APPENDIX 1: LOCAL & REGIONAL PLANS

There have been many planning efforts that cover the Study Area from Mulvane's Comprehensive Development Plan to the Wichita Area Metropolitan Planning Organization's Railroad Crossing Plan. There are descriptions of the plans that have a major impact on development and transportation activities in the Study Area.

EXISTING PLANS

Comprehensive Development Plan for the Mulvane Area, Kansas 2000-2012 (2002)

The Casino Complex is within the jurisdiction of the city of Mulvane. Development within and surrounding the Casino Complex is guided by the Comprehensive Development Plan for the Mulvane Area, Kansas 2000-2012. The Mulvane comprehensive plan works as a tool to provide decision makers with and assessment of existing infrastructure and services demands. The plan also includes goals and strategies to achieve the future vision set forth in the plan. It should also be noted that an update of the plan is being completed at the time of this writing, extending the planning horizon through 2023. The 2011 Amendment to the Comprehensive Development Plan for the Mulvane Area, Kansas 2000-2012 – West Area Plan amended the Mulvane Planning Area boundary to include the area surrounding the Kansas Star Casino site.

City of Mulvane, Kansas Public Safety Study (2011)

The Public Safety Study assessed the need for municipal emergency services, equipment, and facilities to serve the west area of Mulvane. The study identified a likely increase in police and emergency medical calls due to development at the Casino Site, which can be accommodated by Mulvane. Potential issues may occur during major events at the Casino Site because Mulvane has only two ambulances. Issues with fire protection may also arise in the future. The study identified potential options for fire protection including to build a new facility in closer proximity to the Casino Site.

Utility Needs Assessment Study (2011)

The city of Mulvane assessed the current state of its water, wastewater, and electric systems. They identified impacts generated from the development of the Kansas Star Casino and recommended improvement s to meet future demands. Investments in all three systems were deemed necessary to meet future demands caused by the Casino development.

Haysville Comprehensive Plan (2007)

The city of Haysville is located just north of the northern reaches of the Study Area. The growth and development of Haysville, which is guided by the Haysville Comprehensive Plan, will impact the Study Area. Haysville's population is expected to grow 3.19% through 2020, with an emphasis on higher density residential areas. Haysville also desires to broaden the economic base by providing desirable sites for new business. As for specific impacts within the Study Area, it is likely that development of Haysville will be confined to the north of 79th Street North for the foreseeable future. However, the development will likely have traffic impacts within the Study Area due to its proximity.

Wichita/Sedgwick County Comprehensive Plan (1999)

The development guide to Wichita and Sedgwick County, the Wichita/ Sedgwick County Comprehensive Plan, outlines goals and objectives for future development and public investments. The plan focuses the expected population growth through 2030 to be at the edges of Wichita. Substantial population growth is also proposed for most small cities and for large residential lots in rural areas.

Sumner County Comprehensive Plan (2002)

Similar to the Wichita/Sedgwick County Comprehensive Plan, the Sumner County Comprehensive Plan sets goals and objectives for Sumner County. Substantial population growth is expected in the smaller cities through 2020, especially in Belle Plaine with a population increase of 62.4%. Mulvane is expected to grow mostly in Sedgwick County, with only an expected 8.1% increase through 2020. The rural areas are expected to grow 15.6% through 2020. A majority of the residential, commercial, and industrial growth is expected in the Northeast quadrant of Sumner County. By 2020, the following are identified in the Plan:

- Expansion of residential by 1,800 acres, with most being single-family.
- Expansion of commercial by 50 acres, with significant growth occurring near urban areas and along major travelways.
- Expansion of industrial by 80 acres, with increases in both light and heavy industry.

WAMPO Plans

Just over half of the Study Area is within the Transportation Study Area of the Wichita Area Metropolitan Planning Organization (WAMPO). WAMPO is the regional transportation planning authority for the greater Wichita Area. WAMPO has developed plans that impact the Study Area.

Metropolitan Transportation Plan 2035 (2010)

The Metropolitan Transportation Plan (MTP) 2035 is a regional long-range transportation plan that identifies planned regionally significant transportation investments through 2035 to achieve a safe, efficient, accessible, and affordable transportation system. Projects must be consistent with the MTP 2035 if they are to be eligible for federal transportation funds. Specific projects that are listed in the MTP 2035 and are within or directly adjacent to the Study Area include:

- Mulvane Bypass: K-15 to K-53 – new 2 lane asphalt rural type road and an overpass over BNSF railroad
- Hillside: K-53 to 83rd Street South – reconstruct to 3-4 lanes with curb and gutter, storm water sewers, and bike paths
- 95th Street South: Hillside to Broadway – improve to a 4 lane urban parkway
- 95th Street South: Meridian to Broadway – improve to 4 lane urban parkway

South Area Transportation Study (2008)

The South Area Transportation Study (SATS) studied the mobility and access in the southern portion of Sedgwick County. SATS identifies specific improvements that are needed and can reasonably be funded. Improvements within the Study Area included:

- Paving Webb road through the Study Area
- Paving 103rd Street South west of Broadway
- Paving 95th Street South west of Broadway
- New bridge over Arkansas River between 83rd South and K-53
- Potential upgrades (shoulders or widening to K-53 from Arkansas River to Hydraulic)
- Potential arterial parkway on 95th Street South through the Casino Study Area (long-term plan)

Safety Plan (2011)

The WAMPO Safety Plan was created to identify key safety needs and guide investment decisions. The Plan presents data on crash types, contributing circumstances, and crash severity. Five safety priorities were identified based on the data: roadway departures, intersections, impaired driving, occupant protection, and vulnerable road users (motorcycles, pedestrians, and pedal cycles). There are short-term and long-term strategies to mitigate safety issues for each priority area. Based on data contained within this plan, there does not appear to be a high concentration of crashes within the Study Area. However, further crash analysis was completed for the Casino Area Transportation Plan and is available in ***Chapter 4***.

Railroad Crossing Plan (2007)

WAMPO developed the Railroad Crossing Plan (RRCP) to determine the degree of hazard potential for each railroad crossing. This rating takes into account the amount of vehicular traffic, average number of trains per day, and the type of warning device. The RRCP identifies the top 50 potentially hazardous crossings and offers up potential mitigation strategies for improving the safety of railroad crossings.

PLANS UNDER DEVELOPMENT

Sedgwick County Quad Cities Joint Area Plan

The Sedgwick County Quad Cities Joint Area Plan is currently being developed through a cooperative effort between the cities of Derby, Haysville, Mulvane, and Wichita in partnership with Sedgwick County. The Quad Cities Plan will focus on certain land use planning issues of mutual interest of the aforementioned jurisdictions. The following are highlights from a draft plan that have been identified to potentially occur within or impact the Quad Cities Joint Area Plan area, which could be within the CATP Study Area:

- Future regional park within the area
- Additional active and passive recreation spaces
- Public access to Arkansas River for recreation
- Regional park or equestrian recreation trail within the 100 or 500-year flood area in proximity to Arkansas River
- Equestrian recreation trail along west bank of Arkansas River from K-53 to 83rd Street South
- Update Sedgwick County Code amendments for slab-on-grade construction and lowest building floor elevation
- Continue flooded residential property voluntary buy-out program
- Develop bicycle infrastructure improvements in the Casino Study Area as recommended by the Casino Area Transportation Plan
- Consider bicycle/pedestrian infrastructure along 95th Street South
- Develop 95th Street South into a parkway and increase building setbacks along the corridor
- Develop Mulvane bypass (K-15 to K-53)

Wichita/Sedgwick County Community Investments Plan

The city of Wichita and Sedgwick County are developing an update to their comprehensive plan; the Community Investments Plan. The Wichita/Sedgwick County Metropolitan Area Planning Department initiated this process in 2012 with the purpose of assessing existing public infrastructure and identifying priorities on where public investments should be made and policies to implement. This plan will focus updating the future land use guide, the urban growth areas, locational guidelines, the relevancy of the plan to the Capital Improvement Program, and the future public investment priorities. The plan is scheduled for adoption in 2014 – 2015.

WAMPO Metropolitan Transportation Plan 2040

The Metropolitan Transportation Plan (MTP) 2040 is currently being developed. The MTP 2040 will work similar to the MTP 2035 but may include different transportation priorities and projects. Future transportation projects identified by the CATP should be included within the MTP 2040 as appropriate.

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DEMOGRAPHIC, ECONOMIC, AND MARKET ANALYSIS
US-81/K-53 CORRIDOR PLAN

SUBMITTED TO:
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

SUBMITTED BY:
W-ZHA, LLC

SEPTEMBER 2012

W-ZHA, LLC

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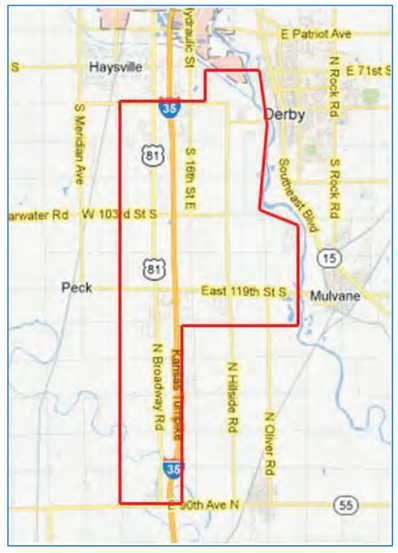
INTRODUCTION

The purpose of the market analysis is to assess the future development potential of the Study Area. In that portion of the Study Area located in Sedgwick County, the boundary is generally defined as 79th St to the north, the Arkansas River to the east, Seneca Rd to the west, and K-53 to the south. The Sumner County portion of the Study Area is bounded by K-53 to the north, the Arkansas River on the east to a southern boundary of East 140th Street to Interstate 35, then south to K-55 and west to North Seneca Road.

Study Area Map



Source: Google Maps; W-ZHA

The market for residential, commercial, industrial and agri-business was analyzed and projected to 2040. The land use projections are intended to inform the US-81/K-53 Casino Area Transportation Plan. The following tasks were undertaken to perform the market analysis:

- Population and employment trends in the Wichita Metropolitan Area, Sedgwick County, Sumner County, and the Study Area were analyzed;
- Existing population and household characteristics were analyzed to understand the character of the existing market;
- Long term demographic projections were obtained, analyzed and refined given the market analysis findings;

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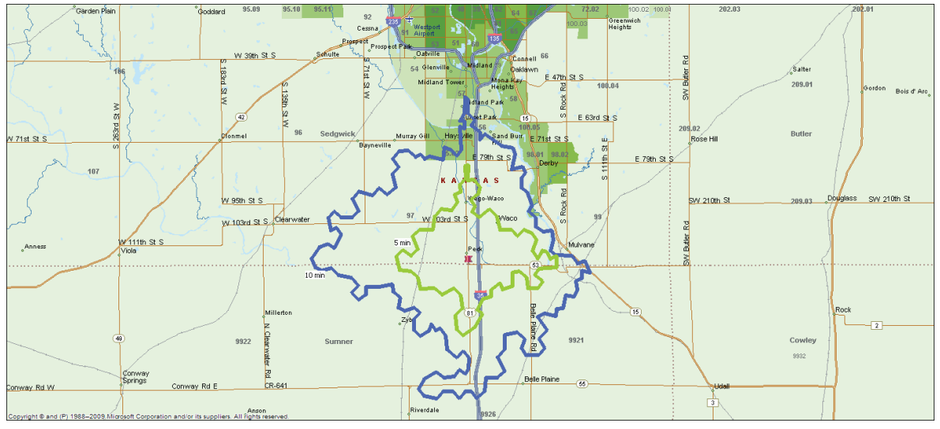
- Key market factors were identified and evaluated for each land use to determine future development potential;
- Economic development professionals in comparable communities were interviewed to understand how the introduction of a casino impacted land use patterns;
- Existing economic impact analyses were reviewed to understand the casino and equestrian center's projected operating performance and impact; and,
- Given the results of the prior tasks, the demand for residential, commercial, industrial, and agri-business land uses was projected to 2040.

THE STUDY AREA

The following map illustrates household density by census tract as well as the 5-minute and 10-minute drive time shed from the US-81/K-53 intersection. As can be seen by the low household density, most of the Study Area is rural in character. There are only 188 households within a five-minute drive of the US-81/K-53 intersection and 3,795 households within a 10-minute drive.

Households Per Square Mile
5 to 10-Minute Drive Time from the US-81/K-53 Intersection
2010



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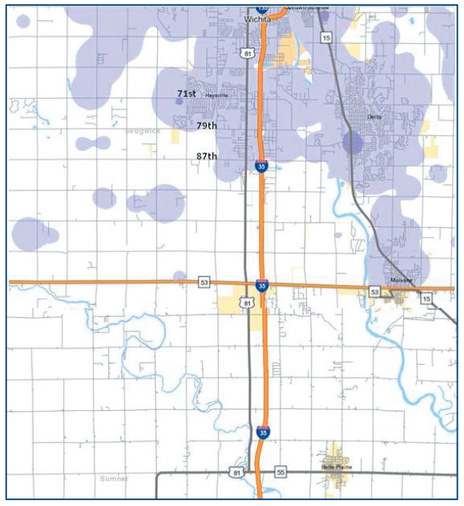
The following map illustrates job density in 2010. The Kansas Star Casino was not operating in 2010. In 2010, there were few businesses around the US-81/K-53 intersection.

Location of Jobs
Study Area and Environs, 2010



Source: U.S. Census; W-ZHA

The map illustrates that employment intensity increases north of 87th Street in Haysville. It also illustrates how the Arkansas River acts as a barrier to/from points east of the Study Area. Most jobs are more than a 10-minute drive from the US-81/K-53 intersection.

According to the Kansas Department of Transportation's 2012 traffic counts, an average of 2,600 vehicle trips occur on K-53 between US-81 and I-35. Average daily trips on the Interstate were 18,800 immediately south of the K-53 exit. Interstate volume increases north of K-53. Average daily traffic on I-35 is 23,700 near 71st Street in Haysville.

