

East Area Plan -

**A Guidance Document for Development
Decisions in Eastern Boone County**

**A joint product of the Boone County and City of Columbia
Planning and Zoning Commissions**

September 2010

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INTRODUCTION & EXECUTIVE SUMMARY

PURPOSE AND PROCESS

The East Area Plan represents the culmination of collaborative efforts by both the City and County Planning and Zoning Commissions and study area stakeholders to arrive at a desired future development pattern for an area containing approximately 21 square miles or 13,446 acres in eastern Boone County (see Map I-1). The Columbia City Council requested that this plan be prepared in response to several large annexation requests presented in late 2008 and the future construction of the Stadium Boulevard/740 extension. It was Council's belief that the timing was appropriate to commission a study for the area to assess what the public's desires were for its future development.

With the assistance of City and County planning staff, the Commissioners conducted five stakeholder meetings to determine what were the key concerns, opportunities, and desired outcomes for the future development of the study area. During the first meeting, stakeholders were provided an overview of the study area's statistics and given the opportunity to provide input into the types of goals, objectives, and strategies that would shape the Plan's focus.

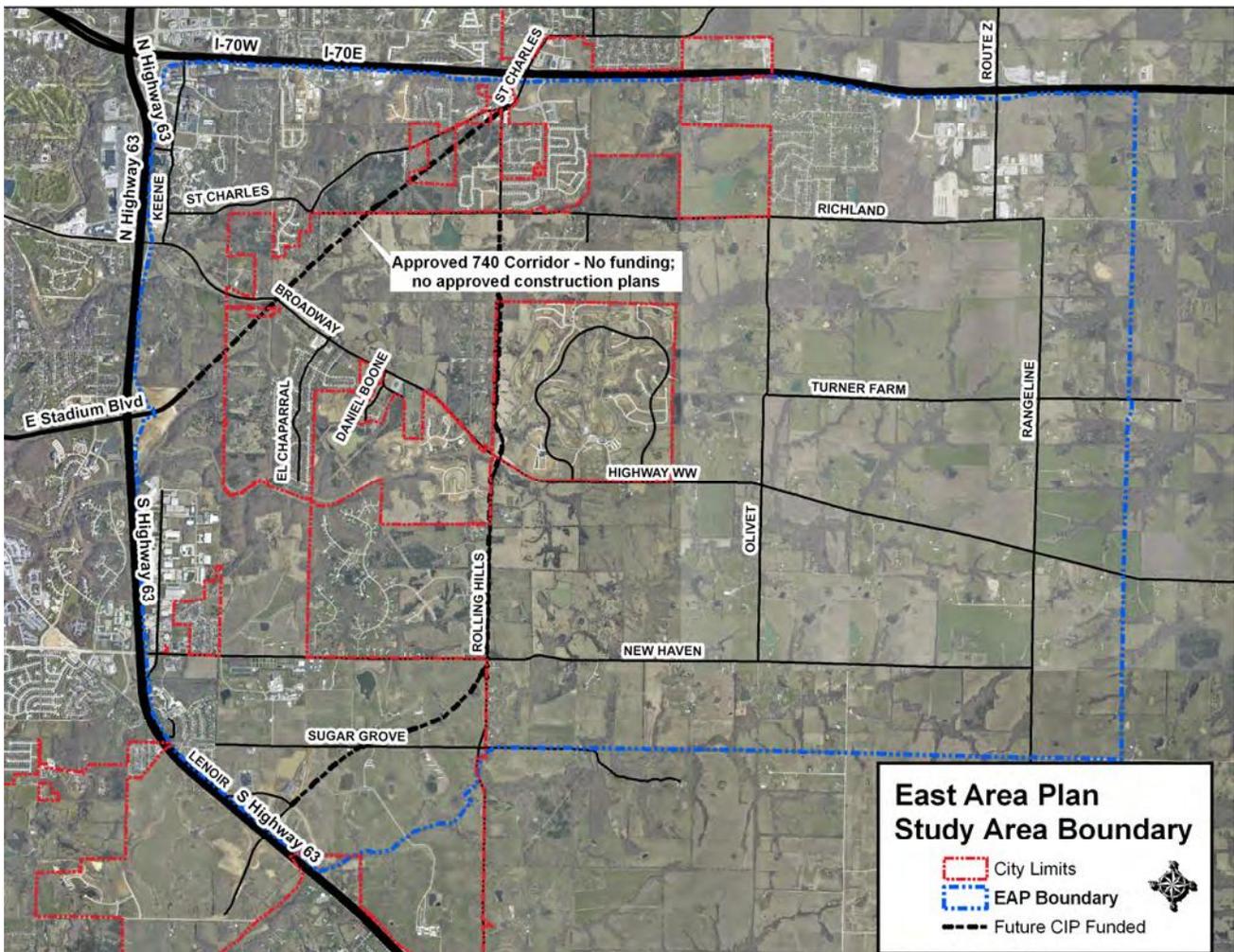
The comments, goals, and objectives gathered at the first meeting set the tone for what was important to the stakeholders for the future development of this area. Expressed clearly were the desires to preserve the rural character, protect the sensitive environmental features, improve the transportation system and protect it from over development, maintain the current development density, and have development quality increased. A full listing of the goals and objectives are presented at the end of this introduction.

The second and third three meetings were used to provide stakeholders an understanding of the existing conditions within the study area from the perspectives of environment (Chapter 1), infrastructure (Chapter 2) and land use (Chapter 3). During each meeting opportunities were provided for questions and answers as well as stakeholder input in the form of written comments.

In addition to the staff presentation during the third meeting, stakeholders participated in a visioning/mapping session designed to help the Commissioners and staff see graphically what land use pattern was desired. Many of the ideas expressed in this session have been incorporated into the Future Land Use Map that is part of this Plan. The map is shown at the end of this introduction as well as is more fully described in Chapter 4.

The fourth meeting provided the opportunity for the Commissioners and staff to provide feedback on the future land use map recommendations and how those recommendations would effect the future distribution (allocation) of land uses within the study area. It was also during this meeting that several concepts were presented on how future development design could influence the preservation of the environmental features within the study area.

The fifth and final stakeholder meeting was an opportunity to present the findings and recommendations of Chapter 4 – Land Use Analysis and Allocation and Chapter 5 – Growth Management to area residents. These chapters integrate the stakeholder comments, goals, and objectives, as relayed to the Commissioners and staff, during earlier stakeholder meetings about the desired outcomes for the study area.



Map I-1 –East Area Plan Study Area

EXECUTIVE SUMMARY

The East Area Plan covers an area containing roughly 21 square miles or 13,446 acres. The study area is bounded on the north by Interstate 70 and on the west by US 63. The interior of the study area is bisected east-west generally by three primary roads – Richland Road, State Rte. WW, and New Haven Road which is the southern boundary of the study area. Traversing the study area north-south are St. Charles Road, Rolling Hills Road, Olivet Road, and Rangeline Road/Route Z which acts as the study area’s eastern boundary. Within these boundaries are a total of 6 watersheds that include the Hinkson Creek, the Hominy Branch Creek, the Grindstone Creek, the Clear Creek, the Gans Creek, and the Cedar Creek. All but the Cedar Creek watershed flows through the study area to the southwest. Cedar Creek flows to the southeast.

The study area is primarily undeveloped with 9,201 acres being allocated to agriculturally zoned properties. The next largest share of allocated land, 3,027 acres, is zoned to accommodate residential land uses. The study area contains two defined industrial parks, Tradewinds and Lemone, which occupy approximately 586 acres. Office and commercial uses are generally equally distributed in the study area with the highest concentrations being to the northwest and central portions of the study area. These land uses account for approximately 106 acres and 457 acres, respectively. Figure I-1 provides the acreage and percentage breakdown of these zoning classifications and Map I-2 shows the zoning distribution of properties within the study area.

Throughout the stakeholder meeting process the desire to protect the environment and natural features within the watersheds were conveyed by study area residents. The environmental assessment of the study area has relied heavily on the use of the City’s Natural Resource Inventory (NRI) data. Based on this data, the study area is comprised of the features as shown in Figure I-2 and graphically depicted in Map I-3. As can be seen, the NRI data is consistent with the features of existing land use (zoning) as noted above.

EAP Zoning Distribution

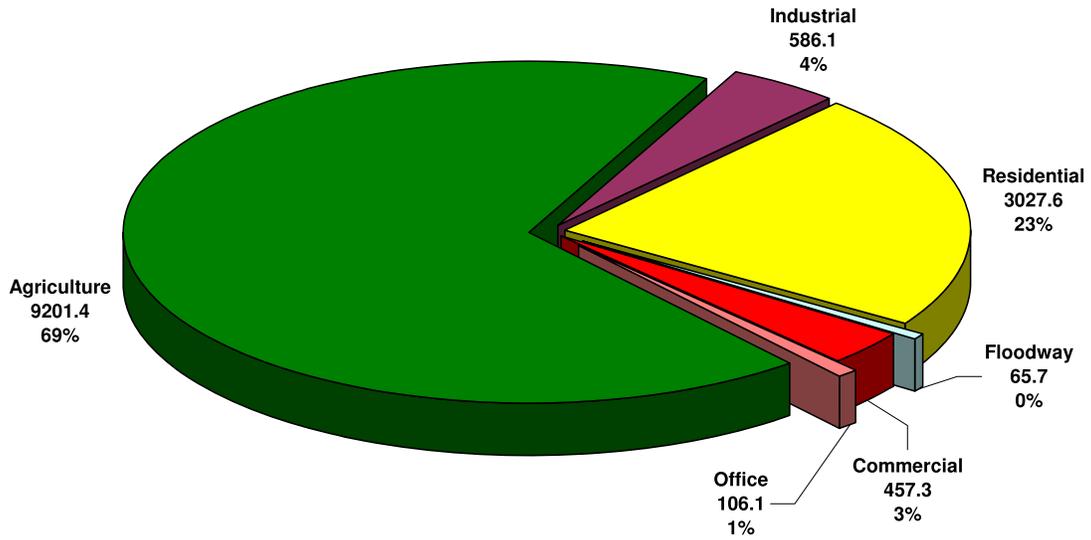
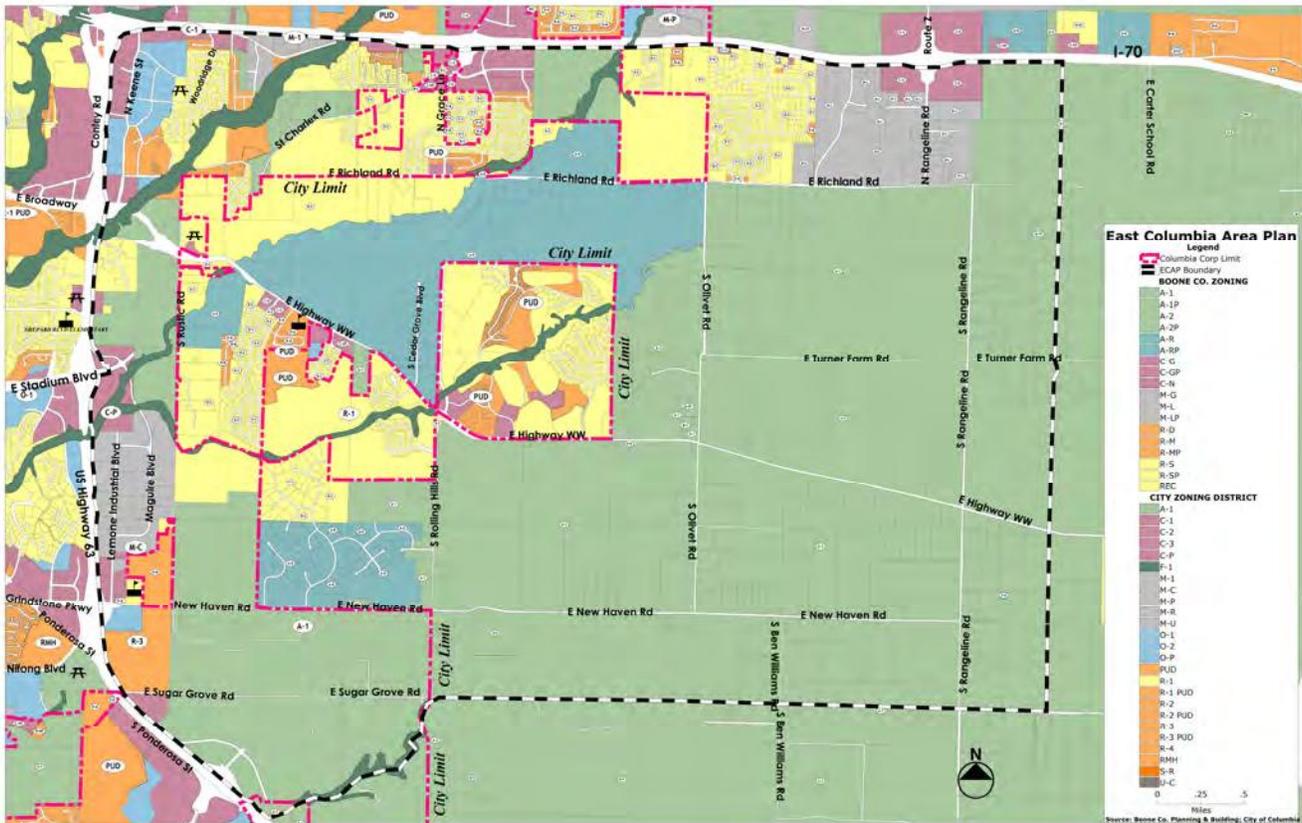


Figure I-1 – East Area Plan Zoning Distribution



Map I-2 – East Area Plan Existing Zoning
(Source: City of Columbia & Boone County)

EAP Land Cover Classification

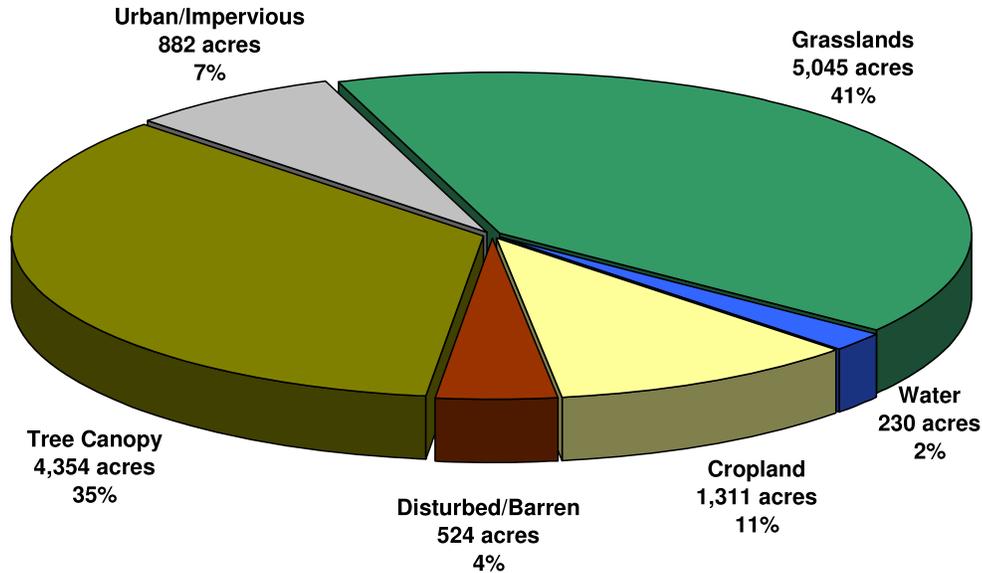
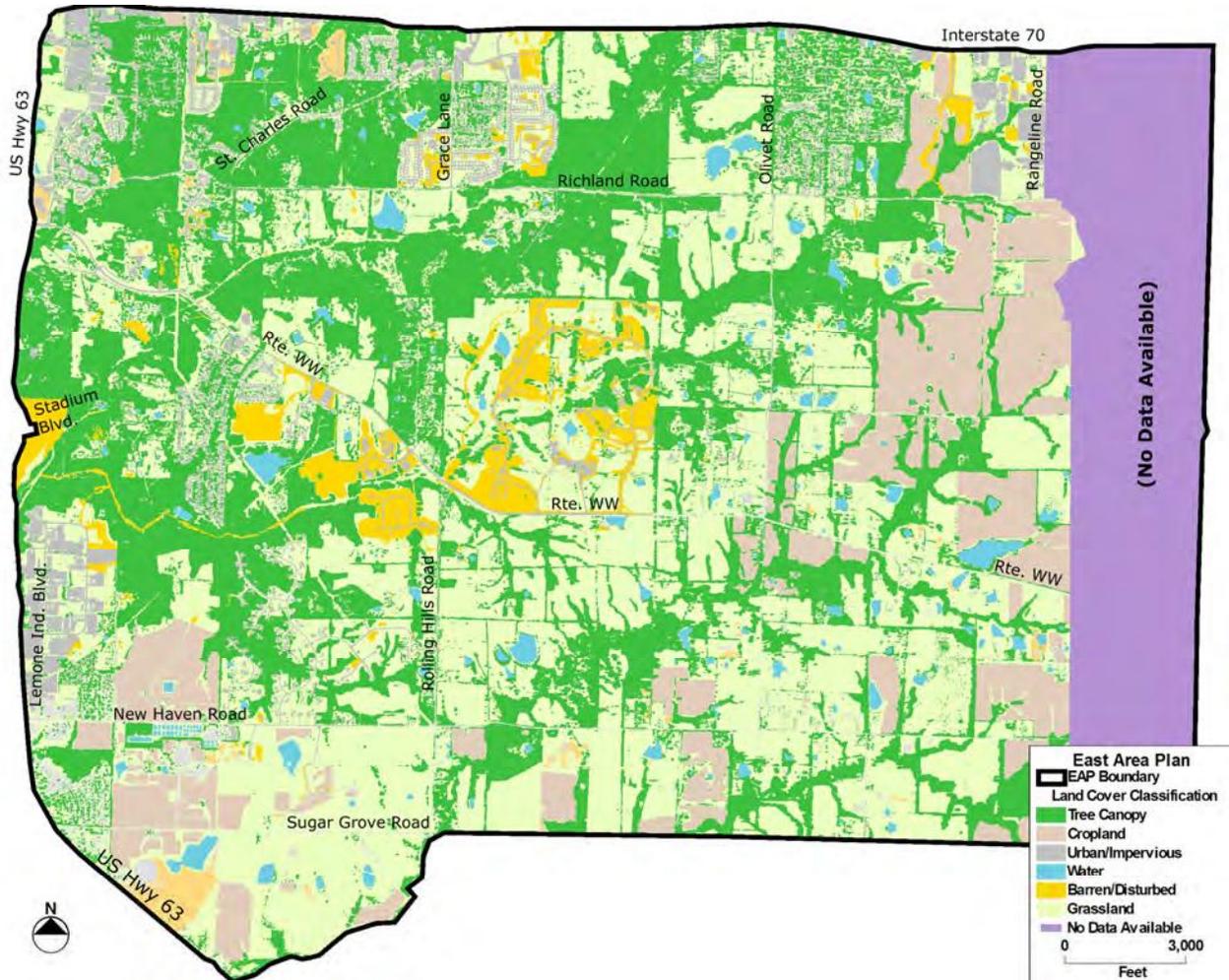


Figure I-2 – EAP Land Cover Classification

(Source: City of Columbia NRI)

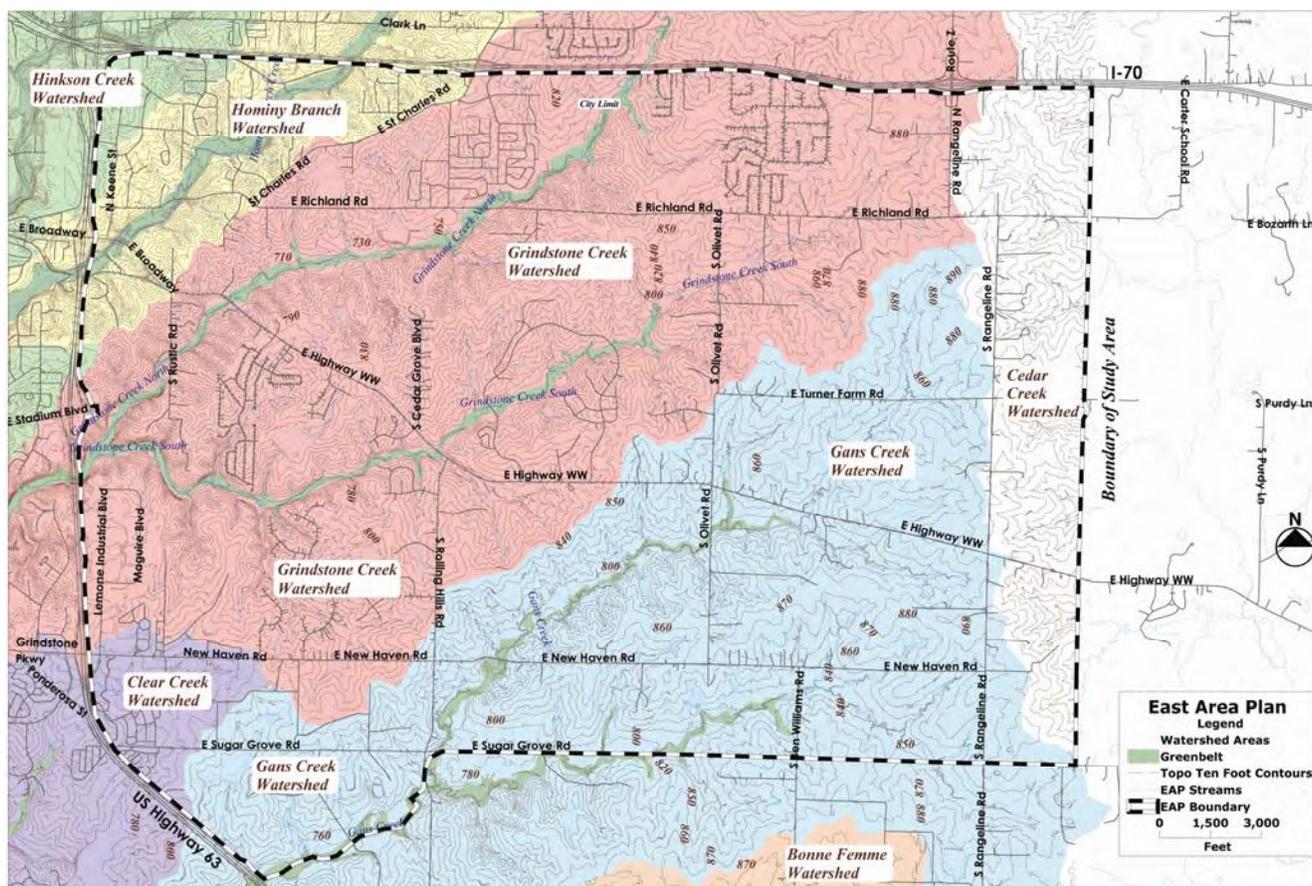
Map I-3 provides a graphical depiction of where and what types of land use activities are occurring within the study area. As illustrated, the greatest urban concentration of development is located in the western portion of the study area near the existing City limits. The intensity of development become less as one moves east in the study area. Of interest is the identification of the significant tree canopy. Much of this canopy follows the four primary creeks within the study area - the Hominy Branch Creek, the North Fork and South Fork of the Grindstone Creek, and the Gans Creek. Also illustrated within Map I-3 is the fact that a significant portion of the tree canopy within the study area lies outside the creek boundaries that are protected by existing City and County stormwater and stream buffer ordinances. It is these treed areas that are most susceptible to removal and were the focus of many stakeholder comments requesting that consideration for their protection be evaluated.



Map I-3 – East Area Plan Natural Resource Inventory (NRI) Land Cover

(Source: City of Columbia NRI)

The body of the Plan consists of a total of six chapters. Chapters 1 -3 present data relating to existing conditions, Chapter 4 provides the future land use allocation and zoning map, Chapter 5 provides recommendations for growth management, and Chapter 6 provides an implementation plan and matrix for bringing plan recommended changes to fruition. Within Chapters 1-4, the Plan follows a common theme of presenting information from a watershed based context. The choice of this common element was due to the important role that watershed boundaries play in the extension of infrastructure, particularly sanitary sewer which is generally the driver of increased development intensity. Map I-4 shows the watersheds that make up the study area.



Map I-4 – East Area Plan Watersheds

Chapter 1 provides an overview of the existing environmental conditions within the study area from a physical features as well as a regulatory perspective. Within the chapter focus is given on four primary environmental features (water quality, tree preservation, agriculture land preservation, and landscape preservation) that stakeholders and Commissioners believed important to consider as the study area continues to develop. Additionally, the chapter evaluates current regulatory standards that exist or need to be developed and/or improved to assure that future development does not negatively impact the remaining features found within the study area.

Chapter 2 provides an overview of the existing and planned infrastructure systems within the study area. The study area is not served by a single service provider, but rather multiple providers in all areas of utility and public safety services. The only exception to this trend is that the Columbia Public Schools provides educational services to the residents within the study area. The study area is served by two centralized sewer providers – the City of Columbia and Boone County Regional Sewer District, three water providers – City of Columbia, Public Water

District 1 and 9, two electric providers – City of Columbia and Boone Electric, and two police and fire services – City of Columbia and Boone County.

While the majority of chapter two is devoted to explaining service provider territories and responsibilities it also provides an overview of the planned and future extensions of these public services. Additionally, the chapter provides a description of the transportation planning process and how future roadway improvements are made within the study area. It also provides an overview of existing regulations and policies affecting development within the study area.

The conclusions of the chapter are that water and electric expansion will not prove to be a limitation to development within the study area - sufficient capacity exists to meet expected development demands. While sanitary service availability, on the other hand, is limited to roughly the western two-thirds of the study area thereby naturally limiting development in the Gans and Cedar Creek watersheds. The chapter concludes by indicating that transportation system improvements will be required to adequately support the future development demands within the study area. Utilizing the CATSO Roadway Plan as the only instrument to assess future improvements is not what that plan was intended for; therefore, additional evaluation criteria or methodologies should be identified.

Chapter 3 provides an overview of the distribution of land within the study area from a zoning district perspective and offers trend analysis relating to both the growth in housing and population for the prior 10 years. Overall, zoning within the study area is predominately agricultural (69%) with residential zoning (23%) coming in as the second most pronounced designation. Not surprising is the fact that the vast majority of the agricultural lands lie in the eastern half of the study area and the more urbanized area is located in the western half closest to the existing City limits (see Map I-2).

Chapter 3 also provides analysis that indicates population and housing have continued to grow within the study area over the prior 10 years. An estimated 21% change in population and 23% change in housing units have been experienced in the study area. Estimated total population at the end of 2009 is projected to be 8,049 and the estimate of housing units is projected as 3,498. Publication of the 2010 Census results in 2012 will allow for a verification of the projection methodology and may possibly require revision of the projections stated within the chapter.

The conclusions of Chapter 3 were that the zoning, housing, and population characteristics found within the study area are diverse and ever evolving. Changes to these elements will be driven by the location of public sewer and sufficient transportation facilities. The existing development conditions would not have been possible had public sewer not been extended into the study area. Chapter 3 concludes by stating that the purpose of the Plan is to

proactively look at future land use needs and attempt to develop a plan of action for decision makers to use when evaluating future zoning changes and development proposals.

Chapter 4 outlines the recommended land use allocations for the study area and the potential changes or additions to the current regulatory structure to facilitate the desired land use pattern. The chapter incorporates the findings of the existing conditions analysis (Chapters 1-3) and the expressed desires of the stakeholders and Commissioners gathered during the public meetings. The chapter identifies and recommends specific strategies for the protection of the environmental features within the study area as well as suggests that additional development density is appropriate and necessary to ensure that such features remain intact. Increases in development density are recommended to be evaluated on a case-by-case basis and must be designed so as to ensure “context sensitivity” in their placement within the existing built environment.

The chapter recommends that no new “regional commercial” development is necessary within the study area based on the findings that there exists an ample supply of existing, planned, and under-developed commercial property in or within five miles of the existing residentially developed areas. While no new “regional commercial” is recommended, the completion of partial nodes of commercial development is supported provided adequate infrastructure (primarily roads) are in place or upgraded to support the expanded use. Furthermore, it is recommended that new “neighborhood marketplace” nodes may be supportable in locations where future residential development will be proposed provided that sufficient infrastructure and population density are in place to support 50% of the proposed square footage at the time of zoning.

The allocation of future land use is further refined by noting that no additional industrial areas are believed to be needed within the study area. The existing industrial parks (Lemone and Tradewinds) coupled with the adjacent undeveloped industrial site north of Interstate 70 (the CAJF site) are believed to be more than adequate to meet future manufacturing needs.

And finally, Chapter 4 identifies the need to protect the agricultural character of the study area and proposes that development within the Gans and Cedar Creek watersheds be limited to agriculture use only. These watersheds are identified as “agriculture areas” within the chapter and designated the same on the future land use map based on the environmental analysis conducted in Chapter 1. Such designation is due to their limited urban development potential resulting from the lack of public services (roads and sewer) to the majority of the development ground. This designation may be temporary and is subject to change should urban services be provided to the watersheds.

Chapter 4 concludes with the graphic presentation of the land use allocation in the form of the Future Land Use Map (see Map I-5).

Chapter 5 provides strategies on how manage future growth through the use of various techniques such as managed infrastructure extension/improvement and development design standards. Chapter 5 also recommends reevaluation of several existing City policies relating to annexation and public service extension and/or provision.

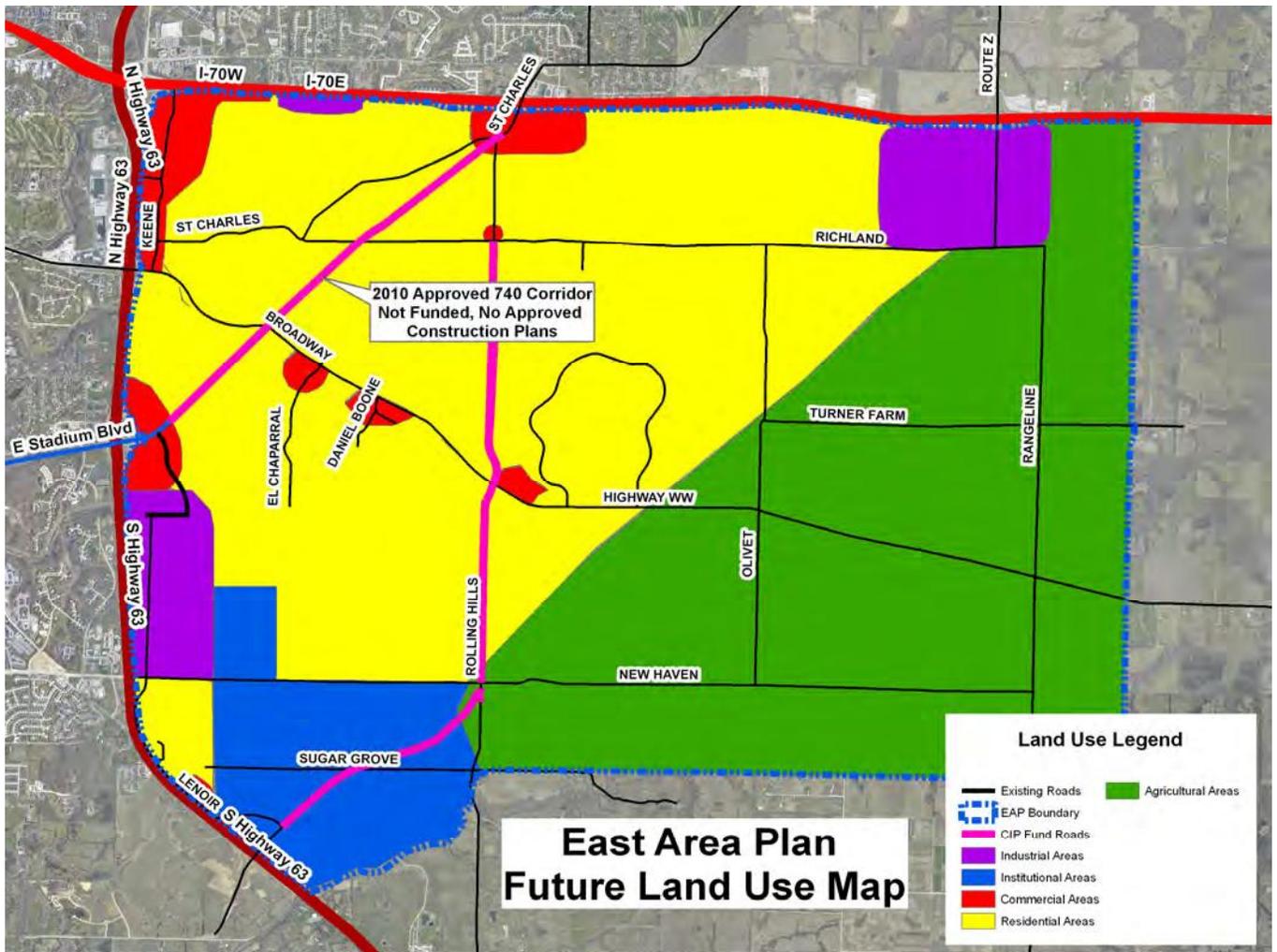
Chapter 6 presents the implementation plan matrix as a means of ensuring a greater likelihood that the recommendations of this plan are brought to fruition. This matrix summarizes all the action statements made throughout the Plan and categorizes them by type. Added to this, are columns that identify who will take the lead in addressing the action, what type of outcome is expected, and in what timeframe such outcome is anticipated to occur.

No good plan is ever fulfilled if it sits on a shelf. The implementation matrix places the ideas expressed by the Plan’s contributors in a format that can be easily monitored and incorporated into the work programs of both the City and County Planning Commissions and their respective staffs. Additionally, this matrix shows to the elected officials tangible issues that their constituents would like to see addressed.

This plan is not meant to be a static document, rather it is meant to be a living document that will be amended as conditions change within the study area. Such updating will occur on a cycle of no less than every 5 years, however, may occur more frequently as conditions warrant. While amendment is almost certain, it is believed that the core principals of the Plan will remain constant. The desire to protect the finite environmental resources found within the study area and the need to better direct the pattern of growth through comprehensive infrastructure policy are timeless and have significantly influenced how this Plan has been prepared.

The Plan’s purpose is to provide a document that may be used for guidance by not only the staff charged with the review of proposals within its boundaries, but also those appointed and elected to represent the interests of individuals living there. It is the City and County Planning Commission’s belief that this Plan provides the broad guidelines necessary for the development community as well as property owners to understand what is desirable for the continued growth of this area.

This Plan attempts to strike the necessary balance between two competing issues - environmental protection and development expansion. A successful, progressive, and forward-thinking community needs both. It is believed that this Plan strikes that balance and provides the opportunity to get ahead of what is believed to be the inevitable – a changed and developed landscape.



Map I-5 – East Area Plan Future Land Use Map

GOALS, OBJECTIVES AND STRATEGIES

The following goals, objectives and strategies represent the ideas and contributions of the study area stakeholders and Planning Commissioners. They provided the basis by which this the Plan has been prepared. These goals, objectives and strategies do not include a full analysis of the City of Columbia’s “Imagine Columbia’ Future” visioning document. Additional goals, objectives, and strategies may be added during a future revision.

ENVIRONMENT

GOAL

Preserve and protect the resources of the natural environment within the study area.

Objective

- Ensure that development does not increase the volume or velocity of stormwater run-off.

Objective

- Identify and implement programs and/or procedures that prevent development practices in areas that would result in increased erosion.

Strategy

- Consider highly erodible soil types for preservation
- Incorporate NRI in decisions

Objective

- Use and enforce “Best Management Practices” (BMPs).

Strategy

- Use performance-based regulations for stormwater management.

Objective

- Preserve existing tree cover and other natural vegetation.

Strategy

- Incorporate NRI in decisions

ENVIRONMENT (cont)

Objective

- Protect existing stream corridors.

Strategy

- Establish density based regulations that are tailored to site specifics not generalized standards.
- Maintain greenways and drainage ways > 100' buffer
- Incorporate NRI in decisions

Objective

- Retain and enhance the continuity of wildlife corridors and greenbelts.

Strategy

- Incorporate NRI in decisions

Objective

- Avoid unnecessary alteration by utilizing existing topography in development proposals.

Strategy

- Incorporate NRI in decisions

Objective

- Maintain a high level of water quality.

Strategy

- Restore ground water levels with appropriate Best Management Practices
- Identify and catalog potential pollution sources (e.g. point/non-point) near water resources.

Objective

- Ensure infrastructure is appropriate to environmental conditions

ENVIRONMENT (cont)

Objective

- Reduce stormwater flow

Strategy

- Soil maps, LTHA

Objective

- Clean-up brownfields (e. g. “dirty” industrial uses)

Objective

- Preserve the night sky beauty

Strategy

- Minimize lighting impacts (lighting ord., Dark Sky Assn. info)

Objective

- Prairie restoration

GOAL #2

Environmental planning needs to be done in concert with common sense and reason

INFRASTRUCTURE

GOAL

Utilize infrastructure as a guide for desired growth.

Objective

- Ensure infrastructure is in place prior to development.

Objective

- Establish measures, methodologies, or systems that would ensure the public pays for “adequate” infrastructure as it is needed – not after demands are created for it.

INFRASTRUCTURE (cont)

Objective

- Establish measures, methodologies, or systems that would permit the evaluation of proposals so as to ensure public money is not spent paying for unnecessary, inadequate, or underutilized infrastructure expansion.

Strategy

- Cost estimates/due dates for projects/prioritize

Objective

- Identify processes, programs, or opportunities to allocate costs of infrastructure expansion equitably among all entities benefiting from it.

Objective

- Preserve future infrastructure corridors (roads and utilities) from development encroachment
- 740 remain an expressway

Strategy

- Limited access to larger roadways
- Incorporate NRI in decisions

Objective

- Encourage consolidation of infrastructure within corridors to enhance efficiency and maintain the scenic and rural qualities of the planning area.

Strategy

- Incorporate NRI in decisions

Objective

- Link infrastructure system sizing to projected growth and needs.

Strategy

- Incorporate NRI in decisions
- Roadway concurrency (traffic studies)

Objective

- Encourage utilization of existing infrastructure capacity prior to expansion.

INFRASTRUCTURE (cont)

Objective

- Coordinate infrastructure system expansion among providers.

Strategy

- Advance notice of infrastructure projects

Objective

- Promote development of “green infrastructure” in addition to traditional systems.

Strategy

- Incorporate NRI in decisions

Objective

- Public transportation

Objective

- Extend fiber-optic service (internet)

Objective

- Support public facility (fire stations, schools, etc) locations based on existing infrastructure availability not locations demanding new service extension

GOAL #2

Establish cost estimation program for city services

Objective

- Identify those services desired or necessary to support future growth (e.g. schools, parks, emergency svcs, post office, library)

INFRASTRUCTURE (cont)

GOAL #3

Improve roadway safety

Objective

- Improve roadway design (width, shoulders, striping)
- Retain the expressway designation of 740 to avoid another Clark Lane development and the attending traffic congestion.
- Preserve and promote bike lanes and non-motorized user trail as Rangeline & New Haven have lots of bicycles.

Strategy

- Bridge over I-70 @ Centralia exit needs to be improvement (widen) & stop lights to support growth.

LAND USE

GOAL

Establish land use policies that promote an appropriate mix of development that complements and enhances each other.

Objective

- Encourage nodal commercial development and discourage linear commercial development.
- Consolidate commercial and industrial areas not spread all over
- Keep commercial properties consolidated. Infrastructure to their area.
- Keep rural area rural/ag as much as possible – stay away from the City

Objective

- Promote “infill”.

Strategy

- Inventory available sites
- Educate the public and development communities
- Identify potential development incentives for reuse verses new construction.
- Incorporate NRI in decisions

LAND USE (cont)

Objective

- Provide opportunities to integrate varied housing types within residential development.

Objective

- Encourage complementary commercial development to support residential needs.

Strategy

- Utilize the criteria contained within the “Neighborhood District” portion of the Metro 2020 Plan as the basis for evaluation and appropriate sizing of commercial proposals.
- Develop performance measures that provide bonuses or incentives for integration of uses.

Objective

- Identify and promote the usage of properties that support and are compatible with adjacent land uses.

Strategy

- Utilize existing conditions mapping and projected land use needs to identify possible sites for mixed development.
- Consider establishing a methodology by which development proposals are “rated” as to their effectiveness in fulfilling the goals of the Area Plan and other relevant planning objectives.
- Encourage higher density near existing HD areas and close to existing infrastructure
- Ensure green, effective (with expert support) buffers between incompatible uses
- Statement of intent with rezoning requests in environmentally sensitive areas
- Incorporate NRI in decisions
- No CAFO’s (confined animal feeding operations)
- Limit incompatible land uses and activities

LAND USE (cont)

Objective

- Establish programs or processes to enhance the planning area’s natural and man-made features

Strategy

- Develop streetscape standards that would establish basic landscaping, site amenities, art, and thematic elements intended to create memorable and attractive street corridors.
- Develop and implement enhanced tree preservation and landscaping policies, provide outreach and education on the benefits of retaining natural features, and promote sustainable and edible plantings.
- Incorporate NRI in decisions
- Identify and catalog historic structures or properties for potential preservation (e.g. churches, cemeteries, etc)

Objective

- Create opportunities to preserve and protect land within the study area from development.
- Protect AG. land for local food production and consumption
- Maintain hunting/fishing opportunities

Strategy

- Identify potential land areas for preservation based on standardized evaluation criteria.
- Develop a land preservation plan for the study area with public input.
- Strengthen, enforce, and create laws and regulations to preserve land.
- Identify programs or opportunities to acquire property or development rights to land deemed appropriate for preservation.
- Consider the creation of a joint City-County Land Preservation Commission charged with acquisition and management of preservation properties.
- Provide alternative standards to the existing regulations in order to encourage low-impact development.
- Establish a Land Trust
- Maintain rural character by clustering development to preserved green space with neighborhood marketplace and good development design
- Incorporate NRI in decisions
- Low density – maintain minimum lot size (large lots) for rural character
- Find ways to help farmers afford to keep their land in farms rather than being forced to sell it.

