated

Agricultural Values

The U.S. Department of Agriculture grades the agricultural potential of different soil types and assigns to them a capability classification. The classifications are based on the suitability of soils for field crops employing normal field management techniques.

Farmlands in the path of urban growth have rapidly disappeared in recent years in metropolitan areas across the nation. Land that is good for farming; flat to gentle slopes, well-drained, cleared of dense vegetation, moderate to deep bedrock; also happens to be the most suitable land for urban development. The rapid rate of turnover of farmlands to urban uses across the United States is a cause for considerable concern. Growing urban populations in our nation will increase demand for continued agricultural productivity, while they displace agricultural activity. Increased energy and transportation costs may also require urban areas to depend more on local agricultural production than before. Prime agricultural land is important for the sustainability of a region.

The suburban growth patterns found within Boone County are very similar to those found throughout the country. In 1994, 85,338 acres of land which is considered to be developable land existed within Boone County, while in 1999, 71,058 acres met the same criteria. Of the 1999 acreage, 47,605 acres or 55.7%, is land which is either prime agricultural land or agricultural land of state wide importance as defined in the Agriculture Element of this plan. Therefore, within the 25 year planning horizon large portions of the most suitable agricultural land which remains within the county could disappear if current development trends continue.

Agricultural lands provide the majority of the open space within a community, as well as creating a visual identity that often defines the character of a community. As pressures increase to develop the prime and state wide important agricultural lands of the county, the character of Boone County will be altered. Future studies and visioning efforts should determine whether Boone County will retain the rural identity of the county, or whether agricultural lands should be developed. If the agricultural lands should develop in a more urban manner, then standards should be established which attempt to preserve the unique character of these areas.

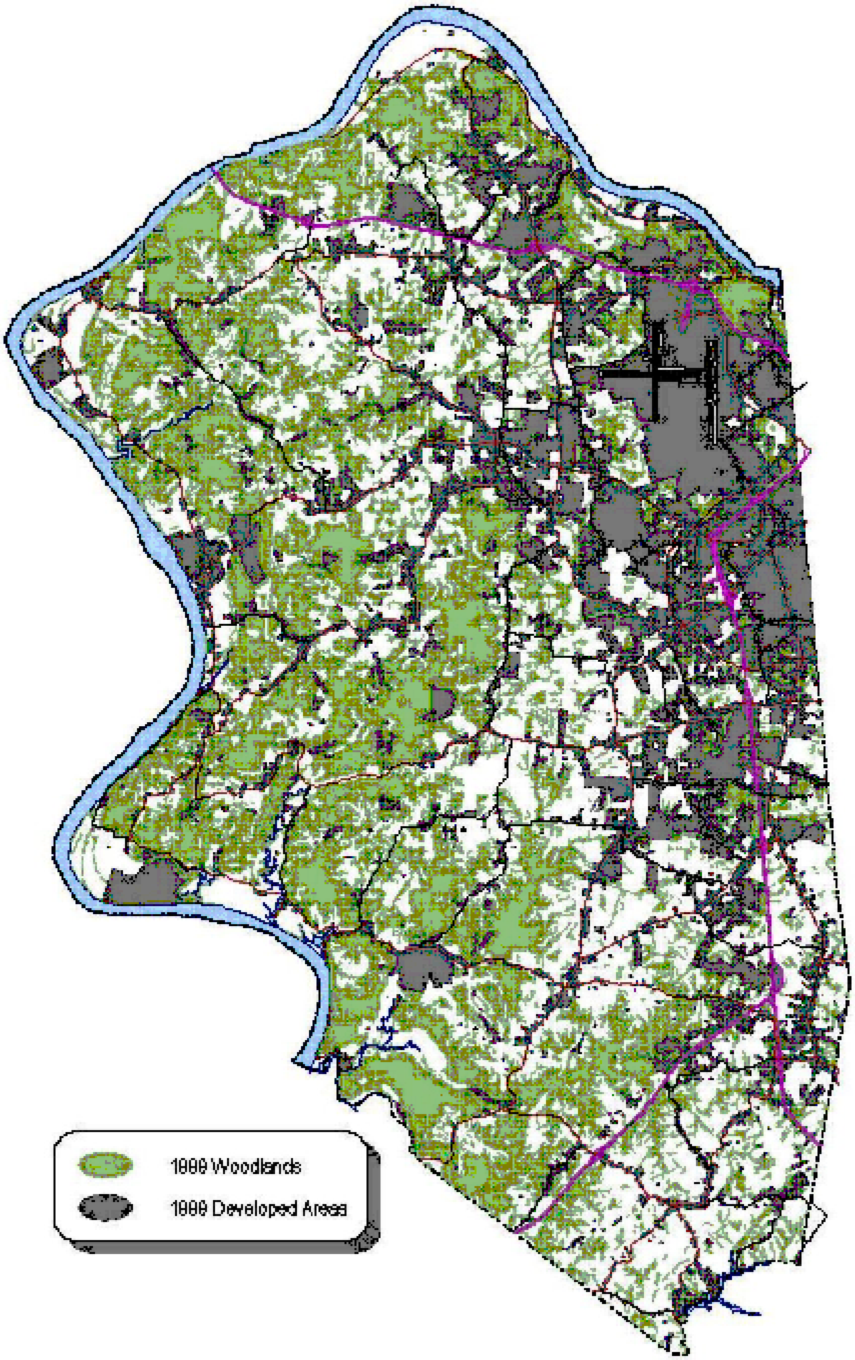
Woodlands

Woodlands are significant natural resources as well as valuable social landscape features. Trees improve the quality of life within a community by reducing the visual impacts between conflicting land uses, and by reducing noise, light, and air pollution. In addition, tree roots stabilize soils by reducing storm runoff volumes, velocity, and soil erosion. Tree roots also stabilize stream banks, and retard, and filter runoff before it reaches and pollutes streams. Woodland cover diminishes the effects of strong winds, filters air pollutants, adds humidity, creates shade, and provides specialized wildlife habitats, as well as providing a visual beauty to the landscape.

The slopes of stream valleys in the western portion and along the northern edge of Boone County are heavily wooded, while the eastern uplands have limited and scattered forest cover. While it is important to preserve the wooded areas in the less developed areas of the county, it is even more imperative to protect the scattered vegetation remaining in the urbanized portions of the county and along major public roadways for both functional and aesthetic reasons.

Boone County contains approximately 57,286 acres of woodlands (see **Figure 3.3**), of which approximately 32,734 acres are located within areas of the county containing slopes over 20 percent. The remaining 24,552 acres of woodlands are located on slopes less than 20 percent and are considered to be easier to develop. Of these 24,552 acres, 4,297 acres are woodlands located on land which is either prime agricultural land or agricultural land of state-wide importance. These woodland areas primarily exist within the areas projected to experience rapid growth within the 25 year planning horizon.

Figure 3.3 - Woodlands



Wildlife Habitat

The capability of land to support wildlife is determined by types and patterns of vegetation, and by the supply and distribution of water. These factors are closely related to properties of soil types. The U.S. Department of Agriculture rates the potential of soils to accommodate three types of wildlife: wetland, woodland, and open land. Wetland wildlife requires soil conditions least capable of supporting urban uses. Woodland wildlife can exist within and adjacent to urban land uses, but is susceptible to habitat loss. Open land wildlife can be found within croplands, pasture and meadowlands, often adjacent to areas of urban use.

Preservation of wildlife habitats is utilitarian, as well as having social value. Various species of wildlife perform ecological functions necessary to control bacteria, plant, and insect growth in natural drainage areas. Some species of predator wildlife are required to control wildlife population cycles. The loss of habitat can also result in animal control problems to residents and automobiles because of displaced animals searching for food and nesting areas. Woodland wildlife should be the primary concern in Boone County, because of the extent of woodland habitat and its vulnerability to urban growth. Corresponding with the pattern of woodlands, woodland wildlife habitats appear predominantly on the western side of Boone County, and diminish to small and isolated spots in the eastern and more urban portion of the county.

Parks, Recreation and Institutional Properties

Value is assigned to these sites because some have unique environmental characteristics, others provide open space, and some provide active recreational areas. All of these features will affect potential adjacent urban use patterns. This category would include conservation areas, parks, golf courses, country clubs, cemeteries, and all public institutions. These sites are addressed in detail and identified in the Recreation Element.

Historical/Cultural

This category identifies sites and facilities of historical or cultural significance. Depending on the unique setting or special features of each site, urban uses on or adjacent to the site may be precluded or subjected to strict design or performance standards.

Boone County possesses a visible legacy of its past in the many historical sites which have been preserved throughout the county. Generally, these are buildings which have been spared destruction by urban development, of which the rural western portion of the county has the greatest number of these sites.

Boone County also has vestiges of its more distant past in many archaeological sites throughout the county. According to archeologists there are identified sites in Boone County that date from four major prehistoric periods, going back as far as 8,000 B.C. Particularly, the Ohio River flood plain and the hilltops which overlook the river, and various other bottomlands in the county should be recognized as possessing archaeological value. Proposals for urban development in these areas should be evaluated with regard to their impact on specific sites. More detailed information regarding the importance of Historical and Cultural sites can be found within the Historic Preservation Element.

Scenic

The unique glacial topography of Boone County offers many astounding vistas of the Ohio River and its bottomlands. The steep tree covered hillsides which parallel the river and creeks, and the valley bottoms themselves offer majestic countryside vistas of a quality not commonly found within 15 miles of a major city. The views and vistas of such natural beauty are arguably some of the most important amenities to residents within the county. They help to establish a quality of life desired by the residents of Boone County. Therefore, scenic areas within Boone County that are identified by special study, should be protected from insensitive development. It should also be recognized that Boone County has over 40 miles of Ohio River frontage of which the majority is adjoined with steep hillsides. Therefore, the river views will propel future development which can disrupt or destroy the scenic hillsides. A study should be conducted to identify significant scenic areas, and to outline measures to be taken to preserve or enhance these views.

In Boone County there is a broad area of scenic value in the flood plains along the Ohio River, and along the valleys of major tributary streams on the western side of the county. Outstanding scenic areas include a series of cliffs along the Ohio River bordering the north edge of the county which afford dramatic views of the Ohio River and beyond. Notable man-made features such as individual historic homes/farm buildings, and the towns of Burlington, Petersburg, Rabbit Hash, and Belleview/McVille also provide scenic amenities to the county.

ANALYSIS OF PHYSICAL AND SOCIAL FACTORS

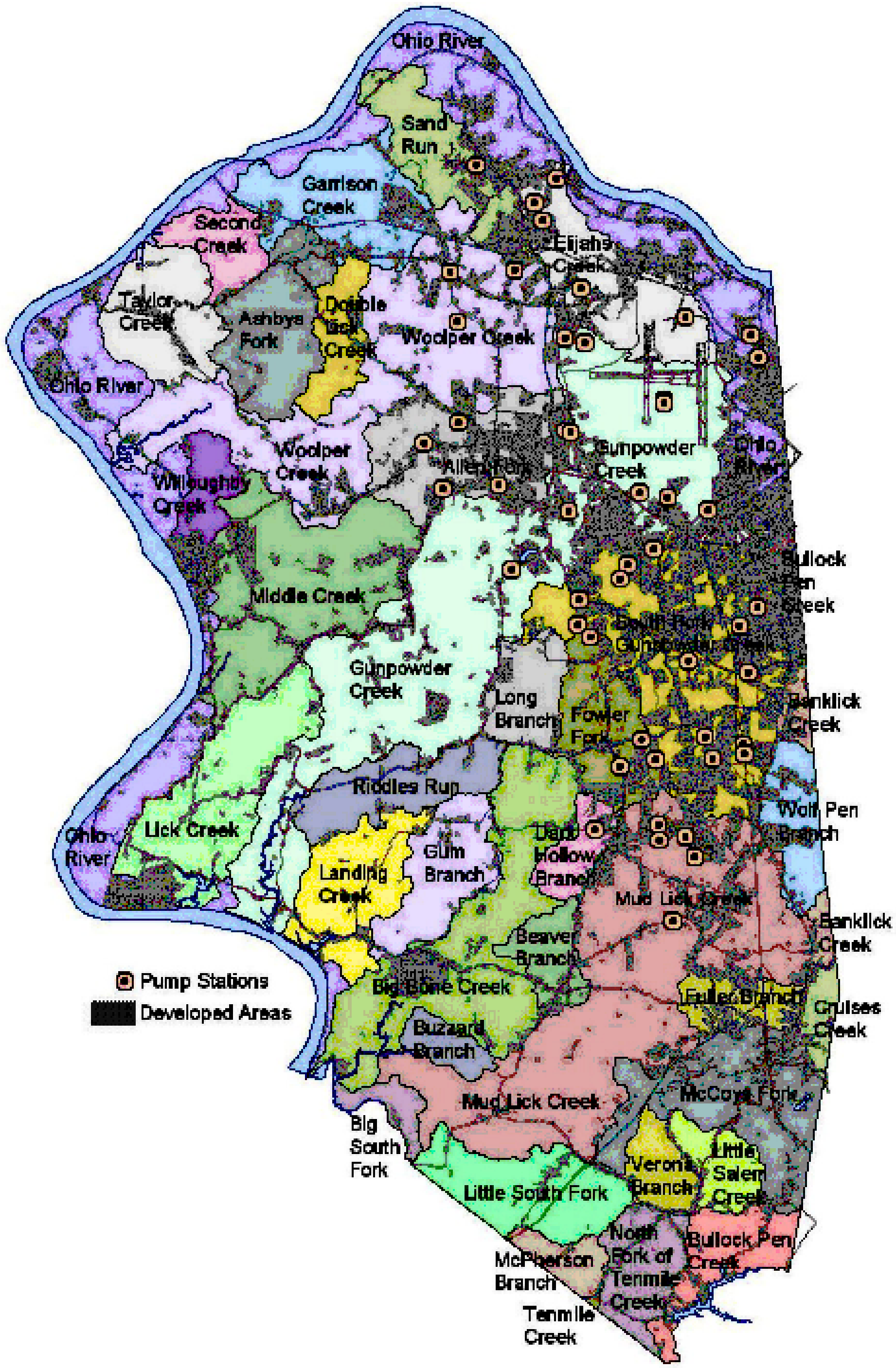
To determine the environmental impacts to the county within the 25 year planning horizon it must be ascertained what areas of the county will develop and how they will develop. The Population, Housing, and Business Activity Elements of the Comprehensive Plan identify the areas of Boone County which are projected to experience rapid growth in the short range, as well as, the 25 year planning horizon. In addition, these Elements generally identify the type of land uses which will develop within these areas. When examining where the growth of Boone County will occur, one needs to consider where the developable land is within the county. The physical and social factors outlined above establish the areas of the county where limitations and restrictions may exist for development. These factors can be used to identify areas which will need special protective measures if they are to be developed. For example, the land areas which are located within flood plains or have slopes over 20% are considered to be developmentally sensitive, because of the environmental hazards which can result from the development of these areas (see **Figure 3.1**). Therefore, development should be prohibited within these areas unless environmental impacts can be mitigated.

Of the 164,120 acres of land within the county, approximately 43,701 acres of land were developed in 1999. The land area within the county which is undeveloped and classified as Developmentally Sensitive is approximately 26% or 42,794 acres of land. The remaining undeveloped land which is capable of supporting most urban land uses totals approximately 77,625 acres or 47% of the land area within Boone County. As projected within the Population Element, the ultimate population that could be physically accommodated under the current development density is 236,183. This number is not an estimate, limitation, or forecast; instead it is intended to provide a projection based on existing development densities and trends applied to all remaining developable land in the county. For the purpose of this projection, developable land is defined as all land in the county not classified as Developmentally Sensitive (DS) in the Land Use Element. This projection provides one of many pieces of information used to prepare the Future Land Use Plan. The conclusions of this Environment Element must be used in conjunction with the conclusions of all the other elements in this Comprehensive Plan.

Water Quality

Boone County contains 26 different watersheds in which the developable areas within the county can be determined (see **Figure 3.4**). Six of the 26 watersheds contain 57.95%, of the total land area within the county and approximately 60.6%, or 51,749 acres of the total developable area within the county. These watersheds are as follows: Mudlick Creek, Gunpowder Creek (Upper Basin), Big Bone Creek (Upper Basin), Woolper Creek, Sand Run Creek, and Elijahs Creek basins. **Figure 3.4** identifies the land areas of each watershed in Boone County as well as the existing sanitary sewer pump stations. These pump stations are significant in that these areas can develop at much greater densities because of the availability of public sanitary sewer. These areas will likely develop much more rapidly than other areas of the county because of the potential for public sanitary sewer. The Public Facilities and Services Element identifies the importance of sanitary sewer and water to these areas in greater detail, as well as identifying some of the incremental effects of development within these areas.

Figure 3.4 - Watersheds



The areas which are projected to exceed, or which have exceeded the 2020 OKI Regional Council of Governments traffic zone population projections as outlined in the Population Element, are primarily located within the six watersheds mentioned above. These watersheds currently have a rural character. Therefore, it is possible to determine the amounts of woodlands and agricultural lands which may be developed. The rural character that many residents desire may be at risk if development within these areas is not sensitive to the environmental factors mentioned within this element.

In accordance with Section 303 (d) of the Clean Water Act, the State of Kentucky has developed a list of water bodies that do not meet their designated uses and are declared impaired waters. Being listed as such, a Total Maximum Daily Load (TMDL) must be developed for these waters. Both Elijah's Creek and segments of Gunpowder Creek were listed for TMDL development in the 1998 report issued by the Kentucky Natural Resources and Environmental Protection Cabinet Division of Water. Since that time, TMDL's have been developed and approved by the Environmental Protection Agency - Region 4 for these two streams. Most of the pollution issues center around siltation, high nutrient levels, and low dissolved oxygen, while Gunpowder Creek in particular includes industrial sources and urban runoff issues.

The Kentucky Agriculture Water Quality Act was passed in 1994 to bring Kentucky into compliance with federal laws. The goal of the act is to protect surface and ground water from potential pollutants as a result of agriculture and forestry operations. The act did not establish any new water quality laws other than requiring that all agriculture and forestry operations of ten or more acres develop and implement a water quality plan by October 23, 2001. The Boone County Conservation District is available to assist in developing individual water quality plans. The water quality plan consists of best management practices (BMP) identified by the Kentucky Agriculture Water Quality Authority (AWQA) that keep non-point source or runoff pollutants such as sediment, animal waste, and fertilizers and pesticides from reaching our waterways. The AWQA asks landowners to address water quality issues in the areas of crops, farmstead, livestock, pesticides and fertilizers, silviculture, and streams and other waters. Not only are landowners required to install best management practices, they are also required to document their efforts to improve and protect the natural resources of the Commonwealth. Many landowners already apply BMPs on their farm. By writing and carrying out a water quality plan, producers and landowners can be assured that they are helping to protect our water.

The analysis of physical factors shows that Boone County could encounter environmental degradation, economic loss, and safety hazards if urban uses are not developed properly and environmental hazards are not accommodated. The county can accommodate growth to complement existing development and allow new development, if proper controls and design standards are followed. The capability inventories for each of the ten physical factors and six social factors should be taken into consideration by developers and planners as part of the review of sites for potential urban uses.

IMPACTS ON THE ENVIRONMENT

With the developable land areas identified within the county it is possible to identify the environmental impacts which can be created by development of these areas for the county and the metropolitan region.

First, if the six identified watersheds follow the same development pattern as the developed areas of the county, then these areas will develop primarily as single-family residential. This low density land use consumes vast areas of land and requires the extension of, and creation of many new community resources to support. Therefore, it is likely that the majority of the prime farmland and farmland of state wide importance within the county will be lost within the 25 year planning horizon. In addition, large areas of woodlands, and wildlife habitats which depend on these woodland areas will be destroyed. This type of development will likely change the visual appearance of Boone County. These visual characteristics, which are often considered by a community as one measure of the quality of life, may be destroyed by this future development.

Low density land use requires people to travel much further distances to their places of employment, schools, shopping, and recreation. Across the United States experience has shown that existing road systems are becoming overwhelmed and congested with traffic, affecting the air quality of the county and the region. Federal regulations which include the Clean Air Act Amendments of 1990 (CAAA), and the Transportation Efficiency Act of the Twenty-first century (TEA 21, follow-up legislation to ISTEA) were created to limit the effect that increasing mobility in the future in metropolitan regions have on air quality. The effect that low density development has on the transportation system and how it relates to the federal legislation for the county and the region is explained in further detail in the Transportation Element.

Low density development prevents efficient mass transit alternatives, and weakens the ability of the region to create a sustainable environment. The Earth Summit of 1992, and the follow-up conference "From Rio to the Capitals," which was held in the Commonwealth of Kentucky in 1993, attempted to educate the World about sustainable development and methods to address our concurrent needs of job creation and environmental preservation. Sustainability is the concept that there is a finite capacity of the Earth to provide resources and absorb waste created by the built environment. In addition, sustainability incorporates a biological approach to the built environment in which the waste and pollution of one use constitute welcomed inputs for another use. Thus all material processes will be cyclical by design. In the last few years, the concept of Sustainability has become more mainstream, and has given rise to similar concepts, such as “Smart Growth.” These ideas promote compact, efficient, orderly development similar to “older” concepts like Growth Management. The American Planning Association (APA) definition for “Smart Growth” is provided below:

> ***Smart Growth*** *- Planning, regulatory, and development practices and techniques founded upon and promoting the following principles: (1) using land resources more efficiently through compact building forms, infill development and moderation in street and parking standards in order to lessen land consumption and preserve natural resources; (2) supporting the location of stores, offices, residences, schools, recreational spaces, and other public facilities within walking distance of each other in compact neighborhoods that are designed to provide alternate opportunities for easier movement and interaction; (3) providing a variety of housing choices so that the young and old, single persons and families, and those of varying economic ability may find places to live; (4) supporting walking, cycling, and transit as attractive alternatives to driving; providing alternative routes that disperse, rather than concentrate, traffic congestion; and lowering traffic speeds in neighborhoods; (5) connecting infrastructure and development decisions to minimize future costs by creating neighborhoods where more people use existing services and facilities, and by integrating development and land use with transit routes and stations; and (6) improving the development review process and development standards so that developers are encouraged to apply the principles stated above.*

Most of the focus of sustainability efforts have been on water conservation, establishment of greenway/recreation networks, and development design that fits with the natural landscape. A local example of a sustainable effort is the Van Melle candy factory, located on Turfway Road in Boone County. Here, much of the interior office and factory lighting is provided by roof skylights with special reflectors. Photo voltaic cells assist in electricity generation, and the company has experimented with windmill power generation. Simple issues, such as orientation of proposed buildings toward the sun, window technology, and use of site vegetation are items routinely overlooked in typical Boone County development. Sustainability promotes the thought of long term impacts and benefits of good design.

Low density residential development creates direct and indirect environmental impacts. Direct impacts include decreases in air quality from increased automobile miles traveled, increased waste products such as yard waste in landfills, water quality issues from increased stormwater runoff containing many household and yard chemicals, and sanitary sewage. Indirect environmental impacts can include the extensions of public services, increased transportation distances for daily products, and a greater consumption of natural resources such as trees and oil.

SPECIAL STUDIES

The Boone County Recreation Task Force, during 2000, suggested that each stream valley system in Boone County be studied in detail to determine its suitability for development and for its potential as a recreation/natural area corridor. These analyses should be used not as a pro-development or anti-development statement, but as a resource for land use and recreation planning. Path systems that connect natural areas and residential development are a potential result of these types of planning efforts.

Sand Run Creek Preliminary Ecological Study

As an example of this type of study, a Preliminary Ecological Survey of the Sand Run Creek Watershed in northern Boone County was performed in August of 1999. The Environmental Resource Management Center at Northern Kentucky University prepared this report to provide preliminary ecological information regarding existing wildlife habitats. The document examines plant species diversity, rare species, unique landscape features, ecosystem health, historical features, and potential long-term management opportunities. This project was prompted by the Boone County Fiscal Court as a result of land donations by an area developer, which raised the potential for a significant public recreation corridor. This Survey was also prepared in conjunction with the 2000 Boone County Parks and Recreation Master Plan analysis and recommendations.

The Survey concluded that the ecological integrity of the Sand Run Creek watershed is relatively high compared to other watersheds in the Greater Cincinnati/Northern Kentucky region. The most significant ecological features of the watershed are the relatively undisturbed stream channel and associated riparian corridor, the contiguous riparian forest canopy and associated forested hillsides that collectively extend for nearly five miles, the absence of garbage, urban debris, sewage, and other signs of human impacts, the abundance of natural pools and riffles in the creek that provide critical habitat for aquatic life, and the potential for wetlands restoration and enhancement activities in the Ohio River bottoms for wildlife habitat, mitigation, recreation, and environmental education. Other such studies or ecological surveys of watersheds should occur.

Western Boone County Study

The 1995 Comprehensive Plan recommended that a study of the western part of Boone County be undertaken so that before these areas begin to develop and the rural character is changed, a visioning process is undertaken which identifies how these areas should develop, and what characteristics should be preserved to foster and promote a quality of life desirable for future generations to come. During 1996, 1997, and 1998, the Western Boone County Study was prepared by the Boone County Planning Commission. Although never reviewed at a public hearing or adopted as an official planning tool or land use control document, it does contain valuable research in report form and suggests a series of specific corridor and area plans for specific locations in the western part of the county. The Planning Commission reviewed the findings of the report in August of 1998 and suggested that the study be accepted as a technical report and its recommendations be considered as future work projects for the Planning Commission. The study is not proposed as a land use regulatory tool by this Comprehensive Plan.

COMPREHENSIVE ENVIRONMENTAL LIBRARY FOR BOONE COUNTY

The Goals and Objectives for the Environment Element recognize the need for a comprehensive environmental library that collects documents relating to environmental issues for Boone County. These topics are connected to the main issues described in this element. As some of these components become available or are produced locally, they should be used to create a centralized body of resources. This collection must be locally housed and readily available to the general public. A recommended outline for this library or directory is proposed here:

Ecological and Recreation potential surveys for major creek valleys, as ranked by the Boone County Parks and Recreation Planning Committee, 2000: Sand Run Creek, Woolper Creek, Gunpowder Creek, Middle Creek, Elijah's Creek, Big Bone Creek. These surveys/reports should examine each

area in detail for its value to Boone County as a natural area, a potential public recreation and historic resource, and as a part of connected path systems.
Summaries of all airport noise monitoring and planning activities.
Working list and roster of storm water and wetland mitigation projects with funding eligibility.
Centralized record of flood problems in tributary creeks.
Air quality reports for Boone County in keeping with the Clean Air Act Amendments.
Water quality reports for the Ohio River and major Boone County Tributaries.
Status reports on compliance of Boone County developments with the 2002 EPA mandate on stormwater.
Running list of development examples in Boone County that promote sustainability and open space development design.

Urban Forest Boards should promote trees as a significant natural resource within Boone County during development. In addition, the trees that will be removed by development should be handled as a resource rather than as a waste product which is burned or thrown away.

Stormwater regulations should be applicable to all types of development, and should be in effect before the undeveloped areas develop to prevent flooding, and costly stormwater control measures in the future.

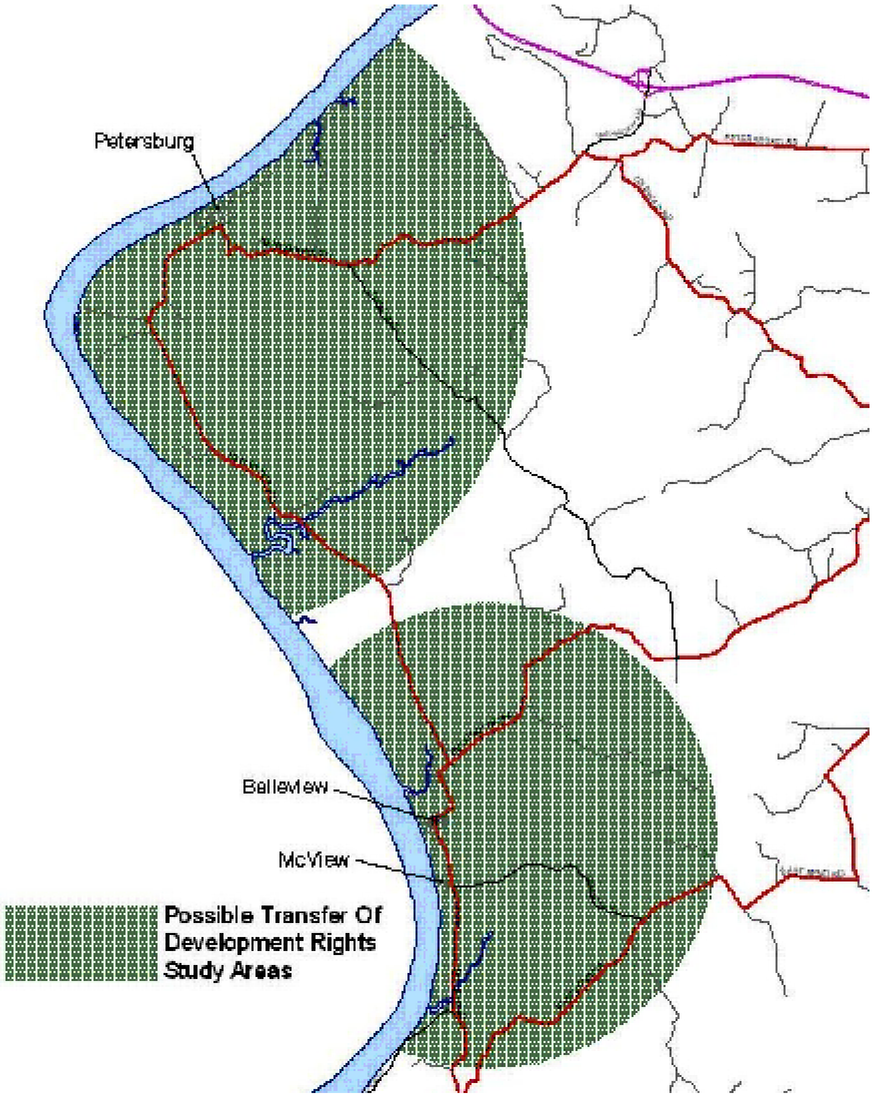
TOOLS FOR LAND CONSERVATION

This section presents two potential tools for a community to achieve a well-designed balance between development and green space. These are not the only methods available, but are proven programs in other areas of the United States. The Boone County Fiscal Court has requested that the Planning Commission perform a detailed feasibility study of Transfer of Development Rights (TDR) and Purchase of Development Rights (PDR) programs. These programs are too complex to implement through a Comprehensive Plan update, and need extensive evaluation. During the Comprehensive Plan update process, however, some discussion has occurred and this Plan includes a definition of these types of programs, as well as several general observations about the design of such programs. Neither of these programs would be intended to implement a growth boundary or services boundary in Boone County.

Transfer of Development Rights (TDR) and Purchase of Development Rights (PDR) programs are based on the concept that property owners have a bundle of different rights subject to reasonable local land use regulations. These include the right to use land, lease, sell and bequeath it, borrow money using it as security, construct buildings on it, develop it, or protect it from development. Normally all of these rights pass from seller to buyer, however, they do not have to. These types of programs allow the property owner to separate and sell their right to build on the land separate from the other property rights. A TDR program allows private interests to purchase these development rights to use on designated lands elsewhere. A PDR program allows the government or non-profit organizations to purchase the development rights with the responsibility to prevent development on the subject parcel(s) according to program objectives. As can easily be seen, both types of programs are voluntary and intended to pursue a community objective while offering the property owner an incentive regarding compensation for property rights. In many of these programs, there is not an outright sale of property but the sale of a conservation or agricultural easement. The property owner is capable of enjoying all the remaining rights on the property that have not been sold. For example, a farmer can continue an agricultural operation forever, while no, or a reduced number of houses, industrial development or other urban land use would be developed. These programs can enable considerable beneficial estate planning options and tax benefits for the property owner as well.

Kentucky has a Purchase of Agricultural Conservation Easement Program (PACE), however, generally, Boone County land is now too expensive to make this program viable by itself. Some communities have

Figure 3.5 - Possible TDR Study Areas



used a designated tax, or leveraged PACE funds with a local bond. TDRs are permitted by state law and referenced by the Boone County Zoning Regulations. They must be based on a fair and equitable appraisal formula for generating land values and exchanges methods.

Transfer of Development Rights

Typically, TDR programs in other parts of the country are designed to transfer development rights from a low density, rural portion of the community to a developed or developing urban or suburban area. In some areas, these programs can cover all or a major part of a community. Because of difficulty in building high density housing in many parts of eastern Boone County, however, a large scale TDR program covering large areas of the county that would increase building densities in the eastern portion of the county would be extremely difficult to implement. Instead, a localized TDR program where development rights are transferred from areas of rough topography or poor access, and transferred to small town areas, such as Petersburg, Belleview, and McVille could accomplish several beneficial objectives. This type of program could allow more overall development in the area, while protecting hillside areas of western Boone County and creating new growth in these older town areas. In addition, residential growth might be accommodated in areas around these towns that are planned for gravel and sand extraction. **Figure 3.5** shows possible geographic parts of the county where this should be evaluated. This general look at TDR's in Boone County is intended to give some guidance to future study, and make sure that the identified areas are included in future planning efforts. It is not intended to propose an actual program in these areas, nor is it intended to rule out TDR programs for other parts of the county. Based on growth trends, topography, other land characteristics, and data from past planning efforts, this type of program may be suitable in the 25 year planning horizon. This is a key question that feasibility studies must answer.

Purchase of Development Rights

Many of the PDR programs around the nation are focused on protecting agricultural land and operations. However, in the case of Boone County, with its significant growth and the rough topography of the undeveloped part of the county, a focus on green space and the resulting increase of quality of life and the more efficient use of urban infrastructure through more compact development patterns are more likely incentives to pursue these types of programs. Any PDR program that is implemented in Boone County must be built upon specific criteria for property or easement acquisition to ensure that the program is carried out strategically and is consistent with Boone Conservancy Board activities.

Criteria should be established which help define and map the scenic areas within Boone County. If these areas are to develop, standards should be created which outline the procedures and methods necessary to protect and minimize negative impacts to the scenic landscape. In addition, standards should be developed for the vast areas of Developmentally Sensitive land within Boone County. These standards should establish procedures for how these areas may develop without creating an environmental hazard.

Requirements for the control of dust, noise, dirt on public right-of-ways, and erosion in all public and private construction activity should be reviewed and revised where needed. In addition, the re-establishment of ground cover and reuse of resources such as removed trees for mulch, lumber, or firewood should be evaluated.

Overall, land planning in Boone County should enable the developable lands to be developed at a higher density, thus reducing the need to develop the developmentally sensitive areas. This would be the most effective way of preserving the environmental characteristics of the rural portions of the county, while reducing the air pollution within the region and making mass transit more feasible and effective. In 1995, the Comprehensive Plan included the observation that in Boone County there was almost three times as much undeveloped land, not including developmentally sensitive, as there was developed land. The conclusion was that unless development occurs in a low density form, there should be ample developable land to allow continued growth within Boone County beyond the 25 year planning horizon. In the five years since the last update, however, development has occurred at a lower density than proposed in the 2020 Land Use Plan, as well as at lower densities than permitted by the existing zoning. This means that Boone County development will affect more acreage than shown on the 2020 Land Use Map. This also means that since overall development densities show no sign of significant increase, the Land Use Element must include the examination of additional development areas outside the 2020 Land Use Map urban areas if the county's growth is to continue for the planning horizon.

BUSINESS ACTIVITY

The Business Activity Element examines the industry classifications of businesses in Boone County over a span of time from 1970 to 1997. Comparisons are made between Boone County, the Cincinnati Metropolitan Area, and the State of Kentucky. In addition to the inventory and comparison of Boone County industry classifications, areas of future business activity in Boone County are listed. The areas of future business activity are divided into commercial, office and industrial activity. The text addressing the areas of future business activity is intended to provide a synopsis of anticipated business activity development in Boone County. This information is described in further detail in the Land Use Element.

Boone County's economy and related business activity are part of the larger Cincinnati Metropolitan Area's economy. Recognition must be given that Boone County's business activity is closely tied to and inter-related to the larger Cincinnati Metropolitan Area's economy. The industrial, business park, and commercial development in Boone County has occurred hand-in-hand with expansion of the Cincinnati/Northern Kentucky International Airport and has provided the economic prosperity and exceptional quality of life experienced over the past ten years. Numerous factors indigenous to Boone County have allowed for it to lead the region in many growth and prosperity indicators. The continued economic vitality of Boone County is of great importance to the success of the entire northern Kentucky region.

The Business Activity Element primarily utilizes the United States Department of Commerce, Bureau of the Census' publication, <u>County Business Patterns, 1970 - 1997</u>. Unless otherwise noted, all industry classifications and employment data discussed are derived from <u>County Business Patterns</u>.

The Business Activity Element has historically examined the Standard Industry Classifications (SIC) of job providers in Boone County. The 1998 Economic Census, however, is published on the basis of the North American Industry Classification System (NAICS). Since the classifications are different, and there is some information not collected in 1998, as well as problems with other data, it is difficult to compare past years to 1998 data. For these reasons, this Element uses the 1997 <u>County Business Patterns</u> data from the Census Bureau.

The two broadest standard industry classifications are base and non-base industries. The designation of job providers into base and non-base industries is a traditional methodology in the examination of an area's business activity. Base industries are responsible for importing outside income into an area. Non-base industries circulate income while providing the services necessary both for the operation of base industries and for the daily activities of all residents in an area. Historically, base industries furnish the products which sustain an area, such as those derived from agriculture, mining, and manufacturing activities. In the last decade the economy has changed so that some businesses once treated as services are now of such a scale that they are effectively a base industry. These businesses export a service to a regional or nation-wide market such as financial services. Non-base industries, on the other hand, are users and marketers of base industrial products. The two industry types are interrelated and interdependent.

While base industries provide the initial economic reason for an area's existence, base industry products, employees, and families immediately generate the need for non-base support industries. These non-base industries also require the services of other non-base industries. A growth cycle of population, products, and services is developed. The growth cycle is characterized by variations in industry volume and diversity. Base industries increase their activities and expand their number of employees in response to market demand for their products. Such growth generates associated population increases and requirements for additional non-base industrial services.

Area economists recommend that an in-depth economic analysis be performed for the three northern Kentucky counties. This analysis should explore issues such as export of services, promoting high tech industries, software engineering, analyzing multiplier effects, a regional measure of productivity, and a detailed shift-share analysis at the 4-digit level. This analysis can be used as a barometer to measure the economic performance of the community by comparing data to regional growth. The study must be uniform across the three counties and updated bi-annually in order to allow tracking over time.

BASE INDUSTRIES

Base industries include Agriculture, Mining, Construction, Manufacturing, and Transportation/Public Facilities. These are defined as follows:

Agriculture
Agricultural production and services (such as landscaping), forestry, and fisheries.

Mining
Extraction of naturally occurring minerals.

Construction
General contractors, operative builders, special builders, special trade contractors, land subdividers, and developers.

Manufacturing
Mechanical or chemical transformation of raw materials into components and the assemblage of components into finished products.

Transportation
Movement of people and merchandise from one place to another.

Public Facilities
Power plants, sanitary services, and other such facilities.

In 1997, the total number of all business establishments in Boone County was 2,170, an increase of 628 from the year 1989. The total number of employees in the county was 29,153 in 1989 and 48,897 in 1997. The number of people employed in base industries in the county was 41.4 percent of all employees, but had decreased to 40.73 percent in 1997. Base industry establishments accounted for 23.6% of the total number of business establishments in the county in 1989, and 26.5 percent in 1997.

Table 5.1 lists the number of base industries and total number of base industry employees in Boone County from 1970 to 1997. Each category has increased over the 27 year time period.

After a steady and strong growth period between 1970 and 1985, the number of Transportation/Public Facilities businesses and Contract Construction businesses rose dramatically from 1989 to 1997. This increase is related to the strong economic market during the 1990's. Finally, the number of Manufacturing businesses has more than doubled since 1985. Manufacturing businesses are generally considered the strongest multipliers for "spin-off" non-base businesses.

Base Industries Comparison, State of Kentucky

Table 5.2 lists the number of base industry businesses and total number of employees in the State of Kentucky from 1970 to 1997. Generally speaking, the growth in the number of the various base industry sectors in the state was not as dramatic as the growth in Boone County. Fluctuations in the number of

Table 5.1 - Boone County Base Industries, 1970-1997

		1970	1975	1980	1985	1989	1997
Agriculture	# Est.	3	6	11	14	30	46
	# Emp.	10	32	62	103	203	339
Mining	# Est.	1	1	2	5	3	4
	# Emp.	N/A	0	N/A	13	39	45
Contract Construction	# Est.	41	70	75	89	161	258
	# Emp.	165	456	525	590	1,289	1,692
Manufacturing	# Est.	28	37	49	62	96	132
	# Emp.	2,542	4,329	6,209	4,964	6,456	9,517
Transportation /Public Facilities	# Est.	17	23	41	67	74	134
	# Emp.	266	306	1,194	2,739	4,095	8,326
(Base) Total	# Est.	90	137	178	237	364	574
	# Emp.	2,983	5,123	7,990	8,409	12,082	19,919
Source: County Business Patterns							

Table 5.2 - Kentucky Base Industries, 1970-1997

		1970	1975	1980	1985	1989	1997
Agriculture	# Est.	346	401	509	649	819	1,340
	# Emp.	2,559	2,644	3,400	4,668	6,106	8,316
Mining	# Est.	1,011	1,347	1,412	1,538	1,226	751
	# Emp.	25,096	40,556	56,488	41,757	39,949	23,010
Contract Construction	# Est.	4,396	5,862	5,746	5,345	6,520	9,091
	# Emp.	40,055	45,520	50,276	46,481	58,808	76,027
Manufacturing	# Est.	2,901	3,133	3,170	3,402	3,818	4,631
	# Emp.	244,083	281,803	283,876	254,418	272,729	310,568
Transportation/ Public Facilities	# Est.	2,024	2,619	2,819	3,103	3,569	4,530
	# Emp.	39,572	42,092	51,606	53,903	62,756	89,622
(Base) Total	# Est.	11,024	13,362	13,656	14,037	15,952	20,342
	# Emp.	351,365	412,615	445,646	401,227	440,348	507,543
Source: County Business Patterns							

Table 5.3
Boone County Manufacturing Industries, 1970-1997
Number of Establishments

	1970	1975	1980	1985	1989	1997
Food and Kindred Products	0	0	0	-	2	3
Apparel Products	0	0	0	3	2	5
Furniture and Fixtures	3	3	2	3	3	2
Paper and Allied Products	4	3	3	3	3	3
Printing and Publishing	0	0	0	9	11	16
Chemicals and Allied Products	0	0	0	-	9	4
Petroleum and Coal Products	0	0	1	1	1	2
Rubber & Miscellaneous Products	0	3	7	7	8	12
Stone, Clay and Glass Products	0	3	-	-	6	7
Fabricated Metal Products	4	6	5	5	16	17
Industrial Machinery and Equipment	0	5	8	16	23	29
Electronic Equipment	4	3	3	1	2	6
Miscellaneous	3	7	10	5	10	7
Total	18	33	39	53	96	113
Source: County Business Patterns						

Construction businesses in Kentucky were similar to those described for the county. The number of Construction businesses increased by 75 percent in Boone County from 1975 to 1980, but increased by 8 percent in 1985, showing the recessionary period. The number of Construction firms in Kentucky decreased by 116 between 1975 and 1980. However, the numbers from 1989 to 1997 show significant growth. The number of Mining businesses in Kentucky fluctuated during the 1970's and 1980's between 1,011 in 1970 to 1,226 in 1989, but has dropped significantly to 751 in 1997. The data demonstrates the importance of mining as a base industry in Kentucky as compared to Boone County. Finally, the number of Manufacturing businesses in Kentucky rose 22 percent from 1989 to 1997. Boone County experienced a 38 percent increase in the number of manufacturing businesses during the same time period.

Manufacturing

The growth of Manufacturing businesses and employment in Boone County is an important indication of the economy of the area. As outlined previously, Manufacturing businesses, and other base industries, create the need for new non-base industries. Additional commercial and service businesses spin-off whenever base industries expand or new ones locate in Boone County. According to the U.S. Census County Business Patterns, of the 132 manufacturing businesses in 1997, nineteen had 100 to 249 employees, eleven had 250 to 499 employees, and one had 500 to 999 employees. In contrast, only one of the 258 Contract Construction businesses in 1997 had over 100 employees. In terms of income, the total number of employees in manufacturing in Kentucky rose 11.7 percent from 1992 to 1997, while the total manufacturing payroll in Kentucky rose 33.5 percent in the same period. Therefore, the expansion of one Manufacturing business with the potential of employing more people at higher salaries would have an impact on Boone County's economy.

Manufacturing, as the major base industry employer, is further detailed and divided into 13 divisions. **Table 5.2** details these 13 divisions by giving both the number of firms and employees for each Manufacturing divisions. The totals for the 13 divisions are given for each year at the end of the table. These totals do not always equal the sum of the divisions due to disclosure rules.

Table 5.2 provides an indication of the growth of Manufacturing Industries in Boone County. Some types of Manufacturing, such as Rubber and Plastic and Non-electrical Machinery have experienced a steady growth both in the number of employees and the number of firms. Others, such as Fabricated Metal Products, have remained stable as far as number of firms, but have fluctuated greatly in the number of employees. Apparel, Petroleum and Coal Products, and Printing and Publishing are recent additions to Boone County Manufacturing Industries.

Table 5.2 and **Table 5.3** detail the number of Manufacturing businesses and number of Manufacturing employees per manufacturing business for Kentucky and for Boone County. In 1989, the number of employees per base industry was higher in Boone County than the State of Kentucky. In 1987, the U.S. Department of Commerce, Regional Economic Information System, Bureau of Economic Analysis, reported that 20.1% of all Boone County employees worked in Manufacturing. This compares to 19.0% of all Cincinnati Metropolitan Area employees, 16.3% of all Kentucky employees, and 15.5% of all national employees. The Boone County percentage has slowly declined from a peak of 33.0% in 1973. This decline has paralleled declines in the percentages of manufacturing employees since 1969 in the Cincinnati Metropolitan Area, in Kentucky, and in the nation.

The distributive share of earnings by Manufacturing employees has similarly declined. In 1987, Manufacturing jobs accounted for 28.2% of total earnings in Boone County, down from a peak of 41.6% in 1974. Manufacturing earnings accounted for 30.1% of all earnings in 1987 in the Cincinnati Metropolitan Area, down from a peak of 38.3% in 1971. Kentucky Manufacturing earnings were down to 23.1% of all earnings in 1987 from a peak of 27.6% in 1973. The national distribution of Manufacturing earnings was down from 28.9% in 1969 to 20.8% in 1987, but rose to 22.6% in 1997.

Transportation

One of the most significant increases in base employment in Boone County is the transportation industry. The presence and expansion of the Cincinnati/Northern Kentucky International Airport has both a local and a regional economic impact. In 1991, the Airport's employment level was approximately 8,700 with $215 million paid in regional employee wages and benefits. Total employment in the region directly or indirectly related to ongoing Airport operations was 10,227 for full and part-time jobs in 1991. In 1991, 957,237 business and convention passengers arrived in the Cincinnati region by air. These travelers accounted for regional expenditures of approximately $605 million and total business sales of $1.2 billion. In 1993, the Airport's direct employment level rose to 9,933, while the number of businesses and passengers increased from 957,237 in 1991 to 982,311 in 1993. In 1993, a total of 2,407,752 passengers deplaned at the Cincinnati/Northern Kentucky International Airport. By 1999, direct employment of the airport was over 15,000. The total economic impact from the Airport has risen from an approximate one-half billion dollars in 1981 to $3 billion in 1993, and $3.9 billion in 2000. Finally, the total number of direct and indirect jobs associated with Airport economic activity has increased from 6,070 in 1981 to 60,100 in 1993, and 69,000 in 2000. The projected number of area jobs supported in the year 2011 is 114,500.

NON-BASE INDUSTRIES

Non-base industries include Wholesale Trade, Retail Trade, Finance/ Insurance/Real Estate and Services. These are defined as follows:

Wholesale Trade
The sale of merchandise to industrial, commercial, institutional, and professional businesses.

Retail Trade
The sale of merchandise to the general public for personal or household consumption, and services incidental to retail sales.

Finance/Insurance/Real Estate (FIRE)
Banking, credit services, and brokerage of real estate.

Services
Professional and personal services.

In 1997, the number of non-base industry businesses in Boone County was 1,596. This represents 73.5 percent of all businesses in the county, up from 70.1 in 1989. The 28,978 non-base industry employees accounted for 59.3 percent of all workers in Boone County, up from 57.4 percent in 1989. The combined number of base industry and non-base industry businesses and employees does not total 100 percent due to unclassified businesses and employees. In 1989, the unclassified businesses and employees accounted for 11 percent of total businesses and 0.6 percent of total employees in Boone County.

Table 5.4 details the number of non-base industry businesses and the total number of non-base industry employees from 1970 to 1997. Each category has continued to increase in Boone County.

Table 5.4
Boone County Non-Base Industries, 1970-1997

		1970	1975	1980	1985	1989	1997
Wholesale Trade	# Est.	20	37	51	51	91	160
	# Emp.	1,044	995	1,198	697	2,049	3,705
Retail Trade	# Est.	132	214	327	388	471	579
	# Emp.	1,213	2,338	5,411	6,179	7,916	13,105
F/I/R/E	# Est.	24	40	69	79	97	196
	# Emp.	117	283	600	668	754	1,998
Services	# Est.	84	141	194	291	422	661
	# Emp.	720	1,442	2,751	4,259	6,029	10,170
Total (Non-BASE)	# Est.	260	432	641	809	1,081	1,596
	# Emp.	3,094	5,057	9,960	11,803	16,748	28,978
Source: County Business Patterns							

Non-Base Industries Comparison, State of Kentucky

Table 5.5 details the number of non-base industry businesses and the total number of non-base industry employees in the State of Kentucky from 1970 to 1997. In general, retail and service sectors are stronger in Boone County than in the state overall. As with the base industry sector of the economy, the growth in the number of the non-base industry sector in Kentucky was generally not as dramatic as the growth in Boone County.

Table 5.5
Kentucky Non-Base Industries, 1970-1997
Number of Establishments

	1970	1975	1980	1985	1989	1997
Wholesale Trade	3,751	4,704	5,022	5,176	5,535	6,292
Retail Trade	16,412	18,582	18,651	19,705	21,547	22,955
F/I/R/E	3,340	3,198	3,013	2,673	5,687	7,971
Services	4,011	4,462	4,892	5,053	24,167	30,991
Total	27,514	30,946	31,578	32,607	56,936	68,209
Source: County Business Patterns						

Retail Trade
With the construction of the Florence Mall, and subsequent development of the Mall Road area and Houston Road as a regional shopping district, Retail Trade has established itself as a major component of Boone County's economy. In 1997, the payroll for the 8,561 Retail Trade employees was $132,632,000 or an average annual income of $15,493 per employee. This payroll amount is considerably lower than the base industries. The number of Retail Trade employees, however, exceeded all other types in Boone County in 1989. In fact, 30.3% of all workers in the county worked in a Retail Trade business, however only 17.7 percent of total payroll was paid to Retail Trade employees. Because of the importance of Retail Trade to Boone County, it is further detailed and divided into 8 divisions. **Table 5.6** details these 8 divisions by giving both the number of Retail businesses and employees for each of the divisions.

Table 5.6
Boone County Retail Businesses, 1970-1997

		1970	1975	1980	1985	1989	1992	1997
Building Materials & Garden Supplies	# Est.		17	17	17	21	28	27
	# Emp.		102	196	-	-	-	590
General Merchandise	# Est.	-	-	-	-	12	14	14
	# Emp.	-	255	1,105	980	1,274	-	1,991
Food Stores	# Est.	21	32	41	47	45	47	52
	# Emp.	339	317	528	603	925	-	1,529
Auto Dealers & Service Stations	# Est.	39	53	58	53	57	65	74
	# Emp.	266	551	737	743	1,059	-	1,552
Apparel & Acc.	# Est.	-	-	52	64	67	73	68
	# Emp.	-	-	372	529	586	-	641
Furniture & Home Furnishings	# Est.	-	-	19	27	40	48	53
	# Emp.	-	-	-	216	228	-	630
Eating and Drinking	# Est.	15	41	67	84	118	113	150
	# Emp.	87	799	1,735	2,221	2,690	-	3,862
Misc. Retail	# Est.	26	36	64	87	109	87	134
	# Emp.	116	143	498	687	876	-	1,340
Total	# Est.	9	11	17	16	469	475	572
	# Emp.	1,213	2,338	5,411	6,179	7,916	-	12,135
Source: County Business Patterns and 1992 Census of Retail Trade								

In 1975, there were only 3 Retail stores in Boone County with 100 to 249 employees while in 1978 there were 7 such Retail stores. The increase in the mean number of employees between 1976 and 1978 corresponds to the completion of the Florence Mall. The leveling-off and decrease in the mean number of employees after 1978 can be attributed to the increase in smaller stores. Although 6 stores continued to employ between 100 to 249 employees in 1984, the number of small stores (between 1 and 4 employees) had risen to 145. By 1986, however, the number of larger stores had increased to 11 and the number of smaller stores had slightly decreased to 132. The mean number of employees was 17 in 1986. With the construction of new large retail stores along Houston Road, the mean number of employees has increased to 19.7.

According to the 1982 Census of Retail Trade, Boone County had a total of 435 Retail Trade businesses. Approximately one-fifth of these businesses did not have payrolls indicating that they were family owned and operated. Seventy percent of the Retail Trade businesses were located in Florence. In 1992, 380 (78%) of the 488 total retail businesses were located in Florence. See **Table 5.7** for details.

In 1987, the U.S. Department of Commerce, Regional Economic Information System, Bureau of Economic Analysis, reported that 22.6 percent of all Boone County employees worked in Retail Trade, compared to 18.0 percent of all employees in the Cincinnati Metropolitan Area, 17.9 percent of all employees in Kentucky, and 16.8 percent of all national employees. The Boone County percentage has remained relatively constant since a peak of 25.8 percent in 1978.