There is very little traffic on US-81 south of 87th Street. Average daily traffic on US-81 immediately north of the K-53 intersection was 3,020 and 3,960 south of the intersection. Like the Interstate, traffic volume increases on US-81 as you proceed north. The traffic count on US-81 near 79th Street was 11,500 per day.

In terms of land use, the Kansas Star Casino Complex is located on the southeast corner of the US-81/K-53 intersection. The temporary casino is now open and a 150-room hotel is under construction. The permanent casino is also under construction.

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The Wlydewood Cellars Winery is located on the south side of K-53 between US-81 and K-53. The next closest commercial use is the Polo Field north on US-81. There are a limited number of roadside commercial buildings between 119th and 79th Street. Most service, retail and light industrial land uses are located outside of the Study Area approximately 5 miles away in either Haysville north of 79th Street, or Mulvane at K-15. Field surveys indicate that there are no retail, service or industrial land uses in the Study Area south of K-53.

Interviews with local economic development professionals revealed that there is water and sewer available for new development in the Study Area on land abutting the south side of K-53. To develop on the north side of K-53 will require additional infrastructure investment. The area north of K-53 and east of US-53 is also challenged by a low elevation and a high water table.

There is no water and sewer service available to development on US-81 in the Study Area except immediately south of 79th Street.

SOCIO-ECONOMIC TRENDS AND EXISTING CONDITIONS

The Study Area Has Experienced Growth Over the Last Twenty Years - The Study Area's population grew by approximately 380 people between 1990 and 2000 and by approximately 330 people between 2000 and 2010. The Study Area's growth represents a small share of the Metropolitan Area's population growth.

Population Trends
Selected Areas
1990, 2000, 2010

				Change			
				1990-2000		2000-2010	
	1990	2000	2010	#	%	#	%
Wichita Metropolitan Area	511,111	571,166	626,878	60,055	12%	55,712	10%
Sedgwick County	403,662	452,869	503,339	49,207	12%	50,470	11%
Sumner County	25,841	25,946	23,337	105	0%	-2,609	-10%
Derby	15,192	17,807	22,981	2,615	17%	5,174	29%
Haysville	8,471	8,502	9,678	31	0%	1,176	14%
Mulvane	4,937	5,155	6,164	218	4%	1,009	20%
Study Area /1	3,879	4,255	4,532	376	10%	277	7%

Source: Claritas, Inc.
f:\8000s, misc\80080 Wichita PEC\[demo 3.xls]Sheet1

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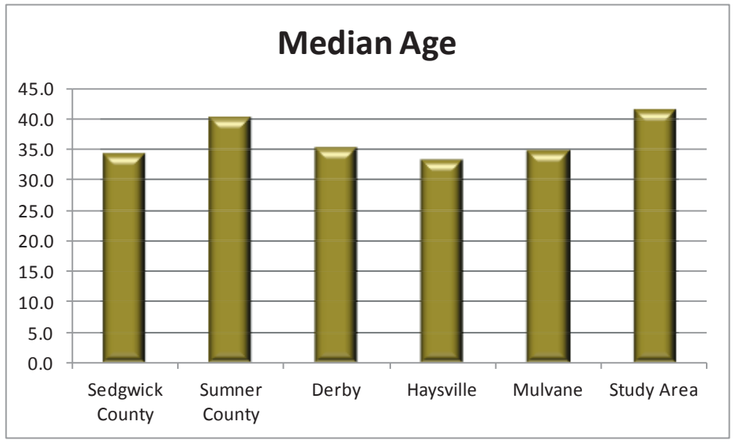
The Median Age in the Study Area is Considerably Higher Than The Median Age in Sedgwick County, Derby, Haysville, and Mulvane - The median age in the Study Area is 41.3 years old. The median age in Sedgwick County is 34.2 years old, while in Sumner County it is 40.1 years old.



Source: Claritas, Inc.

Demo 3

The median age among Study Area residents has increased over the last decade.

Median Age
Seleted Areas
2000 and 2010

	2000	2010
Sedgwick County	33.7	34.2
Sumner County	37.3	40.1
Derby	34.8	35.1
Haysville	33.3	33.1
Mulvane	34.5	34.6
Study Area	38.2	41.3

Source: Claritas, Inc.

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Only 15 Percent of Study Area Residents Aged 25 or Older Have a Bachelor's Degree or Higher

Educational Attainment
Population 25 Years Old and Older
Select Areas
2010

	< High School	High School	Some College	Associates	Bachelors	Masters/Prof/ Doctorate
Sedgwick County	11%	29%	26%	7%	19%	9%
Sumner County	9%	35%	29%	8%	13%	5%
Derby	4%	24%	27%	8%	24%	12%
Haysville	11%	45%	25%	5%	11%	3%
Mulvane	8%	30%	29%	11%	18%	4%
Study Area /1	13%	39%	23%	10%	11%	4%

Source: Claritas, Inc.

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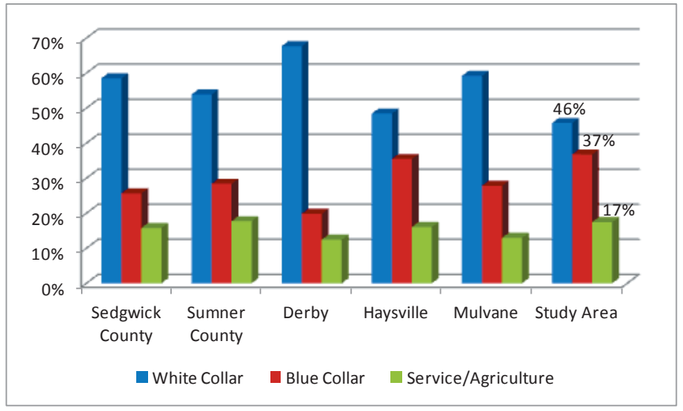
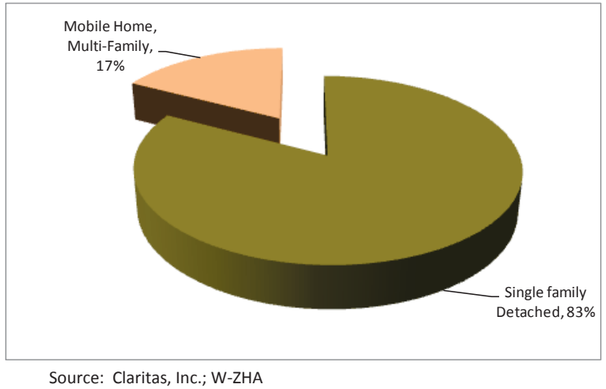
A Relatively High Share of Study Area Residents Are Employed In Blue Collar and Service/Agricultural Industries -- Over half of those who reside in the Study Area are employed in blue collar or service/agricultural industries.

Residents' Occupation
Study Area and Environs
2010



Source: Claritas, Inc.; W-ZHA

Most Households In the Study Area Reside in Single Family Detached Housing Units -- Over 80 percent of the housing units in the Study Area are single family detached units.



Source: Claritas, Inc.; W-ZHA

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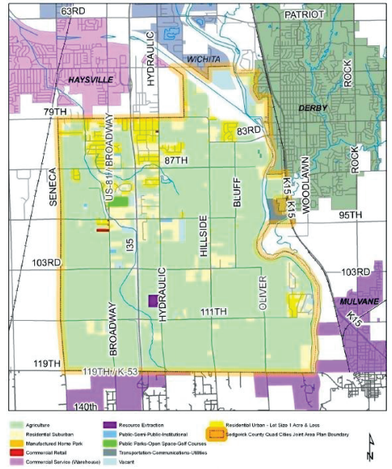
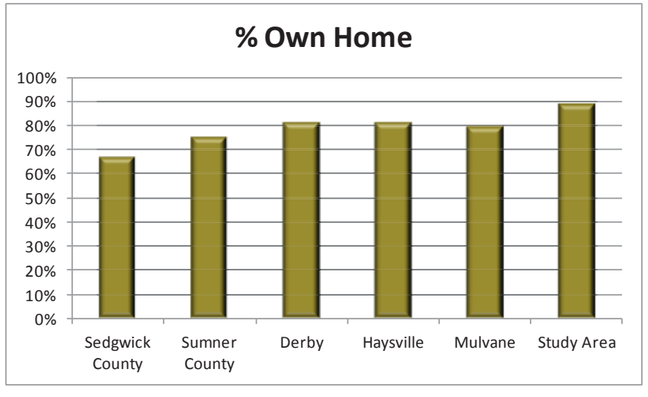
The Study Area south of K-53 is agricultural in land use. As illustrated on the map below, north of K-53 to 95th Street, the housing is mostly large lot single family development. North of 95th Street the housing stock is more dense with more homes on lots of an acre or less.

Existing Land Use
Study Area North of K-53
2011



Source: Sedgwick County Quad Cities Joint Area Plan 2012-2035

The Study Area Has A High Rate of Home Ownership - 88% of the housing units in the Study Area are owner-occupied. The home ownership rate in the Study Area is well above the home ownership rate in the surrounding communities.



W-ZHA, LLC

Source: Claritas, Inc.
Demo 3

Median Income Within The Study Area is Above the County Median Income – The median income among Study Area households was approximately $60,000 in 2010. Only Derby households had a median income above the Study Area's.

Median Income
Selected Areas
2000, 2010

	2000	2010	Change #	Change %
Sedgwick County	$43,070	$47,712	$4,642	11%
Sumner County	$39,756	$47,035	$7,279	18%
Derby	$59,257	$64,922	$5,665	10%
Haysville	$46,855	$50,809	$3,954	8%
Mulvane	$46,935	$55,095	$8,160	17%
Study Area	$53,589	$60,352	$6,763	13%

Source: Claritas, Inc.
F:\8000s, misc\80080 Wichita PEC\[demo 4.xls]Sheet2

Households In The Study Are Mostly Young or Older Empty Nesters and Retirees -- Approximately, 30 percent of the households that reside in the Study Area are young and wealthy. Some of these households have children at home, but many do not. Over 40 percent of the households in the Study Area are empty nesters or retirees.

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Household Lifestage
Study Area
2010

YOUNGER YEARS		37.9%
Midlife Success	29.6%	
Young Achievers	0.1%	
Striving Singles	8.1%	
FAMILY LIFE		19.1%
Accumulated Wealth	0.0%	
Young Accumulators	7.5%	
Mainstream Families	11.0%	
Sustaining Families	0.6%	
MATURE YEARS		43.0%
Affluent Empty Nesters	9.0%	
Conservative Classics	17.1%	
Cautious Couples	14.3%	
Sustaining Seniors	2.7%	

Source: Claritas, Inc.
F:\8000s, misc\80080 Wichita PEC\[study area prizm.xls]Sheet1

ECONOMIC INDICATORS

The Study Area boundaries in the Sedgwick County portion of the Study Area align with the Sedgwick County Quad Cities Joint Area Plan: 2012-2035 boundaries ("Quad Cities Joint Area Plan"). With the exception of the Casino, most jobs in the Study Area are in this portion of the Study Area. The Quad Cities Joint Area Plan indicates that as of 2008, there were 213 jobs in this portion of the Study Area. Fifty-five of these jobs were in retail businesses.

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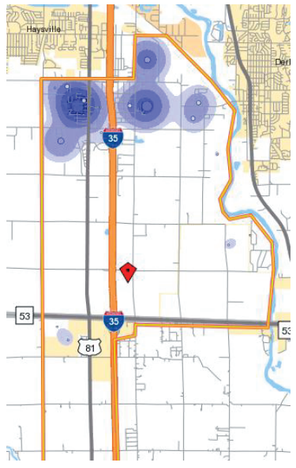
Existing Jobs Sedwick County Quad Cities Joint Area Plan Working Draft, April 4, 2012		
	Jobs	Share of Jobs
Retail	55	26%
Non-Retail	158	74%
Total	213	100%

2035; W-ZHA

F:\8000s, misc\80080 Wichita PEC\[jobs.xlsx]Sheet2

According to the US Census, practically all of these jobs were located north of 87th Street.

Location of Study Area Jobs Prior to the Casino 2010



Source: U.S. Census

Today, there are 601 jobs at the Kansas Star Casino in the Sumner County portion of the Study Area. In addition, there are jobs at the Wyldewood Cellars Winery. Currently, the Study Area is estimated to contain approximately 820 jobs. The job breakdown is estimated to be as follows.

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Existing Job Estimate Study Area May, 2012		
	Jobs	Share of Jobs
Retail	61	7%
Non-Retail	759	93%
Total	820	100%

Source: Segwick County Quad Cities Joint Area Plan, 2012-2035; W-ZHA

F:\8000s, misc\80080 Wichita PEC\[jobs.xlsx]Sheet1

BASELINE PROJECTIONS

The "Baseline" employment projections include the Casino Complex itself, but not the Casino Complex's spin-off development. The Casino Complex's potential impact on future land use is presented later in this report. The projections contained in this section are derived from Sedgwick County Quad Cities Joint Area Plan, development trends and the Casino Complex's build-out plan as summarized in the State of Kansas South Central Gaming Zone: Fiscal Impact Analysis of Proposed Gaming Facilities, Appendix 1 by EKAY Economic Consultants (December, 2010).

Housing Units

Baseline housing unit projections were developed for the Quad Cities Joint Area Plan. The boundary of the Quad Cities Joint Area Plan align with the Study Area boundary north of K-53. Those portions of the Study Area south of K-53 were not part of the Quad Cities Plan. The baseline projections contained in the Quad Cities Joint Area Plan are summarized on the table below. These projections do not include Casino Complex impacts.

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Projected Households Net of Casino Impact
Sedwick County Quad Cities Joint Area Plan
2010-2035

	2010	2035	New
Housing Units	1,418	1,588	170

* The Plan states that 100 of the 170 housing units will likely be developed within a 2-square mile area bounded by 79th St. South, Seneca, 87 St. South, and Hydraulic.

Source: Segwick County Quad Cities Joint Area Plan, 2012-2035; W-ZHA

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The projections from the Quad Cities Plan were extrapolated to project households in 2040. W-ZHA estimates that there will be 206 new households in the northern portion of the Study Area (north of K-53) by 2040.

