ACKNOWLEDGEMENTS

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City of St. George
City of Wamego

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EXECUTIVE SUMMARY

BACKGROUND

In 2005 the U.S. Congress unveiled a strategic military plan referred to as the 2005 Base Realignment and Closure (BRAC) Plan, which announced that the Ft. Riley military installation, located approximately 10 miles west of Manhattan, would be receiving approximately 11,000 new troops. Based on this military shift, it was estimated that more than 30,000 people would be relocating to the Flint Hills Region. This influx of people has stimulated significant growth in communities throughout the region – from Abilene to Wamego.

The U.S. Highway 24 (US-24) corridor in Pottawatomie County has also seen significant growth. Since 2005, more than 3,150 residential lots and more than 65 commercial lots have been developed along the corridor from Manhattan to Wamego. This growth is straining much of the available local infrastructure for water, sewer, and storm drainage. US-24 and its complementary local street network are also experiencing the stress of these new demands. These roadways have undergone a steady increase in traffic growth in recent years and are at risk of developing congestion and safety issues. Continued growth may eventually lead to unsafe and inefficient traffic operations due to increased traffic volumes, inadequate driveway spacing, and sporadic location of new development.

These issues, in conjunction with increasing jurisdictional overlap, led area agencies to coordinate with each other to develop a better understanding of the future needs and challenges surrounding the US-24 corridor from Manhattan to Wamego. Leading this effort was Pottawatomie County, who, in coordination with Manhattan, St. George and Wamego, sought and was awarded funding in 2008 through Kansas Department of Transportation's (KDOT) Corridor Management Program. KDOT agreed to fund 65 percent of the cost of the US-24 Corridor Study, which would produce this US-24 Corridor Management Plan, up to $365,300, with the remaining balance being funded by the local partners. Along with this grant, the communities of Manhattan, St. George and Wamego agreed to provide financial support to the project. In March 2008, Pottawatomie County and its local partners selected the consultant team of HWS Consulting Group to lead the US-24 Corridor Management Plan's study process.

PLAN OVERVIEW

The US-24 Corridor Management Plan included a study area along 16 miles of US-24 reaching approximately a mile north of the corridor and stretching south to the Blue River. For analysis purposes, the consultant team broke the project into three segments:

West Corridor – This segment extended from Manhattan Town Center Mall east to Flush Road. It also included McCall Road from Tuttle Creek Boulevard to US-24; includes eastern Manhattan and the Blue Township.

Central Corridor – From Flush Road east to Flint Rock Road; includes the City of St. George

East Corridor – Flint Rock Road to Airport Road, including the City of Wamego; and from Kansas Highway 99 (K-99) from the US-24 intersection three miles north to Cannonball Road south of Louisville.

Six major tasks comprised the Study , which has resulted in this US-24 Corridor Management Plan:

1. Public involvement
2. Market analysis
3. Land use planning
4. Transportation engineering and planning
5. Infrastructure planning (water / wastewater)
6. Implementation and regulatory review

See Exhibit E.2 on the following page for an illustration of the Study process.

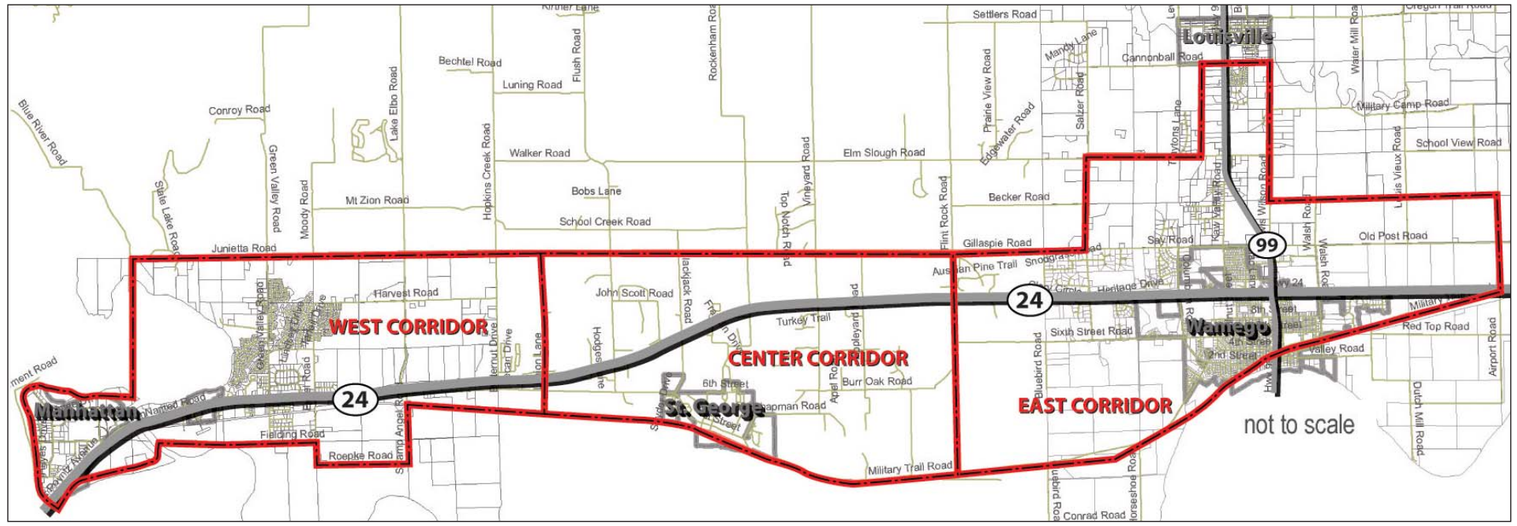


Exhibit E.1: Corridor Segments

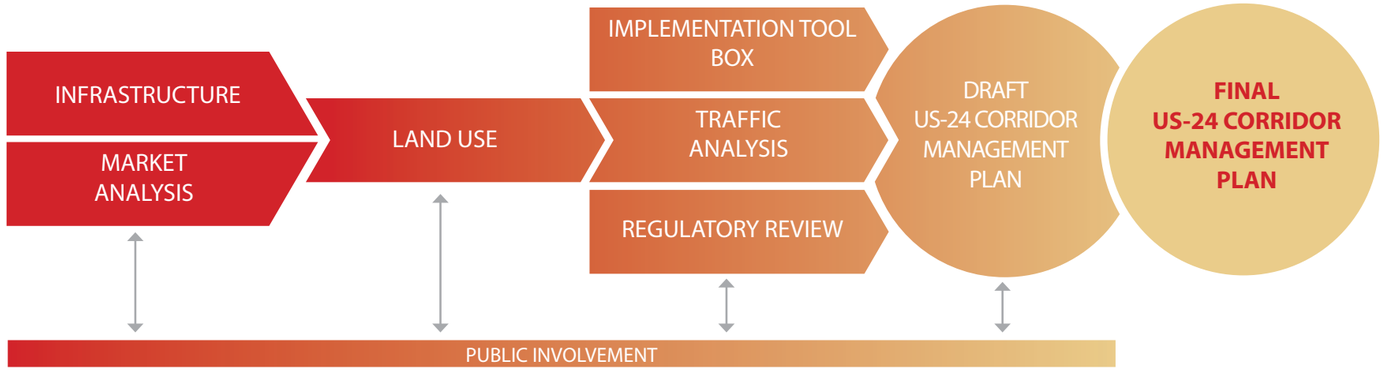


Exhibit E.2: US-24 Corridor Study Process

PUBLIC INVOLVEMENT

The purpose of the public involvement program was to inform the public about the US-24 Corridor Management Plan and its associated Study. Public involvement also enabled the consultant team to gain an understanding of the public's issues and visions for the corridor, and obtain feedback on study concepts in order to refine recommendations. Public involvement efforts included postcards mailed to property owners within the US-24 corridor study area, 48 stakeholder interviews, four Citizens' Advisory Group meetings, a project website and a total of nine public open-house events, which recorded more than 300 attendees. In addition, the consultant team gave multiple community presentations during various stages of the US-24 corridor study process to governing bodies, economic organizations and at other events.

During the initial efforts, the consultant team gained an understanding of how the corridor is used and perceived, and that the public's major concerns with the corridor's transportation issues had to do with intersection operations. Based on the data-gathering in the early stage of the study process, the consultant team learned that the public perceives US-24 to be a good highway; however there are concerns about the operations at intersections, including:

- Flush Road (limited visibility, need longer acceleration lanes)
- Columbian Road (limited visibility, needs signal)
- Green Valley Road (could use a right turn arrow/is too congested)
- McCall Road (needs a longer right turn lane)
- Heritage Square (signal timing)
- Kaw Valley Road (needs signal)
- Lake Elbo Road (difficult to enter in a.m.)
- Excel Road (difficult to enter in a.m.)
- Dick Edwards / Aero-Mod intersection (needs merge lanes)

When asked for specific transportation improvements, these were the top suggestions:

- Lower / enforce speed limits
- Acceleration / deceleration lanes
- More turn lanes
- Bike / pedestrian trail
- Flush Road signal
- Columbian Road signal

As the US-24 Corridor Study progressed, public involvement assisted the consultant team in formulating and refining concepts and recommendations.

MARKET ANALYSIS

A market analysis for the US-24 corridor was completed to estimate future economic growth, which would provide a basis for projections on future land use and future transportation needs / traffic demands. Pottawatomie County has experienced steady growth, adding approximately 150 jobs annually, since 1980. As a county, Pottawatomie also ranks above average in population growth and wages than surrounding counties. The businesses along the US-24 corridor are an important sales tax base, having generated $16.3 million in 2005 for Pottawatomie County, about 70 percent of the county's total.

TABLE E.A
Projected Housing Units 2010-2030

Land Use				
Moderate Scenario	West Corridor	Central Corridor	East Corridor	Total Units
Single Family Units	1,250	450	425	2,125
Multi-Family Units	175	50	100	325
TOTAL	**1,425**	**500**	**525**	**2,450**
High Scenario	West Corridor	Central Corridor	East Corridor	Total Units
Single Family Units	1,850	575	575	3,000
Multi-Family Units	225	75	100	400
TOTAL	**2,075**	**650**	**675**	**3,400**
Percent of Corridor Residential Growth	58%-61%	19%-20%	20%-21%	100%

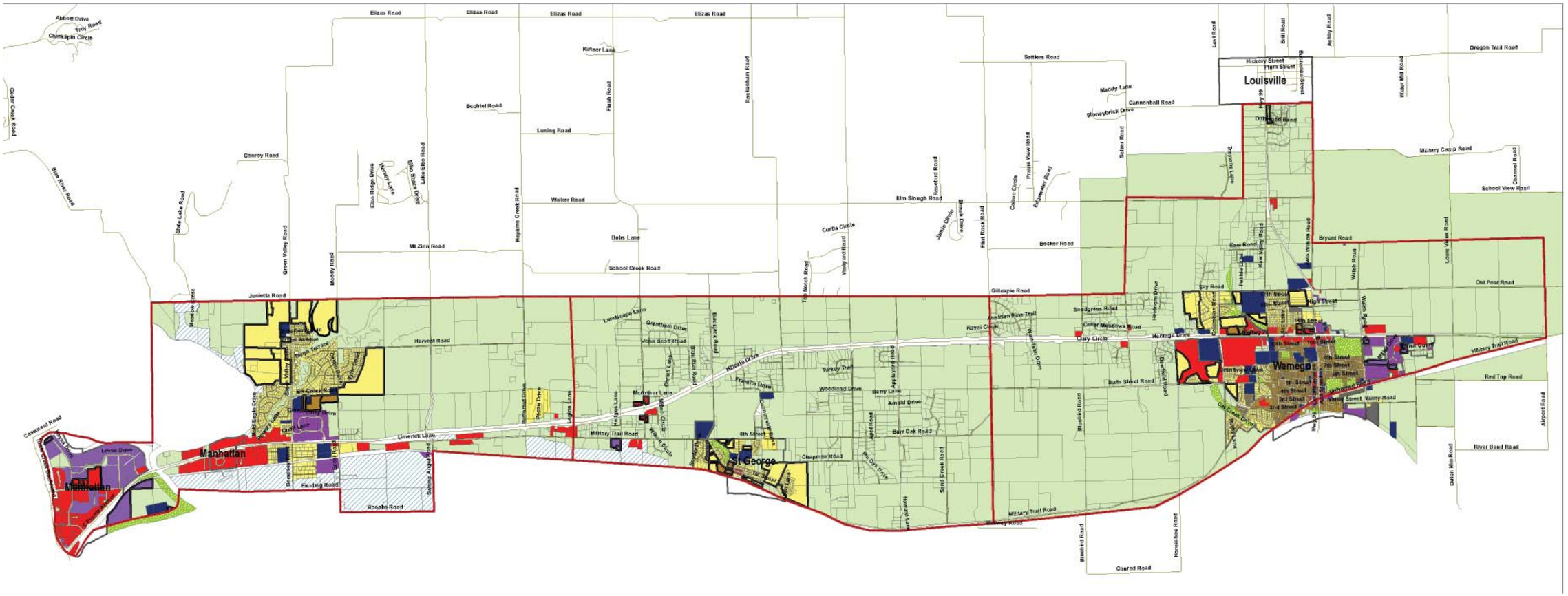
Source: RICHARD CAPLAN & ASSOCIATES.

TABLE E.B
Projected Market Demand by Square Feet 2010-2030

Land Use				
Moderate Scenario	West Corridor	Central Corridor	East Corridor	Total Square Feet
Retail	255,000	60,000	60,000	375,000
Office	90,000	25,000	20,000	135,000
Light Industrial	675,000	90,000	250,000	1,015,000
Total Square Feet	**1,020,000**	**175,000**	**330,000**	**1,525,000**
High Scenario	West Corridor	Central Corridor	East Corridor	Total Square Feet
Retail	310,000	75,000	75,000	460,000
Office	135,000	30,000	25,000	190,000
Light Industrial	750,000	125,000	325,000	1,200,000
Total Square Feet	**1,195,000**	**230,000**	**425,000**	**1,850,000**
Percent of Corridor Commercial Growth	65-67%	11-12%	22-23%	100%

Source: RICHARD CAPLAN & ASSOCIATES.

The market analysis results presented two growth scenarios upon which to base future land use and traffic projections for planning purposes: **moderate growth** and **high growth**. In addition, the consultant team prepared individual growth assumptions for each segment of corridor for each growth scenario. *These growth scenarios estimate that by 2030, the US-24 corridor is projected to require from 2,450 to 3,400 new housing units; and require a total of 1.5 million to over 1.8 million square feet of new commercial and light industrial development.*


Louisville
Wamego
Manhattan
St. George
Elizas Road
Kirtner Lane
Beuchtel Road
Luning Road
Walker Road
Bobs Lane
School Creek Road
Mt Zion Road
Conroy Road
Juniette Road
Harvest Road
Settlers Road
Mandy Lane
Cannonball Road
Stoneybrick Drive
Becker Road
Gillespie Road
Elm Slough Road
Military Trail Road
Oregon Trail Road
Military Camp Road
School View Road
Bryant Road
Old Post Road
Red Top Road
River Bend Road
Conrad Road
Airport Road
Dublin Mile Road
Louis Vieux Road
Walsh Road
Walker Mill Road
Levi Road
Bill Road
Ashley Road
Channel Road
Flint Rock Road
Rochedum Road
Hogans Creek Road
Green Valley Road
Mosby Road
Skyline Road
Lake Elio Road
Elio Ridge Drive
Bull River Road
Cedar Creek Road
Casement Road
Levee Drive
Limerick Lane
Flinthill Road
Roeptke Road
Swamp Angel Road
Hillside Drive
Franklin Drive
Turkey Trail
Woodland Drive
Burr Oak Road
Chapman Road
Sand Creek Road
Hickory Street
Plum Street
Bluemont Street
Poyntz Avenue
Fremont Street
Humboldt Street
Lincoln Street
Vanoy Street
Vanoy Road
Seventh Street
Sixth Street Road
Fifth Street
Fourth Street
Third Street
Second Street
First Street
Tuttle Creek Dam
Tuttle Creek Boulevard
Tuttle Creek Blvd
Tuttle Creek Dam Road
Tuttle Creek Dam Road
Tuttle Creek Dam Road

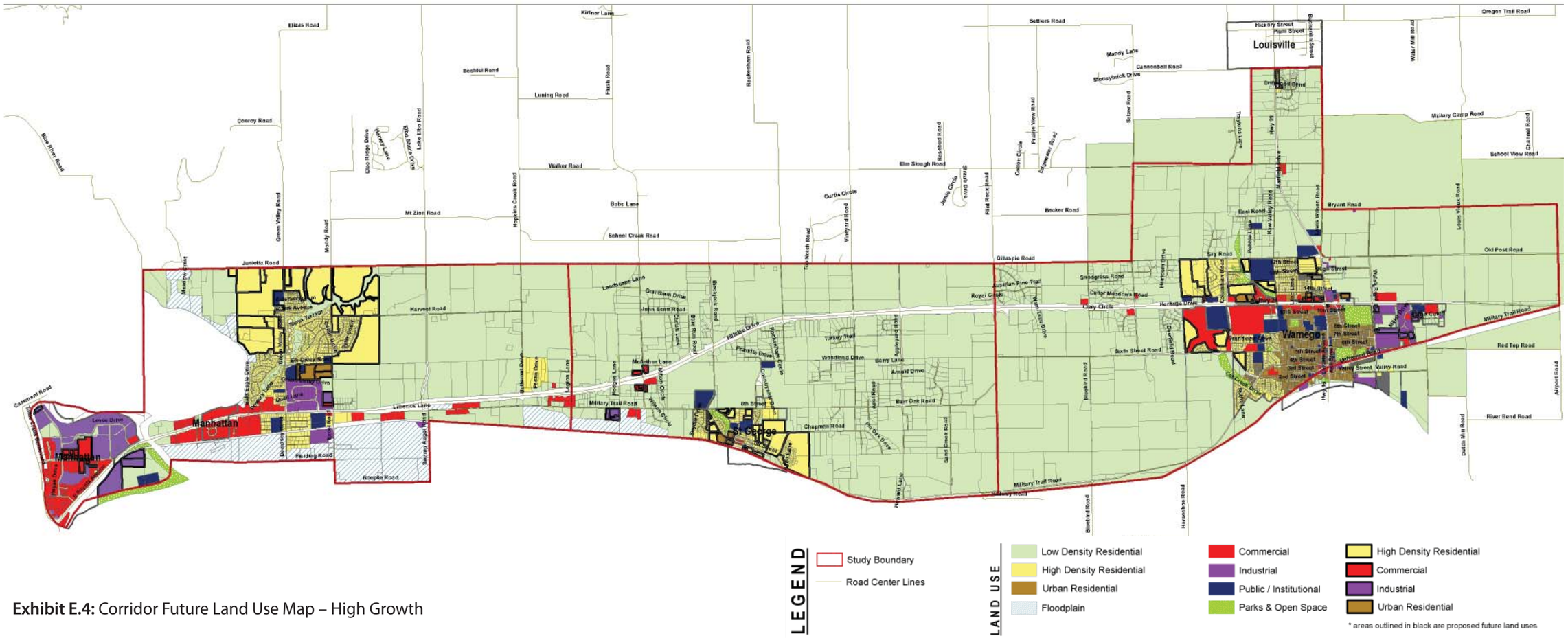


Exhibit E.4: Corridor Future Land Use Map – High Growth

Disclaimer: The Future Land Use maps are general in nature to guide development along the Corridor. The provision of necessary infrastructure within identified growth areas, combined with market conditions, will dictate the timing of development in a particular area.

RECOMMENDED CORRIDOR IMPROVEMENTS

	ROUTE SEGMENT / LOCATION	IMPROVEMENT	TIMING	TRIGGER	ESTIMATED COST*	NOTES	PLATE**
McCall Road	At Tuttle Creek Boulevard intersection	Add WB thru lane, NB left turn lane, and EB thru, left and right turn lanes for McCall / 4th Street Extension	5 to 10 years	Construct with McCall/ 4th St. Extension	$500,000		33
	Hayes to US-24	Widen from 3 to 5 lanes	< 5 years	Currently warranted	$4,300,000		34
	At US-24 intersection	Improve McCall alignment into US-24; Add 2nd EB left turn lane	< 5 years	Currently warranted	$1,600,000		34
US-24 - Tuttle Creek Blvd. to McCall	At Tuttle Creek Boulevard intersection	Add 2nd SB left turn lane	5 to 10 years	SB LT > 300 vph	$200,000		1
	Tuttle Creek Boulevard to McCall	1. Close 1st, 2nd, 4th, and 6th of the six median openings; add or lengthen left and right turn lanes on US-24 at 3rd and 5th median openings. Monitor 3rd opening for signal warrant.	< 5 years	Currently warranted	$400,000		1, 2, 3
		2. Add frontage road on South side between 1st and 3rd median openings.	< 5 years	Currently warranted	$375,000		1, 2
	At Enoch Lane Intersection	3. Improve Enoch alignment into US-24	< 5 years	Currently warranted	$700,000		2
US-24 - McCall to Green Valley Road	At McCall intersection	Lengthen WB right turn lane	< 5 years	Currently warranted	$150,000		3A
	At Levee Drive intersection	Realign road to treatment plant and proposed industrial park to intersect at the existing Levee Drive intersection; add turn lanes and possible signal; close existing intersection of treatment plant road; and moving railroad crossing to new road crossing.	10 to 15 years	Based on Traffic Impact Study at time of development of industrial park	$100,000		3A
	McCall to Green Valley Road	1. Close median opening 650' West of Hofman Lane	< 5 years	Currently warranted	$20,000		4A
		2. Add WB left turn lane at median opening 1200' west of Hofman Lane	< 5 years	Currently warranted	$150,000		4A
		3. Add EB and WB left turn lanes at Hofman Lane	< 5 years	Currently warranted	$300,000		4A
		4. Modify intersection median opening with Crown-C Circle and Sale Barn drive	< 5 years	Currently warranted	$750,000		5A
		5. Close median opening 575' west of Powers Lane / Scottie Lane	< 5 years	Currently warranted	$20,000		6A
		6. Correct Align Powers Lane and Scottie intersection offset	< 5 years	Currently warranted	$350,000		6A
		7. Close median opening 675' west of Green Valley Road	< 5 years	Currently warranted	$20,000		6A
		8. Extend north frontage road (Kearby to Frontage)	5 to 10 years	With development	$800,000		5A
		9. Extend south frontage road (Crown C to Dempsey)	5 to 10 years	With development	$1,800,000		5, 6
		10. Widen to six through lanes including wider bridges over Big Blue River (Green Valley to McCall)	10 to 20 years	ADT > 30,000 vpd	$7,000,000	Marlatt Extension would eliminate these needs	3B, 4B, 5B, 6B
		11. Construct an Extension of Marlatt Ave. from Casement Road over the Big Blue River and extending east to intersect US-24 at Lake Elbo Road, Hopkins Creek Road, or even Flush Road	10 to 20 years	US-24 ADT > 30,000 vpd	$50,000,000 to $60,000,000	The extension of Marlett Avenue would be an alternate to widening US-24 to six lanes	Appendix C
	At Green Valley Road intersection	1. Lengthen EB left turn lane; lengthen SB right turn lane; add WB right turn lane	< 5 years	Currently warranted	$400,000	Marlatt Extension would eliminate these needs	6A
		2. As alternate to longer EB left turn lane, add 2nd WB left turn lane and widen Green Valley Road from US-24 to Quail Lane.	< 5 years	Currently warranted	$400,000	Marlatt Extension would eliminate these needs	6C
		3. Construct and indirect LT intersection.	5 to 10 years	Currently warranted	$400,000		7
US-24 - Green Valley Road to Flush Road	Green Valley Road to Excel Road	Close two midblock median openings; convert Green Valley Parkway to right-in-right-out-left-in.	< 5 years	Currently warranted	$80,000		7
	Excel Road	Pave road and connect Excel Lane to Harvest Rd.	< 5 years	Currently warranted	$300,000		7
	At Excel Road intersection	1. Add turn lanes	10 to 15 years	>40 LT's; >40 RT's	$250,000		7
		2. Add traffic signal	10 to 15 years	Based on monitoring of signal warrants	$150,000		7
	Excel Road to Lake Elbo Road	1. Extend Blue Valley Drive to Lake Elbo as frontage road	10 to 15 years	With development	$2,500,000		7,8
		2. Extend Limerick Lane to Excel Road as frontage road	10 to 15 years	With development	$1,800,000		7, 8, 9
	At Lake Elbo Road / Military Trail	Add SB to WB right turn acceleration lane and NB to WB left turn acceleration lane	< 5 years	Currently warranted	$500,000		9
	At Marlatt Extension intersection (2)	Marlatt interchange	10 to 20 years	With Marlatt Extension	$20,000,000	Could be combined with Lake Elbo Road or Hopkins Creek Road or Flush Road	9
	Lake Elbo Road to Hodges Lane	Extend Walnut Drive / Vesper Circle as north frontage road	10 to 15 years	With development	$150,000		10
	At Legion Lane intersection	Add EB and WB left turn lanes	5 to 10 years	>40 LT's; >40 RT's	$300,000		11
	At Legion Lane and Military Trail Road	Improve intersection	< 5 years	Needed now	$500,000		
	At Plum Creek Circle / Hodges Lane	Add EB and WB left turn lanes	5 to 10 years	>40 LT's	$300,000	In conjunction with indirect left turn alternate at Flush Road	13A
	At Flush Road intersection	1. Add SB to WB right turn acceleration lane	< 5 years	Currently warranted	$300,000		13A
		2. Add length to EB to NB left turn lane	< 5 years	Currently warranted	$600,000		13A
		3. Construct an Indirect Left Turn alternative; traffic signal not recommended	5 to 10 years	When peak hour traffic signal warrant is met	$650,000		13C, 14C
		4. Construct interchange	15 to 20 years	ADT > 4,000 vpd on Flush Road	$12,000,000		13B, 14B

	ROUTE SEGMENT / LOCATION	IMPROVEMENT	TIMING	TRIGGERS	ESTIMATED COST*	NOTES	PLATE**
US-24 - Flush Road to Columbian	Flush Road to Blackjack Road	1. Adjust US-24 vertical profile to improve site distance.	< 5 years	Currently warranted	$2,000,000	Alternate to address limited WB sight distance	13D, 14D
		2. Enforcement of speeds on WB US-24	< 5 years	Currently warranted	N/A	Alternate to address limited WB sight distance	
		3. Extend north and south frontage roads	10 to 15 years	With development	$2,000,000		14, 15
	At Blackjack Road	Add right turn and left turn deceleration and acceleration lanes	5 to 10 years	EB / WB >40 LT's; >40 RT's; NB / SB >75 RT's	$600,000		15
	Blackjack Road to Columbian	Extend north and south frontage roads	10 to 15 years	With development	$5,000,000		15 - 25
	At Hodges Lane/ Plum Creek Cir.	Add EB and WB LT lanes	5 to 10 years	>40 LT's; >RT's	$300,000		13C
US-24 - Columbian to K-99	At Columbian Road intersection	1. Add traffic signal	< 5 years	Based on monitoring of signal warrants	$150,000		25
		2. Add EB right turn lane and SB left turn lane	< 5 years	Currently warranted	$300,000		25
	Commercial to Kaw Valley Road	Complete the 5-lane section	< 5 years	Currently warranted	$750,000		26
	At Kaw Valley Road intersection	1. Add traffic signal; move from Lilac	5 to 10 years	Based on monitoring of signal warrants	$150,000		26
		2. Widen north leg to add SB LT lane	< 5 years	Currently warranted	$200,000		26
		3. Extend sidewalk on east side down to US-24	< 5 years	Currently warranted	$40,000		26
	Kaw Valley Road to K-99	1. Complete the 5-lane section	< 5 years	Currently warranted	$1,800,000		26, 27
		2. Extend sidewalk on south side from Walnut Street to Kaw Valley Road	< 5 years	Currently warranted	$15,000		26
		3. Reconstruct signal as midblock pedestrian signal	< 5 years	Currently warranted	$75,000		26
US-24 - K-99 to Airport Road	At Walsh Road / Balderson Blvd intersection	Pave Walsh Road	5 to 10 years	With development	$75,000		28
	At Airport Road intersection	Widen US-24 to provide WB LT lane	5 to 10 years	>40 LT's	$150,000		32
K-99 - Cannonball Road to US-24	At Cannonball Road intersection	Widen K-99 to provide NB & SB LT lanes	5 to 10 years	>40 LT's	$300,000		40
	At Elm Slough Road intersection	Widen K-99 to provide NB & SB LT lanes	5 to 10 years	>40 LT's	$300,000		38
	At Say Road intersection	Widen K-99 to provide NB & SB LT lanes	5 to 10 years	>40 LT's	$300,000		36
	Say Road - Kaw Valley Road to Columbian Road	Pave road	< 5 years	Currently warranted	$160,000		36
Transportation System Enhancements	At Columbian Road	Construct Park & Ride facility	< 5 years	Currently warranted	$150,000		
	At Flush Road	Construct Park & Ride facility	< 5 years	Currently warranted	$150,000		
	Within Corridor	Construct WAM-SAG-MAN Trail	< 5 years	Currently warranted	N/A		Appendix C
	At McCall Road	Construct / provide bike lanes as part of intersection improvements	< 5 years	Currently warranted			
	Within Corridor	Install "Share the Road" signing	< 5 years	Currently warranted	$30,000		

* Cost estimates are based on 2009 construction costs and included for budgeting purposes; they do not include right-of-way, utility relocation, and engineering, as required.
** Plates are illustrations of the recommendations on displays at tonight's meeting; they will also be available on the website and in the Plan document.

Abbreviation Key:

WB – Westbound
EB – eastbound
SB – southbound
NB – northbound

LT – left turn
RT – right turn
VPD – vehicles per day
VPH – vehicles per hour

TRANSPORTATION ENGINEERING AND PLANNING

Using land use information, the consultant team developed a transportation demand model, which is a tool used to forecast traffic. It determines existing and future deficiencies in the transportation system, as well as a tool to evaluate the effectiveness of potential projects. To develop the model, the consultant team combined the existing and proposed land use with the physical features of the corridor, such as land configurations, speeds and traffic control measures. From the transportation demand model, the consultant team evaluated both near-team and long-term improvements to the corridor, based on existing and future traffic demands. These improvements are listed in Table E.C, and range from improved signalization timings to major infrastructure improvements, such as the Marlatt Extension.

INFRASTRUCTURE PLANNING

The infrastructure planning component of this Study played a critical role in the land use planning. With the US-24 corridor area's accelerated growth, several communities were faced with making upgrades to their water and wastewater treatment facilities to increase the capacity for both collection and distribution.

Throughout this process it was also important to understand the limitation of the existing, aging infrastructure within each community. In the case of water service, it is important to ensure that the distribution needs and the fire flow requirements are met per the uniform building codes for new residential and commercial development. Storm drainage has also become a major challenge as more agricultural land is being converted to alternative land uses, such as light industrial, commercial and residential development. This conversion from cultivated ground to paved parking lots increases the need for other downstream infrastructure upgrades.

The cost for these infrastructure upgrades always creates funding challenges for communities, and can be handled in a variety of ways ranging from planned capital improvement projects to developer incurred costs.

IMPLEMENTATION & REGULATORY REVIEW

The final task of this Study was to review the existing regulatory policies and powers relating to agencies within the US-24 corridor and to provide guidance to the impacted communities on the implementation of this US-24 Corridor Management Plan. The implementation section provides a detailed regulatory gap analysis for the four partner agencies. The implementation portion of the Plan also provides an outline of proposed changes for existing planning and zoning documents, as well as the community subdivision regulations to further coordinate the implementation of US-24 Corridor Management Plans. The implementation section provides the associated communities a tool box of implementation strategies, access management strategies, and well as funding mechanisms to assist in providing financial support for infrastructure improvements.

INTERLOCAL COOPERATION

The final product of this comprehensive Study of the US-24 corridor was the development of this US-24 Corridor Management Plan. To finalize the efforts of this Plan, each partner agency signed an interlocal cooperation agreement agreeing to work together to implement the US-24 Corridor Management Plan. With this process, these communities agree to work as a group in the creation of corridor-wide financing options for the mainline highway enhancements, city connectors, and local road projects within the corridor.

1 INTRODUCTION

NEED FOR A US-24 CORRIDOR MANAGEMENT PLAN

The U.S. Highway 24 (US-24) corridor from Manhattan to Wamego, Kansas, is an important lifeline to all communities throughout the Flint Hills region. This corridor is heavily influenced by commuter traffic to and from Manhattan, as members of the communities drive the corridor to work, shop and enjoy recreational / leisure activities. This important corridor has recently experienced significant development and population growth.

In 2005, the U.S. Congress released a Base Realignment and Closure (BRAC) Plan that had significant impacts on military communities throughout the nation. As a part of this strategy, several military bases were closed while others were expanded. Shortly after the BRAC Plan was released, it was announced that Ft. Riley would be the recipient of approximately 11,000 new and additional troops—including the return of Big Red One, which had been stationed in Germany since 1996. Based on a factor of 3-to-1 (whereby three family members would accompany one stationed soldier), it was estimated that approximately 30,000 people would be moving to the area. With this new inlux of troops and families, the entire region began to explode with new residential and commercial development. The area located along US-24, between Manhattan and Wamego, was significantly influenced by this growth. Exhibit 1.1 identifies the current growth surrounding the US-24 corridor in Pottawatomie County.

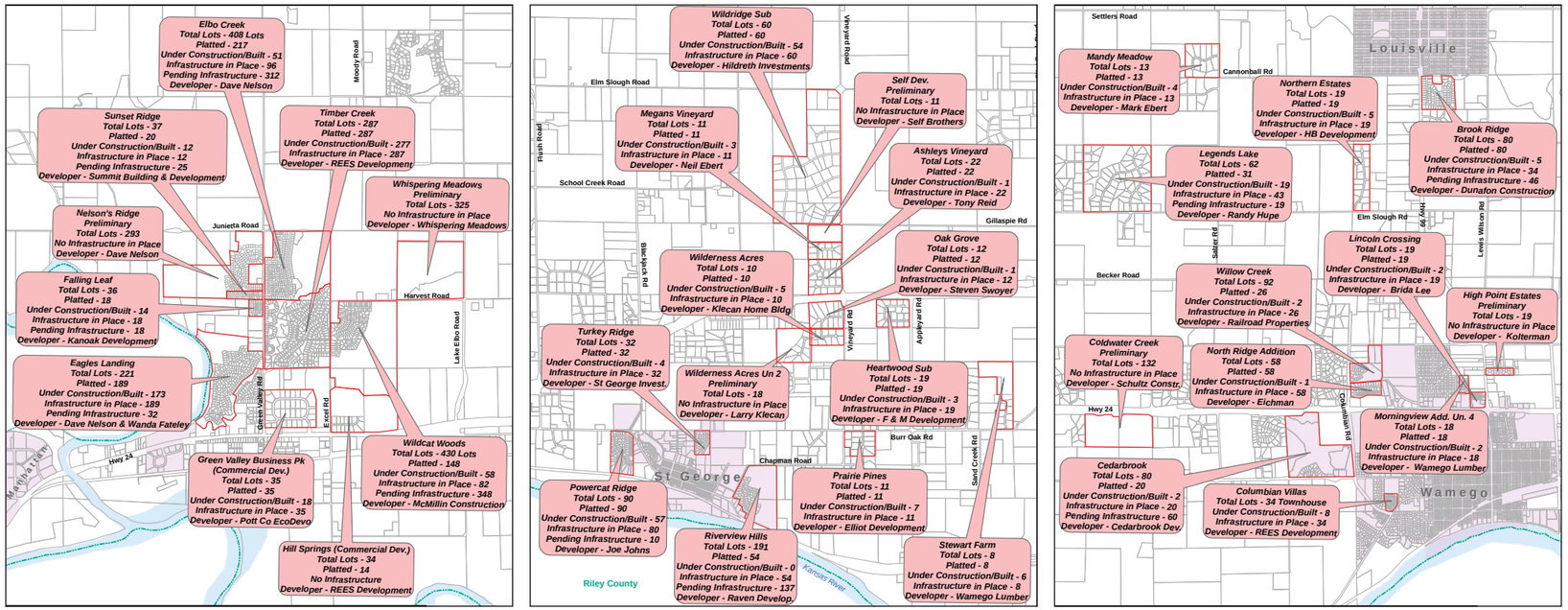
New subdivisions and businesses have developed in a pattern that has stretched the boundaries of several governing bodies. This growth is straining much of the available local infrastructure for water, sewer, and storm drainage. The county, for example, has allocated all of its available capacity for water and sewer services. US-24 and its intersecting roadways are also experiencing the stress of these new demands. These roadways have seen a steady increase in traffic growth in recent years and are at risk of developing congestion and safety issues. This growth may eventually lead to unsafe and inefficient traffic operations due to increased traffic volumes, inadequate driveway spacing, and sporadic location of new development.

These issues, in conjunction with increasing jurisdictional overlap, led area agencies to identify the need to coordinate with each other to develop a better understanding of the future needs and challenges surrounding the corridor. Agency officials agreed it would be beneficial to conduct a study and develop a coordinated plan that would assist the future decision-making process regarding developments along the US-24 corridor.

Leading this effort was Pottawatomie County, who, in coordination with Manhattan, St. George and Wamego, sought and was awarded funding through KDOT's Corridor Management Program to develop a US-24 Corridor Management Plan.

In May 2008, Pottawatomie County, along with its local partners of Manhattan, St. George and Wamego, selected HWS Consulting Group of Manhattan to develop the US-24 Corridor Study and produce the US-24 Corridor Management Plan. To provide expertise for this effort, HWS recruited the firms of George Butler Associates LLC of Lenexa, Kansas; Gould-Evans, LLC of Kansas City, Missouri; Rich Caplan and Associates of Prairie Village, Kansas; and the law firm of Stinson Morrison & Hecker, LLP of Kansas City, Missouri.

Exhibit 1.1: US-24 Corridor Development (as of January 2009)



Source: Pottawatomie County, GIS

CORRIDOR MANAGEMENT PLAN PURPOSE

The purpose of this US-24 Corridor Management Plan is to be a useful, coordinating tool that partner agencies would agree to consider and update as necessary. Its intent is to facilitate orderly growth throughout the US-24 corridor. The study process that led to this US-24 Corridor Management Plan took a comprehensive look at transportation issues, favorable land use configurations, local regulatory policies/ordinances, local infrastructure and general economic conditions within the study area. A Corridor Management Plan outlines a strategy for sustainable corridor development by:

- Following a process that seeks input from the public regarding their perceptions, issues, needs and vision for the corridor.
- Analyzing existing and future traffic conditions and recommending improvements that will help maintain/improve traffic safety and operations as the corridor further develops.
- Creating an "Access Management" plan that provides safe, reasonable access to adjacent development.
- Identifying favorable land use patterns that complement US-24 and benefit the community as a whole.
- Analyzing recent economic trends to determine what growth the local economy can reasonably expect in the coming years.
- Providing the associated communities a tool box of implementation strategies, access management strategies, as well as funding mechanisms to assist in providing financial support for infrastructure improvements.

KDOT'S CORRIDOR MANAGEMENT PROGRAM

Corridor Management Plans are one tool KDOT uses to deliver a safe and efficient highway system to the citizens of Kansas. Agencies that follow such Plans are eligible for KDOT Corridor Management funds to help finance (in part) construction of recommended improvements.

Corridor Management Plans:

- Create strategies for preserving highway investments by maximizing safe and efficient traffic movements and providing reasonable, safe access to adjacent development.
- Facilitate the preservation of existing infrastructure and help position communities for sustainable growth.
- Promote safe and efficient highway corridors with reasonable access to adjacent development.

Exhibit 1.2: US-24 Corridor Study Area

PROJECT DESCRIPTION

The US-24 Corridor Management Plan included a study area along 16 miles of US-24 from Manhattan Town Center Mall to Airport Road east of Wamego, reaching approximately a mile north of the corridor and stretching south to the Blue River. The US-24 Corridor Study limits also included McCall Road from Tuttle Creek Boulevard to East Poyntz Avenue, as well as three miles of Kansas Highway 99 (K-99), from US-24 to Cannonball Road located just south of Louisville.

The terrain of the US-24 corridor is relatively flat within the city limits of Manhattan through the Green Valley area and out to Lake Elbo Road. From Lake Elbo Road to the East, a rolling terrain is experienced throughout the remainder of the rural section of the US-24 corridor. Entering the westerly city limits of Wamego, the US-24 corridor returns to a flatter terrain. The major population centers along the corridor include eastern Manhattan, Blue Township, St. George and Wamego. The corridor is mostly rural, with some retail development along the US-24 corridor at Green Valley, Heritage Square, and within the urbanized sections of Manhattan and Wamego. Residential development has increased significantly along the US-24 corridor in areas behind the existing commercial developments.

The US-24 Corridor Study had six major components. See Exhibit 1.3 for an illustration of how each of the following components fit into the Study process.

Public Involvement – The public involvement function of creating the US-24 Corridor Management Plan was ongoing throughout the plan development process. The consultant team conducted numerous stakeholder interviews and a community questionnaire, developed a project website, worked with a citizens' advisory group and a technical steering committee. In addition, the consultant team conducted a multiple open-house meetings throughout various stages of the Study to gather community input. The public involvement effort was focused on providing updates and receiving feedback, as well as building community acceptance for the final US-24 Corridor Management Plan.

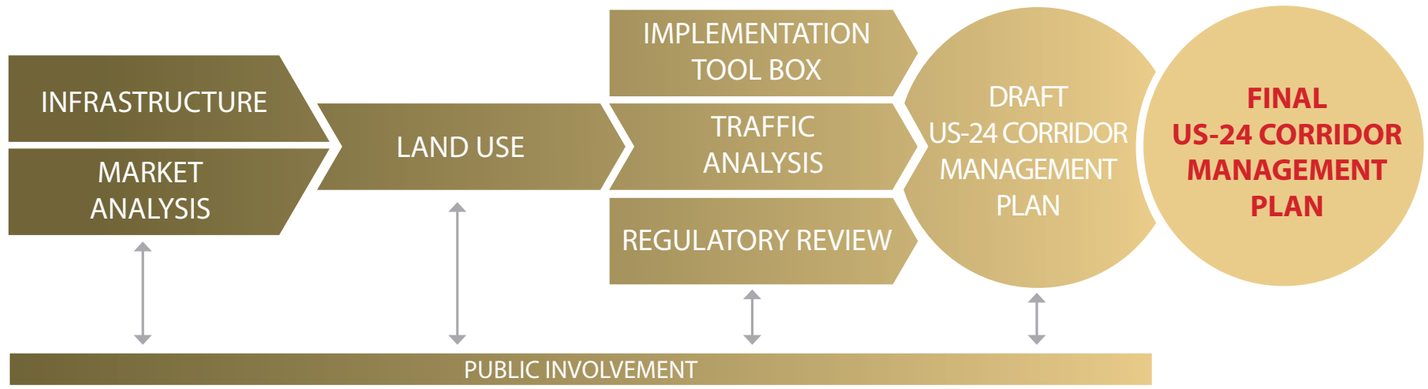


Exhibit 1.3: US-24 Corridor Study Process

Market Analysis – The consultant team completed a market analysis to determine the attractiveness of markets surrounding the corridor. This analysis provided assumptions on growth relating to the corridor over the next 20 years and separated that growth into several categories. These categories included residential, commercial, office and light industrial development. As a part of this analysis, moderate- and high-growth scenarios were provided. This analysis incorporated potential impacts of the relocation of the National Bio and Agro Defense Facility (NBAF) to Manhattan.