LAND USE (cont)

Objective

- Promote a network of attractive and safe parks and recreational amenities connected by trails and greenways that provide area residents with access to nature, recreation, and facilities for active play, both indoors and out.
- Effectively integrate park/green space into residential developments
- Promote development of linear and area parks in plan

Strategy

- Provide incentives to encourage public and private cooperation/collaboration to acquire and develop additional parks and facilities.
- Identify funding opportunities to expand recreational facilities as the population and demands within the study area grow.
- Establish guidelines and evaluation criteria that would specify “thresholds” at which easements or set-asides would be required for greenways or park-land.
- Establish guidelines or performance measures that would require installation or connection to planned or existing trail systems within new developments as a means of providing alternative transportation options.
- Incorporate NRI in decisions
- Add recreational facilities (swimming pool)

Objective

- Support the development of walkable communities with mixed land use (kibutz) (self-sustained)

Objective

- Assist in the identification of property for school placement within walkable communities

Objective

- Direct, where appropriate, the location of commercial and office land near major roadways/infrastructure

Objective

- Support the preservation of MU’s goals for the area at south of New Haven

LAND USE (cont)

Objective

- Support creation of a process that incorporates adjacent property owner’s issues into land use decisions.
- Establish infrastructure availability criteria as a prerequisite to submission of land use change requests.

GOAL #2

Develop the eastern and southern boundaries of the study area in such a way that they become identifiable “gateways” to the City of Columbia

Objective

- Make it welcoming, arrange the scale of building as well as residential and commercial areas appropriate for such an entry to the area

GOAL #3

Promote diversity of housing choices throughout the study area

Objective

- Provide a dispersed and adequate supply of affordable, energy efficient, and accessible housing.

Strategy

- Implement Incentive Zoning that encourages residential developers to provide a percentage of affordable units within newly constructed communities.

CHAPTER ONE - ENVIRONMENT

INTRODUCTION

This chapter provides an overview of the physical characteristics of the land and waterways contained within the study area. The inventory of environmental resources within the study area relies on 2007 land coverage imagery from the City’s Natural Resources Inventory (NRI) to categorize land coverage within the study area, and identify what natural resources currently exist. It provides a baseline for monitoring future changes to the landscape¹. The land cover for the study area was produced from the analysis of high resolution multi-spectral photography by the University of Missouri Geographic Resource Center. Field surveys were conducted to collect land cover information and to check the accuracy of the image analysis. Land cover in the study area is broken down into the following categories:

- **Tree Canopy:** All the land covered by tree leaves continuous or not. An area of tree canopy is classified as forest if over 60% of the area is covered by tree canopy. A complete forest analysis is being completed.
- **Cropland:** Planted or cultivated areas characterized by intensively managed vegetation for food or feed. Cultivated cropland is not included in the “disturbed/barren” classification.
- **Urban/Impervious:** Urban areas are those covered with constructed materials for residential and non-residential structures as well as streets, parking areas, and other transportation features. For the NRI, the term “impervious” was included to provide a storm water management context.
- **Water:** All areas of open surface water in lakes, ponds, and creeks.
- **Disturbed/Barren:** Barren areas are characterized by bare rock, gravel, sand, silt, clay, or other earthen material. For the NRI, the term “disturbed” was included to identify areas that temporarily have little or no green vegetation present in large part due to removal by excavation.
- **Grassland:** Natural or semi-natural herbaceous vegetation; herbaceous vegetation.

Currently, only 11% percent of the area is covered by urban/impervious surfaces or areas that have been disturbed in preparation for future development (disturbed/barren). Approximately

¹ Natural Resources Inventory – Internal Summary Report, City of Columbia, Missouri, October 13, 2009.

52% percent of the undeveloped land within the study area is comprised of agricultural cropland and grasslands. The remaining 37% percent is covered by tree canopy and stream buffers and floodplains (i.e., “water”) which are regulated by current federal, state, City, and County ordinances for environmental preservation and quality maintenance purposes (see Figure 1-1). It should be noted that NRI land coverage data is not available for approximately 1,000 acres of the study area located generally along and east of Rangeline Road (see Map 1-1).

EAP Land Cover Classification

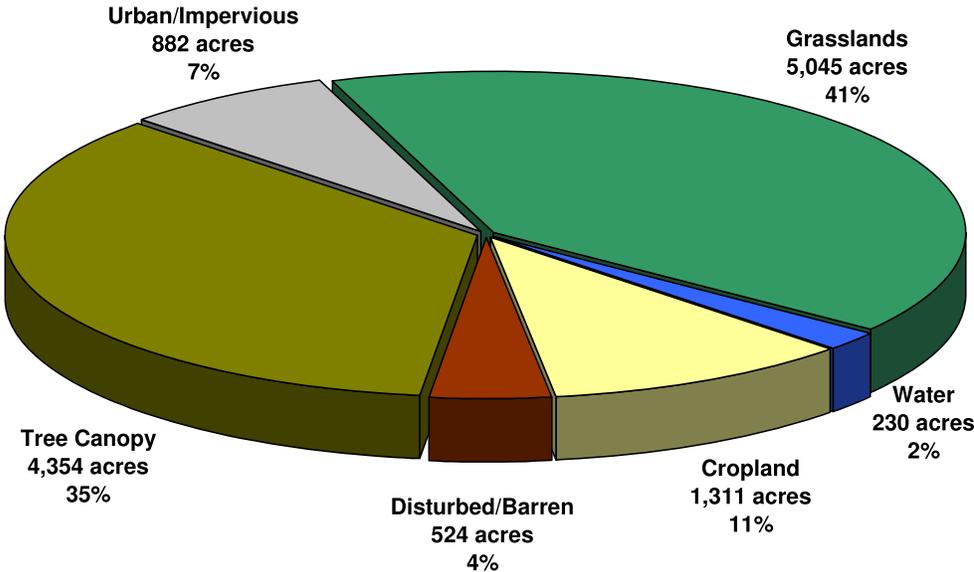
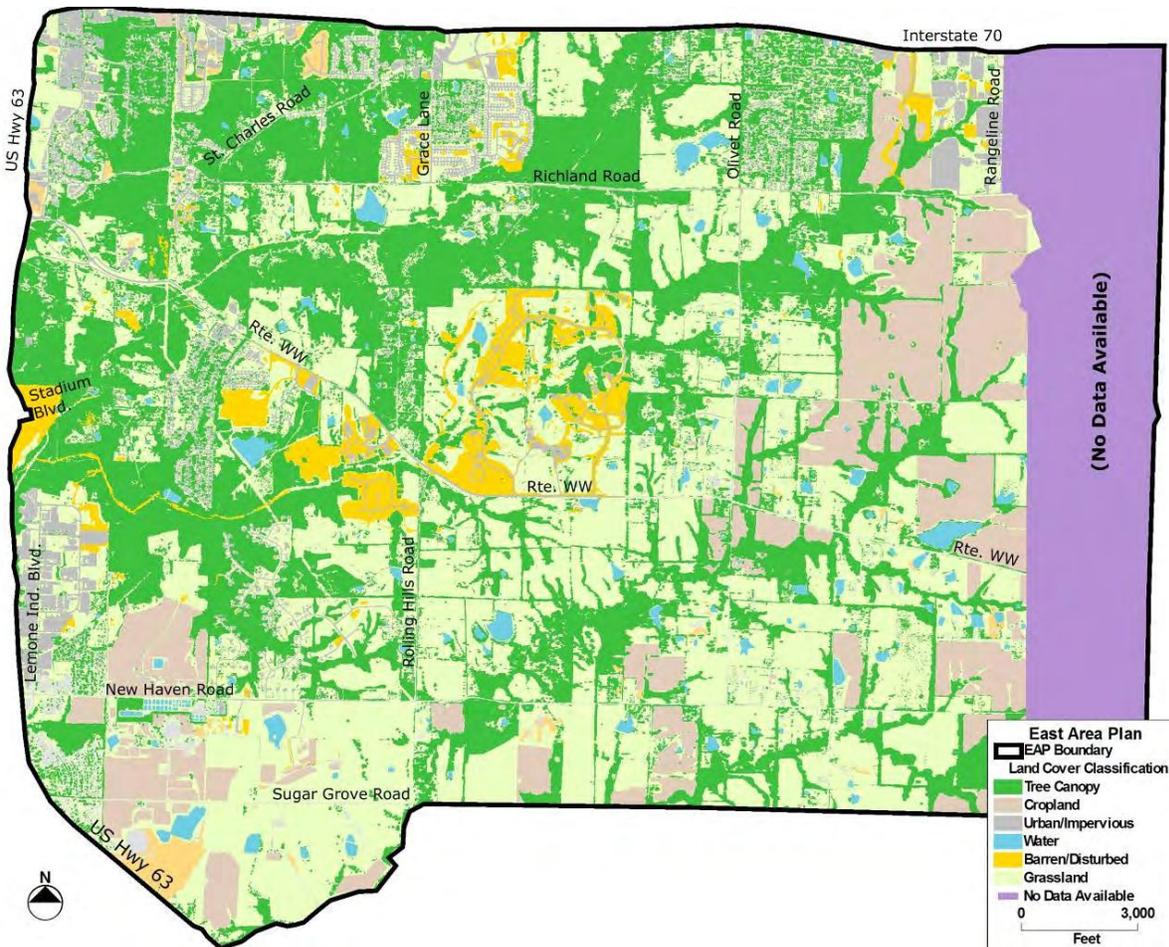


Figure 1-1: East Area Plan Land Cover Classification Distribution

Source: City of Columbia NRI



Map 1-1: East Area Plan Natural Resource Inventory (NRI) Land Cover

The following subsections identify what natural resources exist in the study area. This inventory is organized into two broad categories, each of which covers threats and current regulatory protections that affect each asset:

1. Watersheds: Includes sensitive streamside lands
2. Landscape: Includes all other areas contained within the study area

WATERSHEDS

Watersheds are defined in the City Code as “all the land area which drains to a given body of water”. Their boundaries are defined by high points and ridges from which gravity moves water from surface runoff to common collection points via drainages, catchments, and sub-watersheds. Each watershed is named after the creek or river to which it flows.

Streams are bodies of moving water confined by banks, which may include small rivers or large creeks². There are three types of streams:

1. Perennial (Type 1): Perennial streams have well-defined channels that contain water year round.
2. Intermittent (Type 2): Intermittent streams have well-defined channels that contain water for only part of the year.
3. Ephemeral (Type 3): Ephemeral streams may or may not have a well-defined channel, and carry only water resulting directly from precipitation events.

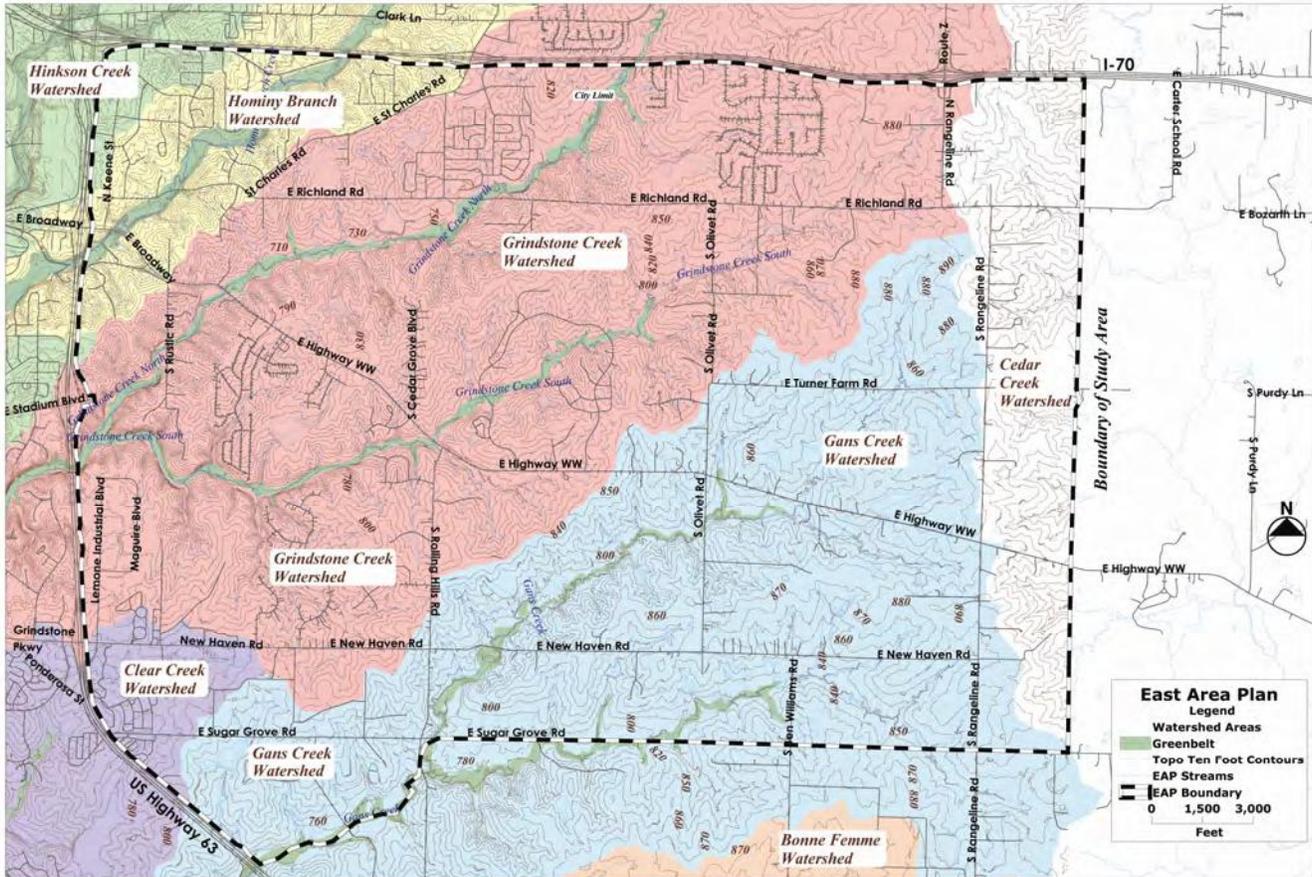
Perennial streams within the study area include portions of Hominy Branch Creek, North and South Forks of the Grindstone Creek, and Gans Creek. Smaller classes of streams that flow into these major creeks are unnamed. Streams and stream corridors act as natural filtration systems for groundwater and support a wide variety of wildlife by providing habitat for both aquatic and land animals.

The study area is contained within the Grindstone Creek, Gans Creek, and Cedar Creek watersheds. There are also three additional sub-watersheds in the study area. These include Hominy Branch and a small portion of the Hinkson Creek at the northwest corner, which are part of the Grindstone Creek watershed; and the Clear Creek sub-watershed at the southwest corner of the study area, which is part of the Gans Creek watershed. The watersheds and sub-watersheds generally flow from northeast to southwest, before eventually draining into the Missouri River with the exception of the Cedar Creek watershed with flow to the southeast.

Water quality may be compromised by a wide variety of sources and pollutants carried in storm water runoff:

1. Sediment: From cropland, lawns and gardens, timbering, roadways, construction sites, and stream-bank erosion
2. Nutrients and pathogens: From cropland, lawns and gardens, livestock operations, wildlife, wastewater systems consisting predominantly of on-site individual lagoon or septic systems, land receiving waste application, and urban runoff
4. Toxic contaminants: From roadways, parking lots, mining operations, cropland, lawns and gardens, and forestry

² <http://en.wiktionary.org/wiki/stream>



Map 1-2: EAP Watershed Boundaries

Another common threat is degradation of aquatic habitat due to physical alteration of channels and riparian corridors, which may occur through the following activities:

1. Piping: Enclosing the stream in a large pipe
2. Channelization: Straightening the stream
3. Paving & rip rap: Altering the stream bottom or banks with concrete, rocks or other foreign stabilizing materials
4. Vegetation removal: Removing trees and other permanent vegetation near streams

FLOODPLAIN REGULATION

City and County floodplain regulations restrict development activity within the 100 year floodplain (see Map 1-3 for approximated 100 year floodplain boundaries). Limited development may occur inside the 100 year floodplain subject to the issuance of a floodplain

development permit. Applicants within the City limits must show that foundations of proposed residential structures in the floodplain will be elevated at least two feet above the 100 year flood event level. Special construction techniques may be employed for commercial structures, as an alternative to the two-foot elevation requirement, to allow flood waters to pass through the structure (e.g., flood doors). All structures built in the floodplain must be anchored and engineered to withstand the forces of floodwater currents. Building permits for structures in the floodway may be approved subject to the completion of engineering studies that prove the activity will not result in an increase in flood water levels upstream (i.e., “no-rise” certificate).

STORM WATER REGULATIONS

The City and County have adopted stormwater regulations in response to Phase II of the Clean Water Act, which requires local governments to regulate storm water runoff and preserve water quality. These regulations were adopted by the City in 2007 and the County in February, 2010. Within each set of regulations there are two components – (1) stormwater management standards and (2) stream buffer standards.

STORMWATER MANAGEMENT

The adopted regulations of both the City and County address the issue of water quantity and water quality that leave a development site. These requirements were mandated by the Environmental Protection Agency (EPA) as part of implementing Phase II of the Clean Water Act. In response to this mandate, the City and County have adopted regulations that specify that the volume of post-development runoff cannot exceed that which left a site during its pre-development state. This means that in many instances significant on-site detention and filtration facilities must be constructed with new developments, where previous regulations allowed storm water to be discharged directly into creeks.

Under the City’s stormwater regulations, subdivisions preliminarily platted prior to September 2007 are exempt from the new regulations; however, all future subdivisions must comply. The goal of the new regulations is to mitigate flooding, erosion, pollution of streams, and personal property damage caused by development activity.

Map 1-3 shows the locations of existing platted development (both City and County) that existed prior to September 2007. The developments lying within the City limits would be considered exempt from the stormwater regulations. While this map shows existing County developments not currently not inside the City limits the purpose for showing them is to illustrate what additional developments would also be exempt should they be annexed into the City. Their presence on this map and identification as being “exempt” should not be construed as implying that they are exempt under the County stormwater regulations.

STREAM BUFFER REQUIREMENTS

A major component of the City and County storm water regulations is the stream buffering requirements. Stream buffers are natural vegetation areas that serve as boundaries between disturbed land and local waterways. They act as filtration systems for storm water runoff entering creeks, thereby protecting aquatic habitat. Stream buffers also stabilize stream banks, mitigate flooding, and preserve natural areas that serve as vital habitat and corridors for the movement of land animals, including people. Stream buffers are measured from the ordinary high water mark and vary in width depending on stream type.

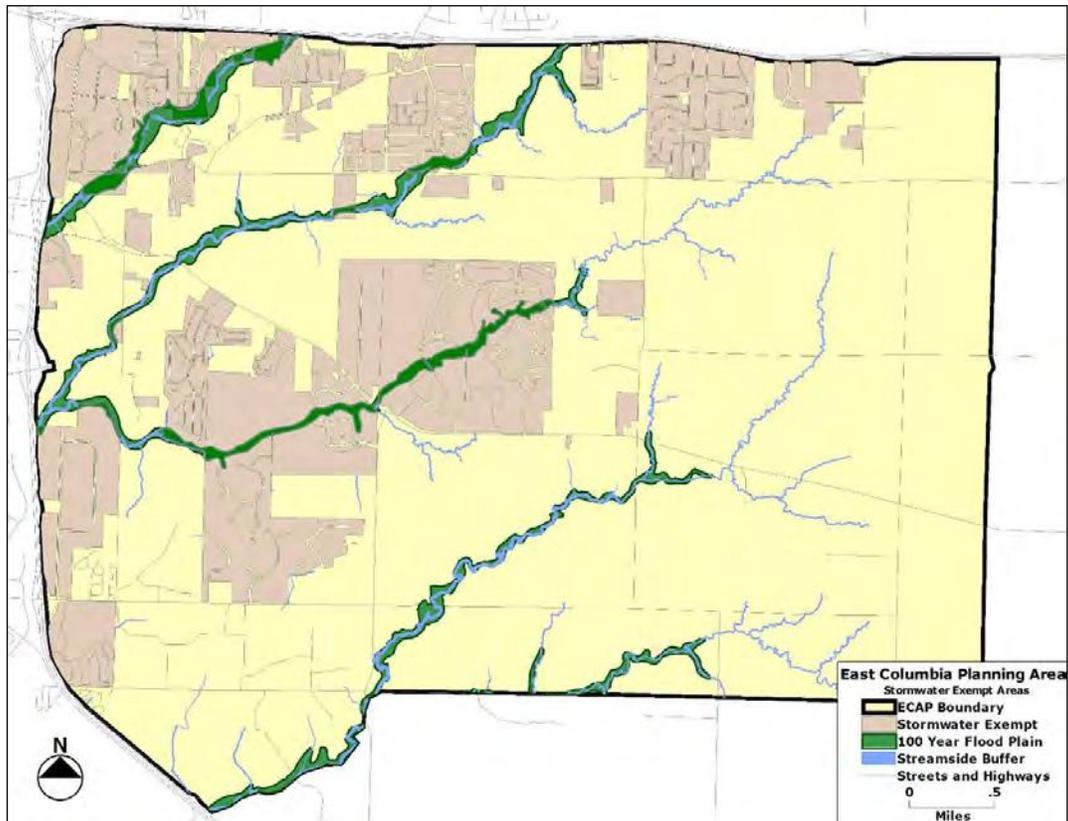
There are three regulated stream types identified in the City’s and County’s regulations:

Stream Type	Description	Total Buffer Width (each side)
1	Perennial: Solid blue line on USGS map	100 ft
2	Intermittent: Dashed blue line on USGS map	50 ft
3	Ephemeral: Minimum catchment area of 50 acres	30 ft

Stream buffers are expanded to include slopes greater than 15% that are adjacent to outer buffers. County regulations include a 200-foot buffer from karst features such as sinkholes.

The inner half of stream buffers must be left as undisturbed natural vegetation. In the City, but not in the County, accessory structures such as sheds may be built within the outer half of these buffers. Trails and maintained lawns may be situated within the outer buffer.

City subdivisions preliminarily approved prior to January 2, 2007 are exempt from stream buffer regulations. Map 1-3 shows regulated stream types within the study area. This map also highlights areas that have been previously subdivided or preliminarily platted (both within the City and County) prior to storm water regulations taking effect in September 2007 and April 2010, respectively. Those tracts located within the City will not have to retroactively comply with current storm water regulations unless they are re-subdivided or a substantial change to the infrastructure and lot configuration requires that a new preliminary plat be adopted. Within the County similar provision exist. The identification of County developments on Map 1-3 is not to be construed as implying that they are exempt under the County stream buffer regulations.



Map 1-3: 100 year floodplain and Storm water “exempt” areas

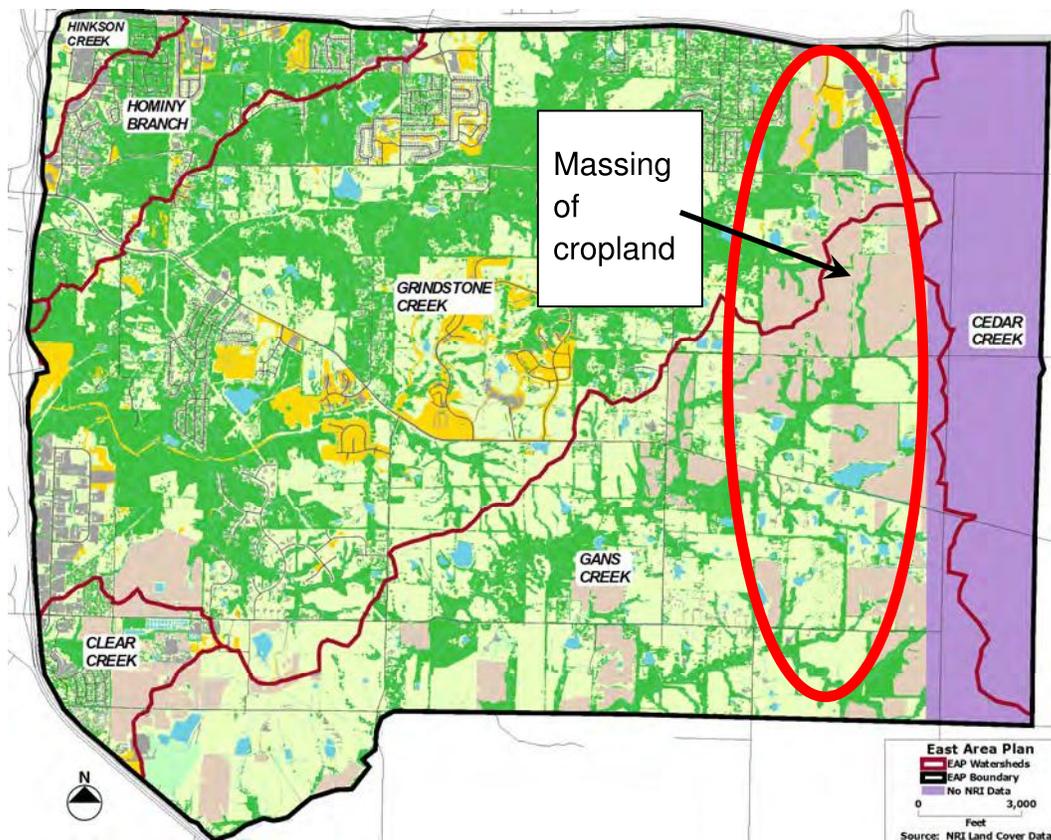
Source: NRI

LANDSCAPE

“Landscape” refers to visible features of an area of land, and includes both naturally occurring features and those resulting from human activity. The study area is composed of several landscape features ranging from steep tree-covered slopes to vast open and flat farm and grass lands.

AGRICULTURAL LAND

Approximately half of the study area is categorized as grassland and cropland. Cropland is primarily concentrated along the eastern edge of the study area in a north-south strip that runs parallel and adjacent to the west side of Rangeline Road and the western boundary of the Cedar Creek watershed. Cropland constitutes approximately 11% of the total study area (see Map 1-4).



Map 1-4: East Area Plan Massing of Existing Farmland

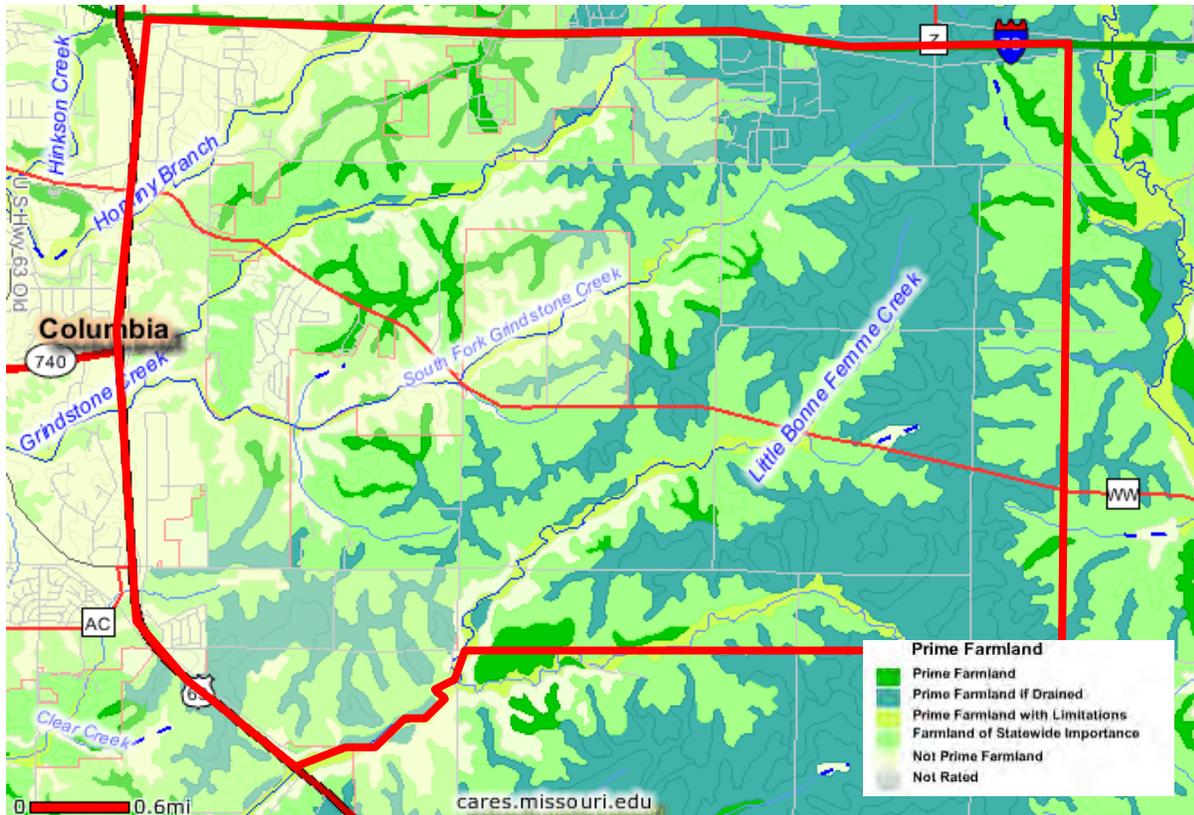
Source: City of Columbia NRI

Most of the existing cropland in the study area is considered prime farmland³, defined as “land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses.”⁴ Most of the remaining land in the study area, with the exception of developed areas, stream corridors, and steep slopes, is considered “farmland of statewide importance”. These lands are not as well-suited for crop production as prime farmland, but could potentially be treated to economically produce high yields of crops⁵. Within the study area, farmland of statewide importance appears to be used primarily for hay production (see Map 1-5).

³ *This assumes appropriate drainage is provided.

⁴ Prime and other Important Farmlands (IA) – Boone County, Missouri. Web Soil Survey – National Cooperative Soil Survey. USDA - Natural Resources Conservation Service. P. 1, 2/25/2010.

⁵ Prime and other Important Farmlands (IA) – Boone County, Missouri. Web Soil Survey – National Cooperative Soil Survey. USDA - Natural Resources Conservation Service. P. 2, 2/25/2010.



Map 1-5: East Area Plan Prime Farmland

Source: University of Missouri CARES

Agricultural lands add value to the local economy and quality of life by producing food, providing wildlife habitat, and maintaining valuable open spaces that provide additional buffering between urban development and sensitive natural habitat. The citizens of Columbia and Boone County have shown their support for local farming activities by supporting County and City farmers’ markets, which serve a growing demand for locally grown and organic foods.

AGRICULTURAL LAND REGULATION

Current zoning regulations in Boone County and Columbia provide agricultural zoning districts as options which accommodate and encourage typical agricultural land use operations such as farming and livestock operations. The County’s A-1 and A-2 districts require minimum lot sizes to be maintained (A-1 = 10 acres minimum; A-2 = 2.5 acres minimum) which help to discourage urban-style development from occurring where these districts are established⁶. (See the Land Use chapter for a complete breakdown of zoning districts within the study area.) The City’s zoning regulations have a similar accommodation for agricultural uses; however, the City’s A-1 district has a minimum lot size of 7,000 square feet, which is consistent with one-family residential urban developments. While both County and City A-1 regulations allow one-family homes as permitted uses, the City’s agricultural district allows typical urban-style development to occur, subject to meeting technical requirements of the City’s subdivision regulations. This typical urban-style development is not allowed under the County A-1 and A-2 zoning districts.

Existing City land use policies and regulations do not encourage or mandate preservation agricultural land. While agricultural uses are permitted, the minimum lot size of 7,000 square feet (0.16 acres) allows land to be subdivided in an urban pattern.

TREE COVER

Climax forests occur when a forest has progressed through early succession of “pioneer” species to a point where it is dominated by tree species primarily consisting of oak, hickory, and other shade-tolerant hardwoods, and this mixture of species remains relatively constant for an extended period of time – often hundreds of years⁷.

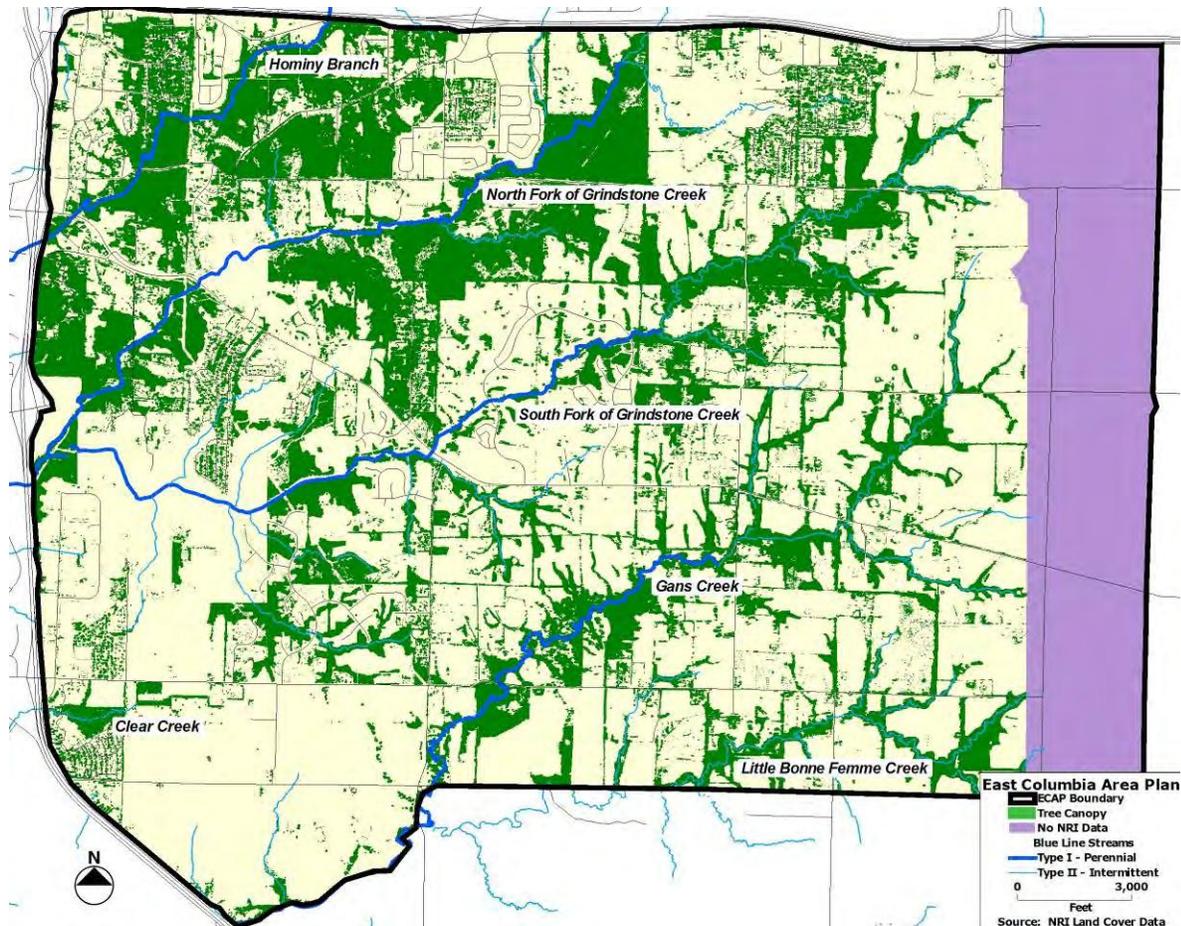
Trees contribute numerous and significant environmental services:

- Creating habitat for wildlife
- Absorbing airborne toxins
- Providing fuel, pulp, and wood
- Producing oxygen through photosynthesis
- Stabilizing slopes and stream banks
- Facilitating soil formation and nutrient cycling
- Providing recreational opportunities
- Filtering storm water and sequestering carbon

⁶ Section 3.B., Boone County Zoning Regulations, Boone County, Missouri.

⁷ http://northernwoodlands.org/articles/article/what_is_a_climax_forest/

Approximately 35% percent (4,323 acres) of the study area is covered by trees (see Map 1-6). It is interesting to note that most of this tree cover is situated on moderate to steep slopes (i.e., greater than 6%), which are primarily creek banks.



Map 1-6: East Area Plan Tree cover

Source: City of Columbia NRI

TREE PRESERVATION REQUIREMENTS

The City requires 25% percent of climax forest to be preserved on tracts of one acre or more. The County has no specific tree preservation ordinance. The limited tree preservation available to the County historically has been a result of tree production as being classified as an exempt farming activity. The County, however, has had limited ability to preserve trees under its Subdivision and Planned Zoning District regulations. With the recent adoption of the County’s Stream Buffer regulations; however, there exists the opportunity to implement the first ongoing regulation to have any direct effect on tree preservation.

In general tree preservation has been most effective on unsubdivided parcels greater than one acre inside the City limits. This is the result of the City’s requirement that a tree survey be

conducted to determine what climax forest exists on a site prior to land clearing activities. The ability to preserve trees once property is platted is challenging since most residential lots are less than the required one acre minimum size for a tree survey.

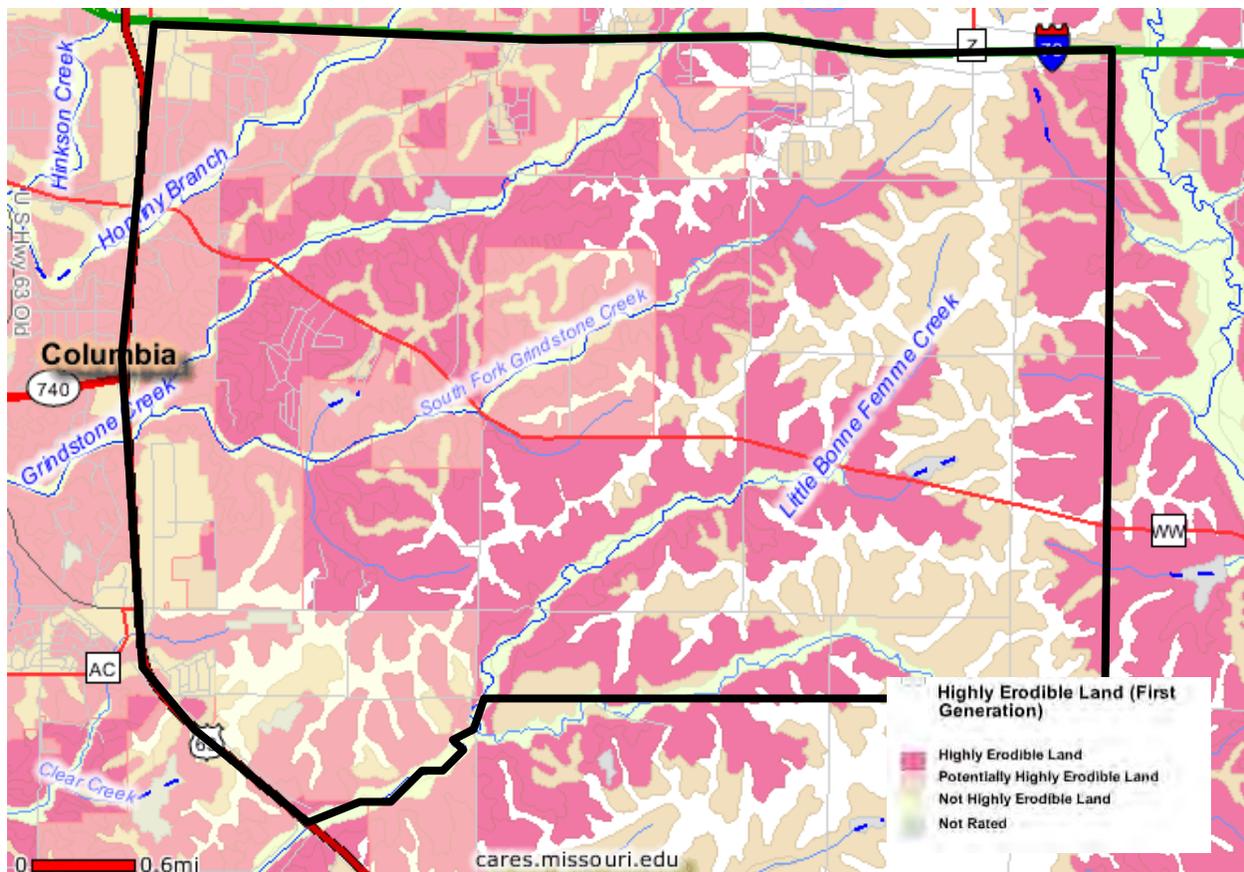
SENSITIVE FEATURES & CONDITIONS

While the landscape of the study area is primarily composed of flat to gently sloping farm and grass lands, it also contains a variety of features that are particularly sensitive to development activities and impacts. Sensitive landscape features and characteristics are considered as those that, when disturbed, might lead to hazardous conditions (i.e., safety issues) or environmental degradation problems (e.g., erosion and pollution). Three typical features and conditions that are classified as sensitive areas include karst topography, erodible soils, and steep slopes.

Karst topography results from acidified rainwater infiltrating cracks and fissures in limestone bedrock and slowly dissolving the rock to create large voids. Sinkholes result when these underground caverns collapse and create surface depressions. A prime example of a karst feature in Boone County is Devil's Icebox Cave in Rockbridge State Park. There is no known karst topography in the study area.