Projected Households Net of Casino Impact
Sedwick County Quad Cities Joint Area Plan
2010 to Extrapolated 2040

	2010	2035	Extrapolated 2040	New
Housing Units	1,418	1,588	1,624	206

Source: Segwick County Quad Cities Joint Area Plan, 2012-2035; W-ZHA

f:\8000s, misc\80080 Wichita PEC\[jobs.xlsx]Sheet9

W-ZHA extrapolated trend data from 1990 to 2010 to develop a baseline projection of new housing units in the Study Area south of K-53. Assuming the 1990 to 2010 growth rate stays consistent; by 2040 there will be 47 new housing units in the southern portion of the Study Area by 2035. These projections do not take into consideration the potential impact of the Casino Complex on the residential market.

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Baseline Projected Housing Units Net of Casino Impact
Study Area South of K-53
2010-2040

	1990	2010	Extrapolated 2040	New
Housing Units	260	292	328	36

Source: Claritas, Inc.; W-ZHA

f:\8000s, misc\80080 Wichita PEC\[demo study area north south.xls]Sheet1

There are no housing units planned as part of the Kansas Star Casino Complex. In summary, the Study Area is projected to grow by 242 housing units by 2040, exclusive of growth derived from Casino Complex spin-off development.

Baseline Projected Housing Units Net of Casino Impact
Study Area
2010-2040

	2010	Extrapolated 2040	New
Housing Units	1,710	1,952	242

Source: Claritas, Inc.; W-ZHA

f:\8000s, misc\80080 Wichita PEC\[demo study area north south.xls]Sheet3

Jobs

The baseline employment projections contained in the Quad Cities Joint Area Plan are summarized on the table below. Employment in this portion of the Study Area is projected to increase by 40 jobs by 2035.

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Projected Jobs Net of Casino Impact
Sedwick County Quad Cities Joint Area Plan
2008-2035

	2008	2035 *	New
Retail	55	70	15
Non-Retail	158	183	25
Total	213	253	40

* The 2035 projection did not include a breakdown of retail and non-retail. The 2008 ratio was applied to 2035.

Source: Segwick County Quad Cities Joint Area Plan, 2012-2035; W-ZHA

f:\8000s, misc\80080 Wichita PEC\[jobs.xlsx]Sheet4

The projections from the Quad Cities Plan were extrapolated to project jobs in 2040.

Projected Jobs Net of Casino Impact
Sedwick County Quad Cities Joint Area Plan
2008-2040

	2008	2035	Extrapolated 2040	New
Retail	55	70	73	18
Non-Retail	158	183	188	30
Total	213	253	261	48

* The 2035 projection did not include a breakdown of retail and non-retail. The 2008 ratio was applied to 2035.

Source: Segwick County Quad Cities Joint Area Plan, 2012-2035; W-ZHA

f:\8000s, misc\80080 Wichita PEC\[jobs.xlsx]Sheet10

According to the EKAY Economic Consultants' Fiscal Impact Analysis[1], the Kansas Star Casino Complex is projected to employ 870 people at build-out.

[1] State of Kansas South Central Gaming Zone: Fiscal Impact Analysis of Proposed Gaming Facilities, EKAY Economic Consultants (December, 2010)

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Casino Development Program
Current Land Use and Build-Out
(Square Feet)

	June, 2012	Build-Out
Temporary Casino	44,100	0
Casino		63,700
Restaurants		28,250
Event Center		100,000
Hotel		188,000
Retail		650
Eq Support Center		251,198
RV Park		100,000
Total	44,100	731,798
Total Jobs	601	870

Source: State of Kansas South Central Gaming Zone: Fiscal Impact Analysis of Proposed Gaming Facilities, Appendix 16, EKAY Economic Consultants (December, 2010)

This projection did not identify whether the jobs would be in retail or not. Retail employees were estimated given the Casino Complex's development program.

Estimated Retail/Non-Retail Jobs in Casino Complex
2012- Build-Out

	2012	Build-Out	New
Retail	6	96	90
Non-Retail	595	774	179
Total	601	870	269

Source: State of Kansas South Central Gaming Zone: Fiscal Impact Analysis of Proposed Gaming Facilities, Appendix 1, EKAY Economic Consultants (December, 2010)

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There are no job projections available for the portion of the Study Area that is south of K-53. The baseline employment projections for the Study Area are summarized on the following table. The baseline projections do not reflect jobs that may spin-off as a result of new development around the Casino Complex.

W-ZHA, LLC

Baseline Job Projections Net of Casino-Complex Spin-Off Study Area 2012-2040	
	New Jobs 2012-2040
Retail	108
Non-Retail	209
Total	317

Source: Segwick County Quad Cities Joint Area Plan, 2012-2035; EKAY Impact Analysis; W-ZHA

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THE KANSAS STAR CASINO POTENTIAL SPIN-OFF IMPACTS

The Project

At build-out, the Kansas Star Casino Complex will include a casino, 300 hotel rooms, a number of restaurants and a 4,200-seat equestrian center. The Kansas Star Casino Complex will be developed in three phases. The first phase is the temporary Casino, which is operating today. The second phase will include 1,350 slots, 32 gaming tables, a 5-table poker room, a 50 seat snack bar, a 40 seat food court, a 250 seat buffet, a 115 seat steakhouse, a 100,000 square foot indoor arena with seating for up to 4,200 people, and a 150-room hotel. This phase is currently under-construction and scheduled for completion in early 2013.

Phase 3 will include 500 additional slots, 10 additional game tables, a sports bar, another 150 hotel rooms, an RV park with 60 spaces, and a 24-acre equine event center complex.

At build-out Casino Complex employment is projected to total 870. Casino officials estimate that annual attendance will be 2.7 million. Tourists are expected to represent 25 percent of the Casino Complex's attendees. Once complete, 7,500 people are expected to visit the Casino Complex each day. According to the "City of Mulvane Public Safety Study" the busiest times at the casino complex will be from 6 pm to midnight.

Casino Spin-Off Impact

The findings of the following reports were reviewed to shed light on the casino's impact on households and employment:

- Fiscal and Economic Impact of Casino Gaming: South Central Kansas, Center for Econoimc and Business Research, W. Barton School of Business, Wichita State University (June, 2007);

W-ZHA, LLC

- City of Mulvane, Kansas Public Safety Study: Assessing Needs for Emergency Services and Facilities Assoicated with the Kansas Star Casino and Complementary Development, Jim Heinicke, LLC (March 11, 2010);
- Economic Impacts of Proposed Gaming Facilities, South Central Gaming Zone – Sumner County, CivicEconomics (November 2010)
- A Review of the Ancillary Amenity Elements of Applicant Proposals for the Kansas South Central Zone Kansas Lottery Casino License, Macomber International, Inc. (November 23, 2010;
- State of Kansas South Central Gaming Zone: Fiscal Impact Analysis of Proposed Gaming Facilities, EKAY Economic Consultants (December, 2010)
- Business Plan for the Proposed New Kansas Star Equine Event Center in Sumner County, KS, Crossroads Consulting Services (March 2011);
- Working Draft, Sedgwick County Quad Cities Joint Area Plan, 2012-2030, Sedgwick County and the Cities of Derby, Haysville, Mulvane and Wichita (June 21, 2011);

The following table summarizes the employment and household impact of the Kansas Star Casino Complex over its initial seven years of operation. The data was provided by the Casino as part of the casino license application process. This information was included in an Appendix to the Fiscal Impact Analysis conducted by EKAY Economic Consultants.

Projected Employees and Households New to the Area Kansas Star Casino Complex			
Year	Est. # of Employees	# of Employees New to the Area	# of New Households New to the Area
2012	481	92	92
2013	798	129	129
2014	798	129	129
2015	862	135	135
2016	870	137	137
2017	870	137	137

* Analysis assumes only Professional, Manager, Executive and Technical positions will be new to the area. Other jobs are expected to be filled by existing area residents. The "Area" is the local School Districts.

Source: State of Kansas South Central Gaming Zone: Fiscal Impact Analysis of Proposed Gaming Facilities, Appendix 16, EKAY Economic Consultants (December, 2010)

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W-ZHA, LLC

According to an analysis conducted for the Sedgwick County Quad Cities Joint Area Planning effort, recent employment information (January 2012) provided by the Kansas Star Casino indicates that 58 percent of casino employees live in Sedgwick County, 18 percent live in Sumner County, 12 percent live elsewhere in Kansas, and 12 percent live out of State. Five percent of casino employees reside in Derby, 6 percent live in Haysville, and 7 percent live in Mulvane.

Potential Impacts

The EKAY analysis assumed that all Casino Complex employees in professional, manager, executive and technical positions would likely be new the Wichita Region. Therefore, in the EKAY analysis, the 137 new professional, management, executive and technical jobs represent residential development *potential* near the casino. Other service-oriented employees were assumed to already live in the Wichita region.

According to interviews with economic development professionals from Haysville, Mulvane, and Derby, to date, the casino has had little impact their residential market. The casino is new, however, and it may be that the residential market impact will occur after the casino is fully operational and employees have had time to decide whether they will remain working at the casino.

None of the impact analyses conducted as part of the casino application process addressed the issue of the casino's impact on surrounding land use. Therefore, economic development officials in five comparable communities with casinos were surveyed as to their experience with the casino's impact on adjacent land uses. This information was coupled with literature review to estimate casino land use impacts. The following table summarizes the results of our discussions with economic development professionals.

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Casino Land Use Spin-Off Experience
Comparable Casinos

Casino Name	Location	Site	Yr Built	Other Amenity	Add'l Dev	Notes
Diamond Jo Worth	Northwood,IA	Interstate Exit	2006	None	Holiday Inn Express - 60 Rms	State Certified Welcome Center was at this exit beofre casino; With casino double visitation at Welcome Center; No utilities to date; projecting 5 - 6 new projects - fast food, truck stop, cracker barrel-type restaurant, small retail center
Riverside Casino	Riverside, IA	Off of a State Highwa	2007	Golf	Come & Go (gas station, convenience store and Subway); existing gas station added a Godfather's Pizza and an A&W Rootbeer; Condominiums were developed with golf course	Condominiums are now being used as rental and short-term rental for golf course patrons
Prairie Band	Mayetta, KS	Near Interstate	1998	Golf; RV Park; 297 Room Hotel	Gas station/convenience store	Kansas Star will compete; tribal casino
Belterra	Switzerland,IN	Riverboat	2001	600 Room Hotel; Golf Course	Gas station; 60-room Sleep Inn	5 Yrs ago built a connector road that made the casino more accessible to Interstate; Utility issues; not enough traffic to support a McDonalds
French Lick	French Lick, IN	Downtown	2006	Two historic hotels and a golf course	Private investors put up a large waterpark with hotel in the Downtown; Denny's restaurant; Chicago Pizza	Casino is not the economic development emphasis; they are looking to the golf visitor; trying to make the Town a resort destination; casino patron not generating economic development

The literature and the experience of other comparable locations indicate that the casino does not spin-off significant land use development outside of the casino complex. Most casino patrons spend their time and money in the casino. Very few of the communities have seen destination development (like stores or residential) occur as a result of the casino.

The uses that typically follow the casino are designed to intercept the casino patron traffic. The typical land uses include gasoline service stations, fast food restaurants, convenience stores, and limited service hotels. When family-oriented activities are programmed with the casino like a waterpark or resort (and, in the case of Kansas Star, an equine center), family-style restaurants are often mentioned as potential land uses.

W-ZHA, LLC

KANSAS STAR EQUINE EVENT CENTER POTENTIAL IMPACTS

Equine Center Development Program

Kansas Star's proposed Equine Event Center is expected to include the following on a 24-acre complex:

- Indoor heated arena: 100,000 sq. ft., 4,200-seat capacity
- Outdoor covered arena: 45,000 sq. ft.
- Outdoor practice arena: 24,000 sq. ft.
- Livestock pens: 19,500 sq. ft.
- Horse/livestock barns: 4 barns containing 400+ permanent stalls and 160 additional temporary stalls;
- RV park/trailer parking

The facility is expected to host events of local to regional and national significance. Crossroads Consulting Services prepared an initial business plan for the Equine facility. This plan draws upon Crossroads' experience with equine centers and similar event facilities throughout the nation. Crossroads projects that the Equine Center will host approximately 26 to 31 events, generating 99 to 117 event-days and 215,700 to 255,150 attendee days in a stabilized year. Among these, 21 to 24 (77 to 80 percent) are likely to be equine-related; other events are expected to include concerts, festivals, and consumer shows.

Attendee - Stabilized Year of Occupancy
Proposed New Equine/Rodeo Complex in Sumner County

Event Type	Participant Days			Spectator Days			Total Attendee Days		
Equine/Rodeo Events									
Level 1	31,500	to	37,800	70,000	to	84,000			
Level 2	25,200	to	28,350	72,000	to	81,000			
Subtotal	56,700	to	66,150	142,000	to	165,000	198,700	to	231,150
Non-Equine/Rodeo Events									
Concerts/Festivals				8,000	to	12,000			
Consumer/Expo Shows				9,000	to	12,000			
Subtotal				17,000	to	24,000	17,000	to	24,000
Grand Total	56,700	to	66,150	159,000	to	189,000	215,700	to	255,150

Source: "Civic Economics, Economic Impacts of Proposed Gaming Facilities," Nov. 2010; W-ZHA
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W-ZHA, LLC

Potential Retail and Eating/Drinking Impact

In estimating likely retail spending by visitors, Crossroads' survey results provide the following indications of spending levels:

Meals/person/day: Crossroads estimates that 71 percent of attendees would spend between $26 and $50 per day. Local and "low impact" attendees would spend less. In a separate analysis, Crossroads estimated total (including lodging) spending at $109 per day for high impact attendees, and $25 per day on low-impact attendees.[2] It is reasonable to assume that food and beverage spending accounts for most of the $25 per day spending figure and the $79 differential is largely attributable to lodging expenses.

Other Retail Expenditures/person/day: In addition to meals, survey findings indicate that 47 percent – the largest share -- of attendees would spend $26 to $50 on retail merchandise. While this finding is similar to the finding regarding meals expenditures, 35 percent would spend less than $25 per person. This is a comparably high percentage; just 18 percent of respondents would spend $25 or less on meals).