Land Use Planning – The land use planning component continued to build on information provided within the two growth scenarios completed as a part of the market analysis. The consultant team utilized these market demands and expanded the existing land use plans in coordination with the local community planners. As with the market analysis, the project team developed two separate land use plans—one for moderate growth and the other for high growth.

Transportation Engineering and Planning – The team developed the transportation engineering and planning portion of the US-24 Corridor Management Plan from existing data collected in the field, information obtained from local agencies, as well as historical information from KDOT. This information, along with the information developed in the land use planning portion, was refined and imported into a travel demand model utilizing software called VISUM. Based on information from the travel demand model, both near-team and long-term recommendations have been provided as a part of the US-24 Corridor Management Plan.

Infrastructure Planning – Infrastructure planning has been a major challenge facing these growing communities. There is a need and a desire to service the new developments with water and sanitary sewer services. As more agricultural land is developed into residential and commercial uses, additional storm drainage challenges will emerge. These infrastructure demands require funding mechanisms as well as long-term planning to expand water and wastewater treatment facilities and their collection or distribution systems. These costs and service challenges have a major impact on how the US-24 corridor develops, and the amount of tax base that is available as a result of this future growth.

Regulatory Issues – As the final task of the US-24 Corridor Study, the consultant team provided a gap analysis on the existing regulations, ordinances, technical memoranda, community plans and governmental policies to determine their effectiveness towards implementing the US-24 Corridor Management Plan. In addition, the consultant team provided recommendations for any identified regulatory gaps.

PARTNERS & INTERLOCAL AGREEMENTS

The final result of the above-referenced tasks resulted in the development and approval of the US-24 Corridor Management Plan. The five partner agencies have developed interlocal agreements that provide a commitment of cooperation in following the expectations and guidelines set forth in this Plan.

A brief description of the partner agencies and their roles follows.

Pottawatomie County – Pottawatomie County is the lead agency in the coordination and completion of the US-24 Corridor Study to develop the US-24 Corridor Management Plan. The study area includes three different communities that exist within Pottawatomie County. Pottawatomie County currently has a population of over 20,000 and US-24 is its primary highway. Pottawatomie County is one the most active and economically vibrant communities in Kansas. Pottawatomie County's primary objectives are to develop an understanding of how growth is and should be occurring along the US-24 corridor, as well as to find ways to preserve the integrity the US-24.

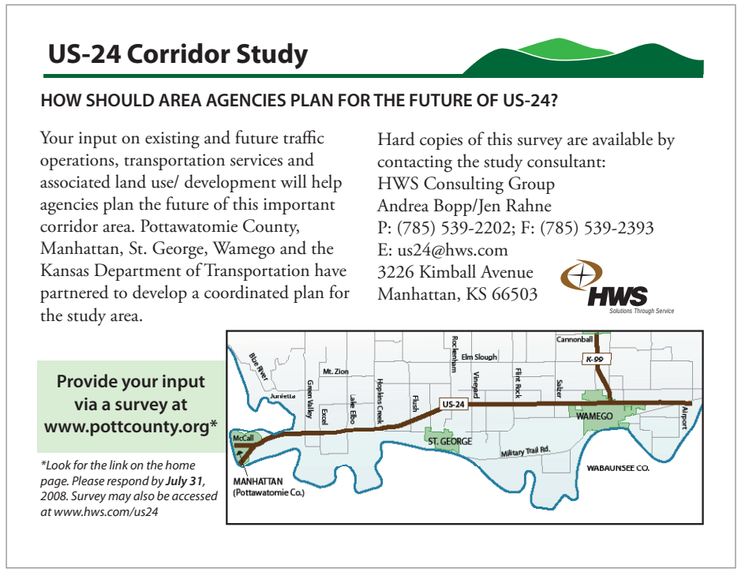
City of Manhattan – The City of Manhattan, commonly referred to as the Little Apple, lies on the west end of the US-24 study area. The limits that exists within Manhattan are comprised of mostly commercial and light industrial development areas located along McCall Road and the US-24 corridor from the Manhattan Town Center Mall to the Blue River Bridge. Manhattan's population exceeds 50,000. The Manhattan economy is heavily influenced by the presence of Kansas State University and Ft. Riley.

City of St. George – The City of St. George, with a population of approximately 250, lies within the center of the study area. This corridor and its future development have a major impact on the vision of growth set forth by the City and its governing body. St. George officials envision commercial development occurring along the US-24 corridor while maintaining the atmosphere of existing St. George in its current location.

City of Wamego – The City of Wamego is located within the east end of the US-24 Corridor Study, and has a population of approximately 4,000. The development that has occurred along the US-24 corridor within Wamego is predominately commercial. The Wamego Industrial Park is located at the very east end of the study area. Wamego is highly known for its Railroad Park, Columbian Theater and its Oz Museum. A large portion of the Wamego Community relies on the US-24 corridor for their daily commutes.

KDOT – The Kansas Department of Transportation is the owner, and the agency that is ultimately responsible for the integrity and safety, of the US-24 corridor. In addition to participating in the creation of the Plan, KDOT is the primary contributor of funding for the US-24 Corridor Management Plan and, potentially, for future construction projects related to the corridor.

2 PUBLIC INVOLVEMENT



US-24 Corridor Study

HOW SHOULD AREA AGENCIES PLAN FOR THE FUTURE OF US-24?

Your input on existing and future traffic operations, transportation services and associated land use/ development will help agencies plan the future of this important corridor area. Pottawatomie County, Manhattan, St. George, Wamego and the Kansas Department of Transportation have partnered to develop a coordinated plan for the study area.

Hard copies of this survey are available by contacting the study consultant:
HWS Consulting Group
Andrea Bopp/Jen Rahne
P: (785) 539-2202; F: (785) 539-2393
E: us24@hws.com
3226 Kimball Avenue
Manhattan, KS 66503

HWS Solutions Through Service

Provide your input via a survey at www.pottcounty.org*

*Look for the link on the home page. Please respond by July 31, 2008. Survey may also be accessed at www.hws.com/us24

Study kickoff postcard

PUBLIC INVOLVEMENT PURPOSE & PROCESS

The project partners identified early that public involvement would be a key component of the US-24 study process in order to develop a Corridor Management Plan that could be implemented, remain relevant and continue to be sustained. Public involvement activities coincided with technical activities and were designed to coordinate with technical milestones. This included data-gathering via a community questionnaire, partner agency meetings and personal contacts with stakeholders. Issues identification, visioning and alternative development / evaluation were conducted through meetings with a Citizens' Advisory Group, public openhouses, public officials' briefings and community group presentations. Tools that were used to reach and provide project information to the public included a direct-mail postcard mailing, fliers, leaflets, personal telephone calls, e-mail, media releases/interviews, a project website and variable message signs on US-24.

STUDY KICKOFF

At the beginning of the US-24 Corridor Study, Pottawatomie County sent postcards to nearly 3,700 corridor property owners to inform them of the Study, invite them to the website and solicit participation in a web-based questionnaire. Area media were also sent press releases announcing the Study and the questionnaire.

COMMUNITY QUESTIONNAIRE

The purpose of the corridor questionnaire was to capture the range of perceptions and issues related to the US-24 corridor as a part of the data-gathering phase of the Study. A total of 356 questionnaires were completed. For the most part people feel at least somewhat safe and are satisfied with the time it takes to travel on the corridor (Graph 2.G). In general the public perception is that US-24 is a good highway; however there are concerns about the operations at intersections (See Graph 2.F).

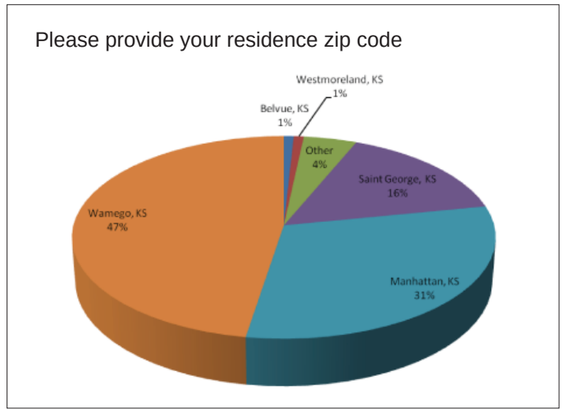
Most frequently cited intersections and their issues were:

- Flush Road (limited visibility, need longer acceleration lanes)
- Columbian Road (limited visibility; needs signal)
- Green Valley Road (could use a right turn arrow/is too congested)
- McCall Road (needs a longer right turn lane)
- Heritage Square (signal timing)
- Kaw Valley Road (needs signal)
- Lake Elbo Road (difficult to enter in a.m.)
- Excel Road (difficult to enter in a.m.)
- Dick Edwards / Aero-Mod Intersection (needs merge lanes)

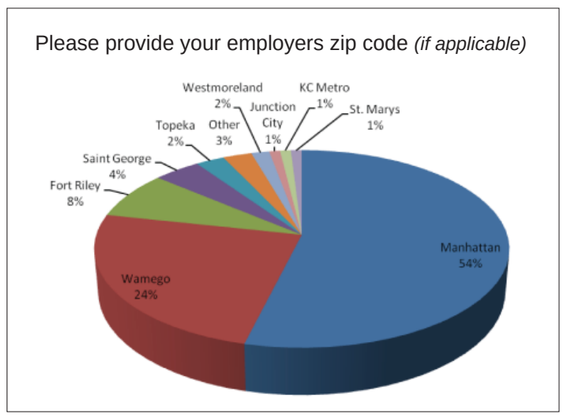
When asked for specific transportation improvements, these were the top suggestions:

- Lower / enforce speed limits
- Acceleration / deceleration lanes
- More turn lanes
- Bike / pedestrian trail
- Flush Road signal
- Columbian signal

When asked about desired land use, respondents most frequently stated retail opportunities, and grocery stores. There is also a desire for land to be devoted to bicycle accommodations and recreational opportunities. When asked what is most important to participants about the physical development of the corridor, the top answers were: safety; keeping it green; aesthetics; bike trail; and commercial development.



Graph 2.A: Resident Zip Code



Graph2.B: Employer Zip Code

GRAPH 2.C
Study Area Context

Please Check All That Apply:	Response
I live within the corridor study area.	89.7%
I work within the corridor study area.	49.1%
I own property within the corridor study area.	71.8%
Members of my residence attend school within the study area.	30.0%

GRAPH 2.D
Corridor Travel Frequency

How Often Do You Travel Along The Us-24 Corridor Between East Manhattan And Wamego?	Response
Several times a day	46.6%
Almost daily	25.9%
Almost weekly	17.0%
1-3 times/month	6.8%
Less than monthly	3.7%

GRAPH 2.E
Purpose of Travel

What Is The Primary Purpose Of Your Travel Along Us-24?	Response
Work	64.6%
School	1.1%
Shopping	15.1%
Recreation/Leisure	11.1%
Other	8.0%

GRAPH 2.F
Transportation Issues Rating

How Would You Rate Each Of The Following On A Scale Of 1 To 5 With 1 Being "Unacceptable/Very Poor" and 5 Being "Acceptable/Very Good"?	1	2	3	4	5
Congestion on US-24	3.5% (12)	16.1% (56)	35.2% (122)	29.7% (103)	15.6% (54)
Intersection operations along US-24	15.5% (54)	33.0% (115)	27.6% (96)	19.3% (67)	4.6% (16)
Condition/maintenance of roadways	3.7% (13)	6.0% (21)	18.7% (65)	42.5% (148)	29.0% (101)
Travel times between places you go (on US-24)	2.0% (7)	5.7% (20)	26.4% (92)	41.4% (144)	24.4% (85)
Condition/availability/connectivity of trails	19.8% (62)	16.3% (51)	34.2% (107)	20.1% (63)	9.6% (30)

GRAPH 2.G
How Safe Do You Feel?

How Safe Do You Feel Driving the US-24 Corridor Between Manhattan and Wamego?	Response
Very safe	25.9%
Somewhat safe	36.6%
Neutral	14.4%
Somewhat unsafe	19.6%
Very unsafe	3.5%

GRAPH 2.H
Traffic Flow

Traffic Moves Smoothly and Efficiiently and Efficiently Through the US-24 Corridor	Response
Agree	28.6%
Somewhat agree	39.4%
Neutral	11.1%
Somewhat disagree	18.6%
Strongly disagree	2.3%

GRAPH 2.I
Land Use Issues Rating

How Would You Rate Each of the Following on a Scale of 1 to 5 with 1 Being "Unacceptable/Very Poor" and 5 Being "Acceptable/Very Good"?	1	2	3	4	5
Presence of business and services	5.4% (18)	13.6% (45)	44.3% (147)	29.2% (97)	7.5% (25)
Accessibility of businesses and services	4.8% (16)	19.5% (65)	39.9% (133)	28.2% (94)	7.5% (25)
Accessibility of housing from the highway	5.5% (18)	10.6% (35)	40.4% (133)	33.4% (110)	10.0% (33)
Availability/accessibility of other transportation modes	52.0% (172)	25.4% (84)	13.0% (43)	6.0% (20)	3.6% (12)

GRAPH 2.J
Land Use Representation

What Land Uses are Adequately Represented Along the US-24 Corridor?	Response
Residential (subdivision, farmhouses, ect.)	87.4%
Retail commercial (convenience stores, restaurants, clothing stores, ect.)	60.0%
Services commercial (offices - insurance, dentist, banks, ect.)	52.3%
Industrial (warehousing, distribution, manufacturing, ect.)	54.8%
Agricultural (famland, CO-OP, implement dealer, ect.)	79.0%
Parks and recreation (parkland, trails, public water features, ect.)	9.4%

GRAPH 2.K
Future Land Use

What Uses Would You Like to See More of on the Corridor, In the Future?	Response
Residential	20.1%
Retail commercial	49.7%
Services commercial	26.9%
Industrial	7.5%
Agricultural	21.4%
Parks and recreation	68.4%

STAKEHOLDER OUTREACH

The US-24 consultant team connected with 48 US-24 corridor stakeholders over the course of 21 face-to-face and 14 telephone interviews during June and July 2008. The stakeholders were identified through discussions with the Partner Steering Committee and also through the interviews themselves. The purpose of this effort was to gain an understanding of the range of issues facing the future of the US-24 corridor and make personal contact with the corridor stakeholders.

Stakeholders interviewed were from the below organizations and interests. Many of the stakeholders interviewed hold several interests in the corridor, whether they are economic, commercial, private, personal, educational, etc.

- Area Residents and Property Owners
- Blue Township Fire Department
- Caterpillar Work Tools Inc.
- City of Manhattan
- City of St. George
- City of Wamego
- Eagles Landing South Homeowners Association
- Eastside & Westside Markets
- Edward Jones Investments
- Farmers State Bank
- Flint Hills Christian School
- Flint Hills RV Center
- Highland Community College
- Horticultural Services
- Kansas State Bank
- Kansas State University
- Kaw Valley State Bank
- KDOT
- Manhattan Chamber of Commerce
- Manhattan-Ogden USD 383
- McCullough Development
- Midwest Concrete Material
- Pottawatomie County
- Rock Creek USD 323
- Rural Water District 1
- Manhattan Livestock Commission
- Schultz Construction
- Shilling Construction Co., Inc.
- St. George Fire Department
- St. George Post Master
- Stewart Funeral Home
- Timber Creek I Subdivision
- Wamego Chamber of Commerce
- Wamego Public Schools (USD 320)
- WamSagMan Trail Organization
- Westar Energy

The team also made several unsuccessful attempts to reach representatives from other organizations

Overall, US-24 is regarded by stakeholders as an excellent highway and an asset to the communities it serves. Stakeholders understand that the US-24 corridor is at risk, however: it has reached its own figurative crossroads due to rapid development and increasing transportation demands. Most stakeholders observed that there is a gap in coordination and decision-making related to managing the corridor. Most also agreed with the need to develop and implement a coordinated plan that will keep traffic moving safely and smoothly, preserve and optimize existing assets, and be prepared for the many opportunities the corridor appears to hold for the future.

Themes that emerged through stakeholder outreach:

- City vs. County roles / responsibilities
- City-specific needs / desires
- Rural-specific needs / desires
- Rapid development
- How is this Plan different from previous?
- Inadequate infrastructure
- Reactive mode by government agencies
- Developer frustrations
- "Leapfrog" development
- Imminent opportunities
- Lost opportunities
- Increasing traffic
- Intersection operations
  - Sight distance
  - Turn lanes
  - Acceleration / deceleration lanes
  - Signals
  - Driveways
- Need for frontage roads
- Bicycle / pedestrian accommodations
- Mass transit in light of rising fuel costs
- Storm drainage
- High speeds
- Aesthetics/green space

CITIZENS' ADVISORY GROUP

Eighteen citizens, reflecting the broad range of corridor interests, contributed their time throughout the study process to learn about the US-24 corridor and provide input and advice to the partners and team. Each of the four nearly day-long Advisory Group workshops included: education on study elements; presentations on study progress; questions and answers; and small group exercises designed to garner in-depth input. The Advisory Group's input helped the consultant team identify issues and alternatives. The group also contributed significantly to the development of the plan elements and ultimate recommendations relating to the market analysis, land use, and transportation/ traffic recommendations.

PUBLIC MEETINGS

Three sets of open-house public meetings were held in each corridor city (East Manhattan, St. George, Wamego) at project milestones. As of the draft report phase, 280 members of the public attended these meetings, where they discussed the project with consultant team members, viewed displays and handouts, and were invited to leave comments.

PUBLIC OFFICIALS BRIEFINGS

Members of the consultant team presented on several occasions at meetings of the partner-agency elected bodies. Prior to each open-house, public officials were also invited to attend informal briefings with the consultant team.

Variable Message Board

Citizens' Advisory Group

Public Meeting

3 MARKET ANALYSIS

MARKET ANALYSIS PURPOSE

The market analysis was one of the first critical steps in completing the US-24 Corridor Management Plan because it was important for the consultant team to determine the market's attractiveness to developers and businesses. The consultant team was able to use the analytical information determined from the market analysis to make land use assumptions. The consultant team then used these assumptions to provide recommendations for near-term and long-term improvements to the US-24 corridor.

In order to provide the recommendations, the consultant team first sought to understand what the US-24 corridor's strengths and weaknesses were and what opportunities could evolve. For this market analysis, the consultant team prepared two alternative demand scenarios based on various economic and market factors that may influence the US-24 corridor's development. The market factors included items such as the Fort Riley expansion, KSU growth initiatives, development sustainability programs, state economic development incentives, financing mechanisms, and other items that affect the current and future markets.

A market analysis of the US-24 corridor in Pottawatomie County was performed and is presented in four sections:

1. Pottawatomie County's Economy within the Region
2. Pottawatomie County's Key Economic Indicators
3. US-24 Corridor within Pottawatomie County
4. Projected Residential and Commercial Market Demand Through 2030.

In summary, by 2030, the US-24 corridor is projected to require from 2,450 to 3,400 new housing units; and require a total of 1.5 million to over 1.8 million square feet of new commercial and light industrial development.

POTTAWATOMIE COUNTY'S ECONOMY WITHIN THE REGION

In order to assess the US-24 corridor's development potential, it is necessary to evaluate Pottawatomie County's economy within the context of the region – the six counties located closest to Pottawatomie County. Over the last several decades, the county has been characterized by the following:

Above-Average Population Growth – Pottawatomie County's population grew from 11,755 persons in 1970, to 19,396 persons in 2007. The County's growth rate exceeded neighboring counties and the statewide average. The median age of Pottawatomie County residents is 35.9 years, slightly higher than the statewide median age. However, the percentage of county residents aged 65 years and older is lower than the region's and statewide percentages (See Table 3.A – "Population Trends 1970-2007" and Table 3.B – "Comparative Age Characteristics").

Steady Employment Growth – The County has added an average of 150 jobs annually since 1980. The County added more workers than Jackson and Geary Counties but fewer than Riley County (See Table 3.C – "Employment Trend 1980-2006").

Above-Average Wages – Annual wages in the County are above average for the region. County wages are higher than three adjacent counties but lower than the statewide, Shawnee and Jackson Counties annual wage averages (See Table 3.D – "Average Annual Wage 2005").

TABLE 3.A
Population Trends 1970-2007

County	1970	2007	1970-2007 Change
Pottawatomie	11,755	19,396	65%
Jackson	10,342	13,420	30%
Kansas	2,224,907	2,775,997	25%
Riley	56,788	69,083	22%
Shawnee	155,322	173,476	12%
Wabaunsee	6,397	6,885	8%
Geary	28,111	25,150	-11%

Source: U.S. Census.

TABLE 3.B
Comparative Age Characteristics 2000

County	Median Age	65+ years % of Total Population
Riley	23.9	7.3%
Geary	29.1	11.9%
State of Kansas	35.2	14.%
Pottawatomie	35.9	13.8%
Shawnee	37.1	14.3%
Jackson	37.4	14.8%
Wabaunsee	39.5	18.5%

Source: U.S. Census.

TABLE 3.C
Employment Trend 1980-2006

County	1980	1990	2006	1980-2006	1980-2006
Pottawatomie	2,571	3,045	7,594	195%	5,023
Jackson	1,330	1,440	3,424	157%	2,094
Riley	10,869	15,342	22,168	104%	11,299
Wabaunsee	586	607	809	38%	223
Geary	5,242	6,491	7,121	36%	1,879
Kansas (000's)	1,312	1,483	1,770	35%	458
Shawnee	58,278	71,409	75,299	29%	17,021

Source: U.S. Census.

TABLE 3.D
Average Annual Wage 2005

County	Average Wage
Jackson	$36,128
Shawnee	$34,547
State of Kansas	$33,385
Pottawatomie	$26,384
Geary	$25,844
Riley	$24,878
Wabaunsee	$22,245

Source: Kansas Department of Labor.

Strong Retail Sales – The retail pull factor measures retail sales per capita. The retail pull factor is a measure of strength of the retail trade in an area based on a comparison of local spending to the State of Kansas. A pull factor above 1.00 represents an influx of outside sales and a pull factor under 1.00 indicates that a city or county is not capturing its fair share of local retail expenditures. Pottawatomie County has the highest retail pull factor in the region. Four of six counties in the region have increased their retail pull since 1990, including Pottawatomie (See Table 3.E – "Retail Pull Factors Pottawatomie County vs. Nearby Counties"). The high pull factor in Pottawatomie County can be attributed to a relatively low population base and the strong retail presence that exists within the county's portion of the City of Manhattan.

POTTAWATOMIE COUNTY'S KEY ECONOMIC INDICATORS

Parts of Pottawatomie County have become less rural in character reflected by the amount of new housing, decline in agriculture and changes in business patterns.

Significant Amount of New Housing Construction – The County more than doubled the number of housing units from 1960 to 2007. The County experienced a record level for new housing of 1,720 units built during the 1970's. The County has added more than 1,124 housing units since 2000 (See Table 3.F – "Total Housing Units 1970-2007"). Over 80 percent of the county's housing units are single family detached homes.

TABLE 3.E
Retail Pull Factors Pottawatomie County vs. Nearby Counties

County	1990 Pull Factor	2007 Pull Factor	1990-2007 Trend
Geary	0.7	1.14	63%
Riley	0.59	0.86	46%
Wabaunsee	0.25	0.3	20%
Pottawatomie	1.37	1.52	11%
Jackson	0.57	0.56	-2%
Shawnee	1.31	1.11	-15%

Source: Kansas Department of Revenue.

Declining Agriculture Base – Since 1990, the number of farms in the County declined by 3.4 percent, a net loss of 30 farms; the number of acres harvested declined by 11.3 percent (See Table 3.G – "Pottawatomie County Agricultural Trends 1990-2005").

Increasing Business Activity – The County added 62 businesses since 1998, a net increase of 12.6 percent. This represents a net increase of nine manufacturers, however the total number of retail businesses declined by 16.8 percent. This decline in retail businesses reflects the dominance and impact of large, big box stores.

US-24 CORRIDOR WITHIN POTTAWATOMIE COUNTY

The US-24 corridor has been the economic engine of Pottawatomie County during the last three decades.

Corridor Center of County Housing Development – Three out of every four (75 percent) of the housing units built in the County since 1970 have been in the vicinity of the US-24 corridor (See Table 3.H – "New Housing Units Pottawatomie County 2000-2007" and Table 3.I – "New Housing Units by Area of County 2000 through May 2008"). As a result of this residential construction, the corridor's share of the county's population has increased from 43.7 percent in 1970, to 55 percent in 2000 (See Table 3.J – "Corridor Population Share of County 1970-2000").

TABLE 3.F
Total Housing Units 1970 - 2007

Year	Total Units	Net Increase
1970	3,591	N / A
1980	5,162	1,571
1990	6,051	889
2000	7,311	1,260
2007	8,263	952
Annual Average Units Built 1970-2007		**126**

Source: Pottawatomie County; City of Wamego: U.S. Census.

TABLE 3.G
Pottawatomie County Agricultural Trends 1990-2005

Year	Farm Acreage 1990-2005	Number of Farms
1990	157,650	870
1995	147,800	810
2000	152,300	790
2005	139,800	840
Percent Change 1990-2005	**-11.30%**	**-3.40%**

Source: Kansas Farm Bureau.

TABLE 3.H
New Housing Units Pottawatomie County 2000-2007

Years	US-24 Corridor	Balance of County	County Total	Corridor % of County
1970-1979	1,310	261	1,571	83%
1980-1989	570	319	889	64%
1990-1999	901	359	1,260	72%
2000-2007	724	228	952	76%
Total 1970-2007	**3,505**	**1,167**	**4,672**	75%

Source: Pottawatomie County; City of Wamego: U.S. Census.

TABLE 3.I
New Housing Units by Area of County 2000 thru May 2008

Area of County	Total	% of Total	Annual Average
West Corridor	425	43%	51
Central Corridor	150	15%	18
East Corridor	38	4%	5
City of Wamego	125	13%	15
US-24 Corridor Total Units	738	75%	89
Balance of County	250	25%	30
Total County Units Built Since 2000	**988**	**100%**	**119**

Note: West corridor does not include permits issued by the City of Manhattan and central corridor does not include City of St. George

Source: Pottawatomie County; City of Wamego.

TABLE 3.J
Corridor Population Share of County 1970-2000

Year	Corridor Population	Balance of County	Total	Corridor % of Total
1970	5,140	6,615	11,755	43.70%
1980	7,677	7,109	14,786	51.90%
1990	8,529	7,599	16,128	52.90%
2000	10,013	8,196	18,209	55.00%
Net Change	4,873	1,581	6,454	11.30%
Percent Change 1970-2000	**95%**	**24%**	**55%**	**N / A**

Source: U.S. Census.

TABLE 3.K Residential Lots Available Along US-24 Corridor 2008				
	West Corridor	Central Corridor	East Corridor	Total
Total Residential Subdivisions	6	10	10	26
Total Residential Lots	2,037	501	554	3,092
Platted Lots	946	364	318	1,628
Built/Under Construction	544	104	37	685
Platted Un-built	402	260	281	943
Platted Lots Without Infrastructure	340	165	6	511
Lots with Infrastructure in Place	149	211	157	517
% of Current Potential Lots	29%	41%	30%	100%

Source: Pottawatomie County.

TABLE 3.L Corridor Employment 2006 by Community		
City	Employment	% of County
Wamego	2,869	38%
St. George	59	1%
Manhattan	2,484	33%
Sub-Total US-24 Corridor	5,412	71%
Balance of County	2,182	29%
TOTAL Employment	**7,594**	**100%**

Source: U.S. Bureau of Economic Analysis.

TABLE 3.M 2006 Pottawatomie County Employment by Industry					
Industry	West Corridor	Central Corridor	East Corridor	TOTAL	% of Total
Retail Trade	750	10	350	1,110	20.5%
Wholesale Trade	700	-	275	975	18.0%
Manufacturing	500	-	400	900	16.6%
Construction	200	-	275	475	8.8%
Accommodations, Restaurants	175	-	150	325	6.0%
Finance, Real Estate, Insurance	100	-	100	200	3.7%
All Other Services (a)	71	49	1,319	1,439	26.5%
TOTAL	**2,496**	**59**	**2,869**	**5,424**	**100%**
(a) Includes agriculture, utilities, education, health care, government, etc.					

Source: U.S. Bureau of Economic Analysis.

Availability of Residential Subdivisions and Lots – Residential growth is projected to continue along the US-24 corridor. There are 26 approved residential subdivisions along the US-24 corridor with more than 517 lots available with infrastructure. Twenty nine percent (29%) of the lots are in the western portion, and 30% are in the eastern portion of the US-24 corridor. (See Table 3.K – "Residential Lots Available Along the US-24 Corridor 2008.")

Diversified Business Growth – The US-24 corridor had an increase of 24 businesses since 1998, an increase of 11 percent. A net six food-and-lodging businesses were added, but the total number of other retail businesses remained unchanged. The US-24 corridor's retail, food and lodging grew more than the county's rate of growth. Professional, technical and manufacturing businesses along the US-24 corridor also grew in the past decade.

TABLE 3.N Retail Pull Factors 2007	
Area	Pull Factor
Wamego	0.78
St. George	0.12
Manhattan	1.28
Pottawatomie County	1.52

Source: Kansas Department of Revenue.

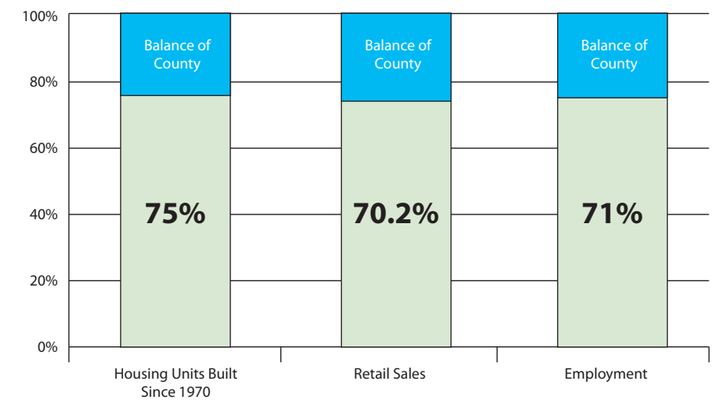
TABLE 3.O Retail Sales Tax Collections 2005		
	Amount	Percent of Total
Wamego	$2,033,726	12.50%
Manhattan	$9,364,404	57.50%
St. George	$34,615	0.20%
Balance of County	$4,854,872	29.80%
TOTAL	**$16,287,617**	**100%**

Source: Kansas Department of Revenue.

Existing and Projected Employment Opportunities – There are currently three active business parks along the US-24 corridor, with 23 businesses and approximately 400 employees. The US-24 corridor contains approximately 71 percent of Pottawatomie County's jobs. Wamego has the highest number of jobs within Pottawatomie County, followed by that portion of Manhattan within the county (See Table 3.L – "Corridor Employment 2006 by Community"). Retail and wholesale trade followed by manufacturing are the largest employment sectors along the US-24 corridor (See Table 3.M – "2006 Pottawatomie County Employment by Industry").

The County's Retail Sales Engine – The western portion of the US-24 corridor, including Manhattan, has the strongest retail pull along the corridor (See Table 3.N – "Retail Pull Factors 2007"). The US-24 corridor generated $16.3 million in sales tax collections in 2005. Businesses along the US-24 corridor generated 70.2 percent of the County's retail sales in 2005. The Manhattan portion of the US-24 corridor generates more than half of Pottawatomie County's retail sales (See Table 3.O – "Retail Sales Tax Collections 2005" and Graph 3.A – "US-24 Corridor Market Share of Pottawatomie County").

GRAPH 3.A
US-24 Corridor Market Share of Pottawatomie County



PROJECTED RESIDENTIAL AND COMMERCIAL MARKET DEMAND ANALYSIS

This market analysis projects the amount of expected new residential and commercial development to be absorbed among the US-24 corridor's three distinct communities through 2030. The additional land use was used in the travel demand model to estimate future traffic growth within the US-24 study area. It is important to note that this market analysis incorporates the projected impact of the new National Bio and Agro-Defense Facility (NBAF) on Pottawatomie County and the US-24 corridor.

NBAF is a $650 million federal laboratory project to be built at Kansas State University. The biocontainment facility will conduct research to protect the U.S. food supply and agriculture economy. Construction will start in 2010. The facility is expected to be opened in 2015 and employ approximately 300 research-related positions.

In order to assist with evaluating the impact of NBAF on the regional economy and especially the US-24 corridor, an analysis was performed of two other major federal research facilities. The two federally funded research facilities most commonly compared to the proposed NBAF facility are:

- NERI – The National Renewable Energy Laboratory in Golden, Colorado; and
- FERMILAB – The National Accelerator Laboratory in Batavia, Illinois.

Both of these facilities are located in suburban counties with larger populations and employment bases than Riley, Geary and Pottawatomie Counties combined.

Each of these two federal research facilities has over 1,000 jobs. Each facility has generated approximately 700 to 800 similar non-federal research jobs (as reported by the NAICS code 5417) within their counties above and beyond the jobs at the federal research facility. These jobs do not include the employment multiplier effect (approximately 2.6 for research jobs) applied to each county's labor market generated by the research facility. A detailed profile of these two facilities setting and employment are presented in the following Table 3.P – "Profile of Comparable Federal Research Facilities."

These employment impacts were considered in the market analysis of the US-24 corridor. The projected increase in residential, retail, office and industrial development along the US-24 corridor is most directly driven by the number of new jobs that will be generated in the future in the region and within the county. In projecting the market demand for the US-24 corridor, it is important to note that since 1985:

- Pottawatomie County added 7,725 jobs; and
- Pottawatomie County captured 43 percent of the combined Pottawatomie and Riley Counties new employment.

Therefore, with the addition of NBAF to the area's economy, as well as the continuing growth of Fort Riley, total job growth for Pottawatomie County is projected to add approximately 7,130 to 8,600 new jobs by 2030 (See Table 3.Q and Graph 3.B – "Pottawatomie County Employment Trends 1985-2030"). More than 90 percent of these new jobs are anticipated to be located within the US-24 corridor.

TABLE 3.P
Profile of Comparable Federal Research Facilities Employment

	NERI	FERMILAB
Location County	Jefferson County, CO	Kane County, IL
County Population 2007	529,384	501,021
Year Facility Opened	1960's	1967
County Employment 2006	182,550	187,981
Total Facility Employment	1,300	1,960
Non-Facility Research Employment	700	800

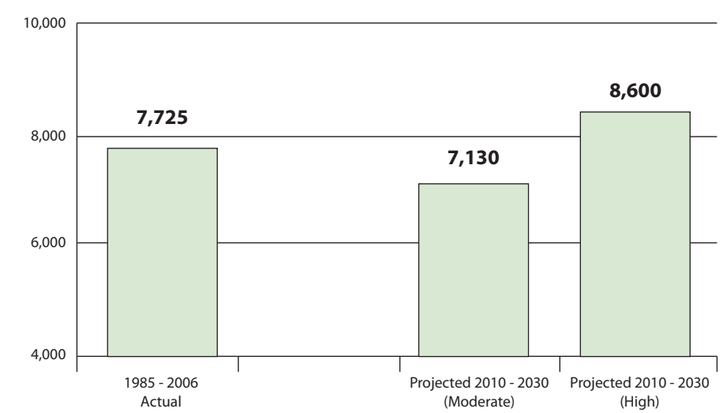
Source: U.S Bureau of Economic Analysis; NERI; FERMILAB; U.S. Census.

TABLE 3.Q
Pottawatomie County Employment Trends 1985-2030

Period	Net Job Increase
1985 - 2006 Actual	7,725
Projected 2010-2030	
Moderate Scenario	7,130
High Scenario	8,600

Source: Kansas Department of Labor; RICHARD CAPLAN & ASSOCIATES.

GRAPH 3.B
Pottawatomie County Employment Trends 1985-2030



In summary, NBAF represents a net impact of an additional 1,250 to 1,735 jobs by 2030 to Riley/Pottawatomie Counties' total employment. Pottawatomie County's direct and indirect employment impact from NBAF is projected to be approximately 530 to 750 additional jobs by 2030. A majority of the new jobs generated by the NBAF facility will be located in light industrial buildings, including the business research parks along US-24. In total, the county is projected to add 7,130 to 8,600 new jobs during this period. These employment projections assume that Manhattan, KSU, Pottawatomie and Riley County officials will aggressively seek to maximize the area's visibility, economic development momentum, and regional marketing to successfully build on the NBAF decision to locate in Manhattan / KSU.

New housing development along the US-24 corridor will continue to be a major economic engine for Pottawatomie County in the next two decades. Altogether, the US-24 corridor is projected to absorb from 2,450 (moderate-growth scenario) to 3,400 new housing units (high-growth scenario) by 2030 (See Table 3.R –"Projected Housing Units 2010-2030" and Graph 3.C –"US-24 Corridor Housing Unit Projections by Growth Scenario").

Approximately 60 percent of this growth is projected to occur in the west US-24 corridor. Furthermore, approximately 85 to 90 percent of the US-24 corridor's total housing demand is projected to be single-family housing units. These housing projections will result in an added population that is consistent with Pottawatomie County's population projection of 14,242 by 2020 included in the County's 2005 *Highway 24 Corridor Plan* document.

The projected moderate- and high-commercial-demand growth scenarios specifically for retail, office and light-industrial development are presented in Table 3.S – "Projected Market Demand by Square Feet." Commercial sites in the City of Manhattan, and Pottawatomie and Riley Counties are projected to continue to attract the majority of regional retail demand for the two counties. Approximately two-thirds of this growth is projected to occur in the west US-24 corridor; approximately 22 to 23 percent of the US-24 corridor's commercial demand is projected to occur in the east US-24 corridor; and the 11 to 12 percent balance is projected to occur in the central US-24 corridor around St. George (See Graph 3.D – "Total Commercial Square Footage of Demand by Growth Scenario 2010-2030).

TABLE 3.R
Projected Housing Units 2010-2030

Land Use				
Moderate Scenario	West Corridor	Central Corridor	East Corridor	Total Units
Single Family Units	1,250	450	425	2,125
Multi-Family Units	175	50	100	325
TOTAL	**1,425**	**500**	**525**	**2,450**
High Scenario	West Corridor	Central Corridor	East Corridor	Total Units
Single Family Units	1,850	575	575	3,000
Multi-Family Units	225	75	100	400
TOTAL	**2,075**	**650**	**675**	**3,400**
Percent of Corridor Residential Growth	58%-61%	19%-20%	20%-21%	100%

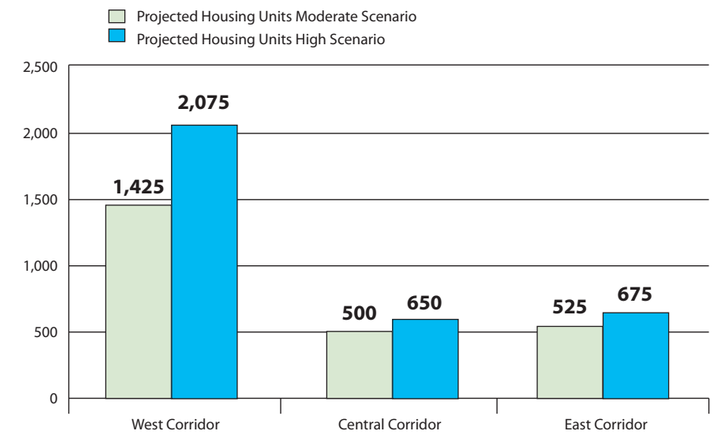
Source: RICHARD CAPLAN & ASSOCIATES.

TABLE 3.S
Projected Market Demand by Square Feet 2010-2030

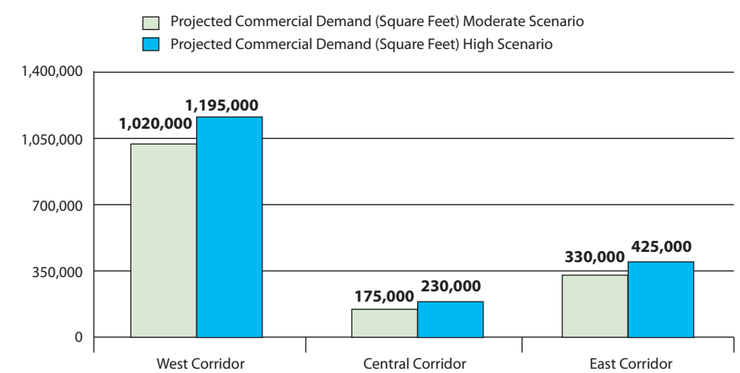
Land Use				
Moderate Scenario	West Corridor	Central Corridor	Central Corridor	Total Square Feet
Retail	255,000	60,000	60,000	375,000
Office	90,000	25,000	20,000	135,000
Light Industrial	675,000	90,000	250,000	1,015,000
Total Square Feet	**1,020,000**	**175,000**	**330,000**	**1,525,000**
High Scenario	West Corridor	Central Corridor	Central Corridor	Total Square Feet
Retail	310,000	75,000	75,000	460,000
Office	135,000	30,000	25,000	190,000
Light Industrial	750,000	125,000	325,000	1,200,000
Total Square Feet	**1,195,000**	**230,000**	**425,000**	**1,850,000**
Percent of Corridor Commercial Growth	65-67%	11-12%	22-23%	100%

Source: RICHARD CAPLAN & ASSOCIATES.

GRAPH 3.C
US-24 Corridor Housing Units Projections by Growth Scenario 2010-2030



GRAPH 3.D
Total Commercial Square Footage of Demand by Growth Scenario 2010-2030



4 LAND USE AND PLANNING

PURPOSE OF LAND USE AND PLANNING

The purpose of the land use component of the US-24 Corridor Management Plan is to encourage a coordinated, planned development pattern across the US-24 corridor to maintain the future efficiency of US-24 as a transportation artery. The US-24 Corridor Management Plan and the analysis of development, growth and existing transportation activities will provide a necessary foundation to plan for the future use of the corridor, as well as policies that efficiently use planning resources for future growth. The land use section of the Corridor Management Plan focuses on current and proposed development patterns within the US-24 corridor.