Table 5.7
Florence and Boone County Retail Trade - 1992
Number of Established Businesses and Workers

		Florence	Boone County
Building Materials & Garden Supplies Stores	# Est.	13	28
	# Emp.	284	364
General Merchandise	# Est.	13	14
	# Emp.	-	1,447
Food Stores	# Est.	26	47
	# Emp.	661	965
Automotive Dealers	# Est.	20	27
	# Emp.	589	683
Gasoline Service Stations	# Est.	22	38
	# Emp.	260	551
Apparel & Accessory Stores	# Est.	73	73
	# Emp.	596	596
Furniture & Home Furnishings Stores	# Est.	44	48
	# Emp.	296	338
Eating & Drinking Places	# Est.	86	113
	# Emp.	2,549	2,866
Drug & Proprietary Stores	# Est.	9	13
	# Emp.	189	224
Miscellaneous Retail Stores	# Est.	74	87
	# Emp.	-	593
Total	# Est.	380	488
	# Emp.	7,375	8,627
Source: 1992 U.S. Census of Retail Trade			

Services

In 1989, the payroll in Boone County for the 6,029 Service employees was $84,672,000 for an average annual income of $14,044 per employee. In 1997, the payroll for 9,731 employees was estimated at $154,236,400 resulting in approximately $15,850 per employee. Although the Service average annual income is lower than those in the base industry sector, the average annual income for Service workers is higher than that of Retail Trade employees. The number of Service employees has surpassed Retail Trade employees. Because of the importance of the Service sector to Boone County, it is further detailed and divided into 11 divisions. **Table 5.8** details the 11 divisions by giving both the number of Service businesses and the number of employees for each division. These totals do not always equal the sum of the divisions due to disclosure rules. The total number of Business Services businesses has increased every subsequent year.

The number of Health Services businesses increased by 100% between 1980 and 1989. The number of Legal Service businesses, which has been recorded in the County Business Patterns only since 1980, rose 41 percent between 1980 and 1989.

Table 5.8 - Boone County Service Businesses, 1970-1997

		1970	1975	1980	1985	1989	1997
Hotels & Other	# Est.	-	10	10	13	15	24
	# Emp.	-	364	272	288	438	585
Personal Services	# Est.	42	58	193	246	54	68
	# Emp.	16	21	30	39	423	563
Business Services	# Est.	-	13	21	43	57	107
	# Emp.	-	-	1,036	1,112	1,909	3,103
Auto Repair, Etc.	# Est.	-	14	18	22	41	69
	# Emp.	-	113	108	447	630	967
Misc. Repair	# Est.	-	-	-	7	14	19
	# Emp.	-	-	-	-	56	188
Amusement & Rec.	# Est.	3	7	8	13	13	35
	# Emp.	-	-	405	567	666	707
Health Services	# Est.	16	28	45	62	90	132
	# Emp.	74	178	383	630	877	2,271
Legal Services	# Est.	-	-	17	22	30	36
	# Emp.	-	-	53	72	127	129
Social Services	# Est.	-	-	6	15	24	39
	# Emp.	-	-	57	312	346	563
Membership Org.	# Est.	10	15	17	31	39	54
	# Emp.	28	53	117	185	245	578
Misc. Services Eng. Mgmt. Motion Pictures, etc.	# Est.	-	-	-	16	41	67
	# Emp.	-	-	-	82	207	377
Total	# Est.	84	141	194	291	422	650
	# Emp.	720	1,442	2,751	4,259	6,029	9,731
	Average Employees	8.57	10.24	14.18	14.64	14.28	14.97
Source: County Business Patterns							

In 1987, the U.S. Department of Commerce, Regional Economic Information System, Bureau of Economic Analysis, reported that 21.3 percent of all Boone County employees worked in the Service sector, compared with 27.2 percent of all employees in the Cincinnati Metropolitan Area, 23.3 percent of all employees in Kentucky, and 26.7 percent of all national employees.

AREAS OF FUTURE COMMERCIAL ACTIVITY

Since the immediate Florence area figures so prominently in Boone County's commercial activity, this region has the momentum to continue dominating any expansion of commercial activity. Currently, “big box” retail has been overbuilt in the county. As a result, building vacancies are visible along the major commercial corridors in Florence. The market and infrastructure impacts of future large scale or regional commercial uses on the existing Florence commercial districts must be considered. Furthermore, it is important to encourage the reuse of vacant commercial buildings instead of creating new commercial districts. Two studies, the Houston-Donaldson Study and the Main Street Study, have defined the scale and type of commercial uses in the City of Florence and surrounding area. The Houston Road area will mature with expansion of the retail and office base, additional racetrack uses and expansions of St. Luke West Hospital. The Main Street area will experience a rebirth as a result of an expanded population in the area and public improvements. Many problems with the location and arrangement of commercial uses have emerged, especially along the KY 18 and U.S. 42 corridors. Commercial developments along KY 18 and U.S. 42 west of Mall Road should not be regionally oriented nor should they attract additional traffic, but rather be served by the existing or future population of the area. The mix of commercial, office, and residential uses, along with limited access, should be encouraged along KY 18. Along the entire KY 18 corridor east of Burlington, there are traffic congestion problems that can be worsened by adding commercial access points.

The land surrounding the U.S. 42 area, southwest of Florence, will experience additional commercial growth towards the City of Union, but should be done on a smaller scale to mitigate any adverse impacts and to be compatible with surrounding land uses and densities. The U.S. 42 corridor toward Union will have a mixture of commercial, office, institutional, public facility and residential uses. As defined by the 2000 Union Town Plan, commercial development should occur in neighborhood business district form instead of strip style commercial. The Union Town Center could be used as an example of planning efforts for other parts of the U.S. 42 corridor, as well as other corridors in Boone County. Ultimately, mixed use town centers should be developed at major crossroads throughout Boone County without commercial development along the roadways between the town centers.

Commercial developments that occur in the KY 18 and U.S. 42 corridors should be limited in scale (e.g. building, intensity, use, etc.) and clustered to serve growing residential neighborhoods. Planned Unit Developments should be encouraged so that commercial construction is incorporated within new residential areas. These commercial clusters should not function as an extension of Florence and Mall Road, but as a distinct unit serving the Burlington and Union areas. This principle should apply to the Limaburg area and surrounding area as well. The commercial development in this area should coordinate closely with the projected high and medium density residential development to form a more coherent community rather than just a strip extending out of Florence. An example of this type of design is the Oakbrook Marketplace, which ties into the subdivision while serving a larger trade area.

The I-75/Mt. Zion Road Interchange should have commercial activity concentrated to the east of I-75 and along U.S. Highway 25. The type of commercial activity northeast of the interchange should serve the growing residential areas on Mt. Zion Road and along Dixie Highway and the Northern Kentucky Industrial Park.

Highway related commercial activity is appropriate at the I-75/Richwood Road Interchange. However such growth on the west side of the interchange should be adequately buffered from existing and planned residential uses. As the residential area of Richwood grows, especially with the development of the Triple Crown Country Club, neighborhood and convenience commercial uses should develop. These new uses should be oriented toward the residents rather than the highway travelers. Most of the highway commercial growth should take place east of the interchange, although this growth should not occur to the point of blocking industrial traffic from future planned industrial development along U.S. Highway 25. Commercial development in this area should be designed to serve nearby residential growth. Over time, the truck oriented uses should be replaced with other commercial development as the interchange transforms from a travel services area to a residential area.

The I-75 Interchange at Walton is capable of additional commercial growth as appropriate levels of infrastructure become available. However, even with recent improvements to the interstate and interchange, additional truck oriented commercial activity will be detrimental to the traffic conditions at this interchange. The area should contain commercial services that serve traffic and customers that are already on Mary Grubbs Highway, and that include interconnected driveway systems, extensive landscaping, and provide a suitable “front door” to the growing City of Walton. This especially affects the southeast quadrant of the interchange in the Service Drive area. In this way, the TA truck stop impacts on KY 18 in Florence can be avoided at this similar location. The additional commercial development should address the coordination and limitation of access points to insure safe access at the interchange and along Mary Grubbs Highway, Stephenson Mill Road and Walton-Verona Road.

The Verona/I-71 interchange has been slow to develop to this point. However, the demand for commercial services will arise in the near future. A detailed study involving citizens and land owners needs to be prepared for both the interchange area as well as the existing town of Verona to the southeast. This study is imperative in light of the recent development of the car racing facility in Sparta to the south and its potential impacts on the interchange area. The racetrack facility could result in the need for commercial services at the interchange giving the county an opportunity to plan ahead for this development.

The Hebron area will experience additional commercial development along KY 20 as the northern area increases in population. The existing commercial center along KY 20, just east of KY 237, will probably not expand significantly because the new highways, I-275 and KY 237, have bypassed it. Commercial development in Hebron will center around the intersection of new KY 237 and KY 20 with a limited amount of convenience and neighborhood commercial uses north of the I-275 interchange to serve the SouthPark Industrial Park, Park West Industrial Park, and the growing number of residential subdivisions along North Bend Road. With the amount of residential construction expected in the North River area, larger scale commercial developments, such as drug stores and grocery stores will be needed. Commercial development in this area should be designed to serve the northern part of Boone County. This commercial growth should coordinate with the existing and proposed industrial and residential developments, especially in terms of access.

The I-275/Airport Interchange should experience a decrease in the existing airport related commercial activities, as these services and activities will eventually be provided on Airport property. The existing airport related commercial businesses at the KY 20/I-275 Interchange should evolve into highway related businesses. This area could support office related businesses, particularly properties possessing panoramic views of the Ohio River. Additional commercial growth based upon the expansion of the airport, and subsequent industrial growth, will be located at the Mineola 1-275 Interchange as evidenced by the Airport Exchange Business Park and the Circleport Industrial Park.

Other types of projected commercial activity include the eventual redevelopment of older commercial areas, developments and corridors. This includes sites along Dixie Highway, U.S. 42 (in Florence), KY 18 (in Florence) and Dream Street. The 1990 Mall Road Study should be redone to address business vacancy issues, traffic circulation, and general image of the corridor.

The Petersburg Road/Idlewild Interchange area at KY 8 and I-275 is now experiencing traffic volumes on I-275 that could support some commercial activity in the next few years. Significant commercial will not occur, however, until residential development occurs in the corridor. Parallel roads should be utilized to provide access to commercial developments. Particular concern should be taken in the design and development of the commercial businesses due to the existing topography and character of the surrounding area.

The various small communities should continue to serve the commercial needs of their surrounding areas. New businesses, as they are constructed or as existing structures are remodeled, should be developed with sensitivity to the historical character as well as to the current character of the area. This is evident in the river towns as casino gaming in Indiana may impact the type of business activity in these areas. Tourism in the County should increase as a result of improvements to Big Bone Lick State Park, the impact of casino gaming in Indiana, and the designation of the Big Bone/Middle Creek Scenic Highway. This industry is significant since Boone County is fourth in the State in tourism dollars generated and is slightly behind Kenton County. Planning principles which guide commercial development in the more developed parts of the county should not be ignored. The Small Community of Burlington, for example, should be revitalized in terms of its commercial opportunities, especially those day-time services which would be available to the many users of the county seat. However, this redevelopment should be done with attention paid to existing traffic, parking, and pedestrian patterns. The 2000 Union Town Plan will provide a template for other small communities in the path of new development.

In general, large residential developments may need to provide for neighborhood-scale commercial activities. Neighborhood commercial activities may include small grocery or convenience stores, family restaurants, professional offices or small retail operations of general merchandise. These neighborhood commercial activities should be scaled to serve only their surrounding residential subdivisions.

AREAS OF FUTURE INDUSTRIAL AND OFFICE ACTIVITY

The Northern Kentucky Industrial Park has the potential to expand along its southern boundary. The location of the county's population involved in manufacturing correlates well with this concentration of industry. The area southward to Mt. Zion Road should be reserved for the expansion of the Northern Kentucky Industrial Park. Future office development is recommended for the Marydale area.

The Richwood and Walton interchanges will serve an increasing amount of industrial traffic along the U.S. 25 and I-75 corridors. Most of the industrial activity should locate near the interchanges to minimize travel on non-interstate roads. The southwest quadrant of the Richwood I-75 Interchange has the potential to develop into a business park development with office uses. The area between U.S. 25 and the Boone/Kenton County line contains industrial potential due to interstate and rail access. Development of this area should utilize Old Lexington Pike as a frontage road to limit the number of access points onto Dixie Highway. The realignment of Old Lexington Pike with Richwood Road has made this area more accessible to the interstate.

The KY 237 and Mineola Pike I-275 Interchanges will experience continued industrial development in addition to the previously outlined commercial/office development. The mixture of uses should be carefully designed and planned to minimize negative impacts. The existing and future residential uses must be adequately buffered from the new development in these two interchange areas.

Several future interstate highway interchanges have been discussed for Boone County including one on I-275 west of Hebron, one on I-75 south of Walton (possibly just across the county line), and another on I-71 between Walton and Verona. The implementation of any of the interchanges must be accompanied with a land use study that evaluates and protects future industrial and business park land. Service and highway commercial development should be minimal in order to preserve prime industrial or business park land.

Property on the north side of KY 20 and near existing and planned Airport runways should be developed with a planned combination of industrial and office uses if existing and future land uses are properly buffered from adjoining uses. The area surrounding the Airport and Airport property should be closely examined to explore industrial and office development opportunities. This examination can be performed by using the Cincinnati/Northern Kentucky International Airport Master Plan and by conducting an Off-Airport Land Use and Zoning Study. Development of this area should occur with extreme sensitivity to the river view and to the steep slopes. The area to the west of the airport along Hossman Road may also be suitable for office oriented development if proper access and buffering can be accomplished.

The river bottom areas, especially the Petersburg and Belleview areas, will continue to support extractive industries such as sand and gravel mining, however, the important resource has shifted from gravel to sand. These areas generally have poor road accessibility, although industries involved in processing bulk products could locate there to make use of river barge transportation. Future development or expansion of these industries should occur with sensitivity to the residential, recreational, and agricultural potential of the river bottom area, especially near Woolper Creek. Upon the disuse of existing sand and gravel operations, reclamation should occur. Other types of mining activities may occur in the future of Boone County, but only with an evaluation of its benefits and costs to the community, including its impact on existing businesses and residential/agricultural uses.

ECONOMY

This element examines Boone County's economy in two ways. The first component reviews the economic factors related to individuals in the county, or resident work characteristics. These are: income, unemployment, poverty, population and employment, the type and distribution of jobs in the county, and commuting patterns.

The second component of this Element examines employment measures, or the economic factors related to the county in general. These factors are: employment types (the kinds of jobs available), employment levels (the number of employees by industrial sector), and employment trends (major directions in county employment).

The conclusion of this Element examines economic development and proposes that, for the future, the county should move toward a sustainable economy closely connected to the metropolitan region.

RESIDENT WORK FORCE MEASURES

Income

During the 1990's, the average income of Boone County residents (per capita personal income) has increased steadily and has been consistently higher than average personal incomes in the Northern Kentucky region (Boone, Kenton and Campbell counties) and the State of Kentucky as a whole. **Table 4.1** illustrates this growth and compares the County's per capita incomes with the region and state for that period of time. This chart also reveals the impact of national recessions in 1981-82 and 1991, where income growth in the County slowed greatly. During these times, the Northern Kentucky Region as a whole fared better than Boone County.

Table 4.1 - Personal Income By Place Of Residence, 1976-98

Year	Boone County Total Personal Income	Annual Growth Rate %	Boone County Per Capita Personal Income	Annual Growth Rate %	N. Kentucky Per Capita Pers. Income	Kentucky Per Capita Pers. Income
1976	228,889,000	16.1	5,781	12.3	5,751	5,396
1977	269,157,000	17.6	6,497	12.4	6,339	5,985
1978	325,856,000	21.1	7,548	16.2	6,979	6,649
1979	372,971,000	14.5	8,332	10.4	7,734	7,382
1980	414,493,000	11.1	8,983	7.8	8,199	8,018
1981	458,157,000	10.5	9,609	7.0	8,908	8,862
1982	482,628,000	5.3	10,010	4.2	9,643	9,225
1983	526,516,000	9.1	10,660	6.5	10,233	9,451
1984	583,242,000	10.8	11,568	8.5	11,161	10,340
1985	626,196,000	7.3	12,218	5.6	*	10,755
1986	685,451,000	9.4	13,136	7.5	*	11,235
1987	750,075,000	9.4	13,937	6.1	13,767	12,216
1988	862,410,000	14.9	15,716	12.8	14,834	12,991
1989	962,340,000	11.6	17,082	8.7	15,847	13,998
1990	1,054,011,000	9.5	18,156	6.3	16,772	14,984
1991	1,102,818,000	4.6	18,200	0.2	17,199	15,626
1996	1,639,693,000	9.7	22,510	4.7	20,091	20,155
1998	2,062,657,000	12.9	25,860	7.4	est. 25,564	22,183

* data not available Source: Northern Kentucky Area Development District, 1999 Woods & Poole Economics State Profile

In a general sense, the steady increase in the per capita income of Boone County is representative of the steady monetary growth of the county's economy. The latest available data on the average income of residents in Boone County reveals that, as a whole, it lies above the average per capita income for the Northern Kentucky Region (Boone, Kenton, and Campbell counties inclusive), as well as that of Kentucky. This generalization holds true for family and non-family households. **Table 4.2** details these findings.

Table 4.2
Average Income By Place Of Residence In 1989

	1989 Households		1989 Families		1989 Non-family Households	
	Median	Mean	Median	Mean	Median	Mean
Florence	31,270	33,954	37,541	39,503	15,903	18,721
Union	46,484	48,457	47,266	49,637	31,667	36,917
Walton	22,734	28,509	26,679	33,182	8,304	13,407
Boone County	34,485	38,766	39,000	42,861	17,524	22,628
Kenton County	30,516	36,148	36,148	42,112	16,589	21,149
Campbell County	29,228	33,673	34,973	39,052	14,595	19,337
Kentucky	22,534	29,354	27,028	33,386	11,471	17,134
Source: 1990 U.S. Census						

In every instance, Union has the highest average incomes in the county. When compared with the income averages of the three counties in the region, Union is considerably higher across the board. What is also apparent, in looking at **Table 4.3**, is the disparity of income averages between Walton and the other incorporated areas in the County in general. Except for median Household income, the income averages for the State of Kentucky are all higher than the Walton averages.

Table 4.3
Mean Family Income By Number Of Workers In Families, 1989

	No Workers		One Worker		Two Workers		3 or more workers	
	Families	Mean	Families	Mean	Families	Mean	Families	Mean
Florence	396	15,589	1,289	26,304	2,526	44,656	732	57,897
Union	13	15,233	58	41,750	172	50,793	34	70,396
Walton	72	13,351	190	23,882	232	40,186	61	58,917
Boone County	1,199	18,157	3,944	32,164	8,206	46,363	2,364	61,082
Kentucky	158,254	14,317	309,115	27,173	445,664	39,881	108,714	52,182
Source: 1990 U.S. Census								

Table 4.4 shows the percentages of families for the municipalities, the county and the state, by the number of workers in the families. This table clearly illustrates the continuing trend, at the national and local levels, of the need for families to have more than one wage earner to sustain an adequate standard of living. In 1979, a third of the families in the county still maintained only one worker, however, by 1989, only a quarter of the families in the county had one wage earner. Except for Walton, in the municipalities and the county in general, the families with two or more workers increased consistently with the corresponding decreases in single worker families.

The greatest change from 1979 to 1989, occurred in the City of Union where there was a 14% drop in the number of families with just one worker and an increase of 15% with families with two or more workers. This large change is congruous with the recognizable recent immigration into the Union area of professional families with two workers.

Table 4.4
Percentages Of Families By Number Of Workers In Family, 1979 & 1989

	No Workers		One Worker		Two+ Workers	
	% of Families 1979	% of Families 1989	% of Families 1979	% of Families 1989	% of Families 1979	% of Families 1989
Florence	8	8	30	26	62	66
Union	6	5	35	21	59	74
Walton	12	13	36	34	52	53
Boone County	7	8	33	25	60	67
Kentucky	15	15	36	30	49	55
Source: 1980 & 1990 U.S. Census						

Unemployment

During the period from 1975 to 1993, Boone County's unemployment rate varied between a low of 3.7 in 1979 to a high of 9.5 during the recession of 1982. The unemployment rates for Boone County are presented in **Table 4.5**, along with those for Northern Kentucky, Kentucky, and the United States. The highest "across the board" levels of unemployment correspond with the periods of state and national recession during 1975, 1982 and 1983. The lowest unemployment rates likewise correspond with times of low unemployment in the nation, specifically during the general economic expansion since 1991. This demonstrates that Boone County's economy tends to fluctuate with the economies of the larger economic bodies. The county's unemployment strongly parallels the regions' rate. The unemployment rates of the county more loosely follow the state and national trends, and have consistently remained below the rates for both. This means that Boone County has tended to fare better in terms of unemployment both during periods of national economic recession and growth. The Kentucky unemployment rate in July of 2000 was only 3.8 percent, while the rate for the entire Cincinnati Metropolitan Statistical Area was only 3.4 percent in December of 1999.

Comparing Boone County employment with Northern Kentucky statistics over this period, it seems that Boone County employment, at times, grew or contracted at comparable rates with Northern Kentucky overall (i.e. 1982, 1989, 1990 and 1992). At other times, Boone County's employment grew at a faster rate and actually "drove" job growth for the Northern Kentucky Area (i.e. 1983, 1986, 1988 and 1991).

Poverty

Poverty status for individuals and families in the United States is determined by the costs of food consumption for a family of three or more persons. The U.S. Department of Agriculture determined in 1955 that poor families of three or more persons will spend a third of their income on food. The poverty level or threshold was then set at three times the cost of this economy food plan. For smaller families or individuals, the relative cost of the "economy food plan" was higher to compensate for higher fixed costs in these smaller households.

The U.S. Census Bureau uses these guidelines to create a table of poverty thresholds of income, based on family size and number of children under 18 years of age. For example, the poverty threshold in 1989 for a family of four persons was $12,674. By comparison, the threshold for a family of four persons with three related children under the age of 18 the threshold was $12,619.

Table 4.6 presents the number of persons in poverty by area in 1989. The column listed as "Number of Persons Below Poverty level" gives the numbers of individuals, for specific areas, that have incomes at or below the poverty threshold. The table reveals that the areas with the largest number of individuals in poverty are the City of Florence (1,634) and the unincorporated areas (2,183) of the county. Poverty is thus found in both the urban and rural areas of the county.

Table 4.5
Unemployment Rates, 1975-00
Boone County, Northern Kentucky, Kentucky & USA

Year	Boone County	Northern Kentucky	Kentucky	U.S.
1975	5.9	7.9	7.3	8.5
1976	4.8	4.3	5.6	7.7
1977	3.9	3.8	4.7	7.1
1978	4.2	4.2	5.2	6.1
1979	3.7	3.9	5.6	5.8
1980	6.0	6.2	8.0	7.1
1981	7.5	7.3	8.4	7.6
1982	9.5	8.7	10.6	9.7
1983	9.4	9.7	11.7	9.6
1984	7.4	7.6	9.3	7.5
1985	6.1	6.6	9.5	7.2
1986	5.8	6.0	9.3	7.0
1987	6.0	6.3	8.8	6.2
1988	4.9	5.5	7.9	5.5
1989	3.8	4.2	6.2	5.3
1990	3.4	3.6	5.8	5.5
1991	5.5	5.3	7.3	6.7
1992	5.3	5.6	6.9	7.4
1993	4.9	4.7	6.2	6.8
1995	4.1		5.4	
2000	3.1	3.7	3.8	3.6
Source: NKADD Kentucky Cabinet for Human Resources				

Table 4.6
Poverty Level By Persons, 1989

	Number of Persons Below Poverty Level	Above Poverty Level		
		100% to 149% of Poverty Level	150% to 199% of Poverty Level	200% of Poverty Level>plus
Florence	1,634	1,252	1,134	14,317
Union	48	14	57	882
Walton	356	210	264	1,189
Unincorporated	2,183	2,182	3,121	28,206
Boone County	4,221	3,658	4,581	44,594
includes persons 15 years of age and older				
Source: 1990 U.S. Census				

For **Table 4.6**, the columns below the heading "Above the Poverty Level" list the number of individuals whose incomes are at the poverty level to approximately 1.5 times that level; from 1.5 times to 1.99 times the poverty level, and then those individuals whose incomes are at least 2.0 times the poverty level or above. It would be misleading to consider those listed in the columns under "Above Poverty level" as safe from poverty. For a family of four, 150% of the poverty level was only $19,001 a year in 1989, and 200%

of the poverty level was $25,348 a year. The individuals listed under the first two columns of the "Above Poverty Level" could aptly be described as the working poor.

Table 4.7 compares the poverty levels of families for the two census years of 1979 and 1989. Overall for the county, there has been improvement for families with children, since there are approximately 100 fewer families in 1989 in this most serious poverty status. However, for the City of Walton there was an increase of 40 families by 1989 into this classification.

Table 4.7 - Poverty Levels By Families, 1979 & 1989

	# Below Poverty				# Above Poverty			
	With Children		Without Children		With Children		Without Children	
Census Year	1979	1989	1979	1989	1979	1989	1979	1989
Florence	365	319	87	74	2,787	2,371	1,626	2,179
Union	3	12	2	0	102	182	71	83
Walton	31	71	10	9	236	257	225	218
Unincorporated	470	390	128	131	4,651	5,296	2,852	4,121
Boone County	869	792	227	214	7,776	8,106	4,774	6,601
Source: 1980 & 1990 U.S. Census								

In 1995, Boone County had 5,201 persons in poverty for a 7.1 percent rate. Both Kenton and Campbell counties were over 11 percent. The Kentucky rate was 17.9 percent and the United States rate was 13.8 percent.

The Population and Employment

Table 4.8 shows the total labor force (Boone County residents in the labor force whether employed or not), the employment (number of jobs) in the County and the total employment figures for Northern Kentucky (Boone, Kenton and Campbell Counties) for the years 1975 to 1995. Overall the County's labor force and employment have steadily increased over the years. When there have been reductions in both categories, they were during periods that coincided with national recessions (i.e. 1980-81 and 1991-92).

Table 4.9 compares the Occupation of Employed Residents by Area for the two census years 1979 and 1989. This table clarifies the types of occupations of Boone County residents. It gives us an initial discernment of the social/economic profile of Boone County residents. The Manager/Professional category is actually subdivided in the Census as; 1) executive, administrative, managerial, 2) professional specialty. For the purposes of this plan, the two sub-headings have been combined together. From 1979 to 1989, there was an increase of almost 3,000 of county residents who work in managerial/professional occupations. Clearly, these are the more high-income wage earners, many of whom have migrated into the county. They have helped stimulate the dramatic growth in residential and commercial development in the county. This has continued throughout the 1990's.

For the Sales and Administrative Support/Clerical categories, there were nearly 1,500 more Boone Countians working in each of these occupational categories in 1989 then in 1979. The increases in these two categories are consistent with the continuing trend towards two-worker families, with the female spouses working in these more traditionally women-oriented occupations.

Though there was an actual increase of 760 residents working in the Service category, the overall percentage of Boone Countians in this category decreased from 1979 (12%) to 1989 (11%). This same phenomenon occurred in the more traditional "blue collar" occupational categories of Production/Craft/Repair and Operators/Fabricators/Laborers, where there was a combined increase of over 1,000 residents working in these categories. However, the percentages for these categories have dropped (P/C/R from 14% in 1979 to 11% in 1989, and O/F/L from 21% in 1979 to 17% in 1989).

The Boone County resident worker population has become more "white collar" or professional in orientation than in the past. This has happened across the board in Boone County, not just in the unincorporated areas or Union, as might be expected. It is highly likely that many of these professionals commute outside Boone County, as shown in **Table 4.10**. This table gives a description of resident workers by place of work in 1989. Over half (14,412) of the resident workers in the county worked outside of the county.

Table 4.8
Boone County Labor Force And Employment, 1975-95

Year	Total Labor Force		Employment		N. KY Employment	
	Number	Annual % Change	Number	Annual % Change	Number	Annual % Change
1975	15,204		14,310		96,680	
1976	16,032	5.4	15,260	6.6	101,520	5.3
1977	17,497	9.1	16,810	10.2	106,810	5.2
1978	19,045	8.8	18,250	8.6	112,430	5.3
1979	19,411	1.9	18,690	2.4	115,200	2.5
1980	22,239	14.6	20,900	11.8	121,390	5.4
1981	22,222	-0.1	20,560	-1.6	119,330	-1.7
1982	23,404	5.3	21,183	3.0	123,015	3.1
1983	25,224	7.8	22,851	7.9	123,588	0.5
1984	25,813	2.3	23,900	4.6	127,202	3.0
1985	25,600	-0.8	24,038	0.6	127,933	0.6
1986	27,449	7.2	25,858	7.6	128,760	1.4
1987	28,127	2.5	26,436	2.2	130,556	1.4
1988	29,841	6.1	28,375	7.3	133,838	2.5
1989	30,555	2.4	29,474	3.9	139,021	3.9
1990	30,919	1.2	29,874	1.4	140,907	1.4
1991	32,754	6.0	31,026	3.9	142,894	1.4
1992	33,580	2.5	30,804	-0.7	141,871	-0.7
1993	33,870	0.9	31,227	1.4	142,202	0.2
1995	57,980	36.6	36,160	7.9	146,510	1.5

Source: Northern Kentucky Area Development District (NKADD)
Kentucky Cabinet for Human Resources, OKI

Commuting Patterns

The relationship of County commuting patterns to the metropolitan region is a valuable tool for analyzing the county's economy, as well as its relationship to the region's economy and transportation systems. In 1980, the Bureau of the Census listed Boone County as having 19,827 resident workers. Of these, one-half worked within the county and the other one-half commuted outside of Boone County. As stated above and shown in **Table 4.10**, there were over 28,000 resident workers by 1990, and the same split persisted with half working outside the county and the other one-half inside. These job related commuting patterns are termed transpositions. **Table 4.11** shows the transpositions of the labor force in 1980 and in 1990. By comparing the commuting patterns for 1980 and 1990, it is clear that transpositions have increased greatly during this ten-year period.

Table 4.9
Occupation Of Employed Residents
By Area For 1979 & 1989

	Florence		Union		Walton		Unincorp. Boone County		Boone County	
Occupation of Employed Residents	1979	1989	1979	1989	1979	1989	1979	1989	1979	1989
Manager/Professional	1,582	2,316	71	139	90	136	2,196	4,332	3,939	6,923
Technicians & Support	212	468	8	19	16	31	334	641	570	1,159
Sales	838	1,184	19	80	39	94	1,235	2,249	2,131	3,607
Admin.Support/Clerical	1,626	1,931	71	75	123	182	2,082	3,174	3,902	5,362
Service	948	1,039	2	33	85	90	1,365	1,998	2,400	3,160
Farming/Forestry/Fish	44	37	5	4	2	18	426	416	477	475
Production/Craft/Repair	842	815	37	71	127	147	1,926	2,360	2,932	3,393
Operators/Fabricators/Laborers	1,247	1,673	63	76	183	191	2,788	3,032	4,281	4,972
TOTALS=	7,339	9,463	276	497	665	889	12,352	18,202	20,632	29,051
Source: 1980 & 1990 U.S. Census										

Table 4.10 - Employed Residents By Place Of Work By Area Of Residence In 1989

Area Resident Workers lived	Worked in County of Residence	Worked outside County	Worked outside State
Florence	4,173	2,540	2,538
Union	252	102	139
Walton	356	210	264
Unincorporated	9,321	6,216	4,689
Boone County	14,102	6,782	7,630
includes persons 16 years of age and older			
Source: 1990 U.S. Census			

Table 4.11 - Boone County Transpositions, 1970-90

	1970	1980	1990
Resident County Workers	4,099	9,047	14,102
Non-Resident County Workers	4,025	11,687	21,988
Resident Out Commuters	7,034	9,172	14,412
data does not include county residents not reporting place of work			
Source: Kentucky Department of Commerce			

This exchange of workers continues to happen to the greatest degree between Boone County and Kenton County in Kentucky, and Boone County and Hamilton County in Ohio. In 1980, 7,000 Kenton County residents worked in Boone County; by 1990, the number had increased to 11,299. In 1980, 1,394 Hamilton County residents commuted to Boone County to work; by 1990, the number had more than doubled to 3,044. Over 2,500 more Boone Countians commuted to Kenton County in 1990 as did in 1980, while 1,733 more Boone Countians commuted across the river to Hamilton County in 1990, as did in 1980. During this same ten year period, the number of Boone County workers commuting to Campbell County more than doubled to 864, while the number of Campbell County workers commuting to Boone increased significantly from 862 to 1,924.

Other recognizable trends include the increased transpositions between Boone County and Butler, Warren, and Clermont counties in Ohio. The trend of Boone Countians commuting north to these three Ohio counties is probably a result of recent commercial and industrial development along I-275 and I-71 in Ohio. However, many more Clermont County residents (676) were commuting to Boone County in 1990 than the reverse (230).

The counties immediately south of Boone County, Grant and Gallatin, continue their dependence on Boone County for jobs. This same phenomenon is now happening between Boone County and Dearborn County in Indiana. In 1980, there were 124 workers from Dearborn County commuting to Boone County. By 1990, the number increased over six fold to 784, but there were half as many Boone Countians (35) commuting to Dearborn County in 1990 as in 1980. The significance of these numbers is that it indicates the strong economic ties Boone County has with the surrounding region. The county's economic growth directly affects the counties to the south and Dearborn County in the north. Any future economic transformations in Boone County will have an impact on all surrounding counties.

Table 4.11 details the number of resident, nonresident, and resident out commuters for Boone County from 1970 to 1990. **Table 4.12** presents the statistics in **Table 4.11** (both resident and non-resident) as percentages. In 1970, approximately one half of Boone County's workers lived within the county; by 1990, only 39% of the County's workers lived within county. This was a period when the total employment (number of jobs in the County) for Boone County grew from 8,100 to over 36,000 jobs.

Table 4.12
Boone County Workers By Percent Resident Or Non-Resident, 1970-1990

	1970	1980	1990
Resident County Workers	50.4	43.6	39.1
Non-Resident County Workers	49.6	56.4	60.9
data does not include county residents not reporting place of work			
Source: Kentucky Department of Commerce			

Part of the explanation for the growth in employment has to do with the overall trend in the growth of industrial and commercial uses in suburban areas from 1970 to 1990. Much of this growth in Boone County was stimulated by the expansion of airport operations during this same period. The split in transpositions for Boone County workers is consistent, for this twenty year time period, with a general transition to a suburb-to-suburb commuting pattern for many workers. **Table 4.11** clearly illustrates the substantial overall increase of commuters on Boone County's roadways. There were 11,000 (both non-resident workers and resident out workers) commuters on Boone County's roadways in 1970; however, by 1990 that number had tripled to 36,000 commuters.

Employment projections by the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) and the Boone County Planning Commission predict that there will be somewhere between 73,000 to 80,000 jobs in Boone County by the year 2010. Light-rail and improved bus services could be in place by that time. Otherwise, traffic congestion on Boone County's roadways would be significant and could have the effect of limiting this expected growth in employment.

The questions that should be asked about present and future transpositions are: who commutes out of the county, and who commutes into the county, and why? **Table 4.9** shows that there was a large increase in residents who were professional or "white collar" workers in the county from 1979 to 1989. However, during this same period, the actual increase in jobs in Boone County was in the more low-paying categories of wholesale/retail, transportation/public utility and services (approximately 12,000 jobs). **Table 4.11** shows that, from 1979 to 1989, there was an increase of over 10,000 non-resident county workers.

It could be argued that, generally, the county "exports" its professional, resident workers and "imports" non-professional, lower-wage workers. The question should also be asked: if the county must import its low to moderate-wage workers, is this because there is not an adequate amount of affordable housing in the county for these workers?

Transpositions are generally viewed negatively by transportation planners because a transposition most often means commuting in a single occupant vehicle (SOV). If the projected increase in employment, described above, indeed happens in Boone County (and within the whole metropolitan region) and present commuting habits persist, it would result in similar increases in transpositions. If no changes in commuting habits are seen, or no major roadway capacity improvements or transit improvements (i.e. light-rail, feeder bus) are implemented, economic development could result in chronic congestion and increased pollution problems for the whole region. Clearly, there is a strong correlation between the health of a region's environment and the health of a region's economy.

Although there will not be updated information on transpositions until 2001 with the completion of the 2000 Census, OKI performed a Person Trip Interchange Summary in 1995. This document analyzed daily inter-county travel by number of people trips. The information can be used to reinforce the trends in the commuting patterns from 1990. **Table 4.13** gives the trips to and from Boone County by location. The total daily trips for the OKI region in 1995 were 6,267,912. Seventy percent of the Boone County trips were intra-county trips.

Table 4.13 - Trips To And From Boone County In 1995

	Trips from Boone County	Trips to Boone County
Butler County	946	1539
Clermont County	1997	1946
Downtown Cincinnati	4820	4747
U.C. area	2264	963
East Hamilton County	986	997
NE Hamilton County	4048	4457
North Hamilton County	3162	2811
West Hamilton County	3724	3534
Warren County	284	428
Boone County	211843	211843
Campbell County	12601	11452
Kenton County	53896	54970
Dearborn County	3141	2567
TOTAL	303712	302254

Source: OKI

EMPLOYMENT MEASURES

As described in the Business Activity Element, there are two categories of industrial activity, base and nonbase. Base industries furnish the products which sustain society, such as those derived from agriculture, mining, and manufacturing activities. Nonbase industries are users and marketers of base industrial products. These support or service activities have developed beyond the simple distribution of physical products to the provision of human services.

The two industry types are interrelated and interdependent. Base industrial activities are responsible for bringing outside income into a community. Nonbase industries then circulate that income while providing the services necessary both for the operation of base industries and for daily activities of all residents in the community.

While base industries provide the foundation for a long term employment sector, base industry products, employees and families immediately generate the need for non-base support industries. This develops an urban growth cycle of population, products, and service, in terms of both volume and diversity. Growth may be considered to be an increase in volume. Base industries increase their activities and expand their employment rolls in response to market demand for their products. Such growth generates associated population increases and requirements for additional non-base services.

Before beginning this comparison of base and non-base industry, it is important to realize the constraints of the comparison. With the shift of the past two decades in the United States to a post-industrial economy, the base and non-base distinction no longer strictly follows traditional lines. Boone County's strong retail sector, its office and service developments serve as a regional base and act as a regional draw resulting in significant outside dollars flowing into the county's economy.

Furthermore, Boone County's economy is strongly tied to the Greater Cincinnati Metropolitan Area economy. It is important to note that several factors outside the county have an important affect on the county's economy. However, despite these constraints the base to non-base analysis does reveal important aspects of the county's economic anatomy, and this comparison is useful in establishing the current status of economic factors.

Employment Types

Table 4.14 contains employment numbers for Boone County's major non-agricultural industries from 1979 through 1999. Of the represented industries, mining, construction, manufacturing, and transportation/public utilities are base industries, and wholesale/retail, finance/ insurance/real estate, services, and federal/state/local government are traditionally non-base industries (increasing numbers of services and federal/state/real estate industries may be considered base employment in a post-industrial, metropolitan area). These categories are defined as follows: mining - the extraction of minerals; construction - establishments that operate as general contractors, operative builders, special builders, special trade contractors, land subdividers, and developers; manufacturing - the mechanical or chemical transformation of materials or substances into new products; transportation - movement of people and merchandise from one place to another; wholesale - the sale of merchandise to retailers repair shops, industrial, commercial, institutional, professional business users, farmers, governments, and wholesalers; retail - sale of merchandise to the general public for personal or household consumption and services incidental to sales; F/I/R/E - finance, insurance and real estate; services - businesses which provide amusement, education, repair, and other services.

Historically, until 1960 a greater percentage of Boone County residents were employed in base industries than non-base industries. This trend began to change during the 1970's; by 1980, non-base industry employment accounted for nearly 60 percent of the total county employment. This shift in the major employment sector is partly due to the decreasing role of agriculture in the county's economy. In 1940, agriculture accounted for nearly 53 percent of the county's employment; by 1980 agriculture employed just over 2 percent of the county's workers. This trend is representative of the county's transition from a rural to an urban economy.

Employment Levels

As of 1997, among the base industries, manufacturing continued to be the largest employer of Boone County workers followed closely by Transportation/Public Utility, while the wholesale/retail industry is the largest employer among non-base industries and is the largest employer of any industry in the county. As of 1997, almost 70 percent of the workers in Boone County were employed in one these three industries. Professional and related services accounted for almost 20 percent of the employment, and continue to increase.

Among the represented industries, some show evidence of being fairly volatile in terms of employment, with important shifts from year to year in the number of workers employed. Construction experienced the greatest shifts in numbers of employees from year to year, and Manufacturing likewise experienced substantial changes in the number of workers employed. The employment levels for Wholesale/Retail and Finance/Insurance/Real Estate have demonstrated a more steady, positive growth. Again, the growth in these non-base industries has closely followed the regional pattern, in which the non-base industries did not experience the declines during periods of national recession that the base industries experienced.

This brief analysis of employment numbers again suggests that Boone County's economic complexion is shifting from the traditional dominance of manufacturing to that of transportation/public utilities (fueled largely by the growth of the Greater Cincinnati International Airport and expansions in utilities), and non-base, or tertiary, industries such as wholesale/retail and services.

Table 4.14
Place Of Work Employment By Major Industry in Boone County, 1979-99

Year	Mining	Construc-tion	Manufac-turing	Trans/ Public Utility	Wholesale/ Retail	F/I/R/E	Services	Govern-ment	Other	Total Employ-ment
1979	35	746	6,695	1,582	6,842	602	3,865	2,029	96	22,492
1980	29	660	6,334	1,610	5,957	605	2,579	2,372	98	20,244
1981		574	5,662	1,692	5,959	596	2,560	2,398	92	19,533
1982		479	5,121	1,700	5,942	595	2,665	2,463	77	19,042
1983	18	564	5,265	1,858	6,424	582	3,038	2,469	84	20,302
1984	39	604	5,665	2,035	6,746	533	3,720	2,580	113	22,035
1985	46	661	6,072	2,694	7,412	579	4,067	2,726	149	24,406
1986	43	931	6,377	2,817	7,899	623	4,768	1,957	*137	25,551
1988	51	1,216	7,406	4,870	9,822	681	5,844	2,174	219	32,283
1989	40	1,031	7,521	5,578	11,369	697	5,921	2,275	243	34,675
1990	44	1,100	7,868	6,454	11,866	771	6,318	2,445	284	37,152
1991	38	1,100	8,268	6,962	11,815	1,168	6,450	2,649	312	38,695
1992	39	1,504	9,191	7,648	12,179	1,206	6,644	2,793	354	41,557
1997	45	1,692	9,517	8,326	3,705	1,998	10,170			48,909
1999		2,012	13,056	13,237	18,142	3,420	11,616	4,741	548	66,772

* does not include Federal jobs

Source: Northern Kentucky Area Development District; N. KY Chamber of Commerce

Employment Trends

Future trends should include a continuation in the growth of wholesale/retail employment, considering the continued expansion of the regionally-oriented commercial districts in the Mall Road Area and in the Houston/Donaldson Study Area. There should also be growth in manufacturing employment with the continued expansion of industrial development around the airport, and along US 25 near Richwood. The Airport reports that aviation affiliated employment has expanded from 10,000 in 1994 to more than 15,000 in 2000, and predicts more than 18,000 in 2020.

For the 1995 Boone County Thoroughfare Plan, the Planning Commission generated some jobs projections for the different traffic zones that OKI uses for its regional transportation planning efforts. **Table 4.15** lists the traffic zones plus actual number of jobs for 1990 (based on 1990 Census information), OKI's job projections for the year 2010, and the Boone County Planning Commission's (BCPC) job projections for the year 2010 and 2020. A map of the traffic zones is presented as **Figure 2.2** in the Population Element.

Table 4.15 - OKI Traffic Zone Jobs Projections

Traffic Zone	1990	2010	2010*	2020
60	4516	6050	6050	6817
811	695	2360	2360	3193
812	340	2220	2220	3160
813	1219	3350	3350	3850
814	1963	7740	7740	8740
815	1816	6090	6090	8227
816	590	1500	1500	1955
817	3178	1220	3178	3378
818	5947	9150	9150	9950
819	4090	2434	4598	4848
820	300	480	480	578
821	361	670	670	824
822	197	620	820	1030
823	281	400	400	450
824	724	2610	2610	3553
825	152	2010	2010	2939
826	230	980	980	1355
827	6170	12210	14210	18210
883	745	2870	3070	4233
884	597	2480	2480	3422
885	43	50	50	55
886	309	2030	1530	2140
887	175	410	610	828
888	222	50	350	414
889	47	90	590	861
890	50	40	140	185
891	47	60	260	360
892	32	40	40	45
893	191	500	500	654
894	122	90	140	150
895	198	150	150	140
896	57	200	200	270
897	105	200	200	220
906	381	1790	1790	2495
Totals	36090	73144	80516	99529

Source: OKI except *BCPC

These projections are based on present trends in those traffic zones and expected future land uses for these areas.

In April 1999, a "Greater Cincinnati Labor Market Supply Study" was published. This study was produced by the University of Cincinnati Center for Economic Education and was prepared for Cinergy Corp., Greater Cincinnati Chamber of Commerce, the Northern Kentucky Chamber of Commerce and Ohio Region 5 School to Work Alliance. The Study offered the following conclusions:

1) 60% of Greater Cincinnati's (region's) labor force is under the age of 40.
2) 48% of the region's labor force has attended college.
3) For every female college graduate in the region, there is 1.4 male college graduates.
4) 43% of the region's workforce is in technical, sales, administrative support, managerial or professional occupations.
5) 39% of the region's workers in service occupations have less than a high school degree.
6) Lower labor force participation rates of the 55-64 year old age group have contributed to the tight labor market.
7) Contrary to popular opinion, many of the people who are not in the labor force have a good education.
8) The labor force participation rate of men is substantially higher than for women.
9) By the year 2005, the level of employment will increase faster than the work force.
10) Population growth will lag employment growth in Greater Cincinnati.
11) In-migration to the region will increase the local labor market supply.
12) The working population will mature over the next two decades.
13) A more mature labor force may require more training and higher wages.

14) Retirement incentives decrease the labor force participation rates of older workers.
15) Incentives from employers may be necessary to keep older workers participating in the labor force.
16) The region's population participates more in the work force that the national population, especially the 16-64 age group.
17) By 2002, an estimated 26,599 people will graduate from specialized programs in the region. However, 50% of the graduates may not enter the local workforce due to interest in receiving a higher educational degree and in working outside Cincinnati.
18) During the next 5 years, there will be a continued tight labor market for workers formally trained in the manufacturing, service, computer science, nursery, therapy, skilled trades, medicine, business and education occupations.

RECOMMENDATIONS

Economic Development and a Sustainable, Regional Economy

The late 1980's and the 1990's contained a resurgence of growth in manufacturing. The Tri-County Economic Development Corporation (TRI-ED), a non-profit corporation financed by the three Fiscal Courts of Boone, Kenton and Campbell counties, is charged with recruiting companies into the Northern Kentucky region. TRI-ED has clearly been successful in recruiting firms into the industrial developments. The region's specific resources and strengths (such as the International Airport) should be nurtured as catalysts for economic development. Boone County, Northern Kentucky, as well as the whole Cincinnati Metropolitan region, should start taking the necessary steps, now, to make the transition to a sustainable, regional economy of the future.

A sustainable economy would be, as the name implies, sustainable from generation to generation. It would not be as susceptible to national recessions or highly dependent on national expansions. A sustainable economy's engine would not be growth by any means, but instead, continuous innovation and regional cooperation and integration. A sustainable economy holds the promise that economic development, environmental preservation and restoration, and the evolution of a regional orientation (that is inclusive of central city and outer suburb) could all come together as interworking parts of a continually renewing, economic system, which is competitive in the new world economy.

Over the past decade Boone County has added a tremendous amount of warehouse and distribution centers. This type of use occupies significant amounts of land while not creating a significant number of jobs per acre. Adjacent counties and cities have expressed desire in attracting these types of employment opportunities. Boone County should work with Kenton and Campbell counties in order to appropriately locate these types of businesses.

To illustrate that we are already beginning to take the initial steps to create a sustainable, regional economy, some attributes of such an economy are characterized below, along with descriptions of Boone County's and the metropolitan region's actual "initial steps". Recommendations for the next steps to be taken by the county are then introduced.

- A most important attribute for a metropolitan region with a sustainable economy is the development of an infrastructure of public transit, roads, bike paths, pedestrian facilities, so that human-scale community is enhanced and options to auto travel are ubiquitous.

In 1993, the City of Florence received a grant (80% federal funds/20% local funds) from the Kentucky Transportation Cabinet for Transportation Enhancement Funds from the Intermodal Surface Transportation Efficiency Act to build sidewalks along U.S. 25 from the county border at Elsmere to U.S.42. Boone County Fiscal Court has applied for similar grants to build bike and pedestrian lanes on

KY 18 from the City of Florence to Burlington. Ewing Boulevard and Woodspoint Drive also have bike paths built by the City of Florence. Subdivision designs are beginning to provide for bike facilities.

For the metropolitan region, the Ohio-Kentucky-Indiana Regional Council of Governments (OKI), in its most recent long-term plan (1993), has proposed the development of a light-rail line to run from Kings Island along I-71 to the International Airport and to the Florence Mall area. This same OKI long-term plan also proposes expansion of bus transit service to the more highly developed residential areas in Boone County.

- A viable, metropolitan regional economy, that aspires to be competitive in the new world economy, needs good international transportation capacity.

The Economy Element's Goals and Objectives lists other definite attributes of a sustainable, regional economy. These include support of local agriculture and patronage of local business products and services. Examples of local support for agriculture include the recent promotion from the state for the building of a permanent farmers' market in Northern Kentucky. The State of Kentucky has promoted this Farmers' Market as the ideal outlet for traditional tobacco farmers to sell alternative crops like fruits and vegetables. This is in keeping with Kentucky farmer and author, Wendel Berry, who argues that we should shorten the distances our foodstuffs are transported and shift to eating more locally grown food, thereby greatly enabling our local farmers.

Patronage of local business products and services is best exemplified in the Cincinnati metropolitan region by the Best of Cincinnati promotional magazine. This idea could be implemented in Boone County or Northern Kentucky. The next logical step would be conscious attempts by the area and region for import replacement, such as is done in Eugene, Oregon. In this example, an individual put together a grant of $38,000 from the city, county and a local bank, for herself and staff of two. This group then contacted local businesses and asked what they expected to purchase from outside the city and county region in the next year. They then searched for local companies who would be able to place bids for the work. They would then continue this cycle of approaching purchasers and seeking potential suppliers and connecting the two. By the end of the first year, the grant had returned more than five thousand percent (of the cost of the contract) in new LOCAL contracts that were formally done outside the city and county.

Encouraging the establishment of recycling programs and recycled materials industries is another objective in the Economy Element that describes specific attributes of a sustainable, regional economy. In the past few years, Boone County has instituted a volunteer curbside recycling program for the community. Another step that could be taken would be maximizing the use of the local governments purchasing power so that recycled products would be purchased. The State of Kentucky has instituted such a policy.

Maximizing energy conservation and the development of local renewable resources are also two other attributes of a regional, sustainable economy. Cinergy is now promoting an energy conservation campaign on television that includes recommendations for replacing normal light bulbs with long-life, energy-efficient, fluorescent bulbs, as well as, energy audits for homes that give homeowners tips on energy savings. Cinergy is also promoting a program for conversion of government, school bus, taxi, or delivery fleets to natural gas vehicles.

In conclusion, the county and metropolitan regions are already making the transition to a sustainable, regional economy out of necessity. There are many further steps to be taken by all levels of society. What are now viewed as environmental problems (e.g. energy inefficient construction methods) will actually become opportunities for new, innovative sustainable businesses (e.g. retrofitting older structures for energy conservation).

HOUSING

This element assesses Boone County's housing situation and presents a plan for future housing growth. Few elements of a comprehensive plan are as far reaching or have as direct an impact on a citizen's quality of life. The housing market is a basic economic operation which is regulated by demand and supply. Demand is comprised of all individuals within the county or wishing to enter the county. Births, deaths, migration, marital status, and a multitude of economic facts all have a profound impact on current and future demand. High interest rate periods, such as the early 1980's, usually decrease housing demand and building activity, and, therefore, increase occupancy rates. Low interest rate periods, like that seen during the 1990's, increase demand and building activity. This was experienced in Boone County during the last several years. Supply is responsive to demand and includes both existing and planned housing stock. Aside from the number of housing units, housing supply analysis is a study of the variety of housing types and the constantly changing market demand.

This Element contains three sections. The first is an analysis of housing market demand, which is closely related to the Population and Economy Elements of the Comprehensive Plan. Second is a study of current housing supply and planned housing development. The last section, recommendations, combines major findings of demand and supply in order to determine future housing needs and to forecast housing growth by area of Boone County. It should be noted that all findings are macro in scale and are not intended to describe individual neighborhoods.

HOUSING DEMAND

Population Trends

Two major population factors affect the housing demand in regards to total numbers of housing units. These are the total population and the average household size. Except for institutions or other forms of group housing, households are defined as the person(s) occupying a housing unit. As a result, the number of households equals the number of occupied housing units, not the total number of housing units. For this reason, the number of households forecasted in the Housing Element is less than the respective number of housing units forecasted in the following Housing Supply section of the Housing Element. The difference in the two is represented by the overall vacancy rate of housing units. Total population, households, and people per household are shown in **Table 6.1**.

Table 6.1
Boone County Population and Households

Year	Population	Households	People Per Household
1980	45,842	14,848	3.09
1990	57,589	20,127	2.85
1995	70,097	24,490	2.75
1997	76,173	27,916	2.66
2000	85,072	31,760	2.55
2010	108,473	42,358	2.55
2020	128,865	52,442	2.44

Source: Kentucky State Data Center, Ohio-Kentucky-Indiana Regional Council of Governments, U.S. Census

Table 6.1 reveals an important trend where household sizes are becoming smaller. The household projections are used as a general guideline for future housing need. Because they represent occupied housing units, the total number of housing units for any given year will be greater by the amount of the vacancy rate. Household characteristics also change as evidenced by the increase in single-parent families. The resulting housing needs impact the size, type, and location of units demanded by the population. Multi-family units near commercial areas often constitute the demand of singles or single-parent families and 'empty nesters'.

Migration

Migration is another factor that affects the amount of housing needed for future residents. In Florence and Boone County, 43.1% and 45.3% respectively of the residents lived in the same house for the 5-year period from 1985-1990. This is below Kentucky's average of 52.8 percent. Union's percentage of persons who lived in the same house from 1985 to 1990 (38.4%) is the lowest in the county. The county and incorporated areas are all below the state average for residing within the same county during that five year period. All these figures suggest a high degree of residential mobility for the population of Boone County, with the greatest showing in the Union area.

Throughout the 1990's, Boone County has continued its rapid growth in commercial and industrial jobs, although office development has decreased in respect to the 1980's, mirroring a regional and national trend. Industrial growth is strongest around the airport and along the I-75 corridor south of Florence. Commercial developments continue to expand in the Houston Road area, while the Mall Road area continues to add new national chains at new sites and as replacements for vacant stores.

These industrial and commercial areas, along with the airport, constitute permanent, regional employment centers, and are acting as attractors for new residential development to occur within commuting distances. Several expansions of the airport, during the 1980s and 1990s, have brought an in-migration of new residents, thereby creating a greater demand.

