MOVE 2040

Kalispell Area Transportation Plan

September 2021

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Abbreviations & Acronyms

A

AADT: annual average daily traffic 241

ACS: American Community Survey 15

ADT: annual daily traffic 109

ASCT: Adaptive Signal Control Technology 253

AVL: Automatic Vehicle Location 254

B

BaRSAA: Bridge and Road Safety and Accountability Act 223

BL: bike lanes 183

BR: bike routes 183

C

CDP: census designated place 81

CMAQ: Congestion Mitigation and Air Quality Improvement Program 220

CO: carbon monoxide 220

E

E+C: Existing plus Committed (referring to a future travel demand model scenario which incorporates only existing facilities and committed projects) 97

F

FAST Act: Fixing America's Surface Transportation Act 217

FBO: full build-out 94

FHWA: Federal Highway Administration 20

FLAP: Federal Lands Access Program 221

FTA: Federal Transit Administration 222

FVCC: Flathead Valley Community College 188

G

GPI: Glacier Park International 90

H

HAWK: High-intensity Activated Crosswalk 211

HSSRA: Highway State Special Revenue Account 218

I

IRWL: In-Road Warning Lights 212

ITS: Intelligent Transportation System 6

K

KRMC: Kalispell Regional Medical Center 188

L

LOS: level of service 27

M

MACI: Montana Air and Congestion Initiative 220

MAP-21: Moving Ahead for Progress in the 21st Century Act 221

MCA: Montana Code Annotated 217

MDT: Montana Department of Transportation 3

MRFL: Montana Rail Freight Loan Program 223

MSN: Major Street Network 159

MT CEIC: Montana Census and Economic Information Center 90

MTDLI: Montana Department of Labor & Industry 90

N

NCHRP: National Cooperative Highway Research Program 250

NHFP: National Highway Freight Program 220

NHPP: National Highway Performance Program 217

NHS: National Highway System 23

O

O-D: origin-destination 39

P

PA: preferred alternative 209

PM10: particulate matter 10 micrometers or less in diameter 220

R

RLC: Red Light Cameras 253

RM: Ramp Meters 253

RRFBs: Rectangular Rapid Flash Beacons 211

RT: Recreational Trails 218

S

SF: suggested facility 209

SLMs: Shared Lane Markings 211

SRC: Study Review Committee 3

SRTS: Safe Routes to Schools 183

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MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 1: INTRODUCTION

INTRODUCTION

The Kalispell Area Transportation Plan, titled Move 2040, will help guide the development of the City's transportation system in a comprehensive and methodical fashion. Move 2040 was developed utilizing a collaborative approach with City and Montana Department of Transportation (MDT) staff, elected officials, and local residents. This plan is designed to help realize the goals and objectives to meet current and future transportation needs.

Background

The city of Kalispell is a growing community that is nationally known as a tourist destination due to its proximity to Glacier National Park, Flathead Lake, the local ski industry at Whitefish Mountain Resort and Blacktail Mountain Ski Area, and the Bob Marshall Wilderness Complex. The City of Kalispell intends to create a long-range transportation plan that will address the present needs of the community and to plan and direct future growth. This plan continues from the previous transportation plan adopted in 2008.

Move 2040 was guided by a Study Review Committee (SRC) and the community. Throughout the process, a series of SRC meetings and community workshops were held to influence the decision-making process. This input shapes the core of the transportation plan. More information on the SRC and public engagement efforts is detailed in Chapter 2

Study Area

The study area for the project was established in collaboration with the Urban Transportation Advisory Committee (TAC). It includes the urban boundary determined through census data and is set by MDT in coordination with local officials. The study area is bounded by West Valley Drive to the west, Birch Grove Road to the north, Flathead River to the east, and Auction Road to the south.

The study area is larger than the city boundary and its urban boundary to account for areas already developing and those areas that could see growth over the twenty-year study horizon. The larger study area allows Move 2040 to understand the impact of commuter traffic generated from developing areas such as Evergreen and outlying residential areas in Flathead County. Understanding the traffic impacts from both within and outside of the Kalispell city boundaries will allow for better planning of the future road network. Figure 1.1 shows the study area.