The current land use patterns provide the development framework within which future development will occur. Understanding current land uses and patterns of use will provide the basis for the future land use plan that is prepared. The future land use plan will guide future development, uses and locations, and identify growth and development opportunities that are supported by future improvements to the roadway network.

The future land use recommendations within this chapter represent the future patterns of development based on the current development environment and practices, as well as input received from the public and feedback from the City and County officials. As the development environment and practices change, the US-24 Corridor Management Plan should be reviewed and amended as necessary. The adaptability of the US-24 Corridor Management Plan will encourage continuity of future development and minimize future transportation impacts to the cities of Manhattan, St. George and Wamego as well as Pottawatomie County as they continue to grow and develop along the US-24 corridor.

Planning Overview

Planning can be defined as the process of identifying the future physical arrangement of uses and conditions of a place or location. Land use planning is the term used for the public policies that seek to order and regulate the use of land. Land use planning is intended to look at a long-range future of 20-plus years, and in doing so tries to anticipate development factors such as location, safety, aesthetics, traffic and access as well as other factors when focusing on the pattern of an area and how development should occur.

In the United States, land use and planning have a long history and have gone through many changes to become the practice it is today. Planning got its start at the 1893 Columbian Exposition in Chicago which began the City Beautiful Movement as well as the profession of Urban Planning. Planning continued to grow with the adoption of the first metropolitan plan; Daniel Burnham's Plan of Chicago in 1909. While there are many important events in the history and evolution of planning, one of the most important issues in the planning profession is that of legality. The legality of planning and zoning was first answered by the United States Supreme Court in 1926, when they upheld the constitutionality of zoning.

In Kansas, chapter 12, article 7 of the State Statutes, based on the Standard City Planning Enabling Act of 1924, outlines the provisions for planning and zoning of cities and municipalities. Article12-741 of the Statutes is the enabling legislation for the enactment of planning and zoning laws and regulations by cities and counties and dictates that planning shall be; "for the protection of the public health, safety and welfare …" In 1992 the State of Kansas updated section 12-741, but the general intent and powers remain the same.

In Kansas, state statutes give cities and counties the right to determine the proper use of land within their jurisdiction. Chapter 12, Article 741 of the Kansas State Statutes outlines the provisions for planning and zoning of cities and municipalities, which has seven foundational elements that include:

(1): The general location, extent, relationship, and use of land for agriculture, residence, business, industry, recreation, education, public buildings and other community facilities, major utilities (both public and private), and any other use deemed necessary;
(2): Population and building intensity standards and restrictions and their application;
(3): Public facilities including transportation facilities of all types (both public and private) which relate to the transportation of persons or goods;
(4): Capital improvement programming based on a determination of its urgency;
(5): The funding of long range financial plans for public facilities and capital improvements based on a projection of the public and private fiscal activity of the planning area;
(6): Utilization and conservation of natural resources;
(7): Any other element deemed necessary to the proper development / redevelopment of the planning area.

Land use itself is only one element of a plan for a community or a specific area of that community, like a corridor, neighborhood or downtown. As applied to the US- 24 Corridor Management Plan, the land use element is a general guide for city and county officials, which is often implemented through codes and ordinances that are regulatory, such as the zoning ordinance and subdivision regulations of the community or county.

Land Use Overview

Land use is the arrangement of different uses on land within a specific area. The general location, extent and relationship of land uses in a planning area defines the area's built environment. There are many reasons to undertake land use planning. The original intent of land use and zoning was to separate noxious, more intense uses, from cleaner, less intense uses. For example, the placement of a steel mill—a heavy industrial manufacturing facility--next to a home would not be appropriate because of the noise, odor and safety hazards that accompany a manufacturing facility. There are many issues, including timeliness, specificity, designations and governance, that influence land use patterns that are appropriate for a community, county or specific area.

The **timeliness** of land use is always an important issue to address. This is especially true in this US-24 Corridor Management Plan. Whereas zoning defines the immediate development regulations for a parcel of property, land use serves as a guide to what uses should occur in specific places as development occurs over time. The land use designation does not necessarily mean that it is appropriate to develop that land now. Instead, land use designations are useful for the future when other issues have been addressed, such as access and the provision of infrastructure, and it is appropriate for some general use to be defined by the plan.

Land uses are, and should be, less **specific** in their definition because of the uncertainty of future development. Land uses should describe the types of land uses that are appropriate for an area because of the qualities of the land, provision of infrastructure and accessibility. Uses are generally defined in broad categories, such as industrial or residential. However, land uses may sometimes be defined more specifically, such as light industrial or medium-density residential, which typically refers to a unit-per-acre count or density of development.

Historically there have been eight general **designations** or **categories** of land uses: agriculture, residence, business, industry, recreation, education, public buildings and other community facilities. These designations

represent the broad definition of land uses typically found in planning. As one might expect, an agriculture land use is commonly used for farmsteads, farming and other agricultural uses. Similarly, residential land uses are for all types of residential development, ranging from large lot estate homes to high-density residential lots and multi-family homes. These categories are intended to be broad and cover a range of uses that may be considered allowable in a development area. The specific uses are defined when zoning is applied to a parcel of land.

The **governance** of land uses falls with the governing body within which the property lies. While the implementation of this Corridor Management Plan will fall to five entities: Pottawatomie County, the City of Manhattan, the City of St. George, the City of Wamego and KDOT, the land use decisions will be governed by the local jurisdictions. KDOT will not have authority to make land use decisions but should be consulted so that land use decisions and roadway improvements are coordinated. Similarly, the local jurisdictions should be consulted regarding roadway improvements and land use decisions, and development, can be coordinated to complement one another. Because each of these jurisdictions falls within the US-24 study area, and US-24 is a State Highway, it is necessary for cooperation among all of these local governments and KDOT.

According to the State of Kansas Revised Statutes (Chapter 12-747), it is the planning commission who adopts and amends a land use plan. The planning commissions of Manhattan, St. George, Wamego and Pottawatomie County shall each formally adopt the US-24 Corridor Management Plan. After the respective planning commission adopts the US-24 Corridor Management Plan, the governing body, city council, city commission or county commission, also must approve of the US-24 Corridor Management Plan in order for it to be effective. In general after the US-24 Corridor Management Plan is officially endorsed and effective, the planning commission must review or reconsider it at least once a year. During these reviews the planning commission may propose amendments, extensions or additions to the US-24 Corridor Management Plan. The US-24 Corridor Management Plan would be subject to an annual review by the local jurisdictions. However, based on the Interlocal Cooperation Agreement, KDOT should be consulted when changes to the land use plans are contemplated, to ensure continuity with the US-24 Corridor Management Plan. Similar, to the local review, the Interlocal Cooperation Agreement outlines a process by which the US-24 Corridor Management Plan be reviewed every two years or as requested by the plan partners.

Zoning Overview

While land use deals with the arrangement of uses across an area of land and is used as a guide for future decisions, zoning deals with the specific arrangement of development on a specific piece of land. A zoning map is officially adopted by a governing body. It depicts the zoning category assigned to each parcel of land and is governed by zoning ordinance. While land use suggests the general location, extent and relationship of land within the planning area, zoning regulates the types of uses allowed and is very specific in setting the number of dwelling uses, density, amount of open space, required parking, setback guidelines and lot lines, among other regulations. Table 4.A below compares land use to zoning.

TABLE 4.A

Land Use	Zoning
Advisory / Planning Commission Recommendation	Legislative / Governing Body Decision (Law)
Future Conditions	Immediate Existing Rights
Addresses general location – extent and relationship (land Use categories)	Addresses classes/ types of buildings and land uses within zoning districts
Allows for different general categories such as agricultural, residential, business, industry, recreation, education, public buildings and others	Officially regulates density, number of dwelling units, lot coverage, setbacks, buffer requirements and others

While land use within a plan may describe a "residential" land use as either low density, or high density or urban, zoning takes this classification one step further and regulates each lot and what uses may be allowed there. For example, land recommended to be used for high density residential development may be in a zoning category of "high density apartment district". The zoning for this district may be classified as R-3 where permitted uses are residential and child care facilities. The height limit may be 37 feet and the zoning typically prescribes the minimum building envelope in which development can take place.

Land use and zoning as prescribed by the State Statutes of Kansas will have an effect on how the corridor is developed. It is the intent of the land use component of the US-24 Corridor Management Plan to guide future development patterns and decisions within the US-24 corridor based on these statute requirements. How the statute and land use pertain to the US-24 corridor is described in the remainder of this chapter.

LAND USE CLASSIFICATIONS

To produce the existing and future land use maps for the US-24 Corridor Management Plan, each municipality's land use categories varied, which made it challenging to construct a single land use map for the corridor. After studying each municipality's land use categories and combining similar land uses, generalized land use categories were created that will be used for existing and future land use definitions. The generalized land use categories defined below and their densities are meant to be used for planning purposes.

Commercial – Commercial land uses include retail sales, professional services and offices. Most of the commercial land uses in the corridor are adjacent to the US-24 corridor, and represent a growth pattern extending from the commercial uses located within the communities themselves. This is most evident east of Manhattan and west of Wamego as the commercial uses have stretched along the US-24 corridor.

Urban Residential – Urban residential land uses include land for development of higher density residential. A combination of housing types comprise this category and include: apartments, town-houses, duplexes and higher density single-family residential. Urban residential uses occur within Manhattan and Wamego in their central core, especially near the commercial centers, providing an urban/pedestrian development pattern. The development densities within this land use category are typically between six units-per-acre (single family) up to 16-plus units for town-houses and apartment development.

High Density Residential – High density residential land uses include the land devoted for single-family home development. This land use category allows a range of one unit per two acres, up to six units-per-acre densities. This land use category is representative of the housing development that is currently taking place north of the US-24 corridor east of Manhattan along Green Valley Road, as well as on the edges of Wamego. (The High Density Residential classification is the same as the Medium / High Density Residential for the Generalized Existing Land Use and the Combined Future Land Use Maps, as shown on Exhibits 4.2 and 4.6 respectively.)

Low Density Residential – Low density residential land uses allow for large-lot residential development where municipal services may not be available or necessary. The intent of this category is to retain the natural character and rural environment of the County. This land use category allows large-lot development with one unit per two-plus acres or lower density. This land use type is characteristic of the US-24 corridor between the communities and, as the development moves away from the US-24 corridor, north and south, the density becomes less.

Agriculture – The agriculture district land uses allow for large-lot residential development where municipal services may not be available or necessary. Similar to the Low Density Residential classification the intent of this category is to retain the prairie character and rural environment of the County. This land use category allows large-lot development with1 unit per 4+ acres or lower density. This land use type is characteristic of the US-24 corridor between the communities and as the development moves farther away from the US-24 corridor, north and south, in to the less easily accessible portions of the county.

Public / Institutional – Public / Institutional land uses include those lands dedicated to a variety of institutional and public uses. These uses include government offices and facilities, churches, schools, libraries, hospitals, and service organizations. Churches, schools and libraries are often permitted within residential land use categories as well. A majority of the public / institutional land uses are found within the three communities. However, some uses are found within Pottawattamie County along the US-24 corridor.

Industrial – Industrial land uses allow both light and heavy industrial uses. Light industrial uses are generally associated with warehousing and distribution facilities but can include light or smaller manufacturing uses. Heavy industrial uses include large manufacturing or production facilities. These typically include uses with potential nuisance characteristics, noise and/or odor, which influence their locations and relationships to surrounding uses. Industrial land uses are often located away from less intense uses or, at a minimum, are buffered by physical or aesthetic means.

Parks and Open Space – Parks and open space land uses include land dedicated to public and private parks, open space and recreational facilities. Parks are often encouraged to be adjacent to residential, commercial and institutional land uses. Parks, open space and recreational uses can be acceptable within floodplains. Within the US-24 corridor most of the park, open space and recreational uses are within each of the communities and adjacent to residential development and the Blue River River.

Floodplain – Floodplains are lands adjacent to water bodies that can experience occasional or periodic flooding. Development occurring within a floodplain is obviously more susceptible to flooding. However, development occurs in these areas for several reasons:

- Rivers have historically acted as a key economic factor for towns;
- Railroads often locate along rivers;
- Flat land is easier and cheaper to develop.

Although there are positive reasons for developing along rivers, little to no development should be encouraged within floodplains to protect natural areas as well as reduce the damage to development and property that would occur during floods. These areas can be developed by utilizing low impact development strategies or only allowing low impact uses (i.e. parks and open spaces or agriculture) on these lands. (The Low Density Residential classification is the same as the Agricultural / Low Density Residential for the Generalized Existing Land Use and the Combined Future Land Use Maps, as shown on Exhibits 4.1 and 4.2 respectively.) These areas are often sublet to the rural emergency management agency and the divisions of water resources of the Kansas Department of Agriculture.

US-24 CORRIDOR LAND USE

As a result of this planning effort, a future land use plan has been prepared as one component of the US-24 Corridor Management Plan. The intent of the land use plan is to provide guidance for growth and coordinated development in areas that can be supported by future transportation improvements. Implementation of the US-24 Corridor Management Plan is important, and all of the involved jurisdictions must work cooperatively to ensure the intended future for this corridor becomes a reality. Pottawatomie County, the local cities and KDOT will sign an interlocal agreement in which they will agree to cooperatively implement the Corridor Management Plan and coordinate the implementation tools discussed in Chapter 7, when they are appropriate in a given situation.

The existing and future land use information represents land use information gathered from the cities of Manhattan and Wamego as well as Pottawatomie County. The land use maps, existing and future, were created by combining the land use categories from the City of Manhattan, City of Wamego and Pottawatomie County. Existing plans utilized for this Study include: "US Highway 24 Corridor Plan 2002-2020", prepared by Pottawatomie County and amended in 2006, "City of Wamego, Kansas Comprehensive Community Plan, 2007 edition" and "Manhattan Urban Area Comprehensive Plan, 2003." There are no existing land use plans for the City of St. George. Table 4.B represents the methodology used to define the land use categories that were applied to the corridor. The table shows which land use categories were used from each of the disparate land use plans for the US-24 Corridor Management Plan. The land use categories defined for the US-24 Corridor Management Plan generally align, with the exceptions listed below, with those prepared for the "Flint Hills Regional Growth Plan" prepared in 2007, as a joint project between the cities of Junction City, Manhattan, Wamego, Riley County, Geary County and Pottawatomie Counties.

- Urban Residential – created for residential within the communities of Manhattan and Wamego for areas with greater than 6 units per acre.
- Floodplain – designates those areas that are prone to flooding and within which development should be discouraged.

TABLE 4.B
Generalized Existing / Combined Land Use

Plan/ Study Name	Highway-24 Corridor Generalized Existing Land Use Plan, October 2008	Highway 24 Corridor Development Plan Manhattan-Wamego	City of Wamego, Kansas Comprehensive Community Plan, 2007 edition	Manhattan Urban Area Comprehensive Plan, April 2003	Pottawatomie County Land Use Plan
LAND USES	**Agricultural/Rural Residential**	*Ag Business Development Land*	*Agricultural & Undeveloped*	*Agricultural*	-
	Vacant/Undeveloped	*Development Land*		*Vacant*	-
	Commercial	*Commercial Highway Commercial Neighborhood Planned Commercial Development Land*	*Service Commercial Retail Commercial Mixed Use*	*General Commercial*	*Highway Commercial*
	Industrial	*Industrial*	*Heavy Industrial Light Industrial*	*Light Industrial*	-
	Manufactured Housing	*Mobile Home Park*	*Manufactured Housing*	-	-
	Parks & REC	*Open Space*	*Parks & Recreation*	-	-
	Public/Semi-public	*Institutional Overlay*	*Public/Governmental Institutional Utilities & Communications*	*Public Utilities*	-
	Medium-High Density Residential	*Med-High Density Residential*	*Single Family Residential*	*Low-Medium Density Residential*	-
	Urban Residential	-	*Two Family Residential Multi-family Residential Single Family Residential*	-	-
	Floodplain	*Flood*	-	*Flood hazard Area*	-

US-24 GENERALIZED EXISTING LAND USE (ELU)

There is a variety of different land uses currently along the US-24 corridor, as shown in Exhibit 4.1: Generalized Existing Land Use Map. The most abundant land uses along and adjacent to the US-24 corridor are agricultural / low density residential and vacant / undeveloped land uses. Development in the form of suburban residential, commercial and industrial primarily occurs in the East US-24 Corridor around the City of Wamego and in the West US-24 Corridor adjacent to the City of Manhattan. Subsequently, the current land use pattern for the US-24 corridor is a result of development growth from Wamego and Manhattan that is taking advantage of the accessibility of the area that is facilitated by the US-24 corridor.

West US-24 Corridor - ELU

The West US-24 Corridor is influenced by Manhattan's growth and is primarily a mix of industrial and commercial that is supported by suburban residential land uses north of the US-24 corridor. The portion of the West US-24 Corridor that is within the Manhattan city limits is all industrial and commercial development along McCall Road and the US-24 corridor west of the Blue River. Within Pottawatomie County, along the corridor, a significant amount of commercial, industrial and residential land is developed between the Kansas River and Excel Road to the west. A primarily agricultural / low density residential land use pattern is present East of Excel Road, to the section boundary at Legion Lane, adjacent to the US-24 corridor and off the US-24 corridor. The exception to this is the area east of the Blue River north of the US-24 corridor where a significant amount of medium-high density residential development continues to develop. The floodplain encroaches into the US-24 study area south of Old Military Trail Road, between Hopkins Creek Road and extending past Flush Road in the east end of the West Corridor area.

Center US-24 Corridor - ELU

The Center US-24 Corridor is largely influenced by City of St. George growth and development with a large amount of residential development occurring within its city limits. This portion of the US-24 study area is dominated by agricultural / low density residential and vacant / undeveloped land with exception of the development within the City of St. George. This residential development is primarily medium-high density residential use, some Public / Semi-public uses, a new school, and a park. There is also single commercial development at the southeast corner of US-24 and Flush Road.

East US-24 Corridor - ELU

The East Corridor land use pattern is defined by the City of Wamego and its growth. The remaining portion of the US-24 corridor west of Wamego and west of Salzer Road consists of mostly agricultural / low density residential and vacant / undeveloped land. The East US-24 Corridor has a higher density development pattern, particularly within the City of Wamego, and includes a variety of land uses, such as commercial areas along the US-24 corridor and urban residential areas, suburban residential and public / semi-public uses spread throughout Wamego. There is also new industrial (Wamego Industrial Park), Parks and Open Space developing on the east edge of the city within the US-24 corridor study area. North of the US-24 corridor along the K-99 corridor is predominantly residential uses, with medium-high density residential uses near Wamego and Louisville and Agricultural / Low Density Residential uses in between the communities.

US-24 COMBINED FUTURE LAND USES (CFLU)

The individual future lands use plans for Manhattan, Wamego and Pottawatomie County were combined into one document and used as a basis for the preparation of the future land use defined in the US-24 Corridor Management Plan. The Combined Future Land Use Map, Exhibit 4.2, discussed in this section represents the proposed land use recommendations of the communities and county under their currently adopted land use plans. A new land use plan for the US-24 corridor was defined through this planning process in the context of those adopted land use plans.

The US-24 Corridor Management Plan combined future land use categories are the same as the existing land use categories and incorporate a category known as development land. Development land is defined as those areas within the US-24 corridor that are appropriate for development, but the type of development has not been identified. While the development land category makes up a significant portion of the land in the Center and East sub-areas, the land use component of the US-24 Corridor Management Plan further defined the appropriate type of development for those locations. In addition to the development land designation, the Combined Future Land Use Map, Exhibit 4.2, indicates medium-high residential land uses to fill much of the land between the cities. It is anticipated that growth will continue as the cities of Wamego, St. George and Manhattan expand their growth areas along the US-24, K-99 and McCall Road corridors.

West US-24 Corridor – CFLU

The future land uses in the West Corridor are influenced by the City of Manhattan's future growth area. Existing land uses remain in their existing locations and growth and infill is encouraged for agricultural lands. Future land uses show expansion of existing industrial development and infill of commercial development east to Hopkins Creek Road. Medium-high density residential growth is proposed to continue to develop to the north of the US-24 corridor and east of the Blue River throughout this section of the US-24 corridor.

Center US-24 Corridor - CFLU

The future land uses in the Center US-24 Corridor are primarily influenced by development within the city of St. George and its future growth area. Medium-high density residential is proposed to occur within and outside of the city limits, which will provide more dense residential development along this section of the US-24 corridor. Large commercial sites on the north and south side of the US-24 corridor, between Flush and Blackjack roads are proposed to take advantage of the exposure to the US-24 corridor. A large area of agricultural / low density residential is anticipated to remain north of Military Trail Road to the east of St. George and extend into the East US-24 Corridor.

East US-24 Corridor - CFLU

Future land use patterns in the East US-24 Corridor are influenced by City of Wamego's future growth areas. Expanded suburban residential occurs north, west and southwest of the existing city limits. Industrial growth would continue to occur on the eastern edge of Wamego along the US-24 corridor within their industrial park. Commercial, residential and public / institutional growth would continue along the K-99 corridor to the north with primarily residential uses around Louisville and to the east along the US-24 corridor.

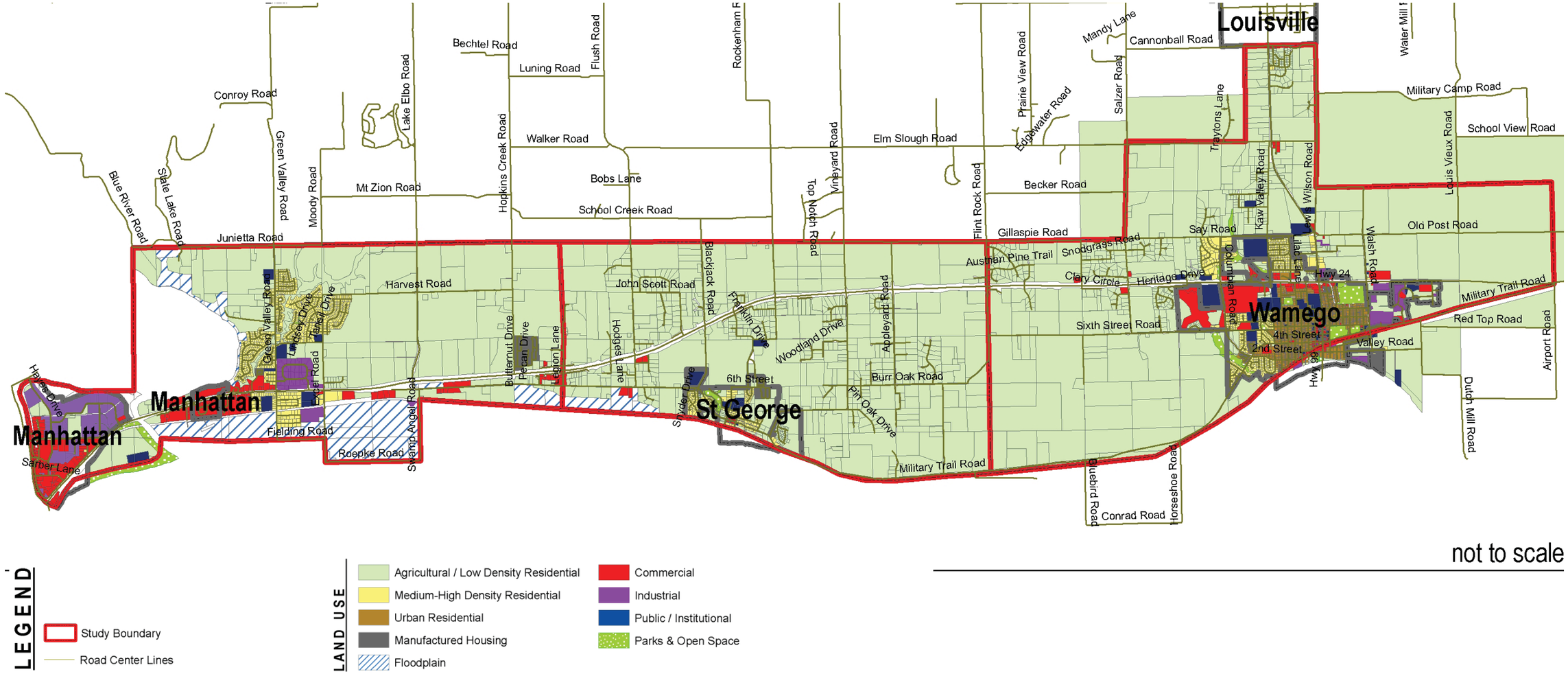


Exhibit 4.1: Generalized Existing Land Use Map

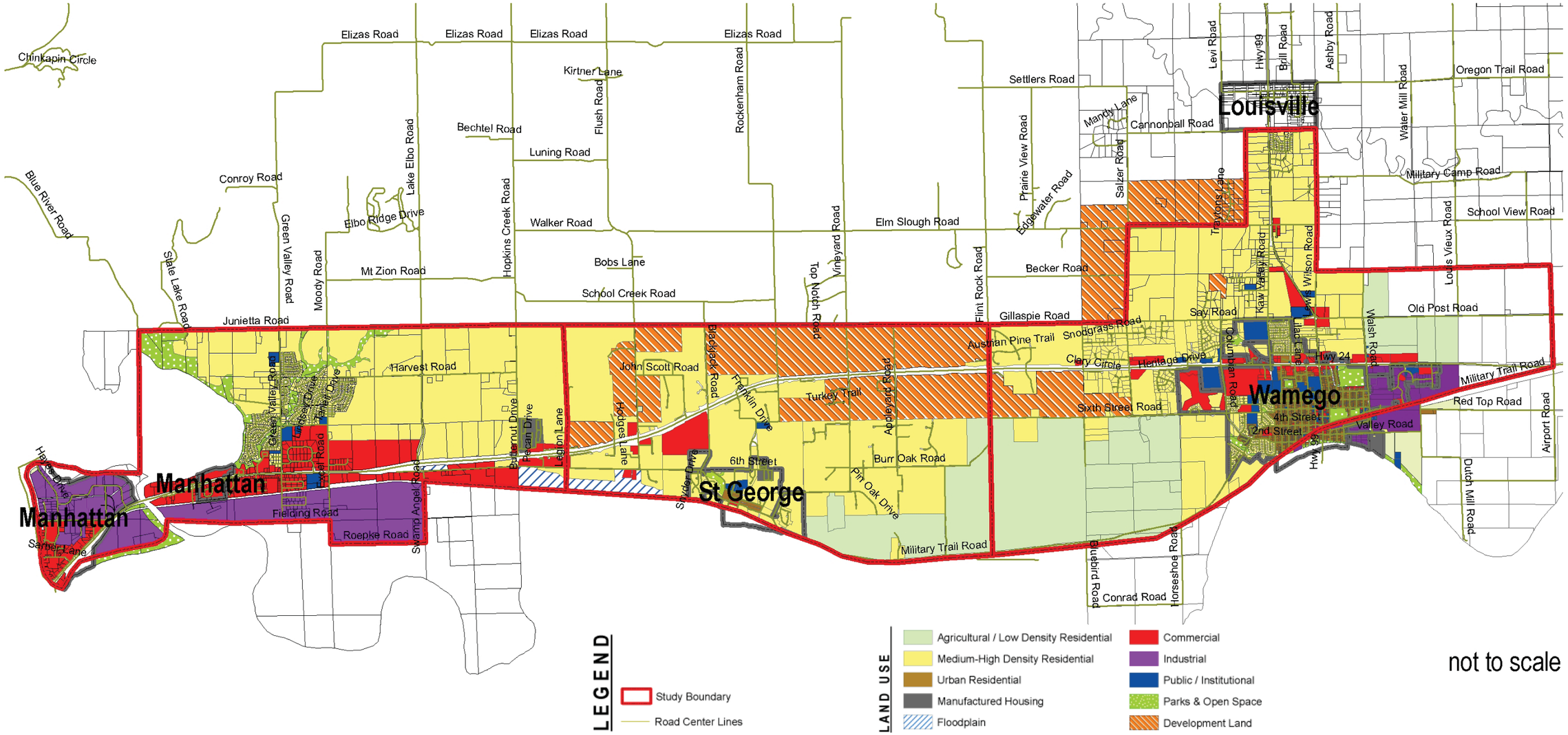


Exhibit 4.2: Combined Future Land Use Map as Currently Defined

US-24 CORRIDOR FUTURE LAND USE PLAN

The future land use maps shown in the following pages for the US-24 Corridor Management Plan will guide future development within the US-24 corridor to provide an efficient pattern of growth. The future land use pattern defined is responsive to the market demand and public involvement summary within the US-24 Corridor Management Plan and provides a framework from which transportation improvements can be planned. This section of the US-24 Corridor Management Plan provides a detailed look at the methodology used to prepare the future land use maps and the future land use for the US-24 corridor.

Methodology

Development Patterns

The first step in determining future land use for the US-24 Corridor Management Plan was to understand where development was most appropriate and /or desirable. To establish the development pattern for the US-24 Corridor Management Plan, three conceptual patterns were reviewed and analyzed – Urban Growth, Corridor Growth and Nodal Growth. Each of the three conceptual development patterns as well as the preferred direction are illustrated in Exhibit 4.3 – Alternative No. 1: Urban Growth, Exhibit 4.4: Alternative No. 2: Corridor Growth, Exhibit 4.5 – Alternative No. 3: Nodal Growth, and Exhibit 4.6 – Preferred Development Pattern.

Urban growth, as illustrated in Exhibit 4.3, looks at the continued radial growth and development of the existing communities within the US-24 corridor. This pattern expands the communities and builds upon the investments made in each community, which are primarily infrastructure and streets to support development.

The Corridor Growth pattern, as illustrated in Exhibit 4.4, promotes more intensive development along the entire length of the US-24 corridor between Manhattan and Wamego. This pattern focuses on development that is support by the traffic and visibility afforded by the US-24 corridor. This pattern also has an inherent challenge in providing infrastructure and services along the length of the corridor.

The Nodal Growth pattern, as illustrated in Exhibit 4.5, looks at the primary intersections along the US-24 corridor as development centers across the corridor. Intersections with the US-24 corridor at locations like Green Valley Road, Flush Road and Columbian Road would be developed with uses that provide goods and services as well as living opportunities to residents.

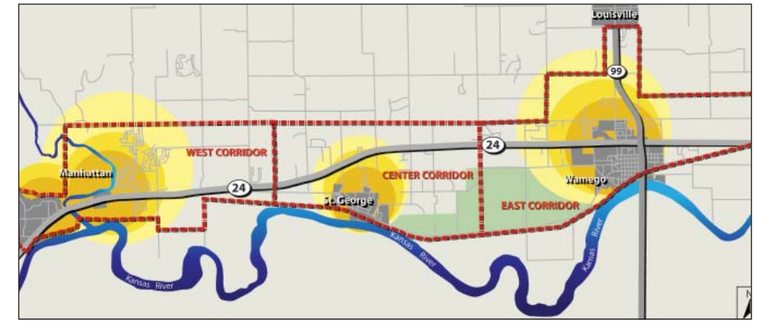


Exhibit 4.3 – Alternative No. 1: Urban Growth

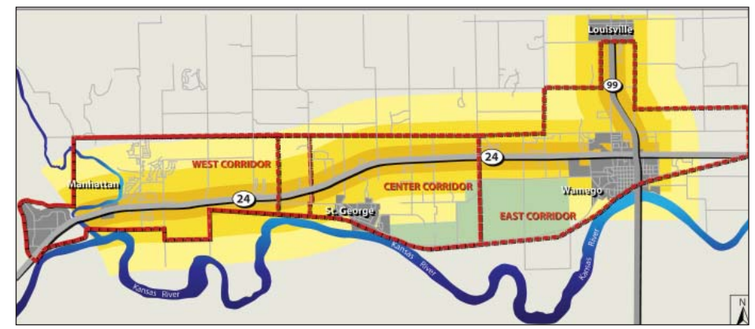


Exhibit 4.4 – Alternative No. 2: Corridor Growth

Exhibit 4.5 – Alternative No. 3: Nodal Growth

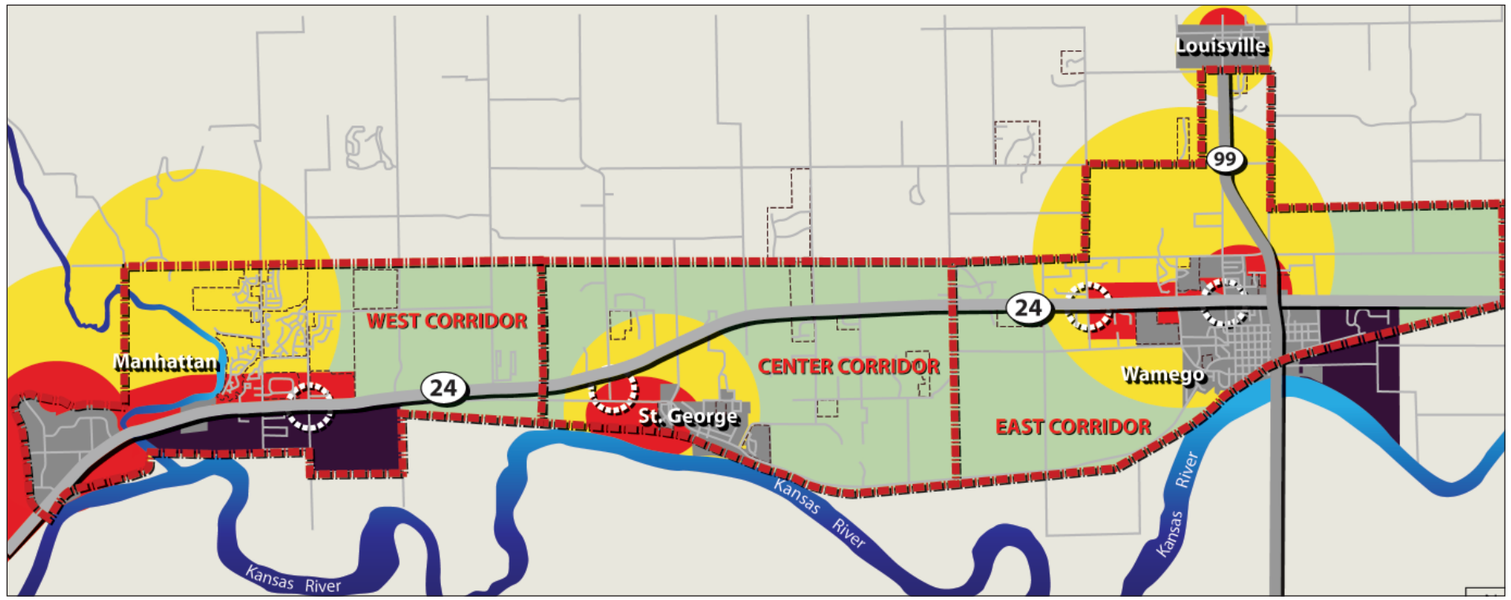


Exhibit 4.6 – Preferred Development Pattern

Upon review and analysis, a combination of the three concepts was identified as the development pattern for the corridor. The preferred development pattern for the US-24 Corridor Management Plan based on existing patterns (See Exhibit 4.6). In support of that growth, a corridor pattern of growth has been defined east of Manhattan from the Blue River to Excel Road, with a node of development around Excel Road. Similarly, a corridor pattern has been defined for west of Wamego to Salzer Road, with a development node in that location. Additionally, based on the future growth of St. George, a node of development has been proposed at Flush Road.

The development patterns begin to identify, on a larger scale, the impact of the development to the US-24 corridor. To get a measure of the impact to the US-24 Corridor Management Plan the demand for development must be understood to adequately project the amount of future development. As detailed in Chapter 3 the market demand for development has been detailed for the US-24 corridor and each of the three sections.

Land Use Estimates

Using the existing land use patterns and the estimated demand for development, the future land use maps have been prepared to show the amount of land to be developed and where that development should occur. To adequately estimate the amount of land necessary for future development, the market demand numbers were converted to dwelling units for residential land uses and acreages for commercial and industrial land uses.

The total amount of acreage for each use was calculated by measuring the total area of each use. The future land use calculations were based on the following assumptions:

TABLE 4.C
Development Land Estimates

			West Corridor		Central Corridor		East Corridor		TOTAL CORRIDOR	
			UNITS	ACRES	UNITS	ACRES	UNITS	ACRES	UNITS	ACRES
RESIDENTIAL	Moderate Growth	Single family units	1,250	417	450	150	425	142	2,125	708
		low density residential	63	21	68	23	21	7	151	50
		med. - high residential	1,188	396	383	128	404	135	1,974	658
		Duplex; MF Units	175	25	50	7	100	14	325	46
		TOTAL	1,425	442	500	157	525	156	2,450	755
	High Growth	Single family units	1,850	617	575	192	575	192	3,000	1,000
		low density residential	93	31	86	29	29	10	208	69
		med. - high residential	1,758	586	489	163	546	182	2,793	931
		Duplex; MF Units	225	32	75	11	100	14	400	57
		TOTAL	2,075	649	650	202	675	206	3,400	1,057
			SQ.FT.	ACRES	SQ.FT.	ACRES	SQ.FT.	ACRES	SQ.FT.	ACRES
OTHER	Moderate Growth	Retail	255,000	23	60,000	6	60,000	6	375,000	34
		Office	90,000	8	25,000	0	20,000	2	135,000	10
		Light Industrial	675,000	44	90,000	6	250,000	16	1,015,000	67
		TOTAL	1,020,000	76	175,000	11	330,000	24	1,525,000	111
	High Growth	Retail	300,000	28	75,000	7	75,000	7	450,000	41
		Office	125,000	11	30,000	3	25,000	2	180,000	17
		Light Industrial	750,000	49	125,000	8	325,000	21	1,200,000	79
		TOTAL	1,175,000	88	230,000	18	425,000	30	1,830,000	137

- Low Density – 1 unit per 3 acres (distributed across the corridor according to the methodology discussed below.)
- High Density Residential – 3 units/ per net acre
- Urban Residential – 7 units/ per net acre
- Commercial – The building area equals 25 percent of total acreage, which does not account for areas outside the building envelope (i.e. road network and parking)
- Industrial – The building area equals 35 percent of total acreage, which does not account for areas outside the building envelope (i.e. road network and parking)

In addition to the calculations for the land use, it was assumed that a portion of the residential development would occur in a low-density format across the US-24 corridor. Because of the different current development patterns in the US-24 corridor, the percentages for low-density residential were applied to each section of the US-24 Corridor Management Plan. The percentages are:

- West Corridor – 5 percent of residential growth
- Center Corridor – 15 percent of residential growth
- East Corridor – 5 percent of residential growth

To provide reasonable guidance in an ever-changing market place, the consultant team prepared two future land use scenarios. Based on the market demand estimates of a moderate growth rate and high growth rate of development, the consultant team created moderate growth and high growth future land use plans. (See Table 4.C).

It should be noted that, where possible, those properties that have been approved for development and/or platted, but have not yet been developed, have been incorporated into the future development.

US-24 FUTURE LAND USE PLAN

Defined by the land use pattern identified for the US-24 Corridor Management Plan, the future land use maps shown on the following pages provide the policy guidance for future development within the US-24 Corridor Management Plan. The future land use plan promotes the efficient and effective use of investments made to support growth within the corridor. Similarly, the future land use plan supports the investments made to the US-24 corridor and attempts to minimize the future physical improvements needed and traffic impacts to the corridor.

The importance for the communities and the county to follow the future land use plan cannot be overstated. To deviate from the future land use plan could have detrimental effects to the operation and safety within the US-24 corridor and the surrounding street network. For example, if development is allowed to occur outside of the defined areas, additional transportation infrastructure improvements may be necessary to maintain the efficiency and safety of the US-24 corridor. Commitment to the proposed future land use patterns will define the future land use that will support the proposed improvements of this US-24 Corridor Management Plan.

To mirror the market demand analysis, the consultant team has prepared two future land use plans: a moderate growth plan and a high growth plan. To apply land uses to the corridor, the consultant team converted the plans' dwelling units and square feet of development into acreages and applied to the maps. To adequately assess the future land use across the corridor, the consultant team divided the future land use maps by the US-24 corridor sections – West, Center and East.

Moderate Growth

The moderate growth land use plan is the more conservative estimate of growth within the US-24 Corridor Management Plan. The growth that has been defined for the corridor – 2,450 new units of residential, 510,000 square feet of commercial, and approximately one million square feet of industrial development is significant, as shown in Table 4.C. Those numbers represent 755 acres of residential development, which is a combination of medium-high and urban residential development, not including the low-density residential development scattered across the US-24 corridor. The consultant team anticipates approximately 46 acres of commercial development and 67 acres of industrial development. The impact to the US-24 corridor from this amount of development will be considerable. The consultant team will detail the land use's impact by the corridor sections to give plan readers a thorough understanding of the land use's impact.

High Growth

The high growth land use plan represents the additional land necessary to accommodate the increased development associated with increased market demand. The high growth scenario estimates there will be approximately 3,400 residential units, 630,000 square feet of commercial and 1.2 million square feet of industrial development, as shown in Table 4.C. Those estimates represent roughly 1,057 acres of residential development, 58 acres of commercial and 79 acres of industrial development. The high growth land use plan adds approximately 300 acres of developable residential and 12 acres of developable commercial and industrial land to the US-24 Corridor Management Plan as compared to the moderate land use plan.

West US-24 Corridor

As detailed by Table 4.C the West US-24 Corridor will receive a significant amount of the development in the moderate growth scenario, largely based on the presence of Manhattan. The land use plan shows the medium-high residential growth continuing adjacent to recent residential development north of the US-24 corridor and east of the Blue River. Expanding residential development in the area south of Junietta Road continues the current development trends of the area.

Similarly, the planned commercial and industrial growth will be focused on filling some of the development gaps along the US-24 corridor between the Blue River and Excel Road, adjacent to existing commercial and industrial development. Additionally, the City of Manhattan anticipates that McCall Road will continue to change to a commercial corridor because of its current industrial focus. As this change continues, the industrial uses will move near the Manhattan wastewater treatment plant south of the US-24 corridor and out along the US-24 corridor. The Future Land Use Plan documents these changes.