Highly erodible soils are the result of a combination of factors, which may include intense rainfall, steep slopes (particularly those greater than 10% percent and situated in major drainage areas), length of slopes, vegetation cover, and the physical and chemical properties of the soil. Certain soil types such as loess tend to erode more easily than others. Highly erodible soils generally coincide with steep slopes, which parallel the major creeks that flow through the study area.

Highly erodible soils and steep slopes have associated impacts that make their disturbance hazardous to plants, wildlife, and human activities if they are not properly managed. They are particularly vulnerable to land disturbance impacts, which may cause water quality degradation from erosion and pollution runoff. Map 1-7 shows the location of soils that are susceptible to erosion.

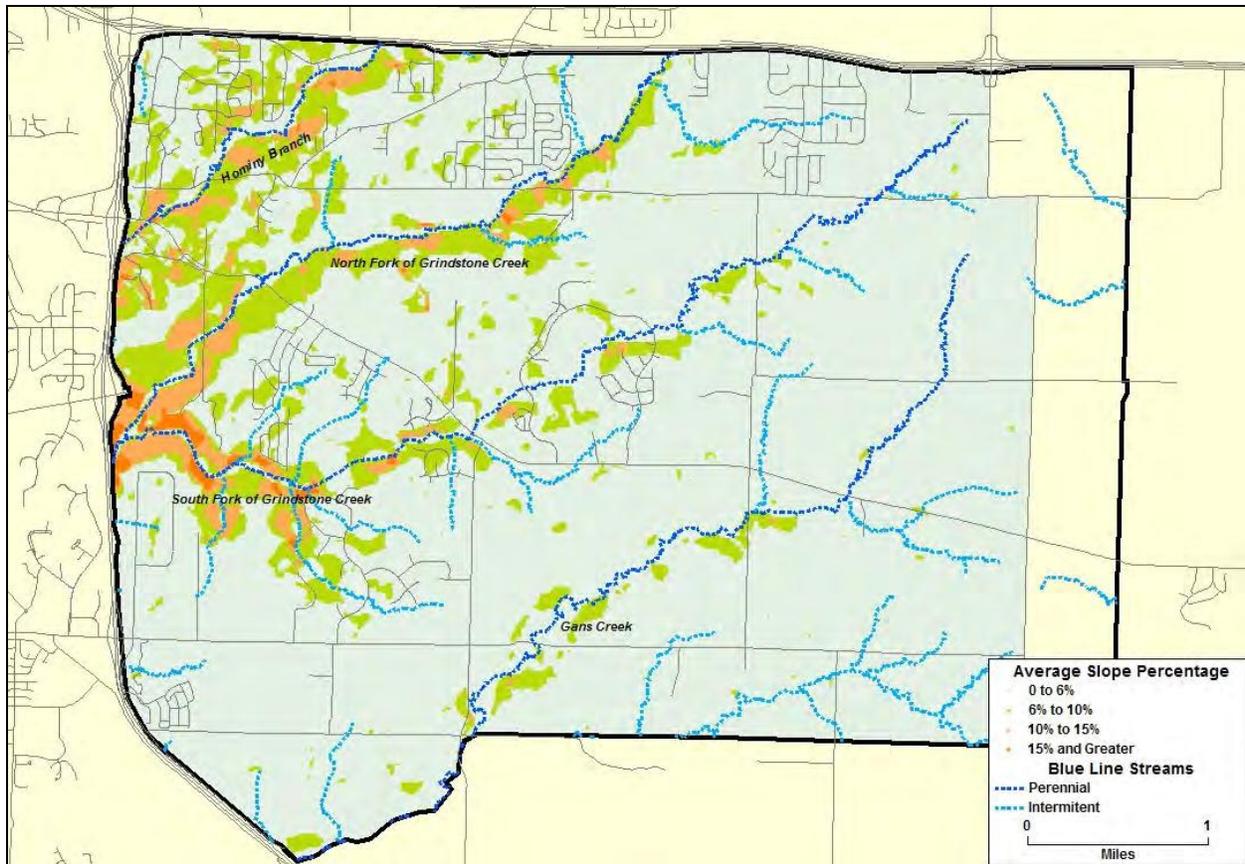


Map 1-7: East Area Plan Highly Erodible Land

Source: University of Missouri CARES

Steep slopes are typically considered gradients greater than 15% percent. In addition to those erosion issues mentioned above, steep slopes present challenges for design and installation of streets, sewers, and other services. Costs associated with substantial grading, blasting, filling, and stabilization of steep slopes with retaining walls often make development of such sites more costly when compared to flatter sites. Steep slopes commonly occur adjacent to creek cut banks and in association with stream buffers and floodplains, which are protected by existing City and County regulations that deter development of such areas.

Within the study area, steep slopes are primarily found where the North and South Forks of Grindstone Creek converge and in areas along Hominy Branch, with other relatively minor exceptions dotted throughout the landscape (see Map 1-8).



Map 1-8: East Area Plan Steep Slopes

Source: City of Columbia NRI

Steep slopes are primarily found within the three creek corridors that pass through the study area, and often coincide and contribute to highly erodible soil conditions. Under normal conditions, where these areas remain undisturbed, they are not typically considered to be highly erosive. However, areas that have recently been cleared for development purposes are an exception.

OTHER CONSIDERATIONS

BROWNFIELDS

Brownfields are properties that by the presence or potential presence of a hazardous substance, pollutant, or contaminant, their reuse or redevelopment may be complicated.⁸ They commonly include existing or former land uses such as gas stations, mines, and junk yards.

⁸ <http://www.epa.gov/brownfields/laws/bflawbrochure.pdf>

While brownfield sites can be found within the study area, they do not represent any major known source of pollution to environmental resources within the EAP area.

THREATENED AND ENDANGERED SPECIES

Through coordination with the U.S. Fish and Wildlife Service (USFWS), the Missouri Department of Transportation’s (MoDOT) East Columbia Final Environmental Impact Statement (EC EIS) concluded that the potential for impacts on the foraging habitats (the area’s stream corridors) of the gray bat and the Indiana bat could be minimized through implementation of approved best management practices. Coordination with the Missouri Department of Conservation (MDC) concluded that no state or federal-listed rare species or rare natural communities were found to occur within or near the EC-EIS study area⁹.

CONCLUSION

There are numerous benefits associated with protecting natural areas and open space from development. The value of intact open space and natural areas may be defined by the broad and varied services they provide to humans, plants and animals. These services include filtration of air and waterborne toxins, provision of habitat for plants and animals, transportation corridors for animals and people, recreational opportunities and scenic beauty, among others. Given the significant inherent value of natural lands, it is no wonder that there is strong stakeholder support for planning that would encourage preservation and conservation above and beyond current development regulations.

The EAP stakeholders’ vision of better environmental preservation is shared by the citizens of Columbia. In *Imagine Columbia’s Future*, the City’s community visioning document, citizens envision “Columbia and its neighboring communities [as] a place where the air, water, land, and natural aesthetic qualities of our environment shall be protected by a combination of conservation strategies including, but not limited to, regulations and ordinances, conservation incentives, education programs, and smart growth planning”¹⁰. Of all the available visioning objectives, the following was most widely supported based on vote counts from the Community Choices Open House:

Preserve open space, farmland, natural beauty, and critical environmental areas using techniques promoted by the International City/County Management Association’s publication “Getting to Smart Growth: 100 Policies for Implementation.”

⁹ East Columbia Final Environmental Impact Statement, MODOT, December 3, 2009.

¹⁰ *Imagine Columbia’s Future – Final Vision Report, Community Vision and Action Plan*, Columbia, Missouri, 2008

This is representative of participants' strong appreciation for the value of parks, open space, and the natural environment, and their desire for better management of environmental resources by providing for a more holistic, balanced, and planned approach to growth and development.

In keeping with this broad vision, the primary environmental goal of the East Area Plan is to preserve and protect the natural environment and resources which make up the lands within the study area.

Getting to Smart Growth: 100 Policies for Implementation identifies ten policies that support preservation of natural resources:

1. Use TDRs, purchase of development rights (PDRs), and other market mechanisms to conserve private lands
2. Coordinate and link local, state, and federal planning on land conservation and development
3. Expand use of innovative financing tools to facilitate open-space acquisition and preservation
4. Employ regional development strategies that better protect and preserve open space in edge areas
5. Adopt a green infrastructure plan
6. Create a network of trails and greenways
7. Design and implement an information-gathering and education program
8. Design and implement zoning tools that preserve open space
9. Provide mechanisms for preserving working lands
10. Partner with nongovernmental organizations to acquire and protect land

These environmental preservation policies reflect the broader community vision, and serve as a foundation upon which to build objectives and strategies to suit the specific needs and desires of the stakeholders within the study area. They provide broad guidance for strategies that are recommended later within this plan in the Growth Management chapter.

CHAPTER TWO - INFRASTRUCTURE

INTRODUCTION & PURPOSE

Without a solid backbone of existing facilities and well-timed improvements to that infrastructure, development in the Plan area cannot take place in an orderly, efficient manner. Approximately one third of the East Area Plan (EAP) land area lies within the City of Columbia’s corporate limits as of September, 2010. Much of the area is undeveloped, and may remain so for the foreseeable future. As this quantity of land exists undeveloped, the need for careful consideration in planning infrastructure improvements is readily apparent.

As the area will face increased pressure as the City’s corporate boundaries expand and new opportunities for residential, commercial, and industrial uses are sought, the importance of the underlying infrastructure to support and control when and how growth occurs is vital. Equally important, however, are the policies and decisions determining where urban scale infrastructure should not be provided so as to mitigate these development pressures.

This chapter is arranged by key aspects of the infrastructure network in the EAP area. It also provides details regarding present facilities, and references other study documents and plans in order to provide a context for both the existing and planned infrastructure of the area.

CURRENT ORDINANCES AND POLICIES AFFECTING EAP INFRASTRUCTURE

Ordinance/Policy	Date last amended
Boone County Master Plan	1996 ¹¹
Boone County Subdivision Regulations	2000 ¹²
Boone County Vision Project	2001
Boone County Zoning Ordinance	2010 ¹³
CATSO 2030 Long-Range Transportation Plan	2008
City of Columbia Metro 2020	2003
City of Columbia Parks, Recreation, and Open Space Master Plan	2002 ¹⁴
City of Columbia Subdivision Ordinance (Ch. 25, City Code)	2002 ¹⁵
City of Columbia Wastewater System Facilities Planning Report	2004 ¹⁶
City of Columbia Zoning Ordinance (Ch. 29, City Code)	2009 ¹⁷
Imagine Columbia’s Future	2007

¹¹ Update of 1973 plan

¹² Amended 1995, update of 1973 document

¹³ Update of 1985 document

¹⁴ Some parks plan/trail maps updated 2009

¹⁵ Update of 1984 document

¹⁶ Most recent addendum 2009

¹⁷ Update of 1983 document

INFRASTRUCTURE COMPONENTS

WASTEWATER

EAP Service Providers: Columbia Sewer Utility (City Sewer), Boone County Regional Sewer District (BCRSD), Columbia Boone County Department of Public Health and Human Services (Health Department)

For hundreds of years, the proper conveyance of wastewater has been recognized as an integral way to ensure a community's health and well-being. More than any other aspect of infrastructure, wastewater conveyance is influenced by watersheds and natural watercourses like rivers, creeks, and streams. As the EAP area sees more development of homes, businesses, and manufacturing sites, the importance of adequate wastewater management increases, generally through the provision of centralized sewer services.

Both the City sewer and BCRSD provide sewer service to the EAP area. The remaining property that has some form of development is served by individual on-site wastewater systems regulated by the Health Department, or through permits issued by the state Department of Natural Resources. Properties in areas of the plan that are not likely to see pressure to develop at urban densities or for urban uses are likely to remain with on-site wastewater systems. A sewerage plan encompassing the entire study area was finished in 2004 by consultants for the City, detailing possible expansion alternatives to the year 2030 and beyond.

The city has three existing primary sewer lines that serve the study area. These primary sewer lines generally follow one of three different creeks: the Hominy Branch, the North Fork of Grindstone Creek, and the South Fork of Grindstone Creek.

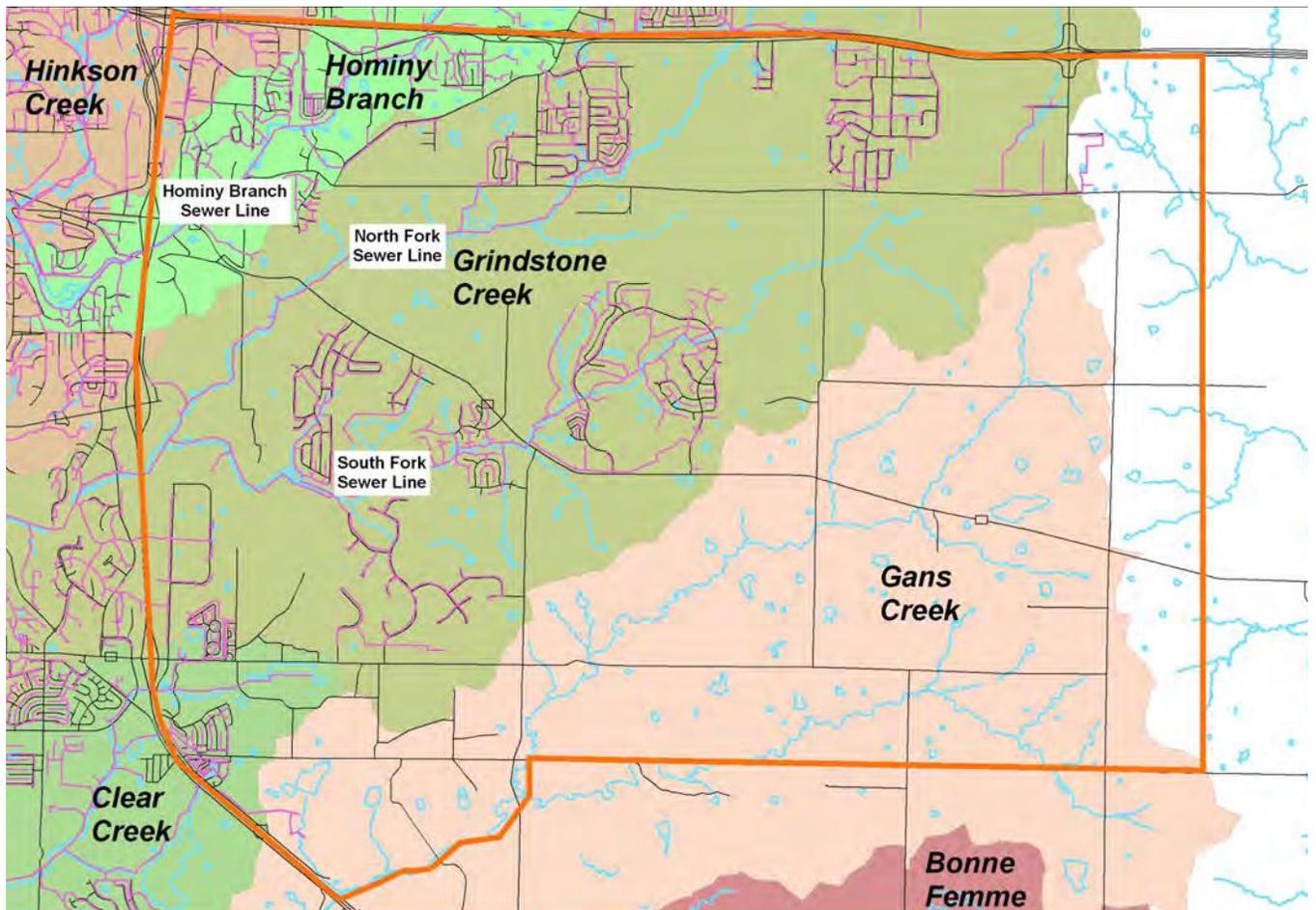
The sewer line following the Hominy Branch serves the northwest (and most densely developed) portion of the study area comprised of the Keene Street corridor and the residential subdivisions that abut to the east and fall along or north of St. Charles Road, south of Interstate 70. This sewer line then leaves the study area, crossing under I-70 to serve additional existing development outside the study area.

The wastewater line that follows the North Fork of the Grindstone comes into the study area as it passes under U.S. Highway 63 from the west as it traces the creek's path northeast to just past Richland Road. This sewer line currently serves the existing residential subdivisions and the other limited development to the southeast of St. Charles Road and south of I-70 near the Lake of the Woods interchange.

The sewer line following the South Fork of the Grindstone branches off of the North Fork line shortly after it enters the study area from the west. This sewer serves the area south of State Highway WW that is west of Rolling Hills Road, including the county subdivisions of El Chapparral

and The Woodlands, continuing farther to the northeast and through the Old Hawthorne development. The sewer line eventually crosses Richland Road to connect to Sunrise Estates and the commercial and industrial properties that were served by the former BCRSD facility at Trade Winds Park, near the Route Z interchange.

The portion of the Clear Creek watershed in the southwest corner of the EAP area is served by both gravity- and force-fed sewer lines connecting to a main that runs southwest toward a pump station north of Rock Bridge State Park.



Map 2-1: East Area Plan Trunk Sewer Lines

At present, the Gans Creek Watershed does not feature similar sewer lines to those of the Hominy, Grindstone, and Clear Creek watersheds. In the event that enough homes and other development would locate there, however, it could have a branched line similar to that of the Grindstone, with the forks covering the watershed from near the Discovery Ridge park to north of Turner Farm Road and south beyond the intersection of Rangeline Road and Bowling Lane.

The BCRSD has traditionally operated isolated, centralized sewer facilities for an individual subdivision or a group of subdivisions in close proximity to each other. These facilities,

however, each had their own discharge points. The BCRSD has followed a policy to eliminate these discharge points by combining collection systems into larger systems or working with the City of Columbia to connect to the municipal wastewater system. The BCRSD currently sends one-third of its community-wide collected effluent to city facilities for treatment, and no longer has any treatment facilities in the EAP area, aside from one near Concord Estates. This facility may close in the near future, and the waste currently handled there would likely go to the City's treatment facilities.

The City and the BCRSD generally share larger trunk lines. At present, agreements between the City and BCRSD regarding the transfer of wastewater from BCRSD facilities to the City's trunk lines are generally made on an as-needed basis, that is, if a subdivision or larger development will produce flow beyond what the development's treatment plant can handle.

The City's policy of prioritizing funding for sewer trunk lines (those larger than eight inches in diameter) to developments with 100 or more acres upstream in a given watershed (the "100 acre point" established by City policy resolution 48-08) means that the City is serving an increasing amount of the study area.

If an individual land owner's on-site sewage lagoon is found to be deficient by the Health Department or Missouri Department of Natural Resources, the property owner has options for remedying the situation. He may, if located adjacent to the City limits, submit a petition for voluntary annexation, which is necessary to receive service directly from the City (as BCRSD customers whose waste is treated by the City generally pay 1.5 times the rate paid by those tied directly to City facilities). He may also choose to tap into the City system by extending a service line from his home to the nearest sewer main through an annexation agreement, whereby a resident may agree to someday be annexed into the City when its boundaries are contiguous to his property, as well as meet all pertinent City development requirements both at present and in the future. He may arrange to install a gravity or pumped line to connect to a BCRSD line, thereby paying the normal BCRSD fee and subscriber rate. Finally, he may have the existing lagoon repaired or a new one installed to the satisfaction of health officials.

The fiscal year 2010 City of Columbia Capital Improvement Plan lists the following current and future wastewater projects:

Current projects:

- H-21 B Interceptor near the St. Charles Road/I-70 interchange—project completed
- North Grindstone Outfall Extension phase I—final design completed, construction likely in 2010
- South Grindstone Outfall Extension phases II and III—project completed

Future projects:

- Hominy Branch Outfall relief sewer between U.S. 63 and Interstate 70, anticipated to be constructed along with the pedestrian trail project
- Timberhill Road sewage treatment system replacement

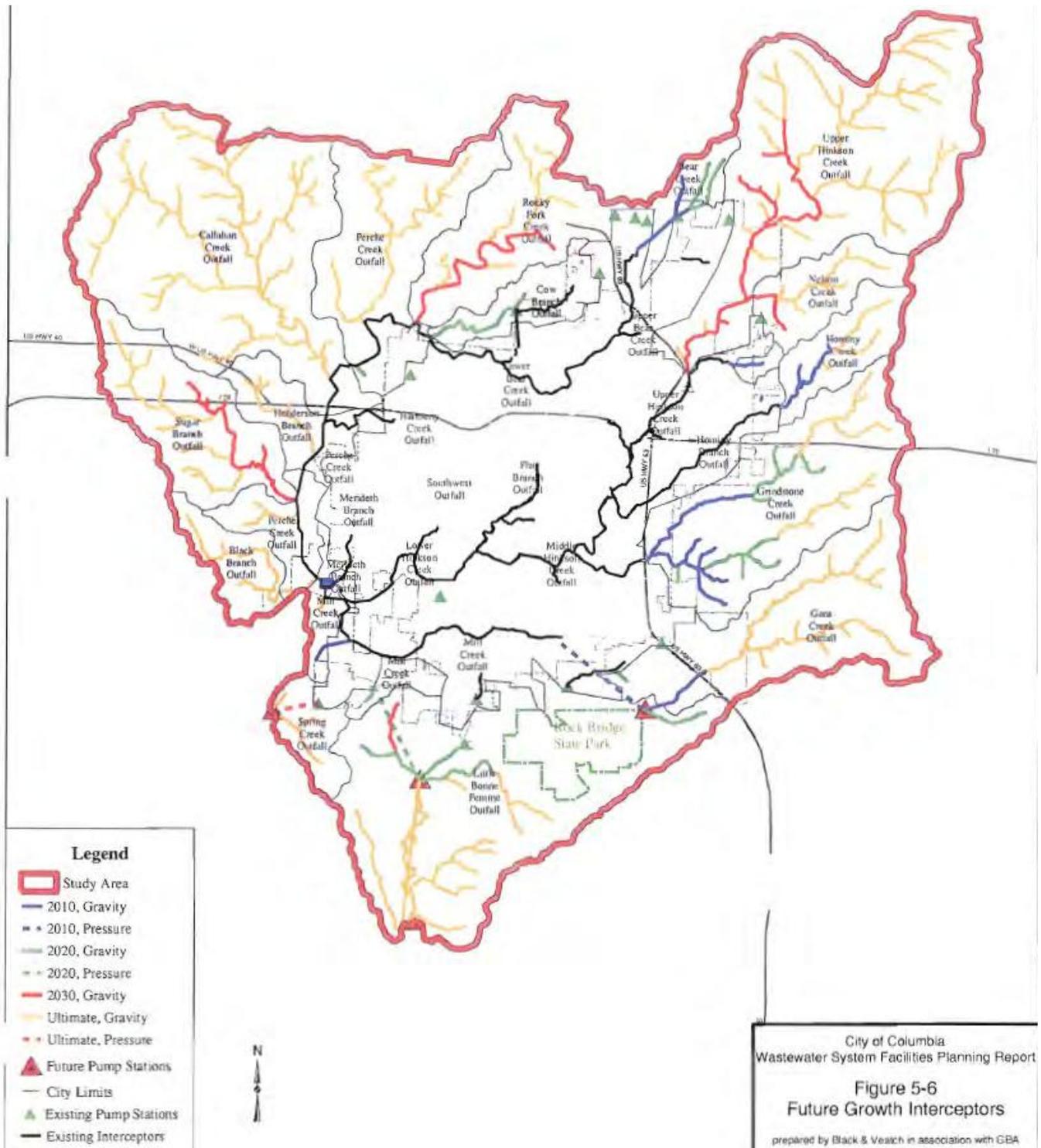
Both the City and BCRSD generally construct sewer lines on an as-needed basis; that is, when a development is proposed or a site's current treatment system is failing. The City's Wastewater Facilities Master Plan lists an objective to construct 57,000 feet of sewer extension by the year 2010, 94,000 feet by 2020, and 112,000 feet by 2030. Projects in the CIP are those being currently considered for construction (see Map 2-2).

STORMWATER MANAGEMENT FACILITIES AND IMPROVEMENTS

EAP Service Providers and governing legislation: Columbia Stormwater Utility (main regulation is Chapter 12A, Article V of the City Code, enacted March 5, 2007); Boone County (Chapter 28 of the County Zoning Ordinance; enacted April 15, 2010)

The regulation of stormwater management has been strengthened in recent years by both the City and County. The City's current ordinance regulating stormwater was enacted in 2007; the County's took effect on April 15, 2010. In general, these rules require no greater off-site peak runoff from a site than occurred prior to that site's development. Stormwater management features are not tied to specific watersheds; practices for its management are generally organized and implemented, though in certain cases (such as with Hinkson Creek's impaired designation) additional measures may be found in a particular watershed that may not be required elsewhere.

As much of the area is undeveloped, many locations feature no stormwater management improvements. For the developed areas outside of the city limits, however, the facilities are limited at present, as Boone County has just adopted a new stormwater ordinance to govern runoff from impervious surfaces, such as those found in hotel and commercial center parking lots.



Map 2-2: Current and Future Sewer Trunk Lines

Improved areas in the City may involve smaller-scale treatment options, such as rain gardens or temporary detention ponds, while larger developments feature detention or retention ponds to handle the greater volume of runoff associated with more sizable

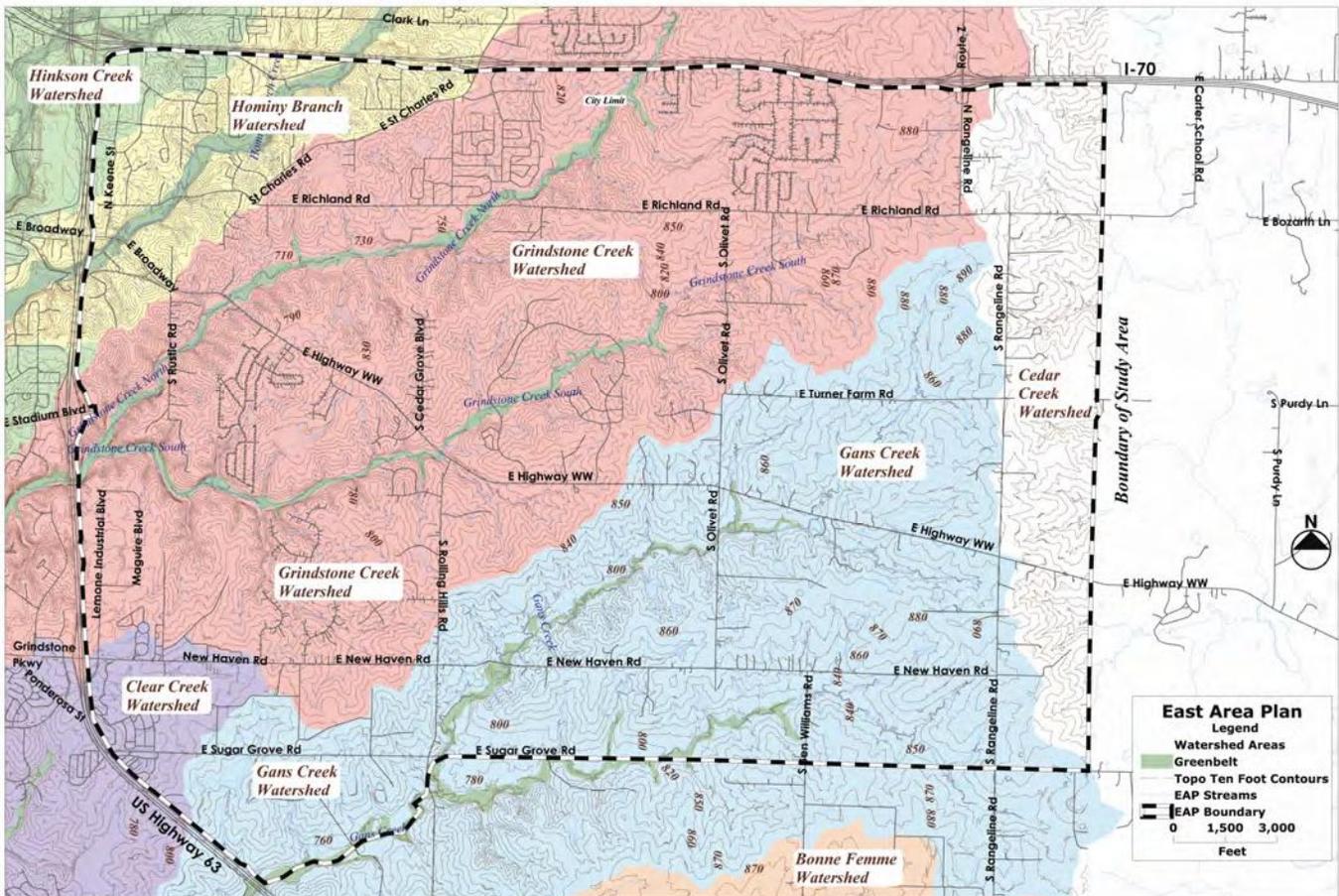
The means used to adequately manage stormwater runoff are varied; some familiar examples are features such as detention (holding the water for a time and slowly releasing it) or retention (permanently holding a volume of water) ponds. These are often featured on larger developments where a greater amount of impervious surface (larger roofs and parking areas) exists. Larger developments are also using underground detention vaults, sometimes under parking lots, as a less-obtrusive measure.

For smaller sites, features such as rain gardens or rain barrels are useful to slow, filter, or reuse water that would otherwise flow off-site. Rain gardens consist of a small pond designed to hold water, much like a detention pond, but with the added benefit of specifically chosen plantings on the inflow end that naturally filter things like salt and oil before it reaches on-site facilities or flows off-site. Rain barrels capture water from a home's downspouts, where it is then stored for later use around the property, such as with a garden hose to water plants.

Water quality is important in that whatever runoff flows from a site will affect other lands downstream, as runoff will drain to local streams and creeks, which then feed larger tributaries, and for the area encompassing Columbia and Boone County, eventually the Missouri River. Preventing or reducing the amount of oil, salt, and other elements that affect water quality both above and below ground is vital to ensuring the area's health and economic viability. For the EAP area, the City has a stormwater utility charged with enforcing the provisions of City code Chapter 12A, which governs stormwater management. The County's Public Works Department is responsible for monitoring such activity in its jurisdiction.

Erosion control is an equally important result of sound stormwater management practices. Just as oil and debris from roads and parking lots and chemicals applied to lawns and fields are harmful to water quality, limiting the amount of soil that is conveyed into local water bodies is also crucial. For further explanation of the study area's measures regarding erosion control, please consult the Environment chapter's stormwater section (found on page 33) of the Plan document.

The fiscal year 2010 Capital Improvement Plan did not list any current or future stormwater projects in the study area. The City Planning Commission is concerned by the lack of funding the stormwater utility has received over the past several years. The City Council is currently evaluating potential revisions to the stormwater utility fee structure to ensure adequate future funding.



Map 2-3: East Area Plan Watersheds

WATER

EAP Service Providers: City of Columbia Water and Light (CWL), Public Water Service District #9 (PWSD#9), Consolidated Public Water Service District #1 (CPWSD#1)

City of Columbia Water and Light, Public Water Service District #9, and Consolidated Public Water Service District #1 serve the EAP area. CWL has limited facilities in the area, namely at the southeast corner of the U.S. 63 and Interstate 70 interchange, in the LeMone Industrial Park, and near the St. Charles Road/Lake of the Woods and I-70 interchange.

Water and Light’s EAP service territory is bounded roughly by U.S. 63, Interstate 70, St. Charles Road to the south, and Glenstone Drive to the east. This area is within the Hinkson and Hominy Branch watersheds. PWSD#9 covers the balance of the EAP area, except for land south of Sugar Grove Road. The area south of Sugar Grove Road, bounded to the west by U.S. 63 and to the east by Gans Creek, is served by CPWSD#1, and includes portions of the Clear Creek and Gans Creek watersheds. The water lines generally follow local roads.

Service is available to all area residents, and as such, its provision does not pose an obstacle to the EAP area’s future development, unless a large-scale user was to locate in a location without sufficient conveyance capacity.

The fiscal year 2010 Capital Improvement Plan lists the following current and future water projects:

Current projects:

- Maguire Blvd. 12” main—construction to be completed with roadway project
- New Haven Elementary School main upgrade for fire flow—in service

Future projects:

- Twenty-four (24”) inch transmission main east of U.S. 63 from Shepard water tower to Hillsdale pump station
- Twenty-four (24”) inch transmission main east of U.S. 63 from Grindstone Parkway/New Haven Ave. to Shepard water tower, generally along Lemone Industrial Blvd. and Maguire Blvd.

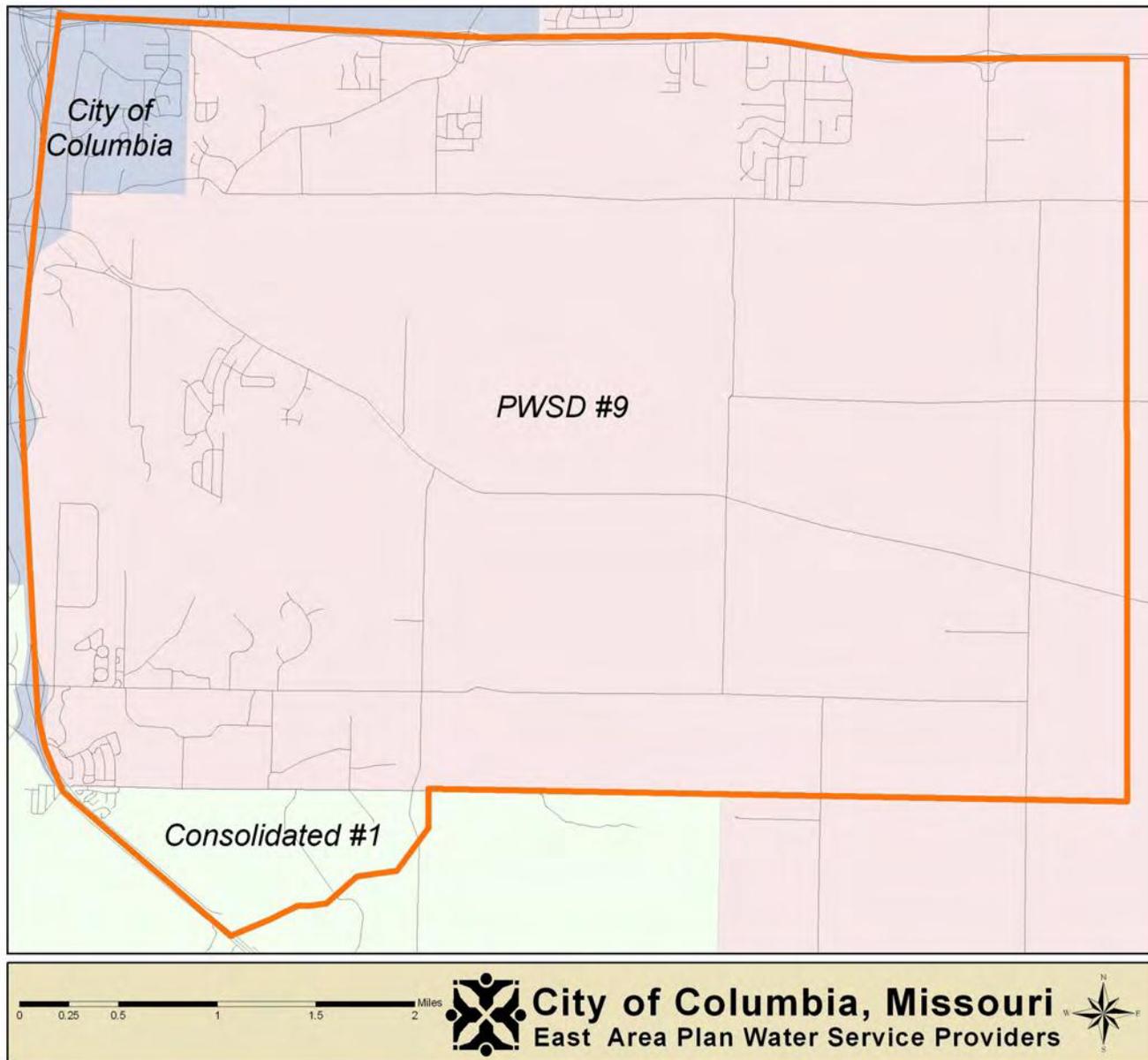
ELECTRIC

EAP Service Providers: Columbia Water and Light, Boone Electric Cooperative

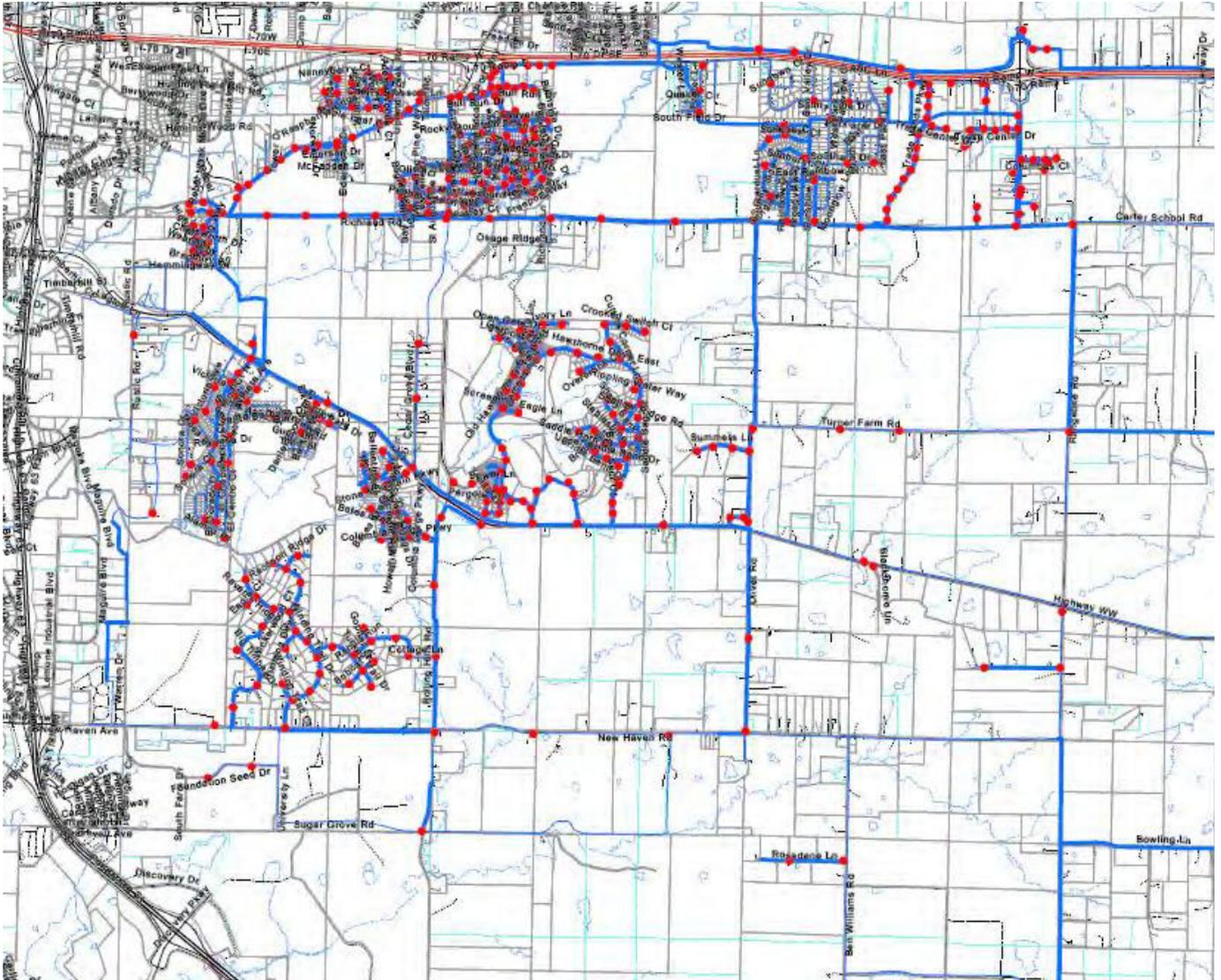
Columbia Water and Light (CWL) and Boone Electric Cooperative (BEC) offer electric service in the EAP area. As with water, the provision of electric service is readily available for future development. All major thoroughfares and local roads are supplied with service adequate for residential use. Should larger-scale development occur in the area, upgrades may be necessary depending on the development’s location in proximity to existing, larger capacity facilities. Two high-voltage transmission lines traverse the EAP area and one substation exists at Rebel Hill, north of Richland Road. Electric service does not look to pose any obstacle to future growth in the EAP area, whether in the CWL or BEC service territories. CWL’s territory, while primarily in the north and west of the study area, covers all of the Hinkson Creek watershed as well as portions of the Hominy Branch, Grindstone, and Clear Creek watersheds.

CWL has larger transmission lines in the area, including the following:

- East-west 161,000 volt lines near New Haven Ave.
- North-south 69,000 and 161,000 volt lines east of the American Legion post and then diagonally toward the intersection of Rolling Hills Road and New Haven Ave.



Map 2-4: East Area Plan Water Service Provider Areas



Map 2-4a: Public Water Service District #9 facilities (Source: Boone Co. GIS Dept.)