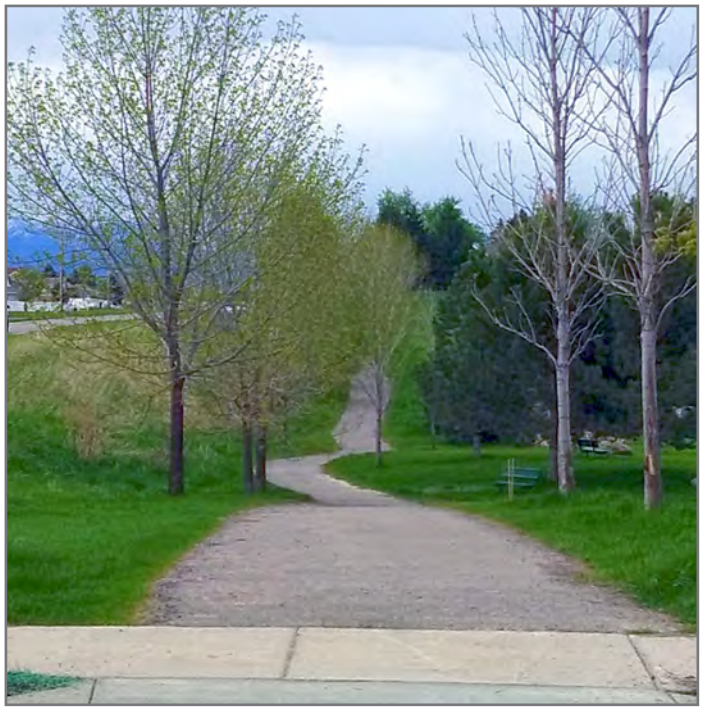
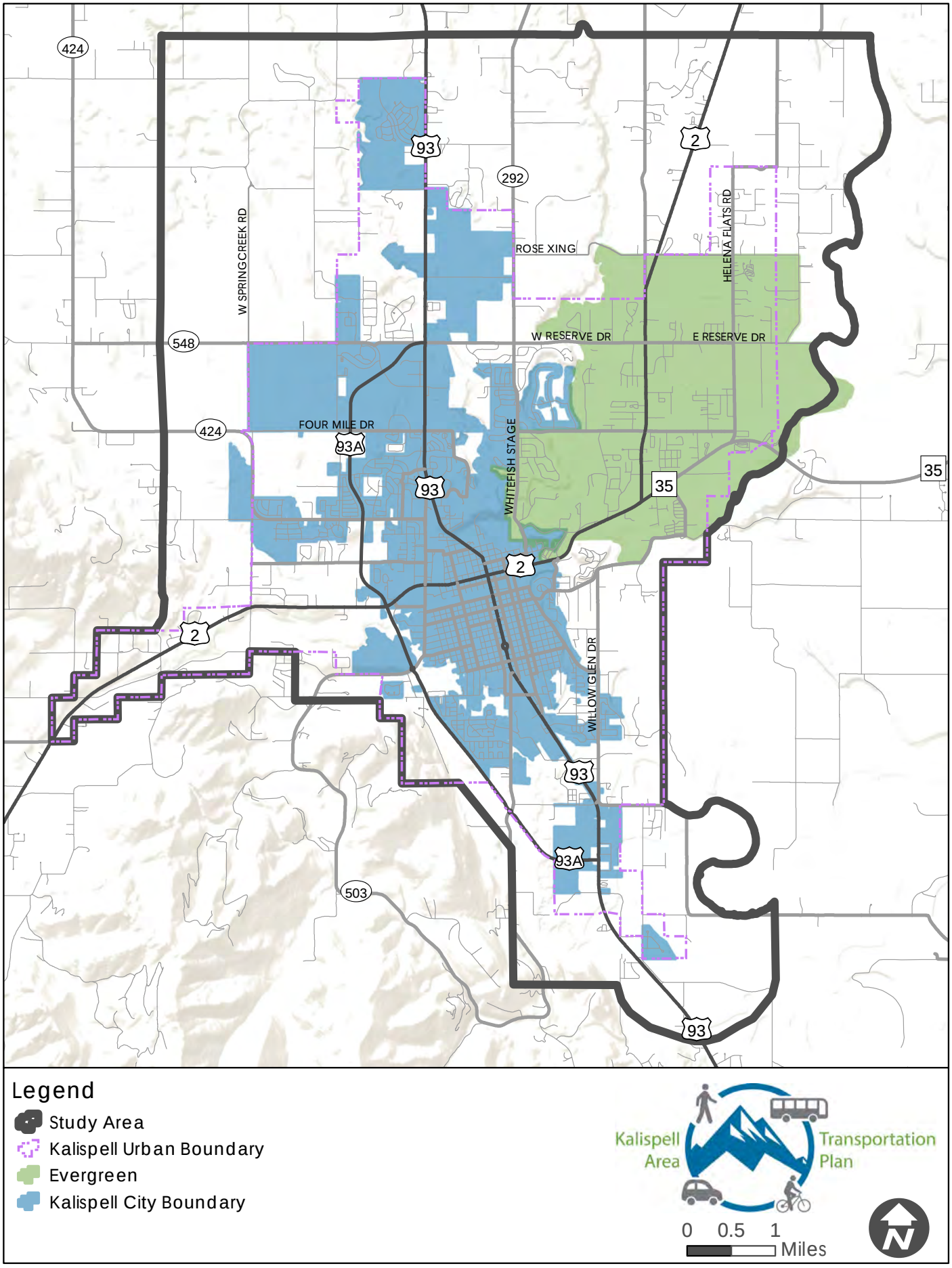