Building up on the land use pattern established by the moderate growth scenario, the high growth scenario continues the residential growth to the north of the US-24 corridor and the infill and redevelopment of commercial and industrial uses between Tuttle Creek Boulevard and Excel Road. Additionally, residential growth to the north will be supported by additional commercial along McCall Road and the US-24 corridor. Displaced and new industrial uses will be located adjacent to the Manhattan wastewater treatment plant and along Excel Road adjacent to the existing business park.

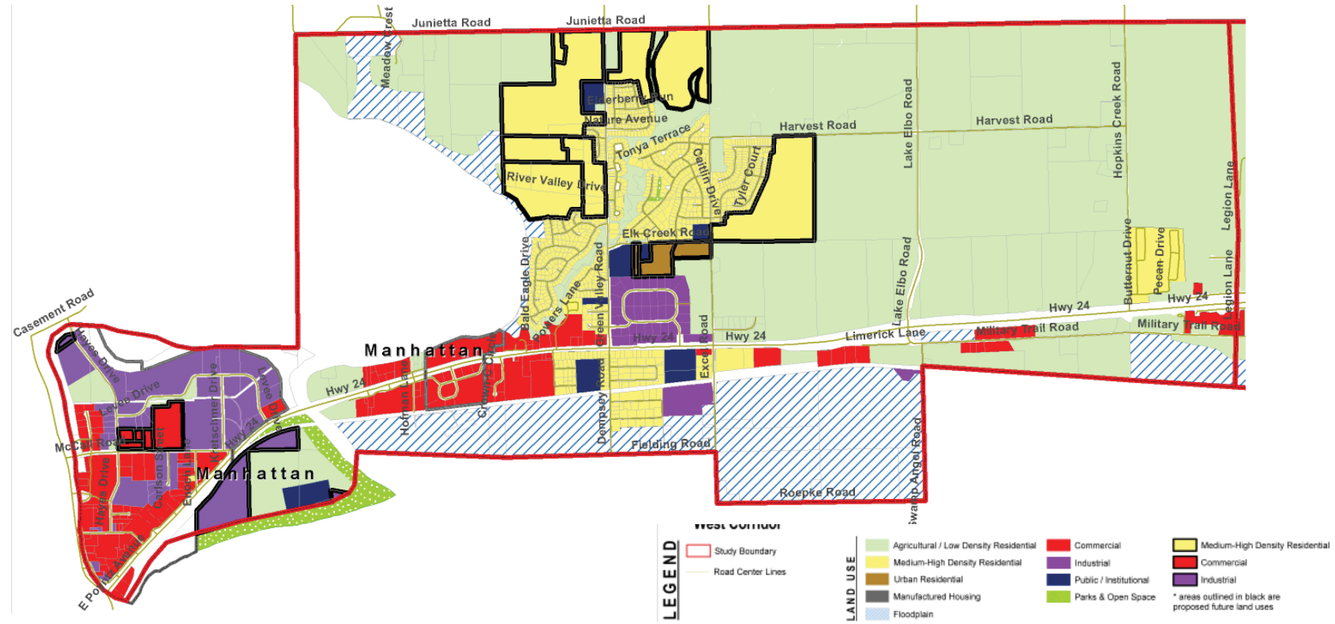


Exhibit 4.7: West Corridor: Future Land Use Map – Moderate Growth

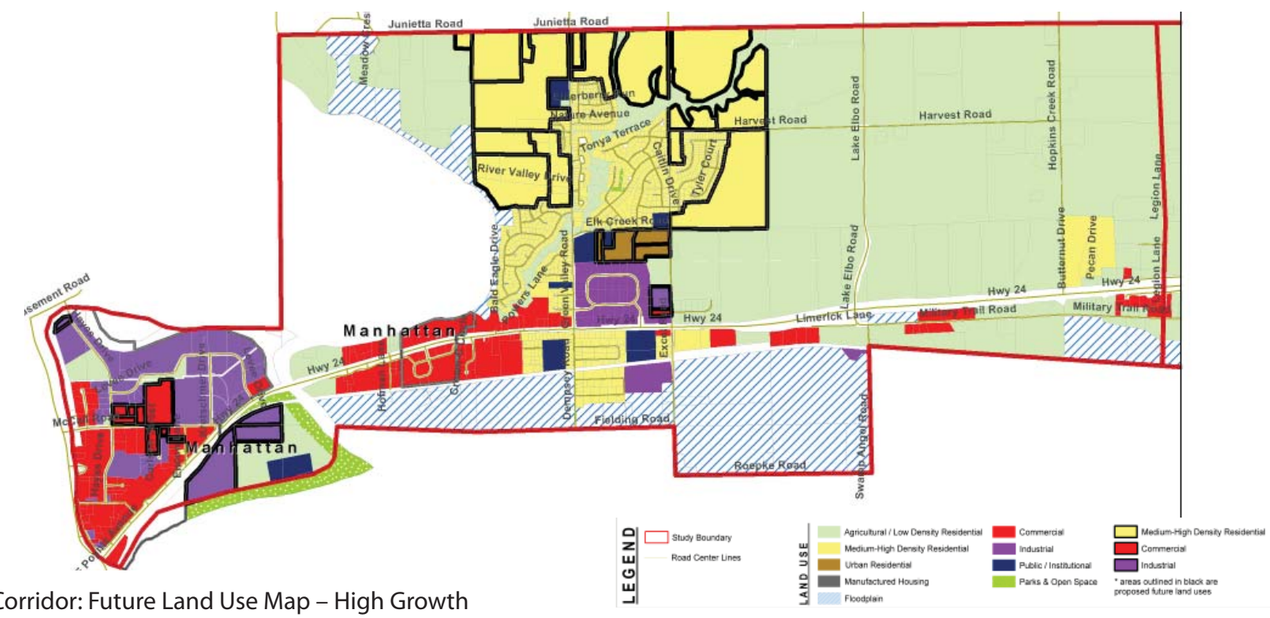


Exhibit 4.8: West Corridor: Future Land Use Map – High Growth

Disclaimer: The Future Land Use maps are general in nature to guide development along the Corridor. The provision of necessary infrastructure within identified growth areas, combined with market conditions, will dictate the timing of development in a particular area.

Center US-24 Corridor

The Center US-24 corridor, focused around the community of St. George, will see a noticeable increase in the development of residential units within and adjacent to the community. Residential construction is occurring on the community's southeast end and plans for it are to continue moving east. Residential development will also begin to fill in some of the gaps in neighborhoods within the community and provide an urban residential density near downtown. Much of the development that is proposed within St. George has been approved or platted for development. The Center Corridor has the highest percentage of low-density residential planned with 68 to 86 units intended within this section of the corridor.

Commercial development within the Center Corridor will be focused around the Flush Road intersection to build on the commercial use present today. While not a significant amount of commercial is planned, commercial development presence at the intersection of Flush Road and US-24 will provide visibility for the community of St. George along the US-24 corridor. The industrial planned, between six and eight acres, for the moderate and high growth scenarios, respectively, is proposed at the south of Military Trail Road between Legion Lane and Flush Road. This location removes it from the community but puts it adjacent to the growth path of St. George toward the intersection of Flush Road and US-24.

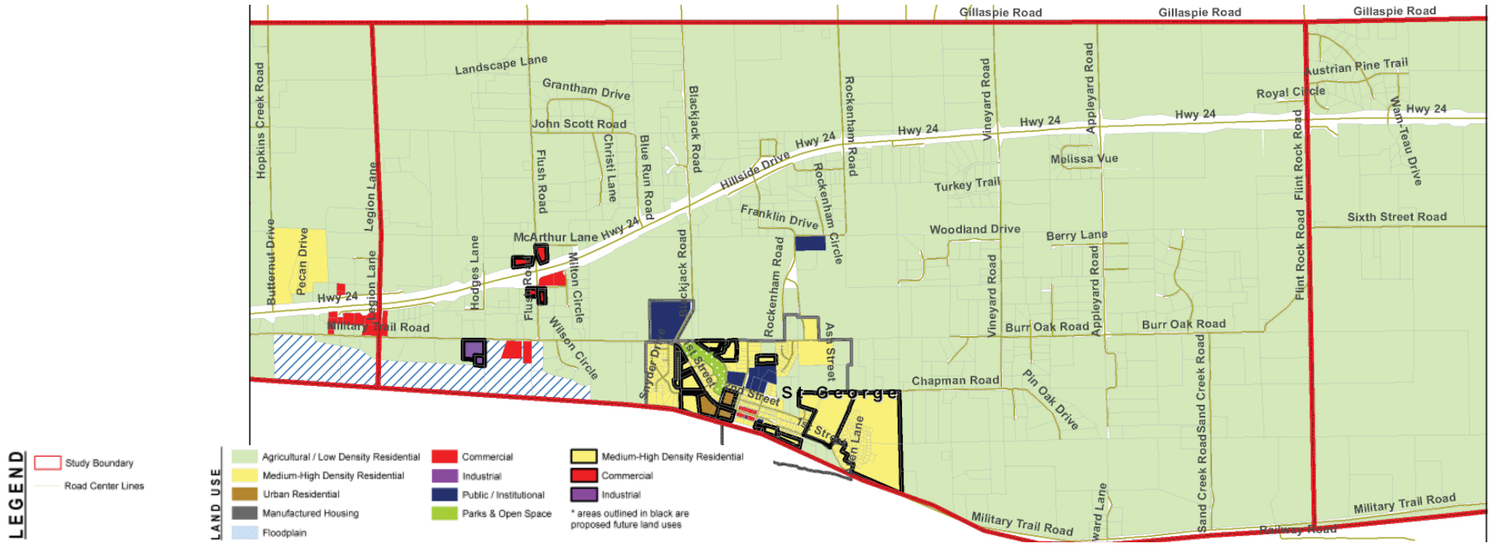


Exhibit 4.9: Center Corridor: Future Land Use Map – Moderate Growth

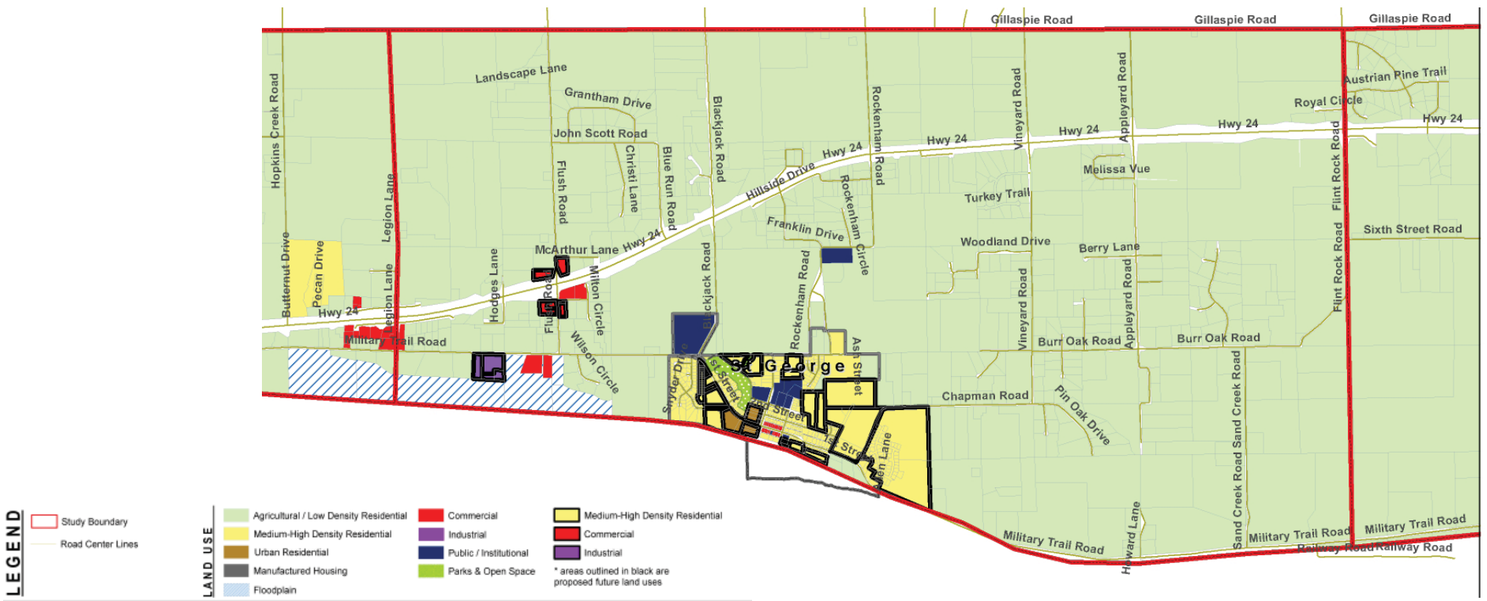


Exhibit 4.10: Center Corridor: Future Land Use Map – High Growth

Disclaimer: The Future Land Use maps are general in nature to guide development along the Corridor. The provision of necessary infrastructure within identified growth areas, combined with market conditions, will dictate the timing of development in a particular area.

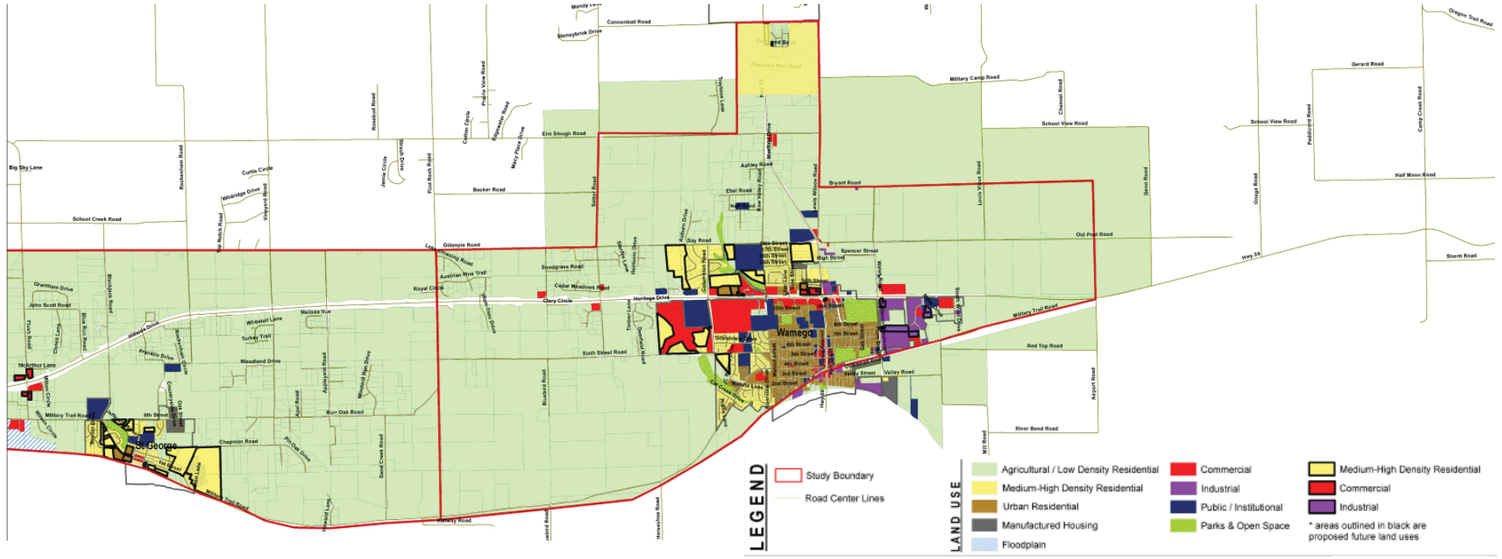


Exhibit 4.11: East Corridor: Future Land Use Map – Moderate Growth

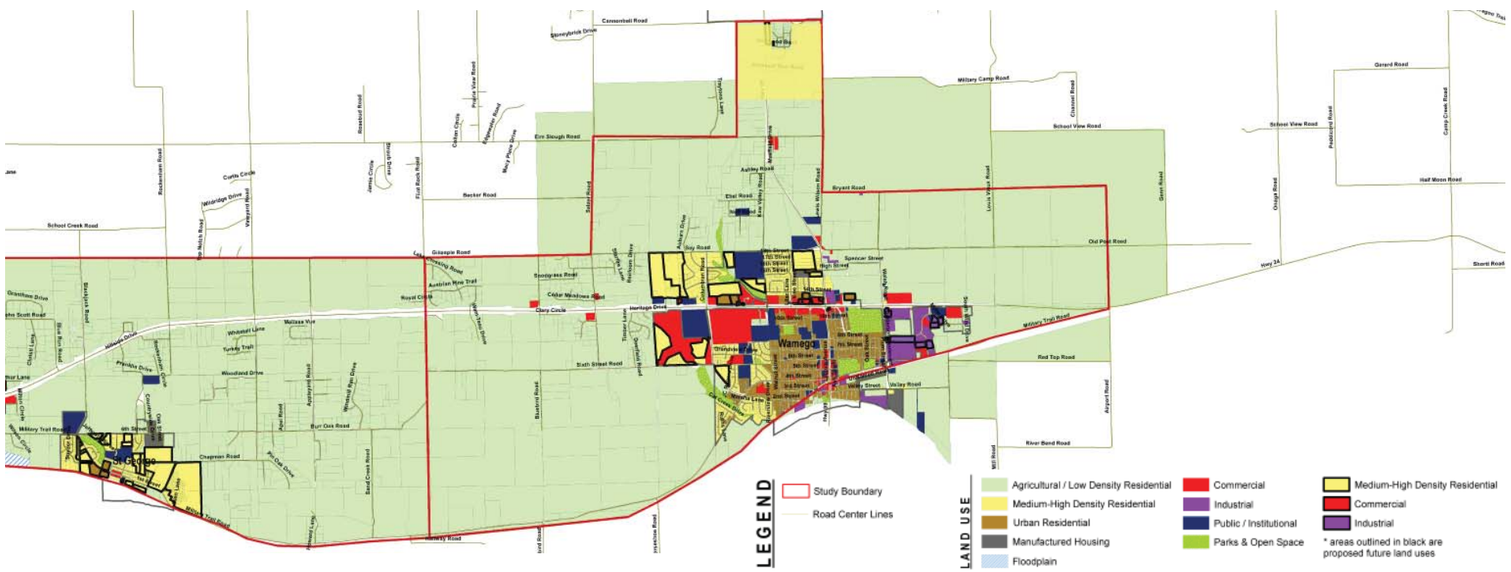


Exhibit 4.12: East Corridor: Future Land Use Map – High Growth

East US-24 Corridor

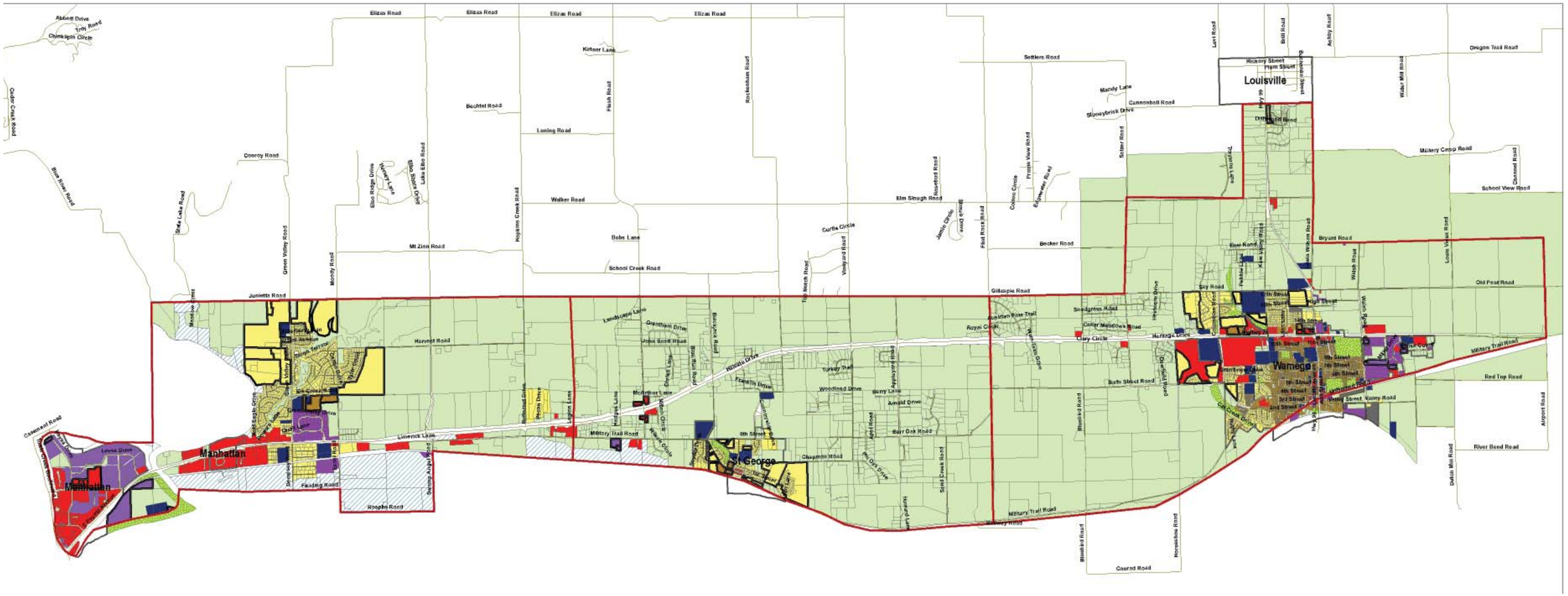
Like the West US-24 corridor, the East US-24 corridor's largest city, Wamego, will continue to affect this section's growth and development. The land use plan for Wamego delineates residential growth continuing north and west of the current city limits. The medium-high density residential development will be off the US-24 corridor with urban residential land uses filling in the gaps along the US-24 corridor between K-99 and Columbian Road. Following the urban residential development will be the commercial development that will continue to develop along the US-24 corridor west of K-99. New industrial to Wamego will maximize the investments made in the Wamego Industrial Park by locating within it on the east side of town south of the US-24 corridor.

The K-99 Corridor will be most affected by additional residential in the K-99 corridor, primarily in the form of additional low-density, residential development east and west of the K-99 corridor. However, additional medium-high residential development is planned for Louisville within an existing development on the south edge of town and north of the US -24 corridor adjacent to Wamego. These patterns are consistent for both the moderate and high land use plans.

SUMMARY

Exhibits 4.13 and 4.14 illustrate the US-24 Corridor Management Plan's corridor-wide future land use for the moderate-growth and high-growth scenarios, representing the future development patterns to 2030. The land use plans are rooted in the existing development patterns of the communities and county within which the US-24 corridor interacts. The land use plans are intended to promote the efficient and effective development of land through the use of existing resources and investments, and the cost-effective provision of future services, including infrastructure and transportation. The implementation of the land use plans over time will reinforce the transportation improvements proposed for the US-24 Corridor Management Plan. Conversely, unplanned or random growth across the US-24 corridor will stretch resources and reduce the effectiveness of the US-24 corridor as a commuter route between the communities. These impacts should be considered when planning for the future of the US-24 corridor.

Disclaimer: The Future Land Use maps are general in nature to guide development along the Corridor. The provision of necessary infrastructure within identified growth areas, combined with market conditions, will dictate the timing of development in a particular area.


Louisville
Wamego
Manhattan
St. George
Elizas Road
Kirtner Lane
Beuchtel Road
Luning Road
Flush Road
Rockbottom Road
Settlers Road
Mandy Lane
Cannonball Road
Stoneybrick Drive
Salter Road
Levi Road
Bill Road
Ashley Road
Oregon Trail Road
Walker Mill Road
Military Camp Road
School View Road
Channel Road
Conroy Road
Elio Ridge Drive
Lake Elio Road
Hopkins Creek Road
Walker Road
Mt Zion Road
Bobs Lane
School Creek Road
Elm Slough Road
Rosebud Road
Flint Rock Road
Becker Road
Bryant Road
Welsh Road
Louis Vista Road
Old Post Road
Red Top Road
River Bend Road
Airport Road
Dakin Mile Road
Military Trail Road
Conrad Road
Juniette Road
Green Valley Road
Monty Road
Harvest Road
Limerick Lane
Flinthill Road
Roeplke Road
Gillespie Road
Sweetgrass Road
Cutler Meadows Road
Sixth Street Road
Hartinger Lane
Clay Circle
Royal Circle
Austrian River Trail
Hillside Drive
Franklin Drive
Turkey Trail
Woodland Drive
Burr Oak Road
Chapman Road
Sand Creek Road
Blueskin Road
Horsesshoe Road
Cedar Creek Road
Cassmend Road
Levee Drive
Bill River Road
Cedar Creek Road
Skyline Drive
Golf Lane
Tuttle Road
Dempsey Road
Ft. Riley Boulevard
Seventh Street
Eighth Street
Ninth Street
Tenth Street
Fourth Street
Third Street
Second Street
First Street
High Street
Poyntz Avenue
Vanoy Road
Johnson Road
Wilson Road
Lincoln Road
Washington Street
Manhattan Street
Hickory Street
Plum Street
Drummond Road
Tuttle Creek Dam
Tuttle Creek Reservoir
Tuttle Creek State Park
Fort Riley
Ft. Riley Boulevard
Marlatt Hall
Kansas State University
Aggieville
Downtown Manhattan
Downtown Wamego
Downtown Louisville
Wamego Municipal Airport
Manhattan Municipal Airport
Wamego Golf Course
Wamego Cemetery
Louisville Cemetery
Manhattan Cemetery
Wamego Elementary School
Wamego Middle School
Wamego High School
Wamego Junior High School
Wamego Public Library
Wamego City Hall
Wamego Fire Station
Wamego Water Tower
Wamego Water Treatment Plant
Wamego Wastewater Treatment Plant
Wamego Sewer Lagoon
Wamego Sewer Lift Station
Wamego Electric Substation
Wamego Electric Substation
Wamego Electric Substation

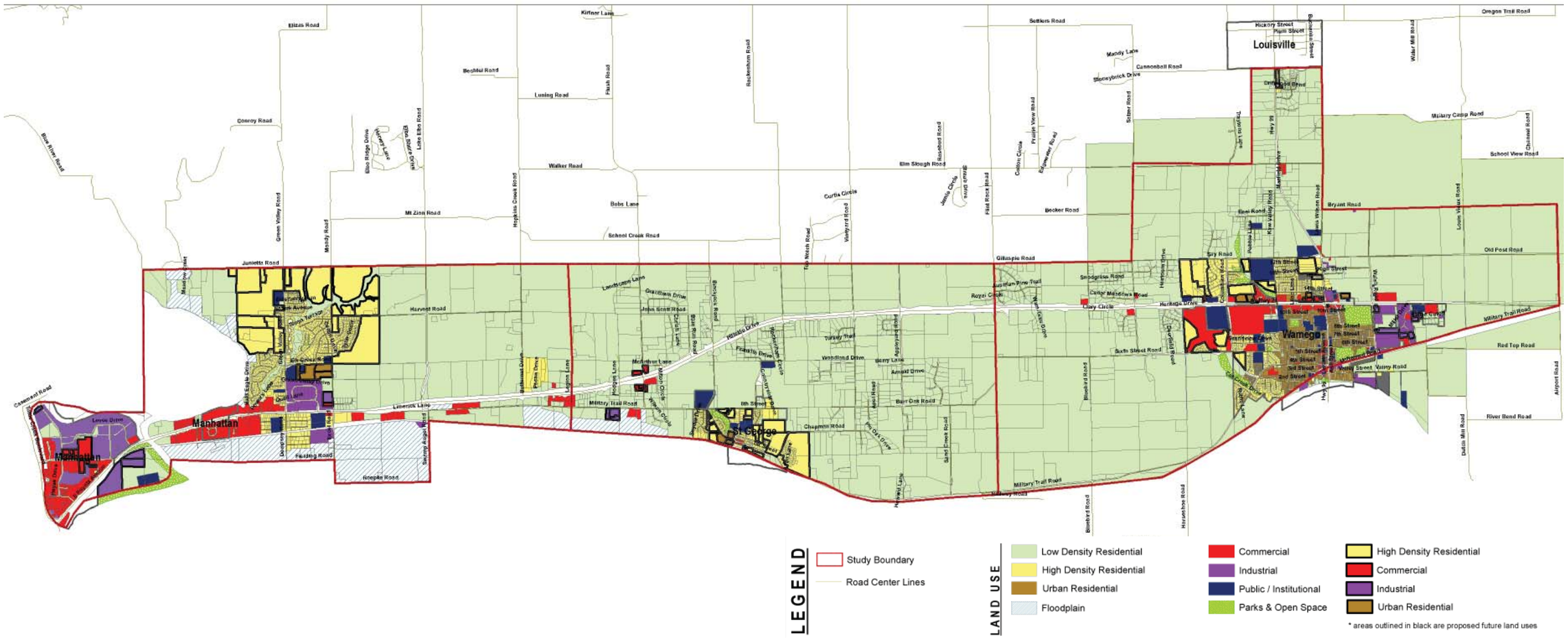
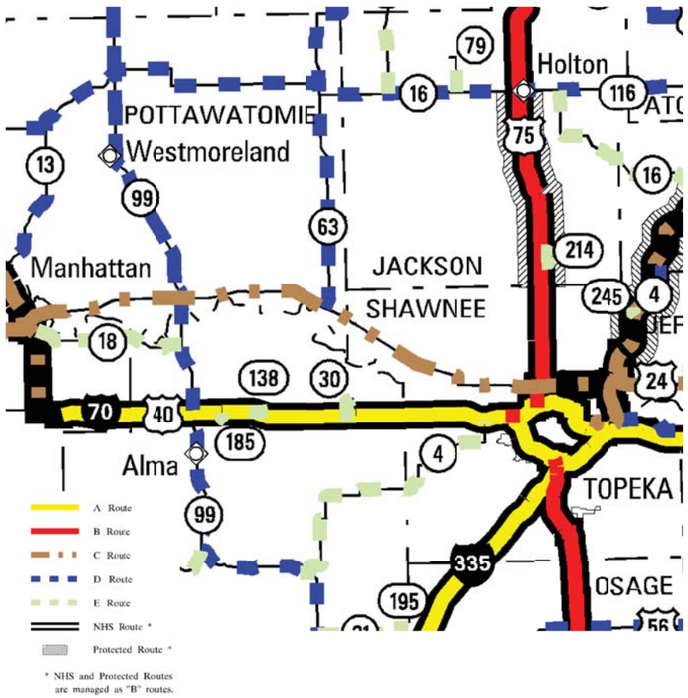


Exhibit 4.14: Corridor: Future Land Use Map – High Growth

Disclaimer: The Future Land Use maps are general in nature to guide development along the Corridor. The provision of necessary infrastructure within identified growth areas, combined with market conditions, will dictate the timing of development in a particular area.

5 TRAFFIC ANALYSIS



CLASS A – The Interstate System, including the Kansas Turnpike.

CLASS B – Routes that serve as the most important statewide and interstate corridors for travel. The routes serve distinct trip movements since they are widely spaced throughout the State. On major sections of the routes traffic volumes are relatively constant. A significant number of out-of-state vehicles use Class B routes, and trips on the routes are typically very long.

CLASS C – Defined as arterials, these routes are closely integrated with Class A and B routes in service to all parts of the State. Major locations that are not on A or B routes are connected by a C route. Average trip lengths are typically long.

CLASS D – These routes provide access to arterials and serve small urban areas not on a Class A, B, or C route. The routes are important for intercounty movement.

CLASS E – Primarily for local service only, these routes are typified by very short trips. Class E routes are frequently used on a daily basis, sometimes several times a day, to connect rural residents with other routes or to provide access to small towns in the area.

Exhibit 5.1: KDOT's Route Classification Map

PURPOSE OF TRAFFIC ANALYSIS

The traffic analysis component of the US-24 Corridor Management Plan incorporates information on the existing transportation network, such as traffic volumes and intersection features, with existing land use to build a computer model that replicates existing conditions. Information from the public, area agencies, and future land-use plan results was then used to project future traffic growth scenarios and determine projected problem areas. The model was also used to test whether potential projects or changes to the system could maintain the efficiency / functionality of US-24. Based on this analysis, along with incorporating further input from the agencies and the public, the consulting team provides its recommendations on what transportation projects and policies will best meet the needs of the US-24 corridor, both in the near-term and the long-term. This chapter shares those recommendations, as well as the process and data that led to them.

BACKGROUND

In 2003, KDOT adopted the current Corridor Management Policy. The intent of the policy is to provide criteria and procedures necessary to obtain reasonable access to abutting properties while preserving the transportation system in terms of safety, capacity and speed. Additionally, the policy is one tool used to help establish statewide consistency in KDOT's management of transportation corridors.

Many of the recommended improvements in this Plan are based on criteria from KDOT's Corridor Management Policy. The policy requires a higher level of performance for routes that are expected to experience substantial land use development and traffic growth. In order to achieve this goal, criteria for access spacing and corridor management is based, in part, on KDOT route classifications and access spacing criteria. See Exhibit 5.1.

US-24 is designated as a Type C route within the study area boundaries. On a route with a KDOT Type C route classification, indirect, alternative access and shared access should be used wherever feasible. If direct access is provided, the minimum access spacing on US-24 shall follow the access spacing criteria in KDOTs Corridor Management Policy, which calls for a 1,320-foot minimum spacing of access points along the high-speed sections between Manhattan and Wamego. Along the sections of US-24 within Manhattan and Wamego, the access point spacing is allowed to be as little as 140 to 335 feet, depending on the posted speed and the traffic volume on the side street or drive (i.e., over or under 50 vehicles per day).

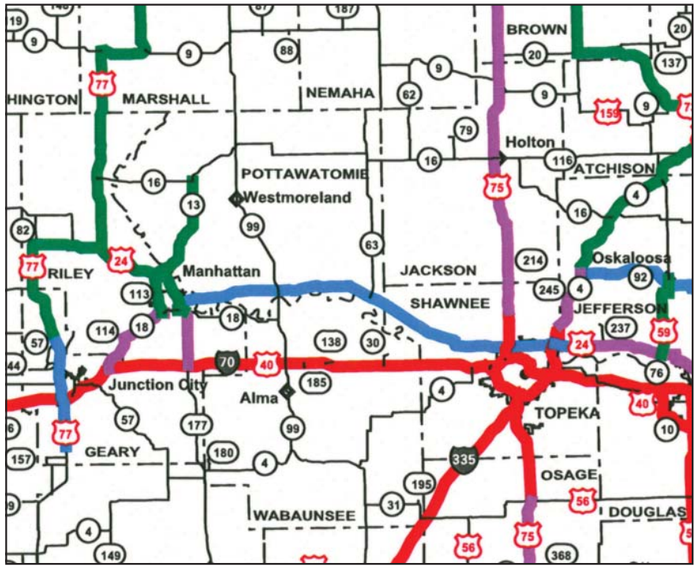
The KDOT route classification for K-99 is Type D. A Type D route classification is to be protected by a modest level of management. Indirect, alternative access and shared access is to be used wherever convenient. Direct access spacing for Type D routes is the same as for Type C routes.

The section of McCall Road between US-24 and Tuttle Creek Boulevard (US-24) that is also within the study area is not a state highway route and not subject to KDOT criteria. However, the City of Manhattan has access control standards that apply to arterial routes, including McCall Road.

KDOT has also developed a Design Access Control Map to provide assistance in determining appropriate access control for future highway improvement projects. See Exhibit 5.2 on the following page. Depending on designated route access control, as part of the planning process, it is important to consider adequate future highway right-of-way and potential interchange locations. US-24 between Manhattan and Wamego is classified as a Moderate Order Partial access controlled route. KDOT also has access control of the segment of US-24 from east of Lake Elbo Road, near St. George, to Kaw Valley Road in Wamego. The access control on K-99, within the study area boundary, is governed by the guidelines of the KDOT Corridor Management Policy.

DATA COLLECTION

The consultant team collected existing roadway and intersection information for the entire length of the study area. Acquired information included: the number of lanes along the corridor; posted speed limits; acceleration- and deceleration-lane configurations; and traffic controls, such as signals or stop signs. Additionally, existing traffic count information from previous studies was provided by KDOT and the City of Manhattan to supplement the data collected. The team used the information for the existing operational analyses and for confirming the network information for the travel demand model. See Tables 5.A and 5.B on the following page for information on existing lengths and locations and recommended improvements.



Access Control

- Full
- High Order Partial
- Moderate Order Partial
- Low Order Partial
- None (Corridor Management Policy Governs)

Note: New bypasses should have full access control
Note: Approaches to freeways and to cities with populations greater than or equal to 4000 should have as a minimum, Low Order partial access control extending approximately 1 mile or desireably Moderate Order partial access control for 2 miles

Roadways designated as **Full Access Control** refer to freeway sections with access to the highway only permitted at grade-separated interchanges. **Partial Access Control** classification is divided into three subcategories: high, moderate, and low.

- **High order, partial access control** limits access to public roads only and recommends removing or relocating existing access pointes between intersections. These highways may be built as expressways or may provide for the opportunity to upgrade the facility to full access control by preserving right-of-way for future lanes and interchanges.
- **Moderate order, partial access control** routes may be built as expressways or major urban streets but are not intended to be upgraded to freeways. Access is limited to public roads only and existing access point between intersections should be removed or relocated.
- **Low order, partial access control** routes are typically arterial highway within an urban area or a rural highway likely to remain two-lane for the foreseeable future. Access points may be either public roads or private entrances. Existing access points should be removed, consolidated, or relocated as much as possible to meet the criteria of the KDOT Corridor Management Policy.

Access on routes with no access control is determined by the criteria of the KDOT Corridor Management Policy.

Exhibit 5.2: KDOT's Design Access Control Map

TABLE 5.A
Existing Intersection Conditions – Acceleration Lanes

INTERSECTION	EB		WB		NB		SB	
	L	R	L	R	L	R	L	R
US-24								
Tuttle Creek Boulevard								
McCall Road								
Green Valley Road								
Excel Road								
Lake Elbo Road								
Hopkins Creek Road								Taper
Flush Road						Taper		*
Blue Run Road								
Blackjack Road								
Rockenham Road								
Vineyard Road						Taper		
Appleyard Road								
Flint Rock Road								
Salzer Road								
Columbian Road								
Kaw Valley Road								
Lilac Lane								
K-99								
Walsh Road								
Airport Road								
K-99								
Old Post Road								
Elm Slough Road								
Cannonball Road								

*Insufficient length based on AASHTO / Proposed Improvement

Proposed Existing Intersection Improvements - Acceleration Lane Length (ft)

INTERSECTION	EB		WB		NB		SB	
	L	R	L	R	L	R	L	R
US-24								
Flush Road								1620′

TABLE 5.B
Existing Intersection Conditions – Deceleration Lanes

INTERSECTION	EB		WB		NB		SB	
	L	R	L	R	L	R	L	R
US-24								
Tuttle Creek Boulevard	80′	80′	2 - 250′		300′	180′	450′	
McCall Road	300′			110′			95′*	95′
Green Valley Road	380′		400′					75′*
Excel Road	Taper							
Lake Elbo Road	400′	400′	Taper	Taper				
Hopkins Creek Road	525′			Taper				
Flush Road	450′*	485′*	Taper	Taper				
Blue Run Road	Taper							
Blackjack Road	Taper		Taper					
Rockenham Road	Taper	Taper	Taper					
Vineyard Road	Taper	Taper	Taper	Taper				
Appleyard Road	Taper	Taper	Taper					
Flint Rock Road	Taper	Taper	Taper	Taper				
Salzer Road	Taper	Taper	Taper	Taper				
Columbian Road	300′	Taper *	300′*	Taper				
Kaw Valley Road	125′			225′				
Lilac Lane								
K-99	300′		275′		200′	200′	350′	
Walsh Road								
Airport Road								
K-99								
Old Post Road								
Elm Slough Road								
Cannonball Road								Taper

* Insufficient length based on AASHTO and KDOT Corridor Management Policy

Proposed Existing Intersection Improvements - Deceleration Lane / Turn Bay Length (ft)

INTERSECTION	EB		WB		NB		SB	
	L	R	L	R	L	R	L	R
US-24								
McCall Road							2 - 200′	
Green Valley Road	600′							325′
Flush Road	590′	590′						
Columbian Road		405′	315′					

*Right-turn and left-turn deceleration lanes on US-24 should be considered at all locations where there are 40 or more turning vehicles in the peak hour.

The consultant team took 24-hour traffic counts on the side road approaches to 13 intersections along US-24 and K-99, including:

- Lake Elbo Road
- Hopkins Creek Road
- Blue Run Road
- Rockenham Road
- Vineyard Road
- Appleyard Road
- Flint Rock Road
- Kaw Valley Road
- Lilac Lane
- Walsh Road
- Say Road
- Elm Slough Road
- Cannonball Road

The consultant team also recorded 24-hour traffic counts of the main highway traffic flows at four locations on US-24 and K-99:

- East of Blue River in Manhattan
- East of Flush Road near St. George
- Between Kaw Valley Road and Lilac Lane in Wamego
- On K-99 north of Cannonball Road

The daily traffic volumes recorded along US-24 during the period of September 10th to 16th, 2008, included 23,000 vehicles-per-day (vpd) at the Big Blue River in Manhattan; 11,000 vpd near St. George; and 11,500 vpd in Wamego west of K-99. The peak-hour percentage was computed to be about 11 percent of total daily traffic. The results of these traffic counts are shown on Exhibit 5.3. Additional count information from previous studies included the critical PM peak hour counts at the intersections of US-24 with Tuttle Creek Boulevard and McCall Road. No AM traffic counts were taken. Traffic count information was also provided to the consultant team at the intersection of US-24 with McCall.

Speeds and Speed Limits

The consultant team recorded travel speeds along the corridor, which ranged from 10 mph to over 75 mph. From this data, the 85th percentile speed is calculated. Most governmental agencies, including KDOT, use the 85th percentile speed to establish speed limits. The 85th percentile speed represents the speed at which or below which 85 percent of drivers feel comfortable traveling. Research has shown that the 85th percentile speed is also the safest speed because it has the least speed variation. A motorist's chances of being involved in a crash increases significantly for every five miles per hour the vehicle is driven either over or under the 85th percentile speed.