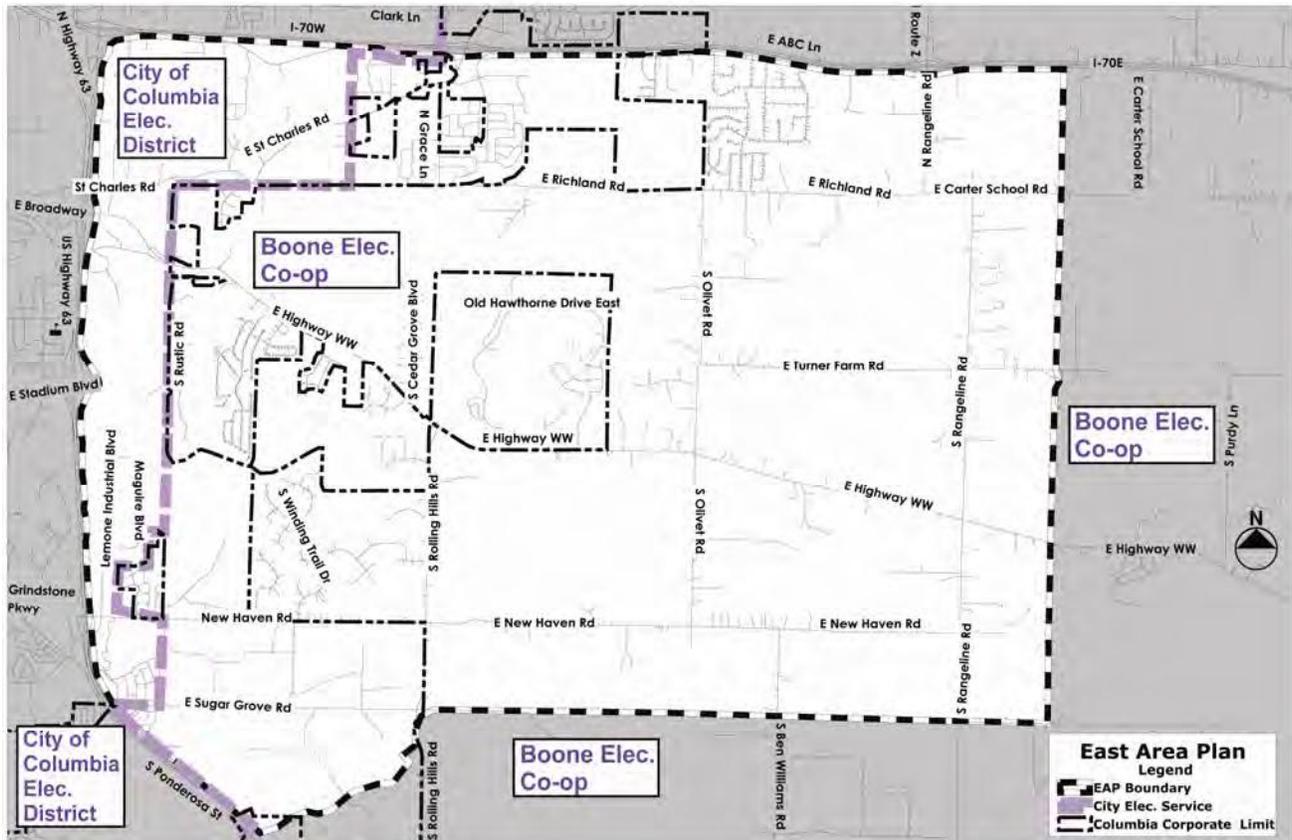
Water lines are shown in blue; line thickness indicates pipe size; Fire hydrants are red circles

Essentially, electric service may be better understood by dividing types of service lines into three parts. High voltage transmission lines, such as those mentioned above, transmit large quantities of electricity across long distances. The receiving end for these lines is an electric substation, where the amount of power is reduced for local conveyance. Medium voltage lines then carry power across a smaller area, such as the city. Finally, lower voltage lines deliver electricity to homes and businesses.

BEC has multiphase (medium and lower voltage) lines providing power to much of the study area. CWL has a substation at Rebel Hill, northwest of the intersection of Richland and St. Charles Roads.

CWL and BEC have a service agreement delineating the respective providers’ territories. These service areas are generally fixed and normally do not change even if a property is annexed into the City. This pre-determination of service boundaries helps each provider focus on its territory and reduces the amount of service duplication in areas experiencing growth. The agreement is overseen by the Missouri Public Service Commission.

The fiscal year 2010 Capital Improvement Plan did not list any current or future electric projects within the EAP area.



Map 2-5: East Area Plan Electric Provider Service Areas

ROADWAY AND SIDEWALK NETWORK

EAP Service Providers: City of Columbia, Boone County, Missouri Department of Transportation

Along with the wastewater system, the roadway and sidewalk network is among the most vital components regarding future development of the study area. How residents move from their homes to places of work, business, and recreation will dictate the area's success as it transitions from a mostly rural environment to a more urban one. The increased provision of this network, while not directly influenced by watershed areas, is affected by such features as steep slopes and floodplains.

The roadway component of the roadway and sidewalk network is currently the predominant transportation system found within the study area. Even with focused efforts on trails and other modes of transportation, this predominance is likely to remain for the foreseeable future. The City, County, and State of Missouri all maintain roads in the plan area. State facilities include Interstate 70, U.S. 63, I-70 Drive Southeast, and Route WW. For the 30 years prior to the year 2000, this area had not seen much development of the roadway network. The only new roadways coming into the public roadway network were those self-contained within the area's few subdivisions, and these roadways had little connectivity or benefit to the network as a system. The creation of new lots necessitated these roads, which provided access to the existing street network, increasing demand on the system's existing roadways. Many of the existing major roadways found within the study area are not classified as major by virtue of their design and carrying capacities, but rather because they are the only public roads available in a given neighborhood.

The transportation planning tool used by the City and County as a guiding document for the development of roads in the Columbia metropolitan area is the 2008 Columbia Area Transportation Study Organization (CATSO) Roadway Plan. The primary purpose of the CATSO Plan is to coordinate the local long-range road planning efforts with those of the State and Federal governments, and in doing so allow access to Federal funds. In addition to its primary purpose, the CATSO Plan is the tool used to determine future roadway needs, capacity levels, and alignments necessitated by development. The CATSO plan outlines a network of collector, arterial, and greater capacity roads that are necessary to efficiently and effectively move vehicular traffic throughout the EAP area and beyond to the surrounding City and County areas. The long range perspective of the CATSO Plan anticipates growth and development of the area and the classifications of the roadways are based upon this growth. The roadways within the EAP area may not need to be upgraded to the full standard of the designated classification if there is no development to trigger such a need.

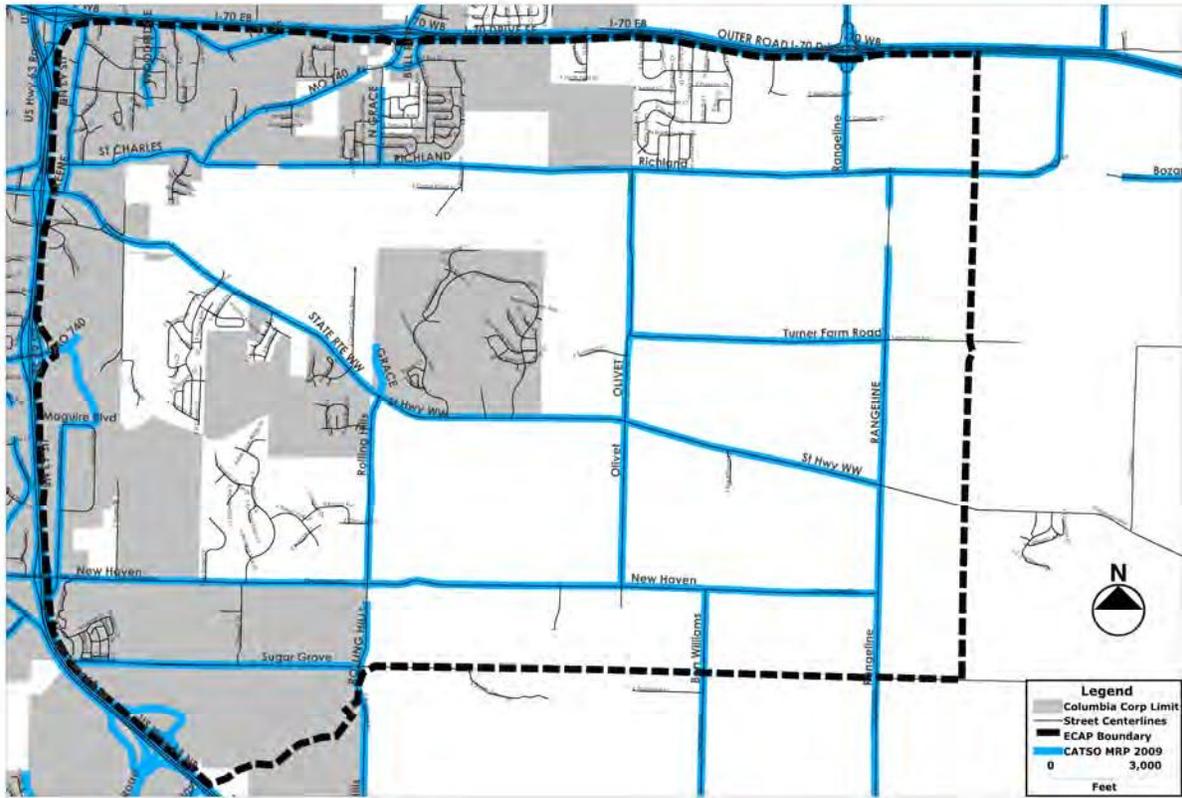
From a traffic and transportation perspective, the study area suffers from a deficiency in the number and capacity of existing roadways to support the transportation needs of the area's

current needs, much less provide capacity for growth and development. With a few exceptions, most of the roadways of the study area only function acceptably as local roadways carrying low volumes of traffic. Most existing roadways would not meet the standards permitting them to be accepted as new public roads based on the current traffic volume, particularly when compared to the design standards for the road classification designation under the CATSO Plan. Map 2-6 shows the study area's existing road network.

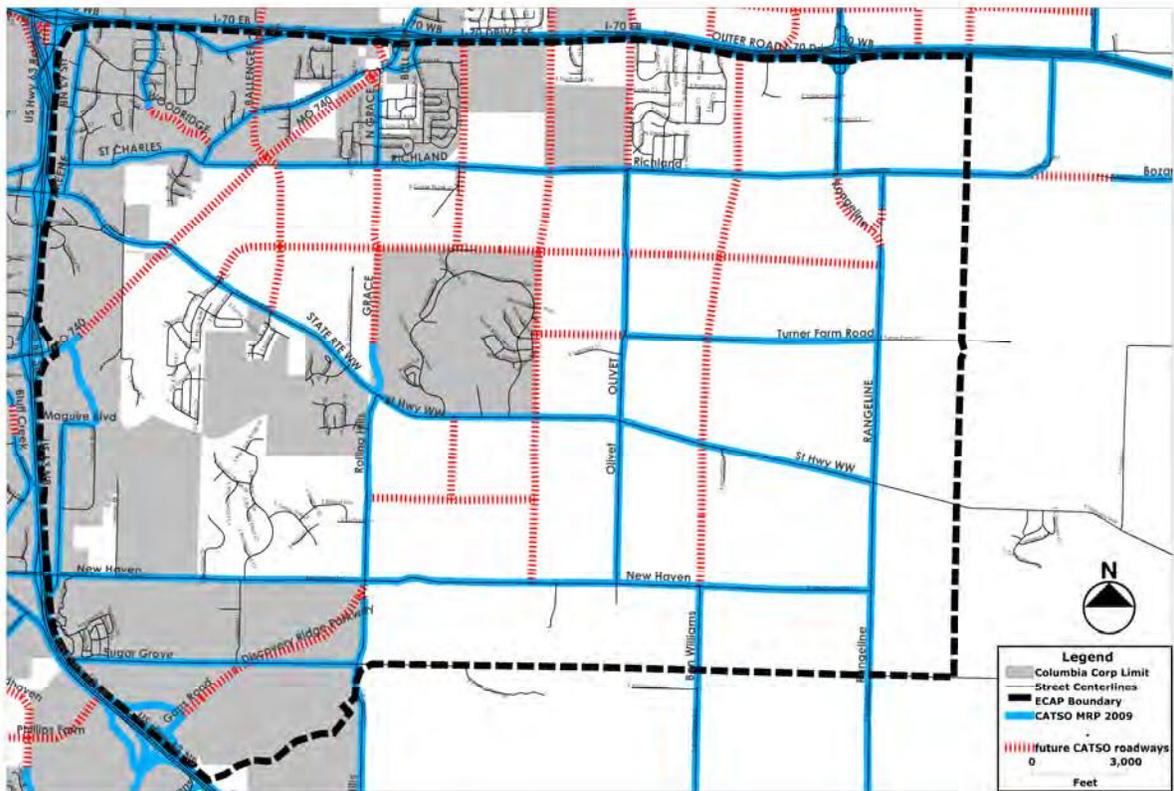
An understanding of general transportation planning and how it has been applied to the study area is important to assess the current state of the area's transportation network. If a new roadway network for the area was to be created, there would be a major roadway every one-quarter mile to one-half mile apart. This spacing accomplishes two things. First, the spacing creates a grid of streets that allows traffic volumes to equalize between different streets in the grid. Second, this spacing allows physical characteristics, such as pavement width, to be minimized for individual streets because the system's design would discourage concentration of traffic on a few roadways in favor of a grid system where the physical characteristics of the streets are similar throughout the system.

It is not practical, unfortunately, to establish a road network grid resembling the idealized condition within the study area, due to existing development blocking required grid segments. It must, therefore, be recognized that some of the remaining grid's roadways will carry higher traffic volumes due to the missing pieces of the grid that may not be established.

It is critical, therefore, to propose additional roadway segments for the grid--where possible--for areas that do not currently have them. These new segments would generally not be constructed until properties adjacent to the proposed roads were developed. The combination of existing roadways and portions of the idealized grid result in the creation of rural or suburban street blocks. The addition of these new grid segments forms the basis of Map 2-7. This map includes essentially the same features that are shown on the CATSO Plan map for the study area, which is shown as Map 2-8.



Map 2-6: East Area Plan Existing Roadway Network



Map 2-7: East Area Plan Modified Grid



Map 2-8: CATSO Plan Map

The 2008 CATSO Roadway Plan identifies several study area roads for their importance to the community's driving network. Those among the larger classifications are: I-70 and U.S. 63--freeways; Stadium Boulevard/Route 740 extension (for which a formal Environmental Impact Statement, or EIS, corridor has been approved)--expressway; Ballenger Lane extension, Richland Road, and Rangeline Road/Route Z--major arterials.

The existing sidewalks within the study area are virtually non-existent as a network, with the existing sidewalks component consisting of isolated sidewalks in some residential neighborhoods with no connectivity to each other. Transportation planning for the sidewalk/pedestrian/bicycle uses focuses on the integration of facilities for walking and biking into other transportation construction projects such as new roadways or roadway improvements and linkage within the system by integration with trails and other connections not associated with the roadway network.

A transportation goal of the Imagine Columbia's Future visioning document is that "Columbia will have diverse travel options that allow for safe and efficient travel to and through destination points. Travel options will be compatible with adjacent land uses and coordinated with the transportation timing needs of the community" (*Imagine Columbia's Future*, p. 99). An objective of the Metro 2020 Plan furthers this desire in saying the City should "Develop and

support mixed use developments and transit nodes as a means of reducing automobile traffic and to encourage pedestrian, bicycle, and transit trips” (*Columbia Metro 2020, p.6*).

The fiscal year 2010 Capital Improvement Plan lists the following current and future roadway and sidewalk projects:

Current projects:

- Gans Road/U.S. 63 interchange—completed
- Maguire Blvd. extension to Stadium Blvd.—under construction

Future projects:

- Stadium Blvd./Mo. 740 extension from U.S. 63 to Interstate 70
- Rolling Hills Road/Grace Lane reconstruction from Old Hawthorne to Richland Road—in final design
- Rolling Hills Road extension from New Haven Road to Route WW
- Ballenger Lane overpass/extension from Clark Lane to St. Charles Road
- Discovery Parkway extension from Lenoir St. to Rolling Hills Road
- Maguire Blvd. connection to Warren Dr., Warren Dr. reconstruction to New Haven Road
- New Haven Road widening from Warren Dr. to Lemone Industrial Blvd.
- Richland Road reconstruction from St. Charles Road to Grace Lane
- St. Charles Road reconstruction from Keene St. to Grace Lane
- Clark Lane widening (four lanes) from Route PP to St. Charles Road
- Grace Lane widening (four lanes) from Richland Road to Route WW
- Keene St. and St. Charles Road intersection improvement
- Richland Road widening (four lanes) from St. Charles Road to Grace Lane
- Rolling Hills Road widening (four lanes)
- St. Charles Road and Richland Road intersection improvements
- Woodridge Dr. from St. Charles Road to terminus
- I-70 Dr. SE sidewalk from U.S. 63 connector to Hillsdale St.

PARKS AND RECREATION

EAP Service Providers: City of Columbia Parks and Recreation, Boone County Parks Commission

The 2009 City of Columbia Neighborhood Parks Plan identifies several existing parks as well as areas desired for acquisition. The current parks within the study area include: Woodridge, American Legion, Eastport, Cedar Ridge, and County Park. Five areas are identified in the study area for future parks: one primary acquisition area near the Vineyards subdivision, south of Route WW; two secondary areas; and two tertiary areas.

The 2009 City of Columbia Trails Plan indicates five trails located within the study area. Four of these follow creek greenbelts; the fifth would connect two of the trails at their eastern termini along Olivet Road. The four trails proposed for the area are as follows:

- Hominy Branch, from Stephens Lake Park to east of Ballenger Lane—phases of this project are primary and secondary trails
- North Fork Grindstone Creek, from the confluence of the north and south forks to Lake of the Woods Park (this trail would connect to the Grindstone Nature Area)—phases of this project are secondary trails
- South Fork Grindstone Creek, from the confluence of the north and south forks to Olivet Road—phases of this project are secondary trails
- Gans Creek, from the Gans Recreation Center in the proposed Southeastern Regional Park to Olivet Road—phases of this project are tertiary trails

As the North Fork Grindstone Creek trail would be in close proximity to the extension of Stadium Boulevard, this trail could be a key component of a multi-modal transportation network to access homes and businesses along the new construction east of U.S. 63. The trail's presence could further increase land value along the trail and roadway corridors.

The South Fork Grindstone Creek trail is slated to travel adjacent to the Old Hawthorne development. This improvement would further enhance the Old Hawthorne area and provide access to trail users from or near the development.

The Gans Creek trail is planned to travel through the University of Missouri's Discovery Ridge business and research park, providing an alternate means of travel to this center without the use of an automobile for workers and researchers.

Two of the three City parks located in the EAP area are slated for improvements, which are detailed in the Capital Improvement Plan notes below. Additionally, as noted in the existing conditions section of this report, the City has identified five general areas for future parks acquisition; one primary, two secondary, and two tertiary acquisition areas. The County Park in the El Chapparal subdivision rounds out the study area's parks inventory.

The fiscal year 2010 Capital Improvement Plan lists the following current and future parks and recreation projects:

Current projects:

- Eastport Neighborhood Park equipment, landscaping—under construction

Future projects:

- American Legion Park renovation
- Hominy Trail construction from Woodridge Park to Clark Lane
- Hominy Trail construction from Stephens Lake Park to Woodridge Park
- American Legion Park phase II, completion of renovations
- North Fork of Grindstone Creek Trail construction from Grindstone Nature Area to Lake of the Woods Recreation Area
- South Fork of Grindstone Creek Trail construction from confluence of North and South Forks of Grindstone Creek to Olivet Road

OTHER FACILITIES

EAP Service Providers: Fire Protection--City of Columbia, Boone County Fire Protection District

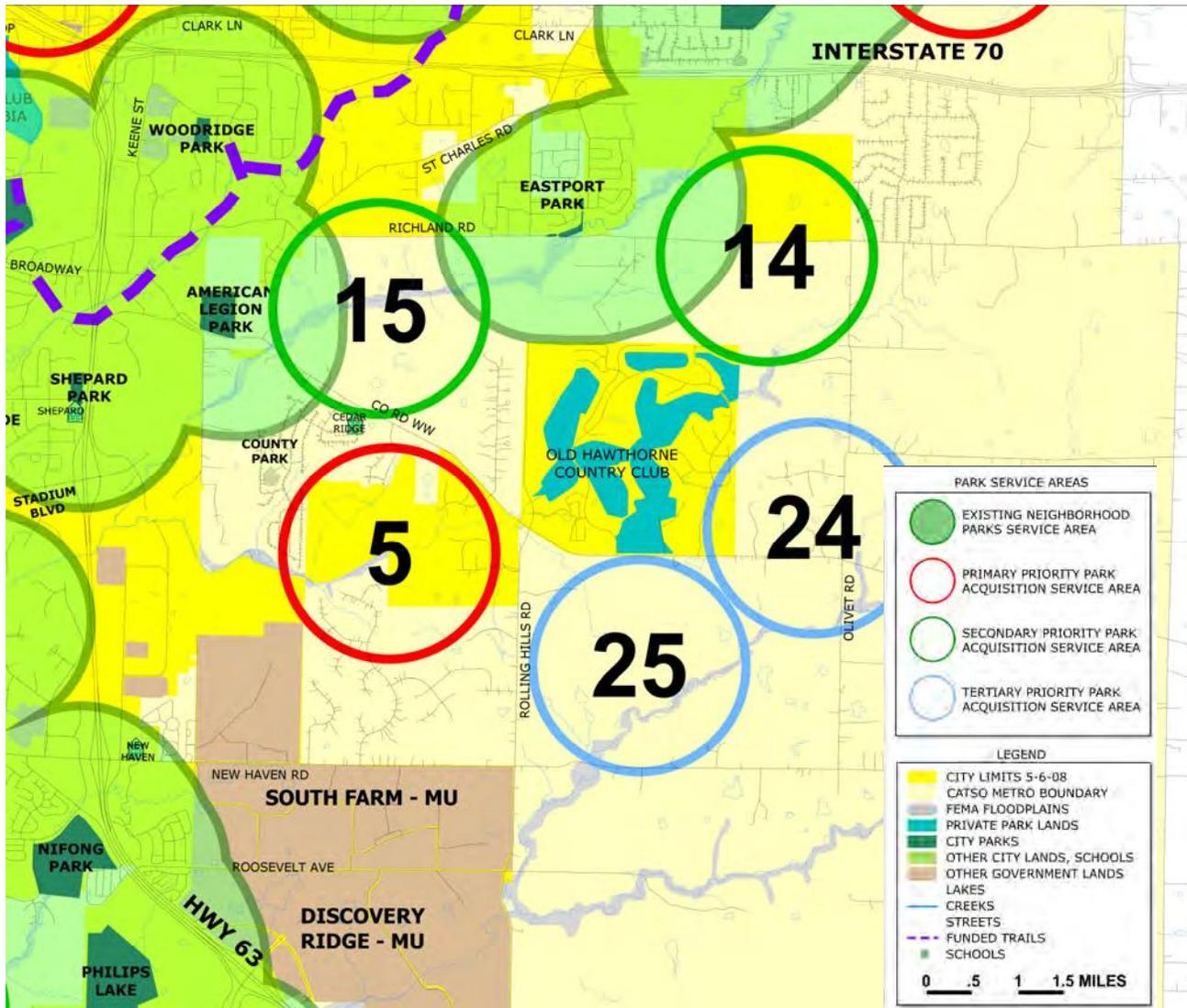
Law Enforcement—City of Columbia, Boone County Sheriff’s Department

Education—Columbia Public Schools

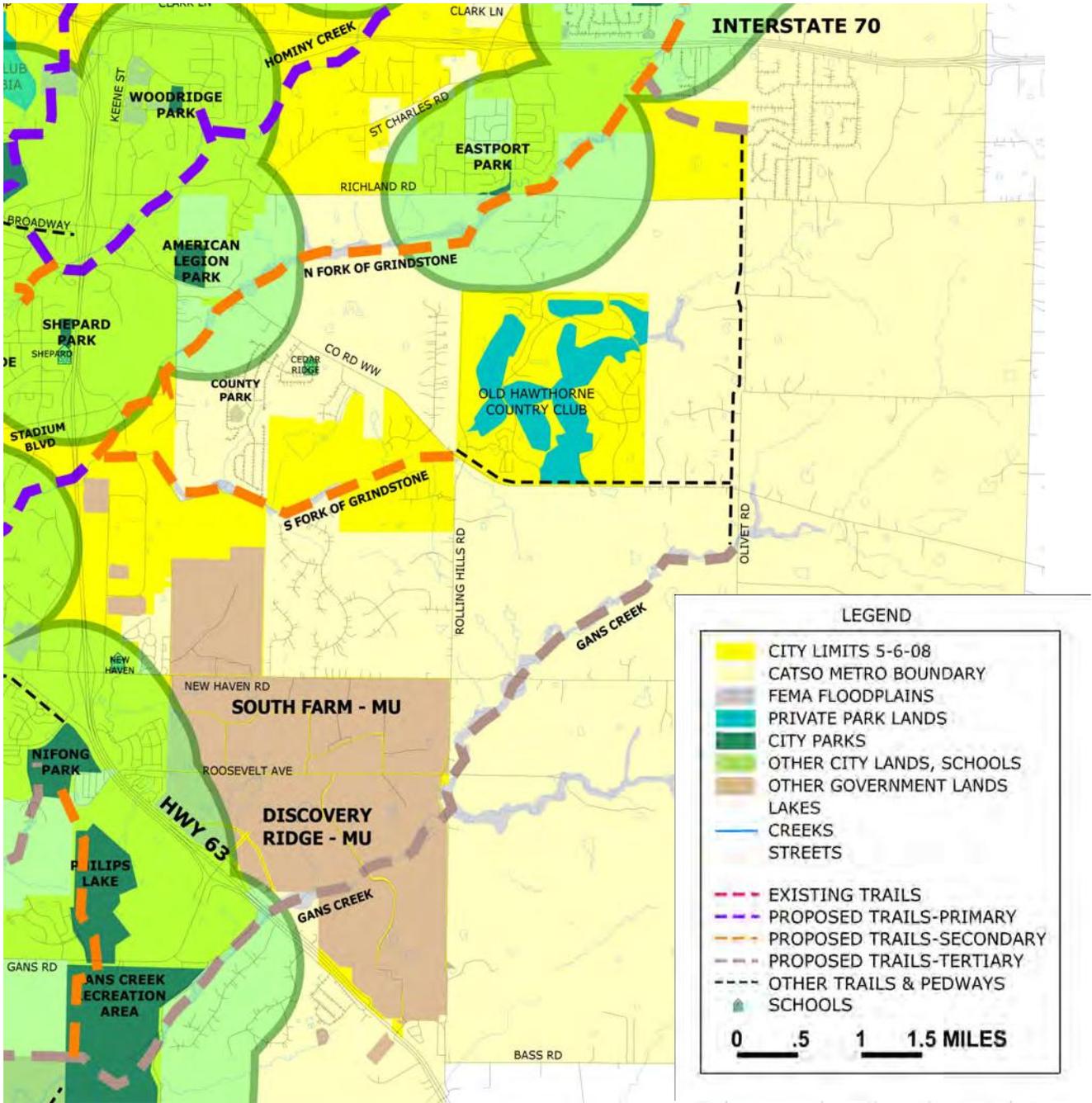
Within the EAP area, there are currently two elementary schools (Cedar Ridge and New Haven), and one Boone County Fire Protection District station (number 12). The proposed new high school is across Interstate 70, north of the study area on St. Charles Road, west of Route Z.

As the area grows, further provision of facilities such as schools, fire stations, or a library branch may be necessary--though plans for these may not yet exist. As is the case with other infrastructure elements, many of these facilities are located in the northern or western portions of the study area, where more development has occurred.

Public transit routes may also be needed as residential or commercial centers develop, and would likely follow arterial or collector roadway corridors. Another important note is that some facilities located in the study area receive individuals (such as schools) who live outside the study area. Other study area residents may similarly be served by facilities located outside the area.



Map 2-9: 2009 City of Columbia Neighborhood Parks Plan



Map 2-10: 2009 City of Columbia Trails Plan

The Bearfield and Clark Lane fire stations, though located outside of the study area, are the primary providers of City fire protection for the area along with Fire District station 12. The stations work under a fire protection agreement to provide mutual aid for the area. As property is annexed, the primary responsibility for service becomes the City's. Due to the travel distances for nearby City fire stations, however, first response duty is handled by Station #12. The mutual aid agreement addresses the costs of providing that service.



Map 2-11: EAP Area Schools and Fire Station Locations

INFRASTRUCTURE COORDINATION

A framework for the implementation of this plan's goals must be established. It is influenced heavily by policy documents from various City and County departments, as well as other service providers. This myriad of guidance documents makes establishing a single, powerful statement on how to install infrastructure extremely difficult; therefore, it is best to investigate how the EAP document may tie together as many of these disparate documents as possible and act as a driver for future collaboration and, when possible, centralized decision-making. Though interdisciplinary decisions spanning water, sewer, roadway, and trail projects and providers are unlikely to achieve unanimous support, those making such decisions must endeavor to further

dialogues between the varied groups whenever possible to effectively manage taxpayer and user funds for current and future capacity management.

As it looks to change the face of the EAP area, great attention should be paid as the Stadium Blvd./Mo. 740 corridor is built. Great potential lies in this corridor, and along with it great responsibility to address the concerns of residents, service providers, and the community at large. The Stadium extension's importance should not, however, eclipse that of other EAP locations, as existing facilities are also important to maintain, upgrade as necessary, and consider as part of the larger area infrastructure network.

CHAPTER THREE - EXISTING LAND USE

INTRODUCTION

The East Area Plan study area contains approximately 13,446 acres or roughly 21 square miles of land. The use of these lands is diverse and is generally influenced by a site's location near existing urbanization (i.e., existing City development), environmental constraints/opportunities, or the availability of urban services. The diverse mix of land use is representative of the historical and current development patterns within the study area. Recent expansion of infrastructure (mainly central sewer) and the planned expansion or improvement of transportation facilities will likely continue to influence the conversion of land within the study area from its existing agriculture and rural residential character to a more urbanized environment.

The speed at which this transition happens will be influenced primarily by the availability of public infrastructure (central sewer and transportation facilities), appropriate zoning, and the demands for new developable ground. It is believed that the study area has sufficient land mass already serviceable by central sewer to accommodate likely development demands for at least the next 10 years, if not longer. Conversely, appropriately zoned property that is served by adequate transportation facilities are lacking within the study area to accommodate the likely future demands.

Therefore, it is important to understanding what the current land use patterns are within the study area. Such an understanding will assist in evaluating what potential changes will be required in zoning, transportation facilities, and public infrastructure availability to accommodate future growth.

PURPOSE

The purpose of this chapter is to provide a comprehensive overview of the land use within the study area. This chapter will evaluate land use from four perspectives 1) general land use, 2) zoning district distribution, 3), population and 4) housing units. As with the preceding chapters, these four perspectives will be presented from an overall study area context and then brought into greater focus based on the six watersheds that the study area covers.

The information presented in this chapter combined with that presented in the preceding two chapters on environmental and infrastructure conditions provide the foundation for analysis and stakeholder input upon which the remainder of this plan will be built.

STUDY AREA OVERVIEW

ZONING DISTRICT DISTRIBUTION - GENERALLY

The East Area Plan study area is comprised of approximately 13,446 acres (21 square miles) of land, most of which is undeveloped. The study area is generally bounded by US 63 and I-70 to the west and north, Gans Creek and New Haven Road to the south, and an area ½ mile east of and parallel to Rangeline Road to the east. The southern portion of the study area contains approximately 1,400 acres of University of Missouri controlled land that includes the Discovery Research Park and University Research Park. Three major creeks – Hominy Branch, North/South Forks of the Grindstone, and Gans Creeks – run through the ECAP area, flowing from northeast to southwest.

Approximately two-thirds of the study area is under the jurisdiction of Boone County for subdivision and zoning regulations with the remainder in the City of Columbia. As noted, the majority of the study area is undeveloped with approximately 9,200 acres dedicated to some form of agricultural use (crop land or grazing). It should be noted that a significant difference exists between the City and County agricultural designation and potential for traditional urban-style residential development.

Under City zoning provisions, 7,000 square foot lots can be created on property zoned A-1. Of the approximate 9,200 acres zoned for agriculture use (zoned A-1, A-1P, A-2, or A-2P) approximately 1,800 acres are zoned City A-1 and of this 1,400 acres are controlled by the University of Missouri. Unlike the City's zoning provisions, the County provisions specify a minimum lot area of 10 acres for A-1 property and 2.5 acres for A-2 property. County planned agriculture districts (A-1P and A-2P) do not permit any greater density per acre than the non-planned districts.

These differences are significant when evaluating potential development densities in the future. All things being considered equal, a City A-1 property that can be served by public sewer could develop at a urban densities that are more intense than that compared to the County A-1 property. While this potential development scenario exists for the 1,800 acres of City A-1 property, past development trends indicated that very few developments proceed under the A-1 classification. This is in part due to the greater setback requirements (e.g. side yards) imposed on the lots that would be created. Instead of developing as A-1, this acreage would likely petition for rezoning to a different residential classification or a planned development which would provide opportunity for greater scrutiny of the potential development impacts.

Of the approximate 4,246 remaining acres within the study area, approximately 3,030 acres are zoned for single-family, duplex, and multi-family uses and approximately 1,216 acres are zoned

for commercial, industrial, office, or other non-residential uses. Of the 3,000 acres allocated to single-family, duplex, and multi-family use, approximately 73% of the land is located inside the City's corporate limits. Of this acreage, approximately 2,500 acres are allocated specifically for single-family dwellings on 7,000 square foot lots in either the City R-1 or County R-S zoning districts. The remaining 500 acres allocated to residential use are distributed among transitional (A-R), medium density (R-2, R-3, R-M), or planned (PUD, RMH) residential districts.

Of the approximate 1,216 acres intended for non-residential uses, 457 acres are zoned for commercial use, 586 acres are zoned for industrial use, 106 acres are zoned for office use and 67 acres are classified as Floodplain Overlay (F-1) by the City zoning code. The floodplain acreage can be developed for uses within the underlying zoning designation (typically residential) provided that special conditions regarding development are met.

Land zoned for commercial development is generally located in the western portions of the study area and normally inside the City's corporate limits. Major concentrations of such acreage are located along the US 63 and Interstate 70 corridors with less intense concentrations located on Richland Road, Route WW, and New Haven Road. Not all acreage zoned for commercial use is currently developed. This is most pronounced at the Lake of the Woods/Interstate 70 and the US 63/Stadium Boulevard interchange locations. Other areas zoned commercially, but presently undeveloped or under-utilized exist along Richland Road at Grace Lane and along Route WW at Elk Park Drive and the entrance to Old Hawthorne.

Not unlike commercial acreage, those properties designated for office use are typically in the western portion of the study area and within the City's corporate limits. The major concentration of office acreage is located in the Keene Street corridor from I-70 Drive Southeast to Route WW. A less intense location of office acreage is found at the southeast corner of the US 63/New Haven Road interchange which is part of the Lenoir Woods tract that is anticipated to be developed with additional assisted living and medical facilities.

The approximate 586 acres of industrially zoned acreage is distributed within the northeast and southwest portions of the study area. In the northeast, under County jurisdiction (with city annexation agreement) is the Tradewinds Industrial Park. In the southwest, under City jurisdiction is the Lemone Industrial Park. Neither park is fully developed; however, the Lemone Industrial Park has greater occupancy and will soon benefit from a second primary access point at the US 63/Stadium Boulevard interchange. Currently access to the park is limited to US 63/Grindstone-New Haven Road interchange. Access to Tradewinds is from either the Route Z/Interstate 70 Interchange via the frontage road or Richland Road.

Differences between City and County zoning designations are typically very minimal. Uses within the districts generally parallel one another between City or County designations. This parallel construction, likely was created to ensure continuity in land uses between the urban

fringe and the rural areas surrounding the City. As the City continues to grow this level of continuity make the process of annexation less complex since the uses established within the County can be transitioned into a comparable City district without creating significant non-conformities.

While a great level of consistency exists between the City and County regulations there are several differences. The most significant is found within the agriculture districts as were noted above. Also, the County provides for a transitional residential district as a step down from their agriculture classifications. The City's regulations do not incorporate such a district into their standards. The County's A-R district allows residential development on half-acre lots provided appropriate sanitary services are available. This lack of transition within the City code, at times, presents challenges when applications are evaluated in developing areas that may be better suited for suburban-style densities.

In addition to aforementioned differences, the City's planned development process varies greatly from the County's in the level of plan details required at the time of rezoning and the length of time a planned approval remains valid. City planned district approval length varies based on the type of planned district. Planned residential (PUD) approvals are only valid for 5 years if no construction has commenced. City Council can rescind approval on commercial and office planned districts (C-P and O-P) after 2 years if construction has not begun. County planned districts remain valid only if a final plan is recorded within two years of County Commission approval and all required infrastructure is installed. If a final plan is not recorded the planned zoning reverts to the original zoning and the applicant must resubmit a new application.

These differences may explain why the use of planned zoning varies greatly between City and County properties. Based on existing zoning, the City has seven times (356 acres versus 46 acres) the amount of acreage within a planned district verse the County. In general, however, a greater number of requests for rezoning are processed by the City each year due to the higher volume of development. A significant portion of the yearly requests for zoning changes are within the planned district due to the City Council's preference for having tighter oversight on development.

Figure 3-1, below, shows the distribution of the land uses within the study area by general land use category. Map 3-1, on the following page, shows graphically the distribution of the zoning districts within the study area.

EAP Land Usage

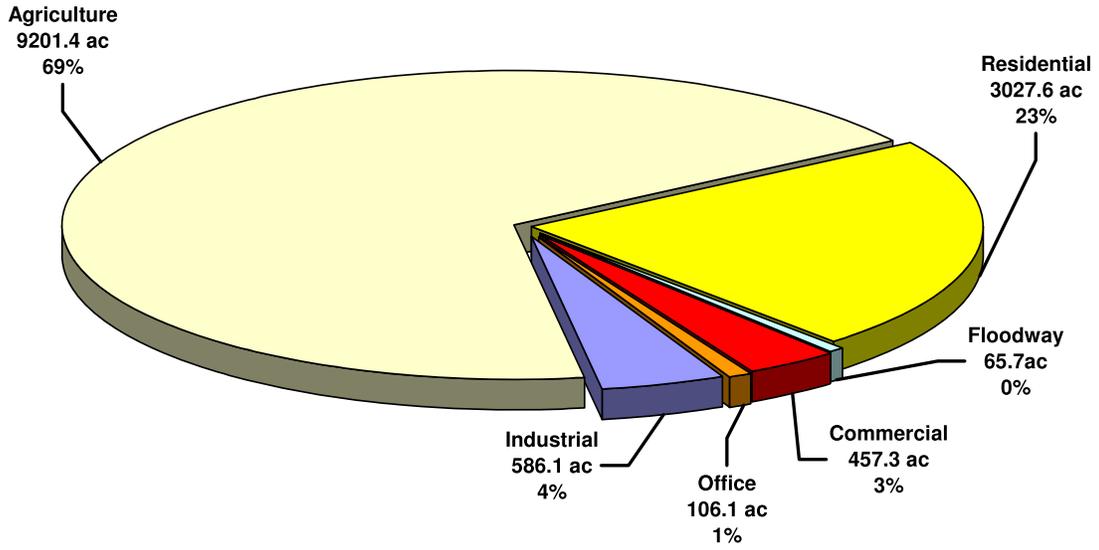
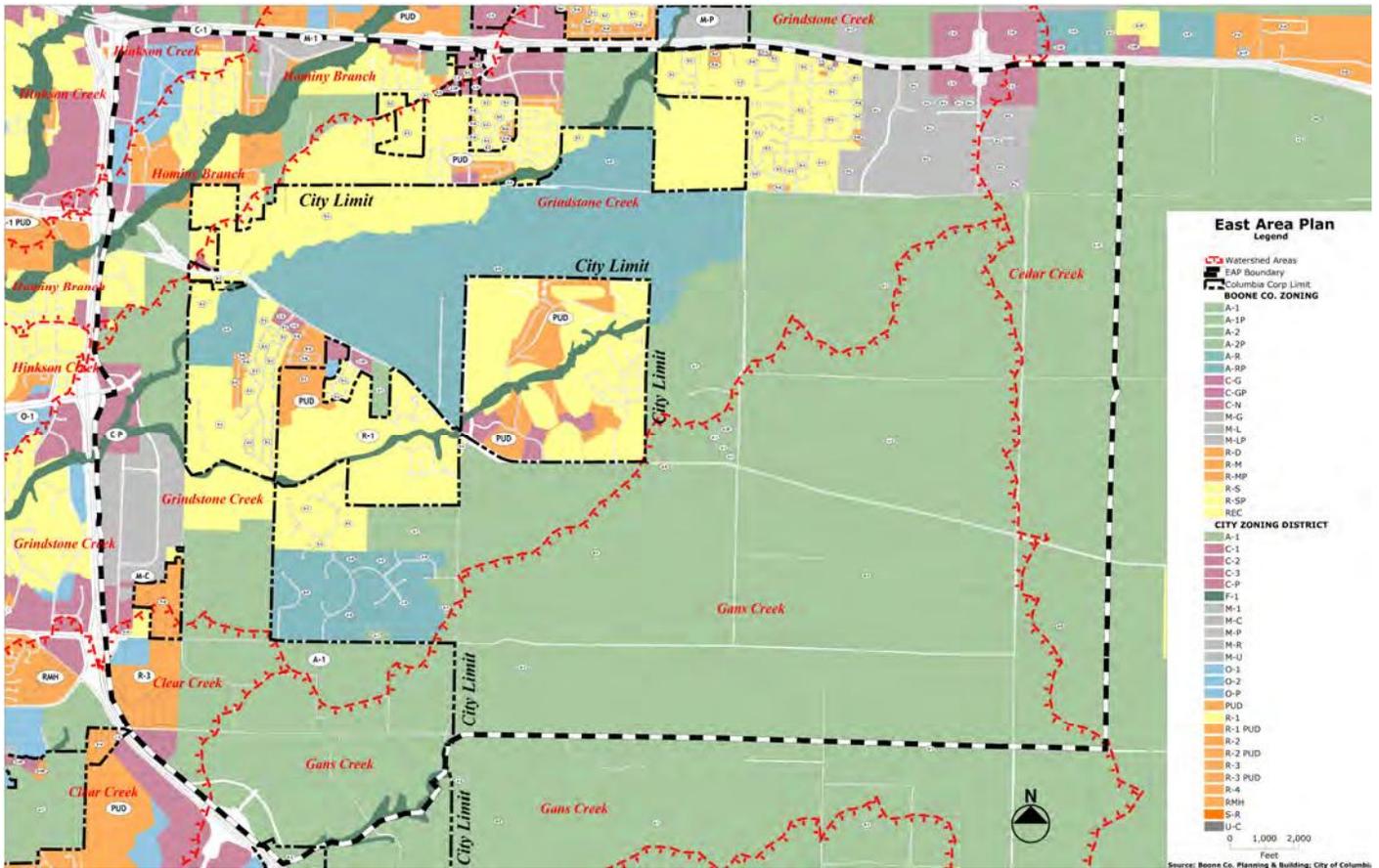


Figure 3-1: East Area Plan Land Use Distribution



Map 3-1: East Area Plan Existing Zoning Districts & Watersheds

ZONING DISTRICT DISTRIBUTION – BY WATERSHED

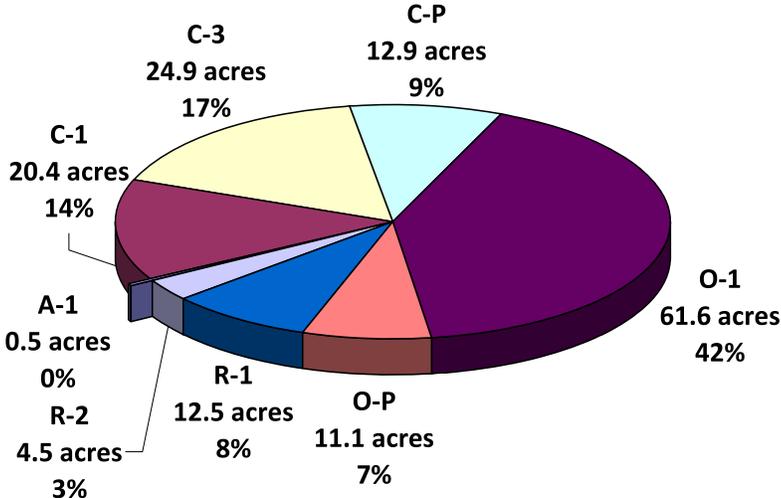
The East Area Plan study area encompasses portions of six watersheds within its boundaries (see Map 1). Moving northwest to southeast, these watersheds are as follows 1) the Hinkson Creek, 2) the Hominy Branch, 3) the Grindstone Creek, 4) the Clear Creek, 5) the Gans Creek, and 6) the Cedar Creek. Within each watershed the level of development and zoning varies widely and is directly related to the availability of infrastructure.