Applying these survey findings, low- and high-range projections estimate likely daily food & beverage spending at $30 and $50 per person, and $25 to $40 for other retail expenditures. Further assuming that 70 to 80 percent of this spending would take place within roughly ten miles of the facility,[3] these levels of spending, as applied to the low and high attendee projections, would generate $8 to $16 million dollars in local retail and restaurant spending.

[2] The relevant section containing the details of this discussion has not been made available to W-ZHA, LLC. Nonetheless, a review of another Crossroads analysis for an event center in York County, SC shows that "Low impact" attendees include small, local-market events, while "regional and national championships and events with more than four event-days are categorized as high impact." In this other analysis, Crossroads provides clarification that such spending constitutes spending outside of the equine facility.

[3] 71 percent of respondents stated a preference for amenities within 10 miles of the facility; the remaining 29 percent stated a preference for amenities within 25 miles. This result supports an assumption that 20 to 30 percent of restaurant and retail spending would flow outside of the immediately surrounding (10 mile radius) market.

W-ZHA, LLC

Kansas Star Equine Center Potential Land Use Impact
Retail and Eating and Drinking Spending

	Low	High
Attendee-days	215,700	255,150
Non-Lodging Spending	$55	$90
Eating and Drinking	$30	$50
Other Retail	$25	$40
Capture Within 10 Miles of Facility	70%	70%
Spending Within 10-Mile of Kansas Star		
Eating and Drinking	$4,529,700	$8,930,250
Other Retail	$3,774,750	$7,144,200
Sales /SF		
Eating and Drinking	$350	$400
Other Retail	$250	$350
Potential Square Feet		
Eating and Drinking	13,000	22,000
Other Retail	15,000	20,000

Source: Crossroads Consulting; W-ZHA

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Within this range, it should be noted that the higher spending levels would be contingent on (1) the facility's ability to consistently perform at the higher range of its projections, and (2) attendee spending at the higher projected levels. Given this uncertainty, the more conservative outlook projects that the Kansas Star Equine Event Center could generate roughly 28,000 square feet of "spinoff" retail and restaurant development within 10 miles of the Kansas Star facility.[4]

[4] The conservative outlook is further warranted in light of the finding – subsequent to Crossroads' business plan – that the Kansas Coliseum – now known as Kansas Pavilions – in Park City, would remain open as a competitive facility to host equine events.

W-ZHA, LLC

Kansas Star Equine Center Potential Land Use Impact
Retail and Eating and Drinking Spending

	Low	High
Attendee-days	215,700	255,150
Non-Lodging Spending	$55	$90
Eating and Drinking	$30	$50
Other Retail	$25	$40
Capture Within 10 Miles of Facility	70%	70%
Spending Within 10-Mile of Kansas Star		
Eating and Drinking	$4,529,700	$8,930,250
Other Retail	$3,774,750	$7,144,200
Sales /SF		
Eating and Drinking	$350	$400
Other Retail	$250	$350
Potential Square Feet		
Eating and Drinking	13,000	22,000
Other Retail	15,000	20,000

Source: Crossroads Consulting; W-ZHA

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Potential Lodging Impact

In addition to retail and eating and drinking development, the Kansas Star Equine Event Center may also generate new market demand for lodging facilities. In the Crossroads Business Plan, survey results indicate that 55 percent of attendees would come from out-of-state and 54 percent of attendees would be likely to stay overnight. Of these overnight visitors, the Crossroads Business Plan survey results indicate that 41 percent would stay at a hotel (others would stay at RV parks, with friends, etc.).

Applying these findings to Crossroads' attendee projections, new annual lodging demand would amount to 48,000 to 57,000 new room-nights. As shown in the following table, this would generate an average of 130 to 155 rooms per day; assuming a targeted occupancy rate of 75 percent, this would support roughly 170 to 206 new rooms. Assuming that 70 percent of this demand will be captured by hotels within 10 miles of the Kansas Star Equine Center, the Center has the potential to generate demand for 130 to 150 hotel rooms within 10 miles of the Kansas Star.

W-ZHA, LLC

Kansas Star Equine Center Potential Land Use Impact Hotel Uses		
	Low	High
Attendee-days	215,700	255,150
Overnights	54%	54%
Overnights At Hotel	41%	41%
Room-Night Demand	47,756	56,490
Room-Night Demand /Day	131	155
Supportable Rooms @ 70% Occupancy	187	221
Capture Within 10 Miles of Facility	70%	70%
New Hotel Room Potential w/in 10 Miles	130	150

Source: Crossroads Consulting; W-ZHA

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It is likely that much of this demand would be served by either the hotel proposed as a component of the overall Kansas Star development or at other nearby facilities.[5]

[5] Preliminary research indicates that a Hampton Inn, Sleep Inn and Express Inn are located within approximately 6 to 10 miles of the Kansas Star property.

W-ZHA, LLC

MARKET FACTORS AND CONCLUSIONS

Residential Land Uses

None of the research indicated that the casino will dramatically change residential market forces. The EKAY Fiscal Impact Analysis did, however, conclude that there was the potential for 137 new households to locate near the casino as a result of their employment at the Casino. The number of households with the potential to move was based on the number of new employees in professional, management, executive and technical positions.

These employees could move anywhere in the Wichita Metropolitan Area. It is likely that most of these employees will locate in established neighborhoods with goods and services nearby. We estimate that, at the most, 15 to 20 percent of these employees will likely move to a large lot single family home in the Study Area. This translates into approximately 20 to 27 new housing units.

Restaurants and Retail

Restaurant and retail uses, consider the following factors when considering an investment location:

- General Location and Demographics
- Site Position
- Traffic
- Competition
- Cost

Retail and restaurant investors are interested in locations with either a concentration of target households or nearby traffic generators like other retail, business centers or “anchors” like the casino. Retail and restaurants prefer locations with both evening and daytime activity.

In terms of a specific site, appropriate zoning, strong visibility and access and enough land for parking are key considerations for retail and restaurant land uses. In non-Downtown environments, traffic volume is very important.

The location and strength of competitors is an important factor influencing retail and restaurant investment. Finally, project economics in terms of cost to acquire and develop land as well investment return are important considerations.

The Study Area’s strongest advantages are the Casino Complex and Interstate 35 access and visibility. Otherwise, the Study Area is not a natural retail location -- there is not a concentration of households and significant residential growth is not projected. For shopping, there are competitive locations to the north and west that are convenient to the Study Area and have the added advantage of a critical mass of retail and services.

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Given the Study Area's market position, interchange-style retail is most likely over the next 30 years with a limited amount of service retail. The retail projection is detailed in the following table.

Projected Retail Development 2012-2040

Establishment Type	Land Use Type	Sq Ft /Estab		Employees	
		Low	High	Low	High
Truck Stop	Retail	8,000	10,000	27	33
Gas Station/Convenience/Fast Food Store	Retail	5,000	7,000	17	23
Family-Style Restaurant	Eat/Drink	5,000	7,000	17	23
Fast Food	Eat/Drink	2,500	4,000	8	13
Small Neighborhood Center	Retail/Service/Eat/Drink	12,000	15,000	40	50
Total		32,500	43,000	108	143

Source: Interviews with Economic Developer in Comparable Communities with Casinos; W-ZHA
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The fast food establishment will likely locate in the northern portion of the Study Area on US-81, where the daytime population is more significant.

Hotel Uses

Like retail, hotel uses seek sites near sales and traffic generators like interchange locations, business centers or "anchors" like the casino and Equine Center. Other key location factors include site visibility, traffic counts, zoning and project economics. From a market perspective, hotel operators take into consideration seasonality, tourism and the competition.

A 150-room hotel is currently under-construction at the Kansas Star casino. A second 150-room hotel is planned in the future. Part of the casino business model is to provide the full-breadth of services for their casino patron, under the same roof. This allows the casino to manage the experience and fully capitalize on patron spending.

Currently, there is a Sleep Inn in Haysville and a number of hotels in Derby. Like retail these competitive locations benefit from a stronger local market economy. Each have interstate access, a concentration of households, at place employment, goods and services nearby and, in the case of Derby, McConnell Air Force Base.

If there were only the Kansas Star casino, it is unlikely that additional hotel rooms would be developed in the Study Area. The casino hotels have price and location advantages. However, the Equine Center will generate room night demand. If market synergies occur with the Polo Ranch in US-81 and other equine-related amenities like a trail are developed, the Study Area would be a competitive limited service hotel location. By 2040, we conclude that there is the potential for a 65- to 90-room limited service hotel in the Study Area targeted to Interstate traffic and the Kansas Star Casino Complex's activities.

W-ZHA, LLC

Hotel Potential 2012-2040

	Low	High
Casino Demand (Rooms)	300	300
Equine Center Demand (Rooms)	130	150
Total Demand (Rooms)	430	450
Projected Casino Hotel Rooms	300	300
Net Potential (Rooms)	130	150
Study Area Capture	50%	60%
New Hotel Rooms	65	90

Source: Crossroads Consulting; W-ZHA
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Light Industrial Land Uses

Light industrial development is driven by land value, zoning and access to both major highways and labor force. There is an industrial park immediately north of the Study Area in US-81 in Haysville. There are few light industrial uses in the Study Area and those that exist are to the north on US-81.

The potential for light industrial development is enhanced with the increase in traffic along US-81 due to the casino. This local traffic makes US-81 more visible to the market. At the northern boundary of the Study Area, US-81 is within a 15-minute drive of Metropolitan Area's employment center. According to interviews land is valued at less that $150,000 per acre on US-81, which is inexpensive.

The major constraint to light industrial development in the northern portion of the Study Area is the lack of utilities south of 79th Street. However, given the increase in market visibility on US-81, the market will likely support a small light industrial uses totaling 20,000 to 40,000 square feet. At 1,000 square feet an employee this translates into 20 to 40 additional light industrial jobs.

From a market perspective, the potential for light industrial development in the Sumner County portion of the Study Area is much more limited due to its rural character. The portions of the Study Area near the US-81/K-53 intersection and points south are not as convenient to the Metropolitan Area's business concentration. The Interstate is not particularly advantageous to light industrial uses here because it is a toll road.

W-ZHA, LLC

Spin-Off Land Use Conclusions

The Casino Complex is expected to have an impact on land use development potential in the Study Area. The analysis concludes that the Casino Complex will generate demand for an additional 20 to 27 housing units in the Study Area above the Baseline projection. By 2040, the Casino Complex will generate demand for an additional limited service hotel of 65 to 90 rooms as well as 52,500 to 83,000 square feet of retail, restaurant and light industrial demand. The spin-off uses will require between 150 and 213 new jobs.

Casino Complex Land Use Spin-Off in Study Area
2012 - 2040

	Units/Households	Rooms	Square Feet	Jobs
Residential	20 - 27			
Retail & Restaurants			32,500 - 43,000	108 - 143
Non-Retail				
Hotel		65 - 90		22 - 30
Light Industry			20,000 - 40,000	20 - 40
Total	**20 - 27**	**65 - 90**	**52,500 - 83,000**	**150 - 213**

Source: W-ZHA

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W-ZHA, LLC

2040 Study Area Household and Job Projection Conclusion

Study Area Projections
2012 - 2040

	Units/Households	Jobs
Baseline Projections		
Residential	242 - 242	
Retail & Restaurants		108 - 108
Non-Retail		209 - 209
Subtotal		317 317
Casino Spin-Off		
Residential	20 - 27	
Retail & Restaurants		108 - 143
Non-Retail		42 - 70
Subtotal		150 213
Total	**262 - 269**	**467 - 530**

Source: W-ZHA

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APPENDIX 3: TRAVEL DEMAND MODEL DOCUMENTATION

INTRODUCTION

This document provides an overview of the modeling process used to support the Casino Area Transportation Plan. A Study Area was developed that can generally be described as extending from the Kansas Star Casino east along K-53 to the City of Mulvane and north to 87th Street along U.S.-81. A larger modeling area was also established allowing the model to better represent route choices. The Base Year for the demand models is 2010 and the plan horizon year is 2040. To support Time of Day analysis, daily, AM and PM peak period travel demand models were developed.

PLANNING SUBAREA

Study Area

To assess the impacts of the Kansas Star Casino during the AM and PM peak hours the Study Area depicted in ***Exhibit A3.1*** was defined. In the east-west direction the Study Area straddles K-53 (119th Street) from Webb Road in the city of Mulvane to Seneca Road west of the intersection of K-53 and U.S. 81 (Broadway Road). In the north south direction the Study Area extends along U.S. 81 from 130th Street to 87th Street. The key intersections located in the study area are:

- K-53 and Northbound K-15 Ramp
- K-53 and Southbound K-15 Ramp
- K-53 and Blair Street
- K-53 and Hillside Road
- K-53 and the KTA Connector
- K-53 and North Casino Drive
- K-53 and U.S. 81
- U.S. 81 and K-55
- U.S. 81 and 142nd Street
- U.S. 81 and North Casino Drive
- U.S. 81 and 111th Street
- U.S. 81 and 95th Street
- U.S. 81 and 87th Street

Model Area

In order to better model traffic patterns to, from, and through the study area a larger model area was defined. This area is illustrated in ***Exhibit A3.2***. The model area extends as far south as 80th Avenue, near the city of Belle Plaine and as far north as 47th Street in the city of Wichita. On the east the furthest extent of the model area is 159th Street while on the west the model area extends to Millbrook Road.

TRAFFIC DATA

AM and PM peak hour traffic counts were collected at the key study intersections between March 21, 2012 and July 18, 2012 from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. In general, the peak hours for all study intersections were determined to be from 7:00 AM to 8:00 AM and from 4:45 PM to 5:45 PM. Twenty-four hour counts were also collected during the week of May 21, 2012 at the following locations:

- 90th Street East of U.S. 81
- Broadway Road south of 87th
- Broadway Road between 144th and North Casino Drive
- K-53 between Hydraulic Avenue and Oliver Road
- K-15 and 1st Street

The existing daily traffic volume on U.S. 81 is approximately 5,700. Existing daily traffic volume on K-53, between K-15 and 1st Street in the city of Mulvane, is approximately 1,700 and 4,300 between Hydraulic Avenue and Oliver Road. Existing daily traffic volumes in the model area are shown on ***Exhibit A3.3*** and detailed peak hour turning movements in the Study Area are shown in ***Exhibit 1*** through ***Exibit 3*** in the report.