Along US-24, the 85th percentile speed in Manhattan at the Big Blue River bridge was 67.4 mph; Flush Road near St. George was 74.3 mph; and in Wamego at Kaw Valley Road it was 46.4 mph westbound and 46.8 eastbound. The corresponding posted speed limits within the corridor are:

US-24	
Tuttle Creek Boulevard to McCall Road	50 mph
McCall Road to Excel Road	60 mph
Excel Road to Columbian Road	70 mph
Columbian Road to Kaw Valley Road	60 mph
Kaw Valley Road to Wamego East City Limit	40 mph
K-99	
US-24 to Say Road	45 mph
Say Road to Cannonball Road	65 mph
McCall Road	40 mph

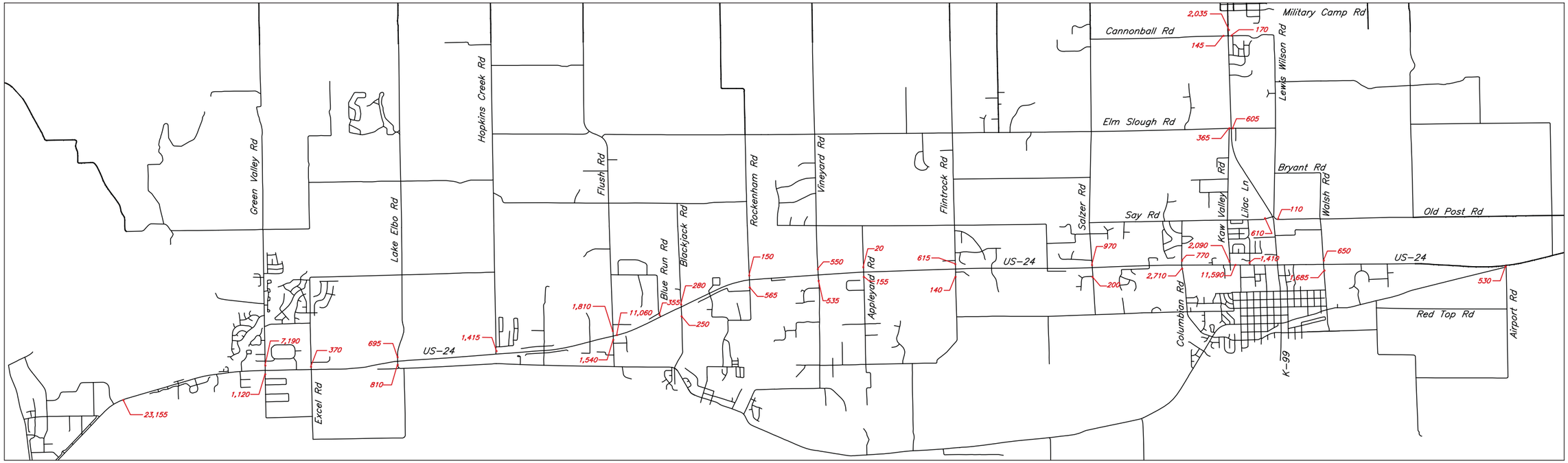


Exhibit 5.3: Existing Average Daily Traffic

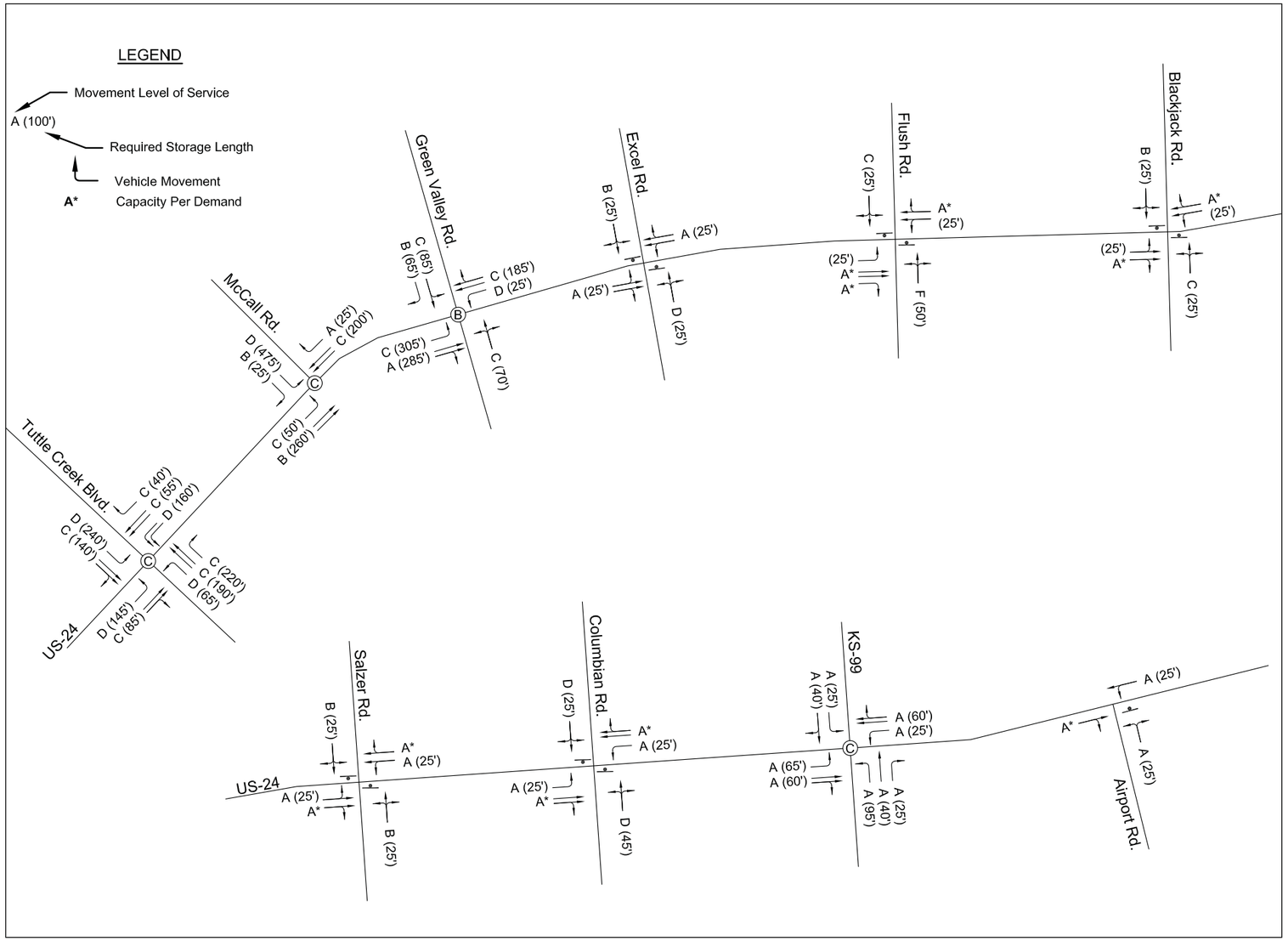


Exhibit 5.4: Existing Peak Hour Levels of Service

Volumes

From September 10th to 16th, 2008, the consultant team manually recorded morning and evening peak hour, vehicle turn movement traffic at the following eight intersections with US-24:

- Green Valley Road
- Excel Road
- Flush Road
- Blackjack Road
- Salzer Road
- Columbian Road
- K-99
- Airport Road

The team used the existing traffic data for existing level of service analyses as well as calibration of the existing condition travel demand model. The City of Manhattan and KDOT provided peak hour counts that were recorded as part of other recent data collection efforts within the corridor. See Exhibit 5.4.

Sight Distance

Sight distance, an important part of intersection design, is how far forward, to the right, and to the left, that a driver can see upon approaching an intersection. A designer should provide sight distance of sufficient length to allow drivers ample time for deciding when to enter or cross the intersecting highway. This distance is measured along a highway throughout which an object of specified height is continuously visible to the driver.

The consultant team recorded available sight distance along the corridor at each intersection using criteria established by the American Association of State Highway and Transportation Officials (AASHTO). Most of the US-24 corridor had adequate sight distance for the posted speed limit. Flint Rock Road, Appleyard Road, and Flush Road have adequate sight distance for the posted speed, however, the sight distance is not adequate for the 85th percentile speeds recorded during the development of this Plan. Sight distance on K-99 appears to be adequate for the posted speeds. See Table 5.C for observed sight distance.

Crashes

KDOT provided traffic crash data along US-24 and K-99 for the years 2002 through 2007. The City of Manhattan provided traffic crash data on McCall Road between Tuttle Creek Boulevard and US-24 for the same period. Table 5.D is a breakdown of each crash type by intersection and segment. The crash types include rear end, right angle, side swipe, backing, head on and other (e.g. fixed object and run off road). All animal-related crashes were removed from the data. The team calculated segment crash rates per million vehicle miles and compared them to the statewide average crash rate. The rural segment between Green Valley Road and Flush Road is higher than the statewide crash rate for rural, four-lane divided highways with full access control. See crash locations in Exhibit 5.5 on the following page.

TABLE 5.C
Intersection Sight Distance

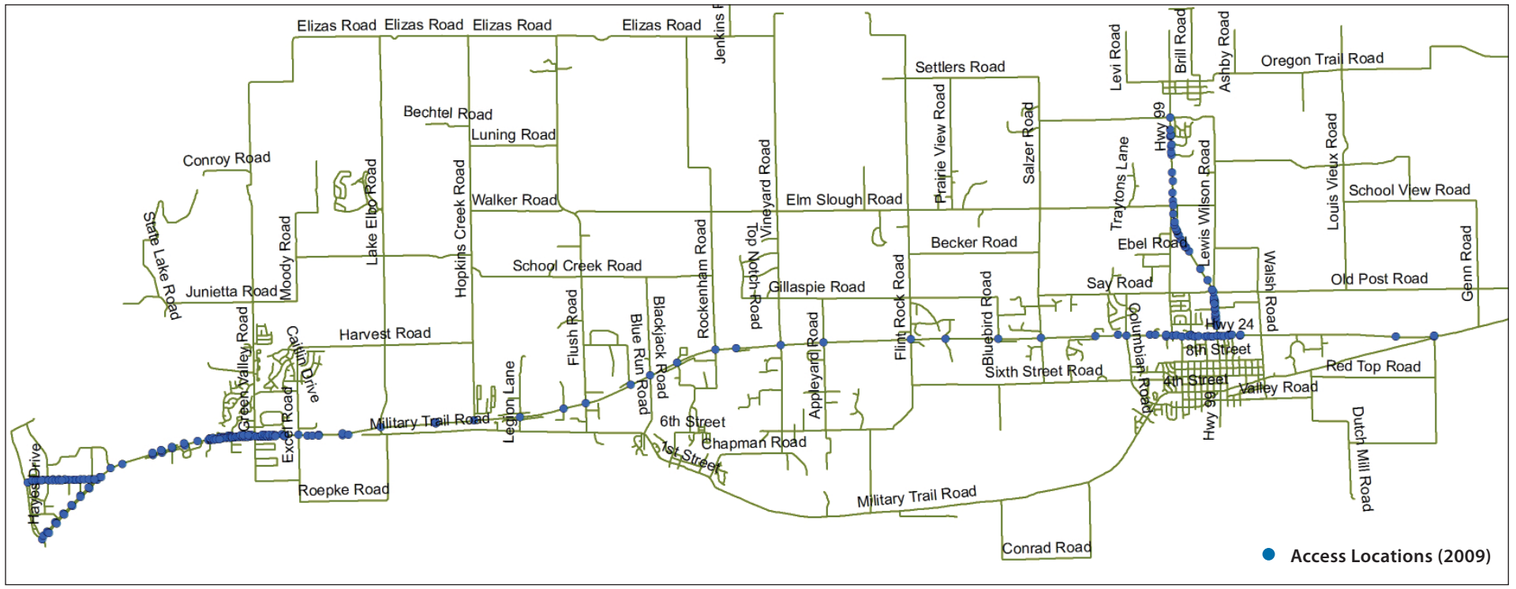
US-24				
INTERSECTION	Northbound		Southbound	
	US 24 EB - Left	US 24 WB - Right	US 24 EB - Right	US 24 WB - Left
Airport Road	> 1000′	> 1000′		
Walsh Road	> 1000′	> 1000′	> 1000′	> 1000′
K-99	> 1000′	> 1000′	> 1000′	> 1000′
Lilac Lane	> 1000′	> 1000′	> 1000′	> 1000′
Kaw Valley Road	> 1000′	> 1000′	> 1000′	> 1000′
Columbian Road	> 1000′	> 1000′	> 1000′	> 1000′
Salzer Road	900′	> 1000′	925′	> 1000′
Flint Rock Road	820′	870′	790′**	870′
Appleyard Road	850′	893′	790′**	890′
Vineyard Road	> 1000′	> 1000′	> 1000′	> 1000′
Rockenham Road	860′	> 1000′	860′	> 1000′
Blackjack Road	> 1000′	> 1000′	> 1000′	> 1000′
Blue Run Road		880′	> 1000′	880′
Flush Road	> 1000′	775′**	> 1000′	915′
Legion Lane	> 1000′	865′	> 1000′	895′
Hopkins Creek Road			> 1000′	> 1000′
Lake Elbo Road	> 1000′	> 1000′	> 1000′	> 1000′
Excel Road	> 1000′	> 1000′	> 1000′	> 1000′
Green Valley Road	> 1000′	> 1000′	> 1000′	> 1000′
McCall Road			> 1000′	> 1000′
Tuttle Creek Boulevard	Full Length of Road	> 1000′	Full Length of Road	> 1000′
K-99				
INTERSECTION	Westbound		Eastbound	
	Right	Left	Right	Left
Old Post Road	> 1000′	645′	660′	> 1000′
Elm Slough Road	> 1000′	755′	765′	> 1000′
Cannonball Road	> 1000′	> 1000′	> 1000′	> 1000′

**Available sight distance adequate for posted speed but not for observed speeds.

Sight distance required for passanger car turning onto a highway:
40 mph / 445 ft
50 mph / 555 ft
60 mph / 665 ft
70 mph / 775 ft
71 mph / 786 ft
72 mph / 797 ft
73 mph / 808 ft
74 mph / 819 ft
75 mph / 830 ft

TABLE 5.D
Crashes by Type (2002-2007)

	Rear End	Right Angle	Side Swipe	Backing	Head On	Other	Total
US-24							
Tuttle Creek Blvd	13	3	1				17
Tuttle Creek Blvd to McCall Rd	5	14	4				23
McCall Rd	7	15	1			1	24
McCall Rd to Green Valley Rd	23	14	10	1		28	76
Green Valley Rd	21	4	3			10	38
Green Valley Rd to Flush Rd	13	11	4			31	59
Flush Rd		10			1	4	15
Flush Rd to Columbian Rd	15	7	4			28	54
Columbian Rd	1	4	1			1	7
Columbian Rd to K-99	15	23	5			6	49
K-99	4	14	2		3		23
K-99 to Airport Rd	3	5	1			5	14
Airport Rd	3					2	5
K-99							
US-24	1	2		1			4
US-24 to Cannonball Rd	4	5	4			9	22
Cannonball Rd	1						1
McCall							
Tuttle Creek Blvd	22	9	2			18	51
Hayes Dr	13	13	1			13	40



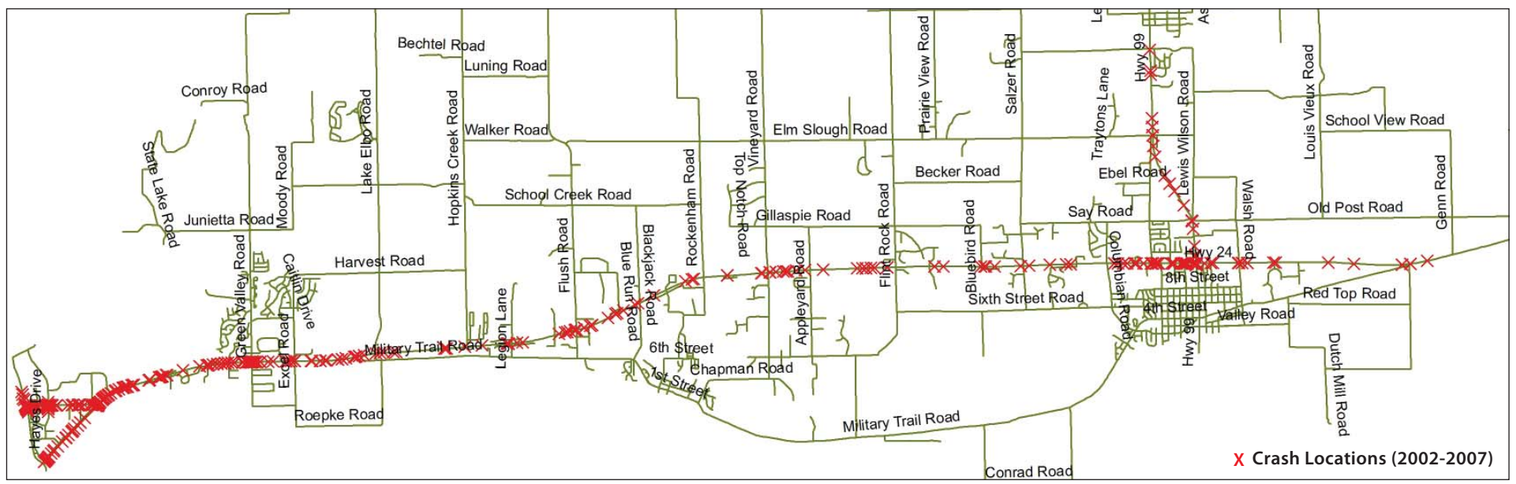


Exhibit 5.5: Access vs. Crash Locations

Access

Additionally KDOT provided an inventory of all existing access points (i.e., drives and side streets) along US-24 and K-99 including full and partial access drives. The data set includes access types for farm, agriculture, residential, commercial, industrial, and local road connections. See access locations in Exhibit 5.5 for access locations along the corridor.

There is a relationship between the location of crashes and access locations in Exhibit 5.5. In the urban areas of Manhattan and Wamego, with high driveway densities, crash patterns indicate many of the crashes are related to the number of access points and may be correctable with median treatments, driveway consolidations or the addition of turn lanes.

Travel Times

Travel time surveys are used to calculate the average traffic speed on the road network or segment of roadway. Data collected in the surveys include location of vehicles, length of segment, time, and direction of travel. The consultant team conducted travel time surveys during a.m. and p.m. peak hours on US-24. During the travel time surveys, the drivers of the survey vehicle maintain an average or typical speed, not too fast or too slow. The survey vehicle stayed in groups of the cars, passing only as many vehicles as passed them. Times were recorded as the survey vehicle passed six locations along the corridor.

On average, it took approximately 14 minutes to drive from Tuttle Creek Boulevard to K-99 in the a.m. and p.m. peak hour. The traffic speed for five segments of US-24 was calculated from the survey information. See Table 5.E. The calculated speed from the travel time survey information generally agrees with the speed information gathered as part of the 24-hour traffic counts.

FINDINGS ON EXISTING CONDITIONS

Existing Levels of Service

The consultant team completed a series of intersection capacity analyses at 10 intersections along the corridor and for specific corridor segments in order to determine the level of service (LOS) that drivers experienced on US-24. The team analyzed the corridor intersections and segments based upon the latest edition of the Transportation Research Board's (TRB) "Highway Capacity Manual." A description of the LOS criteria used in these analyses is provided in Table 5.F.

A completed LOS analysis summary for existing traffic volumes, traffic controls and lane configurations is listed in Table 5.G. The analyses indicate that all of the existing intersections, as well as the individual movements at all of the existing intersections, currently operate at LOS D or better during the a.m. and p.m. peak hours under existing intersection control. Likewise, all route segments (Table 5.H) along US-24 and K-99 also operate at LOS C or better at all times during the day. Based on previous studies conducted for the City of Manhattan, the intersection of Tuttle Creek Boulevard and McCall Road currently operates at a LOS B in both the a.m. and p.m. peak hours.

TABLE 5.E
Average Travel Speeds (mph)

	AM (EB/WB)	PM (EB/WB)
US-24 Segments		
Tuttle Creek Blvd to McCall Rd	38.5 / 36.8	44.2 / 21.8
McCall Rd to Green Valley Rd	53.2 / 50.0	43.9 / 57.7
Green Valley Rd to Flush Rd	65.9 / 67.6	73.8 / 56.9
Flush Rd to Columbian Rd	71.1 / 71.7	63.6 / 73.6
Columbian Rd to K-99	48.6 / 49.3	43.6 / 53.7
K-99 to Airport Rd	--	--
K-99 Segment		
US-24 to Cannonball Rd	--	--

Direction of Travel: EB = Eastbound; WB = Westbound

TABLE 5.F
Level of Service (LOS) Definitions

UNSIGNALIZED INTERSECTIONS		SIGNALIZED INTERSECTIONS	
Level of Service	Average Control Delay (sec/veh)	Level of Service	Control Delay per Vehicle (sec)
A	< = 10	A	< = 10
B	> 10 and < = 15	B	> 10 and < = 20
C	> 15 and < = 25	C	> 20 and < = 35
D	> 25 and < = 35	D	> 35 and < = 55
E	> 35 and < = 50	E	> 55 and < = 80
F	> 50	F	> 80

Level of service criteria are outlined in the 2000 edition of the "Highway Capacity Manual" (HCM) for both signalized and unsignalized intersections. The HCM defines the level of service as a measure of the quality of traffic flow. There are six different levels of service for each facility type, each representing a range of operating conditions. Each level of service is designated by a letter from "A" to "F", with "A" being the most desirable condition and "F" being the least desirable condition.

TABLE 5.G
Existing Level of Service (LOS) Summary

	AM Peak Hour		PM Peak Hour	
Signalized	Intersection LOS			
US-24				
Tuttle Creek Blvd	No Count		C	
McCall Rd	No Count		C	
Green Valley Rd	C		B	
K-99	A		A	
Tuttle Creek Blvd				
McCall Rd	B		B	
Unsignalized	Approach LOS			
	NB	SB	NB	SB
Excel Rd	C	C	D	B
Flush Rd	D	C	D	D
Blackjack Rd	B	C	C	B
Salzer Rd	B	B	B	B
Columbian Rd	E	D	D	D
Airport Rd	A	--	A	--

Intersection Approach Leg: NB = Northbound, SB = Southbound

TABLE 5.H
Segment Level of Service (LOS)

	AM Peak Hour	PM Peak Hour
US-24		
Tuttle Creek to McCall Rd		
Eastbound	No Count	B
Westbound	No Count	B
McCall Rd to Green Valley Rd		
Eastbound	A	B
Westbound	B	A
Green Valley Rd to Flush Rd		
Eastbound	A	B
Westbound	B	A
Flush Rd to Columbian Rd		
Eastbound	A	A
Westbound	A	A
Columbian Rd to K-99		
Eastbound	A	A
Westbound	A	A
K-99 to Airport Rd		
Eastbound	A	A
Westbound	A	A
K-99		
US-24 to Cannonball Rd	C	C

**AM Peak Hour 7:15 to 8:15, *PM Peak Hour 5:00 to 6:00*

Existing Deficiencies
Based on the traffic analysis and field observations, the consultant team identified existing deficiencies along the corridor, including:

- Inadequate eastbound deceleration lane lengths for left and right turn movements at Flush Road
- Need for a southbound to westbound right turn acceleration lane at Flush Road
- Prevailing 85th percentile speeds on US-24 exceed available sight distance for some movements at intersections with Flush, Flint Rock and Appleyard Roads
- Significantly higher than average traffic crash rate on US-24 between Green Valley Road and Flush Road
- The 85th percentile speeds are significantly higher than posted speeds along most US-24 sections
- Non-standard driveway spacing between Crown C Circle and Lake Elbo Road
- Non-standard driveway spacing and lack of east-west left turn lanes between Columbian and K-99
- Inadequate capacity on McCall Road from Hayes to US-24
- Excessive vehicle queues in eastbound left turn lane on McCall Road at US-24
- Excessive vehicle queues in eastbound left turn lane on US-24 at Green Valley Road
- Need for eastbound to southbound right turn lane on US-24 at Columbian Road
- Excessive vehicle queues in southbound right turn lane on Green Valley Road at US-24
- Inadequate westbound deceleration lane length for left turn movement at Columbian Road
- No pedestrian or bicycle paths or lanes provided along US-24 or parallel routes except limited sidewalks in Wamego

FINDINGS ON FUTURE CONDITIONS

Travel Demand Model Development

Travel demand models are computer software tools used to forecast traffic. They are composed of two basic types of information:

1. Information about the thoroughfare system, including speeds, capacities and traffic controls.
2. Trip generation information, based on the existing and proposed land uses in the modeled area.

The consultant team created a travel demand model for the study area using the existing street network information provided by NAVTEQ, which provides a highly accurate representation of the detailed road network, including attributes like numbers of lanes, turn restrictions, physical barriers, one-way streets and restricted access. NAVTEQ data is most commonly used in onboard navigation-enabled vehicles. The team reviewed and updated the NAVTEQ street links to match the current function classifications of the roads in the study area.

As part of the travel demand model, the study area was divided into traffic analysis zones (TAZ). Based on the land uses within each TAZ, traffic related data is computed for vehicle-trip production and attraction by trip type. Trip types include home-based trips to and from work (HBW), home-based trips to and from other locations (HBO), and non-home based trips (NHB). The consultant team designed each TAZ boundary to match the existing census block group boundaries, parcel boundaries and the current street network. See Exhibit 5.6.

Next, the consultant team added to the travel demand model the existing land use for the study area. Riley County and Pottawatomie County provided existing land use information, and the team sorted the data into the following categories for analysis: single family, multi family, apartment, retail, office and industrial.

After the model construction was complete, the consultant team ran the model and compared the results to the recorded field data to determine how well the initial assumptions and model inputs replicated recorded conditions.

The consultant team validated the travel demand model with the existing traffic counts and checked travel times and delay conditions at major intersections against recorded values to verify accuracy. After the review, the individual inputs were modified as required, and the resulting outputs were compared to the recorded conditions. This process was repeated until an acceptable level of correlation was attained.

As part of the validation process, observed field traffic volumes were compared to the model-generated traffic volumes in order to measure the overall model accuracy. This comparison is called the coefficient of correlation, or R^2, and it displays how well the regression line represents the assignment data. A minimum acceptable R^2 is 0.85 with 1.00 being perfect. The consultant team validated the US-24 model to an R^2 of 0.93.

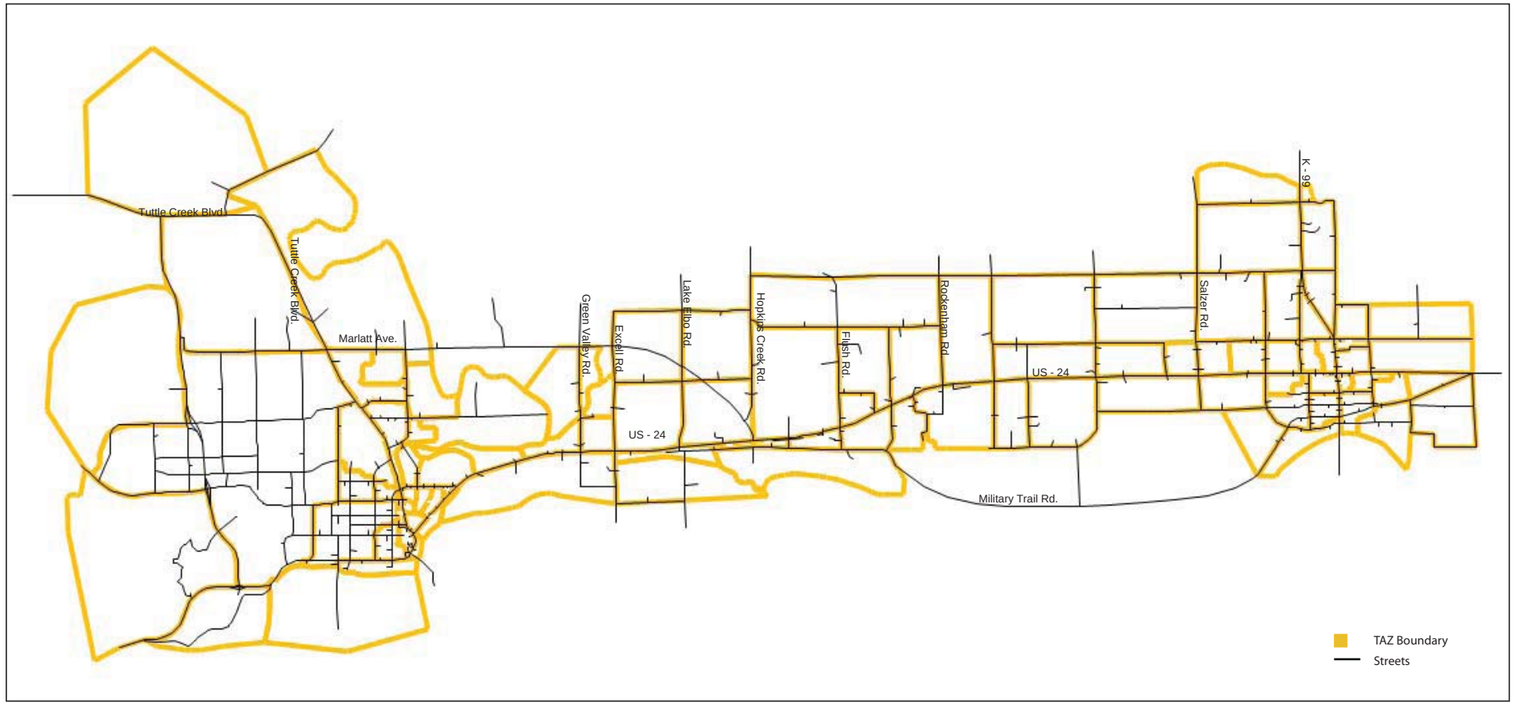


Exhibit 5.6: Traffic Analysis Zones (TAZs) - Defined in Yellow

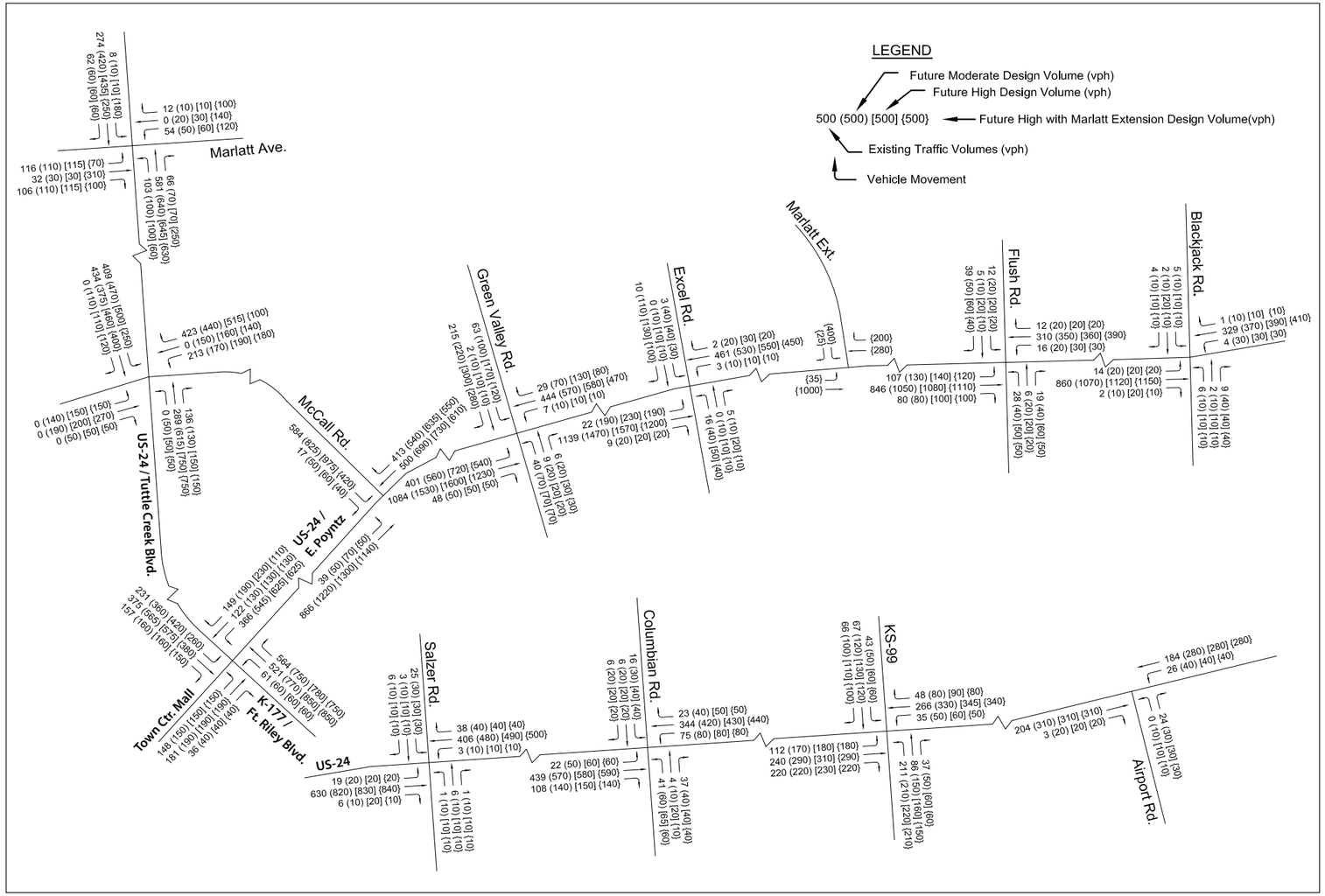


Exhibit 5.7: Summary of Design Traffic Volumes

Travel Demand Model: Projecting Future Conditions

The consultant team created future travel demand models using the existing street network coupled with the future moderate and future high land use growth projections. Additionally, the consultant team developed a model that included the existing street network along with the proposed Marlatt Extension improvements and then paired this scenario with the high future land use projections.

Each of the model scenarios produced traffic volumes that could be expected due to the future land use within the study area and future land use within the City of Manhattan. The traffic along the US-24 corridor, under the moderate land use projection, would be expected to increase about 25 to 40 percent, depending on the area of the corridor. The traffic on US-24 would be expected to increase about 35 to 55 percent under the high land use projection, depending on the area of the corridor. When comparing the segment of US-24 between McCall Road and Green Valley Road using the high land use projection, the model expected traffic volumes to decrease 20 percent with the addition of the Marlatt Extension. See Exhibit 5.7.

The consultant team completed a series of capacity analyses at the 10 previously analyzed intersections along the corridor to determine the expected LOS that drivers experienced. The team analyzed each intersection using the existing geometry with the future traffic volumes. Additionally, the team studied the intersection of the Marlatt Extension with US-24 as an at-grade signalized intersection.

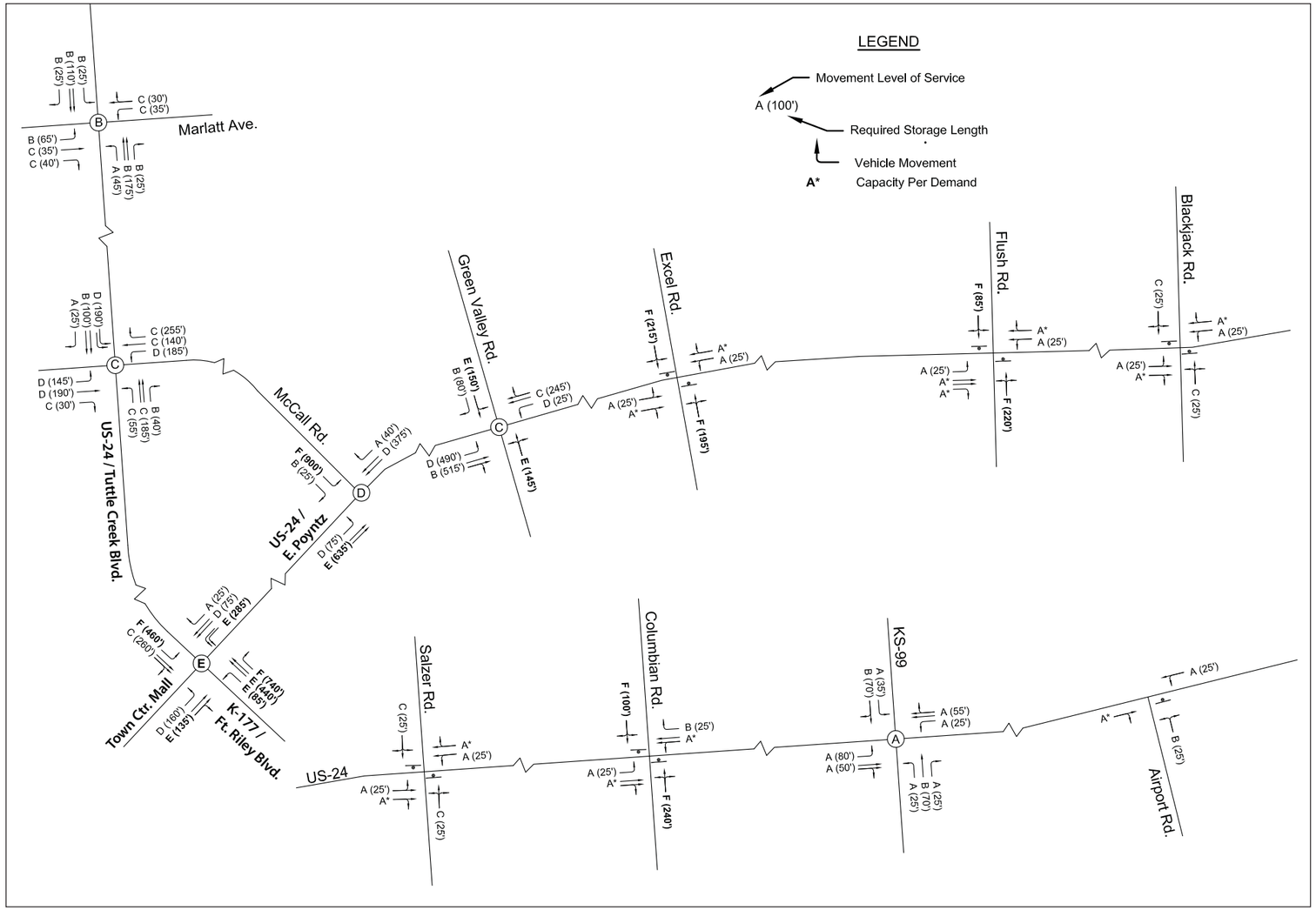


Exhibit 5.8: LOS of Future 2030 Moderate Land Use

Future Levels of Service

The completed analyses indicates that improvements need to be considered at many of the intersections on the US-24 corridor to prevent their failure. Under current traffic control conditions, Excel Road would be expected to fail in less than five years; Columbian Road would be expected to fail in five to 10 years; and Flush Road would be expected to fail 10 to 15 years.

A summary of the completed analysis for the critical p.m. peak hour traffic volumes is shown in Table 5.I and on Exhibits 5.8-5.10, LOS of Future Moderate 2030 Land Use, LOS of Future 2030 High Land Use, and LOS of Future 2030 High Land Use with Marlatt Extension for each of the travel demand model scenarios.