The demand for more affordable single-family and multi-family residences, generated by the commercial and industrial employment growth centers, has helped generate the development of many new subdivisions and apartment developments. However, the overall demand for new affordable housing has not been completely met by the housing market. New subdivision and apartment design has been uniform in suburban areas and offers little variation or innovation from one development to another. Mixed-use, planned developments that provide a mix of housing options, commercial, office, and public uses with multiple transportation options (i.e. transit, pedestrian, park-and-ride) could be one strategy for meeting this demand (see Housing Densities in this Element and the Land Use/Transportation Connection section in the Transportation Element).

Age Composition

With the exception of Walton, the County's incorporated areas and the unincorporated area, as a whole, have higher percentages of young and middle aged persons than Kentucky. Union has the highest youth and the lowest elderly percentages. Walton displays the lowest youth and the highest elderly percentages. **Table 2.10**, which appears in the Population Element, further shows the percentages for the remainder of the county and Kentucky. Boone County's population is becoming more elderly in proportion. This "graying" of the population will have an impact on housing demand. Many of these "empty nesters" will want to move out of their high-maintenance, large lot single-family homes and into condominiums, landominiums, or small lot single-family homes.

Marital Status

Marital status is another demographic characteristic useful in determining housing demand. Single elderly individuals, married couples with children, and single individuals with children have different housing demands than young adult, single individuals. In general, married couples live in single-family houses, while other groups tend to reside in multi-family or attached dwelling units. To summarize from the Population Element, the cities of Walton and Florence have lower marital status rates than Union or the unincorporated areas of the County. Further, Walton has the highest percent of married couple families without children, while Florence has the highest percent of divorced individuals.

As a result of the County's expected population growth, a significant increase in the supply of housing will be necessary. The increase in married couple families will require an increase in the supply of single family housing. In addition, the increase in the rate of growth of single-parent families will require a comparable increase in construction of multi-family dwelling units and for more affordable priced housing of all varieties.

Economic Factors

Economic variables of households also help determine housing demand in Boone County. Single family dwelling units tend to cost more than multi-family units. An exception to this are condominiums, which are owned dwelling units of a multiple unit structure. To summarize from the Economy Element, Boone County residents have relatively high income when compared to Kentucky averages, with Union being highest, followed by the unincorporated area, Florence, and Walton. Owners outnumbered renters in 1990 approximately 11 to 1 in single-family units. Duplexes and multi-family units tend to be renter-occupied while mobile homes are usually owner-occupied, but often located on rental lots.

An important factor in detached single-family housing development is the relative cost of a building lot. The rapid residential growth throughout the 1990s has pushed the expense for developable land higher. As predicted in the <u>1995 Comprehensive Plan</u>, this has strengthened the trend toward multi-family or innovative, clustered housing as developers try to keep down street and utility improvement costs and to stay within affordable price ranges.

The demand for detached single-family units is evident throughout Boone County, however, with the area between Burlington, Union, and Florence being the most active in terms of subdivision development during the late 1990s.

Demand for multi-family housing has historically been in, or around Florence. The emphasis on new construction, however, has shifted to the unincorporated county. The continuing in-migration of a young, professional population combined with the increased growth of single-parent families and the overall graying of the population, means the demand for various multi-family housing options will continue in the future for Boone County.

Manufactured homes are an economical alternative to conventional and modular homes, and have historically been in demand in the rural, western half of the county or in mobile home parks located mostly between Florence and Richwood. The zoning in the western portion of Boone County, however, often requires a minimum five acre lot size making this a less economical housing alternative with increased land prices. The Mobile Home Parks in the US 25 corridor have increased significantly since 1990.

An economic variable essential to housing demand is the extent of poverty and areas where it is found. Summarizing from the Economy Element, Walton has the highest percent of individuals and families in poverty, followed by Florence, and unincorporated Boone County. Low cost housing needs to be located throughout the county so that it doesn't become more economically segregated. Housing assistance programs should be designed to help facilitate low cost housing in locations where it's needed.

Demand Summary

Of the five factors discussed that affect housing demand, the population trends and migration characteristics dictate the number of housing units needed. The age and marital status, and economic factors affect the types and locations of housing development. In general, the demand for housing has remained high throughout the 1990's, and is expected to continue. This continuing trend is readily apparent by the steady increase in the number of building permits issued during the last ten years.

HOUSING SUPPLY

Housing Type by Area

Table 6.2 indicates that the most densely populated, incorporated areas have the greatest amount of multi-family units. For the year 1980, Florence, with 36.3 percent of the population, had 72 percent of the county's multi-family units. In 1990, however, with urbanizing areas in unincorporated Boone County, Florence had only 56.4 percent of the multi-family units with approximately 34.1 percent of the population. The proportion of area within the City of Florence to the area of Boone County has increased with annexations. The amount of land in Florence however, still comprises a very small area compared to the unincorporated county. Newly calculated numbers for Florence and Unincorporated Boone County show that in 1999 47% of Florence's housing stock was comprised of multi-family (an increase of 5% over the 1989 totals) while Boone County increased from 16.5% multi-family units in 1989 to 29% in 1999.

Table 6.2
Housing Unit Types by Municipality

	Single-Family			Multi-Family (& SF attached)			Mobile Homes (a)		Totals	
	1980	1990	1999	1980	1990	1999	1980	1990	1980	1990
Florence	3,423 (29.9%)	4,209 (30.2%)	4,986	2,410 (72%)	3,060 (56.4%)	4,413	7 (.6%)	31 (1.6%)	5,840 (36.3%)	7,300 (34.1%)
Union	199 (1.7)	307 (2.2)		5 (.1)	3 (.1)		2 (.2)	2 (.1)	206 (1.3)	312 (1.5)
Walton	491 (4.3)	548 (3.7)		139 (4.2)	240 (4.4)		5 (.4)	12 (.6)	635 (4.0)	800 (3.7)
Unincorp. Boone	7,332 (64.1)	8,846 (63.9)	22,267	793 (23.7)	2,122 (39.1)	9,203	1,184 (98.8)	1,860 (97.6)	9,309 (58.4)	12,828 (60.6)
Total	11,445	13,910		3,347	5,425		1,198	1,905	15,990	21,240

(a) Prior to February, 1986, double-wide mobile homes were treated as single-family residences by the zoning regulations. After that date, few have been added because of their exclusion from most residential zoning districts. Double-wide installed between August 1984 and February 1986 were counted under single-family residences category.

Source: Boone County, Florence & Walton Building Inspection Data & U.S. Census

The percentage of multi-family in the unincorporated area of the county increased from 16.5% to 29.2% from 1989 to 1999 while the percentage in Florence increased from 41.9% to 47.0% from 1989 to 1999. Much of this growth can be attributed to condominium development. 49.2% of the multi-family construction in Boone County and 43% of the multi-family construction in Florence in the same period were condominium units. Unincorporated Boone County has also maintained the highest percent of the mobile homes during this same period.

Housing Types by Municipality

It should be noted that the number of housing units increased in all housing construction types for each municipality. County-wide, the percentage of total housing units that are single-family detached units, has decreased while multi-family units have increased in percentage. The City of Florence has a lower percentage of single-family units than other areas of the county. County-wide there was a reduction from 1980-1990 in the percentage of single-family homes in each area except Union.

As Boone County continues to urbanize, the percentage of multi-family units continues to increase. **Table 6.3** shows that multi-family housing was 20.9% of the total housing units in 1980. However, by 1990 this percentage had risen to 25.5% of the total housing units. This was during a time of enormous growth in single-family housing development. This increase in multi-family housing happened primarily in the unincorporated part of Boone County.

Table 6.3
Percent Housing Unit Types by Municipality

	Single-Family			Multi-Family			Mobile Homes		
	1980	1984	1990	1980	1984	1990	1980	1984	1990
Florence	58.6	55.4	57.7	41.3	44.5	41.9	0.1	0.1	0.4
Union	96.6	96.8	98.4	2.4	2.3	1.0	1.0	0.9	0.6
Walton	77.3	74.9	68.5	21.9	24.4	30.0	0.8	0.7	1.5
Unincorporated	78.8	74.6	68.9	8.5	10.6	16.5	12.7	14.8	14.5
Boone County	71.6	68.1	65.5	20.9	23.1	25.5	7.5	8.8	9.0

Source: U.S. Census

Values

The average value of a single family housing unit in Boone County in 1980 was nearly $53,000, by 1990 the value was $74,300. In 1990, Union continued to have the highest median value for owner-occupied housing units at $95,600 followed by Florence at $69,200 and then Walton at $53,100. These values consistently exceeded the Kentucky State averages. The average cost to the consumer for a new single-family home has jumped from $75,500 in 1986 to $92,237 for the years 1991-1993 averaged together, and to $144,788 in 1999 (Northern Kentucky Home Builders Association and Boone County Building Department). These figures include the cost of the structure, but not the land cost.

Average rental payments follow a similar pattern, being highest in the unincorporated parts of the county, with the relatively newer multi-family housing units. Rents in Florence remain high, however, because of the high demand and the convenience of the location.

Age

According to the 1990 Census; 6.8 percent of Boone County's housing stock was constructed before 1940. The rapid growth in new housing development becomes very apparent considering that the 1980 Census showed 12 percent of the County's housing stock was built before 1940. In contrast, the current totals indicate that 20.74 percent of all Boone County housing units were constructed between 1984 and 1990.

Table 6.4 and **Table 6.5** indicate the total number and percent of housing units constructed during four time periods. Over 62 percent of all existing housing units in Boone County were built after 1969. It is clearly evident that Boone County's overall housing stock is not very old. However, the houses of the early subdivisions of the 1950s and 1960s should see a major transition in ownership patterns as the original owners proceed from retirement to old age and the need for other housing options (i.e. condominiums, retirement homes).

Growth Patterns

The City of Florence has grown mainly through annexation of new development property to the west and south. Plantation Pointe and Longbranch Park Subdivisions are prime examples of new developments annexed into the city primarily for urban services such as sanitary sewer. Infill and redevelopment will occur in the central parts of Florence.

Table 6.4
Number of Housing Units by Age

	1939 (or earlier)	1940 -1969	1970 -1984	1984 -1990	Totals
Florence	246	3,025	2,939	1,126	7,336
Union	9	67	147	91	314
Walton	213	255	230	103	801
Unincorporated	999	3,139	5,753	3,134	13,025
Boone County	1,467	6,486	9,069	4,454	21,476

Source: U.S. Census

Table 6.5
Percent Housing Unit Age by Municipality

	1939 (or earlier)	1940 -1969	1970 -1984 (Aug.)	1984 -1990
Florence	3.3	41.2	40.0	15.3
Union	2.8	21.3	46.8	28.9
Walton	26.5	31.8	28.7	12.8
Unincorporated	7.6	24.1	44.2	24.1
Boone County	6.8	30.2	42.2	20.7

Source: U.S. Census

Important public sector developments in the City of Florence will probably have great impact on the quality of life of its citizens in the future. These public sector developments are exemplified by the Florence Nature Park, Ewing Boulevard, and new Florence City building, Main Street Improvements and Plan, sidewalk improvements on U.S. 25 and the ongoing implementation of the 1992 PEDESTRIAN/BIKE PATH PLAN.

The tremendous growth in residential development during the last five years is most apparent in the Burlington-West Florence area (see **Table 6.6**). The Oakbrook Planned Development has moved much closer to completion. Silver Creek, Hearthstone, and Carder's Mill Subdivisions are adding more single-family homes in this area. With these developments, there is only one major undeveloped area left along Pleasant Valley Road. Growth in the most active subdivisions in Boone County since 1990 is shown in **Table 6.6**.

The other major residential growth area in the county will be the North Hebron area. Tree Tops, Thornwilde, Wyndemere, Deer Creek, and Northpointe Subdivisions have experienced growth since the 1995 Comprehensive Plan. Although this area will continue to fill in, most of the developable land is accounted for, and remaining undeveloped land contains rough terrain. The Williams Road corridor should be considered in the long range planning for this area as a future residential growth corridor if water, sewer, and access can be provided. Boone County Fiscal Court has contributed funds toward the design of a reconstructed North Bend Road. The project has been added to the Kentucky Transportation Cabinet's Six-Year Plan.

Occupancy

Overall, the county had a 6.3 percent vacancy rate in 1990. **Table 6.7** provides a further analysis of the occupancy rates in 1990 by area and housing type. The table contains two forms of data. The "Total Occupancy Rate" column indicates the percentages of all the housing units which are occupied. The "Rental Units" column indicates the percent of the units which are renter occupied. For example, only 2.9 percent of single-family housing units in Florence were vacant in 1990, and 10.3 percent of the occupied single family units were rental.

Table 6.6 - Subdivision Growth 1999

DEVELOPMENT	JURIS.	ACRES	DENSITY	SING. FAM BUILT	MULT. FAM BUILT	MOB. HOME BUILT	MULT. FAM BUILD-OUT	TOTAL BUILD-OUT
Antebellum	FL	25	4.36	16	0	0	0	109
Arborwood	BC	85	1.53	25	0	0	0	130
Belle Meadows	BC	51	3.08	157	0	0	0	157
Blackberry Hill Esta	BC	68	0.47	7	0	0	0	32
Bluegrass Ridge	BC	23	3.09	71	0	0	0	71
Brentwood	BC	56	1.64	58	0	0	0	92
Brookstone	BC	59	2.54	15	0	0	0	150
Burgundy Hill Apts	BC	34	11.65	0	120	0	396	396
Burlington Oaks	BC	8	18.00	0	144	0	144	144
Burlington Woods	BC	22	2.45	50	0	0	0	54
Cardinal Cove	BC	24	2.58	62	0	0	0	62
Cedarwood	BC	89	1.85	165	0	0	0	165
Chancellor Estates	BC	6	1.50	9	0	0	0	9
Charleston Pines	BC	24	10.00	0	120	0	240	240
Cheshire Ridge	BC	50	2.48	118	0	0	0	124
Cliffs at Oakbrook	BC	34	4.82	0	164	0	164	164
Cool Springs	BC	157	1.57	0	0	0	0	247
Country Place	BC	15	10.00	0	150	0	150	150
Crestview Lakes	BC	15	4.80	0	0	72	0	72
Cross Road Estates	BC	103	0.17	4	0	0	0	18
Crossgate/Farmview	FL	14	5.57	0	30	0	78	78
Crossing of Oakbrook	BC	22	11.82	0	260	0	260	260
Darlington Farms	BC	38	8.89	0	338	0	338	338
Dartmouth	BC	49	2.45	53	0	0	0	120
Deer Creek	BC	77	3.30	89	0	0	0	254
Deer Trace MHP	BC	30	6.00	0	0	180	0	180
Derby Farms	BC	109	2.48	260	0	0	0	270
Dublin Greens	BC	31	2.61	31	0	0	0	81
Florence Methodist	FL	6	6.67	0	40	0	40	40
Greens of Oakbrook	BC	15	3.60	52	22	0	54	54
Greens of Turfway	FL	8	11.00	0	88	0	88	88
Groves at Oakbrook	BC	79	1.73	80	0	0	0	137
Hanover Park	BC	295	2.51	309	0	0	0	740
Hearthstone	BC	210	1.99	0	0	0	0	417
Hempsteade	UN	192	2.28	262	0	0	0	438
Heritage Trails	BC	181	1.22	145	0	0	0	221
Hidden Creek	BC	45	2.04	37	0	0	0	92
Highlands of Oakbroo	BC	45	2.87	33	0	0	0	129
Ivy Pond	UN	30	2.40	72	0	0	0	72
Kensington Park	FL	18	6.00	0	42	0	108	108
Kensington Place	FL	33	2.61	86	0	0	0	86
Kimmis	BC	20	3.95	11	0	0	0	79
Kingsgate Crossing	BC	97	2.54	237	0	0	0	246
Kingsley Chase	BC	52	0.54	8	0	0	0	28
Knolls of Oakbrook	BC	41	2.10	86	0	0	0	86
Lancashire	UN	69	2.42	89	0	0	0	167
Lassing Green	UN	74	1.46	65	0	0	0	108
Liberty Crossing	BC	45	3.89	39	0	0	0	175
Links of Oakbrook	BC	54	1.98	74	0	0	0	107
Magnolia Trace	FL	16	10.94	39	0	0	0	175
MCElheney/Stringtown	FL	3	12.00	0	0	0	36	36
Meadowood Greens	BC	7	10.00	0	70	0	70	70
Mosby's Point MHP	BC	21	4.95	0	0	104	0	104
Mt Zion Apartments	BC	41	10.54	0	432	0	432	432
Northfield/Farmview	FL	35	3.43	110	0	0	0	120
Old Lexington Villas	BC	16	5.75	0	0	92	0	92
Orchard Estates	BC	46	4.17	144	0	0	0	192
Paddock Club	FL	14	14.29	0	200	0	200	200
Parlor Grove	BC	248	0.96	156	0	0	0	238
Pebble Creek	BC	174	2.83	224	0	0	0	492
Pleasant Hill	BC	19	2.68	11	0	0	0	51
Pleasant Valley Mead	BC	257	1.97	387	0	0	0	506
Richwood North Estates	BC	30	6.47	139	0	0	0	194
Ridgecrest	FL	29	3.28	86	0	0	0	95
Ridgefield	BC	66	3.88	218	0	0	0	256
Rivershore Farms	BC	241	0.52	40	0	0	0	126
Saddlebrook	FL	119	5.71	138	528	0	528	679
Sherwood Lakes	BC	48	2.25	0	108	0	108	108
Silver Creek/Thunder	BC	234	2.73	312	0	0	0	638
Southpointe Apts	BC	9	9.78	0	88	0	88	88
Stacy's Acres	BC	10	1.30	13	0	0	0	13
Steeplechase	BC	194	1.63	50	0	0	372	317
Summerset Farms	BC	77	2.08	59	0	0	0	160
Summits of Oakbrook	BC	25	6.24	0	156	0	156	156
Sunchase Meadows	BC	52	0.83	0	0	0	0	43
Sunset Ridge	WL	33	3.36	91	0	0	0	111
Sutherland	BC	64	1.94	72	0	0	0	124
Tall Oaks	BC	15	2.73	37	0	0	0	41
Tall Trees	BC	26	1.92	18	32	0	32	50
Tamarack Trace	FL	23	11.48	0	264	0	264	264
Tara Place	FL	44	13.75	0	254	0	605	605
Taylor Ridge	BC	56	0.18	4	0	0	0	10
Thornwilde	BC	392	1.71	134	0	0	240	672
Tree Tops	BC	129	3.28	222	0	0	0	423
Triple Crown	BC	802	2.11	401	348	0	1152	1693
Union Station	BC	32	2.91	86	0	0	0	93
Union Village	UN	67	2.19	99	0	0	0	147
Verona Commons	BC	48	0.88	16	0	0	0	42
Village of Brigadoon	BC	51	3.33	109	0	0	0	170
Village of Southfork	FL	38	5.89	0	224	0	224	224
Village Parke	FL	21	9.05	0	190	0	190	190
Whispering Woods	BC	15	6.40	0	96	0	96	96
Willow Bend	BC	41	6.90	283	0	0	0	283
Windridge Apartments	FL	14	6.86	0	96	0	96	96
Woodland Estates	BC	128	0.20	14	0	0	0	25
Wyndemere Place	BC	30	3.70	34	0	0	0	111
TOTALS		**7027**	**2.68**	**6621**	**4604**	**448**	**6949**	**18836**

Table 6.7
1990 Percent Housing Occupancy by Municipality

	Single-Family*		Duplex		Multi-Family		Mobile Homes	
	(1)Total Occupancy	Rental Units	Total Occupancy	Rental Units	Total Occupancy	Rental Units	Total Occupancy	Rental Units
Florence	97.1	10.3	95.3	81.7	92.5	91.0	100.0	0.00
Union	97.7	6.8	100.0	100.0	0.0	0.0	100.0	0.0
Walton	95.2	13.3	83.9	69.6	94.6	93.5	100.0	0.0
Unincorporated	94.1	6.3	100.0	65.7	77.3	72.9	92.3	12.2
Boone County	95.9	9.6	94.8	74.9	87.4	84.9	92.5	11.9
Kentucky	93.4	15.0	88.5	73.6	88.0	83.9	86.6	18.6

(1) A percentage of the total occupied housing units, the balance is owner-occupied.

* Includes single family, attached

Source: U.S. Census

Multi-family housing in Florence and Walton in 1990 had very low vacancy rates of 7.5% and 5.4% respectively, revealing the high level of demand for these units in these areas. However, the vacancy rate for multi-family housing units in unincorporated Boone County in 1990 was a relatively high 12.7%. This high percentage is understandable considering that 967 new multi-family units were built in Boone County from 1984 to 1990. Vacancy rates for single-family units throughout Boone County are also very low, especially rental units.

Assisted Housing

The Section 8 Housing Rental Assistance Program began in 1975 with an allocation of 110 certificates. This program is operated by the Assisted Housing Department in Boone County and helps low to moderately low income families pay their rent. The tenant pays 30 to 40 percent of their gross monthly income towards their rent. A utility allowance is considered in figuring this, along with some medical expense for the elderly, disabled and handicapped, and qualified child care expenses. This program has expanded nine times since 1975. The county now has an allocation of 832 certificates. There are approximately 85 landlords renting units under this program.

Other Characteristics

Other characteristics of the housing stock (as of 1990) include heating, bathrooms, kitchen facilities, telephones, water source, and sewage disposal. This discussion is based on the 1990 Census. About 1.4 of every 1,000 homes in the county are without any heating units. While this value is very low, every household should have some sort of heat. Only 0.7 percent of the homes are without complete kitchen facilities. Three hundred forty nine homes are without telephones, of which 50 homes are occupied by individuals 60 years of age and older. This is a potentially serious condition for these persons. Approximately 79 percent of the homes receive water from a public system or private company. Another 2.3 percent of the homes receive well water, while the remaining percent acquire water from some other source. Sixty-five percent of the homes have public sewer service, another 34 percent use on site disposal systems of a septic tank or cesspool. The remaining 1.5 percent dispose of the sewage by another means. With the major construction of sanitary sewer lines during 1993-1994, a higher percentage of homes have been able to connect to the public sewer service.

In general, the supply section concludes that the existing and planned housing units will meet the population's need as developers become increasingly aware that Boone County is one of the top building opportunity areas in the Cincinnati metropolitan area, and in the State of Kentucky.

RECOMMENDATIONS

The remainder of the Housing Element is devoted to examining ways the county can meet housing needs. The goals and objectives of this Plan advocate a planned effort to meet the broad range of housing needs and desires of the present and future populations. The Housing Element is coordinated with the Plan's other elements in order to provide a framework for the Future Land Use Plan.

Population Needs

The major reason for Boone County's rapid population growth is in-migration. Often the higher income or new population locates in the developing rural areas of the county. While this is practical because they are the ones who can afford an estate lifestyle and cost of transportation over greater distances, this spatial phenomenon maintains social divisions between the different segments of society. A variety of housing opportunities within the established urban areas and within developing areas would encourage some of the higher income residents to reside there and thus lessen the isolation of different segments of society. Therefore, single-family housing should remain an ingredient of the urban areas instead of being targeted only for rural or suburban areas. Large, left-over parcels in urban service areas are well suited for planned residential development that includes high density housing. However, established single-family housing areas in urban settings should not experience an influx of multi-family or duplex construction unless adequate buffering or proper development design can be provided. Housing for elderly population or handicapped needs to be located near public transit, commercial areas, and public facilities.

Existing Supply

Housing stock that has redeeming qualities or that can be rehabilitated without much effort or expense should be retained. Additional residential development should reinforce this existing housing stock wherever possible. In some cases, existing houses should be incorporated into new subdivision design. There are concentrations of older housing stock in need of restoration or rehabilitation in many of the established small community, including areas like Belleview-McVille, Burlington, Constance, Hebron, Petersburg, Stringtown, Taylorsport, Union, Verona, and Walton.

Housing Types

Although single-family homes are by far the most numerous, they are decreasing in their percentage of total Boone County housing. Most new construction of single-family housing will take place on the outer rings of growth. The Union area has a high percentage of single-family housing. Seventy- six percent of all units in Union were constructed between 1970 and 1990. Large lot areas, including Union, will see multi-family construction, although this higher density development should occur close to highway arterials and urban services, and be sensitively developed in terms of building height, setbacks, mass, and visual impact. Throughout Boone County, high density developments should be close to thoroughfares to achieve a gradation of densities and land uses outlined in the Future Land Use Plan.

Multi-family housing developments should have convenient access to commercial districts or should provide their own supporting commercial uses. The developments should be designed to offer the shortest trips to the most people. High density residential developments help to hold down the cost of individual units due to many variables including lower land cost per unit, lower land development cost and building unit costs per unit. Clustering of the dwelling units allows this by requiring less site work and utility construction. This provides a supply of affordable housing for county residents.

The only high-density residential uses that should occur outside of urbanizing areas are either planned developments with adequate infrastructure, or mobile home parks, which help reduce the proliferation of isolated mobile homes in rural areas. Individual mobile homes have presented a problem of inefficient and sometimes illegal land use in the rural areas, and since they are increasing in number, efforts should be made to ensure that these mobile homes conform to basic health and safety considerations. The most efficient way to do this is to concentrate most of these units in properly-maintained mobile home parks.

Modular housing is becoming a major factor in the nationwide housing supply. Boone County and Kentucky in general have not seen the influx of modular housing that has occurred in other areas of the country. The Northern Kentucky housing market matured enough in the 1990's that more types of modular housing are appearing. Modular homes add to the variety of housing supply, and can lower the cost of construction to help offset rising land costs. Currently, modular houses are permitted in any residential zoning district in Boone County, and can occur separately or in a subdivision, unless regulated by private deed restrictions or restrictive covenants. Modular housing is typically brought to the building site in several components, and its construction is inspected on site by the local building inspector under the respective State Building Code. These units should not be confused with manufactured homes, more commonly referred to as mobile homes, and/or double-wide mobile homes. Mobile homes are inspected in the factory under the Federal Mobile Home Construction and Safety Standard (H.U.D. Code).

Table 6.7 displays the percentage of occupancy for duplexes in Florence in 1990. This indicates the demand for duplexes is high and should continue to be so in the future. Duplexes are often more successful than multi-family housing in blending in with single-family residential surroundings. Therefore, when buffering is minimal between single-family housing areas and proposed multi-family units, an appropriate transitional area of duplexes may be designed.

It is important to offer a variety of housing units, not only in terms of economics, but also because of the county's demographics. As stated previously, the youthful population, divorcees, and elderly often select a multi-family unit or manufactured home to satisfy their housing needs. In the case of the young, this housing provides their first independent housing unit. In order for Boone County to retain its youth, the county must provide both jobs and housing, otherwise, an out-migration of the young and educated population will occur. Divorcees often select multi-family housing immediately following a separation. Elderly select these units for reasons usually related to economics and the need for a secure environment near their daily needs. The variety of multi-family housing includes nursing homes, apartments, townhouses, and condominiums all ranging greatly in price per unit. These types of units are increasing in demand outside of the established urban areas.

Affordable Housing/Homeless

The previous section discussed the need for a variety of housing units for the special needs of specific demographic groups: young, unmarried adults, divorcees, and the elderly. A high percentage of these groups need truly affordable options in these various housing types. It is not apparent that market forces have provided the needed supply of affordable housing for low to moderate income residents in Boone County.

During the 1990's, housing construction in Boone County has occurred mainly in the mid-value range, with some high-end for both single-family and multi-family housing. However, attempts at more affordable single-family or apartment construction often meet with localized hostility. The existing rental market is not adequate to meet the need as evidenced by the *Northern Kentucky Housing Needs Assessment* (October 1993, prepared by Northern Kentucky Housing & Homeless Coalition/Northern Kentucky Housing Partnership). This report stated that because of demand, the Boone County Section-8 program had a waiting list of over 300 people with an estimated wait of one and a half to two years. The report also stated that at that time, 60% of people who actually receive Section-8 Certificates are unable to locate housing within the allotted 60 days. This has improved dramatically: now the average waiting period is only two months.

In August 1991, the Boone County Task Force on Homelessness published a report that recommended a holistic approach that would coordinate the existing services and agencies already providing for the needs of the homeless. The report also stated the following:

> *Some needs are not currently being provided for and should be addressed. An example of such a need is the alarming and growing need for affordable housing in the Boone County Community. In terms of percentages of total housing, available housing at the low and moderate end of the cost continuum is actually shrinking in Boone County. This trend needs to be reversed.*

The report recommended that the county facilitate affordable housing development through non-profit housing organizations, such as Habitat for Humanity. It also stated that the key to solving homelessness is affordable housing. It recommended possible land reservations by developers, creation of a non-profit land trust, tax incentives, and the adjustment of zoning codes towards smaller lot sizes and higher densities to encourage the development of affordable housing.

To date, Habitat for Humanity has constructed one house in Walton, and has recently received a donation of a building lot for a second lot near Mt. Zion Road.

The Boone County Task Force on Homelessness has since become the Boone County Homeless Board sanctioned by the Boone County Fiscal Court. In 1994, Home Properties, Inc. of Boone County (an outgrowth organization of the Homeless Board), refurbished two homes with funding from the H.O.M.E. program. In 1999, the organization received approval to construct a 15 lot single-family subdivision in Walton, Showalter Green, that will provide the opportunity for home ownership for families at or below the 50th percentile of median income for Boone County. This project also provides an excellent example of how public and private organizations, such as the Northern Kentucky Homebuilders Association, banks, engineering firms, surveyors, the Boone County Planning Commission, and others can work together to keep costs down and provide good design.

Other possible areas for affordable housing development would be in the Transit-Oriented Developments that have been described in the Land Use/Transportation Connection in the Transportation Element and in the Housing Densities section below.

Housing Densities

High density residential areas should be located sufficiently near and with convenient access to major streets, highways, and shopping and public facilities. A progression of densities of residential uses from high (multi-family) to low (single family) shall be encouraged. Where traditional progressions of high to low net density are not possible, an appropriate and attractive visual transition should be achieved. This could include existing vegetation or new landscaping and/or fencing. Existing vegetation (such as wooded fence rows) should be retained as much as possible to provide buffer strips. This serves a dual purpose in that woodland is becoming relatively scarce in the eastern uplands of the county, and these areas buffer different land uses. Housing densities should vary within the established developed areas, which is in agreement with the objective of land use selection based on housing densities rather than housing types.

In order to support the densities needed to sustain mass transit (as proposed in OKI's Looking Ahead: 2020 Metropolitan Plan), and to foster new affordable housing options, average minimum densities shall be encouraged for mixed-use, planned developments. This would allow a variety of housing types but also enable a logical progression of intensities. The highest residential densities would be in the activity centers of these mixed-use developments. These activity centers would also include neighborhood commercial, employment, and public uses, as well as transit stations or stops.

Open Space Subdivision Design - The design of true open space housing development should be strongly encouraged, as an alternative to the conventional subdivision divided entirely into ownership lots. To accomplish this, densities within portions of a site can be increased while the overall intensity on the site can remain basically the same. Topography, vegetation, and public improvement costs reduction should be incentives for open space design. Provision should be made in the zoning and subdivision regulations for true open space design to occur under existing zoning. By increasing densities and clustering on portions of a site, these planned developments will preserve green space and/or provide space for public facility or recreation opportunities. The overall intensity of units per acre on the total site becomes the issue to consider when evaluating public services and relationship to the Future Land Use Map. All residential developments should be designed to preserve natural site features wherever possible.

The common method of residential subdivision design in suburban areas like Boone County is to calculate the most lots that can be fit within the geometric shape of the development site, and modify according to an efficient street layout and grading needs. To achieve true open space subdivisions, however, the review process needs to include more pre-application meeting work, and preliminary plans need to be designed in the following steps:

1. Evaluate the subject site for natural/historic areas or views that make the site special;
2. Set these areas aside to be designed into the development;
3. Select home building sites to take advantage of access to these features or views;
4. Design a road and utility system to serve the planned homes;
5. Create lot lines to encompass the home sites, leaving the features under common ownership for recreational or green space purposes.

Open Space Subdivision design should be encouraged by creating incentive programs. A detailed study should be conducted involving the development community, land owner interests, and local government to determine the incentives and geographic areas in which to encourage this type of residential development. A density bonus should be considered as a possible incentive. The selection of geographic areas during the study process should be based on specific criteria.

Transit Oriented Developments - An excellent model for mixed-use, planned developments is the concept of Transit Oriented Developments (TODs). The Land Use/Transportation Connection part of the Transportation Element discusses the important transportation attributes of TODs including the multi-modal aspects (i.e. facilities for transit, automobile, pedestrian, and bicycle are provided) and the inter-modal aspect (i.e. there is an easy access and transition for users of one mode of transportation to another).

TODs would also offer attractive and affordable housing options. The range of housing options could vary from apartments above commercial uses in the activity centers (up to 30 dwelling units/acre); nearby garden apartments (10 to 20 dwelling units/acre) and condominiums (6 to 15 dwelling units/acre); small-lot single family houses (at 7-10/dwelling Units/acre); and finally, at the edge of the development, standard lot, single-family houses (at 3-4 dwelling units/acre). All sections of a TOD development are directly connected with a prominent pedestrian system, and are easily accessible to commercial and public land uses.

Airport Noise Impacts on New Residential Development

Since the opening of the north/south Runway 18L-36R in 1991, airport noise impact on existing residential development has been a topic of continuing controversy between the airport and the community. The Supplemental PART 150 Study's Noise Mitigation Program was approved in 1994, and it addresses the noise impacts generated by the 1991 runway and the extension to the east/west runway, 9/27. The most recent, year 2000, FAR Part 150 Study Update recommends a new Noise Compatibility Program (NCP). This Program is discussed in the Transportation Element. It is based upon the construction of a new runway (17/35) and the 2,000 foot extension of Runway 9/27 as identified in the 1995 Master Plan. An important issue discussed through this process is night-time flights south of the airport and over Florence. The 1995 Airport Master Plan, currently being updated, proposed the construction of yet another new runway at a threshold level of airport activity, as well as numerous airfield and roadway improvements. Runway 17/35 will impact several existing residential developments in the Hebron area. Also included in this project is another extension of Runway 9/27 to the west. The Environmental Impact Statement for both of these improvements is scheduled for adoption by the Federal Aviation Administration during 2001. By the year 2000, the Airport's Purchase Assurance Program contained over 230 pending applications, and the Sound Insulation Program was completed this year, affecting a total of 260 homes. The airport has indicated that recorded aviation noise easements would be placed on individual properties participating in these programs.

It is important that the construction of new residential development, that would be built in areas impacted by high airport noise levels (65DNL plus), should have stipulations that would mandate that builders in these developments construct their buildings with materials that would reduce excess noise from the outside. The general guidelines for new residential construction within 65 DNL or greater is that it should be built with enough sound insulation to provide an outdoor to indoor Noise Level Reduction (NLR) of at least 30 decibels, and 35 decibels if the outside area is within 70 DNL.

A SUSTAINABLE BUILT ENVIRONMENT FOR THE FUTURE

The planning horizon for this comprehensive plan is 25 years into the future. The future overall pattern of development, as well as the specific building techniques, materials used in construction, and the design of communities, should evolve into a built environment that is sustainable from generation to generation. The pattern of development should be more compact, with most development being built in the mixed-use, transit-oriented model described in this element and in the Transportation Element.

However, added to this model would also be the use of indigenous building materials that could include locally produced lumber products and even rammed earth. Use of indigenous materials would have the intrinsic advantage of creating a new local building material supply industry, as well as, substantial energy savings from not having to transport materials from distant parts of the country. Another important part of the sustainable model would be the siting and design of new buildings so that the renewable energy of the sun would be maximized. Older buildings should be retrofitted with insulation and solar technology to become energy efficient.

"Smart Growth" (see Environment Element for definition) and Open Space Subdivision design are two ways in which Sustainability is becoming mainstreamed in other areas.

Under the idea of sustainability, infrastructure such as wastewater treatment, would evolve back into a more decentralized system, at the neighborhood and small community scale. The use of the presently emerging biological treatment technologies is very promising for serving future residential growth, while avoiding the massive public expenditures required for the sanitary sewer collection system that was constructed in Boone County during the early 1990's, and that is proposed for the western part of Boone County.

Residential Areas

The areas of greatest projected population growth are in the Florence-Richwood-Union-Burlington area, south along I-75, and in the Hebron-North River area. The western and southern sections of Boone County are projected to experience less population growth, thus, less of a housing need. As noted previously, there is a desire of the population to live in rural areas that are convenient to the centers of commercial activity. This suggests a continuation of the outward movement of housing construction from the Florence area. This movement is accelerated directionally by major thoroughfares such as KY 18, KY 237, and interstate interchanges. Residential development should occur near established urban or suburban areas, as opposed to leapfrogging to isolated areas, such as the western portion of the county. For residential development to occur in these outlying areas, adequate and proper infrastructure must be provided, and impact on the natural environment must be minimized.

Development in established areas takes advantage of existing services and minimizes future strain on the transportation network. The Public Facilities Element shows the existing and planned water lines and other services which should influence the locations of new residential construction. The plans for sanitary sewerage for Boone County are of particular importance when high density residential development is reviewed.

GEOGRAPHIC HOUSING ISSUES

The following are general findings about housing issues that should be considered during the planning of the Future Land Use Element:

North River, I-275 Corridor Area - North Bend Road, the highest priority project in the 1999 Northeast Boone County Transportation Study, needs to be upgraded in order to serve additional development in that corridor. The flat North Bend Bottom area and other river bottoms, should be reserved primarily for their present agriculture, or for appropriate residential, recreational or employment uses that further enhance the riverfront resource without placing development in flood prone areas. Special consideration needs to be taken in this area to avoid clearing of natural vegetation along the tops of hillsides so that scenic views for a few homeowners are not created at the expense of the scenic quality of the public view. The Williams Road area should be evaluated in the Land Use Element for future residential growth, if infrastructure can be provided.

Hebron-Idlewild Area - The new north-south airport runway will eliminate several existing subdivisions from the KY 20 corridor, east of Hebron. These include the Laurel Drive area, the part of Hickory Glen Subdivision south of Conner Road, Sycamore Drive, and Ada Lane. As shown on the Residential Growth Map, the growth along KY 20 in the Bullittsville area will continue. As demonstrated in Burlington where many Ethan's Glen residents relocated to subdivisions in that area, many Laurel Subdivision and Hickory Glen Subdivision residents may relocate to these new subdivisions west along KY 20.

Turfway-Mineola Area - Rolling Green Acres Subdivision contains only a few houses after airport buyouts, and the zoning is industrial. The Marydale property off Donaldson Road offers an excellent site for the development of a transit-oriented, mixed-use planned development that could include a range of housing options, as well as commercial, industrial, and public uses all connected to a future light-rail transit station.

Florence-Burlington Area - The undeveloped land on the southwest quadrant of KY 18 and KY 237 would be an excellent site for a transit-oriented, mixed-use planned development. New subdivisions throughout the west Florence and Burlington areas should provide interconnections between their developments and adjacent developments to promote safe and easy transportation access. Overall, the KY 18 Corridor represents a prime opportunity to promote high density residential uses in a transit corridor.

Petersburg-Belleview, Western Area - The roads in this area are not suitable for large scale residential development. The historic character of Petersburg, Belleview, and McVille should be retained and protected from new development pressures. Localized Transfer of Development Rights programs should be investigated for areas immediately surrounding these towns to continue the grid pattern of the towns while resulting in little housing development on the hillsides or bluff areas. Open Space Subdivision design should be the norm rather than the exception in this area. Sewer for these town expansions should go to the proposed Sanitation District No.1 plant, but not serve additional area. Alternate traffic routes, other than through the center of Burlington, will be needed to support any significant residential developments along East Bend Road or KY 18 west of Burlington.

Florence, U.S. 25 Corridor - There will likely be a major transition in ownership patterns for the houses of subdivisions built during the 1950s and 1960s, with an accompanying trend of remodeling and renovation to better serve the needs of the new owners. A plan should be conducted by the Planning Commission and City of Florence that inventories and determines methods of keeping good maintenance and vitality in these older single-family subdivisions. This plan should include a detailed survey of housing stock, property valuation survey, analysis of landlords and property ownership, and the length of residency. Any infill housing that occurs should fit in with the existing character of the area. The plan must contain specific implementation steps to be taken to keep neighborhoods clean, well kept, and safe. South of Florence to Mt. Zion Road, industrial development, associated with the Northern Kentucky Industrial Park, will be predominant. South of Mt. Zion Road, the expansion of existing and the building of new mobile home parks have constituted most of the housing units in this area. However, a recent apartment development on the northwest quadrant of the Mt. Zion interchange shows that residential development momentum is greater west of I-75. Near Richwood, single-family residential development will be limited to the immediate Maher Road area. This road should be upgraded if significant residential developments are planned.

Union-West Florence Area - The factors that will help fuel growth in this area include the improvements (expand from two to five lanes) of U.S. 42 from Florence to the new Ryle High School and Gray Middle School near Frogtown Road; the extension of water and sanitary sewer lines; access to the interstate highway system and the vast amount of developable land. The Union Town Plan sets the stage for development in this area when the new U.S. 42 is constructed around the year 2002, and sanitary sewer becomes widely available around the year 2006. Areas west and south of the Union Town Plan area, along U.S. 42, Hathaway Road, and Longbranch Road contain an existing agricultural, horse farm and estate residential character. Planning efforts, such as the Union Town Plan should be conducted in these areas. Street connections between developments and to arterials are critical in this central part of Boone County. The connections shown in the Union Town Plan need to be continued outside the study area to the next logical properties and arterial roadways.

Rabbit Hash-Beaverlick Area - Future growth around Rabbit Hash should be predominantly single-family but should respect the historic character of the area. Typical suburban subdivision development that is occurring in the Florence and Union areas is not appropriate for this part of the county. Open Space Subdivision Design is one way to accomplish these objectives. The Ohio River views and significant hillsides that may become attractive to builders should not be developed to the extent that the rustic character of the area is lost. The Big Bone Lick area was determined in the Western Boone County Study in 1998 to have a lower probability of public water line construction based on the economic issues with frontage assessments and housing density.

Walton-Verona Area - Walton has annexed several areas north and west of the city to provide public water service and has experienced significant subdivision development during the 1990's. Verona will see mostly single family homes, and some small subdivision activity.

RECREATION

INTRODUCTION

The following is a summary of the 2000 Boone County Parks and Recreation Master Plan:

Purpose
Boone County is faced with the reality of providing parks and recreation opportunities to a population base that is rapidly expanding. Therefore, the Boone County Fiscal Court and City Councils are forced to make difficult decisions regarding services to be provided and parks that are needed and techniques to be used to develop, finance, operate and maintain park areas, facilities and recreation programs. With the impending rapid growth of the County population, it is critical for the Fiscal Court to act quickly to secure the land that will be the future parkland for the County. Since the completion of the 1989 Boone County Open Space Plan, major improvements have been made specifically the development of England-Idlewild Park and Central Park. The land for these parks was the result of opportunities that presented themselves. The County would be in much better condition to serve its citizens with the needed park land if the County had taken a pro-active approach and implemented the 1989 Plan. The result is the need to catch up on the needed land as well as act upon the demand to acquire land for the future parks.

The purpose of the Boone County Parks and Recreation Master Plan is to identify parks and recreation needs throughout the area and to develop strategies that could be implemented to provide services consistent with the existing potential resources and demands of the area.

Why are parks important?
Here are some reasons why this Master Planning effort, additional planning and the future of Parks and Recreation in Boone County are very important:

> The Parks and Recreation Department manages approximately 903 acres of land designated for parks and recreation purposes. The schools operate several additional areas of campus and recreational area. Boone County cooperates with the Cities of Walton and Florence in the operations of parks within their jurisdictions. These agencies have the responsibility to manage this land in an efficient manner that is consistent with the health, safety and welfare of the community.
> For many residents, parks provide their only access to the natural environment. For all residents they provide natural and active outdoor recreational opportunities.
> The quality of a community's parks and recreation system is viewed as one of the indicators of the overall quality of life.
> Property values around parks tend to be considerably higher than other areas, thereby making an annual contribution to the community in the form of higher property tax revenues, as well as additional profits to the owners at point of sale. More valuable properties also tend to be maintained at a higher level, improving the appearance of the communities.
> Parks preserve important cultural and natural features for future generations to enjoy.

PREVIOUS STUDIES

Boone County Open Space Master Plan, January 1989
"The recommendations of this Open Space Plan propose a general philosophy of operation for Boone County legislative bodies for providing recreation opportunities. This general direction is that Fiscal Court should be primarily concerned with providing the large county-wide recreation opportunities, as well as

participating with other agencies in athletic fields, specialty parks and natural areas. Smaller, neighborhood and community park facilities, on the other hand, should primarily be the responsibility of private land development within the county. Of course, overlap between these two ends of the spectrum and the responsible parties are inevitable.

In order to achieve this general recommendation, the specific recommendations of the Plan are contained in a set of Fiscal Court policies as well as a land acquisition strategy for county-wide recreation opportunities designed to serve large segments of the population. The policy recommendations are a culmination of the Needs Analysis and its conclusions, and the Environment Resources Analysis sections of the Plan, with special emphasis on the results of the Master Plan Survey conducted in 1987."

Two types of policy recommendations were presented. The first were actions that should be pursued by the Fiscal Court and other agencies. The other policies proposed the type of facilities that should be provided and the types of environmental resources that should be utilized within Boone County. The policy recommendations included:

Land acquisition policies for the acquisition of land for County and District parks.
Providing for the full spectrum of recreation opportunities for every sector of the population.
The efficient practice of sharing public school recreation facilities between the school and non-school population should be increased.
Active participation with the appropriate school district in the land acquisition process.
Inclusion of public open space as part of public building construction.
County recreation facilities or adjacent public land should accompany public water reservoirs or other large land reserves.
Lighting of public outdoor and indoor recreation facilities should be emphasized to maximize usage through nighttime and/or wintertime use of facilities.
The private development sector should be encouraged, and required when appropriate, to satisfy the needs of the development population and nearby county population.
Inform and encourage private businesses, land owners, and public and semi-public organizations to donate undeveloped land or permit usage of excess land for public recreation purposes.
Increase cooperation with the Cincinnati/Northern Kentucky International Airport to provide additional athletic fields on level and undeveloped airport property.
Development of multiple athletic field complexes for efficient operation.
Provide public access to the Ohio River shoreline for fishing and boating opportunities.
Consider abandoned gravel pits for recreation purposes.
Abandoned gravel mines could be considered for all terrain vehicle areas.
Existing rights-of-way and utility easements should be considered for hiking and biking trails.
Pathway systems should connect park sites to neighborhoods and schools.
Public swimming pool development should be coordinated with the schools and encouragement of indoor pools to encourage year-round use.
Development of outdoor education centers
Development of campgrounds in conjunction with semi-public agency land owners.
Pursue acquisition of scenic overlooks, especially of the Ohio River valley.
Provide facilities for senior citizens, persons with handicaps and small children.

Natural Areas Inventory of Boone and Gallatin Counties, 1989
This study was completed in December of 1989 by Tom Boone, who is a Field Representative for the Kentucky State Nature Preserves Commission. The natural area inventory utilized four approaches within the counties. One - gathering existing information, two - examining maps and aerial photographs, three - conducting their own aerial surveys and four - conducting their own ground surveys. The first approach, gathering existing information, reviewed flora and fauna, soils, geology, physiology, numerous published and unpublished sources. Individual interviews were also conducted of knowledgeable persons within the study areas. The second approach, examining maps and aerial photographs, used soil, geologic and topographic maps to identify potential natural areas. The third approach, conducting aerial surveys, focused on using aerial surveys to examine possible Potential Natural Areas (PNA) in the study area.

This was beneficial in narrowing sites to be ground checked in the future. Finally the fourth approach, conducting own ground surveys, investigated possible PNA's for natural significant features. These PNA's were grouped into four categories depending on the information gathered at the site. The four categories were, one - significant, two - notable, three - eliminated, and four - in need of further investigation. Sites under the significant and notable categories were designated as areas to be further protected from future development. The survey resulted in 55 PNA's being identified in both Boone and Gallatin Counties. Of those 55 PNA's four received a significant designation and two received a notable designation. The final recommendations of the author are that these notable and significant designated areas should be protected in the future from possible development.

<u>Northern Kentucky's Greenspace, Opportunities to Enhance Quality of Life and Economic Development</u>, March 1996, By The Northern Kentucky City And County Administrators Association.

The Executive Summary indicates that the northern Kentucky City and County Administrators Association (NKCCAA) brought together representatives from the development and environmental communities in order to determine whether or not northern Kentucky has an adequate amount of publicly controlled greenspace and what steps should be taken to ensure adequate amounts for the future. Based on data taken from comprehensive plans and geographical information systems databases from all three counties, the committee members unanimously reached the following conclusions:

> Boone, Campbell and Kenton Counties taken together currently have publicly controlled greenspace to meet only 50% of the amount required by a population determined by commonly accepted planning standards.
> As the population increases and the amount of undeveloped land decreases, this deficiency will become steadily greater.
> It is essential that an effective and properly funded public program for the acquisition and management of public land be established for the three county northern Kentucky areas. Their report indicated that Boone County has 1,270 acres available and recommends 2,046. Kenton County has 2,242 with a recommended amount of 5,550. Campbell has 1,677 acres with 3,026 recommended. This results in a total of 5,197 acres of open space including neighborhood, community and district parks, public school grounds and public recreational land in the three counties. This report recommended a total of 10,622 acres or roughly 50% of the amount required. "Northern Kentucky has no comprehensive, integrated plan for the acquisition and management of public greenspace. The increase in demand for recreation, "active and passive" will only compound this problem. Both large spaces and small spaces are needed. The kind that should be saved first are the kinds that are the most useful to people – the spaces that are closest to them.
> The study went on to analyze the need for individual parks and recreation facilities in Boone County based on accepted national standards. It indicated that there are very large shortages in the amount of jogging/running trails, bicycling trails, hunting areas, canoeing areas, swimming facilities, hiking/walking trails, horseback riding trails, fishing areas and for large park areas.
> The plan recommended a process of identifying and evaluating the potential for development and for preservation of various areas throughout the County. It is recommended that this could be accomplished through a three-county board to acquire, develop programs and monitor the preservation of open space. It noted that the source of funding will be a limiting factor for this body. It states that the most vital component of a long range strategic plan will be the establishment of a reliable source of adequate funds and an effective broad based board representing all segments of the community.

<u>A Strategy for Meeting Boone County's Recreation Future</u>, March 1997
The following study was prepared by the Boone County Parks and Recreation Department with the Boone County Planning Commission. A citizen committee identified four areas of recommendation for meeting the County's recreation future.

Create a Park Foundation: This foundation is to be citizen based to better meet the public needs. The goal is to insure continuous revenue support and future land acquisition, capital improvement, and operations and maintenance of the park facilities.

Funding Sources: The Committee is of the opinion that Boone County needs a long term steady source of revenue. The County should not rely strictly on conventional methods of land acquisition for future park use. Local and government park foundations should encourage business districts and residential communities to create local funds to be utilized by parks within these localities.

Land Acquisition: The County is doing well in providing the needed amount of parks recommended within the 1989 Master Plan. However, there is greater need for neighborhood parks to be developed (in accordance with the Master Plan). The Planning Commission should provide incentives and regulations to encourage developers and builders to integrate parks into their future plans.

Short Term Operations: The goal is to make existing parks as useful as possible and to address the needs of the public by:

Providing access to school amenities.
Developing neighborhood groups to monitor existing parks.
Enhancing existing facilities.

<u>Western Boone County Study</u>, 1998

Recognizing that the access, topography, urban services river frontage and general character are quite different in Western Boone County (WBC) than Eastern Boone County, the purpose of this study was to recommend a different way to develop this area that was consistent with its distinct characteristics. The general direction of the Study recommendations was that the Planning Commission, through a list of projects, take a more pro-active approach and a less regulatory approach to addressing the future of WBC. Most of the recommended projects were designed to work directly with the land owners and affected people directly on a smaller scale, and the Study concluded that the traditional planning approach of a large land use plan and extensive regulations is not the best way to guide the future of WBC. The proposed list included the following projects that relate to the delivery of parks and recreation services:

Form a non-profit Recreation Foundation that has been recommended by other planning efforts and conduct an active search for riverfront public access/recreation properties. The focus would be toward county acquisition or tax benefit/contribution through the Recreation Foundation.

Develop a preservation plan for the Middle Creek Valley through concentrated property owner meetings and discussions.

Begin a process where Boone County and the Planning Commission take an active role in approaching the State Tourism Cabinet to create a plan for Big Bone Lick State Park:

Re-plan the park layout and theme.
Consider expansion plans for the park, including a land connection to the Ohio River.
Involve Tri-Ed because the parks are a quality of life issue for N. Ky.
Explore potential for including corporate retreat facilities.

Design a conceptual path system connecting large green areas and stream valleys of Western Boone County.

Natural Areas Inventory

The Boone County Conservation District contacted Dr. Bill Bryant with Thomas More College about the <u>Boone County Parks and Recreation Master Plan Study</u>. They requested Dr. Bryant's opinion on the natural areas in Boone County that should be considered under this plan. Dr. Bryant has conducted extensive studies and surveys on natural areas in Boone County, as well as other areas in Kentucky, Ohio and Indiana. The Boone County Conservation District often seeks his opinion regarding natural resources issues. Dr. Bryant's priority list for areas of concern in Boone County includes:

Middle Creek Valley – Highly significant and once proposed for trail connecting these lands.

Boone County Cliffs State Nature Preserve and surrounding lands.
Dinsmore Woods State Nature Preserve and surrounding lands.

Split Rock – Illinois glacial material of historical significance.
Bald Point – off Hathaway Road, near Camp Michael Boy Scout Camp – glacial material and prairie remnants.
Steep Gut Creek (on maps listed as Steep Creek) – area owned by Don Stites – Illinois glacial material, steep alluvial soils and unique vegetation.
Petersburg – Indian mound areas.
Big Bone Lick State Park – land around the park.
Elijah Creek – Carter Dolwick Preserve owned by the Hillside Trust and surrounding lands.
Intact forested slopes along the Ohio River – should be kept in forest due to underlying Kope formations and possibility of slides.
Beech-Maple forest communities – virtually gone from this area. Were some remnants on East Bend Road, privately owned, and a section near the interchange of I-75 and I-71, privately owned.

Needs Analysis

General
The Needs Analysis consists of the following elements:
An analysis of the participation levels of programs offered by the Parks and Recreation Department.
The classification of existing Parks and Recreation facilities into standard park classifications.
A discussion of the Parks and Recreation area needs by park types.
A discussion of the geographic distribution of parks and recreation facilities.
A summary of the public workshops.
A summary of the parks and recreation surveys that were accomplished in 1996 and 1999.
A facility needs analysis based upon accepted standards and guidelines and past experience of the Consultant.
A summary of the overall parks and recreation facility needs.

Parks and Recreation Classification System
The purpose of developing a park and recreation classification system for a community is to evaluate the total recreation opportunities that are being made available to the public. Too often, a community will "meet the standard" in terms of acreage, but it may meet this provision through only a single park that does not provide for the entire County. Therefore, a system of parks should be developed that provides a combination of local space such as mini parks, neighborhood parks and community parks with county-wide space such as linear parks, county parks, and support by regional or state parks.