To aid with model development existing ADT data was collected from the following sources: Sedgwick County, the city of Wichita, and the Kansas Department of Transportation. ADT data were converted to peak hour traffic volumes, for use in peak period model validation, using the methodology outlined below:

- AM Peak
  - Peak period traffic
    - 10 percent of ADT occurs during the AM Peak
  - Directional splits
    - North – South roads
      - 60 percent northbound
      - 40 percent southbound
    - East – West roads west of I - 35
      - 35 percent westbound
      - 65 percent eastbound
    - East – West roads east of I – 35
      - 60 percent westbound
      - 40 percent eastbound
- PM Peak
  - Peak Period traffic
    - 12 percent of ADT occurs during the PM Peak
  - Directional splits
    - North – South roads
      - 40 percent northbound
      - 60 percent southbound
    - East – West roads west of I-35
      - 65 percent westbound
      - 35 percent eastbound
    - East – West roads east of I-35
      - 40 percent westbound
      - 60 percent eastbound

Existing AM and PM peak period volumes are shown in ***Exhibit A3.4*** and ***Exhibit A3.5***.

DEMAND MODEL DEVELOPMENT

Model Roadway Network

The model area network north of K-53 and the area around the city of Mulvane was taken from the current WAMPO regional model. Additional network was added to the south covering an area roughly bounded by K-53 on the north, 80th Avenue on the south, Seneca Road on the west, and Woodlawn Road on the east. Key attributes for these additional links, e.g., number of lanes and posted speed, were based on a review of Google Earth photography and supplemented by TranSystems' staff site visits. Model attributes consistent with the WAMPO model for all links were estimated for daily and peak period models.

Exhibit A3.6 illustrates the facility type of roadways in the model area network. Within the study area K-53 is Principal Arterial from Webb Road in the city of Mulvane to Broadway Road. Between Broadway Road and Seneca Road 119th Street becomes a Major Collector. It is a two-lane roadway (one lane in each direction) along its entire length. The posted speed limit varies from 30 mph on the east (within the city of Mulvane) to 55 mph on the west.

U.S. 81 (Broadway Road) is a Principal Arterial for its entire length within the Study Area. It is a two lane roadway (one lane in each direction) with a posted speed limit of 55 mph south of 95th Street and 50 mph north of 95th Street.

Two future year roadway networks were tested during this Study. The 2040 Base network assumed no capacity improvements to any of the roadways within the model area between the Base Year (2010) and the Future Year (2040). The 2040 Conceptual Network included the Base network plus capacity enhancements programmed into the WAMPO 2040 model, i.e., additional

lanes, on several roadways within the northern portion of the model area. The capacity enhancements also included a new bridge over the Arkansas River at 95th Street. The location of the capacity enhancements is depicted in ***Exhibit A3.7***.

It should be noted that the purpose of the model developed for this Study is to assess the impact of the anticipated development on the roadways within the Study Area. The testing of the capacity enhancements was done only to assess the potential impact of these improvements on traffic within the Study Area. For example, what impacts might a new bridge at 95th Street have on K-53? Model results should not be used to assess potential demand for these capacity enhancements, because they are outside the Study Area. For example, what level of future traffic can we expect on a new bridge on 95th Street?

Traffic Analysis Zone (TAZ) System

North of K-53 and in the vicinity of the city of Mulvane the starting point for the development of the TAZ system for this study was the TAZ system from the WAMPO regional model. Many of the WAMPO TAZs were subdivided in order to better reflect development patterns and facilitate a more dispersed pattern of trip generation than was possible with the larger WAMPO TAZ. South of K-53 TAZ were defined to be consistent with the TAZ to the north and reflect the density of development.

The CATP and WAMPO TAZ system are shown in ***Exhibit A3.8***. Within the model area there are 146 internal TAZ and 32 external stations.

Socioeconomic Data

The population, dwelling units, and employment used in the development of the 2010 and 2040 demand models are summarized in ***Table A3.1***. Originally included in the data set provided by Prime Consultant PEC were data for total population, dwelling units, median income, as well as retail, non-retail and total employment. During the model development process an estimate of service employment was made for the purposes of developing trip generation estimates .

Demand Model Estimation

Daily, AM Peak, and PM Peak travel demand models were developed using TransCAD software.

Trip generation and distribution were estimated using the internal capabilities of the TransCAD software. Trip generation was estimated using techniques from NCHRP 365 . The Kansas Star Casino itself was treated as a special generator. Daily and peak period trip generation was based on the analysis conducted for the Kansas Star Casino Traffic Impact Analysis . Trip distribution was estimated using the TransCAD internal gravity model application.

For each time period, model validation focused on making modifications to network attributes and trip tables to bring model volumes into an acceptable level of agreement with observed volumes. Network attributes that were modified included BPR volume delay function parameters, link free flow travel time, and capacity. Trip tables were adjusted to insure that the number of origins and destinations being generated by the Kansas Star Casino were consistent with the traffic impact study prepared for the Casino development. As a last validation step, TransCAD's Origin Destination Matrix Adjustment (ODME) methodology was employed to improve the models ability to replicate observed volumes.

Table A3.2 compares the observed and modeled ADT volumes within the Study Area. Most links have a modeled volume within 10 percent of the observed volume. The Percent Root Mean Square Error (RMSE) statistic is a standard statistic used in travel demand forecasting to judge the correspondence between modeled and observed volumes. When applied to model flows versus counts, Percent RMSE values are usually between 10 and 100. 10 percent usually describes flows that are very similar to the counts on a link-by-link basis, while 100 percent usually describes flows that are very different to the counts . The Percent RMSE for counts within the study area is 9.9 percent.

The model to estimate service employment was based on data available from the currently on-going WAMPO model update. The model developed was Service Employment = 0.099(retail employment) + 0.207*(total employment) + 0.017*(development density) and had an R2 of 0.72.*

National Cooperative Highway Research Program. NCHRP Report 365: Travel Estimation Techniques for Urban Planning. Washington, D.C., 1998.

TranSystems Corp., Traffic Impact Analysis: Kansas Star Casino. Prepared for YWS Architects, September 2010.

Caliper Corporation. Travel Demand Modeling with TransCAD 6.0. 2012. Page 242.

Table A3.1: Model Input Summary

Study Area[1]	2010	2040	Change	
			Number	Percent
Population	4,511	4,906	395	9%
Dwelling Units	1,702	1,920	218	13%
Retail Employment	243	493	250	103%
Service Employment	593	703	110	19%
Other Employment	1,348	1,562	214	16%
Total Employment	2,184	2,758	575	26%
Model Area	**2010**	**2040**	**Change**	
			Number	Percent
Population	53,270	77,851	24,581	46%
Dwelling Units	22,244	30,885	8,641	39%
Retail Employment	3,910	5,377	1,467	38%
Service Employment	4,287	5,483	1,196	28%
Other Employment	5,352	6,533	1,181	22%
Total Employment	13,548	17,389	3,841	28%

Table A3.2: Observed & Modeled ADT Volumes

Route	Location	Observed	Modeled	Difference	
				Number	Percent
K-53	East of US-81 (Broadway R	2,600	2,424	-176	-7.3%
K-53	West of Hillside Rd	4,300	4,145	-155	-3.7%
K-53	West of Pope Rd	3,615	4,061	446	11.0%
K-53	West of 2nd Ave.	5,705	4,884	-821	-16.8%
K-53	East of 2nd Ave	3,140	3,146	6	0.2%
K-53	West of K-15	1,720	2,187	467	21.4%
K-15	NB Ramp to K-53	1,030	998	-32	-3.2%
2nd Ave	North of K-53	5,575	5,648	73	1.3%
Broadway Rd	North of K-53	3,020	3,005	-15	-0.5%
Broadway Rd	South of K-53	5,684	5,046	-638	-12.6%
Broadway Rd	North of 140th	3,960	3,950	-10	-0.3%
Hydraulic Ave	North of K-53	1,810	1,791	-19	-1.1%
Oliver Rd	South of K-53	3,515	3,479	-36	-1.0%
Total		45,674	44,764	-910	-2.0%
Percent Root Mean Square Error 9.9%					

APPENDIX 3: TRAVEL DEMAND MODEL DOCUMENTATION

Exhibit A3.1: Study Area

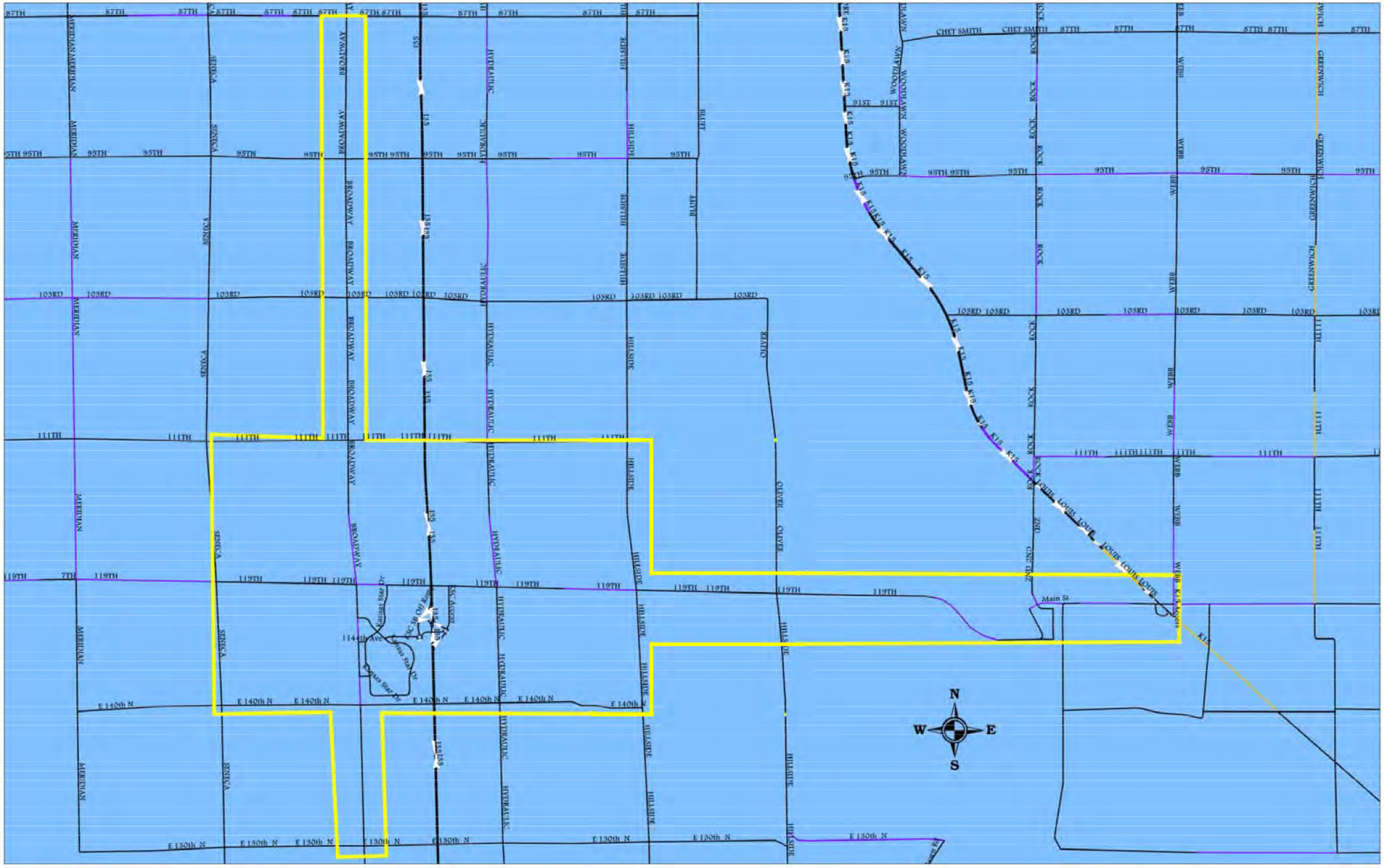
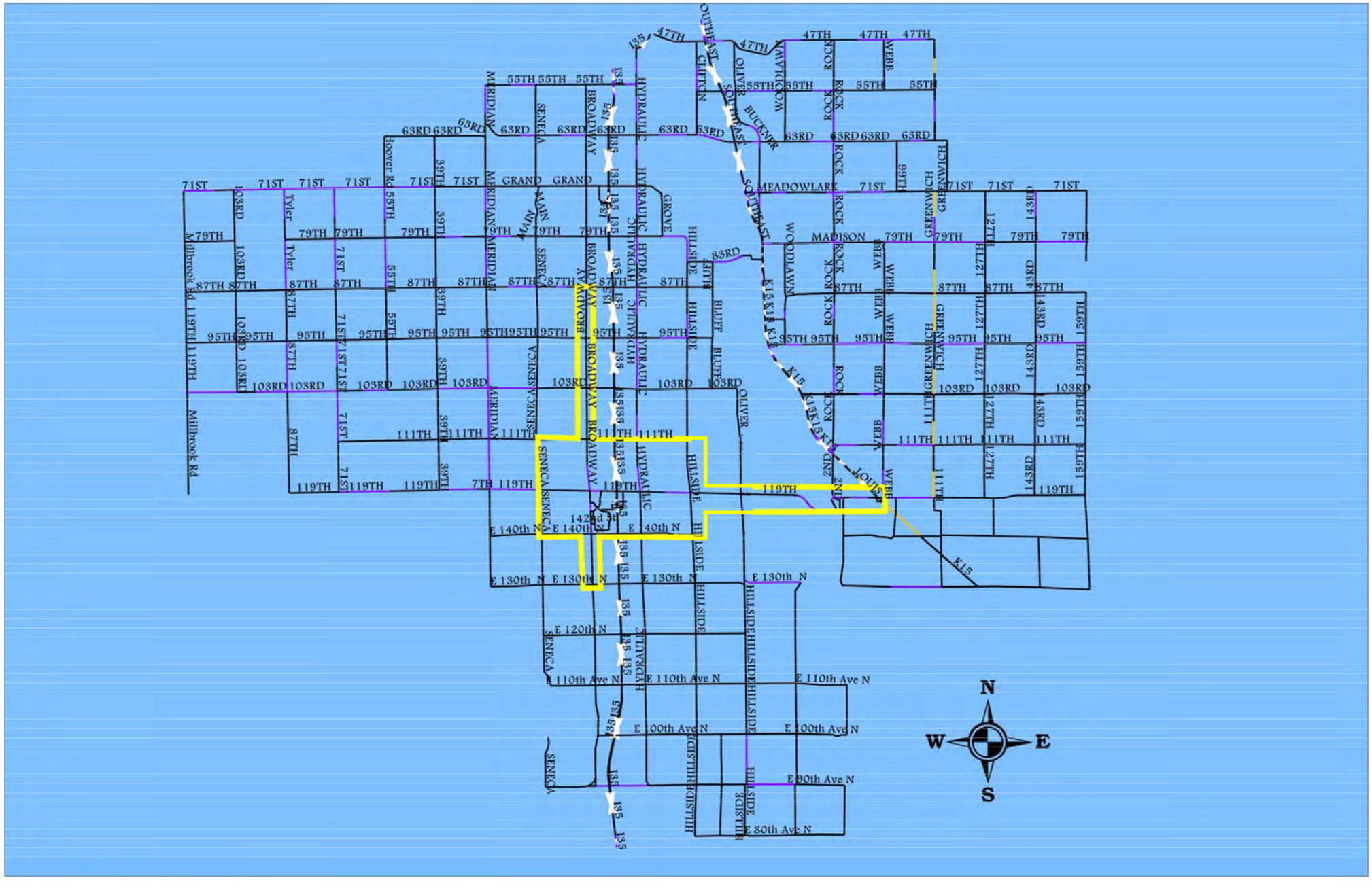