To provide a greater understanding of what types of land use exist within each of these watersheds the following descriptions are provided. These descriptions are intended to provide a portion of the backdrop that will be used to develop a future land use plan for the study area. Understanding what specific land uses exist within each watershed will provide the opportunity to either promote or dissuade a particular type of land use so as to ensure that a balance of uses results once the study area is ultimately built-out.

➤ Hinkson Creek Watershed

This watershed is located in the northwest corner of the study area, inside the City limits, and is primarily built-out at this time. The two predominant land uses within the watershed are commercial and office. Approximately 58 acres of commercially zoned property exists within the watershed which are located along the highway frontages to the north and west. Approximately 73 acres within the watershed are zoned for office use. This acreage is located along the Keene Street corridor and is anchored by the Columbia Regional Medical Center.

Hinkson Creek Zoning Distribution



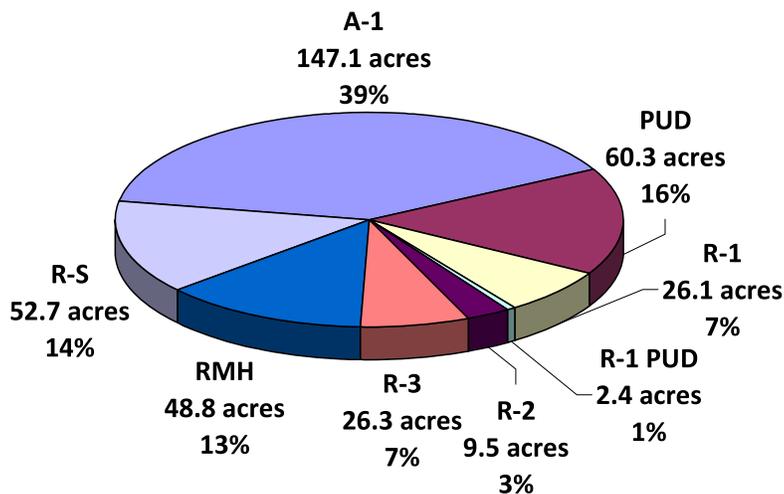
The watershed’s development pattern has been significantly influenced by its accessibility to US 63 and Interstate 70 as well as existing public infrastructure to support more dense development. A limited amount of residential development, approximately 17 acres, exists within the watershed. There is a limited supply of vacant parcels within the watershed which may afford the opportunity for higher-density infill development or additional office space for medical expansion.

➤ Hominy Branch Watershed

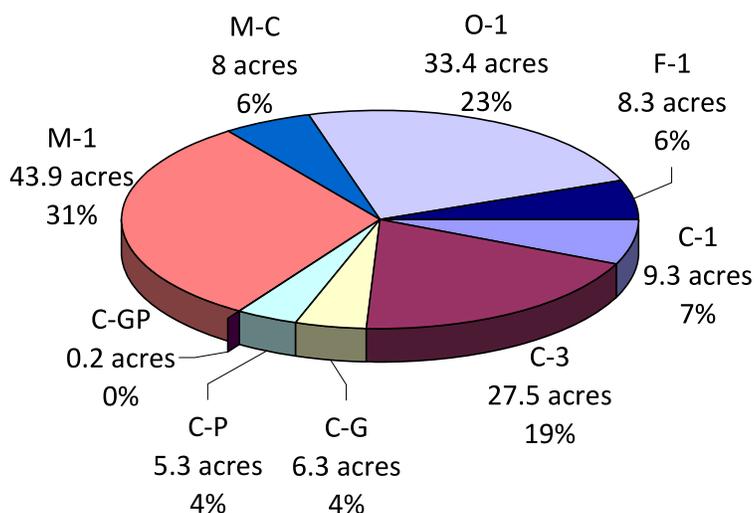
This watershed is also located in the northwest portion of the study area with the majority of its acreage lying inside the City limits. In the study area, this watershed contains 5 times the acreage as the Hinkson watershed and incorporates a more diverse mixture of land uses. The majority of the acreage within this watershed was annexed into the City in 1964.

The predominant land use feature within the area is residential with approximately 373 acres being allocated to that use. Restricted residential uses on 7,000 sq. ft. lots (City R-1 and County R-S) constitute 26 and 53 acres, respectively, of the total residential acreage. Approximately 60 acres is allocated to planned residential development and 48 acres is allocated to mobile home park development. Additionally, the watershed has approximately 49 acres allocated to commercial use and 42 acres for industrial use. This acreage is generally located along the watershed’s I-70 frontage and along Route WW at Keene Street.

Hominy Branch Zoning Distribution (Agriculture and Residential)



Hominy Branch Zoning Distribution (Commercial, Office, Industrial)



Not unlike the Hinkson Watershed, land uses within the Hominy are significantly influenced by the availability of public infrastructure. The majority of the residential development within the watershed is located to the east and southeast of Columbia Regional Hospital. Older existing development is generally located east of the hospital and new development is located along the St. Charles Road corridor. Much of the newer development within the watershed has been constructed within the past 10 years with significant increases between 2001-2002 and 2006-2008.

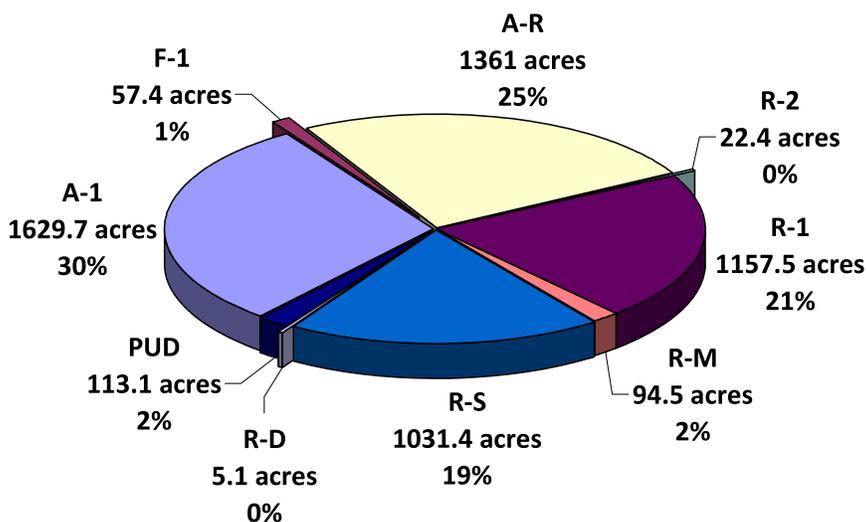
This watershed is not built-out and is likely suitable for more intense development. The watershed; however, is not well serviced by sufficient roadway infrastructure which will likely be the limiting factor to its future growth. Additionally, the eastern portion of the watershed may be impacted by the construction of the Stadium Boulevard/740 extension and alignment changes to the existing roadway network associated with those improvements.

➤ Grindstone Creek Watershed

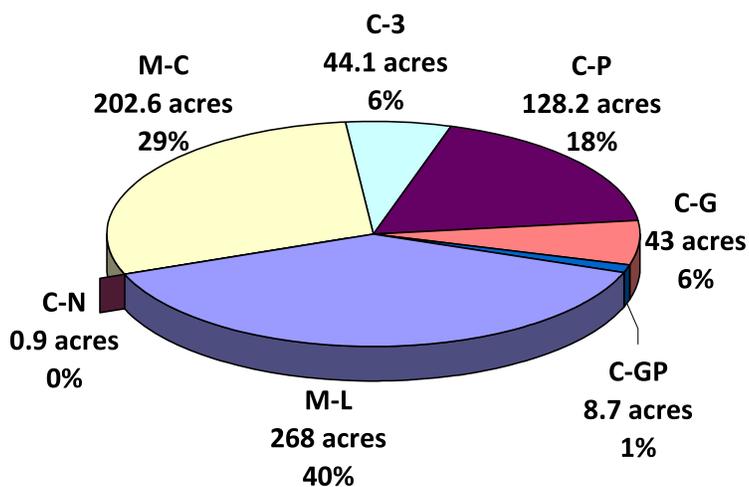
The Grindstone Creek watershed is located in the central portion of the study area and is the largest and second most zoning district diverse of the six watersheds. Within this watershed are the North and South Forks of the Grindstone Creek, both of which have been improved with trunk sewer lines allowing for the development of its approximately 6,100 acres of land. This watershed is also the most impacted by environmental assets and constraints such as steep slopes, stream buffers, and contiguous tree canopy.

This watershed has been the focus of several large annexation requests; however, the majority of the land is still within the jurisdiction of Boone County. The most significant annexation of property within the past 10 years occurred in 2005 with the annexations of Old Hawthorne and the Vineyards. Prior to this time significant annexations occurred in 1979, 1998, 2001, and 2004.

**Grindstone Creek Zoning Distribution
(Agriculture and Residential)**



**Grindstone Creek Zoning Distribution
(Commercial and Industrial)**



The predominant land use features within the watershed are residential and agricultural. Restricted residential zoning accounts for approximately 3,785 acres and agriculture zoning accounts for approximately 1,630 acres. The majority of the restricted residential zoning is located with the platted subdivisions that are found along or near Grace Lane, Richland Road, Route WW and New Haven Road. Most, if not all, of these developments are served by central sewer and consist of lots ranging from one-half acre to approximately 7,000 sq. ft. Several of the developments along New Haven Road have lots significantly larger than the one-half acre minimum and those PUD-zoned areas within Old Hawthorne zoned PUD and the Vineyards have lots with sizes smaller than 7,000 sq. ft.

The majority of the agricultural zoned property (A-1 zoning) within the watershed lies east and south of the Old Hawthorne and Vineyards subdivisions. An additional sizable agricultural tract owned and used for research purposes by the University of Missouri is located to the east of the Lemone Industrial Park north of New Haven Road. With the exception of the University owned property, these lands are typically sparsely developed with residential uses and are generally in cropland or grazing pastures.

While the watershed has been improved with trunk sewer lines affording these tracts the ability to develop the existence of nearby sewer has not materialized to such a point that extension of existing service is cost effective. Until adjacent properties develop more intensely the likely conversion of these tracts for greater density is not foreseen.

This watershed is home to both industrial parks within the study area and is the location of significant vacant commercially zoned property. The Industrially zoned properties are located on the southwest and northeast corners of the watershed and account for approximately 471 acres. Significant commercially zoned, but under-developed property exists at the US 63/Stadium Boulevard and I-70/ Lake of the Woods interchanges. Additional commercially zoned and more productively used property exists along Route WW, in the center of the watershed. Commercially zoned property accounts for approximately 225 acres of the total acreage within the watershed.

This watershed is not near build-out; however, it will be significantly influenced by the potential construction of several major transportation-related improvements that will provide enhanced north-south connectivity. Two projects of significant are the Rolling Hills Road/Discovery Ridge Parkway project and the Stadium Boulevard/740 Extension. Each will provide direct access from I-70 to US 63 though the watershed.

The Rolling Hills/Discovery Parkway project may provide potential development opportunities in the central portion of the watershed while the Stadium/740 extension may provide potential for increased development intensity in the western portion of the watershed. It should be

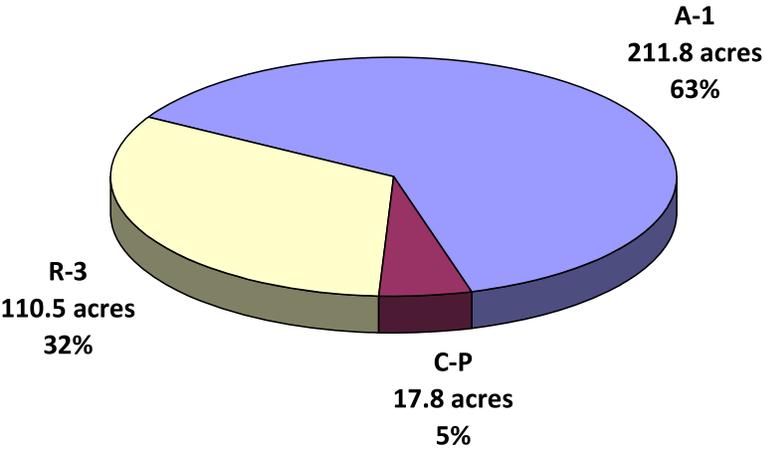
noted that access is to be restricted on the Stadium/740 extension. This restriction will likely impact that level of development intensity that will occur.

These north-south connections will provide needed additional connectivity; however, alone will not be sufficient to support future demands within the watershed. A comprehensive system of east-west and north-south roads will be required to effectively and efficiently move future residents around. Conversion of currently undeveloped or under-developed property will need to take into account these transportation needs as development proposals are submitted for consideration.

➤ Clear Creek

This watershed is located in the southwest corner of the study area and is the smallest in size. The acreage within this watershed is entirely inside the City limits and is comprised generally of residential and agriculture uses. The northwest corner of the watershed is used for assisted living facilities and the eastern half of the watershed is part of the University of Missouri’s South Farm property. Residential zoning accounts for approximately 111 acres and agricultural zoning accounts for 212 acres of the total watershed acreage. An approximately 18 acre tract of land is zoned for planned commercial in the southwest corner of the watershed and is currently used by a mobile home park.

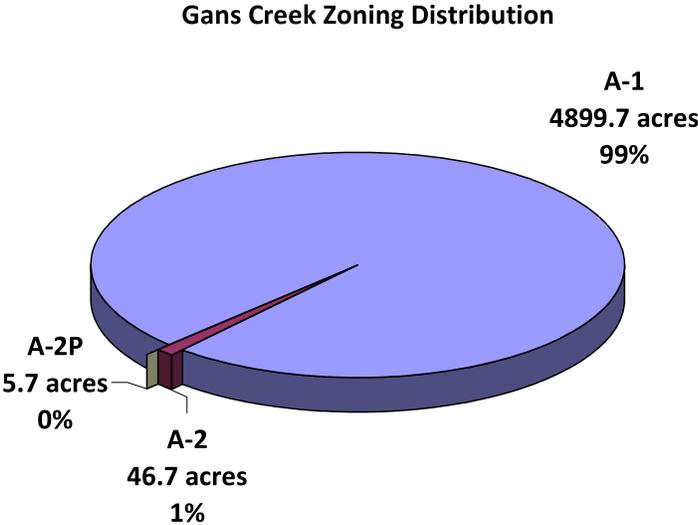
Clear Creek Zoning Distribution



While this watershed is not currently built-out, the majority of land within it (approximately 212 acres) is used for University research-purposes. The watershed is serviced by public infrastructure and can accommodate additional development. Plans are currently in review regarding the potential expansion of the assisted living facilities located in the northwest corner of the area. Consideration of traffic movements and improvements to such systems will need to occur concurrently with any future development or redevelopment of the property located within this watershed.

➤ Gans Creek Watershed

The Gans Creek watershed is located in the southeast central portion of the study area. The acreage within this watershed is exclusively in the County’s jurisdiction with the exception of that portion owned by the University of Missouri and containing the remainder of the South Farm property and Discovery Ridge Research Park. The only land use within this watershed is agriculture with approximately 4,950 acres zoned to accommodate those uses. Of the watersheds, Gans Creek is considered to have the greatest agricultural value within the study area.



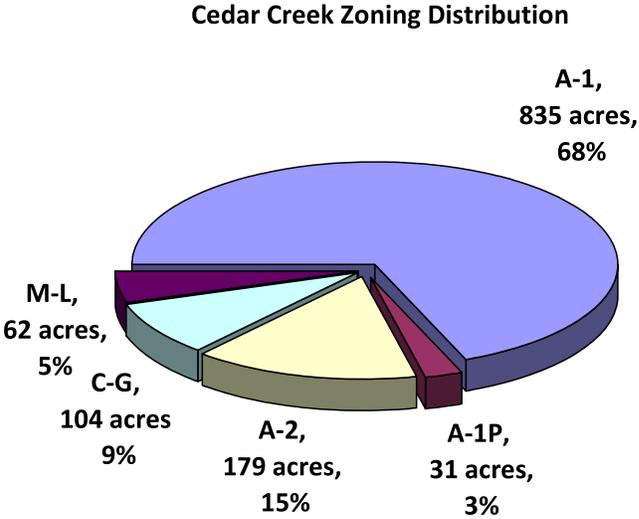
This watershed is currently not served by central sewer and is under-served by sufficient transportation improvements to effectively and efficiently accommodate additional residents. Additionally, this watershed drains into the Little Bonne Femme Watershed which is one of the most sensitive habitats within Boone County. Presently, the opportunity to develop this watershed more intensely is not seen as practical or necessary.

From the practical perspective there are no funds or intentions to service this watershed with central sewer nor are there funded roadway improvements to enhance connectivity. From the perspective of necessity, this land is currently being used productively for agriculture purpose. The focus of more intense development can and should be directed toward those areas inside the study area where existing development is on-going and infrastructure systems exist sufficient to support that increased development intensity.

➤ Cedar Creek Watershed

This watershed marks the eastern boundary of the study area and is exclusively under the jurisdiction of Boone County.

Agricultural zoning is the predominant land use found within the watershed and accounts for 1,045 acres of the 1,211 total acres. This watershed has frontage along the Route Z/I-70 interchange where 104 acres of commercially and 62 acres of industrially zoned land are located. These properties are currently sparsely developed.



This watershed not unlike the Gans Creek watershed is considered significantly outside the pending pressures for development. The acreage within the watershed is not serviced by central sewer and is considered to be some of the most valuable for agricultural purposes, if drained. The current use of the property for agriculture production will likely be its future unless significant private investment is made to upgrade public infrastructure availability.

POPULATION & HOUSING DISTRIBUTION - GENERALLY

Based upon analysis of 2000 Census data the overall population and number of housing units within the study area was approximately 6,327 persons and 2678 housing units which is equivalent to 2.36 persons per household. The distribution of this population is generally equally split between males and females and the distribution of housing favors single-family structures. For the most part, population and housing concentrations are found in the western portions of the study area and along the St. Charles Road, Richland Road, Route WW, and New Haven Road corridors. Generally, population and housing density in the central and eastern portions of the study area are dispersed which is consistent with the agricultural land use of these areas and the limited availability of central sewer.

As the level of development activity began to increase in the early 2000’s the population and housing picture began to change. Prior to this time there had been limited fluctuation in housing levels as many of the existing developments in the study area such as Sunrise Estates (platted 1964), Lake of the Woods (platted 1973), El Chaparral (platted 1971), and The Woodlands (platted 1991) were being built out. During the boom that began in 2000 and peaked in 2006-2007, several new developments were created along the Grace Lane, St. Charles Road and Route WW corridors resulting in additional residents and housing being introduced into the study area. Capturing the exact number of additional residents and units is not fully possible at this time since the 2010 Census figures have not been released.

An exact US Census figure will likely be available in early 2012 and will document the changes that the study area has experienced over the past 10 years. While such figures are forthcoming, an alternative method for estimating the number of additional residents and housing units within the study area is available now. This alternative utilizes data collected by the County Assessor's Office.

The Assessor tracks actual housing units added by year to the tax roles. Utilizing this information and the base housing unit count from the 2000 Census allows for a fairly solid estimate of how many housing units per year have been added over the last 10 years. Likewise, estimating population change within the study area utilizes the change in housing units per year as its base. After determining the housing unit change in a given year, the sum is multiplied by 2.1 (the average household size) as reported in the 2000 census. While not an ideal or a completely accurate method for obtaining the population or housing counts within the study area, this methodology will likely result in figures that closely match those which will be reported in the 2010 Census results. Publication of the Census result in 2012 will allow for the verification of the methodology, and may require revisions.

Based on the above described methodology the estimated population and housing units within the study area as of January 1, 2010 were 8,049 and 3,498, respectively. The estimated population represents a 21% change in residents from 2000 and the estimated housing units account for a 23% change from those that existed in 2000. A year by year analysis of estimated population and housing are shown in the tables below.

Table 1 – Estimated EAP Population

Year	Population	
	Estimate	% Change
2000*	6327	-
2001	6415	1.37%
2002	6484	1.06%
2003	6570	1.31%
2004	6839	3.93%
2005	7280	6.06%
2006	7480	2.67%
2007	7795	4.04%
2008	7967	2.16%
2009	8049	1.02%

* - Actual population per 2000 Census

Table 2 – Estimated EAP Housing Unit

Year	Housing Unit	
	Estimate	% Change
2000*	2678	-
2001	2720	1.54%
2002	2753	1.20%
2003	2794	1.47%
2004	2922	4.38%
2005	3132	6.70%
2006	3227	2.94%
2007	3377	4.44%
2008	3459	2.37%
2009	3498	1.11%

* - Actual population per 2000 Census

As can be seen, significant population and housing increases were experienced between 2004-2008 with generally the most significant occurring in 2004 and 2005. These significant increases were a result of zoning approvals for new developments along Grace Lane and Richland Road. Since these peaks the study area's growth has been more moderate and generally focused along the Route WW corridor as the Vineyards and Old Hawthorne developments are filling in. Less significant population and housing expansion has also occurred in the northwest and north portions of the study area as tract remainders have been developed east of the Woodridge subdivision and west of the Eastland Hills subdivision.

Overall, the population and housing within the study area has generally seen the greatest fluctuations north of Route WW and west of Olivet Road. This trend is likely to continue into the near future as there is an abundance of available development lots for new construction and their location places a future resident within less than 5 miles of the City center. Additionally, this portion of the study area is served by central sewer unlike areas to the south and east.

POPULATION & HOUSING DISTRIBUTION BY WATERSHED

Population and housing distribution/intensity is directly related to underlying zoning and the availability of adequate infrastructure. As was discussed within the zoning distribution section, zoning commonly is assigned based on the availability of public infrastructure. Therefore, it is not unreasonable to expect that higher population and housing concentrations will be in areas zoned for more intense uses that are served by sufficient public infrastructure such as central

sewer. Such is the case within the East Area Plan’s study area. Population and housing concentrations are typically found in those areas closer to existing urbanization or where public utilities are available and begin to lessen as one proceeds further east in the study area.

This fact holds significance when considering what the future population and housing distribution within the study area may look like. Existing infrastructure improvements are in place to accommodate the next wave of population and housing growth which will likely slowly continue to progress eastward within the study area.

The following analysis provides a general understanding of the population and housing distribution based on 2000 Census block group data for each watershed within the study area, except Cedar Creek. Exclusion of the Cedar Creek watershed is the result of the area not being within the Metro planning boundary which is the basis for the other watershed data.

➤ Hinkson Creek Watershed

This watershed has the least number of permanent residents and the smallest number of housing units within the study area even though it is the most highly developed and infrastructure rich. Based on reported 2000 Census figures this area had a total of 195 residents and 79 housing units. Over the past 10 years the watershed has seen little new residential development; however, it has experienced new office and commercial construction. These facts are consistent with the zoning of the lands within watershed. Additional long term development will likely include expanded office and commercial uses based on its availability to existing infrastructure and proximity to the City’s urban core.

➤ Hominy Branch Watershed

This watershed is comprised of some of the earliest urban residential development within the study area. Based on the 2000 Census figures this watershed has approximately 1,433 permanent residents and 538 residential units. The concentration of this population and housing is generally found in the north and northeast sections of the watershed in the Woodridge and Eastland Hills subdivisions. Additionally, population and housing concentrations are found along the St. Charles Road corridor within several loosely connected developments.

Over the past 10 years this watershed has experienced two periods of sustained population growth. These periods were from 2001-2003 and again in 2006-2008. The population and housing increases generally focused on land within the Eastland Hills subdivision; however, were also apparent on property east of the Woodridge subdivision and to the south of St. Charles Road. This watershed is capable of accommodating additional population growth in future years. Complete build-out of the property surrounding Eastland Hills and along the south side of St. Charles Road has not been achieved.

Limitations to future development are related more to the lack of available and efficient transportation routes than to the public utilities. Additionally, future development of the area may be impacted by the construction of the Stadium Boulevard/740 extension which generally traverses the eastern edge of watershed.

➤ Grindstone Creek Watershed

This watershed, as previously noted, is largest within the study area and incorporates many of the early county subdivisions as well as several newer City developments. This watershed has experienced the greatest number of annexation requests over the past 10 years and is the location of the most recently installed trunk sewer lines along both the north and south forks of the Grindstone Creek. As such, this watershed according to the 2000 Census figures was populated by approximately 4041 persons and developed with 1649 dwelling units.

The population and housing concentrations are generally found centrally within the watershed and along the main transportation corridors of Richland Road, Route WW and New Haven Road. Prior to 2005 the population and housing concentrations were typically limited to the existing county subdivisions off Route WW and north of New Haven Road. However, with the installation of new central sewer in the early and mid 2000's along the north and south forks of the Grindstone Creek an acceleration of population growth and housing development occurred.

From 2004-2008 this watershed experienced significant population and housing growth. These increases were typically focused in the central and northern portions of the study area along Richland Road/Grace Lane and Route WW. It was during these years that the Eastport Gardens subdivision was begun, the Old Hawthorne/Vineyards annexation and development plans were approved, and the Bay Hills subdivision project commenced construction. The influx of lots and development units that these projects brought online during these years was significant. These four developments alone account for where the majority, if not all, of the increases in population and housing are attributed.

The watershed is capable of additional population growth and housing development which will likely be focused on the remaining portions of the Old Hawthorne and Vineyards developments. While these developments are primed to receive new housing units and residents there are several other City properties to the north and west of these sites that are currently zoned appropriately to accommodate new growth. Additionally, north of New Haven Road within the Woodland subdivision opportunities exist to construct new dwellings.

Not unlike the development issues within the Hominy watershed, limitations to development of raw parcels within this watershed will be driven more by transportation availability than public infrastructure. The western edge of the watershed will be impacted by the construction of the Stadium Boulevard/740 extension and the central portion will be impacted by the Rolling Hills Road/Discovery Ridge Parkway project. These projects will likely influence the proposal and

ultimate construction of new developments. As these projects are brought closer to completion it is likely that development near or abutting them will follow.

➤ Clear Creek Watershed

This watershed is located in the southwest corner of the study area and according to 2000 Census figures is populated by approximately 688 residents and 348 housing units. The majority of the residents and housing are located within the Lenior subdivision and two mobile home parks (Ed's and Sunset) which have frontage on US 63 and share an eastern boundary with the University of Missouri's South Farm and Discovery Ridge properties. While a significant portion of this watershed is currently undeveloped and capable of accommodating additional development, much of this property is under University control for research purposes.

While much of the land watershed will likely not experience change in the near future, there are currently plans under review for property in the northwest corner of the watershed. These plans show a potential expansion of the existing Lenior Senior Center for additional senior and assisted living facilities. Should this development be realized it will increase the residential densities within the watershed; however, not beyond its available capacity.

➤ Gans Creek Watershed

This watershed is the second largest by land mass within the study area; however, as previously noted, is the least diversified in its land uses. The predominance of agriculture uses and the limited availability of public infrastructure are likely explanations for the lesser development and population intensities. Within this watershed according to the 2000 Census figures there are approximately 246 residents and 89 housing units. These residents and housing units are generally distributed along the primary transportation routes within the study area to the north and west throughout the watershed.

This watershed is capable of accommodating additional development and residents; however, will likely be slow to see significant increases until such time as public infrastructure (mainly central sewer) and expanded transportation facilities are introduced into the area. This watershed contains much of the prime agriculture lands within the study area and drains toward the Little Bonne Femme watershed. These characteristics should be taken into account as development proceeds eastward from the adjacent watersheds.

The fact that this watershed is significantly limited in its urban development potential may be advantageous to maintain so that possible environmental impacts on the current ecological systems to the south are not adversely impacted. Additionally, promoting this watershed as an agriculture preservation area may be instrumental in ensuring that a local "home-grown" farming presence continues to exist within this portion of Boone County. An exception to the limited urban development potential within the watershed exists in the southwest corner

where Discovery Ridge is located. This area is currently serviced with City services and is intended to develop as a research/office park.

EXISTING LAND USE CONDITIONS SUMMARY

As the above information has illustrated the zoning, population, and housing characteristics of the East Area Plan’s study area are diverse and ever evolving. A common theme that is apparent from the above data presentations is that zoning designation, population concentration, and housing growth are generally related to and dependant on the existence of central sewer and sufficient transportation systems. The current development pattern reflects this relationship.

Had it not been for the extension of central sewer into the study area the development and population changes that have occurred would likely not have been possible. County zoning and development procedures which vary significantly from those of the City would have likely resulted in lower density developments with on-site sewer systems. However appealing this may be to some stakeholders, that is not the current situation. The purpose of the East Area Plan is to proactively look at future land use needs and attempt to develop a plan of action for decision makers to use when evaluating zoning changes and development proposals.

The data presented in this chapter and that of the Environment and Infrastructure chapters along with the goals and objectives expressed by the study area’s stakeholders establish the foundation upon which the future land use plan for the East Area will be developed. It is anticipated that this new land use plan will provide the needed guidance framework for decision makers to use when they are presented with requests for zoning changes and development approvals in the future. The development of this land use plan and it essential components is the focus of the remaining chapters of this document.

CHAPTER FOUR - LAND USE ANALYSIS & ALLOCATION

INTRODUCTION

The preceding chapters have focused primarily on establishing the base conditions affecting development within the East Area Plan’s study area. To augment and confirm the results of this basic research, a series of stakeholder meetings were conducted. These meetings produced a set of core goals and objectives relating to the future development of the study area and expressed a desire to maintain the rural development pattern that now defines the region.

Those ideas and comments have been incorporated into this chapter. To adequately prepare for future development of the study area it is essential to understand not only the desires of the residents already living there, but also the needs of future residents. The manner in which future needs are met should not be limited by how past decision have been made, but should look forward to more innovative techniques that will better address the desire expressed by stakeholder throughout this planning process.

The allocation of future land usage within the study area must be looked at from a more holistic perspective. Relying on current zoning and subdivision ordinances will not likely produce the results that existing stakeholders desire or future residents will need.

PURPOSE

This chapter offers strategies that balance the desire for preservation of existing natural assets against the need for development opportunity, and culminates in the creation of a future land use map that will serve as a future development vision for the study area.

The following discussion focuses on allocating the study area’s acreage into future land usage categories, and will culminate with the presentation of a future land use map for the study area. Allocation of the study area’s acreage into land use categories is the result of evaluating the likely demands future growth will create and incorporate many of the expressed desires of the existing stakeholders. The future land use map is the graphic representation of these efforts. When combined, the text and the map, form the future development vision for the study area.

In arriving at this future vision, several strategies will be presented that combine both traditional and new, innovative approaches to growth management. It is through this multi-faceted approach that the expressed desires of the stakeholders for land preservation will be balanced with the needs of future development. This chapter, like the preceding, will be presented from an overall study area context and then brought into greater focus based on the six watersheds that the study area covers.

STUDY AREA OVERVIEW

LAND USE ANALYSIS & ALLOCATION - GENERALLY

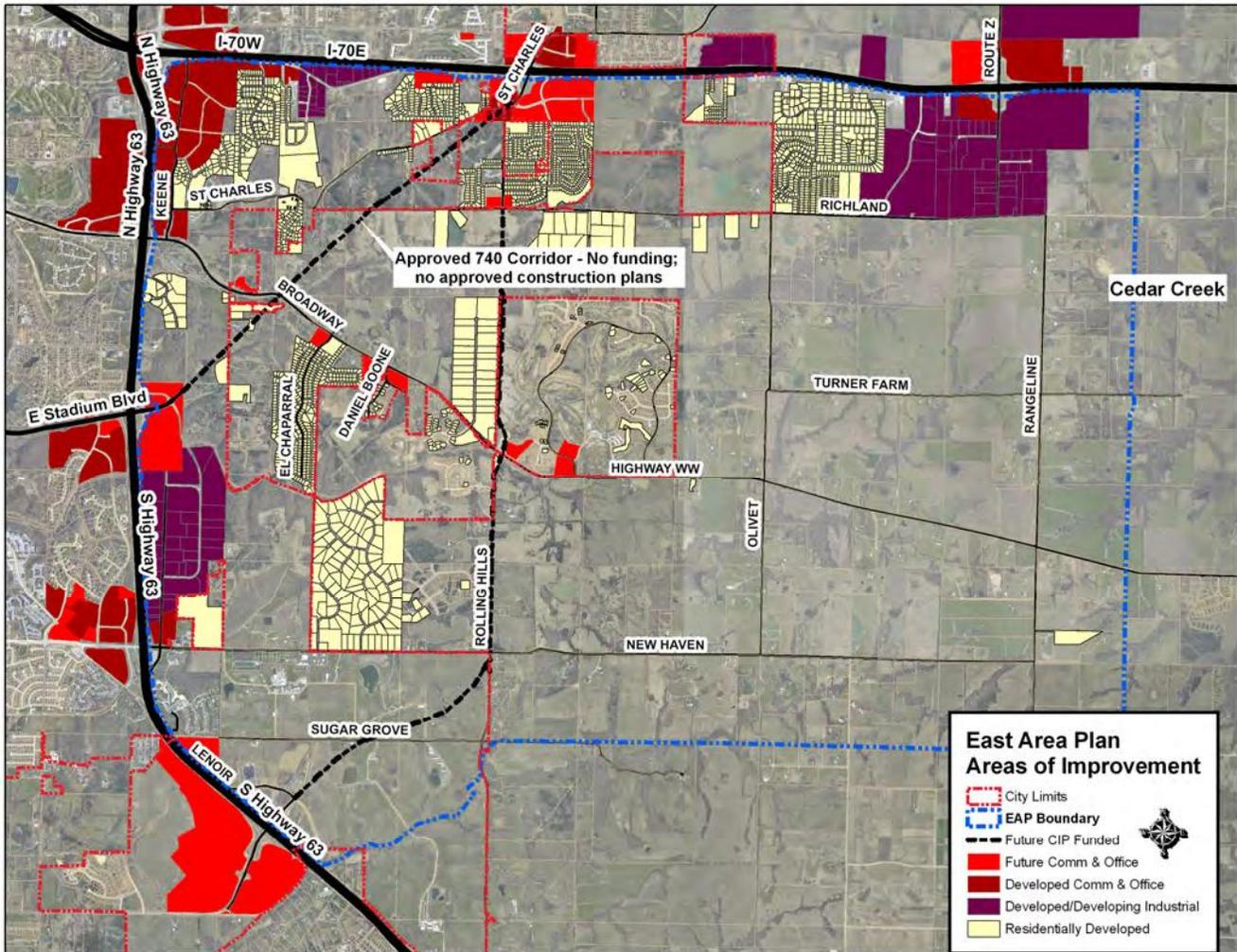
As illustrated in the previous chapter, the current distribution of land uses within study area is limited to roughly five broad zoning categories – agriculture, residential, office, commercial, and industrial. The analysis and allocation presented in this chapter will deviate little from these five categories.

Based on stakeholder input, the desire to expand commercial, industrial or office land uses within the study area is limited. The expansion envisioned will be limited to those areas already zoned and partially developed or zoned and awaiting appropriate market conditions to begin development. For the most part current development and that planned for the future are in locations along existing major transportation corridors and provide general day-to-day convenience, employment or services to the study area’s current population.

Due to the large existing commercial centers that are located in the northern, central, and southern portions of the study area along Interstate 70 and US 63, there does not appear to be a need for significant expansion of such land uses. Several of the existing commercial sites within the study area are currently undeveloped or under-developed. While easily accessible routes to these future commercial nodes are currently unavailable, this condition will be reduced as major transportation improvements are made within the area over the coming years (see Map 4-1). Currently, the majority of the population with the study area is within five miles of regional shopping facilities that provide more than convenience services. Furthermore, the idea of not expanding the land mass allocated to employment or service land uses will assist in facilitating two of the stated stakeholder objectives - reducing impacts on the natural features within the study area and preserving the efficiency of the limited transportation network.

Property currently zoned for future employment or services are generally located in areas that have already urbanized. As a result, the impacts to the existing environment for the most part have already occurred. Completing development on the remaining portions of these properties, while generating impacts, will likely be less intrusive than if development were to occur farther inside the boundaries of the study area on greenfield sites.

Maintaining the amount of land currently allocated for future commercial and service uses will require more efficient utilization of the acreage remaining to be developed. Maximizing land usage will require consideration of techniques and strategies that traditional development



Map 4-1: East Area Plan Areas of Improvement

practices have not tried or have avoided due to the relative ease of being able to zone raw land to accommodate future commercial needs.

Maximizing techniques such as the use of shared parking facilities or developing improvements with the topography or landscape verses against it may be employed to achieve more efficient usage of the limited land resources. Failure to make adjustments in development practices will likely create less optimal developments, comprise development efficiency, and potentially necessitate additional land allocation for these uses – none of which are desirable.

As noted above, maintaining new roadway corridors for the purpose of moving traffic was a second stakeholder objective that can be fulfilled by limiting the allocation of additional lands for the development of commercial or services uses. This objective was clearly expressed by

stakeholders throughout the public meeting process as a strong desire. These stakeholder comments were generally directed toward new “major” roadways such as the 740 extension and the Rolling Hills/Discovery Parkway projects.

Typically, when new roadways are constructed there is an increased desire to convert land along the corridor to non-residential uses, especially at newly created intersections. Often the justification given for such actions is the fact that such locations are not considered desirable for residential uses and that the corners should be allocated to the “highest and best” use. Typically, no demand is present to justify the proposed use and what is really being sought is a speculative rezoning to artificially create demand.

As the current zoning map clearly illustrates, the beginning and ending points of the future transportation corridors within the study area already have been zoned for “regional” commercial or service uses. These areas are typically served by other infrastructure systems that compliment the likely development intensities that will result once full build-out is achieved. Additionally, these locations are positioned such that their ultimate service areas are overlapping and capable of serving not only the study area’s future residents but also those lying outside the study area to the north, south, and west.

These existing sites are optimally located to serve the regional demands of the study area. In light of this, it is reasonable to consider restrictions regarding the allocation of additional land area along these future corridors for commercial and service uses. To do otherwise may result in creating an excess supply of available land for this type of development which could in turn reduce the opportunity for them to fully develop in the most efficient and competitive manner possible.

With that said; however, the opportunity to establish “neighborhood-scale” commercial and service nodes within the context of desired neighborhood development must be considered. Several “neighborhood-scale” nodes already exist within the study area that are in varying stages of development. Most notable are the nodes at the entrances to the El Chaparral and Old Hawthorne developments as well as the node at the intersection of Grace Lane and Richland Road yet to be developed.

It is these types of nodes that are envisioned to meet the daily convenience needs of the study area’s population. While not specifically identified on the future land use map, these types of nodes are likely to be found at the intersection of two major streets internal or on the periphery of new residential development that would consist of low-scale, limited intensity uses that could be easily integrated into the neighborhood framework. Integration of these nodes into future residential areas will likely play a critical role in reducing the need to allocate additional land area to large-scale commercial development which in turn will limit the impacts to the new “major” roadways within the study area.