The parks and recreation facilities inventory in the previous section identified each park by its park type category and also listed the number of specific facilities that are located within each park. **Table 7.1** defines each park type by its typical size and service area of each category, population served by each park, typical features and facilities, and the desirable characteristics of each park in these categories. The categories and descriptions were adapted from the Recreation, Park and Open Space Standards and Guidelines that is published by the National Recreation and Parks Association, 1987 and the previous studies prepared for Boone County such as the 1989 Open Space Plan and the 1995 Comprehensive Plan.

A park system is generally reviewed and analyzed as a composite of recreation areas, each existing to meet a particular public need. Based on a review of national and regional standards, a parks and recreation area classification system has been developed to effect the actual conditions and opportunity for Boone County and the communities contained within it.

Table 7.1
Recommended Park and Recreation Area Classification System

PARK TYPE	TYPICAL SIZE & SERVICE AREA	ACRES/1,000 POPULATION	TYPICAL FEATURES/FACILITIES	DESIRABLE CHARACTERISTICS
LOCAL SPACE:				
Mini-Park (MP)	+/- 1 Acre 1/8 – ½ Mile Service Radius	0.5 Acre/1,000	Typical facilities may include playgrounds, small multi-use court area, and benches.	Most often provided in association with school facilities. May also provide as needed to serve high density neighborhoods where children do not have adequate yard space.
Neighborhood Park (NP)	5-15 Acres ½-1.0 mile service radius. To serve a population up to 5,000	2.0 Acres/1,000	Suited for intense development. Typical facilities include field games, court games, playground apparatus, small pools, small neighborhood centers, drinking fountains, and restrooms.	Easily accessible to neighborhood population (safe walking and bike distance) May be developed as park/school facility or in conjunction with service agency facility. May not be needed in areas served by “community”, “county” or “regional” parks.
Community Parks (CmP)	25-50+ Acres 1.0-2.0 mile service radius to serve several neighborhoods with populations up to 20,000+.	2.5 Acres/1,000	Typical facilities include all listed for Neighborhood Parks plus; major swimming pool, field or court game complex, major recreation or community center, etc. May be an area of natural quality for picnicking, walking, etc.	Capable of providing a range of intensive recreational; or, provides one or two activities that attract users from multi-neighborhood area. Park should ideally be located at or near a school. May meet needs of neighborhood park for users within a 1-mile radius.
Linear Park (LP)	N/A	N/A	Area developed for one or more varying modes of recreational travel (pleasure driving, hiking, walking, jogging, biking, etc.). May also include active play areas, fitness courses, picnicking areas, etc.	Built or natural corridors, such as utility rights-of-way, bluff lines, creek beds, and roads that link other components of the park system or other community facilities (schools, libraries, etc.) with park areas.
Special Use-Local (SUL)	Serves community-wide area.	N/A	Area for specialized or single purpose recreational activities, such as golf courses, plazas in commercial areas, major pools, riverfront park areas, indoor facilities, etc.	Area should be located to meet the special needs of the intended use.
COUNTY SPACE				
County Parks (CoP)	200 + Acres 5-6 mile service radius to serve most of the County.	5.0 Acres/1,000	County operated large properties that contain some active recreation facilities and a large percentage of natural or geographical features. Target size of 200 or more acres with 25% developed for active recreation. Located in rural areas but readily accessible to most of the county population. Travel time within 20 minutes. Should be located off of major roads. Destination-oriented parks. Should connect to linear park system.	Capable of providing a range of intensive recreational facilities; Should include unique natural areas with ecological interest. May meet needs of neighborhood and/or community park for users within a 2-mile radius. May include views of the Ohio River.
Nature Parks (NaP)	Size as needed to protect the resource.		Majority of park to remain in its natural state. Facilities should support nature education activity including: habitat enhancement, trails, nature centers, interpretive signage, parking and restrooms. The park should be of sufficient size to protect the natural resource and provide a buffer from offsite conditions.	Should include unique natural areas with ecological interest. Typical size should be over 50 acres for management efficiency. May be smaller in urban areas such as the Florence Nature Park.
C. MULTI-COUNTY/REGIONAL SPACE				
Regional or State Park (SP)	500 + Acres 30 + mile service radius to serve several counties or region of the state.		State or multi-county agency operated park with large size. Attracts visitors from multiple counties. Contains some active facilities but primarily large areas of natural environments. Main attractions could include a lodge, outstanding natural features, historical features, trail system or other unique characteristics.	Includes unique natural, cultural or ecological features.

Parks and Recreation Area Needs by Park Type

Table 7.2 Parks and Recreation Needs by Park Type Boone County, Kentucky								
Park Type	Existing Developed Acres	Recommended Acres/1000 Population	2000 Recommended Acres	2000 Surplus Deficit(-)	2010 Recommended Acres	2010 Surplus(+) Deficit(-)	2020 Recommended Acres	2020 Surplus(+) Deficit(-)
Mini-Park	4	0.5	42.5	-38.5	56	-52	69.5	-65.5
Neighborhood	51	2	170	-119	224	-173	278	-227
Community	45	2.5	212.5	-167.5	280	-235	347.5	-302.5
County	221	5	425	-204	560	-339	695	-474
Special Use	39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Linear	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	360	10	850	-529	1120	-799	1390	-1069
Population projections provided by the Boone County Planning Commission								
	2000 = 85,000							
	2010 = 112,000							
	2020 = 139,000							

Survey Results

1996 Survey

A survey was completed in 1996 with the results printed in the 1997 report entitled "A Strategy for Meeting Boone County's Recreation Future" which was prepared by the Boone County Planning Commission and the Boone County Parks and Recreation Department. This project was overseen by a citizen board formed specifically for this purpose. This board, known as the Recreation Advisory Committee, provided guidance in preparation of the report. A survey was mailed to 1000 randomly selected Boone County residents. The results of the survey indicated that a combination of state and local taxes with 28% and land donation of 24% were most preferred funding methods. The most utilized park in Boone County was Boone Woods with 51% of the survey respondents indicating they used this park. This survey found that 30% of the respondents believed that an indoor swimming pool was needed and 27% believed that an outdoor swimming pool was needed within Boone County. The other most needed outdoor facilities included more bike trails and horse trails.

1999 Survey

A survey was included in the July issue in the "What's Happening" newsletter which was sent to every household in Boone County. In addition, this survey was handed out at the Boone County Fair. A total of 595 surveys were returned through these methods. In addition, four thousand surveys were distributed through the Boone County School System and completed by school students and their families. This summary is from the initial sample of 595 from the "What's Happening" and another sample of 1056 school students. Some of the key results from this survey include the following. In these summaries, the first number is from the "What's Happening" sample and the second number is from the youth sample.

Summary of Parks and Recreation Facility Needs

Table 7.2 indicates acreage needs, while the surveys demonstrated the following needs:

General shortage of park land in the areas of Hebron and north of I-275, the southern part of Florence to Richwood and Union and the Verona areas.

The need for a wide variety of specific recreation facilities in primarily the same locations.

The strong desire for more open space and land to be preserved as future green space and some land to remain as natural areas.

The development of non-traditional activities such as skate parks, BMX tracks, and similar facilities.

The realization that, as the population grows dramatically, the demand for park land, recreation facilities and programs will also need to expand dramatically to meet the County's demands and expectations.

A very high demand for an outdoor aquatic center.

High demand for all types of trails including jogging, walking, nature, bicycle and horseback.

Demand for open space for the future.

Demand for indoor activities including an indoor swimming pool, youth center, gymnasium and other activities.

COUNTY WIDE RECOMMENDATIONS

Future Vision

The vision for the future of Parks and Recreation in Boone County, as determined from the surveys, workshops, community input and the Consultant's recommendations, include the following components:

A new family outdoor aquatic center is developed in a location that will serve a large portion of the County.

Land is acquired for the development of parks in areas that currently need parks and also land will be set aside for the expansion of these parks as the population grows.

Develop a system of greenways, hike and bikeways and linkages that connect the parks, schools, playgrounds, neighborhoods and green spaces throughout the County.

An indoor recreation and community center is developed which allows for a variety of active and leisure recreation opportunities.

Unique or significant natural areas of the County are studied and preserved.

A conservancy is formed with the purpose of soliciting and acquiring land and financial resources that can be used to implement the recommendations of the Master Plan.

Land / New Parks

The following are the preliminary recommendations for the acquisition of land and the development of new parks. This information has been revised based upon public comment and upon the completion of the tabulation of the surveys. **Table 7.4** describes the final costs and assigned priorities of the planned projects.

North Central Area North of I-275 – The plan recommends the development of three small neighborhood parks that would be strategically located adjacent to the subdivisions and which would provide playgrounds, picnic shelters, game courts and other neighborhood related recreation activities for close to home access. These small neighborhood parks would also be activity nodes along a larger Sand Run Creek Water-shed Park, which is recommended for the County to obtain control of this unique resource that would connect the subdivisions to Route 8 and the Ohio River.

Riverfront Park – One of the best locations for a large portion of the County to have access to the Ohio River is in this same general area in the northernmost portion of the County. Some of the flat floodplain area should be developed into a riverfront access park, which would provide views of the river, picnic areas, boat launch ramps and related river oriented facilities. In addition, the recommended and Potential Green Areas Map indicates lands at Federal Hall in the northwestern portion of the County that could provide access to the riverfront. In addition, East Woolper Creek, watershed and specifically the Split Rock area provides another opportunity for the development of a riverfront park. The plan also indiThis plan recommends at least one neighborhood park and a community park be developed in Florence, west of Interstate 275 and south of Burlington Pike, and between Florence and the Burlington area. This may be difficult since much of this land is already developed but the search should begin for appropriate 8-15 acre and 25-50 acre parcels, which can be developed into neighborhood and community park space.

This plan also recommends the development of a neighborhood park in the area east of I-75 in Florence. Currently, the City is discussing a study of vacant properties in the Florence area to determine the best potential location for parks in the immediate Florence area.

A new recreation/community center and aquatic center should be developed in the Florence area.

A new community park should be developed in the area just west of I-275 in the vicinity of Mt. Zion Road extending south to Frogtown Road. This park would be similar in nature to Boone Woods Park in providing a wide variety of activities that would serve both the community wide needs for the area from Richwood up to Florence.

Land should be set aside for a community park in the Union area. This would be developed as an 8-15 acre neighborhood park but should have land for future development of up to 25-50 acres, similar to a Boone Woods type park.

A large County park is recommended that should be located in the area between US 42 and Interstate 275 and north of the I-71 split. This is basically in the area between Walton and Union. This would be a 200 acre park. Ultimately this would include a recreation/community center and a second family aquatic center as the need develops.

The park in Petersburg is recommended to be expanded to have a wider variety of facilities so that it serves as a neighborhood park of 8-15 acres.

A park should be developed in the Belleview area that would be a neighborhood park initially with land available for a future community park.

Upgrade the park at Big Bone Landing to a neighborhood park, which would require the development of additional local recreation facilities. The State of Kentucky currently has $1 million in its budget for land acquisition and improvements at Big Bone Lick State Park. The County and this plan recommend that the State expand this State Park and extend their land mass over to the Big Bone Landing area so that the park will provide Ohio River frontage and facilities that will make this State Park a better draw and provide the facilities that are needed to serve this portion of the County and State.

Acquire land and develop a neighborhood park in the Verona area with land available to expand into a community park in the future.

Expand Central Park. The definition of the County Park states that approximately a quarter of the land will be developed for active recreation. Currently, all of Central Park is developed and there should be at least 100 acres of additional passive space.

Develop the England-Idlewild Park as indicated in the Master Plan.

Open the Sperti Property as a nature area and provide parking access for nature trails in this area.

Perform a study of all of the watersheds and significant natural areas in the County to determine the most desirable areas to preserve. Several of the watershed areas have been studied and preliminary indications include recommendations to preserve many of the watersheds for natural areas. Some specific items on the priority list include the Split Rock area because the Illinois glacial materials are of historic significance, the Bald Point area within the Gunpowder Creek watershed because of the glacial material and prairie remnants. The Steep Gut Creek area along the Ohio River also includes the Illinois glacial material, steep alluvial soils and unique vegetation. Some areas are important for immediate protection because of the strong development pressures around these watersheds. These include the Sand Run Creek watershed in the extreme northern portion of the County, the North and East Gunpowder Creek watersheds in the central portion of the County and the Woolper Creek/Ohio River quadrant area. Other areas that have been recommended for preservation include Federal Hall Ohio River waterfront, which is located south of I-275 along the Ohio River, expansion of the Middlecreek watershed including the lands adjacent to Middlecreek Park and the lands adjacent to Boone Cliffs Nature Preserve. The north/west Gunpowder Creek area and south Gunpowder Creek watershed are also on the priority list for areas that should be preserved. East Woolper Creek watershed also deserves to be preserved. The recently established Boone Conservancy may pursue lands in these significant natural areas. Their priorities should be the protection of significant natural features followed by the riparian corridor for preservation, waterway protection and the development of greenways and trails followed by the acquisition of significant pieces of farmland and other properties that may be available in these areas. These acquisitions could be in a variety of methods. These could include fee simple purchase, purchase of development rights, scenic easements, conservation easements, and greenway and trail easements.

BOONE CONSERVANCY

In late 1999, the Boone Conservancy was established as a non-profit 501-C3 organization with the purpose of assisting in the implementation of this Master Plan by acquiring land. Currently there are approximately 20 members on the Board of the Conservancy which includes a variety of individuals with interest in expanding the parks system throughout the County. A specific constitution and by-laws have been established for this organization and they should establish their own goals and objectives but should use this Master Plan as a guide.

The Conservancy's primary focus will be on fundraising for the acquisition and development of the natural areas that are identified in this plan. Their fundraising efforts could also be of great assistance in establishing corporate sponsors for other County recreation programs and facilities such as aquatic facilities, recreation centers and others.

The land acquisition costs for the neighborhood, county and community parks that are recommended in this plan are significant. Therefore, the assistance of the Conservancy to evaluate potential lands for these purposes as well as the nature preserves should be included in their mission.

Another role of the Conservancy will be to acquire land, easements and other methods of acquisition and control of land that can be used for the greenways and bikeways that will truly make Boone County unique. There is already a great deal of bicycle traffic in certain areas of the County and this activity can be greatly enhanced through the addition of the greenways and bikeways that are indicated on the Recommendations Plan.

Nature Parks, Greenways and Bike Trails

The acquisition of the nature parks and greenways and the development of the bike trails that are identified in this Plan are also very important in providing the quality of life that is desired in Boone County. It is generally hoped that the Boone Conservancy can lead the efforts for these acquisitions and developments. The Fiscal Court should concentrate on the funding for the basic parks and recreation services that are recommended in this Plan. First, while looking for opportunities to partner with the Conservancy on key green space acquisitions. The County and Municipalities will provide the leadership for the greenways and bike trails, especially in urban areas Please refer to the 2000 Boone County Parks and Recreation Master Plan for more discussion of the proposed Nature Parks and Greenways.

Table 7.3

Advisory Committee Priority Recommendations
Property Acquisition Ranking

Rank	Park	Top Priority
1	Union Neighborhood Park and Future Community Park	
2	Central Park Expansion	
3	South County Park	
4	North Riverfront Park	
5	Florence Community Park (West of I-75)	
6	New Community Park at Mt. Zion Rd./Frogtown Rd.	
7	West Riverfront Park	
8	Hebron Neighborhood Park #2 (north of I-275)	
9	Verona Neighborhood and Future Community Park	
10	Florence Neighborhood Park #1 (East of I-75)	
11	Belleview Neighborhood Park	
12	Hebron Neighborhood Park #3 (north of I-275)	
13	Petersburg Neighborhood Park	
14	Florence Neighborhood Park #2 (West of I-75)	
	Subtotal	**$8,550,000**

Table 7.4

Capital Development Project Ranking

Rank	*New Park Capital Improvement*	*Budget*
1	North Family Aquatic Center No. 1	$2,200,000
2	Union Neighborhood Park	$550,000
3	Hebron Neighborhood Park #1 (north of I-275) (5 acres donated)	$300,000
4	Florence Skate Park	$165,000
5	North Community/Recreation Center No. 1	$3,500,000
	Subtotal	**$6,715,000**

Existing Park Improvements	$2,668,000
Improvements at School Sites (0-5 Years)	$50,000
Maintenance Equipment (0-5 Years)	$271,000
Total - Top Priority Land Acquisition and Capital Projects	**$18,254,000**

Table 7.5

Priority Ranking for Remaining New Parks

Rank	*New Park*	*Budget*
1	North Riverfront Park	$550,000
2	Upgrade Union Neighborhood Park to a Community Park	$1,650,000
3	West Riverfront Park	$550,000
4	New Community Park at Mt. Zion Rd.	$2,200,000
5	South County Park	$3,300,000
6	Florence Community Park (West of I-75)	$2,200,000
7	Florence Neighborhood Park #1 (East of I-75)	$550,000
8	Verona Neighborhood Park	$550,000
9	Hebron Neighborhood Park #2 (north of I-275)	$550,000
10	Upgrade Verona Neighborhood Park to a Community Park	$1,650,000
11	Florence Neighborhood Park #2 (West of I-75)	$550,000
12	Petersburg Neighborhood Park	$550,000
13	Belleview Neighborhood Park	$550,000
14	Hebron Neighborhood Park #3 (north of I-275)	$550
		$15,950,000

Priority Ranking for Remaining Major Capital Projects

Rank	*Major Capital Project*	*Budget*
1	North Community/Recreation Center No. 2	$3,500,000
2	North Family Aquatic Center No. 2	$2,200,000
3	South Community/Recreation Center	$3,500,000
4	South Family Aquatic Center	$2,200,000
		$11,400,000

Future School Improvements (5-15 Years)	$100,000
Future Maintenance Equipment (5-15 Years)	$400,000
Total Cost for Remaining New Parks and Capital Projects	**$27,850,000**

AGRICULTURE

The Agriculture Element of the Boone County Comprehensive Plan describes the significance of the number of farms, the amount of land devoted to farming activity and the average size of a farm in Boone County. The Agriculture Element traces the history of farm production in Boone County and offers conclusions on the significance of the data.

FARMLAND INVENTORY

A farm, as generally defined by the U.S. Department of Commerce, Bureau of the Census, is any place from which $1,000 or more of agricultural products were sold, or normally would have been sold during the census year.

The Boone County Zoning Regulations contain two agriculturally oriented zoning districts: Both the Agriculture One (A-1) and Agricultural Estate (A-2) allow all agricultural uses, as well as sales of agricultural products. The Agriculture One (A-1) zoning district covers about 49,656 acres of the county. This zoning district lies primarily within the rural western half of the county. Agricultural Estate (A-2) covers about 49,820 acres of the county and lies mainly between the A-1 zoning areas and the developed eastern portion of the county. Both districts allow residential construction; the A-1 requires a five acre lot size and the A-2 requires a two acre lot size. Together the two districts cover approximately two-thirds of the county's 164,120 acres.

As **Table 8.1** shows, 59% of the population of Boone County lived on farms in 1940. Since then, the number and percentage of people living on farms in Boone County has decreased drastically. In 1990, only 2.3% of the 57,589 Boone County residents lived on farms. From 1940 to 1990 the county population increased by 46,769 people, while the population of those living on farms decreased by 5,056.

Table 8.1 - Percent Living on Farms

YEAR	COUNTY POPULATION	FARM POPULATION	% LIVING ON FARMS
1940	10,820	6,406	59.2%
1950	13,015	5,561	42.7%
1960	21,940	5,750	26.2%
1970	32,812	3,916	11.9%
1980	45,842	2,425	5.3%
1990	57,589	1,350	2.3%
2000	85,072	est. 1100	est. 1.3%

Source: 1992 Census of Agriculture, est. by BCPC

This rapid population growth has been gradually reducing the available farmland, as well as land zoned primarily for agriculture use, as shown on **Figure 8.1** (derived from the Important Farmlands Map produced by the former U.S. Soil Conservation Service) and **Figure 8.2**. This phenomenon of farmland reduction is an on-going process, and is assisted by the location of new sewer and water lines as they encroach into existing farming regions. The sewer and water lines increase pressure on the existing farmlands to develop for industrial and suburban residential developments (see **Figure 8.2**).

Table 8.2 compares the number of farms and farmland in Boone County since 1900. Between 1949 and 1990, the county lost 516 farms consisting of 53,241 acres. In just the ten year period from 1982 to 1992, 164 farms totaling 24,526 acres were replaced by suburban development. The average farm size had dropped to 101 acres after being up to 124 acres as recently as 1978. **Table 8.3** further describes farms by size in acres since 1909.

Figure 8.1 - Prime Farmland

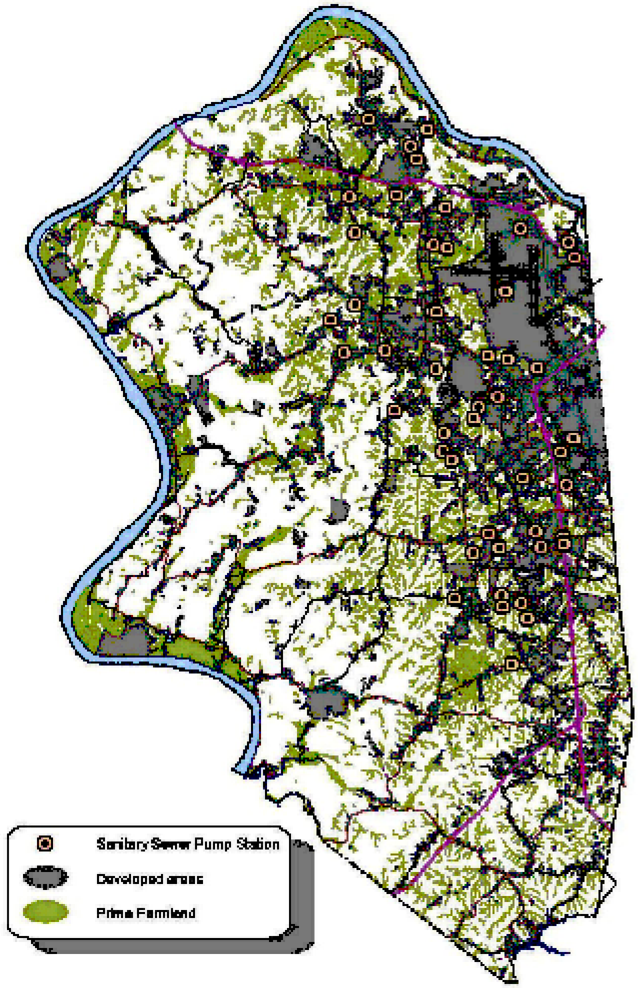


Figure 8.2 - Agricultural Zoned Land

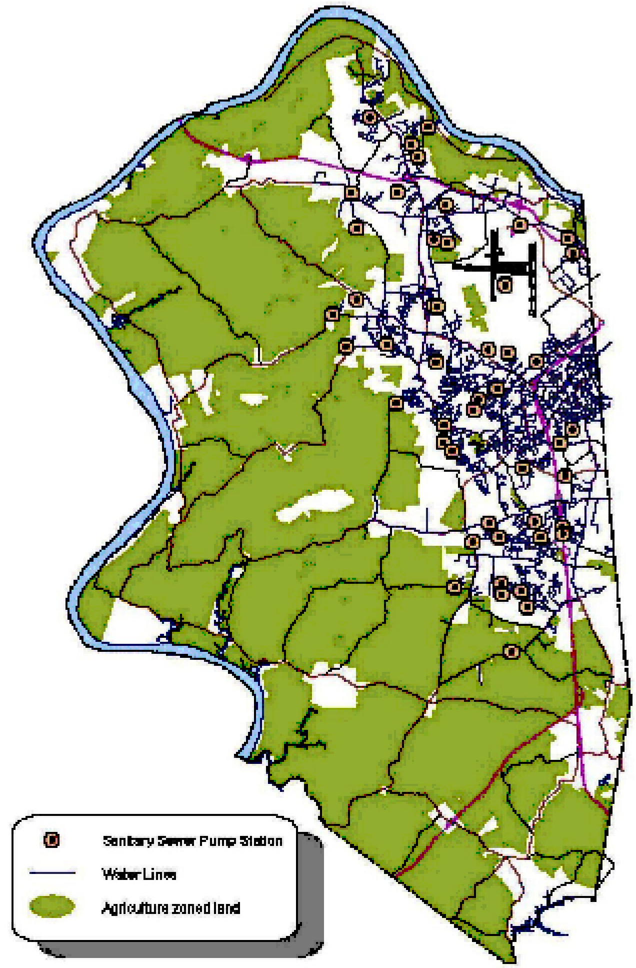


Table 8.2 and **Table 8.3** indicate the decrease of farms and farmlands as development of the county has occurred. The Boone County Extension Service expects the number of farms to reverse the trend and begin to increase in the county, although most of them likely won't increase in acreage due to land use changes from agriculture to other uses. Livestock numbers have also been decreasing. In 1982, the county had over 16,500 cattle, and by 1992 the number had dropped to 13,000. Hogs and pigs peaked at 13,100 in 1970, but have continually dropped since, with 1992 totals of 1,200. Nationally, livestock production has risen, but this increase is attributed to larger, consolidated farms. Boone County, however, is distinctly an area of small farms, and is not sharing in this increased livestock production.

Table 8.2 - Farm Number and Acreage

YEAR	FARMS	TOTAL ACRES	AVG SIZE (ACRES)
1900	1,598	149,191	93
1909	1,540	145,693	95.0
1919	1,831	151,242	83
1929	1,563	149,159	95
1939	1,443	146,424	102
1949	1,314	134,105	102
1959	1,204	121,222	101
1969	1,245	126,706	102
1978	847	104,882	124
1982	962	105,390	110
1992	798	80,864	101
1997	691	79,855	116

Source: U.S. Census of Ag. KY Crop and Livestock Reporting

Table 8.3 - Farm Size by Acres

SIZE (ACRES)	1909	1919	1929	1939	1949	1959	1969	1978	1982	1992	1997
1-9	158	283	132	125	111	128	200	90	136	100	78
10-49	439	549	437	369	356	328	353	240	324	301	261
50-179	720	773	758	728	636	555	485	345	321	278	227
180-499	211	220	228	210	206	183	183	140	149	96	101
500-999	11	5	8	9	4	10	20	30	30	18	19
1,000-1,999	1	1	0	2	1	0	4	4	2	3	5
2,000 +	0	0	0	0	0	0	0	0	0	0	0
Total	1,540	1,831	1,563	1,443	1,314	1,204	1,245	849	932	798	691

Source: U.S. Census of Agriculture Kentucky Crop and Livestock Reporting Service

Even with the amount of development occurring in Boone County, the county is important in terms of agriculture. Through the end of 1998, Boone County ranked within the top 70 counties or better out of the total 120 Kentucky counties in all the major crop and livestock categories, including corn, soybean, tobacco, hay, cattle, hogs, and milk production. In addition, the total crop and livestock receipts for 1998 in Boone County were higher than 1995 statistics.

AGRICULTURAL LAND

Prime Farmland and Farmland of Statewide Significance

Estimates by the U.S.D.A. Natural Resources Conservation Service, formerly the U.S. Soil Conservation Service, indicate that 11,704 acres of the county land are considered "prime" farmland. Prime farmland is defined in the National Soils Handbook based on criteria of crop production potential, land availability, and climate. According to the Soil Conservation Service Soil Survey (1989), much of the best farm soils are located in the eastern half of Boone County. The following soil series comprise the prime farmland in Boone County: Ashton, Wheeling, Huntington, Egam, Lindside, Newark, Nolin, Captina, Chavies, Faywood, Jessup, Licking, Negley, Nicholson, Rossmoyne, and Chagrin. Low to moderate slope is an important factor in this classification as well. Soils of Statewide importance include the following soil series: Brashear, Captina, Chavies, Faywood, Jessup, Licking, Nicholson, Rossmoyne, Wheeling, and Woolper. This soil classification includes soils and slopes of less ideal conditions than the prime farmland areas.

Agricultural Districts

Agricultural Districts are administered by the Boone County Conservation District, under the Kentucky Division of the Agricultural District Law, and allow farmers to form special areas where commercial agriculture is encouraged and protected. They are designed to protect agriculture as a viable segment of the state's economy and the land as an important and valuable natural resource. The program was enacted in 1982 and amended in 1984 and 2000. Agricultural districts offer members the following protection under the law:

- the right to have their land assessed by the local property valuation administration at the land's agricultural use value;
- protection against involuntary annexation;
- deferred assessment of fees for water service extensions until the land is removed from the agricultural district and sold for non-agricultural purposes;
- the right to request that the local soil and water conservation district board hold a public hearing on the proposed taking of land under condemnation proceedings initiated by certain utilities.

Districts also benefit members by making them a higher priority for state cost share assistance, a higher ranking in conservation easement programs, and eligibility for federal tax benefits for conservation easements.

To form an agricultural district, land owners must have at least 10 acres each (or 11 acres with a homestead) and a total of 250 contiguous acres in agricultural use. The land must also meet a state definition of agricultural land. The program is entirely voluntary and landowners can withdraw from the district at any time. In 1995, Boone County had a total of five of these agricultural districts which totaled 3,343 acres. In 2000, there are twelve districts comprising 7,779 acres. This includes 85 different land owners.

As mentioned in the Environment Element, the Kentucky Agriculture Water Quality Act, passed in 1994, protects surface and ground water from potential pollutants as a result of agriculture and forestry operations. The act did not establish any new water quality laws other than requiring that all agriculture and forestry operations of ten or more acres develop and implement a water quality plan by October 23, 2001. The Boone County Conservation District is available to assist in developing individual water quality plans.

RECOMMENDATIONS

It is apparent that future development of the county's rural areas will occur in residential, industrial, and commercial terms. This plan calls for farmland conversion to occur through logical urban expansion. In order to protect those who want to continue to farm in urbanizing areas, tax structures, planning efforts, Purchase of Development Rights (PDR), incentive programs, and utility expansions should be designed to enable those uses to continue.

New residential developments in agricultural areas should be closely correlated to adequate infrastructure. When this type of development does occur, compact efficient land use development patterns should be encouraged to assure the availability of lands in the county for agricultural use. New residential development is further addressed in the Housing Element.

Diversification of crops would also preserve existing farmlands as the tobacco industry is threatened with an uncertain future. Farmers may be forced to look to alternative crops if the demand for American tobacco decreases. Such crops would include herbal crops, hay, timber (wood products), textile industry, aquaculture, vegetable and fruit produce, and medical industry crops.

A good farmers market network should be established to link producers with potential suppliers and customers. Participating in farmers markets may also help farmers get in contact with purchasers of alternative crops for such uses as medical, research, and others. The "demand" for a particular product would be put in contact with potential suppliers. This would also promote a more regional distribution of crops as local companies could contract out with local farmers for alternative crops to meet their needs. Furthermore, there may be a need for alternative livestock, such as bison and ostrich, that can be met by the local farmers instead of having items shipped into the area. A good farmers market network can help the sustainability of the region as local farming and agricultural needs are met by local suppliers. This Plan recommends that Phase I Tobacco settlement money be used to create a “clearinghouse” type of organization that matches grocery markets and plant nursery operations with local growers of produce and horticultural products. In this way local growers may be stimulated to produce more of these goods to supply the steady and growing demand of these markets. As a result, the residential and commercial growth of Boone County can support a strong agricultural market in concert with urban land conversion.

HISTORIC PRESERVATION

The Historic Preservation element discusses Boone County's historical, architectural, cultural, and archaeological resources as well as outlining ways to preserve them. Additionally, the element places these resources in their appropriate historic contexts in order to understand their true significance. Boone County's historical, cultural, architectural, and archaeological resources greatly enhance the quality of life for all county residents and give the county a sense of identity, making their preservation essential.

The preservation strategies developed for these resources are distinct from those for recreational and open space resources. Maintaining and developing recreational areas and open spaces is the responsibility of local governments, whereas historic preservation in Boone County is essentially a grass roots endeavor with direction or guidance supplied by the appropriate county agencies. For these reasons and those discussed in the preceding paragraph, a separate Historic Preservation Element was needed for the Boone County Comprehensive Plan.

BOONE COUNTY HISTORY

The earliest occupants of Boone County, referred to as the Paleo-Indian culture, consisted of a highly mobile existence dependent upon the hunting of large game animals. Later people, referred to as Archaic peoples, developed a more diversified subsistence strategy based on choices from a variety of local options. A third time frame, the Woodland period (c. 1000 B.C. - A.D. 1000) contained the use of cultivated plants as the major subsistence strategy. A more sedentary lifestyle, and larger groups of people characterize this period. The Late Prehistoric Period (ca. A.D. 1000-1700) of the central Ohio Valley, known as Fort Ancient, reflects an elaboration of Late Woodland subsistence activities and social organization. Settlements were large villages located in valley bottoms. Some of the major sites located adjacent to or near the Ohio River were fortified; many had central plazas or courtyard areas. Smaller sites, possibly representing seasonal hunting camps, were located on tributary streams.

Perhaps the first European to visit Boone County was a Frenchman who sailed down the Ohio River in 1729. He highlighted primeval Boone County on his chart with an inscription in French that translates "where they found the bones of an elephant." Thus, Big Bone Lick became one of the wonders of the world.

That Frenchman was followed a decade later by Captain Charles de Longueil who was credited with the first investigation of that area. His account of the huge bones of dead mammals provided incentive for further exploration, and attracted the attention of the British and early American colonists. The salt deposits at Big Bone Lick had long been known to the American Indians and, in 1755, Mary Draper Ingles, the first recorded European woman to visit this region, escaped from her Shawnee captors while they were boiling water from the lick to make salt.

France claimed the Ohio Valley until the end of the French and Indian War, and a veteran of the war, Captain Thomas Bullitt, led surveyors to this territory in 1773 when it was a part of Fincastle County, Virginia. In 1789 over a decade after the first settlement in Central Kentucky, John Tanner, a Baptist preacher from North Carolina, established Tanner's Station where Petersburg is today. Tanner's Station was the first settlement in this region, and others rapidly moved in. The community's name was changed to Petersburg in 1814. These pioneers occupied tracts of land above and below Tanner's Station. Many came from central Kentucky, now Woodford and Scott counties, and in 1794, seven persons founded the Bullittsburg Baptist Church in the North Bend Bottoms above Tanner's Station. Other early settlers in the area were Captain Jacob Piatt and Captain John Brown, both of whom were from New Jersey and Revolutionary War veterans.

Many pioneers during this first period of settlement migrated from Virginia. A large portion of them were of German ancestry and came from the Germanna community in Madison County, Virginia. Eleven people from that place arrived in 1805 under the leadership of Ephraim Tanner. The following year, they organized the Hopeful Lutheran Church in the east-central part of the county. Other families came after them and settled in Florence and Hebron (named after Hebron, Virginia).

When Boone County was officially established in 1799 (having been created by the Kentucky Legislature in 1798), less than two hundred men owned all of the land and the population was 1500. On June 17, 1799 the first county court decided to locate the county seat on a seventy-four acre site donated by Robert Johnson and John H. Craig. The town was originally called Craig's Camp which was changed to Wilmington and then renamed Burlington in 1816.

Boone County prospered because of the Ohio River which forms its northern and western boundaries. At one time there were six ferry crossings to the opposite shore, and as many shipping points with warehouses. There was a distillery at Petersburg, and another at Hamilton. Steamboats were built at Big Bone and Belleview, and steam packets offered service to the far reaches of the Ohio and Mississippi rivers.

Inland, blacksmith and wagon shops flourished at crossroads communities, and farmers cleared forests and cultivated grain in the rich soil The waters of Gunpowder, Woolper and other creeks were harnessed by grist mills grinding the corn to meal and the wheat to flour. Most of the early farms had ready access to the Ohio River and its down river markets, and most appear to have thrived in the early years of the county's existence. The towns along the river, however, failed to develop as trade centers for the interior of the state. They, instead, became specialized centers for cross-river ferry traffic, post offices and general stores. The fertile floodplain along the Ohio River in Boone County seems to have attracted those settlers who were more interested in agriculture than in commerce, but there are probably other reasons, including geography and the nearby development of Cincinnati, for the lack of commercial growth in Boone County.

Despite Boone County's proximity to Cincinnati, its nineteenth century development was largely isolated from that of its large urban neighbor. Early in its history, Cincinnati became the chief urban focus for the central Ohio River Valley because of its reputation as a fortified settlement offering protection from Indian attacks, its role as a stopping point for westward bound settlers, and its large floodplain suitable for expansion. The population of Cincinnati in 1800 was 750, while that of Boone County was 1,534, but between 1800 and 1820 the population of Cincinnati took the lead.

The Kentucky cities along the Ohio River that were successful gateways to central Kentucky were either closer to the geographic center of the state, such as Maysville and Carrollton, or opposite the Ohio from Cincinnati, such as Newport and Covington. Even Boone County's potential advantage of having a major transportation corridor, the Dry Ridge Divide, pass through its border seems to have had a minimal effect on the county's economic growth until recent years. The crossroads town of Florence was established at the intersection of roads from Covington to Louisville and Lexington. Ten miles from Covington, it was thus the first stagecoach stop. However, in the late 1880's, the town of Erlanger was established across the county line from Florence. The railroad promoted the sale of land near its right-of-way, and Florence despaired. Its population fell off 24 percent at the turn of the century, and remained so until 1930. With the completion of the first railroad through the county, the town of Walton held great promise as the county's primary railroad town, but its growth dwindled even before the Great Depression. Young and old left farms for work in the city, and shopping "over the river" became the popular thing to do.

With the advent of automobile, long, tiresome journeys to the city, over the river road through Constance or the Dixie Highway (new U.S. 25) through Florence, became short and enjoyable. It became possible to work in town and live in Boone County. It was the beginning of a new era.

The population of Boone County grew slowly between the Civil War and the 1890s and then declined slowly until the great population surge that began in the 1940s. Between 1920 and 1940, Boone County lost 21 percent of the number of its farms and 3 percent of the farmland acreage. The average farm size fluctuated little throughout the twentieth century: 93 acres in 1900 and 102 acres in 1969. Today, county acreage devoted to agriculture is steadily decreasing. In 1946 the airport for Cincinnati was dedicated in northeastern Boone County. The population of Boone County grew by twenty percent from 1940 to 1950. With the construction of Interstates 71 and 75 in the late 1950s, Boone County became one of the fastest growing counties in the nation. Based on the 1990 census figures, Boone County was the fastest growing county in Kentucky.

HISTORICAL SETTING

Located in the largest bend of the Ohio River a few miles downstream from Cincinnati, Boone County is the northernmost county in Kentucky. For forty-two miles the Ohio River bounds the county on the north and west. As in most sections of the outer Bluegrass region of Kentucky, the land in Boone County is gently rolling to steeply hilled. Historically Boone County's economy has been dominated by agriculture: corn, wheat and especially tobacco continue to be the principal cash crops. However, residential, commercial, and industrial growth are changing the once rural landscape of Boone County.

There are several significant natural and archaeological sites documented in the county. The natural sites are, for the most part, the result of the glacier's presence in the area. The archaeological sites represent the different periods of occupation by native aboriginal cultures. Boone County has a substantial number of log structures, and a wide variety of vernacular building types. It also has a significant group of houses near the river with links to Ohio River Valley Greek Revival architecture and several valuable variants of mid-19th century revival styles. Many of the historic resources are farmsteads, but urban houses, commercial and industrial buildings, churches and schools are represented as well.

The land is drained by numerous small streams that flow westward into the Ohio River from headwaters along the Great Ridge, or Dry Ridge Divide. This major feature runs north-south just inside the eastern boundary of the county and has long served as a major transportation corridor connecting Cincinnati and Lexington. The completion of the Greater Cincinnati Airport in Boone County in 1946 and of I-75 in the 1950s has accelerated the suburban growth that began about 1950. This growth in population and the postwar rise of industry dominates the northeastern section of the county. Industrial growth is expanding in southern Boone County, especially around Walton, while the western portion remains relatively untouched by the more intrusive forms of 20th century culture. These rural sections have retained much of their 19th century character, marked by an almost total concentration on agricultural activities.

INVENTORY OF GEOLOGICAL, ARCHAEOLOGICAL, AND ARCHITECTURAL SITES

Geological/Natural Sites

The bedrock of Boone County is primarily limestone and shale. Along with the parent material, glacial deposits occur in the northwestern section of Boone County. It is this region that was covered by early glaciation but untouched by later glaciers. It is estimated that as much as one-fourth of Boone County is covered by glacial tills and associated alluvial deposits. The remnants of two terraces are present along the Ohio River (Boone Cliffs & Split Rock). Ravine and valley deposits are comprised of glacial gravels, sand and silt, along with alluvial deposits (glacial deposits in Woolper & Gunpowder). Boone County is noted for its numerous mineral springs, the most famous of which is Big Bone Lick. The saline water of the springs arises from the Saint Peter sandstone layers.

Archaeological Sites

Over 500 archaeological sites have been identified in Boone County. Many of these sites have not been thoroughly surveyed and studied. Much more identification, research, and analysis remains to be done. Several Boone County archaeological sites have been placed on the National Register of Historic Places, including Big Bone Lick State Park (encompassing just over 500 acres), possibly one of the most significant Paleoindian sites in this part of the country. Also listed are Arrasmith and Cleek-McCabe, two Fort Ancient sites, Rogers, a Woodland mound and habitation complex, and Reeves Mound, from the Adena culture, (currently owned by the Archaeological Conservancy). Also potentially eligible but not listed yet are a multiple period Fort Ancient village site in Petersburg, and the ruins of a grist and saw mill on Gunpowder Creek.

Boone County has been the focus of archaeological investigation by professionals and amateurs for many years. Identification of archaeological sites began early and focused on reporting the presence of cemeteries and earthworks. In Archaeological Survey of Kentucky, Funkhouser and Webb (1932) listed thirteen sites for Boone County. Eight mounds, one complex of two mounds, one mound and cemetery complex, one fort, one village, and one village and cemetery complex were listed.

During the Works Progress Administration (WPA) era (1938-1941), seven Adena mounds, and a Fort Ancient mound and village site were excavated. In the 1950s the Northern Kentucky Archaeological Society, largely under the direction of Ellis Crawford, conducted investigations in Boone County, most notably at the Rogers mound and village.

The National Historic Preservation Act of 1966, the National Environmental Policy Act of 1969, and the Procedures of the Advisory Council on Historic Preservation require that impact assessments must be conducted for construction involving Federal licensing or funding. In compliance with these acts, archaeological surveys have been performed in Boone County since 1968. In conjunction with these requirements, projects involving road construction, airport expansion, power plant development, sewer lines, and U.S. Army Corp of Engineers permits have required archaeological survey and, at times, extensive testing. Survey and testing of archaeological sites has continued in the 1990's, reflecting the rapid commercial growth and increase in population which have occurred in the Cincinnati metropolitan area.

Since the 1730s, Big Bone Lick has been noted as a place where bones of extinct megafauna could be found. At the salt springs of Big Bone, the remains of many animals have been found where they were entrapped in the mire. Sloths, horses, tapirs, deer, elk, moose, reindeer, caribou, musk ox, bison, peccary, mastodon, mammoth, and bear have been identified. Preliminary paleontological research, completed at Big Bone in the 1960s, by the University of Nebraska has never been properly reported, and the artifacts recovered remain in Nebraska. Very little archaeological research has been completed at Big Bone Lick. In the summer of 1993, local archaeologists from 3D Environmental Services noticed an important archaeological feature, on the steep bank of Big Bone Creek, in danger of being destroyed by erosion. They obtained emergency permits from the State Office of Archaeology, and the Department of State Parks, and through a combined volunteer and pro-bono effort, the site was excavated and is currently being analyzed and documented.

Properly interpreted, Big Bone Lick State Park has the potential for becoming a unique education site, as well as a National Historic Landmark. The State Parks Department, and local citizen groups, are actively promoting the construction of a new museum for Big Bone Lick, with ongoing archaeological and paleontological research as part of its' interpretive mission. It has been estimated that the development of this site as an archaeological "theme" state park would triple tourist visitation, and provide non-invasive economic development for western Boone County.

In 1990-92, extensive archaeological research took place at Petersburg. Previously identified sites, 15BE6, 15BE6A, and 15BE6B, were studied in detail during this three year project. The project was funded by a Certified Local Government grant from the Kentucky Heritage Council, and matched by funding from the Boone County Fiscal Court. The project had a dual goal of completing scientific and historical research, while providing public education about Boone County's heritage as well as archaeological methods. Over 1200 school children and adults benefitted from on-site visits, workshops, and classroom presentations.

Also in 1992, archaeological survey was completed in a variety of areas throughout the county. This research focused on previously identified but not documented sites reported by county residents, and amateur archaeologists. Approximately 25 previously unrecorded sites were documented during this project. A Certified Local Government project completed in 1996 identified and documented Indian burial mounds throughout the county. The accurate mapping of these sites will ensure their protection from development under Boone County's Cemetery Preservation Plan.

Recent archaeology has received little attention in Boone County. Archaeological sites may include (but are not limited to) cemeteries, the communities or camps of native American Indians, the remains of demolished or deteriorated buildings, former community sites (now obscured on the surface), former industrial sites such as grist mills, former commercial sites such as toll houses, sites of Civil War activity, and the yards of existing historic structures. As part of ongoing comprehensive architectural survey the Crisler-Gulley Grist and Saw Mill site on Gunpowder Creek was identified in 1993. Through a Kentucky Department of Local Government Community Rivers and Streams Grant, the site was nominated to the National Register, and a traveling exhibit and student handbook about the mill site were prepared.

Boone County has numerous small family cemeteries. An inventory of known cemeteries is available, and is being continually updated by the Boone County Historic Preservation Review Board. The Boone County Cemetery Preservation Plan, approved in 1990 and now a part of the Boone County Zoning and Subdivision Regulations, offers recommendations to preserve these cemeteries and to limit the development surrounding them. This plan was one of the first of its kind in the country, and has been widely copied throughout the nation.

Paleo-Indian artifacts are found in private collections and have been informally reported from the Rogers site, and others throughout the county. Paleo-Indian tools have also been recovered from several sites west of Big Bone Lick. By the middle of the Archaic Period, the environment in Boone County was much as it is today. There is abundant evidence of an Archaic presence in Boone County, however, there is still much still not known about specific patterns of Archaic adaptation to the local environment. The presence of a Woodland population is indicated by the numerous mounds, many of which are associated with the Adena tradition, such as the National Register listed Reeves Mound in the northern part of the county. Small to large villages, and hunting camps are the site types defined for Fort Ancient.

Currently, Boone County's archaeological sites, particularly the Indian mounds are threatened by pot hunters. These people indiscriminately dig up mounds and other sites to find artifacts which they then sell or keep for themselves. Such amateurish invasions of these sites destroys valuable scientific evidence. Consequently, any information the sites may have yielded on Boone County's history is lost forever.

Architecture

The initial survey of Boone County was conducted in 1976-1977 by the Kentucky Heritage Council. The survey documented 353 resources and was comprehensive in that every passable road was traveled. Twentieth century resources, barns and outbuildings, and simple vernacular structures were largely neglected. Some years later, all of the original 353 resources surveyed were re-examined, and approximately 70 structures, along with related contributing buildings, were listed on the National Register of Historic Places through a multiple resource area nomination. Criteria for inclusion were based upon local historical and architectural significance as defined in the National Register Standards and Guidelines.

In 1992, a new comprehensive architectural survey, funded by a county matched Certified Local Government grant, began in Boone County. Completed in 1996, this survey created an inventory of all Boone County buildings and structures, fifty years old or older, with historic and/or architectural significance, primarily in a local context. This inventory includes agricultural buildings, ruins, and bridges, as well as houses, businesses, and public buildings. The Boone County inventory now includes almost 1300 historic resources. The inventory provides a foundation for the county-wide Preservation Plan, and gives the Historic Preservation Review Board documented evidence of the wealth of historic resources found throughout the county. This information can be used in the review of plans for development, by citizens completing historic or genealogical research, or as a guideline for future historic preservation projects or initiatives in Boone County. Currently, a number of individual National Register eligible buildings are being considered for possible listing on the National Register of Historic Places, as an addendum to the 1988 Multiple Resource Listing. The inventory final report also makes recommendations for potentially eligible National Register Historic Districts, especially in Petersburg, Belleview, Rabbit Hash, Verona and Walton. Individual inventory forms, as well as the final report are public information and copies can be obtained from the Boone County Historic Preservation Office, or the Kentucky Heritage Council in Frankfort. A database listing of basic information for all Boone County historic inventory sites will be available shortly at the Boone County Planning Commission or the Boone County Historic Preservation Office. In the near future, all sites will be mapped through the GIS system and may be available on the Boone County Planning Commission Web Site.

Floor Plans, Building Types and Architectural Styles

Residential and commercial floor plans represented in Boone County include one-room, hall-parlor, double-cell, side-passage, and central passage, as defined below. Building types found in the county include T-form, cross-gable form, single pen, saddlebag, dogtrot, foursquare, and the I-house, which was the single most popular form in the county during the 19th century. Stylistic influences varied with the most popular being Federal, Greek Revival, and Gothic Revival. Wood frame (both timber and balloon framing) was the most popular method of construction, followed by log construction, brick masonry and stone masonry.

The hall-parlor plan, defined here as consisting of two unequal rooms in the principal block, was particularly popular in late 19th century Petersburg. The hall-parlor plan is significant to Boone County in the period 1800-1900 as a distinctive and long-lived component of the county's architectural history.

The double-cell plan consists of two equal-size rooms in the principal block, usually single-pile, significant to Boone County in the period 1800-1880. Although the plan type is plentiful in Boone County, it is uncommon in the rest of Kentucky.

The side-passage plan, consisting of a hallway at one side of the main block, were constructed in both single and double pile versions in the county. Many of the Boone County examples adopted the Greek Revival style, and they are nearly evenly divided between brick and frame construction. The plan was significant to Boone County in the period 1840-1880, the same period of significance, nationally, for the Greek Revival style.

The I-house building type, a two-story, single-pile house with a central passage, was the single most popular house type in 19th century Boone County. Most of the examples are of frame construction. The significance of the I-house type to Boone County, spanning six decades of use from 1840-1900, lies in its being the single most prevalent architectural type in the historical landscape of the county for both rural and urban areas.

The T-form house also occurred in Boone County. Either one or two stories high, the T-form is T-shaped, with one bar of the T projecting forward in the facade and the stem of the T appearing in the facade as a wing, rising to the same height as the bar and containing the roughly central entrance.

The Federal style was significant to Boone County in the period 1795-1845, coinciding roughly with the major settlement decades in the county's history. Adopted in a variety of building materials (brick, stone, wood frame, and log) and floor plans, the style in Boone County is largely found in details and proportions rather than high style architectural features.

The Greek Revival style, the single most prevalent architectural style in Boone County, is found in high style houses of the 1840s and 1850s and in simple vernacular farmhouses of the 1870s. It is the style most closely linked with the height of Boone County's agricultural economy, which occurred between 1840 and 1880, the period of significance of the Greek Revival style in Boone County.

The Gothic Revival style, seen most commonly close to the river, had a definite impact on buildings in mid-nineteenth century Boone County. Its' decorative detailing, with pointed, narrow windows, steep roofs, and fretwork cornice and porch trim, may have been an easy-to-accomplish alternative to the more formal and plain Greek Revival style in the later years, c.1860-1880, of that styles' popularity in the county.

The Italianate style was a viable stylistic alternative in 19th century Boone County, although it was less important numerically than the Greek Revival. Elements of the style appear in commercial buildings, churches, and simple houses in both urban and rural areas including four good examples in the Petersburg area. The most common feature of the Italianate style - eave brackets -are found in many more Boone County buildings.

The Decorated Cottage is a locally significant, vernacular architectural style in Boone County. A number of Boone County buildings, display the same recurring design features. The Decorated Cottage style is significant to Boone County as a demonstration of local builders working with well known design features to create small-scale housing of a locally distinctive nature. The period of significance for this style in Boone County is the 1850s through the 1880s.

Folk Victorian architecture resulted from the application of milled, stock wooden ornament to common house types. The significance of Folk Victorian architecture to Boone County is its demonstration of the fondness of the county's residents for picturesque architectural detail in their everyday lives. They were responding to a national trend in residential design. During the period of significance of Folk Victorian architecture, 1875-1900, improved transportation and increased manufacturing of stock architectural ornament made it possible to carry out this ornamental impulse.

The vernacular architecture of Boone County is significant as a demonstration of the key role played by local builders in providing straightforward, workmanlike, utilitarian houses, industrial buildings and churches necessary in everyday life during the period 1850-1930. Local builders used both forms and plans known by Boone County settlers, such as hall-parlor, central passage and double-cell, brought with them from the East Coast. Although the influence of the county's vernacular builders was considerable, only a limited number of buildings demonstrate the vernacular approach as isolated from stylistic influences.

The Queen Anne style is significant to Boone County in the period 1880-1915 as a local illustration of a popular national architectural style. Originating in England, the Queen Anne style freely mixed classical and medieval sources, using a variety of textures and materials. Boone County examples of this style are limited, and are conservative in their design, and detailing.

Early 20th century vernacular commercial architecture is significant to Boone County as a demonstration of the role of local builders in providing utilitarian commercial buildings for Boone County in the period 1900-1930. Found in both urban and rural areas of the county, stylistic influences were minimal, and the chief attribute that separates vernacular commercial structures of this period from those built earlier is the clear objective of builders to portray the building's commercial function and to differentiate it from residential architecture.

The Bungalow/Craftsman style is significant to Boone County as a local illustration of a national style produced in great numbers in most American cities and towns and also as a symbol of rapid changes in the building industry in the years of its period of significance, 1905-1930. Bungalows in Boone County are almost exclusively limited to the towns of Florence and Walton, two towns that achieved economic growth in the early 20th century due to their key locations on the main transportation corridors. Craftsman/Bungalow style buildings also reflect the growing role of architects, particularly those from suburban Kenton and Campbell counties, and outside architectural influences that were disseminated through pattern books.

The Tudor Revival style was significant to Boone County beginning in 1910, and, although the most significant examples were constructed between 1915 and 1930, elements of the style continued to be used through the 1930s.

The Georgian or Colonial Revival style was significant to Boone County as a local illustration of a national architectural style. Although the style was numerically less important to Boone County than the Craftsman/Bungalow style, elements of the Georgian/Colonial Revival appear over a much longer period, from 1900 to 1945.

There are four stone houses which represent a method of construction associated with the Scotch-Irish and English settlers of Boone County. The primary period of significance for the dry-stone buildings is the settlement period 1780-1830, although a few dry-stone buildings were built through the Civil War period to 1865.

Small farmsteads typically consisted of a multipurpose stock barn, a corn crib, a smokehouse, a few sheds and perhaps a root cellar. Medium to large farmsteads typically consisted of a second or possibly third stock barn, often designed for particular animals, such as hogs, horses, or milk cows, a tobacco barn, and a second corn crib. Also evident are a variety of outbuildings for specialized uses, including icehouses, slave or tenant quarters, meal houses or granaries, chicken houses, and carriage houses or machinery barns. Because some of these outbuilding types have long been outmoded, and their maintenance difficult to justify, it may be assumed that they were once more common than their current numbers indicate.