Exhibit A3.2: CATP Model Network



APPENDIX 3: TRAVEL DEMAND MODEL DOCUMENTATION

Exhibit A3.3: Existing Daily Traffic Volumes

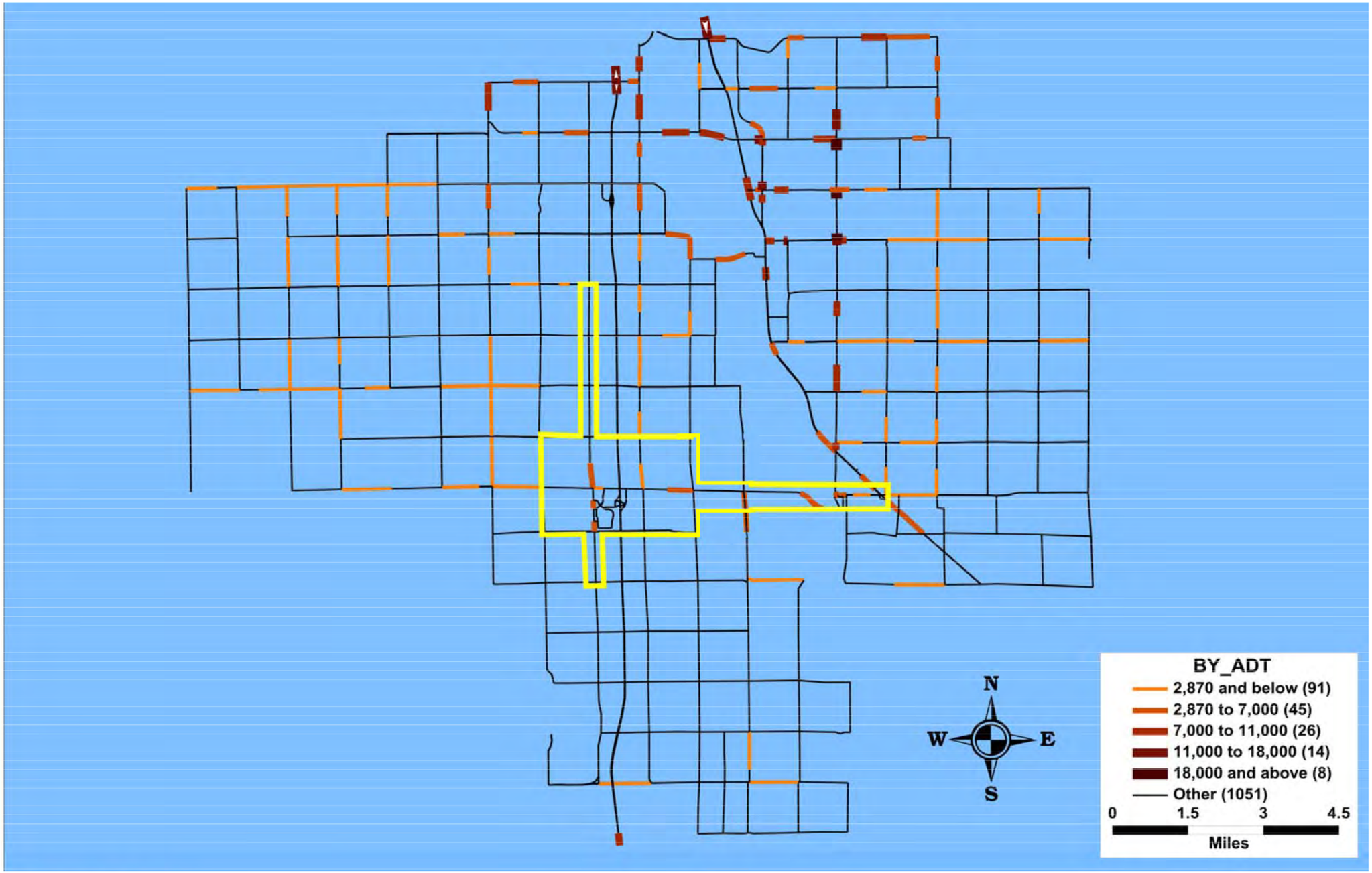


Exhibit A3.4: AM Peak Period Volumes

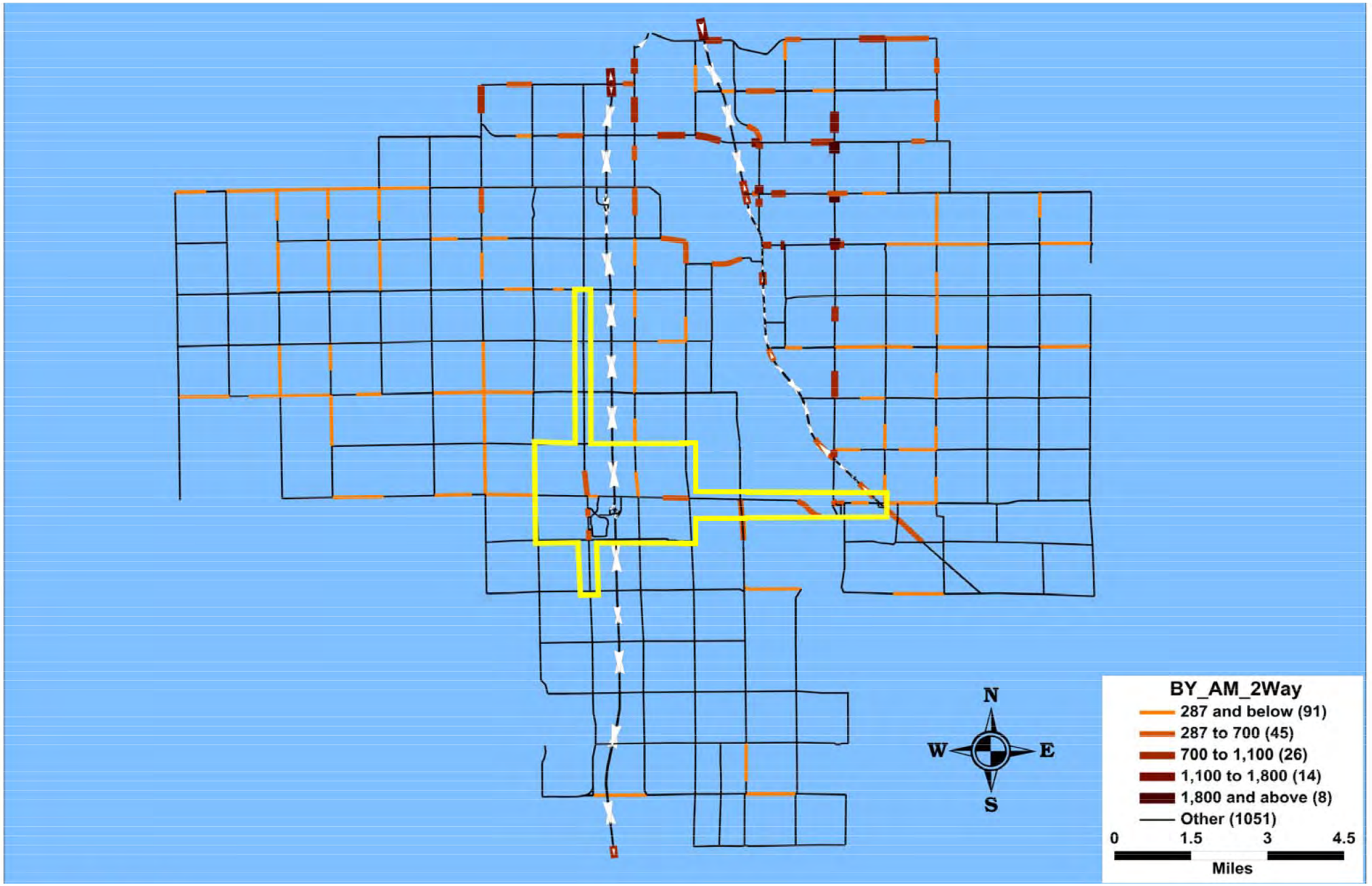


Exhibit A3.5: PM Peak Period Volumes

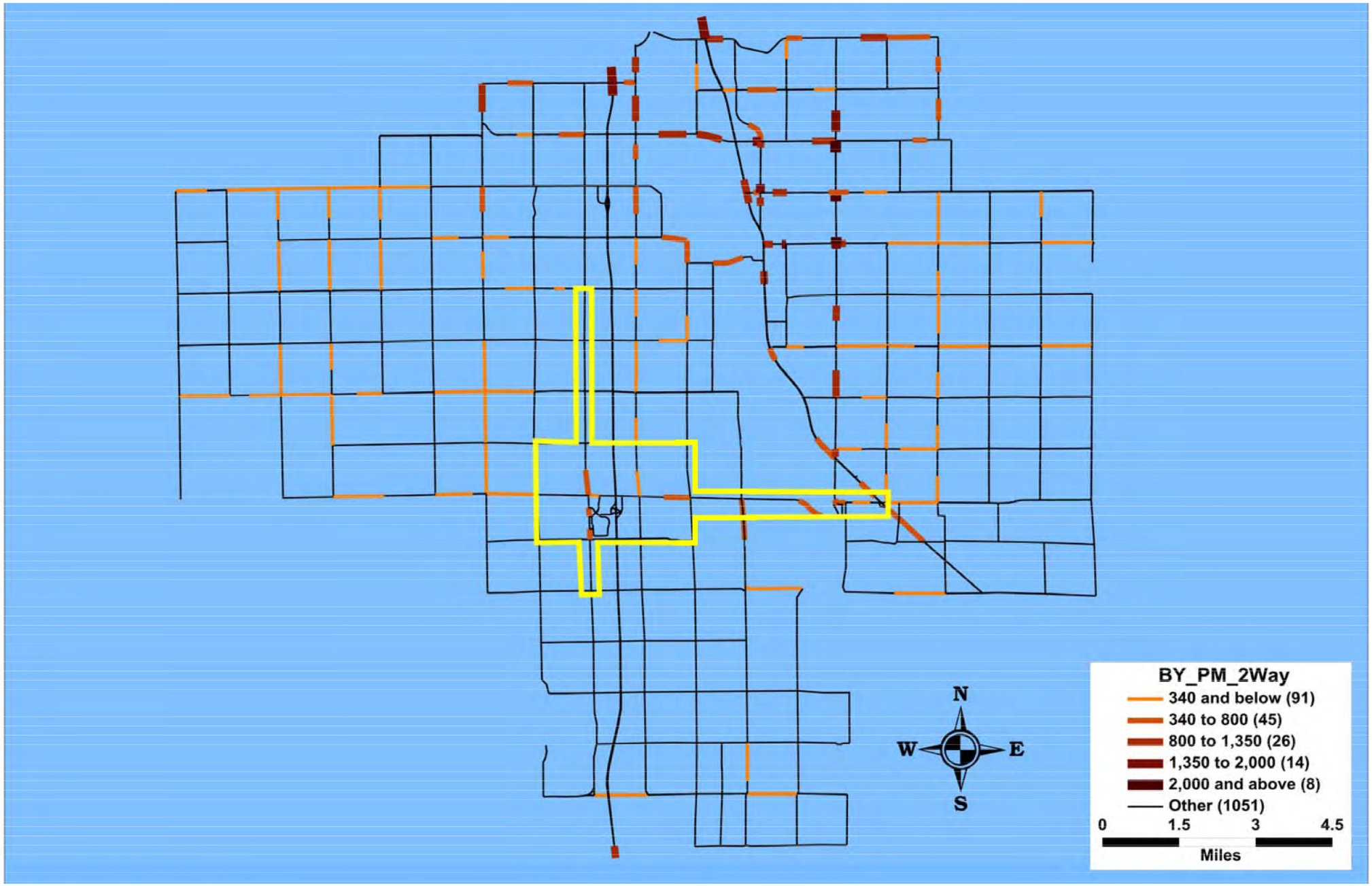
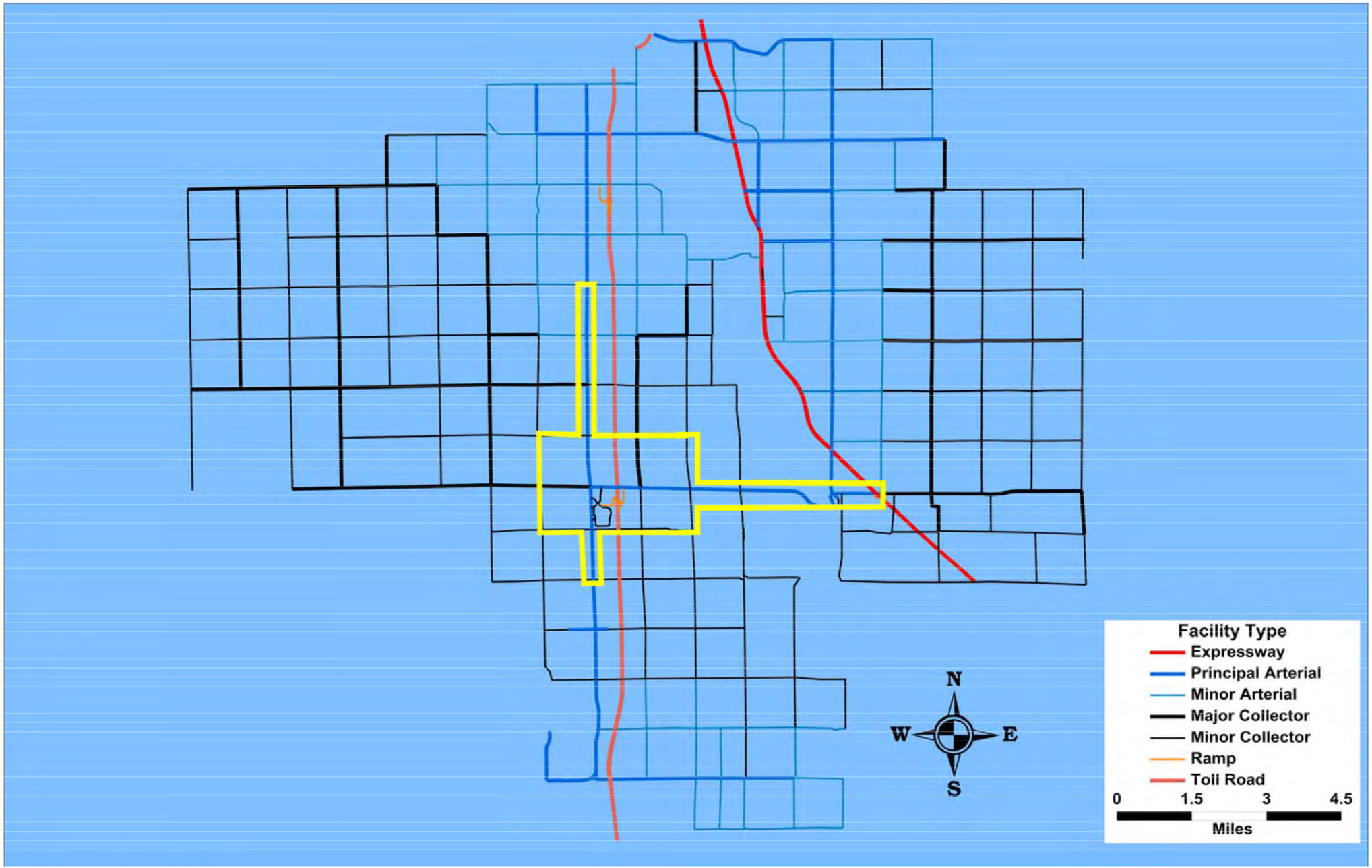