TABLE 5.I
Future Level of Service (LOS)

Intersections			
	Future Moderate	Future High	Future - High with Marlatt Ext
Signalized	Intersection LOS	Intersection LOS	Intersection LOS
US-24			
Tuttle Creek Blvd	E	F	E
McCall Rd	D	F	D
Green Valley Rd	C	D	C
Hopkins Creek / Marlatt Ext	--	--	B
K-99	A	B	B
Tuttle Creek Blvd			
McCall Rd	C	C	C
Marlatt Ext	B	B	C

	Approach LOS		Approach LOS		Approach LOS	
Stop Control	North-bound	South-bound	North-bound	South-bound	Northbound	Southbound
Excel Rd	F	F	F	F	F	E
Flush Rd	F	F	F	F	F	F
Blackjack Rd	C	C	C	C	C	C
Salzer Rd	C	C	C	C	C	C
Columbian Rd	F	F	F	F	F	F
Airport Rd	B	--	B	--	B	--

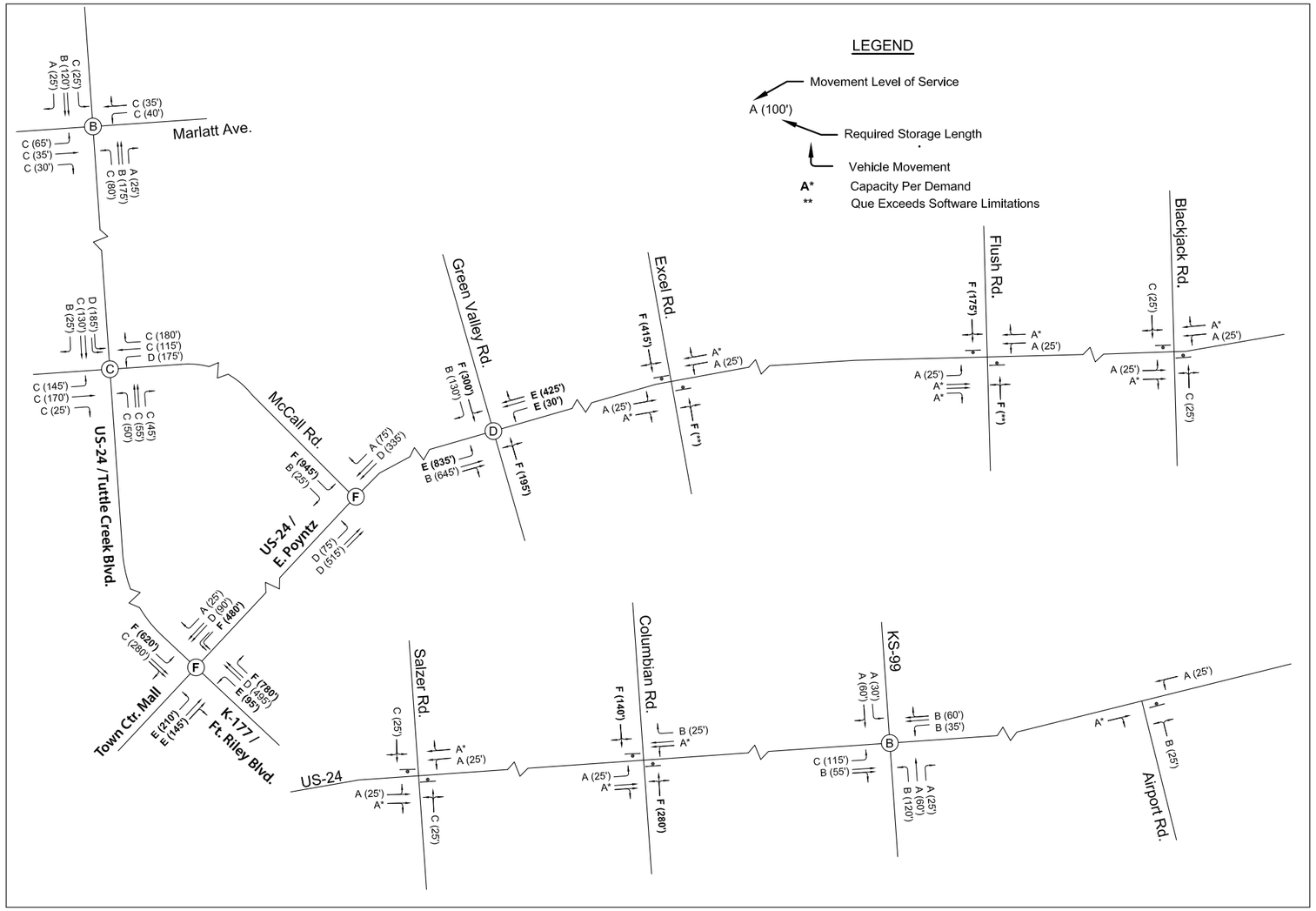


Exhibit 5.9: LOS of Future 2030 High Land Use

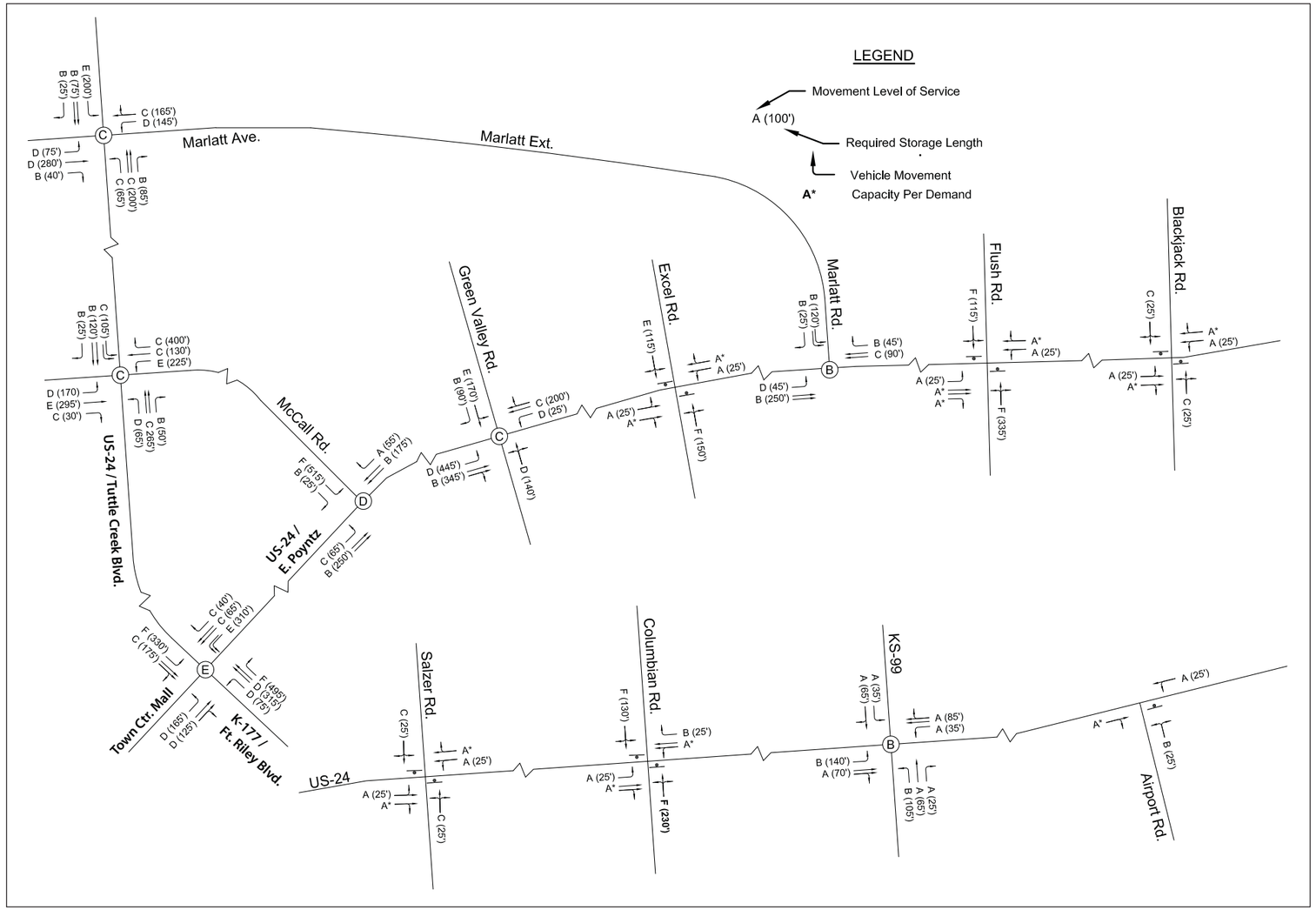


Exhibit 5.10: LOS of Future 2030 High Land Use with Marlatt Extension

Future Deficiencies

The consultant team identified several improvement needs to best serve the planned growth along or adjacent to the US-24 corridor and the associated growth in traffic volumes. These future deficiencies include:

- Need to extend McCall Road from Tuttle Creek Boulevard to the 4th Street and Bluemont intersection as a critical link in the City's thoroughfare system. *
- Inadequate capacity for southbound left turn movements from Tuttle Creek Boulevard to US-24
- Need to develop a major intersection on US-24 at Levee Drive to provide access to the industrial park development that is expected on the south side of US-24 adjacent to the City's waste water treatment plant
- Inadequate arterial capacity on US-24 between McCall Road and Green Valley Road
- Inadequate capacity at intersection of US-24 with Excel Road
- Need for more left and right turn deceleration and acceleration lanes at several intersections along US-24 and K-99 as turning movements exceed the 40 mph criteria for deceleration lanes and 75 mph criteria for acceleration lanes
- Inadequate capacity at intersection US-24 with Flush Road
- Inadequate capacity at intersection US-24 with Columbian
- Inadequate capacity at intersection US-24 with Kaw Valley Road

* *This link is needed to eliminate a series of turning movements at critical major intersections along Tuttle Creek Boulevard caused by the discontinuity of the Bluemont / McCall Road east-west arterial corridor. This link also would provide a connection serving the redevelopment along the City's 4th Street corridor to and from Pottawatomie County.*

TRANSPORTATION RECOMMENDATIONS

The US-24 and K-99 corridors within the study area generally considered good highway facilities. The consultant team identified some localized and a couple of system-wide deficiencies, which should be addressed as time and budgets allow. The team identified many of these improvement needs as existing, and identified many more as a result of the continued growth of land uses, which is expected. Where possible, many improvements should occur as development or redevelopment takes place along the corridor, including along McCall Road.

Table 5.J, at the end of this chapter, provides a summary of the improvement recommendations. This summary includes locations, timeframes, triggers and construction cost estimates for the various improvement recommendations. This summary also includes many alternatives that affected parties should consider to address capacity and / or safety concerns at some locations. Table 5.J is an overall "wish list" of improvements that need to be prioritized and implemented by the partner agencies as time and budgets allow. A series of illustrations showing the recommended improvements is provided on Plates 1-33 in Appendix A. The consultant team views the recommended improvements or improvement alternatives as a means to address the existing and future expected deficiencies. The improvement recommendations are, in part, a result of the technical analyses completed as part of this Study.

Near-Term Improvements

There are several improvement projects that are needed immediately to address existing deficiencies. These near-term improvements include:

- ***McCall Road*** – The existing three-lane section between Hayes Road and US-24 should be widened to provide a five-lane cross section to provide needed arterial capacity.
- ***McCall Road and US-24 Intersection*** – This intersection needs several improvements, including:
  - realignment to correct the intersection angle
  - adding a second eastbound left turn lane on McCall Road
  - extending the westbound right turn lane on US-24
  - adding bicycle and pedestrian facilities
- ***US-24 from Tuttle Creek Boulevard to McCall Road*** – Plan partners should consider consolidating four of the six existing median openings in this section and upgrading the remaining median openings to provide adequate deceleration and acceleration lanes for left turn and right turn movements.
- ***US-24 from Blue River Bridge to Green Valley Road*** – Plan partners should consider consolidating three of the seven existing median openings in this section and upgrading the remaining median openings to provide adequate deceleration and acceleration lanes for left turn and right turn movements. This action includes reconstruction of the intersection with Crown C Circle to provide proper access.
- ***Green Valley Road and US-24 Intersection*** – The signal timing at this intersection should be reviewed to confirm it is functioning efficiently for the existing traffic volumes. After analyzing the existing traffic count information, the team determined that a southbound right-turn lane should be constructed on Green Valley Road to improve the function of this intersection. Additionally, field reviews indicate the eastbound left-turn lane on US-24 should be extended to remove turning vehicles from the through traffic flow.
- ***US-24 from Green Valley Road to Excel Road*** – Plan partners should consider consolidating two of the three existing median openings in this section and upgrading the remaining median openings to provide adequate deceleration lanes and median channelization to allow right in - right out - left in movements at the intersection with Green Valley Parkway / Cemetery Drive.
- ***Flush Road and US-24 Intersection*** – Based on the existing traffic volumes at Flush Road, the existing eastbound left-turn and right-turn lanes on US-24 should be lengthened. Also, an acceleration lane should be constructed on westbound US-24 for southbound vehicles on Flush Road making a right turn.
- ***US-24 east of Flush Road*** – The vertical profile along a section of US-24 could be adjusted to increase the sight distance. This would be an alternative to addressing the concerns of high speeds along US-24 at this location, where the intersection is designed for a speed of 70 mph, if speed enforcement is not effective.
- ***Columbian Road and US-24 Intersection*** – Currently at Columbian Road, there is an eastbound right turn taper, an eastbound left turn lane, a westbound right turn taper, and a westbound left turn lane. the eastbound right turn taper should be extended to a turn lane to accommodate the right turn traffic volumes. The westbound left-turn lane should be extended. The intersection is close to meeting the criteria (warrants) for a traffic signal, based on existing traffic volumes.. Additional monitoring should be conducted to do determine when this intersection should be signalized in the near term.
- ***Kaw Valley Road intersection with US-24*** – Widen the north leg of the intersection to provide a separate left turn lane and a sidewalk along the east side of the street. This improvement would require the extension of a large culvert under Kaw Valley Road just north of US-24.
- ***US-24 from Columbian Road to K-99*** – The four-lane sections should be widened to five-lanes in order to provide left turn lanes for the many driveways in this section. Where possible, some driveways should also be closed or combined with adjacent driveways.
- ***Corridor Transportation System Enhancements*** – As soon as practical, several improvements should be completed to provide or improve services for the pedestrian and bicycles modes and to provide some intermodal capability. These should include:
  - extending the sidewalks in Wamego at the intersection with Kaw Valley Road
  - adding "Share the Road" signs for cyclists along appropriate sections of US-24 and adjacent routes in the corridor
  - providing "Park and Ride" facilities in Wamego and St. George for commuters to and from Manhattan
  - The private-public partnership efforts to pursue funding and property for phased implementation of the WAM-SAG-MAN trail (See Appendix C) should continue, as there is a lack of bicycle facilities throughout the corridor. Public involvement indicated this as a highly desired element of the transportation network.
- ***General Access Management Improvements*** – At other intersections along US-24 and K-99, the left turn and right turn traffic volumes should be monitored to determine when the criteria for deceleration and acceleration lanes are met. At such time, construction of these lanes should be programmed, as budgets allow, to improve the safety along the corridor.
- ***General Speed Control*** – The studies of existing conditions indicated that the 85th percentile speeds along most of the corridor are above the posted speeds. This is critical in a few areas where intersection sight distance is based on the posted speeds. Enforcement activities should be conducted to try to lower the speeds to acceptable levels.

Long-Term Improvements

The consultant team recommends programming several improvement projects to address expected future deficiencies. These long-term improvements include:

- ***McCall Road Extension*** – Construct an extension of McCall Road from Tuttle Creek Boulevard to the intersection of 4th Street with Bluemont Avenue. This project would also include improvements at the Tuttle Creek Boulevard intersection to accommodate the conversion from a T-type intersection to a four-way intersection.
- ***Tuttle Creek Boulevard intersection with US-24*** – Widen Tuttle Creek Boulevard to allow for two southbound left turn lanes.
- ***Levee Drive intersection with US-24*** – Convert the existing Levee Drive intersection from a T-type intersection to a four-way intersection with complete left and right turn lanes and signalization to accommodate the industrial park development planned by the City of Manhattan along the south side of US-24 west of the River. This includes the upgrading and realignment of the current minor road serving the industrial area / treatment plant and a relocated at-grade railroad crossing.
- ***US-24 from McCall Road to Green Valley Road (including Blue River Bridge)*** – Widen US-24 to provide six through lanes and required turn lanes to serve the expected 20-year design traffic volume of about 37,500 vpd along this section. The Blue River bridge would also need to be widened and raised to meet 100-year flood standards.
- ***Marlatt Extension*** – Construct a extension of existing Marlatt Road from Casement Road across the Big Blue River to a connect with US-24 east of Excel Road (i.e., at Lake Elbo Road, Hopkins Creek Road or possibly Flush Road). Analysis indicates this route would divert significant traffic away from US-24 between McCall Road and Green Valley Road and eliminate the need to widen US-24 to a six-lane expressway cross section. The Marlatt Extension would be expected to serve about 6,000 vpd at the eastern terminus with US-24 and about 12,000 vpd at the western end at the intersection with Tuttle Creek Boulevard.
- ***Marlatt Extension connection with US-24*** – Construct an interchange to serve the significant volume of traffic that would use the Marlatt Extension to access US-24. The consultant team advises against signalizing this connection, due to the high speed (i.e. > 70 mph) along US-24 in the area of the connection. It is anticipated that this road will be a three-lane section.
- ***Flush Road intersection with US-24*** – To serve the traffic growth expected on Flush Road at this intersection by the design year 2030, it will be necessary to provide some type of non-traditional intersection design or construct an interchange. Traffic signal control is not feasible at this intersection due to the high speed of traffic on US-24 (i.e. >70 mph). There are a few non-traditional intersection designs that do not require traffic signal control. DOTs around the country are using these designs to address the same condition that exists at this intersection. It may be that within 20 years, these designs will not be considered non-traditional and will be a less expensive option.
- ***Kaw Valley Road intersection with US-24*** – Install a traffic signal to satisfy growing traffic volumes on Kaw Valley Road, which also serves a community school to the north of US-24.
- ***General Access Management Improvements*** – At other intersections along US-24 and K-99, the left turn and right turn traffic volumes should be monitored to determine when the criteria for deceleration and acceleration lanes are met. At such time, construction of these lanes should be programmed, as budgets allow, to improve the safety along the corridor.

RECOMMENDED CORRIDOR IMPROVEMENTS

	ROUTE SEGMENT / LOCATION	IMPROVEMENT	TIMING	TRIGGER	ESTIMATED COST*	NOTES	PLATE**
McCall Road	At Tuttle Creek Boulevard intersection	Add WB thru lane, NB left turn lane, and EB thru, left and right turn lanes for McCall / 4th Street Extension	5 to 10 years	Construct with McCall/ 4th St. Extension	$500,000		33
	Hayes to US-24	Widen from 3 to 5 lanes	< 5 years	Currently warranted	$4,300,000		34
	At US-24 intersection	Improve McCall alignment into US-24; Add 2nd EB left turn lane	< 5 years	Currently warranted	$1,600,000		34
US-24 - Tuttle Creek Blvd. to McCall	At Tuttle Creek Boulevard intersection	Add 2nd SB left turn lane	5 to 10 years	SB LT > 300 vph	$200,000		1
	Tuttle Creek Boulevard to McCall	1. Close 1st, 2nd, 4th, and 6th of the six median openings; add or lengthen left and right turn lanes on US-24 at 3rd and 5th median openings. Monitor 3rd opening for signal warrant.	< 5 years	Currently warranted	$400,000		1, 2, 3
		2. Add frontage road on South side between 1st and 3rd median openings.	< 5 years	Currently warranted	$375,000		1, 2
	At Enoch Lane Intersection	3. Improve Enoch alignment into US-24	< 5 years	Currently warranted	$700,000		2
US-24 - McCall to Green Valley Road	At McCall intersection	Lengthen WB right turn lane	< 5 years	Currently warranted	$150,000		3A
	At Levee Drive intersection	Realign road to treatment plant and proposed industrial park to intersect at the existing Levee Drive intersection; add turn lanes and possible signal; close existing intersection of treatment plant road; and moving railroad crossing to new road crossing.	10 to 15 years	Based on Traffic Impact Study at time of development of industrial park	$100,000		3A
	McCall to Green Valley Road	1. Close median opening 650' West of Hofman Lane	< 5 years	Currently warranted	$20,000		4A
		2. Add WB left turn lane at median opening 1200' west of Hofman Lane	< 5 years	Currently warranted	$150,000		4A
		3. Add EB and WB left turn lanes at Hofman Lane	< 5 years	Currently warranted	$300,000		4A
		4. Modify intersection median opening with Crown-C Circle and Sale Barn drive	< 5 years	Currently warranted	$750,000		5A
		5. Close median opening 575' west of Powers Lane / Scottie Lane	< 5 years	Currently warranted	$20,000		6A
		6. Correct Align Powers Lane and Scottie intersection offset	< 5 years	Currently warranted	$350,000		6A
		7. Close median opening 675' west of Green Valley Road	< 5 years	Currently warranted	$20,000		6A
		8. Extend north frontage road (Kearby to Frontage)	5 to 10 years	With development	$800,000		5A
		9. Extend south frontage road (Crown C to Dempsey)	5 to 10 years	With development	$1,800,000		5, 6
		10. Widen to six through lanes including wider bridges over Big Blue River (Green Valley to McCall)	10 to 20 years	ADT > 30,000 vpd	$7,000,000	Marlatt Extension would eliminate these needs	3B, 4B, 5B, 6B
		11. Construct an Extension of Marlatt Ave. from Casement Road over the Big Blue River and extending east to intersect US-24 at Lake Elbo Road, Hopkins Creek Road, or even Flush Road	10 to 20 years	US-24 ADT > 30,000 vpd	$50,000,000 to $60,000,000	The extension of Marlett Avenue would be an alternate to widening US-24 to six lanes	Appendix C
	At Green Valley Road intersection	1. Lengthen EB left turn lane; lengthen SB right turn lane; add WB right turn lane	< 5 years	Currently warranted	$400,000	Marlatt Extension would eliminate these needs	6A
		2. As alternate to longer EB left turn lane, add 2nd WB left turn lane and widen Green Valley Road from US-24 to Quail Lane.	< 5 years	Currently warranted	$400,000	Marlatt Extension would eliminate these needs	6C
		3. Construct and indirect LT intersection.	5 to 10 years	Currently warranted	$400,000		7
US-24 - Green Valley Road to Flush Road	Green Valley Road to Excel Road	Close two midblock median openings; convert Green Valley Parkway to right-in-right-out-left-in.	< 5 years	Currently warranted	$80,000		7
	Excel Road	Pave road and connect Excel Lane to Harvest Rd.	< 5 years	Currently warranted	$300,000		7
	At Excel Road intersection	1. Add turn lanes	10 to 15 years	>40 LT's; >40 RT's	$250,000		7
		2. Add traffic signal	10 to 15 years	Based on monitoring of signal warrants	$150,000		7
	Excel Road to Lake Elbo Road	1. Extend Blue Valley Drive to Lake Elbo as frontage road	10 to 15 years	With development	$2,500,000		7,8
		2. Extend Limerick Lane to Excel Road as frontage road	10 to 15 years	With development	$1,800,000		7, 8, 9
	At Lake Elbo Road / Military Trail	Add SB to WB right turn acceleration lane and NB to WB left turn acceleration lane	< 5 years	Currently warranted	$500,000		9
	At Marlatt Extension intersection (2)	Marlatt interchange	10 to 20 years	With Marlatt Extension	$20,000,000	Could be combined with Lake Elbo Road or Hopkins Creek Road or Flush Road	9
	Lake Elbo Road to Hodges Lane	Extend Walnut Drive / Vesper Circle as north frontage road	10 to 15 years	With development	$150,000		10
	At Legion Lane intersection	Add EB and WB left turn lanes	5 to 10 years	>40 LT's; >40 RT's	$300,000		11
	At Legion Lane and Military Trail Road	Improve intersection	< 5 years	Needed now	$500,000		
	At Plum Creek Circle / Hodges Lane	Add EB and WB left turn lanes	5 to 10 years	>40 LT's	$300,000	In conjunction with indirect left turn alternate at Flush Road	13A
	At Flush Road intersection	1. Add SB to WB right turn acceleration lane	< 5 years	Currently warranted	$300,000		13A
		2. Add length to EB to NB left turn lane	< 5 years	Currently warranted	$600,000		13A
		3. Construct an Indirect Left Turn alternative; traffic signal not recommended	5 to 10 years	When peak hour traffic signal warrant is met	$650,000		13C, 14C
		4. Construct interchange	15 to 20 years	ADT > 4,000 vpd on Flush Road	$12,000,000		13B, 14B

	ROUTE SEGMENT / LOCATION	IMPROVEMENT	TIMING	TRIGGERS	ESTIMATED COST*	NOTES	PLATE**
US-24 - Flush Road to Columbian	Flush Road to Blackjack Road	1. Adjust US-24 vertical profile to improve site distance.	< 5 years	Currently warranted	$2,000,000	Alternate to address limited WB sight distance	13D, 14D
		2. Enforcement of speeds on WB US-24	< 5 years	Currently warranted	N/A	Alternate to address limited WB sight distance	
		3. Extend north and south frontage roads	10 to 15 years	With development	$2,000,000		14, 15
	At Blackjack Road	Add right turn and left turn deceleration and acceleration lanes	5 to 10 years	EB / WB >40 LT's; >40 RT's; NB / SB >75 RT's	$600,000		15
	Blackjack Road to Columbian	Extend north and south frontage roads	10 to 15 years	With development	$5,000,000		15 - 25
	At Hodges Lane/ Plum Creek Cir.	Add EB and WB LT lanes	5 to 10 years	>40 LT's; >RT's	$300,000		13C
US-24 - Columbian to K-99	At Columbian Road intersection	1. Add traffic signal	< 5 years	Based on monitoring of signal warrants	$150,000		25
		2. Add EB right turn lane and SB left turn lane	< 5 years	Currently warranted	$300,000		25
	Commercial to Kaw Valley Road	Complete the 5-lane section	< 5 years	Currently warranted	$750,000		26
	At Kaw Valley Road intersection	1. Add traffic signal; move from Lilac	5 to 10 years	Based on monitoring of signal warrants	$150,000		26
		2. Widen north leg to add SB LT lane	< 5 years	Currently warranted	$200,000		26
		3. Extend sidewalk on east side down to US-24	< 5 years	Currently warranted	$40,000		26
	Kaw Valley Road to K-99	1. Complete the 5-lane section	< 5 years	Currently warranted	$1,800,000		26, 27
		2. Extend sidewalk on south side from Walnut Street to Kaw Valley Road	< 5 years	Currently warranted	$15,000		26
		3. Reconstruct signal as midblock pedestrian signal	< 5 years	Currently warranted	$75,000		26
US-24 - K-99 to Airport Road	At Walsh Road / Balderson Blvd intersection	Pave Walsh Road	5 to 10 years	With development	$75,000		28
	At Airport Road intersection	Widen US-24 to provide WB LT lane	5 to 10 years	>40 LT's	$150,000		32
K-99 - Cannonball Road to US-24	At Cannonball Road intersection	Widen K-99 to provide NB & SB LT lanes	5 to 10 years	>40 LT's	$300,000		40
	At Elm Slough Road intersection	Widen K-99 to provide NB & SB LT lanes	5 to 10 years	>40 LT's	$300,000		38
	At Say Road intersection	Widen K-99 to provide NB & SB LT lanes	5 to 10 years	>40 LT's	$300,000		36
	Say Road - Kaw Valley Road to Columbian Road	Pave road	< 5 years	Currently warranted	$160,000		36
Transportation System Enhancements	At Columbian Road	Construct Park & Ride facility	< 5 years	Currently warranted	$150,000		
	At Flush Road	Construct Park & Ride facility	< 5 years	Currently warranted	$150,000		
	Within Corridor	Construct WAM-SAG-MAN Trail	< 5 years	Currently warranted	N/A		Appendix C
	At McCall Road	Construct / provide bike lanes as part of intersection improvements	< 5 years	Currently warranted			
	Within Corridor	Install "Share the Road" signing	< 5 years	Currently warranted	$30,000		

* Cost estimates are based on 2009 construction costs and included for budgeting purposes; they do not include right-of-way, utility relocation, and engineering, as required.
** Plates are illustrations of the recommendations on displays at tonight's meeting; they will also be available on the website and in the Plan document.

Abbreviation Key:

WB – westbound
EB – eastbound
SB – southbound
NB – northbound
LT – left turn
RT – right turn
VPD – vehicles per day
VPH – vehicles per hour

6 INFRASTRUCTURE PLANNING

PURPOSE OF INFRASTRUCTURE PLANNING

As part of this US-24 Corridor Management Plan, the participating government entities asked the consultant team to review the existing storm drainage, water distribution and sanitary sewer collection facilities surrounding the US-24 corridor and provide recommendations on infrastructure planning. During this review, the consultant team collected information from as-built plans, Geographic Information Systems (GIS) data and previously completed studies and plans from the participating governments. In addition, the consultant team met with utility representatives to develop a greater understanding of their system capacities and their visions for future infrastructure expansion and/or improvements. The team collected information, installed the data on aerial photography and considered the infrastructure needs in conjunction with the land use planning. The planned expansion of these future utilities could be completed as a part of future CIP projects or be coordinated with future developments as they occur. In addition, this utility information will be used to develop an understanding of what impact fees may be needed to improve or expand the service areas. No utility modeling was completed for this review.

STORM WATER DRAINAGE

The consultant team first reviewed storm drainage along the corridor as part of the infrastructure planning for the US-24 Corridor Management Plan. Certain areas reflected signs of inadequate drainage. The storm water drainage evaluation did not include a complete hydraulic analysis; rather it included collecting and combining data from the public, previous drainage studies, and field investigations. The consultant team then reviewed this data to determine deficiencies.

Data Collection

In reviewing the storm water drainage for the area, the consultant team gathered previously completed drainage studies conducted within the US-24 study area. The team used the following drainage reports for the review:

- City of Manhattan Storm Water Management Master Plan; May 1, 1995
- Manhattan East Side Drainage Study; October 18, 2006
- Heritage South Drainage Study; July 2006
- Heritage North Drainage Study; August 2006
- Wamego Storm Water Management Master Plan; November 2008

Information obtained from these reports was transferred into a GIS format that is provided in Appendix B.

To supplement this information, the consultant team completed a field investigation of all drainage structures along the US-24 corridor. The investigation included photographing drainage system features and linking the photos to pipe locations in GIS files. From these field investigations, the team determined the pipes were either adequate, marginal or inadequate, based on their conditions. Pipes that provided a lesser capacity of flow than from the time of their original installation were identified as inadequate, marginal or adequate unless there was evidence of an undersized pipe or structure. Pipes identified as inadequate were those that had significant damage to the end sections, were collapsed, or were silted in. Marginal pipes were those that had experienced minor restrictions to flow. Pipes that were in good condition were identified as adequate.

In addition to the above methods of storm drainage data collection, the team collected public input during the public meetings and outreach. This opportunity for open participation allowed users of the corridor, business owners and area residents opportunities to provide information about their drainage concerns. The consultant team reviewed the concerns to determine if future corridor improvement projects could assist in improving the drainage in inadequate locations. The public involvement process identified specific drainage issues at the following locations:

US-24 (Lake Elbo Road to Excel Road) – The public identified this location early in the process. The middle section of ground located north of US-24 in between Lake Elbo Road to Excel Road experiences significant flooding during a storm event. This problem exists because of the elevation of the property in relation to the elevation of the adjacent drainage ditch. Both appear to be extremely close in elevation. In addition, the longitudinal slope of the adjacent ditch is relatively flat. Therefore, the ditch does not drain at a rapid pace. In addition, slightly downstream is a Reinforced Concrete Box (RCB) structure that crosses Limerick Lane and appears to be significantly undersized. The RCB appears to be causing water to back up along the corridor. Improving drainage through this structure would improve the drainage along this section during an intense storm event. In order to solve the drainage problems at the flooding property, the consultant team recommends placing fill on this property to raise its elevation.

US-24 (Crown C Circle to Green Valley Road) – Drainage along the south side of this corridor section is poor. Currently, the ditches along the south side of US-24 have very little longitudinal slope, therefore preventing drainage from occurring at a preferred rate. In addition, the residential area directly south of the corridor to the Union Pacific Railroad Track is very flat. From field visits following a storm event, consultant team members determined significant storm water ponding occurs in this area. Because of the complexity of this drainage area, the team did not identify immediate solutions as part of the storm drainage review. However, the team does recommend conducting a comprehensive drainage study for this area to determine the best methods of storm water management.

US-24 & Kaw Valley Road Intersection – The consultant team learned that, during large storm events, storm water runoff crosses the road at this intersection and flows into a ditch and floods. The 2008 Wamego Storm Water Master Plan also identified this drainage deficiency. The Wamego Plan recommends making drainage improvements that include the removal of the existing structures and the construction of a 4-foot by 4-foot RCB beneath the intersection.

Ponding north of US-24, between Excel and Lake Elbo Road.

Ponding along Dempsey Road.

Drainage Structure under Limerick Lane.

Through the storm water drainage review, the consultant team identified other deficient areas as follows:

McCall Road (Hayes Drive to US-24) – Several drainage issues were identified along McCall Road. In October 2006, the City of Manhattan finalized an Eastside Drainage Report that evaluated drainage on the east side of Manhattan, which included McCall Road. This study provided several recommendations for the troubled areas. The City has made significant drainage improvements along McCall Road from Tuttle Creek Boulevard to Hayes Drive. The City completed the improvements as a part of the commercial development that occurred in the Limey Point Addition.

Officials anticipate additional drainage improvements occurring at this section during the widening to McCall Road from Hayes Drive to the US-24 intersection. As indicated in the Eastside Drainage Study, the improvements involve constructing a storm sewer collection system consisting of a 5-foot by 3-foot RCB that connects to and expands into 2-5-foot by 3-foot RCBs directly west of the US-24 and McCall Road Intersection. This storm drainage would flow into another improved closed system that consists of 3-6-foot by 4-foot RCBs that cross US-24. This drainage would continue under the Union Pacific Railroad Tracks through a 96-inch Reinforced Concrete Pipe (RCP)and across the agricultural fields in front of the Manhattan Wastewater Treatment Facility. Next, the storm drainage travels through an 84-inch RCP that passes through the U.S. Army Corps of Engineers' Levee and outcrops into the Kansas River.The construction of this improvement should have a significant, positive influence on the corridor and relieve some of the drainage along the corridor.

Frontage Road along US-24 (Tuttle Creek Boulevard to McCall Road) – Based on information provided in the eastside drainage study, the team recommends other drainage improvements for the frontage road along US-24, including the removal and replacement of several existing cross road pipes with potential upgrades at specified locations. For additional information pertaining to this drainage structures, see the 2006 City of Manhattan Eastside Drainage Plan.

US-24 through Wamego – Based on information obtained from the 2008 Wamego Storm Water Master Plan, the consultant team identified the following drainage structures along the corridor as inadequate:

- Commercial Circle Drainage Structure (North of US-24) – This improvement shall include the removal of the existing pipe and the installation of a 42-inch RCP beneath Commercial Circle Drive.
- Lilac Lane Drainage Structure (South of US-24) – This improvement shall include removal of the existing pipe and the installation of a 60-inch RCP.
- US-24 and West Lincoln Street Drainage Structure – This improvement shall include the removal of existing pipe and the installation of 36-inch RCP across the intersection.
- US-24 and East Lincoln Street Drainage Improvements – This improvement shall include the removal of the existing pipe and the installation of a 24-inch RCP.

There was also consensus that officials needed to coordinate and plan both existing storm water drainage and future changes to ensure future successful drainage patterns.

WATER DISTRIBUTION SYSTEMS

Manhattan Service Area

The City of Manhattan has been proactive in growth planning caused by the reassignment of approximately 11,000 troops to Fort Riley. As a part of this growth planning, City representatives are currently in the final stages of design for improvements to the Manhattan Water Treatment plant that will expand its ultimate capacity from 20 million gallons per day (MGD) to 30 MGD. The total estimated cost for these improvements is $20 million.

With these proposed upgrades, the City will have plenty of capacity to provide Manhattan with quality water service for many years into the future. Currently, there are several areas surrounding Manhattan that have inadequate fire flow and experience low peak pressure. The City envisions eventually providing wholesale water service to these areas, as the community grows. However, in this model, the responsibility for maintaining the existing distribution system infrastructure remains with the Timbercreek Water District or Pottawatomie Rural Water District #1

If the City of Manhattan were agreeable to providing additional water service along the corridor and to the Blue Township and Pottawatomie County service areas, following the rationale provided below, officials would need to complete significant infrastructure improvements. These improvements would include the extension of a 16-inch transmission water main from the existing Heritage Square extension up and along Excel Road, to a proposed 810,000 gallon elevated storage tank located along Harvest Road. The estimated cost for these improvements in 2003 was $3.8 million. Currently, no water service or distribution issues have been identified along the US-24 corridor or McCall as it relates to the City of Manhattan.

Rural Water District #1

Rural Water District #1 was created in 1971 to provide water service to rural areas surrounding Manhattan, St. George and Wamego. As Manhattan has grown, the density of the development that has occurred in the Blue Township become more urbanized near Manhattan. This urbanization is currently providing a strain on the water service infrastructure system of Rural Water District #1. The existing system will reach its maximum capacity with the addition of approximately 300-400 residential units. Any additional commercial or industrial usage would further reduce the available capacity of the system. Water pressure issues already exist during peak times within the Green Valley area. Without significant improvements to the system, the level of this service will continue to decrease and ultimately fall below acceptable standards. A service map Rural Water District #1's Services pertaining to US-24 can be found in Appendix B.

The current well field for Rural Water District #1 is located east of the Flush Road and Elm Slough intersection. This well field has the capacity to produce approximately 300 gallons per minute, which is distributed to the Green Valley area through a 10-inch waterline. The water distribution lines within the urbanized areas range from 2½-inch to 8-inch diameters. Most of the service lines in this area appear to be undersized for urbanized development.

Rural Water District #1 has developed a current master plan to construct approximately $6 million worth of infrastructure improvements. It envisions improvements to include constructing a reverse osmosis treatment facility, a water storage facility and an additional well and pumping system. In addition, Rural Water District #1 has acquired the necessary permits and water rights to increase it pumping capacity approximately 1.03 million gallons per year.

The difficulties of constructing and implementing these improvements are their financial investment and impacts on user rates. Rural Water District #1's current rates are $25 per month plus $1.60 per 1,000 gallons of usage. These proposed improvements would significantly increase those rates. Therefore, the water district has given serious consideration regarding the implementation of the proposed infrastructure improvements. The district's officials from the Rural Water District #1 have held preliminary discussions regarding the possibility of obtaining wholesale water from the City of Manhattan. This would eliminate the need for the proposed water well and water treatment facility, and would significantly improve the current capacity issues.

Pottawatomie County

Pottawatomie County currently provides water service for the area known as Timber Creek in the Green Valley area. Timber Creek is primarily a residential area that began development in 1996 and now consists of more than 350 homes. Its water distribution system consists of water lines ranging from 2½ -inch to 6-inch in diameter and serviced by an eight-inch transmission line that connects to Well Number 1 and Well Number 2 located north of the Green Valley Industrial Park along Green Valley Road. Due to the water quality at the existing well, only chlorine is required for water treatment. Pottawatomie County has no plans to expand its water service infrastructure and its service limits, and ultimately envisions acquiring wholesale water from the City of Manhattan to service the Timber Creek Subdivisions.

St. George Service Area

The City of St. George currently provides water to the community from two wells located just north of US-24 along Rockenham Road. A chlorinated gas system treats the water from these wells, and the water is then pumped to a 100,000 gallon storage tank located along Rockenham Road, just inside the city limits. The trunk lines within the community are mostly 8-inches in diameter with other distribution lines in the community ranging from 2-inches to 6-inches in diameter. There are approximately 245 water meters on the existing system. The water distribution systems appears to have adequate pressure as there is currently a pressure-reducing device located on the trunk main that services the entire community.

With the location of the existing well, the City of St. George appears to be well positioned to provide the US-24 corridor with water services. Officials will require additional infrastructure in order to accommodate the future growth needs of the corridor and the community. The City currently does not have a formal Long Range Comprehensive Plan. With the significant amount of growth that has occurred and is expected to occur over the next 20 years, the consultant team recommends that the City investigate opportunities to complete this master planning task.

Wamego Service Area

The City of Wamego currently has the plant capacity to service additional growth in the community. Its primary issue is low water pressure during peak times due to undersized or aging waterlines. The City has hired a consultant and is currently in the process of completing the final design of a new water tower, with construction imminent. The new tower will be located along US-24 near the intersection of Columbian Road and will connect to the 12-inch water main that runs adjacent to US-24. While this will improve the water pressure issues in the area, due to the terrain it will not be capable of servicing any future growth that may occur west of Salzer Road. Therefore, an additional water tower will be needed as future development begins occurring along US-24 west of Salzer Road.

Currently, the Prairie Ridge Subdivision located directly north of US-24 and west of Columbian Road experiences water pressure issues. This development owns their own water distribution system that currently does not meet city standards. Therefore, future development will be restricted in this area until these water issues can be resolved.

The Wamego Industrial Park located along US-24 is serviced by 12-inch loop. Therefore, the city has adequate water infrastructure to support future industrial development. Other areas along the US-24 corridor appear to be adequately serviced.

SANITARY SEWER COLLECTION SYSTEMS

Manhattan Service Area

The City of Manhattan has taken a proactive approach to providing sanitary sewer services to its citizens and to some of the non-annexed areas surrounding Manhattan. Currently, the City is in the final design stage on improvements to their existing wastewater treatment facility, which will expand its current capacity of 8.7 MGD to 16.0 MGD. This major infrastructure improvement has an estimated total cost of $40 million. Based on conversations with City staff and a review of the existing and updated sanitary sewer collection systems, there appear to no significant sanitary sewer collection or treatment issues within the US-24 study area. The City of Manhattan, following the construction of its proposed upgrades, would have adequate capacity through the projected year of 2030.

Pottawatomie County

Blue Township Sewer District currently provides only sanitary sewer services to the Green Valley area in Pottawatomie County. Plans exist for Pottawatomie County to move away from the existing .2 MGD treatment facility located along Fielding Road south of US-24 to a future pump station that will pump this waste to the Manhattan Wastewater Treatment Facility. Under this scenario, the County would continue to maintain the existing collection system, with the City of Manhattan charging Pottawatomie County for sewage treatment services. This project is more formally referred to as the Blue Township Sewer Improvements in the City of Manhattan Sanitary Sewer Collection System Master Plan's 2009 update. The project envisions installing approximately 15,700 linear feet of force main and implementing a new lift station directly south of the Union Pacific Railroad Tracks along Excel Road. The force main would be located along the north edge of the Blue River and cross at a connection point near the Manhattan Wastewater Treatment Facility. The total estimated cost of this improvement is approximately $5.3 million. The City of Manhattan has agreed to provide the County with .6 MGD of wastewater treatment as a part of this improvement, which is currently three times greater than its current treatment capabilities. This additional .6 MGD will provide the county with adequate capacity for the area's future projected growth.

St. George Service Area

The City of St. George also has a keen understanding of the importance of utility infrastructure as it relates to residential and commercial development. St. George is currently in the process of designing a new wastewater treatment facility with expected construction completed by late 2012. St. George will construct this facility adjacent to its existing facility near the Kansas River. This treatment facility will boost their current treatment capacity from 60,000 gallons per day to 160,000 gallons per day. With this expansion, the St. George Community anticipates that new infrastructure can be added to the existing system that will extend sanitary sewer service up to and along the US-24 Corridor from Flush Road to Blackjack Road. Existing developers and landowner along the corridor have recently expressed interests in these potential connections and have verbally agreed to participate in a percentage of the associated costs of the improvements. As indicated in the water distribution section, the City of St. George needs to investigate funding opportunities to complete a Long Range Comprehensive Plan for their community. They have seen—and will continue to see—significant growth as the US-24 corridor and its surrounding communities continue to expand.

Wamego Service Area

In 2004, The City of Wamego and Pottawatomie County completed a comprehensive study of their Sanitary Sewer Collection System. The existing collection system consists of over 127,500 feet of sewer lines, 435 manholes and two pump stations. The existing wastewater treatment plant is located south of Valley Road near the Kansas River. One of the main problems identified in this study is related to the inflow and infiltration of storm water into the existing collection system. Resolving this problem will only provide improved performance to the plant during peak operations. The comprehensive study also recommended improvements throughout the community for parallel lines or piping network upgrades. Based on the team's discussion with City staff, it appears the City of Wamego is well positioned to handle additional capacity at its wastewater treatment plant. Therefore, the City need only require that, as new development occurs, the future sanitary sewer connection infrastructure will need to connect to existing piping networks.

COST OF FUTURE INFRASTRUCTURE

As a part of this infrastructure planning effort, the consultant team was asked to review potential funding mechanisms for financing the proposed infrastructure improvements related to the projected US-24 growth. See Section III of Chapter 7: Implementation for details on financing strategies. From this review, the following project financing strategies would be the most useful.

K. S. A 12-6a Improvement Districts

Improvement Districts are the Kansas form of a traditional benefit district; a financing and development tool whereby cities and counties can establish a district, construct improvements and then issue general obligation bonds for construction of public improvements and assess the cost to those properties that are specifically benefited by the improvement. The bonds are then retired through payment of special assessments that are paid along with the benefited property owner's ad valorem property taxes by these benefiting properties. There is a very specific statutory process that must be followed to effectively utilize this strategy.

Improvement Districts are used by cities and counties to assist in development of arterial roadways (usually associated with section line roads), water lines and sanitary sewers, among other public improvements. It is a responsible and fair method available to communities in Kansas to pay for the roads and infrastructure associated with new development, though its use is not limited to improvements to support only new development. For example, it is often used as the financing mechanism for the construction of new sidewalks in existing developments. However, the method can be effectively used to ensure that existing property owners do not pay for improvements from which they do not receive a special benefit.

With the number of roadway, sanitary sewers and water line improvements throughout a community, if the community did not utilize improvement districts, either the improvements would not be made or property owner's ad valorem property taxes would need to be raised to allow for the construction of these necessary improvements. Developers have the option to build the improvements in front of their land to meet city specifications, but in so doing, a hodge-podge of improvements would occur, and the improvements could be under construction at different times and cause much more disruption than the orderly process afforded by the creation and administration of Improvement Districts.