The most common form and materials for Boone County agricultural outbuildings were rectangular gabled structures of wood frame construction with vertical-board siding and fieldstone foundations. Smaller outbuildings within the domestic space of the house might also be square, of stone or brick masonry, and they might also be hip-roofed. Bank barns are uncommon, level land being the preferred sitting in the county. The most common spatial arrangement of outbuildings was an open oval shape, with the smaller, more domestic outbuildings, such as privies, smokehouses, and chicken houses clustered near the house.

As the current architectural survey progresses, pre-1870 commercial structures such as inns, toll houses, and store buildings, including a good number previously undocumented, are being identified throughout the county. Two former inns are located in Petersburg, where they could take advantage of the Ohio River trade, one on the road between Cincinnati and Lexington, the principal overland transportation corridor in Northern Kentucky, and one in the county seat of Burlington. These inns are the remnants of an important early commercial activity in the county. The surviving toll houses serve as reminders of the intricate turnpike system that existed on all major roads in nineteenth (and into the twentieth) century Boone County. Early retail store buildings in the county vary from an urban example in Petersburg, originally retail on the first with a second floor added for meeting space, to the Rabbit Hash General Store, an all-purpose facility, to the former Grange store on East Bend Road. Post-1870 commercial buildings in Boone County are represented by examples such as a bank in Hebron, a dry goods store in Union, and a garage in Verona.

Between 1870 and 1930, the larger towns in the county, especially Petersburg, Burlington, Florence, and Walton, matured and became more urbanized. In all these communities, notable examples that combined commercial activities, on the first floor, with social, entertainment or fraternal functions on the upper floor have been identified. This commercial type is represented by two structures in Petersburg, a store-public hall and a store-fraternal meeting hall. In structures of this type, local business activity took on civic roles found in single-function halls and theaters in urban areas elsewhere. A similar mixed-function building in the town of Florence is an 1870s hotel that also served as a store and a post office, again combining commercial and community roles.

Few structures have been identified with definitive links to local industry, a testament to the dominance by agriculture of the county's economy, as well as the short life span of 19th century small-scale industrial architecture. In Petersburg, there are three structures associated with the distilling industry, an enterprise important to Boone County in the period of its operation, c.1820 to 1916. They include the cooperage (site of barrel-making activities), and the superintendent's house and guest house for the Boone County Distillery. The third surviving building, also built as part of the same distillery, has lost integrity and the main buildings of the distilling operation, the warehouses, are in ruins.

Along Gunpowder Creek, in the central park of the county, are the ruins of a grist mill, saw mill, and blacksmith shop complex. Although the structures associated with this site have largely disappeared, the foundations, mill stone and portions of equipment, as well as patterns in the land such as the mill races, and dam site, remain. This type of activity is closely linked to the agricultural economy of nineteenth century Boone County. This mill site may offer the last surviving remnants of a once extensive local industry.

Just as Boone County's major transportation corridors did not guarantee commercial growth, so the Ohio River and the Dry Ridge Divide did not ensure a substantial body of high style architecture for Boone County. Despite its location on main routes of architectural communication, Boone County was minimally affected by changes in stylistic tastes and by the flow of builders, artisans and architects into the Ohio River Valley and the Bluegrass region of Kentucky. With rare exceptions, the builders and architects are unknown. Most of the structures with stylistic pretensions are found along Highway 42 (Old Louisville Road), in the Burlington county seat, and along the Ohio River.

BURLINGTON HISTORIC DISTRICT

The Burlington National Register of Historic Places District is a gridded rectangle of 74 acres comprising the original town in its entirety. It is bounded on the north by Temperate Street, on the east by Orient Street, on the south by Torrid Street, and on the west by Ohio Street (now Water Street). The western most street and the western end of Torrid Street were never completed, but the remainder of the streets exist essentially as planned. Burlington is situated on a low hill that falls away on all sides. The town was laid out orthogonally, with main streets running north-south and east-west. Recent subdivision development in central Boone County is evident upon entering Burlington from the east, Burlington Pike, and south, East Bend Road. These subdivisions ignore the street grid of the original town plan. One northern approach, Idlewild Road, is still basically agricultural and recreational in character. The Boone County Fairgrounds, and land owned by the Airport, soon to be used for recreational purposes, dominate this entrance to the county seat. The social and visual center of Burlington is the intersection of the two main streets, Washington and Jefferson, and includes the principal commercial, retail and governmental structures.

In consideration of Burlington's small size (approximate pop. 350), architectural styles span a rather wide range. Several early vernacular 19th century houses remain, although artificial siding and layers of alterations conceal much of the original fabric. One log building (5878 N. Jefferson c.1860), and one brick building (5825 N. Jefferson, National Register, c.1830) have recently been restored to their original appearances. North of the courthouse are three sizable Federal style residences, with later Greek Revival influences, that date from 1820-35 and share certain similarities. The Greek Revival is well represented in public buildings by the former county clerk's office and in residential architecture by a small house on North Jefferson Street. Late nineteenth century architectural influences can be seen in residential and commercial structures throughout the Historic District.

The 1889 Boone County Courthouse is the third courthouse, the original a log structure, to occupy the same site is attributed to the McDonald Brothers of Louisville. This architectural firm was responsible for numerous such structures in the southeastern United States. However, the Renaissance-inspired Burlington building is somewhat unique among most late 19th century courthouses, especially those of McDonald Brothers, which were typically Romanesque or eclectic in design.

As Boone County's only urban National Register Historic District, and the county seat, Burlington presents a crucial preservation challenge. Efforts must be made to insure that a mixture of governmental, commercial, and residential activity continues to function in Burlington. Re-incorporating Burlington may be a useful tool for retaining the character of the historic county seat, while providing for sensitive economic development. Burlington has the rare opportunity to capitalize on its unique architectural landscape, small town charm and rural atmosphere. Poorly planned new construction, already apparent in several Burlington locations, will destroy this valuable character. The town's historic buildings should be rehabilitated and adaptively reused to meet the realities of a rapidly changing county, and the challenges of the 21st century. Plans and recommendations for the future of historic Burlington should be studied and a preservation plan developed.

The landscapes of Boone County are made up of a wide variety of natural and historic resources. Efforts must be made to integrate these resources with current development patterns, not as stagnant entities but as productive and contributing county assets. It is essential that growth management strategies include the preservation and conservation of natural and historic sites. These strategies may not only involve the preservation of historic buildings, but instead focus on the retention of cultural landscapes and characteristics.

In Burlington, Union, and throughout the county, it is imperative that more of a balance between old and new be encouraged and supported. Boone County deserves to retain its own unique identity as it continues to grow and prosper.

PRESERVATION STRATEGIES FOR BOONE COUNTY

Historic Preservation efforts in Boone County should focus on creating a balance between new development and preserving the history and character of Boone County. This could include strategies such as adapting a historic building for a modern commercial or retail use, including an existing building, usually a single family residence, in plans for a new subdivision, or a creative building design that blends with the existing landscape. Much of the success of such an effort depends on educating the public, including elected and appointed county officials, and residential and commercial developers, about the benefits of historic preservation. Increased awareness of the work of the Historic Preservation Review Board is an important part of the educational process.

The Historic Preservation Review Board has completed a comprehensive survey of all buildings or structures fifty years old or older in the county. This information includes the development of historic contexts or themes for historic and related resources. These contexts place buildings in their proper historical or architectural perspective, and help in evaluating their significance. The survey results have been used as the basis for a Boone County Preservation Plan, completed in 1999. The Plan provides specific guidelines and recommendations as well as pertinent background information for implementing a successful preservation program in Boone County.

Heritage tourism is a significant means of promoting historic preservation in Boone County. Historic properties in the county such as the Burlington's National Register Historic District, the Dinsmore Homestead, Big Bone Lick State Park, and the town of Rabbit Hash are currently popular tourist destinations. Route 8, from the historic Anderson Ferry west, is a popular bike and pleasure drive route with scenic views, and picturesque local farms. The Ohio River corridor, from Petersburg to Big Bone Lick, includes a wide diversity of significant natural and historic sites that should be protected from insensitive development. Properly handled, this corridor, including the Big Bone Lick-Middle Creek Parkway, a designated Kentucky Scenic Highway, can provide the resources for a substantial tourism industry in Boone County. Plans for a proper museum and research center at Bog Bone Lick State Park, as well as a National Historic Landmark nomination, must be encouraged. The Historic Preservation Review Board, with the involvement of the public, and the assistance of the Boone County Planning Commission, should complete a **Tourism Plan** as a guideline for the development of this industry in Boone County.

The Historic Preservation Review Board should study and design a **Local Landmarks Program** to recognize significant historic buildings throughout the County. Design review guidelines, administered by the Review Board, should be established for these properties. Design review guidelines help to preserve the historical integrity and strengthen the aesthetic value of a building or site. The Review Board has established design review guidelines in conjunction with a new zoning district for Florence's Main Street. Although this area is not a traditional historic district, the guidelines are intended to preserve the existing historic character of Main Street, and strengthen its viability as a pedestrian corridor. Further study and extensive community education needs to be undertaken to determine exactly what areas in Boone County would benefit most from design review guidelines.

The preservation of significant archaeological sites also contributes to the quality of life in Boone County. However, the issues involved in preserving these sites differ from those for historic buildings and structures. The locations of archaeological sites should not be made public. Such sites, once their locations are generally known, could be desecrated by pot hunters and then any information they may have yielded is lost forever. Kentucky law prohibits the desecration of burial sites and cemeteries but enforcement of these statutes is difficult. Action on the local level is essential to the preservation of Boone County's archaeological sites. The Boone County Planning Commission and the Boone County Historic Preservation Review Board have developed the Boone County Cemetery Preservation Plan (which includes Indian burial sites) in response to this need. Its ongoing implementation represents a significant step forward in the county's preservation efforts. Community educational efforts, beginning with our schoolchildren, should focus on the importance of archaeological sites, and responsible action related to their preservation. The Historic Preservation Review Board must remain proactive in identifying and documenting significant archaeological sites in Boone County.

Boone County should also encourage groups such as the Archaeology Conservancy to acquire easements on lands with significant sites. The Historic Preservation Review Board should work with private property owners and the Kentucky Heritage Council toward the donation of preservation easements for important archaeological sites. To document otherwise unobtainable historical information, the Boone County Planning Commission should encourage developers to conduct expedient archaeological surveys of their development sites with the goal of determining the significance of the site without delaying construction.

Because of Boone County's Certified Local Government (CLG) status, the Boone County Fiscal Court has received $142,240 in grants from the Kentucky Heritage Council between 1986-2001 for historic preservation activities. Some of the more recent grants or projects include a three phase architectural survey of Boone County, the Big Bone Lick National Register nomination, a GIS cemetery mapping project, a Heritage Education Curriculum, a cemetery preservation workshop, and an addendum to the Multiple Resource Listing of the National Register of Historic Places.

FEDERAL INCENTIVES FOR HISTORIC PRESERVATION

Investment Tax Credits

The Tax Reform Act of 1986 permits owners and some leaseholders to take a 20-percent income tax credit on the cost of certified substantial rehabilitation of certified historic structures for industrial, commercial, or rental residential purposes. The law also permits a ten-percent credit for substantial rehabilitation of non-historic structures built prior to 1936 if the post-rehabilitation use is nonresidential. In neither case can the credit be included in the depreciable basis.

Generally, the work must be completed within two years, although it may be phased over a maximum five-year period, if the development plan is initially conceived and presented in that manner. The credit is taken when the project (or the phase) is completed and put to use. The rehabilitated property is depreciated using the straight-line method over 27.5 years for residential property and over 31.5 years for nonresidential property.

For buildings eligible for the 10-percent credit, there is a strictly applied requirement that specific percentages of external walls and internal structural framework be retained. Taxpayers who sell rehabilitated property within five years are subject to recapture of the tax credit at the rate of 20 percent for each year less than five. There is no recapture after five years.

Certified Historic Structure

A Certified Historic Structure is an individually listed structure in the National Register of Historic Places, or a structure certified by the National Park Service (NPS) as contributing to a registered district.

A registered district is one listed in the National Register, or designated under a state or local statute that has been certified to contain criteria that will substantially achieve the purpose of preserving and rehabilitating buildings of significance to the district. In addition, the district must be certified as substantially meeting all the requirements for listing of districts in the National Register.

A certified rehabilitation is a rehabilitation certified by NPS as being consistent with the historic character of the property and, where applicable, the district in which it is located. NPS refers to the Secretary of the Interior's "Standards for Rehabilitation" in certifying rehabilitations.

To qualify as substantial, the cost of rehabilitation must equal or exceed the adjusted basis of the property or $5,000, whichever is greater. To calculate the basis, the following equation is used: cost of property, plus capital improvements, less the value of the land, less depreciation. Investment Tax Credit projects should be encouraged in Boone County as a means of promoting historic preservation.

Federal Tax Deduction for Easement Donations

Federal tax laws also offer property owners a federal tax deduction for easement donations. A donation must be made "in perpetuity" to a qualifying agency - usually a nonprofit organization or a government body. In an easement donation, the owner gives up certain potential development rights; thus, the receiving agency can place restrictions on future changes to the structure. In exchange, the owner can get a substantial tax deduction, based on the difference in the value of the property before and after the restrictions. Use of this incentive is highly technical requiring substantial knowledge of federal tax laws. Individuals interested in easements should consult their tax attorney or accountant.

However, the Boone County Historic Preservation Review Board and its staff should have a working knowledge of how easements benefit property owners. They should publicize and promote easement donations as one part of an overall preservation strategy for the county. For more detailed information on easements, see state incentives.

STATE INCENTIVES FOR HISTORIC PRESERVATION

Easements

An easement is a legal document through which a property owner grants limited rights in his or her property to another. Easements for driveways and utilities have existed for some time. Conservation easements, under Kentucky law, can now be utilized to protect natural, scenic or open space areas and natural resources or to preserve historically and architecturally significant properties and archaeological sites. Such an easement limits the right of the owner to alter the historic or natural character of the property. Because the easement is given in perpetuity, it continues to protect the property even after ownership changes hands.

The restrictions included in an easement are up to the property owner. Generally, in the case of a historic building, the easement restricts changes to the facade and blocks demolition. Easements can also be used to protect significant interior spaces and prevent subdivision of the land upon which the building sits. The owner does not give up title to the land, nor the right to sell, lease or mortgage the property.

Any property owner may grant a conservation easement to protect and preserve a historic building or land. Any governmental body empowered to hold an interest in real property or a non-profit organization involved in the preservation of natural and historic resources may accept such an easement. The benefits to the owner are that 1) the historic property is protected, 2) the owner receives a one-time tax deduction as a charitable contribution, 3) inheritance tax can be substantially reduced, and 4) his or her real estate taxes are decreased. The Kentucky Heritage Council will currently accept easements on National Register eligible property, however, a conservation easement program should be encouraged for Boone County.

LOCAL INCENTIVES FOR HISTORIC PRESERVATION

Loan Program

The following information from the National Trust for Historic Preservation describes how to develop a loan program and the positive impact it can have on historic preservation in a community.

"Establishing a loan program can encourage local banks to participate with preservation groups to finance the rehabilitation and reuse of privately-owned historic properties, provide below-market interest rates for historic preservation projects, attract other financial contributions and provide an ongoing source of local capital for historic preservation.

A revolving fund can be defined as a pool of capital created and reserved for a specific activity such as historic preservation, with the restriction that the monies are returned to the fund for similar real estate development activities. A revolving fund may be initiated with seed money from a variety of sources including grants from corporations, foundation, government agencies and individuals, and loans from banks and other lending institutions. Loan pools are established to accomplish similar goals, but the funds are disbursed once and repaid to the lender; they do not revolve back into the fund. Lenders, however, often are more willing to continue making loans for preservation purposes if their experience with the loan pool is positive.

In considering the establishment of a revolving loan fund or loan pool, an organization should assess and clearly define the need for the fund (identify the target population and area as well as existing financing resources, and determine why lending is not currently occurring), establish goals and objectives for it and identify potential funding sources. Once these items have been addressed and appropriate organizations and individuals have had an opportunity to comment, the management entity should be identified and the specific lending criteria, terms and conditions, loan disbursement process, marketing strategy and funding sources should be defined."

More research needs to be done to determine the feasibility of such a program for Boone County. It would require the cooperation of local banks and local government. Potentially, the Boone County Historic Preservation Review Board would review the proposed rehabilitation work. If the work is approved, then the loan application is submitted to the participating financial institution for its approval and disbursement of funds. This type of program could be part of a bank's Community Reinvestment responsibilities, and would encourage a greater balance between historic rehabilitation and new development in Boone County.

CONCLUSION

The Boone County Historic Preservation Plan is designed to clarify the role of historic preservation efforts in Boone County, provide information, and suggest guidelines for recommendations of the Historic Preservation Review Board to the Boone County Planning Commission, the Boone County Fiscal Court and to the cities of Florence, Union and Walton concerning historic preservation issues.

Citizen education about the value of historic preservation in Boone County is an important key theme of the Preservation Plan, as reflected in the first Goal. This Goal provides mechanisms and strategies for improving the availability of information about historic resources in the county, as well as establishing objectives that focus on the importance of heritage education in local schools and throughout the community. Increased awareness of the economic, cultural and aesthetic benefits of historic preservation for Boone County will strengthen community participation and interest in preserving tangible reminders of their heritage.

Since Boone County Fiscal Court and the Cities of Florence, Union, and Walton have limited authority in Historic Preservation issues, the Preservation Plan does not propose specific regulatory measures for the protection and preservation of historic resources. Rather, it provides guidelines which the Historic Preservation Review Board can use in making decisions and recommendations regarding potential impacts to historic resources. The Plan suggests further ways historic preservation can be a part of the planning process by continuing to partner with the Boone County Planning Commission. The Preservation Plan also outlines research questions that support specific Goals and Objectives. The Historic Preservation Review Board may consider these issues when planning future preservation projects, or looking for additional funding sources to support preservation endeavors throughout the county.

The goals of the *Boone County Preservation Plan* consist of the following:

1) Promote historic and prehistoric resources as a viable part of the county's lively past and vibrant future.

2) Identify historic and prehistoric resources as valuable assets to the county and to its citizens.

3) Protect historic and prehistoric resources from physical threats, which endanger their preservation.

4) Preserve historic and prehistoric resources through a variety of economic and other programs.

The Historic Preservation Review Board must work toward achieving a greater public awareness of the benefits of historic preservation for Boone County, and the critical role it plays in the quality of life in this county. Historic preservation is not only over one hundred buildings listed on the National Register, it's not only thousands of annual visitors to the Dinsmore Homestead and Big Bone Lick State Park, or the celebration of Old Timers Day in Rabbit Hash; it's the preservation and protection of the very roots of Boone County's success. Historic preservation goals must be integrated into planning, economic development, and governmental strategies in order for Boone County to continue that success in the 21st century.

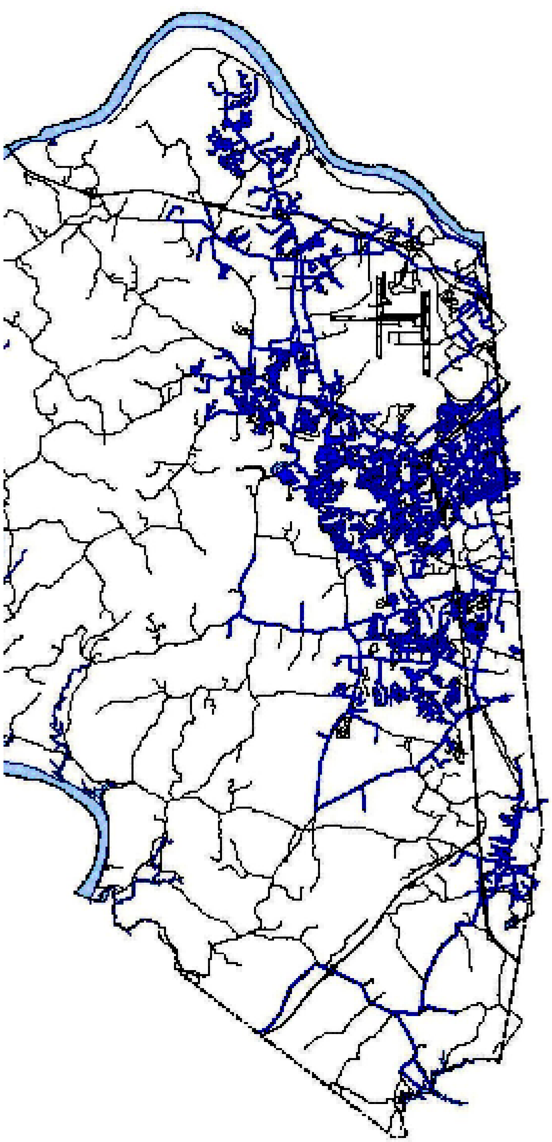
PUBLIC FACILITIES

This Element discusses the public facilities and services within unincorporated Boone County and the Cities of Florence, Union, and Walton. Water distribution, sanitary sewage collection and treatment, gas and electric supply, municipal/public services, education, health care, and public communications are the services discussed. This element presents current data and provides insight into future expansion of these services. Several conclusions are also presented as to the various facility impacts on the future land use pattern.

WATER DISTRIBUTION

Within the geographic areas of the three Cities and the unincorporated County, there are five different public water distribution systems. These current systems are the Boone County, City of Florence, City of Walton, Bullock Pen, and Kenton County districts. The major service lines of these systems are depicted on **Figure 10.1**. Public water service should be correlated between these districts to use common mains and avoid duplication of services. If it makes sense from an efficiency standpoint to serve areas across political boundaries then districts should be encouraged to do so. As shown on this map, broad areas of the east and northeastern parts of the county are currently served by public water. The remainder of the county is currently dependent on cisterns or occasional wells.

Figure 10.1 - Water Lines



Florence

The Florence Water and Sewer Commission provides treated water service to all areas within the corporate limits of Florence and some land areas adjacent to the City. The Commission does not have its own water purification facilities and currently obtains all of its water supply from Northern Kentucky Water District. The District has reached an agreement, however to purchase water from the Cincinnati Water Works via a transmission main under the Ohio River. This main should be in service by 2003. There is a restriction on capacity for Florence and Boone County until the year 2003 through contracts with the Northern Kentucky District. Water demand exceeded the maximum agreed daily demand of 10 million gallons per day in the summer of 1999 with 12.4 million gallons. Water conservation measures can be implemented when demand exceeds 10 million gallons.

Current storage capacity in the Florence system is 1.5 million gallons with two existing water towers. Another tower is proposed on Weaver Road. Average daily water usage within the system is approximately 4 million gallons. Since 1995, the District has concentrated on creating loops in water service areas to improve pressure and service. Several recent annexation requests by residential developers in the U.S. 42 corridor, west of Florence, have extended water service in that area, but have not yet required major main extensions.

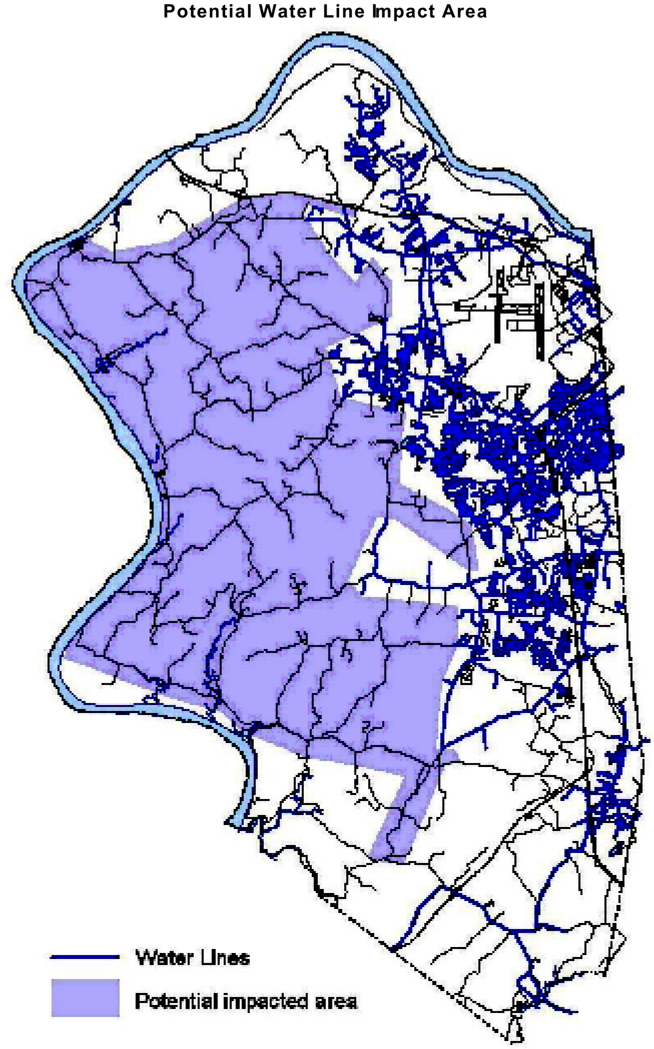
Boone County

The Boone County Water District provides water service to areas contiguous to the City of Florence, the Hebron and Bullittsville area, the Burlington area, the City of Union and surroundings, and the area southward from Florence to Richwood. This District also currently obtains all of its water from the Northern Kentucky Water District. It is limited in supply capacity by internal and external demands on the Kenton County system. The District has reached an agreement, however to purchase water from the Cincinnati Water Works via a transmission main under the Ohio River. This main should be in service by 2003. This should eliminate supply problems that have been encountered during the summer of 2000.

Current storage capacity within the County system is 600,000 gallons in two existing water towers. In addition, the District has access to water storage in the two-million gallon Kenton County Water Tank on Dixie Highway. An average daily use of approximately 4 million gallons is currently supplied by the District.

The Boone County Water District presently serves the east-central portion of the County. This coincides with the more populated and growing areas of the County. Since development usually occurs more rapidly where new water lines are placed, good planning and growth management policy would be to not encourage water line extension in environmentally sensitive areas or areas planned for farmland preservation. Public comment during the comprehensive planning process in 1995 indicated that the installation of water lines in new areas has a negative affect on agricultural uses by causing an increase in tax rates for undeveloped property. Since that time, however, there has been a change in state law. Land owners in an Agricultural District receive a deferred assessment of fees for water service line extensions until the land is removed from the District and sold for non-agricultural uses. Public water districts have a responsibility to provide cost-effective water service. When there is existing demand in rural areas, the placement of water lines has historically not been a realistic growth management tool. It is difficult to argue that residents should not receive the benefits of public water supply in the name of growth management.

Figure 10.2
Potential Water Line Impact Area



The Boone County Fiscal Court has contracted a Preliminary Engineering Report to consider significant water system expansion plans for most of Boone County. The Fiscal Court initiated this program in 1999 based on the fact that Boone County has less water service area for its residents than many other Kentucky counties. This will allow many rural areas of the county to connect to public water supply (see **Figure 10.2**). Although the initial intention of this project is to provide water to existing residents, it does have significant potential impacts on growth in Boone County, particularly the Western Boone County area. Preliminarily, the report indicates 65-70 miles of water main construction along the primary roadway corridors of Western Boone County. Future side extensions would be based on assessments.

These improvements would be constructed in phases, in fact much of the work cannot be accomplished until the Cincinnati Water supply line is in operation. However, the proposed phasing will likely cover only about five years. Currently, this

Preliminary Plan has not been approved by the Boone County Fiscal Court. In addition, these improvements must still be reviewed by the Kentucky Public Services Commission (PSC) and undergo local public meetings. As of September 2000, the Fiscal Court is considering general obligation Revenue Bonds or Notes to finance the estimated $20 - $25 million improvements. The Land Use Element should consider the possibilities of this water line construction, and how land use regulation should be designed in its event.

One common phenomenon of water line construction in rural areas is the change in habits of the residents. Households that are served by a cistern or well often exhibit a conservative use of water. When these households receive a continuing, inexpensive supply of water from a public system, water use habits often change. The increased use of water has an impact on existing septic systems by aggravating soil saturation problems. A common solution to this problem is often the public outcry for public sanitary sewer service to the area. The impact of sanitary sewer facilities on county growth patterns is well known and is described later in this element. In this way, the community needs to begin to realize that, although water lines do not always directly affect growth, they can trigger a series of changes that lead to growth. Likewise, the construction of a water line, by itself, does not entitle an area of the county to develop.

During development of the Land Use Element, and in planning efforts after the adoption of this 2000 Comprehensive Plan, Boone County, as a community needs to carefully create incentives and regulations to properly guide development in the areas affected by new water line construction. Creative ways of structuring future property assessments and blending them with planning efforts could provide a development pattern for Western Boone County that is different from typical suburban sprawl.

A prime example of the effects of water main construction on the development patterns of an area is the 12 inch main along North Bend Road. Since its construction in 1987-88, major developments have been approved in the Hebron-North River area. Sanitary sewer service for this area has resulted partly from public expenditure and partly from private construction. The effect has been that the overall momentum of development in this area has been increased. Now, with the addition of Northpointe Elementary school and road improvement designs for North Bend Road, this has become a prime example of how other infrastructure must be developed when a new water main is extended to a lightly developed area.

Walton
The City of Walton currently provides water to areas within the incorporated limits of the City and adjoining areas to the north of the City along Dixie Highway (U.S. 25) and Old Lexington Pike. Previously the City treated its own water for their supply. However, during the early 1980's the City contracted with Kenton County for their water supply. By this agreement, the City is limited to a maximum daily supply of 1 million gallons of water. Currently, the system is not at capacity with average daily usage of 350,000 gallons and a storage capacity within the two water towers of 500,000 gallons.

Since the Walton Water District has contracted for a large supply and uses relatively little of it, there is great potential for expansion. Although some of Walton's water supply is transported from the city by private water-haulers, the immediate Walton area is not projected to experience great population growth. This increases the supply available for industrial development.

Bullock Pen
The Bullock Pen Water District currently serves an area around Verona and southward to Grant County and Gallatin County. The Bullock Pen Lake provides the water source for this system. Any further extension of these water lines in a northwest direction would encounter rougher topography in the Mud Lick Creek area - some of which has limited suitability for development. This area of the county is not expected to experience dramatic growth, but will see some residential construction in the general Verona interchange area. The Bullock Pen Water District does have some opportunity for expansion toward Walton, however. Any further expansion of this system can have the same land use impacts as discussed earlier under the Boone County Water District. The effects on water usage habits within the

Bullock Pen District area could be significant because there is no public sanitary sewer system present. To compound this situation, the Environment Element has shown that the soils present in this area have severe limitations regarding leach fields for private septic systems.

Kenton County

The Kenton County Water District currently serves the Greater Cincinnati International Airport and the Northern Kentucky Industrial Park. Some areas along Donaldson Highway, originally served by the Kenton County Water District are now served by the Boone County District. The Kenton County Water District maintains its own water treatment plants along the Licking and Ohio Rivers. The recently constructed two million gallon water tank on Dixie Highway provides additional storage for the Florence and Boone County systems, in addition to serving the Industrial Park. Expansion of the Kenton County Water District within Boone County would not be expected considering the current systems and their ability to meet the demands for their future needs.

SANITARY SEWAGE COLLECTION AND TREATMENT

Sanitary sewage collection and treatment in Boone County includes three public systems: Florence Water and Sewer Commission, City of Walton, and Sanitation District Number 1 of Boone, Campbell, and Kenton Counties. Sanitary sewage collection and treatment also includes private package treatment plants and individual on-site septic systems. The public sewer systems usually serve large areas or clusters of developments, and private treatment plants usually serve one development.

Private, on-site systems, including leach fields, generally discharge into the soil for natural decomposition. In general, Boone County's soils are poor at accepting these discharges, and stream pollution often results. These systems also require larger lot sizes, often resulting in inefficient use of land.

Public Sewer Systems, though historically necessary for proper county growth, are expensive to install, operate, and maintain. Even more than water supply lines, sewer systems greatly influence where development occurs. Sewers must be considered for their environmental impacts, not merely for treatment plant discharges but also for their influence on future development. Sewers should be extended only to areas that can support substantial development so that most efficient use of the services is made. Development of collective sewer systems for the low density uses outside urban areas is usually not economically feasible. Individual package treatment systems have historically accommodated development in these areas, but are now generally discouraged because of their environmental impacts. This is especially true where rough terrain or other major building limitations are present.

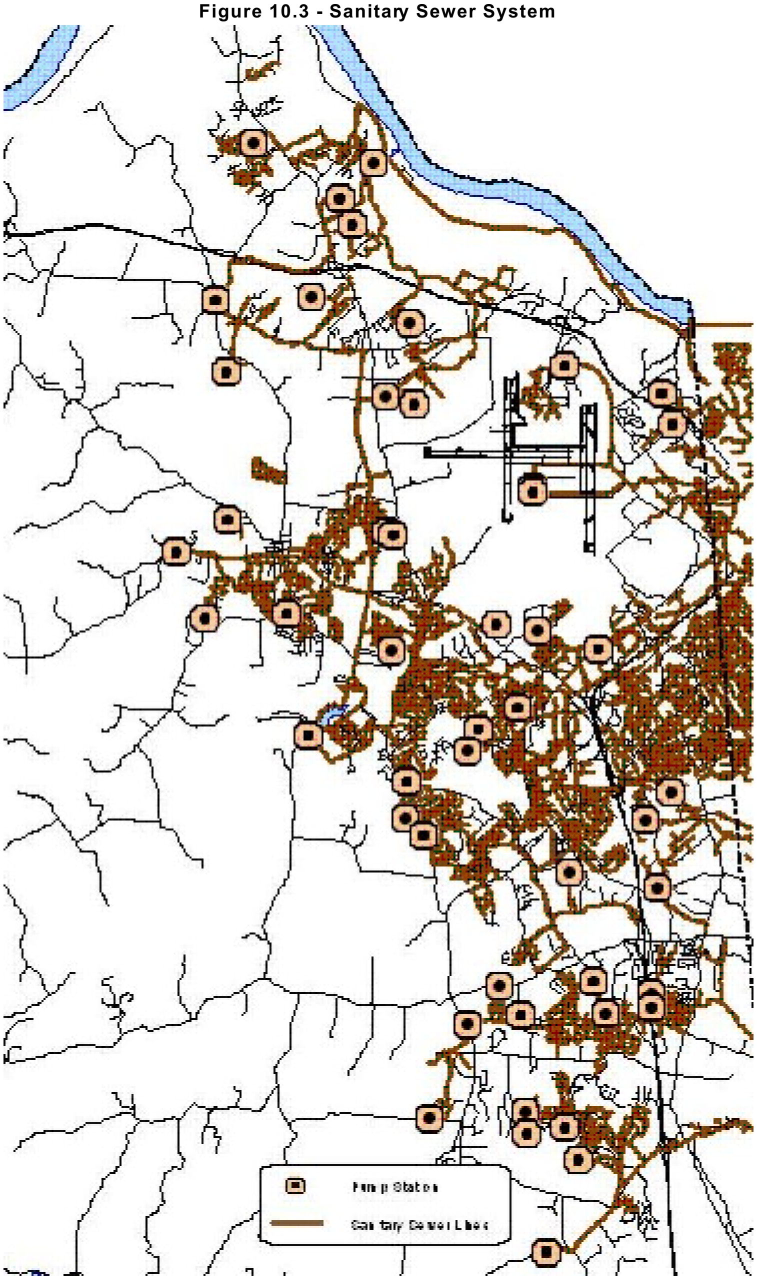
The last several years have seen a significant transformation in sewage treatment in Boone County. The following passages describe the public sanitary sewage treatment systems.

Florence

During the early 1980's, the Florence Water and Sewer Commission improved their sewer system by connecting into the Sanitation District Number 1 of Campbell and Kenton Counties. By connecting the Florence system, the Commission eliminated its treatment plant, and could expand and improve its system and services. Before committing to these improvements, the Florence system was at its capacity for treatment of 2.1 million gallons per day and involved the use of eighteen lift stations throughout the City. This system required much operating maintenance and repair. Subsequent improvements included the removal of most of the stations. With the addition of a new pump station on Houston Road, the Commission maintains five. Ultimately, the system connects to the Sanitation District's system and the Dry Creek Sewage Treatment Plant. **Figure 10.3** shows the sewer lines and pump stations throughout the county. Future expansion will likely occur in the Pleasant Valley Road and Union areas, and sewage is intended to be pumped to the proposed Western Regional Treatment Plant upon its construction.

Sanitation District No. 1, Boone, Campbell, & Kenton Counties

Figure 10.3 - Sanitary Sewer System



Since 1995, a dramatic change has been that the Sanitation District has taken over the former Boone County Sewer District. The Boone County District system had been operating under the 1989 Boone County Water and Sewer Master Plan Report. The focus during the 1980's was to obtain public ownership for as many of the private package treatment plants as possible to enable eventual consolidation and elimination of them. The Master Plan recommended a coordinated strategy to acquire and consolidate the numerous individual package wastewater treatment plants, expansion of the wastewater collection lines network, and the treatment of collected wastewater. The Master Report proposed two wastewater treatment plants, located in the North Bend Area and Gunpowder Creek Area, to provide wastewater treatment for service areas. After the adoption of the Master Report, Boone County Fiscal Court entered into an agreement with Kenton County Sanitation District Number One to treat Boone County wastewater at the Dry Creek Wastewater Treatment Plant. Fiscal Court's actions eliminated the need for the two proposed treatment plants in Boone County. Later agreements resulted in the Sanitation District constructing the major sewage transmission lines, while the Boone County District was responsible for the maintenance of the existing system. Finally, the agreement was reached for the Sanitation District to serve Boone County. Since many of the individual collection systems that have been removed were in poor operating condition, the consolidation of these systems into the regional system has benefitted Boone County's environment and public health.

In 1995, Sanitation District No. 1 commissioned the preparation of a 20-year Regional Facility Plan, completed in 2000. A portion of the plan addresses efforts to improve existing sewer systems. The most significant improvement recommended by this plan, to affect Boone County, is the construction of an entirely new sewage treatment plant on the Ohio River. During 1998 and 1999, there was much discussion about the location of such a plant. Several sites were considered, and finally the District selected a site north of Belleview on the river. Considerable controversy still exists over the site selection process, and final details of the sewage transmission system are currently being designed. The collection system will include force mains to reach the proposed treatment plant. The District will discourage additional sewer customers from directly accessing these force mains. The major sewage collection point for all of the Boone County service area and fifteen percent of Kenton County will be in the western Florence-Union region, probably in the Longbranch Road and U.S. 42 area. It is anticipated that the proposed treatment plant could be in operation around the year 2005. Kelly Elementary School is being considered for sewer service via a direct line to the proposed treatment plant and there is a possibility that the town of Belleview could be served as well. Although only a portion of the I-71 corridor in the southern part of the county is included in the 20-year plan, the trunk mains, pump stations, and treatment facility in the plan could accommodate the flow from this area at a later date.

The Sanitation District has stated that the 1995 Boone County Comprehensive Plan was used to develop the Regional Facility Plan, and that a slightly increased capacity over the 2020 Future Land Use Plan was designed. Although this represents some progress in agencies working together, the proposed improvements in the District's final Plan would create growth impacts greater than the 1989 Boone County Water and Sewer Master Plan Report or an expansion to the Dry Creek Treatment Plant. It is important that the regional treatment plant, and the service lines leading to it, are designed and implemented with specific growth areas in mind, as defined by Boone County citizens and planners, because the 2020 Boone County Future Land Use Map was prepared without the knowledge of a potential treatment plant in the far western part of the county. The Future Land Use Element of this Plan should contain creative ways of utilizing the future availability of sewer to develop a town and rural land use pattern instead of extending eastern Boone County style of development into Western Boone County.

The Sanitation District has indicated that the regional collection system is planned generally around the Year 2020 Future Land Use Map contained in the 1995 Boone County Comprehensive Plan. Some additional capacity has been designed into the system to safeguard public investment, however, the District has not intended to serve all of Boone County with this planned system. Sewer transmission facilities are being designed to accommodate a 20-50 year planning horizon. The District has recognized that the major growth corridor in Boone County is toward the south. Even so, most of the Verona and I-71 areas of the county are not shown as being served in the 20-year plan. Outlying areas in the I-71 corridor and the western parts of Boone County could be served in the future, but are not shown in the 2000 Regional Facility Plan. Gravity trunk mains could be built in major creek valleys if significant future development is allowed to occur in these outlying areas. The Sanitation District has adopted a policy that encourages gravity sewer lines as opposed to a series of pump stations to serve new development. This may become an important issue as development proceeds further west into the major creek valleys of the county. The 20-year plan must be updated in the future if certain changes occur in the community. This includes a situation where sewer flows come within thirty percent of the system capacity.

Boone County, as a community, needs to be careful that sewer service areas are developed in an efficient manner, but that all sewer service areas are not over-developed. Some locations within urban service areas may be more beneficial to the community if preserved or used for recreation purposes. For Boone County to develop properly in the future, Land Use Planning and Infrastructure Planning must be closely intertwined. As the Environment and Agriculture Elements show, the sewer pump stations that have been constructed are promoting future development in broad new areas without local control. Construction of future sewer facilities should reflect community and Planning Commission involvement because of the inherent relationship between Infrastructure and Land Use. Government agencies should work together to define future growth areas as well as to encourage and fund significant infrastructure in those regions.

It is important to put the relationship of the sanitary sewer system and Boone County's growth into perspective. The rapid growth in the unincorporated areas of the county has occurred until the mid 1990's without a coordinated sewer system. Now that such a system is available, future growth rates are difficult to estimate. The sewer pump stations shown in **Figure 10.3** were constructed in the early 1990's and were designed to serve watershed areas, therefore future development can access them through private investment and construction of sewer lines that may include additional pump stations. The new availability of sewage service to large areas of the counties has committed many of these areas to development. The Sanitation District has passed a resolution that the improvements in the Regional Wastewater Treatment Plan are not intended to encourage additional development beyond what has been planned for the area. Although this public expenditure can be viewed as a positive and efficient way of getting out in front of future development, it is important to realize that the need for other new services, such as police, schools, and planning will be accelerated. As a result, it can be inferred that the quicker Boone County develops, the quicker the cost of providing public facilities and services increases.

The Sanitation District continues to serve the areas of the Cincinnati/Northern Kentucky International Airport, Cherry Hill Subdivision, and the Northern Kentucky Industrial Park. As described above, the District now owns and maintains the major sewage transmission mains capable of serving the developing areas of unincorporated Boone County. Future expansion of the system should be in concert with local planning efforts.

The capacity of the Dry Creek Treatment Plan is 46.5 million gallons per day with the effluent being discharged into the Ohio River at Anderson's Ferry.

Walton
Currently, the City of Walton provides wastewater treatment at its plant for users within the corporate limits. The current capacity of the Walton facility is 450,000 gallons per day. The average daily flow into the plant is around 300,000 gallons into Mud Lick Creek. The City of Walton also has a 50,000 gallons per day plant serving the Walton Industrial Park.

Private Sewage Treatment
Package plants generally serve only one user, usually a business, industry, or school. Others serve a residential subdivision or mobile home park. Many are privately owned and operated, and are inspected by the State of Kentucky, Department of Environmental Protection, and the Division of Waste Management regarding maintenance and effluent discharge. There are now fewer private package treatment plants in Boone County that serve individual users and developments than there were in 1990.

Individual septic systems are historically the prevalent method of wastewater treatment in developing areas like Boone County. Other than the above mentioned areas of public or private collection systems, all of the remaining areas of Boone County continue to rely on the use of a septic tank or similar individual systems. Even though the Burlington, Hebron, and Union areas contain many such systems, they should experience little additional septic tank construction in the future with the expansion of sewer service in the area and the limited capability of some of the soils to accept septic tank discharge. Septic tanks will likely remain prevalent for low density residential uses in rural areas of the county, however, there are biological treatment alternatives available.

New Issues Surrounding Sanitary Sewage Treatment

Marsh systems and greenhouse or living aquatic systems can provide localized wastewater treatment in parts of Boone County, with necessary permits. These systems can provide effective treatment, but require more land area than conventional treatment plants. These systems may be considered for concentrated outlying development in Western Boone County, but should be designed to be maintained by a responsive agency.

STORM WATER MANAGEMENT

The rapid development of Boone County has resulted in a large increase in pavement and roof coverage of land area. These impervious surfaces have the effect of increasing both the amount and rate of storm water runoff over the pre-development conditions. Often, existing storm water pipes and stream channels are unable to handle this increased storm water flow, resulting in property damage, loss in water quality, and potential injury.

Since there are so many different types of development impacting each drainage system, public storm water management systems represent the most effective and consistent method of establishing a coordinated approach to handling storm water runoff problems. The City of Florence has conducted extensive study in this area and produced a Storm Water Management Plan during the late 1980's, of which mapping of exciting facilities was an important first step. In 1992, the City created a Storm Water Management Division under the Florence Water and Sewer Commission, and instituted a storm water tax within the city limits. This tax applies to all businesses, and funds the Division. Tax credits are available to those businesses and residents that provide storm water detention according to regulations. The Boone County Public Works Department is poised to follow suit as it provides services to the unincorporated area and to the Cities of Union and Walton through an inter-local government agreement. A good first step, a Storm Water Management Plan for the Upper Gunpowder Creek Watershed, has been completed. This Plan is a logical extension of the City of Florence efforts into a highly impacted area of the unincorporated county. Some of the recommended improvements have been completed. Such plans need to recognize the responsibility of both the private sector and government in addressing existing problems and avoiding future problems.

The United States Environmental Protection Agency recently promulgated a new set of regulations targeting the control of storm water runoff. The purpose of these requirements, known as the Storm Water Phase II regulations, is to improve the quality of surface waters that are currently impacted by storm water runoff. Under this new rule, communities must submit an application for a National Pollutant Discharge Elimination System (NPDES) permit to the State by March 2003.

In an effort to comply with these requirements in a cost effective and efficient manner, local leaders have requested that a regional storm water management program be developed under the authority of a single entity - the Sanitation District. The District's Board of Directors has agreed to assume this new role and staff is aggressively working on the development of this program.

The proposed Storm Water Management Program would include capital improvements, routine maintenance, inspection, plan review, enforcement, rules and regulations.

NATURAL GAS DISTRIBUTION

The Union Light, Heat, and Power Company, now owned and operated by Cinergy, supplies natural gas in parts of Boone County. The supplier for Union Light, Heat, and Power is Columbia Gas Transmission Companies.

Currently much of the northeastern part of the County, the City of Florence, and the City of Walton are receiving natural gas service. Recent gas line construction has occurred in the Burlington area along KY 18, KY 237, Camp Ernst Road, Pleasant Valley Road, and Conrad Lane. Three major natural gas transmission lines pass through Boone County. All of these pipelines are located generally in the eastern half of the County. Installation and improvement of gas lines usually require an increase in residential or industrial concentration to be feasible.

ELECTRIC POWER DISTRIBUTION

Electric power distribution is broadly provided by Cinergy/Union Light, Heat, and Power Company and Owen County Rural Electric Cooperative Corporation. Some overlap within residential subdivisions and commercial developments exist. Cinergy currently operates the East Bend Power Plant, a coal powered plant. This facility is located along the Ohio River in the western part of the County. The Ohio River serves this facility by supplying the cooling water and the transportation for coal delivery via barges.

Owen Electric Cooperative purchases its wholesale power from the East Kentucky Power Cooperative in Winchester, Kentucky. East Kentucky operates three generating stations of its own and has interconnections with Kentucky Utilities, Cinergy, Louisville Gas and Electric, and Tennessee Valley Authority. This network provides the power reliability that a developing area needs.

Of all the above mentioned distribution and collection systems of the public infrastructure, electric power would offer the least limitations for urban development throughout the County. Electric and gas lines generally follow development instead of preceding it. Electric lines are versatile and can be extended to accommodate new development. For these reasons, these services do not have a great impact on directing residential development to specific areas. The fact that some industrial enterprises try to locate near energy sources should influence the placement of these facilities. From the stand point of sustainability, conservation of energy and development of alternative forms are needed to keep the Cincinnati region competitive economically.

MUNICIPAL/PUBLIC SERVICES

Public Facilities services such as police, fire and rescue services, and other services provided by municipal and county agencies are vital to Boone County. A consolidation study has been conducted by private consultants to examine the advantages and disadvantages of combining some city and county services, including law enforcement and utilities.

Police

The Cities of Florence and Walton have their own police force, while Union utilizes the services of the Boone County Police and the Boone County Sheriff. There has been discussion regarding the consolidation of the Police and Sheriff services. Florence currently has a police force of over 51 officers including 2 bicycle patrol officers. Florence has a fleet of 58 patrol cars. Walton currently has 4 full-time officers and 5 patrol cars.

The remainder of the County, including the City of Union, is served by the County Police and Sheriff Departments. The County Police currently has a force of 61 officers. The Boone County Sheriff's office contains 33 full-time law enforcement personnel.

The two City police departments have their offices in their respective City or Municipal buildings. The County Police and Sheriff offices are in the Boone County Administration Building, in Burlington. The Cincinnati/Northern Kentucky International Airport has a separate force of officers and several dispatchers for the Airport and vicinity.

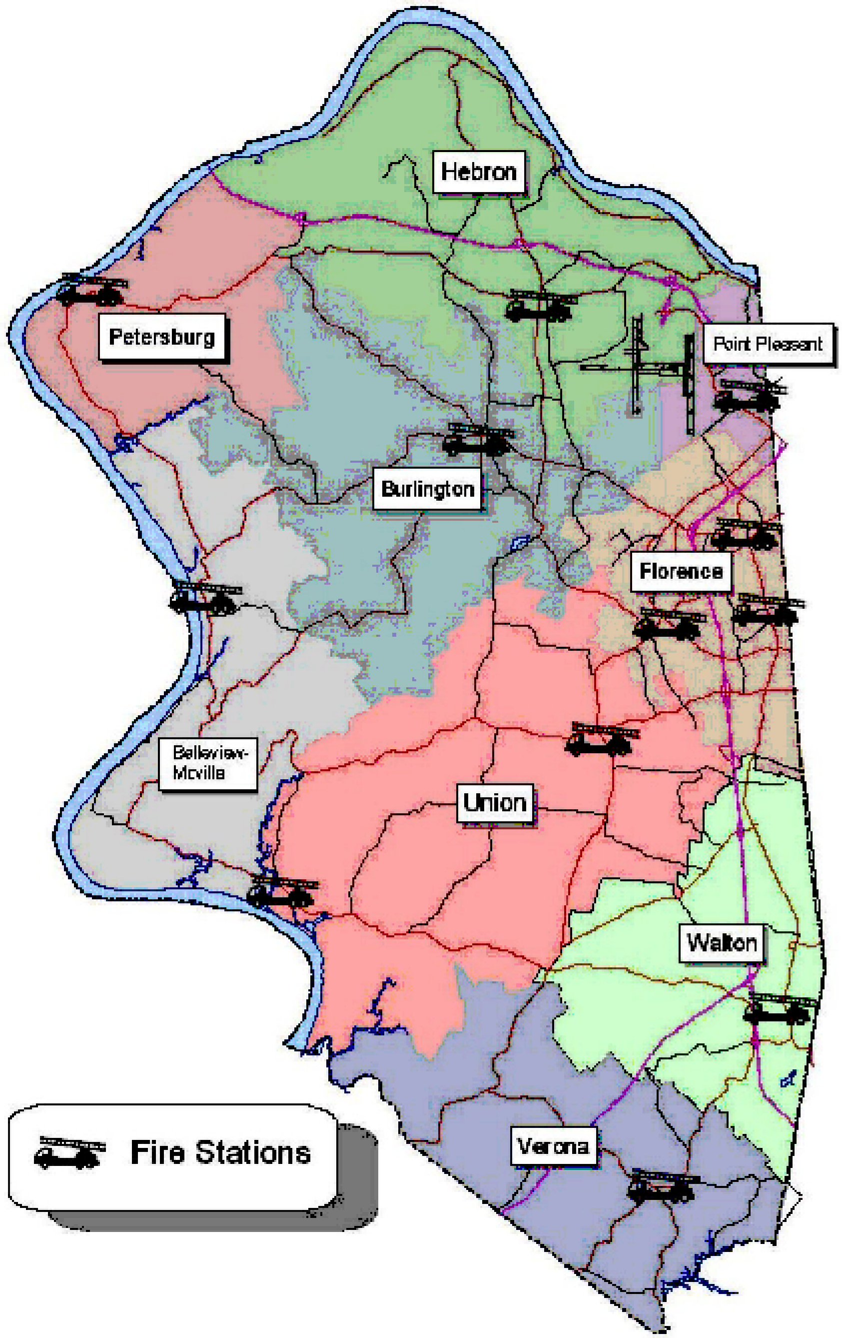
Fire and Rescue

Florence has historically been the only fire district in Boone County where there are full-time staff members for fire fighting, however the Burlington, Hebron, Walton, Union, and Point Pleasant Fire Departments have added full time paid personnel since 1990. Volunteer Departments exist in Belleview/McVille and Petersburg. Fire fighting equipment and personnel are also available at the Greater Cincinnati International Airport. The Airport currently has a full-time force of 53 people. Associated with each district is a Rescue Squad, generally manned by volunteers. **Figure 10.4** shows the district boundaries of all Fire Districts in the County as well as the location of the fire stations.

Several fire districts, such as Burlington, Hebron, Pt. Pleasant, Union, Florence, and Walton have experienced increasing demands for fire protection. The Hebron fire station recently expanded and a new fire station is in the works for the northern portion of their district. Furthermore, a new fire station is under construction for the Burlington fire district which will replace the existing building. The new facility is scheduled to open in 2001. Full-time fire personnel and paramedics will increasingly be necessary in each of these growing districts. This is especially important as new schools and other facilities are built that operate during the daytime hours. These are historically inconvenient times for volunteer districts because they coincide with typical work hours.

With the rapid growth of Boone County and the accompanying major roadways, transportation of hazardous materials and the emergency response to leaks and accidents will become increasingly important. Fire and rescue departments must be equipped and trained to deal with such emergencies.

Figure 10.4 - Fire Districts



To coordinate emergency response, new communication and data systems have been implemented at the new communications center at the Florence Government Center. This incorporates the Boone County GIS and should in the future incorporate mobile graphics terminals and automated vehicle location technology for emergency response vehicles.