Exhibit A3.6: Roadway Facility Type



APPENDIX 3: TRAVEL DEMAND MODEL DOCUMENTATION

Exhibit A3.7: Location of Capacity Enhancements

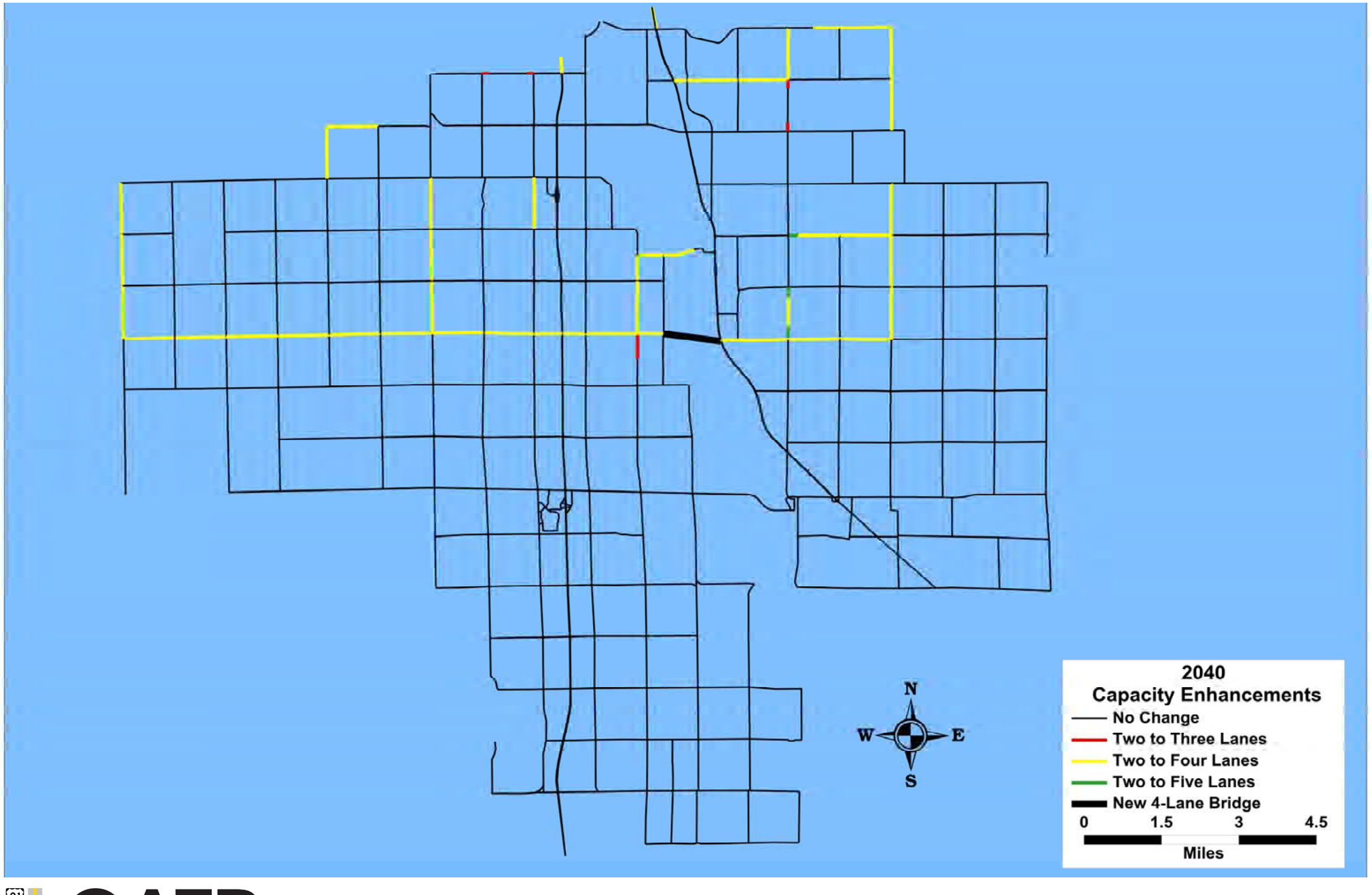
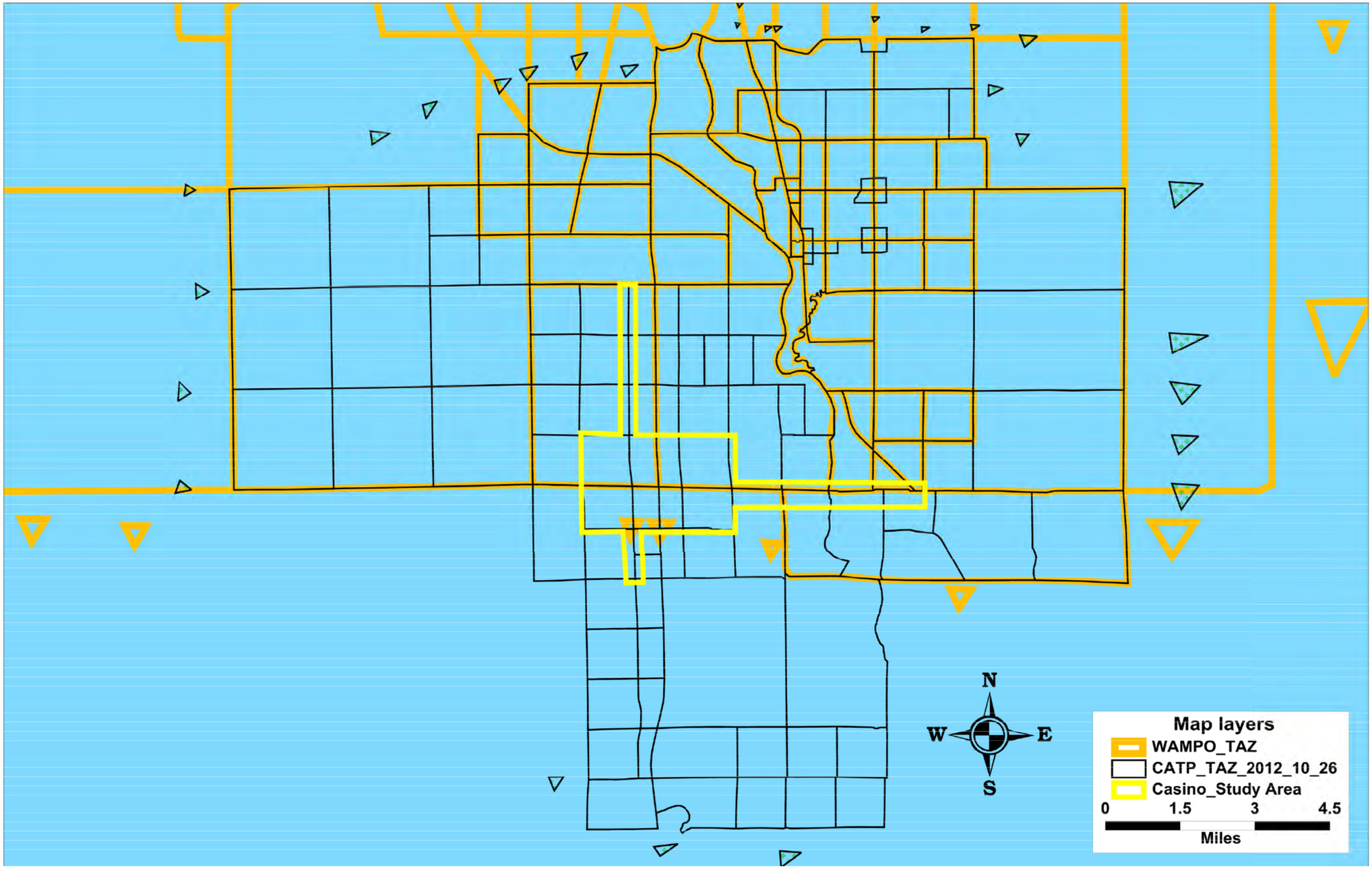
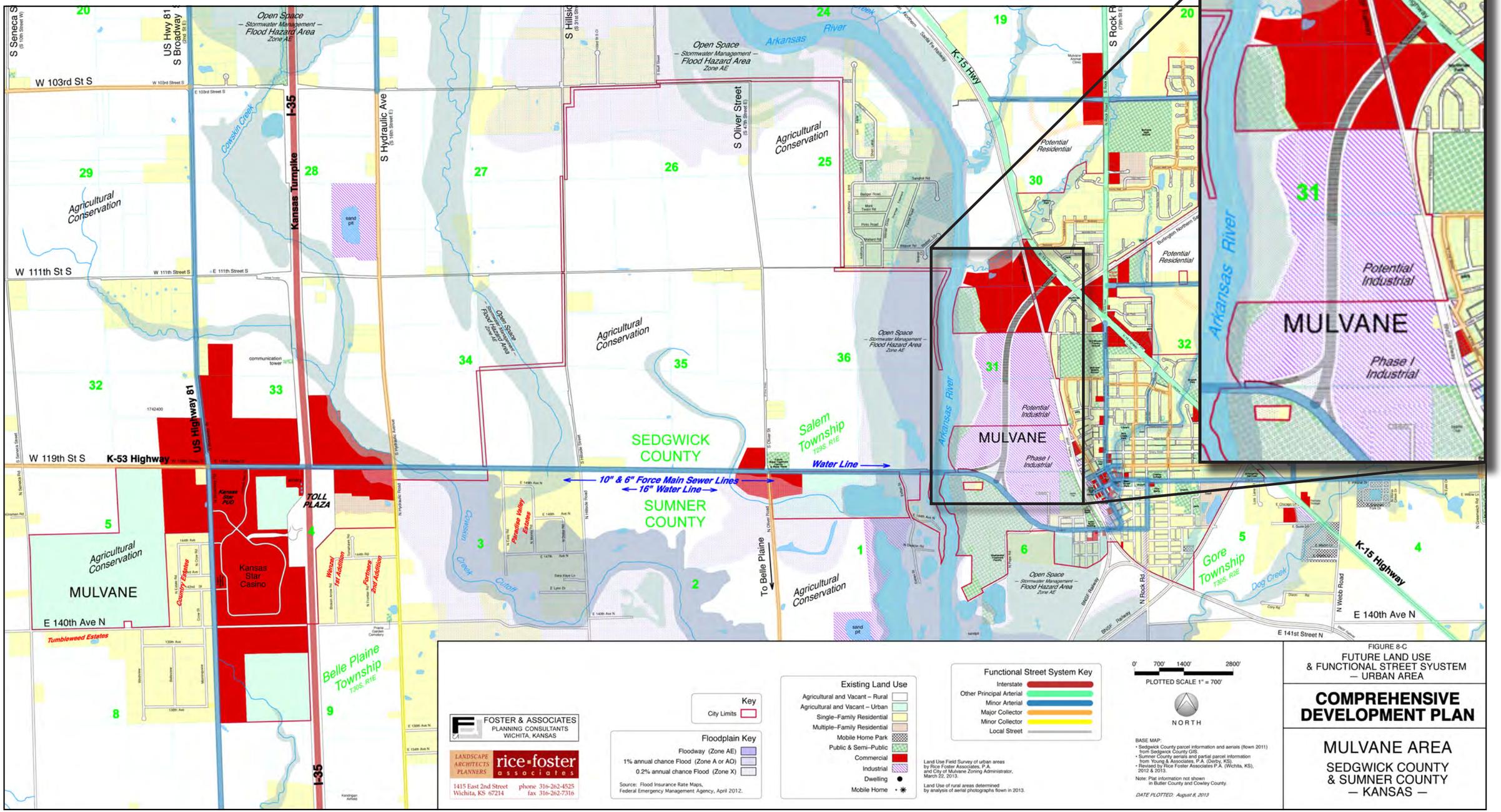