Main Trafficways

K.S.A. 12-685 et seq. authorizes cities to designate by ordinance any existing or proposed street, boulevard, avenue or part thereof, within its jurisdictional boundaries as a main trafficway, if the primary function of the street is the movement of traffic between areas of concentrated activity within or outside the city. Once designated a main trafficway, the city is authorized to acquire by purchase or condemnation the necessary right of way for that facility and to improve or re-improve that trafficway. Virtually all aspects of the construction of these trafficways is authorized, including bridges, viaducts, overpasses, underpasses, culverts and drainage, trafficway illumination, traffic control devices and pedestrian ways. The cost for these improvements, including acquisition, can be paid for from the city's general improvement fund, internal improvement fund or any other available funds or by the issuance of general obligation bonds. No vote of the public is required for issuance of bonds for these purposes. This method is often used in conjunction with the improvement district statute for street improvements.

Capital Improvement Program

A Capital Improvement Program, or CIP, is a short-range plan, usually four to six years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing. Essentially, the CIP provides a link between a municipality, school district, or other local government entities, and an entity's comprehensive / strategic plan and annual budgets. CIP projects can be funded through a variety of funding sources, such as bonding, revolving loan programs, assessment fees, transportation development districts (TDD), as well as other governmental funding mechanisms.

Impact Fees

An impact fee is a fee that is implemented by a local government on a new or proposed development to help assist or pay for a portion of the costs that the new development may generate in public services necessary to serve that new development. See Section III, Chapter 7: Implementation Chapter for a full discussion of impact fees. They are considered to be a charge on new development to help fund and pay for the construction or needed expansion of offsite capital improvements. These fees are usually implemented to help reduce the economic burden on local jurisdictions that are trying to deal with population growth within the area.

Impact fees have become the most important method in infrastructure financing and an essential part of local governments' funding for infrastructure or public services. Impact fees may help to assist in the development of needed streets, parks, schools, roads, sewer, water treatment, utilities, libraries, trails and pedestrian ways and public safety buildings to the newly developed area. In most cases, impact fees are used in new development. For example, when a new neighborhood or commercial development is constructed, the developer may be required – as a condition of the approval of a new plat or building permit – to pay the developer's proportionate share of the cost of new infrastructure due to the demand the new development generates. Generally, this fee is passed on by the developer to the future property owners.

Developer-Incurred Costs

This funding process places the burden of costs for infrastructure projects related to a new development upon the developer. In turn, the developer would ultimately pass on these costs to the individuals who purchase property within the new development.

7 IMPLEMENTATION

INTRODUCTION

Substantial effort and expense has been put into the development of this US-24 Corridor Management Plan. All of the parties have invested significant resources to:

- collect and analyze all available, relevant background information on the land area included within the corridor study area to fully understand current conditions;
- study and extrapolate projections from the current plans adopted and being prepared by the parties and other entities whose plans may have an impact on development within the corridor to identify trends and prepare alternative scenarios of how future development may and can progress;
- prepare market projections on development opportunities and constraints that will either positively or adversely affect development potentials;
- reach out to all interested stakeholders to obtain input and guidance on what has occurred, what exists and what they feel should be the vision for this corridor into the future; and
- forge a consensus among KDOT, the community partners and interested stakeholders on a plan that captures this shared vision for enhancements to the mainline highway and adjacent local street network and the interface between the two, including the type and location of points of access, as well as land uses and densities and intensities of development within the corridor.

IMPLEMENTATION TOOLBOX

Successfully completing this planning effort is a major accomplishment in and of itself. The dividends which will flow to the parties from having achieved this goal are inestimable. That being said, this Corridor Management Plan is just that: A PLAN. The real purpose for doing a plan is to, through comprehensive and thorough analysis, create a decision-making guide for all the interested parties, so that the vision and, as much as possible, the details of the Plan can become reality.

To make this vision a reality, KDOT and each of the local communities within the corridor must take action to implement the US-24 Corridor Management Plan. This chapter describes a series of techniques – a "toolbox" – that partners can used to help turn the maps, illustrations, policies, goals, strategies and recommendations into the actual facility improvements and the associated development patterns envisioned by the Plan. The tools, when put into place, have the supplemental benefit of establishing additional criterion against which state, county, municipal and utility improvement plans and private development proposals can be evaluated, as each is brought forward through time. Having this supplemental criterion in place will give all parties greater assurance that all the resources the parties put toward creation of this Corridor Management Plan are realized upon and that the vision for this corridor becomes a well-functioning component of each community.

The toolbox of techniques is divided into three categories:

- Corridor Preservation Strategies
- Access Management Strategies
- Financing Strategies

CORRIDOR PRESERVATION STRATEGIES

Corridor preservation is achieved through planning and the implementation of those resulting plans using a variety of regulatory strategies, including zoning, subdivision regulations, access management and exercise of the police power. One primary goal is to control or protect areas identified in the Plan that will be necessary for future enhancement to the mainline of the highway as well as for improvements to the local street network within the corridor. An equally important goal is to preserve and, wherever possible, enhance opportunities for development at locations within the corridor that maximize the economic potential of the corridor, while simultaneously preserving the functionality of the mainline highway, its access points and the interfacing adjacent local street network. Benefits of corridor preservation include:

- preventing incompatible development;
- minimizing adverse environmental/ social /economic impacts; reducing displacements;
- establishing the location of transportation facilities which allows communities increased opportunities to achieve orderly development through future planning; and
- reducing future project costs.

Close coordination between KDOT and the local communities is essential since authority for some preservation tools are vested in the state and the authority for others is vested in the local governments.

Planning Tools

Comprehensive Planning - To help ensure that the land development decisions are consistent with and are made in accordance with the recommendations of the Corridor Management Plan, each community should adopt the Corridor Management Plan, including the Future Land Use Maps, as a part of their respective comprehensive plans. K.S.A. 12-747 authorizes city and county planning agencies to make or cause to be made a comprehensive plan for the development of that community. There is specific authority to adopt area or sector plans covering only a portion of the area within a community's jurisdictional boundaries. The Plan must show the commission's recommendation for the development or redevelopment of the territory included in the portion of the Plan prepared. The planning commission must hold a hearing on the adoption of the Corridor Management Plan and make a recommendation to the governing body on its adoption. The plan does not become effective unless approved by the governing body. *Jurisdiction*: Local.

Official Maps – An official map is a legally adopted map that conclusively shows the location and width of proposed roads or streets, public facilities and public areas and drainage rights-of-way. It is also commonly referred to as a major street plan. Although the Kansas statutes do not specifically authorize cities or counties to adopt an official map, K.S.A. 12-747, in its description of the elements that should be covered in a comprehensive plan, clearly contemplates that the plan include the type of information that is traditionally included in an official map. It goes without saying that the lack of specific statutory authority to adopt an official map in no way precludes a city or county from acting pursuant to their home rule authority to do so. In addition, K.S.A. 12-765, discussed below, granting authority to cities and counties to establish building or setback lines, does authorize cities doing so to incorporate by reference an official map in the ordinance or resolution, as the case may be. The adoption of an official map as a part of the community's comprehensive plan or as a standalone document gives that community one additional point of reference and source of guidance when considering development applications relating to land that lies within the corridor to determine whether the development proposed will have an impact on the improvements contemplated by the Corridor Management Plan. *Jurisdiction*: KDOT/Local.

Plan Consistency – To help ensure that the community's comprehensive plan is internally consistent and therefore effectively serves as a comprehensive guide to development within the community, upon adoption or in conjunction with the adoption of the Corridor Management Plan, the community should review its existing comprehensive plan to assure that other portions of the plan support and are not in conflict with the recommendations of the Corridor Management Plan. If the community identifies inconsistencies, it should revise and readopt the comprehensive plan with revisions designed to eliminate those inconsistencies using the procedures outlined for the adoption of a comprehensive plan. *Jurisdiction*: Local.

Utility Planning – Utilities necessary to support development will be constructed within the corridor. It is critical that these utilities be located at places that are consistent with the Corridor Management Plan, so they will not have to be relocated upon construction of enhancements to the mainline highway at future dates. Each community within the corridor should, in coordination with all providers of utility services within its corporate boundaries, prepare and continually update a master utility plan. These utility master plans must be carefully coordinated with the Corridor Management Plan to ensure consistency between the two. KDOT and communities within the corridor should carefully evaluate the Corridor Management Plan, when making decisions about the location of new utilities and related easements. In addition, KDOT and each community should establish a regular point of interface with each utility provider to ensure coordination between the parties in ongoing planning efforts and land acquisition and placement decisions. *Jurisdiction*: KDOT/Local.

Conformity of Public Improvements – K.S.A. 12-748 provides that whenever a planning commission has adopted a comprehensive plan for an area, no "public improvement, public facility or public utility," of a type covered by the recommendations of that plan, may be constructed without first being submitted to and approved by the planning commission as being in conformity with the plan. Public entities with plans for construction of these improvements, facilities and utilities should consult with the representative of cities and counties with adopted comprehensive plans early in that entity's decision-making process and timely submit those plans to the appropriate planning commissions for this determination. This requirement applies to any public entity that is intending to do this type of construction within the jurisdictional boundaries of a city or county. This is an important way to ensure due consideration is given to the recommendations of the Management Plan, once it is made a part of a community's comprehensive plan. Cities and counties that learn of plans for construction of this type, by another public entity within their boundaries, should be diligent in contacting the entity to make sure they are aware of this obligation and then to facilitate the contemplated review, thereby helping to ensure the Plan is fully considered in these situations. It is important to note that the governing body of the entity proposing this construction can over-ride a negative recommendation of a local community planning commission, but even in that instance, an important opportunity for review of the consistency between the proposed construction and the Management Plan by the parties is captured. *Jurisdiction*: KDOT/Local.

Regulatory Tools

Development Moratoria – A public sector entity may, through passage of a development moratorium, temporarily halt the processing of applications for all or a specified type of development until a governmental activity is completed, such as the adoption of a plan or the passage of a revised ordinance on a specified subject. The Supreme Court recently held that a reasonable moratorium fulfills a legitimate public purpose and is not per se a taking.

As vigilant as the partners may be in incorporating the US-24 Corridor Management Plan into local comprehensive plans and utilizing the regulatory strategies to implement the Plan, situations are bound to arise where development pressures overtake the local professional staff's ability to effectively manage those pressures. In those situations, development moratoria are a very effective tool to help stem those pressures while the community determines what approach will be most effective; be it an amendment to the comprehensive plan or passage of an ordinance/resolution establishing a new or updated regulatory implementation technique, such as an overlay district.

The moratorium ceases the processing of applications during a legislatively established period of time needed to prepare and adopt strategies the community determines will best address the circumstance. It is important to note that adoption of moratoria is generally considered to be a zoning action. Accordingly, that ordinance/resolution must be passed pursuant to the hearing and notice requirement of Article 7 of the Kansas Statutes. For that reason, it is critical that communities act quickly to get a moratorium in place once a situation calling for a "time out" is identified. One way to close the window on the rush of applications that might result from notice of the consideration of a moratorium ordinance is for the community's governing body to adopt a resolution directing staff to stop accepting applications until the moratorium ordinance takes effect. The authority for adoption of a resolution of this type is found in the "pending ordinance" doctrine, which has been accepted by the courts of most states. *Jurisdiction*: Local.

Zoning – Zoning is one of the most prevalent and effective mechanisms for implementing a comprehensive plan. Zoning is a process utilized by local governments to classify land into areas and districts. These areas are generally referred to as "zones," and impose, in each area and district, restrictions related to building and structure designs, building and structure placement, and uses to which land, buildings, and structures within these districts may be put, including setbacks and height, lot coverage, and impervious cover restrictions. Zoning ordinances may also make provisions for certain uses to be established community-wide or in individual zones only by issuance of a special or conditional use permit. Rezoning of parcels that have been previously zoned may be initiated by the local community or by a property owner. *Jurisdiction*: Local.

Through the adoption of zoning ordinances, which are carefully tailored to implement the strategies and policies of the Corridor Management Plan, development within the corridor can be effectively managed to ensure successful implementation of that Plan. K.S.A. 12-755 and 12-756 authorize both cities and counties to adopt original zoning ordinances, and K.S.A. 12-757 authorizes the rezoning of properties in those instances where changing a property's zoning classification is advisable or necessary to adapt original zoning to current situations. K.S.A. 12 715b authorizes cities, with a couple of exceptions and under certain conditions, to adopt zoning regulations applicable to land located outside of its corporate limits, but only within three miles of those limits and only if the county has not adopted zoning regulations applicable to that area of the county. Written notice of a city's intent to adopt zoning outside its limits must be provided to the appropriate board of county commissioners. Similarly, each county that proposes to adopt zoning regulations affecting property within three miles of the corporate limits of a city must give written notice of its intent to that city's governing body.

Zoning Approval Criteria – Arguably, the most important Kansas Supreme Court case dealing with zoning is Golden v. the City of Overland Park. Golden sets out a set of factors that planning commissions and governing bodies may consider when deciding whether to approve or deny a zoning application. One of those factors is consistency with the comprehensive plan. Each community along the corridor, when acting on a development application related to land that lies within the corridor, should consider whether the development proposed by that application is consistent with the Corridor Management Plan, as adopted into its comprehensive plan.

Overlay Districts – One of the most effective plan implementation zoning techniques is overlay districts. An overlay district can be either mapped or narratively described to be mapped at some later point in time (floating). An overlay district superimposes certain additional restrictions that modify or supplement the restrictions of the underlying zoning district or districts, in recognition that distinguishing circumstances exist within the area that must be regulated in a manner different from the regulations of the underlying district. One misunderstanding about the term overlay district is that communities think there is a model that can be pulled off the shelf and adopted to serve as its overlay district. While it might be accurate to say that a model procedural framework might exist, nothing could be farther from the truth when talking about the real implementation aspects of the overlay district. The whole goal behind adoption of an overlay district is to address special and unique circumstances and considerations that affect a specific geographic area of the jurisdiction differently than other areas of the jurisdiction. Thus, the objective is to identify those circumstances and considerations; articulate visions for how that particular area should develop over time (while both accommodating and capitalizing on opportunities presented by those considerations, and then develop regulations, restrictions and incentives to guide development to effectively realize that vision.

Overlay ordinances are generally composed mainly of design and performance guidelines and standards, and are filled with illustrations and graphics. They are carefully prepared to effectuate the plan for that specific area. In this instance, the Corridor Management Plan has created the vision, or at least, the superstructure of that vision. An overlay district is crafted to implement that Plan. It is also common for people to believe that the community could prepare one overlay district, and that it would apply to all land in its jurisdiction within the corridor. For the very reasons stated above, that notion is incorrect also. Because the Plan identifies development scenarios that are unique to each different location within the corridor, the idea that one set of regulations and incentives could be prepared to guide development along an entire length of a corridor is flawed. Each one of those locations should have its own overlay district with carefully chosen implementation techniques employed to achieve Plan objectives. Potentially, one overlay district could be prepared for each jurisdiction along the corridor, but for it to have any real usefulness; it would have to break the corridor into distinct segments with a separate set of standards created for each segment.

Planned Districts – Conventional zoning allows for an amendment of the zoning classification of land upon application of the governing body or the planning commission. If the proposed amendment affects specific property, the landowner many make application. The procedures set forth above govern the consideration of and action on zoning amendments, generally called rezoning. So long as the decision to rezone is reasonable, in light of the Golden criteria, the rezoning may take place at any point in time. Most commonly, a rezoning is applied for just in advance of development of that property or when a change of use is contemplated as a part of redevelopment of the property. Nothing, however, requires that there be pending development for a rezoning of a particular property to be reasonable. Sometimes properties are rezoned well in advance of any potential development or redevelopment activity. There may be a very valid public purpose for rezoning land substantially before it is ripe for development or redevelopment, and in those instances, the application should be made by the governing body or planning commission. It is generally good planning, however, not to prematurely rezone land to a zoning category other than one that allows its current use or to a use that is imminent. A community can successfully illustrate its vision of how land should be developed, in terms of general uses, through the future land use map of its comprehensive plan. It really does not need to zone land to an anticipated land use well in advance of development to make its community vision for land use known.

Generally, a community's development objectives can best be served if it has as much information about contemplated uses, proposed site terrain, location and type of infrastructure being proposed, building arrangement, architectural design and other features of development, as is possible, when it considers a rezoning application. Planned districts are an excellent tool to help in achieving this objective. A community's zoning ordinance can provide that all its zoning districts are planned districts, it can provide a parallel planned district for each or any number of its conventional districts (such as C-1 and C-1/P) or it can create separate planned districts for certain types of development or for development in certain locations.

The planned district process ensures this type of information is available to the planning commission and governing body by converting the traditional rezoning process into a two step process. The applicant submits two separate plans to the community at different points in the approval process. The plan contains an increasing level of detail commensurate with the stage at which the property is in development process. These plans are generally called development plans; one a preliminary and the other a final development plan. Although what the submittal is called is without significance. The preliminary development plan is submitted along with the application for rezoning.

The amount of information that is included in the preliminary plan can and should vary from community to community, but in any event should include enough to allow decisions makers to understand the nature and quality of the development being proposed. The following type of information would generally be included: topography, locations of building and other structures, dimensions portraying relationships between buildings and to property and setback/build to lines, on site and adjacent area circulation, storm water management approach, preliminary sketches depicting the general style, size and exterior construction materials of proposed structures and evidence of adequate public facilities. Both the planning commission and the governing body consider and act on the preliminary plan at the same meeting they consider the rezoning application.

No rezoning application may be approved until and unless a preliminary plan for that property is approved. This helps ensure that the decision makers fully understand what is going to be developed on that property when the rezoning is approved. An applicant may opt to combine the two plans into one and submit the combined plan with the rezoning application. It is just necessary that all the submission requirements of the two plans are incorporated in the submitted plan.

Typically, the approved preliminary plan stays in effect for a set period of time; most commonly two years, with the possibility of an extension if justified and applied for before the expiration of the approval. This process can be easily adapted to phrased projects.

The second step in the planned district approval process is the submission of a final development plan. This occurs after engineering drawings have been approved, but before any building permit may be issued. The final plan must be substantially consistent with the approved preliminary plan or be approved using the same process for preliminary plan approval. The final plan contains much more information than the preliminary, as, of course, the developer has moved farther along in designing the development, so more information is available to provide additional assurance to the community that the development proposed is appropriate for that location. These final plans, when consistent with the preliminary, can be approved administratively or legislatively or through a combination of the two. Once the plan is approved, it is filed of record with the county register of deeds. All development at the location covered by the rezoning and development plan application must then be constructed in accordance with the plan or risk stop work orders and zoning ordinance violations

Site Plans – Although a site plan itself is very similar to the development plans discussed above in the description of Planned Districts, the term is used here to describe a plan submitted during the course of the development approval process when the community does not employ a planned district process. It is designed as a mechanism to inform the decision makers of the applicant's proposal for development of a property. Unlike the Planned District process, which is traditionally a two step plan submittal process undertaken in conjunction with a rezoning of land, the site planning process is generally a one step process that is required of developers that are not required to rezone their property prior to the issuance of a building permit necessary for the start of construction on the proposed development. To institute this mechanism, the community would need to revise its land development codes to require that, in instances of proposed developments, where some other plan approval process is not required prior to issuance of a building permit, the applicant must submit a site plan for review and approval prior to building permit issuance. It would be common for certain types of development to be excluded from the site plan approval process, such as development of a single family house or similar smaller type developments that will have a minimal impact on facilities and services or on the landscape.

The usual site plan would be described as a plan for one or more lots on which is shown the existing and proposed conditions of the lot, including topography, vegetation, drainage, floodplains, wetlands, and waterways; landscaping and open spaces; walkways; means of ingress and egress; circulation; utility services; structures and buildings; signs and lighting; berms, buffers, and screening devices; surrounding development; and any other information that reasonably may be required for an informed decision to be made by the approving authority.

Plan Administration – It is not uncommon for the site planning process to be divided formally or informally into two parts, and for that matter, for the planned district two step process to be modified to add a third step . In this circumstance, an initial submittal, often called a concept plan, is made to the technical staff for informal review. The applicant and its consultant sit down with the approving authority's technical staff to discuss the plan and exchange views on what the applicant is proposing and what the technical staff believes will be acceptable to the approving authority; an opportunity to fine-tune the plan for formal submittal. Once that process is complete, a formal site plan, as described above, or a preliminary development plan is submitted for staff review and report.

The nature of the approval required for a site plan can vary greatly, depending on the expertise of staff and the appetite of the community to delegate approval authority to an administrative official. So, for example, a community could decide to vest plan approval authority for some categories of development in an administrative official, other categories of development in its planning commission and retain to the governing body still another category of development approvals. One would expect that administrative approval would be available for those categories of development that are determined to be of the least potential community impact, moving up to governing body approval on those that could have far reaching impacts, such as development at certain locations (key intersections) along the corridor.

Another excellent way to approach site planning is to combine site plan review with an overlay district. The site plan is then used to evaluate the extent to which the design and performance guidelines of the overlay district are met by the proposed development. Going a step further, the overlay district could set forth certain guidelines that are mandatory, others that are encouraged and a last tier that are desirable, or some variance of this approach. The nature of the approval could then be tied to the degree to which the different tiers of guidelines are achieved. For example, all proposals that achieve all the mandatory and encouraged guidelines can be approved administratively. If the staff determines that the proposals does not achieve the guidelines in both tiers, the site plan must be considered by the planning commission or governing body. The variants that can be employed here are nearly endless.

Subdivision Regulation – The subdivision of land through platting is the second most common method used by communities to manage the development of property within its jurisdiction. The control of the division of a parcel of land is effectuated by adopting subdivision regulations by ordinance or resolution that requires development be in accordance with set design standards and procedures adopted locally. It is through this mechanism that communities are able to require that the layout of building lots and the public improvements associated with those lots conform to locally established standards. In some locations, subdivision regulation and plat approval may actually be the most significant regulatory tool for managing development. In some more rural area, it is more common for counties to have adopted subdivision regulations than to have adopted zoning. In those unincorporated areas, there would be no local legislative authority to manage development through zoning restrictions. Accordingly, subdivision regulation would be those counties' primary land management tool.

Subdivision regulations usually specify what improvements the subdivider will be required to provide and the standards to which the improvements need to be constructed. A plat is a map prepared by a registered civil engineer or licensed land surveyor showing the boundaries and locations of individual properties and the streets of the proposed subdivision. The plat generally also shows land to be dedicated to a public sector entity for streets and easements for public utilities. K.S.A. 12-749 authorizes a planning commission to adopt and amend regulations regarding the subdivision of land, including payment of a fee in lieu of dedication of land. This same section also authorizes a county planning commission to establish subdivision regulations. Much like zoning, a city may adopt subdivision regulations that control the subdivision of land outside of its corporate boundaries, but only within three miles of that limit or one half the distance between two cities, whichever is less. Similar written notice requirements apply. The regulations must be considered by the planning commission at a public hearing, and the commission must forward its recommendation to the governing body for its approval. K.S.A. 12-750 lays out a process that must be followed where a city desires to adopt extraterritorial subdivision regulations and the county has its own regulations in effect as to that area. That process can result in the creation of a joint city/county committee for subdivision regulation.

K.S.A. 12-752 establishes the procedure for the consideration of and action on plats. Each plat must be submitted to the planning commission, which determines if the plat conforms to the subdivision regulations. If it finds that it does, it notifies the owners of that fact and endorses that fact on the plat. A dedication of land for public purposes must be accepted by the governing body before it takes effect.

See Section C.3 below, of this Chapter, regarding notices that should be placed on plats prior to their recording with Registers of Deeds to help ensure that prospective purchasers of properties, which are included in the geographic area covered by the Management Plan, are informed of the ramifications on those properties of being within an the area covered by the Management Plan. *Jurisdiction*: Local.

Building Permits – The same section of Kansas Statutes discussed immediately above, prohibits the issuance of a building permit for the use or construction of any structure on any platted lot in an area governed by subdivision regulations, except in the manner provided by that section. It further authorizes subdivision regulations adopted by cities and counties to provide a procedure for the issuance of building permits that takes into account the need for adequate street rights-of-way, easements, improvements of public facilities and zoning regulations, if in existence.

The issuance of a building permit is obviously the last step in the typical development approval process. Although courts hold that a building permit must be issued upon submission of a complete application, if all code provisions governing the process for building permit issuance have been fulfilled, this does not mean that communities cannot creatively incorporate building permit requirements into their governing code provisions. For example, it is common for the issuance of a building permit to be conditional upon the payment of a legislatively imposed fee, such as an impact fee.

In cities or counties that have not adopted zoning or subdivision regulations, local regulations governing the issuance of building permits may not only be the last step, but also the first step in the development approval process, thus markedly increasing the importance of this tool in the arsenal of techniques a community may employ to effectively manage land development. Even in communities that have adopted one or both regulatory tools, the procedure for the issuance of building permits still may play a very a critical role. See subsection B.3 above, of this Chapter, on Site Plans for a description of how that technique can be used to more effectively manage the development of land in jurisdictions where either zoning or subdivision regulations have not been enacted. K.S.A. 12-751 authorizes cities to adopt and enforce building codes outside that city's limits and allows compliance with subdivision regulations to be a condition of the issuance of a building permit. *Jurisdiction*: Local.

Transfer of Development Rights and Density Transfers - Some locations along the corridor, for a variety of reasons, including availability of access, are best developed with more intense and/or dense uses. Other locations along the corridor, for other reasons, including the lack of direct access, are best suited for less intense or dense development. One way communities along the corridor can help ensure that property owners are afforded the maximum opportunity to develop their property to its most reasonable and economic potential is to establish a system of density incentives and transfers to encourage more intense development in areas designated on the Plan for such development. This system provides those landowners whose land is designated for less intense development the ability to transfer some or all of their development rights to locations where more intense development is planned, through a sale of those rights to landowners at those intense locations. These systems involve the transfer of all or a part of the permitted density on one parcel to another parcel or to another portion of that same parcel, thus allowing higher density at that location than would be allowed under the existing zoning regulations.

The transfer or removal of the right to develop or build is expressed in units per acre or floor area ratio. This transfer generally occurs in accordance with a legislative established program that allows the shifting of development potential from areas where more intense land uses are considered undesirable (the donor site or sending zone), such as at locations which are a distance from the location where mainline interchanges are to be constructed, to other areas (receiving zones) chosen on the basis of its ability to accommodate development that is more dense or intense, such as areas adjacent to proposed interchanges. For example, developers can buy development rights from properties targeted for public open space and transfer the additional density to the base number of units permitted in the zone in which they propose to develop.

Density Incentives – This technique is an additional method of increasing density at locations designated by the Plan, and thereby maximizing the economic potential of the corridor without sacrificing the functionality of the mainline highway and the adjacent local street network. It involves identifying areas, such as areas near interchanges or other access points, which are shown on the Management Plan as more appropriate for dense or intense development than other areas within the corridor and providing incentives that will encourage developers to propose a form of development at those locations that conform to the density or intensity levels contemplated by the Plan. The most common incentive is to allow for a streamlined development approval process for applications that propose developments which exceed the density thresholds established by the local community through the restrictions of the underlying zoning district regulations. This is generally achieved by allowing for administrative, rather than legislative, approvals during the application review process. To be legally valid, the legislation establishing the program must include specific standards to guide the administrative official in decisions on when an application qualifies for streamlined review and when the application approval criteria are met. There are few limits to the innovation that can be used in creating incentives to lure more dense development. The Management Plan should serve as a good source of inspiration on potential incentives. *Jurisdiction*: Local.

Cluster Development – This technique is yet another tool to help achieve Plan goals of ensuring denser development at locations where the Plan calls for it, while simultaneously keeping development away from or at very minimal levels at locations where it will have an adverse impact on Plan goals. A good example would be to preserve and protect critical environment or cultural resources. This technique is generally authorized by specific district regulations, such as a cluster subdivision. It is a development design technique that concentrates buildings in specific areas on a site to allow the remaining land to be used for recreational, common open space or preservation of historically or environmentally sensitive areas. Through the employment of this technique, property owners are able to achieve an acceptable average density for the entire parcel, and both the public and private sector participants are able to effectively protect key community resources. This technique is intended to allow for significant creativity in site layout and planning, generally resulting in added value to development areas as a result of access to permanent open space and recreational opportunities. *Jurisdiction*: Local.

Setback Ordinances – One of the keys to successful implementation of the Corridor Management Plan is ensuring that development does not encroach on right-of-way that would be necessary for highway and interchange improvements as the corridor develops. One very effective way to achieve this objective is through the adoption of a building or setback line. This tool preserves projected rights-of-way and reduces acquisition costs: both over-riding goals of the Management Plan. K.S.A. 12 765 authorizes cities or counties, which have adopted a plan for a major street or highway system (which would include the Corridor Management Plan), as a part of its comprehensive plan, to adopt building setback lines.

After consultation with the Secretary of Transportation, the county engineer and any planning commission of a county or counties within which that highway system lies, the governing body may establish, by ordinance or resolution, a building or setback line along proposed major streets or highways. This enactment includes a prohibition on the location of buildings in front of that setback line. The enacting ordinance or resolution may incorporate by reference an official map showing with survey accuracy the location and width of existing or proposed major streets or highways and any setback or building line.

A building or setback line cannot be enforced until a certified copy of the map and any adopting ordinance or resolution is filed with the register of deeds of each county. The key to the enforceability of the setback line is a careful evaluation of the impact of the line, and its attendant prohibition on adjacent landowners. The restriction on development must leave these owners with viable economic uses for their commonly owned contiguous parcels of land. As a safety valve, the local board of zoning appeals is vested by statute with the power to modify any building restrictions to address unwarranted hardships that constitute a complete deprivation of use. Building setback lines, like build-to lines, can also be established as a part of zoning district restrictions and as a design guideline in an overlay district. *Jurisdiction*: KDOT/Local.

4(f) Uses – Federal statute places significant restrictions on the authority of the United States Secretary of Transportation to approve a transportation program requiring use of publicly-owned land, a public park, recreation area or wildlife refuges or land of a historic site. Because state transportation programs or projects often involve federal funds, the Secretary's approval is commonly required. Accordingly, it is important that these uses not be located within the corridor unless no other viable option is available. This imperative makes it critical that communities avoid locating or approving development applications seeking to establish public parks, recreation areas or wildlife refuges and historic sites, also known as 4(f) uses, in the areas shown on the Plan footprint map as right-of-way for the mainline or of any portion of the local street network. The moniker 4(f) comes from the United States Code provision that limits the Secretary's authority. *Jurisdiction*: KDOT/Local.

Variances – Communities in Kansas have authority to grant variances from the specific terms of the zoning restriction whenever doing so is not contrary to the public interest and where, due to special conditions, local enforcement of the provisions of the regulations in an individual case results in unnecessary hardship. K.S.A. 12-759. The board of zoning appeals has the authority to grant a variance to area and setback regulations applicable to that property.

The grant of a variance from district restrictions, such as parking requirements and impervious cover requirements, may be an effective way to allow an important development proposal to proceed with minor modifications that keep it out of necessary rights-of-way and behind setback lines. At the same time, the grant of some variances could adversely impact the recommendations of the Plan. Therefore, it is recommended that the board of zoning appeals consult the Corridor Management Plan, as incorporated into its comprehensive plan, when considering any request for a variance to ensure that the variance decision supports the recommendations of the Plan. *Jurisdiction*: Local.

Administrative Tools

Accessibility of the Comprehensive Plan - The goal of a comprehensive plan is not only to serve as a guide to development for the planning commission and the governing body but also to owners and potential owners of property within the community's jurisdictional boundaries. That being the case, it is recommended that the amended comprehensive plan be posted on the city's website and at all other appropriate locations to assist in assuring that all interested parties are informed of the recommendations of the Corridor Management Plan for areas included in its footprint map. *Jurisdiction*: Local.

Notice of Applicability of Plan – One tool to help ensure that individuals who own property within the corridor and who are considering purchase and/or development of that property are aware that the land is included in the area covered by the Corridor Management Plan is for all counties and cities that are partners in the development of a Corridor Management Plan to require that all plats approved by them contain a statement, similar to the following, placed in the dedication section of each approved plat.

"The property shown on and described in this plat is and shall hereinafter perpetually be subject to that certain US-24 Corridor Management Plan, adopted by the Kansas Department of Transportation on _____, the City of _____, Kansas on _____, ____and _____County, Kansas on _____, ____, recorded in the Register of Deeds for _____ County, Kansas, in Book _____, at Page _____."

Another way to help ensure that those interested in developing areas of land covered by the Management Plan are aware of the Plan is for communities within the corridor to amend all their development applications to highlight the existence of special planning areas in the city or county, including the areas covered by the Corridor Management Plan. This could be accomplished informally through an internal process established wherein all individuals who request a development application are routinely asked by staff the location of the subject property that will be the subject of the application to allow the staff member to inform the potential applicant when the area to be developed is included in an areas covered by a special area plan. Alternately, it could be handled more formally by inserting a line on all applications with a space to be filled in identifying parcels covered by special plan areas. The latter is the recommended approach, as it avoids reliance on, what could be revolving staff to ensure that knowledge of the relevance of areas plans is consistently imparted to applicants. That being said, development application forms cannot always be changed immediately, so the informal process may be employed until the opportunity arises to make the formal change.

Entities or persons interested in developing at locations within the corridor may also become informed of the existence of the Plan as a result of the requisite filing of the Interlocal Cooperation Agreement (entered into among all parties to the Study that resulted in the Corridor Management Plan) in the register of deeds office in the county where that property is located. It should be noted that upon its filing the Interlocal Agreement will not be filed in the grantor/grantee index, so it would not typically show up on a title search. The agreement is filed under the names of the parties to the agreement. More information on interlocal agreements is provided at the end of this chapter. *Jurisdiction*: Local.

Notice and Opportunity to Provide Input – Since the Corridor Management Plan is a joint cooperative effort between the Kansas Department of Transportation and communities along the corridor to create a vision for development of that corridor and provide a guide to development decisions made by each community within that corridor, all parties with an interest in potential development along the corridor should be afforded an opportunity to provide input on that decision-making process during the requisite application and consideration procedures utilized by that community. Accordingly, each community should provide KDOT with appropriate notice of any development application or hearing on an amendment to that community's comprehensive plan, if either could reasonably be expected to have the potential to adversely impact the corridor. In addition, each community should provide KDOT with advance copies of the proposed plan amendment or development application and any related staff report. *Jurisdiction*: KDOT/Local.

Notice of Land Marketed for Sale – Success in being able to acquire property necessary for right-of-way for the mainline highway at the earliest time possible is critical to the successful implementation of the Corridor Management Plan. The ability to act quickly when an opportunity arises is key to this success. If KDOT has prompt notice of properties that become available for purchase within areas shown as future right-of-way in the Corridor Management Plan, it will be in a better position to timely coordinate with local governments on the acquisition of necessary rights-of-way. Cities and counties within the corridor should employ whatever means are available and identify additional means by which they can keep apprised of land purchase opportunities as they arise within the corridor. *Jurisdiction*: KDOT/Local.

Economic Incentive Policy – As discussed below, city and county economic incentives can effectively be focused to increase the amount of revenues they generate to pay for the cost of acquisition of land needed for transportation facilities and for the actual construction of the facilities shown on the Plan, as well as to encourage dedications of land for facility rights-of way. Many cities and counties have adopted policies to guide governing body decisions on when to grant incentives and the level of incentives that will be available. If a community along the corridor has adopted or is considering the adoption of an economic incentive policy, that policy should be revised or adopted to encourage the use of economic incentives to implement the recommendations of the Corridor Management Plan. *Jurisdiction*: Local.

Acquisition Tools

Land Acquisition – Public sector entities have the authority to acquire land for public improvements, including state highways and local roads and streets by gift, purchase, or condemnation. (K.S.A. 19-101 et seq., Article 12, Section 5 of the Kansas Constitution, K.S.A. 68-404) Sufficient land may be acquired to accommodate immediate construction needs, as well as for future needs. In appropriate circumstances, public sector entities can acquire interests in land for public improvements in advance of the date of the start of construction. Timely acquisition of necessary rights-of-way preserves opportunities to fully implement the goals of the Corridor Plan and helps reduce the cost of full implementation. The primary objective of all the partners in implementing the Plan must be to continually coordinate with one another to identify opportunities to acquire the interests in land necessary to construct the transportation improvements envisioned by the Plan. Continuing coordination is critical, but it means nothing if the partners are not equally devoted to cooperation with one another in the identification of traditional and innovative new sources of revenue and in creative partnering on acquisition strategies. *Jurisdiction*: KDOT/Local.

Access Acquisition – Existing access points that are not consistent with the Corridor Management Plan can often be eliminated though the KDOT's, city's or county's exercise of their police power. For that exercise to be appropriate however, adjacent landowners must be left with "reasonable" access after the inconsistent access point is removed. A private property owner does not have a legal right to direct access to the highway or to a particular local street. It is only required that a reasonable access is available to a property owner through some alternative means, such as access to a frontage or reverse frontage road, in the case of a highway or from some other adjacent street. That being said, situations will arise where this objective of reasonable access cannot be achieved solely though exercise of a public entity's police power. Situations will also exist where it is desirable to eliminate one or more existing access points to a particular parcel to achieve the access management objectives of the Plan, while still leaving that property owner with a point of direct access that is consistent with the Plan. In those, and in other instances, it may be advisable or even necessary to acquire inconsistent points of access through traditional negotiation or condemnation processes.

The authority to acquire land referenced above is also the source of KDOT's, cities' and counties' authority to acquire access. Acquisition of access rights can be applied to:

- limit access to designated locations or side streets;
- control access and sight distance at intersections or interchanges;
- introduce long term or permanent access control; and/or
- control traffic and turning movements at locations with high numbers of conflicting movements occur.

Land Dedication and In-Lieu Fees – One of the most, if not the most, critical recommendation of the Corridor Management Plan is that both KDOT and the communities along the corridor do everything within their power to preserve and acquire the right-of-way necessary to construct the enhancements to the highway mainline and to the adjacent and interfacing local street network. One of the goals of the plan is to maximize economic opportunities for both landowners and communities along the corridor while, at the same time, minimizing development of land at locations of a nature, and of an intensity that impedes the partners' ability to ensure that the mainline highway and the local street network function as envisioned by the Corridor Management Plan. New development that takes place within the corridor, in most instances, will create a need for new transportation network facilities to accommodate the vehicle trips it generates.

Both federal and state law authorize the communities along the corridor to require, as a condition of development approval, that the landowner dedicate rights-of-way needed for network improvements in an amount that is roughly proportionate to the need for facilities generated by that development. A carefully calculated system of fees in lieu of dedication also can be effectively utilized to ensure the timely purchase of sufficient rights-of-way. These in-lieu fees are authorized by K.S.A. 12-749. If each community along the corridor adopts a well-designed, legally defensible right-of-way dedication and/or in-lieu fee program, the significant costs of acquiring the right-of-way contemplated by the Corridor Management Plan can be greatly minimized, thereby helping to ensure successful implementation of the Plan. *Jurisdiction*: Local.

ACCESS MANAGEMENT STRATEGIES

KDOT and local communities can undertake access management activities through their "governmental police powers," which is the authority to take action to protect the well-being, safety and health of the public, and through their authority to acquire interests in land. These management strategies can be designed to apply equally to all parts of the transportation network within the corridor. Alternatively, access management tools and regulations can be imposed as an overlay district and don't have to be city or county-wide, but can be tailored to accomplish specific objectives in defined areas. A component of access management is known as regulation of traffic flow. Regulation of traffic flow could include several actions listed in the access management tools described below or be as simple as prohibiting left turns, prescribing one-way traffic, or restricting speed. Managing access is complicated and requires careful consideration, but it can be done while still allowing the property owner reasonable access to their property and to the surrounding street network. It is important to understand the differences between access (connection with surrounding roadways) and routing (direction of flows between properties and surrounding roadways).

The following are several action steps the corridor partners can take in the area of access management to help assure successful implementation of this Management Plan.

Closing of Access – While the ultimate objective of conversion of an existing route to an access controlled facility generally may not be realized immediately, KDOT and the communities need to constantly be looking for and acting on opportunities to eliminate access at locations other than those interchanges and access locations designated in the Plan. Access management is necessary to protect safety for the motoring public and the operational efficiency of the corridor. Effective access management also protects public investments and facilitates the continued economic vitality of the corridor. In contrast, uncontrolled access generally impedes development and produces high costs when and if retrofits are needed. *Jurisdiction*: KDOT/Local.

Approval of Access – As stated above, the authority to allow access to a state highway or city connecting links is vested in KDOT. A request for access is approved and controlled through issuance of a Highway Permit. The Permit is the legal document that establishes the relationship between the landowner and KDOT. All points of access to the state highway system must be the subject of a Highway Permit. This includes when access connections or local streets and intersections are installed, relocated, improved, removed, or replaced on or along state highway system right-of-way. The permit will specify such things as the location of the point of access, issues related to the construction of the access, type of use allowed at the access point and other conditions and limitations of access at that point. The KDOT District Engineer has been delegated the authority to approve Highway Permits. A request for a Highway Permit must be made with the appropriate KDOT Area Office.

With respect to access to local streets within the corridor, the authority to approve that access is vested in either the city or county that has jurisdiction at the requested location. This authority is derived from the government's inherent police power. The actual procedure for obtaining access will vary from community to community. Some communities may have adopted an access management policy that governs the location and other aspects of access to the public streets and road. In other instances, regulations governing access points may be located in the community's zoning district regulations or its subdivision regulations. Provisions on access should be included in any overlay district created for an area with the corridor. On City Connecting Links, a Highway permit must be obtained for work in the right-of-way. Executed copies of the permit, approved by KDOT and the city or county will be provided to the property owner.

Input to KDOT on Access/ Coordination of Access Management – Because of the importance of access management on the mainline highway, and on the road and street network within the corridor, and because the authority to permit and close access to the state highway system and its connecting links is vested exclusively in KDOT, (K.S.A. 68-413 and K.S.A. 68 404(a)), it is critical that communities along the corridor confer with KDOT respecting development applications that propose access points on the mainline highway and on portions of the local street network that are included in the Corridor Management Plan, particularly if that access is not consistent with points shown on the Corridor Management Plan as future points of access. *Jurisdiction*: KDOT/Local.