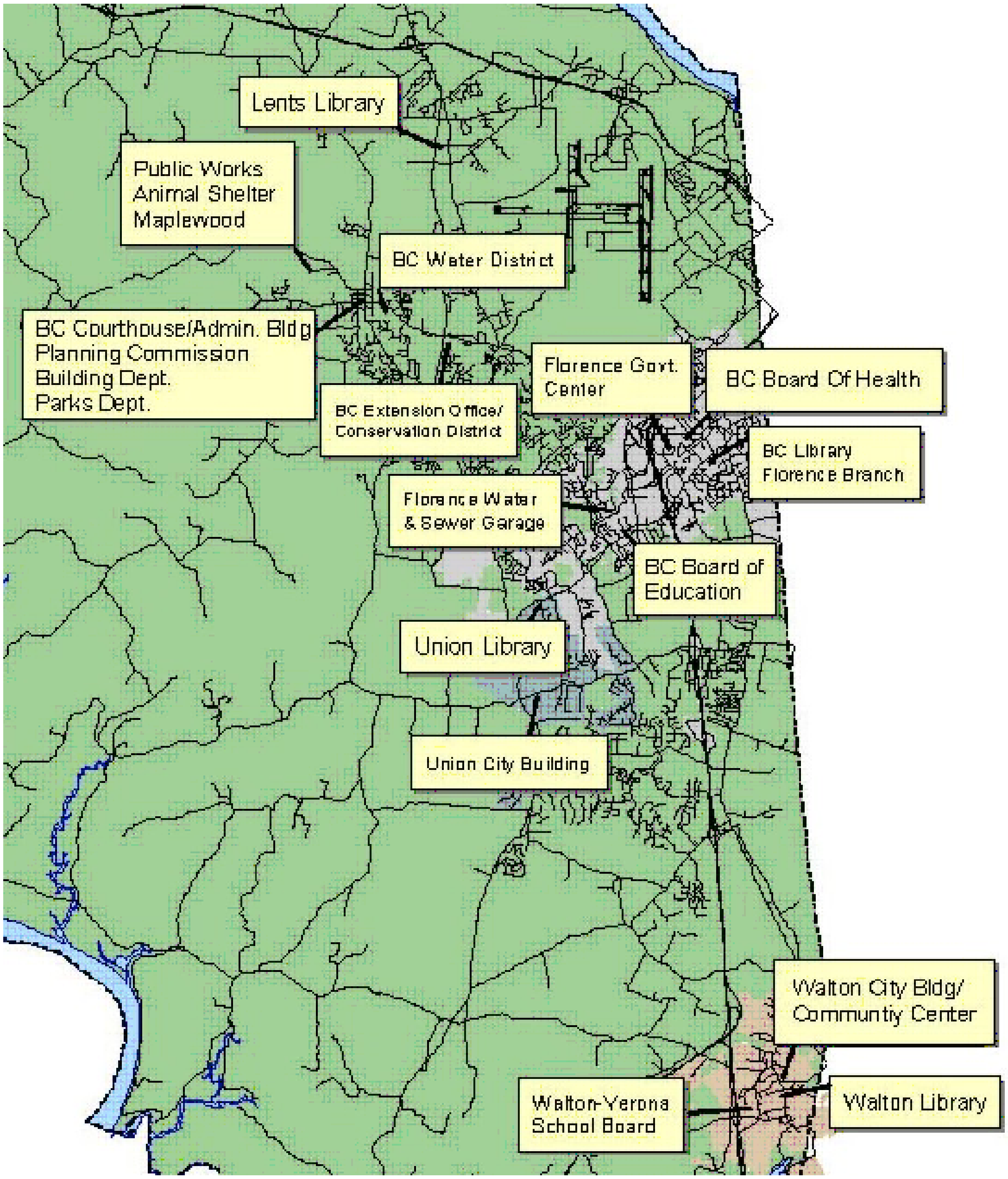
With increasing traffic congestion on the major interstates, increased air traffic, increased resident population and daytime employee population of Boone County, a trauma unit will be necessary to deal with potentially large emergencies. This unit should be somewhere near I-75 and near the Florence area. Currently, trauma situations are flown by helicopter to the trauma unit at University Hospital in Cincinnati. Lastly, a new trend of urgent care facilities are appearing across the region which provides 24-hour care that may not be deemed an emergency. It is anticipated that these facilities will continue to appear in Boone County.

Municipal/County Offices

Each of the municipalities within the County operate their offices out of a City or Municipal building. Each municipal building provides a central location within the community for public services. A municipal complex on Ewing Blvd was recently constructed to house the City of Florence offices as well as other government agencies. Expansion of this complex could include even more public services and needed meeting facilities which would serve the entire community. **Figure 10.5** shows the general location of the County and Municipal offices.

Boone County Government Administrative offices were originally spread throughout the town of Burlington providing no central location for services. Although the Boone County Administration Building was completed in 1982, it is experiencing severe space limitations. Some agencies, including the Boone County Planning Commission, have begun to move out of the building, beginning the decentralization process again. A new justice center planned to begin construction in 2001 will relieve the space problems and should provide for the re-centralization of county offices and services. Such facilities, however, would

Figure 10.5
County & Municipal Offices



need to be developed carefully to protect the historic and residential character of central Burlington.

The Boone County Planning Commission is an important agency that will become an increasingly vital tool for the community to deal with rapid growth. Boone County is in a beneficial situation in that the Commission is a joint planning commission and is responsible for directing land use and development for Boone County, as well as the three cities of Florence, Union, and Walton. As a result, the four legislative bodies operate under the same Comprehensive Plan and consistent regulations.

The Planning Commission has historically functioned mainly by reviewing development plans and managing growth, with the assistance of four boards of adjustment. The overall goal for land use regulation in Boone County is a balance between the right of the property owner to utilize land for economic purposes with the protection of public health safety and welfare. The chief tool for accomplishing this task has been zoning regulations and subdivision regulations, but the future likely holds new methods of regulating land use and affecting infrastructure provisions.

The Planning Commission has recently been restructured to be more proactive. Its future role will be of helping the community both solve problems and pursue opportunities.

EDUCATION

There are two public school systems in Boone County, the Boone County School District and the Walton-Verona Independent School District. Each system offers education for grades 1 through 12 along with kindergarten classes. Both districts excelled in the Kentucky Core Content Test with Boone County placing sixth in the state for county districts and Walton-Verona finishing fourth of all the state's independent districts. Throughout Boone County there are also several private/parochial schools.

Boone County School District
The Boone County School District currently operates 18 schools within the County. These schools are as follows:

Elementary Level	Middle School Level	High School Level
Burlington	Conner	Boone County
Stephens	Ockerman	Conner
Yealey	Gray	Ryle
Goodridge	Jones	
New Haven		
Florence		
Ockerman		
Collins		
Kelly		
Erpenbeck		
Northpointe		

The Boone County District has an enrollment, as of the beginning of the 2000-2001 school year, of 13,167 in grades kindergarten through 12. This represents a 22% percent increase since the spring of 1994. Because of the dynamics of population migration in and out of Boone County, the usual population pyramid approach to forecasting future enrollments is often not reliable. The school district has to examine many factors in addition to natural population increase including future land uses as foreseen by the 2000 Comprehensive Plan. **Table 10.1** details the current enrollment of and the designed capacity of each school. **Figure 10.6** shows the general location of the schools in the county.

Elementary Schools - Erpenbeck Elementary and Northpointe Elementary have both been constructed since the 1995 Comprehensive Plan update. Burlington Elementary is currently undergoing major renovation in order to increase the school capacity.

Enrollment is generally greater than the designed capacity, even with classroom additions and mobile classrooms. Concentric locations of elementary schools have made the distribution of students more difficult without bussing children excessive distances. Major redistricting efforts for the new Erpenbeck and Northpointe elementary schools utilized the Boone County GIS, which is also being used in the planning for the most efficient locations for new schools in the future as the Boone County student population continues to grow.

Middle High Schools - The middle schools are all operating near or above capacity. Although they are all located in the eastern section of the county, they are strategically placed so that the rural sections of the county (south and west) are directly accessible by road. A redistricting effort will likely be initiated within the next couple of years in order to accommodate a possible new middle school needed to handle the large amount of students coming from the elementary schools.

High Schools - Currently, two high schools in the county are operating over capacity. These schools are Boone County High School and Conner High School. Like the middle schools, the high schools are located in the most populous areas with convenient road access to most of the county.

Table 10.1 - Schools In Boone County

BOONE COUNTY

SCHOOL	ENROLLMENT 1986	1989	1993	2000	DESIGN CAPACITY
Burlington Elementary	810	901	567	628	680
Collins Elementary			622	566	599
Erpenbeck Elementary				798	
Florence Elementary	798	680	654	528	900
Goodridge Elementary	651	754	516	549	750
Hamilton Elementary	145				
Kelly Elementary		415	329	306	368
New Haven Elementary	474	664	617	629	510
North Pointe Elementary				462	
Ockerman Elementary	793	884	608	639	840
Petersburg Elementary	90				
Stephens Elementary			595	621	621
Yealey Elementary	673	860	597	597	720
Elementary sub-total	***4,434***	***5,158***	***5,105***	***6,323***	***5,988***
Conner Middle	814	739	891	1092	900
Gray Middle				780	600
Jones Middle	705	680	656	447	600
Ockerman Middle	738	884	781	728	867
Junior High sub-total	***2,257***	***2,303***	***2,328***	***3,047***	***2,967***
Boone County High	1,128	1,118	1,118	1,341	1,500
Conner High	777	772	1,088	1,216	867
Ryle High			1,174	1,240	1,000
Senior High sub-total	***1,905***	***1,890***	***3,380***	***3,797***	***3,367***
Total	***8,596***	***9,351***	***10,813***	***13,167***	***12,322***

WALTON-VERONA

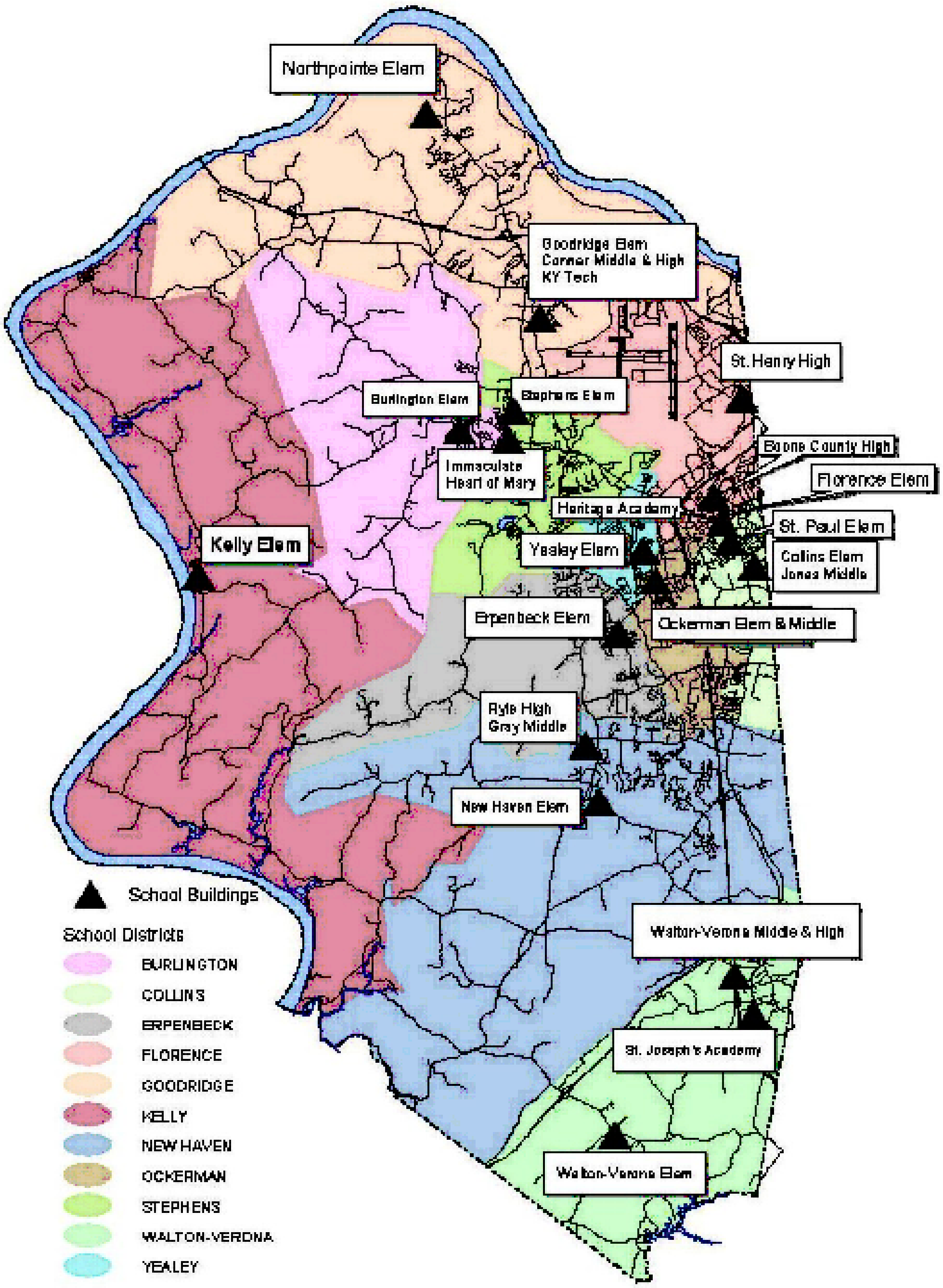
SCHOOL	ENROLLMENT 1986	1989	1993	2000	DESIGN CAPACITY
Elementary (K-6)	337	430	485	509	550
High School (7-12)	405	400	450	497	700
Total	***742***	***830***	***935***	***1006***	***1250***

Walton-Verona School District

Enrollment growth has been relatively slow in the Walton-Verona Schools. Furthermore, population growth projected for that area is not anticipated to be dramatic. The Walton-Verona school system has a year 2000 current enrollment of 1,006 students in grades Kindergarten through 12. This enrollment represents a 7.6% increase since 1993.

This school system operates an elementary school just west of Verona and a high school in Walton. The elementary school (K-6) currently operates near capacity. The high school, which also houses middle school students, is about 200 short of it's total capacity. There are currently plans to either add space

Figure 10.6 - Elementary School Districts



to the high school and move the 6th grade students to that building or to simply build a new high school and use the existing high school building as a middle school.

Public Education Plan

Facilities Plan - In 1991 the Kentucky Education Reform Act (KERA) was passed by the Kentucky General Assembly to totally revise the public educational system in Kentucky. Consequently, both school districts are attempting to comply with KERA requirements. In addition, the Boone County School District has adopted a Master Educational And District Facility Plan for the needs of the District.

An overview of the future educational needs is concentrated on the central portion of the county where the greatest population growth is occurring. As the center of the county becomes more densely populated, more classroom space in the form of new schools or expansions of existing buildings will be necessary in growth areas. The current strategy of school location in the Boone County District is to distribute the location of new schools where areas are experiencing population growth.

The next five to ten years represents an important time period for expansion of the Boone County School District. Continuing industrial development in Boone County increases the tax revenues available to education, however, continuing residential development can increase the needs impacts on the system. The education system must closely coordinate its efforts with land use planning activities. Correlation of school size and location with approved residential development, as well as the Future Land Use Map, will be a major focus of the school district's efforts. This is especially apparent with the elementary schools in the district which are currently overcrowded, and in most cases, have already transferred the sixth grade to nearby middle schools. A new location strategy being considered by the school district is to disperse new school facilities out from the central urbanized Florence area through the use of the Boone County GIS in order to minimize student travel time and problems with traffic congestion.

Because of Boone County's rapid growth, new school facilities should be strategically located in the transportation network and near residential areas they are designed to serve. Besides being easily accessible to new growth areas, this can enable future redistricting to avoid overcrowding. Aside from elementary school construction, the major improvement to the school system will be the planned high school in the Union area, an area of great residential growth potential. Future expansion of the Boone County Vocational School or construction of additional facilities will be necessary as the County becomes more urban. Transportation activities can also have a negative impact on the education system. This is apparent with airport noise impacts on several Boone County schools. Noise mitigation measures, including sound insulation, should be implemented where necessary.

In terms of land acquisition, suitable land donation to the school district by Boone County land owners should be encouraged, as well as the provision of suitable land within planned developments or subdivisions as long as the sites are strategically located to avoid future redistricting problems. The Boone County Zoning Regulations Planned Development Article and the Boone County Subdivision Regulations should be considered for revisions to facilitate such donations or lease arrangements for suitable school sites. Erpenbeck Elementary and Northpointe Elementary are two examples of schools were built through these types of efforts.

In addition, both school districts should examine the potential for working with the Boone County Parks and Recreation Department in providing joint use facilities. This can be beneficial in terms of land costs, maintenance costs, and provision of facilities. This is discussed in detail in the "Recommendations" section of this Plan's Recreation Element and Boone County Parks and Recreation Master Plan.

Private Schools

Currently, six private or parochial schools exist in Boone County:

St. Paul School
U.S. 25 (Dixie Highway) Florence; Enrollment - 625; Grades K-8.
Mary, Queen of Heaven Elementary
Donaldson Road at Turfway Road; Enrollment - 260; Grades PS-8.
Immaculate Heart of Mary School
KY 18; Enrollment - 540; Grades PS-8.
St. Joseph Academy
Needmore Street, Walton; Enrollment - 300; Grades K-8.
Heritage Academy
U.S. 42, Florence; Enrollment - 357; Grades K-12.
St. Henry District High School
Donaldson Rd; Enrollment - 540; Grades 9-12.

These schools are shown on **Figure 10.6**. Private schools ease part of the pressure placed on the public schools as new residents come into the county. As the county continues to grow, new private schools can be expected to emerge.

This plan encourages these schools as long as they meet the standards of public schools. These schools can be expected to be built in conjunction with religious institutions.

Colleges/Trade Schools

At present, there are no colleges located in Boone County. There are, however, several business and trade schools located in the Florence area. These are not regional campuses, but primarily serve individuals from the immediate Northern Kentucky Area. As the population of the County grows, expansion of these schools or construction of new schools can be expected. Furthermore, the continued increase in industrial activity indicated that Boone County would be an ideal location for a state technical college. Any new college or trade schools should locate in urbanized areas that are easily accessible to their students.

Libraries
Libraries are an important educational resource that should be further developed in Boone County. Currently, there are four libraries within the County, including the main library in Florence and branches constructed in Hebron, Walton, and Union. Various educational programs in connection with public schools should be considered in the planning of new facilities.

HEALTH CARE SERVICES

St. Luke Hospital West is currently the only hospital in Boone County. This hospital is located in Florence on Turfway Road, with access to I-71/75. The hospital is a full service facility with 177 beds and a 24-hour full service emergency unit. The hospital added 36,000 square feet improving the emergency and outpatient services since the 1995 Comprehensive Plan update. Presently, this hospital is felt to be adequate to meet the county's needs. The county's medical services are presently well concentrated in the urbanized areas. As the county's residential growth extends to the south and west, the placement of additional medical services will have to reflect this growth pattern.

The Boone County Health Center was previously located on Woodspoint Drive, however, a larger facility was constructed in 1988 on KY 18 in Florence to replace the Woodspoint center. The former Health Center building is now used for a Senior Citizens organization and Adult Learning Center. The Griesser Farm development on KY 18 west of Burlington is proposed to contain an assisted living component in addition to the residential development.

The following are private medical care facilities in the Florence area:

Woodspoint Nursing Home, located on Woodspoint Drive, is a 150 bed facility with 100 intermediate care and 50 skilled care beds.

Florence Park Care Center, located on Burlington Pike in Florence, is a 150 bed facility with 120 intermediate care and 30 skilled care beds, as well as 200 assisted living.

PUBLIC COMMUNICATIONS

The written medium involves two weekly newspapers (Boone County Recorder and Dixie News) and two daily newspapers (Kentucky/Cincinnati Enquirer and Kentucky/Cincinnati Post).

The visual medium involves several television stations located in Cincinnati and cable television. In addition, Intermedia Communications provides cable TV in Boone County.

Wireless Communications

In 1998, the Boone County Planning Commission conducted a study on cellular towers, the regulations concerning them, and actions that Boone County could take to address impacts. The purpose of this study was to provide an informative document on the wireless communication industry, investigate the effects of this technology on Boone County, and develop a stance on how to regulate this industry while reaping the benefits of this technology.

This document and the Boone County Zoning Regulations serve as the official guides for Boone County's local governments to plan for and regulate the siting of cellular antennae towers as stated in House Bill 168. The study sets the foundation and basis for Boone County Planning Commission decisions to recommend approval or denial to the Public Service Commission for the construction of new cellular towers. The Boone County Zoning Regulations has been updated to recognize cellular antennae towers and the related equipment as permitted uses in certain zone districts, and they are subject to a newly created section in the Supplemental Performance Standards section of that ordinance. The Study explores the history of mass communication, the Telecommunications act of 1996, Kentucky Revised

Statues - Chapter 100, and House Bill No. 168. It provides a catalog of existing and proposed wireless facilities in Boone County, assists service providers as a resource to select key locations for future wireless facilities, and includes possible co-location sites. It is the official guide, along with the Boone County Zoning Regulations, for recommending approval or denial to the Public Service Commission regarding new cellular tower construction in Boone County.

Recycling/Garbage Collection
Garbage collection is currently contracted out to private firms. Boone County has reached the point in its development where large scale recycling of garbage is feasible. This plan supports recycling of materials for not only residential uses, but commercial and industrial as well. Recycling should be treated as an important part in a complete Solid Waste Plan for Boone County and surrounding communities.

Recycling efforts need to also include a continual search for economic markets for materials. A well known innovative example of recycling has been instituted in Curitiba, Brazil. Here residents exchange recycled goods for bus fare vouchers. Other methods of promoting recycling as a central function in the community would include convenient facilities for composting. Large scale recycling is a key component of the concept of sustainability, which is addressed in detail in the Economy Element.

CONCLUSION

Public officials are finding nationwide that in most communities revenues are not keeping pace with resources needed to provide services. In the suburbs, this is largely a result of the inefficient pattern of low density development, while in the central cities this is a result of losing resources to the suburbs. This is also why such controversial topics like development moratoriums and impact fees have gotten a lot of nationwide attention over the last several years.

It is well known that currently Boone County has low tax rates compared to more urbanized communities in the metropolitan area. Boone County Fiscal Court's budget situation has experienced positive change over the past 5 year period due to tremendous growth in revenue from commercial and industrial development. This has created a surplus which the Fiscal Court is applying toward infrastructure and other public improvements. To accommodate rapid growth Boone County Government needs to determine whether or not taxes and other revenues adequately pay for public services, and identify the deficiencies as the first steps in preparing an effective Capital Improvement Plan. The costs of providing public facilities and services for different suburban land uses should be determined.

Government needs to find ways of analyzing different sectors of public service together instead of separately. An example would be to connect the efforts of the regional planning agencies striving to reduce air pollution through technical means with the efforts of the many urban forest commissions in the area which will likely improve air quality through entirely different means.

To fulfill the role of government as a problem solver in the future, public involvement on all types of issues is paramount. The old way of top-down government telling the community what it needs is becoming increasingly ineffective. The new way that is gaining momentum nationwide is known as Collaboration. This process is more than coordination or cooperation in that it involves all affected parties, known as stakeholders, in the very beginning of a decision process, as well as in the decision itself. Collaboration is an extremely effective way of finding a solution to a problem in situations where the problem itself cannot be agreed upon by those affected. With the increasingly complex relationship between cities and suburbs, as well as between suburbs, these types of problems are becoming more common than clear cut problems.

LAND USE

This Comprehensive Plan is intended to be a tool for the management of growth and development in Boone County. The growth of the county can have positive benefits for the present and future population if it takes place within the context of a comprehensive plan which recognizes and integrates the various elements that comprise Boone County. This growth management is directed by the Goals and Objectives of this plan, which recommend the efficient use of land resources, physical improvements, public facilities, and protection and enhancement of the natural and social environment. These Goals and Objectives require that growth and development be coordinated and well-planned.

The Land Use Element of this Plan recognizes that substantial growth will take place in portions of Boone County. This plan utilizes a 25-year planning horizon for future land use recommendations, and further, the document is mandated to be updated every five years. This element contains land use classifications for the existing and future land uses, text regarding the future land use for all of the county as divided into 28 sections, and a map identifying specific future land use patterns throughout each of these sections. This plan is a tool designed to enable Boone County and the Planning Commission to manage the location and timing of the various types of development, to assure adequate and fiscally responsible provision of infrastructure and public services in order to assure that adjoining land uses are compatible, and to assure that negative impacts to the environment are minimized. The various types of development will demand different levels of infrastructure as a major component of the Land Use Element.

Urban service areas are those parts of the county where public services, infrastructure, and community facilities are available or planned to support an intense urban development pattern. This is not to say that all of the land within the urban service areas should be developed; there is in fact a special need to protect or maintain some land as open space within these higher density areas. Urban service areas should contain water supply systems, sewage treatment, utilities, police and fire protection, schools, recreation facilities, and easy access to major transportation routes. Future urban service areas, or the expansion of existing urban service areas, should develop where land resources are available and demand is sufficient to assure efficient utilization of proposed public services and infrastructure. Development of future urban service areas should be permitted when adequate services are provided as part of the development or when full public services are made available. Until such services are provided, future urban service areas should only contain low density development, which is compatible with the ultimate planned land uses, but not dependent on full urban services. Areas not anticipated to experience substantial urban growth are planned for less intense, rural development which will create little or no demand for urban services. Any extension of services to these areas could commit them to development and should be undertaken carefully.

The Land Use Element is intended to provide general guidelines for all future development and to permit the management of growth in Boone County. Implementation is essential to the practice of growth management. Currently, the topic is know as “Smart Growth”. This plan anticipates that growth management will be achieved by specific land use regulation tools, including zoning and subdivision regulations, specific land use studies (corridor studies, area studies), public land ownership and land-banking, restrictive covenants, easements, environmental regulations, cooperative agreements with public and private organizations, etc. This growth management should be coordinated with the construction of public infrastructure and the provision of public services. All sites should be designated for the appropriate land use and density of development to assure efficient use of infrastructure and services. Where existing infrastructure and services are not available, the developer of a site must demonstrate that adequate services will be provided, assuming that the development is appropriate through the evaluation of other land use considerations.

The development of this Land Use Element incorporates the existing and projected noise contour information related to the operation of the Cincinnati/Northern Kentucky International Airport, described in the Transportation Element. The projected noise contours may vary over time, thus impacting the type and location of appropriate land uses around the airport. The 1995 Airport Master Plan includes detailed recommendations for land use on airport property. This plan is currently being updated. The profound and important relationship between the operation of the Cincinnati/Northern Kentucky International Airport and Boone County necessitates a careful, cooperative effort between the two entities to assure that aircraft flight routes are coordinated to avoid sensitive existing and future residential areas and public land uses.

This Land Use Element is the culmination of the preceding ten elements of the Boone County Comprehensive Plan. The Land Use Element is based upon the previously approved Goals and Objectives of the Comprehensive Plan and the following Elements: Population, Environment, Economy, Business Activity, Housing, Recreation, Agriculture, Historic Preservation, Public Facilities, and Transportation. For these reasons, the Goals and Objectives for the preceding ten Elements of the comprehensive plan also constitute the Goals and Objectives of the Land Use Element. The Land Use Element recommendations are based upon the specific data and recommendations of the other elements of this comprehensive plan. Compliance with the other elements of this Plan will result in the development of Boone County as specified in the Land Use Element.

2000 EXISTING AND FUTURE LAND USE CLASSIFICATIONS

The existing and future land uses in Boone County have been identified in this Element with basic classifications. These classifications, based upon the type and density of use, are described below. For the purpose of these land use classifications, density is defined as: gross density - the average number of units per acre for the entire acreage of a development. Except where noted, the classifications pertain to both the existing and future Land Use Maps.

Agriculture (A) (1999 Existing Land Use Map only) - Agricultural activity and abandoned, overgrown fields that have not yet reverted to woodland.

Woodlands (W) (1999 Existing Land Use Map only) - Mature wooded areas of greater than one acre.

Open Space (OS) (1999 Existing Land Use Map only) - Woods, fields, and future development areas adjoin urban uses within the urbanized portion of Boone County.

Rural Lands (RL) (2025 Future Land Use Map only) **-** Wooded, agricultural, recreational, or low density residential uses of up to one dwelling unit per two acres for the 25 year land use plan. Residential construction in Rural Lands does not occur in a formal subdivision.

Developmentally Sensitive (DS) (2025 Future Land Use Map only) - Areas that have an existing slope of twenty percent or greater for a height of 20 meters, or have unique soil or flooding characteristics which limit the ability of an area to support urban development, or contain significant wooded areas, creeks, wildlife habitat or other natural features that are important to a site's stability and visual character. In addition, developmentally sensitive areas may, in the future, be defined and protected due to historical or visual importance. Any development on land identified as Developmentally Sensitive must be carefully assessed by the developer and the Planning Commission to determine the ability of the land to support the proposed project. The land use priority for areas designated Developmentally Sensitive is preservation of the existing environment, as opposed to development of the land. This shall act as a guideline for any project proposed in Developmentally Sensitive areas; specific sites designated as Developmentally Sensitive require more detailed inventories of soil, slope, wildlife habitat, vegetation, and other possible physical constraints as part of the development plans. These inventories shall be used, along with engineering studies, to determine whether an area designated Developmentally Sensitive can be developed in a fashion which is sensitive to the existing site characteristics. The Developmentally

Sensitive areas of Boone County have been identified by utilizing United States Department of Agriculture Natural Resources Conservation Service (formerly Soil Conservation Service) data and mapping, through the Boone County Geographic Information System (GIS). The degree of accuracy of these areas is intended to locate general areas of concern. Actual site assessments will determine the exact boundaries of Developmentally Sensitive areas in Boone County at the time of development, or through a detailed county-wide inventory.

Rural Density Residential (RD) - Low density residential uses of up to one dwelling unit per acre, which are not part of a formal subdivision.

Suburban Residential (SR) - Single family housing of up to four units per acre. This classification also includes any low density or estate residential developed as a formal subdivision.

High Suburban Density Residential (HSD) - Single-family and/or attached housing of up to 8 dwelling units per acre. This classification is typified by townhouse, condominium, and zero-lot line development, and also pertains to existing mobile home parks.

Urban Density Residential (UD) - Attached housing, generally condominiums or apartments, of over 8 dwelling units per acre.

Public/Institutional (P) - Government offices, schools, libraries, churches, cemeteries, fairgrounds, maintenance areas, etc.

Transportation (T) - Airports, major four lane roads, interstates, and interchanges.

Recreation (R) - Public and commercial outdoor recreation including golf courses, parks, race tracks, etc.

Commercial (C) - Retail, corporate and professional office, interchange commercial, indoor commercial recreation, restaurants, services, etc.

Industrial (I) - Manufacturing, wholesale, warehousing, distribution, assembly, mining, and terminal uses.

Business Park (BP) - A mix of office warehouse, research, office, and light industrial uses in a park like setting with large building setbacks, low floor area ratio, integrated pedestrian and recreation facilities, constant architectural and signage theme, extensive landscaped areas, and attractive entrance treatment. This land use is recommended for high visibility areas and transition areas between industrial and residential land uses.

FUTURE LAND USE DEVELOPMENT GUIDELINES

There are a number of general development guidelines which are applicable to all future growth in Boone County, regardless of type or scale. These guidelines are intended to mitigate the impacts of growth on the existing land uses, adjoining properties, public infrastructure, and the quality of life and safety in the County. These guidelines represent some of the items which the Planning Commission includes in the review of all projects proposed for Boone County. These guidelines are detailed below.

Utilization of Existing Vegetation and Topography

Developments in Boone County should begin with an assessment of the existing site features to determine positive and useful attributes, as well as features which should or can be preserved. Development design should incorporate the use of these attributes for the benefit of the development and the County as a whole, rather than leveling an entire site to meet a pre-conceived project design. Development plans should identify such areas, and delineate disturb limits to protect those areas that have been defined.

Buffering

Developments in Boone County must recognize the potential impacts upon adjoining land uses and incorporate a transition of land uses, building setbacks, and/or landscaping to minimize these impacts. Potential impacts include visual, noise or vibrations, odors, dust, smoke, and light. Buffering to mitigate these impacts should be an integral part of the design of proposed projects; existing site features should be used in meeting this guideline. Developments should provide buffering along public roadways, to soften the visual impact. Appropriate wooded areas and stream valleys should remain as greenbelts and open space within developments and between developments. Developments proposed adjacent to planned or established greenbelts should provide pedestrian access where appropriate. Specific greenbelt studies should be conducted that examine Boone County's stream valleys and prominent wooded areas as permanent buffers or community separators. Natural green space benefits the community as well as encouraging developers to create innovative developments through clustering of buildings and impermeable area.

Landscaping

Developments in Boone County must include landscaping to accompany the proposed project. This landscaping should be designed to improve the public view of a development, and should be incorporated into parking lots and other vehicle circulation areas as well as within open spaces and around structures. Landscaping is intended to minimize the visual impacts of the development from adjoining properties and roadways. The amount of heat absorbed by impervious cover from sun radiation is decreased by landscaping, which reduces energy costs. Landscaping also helps to purify the air of harmful pollutants, reducing health impacts.

Developments along major roadways in Boone County must include landscaping and/or the use of berms between the development and the right-of-way in order to promote the aesthetic appearance from the roads and to facilitate the compatibility of differing land uses.

Stormwater Management and Erosion Control

Developments in Boone County must recognize the potential impacts of stormwater run off. Developments must design and incorporate adequate provisions for the channelization and control of the rate of stormwater flow on and from the site. Further, control and mitigation practices for erosion associated with developments must be provided. At a minimum, developments must seed and mulch all graded areas and provide siltation controls. Stormwater management and erosion control measures must be concurrent with site work in order to be effective.

Access Management

Developments in Boone County must recognize the potential impacts of associated traffic on adjoining properties and transportation systems. The need exists to protect the capacity of the existing roadway network, and to plan improvements to accommodate new development and travel patterns. Access management provisions include the coordination of curb cuts, adequate corner clearance and site distance for access points, adequate space between access points, shared access points and parking facilities, and provisions for access connections to adjoining properties, and dedication of public right-of-way. In subdividing property, arterials or collectors should not be used for direct access to lots, rather a system of local streets should feed into the collector and arterial system.

Transportation and Pedestrian Network

Developments in Boone County must be designed, where appropriate, to improve the County's transportation network system of roadway classification and function must be used in the planning for and designing of new developments. Collector roadways should be extended and developed to provide for the safe movement of traffic through and between subdivisions. Development along existing arterials and collector roadways should not have direct driveway access, but be served by a local street. Appropriate road connections should be constructed to provide alternate routes for traffic to and through specific projects and to enhance the capacity of existing streets. The traditional grid system can provide an alternative to typical suburban design. Parallel and frontage roads should be used to minimize impacts of individual sites on collector and arterial roadways. Appropriate pedestrian networks should be incorporated into the design of developments which will generate or experience significant pedestrian use. These networks should not only provide internal paths, but should provide connections to adjoining uses where appropriate. Public open space and recreation sites should be connected by bicycle and pedestrian paths where appropriate.

Transit Oriented Development (TOD) is discussed in detail in the Transportation Element, and should be examined as a future direction in Boone County development patterns.

Design, Signs, and Historic Preservation

Developments in Boone County should give consideration to the overall design of the area. Design should be a primary concern at the early stages of the development, with an emphasis on the aesthetic impact of the proposed use. The minimal use of signs is encouraged; signage should be adequate to identify a specific development, but should not be used as a means to compete for motorist attention. The objective is to avoid the confusion and/or distraction of motorists, and to avoid the potential negative impacts of signs on the visual appearance of a development or corridor. Overhead utility lines should be placed underground wherever possible, and junction boxes screened from public view. Neo-traditional residential and commercial development should be encouraged to provide quality development that blends with the natural or historic character of parts of Boone County. This Comprehensive Plan encourages the restoration, renovation and/or adaptive re-use of historically significant structures in Boone County.

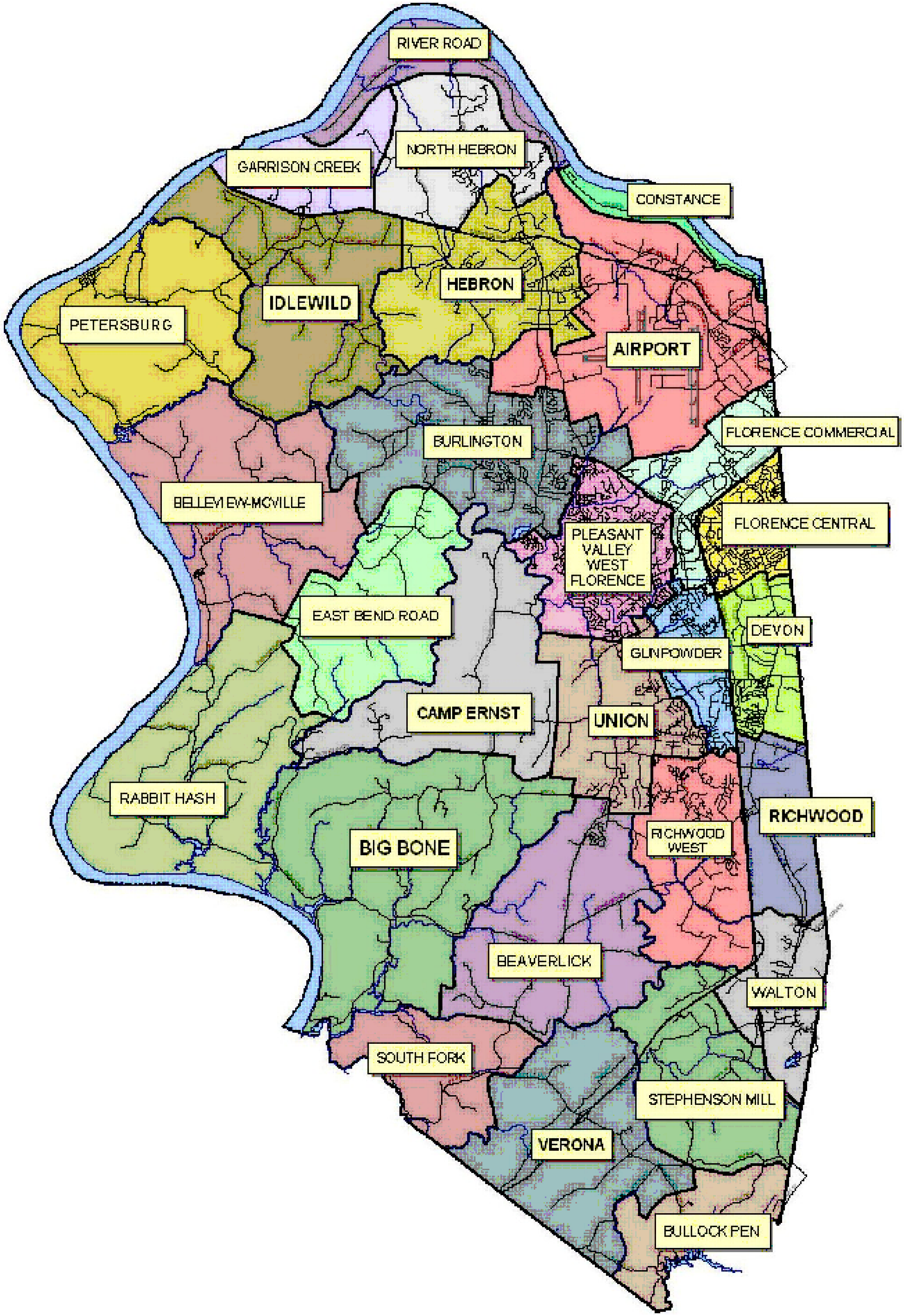
The proper application of these guidelines help, in part, to achieve an overall objective of this Comprehensive Plan. This goal states that proper future growth management for Boone County is implemented. As a minimum, proper design and development must include the consideration and application of the above guidelines.

LAND USE MAPS

An Existing Land Use Map, accurate to March 1999, and a Future Land Use Map have been produced with the use of the Boone County Geographic Information System (GIS) program. The maps are intended to be used in tandem with the accompanying text below; the future land use boundaries are approximate and subject to refinement and interpretation by the Planning Commission and county legislative bodies. The text and map should be used as a tool to aid in managing growth in Boone County. This Comprehensive Plan provides a 25 year outlook for land use, while zoning is typically treated as a five year tool. The zoning map communicates what immediate uses can occur on property based on infrastructure and other considerations. The Future Land Use Map should not be used as a zoning map. Unlike the zoning map, it does not portray land use regulations parcel by parcel. The Future Land Use Map is one tool used to guide the formation of zoning regulations.

The 2025 Future Land Use Map contains some differences from the 2020 Map that was adopted in 1995. Additional residential and industrial areas are carefully located near existing or planned infrastructure. **Figure 12.1** shows the geographic areas corresponding to the Land Use text that have been reorganized since 1995. Based on the draft 2025 Future Land Use Map, an ultimate population of 363,073 people could be accommodated using 2.5 people per household and the following residential dwellings per acre: RL - 0.5 dwellings per acre; RD - 1.0 dwellings per acre; SR - 3.0dwellings per acre; HSD - 6.0 dwellings per acre; UD - 10.0 dwellings per acre.

Figure 12.1 - Characteristic Areas



Florence Central
The City of Florence developed from an aggregate of residential subdivisions, and is the population center of Boone County. The city is experiencing considerable residential growth due primarily to annexation. Florence did not develop in the traditional manner of cities, with established areas of concentrated commercial, industrial, and residential uses; instead, the uses were intermixed. For instance, the city's central business district is not in a precise location, but rather is a combination of suburban business districts. This factor, above all others, has molded Florence into a suburban city. This is evidenced by continuing annexation of developable property.

The city contains a valuable asset in its Main Street area. The Florence Main Street Zoning Study, which was adopted by the City in 1994, identifies the uniqueness of this area and ways of improving the vitality and visual appearance of Main Street. With careful planning and protection, development of old Stringtown could transform this area into a pedestrian-oriented center. The City of Florence has helped the area by constructing a new streetscape and addressing utility issues. The zoning study should be reexamined in the near future to determine the effectiveness of the study and whether the scope of the study should be expanded to incorporated additional areas within the Main Street Study. New buildings in the study area must be designed and located to reinforce the area's character identified in the Study.

Development of the Turfway Road area between U.S. 25 and KY 18 should remain much the same, and must meet access management guidelines. Development in the area west of I-75 should follow the guidelines of the Houston-Donaldson Study. Additionally, a study for the Dream Street area should be prepared.

Light rail will likely connect to major employment areas such as the airport, Mall Road, Houston Road, the Northern Kentucky Industrial Park, and concentrated residential areas. Much of Florence's future growth will occur from annexation, however, the City should balance this annexation growth with high density infill and redevelopment growth along the major transportation corridor of the City. As described in the Housing Element, the condition of older housing in Florence should be specifically addressed. The concept of Transit Oriented Developments should be explored within the City of Florence. Higher density residential development should occur where it can serve as a buffer between industrial or commercial intrusion on single-family residential areas or where it is easily accessible. Examples of the former include development along Industrial Road and west to the interstate, and near the Turfway Interchange. Examples of the latter include the Village Parke Condominiums on the old Florence Drive-In site. Overall, a mixing of uses can be accommodated within the City of Florence and the existing residential communities can be protected if proper buffers and design are incorporated into the developments. The redevelopment of property into commercial uses must be carefully designed in order to minimize impact of adjacent residential property.

In summary, growth in this section of Boone County must be balanced among three major land users, commercial, industrial, and residential development. Growth in one land use must consider the location of existing and planned developments of the other two.

Florence Commercial Area
The Mall Road area should continue to develop as a regionally-oriented commercial district. This regionally-oriented growth should be confined to Mall Road and Houston Road, and should not expand on to U.S. 42, KY 18 or Hopeful Church Road. However, the highway-scaled, automobile-oriented appearance of this growth should be minimized through the provision of pedestrian improvements, smaller facilities within outlots in conjunction with larger strip-style centers, multiple, scattered parking areas in lieu of large central parking areas, and street trees along Mall Road. This growth should also include multi-modal transportation amenities. Any commercial development in the Houston Road area should be consistent with the recommendations of the Houston-Donaldson Study. The Mall Road Study should be updated in detail.

The northern portion of this section is within the Houston-Donaldson Study area. The Study recommends an employment district which would include a mix of office, commercial, and industrial uses for the existing

Houston Road corridor, with a preferred emphasis on office development along I-75 and high-technology industrial uses west of Houston Road. The Houston Donaldson Study further details these developments.

Commercial development in this section should remain near the arterial roads or close to the interstate. These consumer service and traffic-oriented developments must be contained to specific areas adjacent to the arterial roads and interstate. The coordination of curb cuts and parking lot connections in the already developed areas must occur in order to maintain a reasonable ease of travel along these roads. Undeveloped tracts of commercial land should connect to and coordinate with any adjoining commercial, office, or industrial development in existence. Where no development has yet occurred, provisions for Access Management must be made for future development. This includes the use of frontage roads as well as parking lot connections and shared curb cuts.

Regionally-oriented commercial development should be confined to Mall Road and the Houston Road area. A large tract of land with commercial potential is only partially developed on Mall Road. This property, called the Berkshire Farm, should be developed in a cohesive planned manner, both internally and as it relates to other developments in the area. Ingress to the site should be encouraged primarily from Mall Road, with access from U.S. 42 limited to right-turn-in only. To maintain the ease of traffic on Mall Road, frontage roads, common parking areas, and shared curb cuts should occur in the undeveloped areas. The visual appearance of commercial areas in general, and of Mall Road in particular, should be enhanced through the design of buildings, landscaping, signs, and arrangement of buildings. Attention to aesthetic impacts of proposed developments should be part of all phases of the review process. The Mall Road Study of 1991 made several recommendations which have not been implemented. This study should be reexamined and updated, and more effective ways should be devised to implement the studies recommendations.

Development along U.S. 42 from Mall Road to the Ewing Boulevard area should continue to be a mixture of professional and local, traffic-oriented commercial activity. The area east of I-75, north of U.S. 42, and south of KY 18 shall be developed in a cohesive manner to form a city center for Florence. The Parkway Corridor Study, which was developed for this area, should be updated and a more definitive direction should be developed for the area. A mixture of office, retail, commercial, recreation, and residential development is the goal.

Pleasant Valley - West Florence Area

This section of Boone County includes some of the western growth areas of Florence, including Mall Road and KY 18. It also contains the some of the most rapidly growing residential areas in the county, particularly from KY 18 south to Union.

Hopeful Church Road should continue to serve as a residential corridor, and no commercial uses should occur past the KY 18 or U.S. 42 frontage properties. The proposed commercial land uses on KY 18 should be planned with careful Access Management, including continuous parallel roadways. Development should create commercial clusters rather than strip centers which parallel KY 18. These commercial uses must also be designed to be compatible with existing and proposed residential developments along KY 18. A specific study should be conducted regarding the connection of the northern half of Hopeful Church Road with Merchants Street. In addition, connections should be provided between Hopeful Church Road and Mall Road.

The large area between Hopeful Road and Oakbrook Road, south of KY 18 to Pleasant Valley Road, should develop in a Suburban Residential fashion. The area must develop with local access and limited access collector road connections as a high priority. These should include the connection of Oakbrook Road to Pebble Creek Drive; Beemon Lane to Pleasant Valley Road; Cayton Road to Pleasant Valley Road; and, an east-west connector between Pleasant Valley Road and Hopeful Church Road, south of Stonegate Meadows. These collector road extensions should not allow parking or driveway access in order to facilitate the movement of traffic through the area, and should include multi-modal elements such as pedestrian paths and bike lanes, and bus stop areas.

Commercial development in the U.S. 42, Pleasant Valley Road intersection area should be of a local, rather than a regional scale, and should incorporate the reconstruction of Old Toll Road for use as an access road. Access Management at the intersection of U.S. 42 and Pleasant Valley should include access roads to serve commercial developments. Mixed-use development, that has commercial uses focused along U.S. 42 and that has varying types of residential uses, should occur to the southwest of this intersection on both sides of U.S. 42. The intensities of these commercial uses, in terms of building intensities, the size and style of individual structures, and the range of uses permitted, should begin with a broader range of commercial uses near the intersection and gradually decline to smaller-scaled office and institutional uses in the vicinity of Farmview Subdivision and the Florence/Union corporate boundary. Further, creative building layout and orientation should be used in lieu of strip-style commercial development, and Planned Development Overlay Districts should be utilized. Farmview Subdivision should continue to develop in a High Suburban Density Residential manner. All development in this area should be viewed as part of an entryway to both the Cities of Florence and Union.

The remaining portions of this section of Boone County should develop in a Suburban Residential manner. Major subdivisions in the area should provide internal connector roads with no driveway access or parking. Improvements to Fowlers Creek Road and bridges over Gunpowder Creek could provide connections from subdivisions along U.S. 42 and Pleasant Valley Road to the Camp Ernst Road area; these connections should be aligned with existing or planned intersections on U.S. 42 and Pleasant Valley Road. The Kentucky Transportation Cabinet is currently conducting a scoping study for the KY 237 and KY 536 corridors.

It is recommended that the South Fork/Gunpowder Creek tributary valleys be utilized for Recreation purposes, including the provision of a greenway system along the creek corridors as adjoining areas are developed. The greenway system should provide for interconnecting pathways between subdivision destinations in the area as well as provide passive recreational facilities.

Union Area
This section of Boone County contains the City of Union and a substantial portion of Hathaway Road and U.S. 42. In general, this section should experience considerable residential growth due to Union's current residential nature, growth associated with the City of Florence, and proposed improvements to U.S. 42. For these reasons, the 2000 Union Town Plan was prepared by the Boone County Planning Commission, City of Union, and Boone County Fiscal Court. The plan's recommendations are shown on the 2025 Future Land Use Map and also affect the Boone County Zoning Regulations.

New subdivisions should be developed with connecting roads providing alternative routes for residential traffic and decreasing the impact on major roadways. Road connections should include multi-modal elements such as pedestrian paths and bike lanes, and bus stops; Wetherington Boulevard is an example. Further road connections, that prohibit driveway access and street parking should occur between U.S. 42, Camp Ernst Road, Longbranch Road, and Hathaway Road. Hathaway Road needs special attention to protect this important east-west route. Water and sewer infrastructure should accompany such road connections and extensions as to prevent premature, estate-style residential development associated with sprawl, and to prevent frontage subdivisions that result in poor access management. Development proposals shall be carefully evaluated relative to the area-wide road network and any necessary contributions to the network.

Improvements to Mt. Zion Road, between the Union city center and the interchange, should be accompanied by water and sewer improvements to accommodate the anticipated residential growth. An elementary school will be needed at the Ryle High School site, since Erpenbeck Elementary is already at capacity.

The 1995 Comprehensive Plan recommended that:

> *the Small Community Overlay District should be expanded, or a new overlay district should be created, to incorporate this entire area and be utilized to encourage the development of a centralized,*

downtown area that coincides with the final alignment of U.S. 42. It was recommended that this downtown area be characterized by reduced setbacks, shared parking areas located between and behind buildings, and a pedestrian-oriented streetscape that builds upon the existing small town fabric. The downtown uses were recommended to include a variety of resident-oriented services and retail, and may include residential uses on second or subsequent floors.

Neighborhood-oriented commercial uses may be provided along U.S. 42 between Farmview Subdivision and the Union city center in the form of small-scale nodes that are focused upon existing and future road intersections; regional retail uses are not appropriate in the U.S. 42 corridor. The physical development of these commercial nodes should be reflective of the existing rural environment and should include such elements as vernacular influenced architectural treatments, site planning arrangements reflective of the farmsteads in the area, parking areas situated at the sides and rear of buildings, tree lines along side property lines, and post and rail fencing. Residential subdivisions in this area should be cluster form so that the open space areas and pastures along U.S. 42 are maintained; density bonuses are encouraged for residential subdivisions in this area to accomplish this purpose. The new alignment of U.S. 42 offers a unique opportunity to prepare a model plan of a Transit Oriented Development (TOD) for the new corridor. This Comprehensive Plan recommends that such a specific area plan, that includes design review procedures, be explored for the U.S. 42 corridor between Farmview Subdivision and the south end of the Union city center within a few years of this Plan's adoption.

All major residential developments should provide recreational facilities, or other public facilities, through cooperative efforts between developers, legislative bodies, and other agencies/ organizations. These facilities should be designed not only to serve the residents of the specific subdivision but, where appropriate, to serve surrounding populations in order to mitigate the impacts upon existing facilities. This section of Boone County should develop as a major population area, and sites for recreation and other public facilities should be planned and obtained before prime sites are no longer available or become too costly.

Gunpowder Area

The area south of the Saddlebrook Farms Subdivision along Weaver Road, should develop in an Urban Density Residential manner consistent with this subdivision, with adequate buffering for adjacent to single-family residential uses. Commercial uses should not expand along the west side of the interstate beyond the recently approved addition for Security Self Storage, and the Lion's Park site should remain as a recreation area.

Vacant parcels and existing residences along the south side of US 42 near Dilcrest Drive and Bentley Court may be appropriate for Urban Residential if the developer(s) can demonstrate that proper access management, architecture, and buffering can be provided. An extremely well-designed, low-impact professional office use may be considered for this area, however, the potential developer must submit detailed buffering and building design plans, and demonstrate that the project would establish a positive focal point for the U.S. 42 corridor in addition to minimizing visual, traffic, and stormwater impacts on adjacent residential uses. All developments must provide for connecting parking lots or a frontage road. In addition, right-turn lanes may be required for each development. Development must accommodate plans for double left turn lanes from U.S. 42 to Mall Road. Due to the high visibility of the lots and the need to minimize traffic distractions, minimal signage is recommended.

West of I-75 and along Weaver Road should develop residentially in a similar fashion to Saddlebrook Farms Subdivision. The vacant parcel between the Grammas strip center and the Weaver Road fire station should develop as a low traffic professional office use. This part of Weaver Road is not suitable for commercial driveway access. In addition, a connector road should be completed from Mt. Zion Road to Weaver Road along the west side of I-75. South of this area should remain Suburban Density Residential in nature. Existing tree stands should be preserved to establish the contrast of this area from the Northern Kentucky Industrial Park, and to decrease noise impacts of I-75 and the airport.

Devon Area
This section contains the Northern Kentucky Industrial Park, which is the largest park in the metropolitan region. Expansion and continued development of this employment center is expected to continue over the study period of this Plan. The residential areas to the north of the Park prohibit any expansion in that direction, and industrial expansion should not occur west of the interstate. Development should occur along the east side of the interstate, however, this development should retain the existing tree line to buffer the uses from residential development on the west side of the interstate and to hide the outside storage and parking areas from public view from the interstate. The short term movement of industries should be along Industrial Road into Kenton County, and along the length of Empire Drive. The Park should be encouraged to expand to the south along the Empire Road Connector, and the proposed Weaver Road to Sam Neace Boulevard. In addition, development should continue along U.S. 25 and Weaver Road, and near the railways. Tracts of developable land exist in the area and development depends only upon public utility expansion and an improved road network, including upgraded railroad crossings.

Industrial uses, similar in nature to the Northern Kentucky Industrial Park, should expand southward to Mt. Zion Road, between I-75 and U.S. 25. To the east of U.S. 25 manufacturing and distribution uses should occur. Southward expansion of industry should be tempered by important locational factors, such as appropriate access to the interchange and connections to existing or planned industrial parks. Industrial development to the east of U.S. 25 and the railroad must be accompanied by improvements to important access roads, such as East Mt. Zion Road and East Frogtown Road.