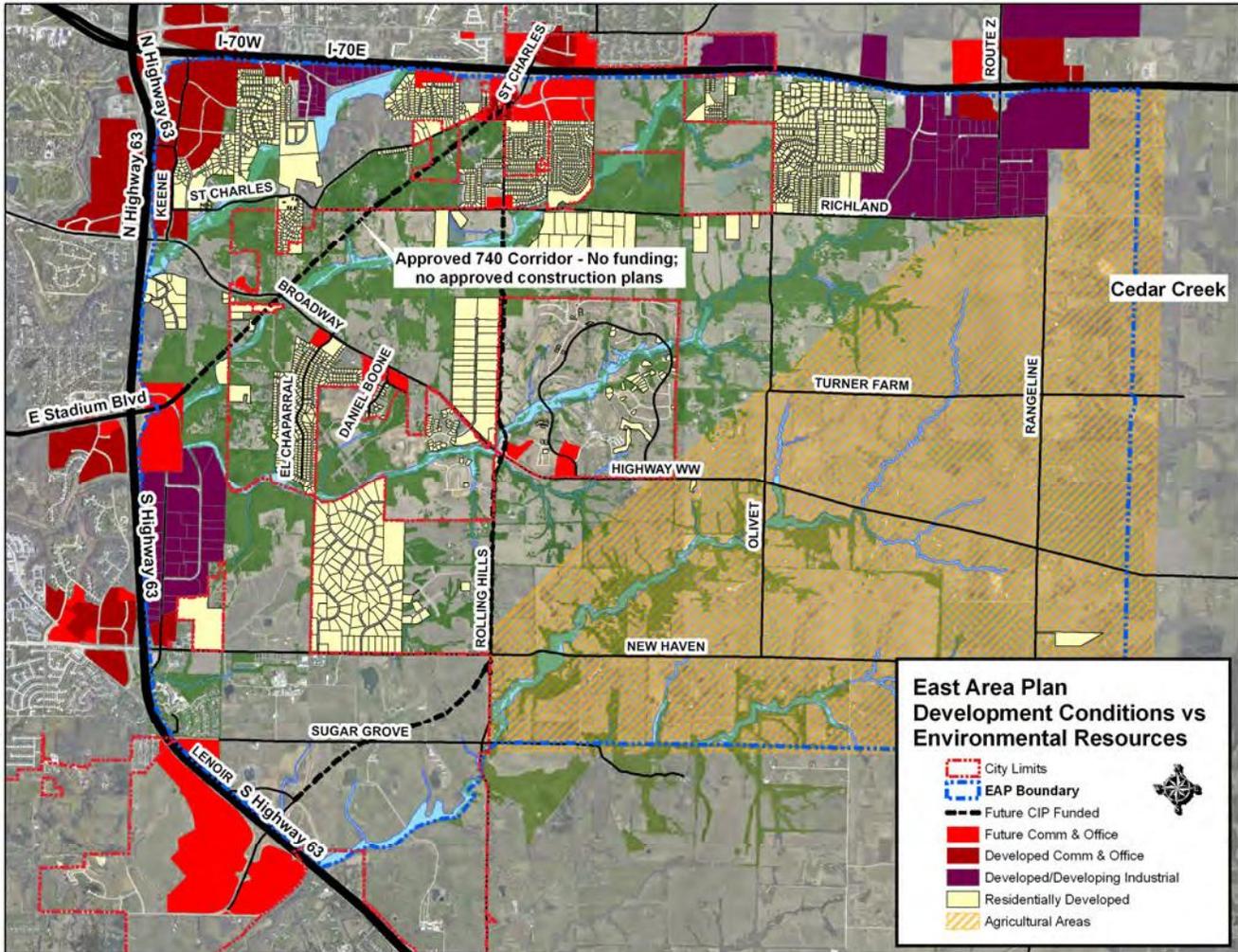
As indicated above, stakeholders clearly expressed the desire to limit the expansion of commercial, office, and service uses as the remaining acreage within the study area develops. In so expressing this desire, stakeholders by default have indicated that agriculture, preservation, and residential land uses are the only categories considered desirable to occupy the remaining undeveloped acreage within the study area. Again, at first glance, this desire seems to be short-sighted; however, after further analysis of the study area's characteristics and limitations this desire makes sense.

Map 4-1(a) shows the existing developed commercial, industrial, and residential areas as well as the developing commercial and industrial areas in contrast to the environmental features that remain within the study area. This map provides an opportunity to visualize just where preservation and development opportunities remain as the study area continues to build-out. As can be seen from the map much of the existing development has impacted many of the environmental areas desired for preservation. As development continues to occur careful consideration will need to be given to how much of those remaining assets should be disturbed. Stakeholders have expressed a desire to limiting such disturbance to a minimum.

As noted in Chapter 2, the existing public infrastructure (i.e. roads, sewer, and water) is typically concentrated in the western two-thirds of the study area in the Grindstone, Clear Creek, Hominy, and Hinkson watersheds. It is in these watersheds that increased development intensity is envisioned. The type and location of future residential development in these watersheds was not clearly articulated by stakeholders; however, a preference for density similar to that already existing, limited rental housing, and higher quality developments were among the attributes expressed as desirable.

Increased development intensity within the Gans and Cedar Creek watersheds, further east, is not foreseen in the near future as these areas are not served by sufficient public services to support more urban density. As such it was recommended and supported by stakeholders that this portion of the study area be allocated as "agricultural areas" and be retained as the agricultural preservation area within the study area. This area accounts for 5,741 acres.

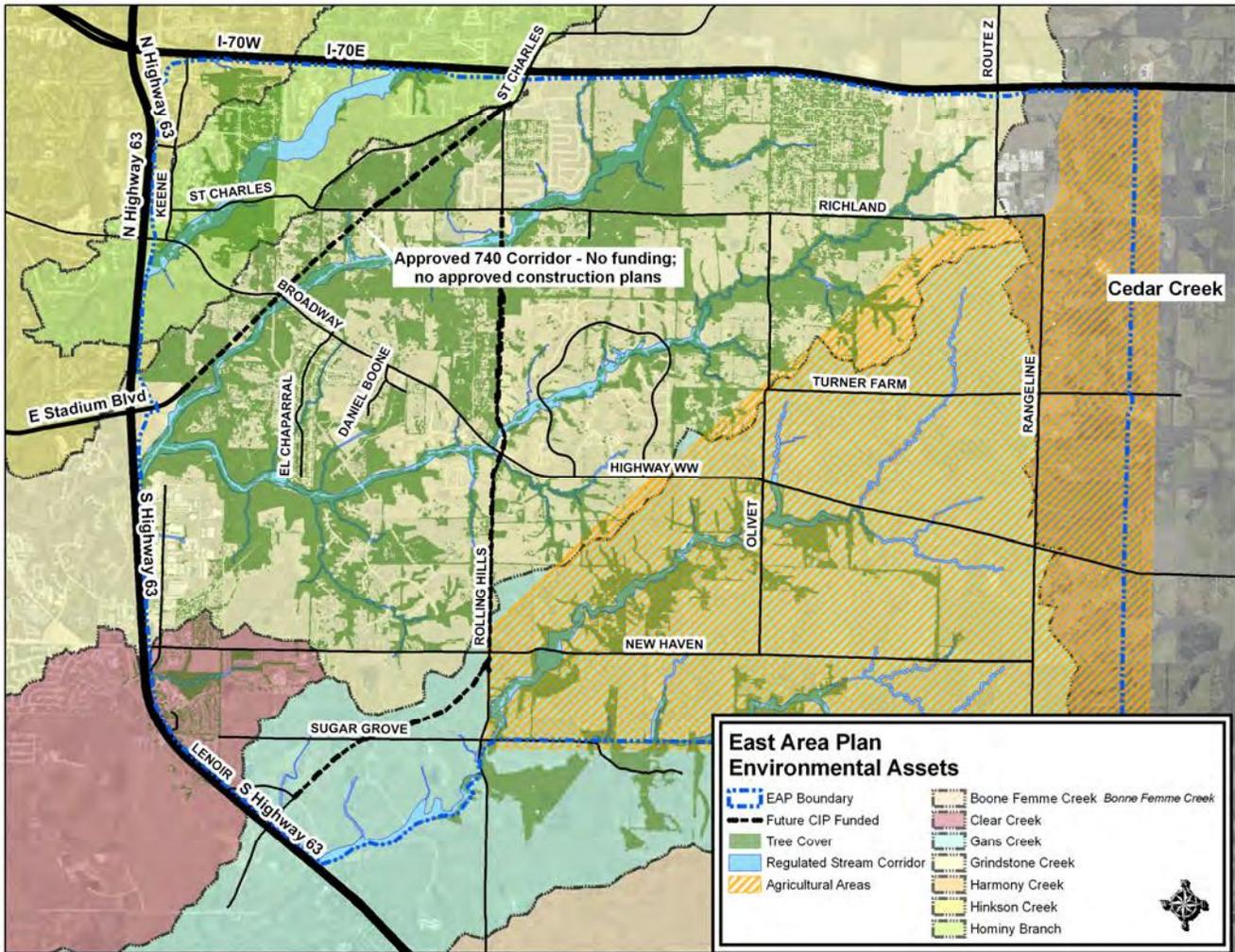
While identified as "agricultural areas", this portion of the study area is not entirely off-limits to development. Conversion of lands within the area will undergo intensive review and may likely not be candidates for extension of public facilities or annexation. As implied by its designation, this area is intended to be preserved to ensure the agricultural character and integrity of the study area is maintained. This area, due to its existing value for farming, is envisioned to be retained as such until such time as its existing use is no longer viable or a justifiable need for development of it is shown.



Map 4-1(a) – Development Conditions vs Environmental Resources

As expressed in Chapter 1, the western portion of the study area is rich in environmental assets worthy of preservation (See Map 4-2). Stakeholder preference has been shown to protect these assets especially those along the stream corridors. However, greater analysis of the study area’s assets found that a significant portion of the contiguous tree cover, desired for preservation, is located outside stream corridors and under County jurisdiction. This finding is significant from the perspective of ensuring these areas are protected from traditional development practices.

As noted previously, the stream corridors within the study area are protected under provisions within either the City’s or the County’s development codes. These protections, however, only regulate development within a specified distance of the stream corridor based on the stream’s classification. To ensure that the contiguously treed areas lying outside these corridors are preserved, a modified or incentive based development approach must be implemented. Without such a process, the only alternative to ensure preservation is achieved would be to



revise the existing code provisions applicable to City parcels or develop protection criteria for County parcels.

Increasing the base requirements or creating new ones will likely do little to increase preservation efforts beyond the regulated minimums. Whereas, if an incentive approach to development is implemented the opportunity to increase the level of preservation may be made possible. Should such an opportunity become available one of the primary goals envisioned within the East Area Plan will be achieved.

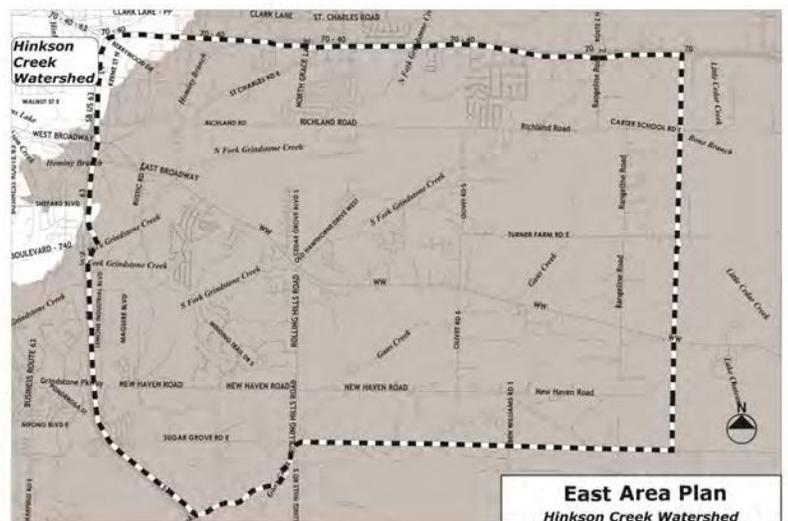
Balancing the needs and desires of the East Area Plan’s current residents and those of future residents is the challenge that this chapter is to address. The preceding paragraphs illustrated, from a broad perspective, what future land uses are generally envisioned for the study area. The following sections will provide a detailed evaluation of the land uses desired within the study area by watershed and will culminate with the graphic display of this vision on the Future Land Use Map.

LAND USE ALLOCATION – BY WATERSHED

As noted previously, the East Area Plan’s study area is generally undeveloped and contains approximately 13,446 acres or 21 square miles. Within this acreage are six watersheds that have their own unique set of opportunities and constraints that affect the potential for future development. The following land use allocation takes into consideration these opportunities and constraints as well as incorporates the broader goals and objectives that stakeholders and Planning Commissioners have expressed as desirable for shaping the future growth of the study area.

➤ Hinkson Creek Watershed

The build out of this watershed will be significantly influenced by the existing development pattern and readily accessible infrastructure. It is envisioned that this area will see a continued investment in commercial, medical, and professional office uses. Integrating future development investments into the surrounding land use pattern will be imperative and may only be achievable through the use of planned district zoning.



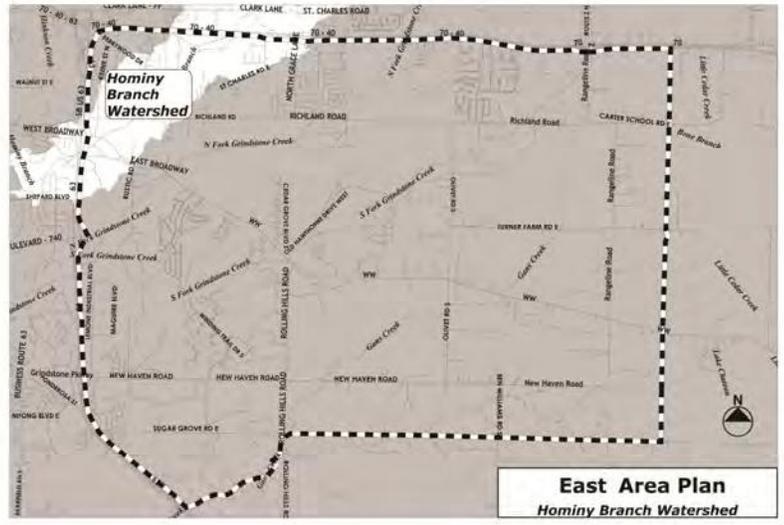
Preference to maintaining the medical and professional office land usage adjacent to existing residentially developed areas, especially to the east of the hospital, and along the Keene Street corridor will be viewed more favorably than seeking a zoning change to a commercial designation. Limited intensity neighborhood-scale commercial uses instead of businesses reliant on a region-wide customer base are foreseen as more favored along the I-70 Drive Southeast corridor.

While this watershed is considerably developed, there are several natural assets that remain and others that will be impacted as build-out occurs. This watershed drains to the Hinkson Creek which is currently classified as an impaired waterway by the Environmental Protection Agency (EPA). As development of the remaining acreage occurs it is strongly recommended that additional or alternative stormwater measures, beyond the required minimums, be implemented. Utilization of additional/alternative measures or requests to reduce impervious surfaces on development sites may receive more favorable considerations than those developments that adhere to only the minimum standards.

The transportation system within this watershed is near complete and little modification will occur as the remaining acreage develops. It is more likely that roadway reconstruction will occur before new construction would commence. Generally, the only transportation improvements foreseen in this watershed will be upgrades to substandard right-of-way or capacity improvements demanded by new construction or redevelopment of existing sites.

➤ Hominy Branch Creek Watershed

The Hominy Branch watershed is split roughly in half by the Hominy Branch Creek and is the second largest watershed considered appropriate for focusing future development within. This watershed has ample opportunities for access to Interstate 70 and US 63 via I-70 Drive Southeast, St. Charles Road, and Keene Street. Existing development generally has occurred on the periphery of the watershed and has capitalized on these convenient accesses. In so doing, however, the interior of the watershed has been left with limited internal roadway infrastructure.



This lack of internal roadway structure coupled with the almost equal bisection of this watershed makes the future land use allocation of this area somewhat limited. More intense land uses that generate significant traffic demands such as commercial and some types of service uses should be avoided due to the generally higher demands that they will place on the already limited transportation network. With that said, however, the utility infrastructure within the watershed is plentiful. As such, the allocation of available development land should not be minimized to lower density development patterns. Appropriately designed, buffered, and sited higher density developments would be appropriate within this watershed. Given the proximity of the developable land to the downtown and nearby employment centers a higher density could be supported.

While design guidelines do not exist at this time within either the City or County regulations, special attention should be paid to the scale and types of development proposed. Integration of new development into the surrounding development pattern should be one of the foremost issues that applicants evaluate. The ability to site and buffer higher density developments among the existing lower density pattern must be employed. To effectively facilitate this may require the innovative use of planned districts. Opportunity to develop in a cluster-style rather

than the traditional subdivision lot or common multi-family scheme would be the preferred method of land development for the remaining acreage.

The pattern of development as well as placement of new construction must also be respectfully of the natural features within the watershed. These natural features are primarily made up of the Hominy Branch Creek and its associated floodplain as well as a fairly intact stand of trees running through the center of the watershed that begins in the Woodridge subdivision and extends south of St. Charles Road.

It is likely that development will encroach upon these natural features to the extent permitted by existing regulations. However, to encourage preservation it is recommended that a “riparian preservation corridor” be established to provide a level of development guidance that currently doesn’t exist. The corridor would follow the top of the existing protected stream corridor and extend inward on a development site a specified distance (yet to be established) to identify areas where limited or no development is desired. The areas for protection would be those with the greatest environmental sensitivity such as steep slopes and heavily forested stream banks.

While not desired for traditional development practices, these areas could potentially be converted on a limited basis provided other areas of sensitivity are protected permanently elsewhere on the site. To ensure that a process of exchange is appropriately applied to all developing properties, standards that would permit trade-offs for increased preservation will need to be developed. In the interim, use of the planned district provisions and statement of intent (SOI) process should be used to establish parameters that would be beneficial for all parties involved – developer and regulating agency.

As noted above, existing development has generally occurred on the periphery of the watershed. This practice has resulted in the development of a limited capacity internal roadway network. As such, special consideration should be given to the establishment or enforcement of access controls that will ensure the limited resources are not overwhelmed by new construction.

Spacing and location of additional accesses to those properties not having access or are currently served with inadequate access must ensure that the convenience and safety within the transportation system is not diminished but rather improved as new development or redevelopment occurs. Use of appropriate traffic engineering principles shall be required for any new or upgraded access points. In such instances where off-site improvements are deemed necessary, the applicant will be responsible for incorporating such improvements into the development project. Depending on the level of such improvements, it may be necessary to “phase” a proposed development project such that the most critical or needed improvements are made prior to the impacts of such development be created.

To further ensure the safe and convenient movement of existing and future traffic, as new development is brought on-line, opportunities should be sought to interconnect currently undeveloped lands to other developed portions of the watershed. Such connections should consist of a combination of roadways and/or greenways and trails. Opportunities exist to provide linear greenways along the banks of the Hominy Creek, within the riparian preservation corridor, which will promote both environmental protection and non-motorized opportunities for residents. Coordination of trails or greenway improvements should be linked to those planned by the City or the County.

Transportation improvements necessary to service new development will need to follow the design standards for roadway construction as established in the governing jurisdictions development codes. However, strict application of these standards may not always be in the best interests of the regulating agencies, developer, or affected adjacent residents. Typical right-of-way standards and clearing limits may require modifications to ensure maximum environmental preservation and roadway integration into the existing built environment. Such modifications should also consider preserving the unique qualities of such area and ensure that the scenic views are not unnecessarily lost due to the construction of new roadway networks. Modification of the typical roadway standards should be based on the unique aspects of topography and other environmental features contained within the proposed right-of-way.

While such modifications are intended to preserve the greatest level of environmentally sensitive land and scenic views as possible, approval of such modifications should not be construed as a waiver of neighborhood interconnectivity. The ability to circulate traffic internally from neighborhood to neighborhood without requiring drivers to connect to the limited peripheral roadway network is crucial in ensuring a more balanced and efficient watershed transportation network.

Many of the existing traffic issues within the watershed are isolated to a single roadway – St. Charles Road. This roadway has been identified by most area residents as a major concern. These concerns and their possible solutions accentuate the need and reinforce the importance of internal connectivity. Without such a system, the functionality of the remaining network is significantly compromised.

At its intersection with Keene Street, during AM and PM peak hours this intersection can fail to meet the demands placed on it. At its intersection with Richland Road there is a sight distance issue creating an unsafe situation for users. And at its intersection with the Bull Run/Grace Lane issues of traffic volume and turning movements can compromise safety.

The future improvement of Route WW, Rolling Hills Road, and the extension of 740 may all relieve the pressures placed on these intersection by affording residents, to the west, convenient alternative routes into the medical district as well as downtown Columbia. In the

intervening period however, new construction projects and redevelopment proposals will need to be evaluated closely to ensure that traffic generation levels are not exacerbated without providing requisite roadway improvements designed to mitigate such increases. A more consistent methodology of requiring traffic studies and needed capacity upgrades will be required.

➤ Grindstone Creek Watershed

This is the largest watershed within the study area and it is home to the most diverse collection of environmental features and infrastructure improvements (roads, sewer, and water) that will influence future development. This watershed is traversed by both the North and South forks of the Grindstone Creeks and has the highest proportion of steep slopes and contiguous tree canopy considered desirable for preservation. The watershed is also improved or will be improved with the major transportation corridors serving eastern Boone County. Route WW, Richland Road, New Haven Road, Rolling Hills Drive/Grace Lane, and Olivet Road all are found within this watershed. Additionally, and potentially the most important future roadway in the watershed will be the Stadium Boulevard/MO 740 extension to Interstate 70. Finally, this watershed is currently improved or capable of being improved easily with all forms of infrastructure service (electric, sewer, and water) needed to support continued future growth.



The watershed is also improved or will be improved with the major transportation corridors serving eastern Boone County. Route WW, Richland Road, New Haven Road, Rolling Hills Drive/Grace Lane, and Olivet Road all are found within this watershed. Additionally, and potentially the most important future roadway in the watershed will be the Stadium Boulevard/MO 740 extension to Interstate 70. Finally, this watershed is currently improved or capable of being improved easily with all forms of infrastructure service (electric, sewer, and water) needed to support continued future growth.

It is the combination of these factors that make this portion of the study area desirable to future growth. The existing development pattern, with its land uses and general densities, is not likely to be changed significantly as new construction occurs. In fact, a stated preference of the public has been to leave much of the character of the watershed intact.

While it is understandable that area residents desire to have the future development density mirror existing conditions and establish limitations on development types, such activity may actually be counterproductive to addressing the desire of preserving the natural and environmentally sensitive features within the study area. The limited diversity of future land uses may result in greater environmental degradation as fewer options will be created for residents relating to the types of housing available or the proximity to employment or

consumer conveniences. These expressed desires are in many instances counter to good land use planning and may promote additional “sprawl” development.

Given the nature of existing and future public investments in this watershed, the allocation of land for future uses must take a more balanced approach. The identification of appropriate land use locations and standards by which such uses may be approved must rely on less subjectivity and more on objective standards that result in predictable outcomes for all individuals involved in the development process. As was expressed during stakeholder forums, the current regulatory mechanisms available to city and county officials are often inadequate to provide the needed guidance for decision making. Revision of the existing standards is a continuous and public process that will result in regulatory changes slowly.

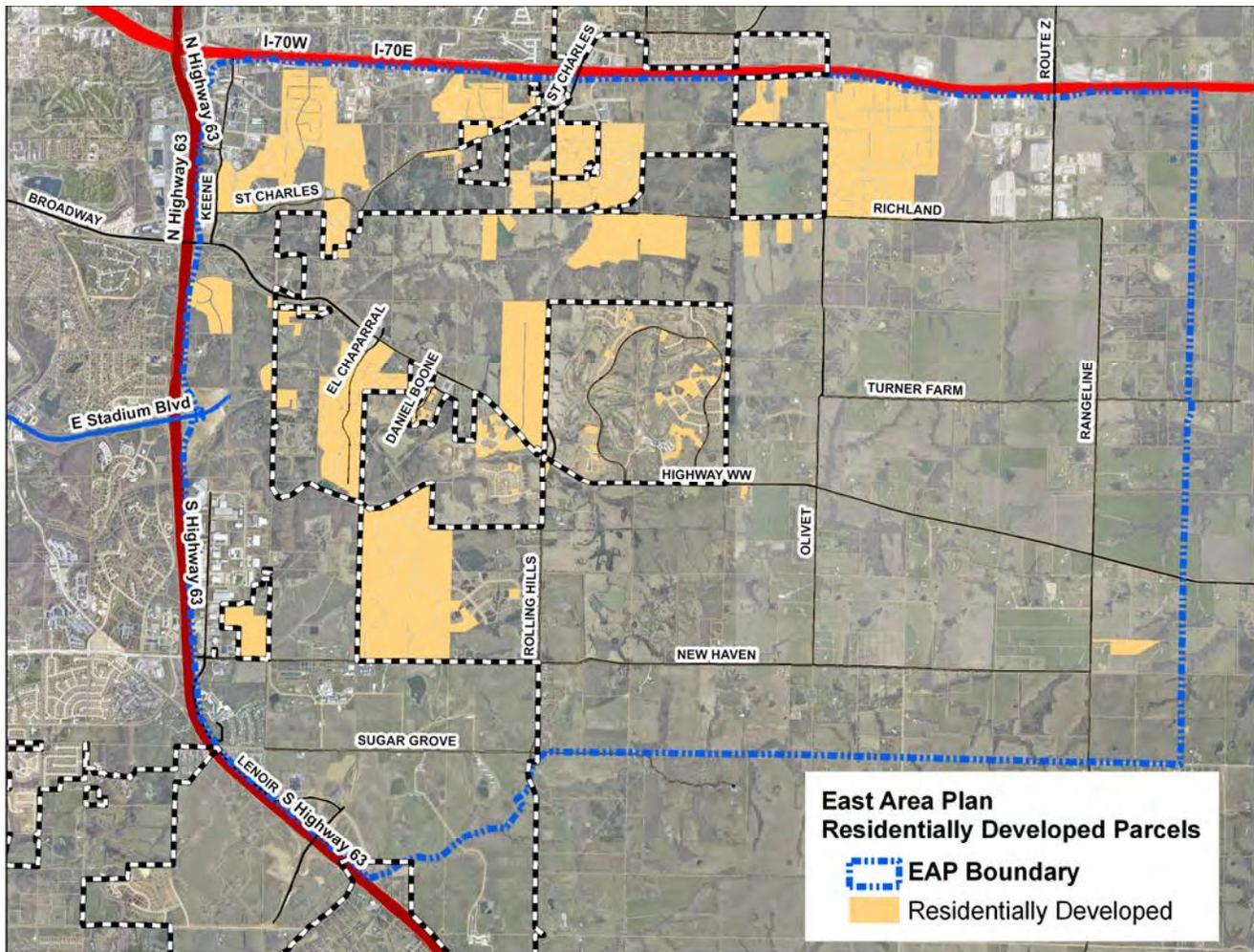
However, one of the first steps in making substantive changes to the existing regulatory deficiencies is to have a better understanding of how land uses should be or are desired to be grouped. What follows is the allocation of land as envisioned by area stakeholders and Planning Commissioners for this watershed. The proposed allocation is broken into three general categories - residential, commercial, and industrial.

Residential Land Use Allocation

Presently the majority of this watershed is zoned and developed for residential uses generally at densities of between less than 0.5 to 6 units per acre. Areas to the north are generally more densely developed than the areas within the middle or southern sections of the watershed (see Map 4-3). As would be expected the density is typically driven by the available infrastructure primarily roads and central sewers. Stakeholders and Commissioners alike believe that a majority of this watershed should be allocated to residential development. Development density, on the other hand, is less agreed upon.

An expressed desire by most stakeholders was that lower density within the watershed should be maintained. Much of this reaction, as best understood, is a result of poor development decisions made during the building boom of the mid-2000's. Additionally, most stakeholders expressed concern over the limited roadway infrastructure to meet current development needs.

This reaction is not surprising based on the impacts that earlier development has brought upon certain locations within the watershed, however, does not acknowledge the future land use needs or value that land use diversity can have within the area. The establishment of residential development with density greater than one unit per lot must be evaluated on a case by case basis. It is for this reason that the designation of “residential” only appears on the future land use map rather than specific density ranges.



Map 4-3: East Area Plan Residentially Developed Parcels

It is impossible to say that a property proposed for duplexes or attached single-family will not be used for rental. The same can be said for any traditional single-family development. Such controls are not the purview of zoning regulations, but rather restrictive covenants that if left unenforced become a civil litigation issue.

A healthy community contains a broad spectrum of housing types that accommodate its residents. The study area for all intents and purposes is considered a small community or at the least a continuation of the adjacent city. It is therefore appropriate that multiple housing types be considered and permitted throughout this watershed when warranted and where appropriate.

Evaluation of requests for higher density development on undeveloped tracts should be considered from several perspectives. First and foremost, as expressed by stakeholders and Commissioners, would be the availability of infrastructure. As has been experienced, the approval of increased density without appropriate triggers for system improvements only leads to degraded environments. The concept of evaluating rezoning and development requests

based on a “sufficiency of services” matrix or a capital improvement program’s projects may provide the most defensible argument for approval or denial of a particular request.

It should go without saying that if a proposed development is in an area not intended for improvement or reliant on others to become developable, that such proposal is most likely premature. However, such a dogmatic view point leaves out the possibility of considering more creative approaches that attempt to address the issue of development timing. Often the use of “development agreements” or planned district zoning statements of intent may afford opportunities to address the issues typical deemed to make a particular application premature. The contents of such agreements or statements of intent, however, must be strong enough to ensure compliance.

The bottom line is this – no development should occur that would out strip the capacity of the systems that it would rely upon for service or accessibility. Determining what the threshold for this is, is a different and more complex issue that needs to be evaluated further and addressed through regulatory enhancements. In the interim, however, the use of standard engineering practices such as traffic studies or capacity analysis for sanitary service should continue to be used as the default evaluation criteria.

A second and potentially equally important perspective is to evaluate any rezoning or development request in light of how well it is integrated into its site and its surroundings. A common theme expressed by stakeholders was that property values are degraded by the continued development of inferior housing (i.e. rental) that lack any design control or property maintenance.

While this issue is apparent in some areas throughout the watershed, its correction is not as simple as some may believe. Eliminating cost effective housing options for area residents may have unintended consequences elsewhere. Rather, an approach that may be more appropriate to consider is the creation of design guidelines relating to architecture, site placement, and environmental asset preservation. Improvements to the physical attributes of development is possible through a zoning code, however, changing the way people manage or live within developments is not.

As stated, a healthy community consists of a diverse housing stock developed to meet the demand of its residents. Likewise that housing stock should not impose undue burdens on adjacent development. It is therefore critical to consider how a development may be situated on a particular property. Consideration must be given to the adjacent development and the site’s natural assets. Provision of additional buffers, natural area preservation, or alternative development styles such as cluster development may all be ways in which projects with greater intensity may be integrated into the adjacent landscape.

Given the fact that much of the easily developable land within the watershed has already been developed there are limited opportunities to isolate uses that some may find objectionable. In many instances, locations chosen for what is considered objectionable are far superior to other potential sites due to either existing or future infrastructure improvements. When this situation arises, it would be of significant value to have a performance-based evaluation system that provides clear guidance to developers and property owners of what is expected on a given site.

Today such a process exists within the City and County planned district provisions. However, the excessive use of these provisions has lessened their importance. As originally conceived, planned districts were intended to be used on sites with unique constraints that required special considerations not just as a mechanism to control how construction would look or be sited on the property. With that said, however, the only tools currently available to city and county officials to address incompatibility is planned district zoning.

As an outgrowth of preparing this plan, consideration will be given to establishing the performance-based provisions suggested. It is believed that such provisions will provide greater predictability in the review process and will assist in mitigating developer and adjacent property owner conflicts. The process of developing these standards will be public with opportunity provided for all to express their views.

A third, albeit not the last, perspective that should be considered in rendering a decision on a rezoning or development proposal is how effectively is the applicant protecting or preserving the environmental features of the site. It has been clearly expressed by stakeholders and Commissioners the need for protection and enhancement of the natural features that make up this watershed. As indicated above, this watershed has of the most expansive natural features worthy of protection.

Evaluation of the qualitative and quantitative aspects of what an applicant is preserving should be considered just as importantly as whether the site is accessible to infrastructure. The location of these preservation areas should also be weighed against the need to protect existing development from that which is proposed, especially if it is not consider equal to what was already there. Proposed preservation components should also be evaluated against what long-range plans exist at the City or County level for greenbelt or trail connectivity.

As noted elsewhere, development follows closely behind the installation of infrastructure improvements within a community. The existing development pattern found within the plan area is no different. Early development patterns were greatly influenced by the location of key roadway connections to the City and points further east. The advances in construction during the early and mid 2000's were the result of central sewer expansion up the Forks of the Grindstone Creek. Had it not been for the investments made in sanitary improvements the

development pattern would be substantially different and likely so much so that this plan would be unnecessary.

While maybe a desirable outcome for some it is not the reality of today. The backbone of the infrastructure systems (sanitary sewer) is available for the majority of this watershed and with its installation the opportunity to seek development approvals was made more readily available. The sanitary lines that have been installed were sized to accommodate all conceivable growth within the watershed over the life of this plan. As is City policy, if development is to hook up to the sanitary lines an annexation or annexation agreement must be approved. Aside from this stipulation the only impediment to new development occurring with central sewer is the cost to connect to such systems.

Transportation improvements, on the other hand, have unfortunately not kept pace with the increases in development intensity. It is this fact that has many stakeholders frustrated that new developments continue to be approved with apparent disregard for the current situation. The ability to require that developers provide improvements along entire stretches of substandard roadway is not currently a provision within either the City or County development codes. The extent to which roadway improvements are obtained is generally limited to the frontage that a development has along the substandard road.

The most visible signs of these improvements can often be seen at the entrances to new developments in the way of turn lanes and pavement tapers. While these improvements, to most travelers, are not seen as significant they are valuable from the perspective of traffic safety and flow. The improvements however do not address the congestion that sometimes results in previously developed areas where similar improvements do not exist.

The upgrading of these roadways is a function of funding at both the local and State level. As revenue levels fluctuate so too does the amount of upgrading, maintenance, or expansion that occurs. The best that can be expected in tight economic times is that the incremental improvements made by individual developments merge together overtime creating a more functional roadway network.

However, relying on the possibility of development to complete the roadway network is not viewed as appropriate transportation planning. In light of this and to ensure continued receipt of federal transportation monies, the City, County, and MoDOT have prepared the CATSO Plan which identifies a future “idealized” roadway network for the entire metro area of Columbia, of which the plan area is the eastern part.

As new developments are brought on-line it is this plan that is used as the basis for requiring transportation improvements or required upgrades. While roadway alignments are shown on the CATSO Plan they are not intended to be final. The plan serves as the guide for roadway

locations. Once a development is proposed the alignment is refined to match the conditions that will be created.

This process is not proposed to be changed with this area plan. Improvements shown on CATSO are desired to be constructed as development warrants them. If no development occurs within a particular area where roads are shown none will be required.

There has been much discussion about the need to ensure that infrastructure is in place prior to development occurring. Historically, this is practiced only within County developments. The discussion of cost allocation for infrastructure is beginning at the City as part of the comprehensive plan update and in response to the Imagine Columbia's Future Vision. Depending on the outcome of such discussions, the amount of infrastructure placement required as part of the development process may significantly change. As for now, the process of requiring that the improvement be consistent with the CATSO Plan and the development codes of each jurisdiction will have to suffice.

Commercial Land Use Allocation

Allocating additional undeveloped property for future commercial use was not seen by many stakeholders as a necessity within the watershed. This expression is manifested in the fact that much of the already allocated land (that zoned to accommodate commercial development) is undeveloped or under-developed. It was further expressed that an expansion of commercial uses in certain areas of the watershed would do nothing but exacerbate the already challenged transportation network.

This response was not expected considering that most residents typically would want additional convenience commercial uses near them. However after further analysis, staff concluded the points raised by the stakeholders were reasonable. The concentration of existing development within the watershed is essentially within 5 miles of regional shopping and with the future improvement of the major roadways additional undeveloped commercial acreage will be made easily accessible.

While making reasonable sense, the stakeholders desire for no increases in commercial land allocation is limiting and most likely not realistic given the potential for additional residential development within the watershed. Based on this, a limited amount of additional commercial land is proposed to be identified on the future land use map. This additional allocation will be focused on those areas that already have partially developed commercial "nodes" where provision of additional land area for expansion would complete the node.

These existing partial "nodes" are located in areas where a single or multiple legs of the transportation network exist. The justification for providing additional allocation at these locations is based on the future extension of the roadway network. Once the roadway

improvements are completed the node will be complete thereby providing opportunity to concentrate expanded commercial in centralized locations avoiding linear or strip expansion. Additionally, having such land areas identified or allocated at this time will ensure that as future roadway improvements are funded they will be completed with the opportunity to be designed with appropriately sized facilities to accommodate the increased commercial intensity.

These nodes are not desired nor expected to provide the regional shopping needs of the watershed's current or future residents. Rather these nodes are envisioned to provide opportunities to meet everyday convenience and service needs. The location of many of these nodes are already on the perimeter of existing development and the expansion of them will provide opportunity for diversification of the uses within them to meet the potential expanding needs of a growing population.

A completed node is envisioned with improvements no greater than 200,000 square feet of gross floor area and should incorporate the same types of uses currently considered desirable for a "Neighborhood Marketplace" as defined in the City's Metro 2020 Plan. As these nodes built-out care needs to be given to the impacts that additional commercial expansion will have on adjoining property (developed or undeveloped) so that such expansion does not result in any undue burden on these parcels.

As currently distributed within the watershed, the commercial nodes are for the most part away from environmentally sensitive features. However, as future expansion of these nodes occur site placement should seek to minimize the extent of land disturbance and look at more innovative techniques for addressing the issues of stormwater detention and filtration. Additionally, opportunities should be sought to reduce the overall pavement areas by the use of shared parking arrangements or other innovative concepts.

Expansion of commercial nodes by the construction of new structures will likely always be driven by economic forces and will deplete the available land for new development. As the study area's population increases so too will the need for additional businesses and services. While not explicitly identified on the future land use map, the opportunity to establish new neighborhood commercial nodes within currently undeveloped portions of the watershed is considered essential in meeting the future needs of the study area's population. Locations for new nodes of development, yet to be identified, should offer the opportunity to have businesses locate in areas that are convenient to the populations which they will serve and should incorporate multiple means of accessibility.

New nodal locations are envisioned to be at the intersections of transportation corridors where significant traffic volume is or is expected to be traveling. Additionally, the placement of these new nodes should ensure that sensitive environmental assets such as steep slopes and contiguous tree canopy are incorporated into the site planning process. The concept of

minimizing the footprint of the proposed construction and developing in harmony with the site's natural assets should be central considerations when evaluating the location as a potential new node. Furthermore, the ability to have these locations served with appropriately sized infrastructure to support no less than 50% of the proposed build-out prior to development occurring must be shown if favorable consideration is to be given.

Due to the need to condition initial and future development, the establishment and zoning of any new node will likely need to occur within a "planned district". Establishing these new nodes with this classification will allow for better definition of the key features and elements that will govern the development of the site. Furthermore, the use of planned zoning will allow both the stakeholders and regulatory officials the opportunity to contribute desired outcomes for the site's development. Projects that better address the key features noted above stand a greater chance of support than those that choose to ignore them. Applicants are strongly encouraged to avail themselves the opportunity to meet with staff informally to discuss their development concept prior to making application for a land use change.

While the opportunity to establish new nodes is being indicated as a possibility it is intended to be one at a future date. The existing nodes, as stated, are in locations where development is today. Unless extensive expansion of the residential sector within this watershed is experienced the need to request or approve new nodes is limited, if not, premature. Every effort should be made to focus new commercial development to those nodes or allocated areas so that they are fully occupied. Creation of new nodes will only dilute the environment and make all commercial areas less viable.

Industrial Land Use Allocation

Not unlike commercial land use allocation, stakeholders and Commissioners did not see a significant need for additional land area to be allocated for industrial use. The existing industrial parks within the study area, Lemone and Trade Winds, have adequate capacity to accommodate future growth.

For the most part, the issues with industrial development have to deal with accessibility and integration with adjacent development. The location of the industrial land within the watershed has already had its impact on the environmental features of the area. However, this does not diminish the importance of continued protection of what remains.

In general, the most environmentally sensitive lands are located to the north of the Lemone Industrial Park at the confluence of the Hinkson and Grindstone creeks. It is this area that is most in need of protection from future industrial development. While expansion of Lemone is possible to the north, it would be preferable if such expansion were to occur east and south toward New Haven Road. Growth in these directions would limit impacts to the most sensitive areas along the stream banks.

Expansion of the park in this direction, however, will require care be exercised as development occurs. While a substantial agricultural buffer exists along the eastern edge of the park's development the potential for incompatibility is still possible. Should further land area be needed for industrial uses, a "planned district" will most likely be the best way in which to handle the issues that could arise. Not unlike establishing new commercial nodes, use of a "planned district" for industrial expansion would permit stakeholder and regulatory officials the opportunity to review and influence the outcome of future development plans.

As a standard practice, however, applications requesting expanded industrial land should be prepared to show how such proposals have incorporated best management and green building practices into their design proposals. Depending on how innovative such proposals are the need for a "planned district" may be avoided.