Exhibit A3.8: CATP & WAMPO Traffic Analysis Zones



APPENDIX 4: MULVANE ALTERNATIVE ROUTE

Exhibit A4.1: Proposed Mulvane Alternative Route



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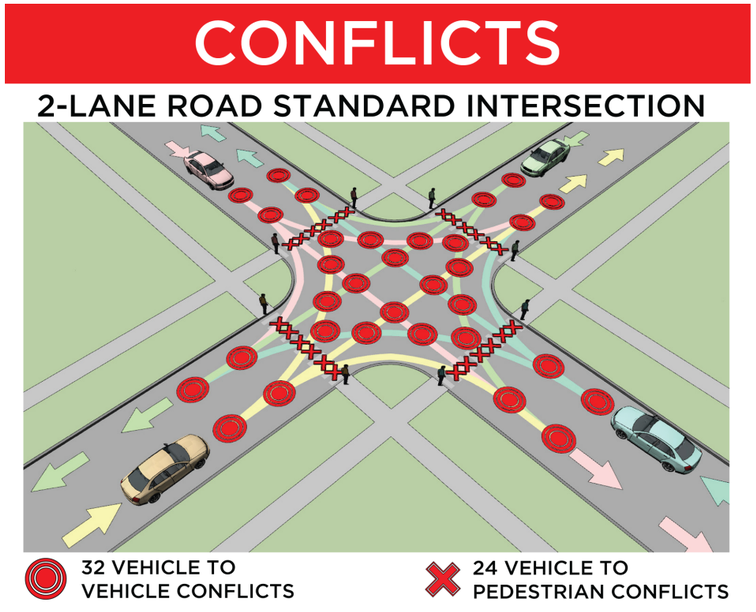
APPENDIX 5: ACCESS MANAGEMENT INFORMATION

IMPORTANCE OF ACCESS MANAGEMENT

The Transportation Research Board (TRB) Access Management Manual defines access management as "the systematic control of the location, spacing, design, and operations of driveways, median openings, interchanges and street connections to a roadway." Each driveway and intersection along a roadway creates a potential point of conflict where travel paths may cross one another. They also cause friction within the traffic stream as vehicles reduce speed to make turning movements.

A conflict point is a location where the potential exists for a vehicle to collide with another road user, whether it is another vehicle, pedestrian or bicyclist. The typical four-way, two-lane intersection has 56 conflict points of which 32 are vehicle-to-vehicle conflicts and 24 are vehicle-to-pedestrian conflicts. This is illustrated in ***Exhibit A5.1***.

Exhibit A5.1: Intersection Conflict Points



Access management improvements to typical intersections, such as dedicated turning lanes, result in fewer overall conflict points. Research by the TRB indicates that an estimated 40% of crashes occur at access locations. The addition of dedicated left turn lanes alone reduces crashes an average of about 50% and reduces rear-end collisions an average of 74% thereby improving safety for all road users.

Access is managed through a variety of common methods and design treatments further detailed in in the following section. Several of these access management techniques include:

- Medians
- Turn lanes
- Roundabouts
- Proper traffic signal timing
- Frontage roads
- Appropriate driveway spacing

Properly executed access management offers many potential benefits to a variety of transportation system users at relatively low costs. This high benefit-to-cost ratio is the main reason it has become an essential part of transportation system design in the United States. In recent decades, taxpayers have begun demanding good infrastructure investments to maximize the dollars spent. Access management delivers. To illustrate this point, some of the major benefits of good access management are listed below.

- Preserve highway capacity and reduce crashes.
- Protects public investment by reducing the need for costly roadway improvements.
- Faster, safer, more efficient travel.
- Improved access to businesses and increased business vitality.
- Relatively low-cost to implement compared to adding capacity.
- Return on investment is measurable in travel time savings and reduction in vehicle crashes.

ACCESS MANAGEMENT TECHNIQUES

To achieve the safety and efficiency goals of access management, a variety of design techniques are employed. This section describes a few commonly used access management design techniques that may have some application within the study area or within the Haysville area community. This is by no means an exhaustive list. Each technique described in this section has a variety of benefits when used in the appropriate situation. The benefits of some of these common techniques are outlined in the ***Table A5.1*** on the right.

Table A5.1: Access Management Techniques and Benefits

Access Management Benefit	Access Management Technique					
	Medians	Turn Lanes	Roundabouts	Traffic Signal Timing	Frontage Roads	Driveway Spacing
Improve motorist safety	✓	✓	✓			✓
Improve pedestrian and bicycle safety	✓		✓	✓		✓
Reduce conflict points	✓	✓	✓	✓	✓	✓
Decrease crash rates	✓	✓	✓			✓
Improve air quality			✓	✓		
Decrease congestion	✓	✓	✓	✓	✓	✓
Improve aesthetics	✓		✓			✓
Decrease travel times		✓	✓	✓		✓
Improve property access		✓			✓	✓
Preserve roadway capacity	✓	✓	✓	✓	✓	✓

Medians

There are two main types of medians: raised (non-traversable) medians, flush (painted) medians. Medians provide a physical or visual barrier, which separates opposing traffic flows and concentrates turning movements to specific sections of a roadway. Raised medians are particularly useful in access management because of the physical separation they provide. Raised medians also have ancillary benefits. For example, they can be used for landscaping, drainage and pedestrian refuge.

Turn Lanes

Left turn lanes remove left turning movements from the through travel lanes. This provides left-turning vehicles refuge, which helps preserve traffic flow on through lanes and provides storage space while waiting to make a safe turning movement. Dedicated left turn lanes are separated from through lanes by either a raised or painted median. Left turn lanes improve safety, increase visibility of oncoming traffic and expand roadway capacity.

Two-way left turn lanes (TWLTL) or center left turn lanes (CLTL) are painted medians that provide left turn refuge for both travel directions on two-way roadways. They are appropriate where moderate to high levels of development exist adjacent to roadways. However, they can be used in lesser developed commercial corridors with high left turn demand. TWLTLs also provide refuge for vehicles turning left onto a roadway where they can wait to safely merge into the main traffic lane.

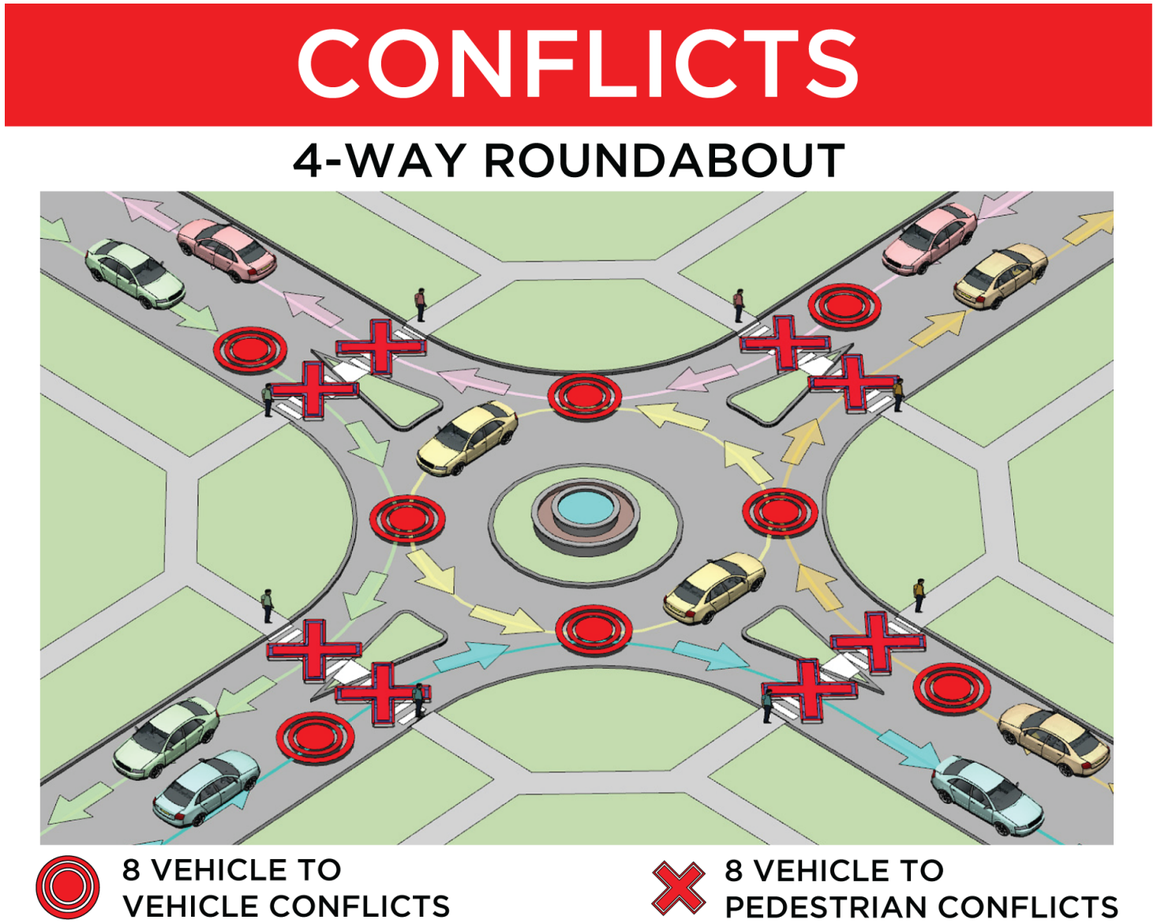
Right turn lanes are sometimes deployed at relatively high traffic intersections to remove right turning movements from the through travel lanes. They are not frequently implemented at lower volume driveways and intersections, because right turning traffic does not need to come to a complete stop under normal circumstances. Also, right turning movements do not cross another vehicle's travel path. However, they can serve an important role in access management by allowing space for right turning vehicles to decelerate to a safe speed prior to negotiating the turn. By removing that deceleration from the through travel lane, friction is minimized and potential conflict avoided.

Roundabouts

A roundabout is a type of intersection in which traffic from all directions merges into a circular facility and travels counter-clockwise until it can proceed in its desired direction of travel. In many situations, roundabouts have proven to be safer and more efficient at moving traffic than signalized intersections.

They can be safer than typical two lane intersections, because they eliminate conflict points within an intersection. The typical two lane intersection, as previously mentioned, has 32 conflict points. In a roundabout, there are no left turn movements. As shown in Exhibit A5.2, this results in only eight vehicular conflict points, none of which represent the potential for a head-on collision.

Exhibit A5.2: Roundabout Conflict Points



Traffic Signal Spacing/Timing

Traffic signals serve the important purpose of controlling the flow of traffic at relatively high volume intersections. But they should be used sparingly. Generally, signal deployment occurs only as warranted and justified by a through traffic engineering analysis. Such an analysis normally considers the broader traffic control needs of the entire corridor and local land use development plans to maximize positive results.

Proper spacing and timing of traffic signals helps control the ebb and flow of traffic to facilitate access management along a roadway. Too frequent spacing results in decreased operational efficiency by slowing traffic flow. Poorly synchronized timing cycles yield similar results.

Frontage Roads

Frontage roads are built parallel to the primary roadway and allow no direct access from properties onto the main through lanes. The standard frontage road configuration places it adjacent to the primary roadway and allows front access to properties. The frontage road typically connects to an intersecting roadway, where traffic is then allowed to access the main through lanes. Frontage roads allow businesses good visibility to the primary roadway while minimizing the number of direct access points.

Reverse frontage or backage roads are an alternative configuration to typical frontage roads. They are offset a greater distance from the primary roadway, typically located to the rear of frontage lots. This means that traffic accesses property from the rear of the lot. The main advantage to reverse frontage roads is that the greater offset distance separates the turning movements from the primary intersection, creating a safer and more efficient configuration. This also allows for commercial development on both sides of the frontage road.

Driveway Spacing

The amount of space between driveways can dramatically affect traffic flow. Condensed driveway spacing results in many conflict points along a corridor, while increased driveway spacing creates fewer conflict points. The greater the distance between access points, the smoother the traffic flow. There are several methods used to control driveway spacing. These include cross-lot access, shared access and shared parking.

Cross-lot access occurs when access is gained to a property through an adjacent property's driveway. Shared access occurs when two or more properties gain access through a driveway that is located on a common property line. Shared parking occurs when adjacent properties jointly develop, maintain and use the same parking area.

Such access strategies are commonly implemented by legal agreements entered into by adjacent property owners. The agreements are notarized and filed for record with the local county and are legally binding. Also, access agreements typically run with the land to ensure long-term mitigation of access issues. That is to say, they do not expire with a change in ownership, but remain intact as property changes hands. Therefore, access management is enhanced over an extended period of time. Many jurisdictions have standard access agreements to facilitate their use. Such agreements can be used as conditions of development approval.