Development at the Mt. Zion interchange should be planned in such a way as to not greatly impact the existing and planned Suburban Density Residential uses in the area. A study is currently being conducted for KY 536 that will examine possible improvements to make this corridor a major arterial route to Campbell County.

The northwest quadrant of the interchange is the ideal location for urban and higher density residential development. The planned church use should provide a more appropriate transition between the urban density residential and the planned suburban density residential to the west. This would be compatible with the residential character of the area, and should provide housing opportunities for employees of the Florence urban area, as well as providing a limit to over-expansion of commercial activity towards Union. Commercial activity associated with the interchange should be concentrated on the east side of the interstate. Access for these commercial uses should be coordinated so that all development can easily access traffic signals. All commercial development should be planned with attention to possible traffic impacts, because this interchange will serve an increasing volume of residential, commercial, and industrial traffic.

South of the interchange, between the interstate and U.S. 25, should develop in a variety of residential uses. The undeveloped land south of Mt. Zion Road is land appropriate for Urban Density residential development or attached affordable housing. Innovative design and affordable construction should provide a good alternative to the mobile home parks that dominate the area, and which create negative visual impacts on the U.S. 25 corridor. Permanent attached housing is also preferable to mobile home park development, because less site preparation is necessary and more open space is retained. Mobile home development should not extend south of the intersection with Maher Road. Industrial growth can occur around the expanded I-75 rest stop, but should provide a buffer to hide outside storage and pavement areas from the rest stop and interstate. The U.S. 25 and Frogtown Road intersection should support locally-oriented commercial uses, however, special attention should be given to controlling and coordinating access points with this area. Multiple street connections are critical in the area south of the Mt. Zion interchange and west of I-75 to avoid burdening specific connections with too much traffic.

Richwood West
Development to the southwest of the Richwood Interchange must continue the Grand National Boulevard connection to Chambers Road. Triple Crown Subdivision provides an important road connection between Richwood Road and Frogtown Road. Other connections between Richwood Road and Frogtown Road

need to occur. The southwest quadrant of I-75 and Frogtown Road, adjacent to the new Frogtown-Richwood Connector Road, should develop as High Suburban Density residential to provide a logical transition of density and a buffer between the major roadways and single family development to the west. However, this area should not include a continuation of the existing mobile home park. Any attached housing in this area must be designed to complement adjacent single-family residential.

Richwood Area

The growth of this section will be impacted in several ways. There are several major influences behind the anticipated growth, including the Northern Kentucky Industrial Park to the north, the Mt. Zion interchange, Weaver Road, development pressures along U.S. 25, the expansion of the I-75 rest stop areas, the extension of public sanitary sewer service, and the Southern Railroad Line. Because of the development pressure all necessary types of infrastructure should increase in scale. This area is bisected by U.S. 25, a major corridor for growth, extending from urbanized Florence to Walton. The fact that it runs parallel to I-75, and is located between the interstate and the railway, makes it an ideal transportation connector. Because of the various existing and future land uses along U.S. 25, it will carry a high volume of mixed traffic types. For this reason, any traffic-intensive or truck-oriented uses shall locate near connections to the interstate, and access management shall be an important consideration on all development along U.S. 25. The Kentucky Transportation Cabinet is considering a major widening of U.S. 25 south to the Richwood area.

Maher Road should not serve industrial traffic because of its design and its dangerous intersection with U.S. 25. Maher Road should remain an enclave of residential uses, and no industrial access should be provided along this road. Industrial uses abutting this residential area must be planned with adequate buffering for the existing and future residential development. The industrial area to the south of Maher Road should be accessed via Frogtown Road, and the possibility of extending East Frogtown Road to connect with Maher Road should be explored because of the better visibility at the railroad crossing and intersection with U.S. 25. The frontage along U.S. 25 is suitable for a mixture of commercial and light industrial activity with proper access management provisions.

Improvements are needed to the Richwood Interchange and to Richwood Road to increase capacity. Commercial development around the interchange area is expected to remain and expand to serve local residents, in addition to highway-related services. Intrusive highway related services should not impact the low density residential uses on the west, and be limited to the east side of I-75. The industrial development should primarily occur on the east side of U.S. 25, and south of the existing commercial area, as well as along Old Lexington Pike. Any heavy industrial uses proposed for Boone County should be directed to this area because of the distance from residential uses and the proximity to rail services. Old Lexington Pike should be upgraded as needed to serve as an access road for these industrial uses. Industrial uses fronting on U.S. 25 should be developed with attention given to adequate aesthetic design and natural vegetation to minimize visual impacts to the residential uses across the highway.

Commercial uses should develop in the northeast quadrant of the Richwood interchange, but further truck-oriented commercial uses in this area should be discouraged because of the existing traffic congestion and topographical constraints of the interchange. The commercial development northwest of the interchange will expand and extend along the interstate. This expansion can occur with the completion of the connector road to Frogtown Road. The commercial areas need to be adequately buffered from the existing residential areas, and should not include uses which require outside display of products. The area to the north of the interstate commercial area and south of the existing mobile home park should develop as commercial uses that are consistent in design and serve the single family residential developments in this area. Care must be taken to mitigate any of the adverse impact of commercial development, due to the proximity of the interstate and residential uses. Commercial development along Richwood Road should be screened from the roadway, and serve the developing residential uses in the Richwood - Union area. Curb cuts should be limited and consolidated wherever possible.

The area east of I-75 and west of U.S. 25, from Richwood Road to Chambers Road, should develop as a Business Park. A buffer should be provided along Chambers Road to residential uses to the south, and no business park access should occur on Chambers Road.

Walton Area
The Walton area should experience gradual commercial, residential, and industrial growth. This growth should result primarily from the Walton Interchange, and its location near the intersection of I-71 and I-75. Walton lies along this regional interstate corridor, between Cincinnati to the north and Louisville, Lexington, and Frankfort to the south, that is generally experiencing demand for industrial development.

The City of Walton is being surrounded by industrial development and zoning to the north, south, and west of the City. Therefore, to ensure the integrity of the central portion of Walton, the area from the former Turner Fishing Lake to Boone Lakes should have a land use designation of Suburban Residential. This would allow the central portion of Walton to experience residential growth in response to the employment growth and utility expansion in the area. Suburban Residential development is occurring south of Chambers Road. The rougher terrain, immediately adjacent to Chambers Road should include lower density residential development that minimizes traffic on this roadway, and fits into the landscape along this highly visible portion of the interstate corridor. The suitability of this area for residential use is enhanced by proximity to developing recreation areas, commercial services, and the Walton-Verona schools. Commercial development along U.S. 25 should also experience infilling, and should remain local in nature. A specific study has been conducted for Walton's Main Street to assess, and protect its historic resources and its small town character.

Residential development is suitable east of Mary Grubbs Highway to the Boone County line; access to these uses should be aligned with the highway. Some commercial uses may be appropriate at the front of this residential area, if designed to serve growing residential uses in the area. Commercial development should also occur at the southeast quadrant of the interchange. However, this development should not be oriented to truck-traffic. Attention should be given to the appearance of industrial uses from the interstate in this area, because it represents the southern entrance into Boone County. Residential uses to the south of the city and east of the interstate should not exceed the Rural Density classification unless adequate sanitary sewer and water services are extended.

The portion of this section north of I-71 and east of I-75 should remain as Rural Density Residential and agricultural uses. The area south of I-71 and Beaver Road, and west of I-75 to Stephenson Mill Road is suitable for light industrial development; access to this industrial area should connect to Beaver Road and Stephenson Mill Road. Urban Density Residential is appropriate to act as a transition between the Suburban Residential and Industrial uses along Stephenson Mill Road. However, before these areas develop, improvements to Stephenson Mill and Beaver Roads will be necessary. In addition, improvements to the intersection of these two roads and the interstate will be necessary. Suburban Residential will be appropriate to the west of Stephenson Mill Road if the utilities are extended into this area. Commercial development of the northwest quadrant of the interchange should be of a type to serve the adjoining industrial area, while the southwest quadrant of the interchange will be dominated by the Flying J development. As described in the Business Activity Element, there should be no further development of commercial uses oriented to truck traffic. The remaining area in this section should be Rural Density Residential or agricultural in nature.

Stephenson Mill Area
This section of Boone County contains the majority of the land between I-71 and I-75. There has been discussion regarding a possible future interchange on I-75 south of Walton, most likely to be located in Kenton County. Although the Future Land Use Map shows Industrial on the west side of I-75 between the railroad tracks and the county line, this development can only occur with the provision of such an interchange and all other utilities. Access to the industrial/business park site must be from the southeast. Much of the land around Mud Lick Creek and its tributaries is Developmentally Sensitive and should not experience any growth. This section also contains the Bavarian landfill site. The land fill should not expand to the south because of the McCoys Fork Creek and should not expand to the north in order to

avoid additional impacts on existing residential uses. The operation and area of the landfill should be evaluated by the Boone County Planning Commission and other appropriate public agencies in order to determine environmental and land use impacts associated with this use.

Verona Area
This section of Boone County is characterized by the town of Verona and the I-71/KY 14 interchange. Local and interstate-related commercial development is appropriate around the interchange. This commercial district should primarily serve the Verona area. Adjacent to this development, south of the interchange, High Suburban Density Residential development can occur. This would provide a higher density residential opportunity in this non-urbanized portion of the county. Development in this area should be encouraged to employ marsh or greenhouse sewage treatment as opposed to extending sewer lines to the area. Access to this residential development should be by a road connection to KY 14 at an adequate distance from the interchange to avoid future traffic congestion. Additional residential development in this section of the county should be Rural Density in nature and should occur along the established roadways. Development along KY 14 should reinforce the rural estate character of Verona Commons Subdivision.

Residential development in the Verona area is encouraged by the availability of public water. The town of Verona should experience limited residential and commercial growth; neo-traditional and Suburban Density development should be encouraged immediately surrounding the town. Commercial development between Verona proper and the interchange should be discouraged in order to preserve the small community nature of the town. As described in the Business Activity element, a detailed study is needed for this area in order to coordinate the residential and commercial development as well as the infrastructure. At the same time, this study could examine the idea of utilizing performance standards as a means of achieving quality development design. Currently, the zoning in this area does not correspond with the Future Land Use Map. This should be evaluated during the county-wide zoning update or though a special study.

Bullock Pen Lake Area
Much of the southern boundary of this small section of Boone County is formed by Bullock-Pen Lake. Any further residential development should be of a Rural Density nature and should occur along the existing roads. Continued residential development of the immediate lake area should be discouraged in order to protect the water resource and recreational uses of the lake. In general, little growth should occur in this section. The growth and development of the section of the county is tied to Crittenden (in Grant County), Verona, and Walton. Any development in this section should be related to these towns. Further residential development around the lake should be discouraged, due to the lack of infrastructure and the importance of preserving Bullock Pen Lake as a water and recreation resource. Generally, this area should remain in Rural Density Residential and agricultural uses.

Burlington Area
This section of Boone County contains Burlington, part of new KY 237, and a significant portion of KY 18. KY 18 and KY 237 are important roads to all of Boone County; the primary function of these roads is to move traffic through the area, with direct access to specific properties being a secondary function. Intersections along KY 18 should continue the existing pattern of spacing of major access points of approximately 600 feet. A parallel roadway network should be developed to provide access to properties fronting on the roadway.

Burlington proper will continue to experience growth-related pressures. The influence of residential subdivisions in the surrounding areas, and the associated traffic, will necessitate improved traffic controls and management, particularly at KY 18 and KY 338. Central Burlington includes a National Register Historic District. Historically important structures should be protected from development pressures, or be subject to appropriate adaptive re-use to retain the character of central Burlington. As Boone County grows, there will be a greater need for public facilities and services. An additional government center should develop in close proximity to the existing Administration Building, however, the placement and design of this structure or parking should not fragment the existing residential areas. A comprehensive

Burlington Plan should be finalized that addresses the unique transportation, parking, public facilities, historic preservation, and subdivision characteristics of the area. Until then, commercial development along KY 18 between Burlington and the KY 237 intersection should be discouraged in order to protect the remaining downtown Burlington businesses.

Development in the area around Rogers Lane should be carefully planned. Important to residential growth in this area is a new road connection between Rogers Lane and East Bend Road. This connection should be closely examined in the Burlington Comprehensive Plan. The remaining portions of this section of Boone County should develop in a Suburban Residential fashion, with the exception of planned High Suburban Density Residential uses between Hickory Hill Subdivision and Ky 18. Subdivision street connections are vital to this area around Burlington to give alternative routes for residents.

The south side of KY 18, between Camp Ernst Road and Burlington, should develop in a mixed residential and commercial fashion. Commercial uses should be of a local service variety and should be evaluated as to traffic generation, visual impact and buffering. Strip commercial development should not occur, rather an innovative mixing of Office, High Suburban and Urban Density Residential uses, and some local commercial uses should be provided. This will create a transition into the continuing residential development occurring off of the KY 18 corridor. All development along the south side of KY 18 toward Burlington must use Access Management, including parallel roads, shared curb cuts, and adequate turning-lane provisions in order to maintain safety on this high volume route. This area provides another excellent opportunity for a TOD featuring high density residential and employment opportunity due to the intersection becoming a major crossroads in the county. This development should connect to Camp Ernst Road and include improvements to that road.

The intersection of KY 18 and Limaburg Road should also develop locally-oriented commercial uses. Commercial development along the north side of KY 18, between Limaburg Road and Zig-Zag Road should serve local residential needs, and include office uses in order to avoid a continuous commercial strip. Existing pockets of mature wooded areas should remain intact to provide a visual transition into the industrial uses planned north of KY 18 as indicated on the Future Land Use Map. Industrial development should be served by a new road system that includes a major north-south connection between KY 18 and the Mineola Pike and Turfway Road areas as recommended in the Northeast Boone County Transportation Study and the 1996 Boone County Transportation Plan. The plan also recommends a roadway extending west from this connection to the KY 237/Conrad Lane area. The location and function of these roads are very important. The location of the terminus of this north-south airport road will greatly impact current and future traffic patterns on KY 18, and must be given careful consideration. The primary function of both roads should be to move traffic through the area, not to serve as access for adjoining parcels.

Limaburg Creek Road is inadequate to carry industrial traffic and intersects Ky 18 at a dangerous location. The Future Land Use Map indicates a mixture of land uses along the Ky 18 corridor and which will provide a transition into existing and planned public facilities uses near Ky 237.

This section of Boone County contains parts of the Woolper Creek valley and the extensive Developmentally Sensitive areas associated with the creek. This section should nevertheless experience some population growth as the Burlington area changes from a rural community to a suburban community. This is due largely in part to the sanitary sewer pump station and mains on KY 18. The suburban growth around Burlington will be substantial, causing KY 18 and Idlewild Road to serve as higher volume collector roads. New subdivisions should locate in close proximity to Burlington proper. Any new subdivisions should develop internal road networks rather than using the existing roads as primary access; this will avoid congestion and allow adequate space for necessary road improvements. Road connections between KY 18 and Idlewild Road, between KY and East Bend Road, and between Idlewild Road and Bullittsville Road should be made. Parts of the Woolper Creek valley should be preserved and included as part of the tourism/recreation potential of the area. To provide an appropriate entrance to the potential large western Boone County tourism area, KY 18 west of Burlington should maintain a rural appearance through unique subdivision design. The balance of land in the western part of this section should remain largely undeveloped or in agricultural uses, and suburban development should stay in the immediate watershed of the KY 18 sewer pump station.

The area along and west of Bullittsville Road within the year 2005 65 DNL noise contour level can continue to contain some Low Density Residential as well as Recreation uses. New construction should only occur if the residential structures are adequately sound-proofed. This should pertain to buildings within the 65 DNL beginning with the year 1996, which comprises the worst case scenario for noise impacts in this corridor.

The northwest quadrant of the intersection of KY 18 and KY 237 is planned for Office and High Suburban Density uses to provide a suitable transition between Stephens Elementary School and KY 18, and would help establish the public facilities and office orientation of the entire intersection area. Access Management is critical in this area.

The area bound by KY 18 to the south, KY 237 to the west, Limaburg Road to the east and Conrad Lane to the north currently contains a variety of uses. This area should continue to develop in a residential fashion, providing low to high density housing opportunities.

The intersection of KY 18 and KY 237 should develop as low traffic-generating office uses. Any access to Camp Ernst Road in this area must be accompanied by road improvements. Public Facilities uses should continue to develop at the southeast corner of the intersection. Public Facilities development east of the Boone County Extension building should retain the existing mature woodlands as a transition into the planned High Suburban Density Residential uses and to retain this prominent visual characteristic of this portion of the KY 18 corridor. This site would be an appropriate location for an alternative education program site or passive recreation uses. In the event of any office or commercial development on the site, the development design must be unique in order to incorporate existing woodland.

Some residential development within the airport noise mitigation corridor may be appropriate only if adequately sound insulated. Sound insulation programs should take place for new construction within the current 65 DNL noise impact areas, beginning with the proposed worst-case noise impacts.

Airport Area
Riverview Subdivision and the residential area on Hunter Drive and Hetzel Drive have been purchased lot-by-lot by the airport, and should eventually redevelop into office and commercial uses to take advantage of the proximity to the interstate. The existing commercial parking lot facilities at KY 20 and KY 212 should eventually redevelop into office, hotel, convention, and travel related commercial uses. Commercial parking uses should be relocated onto airport property, in closer proximity to the airport terminals. Industrial development to the north of KY 20 should not locate on any portion of the Developmentally Sensitive hillsides, and a buffer area for the preservation of those hillsides may be required. Throughout these hillside areas, stands of existing trees should be retained between individual developments.

Land to the north of Elijah's Creek Road, including the plateau area known as the Shor Property, should be developed in a Business Park fashion. Access to this area should be by a road connection to KY 20, through Airpark International, and may eventually include a connection to KY 237 at South Park Drive. Access to this area directly from Tanner Road or Route 8 is not desirable due to geologic formations, topography, vegetation, and scenic views. In its current condition, Elijah's Creek Road is not suitable for serving additional traffic. The road should be further improved to allow access to the Shor Property and permit redevelopment of the existing residential uses. Development of this area must be carefully planned, with great care taken in preserving and protecting the surrounding Developmentally Sensitive hillsides and existing vegetation clusters on the site. This will necessitate creative design and construction techniques, sensitive location of buildings, as well as the retention of existing vegetation along the bluff edges.

Due to the impacts of noise, industrial uses are recommended along the east side of Limaburg Road, from Hossman Road south to KY 18. A substantial land area is located in the east-west flight path, extending west of KY 237, and is suitable for Business Park development. As a result, the 1995 Future Land Use Map shows Business Park uses extending west from KY 237 to Bullittsville Road with no access to Bullittsville Road. The north side of Conrad Lane, shown as Business Park, should contain an extensive buffer area to protect the developing residential subdivisions to the south. Planned Business Park development on Conrad Lane east of KY 237 should be accessed through industrial development to the north and not contain access to Conrad Lane. Due to the existing aesthetic qualities of this area, including rolling topography and stands of mature trees, the industrial development of this area should incorporate these features into planned site designs. In particular, existing areas of mature woods should remain intact to retain the character of the Ky 237 corridor and provide a transition into adjoining residential areas.

The area along Hunter Road and Hetzel Drive should redevelop in a commercial nature. Some High Suburban Density residential growth should occur outside the flight path areas, on hilltops that have potential access connections to Point Pleasant Road. Along Point Pleasant Road itself and adjacent to I-275, some office development, consistent with the Airport Exchange Business Park, is appropriate. Traffic associated with this development should be directed toward the interstate. All development in this section must be carefully designed to minimize impacts on the Developmentally Sensitive hillsides, which should remain mostly wooded. Since the ridge top areas are also heavily wooded, the design of office and residential development should incorporate existing stands of trees.

This section of Boone County contains the I-275/Mineola Pike interchange, Mineola Pike, Donaldson Road, and Turfway Road. Major developments within this section include the Airport Exchange Business Park, Circleport I and III, the Mineola Industrial Park, Turfway Race Track, the Houston-Donaldson area, and Turfway Square. This section of the County should experience a wide variety of substantial growth. This area will also be affected by the proposed connector road between the Mineola area and KY 18. To the north, the Mineola Interchange area has experienced, and should continue to experience, significant Business Park development. The Airport Exchange Business Park and Circleport Industrial Parks should continue to develop. As a result of this growth, the residential uses along Mineola Pike and Booneland Trail should eventually be redeveloped in a business park manner, similar to the adjoining uses. Rolling Green Acres should likewise eventually redevelop as industrial uses. Because of increasing development, the road network in this section should be improved, including the widening of Mineola Pike and road connections across airport property to KY 18 and/or Limaburg Road.

Existing clusters of residential uses along Donaldson Highway, between O'Hara Road and the county line, should redevelop in a integrated commercial fashion involving the combination of existing lots.

A substantial portion of this section is within the Houston-Donaldson Study area. In general, this Study recommends light industrial uses in the O’Hara Road area, with limited commercial development at Turfway Road and Donaldson Highway. The central portion of the Marydale property is recommended to continue in its Diocese of Covington-related uses; however, portions of the property near Turfway Road will develop in a High Density Residential nature. Between the extension of Houston Road and I-75, office and commercial uses are encouraged. This important future employment area should be served by mass transit including light rail when available. The Turfway Park Racetrack should remain; property to the east, along I-75, should develop in a mixed office and commercial manner compatible with the racetrack.

Constance Area
Below these hillsides, land uses in the Ohio River flood plain should remain agricultural, Rural Density Residential, or river-related recreational. The western portion of this section of Boone County lies in the flight path of the 18-L north-south airport runway, and the associated noise is discouraging residential growth in those areas. Riverview Subdivision should redevelop as light industrial uses.

The river bottoms in this section have very limited development potential, and should remain largely residential and agricultural in character, with occasional local commercial development. Although this area includes excellent industrial potential along the river, it does not enjoy adequate access. Future industrial development may become appropriate should the access issue be addressed. The Anderson Ferry service should continue as a service to automobile traffic, and represents a historic resource for Boone County. This area has been identified as a possible site for a new bridge over the Ohio River; however, the physical constraints of the river valley and relationship to Boone County's road network combine to make this an inappropriate location for a bridge. These sites would make excellent recreation areas over the planning horizon. Finally, consistent with a study conducted by the Dry Creek Recreation Task Force, active and passive recreation should develop within the Dry Creek Valley.

Hebron Area
Subdivision activity should continue around Bullittsville and along Bullittsville Road, with High Density Suburban Residential and local commercial uses designed to reinforce the small town character. Residential development proposed to access Graves Road, including the portion south of I-275, must be accompanied by improvements to that road.

This section of Boone County is characterized by the I-275 and KY 237 Interchange and the established town of Hebron. Land to the north of the airport interchange lies directly under two of the airport's flight paths and is in most cases suitable only for commercial, office, or industrial uses related to the airport. The Hebron area will be dramatically affected by a planned 3rd north-south airport runway. This runway is described in detail in the Airport Master Plan and is shown on the Future Land Use Map. Construction of this runway will displace existing residential land uses, impact public land uses, and relocate or close roadways.

Some Business Park development is appropriate adjacent to the SouthPark project and I-275, with access provided by the extension of SouthPark Boulevard. Again, this development must be carefully planned to avoid negative impacts to Developmentally Sensitive hillsides near Elijah Creek. The Carder-Dolwick Nature Preserve is an indication of the importance of this valley as a natural area. The SouthPark project should represent the northern-most limit of industrial uses on North Bend Road. Land to the west of North Bend Road and south of Graves Road is suitable for High Suburban Density Residential development, which will provide a transition to the Suburban Residential densities in the Francisville area. This High Suburban Density Residential development must be clustered to make the most effective use of the land and preserve important natural features. In addition, because of the area's topography, the retention of existing wooded areas near Sand Run Creek provides the only appropriate transition area between Park West and planned residential development. Acreage next to the interstate, at Graves Road, is appropriate for high-profile office uses in order to take advantage of visibility to interstate traffic and to provide a transitional use between the business park development to the east and residential uses to the west. Currently, Worldwide Boulevard is being completed, as planned in the 1995 Comprehensive Plan. Combined with a future parallel road north of I-275, a possible interchange at Graves Road should preclude any need to directly connect the Idlewild Interchange with KY 8.

On the south side of the KY 237 Interchange, additional industrial development should occur around the Western Atlas site. A collector roadway should be developed along the southern border of this site, parallel to I-275. This roadway will provide access to the industrial property and to the possible future interchange at Graves Road. The southern boundary of this industrial development should terminate at KY 20 as shown on the Land Use Map. Industrial developments should be designed to direct truck traffic to collector roads and away from KY 20. The industrial/business park shown south of I-275 in the Bullittsville area is dependant upon a future interchange in the Graves Road area. This development must be sensitive to the residential located to the south and should be accessed from the interchange and not via KY 20. This development must also be designed to fit into an established residential corridor. Design control will be important in this area. The existing and planned residential areas located on the east and west side of KY 237, north of KY 20, should remain, with an area of commercial uses around the KY 20 and KY 237 intersection to serve area development. The southeast quadrant of the KY 237 Interchange should develop in a Business Park manner on the acreage fronting on KY 237. The design of this development should include large building setbacks to be visually consistent with existing development on the southwest quadrant. The site is suitable for a Business Park or one large user similar to the existing Western Atlas facility.

Property to the east of the interchange along I-275 possesses high visibility and is a suitable location for high-profile Business Park development similar to that occurring at the Mineola Interchange. The development of this Business Park area is dependent upon a road connection from KY 237, opposite Litton Drive to Elijah's Creek Road to allow all traffic associated with the development to directly access the KY 237 Interchange, and to serve future residential growth. This road should be connected to the airport-planned relocation of KY 20, near I-275, through the Urban Residential and Industrial Areas. The Airport Master Plan shows that Elijah Creek Road should receive improvements. Appropriately designed High Suburban Density and Urban Density Residential uses should surround the Industrial and Business Park uses to serve as a transition to the town of Hebron.

High Suburban Density and Urban Density uses in Hebron should remain near the intersection of KY 20 and KY 237. These uses must have adequate water and sanitary sewer service and should be accompanied by increased school capacity. These developments should utilize exiting woodland vegetation as a buffer from I-275, and as a buffer to the Suburban Density Residential uses. The small industrial park surrounding the Hebron Post Office should continue to develop to the limits indicated on the Future Land Use Map.

The property adjacent to the Public Library, on the north side of Cougar Path, should develop as various, clustered public facilities, and/or compatible commercial and office uses, to make use of the easy access to Hebron-Burlington-North Bend Road service areas. The KY 20 and KY 237 intersection area should contain a variety of commercial and higher density residential uses to establish the location as a future service center connected to the older town of Hebron. Open space and landscaping should be an integral part of development design at this important Boone County intersection to give the appearance of coordinated development. Further Urban Residential uses planned behind the Hebron Commercial Mart development must utilize a site design that pays attention to building orientation and landscaping in order to enable an adequate visual transition from KY 20 and into older single-family areas to the north. These established residential neighborhoods will eventually be surrounded by commercial, industrial, and higher density residential development, and need some degree of visual protection.

The commercial uses at this intersection should be consistent in architectural design and landscaping with adjacent residential uses. The planned Urban Residential uses should not develop until adequate elementary school space is available. Small roads in the area, such as Bullock Lane, are not suitable for serving subdivision or industrial traffic and must be upgraded or bypassed in such developments.

In the event that the proposed 3rd north-south runway is not constructed, the Hossman Road area between KY 20 and KY 237 is planned for a Business Park district that should reflect an office campus environment. This development would require reconstruction of the northern end of Hossman Road; at the intersection with KY 20, the roadway would extend southward, eliminating the two existing ninety degree turns and reconnecting with Hossman Road as it borders the airport. The Business Park development in this area should contain significant buffering and landscaping to blend in with the continued residential character of KY 20 and Hebron. Care should be taken to insure that new development not significantly impact, nor encroach upon the established residential character of central Hebron and KY 20, as shown on the Land Use Map. The Conner Road and KY 20 areas outside the 65 DNL could develop as Suburban Residential in the event that the runway is never constructed.

North Hebron Area

Some Suburban Residential and Rural Density Residential development should occur along Williams Road as a result of infrastructure improvements. Future road access to the KY 8 area from the Graves Road and KY 237 areas would be more suitable than the discussed connection of KY 8 with the I-275 Idlewild Interchange, because of topography and Developmentally Sensitive Areas. Williams Road will eventually connect to KY 237 through Thornwilde Subdivision. With planned public sanitary sewer improvements in the Sand Run Creek and Elijah Creek watersheds, including sewer lift stations, there will be considerable growth pressures. Development should be clustered on the ridge top areas because of the limited capacity of the existing roadway network and planned improvements, the Developmentally Sensitive areas, and the importance of the stream valleys as greenbelts. Lower density development, such as Rural Density Residential, should provide a transition into the Developmentally Sensitive areas. As approved in the Northpointe Development, stream valleys should be left undisturbed to provide open space, buffering, and/or passive recreation areas. Developers of other properties along the Sand Run Creek valley should also contribute land to the Sand Run Park proposal that would connect to and benefit all the area developments.

With the provision of adequate infrastructure, some Suburban Density Residential development may extend onto the ridge top areas. Development would need to retain the bluff line vegetation in order to minimize the visual and environmental impacts of residential development. Planned Development or clustered housing should be used to insure proper development of this area, due to environmental and site characteristics. Much of the remaining land in this section contains Developmentally Sensitive and scenic hillsides, and should stay wooded in order to create greenbelts between future developments. The Sand Run Creek and Elijah Creek valleys should constitute such greenbelts, and should be included in future greenbelt studies.

There are areas within this section of the County which are suitable for recreational uses, such as the 422 acre Traditions Golf Course on Williams Road. This section should experience considerable residential growth pressures especially around the golf course to the east. This development should not occur until adequate infrastructure is provided, including significant improvements to Graves Road. The area west of the golf course and north of I-275 should develop residentially, once adequate road access and utilities are available. As stated in previous sections, this development should not encroach on the developmentally sensitive areas.

Land in the Williams Road area, north of I-275, is suitable for some Suburban Density residential development when Worldwide Boulevard is completed and water and sanitary sewer are available. A road connection from KY 8 to I-275 warrants further study to determine feasibility and potential impacts on Developmentally Sensitive areas. Such a connection may be more appropriate between the Idlewild interchange and Graves Road near and parallel to I-275. Limited Rural Density residential growth should occur along other roads in this section. Suburban Residential development cannot be adequately supported by the existing road system.

Conventional layout subdivisions should be discouraged because of their inefficient circulation systems and excessive site grading requirements. The stream valleys and ridge bluff edges in this section should remain in their current state to provide public open space for the residential development on the ridge tops. Overall, this section should experience growth because of its proximity to I-275, and the Burlington-Hebron areas.

In general, Suburban Residential development should be concentrated on land nearest to KY 237, as indicated on the Future Land Use Map. Current conditions of North Bend Road in the Francisville area are not suitable for suburban traffic demands. However, as described in the Transportation Element, the reconstruction of North Bend Road is now a priority project. Unlike most developing areas of Boone County, the north river area contains only one primary means of access, being North Bend Road. In the event that a bridge is proposed between Boone County and Hamilton County, a full study of the impacts should be made. These impacts could include effects on labor supply and transpositions, increased truck traffic in Boone County, and impacts on existing and planned residential areas.

Residential development east of KY 237, between Rivershore Farms and Parlor Grove subdivisions needs to provide street and pedestrian connections between developments. Without the recommended improvements to North Bend Road, the remaining acreage in this section is suitable only for Rural Density residential growth. Residential development must take care to avoid potential negative impacts to the Developmentally Sensitive hillsides.

River Road Area
This section of Boone County is characterized by KY 8, or River Road, and contains significant Ohio River frontage. Much of the topography is rolling, with Developmentally Sensitive hillsides. Because of the sensitive nature of these hillsides, the western portion of this section should remain wooded. The North Bend River Bottoms contain agricultural land and should remain in that capacity. Since the area is scenic, and the area's roadways are not suitable to serve large amounts of development, very limited Rural Density Residential growth should occur along KY 8. Some specialized agricultural uses should continue on the Ohio River flood plain area. The Recreation Element of this Plan indicates this section is suitable for recreation uses; new recreational uses are important because of the residential growth throughout Boone County. The current use of KY 8 by cyclists will likely continue and increase, and provisions for this recreational use should be considered as part of any future developments in this section of the County. Any connection of KY 8 to the Idlewild Interchange would adversely affect this phenomenon. Overall, this section should experience limited development because of the many Developmentally Sensitive areas and indirect access.

This section of Boone County has considerable Ohio River frontage, as well as an important residential development area along North Bend Road. Between Rivershore Farms and Taylorsport is a large river plain area that is suitable for future athletic fields and similar recreation uses.

Garrison Creek Area
The Garrison Creek valley should remain intact as a greenbelt adjacent to Rural Density Residential growth, and should be considered for future outdoor recreation opportunities.

Idlewild Area
This section of Boone County contains the I-275 Idlewild Interchange, Idlewild, Bullittsville, and a substantial portion of KY 20. The Idlewild interchange should see slow, highway-related, commercial growth. This commercial development should occur on the southern half of the interchange because of the lack of visibility, established residential uses and church uses on the northern half. South of the interchange, Bullittsburg Church Road should be improved and serve as the only access to the commercial development from the KY 20 Bypass. The existing cement mixing plant should eventually redevelop as light industrial uses. The wooded swale south of this plant should remain as a buffer to existing and planned residential uses to the south. Access to commercial development on the southwestern quadrant must align with Bullittsburg Church Road. Idlewild proper is unlikely to experience major commercial or residential growth. Continued, gradual Rural Density and Suburban Density Residential uses should occur along KY 20 between Idlewild and Bullittsville. Street connections between KY 20, Idlewild Road, and Bullittsville Road through interconnecting subdivision developments are to be provided where possible. This Plan recommends that the Idlewild Road area, in and around the year 2005 65 DNL contour level, continue as Rural Lands.

The High Suburban Density residential development shown on the Future Land Use map along I-275 is dependant on a new interchange in the Graves Road area and must be accessed from the interchange and Industrial/Business Park development described in the Hebron Area land use section.

Petersburg Area
This section of Boone County is characterized by the town of Petersburg and the western-most portion of KY 20. Much of the land is Developmentally Sensitive, undeveloped, or in agricultural uses. Petersburg could potentially be a resource for tourism in the county due to its history and river frontage.

The extraction of gravel along the Ohio River in this area should continue at established sites; new locations for extractive operations should be discouraged so as to allow alternative uses, such as recreational and low density residential development. This should lead to an appropriate balance of uses along Boone County's substantial river frontage, including access for recreational uses. Inactive sand and gravel extraction sites along the river should undergo the reclamation process noted in the Boone County Zoning Regulations, or be converted into recreation opportunities. The land to the north of Petersburg should be maintained for eventual low density residential, and recreational uses. There are also sites of archaeological significance in this section of the County which should be identified and preserved. The existing pay fishing lake area and Taylor Creek should be considered for a future wildlife habitat area. Development in the Petersburg area should protect the scenic characteristics of the hillsides and river plains.

Petersburg must continue to contend with its isolation from the urban service areas of Boone County and poor accessibility during the winter months. Any reconstruction of KY 20 into Petersburg should occur for the purpose of serving residential and school-related traffic, rather than for use by industrial vehicles. The preservation of the historical buildings of this important Kentucky town should be a prime objective, and eventual development of a tourist industry is possible with adequate planning and administration. Small commercial services within the town should be provided and designed to reinforced and retain the small town character of Petersburg. The areas in and around this town offer an opportunity for neo-traditional residential and small commercial development. With improvements to KY 20 and the provision of water and sewer service, the town could grow significantly . For this to occur, it must be in the form of formal and well-designed neo-traditional development. Transfer of Development Rights should be evaluated as a tool to conserve the surrounding hillsides and valleys while permitting a higher density in the town.

Belleview - McVille Area

This section of Boone County is characterized by significant Ohio River frontage and the mouth of Woolper Creek. The river bottoms in this section contain prime agricultural land and existing gravel extraction sites. New extraction operations should be confined to sites adjacent to existing operations between Ky 20 and the Ohio River. The redevelopment of former gravel extraction sites may be suitable for river-related recreational uses accompanied by self-contained clustered residential development. The hillsides should remain largely wooded, while the more level areas can continue to support agriculture. This area includes some of the most prime farmland in the county.

During the late 1980s a combination recreation and residential development was planned for the mouth of Woolper Creek, however, this project was abandoned, and the Corps Of Engineers conducted a partial reclamation of the site. The result has been the creation of a significant wildlife habitat that should ultimately become accessible to the public. This site has been shown in past OKI, NKADD, and Boone County recreation studies as suitable for a large county park or similar facility, and constitutes another potential resource within the western Boone County tourism area. Adjacent to the former marina site is the geologically significant formation known as Split Rock. Additionally, a study should be conducted to consider the Woolper Creek Valley, from the creek's mouth to the Ashby's Fork Road area, as a recreation/ environment preservation corridor. This portion of the valley is particularly important because of its geologic and vegetation characteristics. Sensitive development of the Woolper Creek tributary valleys is also necessary to protect the stream itself. Overall, this section should experience limited growth due to its isolation from major transportation routes and urban services as well as its value as a unique natural area and a component of the tourism area.

This section of Boone County contains the small communities of Belleview and McVille, and is primarily composed of river bottom area. The gravel extraction operations to the north of Belleview should remain, but should not extend east of Ky 20, or adjacent to existing or planned recreation sites. The southern portion of this area, where mineral extraction has been concluded, should be considered for development as a river-oriented recreational area, or wildlife habitat as part of the reclamation process.

Belleview and McVille proper should function as neighborhood centers for the surrounding area. The communities in this general area of Boone County have experienced some growth, in the form of the Kelly School in Belleview and the firehouse. Additional new local-scale commercial services may develop; existing buildings should be restored or replaced to meet the towns' residential and commercial needs. The cemeteries on KY 18 will hinder any development in that area, thus any growth should occur south or east of the towns. Overall, this section should experience slow residential growth along the major roads of the area, with neotraditional residential or continuing agricultural uses on the river bottoms. Any commercial development in this area should occur within the town center of Belleview and McVille and not along the roadways outside the towns. These two towns present an excellent opportunity for residential to expand in a neo-traditional manner, as described for Petersburg. This development must carefully be carried out so that typical subdivision development does not alter the character of the area. With proper development in this fashion, the towns can become centers of activity for Western Boone County.

The Middle Creek Valley comprises a major portion of the land area in this section. Substantial acreage is Developmentally Sensitive; it should remain mostly wooded to protect historical preservation and recreation uses in the area from the visual impacts of nearby residential development. Boone Cliffs is also located in this area and contains important geological formations which should be preserved. Additionally, this section contains the Dinsmore House, acreage used by the Camargo Hunt Club, Nature Conservancy lands, and the 100 acre Middle Creek Park operated by Boone County. These sites should likewise be preserved as they are valuable assets as tourism resources. The Middle Creek Valley should become a preservation corridor in order to protect and expand the existing nature preserves, passive recreation sites and historic sites. This area should be protected from major utility main construction, such as water and sewer, and from development pressure along KY 18, including extractive mining activity. KY 18 is the major access route to the area and needs moderate improvements to accommodate traffic without jeopardizing the region's rural characteristic. Boone County, private organizations and the citizens of the county should work together to insure that this important area is protected. Outside of the towns, this section should experience isolated growth of a Rural Density Residential character.

East Bend Road Area
This section of Boone County contains a substantial portion of East Bend Road. The greatest amount of growth in this section should occur along East Bend Road, mostly in the form of Open Space Design Residential development. The location and number of driveways should be controlled, and where possible, driveways should be shared. This development will require the realignment and improvement of East Bend Road. As shown on the Future Land Use Map, much of this area should be evaluated for an Open Space Design Incentive Area. The small community of Waterloo may receive some limited residential growth as a result of growth in the Belleview and Burlington areas.

Camp Ernst Area
The western half of this section should remain undeveloped or in agricultural uses. Development along Hathaway Road, west of Camp Ernst Road, should be limited. Due to its scenic value, land along the creek and south of Hathaway Road may be suitable for passive recreational uses, as well as promoting tourism to the area. The Boy Scout campground should be protected as recreation land, and any adjoining land uses should be designed to be compatible with this facility. The entire Gunpowder Creek valley should be considered for a future corridor study to preserve this unique and important County feature as a greenbelt and passive recreation corridor. Residential development should remain along the existing roads, consolidating access points where appropriate. Rural Density residential should occur around Central Park to reinforce the existing character of the area.

Rabbit Hash Area
This section of Boone County contains Rabbit Hash, the intersection of KY 338/KY 536/KY 18, and considerable Ohio River frontage. The Rabbit Hash area, including the Rabbit Hash General Store, has become a significant tourist attraction and should continue as such without compromising its rustic and small town nature. Limited residential growth should occur along the major roads leading to this area. Formal subdivision developments are not recommended in keeping with the existing character and lack of urban services. The junction of the state routes should provide local service needs that would be inappropriate within the established town of Rabbit Hash. Any commercial that may develop at this intersection should have a theme consistent with that of rustic Rabbit Hash. The land along KY 18 which is in crop production should continue in that capacity. Furthermore, the Developmentally Sensitive hillsides in this region should be protected. In general, growth in this area should be limited. Every attempt should be made to preserve the character of Rabbit Hash in light of the gaming development across the river. The roads are currently not adequate to handle an increase in traffic to Rabbit Hash or to river access. This location should not be considered for a future ferry location due to the condition of

the roads leading into Rabbit Hash. Any potential ferry location should occur to the north of Rabbit Hash, possibly at a reclaimed gravel pit site.

This section of Boone County also contains the East Bend Power Plant and a substantial area of river bottom. The power plant has developed a large portion of this section, using much of the developable land. Two large areas to the east and west of the plant are in agricultural use and should remain where compatible with the power plant. The rough terrain to the north of KY 338 is divided by three small creeks. Development of any kind in this area should be limited; industrial development is inappropriate because of poor access. The backwater area of Lick Creek, east of the power plant, should be examined as a potential wetland wildlife management area. Significant growth is not anticipated for this area because of its remoteness. The potential for tourism exists in this region due to archaeological sites and historic buildings.

Big Bone Lick Area

This section of Boone County is characterized by several rural roadways, including KY 338 (Beaver Road), Riddles Run Road, and Big Bone Church Road. It also contains the mouth of Gunpowder Creek. Due to the major creeks and tributaries, much of the land in this section is Developmentally Sensitive, and should be protected from development. Most of the growth in this area should be of a Rural Density residential nature, located predominately along Beaver Road. Some recreational uses may develop based on the amenities of Gunpowder Creek.

The area of KY 338 from Riddles Run Road to Big Bone Church Road may see the development of some seasonal homes as well as recreational vehicle campgrounds. Land between Ryle Road and Boat Dock Road should not be developed due to steep slopes and poor soil conditions. Big Bone State Park should be expanded in size and in quality. KY 338 from US 42 to Boat Dock Road could develop some limited commercial uses, consistent with recreation uses in the area. This possible development is not shown on the Future Land Use Map. Any requests for such uses should be examined carefully in order to ensure that they fit in with the rural and recreational character of the area as well as maintaining safety along KY 338.

This section of Boone County is dominated by several creeks, including Big Bone Creek, Mud Lick Creek, and the Big South Fork Creek along the Boone County/Gallatin County border. Most of the acreage in this section is Developmentally Sensitive, and should remain wooded. Residential development in this area is concentrated on Ryle Road, along the Ohio River. Ryle Road is subject to frequent slippage along the steep river banks; the resulting poor condition of the road limits future residential growth. The existing residential uses along Ryle Road limit potential public access to the river in this area. An effort should be made to connect Big Bone Lick State Park to the Big Bone Boat Dock. A possible bridge to Gallatin County would provide an incentive for additional river-related recreation facilities. It could also increase usage of Big Bone Lick State Park, making expansion of the park and connection to the riverfront area feasible. Overall, this section should experience very limited residential growth and be oriented towards river access and river recreation activities.

Beaverlick Area

This section of Boone County is characterized by a substantial portion of U.S. 42, Richwood Road, Hicks Pike, and Rice Pike area. This section will also be greatly affected by the reconstruction of U.S. 42. Suburban Residential Development of this section of the county is dependent upon the provision of water and sewer, and should not negatively impact the Big Bone Creek and Mud Lick Creek watersheds. The water and sanitary sewer services should not commit these two watersheds to extensive development. It is important that residential subdivisions construct internal roadway systems rather than using the existing roads for primary access; these existing roads should serve as corridors to move traffic through the area. Substantial residential growth will compound crowded conditions at the New Haven Elementary School and will require expansion of school facilities. Beaverlick should remain as a small community with little growth. Any commercial development in this area should locate at the intersection of U.S. 42 and Beaver Road in Beaverlick.

South Fork Church Area

This small section of Boone County is largely characterized by the border with Gallatin County. Growth should be minimal, in the form of Rural Density residential uses along U.S. 42.

TRANSPORTATION

The Transportation Element reflects the changing context of Boone County's transportation network. The text of this element follows the same arrangement as the 2000 Goals and Objectives for the Transportation Element with a breakdown into three sections: 1. Regional Transportation System (Boone County as an integral part of the Cincinnati metropolitan region), 2. Local Transportation System (Boone County's roadway system). and 3. Transportation/Land Use Connection.

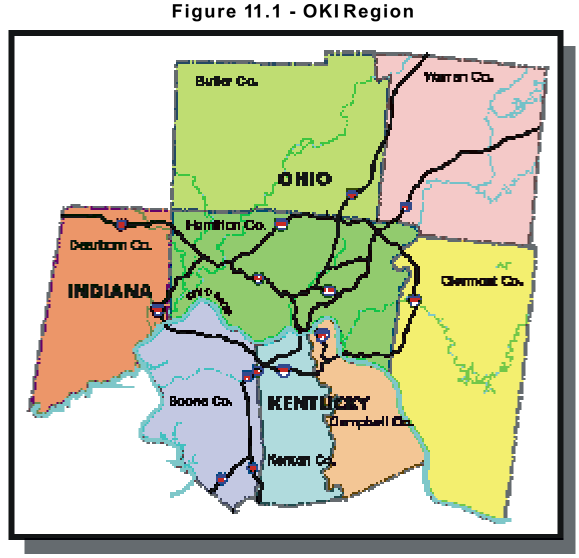
1. REGIONAL TRANSPORTATION SYSTEM

The Region - The first Transportation Goal emphasizes that the transportation network of the county is a significant component of a regional, metropolitan transportation system. As shown in **Figure 11.1**, this Greater Cincinnati metropolitan region includes eight counties in three states: Ohio, Kentucky, and Indiana. The responsibility for transportation planning within this region rests with the Ohio-Kentucky-Indiana Regional Council of Governments (OKI). However, OKI is not responsible for transportation planning in Dearborn County, which is done by the State of Indiana.

OKI's Regional Transportation Plan provides an good history and overview of the transportation network for this region:

> *Transportation facilities have always been important to this region's growth and prosperity. In the late 1700's, the Ohio River supported Cincinnati's emergence as the gateway to the West, a point of convergence for people and goods. In the 1800's, the Miami and Erie Canal and the railroad system established the Cincinnati area as a commercial and transportation center.*
>
> *Today, the region's transportation network includes five interstate highways, an international airport, and a web of arterial highways. As one of the most heavily multi-modal networks in the county, the region's transportation system is invaluable both to the health of the region's economy and the mobility of the population.*

Figure 11.1 - OKI Region



Boone County is an integral element of the regional transportation system because three of the region's five interstate highways traverse the county, the international airport is located in the county, and the Ohio River borders over half of the county. Boone County's intergovernmental connections with the regional, metropolitan transportation system are maintained through our Metropolitan Planning Organization (MPO), which is OKI, and the Kentucky Transportation Cabinet (KTC).

OKI & Regional Transportation Planning - OKI has been the designated MPO for the Cincinnati metropolitan region since 1964. According to the Federal Aid Highway Act of 1992 and subsequent amendments, OKI has had statutory responsibility for planning and coordinating all aspects of transportation planning on behalf of local governments within its region, with the cooperation of the Ohio Department of Transportation (ODOT) and the Kentucky Transportation Cabinet (KTC).

Since this region qualifies as an urban area (over 50,000 population), OKI has had to maintain a comprehensive planning process for transportation improvement projects. This process includes developing and periodically updating a long-range, regional transportation plan and developing a prioritized capital projects list (Transportation Improvement Plan-TIP). OKI also maintains data management (e.g. population projects, traffic counts) and other planning services (e.g. access management) that assist local governments' transportation planning endeavors specifically, and generally, the overall regional planning efforts.

The long range plan addresses and makes recommendations for what the transportation needs of the region will be in the future (the most recent plan forecast to the year 2020). The recommendations of the long range plan and other capital projects are prioritized into a four-year schedule called the TIP-Transportation Improvement Plan. The TIP is the region's plan for major transportation improvements in the metropolitan region. It is the mechanism through which local governments prioritize specific projects that will receive federal funding. When the TIP receives final approval by OKI's Executive Committee, it then is recognized as the policy document that directs transportation improvements in the OKI region.

Increased Roadway Capacity, Increased Automobile Travel, and Poor Air Quality - The primary objective of transportation planning in most metropolitan regions, including the OKI region, from the early 1960s to the present was the increase in mobility of automobile drivers by increasing roadway capacity. This was done by either improving roadways or building new roadways. While mobility of automobile drivers seemingly increased during this period, the increase in air pollution problems caused by increased automobile travel was undeniable in most metropolitan areas, including the Cincinnati region.

Since the 1970's, the federal government has attempted to improve air quality in metropolitan regions with the Clean Air Acts, but with little success. This legislation mandated auto manufacturers lower the emissions produced by the automobiles they manufacture. However, during this same period, total vehicles miles traveled (VMT) by automobile increased tremendously. Most of this increase in VMT was caused by individuals driving alone or, which defines single occupant vehicles (SOVs). Undoubtedly, much of the increase in VMT is attributed to longer daily commutes to work.

The increase in VMT was greatly facilitated by the completion of the interstate highway system in the 1970's, as evidenced in this region by the completion of I-275, the circle highway around Cincinnati. The highway system also further encouraged low-density suburban land development.

Table 11.1 shows the national trend of increasing automobile travel according to the U.S. Department of Transportation's *1995 Nationwide Personal Transportation Survey*. Comparable data is not available for the Cincinnati metropolitan region, however, all indications suggest that the travel trends in our region are similar.

Table 11.1 - National Travel Trends

Data per Household	1969	1977	1983	1990	1995
Daily VMT	34.01	32.97	32.16	49.76	57.25
Annual VMT	12,414	12,035	11,739	18,161	20,895
Daily Auto Trips	3.83	3.98	4.07	5.69	6.34
Annual Auto Trips	1,396	1,443	1,486	2077	2321
Number of Vehicles	1.16	1.59	1.68	1.77	1.78

Source: U.S. Department of Transportation. 1995 Nationwide Personal Transportation Survey (next edition 2001).

Dispersed Suburban Development and Congestion - Low-density land development began to occur throughout the country with the migration of World War II veterans and their young families to the sub-divisions of single family homes built during the 1950's and 1960's. It continued during the 1960's and 1970's with the movement of commercial uses to the suburbs and the development of large regional shopping centers. Also, during the 1970's and 1980's, and continuing to the present, many manufacturing uses relocated in the suburban areas. Boone County has been, and continues to be, impacted by all of these phases of suburban land development.

This dispersed, low-density pattern of suburban development, coupled with very limited transit services, necessitates travel by the automobile in Boone County. Like other growing suburban areas of metropolitan regions, Boone County has also experienced chronic traffic congestion on its interstate highways and primary arterial roadways. Of course, this congestion has contributed enormously to the air pollution problems of the overall OKI region.

The normal governmental response, during the past few decades, for alleviating this congestion was to add another lane to the roadways or build new roads, thus "increasing capacity". However, the dilemma has been that when capacity was increased congestion was relieved for only a short time period before returning at even greater levels. The multiple improvements to KY 18 in the Mall Road and Houston Road area exemplify this "congestion, increased capacity and return to congestion effect" in Boone County.

To address this phenomenon, Congress decided in the early 1990's to take a different tact in dealing with metropolitan air pollution and traffic congestion problems. It decided to link its clean air legislation with its transportation legislation. Now all future transportation projects must conform to air quality standards and contribute in reducing motor vehicle emissions, thereby improving air quality. Increasing mobility, in the future, will be realized by improving mass transit and pedestrian options and improving capacity in the existing roadway system.

The CAAA, ISTEA, TEA-21 And Their Impacts - The Clean Air Act Amendments of 1990 (CAAA) and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) were the legislative acts that Congress undertook to assure that increasing mobility in the future in metropolitan regions would not have a concurrent, detrimental impact on air quality. The Transportation Efficiency Act of the Twenty-first Century (TEA-21) is the most recent law. OKI's 1993 Regional Transportation Plan explains the impact of the CAAA and the ISTEA on transportation planning as follows:

> *For transportation planning, the CAAA is a significant driving force. The CAAA recasts transportation planning as a process for improving air quality as well as mobility. It challenges transportation officials to find ways to reduce emissions from motor vehicles, to increase use of alternatives to single occupant vehicles (SOVs), and to reduce SOV travel in order to help achieve air quality standards by 1996. From now on, the region's transportation plans, programs, and projects must conform with State Implementation Plans (SIPs) for air quality. For highway projects involving new or expanded capacity, federal funds will not be available unless the proposed project will result in an overall reduction of automobile emissions. (In the past in Boone County, road improvements on KY 18, KY 237 and Weaver Road all used federal funding.)*
>
> *The CAAA's impact on the OKI region results from the region's ozone problems. Ozone is one of the pollutants for which the EPA has defined national ambient air quality standards (NAAQS). Based on health impacts, the NAAQS specify allowable pollutant concentrations and exposure limitations. Although ozone is beneficial in the upper atmosphere, it is harmful to breathe near ground level.*
>
> *Ozone, also known as smog, is not emitted directly into the atmosphere but is formed when precursor emissions--volatile organic compounds (VOCs) and oxides of nitrogen--react in the presence of sunlight. Nearly half of the VOCs from man-made emissions are from mobile sources (primarily vehicle emissions from cars, trucks, and buses). VOCs are also emitted from stationary sources (primarily industries) and area sources (individually insignificant sources that have a cumulative impact, e.g., lawn mowers, consumer solvent use, farm equipment).*

The OKI region was one of 96 urban areas in the country identified as not meeting ozone standards. The severity of each area's ozone problems is the basis for its classification as marginal, moderate, serious, severe, or extreme. Cincinnati was identified as a moderate non-attainment area. Areas with more serious problems are required to take more numerous and more stringent actions to attain the NAAQS but have more time to do so than areas with less severe problems. Any area that failed to meet the NAAQS by its 1996 deadline was supposed to be bumped into a more stringent classification with stricter compliance requirements.