As for the expansion at Trade Winds, there is limited adjacent property available and very few environmental constraints affecting the park's development. This park is at the top of the Grindstone watershed and as such stormwater discharges should be monitored. Development within the park has been slower than anticipated when it was originally platted, however, as land becomes less available at Lemone Industrial it is anticipated that this park should see increases in its development activity. This belief is based on the fact that the site has good connectivity to the roadway network having access to both I-70 Drive SE and Richland Road and the infrastructure is installed. The other nearby industrial property, across I-70 to the north, is not yet ready to accommodate industrial development rapidly.

As built-out occurs within this park attention will need to be given to the scale and location of buildings to the adjacent developments. To the west is the Tradewinds subdivision which is an established residential development. As new construction within the industrial park occurs efforts should be made to site buildings on lots in such a manner as to avoid locating service entrances or docks toward the established dwellings. Additionally, as this park is at the top of the watershed special care should be given to how impervious areas can be reduced and stormwater filtration processes increased. Development should attempt to be conducted with the least amount of grade alteration as possible thereby allowing the proposed structures to look more in harmony with the existing landscape.

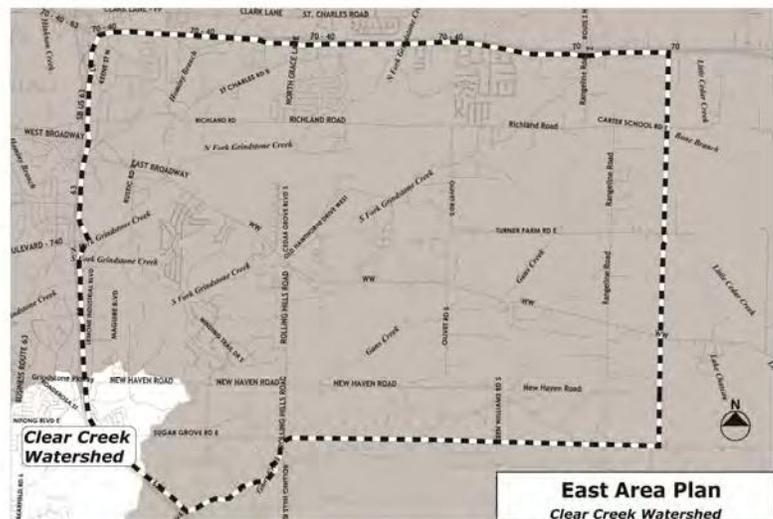
Expansion within either park is not foreseen as traditional "heavy" industrial use, but more along the lines of high tech and support service industries. However, to support such uses continued improvement to the roadway networks surrounding the parks will need to occur. The recently completed connection of Maguire Avenue to Stadium Boulevard, over the confluence of the Hinkson and Grindstone creeks, was instrumental in securing a commitment from IBM to locate within the Lemone Industrial Park. Upgrades to Richland Road and the future extension of Stadium Boulevard to I-70 may have similar impacts for the Tradewinds Industrial Park. Both parks have visibility from major arterials making them candidates for

continued growth and build-out. However, at this time it is the Lemone Industrial Park that is favored due to its superior access.

To capitalize on the location asset that Tradewinds Industrial has it will be necessary to look for opportunities to upgrade its Richland Road access. Such efforts, while beneficial to future development, are not totally a developer-related issue. Improvements should be coordinated between both the developer and responsible jurisdiction. The value to address the transportation issue collaboratively will ensure a better end product that not only provides marketing advantages to developers, but also provides opportunities to address transportation system deficiencies for watershed residents, current and future.

➤ Clear Creek Watershed

This watershed is primarily occupied by institutionally and government controlled property. As such the ability of the City or County to regulate the uses within the watershed are significantly limited. For the most part, what is able to be regulated is along the western portion of the watershed between US 63 and the extension of Maguire Avenue. The property not under institutional control is generally accessible off Lenoir Street.



As a result of the land ownership dynamic, the future land use map will not identify anything new occurring on the land beyond what is currently permitted. While no new land uses will be proposed for allocation, the northwest and southwest portions of the watershed will see the most significant changes as development progresses in years to come.

First, in the northwest, the property currently owned by Lutheran Senior Services and improved with the Lenoir Subdivision will be redeveloped and expanded. The growth in senior care is the reason for these changes. The site, located at the intersection of Lenoir Street and New Haven Road, will be redeveloped with a continuing care retirement community (CCRC) providing comprehensive senior living in housing ranging from fully independent to nursing home. The CCRC concept is becoming a preferred option for individuals desiring or needing a full spectrum of senior health care. Within a CCRC, residents moves through a continuum of residential housing as their health needs change. The value to residents is that once located within the CCRC they are not required to leave to find more skilled assistance.

The CCRC concept is a highly integrated development and typically located within a campus setting. As such, opportunities exist to develop around environmentally sensitive features and incorporate innovative stormwater management techniques into the overall design. The proposed development of the Lenoir property for a CCRC will assist in fulfilling several area plan objectives.

First, this property is located in the watershed immediately above Rockbridge Memorial State Park. The use of innovative stormwater management techniques will be critical in preserving the ecosystems of the Park. While the CCRC on the Lenoir property will be a testing ground for these techniques, redevelopment of other parcels within the watershed should also incorporate them into their design plans. Collectively, these efforts will ensure preservation of the natural features found further south in the Park itself.

Second, the development of a CCRC on the Lenoir property will allow for the existing tree canopy to remain more intact than if traditional development practices were employed. Again, while unique to the design practices of a CCRC the concept needs to be extended to any future redevelopment of the remaining parcels within the watershed. Changes to the development codes pertaining to tree preservation will need to be evaluated to make this aspect of preservation more prescriptive and less optional.

As the watershed is defined partially by Clear Creek, the concept of implementing the “riparian preservation corridor” on the banks of the creek in areas that would allow for local regulatory control is viewed as a valuable contribution to further assisting in the preservation of environmental assets within the watershed. As noted previously, provisions for equal application of the desired effects still must be developed; however, such provisions will likely include opportunities to allow for some development in areas of environmental value provided other similar areas are protected permanently.

The second major development feature of this watershed will occur in the southwest corner. The development of the Discovery Ridge Research Park will effectively provide employment opportunities to residents living throughout the study area and beyond as well as afford a third location for high tech jobs. The Park, established by the University of Missouri, is not subject to local land use or development controls.

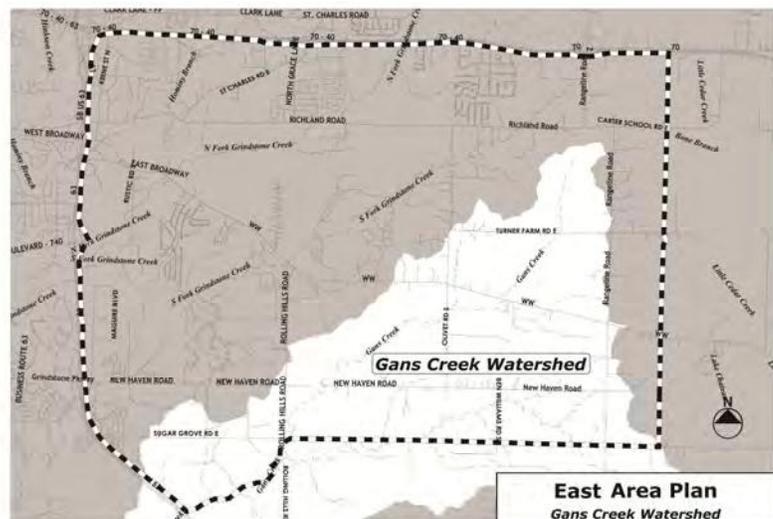
Even though this is the case, the MU system has consulted with the City regarding development proposals and has verbally committed to follow closely the established regulations relating to stormwater and other development codes. The City and MU are currently working together to make improvements to the transportation network through this site. The extension of Discovery Ridge Parkway to New Haven Road and its connection with Rolling Hill Road will provide opportunities to move traffic from the southern end of the City all the way to I-70. The roadway once completed will serve as an outer traffic loop for eastern Boone County.

The master plan for Discovery Ridge shows that consideration has been given to protection of sensitive environmental features further to the south. The Park is at the low point of the Clear Creek watershed and its stormwater drains into the Bonne Femme. As such, the Park’s plan shows the development of a series of stormwater retention facilities to collect runoff and allow it to cascade from one pond to the next for the purposes of enhanced filtration. This additional filtration will assist in allowing sediments to settle out prior to exiting the site and help preserve the environmental quality found within the Bonne Femme watershed which is home to Rockbridge Memorial State Park. The proposed filtration system, while not required by any City or County ordinance is a potential model of how to design facilities that not only enhance the overall development but also have functional purpose.

Aside from these developments, the overall appearance and character of this watershed will remain as it is today. For the purposes of display on the future land use map, the area along New Haven Road that is used by the University and Government for research purposes will be labeled as institutional not agriculture which is its technical zoning classification.

➤ Gans Creek Watershed

This watershed is the home to some of the most productive agricultural acreage within the study area and as such is identified as part of the “agriculture area” on the future land use map for the study area. For the purposes of this plan, this classification means that the 4,486 acres will not be the focus of future development activities or annexations. The simple fact is that this watershed is currently underserved with the types of infrastructure improvements necessary to support enhanced urban development patterns.



While no additional allocation of land for new land uses is being proposed at this time, the area is not off-limits to development. The watershed will be reevaluated within the next 5 years to determine if surrounding land use conditions have changed, thereby warranting a change to the proposed usage of land within the area. It is not anticipated that public infrastructure will be made available to a vast majority of the watershed within the next 5 years and fully servicing this watershed with public services may take as many as 10 years.

In the interim, land owners desirous of developing their land will be required to justify that the proposed development densities are supported by the available infrastructure or will be required to provide the necessary upgrades to make such services available. Conversion of tracts within this portion of the study area will likely be subject to the zoning and subdivision regulations administered by the County.

Applications seeking consideration of an annexation agreement with the City may be requested, however, should not be considered a guaranteed for public services. Additionally, if an agreement to annex such properties is shown as being acceptable the development rights for increased density will likely be significantly restricted through the approval of a “planned district” or some other mechanism to ensure that development intensity is timed to infrastructure availability.

In addition to the vast agricultural lands within the watershed there are several environmental features that need to be considered for preservation. This area is defined by the Gans Creek and has several stands of contiguously treed areas. Protection of these assets would provide the opportunity to assemble greenbelts or habitat corridors as a community-wide enhancement and a buffer to protect environmentally sensitive areas along the stream banks.

Agricultural uses are exempt from both the city and county stormwater ordinances; therefore, an alternative method for obtaining preserved areas along the banks of the stream is necessary. To help facilitate this, the concept of establishing the “riparian preservation corridor” along the banks of the Gans Creek is the preferred option. As noted elsewhere, the regulatory standards for the corridor need to be developed and would most likely include provisions allowing for limited development within the corridor provided other similar areas are permanently preserved.

Not all the watershed’s environmental assets lie immediately adjacent to the Gans Creek. Their removed location, however, does not diminish the important to protect these areas from future development encroachment. For those contiguously treed areas lying outside the “riparian corridor”, provisions will need to be created to promote their protection. Such techniques could include the creation of conservation subdivision standards, the use of transfer of development rights (TDR), or simply conservation easements.

Conservation subdivisions would permit the opportunity to preserve a site’s most significant natural assets by shifting the density associated with those areas to other parts of the site that have fewer environmental assets. Typically, a conservation subdivision looks at development from the reverse perspective of traditional development. Conservation development looks first at the environmental characteristics of a site and then develops a development plan based on the net acreage left over. Whereas, traditional development first develops a development plan which is based on the site’s gross acreage and a needed profit margin and then, if possible,

preserves environmental assets. The areas retained are typically areas that were not developable to begin with.

The benefits with conservation development from an environmental perspective are relatively obvious; however, there are also benefits from an infrastructure perspective as well. Typically, a conservation subdivision is more compact than traditional development and this compact nature lessens the need for infrastructure (road, water, and sewer) to serve the future construction. This reduction in infrastructure creates saving for the developer and at the same time provides opportunity to offer protection of environmentally sensitive features. This technique is favored if development within the watershed is to be undertaken.

A second method of protecting the watershed's environmental features that lay outside the "riparian corridor", especially prime agriculture land, would be through the use of a transfer of development rights (TDR) program. Such a program consists of two areas – a sending and a receiving area. The TDR concept is essentially the selling of an individual's development rights in an area desired for preservation (the sending area) in exchange for the ability to use that density in another area (the receiving area) where development is desired at a greater intensity.

Stakeholders expressed a desire to maintain rural character throughout the entire study area. This watershed, however, is the prime location to make that desire a reality. As noted the infrastructure to make this area ready for urban development is not in the pipeline in the short-term and there are no known plans for extension of such facilities in the long-term. The TDR concept would allow property owners to receive compensation for permanently placing the most sensitive lands within this watershed into conservation easements. Those purchasing the rights would be able to use them elsewhere within the city or county upon establishment of the TDR program's receiving area.

The challenge with this concept is that the regulatory framework for a TDR program must still be developed and will require additional research and regulatory changes. The establishment of a receiving area will also need to be agreed upon by the elected officials. It is likely that the receiving area would not be inside the study area's boundaries; however, a final determination of this will be made once research into establishing the program is nearing completion.

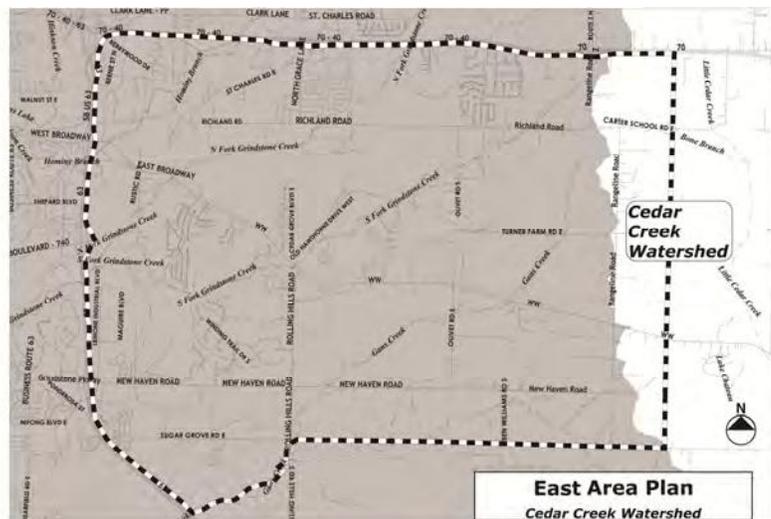
A third, but not monetary (to the property owner) way of preserving land would be by placing conservation easements over sensitive environmental features. The City's development code currently has three types of conservation easement available to developers interested in providing these types of set-asides on their property. Typically these easements are provided as a means of supplying greater open space within a development. However, such easements can be used to protect sensitive areas and permit the installation of limited public improvements such as trails, greenways, or greenbelts that are deemed beneficial to the public.

If this technique were applied in the absence of a TDR program many of the same environmental protection benefits would be obtained, however, the ability for property owner compensation would be lost. In light of the time and research needed to establish the TDR program’s regulatory standards these types of easements may be, in the short term, an appealing option for some developers/property owners who are interested in protecting their land from development encroachment.

The intended future land use of this watershed is for preservation of its agricultural value. This designation is consistent with the expressed desires of the stakeholders and is based on the unlikely extension of any public infrastructure in the near future. As the time nears for review of this plan’s contents, the land use allocation for this watershed may be considered for change. Until signs are exhibited that this watershed is transitioning from its agriculture base, the need to identify any other land uses as being needed within it are not seen as necessary.

➤ Cedar Creek Watershed

This watershed not unlike the Gans Creek watershed is identified as an “agricultural area” on the future land use map and will not be the focus of development activities or annexations for the foreseeable future. This watershed is almost a direct copy of the Gans Creek in its agricultural value. The Cedar Creek which is the defining feature of the watershed is not inside the study



area’s boundaries. While this is the case, the need to protect other features of the watershed such as its prime agriculture land is believed necessary. The techniques to do so would be no different than what was proposed for the Gans Creek watershed, but would instead be limited to potentially just the TDR program or privately established conservation easements.

Should development be desired, land owners would be required to justify that the proposed development densities are supported by the available infrastructure or will be required to provide the necessary upgrades to make such services available. Conversion of tracts within this watershed will be subject to the zoning and subdivision regulations administered by the County. Increasing development intensity is not likely to receive regulatory official support.

The intended future land use of this watershed is for preservation of its agricultural value. This designation is consistent with the expressed desires of the stakeholders and is based on the

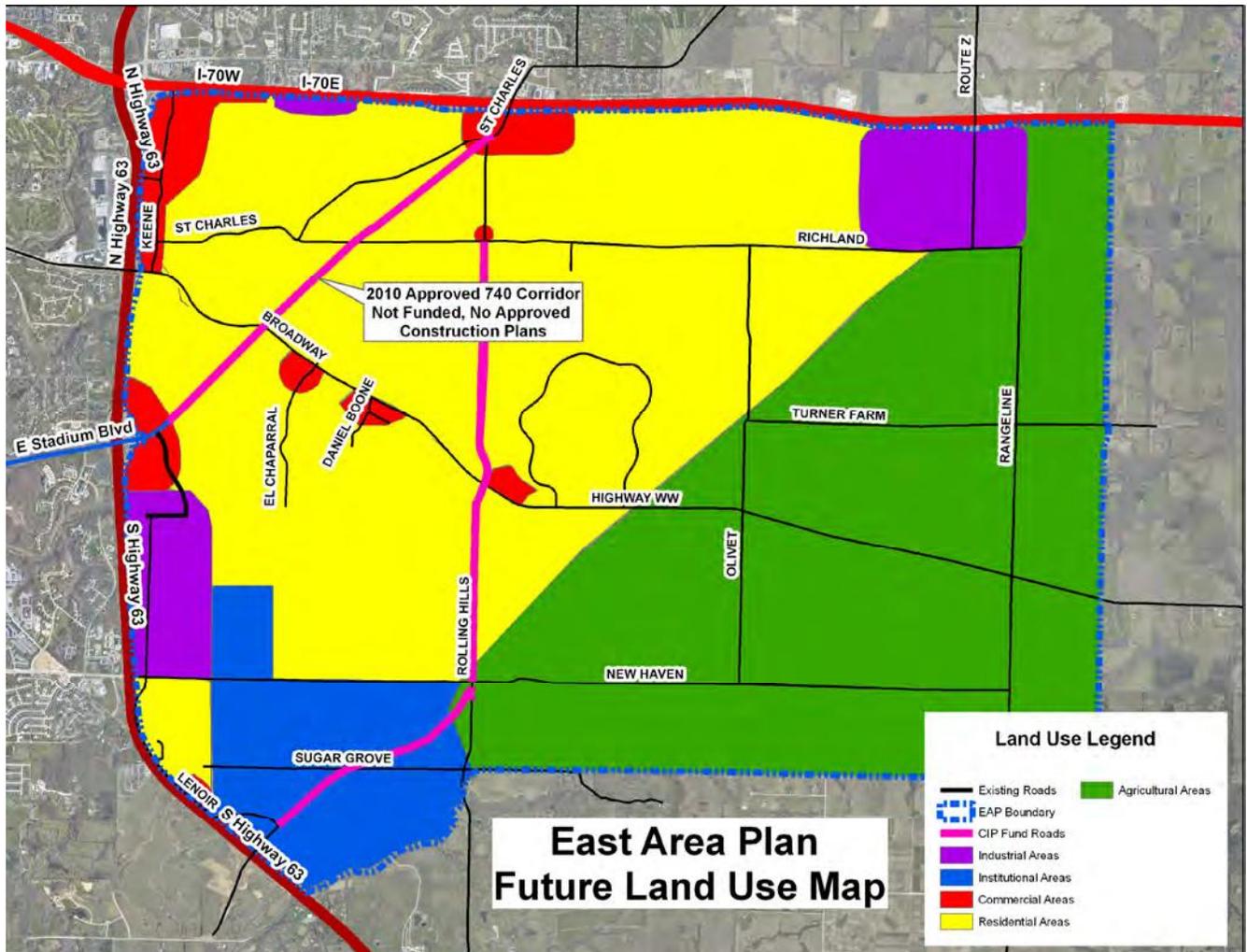
unlikely extension of any public infrastructure in the near future. As the time nears for review of this plan's contents, the land use allocation for this watershed may be considered for change. Until signs are exhibited that this watershed is transitioning from its agriculture base, the need to identify any other land uses as being needed within it are not seen as necessary.

LAND USE ANALYSIS AND ALLOCATION SUMMARY

This chapter has covered a broad range of topics and issues. The above recommended future land use allocation for the East Area Plan's six watersheds were arrived at after a series of public meetings and extensive investigation of relevant plans, documents, and data relating to existing and planned infrastructure, growth factors, and publicly stated goals and objectives. At its May 25, 2010 meeting, stakeholders participated in a land use mapping exercise to assist the staff and Commissions in understanding the public's vision on the future land use within the study area.

Having completed these tasks, the text articulating the future land use for the study area was devised and written. The textural concepts are shown in the following graphic display called the "Future Land Use Map". The designation of land use features shown on this map are not intended to be unalterable, but to serve as the guide for land use decision making and evaluation by the staff, appointed, and elected officials of the City and County. Modifications to the designations or allocations are at the discretion of the elected officials and may change as conditions or improvements warrant.

As noted, the map may change as conditions or improvements are introduced into the study area. Effective plans are not static, but are "living" documents that should reflect the conditions of the area for which they are prepared. To that end, the following future land use map and the text on allocation presented above will be reviewed no less than once every 5 years. Depending on what type of development may occur within the study area this chapter of may be revised more frequently.



Map 4-5: East Area Plan Future Land Use Map

CHAPTER FIVE - GROWTH MANAGEMENT

INTRODUCTION

The goal of growth management is to guide the location, timing, and pattern of development to ensure that development occurs in an orderly, compact, and economical manner. While the costs and practical limitations of extending sanitary sewer is a primary consideration in designating where growth will occur in the future, other infrastructure considerations including transportation system capacity, environmental suitability of land, and existing land use patterns should also be evaluated.

This chapter examines growth management from two general perspectives - macro (“hard” infrastructure) and micro (“soft” infrastructure) levels.

“Hard” infrastructure refers to access to utilities and services that are needed to accommodate development. This includes utilities such as sewer, water, electric, and access to adequate roadways to reach development sites. Other considerations include access to essential community resources such as fire and emergency services, schools, and other government services. These utilities and services must be planned and funded before development is allowed to occur. Therefore, it is of vital importance for careful planning to occur, which guides both the locations and timing of future infrastructure in a way that ensures supportable growth.

“Soft” infrastructure encompasses the preservation of natural features, and undeveloped land for uses such as agriculture and parkland, which provide valuable environmental services such as water and air filtration, flood mitigation, crop production, natural habitat, and recreation opportunities. Retention of these assets has become a central concern among community stakeholders with regard to how development impacts the landscape. Strong support for increased preservation of these natural features and assets will influence the shape of future development by redefining the process and pattern of development to achieve growth that is consistent with the values of citizen stakeholders – particularly with regard to preservation of the natural environment and rural character.

The following sections present growth management policies and strategies that might be implemented to direct future development in a format that is consistent with the values and goals put forward by stakeholders in the EAP study area. While it is recognized that many of these strategies may not be adopted, the aim is to provide basic concepts to initiate further discussion of alternative growth management practices.

INFRASTRUCTURE LOCATION AND TIMING

INFRASTRUCTURE STRATEGIES FOR GROWTH MANAGEMENT

Infrastructure, as mentioned elsewhere in this plan, is one of the main drivers of how and where land is developed. In light of this role, infrastructure is one of the key elements to a well-rounded growth management program.

Drawing from the Plan's original goals and objectives, the following pages enumerate strategies for meeting these objectives with growth management in mind.

ESTABLISH AN URBAN SERVICES BOUNDARY (USB)

An urban services boundary functions as a guide to where services may be realistically provided at a fair cost to citizens and, therefore, beyond which the provision of some utility services may not be prudent or cost-effective. The USB may be amended at prescribed intervals (e.g. a 10-year period) by a joint City-County effort to accommodate certain development or public facilities.

Sometimes called a utility services boundary, a growth boundary, or other names, the terms are generally interchangeable to the extent that the goal is to limit or discourage growth beyond an established boundary. This line may be the edge of a watershed, a particular road, the far end of a gravity-fed sewer line, or some other feature creating a division between the land within the served area and that without it.

The City of Columbia proposed an urban growth boundary (see Figure 5-1) in its 1967 Comprehensive Plan. However, the City deviated from the boundary in 1969 when a voter-approved annexation increased the corporate limits by approximately 80 percent. At the time of the annexation, the County had no land use controls. The annexation, ideally, would have honored the idea of maintaining a

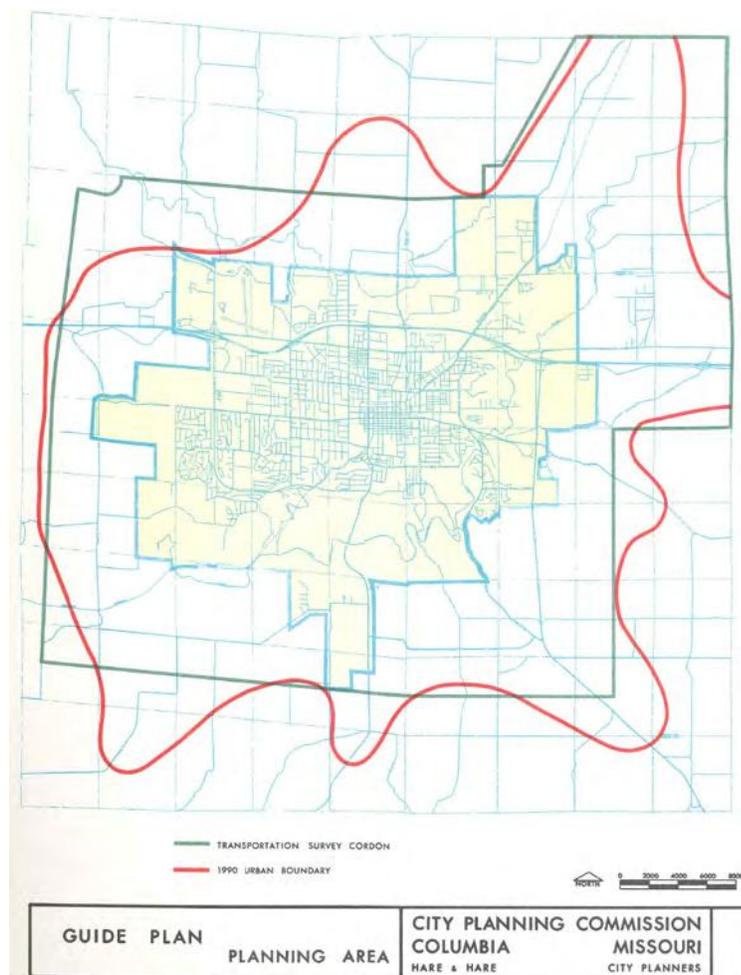


Figure 5-1: 1967 Urban Growth Boundary

compact corporate limit and the urban growth boundary found in the plan; unfortunately, this opportunity was not taken.

Boone County first proposed a USB for unincorporated areas in 1981 in its subdivision regulations, though a sufficient framework of legislation was never adopted to enact such review of proposed developments.

LIMIT NEW DEVELOPMENT BEYOND THE USB

Establishing City and County policies to consider the USB in all zoning and subdivision decisions in order to limit development beyond the area of cost-effective service provision is a key element in the USB program. Without mutual cooperation, projects not requiring additional infrastructure may locate in areas less-equipped to handle development. This affects both the City and County, as disjointed development puts a strain on roads, water systems, and other services and ultimately costs taxpayers and rate payers more to provide such services.

Just as legislation holds little power if not enforced, so too is a USB on paper without applying its parameters in case reviews by City and County staff and officials. Both the County and City should endeavor to support a USB, thereby encouraging the orderly growth and development of lands in their respective jurisdictions. The application of such a boundary's limits would take place during staff project review and in public hearings.

A suggested means by which to discourage this type of development is to limit City or County contributions to infrastructure projects to those in the Capital Improvement Plans; otherwise, developers should pay the full costs of extending infrastructure or services. The County currently does not extend infrastructure to specific developments, leaving this task to the developer. By requiring developers to cover all infrastructure costs up front, building outside of the City boundaries to save costs is less effective. The land price may be less than that inside the city limits, but the cost to install the required infrastructure generally discourages this type of leap-frog development. While this aspect of the County's regulations has provided some safety against rampant speculative development scattered throughout the County, a conscious, coordinated, and designed system to discourage scattered isolated development should be developed. Development could be channeled and encouraged in this manner where both the County and a cooperating City want to see such growth.

An example of an assessment of growth in relation to service availability is shown in Figure 5-2, on the following page, from Sioux Falls, S.D. Here, future development areas are noted in relation to a tiered system as well as capacity data and projected land use.

COORDINATE ADOPTION OF SIMILAR CITY AND COUNTY SUFFICIENCY-OF-SERVICES PROVISIONS

With two jurisdictions overseeing development review of the Plan area, a consistent policy of assessing the sufficiency of services provided to a development before zoning, plat, or plan approval is crucial to ensuring all parts of the Plan area are given the same consideration. As

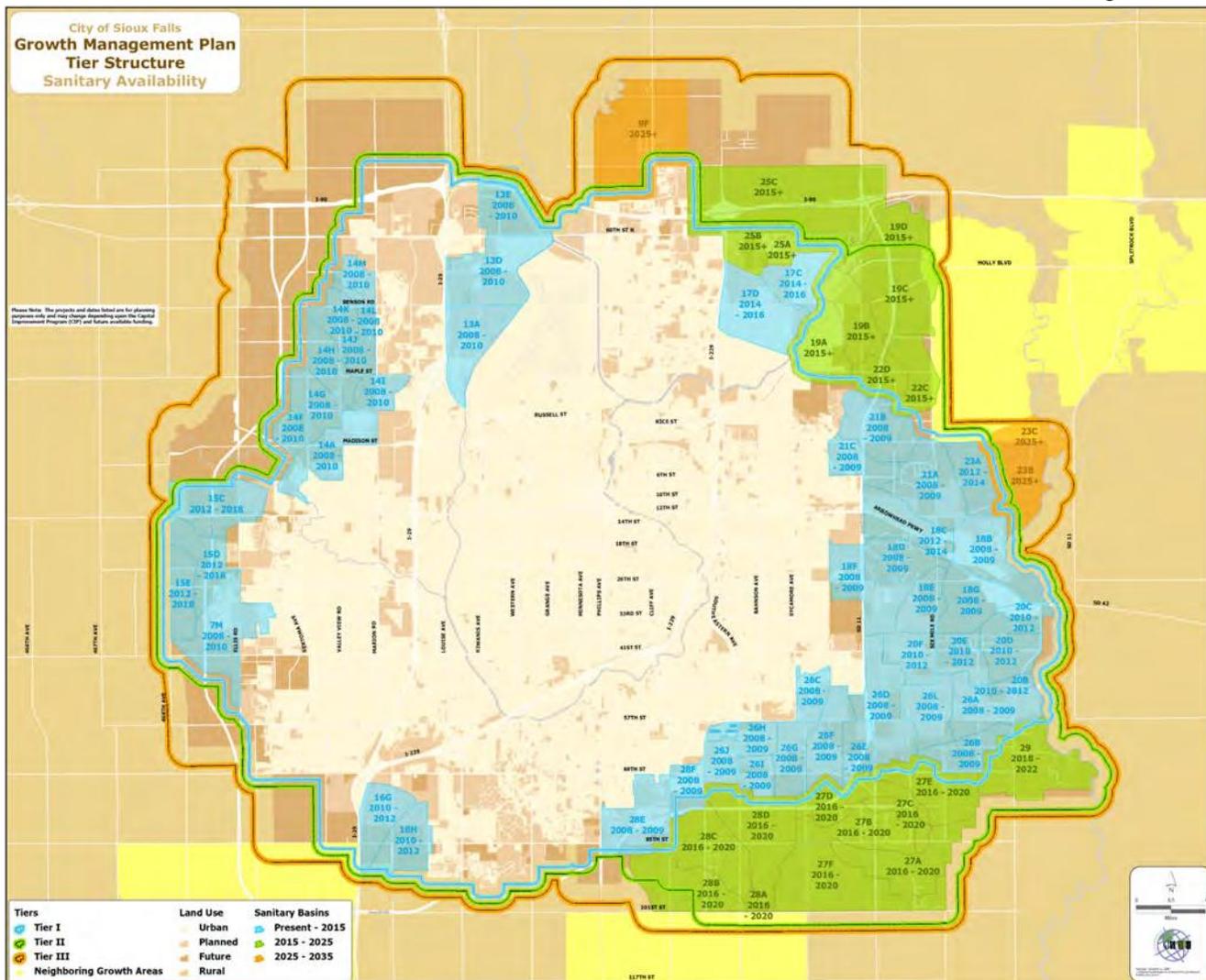


Figure 5-2: City of Sioux Falls, SD Tier Structure (Source: City of Sioux Falls)

with the desire for a coordinated, consistent application of USB consideration in development review, so too must the City and County share similar (but not necessarily identical) sufficiency-of-services provisions to ensure that new developments are paying for their impacts on infrastructure expansion and use within the contexts of each jurisdiction’s codes.

The County’s 1995 Master Plan outlines a rough framework for such a test, though no sufficiency test is formally codified in County regulations. The Master Plan provides a cursory explanation of how the test could be applied, and envisions situations where the existence of such measures could benefit landowners and taxpayers alike. While not formally codified in the Master Plan, the sufficiency test is applied consistently by department policy through the staff report analysis for all rezoning requests. The sufficiency test is currently broken down into three basic categories for analysis: adequate infrastructure, transportation network/system, and public safety services.

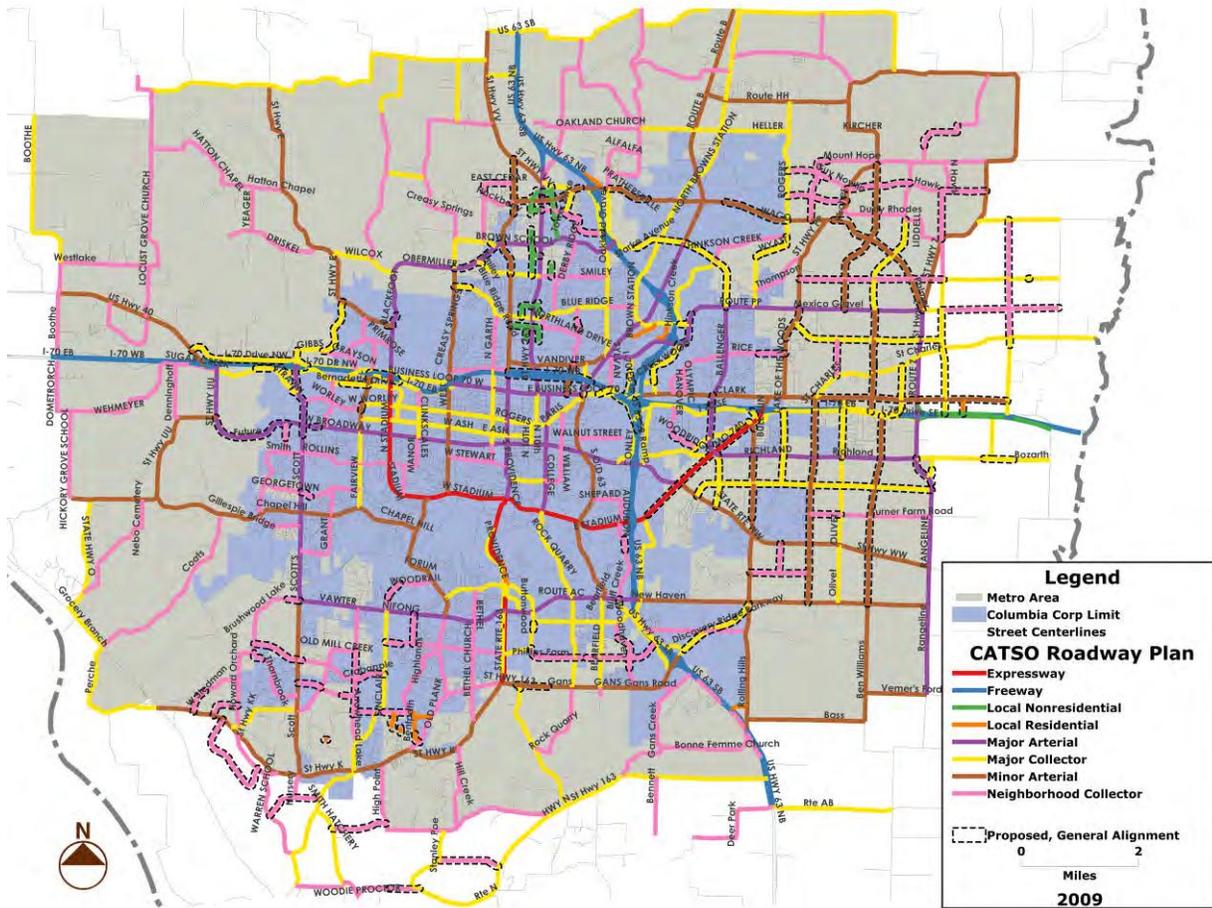
Additionally, the text in the Master Plan suggests possible measures to collect funds under this sort of test, including impact fees, which could be collected at the time building permits are

issued. While the collection of additional fees is possible to offset development impacts currently this is not done. The City and County will need to develop a framework to collect and distribute the fees to the appropriate body, and will likely need to seek counsel from their respective legal staffs to do so within Missouri statutes.

BUILD ON THE CATSO PLAN FOR ROADWAY IMPROVEMENTS AND FUTURE CORRIDORS

The purpose of the CATSO Plan, and its associated map, is to coordinate local road planning with the Federal and State governments; for this purpose it functions well. As a long-range transportation plan, it has a 20-year outlook. The City and County currently use the CATSO Plan and its associated map as the sole tool for transportation planning and coordination, a task for which the CATSO Plan was not designed. The public has expressed frustration with the local transportation planning and much of this dissatisfaction comes from the difficulties created by trying to utilize the CATSO Plan for all transportation planning needs, suited or not.

In absence of other transportation planning tools, the CATSO Plan provides a safety net to ensure that at least some of the major roadway network corridors are taken into account should a developer choose to propose development of a particular property. A transportation planning system should be developed that uses the CATSO Plan as one of its components, but incorporates tools better suited to the other aspects of transportation planning. Use of the CATSO Roadway Plan as a starting point ensures a broader, forward-thinking approach to future roadway improvements rather than a piecemeal, reactionary system. This method could also preserve future infrastructure and utility corridors from encroachment by land use growth, encouraging efficiency of land use within an overall transportation planning system.



Map 5-1: CATSO Major Roadway Plan

ENCOURAGE MAXIMUM USE OF EXISTING FACILITIES/CORRIDORS FIRST

An apparent way to promote efficiency in development is to maximize the capacities of existing infrastructure facilities before constructing new ones. This should be done within the parameters of safety and reason, and not in a manner that would overload utilities or degrade streets. Area residents have voiced a strong preference for this strategy to limit the amount of land--particularly along roadway and utility corridors--that would need to be dedicated for such future use. Logic dictates that consolidating utilities, to the extent possible, in these corridors makes the best use of land and creates the fewest disruptions for landowners. Ensuring that adequate right-of-way and utility easement corridors are established along with infrastructure upgrades will also accomplish residents' stated goal of minimizing disruptions to their properties along these corridors.

Parallel to this discussion is a call to use existing roads to a greater extent than in the past before constructing new facilities or expanding existing roads. This comes mainly from citizens living along key roadways that may see expansion or other construction, and is spurred by concerns about traffic volume, among other issues. City and County officials understand such

concern and must weigh a variety of factors, including overall traffic flow in the Plan area, in decisions to improve or add new roads.

USE THE CATSO PLAN TO REINFORCE JUSTIFICATION FOR LIMITED ACCESS TO THE 740 EXTENSION AS AN EXPRESSWAY

Area residents and members of the general public have strongly expressed the desire for the 740 extension to be as freely-flowing as possible. This desire supports the official designation for this facility under the CATSO Plan as an Expressway; therefore the local network should interface 740 with as few intersections as possible and only at major intersections. These locations may include intersections at the following streets:

- State Route WW
- Richland/St. Charles/Ballenger
- Grace/St. Charles/I-70 SE frontage road

Challenges exist in building intersections at many points along the proposed 740 extension. The combination of the aforementioned roads into so few intersections may not be possible due to existing construction, topography, or other constraints. Also important to note is that the 740 extension, while approved for this location, does not currently have funding or a final design to complete its construction.

Only after a final design is completed and approved will there be enough detail to show where properties can connect to the road systems near the corridor and its supporting intersections. Once the road's location within the corridor is established, rezonings based on its location will be appropriate. While it is possible that land use changes could be approved for land in or near the corridor prior to the final design approval for the 740 extension, the actual corridor itself is not a valid consideration until the design is finalized; otherwise, decisions are based on speculation.

These concerns and the need to have a final design prior to significant changes would be less important if the 740 extension was classified as an arterial instead of an expressway, as arterials, while somewhat restricted in their accessibility, may allow property access in some limited fashion. An expressway, on the other hand, is meant by designation to have limited access at controlled points to ensure maximum traffic conveyance capacity.

The opportunity exists at this time to ensure that future land uses along the 740 extension do not result in the creation of subpar operational conditions similar to what exists on the western end of the existing 740 corridor near Columbia Mall. Waiting for a more complete design of the roadway improvements will ensure the most effective land use plans are prepared in relation to the available access points.

MODIFY CITY POLICY TYING ANNEXATION TO RECEIPT OF CITY SEWER SERVICE

In 1997, the City adopted a policy resolution requiring annexation (or an annexation agreement for non-contiguous parcels) in order to receive City sewer services. The purpose of the policy resolution was to ensure orderly growth along the fringe of the City as well as provide a mechanism by which to ensure that urban development along that fringe was brought into the City in a timely manner.