Coordination with KDOT – The Corridor Management Plan identifies existing access points on the highway that should be closed over time, as appropriate circumstances present themselves, to achieve access management objectives. Accordingly, each community along the corridor should cooperate with KDOT in identifying existing access points along the mainline and in closing those points, where doing so, will implement the access management goals of the Corridor Management Plan. Each local government partner should establish points of contact with KDOT to facilitate the ability to quickly capitalize on opportunities as they arise. *Jurisdiction*: KDOT/Local.

Shared Access – One meaningful way to help ensure that all property owners are afforded reasonable access to the mainline and to the local street network consistent with the full functionality of that network, is to encourage that joint access to that network by adjacent property owners be utilized to the maximum extent possible. Therefore, communities, when reviewing development applications should consider, as a condition of approval of that application, the grant of a recorded easement by the applicant to adjoining property owners or such other conditions as are appropriate to further the corridor access management objectives. *Jurisdiction*: Local.

A list of common access management tools is provided below. Each tool is explained in Table 7.A.

Access Management Tools:

1) Close median breaks
2) Consolidate mainline driveways
3) Eliminate mainline driveways/side road access
4) Eliminate public road connections to mainline, reconnect to frontage roads
5) Eliminate private driveways, reconnect to frontage roads
6) Intersection consolidation
7) Convert major intersections to interchanges
8) Advanced right-of-way acquisition
9) Interim intersection upgrades (traffic signals, turn-lanes and acceleration lanes)

TABLE 7.A
Access Management Tools

TOOL	DESCRIPTION	JURISDICTION	IMPLEMENTATION AND COMPENSATION REQUIREMENTS
Close Mainline Median Breaks	Eliminate existing median breaks to prohibit left turns to/from mainline and abutting properties.	KDOT	Administrative action under police power to regulate traffic flow. No private property right exists in traffic flow (turning movements) and therefore no compensation due abutting property owners.
Consolidate Private Driveways	Eliminate redundant driveway connections to mainline into single driveway connection, either within an individual tract or at property line of contiguous tracts.	KDOT/LOCAL	If "reasonable" access to the property will remain after consolidation, can potentially be accomplished by KDOT regulation of driveway permits under police power without payment of compensation to affected property owners. More typically, existing access control breaks allowing private driveways to mainline are acquired through traditional negotiation or condemnation processes. If abutting property owner submits a re-zoning or development proposal to local government, driveway locations are subject to regulation under zoning authority without payment of compensation as condition of zoning or development plan approval.
Eliminate Private Driveways/ Side-Road Access	Where property owner has frontage on both mainline and side-road, eliminate mainline driveway and restrict access to side road.	KDOT/LOCAL	If "reasonable" access to the property will remain after consolidation, can potentially be accomplished by KDOT regulation of driveway permits under police power without payment of compensation to affected property owners. More typically, existing access control breaks allowing private driveways to mainline are acquired through traditional negotiation or condemnation processes. If abutting property owner submits a re-zoning or development proposal to local government, driveway locations are subject to regulation under zoning authority without payment of compensation as condition of zoning or development plan approval.
Eliminate Public Road Connections to Mainline, Re-Connect to Frontage Road	Where local roads connect to mainline at locations other than mile roads, eliminate connection between mainline and local cross-road, re-connecting cross road to newly installed frontage or reverse frontage road.	KDOT/LOCAL	KDOT may regulate location where public roads connect to mainline under general statutory authority to establish and maintain state system and its police power. No public "property right" in location where local roads connect to mainline. Therefore, local governments cannot enjoin closure of mainline connections nor can abut property owners seek compensation for resulting re-routing along local roads to mainline. More typically, KDOT and local governments will jointly undertake coordinated road improvement projects pursuant to their respective general statutory powers to establish and maintain public roadways. Such a project would include closing cross-road intersections with mainline and reconnecting cross-roads to frontage or reverse-frontage roads which connect to mile-roads and mainline interchanges. If abutting property owner submits a re-zoning or development proposal to local government, location of abutting public or private streets are subject to regulation under zoning authority without payment of compensation as condition of zoning or development plan approval.
Eliminate Private Driveways, Re-Connect to Frontage Road	Where private driveways connect directly to mainline, eliminate private driveways and re-connect to newly installed frontage or reverse road.	KDOT/LOCAL	Acquire existing access control breaks through negotiation or condemnation, stipulating property remaining will be connected to a newly installed frontage or reverse frontage road. If abutting property owner submits a re-zoning or development proposal to local government, driveway locations are subject to regulation under zoning authority without payment of compensation as condition of zoning or development plan approval.
Intersection Consolidation	Consolidate redundant, at-grade local road intersections into single intersection by establishing local road network to facilitate connection to single remaining at-grade intersection.	KDOT/LOCAL	KDOT may regulate location where public roads connect to mainline under general statutory authority to establish and maintain state system and its police power. No public "property right" in location where local roads connect to mainline. Therefore, local governments cannot enjoin closure of mainline connections nor can abut property owners seek compensation for resulting re-routing along local roads to mainline. More typically, KDOT and local governments will jointly undertake coordinated road improvement projects pursuant to their respective general statutory powers to establish and maintain public roadways. Such a project would include consolidating redundant, at-grade local road intersections with local road network to facilitate connection to single remaining at-grade intersection. If abutting property owner submits a re-zoning or development proposal to local government, intersection location is subject to regulation under zoning authority without payment of compensation as condition of zoning or development plan approval.
Interchanges at Major Roads	Replace major road at-grade intersections with grade-separated interchanges	KDOT	KDOT may install interchanges under general statutory authority to establish and maintain state system. Acquire necessary right of way through traditional negotiation and condemnation processes.
Advance ROW Acquisition	Identify and prioritize critical parcels most vulnerable to development or other market forces.	KDOT/LOCAL	After identifying and prioritizing critical parcels most vulnerable to development or other market forces which would make acquisition at time of future project physically impossible or unnecessarily expensive. KDOT or local government may acquire necessary right of way as funding is available through traditional negotiation and condemnation processes.

GAP ANALYSIS NOTES:

Pottawatomie County

P-1. See Manhattan Zoning Ordinance section 3-412 for an example of a detailed process for review of all public improvements for conformance with a comprehensive plan.
P-2. Some applications have more specific criteria than others. For example, Article 3, Section 101-3 has the required findings for a conditional use approval. However more routine applications such as re-zoning approvals have no criteria other than the assumption that it meet all of the standards.
P-3. The variance criteria follow all the state statute criteria. However there is no explicit reference that the applicant or BZA should consider the comprehensive plan policies in goals in making a determination on these criteria.
P-4. Not all districts have these standards, but for classes of zoning districts that allow more development options or innovative applications, the site design standards are elevated. (i.e. the PCD district begins to address urban design elements that are not included in the basic commercial districts.) However, none of the site design standards are specifically geared towards more compact or concentrated development that could minimize impacts on the US-24 corridor. The planned districts or new overlay districts could be used to accomplish this in the absence of specific criteria. (See Implementation section of the US-24 Corridor Management Plan.)
P-5. Article 4, Section 105.E references connectivity standards, but in general there are no standards for street networks, connectivity, or different street design types.
P-6. See above comment P-5.
P-7. There are no specific standards for the layout and arrangement of blocks and lots, but the platting procedures do have general objectives for the layout for divisions of land. This more permissive and objective-oriented approach may be more appropriate for the anticipated level of development in the unincorporated county, but it also would be more difficult for denying proposed applications on these criteria. (Article 4, Section 105.G.)
P-8. The UDC has a PURD and PUD zoning districts for this purpose, which also triggers alteration of applicable subdivision standards based on the plan.

Manhattan

M-1. The Manhattan PUD District (9-901) has good objectives and criteria that tie its application to sound long-range planning policies. However the district has very low area thresholds (i.e. ½ acre for residential and commercial.) This does not result in areas capable of being "planned" at a scale to meet many of these objectives and the district may be used simply to plan specific sites rather than use the flexibility to meet broader planning policies stated in the Purpose and Objectives and Criteria sections of the ordinance.
M-2. Most districts have a brief description at the beginning of the district, but none of them draw explicit relationships to general land use categories or development patterns in the comprehensive plan. They also do not include relationships to other supportive or compatible districts that could tie application of zoning for specific sites to long-range planning policies. The planned overlay districts have the most complete intent statements, but still do not specifically link to long range planning policies of the comprehensive plan. The following is an example of a more comprehensive intent statement from another jurisdiction's zoning ordinance: *The NB District is intended for Retail, Employment, Service and Civic uses to support adjacent residential neighborhoods in meeting most of the daily needs of residents within close proximity to dwellings. The district regulations are designed to promote small-scale business uses tightly integrated with surrounding residential uses with a walkable urban design and character. The NB District is applicable to any area where small scale retail and services are desired to support adjacent residential uses, specifically the Neighborhood Business Centers and smaller Mixed-use Commercial Activity Centers in the comprehensive plan. The total area of the district typically entails no more than 5 to 20 acres (2 to 8 blocks) in its entirety, without transitioning to the adjacent and supportive uses and zoning districts (individual applications may be smaller).*
M-3. The variance criteria follow all the state statute criteria. However there is no explicit reference that the applicant or BZA should consider the comprehensive plan policies in goals in making a determination on these criteria.
M-4. Except for special districts (i.e. PUD or TNO), these standards typically only address signs, parking, and screening for parking areas and do not have a great deal of guidance for different urban design or site design strategies that may be appropriate for various zoning districts. However, none of the site design standards are specifically geared towards more compact or concentrated development that could minimize impacts on the US-24 corridor. The planned districts or new overlay districts could be used to accomplish this in the absence of specific criteria. (See Implementation section of the US-24 Corridor Management Plan.)
M-5. 10-202 and 10-203 make the street networks and designs a significant portion of the submittals, but they do not have any specific standards other than to reference other plans or policies for street networks or designs and the generic functional classification standards. To the extent that these other plans or policies do not include specific information (preferably altered to different contexts of application), it may be difficult to ensure that multiple independent plats execute these plans in a coordinated manner. More specific design and connectivity criteria could make it easier for applicants and reviewers to identify critical issues with respect to applying these policies to plat applications.
M-6. See above comment M-5. Also, section 10-301(B) has the only specific connectivity standard which has a very large and general maximum block length requirement. It may be appropriate for very low density residential standards, but does not ensure a sufficient level of street network connections for other situations. Development that merely meets this maximum connectivity requirement can tend to overtax collector and arterial streets by forcing them to accommodate even the most routine of local vehicle trips.
M-7. See above comments M-5 and M-6. Section 10-401 has standards only for lots, and there are no community planning or design standards for proper arrangements of blocks and lots for a variety of different contexts.
M-8. The review criteria and Section 10-801 note that open space systems and "community assets" are an important component of planning and plat approvals but other than references to parks and trails plans and policies there are not standards for the various types of open spaces that could be incorporated into plats, and which may need to link or relate between multiple and independent adjacent plats.
M-9 The review criteria for plats have very specific references to utilities and public facilities, but there is not a clear mechanism or process for which land acquisition would occur for public facilities beyond utility easements. (sections 1-401, 6-306, and 8-101 through 8-103) This can become important particularly if the improvement is one not built by the City and/or one not specifically required in association with the development. An example is "reservation" provisions, which allow opportunities for negotiation, planning and acquisition for public facility sites that parallel the plat review process for only a limited time period.
M-10. Section 1-301 appears to only utilize this authority with respect to the city's planning jurisdiction in unincorporated Riley County, and not for the portions of the US-24 study area in Pottawatomie County.

St. George

S-1. The PUD (Article V. Section 103) and PURD (Article IV., Section 102) do allow for flexible application of standards. However there are not any specific design criteria and objectives other than ranges for allocation of general land uses or setback requirements. Therefore, it does not provide much guidance to planners or potential developers on how the City intends to use this flexible regulatory authority.
S-2. Some of the districts do have general introduction or intent statements that are more detailed (i.e. the PUD, PURD, C-1, and C-2), however they do not go into sufficient detail to describe how the districts will relate to an overall and long-range pattern of growth and development of the City. In effect, the statements can only be helpful in analyzing the design of particular sites, and not as much in analyzing the application of a zoning district to a particular area. This is likely the result of not having a comprehensive plan.
S-3. 16-307 of the City Code establishes variance criteria that meet the state statutory requirements but do not specifically indicate the BZA and applicant may use the comprehensive plan as a mechanism for determining if the criteria are met.
S-4. Article III, Section 103.4 references the City's extraterritorial zoning authority, however there is no specific indication in the ordinance to the extent or areas to which the City has implemented zoning restrictions beyond its boundaries.

Wamego

W-1. See Manhattan Zoning Ordinance section 3-412 for a detailed process for review of all public improvements for conformance with a comprehensive plan.
W-2. Certain districts do have specific review and approval criteria (i.e. PUD) and tie approval to comprehensive plan policies and intent of the district, but in general the ordinance does not explicitly establish these review and approval criteria for all districts.
W-3. The variance criteria meet the state statutory requirements but do not specifically indicate the BZA and applicant may use the comprehensive plan as a mechanism for determining if the criteria are met. Note the Exception criteria in Article XXX, Section 12 do specifically include the comprehensive plan in the consideration for "exceptions" to the ordinance.
W-4. The ordinance does not have any specific urban design standards specifying how buildings and open spaces should relate in various districts or different contexts. The zoning ordinance does contain basic parking, sign, and landscape standards, however without an explicit site plan process (for non-zoning change applications) and/or detailed review and approval criteria, enforcement of these standards could vary based on the circumstances of any particular application. Additionally, none of the site design standards are specifically geared towards more compact or concentrated development that could minimize impacts on the US-24 corridor. The planned districts or new overlay districts could be used to accomplish this in the absence of specific criteria. (See Implementation section of the US-24 Corridor Management Plan.)
W-5. Article VI, Section 3 includes general street standards, but they are based purely on functional classifications and make no accommodations for different types of street networks and/or different street design types to be used in different contexts. They also do not account for any difference in urban design strategies along streets or in different contexts, and are organized purely by street width (80' / 70' / 60' / 50') by functional classification.
W-6. Article VI, Section 2 includes some very general standards that begin to regulate overall network connectivity and could result in the proper arrangement of blocks and lots across multiple divisions of land, but because they are so general they do require close administration by the City and Planning Commission to ensure this result.
W-7. See comment W-6 above.
W-8. Article VII allows for this but does not contain a specific procedure for how reservation may occur in the platting process.
W-9. Article I includes some circumstances for extra-territorial application of the Wamego subdivision regulations, but they are not to the full extent authorized by the Kansas Statutes.

TABLE 7.B
Regulatory Gaps Between Partner Agencies

	Pott. Co.	Manhattan	St. George	Wamego
PLANNING				
Comprehensive Plan. Does the jurisdiction have a Comprehensive Plan?	Yes	Yes	No	Yes
Official Maps. Does the jurisdiction have an official long-range transportation plan map, either as part of the comprehensive plan or independent?	No	Yes	No	Yes
Plan Consistency. Do development regulations and/or review criteria reference comprehensive plan?	No	Yes	No	No
Utility Planning. Does the jurisdiction have a utility master plan for service infrastructure or stormwater facilities?	No	Yes	No	No
Conformity of Public Improvements. Does the jurisdiction have practice of making all public improvements (city, state, or local, and public, quasi-public, or privately owned) reviewed by the Planning Commission for consistency with long-range policies in the comprehensive plan?	No [P-1]	Yes	No	No [W-1]
ZONING				
Zoning Ordinance. Does jurisdiction have a zoning ordinance?	Yes	Yes	Yes	Yes
Planned Zoning Districts. Does jurisdiction have planned zoning, and if so are its requirements tied to clear long-range planning policies?	Yes	Yes [M-1]	Yes [S-1]	Yes
Overlay Districts. Does the jurisdiction have overlay districts in its zoning ordinance, and are they tied to unique circumstances?	Yes	Yes	No	Yes
Zoning District Intent. Do the zoning districts have clear intent statements, including reference to the comprehensive plan, reference to the scale of application of the district, and reference to relationships to other supporting or compatible zoning districts?	Yes	No [M-2]	No [S-2]	Yes
Site Plan. Does the jurisdiction have requirements for site plan submittals for development activities not associated with zone change requests?	Yes	Yes	No	No
Review / Approval Criteria. Does the zoning ordinance have approval criteria for rezoning that reflect the intent / character of the zoning district, including the ability to condition approvals on meeting the specific intent?	Yes [P-2]	Yes	No	No [W-2]
Variance Criteria. Does the zoning ordinance have approval criteria for granting variances, including reference to the state statute requirements and reference to the comprehensive plan or zoning district intent when assessing those criteria?	Yes [P-3]	Yes [M-3]	Yes [S-3]	Yes [W-3]
Site Design Standards. Do the regulations have standards or criteria for good site design / urban design based on a variety of different contexts (i.e. building form and placement, open spaces, parking, on-site pedestrian and vehicle circulation]?	Yes [P-4]	Yes [M-4]	No	Yes [W-4]
Extra-territorial Zoning. Do the regulations take advantage of any extra-territorial authority to coordinate interim development activity with long range growth and annexation?	N/A	No	Yes [S-4]	Yes
SUBDIVISION REGULATIONS				
Subdivision Regulations. Does the jurisdiction have subdivision regulations?	Yes	Yes	No	Yes
Comprehensive Plan. Do the subdivision regulations reference development pattern policies of the comprehensive plan as a significant criteria or factor for land divisions?	No	Yes	N/A	No
Street Networks and Designs. Do the subdivision regulations have standards or criteria for street networks and designs for different areas (i.e. guidance for transportation planning and development beyond the major streets that may be part of an Official Map above)?	No [P-5]	Yes [M-5]	N/A	Yes [W-5]
Connectivity Standards. Do the regulations have standards or criteria for connectivity of local streets to support different development contexts (i.e. compact commercial requires 400' to 600' intervals; urban residential requires 400' to 800'; low density residential requires 600' to 1000', etc.)?	No [P-6]	No [M-6]	N/A	Yes [W-6]
Blocks and Lots. Do the subdivision regulations provide standards or criteria for the proper arrangement of blocks and lots, with particular consideration to different contexts and/or potential logical re-subdivision of land?	No [P-7]	Yes [M-7]	N/A	Yes [W-7]
Open Space Systems. Do the subdivision regulations have a mechanism for coordinating various types of open spaces across multiple developments and implementing a system-wide approach to open space?	Yes	No [M-8]	N/A	No
Utility Systems / Stormwater Mgmt. Systems. Do the subdivision regulations have a mechanism for coordinating service and natural infrastructure across multiple adjacent developments, with particular emphasis on planning and coordinating development that may occur in separate time periods?	Yes	Yes	N/A	Yes
Community Facilities & Other Public Improvements. Do subdivision regulations provide a mechanism to review for the need and/or location of community facilities (i.e. schools, public safety, utilities, etc.) and a mechanism for acquiring the property in association with development of the area?	No	Yes [M-9]	N/A	Yes [W-8]
Cluster Development / Conservation Subdivisions / Density Incentives. Do the subdivision regulations encourage innovations that can yield more efficient layout of potential development and meet multiple long-range planning goals (i.e. more concentrated open space preservation / farm-land protection, etc.)?	Yes [P-8]	Yes	N/A	No
Extra-territorial Platting. Do the regulations take advantage of any extra-territorial authority to coordinate interim development activity with long range growth and annexation?	N/A	Yes [M-10]	N/A	Yes [W-9]
OTHER RELATED DEVELOPMENT REGULATIONS				
Building Permits.	Yes	Yes	Yes	Yes
Transfer of Development Rights / Density Transfers.	No	No	No	No
Setback Ordinances.	No	No	No	No

DEVELOPMENT REGULATIONS GAP ANALYSIS

A "Gap Analysis" was performed as part of the US-24 Corridor Management Plan and is summarized in Table 7.B. It is based on the Toolbox of Implementation Strategies, as well as the goals and policies of the US-24 Corridor Management Plan. It assesses each jurisdictions' development regulations against the planning and regulatory tools identified in the toolbox. This Gap Analysis merely identifies the presence or absence of each tool in the jurisdiction's regulations. The comments included in the notes to the Gap Analysis identify how the "gaps" could be filled in relation to the goals of the US-24 Corridor Management Plan, providing additional commentary on how the tool could be generally implemented in each jurisdiction. The comments are based on independent assessments of each regulation, and on assumptions on general plan implementation techniques and "best practices" in the planning profession. The specific appropriateness and application of each tool for the various jurisdictions will need to be based on more detailed discussions and formal procedures.

FINANCING STRATEGIES

The Corridor Management Plan has been developed to maximize economic opportunity and to provide a fully functional highway and street network for property owners within the corridor. The full costs of the improvements to the mainline highway and adjacent street network necessary to achieve these Plan objectives are significant. Monies needed to complete these enhancements may not be available from KDOT or from the local communities within the corridor when the enhancements are needed. Therefore, the below activities are all critical to the successful implementation of the Corridor Management Plan.

- Identify all existing financing tools, both the traditional and the alternative tools;
- Creatively analyze how these tools can best be utilized individually and in concert with one another to maximize resources;
- Investigate possibilities for new options using home rule and delegated powers;
- Pursue federal and state statutory and regulatory amendments to eliminate funding obstacles and provide new approaches; and
- Pursue new legislative authority for innovative funding approaches.

To achieve this sought-after success, it is imperative that all corridor partners carefully and constantly coordinate with one another to identify potential sources of funds and work diligently, once sources are identified, to make certain that available funds are utilized in the most effective and efficient way to the benefit of all parties to this endeavor.

That having been said, there is a wide array of financing options available to cities and counties to finance infrastructure improvements. Notably, many of these same financing options can be used as economic incentives to encourage development to occur at a certain location, in a certain form, and/or in specified densities or intensities. These financing options include the traditional mechanisms used by cities and counties to raise revenues and to pay for both the capital and operational expenses of government and other alternative financing strategies.

Traditional Funding

Traditional funding mechanisms include federal and state funds, real and personal property taxation (Article 12, Section 5 of the Kansas Constitution, K.S.A. 19-101 et seq. and K.S.A. 79-1801 et seq.), sales taxation (K.S.A. 12-187 et seq.), economic development tax exemptions (Article 11, Section 13, Kansas Constitution), special assessments (K.S.A. 12-6a01 et seq., and K.S.A. 12-601), and the Main Traffic way Act (K.S.A. 12-685). All of these financing mechanisms are available to fund improvements contemplated by the Corridor Management Plan and their use, as the situation dictates, should not be ignored.

Because the traditional mechanisms are regularly utilized by KDOT, cities and counties to pay for capital projects, they will not be discussed in detail in this Chapter; rather this portion of this Chapter is devoted to an explanation of several of the less-traditional mechanisms available to cities and counties to pay for improvements contemplated by the Plan and to incent corridor development that is consistent with the Plan's recommendations.

Although not actually a source of additional revenue, the bonding authority of cities and counties is worthy of mention. Each is authorized to issue long-term debt to finance projects, with that debt to be repaid from a variety of traditional and some alternative revenue sources. Bonding authority is important for many reasons, but one key advantage of issuing bonds to finance public improvements is that it allows the issuing entity to pay for an improvement up front (before total project costs are available in hand) to get a project started or even completed in those instances where timing is critical in terms of events in the community and/or to take advantage of favorable financial markets. These improvements can then be paid for over time, generally up to 20 years, as tax revenues or other dedicated sources become available. This can be a huge advantage and can help the partners in their efforts to acquire land for and make the improvements contemplated by the Plan when actual situations in the corridor dictate those actions occur.

Cities and counties are authorized to issue general obligation (GO) bonds payable from a general tax levy on all taxable property within the city (K.S.A. 10-101 et seq.). These GO Bonds are backed by the full faith and credit of the issuing entity. As an alternate, the city may issue revenue bonds (K.S.A. 10-1201 et seq.). Revenue bonds are repaid from a pledge of the revenue from a specified income-generating facility or source. Revenue bonds are not guaranteed by the full faith and credit of the issuer. A city may issue special assessment bonds to be repaid, in whole or in part, from the revenues received from special assessments imposed on properties that are specially benefited by the improvement(s) constructed within an assessment district (K.S.A. 12-60015). Special assessment bonds are actually general obligations of the issuer, which, in addition to the pledge of the revenues from the special assessment, are backed by the full faith and credit of the city. The final category of traditional municipal bonds is special obligation bonds. These are bonds issued under the authority of Kansas statute, specifically, K.S.A. 12-1770 et seq. and 12-17, 160, et seq., to finance the undertaking of redevelopment projects. These bonds are payable from incremental property tax increases resulting from the redevelopment in an established redevelopment district, a pledge of a portion of the revenues received by the issuer from transient guest, sales and use taxes collected from taxpayers doing business in a redevelopment district, franchise fees, private, state or federal assistance or any combination thereof.

Alternative Funding Mechanisms

Most alternative funding techniques are devised by one local government to meet a local need and their use then spreads from community to community. The techniques are refined based on trial-and-error. Many of these approaches do not have specific legislative authority, but are enabled through home rule, local police powers, or a broad reading of authority from another source, such as local planning.

State highway, road and street projects required to support new development may be constructed utilizing economic incentives, such as tax increment financing, Star Bonds, sales tax reimbursement agreements, tax abatement, special assessment districts and transportation development districts, to name only several of the options. It is important that, wherever possible, local communities along the corridor be cognizant of their ability to require that revenues from the grant of these incentives to developers be used to offset the cost of the construction of mainline highway improvements and related improvements to the local street network, as shown on the Corridor Management Plan. But, even more importantly, they must actually make the grant of these incentives conditional on a reasonable portion of these monies being used to pay the cost of Corridor Management Plan identified improvements. *Jurisdiction*: Local.

These incentives also can be effectively used to influence the location, type/uses, form, architectural quality, configuration and density/intensity of development. It is important to utilize these incentives, not only to offset traditional public costs for these facilities, but also as incentives to shape development proposals, so they further Plan recommendations and achieve quality design and sustainable development in the corridor.

Impact Fees – Impact fees are one-time regulatory fees assessed against new development to cover the costs for necessary capital facilities proportionate to the demand generated by the new development. The fee is imposed by a public sector entity on development activity as a condition of granting development approval, and generally is calculated at the platting stage and collected at the time a building permit is issued. Kansas has no impact fee statutory authority. Nevertheless, cities and counties can establish a system of impact fees using their home rule authority. This system of fees requires the development of a local legislative adopted scheme that includes the calculation methodology for the fee, and a system of credits, exemptions and appeals. The system would be adopted by ordinance or resolution, as the case would require. Impact fees must be used to add capacity attributable to new development; they cannot be used to pay for improvements necessitated by existing development. An impact fee must meet three requirements:

1. The new facilities are a consequence of new development;
2. There must be a proportionate relationship between the fee and the infrastructure demand; and
3. The funds collected must be used to provide a substantial benefit to the new development.

In Kansas, impact fees may be collected either across the entire jurisdiction or in a designated geographic area. While they may be assessed at platting, impact fees are typically collected upon building permit issuance. A detailed calculation is necessary to ensure that the system, and particularly the fee charged property owners, is proportionate to the demand for new facilities that each unit of new development generates, i.e., its impact, in terms of facility capacity consumed. In funding transportation network facility improvements, the measuring stick for each development's impacts is the number of vehicle trips it will generate. Since streets are generally designed to accommodate the PM Peak trips, that is generally the time interval used.

The Kansas Supreme Court has recognized the legitimate use of impact fees in McCarthy v. City of Leawood. In that case, the City of Leawood assessed the payment of impact fees on the issuance of building permits and plat approvals for properties within the K-150 (135th Street) corridor. The purpose of the fee was to finance a portion of the improvements of K 150. Back when first established in 1988, the fee was calculated based upon trip generation, at a rate of $26.45 per trip. This rate was then multiplied by the average number of trips generated by a use to determine the individual fee. For example, residential uses were projected to generate 10 trips per day, multiplied by $26.45 for a fee of $264.50 per unit. *Jurisdiction*: Local.

Excise Tax – Technically, an excise tax is a broad term that covers every type of tax, except a property tax. As with all taxes, it is a method of raising revenue. It is distinguished by the fact that rather than being based on the value of property, it is levied on a certain activity or the exercise of a privilege – more accurately described as business done, income received, or privilege enjoyed. Typical examples of excise taxes include taxes on the purchase of gasoline, alcohol or cigarettes, business license taxes and on the rental of hotel rooms. In recent past, local governments in Kansas have innovatively used an excise tax to fund transportation network improvements that are required to support development. It is structured as a tax on activity of platting lots. The rate of the tax is based on the amount of square footage proposed to be constructed or on the number of vehicle trips the proposed development will generate on the street network. The key reason for its use has been that because it is a tax and not a regulatory fee, the rate is not required to satisfy the constitutional benefit or nexus requirements of regulatory fees imposed by local governments, such as impact fees discussed above. Kansas courts had upheld this financing approach.

In 2006, however, the Kansas Legislature amended K.S.A. 12-194 to make it uniformly applicable to all cities. By doing so, this provision became no longer subject to a charter ordinance or resolution whereby cities and counties could make its provisions inapplicable to that city or county and adopt supplemental provisions on the subject. This charter approach was the one that cities and had used to eliminate the legal impediment in K.S.A. 12-194 and use their ordinary home rule power to establish an excise tax system of this type. It had become known as a "development excise tax." That amendment, in addition to precluding local governments that did not have a development excise tax in place from adopting one, also included a provision that prevented cities and counties that had levied or imposed a development excise from increasing the rate of the tax without a majority vote of the electors, after July 1, 2006. Accordingly, this technique is only available to local governments that had a development excise tax in place before that date, and those that did have one in place cannot increase the rate charged without a vote. *Jurisdiction*: Local.

[1] *257 Kan. 566, 894 P.2d 836 (1995).*

Transportation Development Districts – A Transportation Development District (TDD) (K.S.A. 12-17,140 at seq.) is a form of a special district that was enacted specifically to facilitate the construction, maintenance and financing of a broad array of transportation projects, ranging from streets, roads, highway access roads, interchanges and bridges to light rail and mass transit facilities. Most improvements related thereto, such as streetscape, utility relocations and other necessary associated infrastructure can also be funded using this technique. While a regular special district can be used to address transportation issues, transportation development districts allow greater funding flexibility, including authority to impose a transportation development district sales tax of up to 1% (K.S.A. 12 17,145), in addition to the authority to levy special assessments. If a transportation development district is sought to be imposed, the governing body must hold a duly noticed public hearing in advance of adopting the resolution or ordinance creating the district and approving the method of financing projects within the district. The district may issue bonds backed by the revenues received from properties in the district from the imposed sales tax or special assessment.

One significant difficulty in utilizing this mechanism for improvements covering a larger area is that the district can only be formed through a petition signed by owners of all of the land area within the proposed district. So, if the improvement is adjacent to lands owned by different owners, it may be difficult to obtain the consent of all necessary owners. It may have its greatest utility for distinct segments of the improvements proposed by the Management Plan, such as mainline highway interchanges and access roads located within one tract of land that is designated in the Plan for more dense or intense development. This technique can also be used effectively to assist in the financing of key portions of the adjacent local street network. The statutory scheme allows for a good deal of flexibility in how the boundaries of the district are established, so long as all included property owners agree. For that reason, the community partners should keep this tool on the list of the ones that should be considered for funding, particularly in those instances where a property owner or several property owners want to develop an area of land at an access point with sales tax generating properties. *Jurisdiction*: Local.

Transportation Utility Fee – A transportation utility fee is a fee collected on residences and businesses within a city's or county's corporate limits tied to the use and consumption of the transportation system. While this approach has only recently been applied to transportation services, utility charges have been used for years "to finance not only public water and wastewater systems but also such diverse facilities and services as electricity, telephone or telegraph services, gas, and a cotton gin." There are a number of benefits to TUFs: Utility rates and fees provide a steady revenue stream that may be used for maintenance and operations costs, as well as facilities construction and are not required to meet the direct benefit test applicable to special assessments. Also, utility charges are generally not subject to voter approval, as are many taxes. And perhaps most applicable to the current circumstances, "[t]he development of a transportation utility is a particularly attractive option in states with strong home rule powers, such as Colorado, Florida, and California."

Utility fees are collected from all development, both existing and new (as it "hooks-in" to the existing system). Charges are based on usage estimates of trips by land use and project budgets. The transportation utility fee is typically included on an existing county or utility collected tax or rate bill. The uses to which revenues from a utility can be used are limited only by the restrictions placed on their use in the home rule authority. Generally, however, the revenues would be placed into a separate fund and earmarked or dedicated to the purposes stated in the enabling authority and to no other purpose.

There is no specific legislative authority for transportation utility fees in Kansas. Local governments will need to look to home rule to authorize this financing mechanism. The key to the successful employment of this technique is crafting an ordinary ordinance or resolution that establishes a system of charges that will not be found to be a "tax," while at the same time ensuring that the ordinance or resolution is not in conflict with existing state statutes, such as, by example, K.S.A. 12-6a01 et seq., authorizing special assessment districts.

In the leading case on transportation utility fees, Bloom v. City of Fort Collins , the Colorado Supreme Court reached the following conclusion: We hold that a transportation utility fee is not a property tax but rather is a special fee imposed upon owners or occupants of developed lots fronting city streets and that such fee . . . is reasonably related to the expenses incurred by the city in carrying out its legitimate goal of maintaining an effective network of city streets.

The Fort Collins transportation utility fee was adopted to address maintenance issues. Nothing, however, would prohibit the utility fee from being designed to fund construction-related costs. The Fort Collins fee was calculated based on: "the amount of frontage in linear feet that each lot or parcel has on the right-of-way of an accepted street; the base rate maintenance cost of each foot of frontage; and the developed use of the property (which includes the amount of vehicular traffic generated by the property)". The fee was billed monthly. The Colorado Supreme Court found that the transportation utility fee qualified as a fee and not a direct tax. "Unlike a tax, a special fee is not designed to raise revenues to defray the general expenses of government, but rather is a charge imposed upon persons or property for the purpose of defraying the cost of a particular governmental service."

Although this technique has a lot of potential as a viable alternative funding strategy, careful coordination with legal counsel will be necessary to ensure the precise structure developed is legally defensible. *Jurisdiction*: Local.

[2] *64 Am. Jur.2d Public Utilities § 1 (1972) (cited in Susan Schoettle & David Richardson, Nontraditional Uses of the Utility Concept to Fund Public Facilities, 25 URB. LAW. 519 (1993).*
[3] *Id. at 525.*
[4] *Id.*
[5] *784 P.2d 304, 305 (Colo. 1989).*

Tax Increment Financing – Tax increment financing (K.S.A. 12-1770 et seq.) is a tool used by local governments to capture the future increases in property tax and all or a portion of the revenues received from transient guest, use, local sales taxes collect from taxpayers doing business within the district, and increased franchise fees, and to make revenues realized there from available as an incentive to development, by using the revenue to pay for, generally, public infrastructure necessary to implement a redevelopment project plan (K.S.A. 12-170a (o)). Project costs may not include costs related to a structure to be owned by or leased to a developer. TIF funding can provide funds either as collected (pay-as-you-go) or through special obligation tax increment bonds repaid over 20 years.

While there is specific enabling authority for the use of TIF, it is limited to "eligible" areas that fall within one of the following categories and the boundaries of which are designated by the local government as a redevelopment district:

- Blighted
- Blighted and in a 100-year flood-plain
- Intermodal transportation area
- Major commercial entertainment and tourism area Conservation (becoming blighted)
- Major tourism area
- Historic theater
- Enterprise zone, or
- Environmentally contaminated area

Therefore, not all property within a local government's jurisdictional boundaries may qualify to be included in a redevelopment area.

Eligible project costs most certainly will include all transportation network public infrastructures identified in the Corridor Management Plan. *Jurisdiction*: Local.

[6] *Id. at 306.*

Sales Tax and Revenue Bond Districts – This mechanism (K.S.A. 12-17, 160 et seq.) is the big brother/sister of tax increment financing. It's "Super TIF," if you will. The entire mechanism works almost exactly like tax increment financing, except the districts are called STAR bond project districts and the individual projects in the district are called STAR bond projects. Each project must be approved by the Secretary of Commerce and include at least a $50,000,000 of capital investment and evidence $50,000,000 in project gross annual sales or, if outside a MSA, met the requirements of K.S.A 12-17,162 (w). It is the heightened level of incentives authorized in these districts that is key. Once a district is established and a project plan is approved, the approving city may issue special obligation bonds. Importantly, those bonds may be repaid from the portion of the city and county sales and use tax collected from taxpayers within the city portion of the district AND the sales tax increment revenues received from any state sales taxes collected from taxpayers in that district. This is in addition to the property tax increment and local sales, use and franchise fee that can be pledged to repayment of the special obligation bonds issued in a traditional tax increment financing project. The Secretary can set a limit on the amount of bonds that may be issued to pay eligible project costs.

General Contract Authority – It is important to recognize that local governments have significant powers pursuant to the Constitutional home rule amendment and Chapter 19 of the Kansas Statutes. These powers include all powers of local legislation and administration that they deem appropriate, with really only minor exceptions. This Chapter extensively discusses state, county and city powers, such as the power to regulate through exercise of the police power, the power to zone, the power to tax, the power to charge fees, the power to impose special assessments and the power to purchase, hold, sell and convey land, including exercise of the power of eminent domain . The one power that really hasn't yet received that much analysis is the power to contract. It would be a mistake not to also highlight this power which all the parties share. In addition to finding the source of the power to contract in the home rule provisions, K.S.A.12-101 contains a specific statutory delegation of power to cities to contract; K.S.A. 19-101 contains a similar grant to counties; and, among others, K.S.A. 75-5004 vests power to contract in the KDOT's Secretary of Transportation.

The limits on the power of the participants to the preparation of this Plan to contract are minimal. The two major limitations are: (1) whether the contract is within the scope of the delegated power: and. (2) Whether it is entered into and executed in accordance with statutory requirements. As to the first limitation, since the delegation in each instance is along the lines of "to make contracts in relation to the property and concerns of the city and necessary to the exercise of its corporate powers, " as is readily apparent, the power to contract is quite broad. Generally, it is only limited by whether the contract is in conflict with statute or the constitution. A contract that violates the first limitation is ultra vires and void. For example, a contract that violates the Cash-Basis Law (K.S.A. 10-11-1 et seq. because it obligated the public entity to pay monies that are not budgeted and encumbered is completely void. Legally, it is as if it never existed.

It goes without saying that monies paid pursuant to a contractual obligation, like any other payment of monies by a public entity, must be for a public purpose. Courts, however, are clear on the broad scope of what constitutes a public purpose. Courts will presume that facts declared in support of a legislative determination of public purpose to be true and adequate A good rule is that a public entity is permitted to enter into all contracts that are reasonable and proper and which are reasonably necessary to allow it to fully perform the functions expressly conferred on it, as well as those that are essential to enable it to perform the duties of government for the benefit of its citizens.

The other main limitation on the contract power of which public entities should be wary is the prohibition on contractually bargaining away its duty to make reasonable laws and exercise their other legislative powers whenever doing so is necessary to preserve or protect the public health, safely and general welfare. As an example, a public entity could not agree by contract to approve a rezoning or impose or not impose some tax or fee at some later point in time.

The beauty of the contracting power is that it is so comparatively unfettered by limitation, particularly by those of the constitutional variety, such as the 5th Amendment's constraints on exercise of the zoning and police power to require the dedication of land as a condition As noted above, for good and valid reasons, any dedication of land required in that instance must be roughly proportionate, in its nature and in its extent, to the impacts created by development. (See Sec. I.D.3)

In situations where the public entity is exercising its contract power, the parties are negotiating their own contractual duties and obligations. Ostensive, the ultimate objective of both parties is to achieve a win-win situation, where both receive the benefit of the bargain struck. The

traditional elements of a contract must exist for the agreement to be binding, of course. There must be an offer, acceptance of the offer, mutuality and delivery. As an example of use of the contract power to implement the Plan, an entity or individual contracting with a community within the corridor may be willing to agree to convey more land than the community could legally require them to dedicate when exercising its police or zoning power. So to, there may well be benefits the community can and is willing to provide to a developer that are more valuable to them than retaining that portion of the land which exceeds what "rough proportionality would allow the community to require, as a part of the development approval process. Based on the mutual interests of both parties, a deal can be struck that help in the implementation of the plan, while at the same time enhancing the developer's business objectives. The fact that a contracting party voluntarily agrees to an obligation to which it could not be required to commit as a part of the development application process does not make the contractual obligation illegal.

The opportunities to utilize public entity contract powers to help implement this Plan are numerous and should not be ignored. In fact, each community along the corridor and KDOT should be ever vigilant about identifying situations where this power can be used beneficially. Virtually every time public incentives are provided to a developer, a contract is employed to memorialize the duties and obligations of the parties. The recipient of the incentives will expect that it will be asked to provide benefits to the community in exchange for being provided development incentives. There is no absolute right to develop land. Each party to the contract, however, must receive compensation (mutuality). Communities should be constantly watchful for opportunities to negotiate for the inclusion of provisions into agreements with developers and landowners along the corridor provisions that obligate them to take whichever appropriate actions they may be able to take to assist in implementation of this Corridor Management Plan.

INTERLOCAL COOPERATION

Through the exercise of home rule, by entering into an interlocal cooperation agreement, pursuant to K.S.A. 12-2901 et seq., and by utilizing powers granted to cities and counties by Kansas statutes, significant opportunities exist for cities and counties to cooperate with each other in the creation of corridor-wide financing strategies for the mainline highway enhancements and city connectors and local road projects within the corridor. There is potential for such cooperation in the use of both the traditional and the alternative financing mechanisms described above.

K.S.A. 12-2901 et seq. authorizes all public agencies of the state (including KDOT) to jointly cooperate in the exercise of any power, or privileges, or authority exercised or capable of exercise by such agency, including economic development and public improvements, pursuant to an agreement in the form therein provided. See also, K.S.A. 75-5023.

K.S.A 12-2904 (f) dictates that each interlocal agreement, prior to it taking effect, shall be submitted to the attorney general for a determination of whether or not the agreement is in proper form and compatible with the laws of the state. The Office of the Attorney General has made this determination on other interlocal agreements related to implementation of Corridor Management Plans, so obtaining approval of interlocal agreements, which are based on the KDOT-approved template Interlocal Cooperation Agreement, and is not daunting.

In addition, K.S.A. 12-2905 requires that, also prior to the interlocal agreement taking effect, it be filed with the register of deeds of every county in which each political subdivision or agency of the state that is a signatory to the agreement is located. The agreement also must be filed with the Office of Secretary of State.

Wherever possible, these opportunities should be investigated by KDOT and each local community to ascertain if a multi-jurisdictional approach will be beneficial to all parties, by providing better opportunities to successfully implement the goals of the Management Plan.
Jurisdiction: KDOT/Local.

APPENDIX

B APPENDIX

C APPENDIX