The ISTEA, and later TEA-21, replaces the Federal Aid Highway Act of 1962 and all of its subsequent amendments. The primary goal of this law seeks to develop a national intermodal transportation system with logical interconnections between different transportation modes (i.e. light-rail connections with major airports). The law also promotes the secondary goals of simultaneously reducing energy consumption and air pollution.

OKI's regional transportation plan further defines the new direction of this legislation. "ISTEA shifts planning emphasis away from expanding highways and toward constructing a multimodal system in which transit, rideshare, bicycle and pedestrian facilities can offer a viable alternative to single-occupant vehicle travel. It calls for transportation planning to reduce travel demand rather than just manage travel demand; it addresses the transportation system's performance as well as its capacity."

Another important change with ISTEA and TEA-21 is that the decision-making authority for projects is shifted away from the federal government to the states and localities. Coupled with this change is an emphasis on planning. In urban areas, the Metropolitan Planning Organizations (MPOs) and the state transportation agencies both must develop 20 year long-range plans and 3 year plans (or TIPs) which identify funding for the projects.

Metropolitan Planning Organizations (MPOs), such as OKI, have been given increased influence for deciding how federal dollars will be spent in their regions. According to OKI, the long range planning process now includes attention to land use, travel demand and congestion management, intermodal connectivity, methods to improve transit service, and expanded travel by other modes.

OKI's Regional Transportation Plan - The Cincinnati region's Metropolitan Planning Organization (MPO) the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) adopted its long-range plan, *Looking Ahead: 2020 Metropolitan Plan* in 1998. The Plan is required to be updated every three years, and the next Plan is scheduled for adoption in 2001. The Clean Air Act Amendments (CAAA) and the Transportation Efficiency Act (TEA-21) defined the context and direction for the Plan. Some actions arising from these planning efforts include:

- high-tech tailpipe emission control program and use of alternative fuels;
- expansion of transit systems to include light rail and commuter rail, in addition to bus system improvements;
- "smart" highway surveillance systems to reduce delay, vehicle emissions and accidents;
- projects to promote bicycle and pedestrian travel that reduces vehicle trips;
- travel demand strategies such as employee commuting programs;
- corridor studies to further define recommended actions; and
- regional committees to deal with long range issues of land use, financing, and transit expansion.

The first phase of this plan must deal with achieving the federally mandated air quality standard by 1996 by emphasizing the tail-pipe emissions control program, the "smart" highways surveillance systems, and the highway capacity improvements that are already committed. The initial phase will also include expanded transit services, projects for new pedestrian and bicycle facilities, travel demand strategies and traffic operational improvements (i.e. centralized computer networks for traffic signals). Finally, during the first phase, three vitally important ad hoc committees will be formed whose work will be to make specific recommendations for implementing the remaining recommendations: Commission on Land Use, Commission on Transit Institutional Restructuring, and the Commission on Transportation Financing.

Implementation of this Regional Transportation Plan will have dramatic, long-term impacts on the residents of Boone County. The greatest of these will involve changes in future land-use patterns necessitating different development approaches. OKI's strategy for future land use development calls for more compact development that includes well-planned, attractive, and dense residential areas, with various multi-family types and smaller lot sizes for detached houses.

This Plan also suggests a mixture of land uses that would include neighborhood retail, public uses (i.e. libraries, post offices, parks), and day care. These compact developments would be served by extensive bicycle and pedestrian facilities, thereby reducing the need for many local automobile trips. Also, these developments would have the appropriately high densities that are needed to enable efficient transit service, thus enabling the residents to take transit for the commuting trips to their employment.

The transition to this more compact land use pattern would involve changing municipal zoning and subdivision codes to allow mixed-use and encouraging consistent development of pedestrian and bicycle facilities. OKI's strategy for implementing this change in land development is presented below in the discussion on the Commission on Land Use.

The Commission on Land Use - The Commission on Land Use, which formed during 2000, includes representatives from local and county planning commissions, City of Cincinnati planning staff, developers, and other individuals who possess expertise in land-use and transportation matters. OKI foresees that the recommendations of the Commission on Land Use should become the policies that would promote the compact land use patterns that foster travel by transit, bicycle or walking. These policies would then be reviewed by the various counties and municipalities for possible use in their zoning and subdivision regulations.

The future pattern of land-use should involve developing at a higher density with a mix of residential, commercial, public and industrial uses. Development will be served by multi-modal and inter-modal transportation facilities. Good pedestrian and bicycle access to transit facilities should become the norm. A better description of this more compact land use pattern will be presented in the final section of this Element-LAND-USE/TRANSPORTATION CONNECTION.

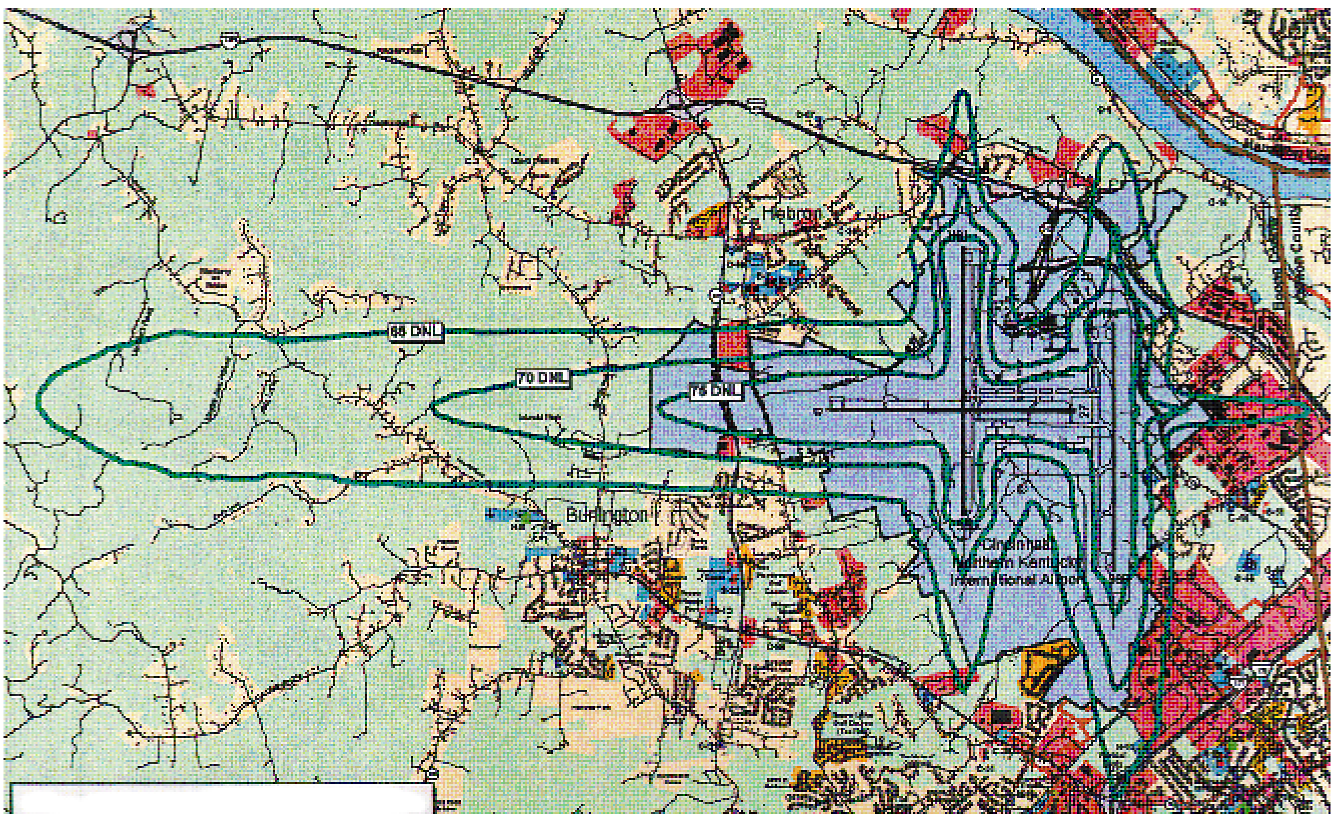
The Cincinnati/Northern Kentucky International Airport - In January 1991, the new 10,000-foot north/south Runway 18L/36R was opened by the Cincinnati/Northern Kentucky International Airport. Since that time there has been continuing controversy concerning airport noise impact on residential areas to the south and west of the airport in unincorporated Boone County and the City of Florence. These residential areas were not significantly effected by airport noise prior to the opening of Runway 18L/36R. Some citizens' organizations have been formed to generate proposals for the airport that might help in the mitigation of airport noise in those areas. These citizen groups will undoubtedly continue to be involved in future planning efforts by the airport. Both Boone County and the City of Florence remain concerned about the noise impact of night-time flight activity.

The 1990 Boone County Comprehensive Plan described the Airport's development of a PART 150 Study, which is the Federal Aviation Authority's (FAA) process for assessing the noise impact of all airport operations and then the recommendations for mitigation strategies. The 1990 Comprehensive Plan also listed the noise mitigation strategies proposed in the PART 150 Study, however, only portions of the study were approved by the FAA in 1991. The approved portions of the PART 150 Study are as follows: a 1,500-foot extension of Runway 18R/36L, a purchase assurance program, purchase of the Immaculate Heart of Mary Church and School, soundproofing of other schools and acquisition in the 75 DNL contour, a residential soundproofing and purchase assurance program, purchase of certain undeveloped lots, establishment of an implementation committee, noise monitoring of the new runway, preparation of noise contours annually until 1995, and a 24-hour system for recording public comments. Most of these recommendations have been implemented by the Airport.

Several other recommendations from the PART 150 Study were not approved by the FAA or were deferred until more information was obtained. To obtain this needed information and to complete the noise mitigation process, the Airport undertook the development of a PART 150 Supplemental Study. The specific objectives of this study were to update the Noise Exposure Maps and to continue the analysis of noise abatement and land use management alternatives.

In April 2000, the Kenton County Airport Board adopted the FAR Part 150 Study Update, which included revised Noise Exposure Maps (NEM) and a Noise Compatibility Study (NCS) for the Cincinnati/Northern Kentucky International Airport. The proposed NEM is based upon forecasts and assumptions contained in the Airport Master Plan, the Environmental Impact Statement (EIS) for the proposed Runway 17/35 and the Part 150 Study Update. FAA review would include approval of the 1999 Noise Exposure Map (NEM) for the existing noise conditions and the proposed 2005 NEM with Noise Compatibility Program (NCP) implementation. **Figure 11.2**, **Figure 11.3**, and **Figure 11.4** depict the report's existing and proposed noise contours as well as noise mitigation efforts.

Figure 11.2 - 1999 Noise Contours



The adopted Part 150 Study Update contains 31 measures for immediate implementation with the existing runway system (1999) and one measure (OP-6) to be implemented with the development of proposed Runway 17/35 (2005) and the 2,000 foot extension of Runway 9/27. The Part 150 Study Update recommends the following:

A) A list of operational noise abatement measures (turbo jet aircraft over 70,000 pounds).
B) A list of Land Use Mitigation and Management Measures.
C) A list of Implementation Measures.
D) Noise Compatibility Program Mitigation (1999 NCP) Area of Eligibility
E) Noise Compatibility Program Noise Exposure Map (2005 NCP) - Activity Levels
F) Noise Compatibility Program Costs
G) Noise Compatibility Program Implementation Schedule

Figure 11.3 - 1999 Noise Mitigation

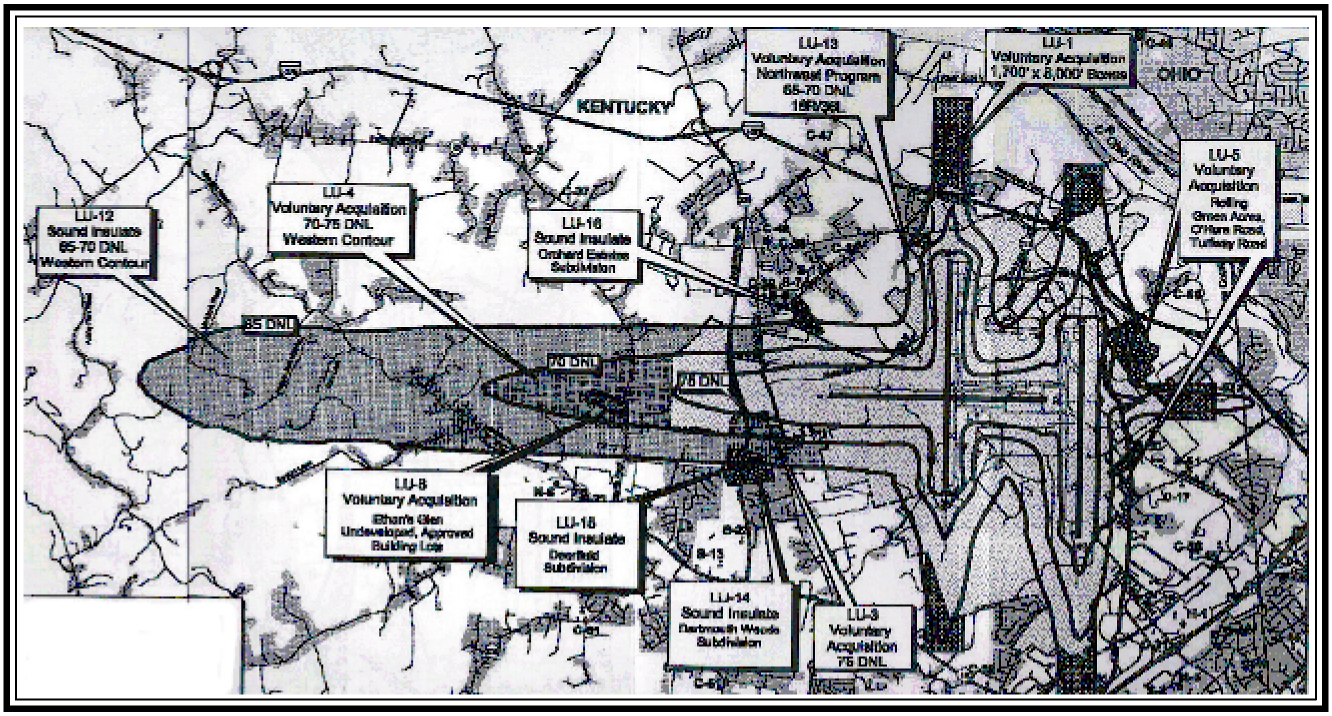
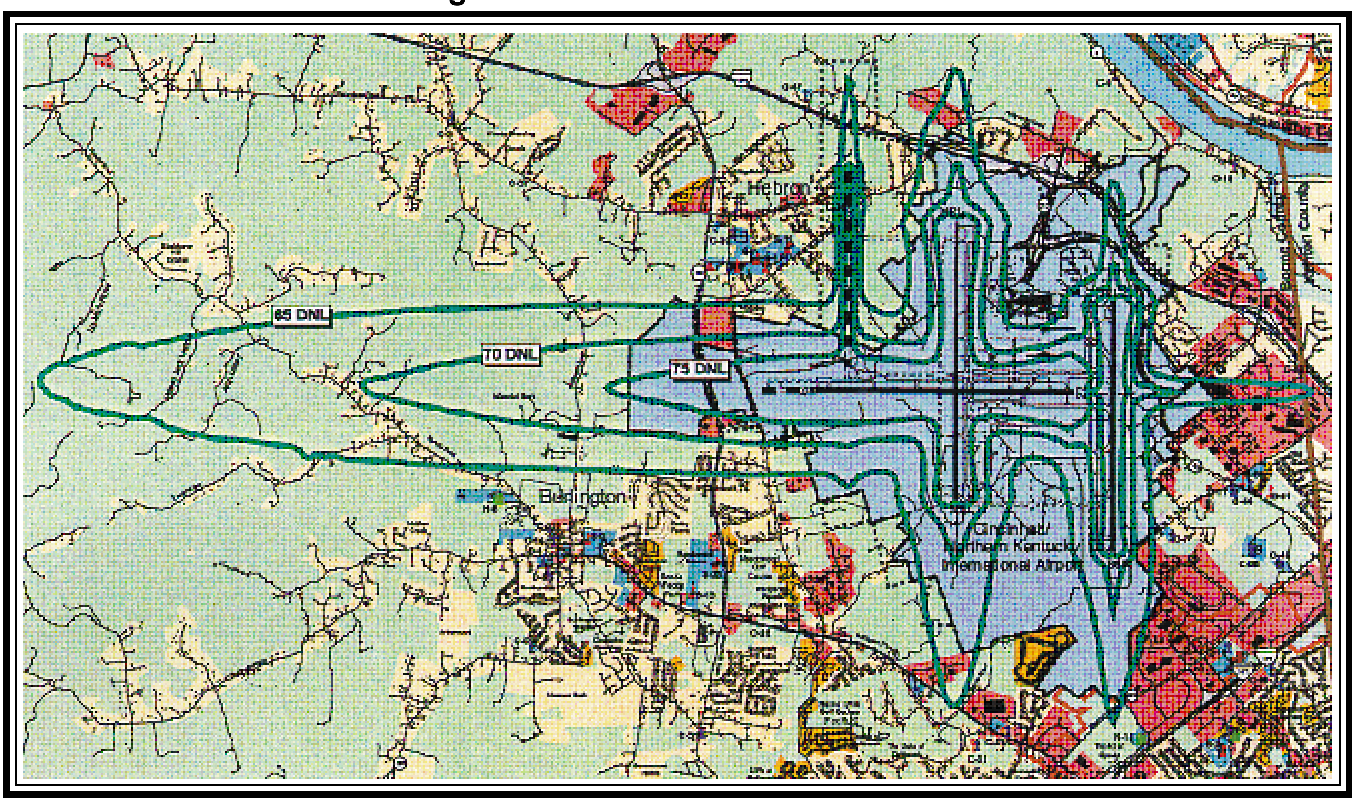


Figure 11.4 - 2005 Noise Contours



In 1993 the Airport began the process of updating its Master Plan. The Airport Master Plan was adopted in 1996 and recommended an overall Airport Layout Plan (ALP) package. This package included the following: existing and future airport layout plans, airport data summary, existing and future terminal area plans, south airfield plan, airspace plan, approach plans for all runways, on and off airport land use plan, airport ownership plan, airport environs survey and airport photography. The Airport is currently updating its Master Plan by completing a Terminal Area Study. The most critical issue of the 1993 process was analyzing where another new runway would be built. The Airport narrowed a list of 18 alternative runways to five options, and initiated a public involvement process to obtain information from citizens and organizations about their reactions to the different runway alternatives. In late 1994, the Airport decided that Alternative #17 would be the preferred future runway alignment. The proposed runway (17/35) would be another north/south runway located 4,300 feet to the west of the present Runway 18R/36L (the original north/south runway) and north of Runway 9/27 (the east/west runway). The runway would not be built until a certain aircraft operations (departures and landings) threshold was met. The Airport's consultant predicted the earliest need for this new runway would be by the year 2003. The airport estimated that over 1,210 acres, 222 homes and 10 businesses would have to be acquired to enable the building of this runway. A portion of Kentucky Highway 20 would also have to be relocated, and Hossman Road, Conner Road, and Limaburg Road would be discontinued as through routes or else relocated. An Environmental Impact Statement (EIS) for Runway 17/35 is currently underway..

The Airport's Master Plan also proposes the building of an airport perimeter road, along the east side of the airport, that would connect on the south with KY 18 (west of Houston Road) and on the north to the Mineola Interchange on I-275. The Master Plan also proposes frontage roads to parallel I-275. Both frontage roads would then connect with the relocated KY 20. There would also be east and west service area access roads that would both connect to the proposed I-275 frontage roads. Of course, a light-rail alignment is proposed to connect with the central services transportation center within the airport. Other perimeter roadway improvement projects, proposed in the Airport's Master Plan, include a Houston Road/Airport By-Pass connector, a Mineola Pike/I-275 interchange upgrade, a Tower Drive/relocated Donaldson Road connector, a KY 212/KY 8 connector road, and a KY 3168/KY 237 connector road. As a result of the OKI Northeast Boone County Major Investment Study (MIS), the Airport is proceeding to complete a KY 212 / KY20 / KY 236 / I-275 Interchange Study and Boone County is pursuing the other recommendations in the adopted OKI Northeast Boone County MIS.

Railroad - Rail service in Boone County is provided by two rail lines, the Norfolk and Southern Railroad and the CSX Railroad. Only the eastern portion of the county, specifically the area east of I-75/71, has rail service. The tracks located in the county do provide service to all points in the United States.

In addition to individual companies, freight rail service is provided to three industrial parks in Boone County: Northern Kentucky, Richwood, and Walton. The railroad companies can provide design services to individual users needing rail service. In fact, the Southern Railway participated in the design of the Walton Industrial Park.

At present, the railroads do not expect to expand the railroad network to other parts of Boone county. The topography and expense involved make such an undertaking very unlikely. However, it is expected that new users will be adequately served by the existing tracks.

River Transport - The Ohio River comprises approximately one half of Boone County's border. As one of the major rivers in the United States, the Ohio River is part of a vast river transportation network. The 39.1 mile river shoreline of Boone County has historically been under-utilized by river traffic for docking or storage.

At one time there were three ferry crossings in Boone County. The Anderson Ferry, in the Constance area, is the only vehicular ferry still operating in the county.

The Boone County river shoreline presently lacks the appropriate infrastructure of roadways and rail service needed to accommodate a large riverport facility. However, Boone County's Ohio River shoreline is viewed as an undeveloped resource for the county. Therefore, it shall in the future be studied to ascertain its potential for various land uses such as business, residential, resort and port operations, and to determine the needed surface transportation connections to such uses.

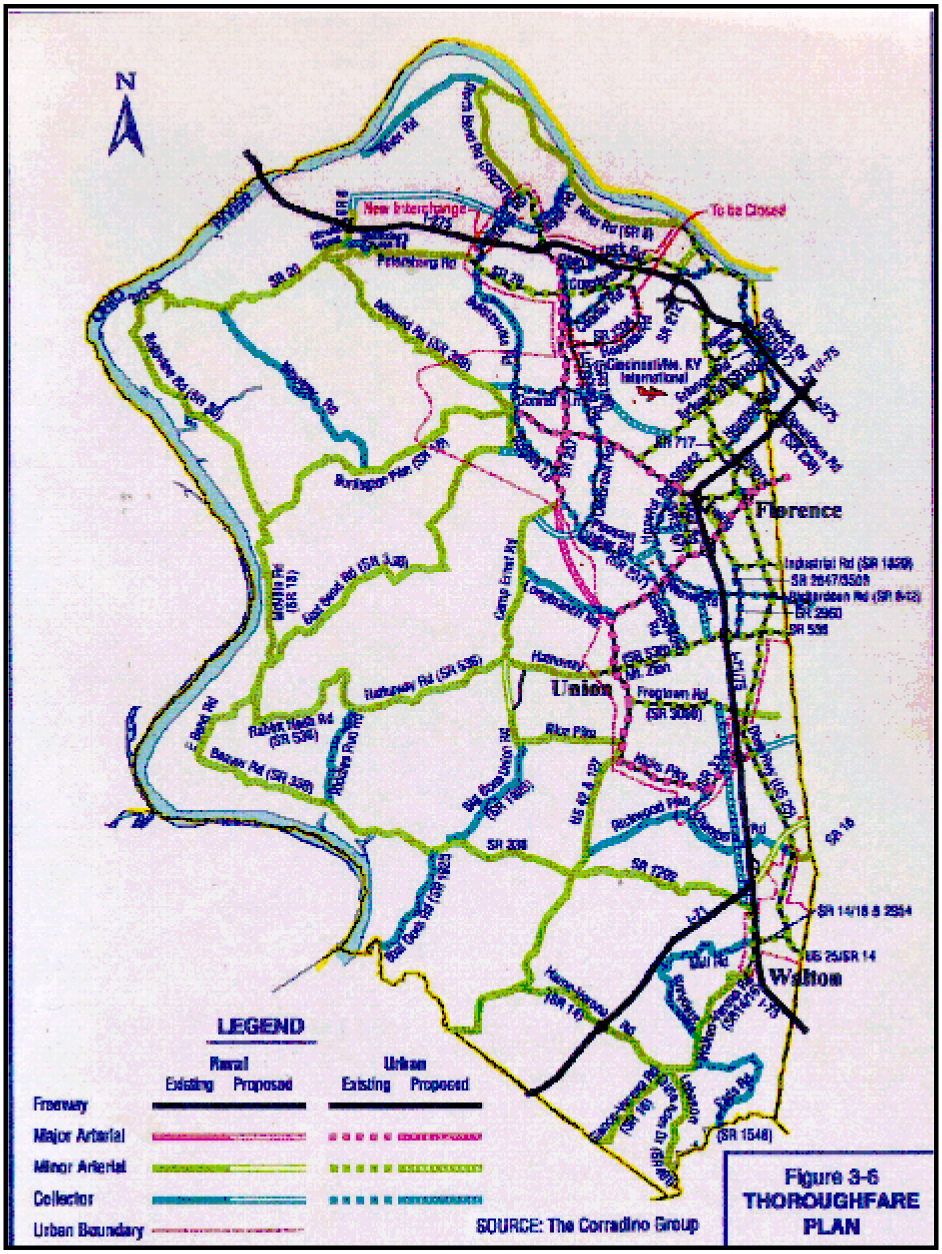
2. 1996 BOONE COUNTY TRANSPORTATION PLAN

The 1996 Boone County Transportation Plan was a recommendation stated in the 1995 Boone County Thoroughfare Plan, which was adopted as part of the 1995 Boone County Comprehensive Plan. It constitutes a multi-modal transportation plan for the year 2020 with a thoroughfare plan component and a long range Transportation Improvement Program (TIP) component. The transportation plan serves as a guide for long range transportation improvement decisions. The thoroughfare component assists in the preservation of rights-of-way and corridors for transportation facilities and establishes a consistent framework for the design of new transportation facilities.

The 1996 Boone County Transportation Plan, prepared by the Corradino Group for the Boone County Planning Commission, views Boone County as an integral part of the Cincinnati Metropolitan region, while also recognizing it as a dynamic community in its own right. This overall transportation plan developed during 1995 includes a detailed automobile/truck, bicycle and pedestrian thoroughfare plan, and a transit plan. The transportation plan has been prepared as a step toward developing a formal Capital Improvement Plan (CIP) for the four legislative units in Boone County.

The first step toward preparing a county transportation plan was to develop a planning process which included the conceptual or strategic 1995 Boone County Thoroughfare Plan. This plan addressed the general automobile needs of Boone County and was included as part of the 1995 Boone County Comprehensive Plan. The 1996 Boone County Transportation Plan recognizes all existing planning efforts, providing more detail where necessary and filling in missing pieces of transportation planning in Boone County. Although the preparation of the 1996 Boone County Transportation Plan is recommended in the Goals and Objectives of the 1995 Boone County Comprehensive Plan, it is a separate document and was adopted as such.

Figure 11.5 - Thoroughfare Plan



The Transportation Plan is not an amendment to the Comprehensive Plan. Rather, it is to be one of many planning tools utilized during the review of applications submitted for development in the county. The plan informs all persons, public and private, of the anticipated road improvements that will be necessary to accommodate the growth expected through the year 2020. The Transportation Plan has been presented to all four legislative bodies. The adoption of this plan has helped the county to justify their requests for state and federal funding.

The Corradino Group was assisted in the development of the Transportation Plan by a Technical Advisory Committee comprised of representatives from Boone County Fiscal Court, Florence, Walton, and Union, as well as Boone County Planning Commission staff, the Cincinnati/Northern Kentucky International Airport, the Kentucky Transportation Cabinet, the Transit Authority of Northern Kentucky (TANK), and the Ohio-Kentucky-Indiana Regional Council of Governments (OKI). Public forums were held in order to gain public input on the plan, and nearly 700 people and agencies were invited to attend and comment on the plan. In addition, advertisements occurred in the Kentucky Enquirer, Kentucky Post, Boone County Recorder and Florence Recorder, as well as a feature on an evening news broadcast of WLWT Channel 5 (NBC).

The Plan - A major element of the plan examines transit service in the county, a key component in the multimodal transportation system. The existing transit system was analyzed against projected population and employment numbers for the year 2020. The results include recommendations as to where additional transit service should occur in the future. Furthermore, the bikeway system component of the plan expanded on the OKI Regional Bicycle Plan and the Pedestrian/Bike Plan For The City of Florence And Boone County, Kentucky. Proposed bicycle corridors are shown in the 1996 Boone County Transportation Plan, and space is recommended for bike lanes on all new roadway improvement cross-sections. A key recommendation is to make all reconstructed roads bike friendly at the time of construction and avoid relying on Transportation Enhancement Grant funds to construct bike facilities after the road is completed.

The Transportation Plan includes an examination of the capacity that the roadway system must have to handle existing and future traffic volumes. A computer model provided valuable information about future needs but was not accepted as the endpoint. The Advisory Committee made several qualitative changes based upon “real-world” knowledge in arriving at a list of needed projects.

Improvement Program - An annual state and federal funding level of $15 million was reached based upon the portion of annual-vehicle miles of travel or population of Boone County to the State. This figure projects a total of $314 million available through the year 2020.

The proposed thoroughfare improvements themselves are classified into two separate categories. The first includes Capacity Expansion Projects comprised of new roadways, interchanges, and additional lanes. The second, Preservation Projects, includes resurfacing, minor realignments, roadway improvements, bikeways, walkways, etc. The breakdown of funding for Capacity Expansion Projects verses Preservation Projects is generally 30% to 70% respectfully.

The Capacity Expansion Projects phasing list is shown in **Table 4-5** of the 1996 Boone County Transportation Plan. The table shows the location of the project as well as the project performance score based upon rankings by the Technical Advisory Committee. Besides being ranked by performance, the projects were also phased where funding could be accommodated. The phasing is designed to coincide with the state’s six-year plan. If insufficient funding was present then the project could be delayed until the next phase where sufficient funding was available. Projects anticipated to be built by the private sector, a partnership between the private and public sectors, special local or state government economical development initiatives, or a partnership between the Cincinnati/Northern Kentucky International Airport Board and the Kentucky Transportation Cabinet were labeled as “Special” funding. These are needed projects with no identified funding through normal sources that would primarily benefit a specific site or area.

The Preservation Projects appear in **Table 4-7** of the 1996 Boone County Transportation Plan. That list is a starting point as a short-range transportation Capital Improvement Program as priorities will undoubtedly change with development demands. If identified Preservation Projects would be taken care of by planned Capacity Expansion Projects, then the Preservation Project can be eliminated in order to free up funding for projects otherwise unfunded.

There are more Capacity Expansion projects that can be accommodated through normal funding. Over $286 million is forecasted as the need for Capacity Expansion projects, while $96 million is anticipated to be available. This will require that the alternative methods of funding described in this element be implemented.

KY Transportation Cabinet Six-Year Plan - The Six-Year Highway Plan is a bill enacted by the Kentucky state legislature to program funding for specific roadway improvements throughout the state. The plan schedules design, right-of-way acquisition, and construction money in phases for each roadway project. The current Six-Year Highway Plan was enacted in the year 2000 and plans through the year 2005. It is updated and re-enacted every two years by the Kentucky Transportation Cabinet. The following list is a summary of the improvements planned for Boone County roadways as indicated on the Six-Year Plan:

I-275 bridge inspection over the Ohio River near Lawrenceburg, Indiana.
Add restroom facility to I-71 weigh station.
Reconstruction of US 42 from KY 536 northeast to Florence city boundary.
New bridge on Mt. Zion Rd over railroad east of US 25 (Dixie Hwy).
Reconstruction and widening of KY 237 (North Bend Rd) from I-275 to just south of KY 8 (River Rd).
Reconstruction of KY 536 (Mt. Zion Rd) to 3-lane urban section from Union to I-75.
Widening of Turfway Road from US 25 (Dixie Hwy) to Turfway Park.
Reconstruction of US 25 from KY 1829 (Industrial Rd) to KY 338 (Richwood Rd)
New bridge construction on KY 536 (Mt. Zion Rd) at South Fork Gunpowder Creek.
"Beat The Jam" traffic information program.
ARTIMIS - traffic management system.
Bridge replacement over railroad on High Street in Walton.
I-275 resurfacing from Ohio River bridge to west of KY 237 (North Bend Rd).
Resurfacing of I-275 from west of KY 212 (Airport exit) to west of KY 237 (North Bend Rd).
Resurfacing of I-71 from Gallatin County line to I-75.
Repair embankment failure on US 42 (mile point 2-3).
Perform interchange study for new access from I-275 to Cincinnati/Northern Kentucky International Airport.
Construct new interchange at I-275 and KY 20 (near airport interchange).
Reconstruct and widen KY 237 (Camp Ernst Rd/Pleasant Valley Rd).

The Boone County Fiscal Court has contributed funding towards the design of several State roadways including the Frogtown-Richwood Connector and North Bend Road. These actions generally make a project more attractive to the State as well as accelerate a project's schedule of implementation. Similarly, private land owners have in the past dedicated right-of-way needed for reconstruction or improvement of State roadways. In order for Boone County to keep up with roadway improvement demands, a consortium of local government, developers, builders, and land owners is needed.

Funding Opportunities - Since most of the major roadways in Boone County are state owned and maintained, Boone County continues to be dependent on federal money for improvements to these roads. Under TEA-21, the proposed improvements must be on the OKI region TIP to be funded. Because there are so many projects in need of funding statewide and region-wide, the OKI and KTC priorities for project funding usually do not address all the needs of the local community. In fact, there are not enough funds to cover these needs. Boone County has reached a threshold in its development that it no longer enjoys the provisions of the multi-lane facilities such as KY 18 and KY 237 being in place before the development occurs. The county is now faced with rapid development on a road system that is not designed to serve it, and without the future commitments on the TIP to build it. The following section presents major types of funding opportunities.

State and Local Funding Sources

State funds provide Kentucky with the means to construct, maintain and repair state, county, and rural roads, many of which do not or cannot receive federal funding. The largest sources used for funding these roadway systems comes from the County Road Aid and Municipal Aid Program as described in the beginning of this chapter.

The following alternatives may be able to be utilized for additional funding for roadway improvements and maintenance. Several of these items are successfully used by other states to provide supplemental or additional funding for the roadway system.

Road Levys - On roads where state funding is not available, Boone County should think about establishing a county wide road levy. This levy, collected with county taxes would establish a fund that would provide monies for roadway improvement and maintenance.

Bonds and Gasoline Taxes - The State of Ohio has established a bond program, the State Capital Improvements Program (SCIP), also known as Issue 2, and a Local Transportation Improvement Program (LTIP). The LTIP raises its funds through a one cent gasoline tax for roadway funding. Funds from the SCIP and LTIP are distributed by the Ohio Public Works Commission on the basis of population among the 19 public works districts in Ohio. In this area, Hamilton County, Ohio is a district in and of itself while Butler, Clermont and Warren Counties, Ohio are another one of 19 districts. Since 1987, the SCIP and LTIP have provided Ohio counties with approximately $840 million dollars for improvements.

Traffic Impact Fees

Over the past several decades, many states have been working for alternative revenue sources for funding roadway improvements. As a result, a growing number of states are passing traffic impact fee enabling legislation that shifts the burden of paying for capital facilities to new development. Impact fees are one time fees charges to developers to help cover their projects need for additional infrastructure capacity. The courts have developed three general guidelines to establish traffic impact fees. The first two items establish the impact fee. The third item provides a guideline for the allocation of impact fee revenues. The three guidelines are:

1. There is a reasonable relationship between new development and the need for new roads;
2. The amount of the fee is limited to the new development share of the cost of road improvements; and
3. The development will benefit from the use of the fees to construct new roads.

It is important to note that when using traffic impact fees, it must be understood that a municipality must be careful that it does not "double charge" a new development for road improvements. Credit from other programs such as the gasoline tax should be given to projects utilizing traffic impact fees to avoid legal challenge.

Court decisions have established the following legal guidelines for impact fee development:

Impact fees are to be predicated on the improvements made necessary by new growth, not improvements made necessary prior to the adoption of the impact fee.

To minimize the risk of overcharging, an alternative method for calculating an individual's impact fee should be provided. This allows prospective feepayers to calculate a fee based upon the unique aspects of their projected impacts rather that using a standard fee schedule adopted by the government.

A time limit should be placed on government's use of the impact fee. If the time limit has expired (typically six or seven years), the feepayer can request a refund from the government.

It is desirable for districts or zones to be created in an impact fee system so that a geographical relationship between the fees paid and the improvements implemented can more readily be demonstrated.

Furthermore, it was discovered that many municipalities reduced the fee by as much as 20 percent to avoid legal challenge. Montgomery County, Maryland has determined that only 50 percent of the need for new roadway improvements can be attributed to new developments. Therefore traffic impact fees can only account for 50 percent of the funding. The authority to impose traffic impact fees can reside in special enabling legislation, home rule powers, zoning or subdivision regulation legislation.

For the implementation of a traffic impact fee, the following procedures are suggested:

Implementation Procedures and Issues

To adopt an equitable schedule of transportation impact fees, several key steps should be undertaken. These include:

1. Develop a transportation plan. Regardless of whether the impact fee system is to be an improvements-driven or a standards-based system, sound public policy argues that an understanding of transportation improvement needs be established. In an improvements-based system, this plan is essential for the calculation of the cost per trip. In a standards-driven system, the unit construction cost and capacity are natural outgrowths of this plan. This plan has been accomplished in the <u>1996 Boone County Transportation Plan</u>.

2. Adopt traffic demand variable rates. Three demand variables are found in a standards- driven transportation impact fee: trip generation, trip length, and percentage of new trips. In an improvements-driven system, trip generation and, in some cases, percentage of new trips are considered. Most communities rely on the Institute of Transportation Engineers' (ITE's) Trip Generation Manual for trip generation data. When local trip generation data has been collected for specific land uses, this has been substituted for ITE data. Also, most ordinances allow the developer to provide land- use-specific data if they believe either of the following to be true–the land use they are proposing is not represented in the impact fee schedule; or the land use they are proposing is in the impact fee schedule but the trip generation rate is inappropriate. Both trip length and percentage of new trips are typically based on traffic studies, and both can be challenged in an independent impact fee calculation.

3. Establish accounting procedures. Impact fees must be maintained in separate accounts from all other revenues, including individual districts' fees, if applicable. Typically, the funds are expended on a first-in, first-out basis. The use of impact fees for ineligible expenses, such as operations and maintenance, must be spent in District A or, in some rare instances, on a project outside District A that will benefit the feepayers in District A.

Tax Increment Financing Districts (TIF)

TIF is the process of allocating increases in property tax revenues resulting from new development to a special fund to be used to pay for public improvements to an area as defined by an established boundary. The local government may issue bonds to finance public improvements prior to development in order to encourage upgrading of property in a certain area. The revenues that are allocated to the special fund as redevelopment occurs can then be used to retire the debt established by the local government. This technique has been found to be an effective means of encouraging growth in a particular area without burdening the public with the excessive costs of new improvements. A tax increment financing district would utilize all increase in taxes from the new development for roadway improvements within that district.

Special Assessment District

A special assessment district is an area designed to enable revenue to be collected from those properties that will directly benefit from the specific public improvement. Special assessment districts are a tool that is authorized for use in all 50 states.

For example, a special assessment district can be established for the modification of a highway interchange that would encompass all surrounding properties which directly benefit from the increased safety and convenience that interchange would provide. Unlike a tax increment financing district that only takes the increase in property tax from property improvements, special assessment districts assess properties within an established district and impose a special tax over a predetermined length of time. Special assessment districts can be established for projects such as interchange reconstruction, new roads, road widening and access improvements.

The legal basis of special assessment districts is the taxing power of the governmental entity. However, special assessments are not taxes; they are a shifting of improvement costs to a relatively small group of property owners in return for publicly constructed improvements that would directly benefit their property. Most states have procedures for implementing special assessment districts which are established in the enabling legislation.

Issues to research when establishing a special assessment district boundary are:

> The district boundaries should be established such that the proposed improvements benefit all properties being assessed within that district at least to the amount assessed;
>
> Properties outside the district should not derive any benefit from the improvement, or at least not to the same extent that those properties within the district are receiving; and
>
> The district should be established to encompass all willing participants and exclude any unwilling property owners when possible.

Maintenance of roads built through the Special Assessment Legislation is usually performed by the state or local government as the roads are dedicated to those bodies after completion of construction. Mall Road in Florence is a local example of a roadway built through an assessment district.

Roadway Functional Classifications

The recommended Functional Classification of roadways in Boone County consists of an integrated system of freeways, arterials, and collector streets. Their delineation serves to specify minimum design standards for new construction and major facility upgrades.

Freeways - A divided highway intended to serve the uninterrupted flow of traffic for both interstate and intrastate traffic through an area. Such highways are limited access in nature and are intended to serve long trips;

Arterials - Arterials carry both local and cross-county traffic, link various urban and rural communities, and move traffic to and from major traffic generators, serving both medium and long trips;

Collectors and Sub-Collectors - Collectors consist of county roads that are intended to carry local traffic over short distances and distribute traffic to arterials and/or to local streets (short- and medium-distance trips). This category may also include frontage roads when used adjacent to arterial facilities. Most of the roads within the county are classified in this Thoroughfare Plan as collector roads; and

Local Streets - These streets provide access to individual properties that abut them. In addition, they provide access to the collector and arterial system on a local level. Local streets serve residential, commercial, and industrial land uses as well as provide inks from short-distance trips Frontage roads may also be considered local streets. They are intended to serve the short trips only.

One of the major aspects related to Functional Classification of roadways is the degree to which access is provided to adjacent land uses. Within Boone County, access management and access controls along existing facilities, particularly Collector Streets, are an important component of implementation.

Residential subdivision connector roads in the sub-collector and collector classifications should be designed to serve subdivisions without on-street parking and individual driveway access. Public safety should be an important feature. Existing examples of this in Boone County include Oakbrook Drive, Wetherington Boulevard, and Triple Crown Boulevard.

Street Connections

The Boone County Subdivision Regulations contain specific criteria for evaluating potential street connections between developments and adjoining property. The Boone County Planning Commission maintains conceptual maps of possible future street connections for public review as well as to assist the Planning Commission in the development plan review process.

Pedestrian/Bike Path Plan

The Pedestrian/Bike Path Plan, City of Florence and Boone County was completed in 1992 and officially adopted by the Planning Commission, City, and county in 1993. The Plan concentrated mainly on the City of Florence, but also addressed some extensions of the network into the county in the West Florence area. It was conducted under the guidance of a joint city/county coordinating committee.

The recommendations of the Plan contain thirteen specific proposals, but in general recommend that the sidewalk system in the City of Florence be completed where voids exist, that a network of designated bike lanes and routes be established in the City, and that several bike paths and lanes extend into the county. The Plan was submitted to OKI and KTC, and nine of the proposals were placed on the Kentucky Unscheduled State Highway Needs for Boone County list. This list includes projects that received OKI and KTC endorsement, but have no designated funding.

Several of the plan proposals have been utilized as applications for Transportation Enhancement Grants under ISTEA. In 1993, the City of Florence was awarded a grant to construct sidewalks along critical portions of Dixie Highway. Boone County Fiscal Court has applied for grants to construct bicycle and pedestrian lanes along KY 18 between Florence and Burlington, but has not yet received funding.

3. THE TRANSPORTATION/LAND USE CONNECTION

Land Development and Transportation Use since World War II

The existing land-use pattern in Boone County is the result of a combination of some dynamic trends that have impacted the suburban areas of most major metropolitan areas during the last 45 years. The pursuit of the American Dream of home ownership, realized by World War II veterans with their purchase of single-family homes in new subdivisions, began the process of a more dispersed, suburban settlement pattern.

The G.I.'s were facilitated in the pursuit of their dreams by the Veteran's Housing Authority's (VHA) programs that financed houses at low interest rates on long-term mortgages. Many of the early subdivisions along KY 18 and US 42 in Florence were built to accommodate the desires of G.I.'s and their families to move out from the inner city areas of Covington and Newport.

The construction of the interstate highway system during the 1950's, 1960's, and 1970's was another federal program that promoted development at the edges of the old central city. Major commercial/retail uses in the form of regional shopping centers were developed at the cross roads of interstate highways and older spiral, arterial roadways. Florence Mall, still the only regional shopping center in Northern Kentucky, was developed during the 1970's at the intersection of I-75/71 and KY 18.

Factories migrated from the central city since they were no longer tethered to the railroad lines along the Millcreek Valley. These factories and warehouses were almost always built as very large, single story structures near the interstate highway system. The long-haul tractor trailer, traveling the interstate highway system, replaced the train and its rail car as the primary means for moving manufactured goods. The Northern Kentucky Industrial Park was the initial prototype of this form of industrial development in Boone County, while Southpark is a more recent example.

Along with increased home ownership, there was also a substantial expansion of automobile ownership for the World War II veterans (much beyond their parent's generation). Probably this was initially considered an affordable luxury for the veterans and their families. However, because of the dispersed nature of the land use pattern and the separation of industrial, commercial, and residential uses mandated by zoning, the luxury of automobile ownership quickly became an absolute necessity. Travel by automobile became and still is the primary means of transportation in Boone County.

Planned Unit Developments-A New Prototype for Residential Development

Many of the early residential subdivisions in Florence did not have sidewalks, but utilized a traditional grid pattern for the layout of the streets (e.g. Grand Avenue, Edward Avenue, Roger Lane, and Circle Drive). Later subdivisions (e.g. Stonegate Meadows), did provide sidewalks, but used multiple cul-de-sac streets connected to internal collector streets, resulting in decreased connectivity.

In the late 1970's and early 1980's, a new prototype of residential development arrived in Boone County- the Planned Unit Development (PUD). Primary examples are Oakbrook, Triple Crown, and Plantation Pointe Subdivisions. This form of development is characterized by being divided into "pods" of separate housing types - i.e. apartments, condominiums, single family houses, and including a commercial area. The "local" streets of the "pods" are connected to an internal collector street, such as Oakbrook Road.

Oakbrook is often used as an example of better than usual pedestrian facilities, exemplified by the meandering pedestrian pathway along Oakbrook Road. However, the pedestrian facilities within the different "pods" are insufficient within the multifamily areas. Again, because of the separation of the different "pods", automobile travel continues to be necessary for most trips.

Future proposed residential development in Boone County will primarily continue as a system of cul-de-sacs connected to local streets, which then connect to collector streets (in both small and large subdivisions). In other large scale developments, more Planned Unit Developments (PUDs) and Cluster Subdivisions with "pods" connecting to internal collector streets have been approved. Both of these models of residential development will continue to assure that the primary means of transportation for residents will be by automobile.

Recent Growth Patterns

During the 1980's and 1990's, regional commercial development has expanded beyond the Florence Mall to include major developments in the form of large national, chain stores along Mall Road and in the Houston Road area. There has also been increased development of local-oriented commercial development, in the form of strip malls located along major arterial roads such as US 42 and KY 18. Industrial development continued to expand south from the Northern Kentucky Industrial Park along US 25 and at other intersections of the interstate highway, such as the Hebron and Mineola I-275 interchanges.

These commercial and industrial expansions have resulted in chronic traffic congestion problems on the arterial and collector roads. Improvements on these roadway systems only temporarily alleviate the congestion problems, as clearly exemplified by the improvements on KY 18 near Mall Road and I-75. The road improvements mean expanded capacity and therefore greater access. Greater access encourages additional development, which brings more traffic, and ultimately, increased congestion.

The Future: Integrating Transportation and Land Use

If Boone County continues to develop in this same low-density, dispersed form of development, which only accommodates travel by the automobile, it would almost certainly guarantee chronic traffic congestion, increased air pollution problems and a waning quality of life for residents of the county.

The first section of the Transportation Element, the Regional Transportation System, describes the need for the Cincinnati Metropolitan Region to evolve, in the future, to a more "transportation-sensitive" land-use development pattern. Spurred by the federal legislation such as the CAAA and TEA-21, OKI's most recent regional transportation plan has established a regional Commission on Land Use that would generate recommendations and policies that may be implemented in local zoning ordinances that would "promote land use patterns consistent with plan objectives to minimize the need for new highway construction and foster travel by transit, bicycle and walking."

A different type of planned development, one that will facilitate the evolution to a more "transportation-sensitive" land-use development pattern, is advocated in the first objective of the third goal the Transportation Element's Goals and Objectives. Unlike the usual form of suburban development of the last 40 years that adhered to the separation of uses, this new type of planned development would incorporate a mixture of uses including residential, retail, office, light-industrial, public parks, and other public uses in a tastefully-designed, compact development. The other defining element of this new type of planned development is that it will be served by an interconnected, multi-modal transportation system.

This system would include appropriately located transit stations or transit stops within walking distance (a quarter mile) of all residential areas. There would be well-designed pedestrian and bicycle facilities that would connect to the transit stations or stops. The bicycle facilities could include bike lanes or routes on roadways and bike lockers at the transit stations. Pedestrian facilities should be built along streets, wherever possible, and should provide an attractive, safe and direct route to the transit stops.

The roadway system within a Transit Oriented Development incorporates a traditional or modified grid pattern, thus allowing multiple access routes, unlike normal suburban development where residents must travel by vehicle from local to collector to arterial road. Arterial streets should be located at the periphery of the grid system assuring that regional traffic will bypass the developments. Arterial streets would then cease to be barriers to pedestrian travel.

Transit Oriented Development (TODs)

The "planned, mixed-use neighborhoods" are exemplified by the recently popular planning concept of Transit-Oriented Development (TOD). A Transit-Oriented Development has been defined as: *a mixed-use community within an average 2,000 foot walking distance of a transit stop and core commercial area. TODs mix residential, retail, office, open space, and public uses in a walkable environment, making it convenient for residents and employees to travel by transit, bicycle, foot, or car.*

Ideally, these Transit-Oriented Development Centers should be located at least a mile from one another to assure an adequate market area for the commercial uses. These developments would also serve the existing and future single-family, residential areas with new opportunities for nearby neighborhood shopping and with transit ridership, by park and ride lots.

The actual development process for these Transit-Oriented Developments would necessarily deviate from the normal single parcel for single use form of development. Though there could be sites, owned by a single entity, that could be developed this way, typically there will be more than one parcel and thus multiple ownership. A Specific Area Plan would be agreed upon and developed for the site requiring meticulous cooperation and coordination between the private and public sectors. It is possible for multiple developers to be involved in the site, building different sections.

To create a TOD, specific design guidelines and development standards for the site would have to be prepared that would replace the standard zoning regulations. Also, financial plans would have to be developed to assure that public improvements, including roads and parks, are developed in a timely manner, and that the costs distributed equitably to the participant private developers and public entities.

These Transit-Oriented Developments will not replace typical residential, commercial, or industrial development. However, with the appropriate siting of these developments, the existing land-use pattern of dispersed, low-density development could be rewoven into a more "transportation-sensitive" land-use pattern. This "transportation-sensitive" land-use pattern would give more options (i.e. transit, bicycle, walking) for travel than the just the automobile for all the residents of the community. Transit-Oriented Developments would offer a mix of housing types and real affordable housing options to its residents (also addressed in the Housing Element). TODs would also offer stronger community identity for residents with its incorporation of public spaces and uses.

The most appropriate area for siting TODs in Boone County would be within the proposed transit service areas and along the light-rail transit alignments. TODs would allow the expected, future growth of this area to happen in a more compact fashion, and also be connected to the future, regional inter-modal transportation system. Two specific sites were described in the Housing Element as being excellent locations for Transit Oriented Developments: the Marydale property on Houston-Donaldson Road and the undeveloped land on the southwest quadrant of the KY 18 and KY 237 intersection.

I-71 Corridor Transportation Study

OKI conducted a Major Investment Study (MIS) for the I-71 corridor from Florence and the Airport to Kings Island in Ohio. The Study was approved in August of 1998, and OKI has proceed to study specific priority segments of the corridor. The Study was directed by the I-71 Study Oversight Committee, and was intended to identify a preferred mode of transportation for future improvements throughout the corridor. The Study recommended Light Rail Transit (LRT) as the preferred mode. A tentative alignment was also selected. Other transportation modes considered include a No-build option, Transportation Systems Management (TSM), Busway, and High Occupancy Vehicle Lanes (HOV), as well as combinations of these options. Simultaneously, Metro and TANK will be expanding the regional bus system as recommended in the I-71 Study. This includes new buses, additional routes, park-and-ride lots, and a restructuring of transit service to serve the light rail system.

Currently, an Environmental Impact Statement (EIS) and Preliminary Engineering are being conducted for Phase I of the light rail system between 12th street in Covington and Pfeiffer Road in Cincinnati. Later phases of the light rail system will be developed as extensions in future years.

A key issue for Boone County is the proposal of two alignments, Florence and the Airport. Although the Airport is an obvious endpoint/destination for the system, this Comprehensive Plan notes that Florence could potentially generate much demand (ridership) for the system, and therefore, should be studied closely as to which of these alignments is more important to the system. For the Florence alignment, special attention is needed at rail crossings of Donaldson Highway, Turfway Road, and KY 18 to ensure that traffic congestion is not worsened.

Northeast Boone County Major Investment Study

This is another study conducted by OKI to address a critical area in the county identified in the 1996 Boone County Transportation Plan process. It is the first step in the implementation of various transportation improvements that have already been recommended in the Transportation Plan, the OKI Looking Ahead: 2020 Metropolitan Plan, the KYTC 6-Year Plan, and the Airport Master Plan. The Study was coordinated by a planning committee comprised of Boone County citizens and business people, and various agency representatives. The Study's main purpose was to develop a consensus and support for the prioritization of the improvements.

The final three prioritized recommendations are as follows:

1. The widening of North Bend Road (KY 237) north of I-275.
2. The improvement of the I-275/KY 212 interchange at the airport and the construction of new ramps and a new interchange with Donaldson Highway.
3. Construction of the South Airfield/Burlington Bypass from Zig Zag Road to I-275.

Secondary recommendations include:

- Construction of a connector roadway between Cavalier Boulevard and Woodspoint Drive (over I-75/71)
- Construction of a connector roadway between the South Airfield/Burlington Bypass and Houston Road.
- Addition of a partial interchange between Petersburg Road and I-275 west of the airport.

The following funding alternatives were recommended for project financing:

- Passenger Facility Charges
- Airport Parking Fees
- Car Rental Tax
- Local Occupational Tax
- Development Impact Fees
- Accommodations Tax
- County Sales Tax
- Vehicle Registration Fee
- Motor Vehicle Gas Tax

The study did not evaluate the concept of a new Ohio River bridge in the northernmost part of Boone County nor did it make any recommendations concerning this possible project. However, for the purposes of this comprehensive plan, potential impacts of such an improvement could include the following:

Labor pool accessibility.
Increased automobile and truck traffic from Western Hills and River Rd (Cincinnati) seeking easier access to interstate system and airport via I-275.
The need for additional lanes on the proposed reconstruction of North Bend Road.

1999 Existing Land Use

2025 Future Land Use

3400 0 3400 6800 10200 13600 17000 Feet

1 inch equals 3400 feet
Produced by the
Boone County Planning Commission
Planning Services Division
February 22, 2001