Enforcement of this policy, however, has resulted in several unintended consequences since its adoption. The policy often results in stretching City services to remote locations with very little economic return or efficiency. Service agreements with Boone County Regional Sewer District (BCRSD) and the Boone County Fire Protection District in some instances lessen the burden of these expenditures. For the most part, however, the overall effect of the 1997 policy is the stretching of City budgets in a variety of ways and a less-than-compact municipal boundary. The assertion that user fees pay for the services rendered and the capital outlays necessary for adding additional customers has not always proven true.

The proper conveyance of wastewater is crucial to preventing disease and protecting the land. At the same time, the entities involved in this process, particularly the City, should re-examine extension policies related to this service in light of modern fiscal constraints. The City-County Health Department is confronted with challenges in the assessment of failing individual, on-site septic systems and lagoons. Reissuing permits for outdated on-site systems may result in fewer costs for the landowner, but the community at large suffers and adjacent properties and nearby water bodies may be polluted by the waste. Continuing collaboration with the Missouri Department of Natural Resources, which may have issued permits for some of these sites, is crucial in effectively protecting Area properties and natural features.

The suggested collaboration by City and County staffs and commissions in reviewing proposed developments will accomplish some of the main goals of the annexation-sewer policy, particularly that of ensuring consistent development according to subdivision regulations for areas that may someday become a part of the City. If such collaborative measures are implemented (e.g. all development projects not subject to City subdivision regulations but within one mile of the City limits are provided to City staff for review as a courtesy by the County), the need for an overly inclusive annexation policy is greatly reduced. One of the original reasons for the City to annex beyond its existing corporate limits, such as the expansive voter-approved annexation of 1969, was to ensure such oversight of development on the City's fringes. Boone County adopted subdivision and zoning regulations in 1973, which continue to be revised to meet modern challenges facing such codes, further reducing the need for extraterritorial oversight by the City.

USE WATERSHED BOUNDARIES/FUTURE LAND USE MAP AS GUIDES FOR SANITARY SEWER, PUBLIC FACILITIES, AND ULTIMATE BUILDOUT

Using the future land use map may provide opportunities to appropriately size and project where future sanitary sewer facilities would be needed as the study area's development intensity increases. Using the map for this purpose should aid the installation of these facilities in a more efficient and cost-effective manner.

The future land use map and the proposed development preferences it depicts are described in terms of the six (6) watersheds that make up the study area. Watershed boundaries are particularly highlighted because of the fact that sanitary sewer service lines are able to be built in a more cost-effective manner by following the natural flow of waterways, thus using the watershed and its backbone creek or river to delineate service areas and primary growth locations. Virtually all of the areas envisioned for some type of growth in the Plan are within a watershed that flows to the southwest; that is, toward City wastewater facilities. The use of pumps to convey wastewater, while not a favored outcome, may still be necessary for some topographic conditions; this plan does not dismiss their use altogether. A case-by-case determination should be made on the appropriateness of such systems by the appropriate wastewater authority (BCRSD/City sewer utility), which will ultimately have to maintain such facilities.

This approach also sheds light on where potential future schools, police and fire stations, parks, and other amenities may be located. Additionally, consideration of the watersheds and future land use map will better prepare these agencies as they consider where to establish new facilities by understanding what system capacities exist and where stakeholders envision improvements being made.

Using the watersheds or future land use map, however, cannot be done in isolation as land use change or development decisions are being considered. Other factors such as environmental features, roads, and utilities are more immediate determinants of what may develop over time in a given location. Fewer conflicts or greater utility availability will greatly determine the development success of particular tracts of land.

COLLABORATE WITH COLUMBIA TRANSIT TO ESTABLISH REGULAR ROUTES TO PLAN AREA COMMERCIAL DISTRICTS AND PUBLIC FACILITIES

The establishment of frequent bus service, connected to alternative transportation corridors and facilities such as trails and greenways, has the potential to reduce traffic in the Plan area and provide residents a connection to Columbia’s major commercial hubs. It would also allow those closer to the City to take the bus to East Area commercial uses and public facilities. Only one route, the red line (shown at right), currently serves the Plan area.

In an era of budgetary concerns and shrinking funding for public transportation, this strategy will be difficult to implement to the extent desired by many residents. This difficulty is compounded by the fact that a major component of the success of a new bus route is how its efficiency is measured. This efficiency is directly related to the concentration of households in the route service area and this number of households generally needs to be higher than that traditionally found in the area.

For the orderly growth of the study area, however, it is an essential element to encourage compact development near transit stops and commercial hubs alike. Future schools and parks should also be given strong consideration for stops along such a route, as citizens from both inside and outside the study area will be using these facilities. As the Area grows and residential and commercial corridors become more established, public transit routes may be added as needed to better serve these areas to enhance employment and living opportunities.

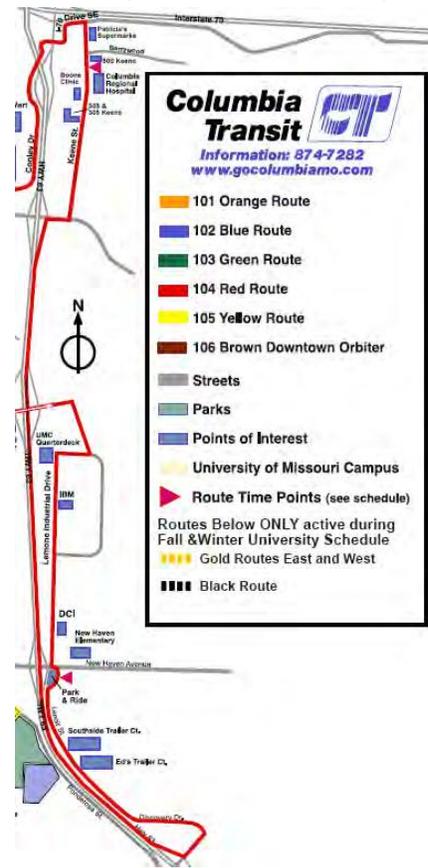


Figure 5-3: EAP Transit Route

ENCOURAGE INTERCONNECTIVITY BETWEEN SUBDIVISIONS AND NEIGHBORHOODS USING NON-MOTORIZED TRANSPORTATION NETWORKS

Allowing residents the ability to travel via means other than an automobile may lessen the effects of traffic (e.g. noise, congestion) on the surrounding area. The City and County may collaborate to identify corridors needed for these future improvements, working with developers and local land owners to set aside or acquire areas for such use.

The ability to walk or ride a bike between neighborhoods or to commercial developments is not solely based on an extensive network of trails. Building sidewalks as envisioned by the City’s subdivision regulations, with provisions for connections or stubs to undeveloped parcels leading to hubs of activity or public facilities, will, over time, add up to a comprehensive network of

non-motorized transportation facilities, contributing to the convenience, safety, and overall health of study area residents.

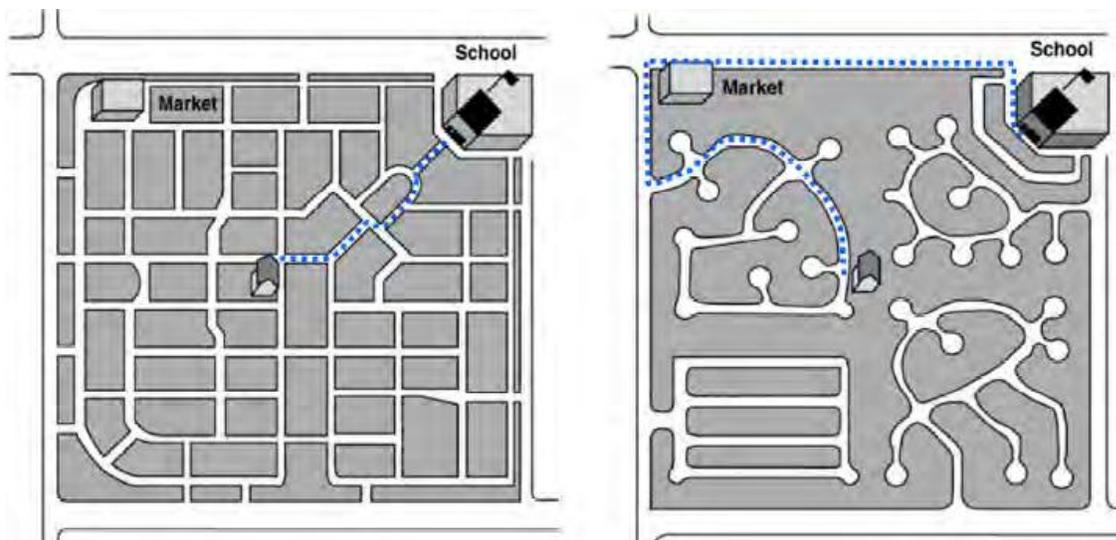


Figure 5-4: Sidewalk Connectivity--grid versus curvilinear systems (Source: Kentucky Chapter, American Planning Association)

PROMOTE POLICIES SUPPORTING GREEN INFRASTRUCTURE NETWORKS

Green infrastructure is simply a network of green spaces, parks, waterways, and other natural features that complement development. The aesthetic and recreational aspects of green infrastructure should enhance--rather than negatively impact--development. These features comprise another infrastructure system that, like roads, sewers, or sidewalks, has the potential to significantly impact a development positively or negatively.

Area residents have stressed the need to preserve natural features, including streams, steep slopes, and forested areas. Green infrastructure is essentially a planning term for this practice, furthering it by creating links between such areas when possible to form an interconnected pattern. As this practice stresses the preservation of natural features, it is a bonus to landowners seeking to preserve rural character while enhancing the attractiveness of commercial areas and providing recreational opportunities.

An additional aspect of green infrastructure is its ability, in some cases, to help lessen the effects of development on adjacent streams by helping to naturally filter runoff before it reaches these waterways.

PRESERVATION AND DEVELOPMENT PATTERN

PRESERVATION GOALS

East Area Plan stakeholders have identified a strong desire to maintain the rural character and preserve natural areas that they presently enjoy in much of the study area. This desire for land preservation is shared by county and city residents. The City’s 2007 visioning report, “Imagine Columbia’s Future”, produced the following goal for land preservation:

Land will be preserved throughout Columbia and Boone County to protect farmland, scenic views, natural topographies, rural atmosphere, watersheds, healthy streams, natural areas, native species, and unique environmentally sensitive areas, thereby enhancing quality of life.

The visioning report goes on to suggest the formation of a city-county land preservation authority that would use data from the City’s natural resource inventory (NRI) and work with the public to develop a land preservation plan, which identifies areas and features needing protection. The next step suggested in the visioning document is to map and prioritize these assets. Finally, it is suggested that funding mechanisms be developed to allow property or development rights to be purchased from willing sellers.

The above-stated goals and objectives reflect a common desire to reform conventional development practices by placing more emphasis on preservation of environmental assets. In order to achieve these goals, it will be necessary to make changes to existing regulatory provisions that govern land use. In so doing, the potential exists to guide the pattern of future development to maintain a significantly more intact and attractive landscape than what is possible under current regulations.

The following section describes current development regulations and practices that have a significant impact on shaping the landscape as development occurs. It identifies where they fall short of achieving the level of preservation desired by stakeholders, and identifies tools and strategies that could be used to achieve these goals. These strategies will have a direct and significant impact on the pattern of individual developments, and is therefore a key component of growth management.

GREENBELT PRESERVATION – BACKGROUND & CURRENT PRACTICE

Since the early 1990s, the City of Columbia has encouraged preservation of greenbelts, which correspond to the 100 year floodplains. The City Council passed a policy resolution in 1993 (PR 42-95A) to adopt the Hinkson Creek and Bear Creek Greenbelt Plans and establish the following goal:

The primary goal of the greenbelt plans is to maintain and preserve open space along major stream corridors. This goal should be accomplished preferably by private ownership or action, or by public acquisition of land or flood plain regulations.

Another stated goal in this resolution was the construction of trails within specific portions of the greenbelt corridor where "appropriate and feasible". The general policy resolution was amended in 1995 (PR 170-95) to include Bear Creek, Perche Creek, Hinkson Creek, Flat Branch Creek, Grindstone Creek, Rocky Fork Creek, and Hominy Branch Creek.

In an effort to achieve this goal, city planners encourage developers to provide easements or donations of land to the City for the purpose of greenbelt protection and access. These easements or donations of land are usually acquired when requests for subdivision of land are submitted to the City for review and approval. Both the City's and County's Subdivision Regulations require subdivisions to show public facilities, including parks and trails that have been identified on officially adopted plans.ⁱ City Subdivision Regulations also allow planners to require non-motorized linkages between public streets in new subdivisions and schools, parks, trails or other uses via greenspace access or trail easementsⁱⁱ. This policy has successfully resulted in the permanent protection of marginally developable land; however, it has fallen short of guiding development patterns to meet the wide variety of stakeholder and community preservation goals mentioned above.

Boone County does not currently have a policy of actively pursuing green space preservation. Unlike the City, the County does not currently have dedicated resources for acquiring and maintaining public parkland. Instead, open space preservation is encouraged on private land and as part of new developments. However, it should be remembered that, while not public open space, most property in the County is predominantly open or greenspace with a relatively small development footprint when viewed as a percentage of the overall property. It is this recognition that has contributed in not making the acquisition of public park land a priority for the County in the past.

As mentioned in the Environment chapter, both City and County have flood plain and stream buffer regulations designed to limit development activity within streamside areas, and provide water filtration, stream bank stability, and flood protection for individuals and their property. While preservation of natural areas is a positive byproduct of these regulations, they are primarily designed to improve water quality and mitigate storm water impacts on personal property. As such, they do not provide for the preservation of intact natural areas of sufficient size or with adequate connectivity to support the habitat needs of many common plant and animal species.

A comprehensive strategy is needed to ensure that these related issues are addressed as the city and surrounding rural areas continue to develop.



Map 5-2: East Area Plan Greenbelts and Open Space

Source: City of Columbia Metro 2020 Plan

GREEN INFRASTRUCTURE PLANNING – CONCEPT & STRATEGY

“Green infrastructure” refers to the concept of providing connected natural ecosystems as part of the framework for both conservation and development.ⁱⁱⁱ As the name implies, green infrastructure recognizes the importance of natural area networks as part of a complete infrastructure plan. It can include large scale preservation of natural landscape features such as forests, floodplains and wetlands or smaller scale practices such as the use of rain gardens, porous pavements and green roofs.^{iv}

At its broadest scale, the green infrastructure network is not unlike any other utility that is needed to sustain development. Green infrastructure systems incorporate riparian corridors, which provide for wildlife habitat, storm water filtration, flood mitigation, and the movement of people and animals between larger hubs such as regional parks and natural areas (see illustration, below). In the same way that a sewer or water line does not function if it is broken, green infrastructure corridors cannot be effective when they are fragmented by development encroachment.

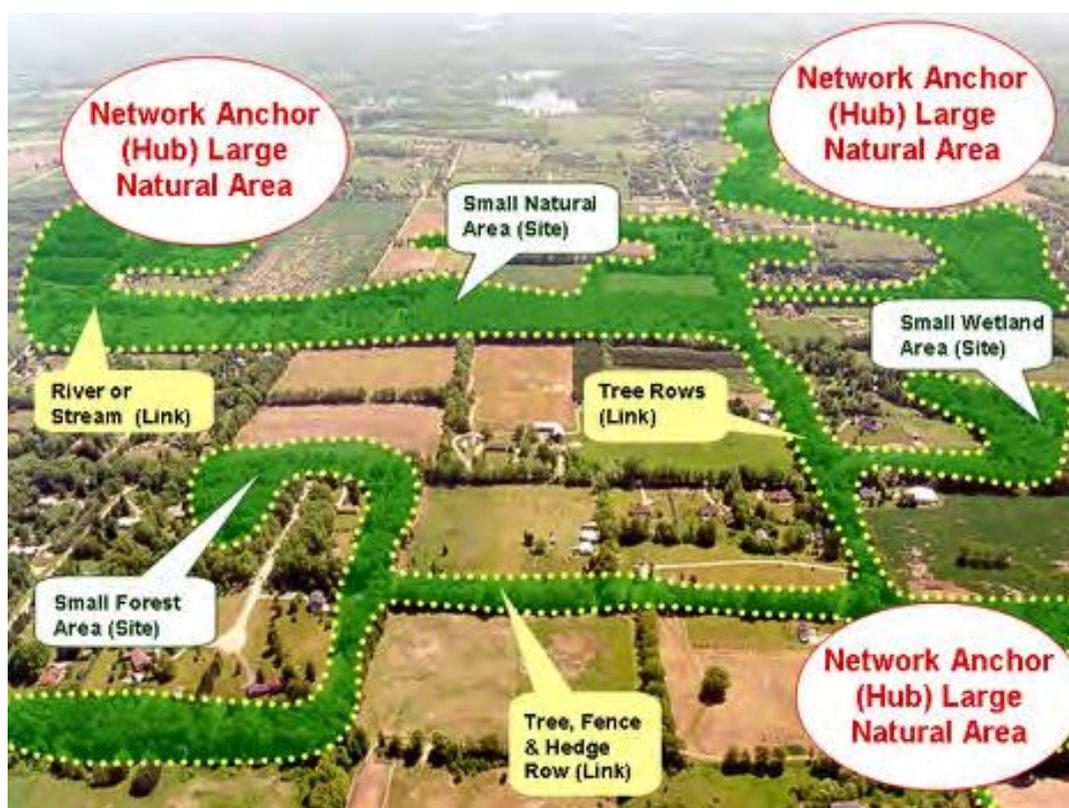
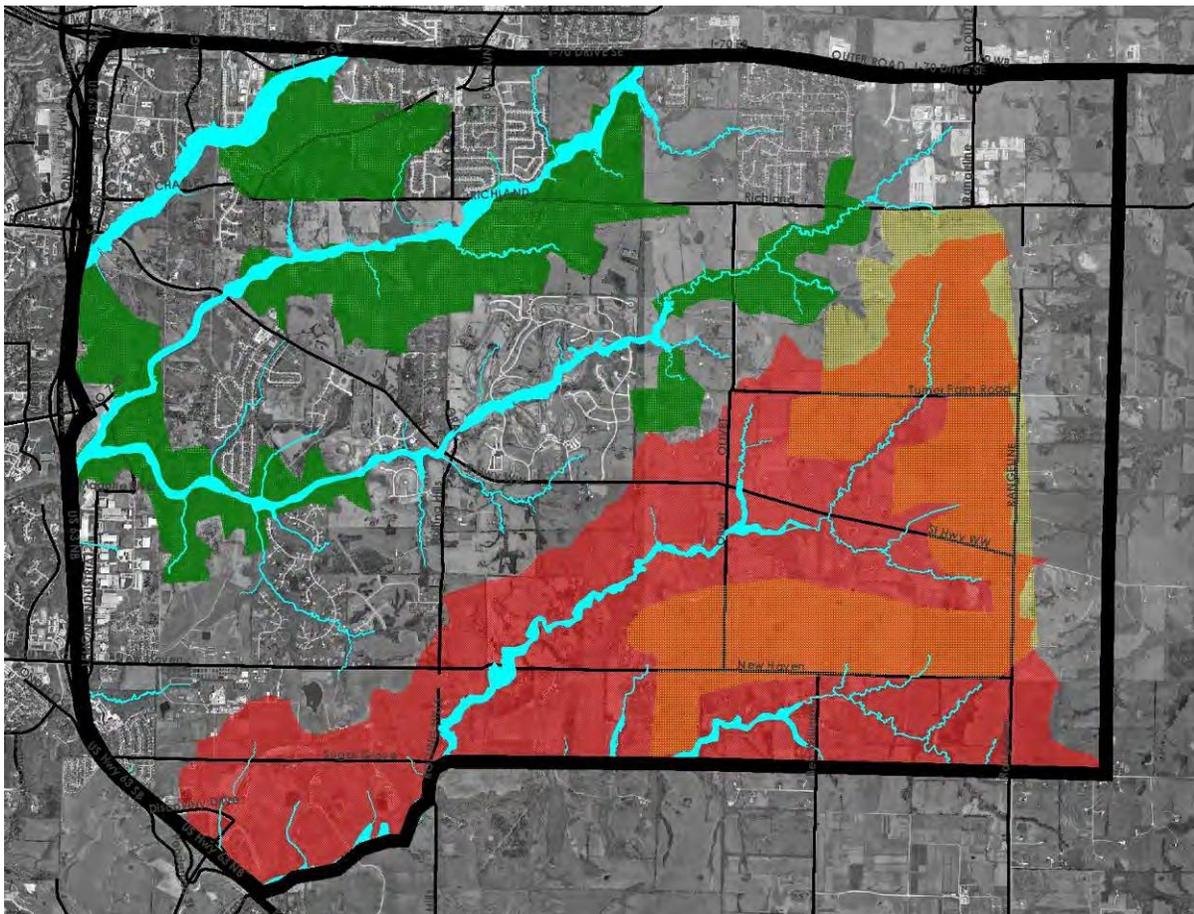


Figure 5-5: Example of an interconnected “green infrastructure” network

As noted in the Environment chapter, there are no current regulations or incentives that effectively result in the preservation of viable wildlife corridors and significant natural features with the comprehensive purpose of habitat preservation in mind.

Development of a green infrastructure plan may be the best method to address the environmental preservation objectives identified by EAP area stakeholders. The plan would coordinate the preservation, restoration, and linkage of existing natural areas, identify habitat requirements for indigenous plants and animals, and provide guidelines for future development activity. Low impact development (LID) designs and storm water best management practices (BMPs) could be integrated into such a plan. The following map illustrates areas of floodplain, tree canopy on steep slopes, sensitive watersheds, and prime agricultural land within the EAP study area. This data could serve as a starting point for an environmental inventory, which is the basis of developing an environmental preservation plan.



Map 5-3: East Area Plan Sensitive Areas Identified for Preservation

Sources: City of Columbia NRI & Missouri Department of Natural Resources Conservation Service

AGRICULTURAL LAND PRESERVATION – ISSUES & STRATEGIES

Another area of concern expressed by stakeholders is the preservation of agricultural land as urban development continues to spread into historically agricultural areas of the county. As mentioned in the Environment chapter, agricultural zoning districts in Boone County and Columbia may not effectively mitigate the conversion of farmland to suburban style residential development. While existing City and County land use policies and regulations encourage preservation of agricultural land, they do not mandate it.

There are various ways to ensure that preservation of prime agricultural land is achieved, including the use of more restrictive agricultural zoning districts, purchase of development rights (PDR), and transfer of development rights (TDR). PDR involves purchasing development rights for a particular tract of land, and placing a permanent deed restriction on the property to ensure that it remains as permanent agricultural land. Transfer of development rights involves transferring land use rights from one area (the “sending area”) to another (the “receiving area”). This would allow developers to purchase the right to build at higher densities. The money from these density bonus purchases would then be used by the local government to purchase conservation easements or purchase land identified as important for preservation. These methods are most effective as part of a coordinated system that is integrated into the land use and development regulations and policies of one or more jurisdictions.



Figure 5-6: Transfer of Development Rights^{vi}

Agricultural zoning districts could also be modified to increase the minimum lot size in agricultural districts to 20 or even 40 acres in order to discourage subdivision of tracts into pieces that are too small to sustain agricultural uses.

LAND DISTURBANCE – ISSUES & STRATEGIES

Stakeholder comments indicate a desire to avoid unnecessary alteration of the natural topography of the land for development purposes. While this is supported by City and County land preservation and subdivision regulations, there may be room for regulatory improvement to better achieve this objective.

LAND DISTURBANCE

A major goal of the City’s and County’s land preservation regulations is to ensure that consideration is given to the preservation and restoration of natural features in the grading or development of land.^{vii} Despite this stated purpose, there are certain situations and loopholes that exist, which may undermine this objective.

Agricultural land is exempt from local and state land disturbance regulations. To discourage circumvention of land preservation ordinances, Boone County has recently imposed a six-year temporary abeyance of development permits on agricultural land that is cleared without a land disturbance permit and/or when stream buffers are removed.^{viii} This is expected to reduce instances in which agricultural land is cleared without a permit immediately prior to being sold for development. However, implementation and enforcement of this provision has been suspended by the County Commission until the City adopts the same or similar provisions.

On land that is not exempt from land disturbance regulations, land disturbance permits are currently issued independently of development permits, regardless of whether development is planned to occur in the near future. The result may be that a site is denuded of vegetation years prior to development taking place, creating an unnecessary eyesore and if unchecked, erosion problems. A potential solution to this problem may be to require that disturbance permits only be issued with an accompanying building permit, or within a reasonable time period of building permits being issued. While well intentioned, this method may be difficult to put in practice. An exception might be to allow grading of land prior to development only if it is needed to correct existing drainage problems or to mitigate unsafe conditions.

While generally related to commercial or industrial property, the practice of “table topping” sites to make them “shovel ready” should be limited to areas that do not have slope, stream, or tree canopy issues. Cut and fill standards should also be included in these regulatory revisions. A more effective tool to stop this specific practice might be to create and follow a policy of not approving rezoning or land use changes for property that is cleared or “table topped” when it

does not already have a commercial or industrial zoning. This practice would discourage speculative grading in advance of regulatory approval. With respect to the County regulations it may be possible to tie some limitations on the issuance of grading permits to a USB, but it is unlikely that such limitation would be possible at a County wide scale.

TREE PRESERVATION REQUIREMENTS

Closely tied to land disturbance is the issue of tree preservation. Trees stabilize soils, provide habitat for wildlife, filter toxins from air and water, and perform a host of other valuable environmental services that make their preservation worthwhile. As indicated in the Environment chapter, most residential lots are exempt from the City’s tree preservation requirements because they are typically less than an acre in size. This loophole could be closed by requiring climax forest to be identified during the platting process and preserved on separate common lots (as in conservation subdivisions), or by dedicating conservation easements. In keeping with “green infrastructure” system connectivity goals, modifications to tree preservation requirements should also encourage the preservation of linked swaths of forest that might extend beyond the current 25% climax forest preservation minimum.

SUBDIVISION AND ZONING ISSUES

In the case of City Subdivision and Zoning Regulations, the stated intent and purpose clearly supports the preservation goals of the EAP area stakeholders. However, ambiguous or vague language within the specific textual standards of these codes is insufficient to ensure that development projects meet these intentions. For example, the City’s Subdivision Regulations make the following statement regarding the preservation of natural features:

Natural features, such as trees, brooks, hilltops and views, shall be preserved wherever practicable in designing any subdivision containing such features. Artificial and natural lakes and wooded areas are to be preserved and encouraged as much as possible.^{ix}

While the intent of this regulation addresses the above-stated concern about preserving adequate habitat areas, further guidance is needed to identify specific procedures by which this preservation goal can be reliably achieved.

Zoning tools such as Planned Unit Development (PUD) districts allow for flexible development patterns to occur, and encourage preservation of common open space and natural areas in exchange for higher development densities in other areas. This allows for the integration of parks and recreation with undisturbed wildlife corridors, tree preservation areas, and drainages that naturally filter and clean storm water runoff before it enters creeks and major waterways. Unfortunately, these developments commonly set aside open space in areas with extreme topography or other geographical conditions that make them unbuildable and otherwise

unusable as an amenity to local residents. This limits the success of their intended objective of providing more usable and suitably-located common open space than would otherwise be provided under conventional land development standards.

CONSERVATION SUBDIVISION – CONCEPT & STRATEGY

“Conservation” subdivisions offer an improvement over conventional subdivisions and PUD options, particularly with regard to placing an emphasis on open space. Unlike conventional subdivisions, conservation subdivision standards are designed to maintain rural character by incorporating large preservation areas for sensitive environmental corridors, prime agricultural land, scenic views, significant archaeological and historic sites, and open spaces. This is achieved by clustering homes on smaller individual lots, and preserving substantially more usable open space than would be provided by conventional subdivision design.

Like PUDs, conservation subdivisions trade large private yard areas found in conventional subdivisions with vast common areas that can be enjoyed by all property owners within the subdivision. This redistribution of yard space allows for less intrusion of development into sensitive and valued natural areas. Common areas may serve the same function as public neighborhood parks without the need for dedication of additional land area by the developer. The compact nature of clustered conservation subdivision typically results in lower development and maintenance costs associated with infrastructure since roads and utilities tend to be more concentrated.

Conservation subdivisions generally follow the same process for review and approval as regular subdivisions. The primary difference is that preservation of open space is the first step in designing the subdivision, whereas this is typically the last step in the design of conventional subdivisions. A community conservation plan is necessary to provide guidance as to where open space preservation occurs. The City’s NRI provides base data that can be used to identify locations of features that may be desirable to protect. A few of these features, including tree cover, steep slopes, and habitat corridors are illustrated in the following map.

Conservation subdivisions have been possible under the County zoning regulations for a number of years. A possible reason that very few examples have been proposed in the County could be due to the requirement that such a subdivision be proposed as part of a planned development that opens up the proposal to the public hearing process. Creation of prescriptive standards and regulations that would allow the establishment of conservation subdivisions without this public aspect could alleviate fears about trying this type of development.

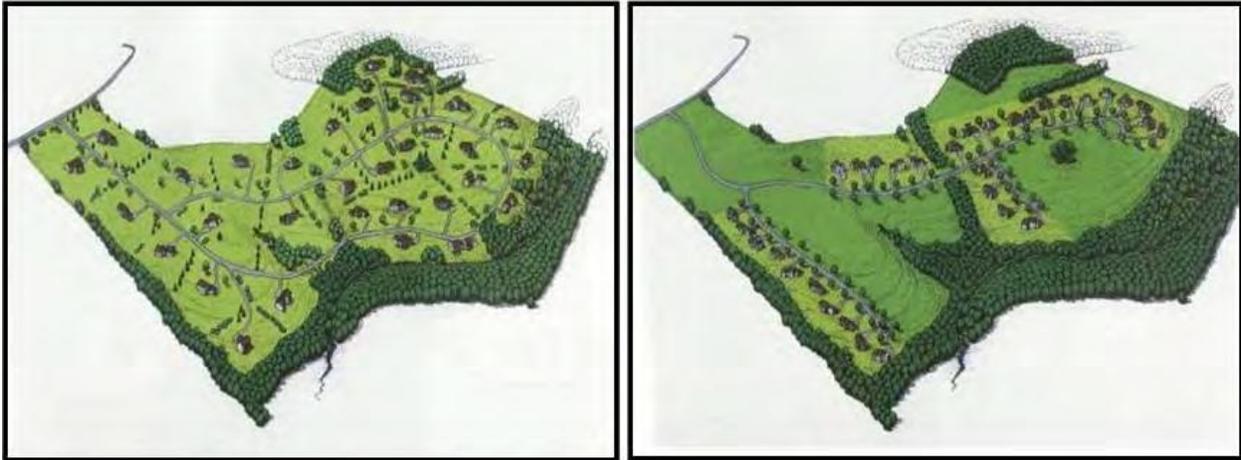


Figure 5-7: Conventional vs. Conservation subdivision

© Randall Arendt

Conservation subdivisions are usually implemented through open space zoning or overlay districts, but in some communities have replaced conventional subdivisions as the standard method of development. This development option would achieve most of the preservation goals of stakeholders.

SUMMARY OF GROWTH MANAGEMENT STRATEGY RECOMMENDATIONS

INFRASTRUCTURE LOCATION AND TIMING STRATEGIES

- Develop and base development review on an Urban Growth Boundary
- Utilize existing infrastructure corridors before creating new; develop additional transportation tools to build on CATSO Plan to guide roadway planning.
- Repeal the City’s policy linking annexation to the provision of City sewer service
- Use watershed boundaries and the generalized future land use map as guides for sewer and facilities buildout
- Encourage non-motorized transportation network interconnectivity between developments to compliment new Columbia Transit routes

PRESERVATION AND DEVELOPMENT PATTERN STRATEGIES

- Develop a green infrastructure plan, which addresses environmental preservation objectives identified by EAP stakeholders.
- Preserve prime agricultural land
 - Increase minimum lot sizes in agricultural districts
 - Create a preservation system that incorporates purchase development rights
 - Create a preservation system that incorporates transfer development rights
- Require climax forest to be identified and protected on separate common lots or by conservation easements when land is subdivided.
- Tie land disturbance permits to the issuance of building permits in certain circumstances or areas.
- Implement “cut and fill” standards that minimize the alteration of existing natural landscape topography.
- Use conservation subdivisions to preserve more open space and maintain rural character

CHAPTER 6 - PLAN IMPLEMENTATION

INTRODUCTION

For any planning document to be successful its goals and objectives must be clearly articulated and within ones reach. Throughout the process of preparing the East Area Plan a steady flow of ideas, goals, and objectives were exchanged between stakeholders, Commissioners, and staff. This chapter brings together those contributions and assembles them into an easily comprehensible matrix that is intended to act as a guide or work program for making the ideas presented in previous chapters a reality.

IMPLEMENTATION MATRIX

No good plan sits on a shelf for if it does it will only collect dust. This is not the outcome that Commissioners or either staff desire to be the legacy of this plan. Rather it is the desire to have this plan act as a catalyst for change within the regulatory and policy structures of both the City and the County. The matrix that follows identifies and categorizes the action statements made within the preceding chapters. Taking action to effectuate these statements, ideas, goals and objectives will be one of the measures of how successful this planning effort was.

One of the keys to ensuring this plan's recommendations are implemented is to easily track the document's action statements. The following matrix provides a readily accessible, visual guide to these actions, the participants in achieving them, the expected outcomes of each action, and the timeframe in which the action may be completed.

Implementing the actions stated within the matrix will be one method of determining if the efforts to prepare this Plan were worthy of the time spent. It is the Commissioner's and staff's belief that actions articulated in this matrix are not only suitable for the East Area Plan, but have broad city-wide and county-wide application. At a minimum, the actions included within this matrix show elected official the tangible issues that their constituents would like to see addressed.

Category/Action	Participants	Expected Outcome	Anticipated Timeframe
Environment			
Create a City-County land preservation authority	City Planning; County Planning; City Council; County Commission	Land preservation is achieved through the establishment of a land preservation plan, mapping/prioritizing potential areas for preservation, and development of funding mechanisms to allow property development rights to be purchased/sold/traded	2011
Greenbelt preservation	City Planning; County Planning; City Council; County Commission, P&R, US Interior	Maintain and preserve open space along major stream corridors, specifically including floodplains; this may be by private action or public acquisition	On-going
Develop a green infrastructure plan	City Planning; County Planning; City Council; County Commission, MDC, MU, DNR	Create and implement a plan governing preservation, restoration, and linkage of existing natural areas, identify habitat requirements for indigenous plants and animals, and provide guidelines for future development	2012 (start) 2014 (finish)
Agricultural land preservation	City Planning; County Planning; City Council; County Commission	Establish policies to maintain existing farmland for future use through mechanisms such as the purchase of development rights (PDR) or transfer of development rights (TDR)	2014-2015
Strengthen land disturbance regulations	City Planning; County Planning; City Council; County Commission	Create City policy regarding land disturbance and grading of ground; may be tied to development or disturbance permits and should be similar to established County policy (currently suspended until the City creates a like policy)	2011
Strengthen tree preservation regulations	City Planning; City Public Works; County Planning; City Council; County Commission	Create County policy regarding the percentage of climax forest and tree preservation required for lots or developments; revamp City regulations to consider developments as a whole instead of individual lots, and encourage cross-development preservation in support of the green infrastructure concept	2012
Encourage land preservation through subdivision and zoning code regulations	City Planning; County Planning	Reduce ambiguities in the subdivision and zoning codes by refining language to be more specific in its intent and implementation; encourage preservation of usable/accessible open space in planned unit developments (PUDs)	On-going
Implement conservation subdivision standards	City Planning; County Planning; City Council; County Commission	Establish policies in City and County code encouraging the preservation of common open space in subdivisions through the adoption of conservation (cluster) subdivision standards	2012

* - Action statements do not reflect complete evaluation of the City of Columbia's "Imagine Columbia's Future" document. Additional statements may be added at a later date.

Category/Action	Participants	Expected Outcome	Anticipated Timeframe
Infrastructure			
Establish a Urban Services Boundary (USB)	City Planning; County Planning; City Council; County Commission	Limit or discourage growth beyond the established boundary	2013
Limit new development beyond the USB	City Planning; County Planning; City Council; County Commission	Staff review of projects will significantly limit development beyond the established boundary	On-going
Coordinate adoption of similar City and County sufficiency-of-services provisions	City Planning; County Planning; City Council; County Commission	Establish standards with which to assess existing and/or needed infrastructure improvements for developments during review processes	2011
Build on the CATSO Plan for roadway and corridor improvements	City Planning; County Planning; City Council; County Commission, CATSO	Develop and implement other transportation planning documents or tools to aid in reviewing development proposals	2013
Encourage maximum use of existing facilities and corridors before new construction	City Public Works; County Public Works; City Council; County Commission	Maximize the capacities and use levels of existing roadways and infrastructure corridors in general before constructing new ones or taking additional rights-of-way	Ongoing policy
Use the CATSO Plan to reinforce justification for limited access to the 740 extension	City Planning; County Planning; City Council; County Commission; MoDOT	Limit the number of intersections or interchanges on the 740 extension, thereby preserving the expressway designation given to the road in the CATSO Plan	Dependent on initiation of the design documents
Modify City policy tying annexation to receipt of sewer service	City Planning; City Council; City/County Health; Mo. Dept. of Natural Resources, Boone County Regional District	Reduce the area served by City agencies other than the sewer utility by relaxing or eliminating the requirement of annexation (or an annexation agreement) to receive City sewer service; reduce the number of permit re-issuances for failing septic lagoon sites	2012
Use watershed boundaries/future land use map as guides for sewer, facilities build out	City Public Works; County Public Works; City Council; County Commission; Utility providers	Future sewers and other improvements should be guided by the boundaries of their respective watersheds (to maximize gravity flows, thereby reducing costs), as well as the Plan's future land use map to most effectively direct growth; other public facilities should also use this approach to understand future plan area needs	Ongoing
Promote policies supporting green infrastructure networks	City Planning; County Planning	Network of green spaces, parks, waterways, other natural features complementing developments	Ongoing policy
Encourage interconnectivity between subdivisions and neighborhoods using non- motorized transportation networks	City Planning; County Planning	Connected neighborhoods and developments will offer residents alternative means by which to travel, lessening the need for automobiles, encouraging health, and enabling convenience	Ongoing policy
Collaborate with Columbia Transit to establish regular routes to commercial districts and public facilities	City Planning; County Planning; City Council; County Commission; Columbia Transit	Extend City bus route(s) to plan area to serve commercial districts and public facilities	Dependent on funding and growth

* - Action statements do not reflect complete evaluation of the City of Columbia's "Imagine Columbia's Future" document. Additional statements may be added at a later date.

Category/Action	Participants (minimum)	Expected Outcome	Anticipated Timeframe
Land Use Establish neighborhood scale commercial and service nodes	City Planning; County Planning	Use planning tools and decision making to locate smaller-scale commercial and service businesses adjacent to neighborhoods	Ongoing policy
Identify and protect designated agricultural areas	City Planning; County Planning	Designate areas unlikely for development or to receive future sewer service; establish zoning protections designed to preserve the current ag uses in these areas	Ongoing policy
Enhance stream corridor protections	City Planning; County Planning; City Council; County Commission	Implement a modified or incentive-based program to preserve contiguous tree-covered areas adjacent to stream corridors	2012
Draft suggested additional water quality measures for Hinkson Creek-area developments	City Planning; County Planning; City Council; County Commission, DNR	Draft, codify additional water quality measures beyond current minimums to further the effort to revitalize Hinkson Creek and have it removed from the Environmental Protection Agency's impaired waterway list	2013
Establish a riparian preservation corridor	City Planning; County Planning; City Council; County Commission	Implement additional ordinance language to extend protective coverage of areas adjacent to currently protected stream corridors to limit development in and near these features; these areas would likely feature steep slopes and heavily forested stream banks	2014
Investigate a performance-based zoning system for reviewing new residential developments	City Planning; County Planning; City Council; County Commission	Research measures to better evaluate the potential impacts of proposed residential developments on their sites as well as adjacent properties	2012-2013
Establish a transfer of development rights (TDR) program to protect natural features	City Planning; County Planning; City Council; County Commission	Create and codify a TDR program, with areas sending their development rights to receiving areas that are permitted to build with increased densities (transferred from the sending areas), to protect environmentally sensitive areas such as forested lands, steep slopes, and riparian corridors and buffers	2014-2015
Promote construction of affordable housing	City Planning; County Planning; City Council; County Commission	Create a diversity of housing choices within the study area to achieve an adequate supply of affordable, energy efficient, and accessible housing	On-going

* - Action statements do not reflect complete evaluation of the City of Columbia's "Imagine Columbia's Future" document. Additional statements may be added at a later date.

ENDNOTES

ⁱ City of Columbia Code of Ordinances. Sec. 25-35.(2). Conformance with applicable laws, rules and regulations.

ⁱⁱ City of Columbia Code of Ordinances. Sec. 25-42.(2)c. Street improvements generally.

ⁱⁱⁱ Green Infrastructure: Smart Conservation for the 21st Century,
http://www.conservationfund.org/sites/default/files/GI_SC21C.pdf

^{iv} http://cfpub.epa.gov/npdes/home.cfm?program_id=298

^v http://www.oakgov.com/peds/program_service/es_prgm/green_infras/gi_project.html

^{vi} <http://www.co.pierce.wa.us/xml/services/home/property/pals/landuse/tdrlogo.jpg>

^{vii} City of Columbia Code of Ordinances. Sec. 12-A. Land Preservation

^{viii} Boone County Storm water Ordinance. Sec. 9.3.

^{ix} City of Columbia Code of Ordinances. Sec. 25-39. Natural features.