Figure 1.1: Study Area



Policy Framework

The Move 2040 policy framework serves as the plan's policy foundation and charts a course for future transportation investment within the Kalispell area. The framework is designed to be long-range and comprehensive, reflecting the transportation system as a whole and incorporating the community's priorities in order to support current residents and accommodate future growth. The framework champions local needs while placing the City's transportation vision within a larger regional context.

The framework was developed in close coordination with the Kalispell SRC and neighboring local governments. It incorporates input collected through the community engagement process, as well as the policy direction put forth in local and regional planning documents.

The Policy Framework consists of three elements: Vision, Goals, and Strategies.

- **Vision:** The transportation vision communicates the aspirations and priorities that will guide the City's transportation investments in order to achieve its desired future.
- **Goals:** Goals are broad statements that describe a desired end state. The Transportation Policy Plan (TPP) goals represent key priorities for desired outcomes for the transportation system, and for the wellbeing and prosperity of the community. Goals are visionary statements that reflect key priority areas.
- **Strategies:** Strategies are specific statements that support the achievement of goals. Strategies "operationalize" the goals: they refine goals into discrete, policy-based actions that are used to guide decision making towards achievement of the vision. There are multiple strategies for each goal.

Transportation Vision

The Move 2040 transportation vision will serve as an anchor for future development of the Kalispell area transportation system. The transportation vision is as follows:

Move 2040 is focused on preserving Kalispell's unique character while encouraging and accommodating future growth. Kalispell is the commercial and governmental center of the Flathead Valley with a diverse economy, robust employment, and vibrant neighborhoods. The plan celebrates this identity, and presents a transportation investment approach that will enhance the community's cherished qualities by preserving community, addressing congestion, increasing connectivity, and supporting a revival of Highway 93/Main Street through downtown. Move 2040 looks to harness the opportunities of the future by advancing projects that support desired growth. The plan embraces the development of key corridors, including the Kalispell Bypass, West Reserve Drive, Four Mile Drive, and Rose Crossing, as key to improving regional mobility, supporting economic development, and optimizing existing transportation infrastructure.

Goals and Strategies

The project team defined six goal areas in collaboration with the SRC, stakeholders, and the public. In addition, the goal areas presented in MDT's TranPlanMT served as a basis for the Move 2040 goal areas. The goal areas were used to develop the final set of six Move 2040 goals.

Input collected through the public involvement process allowed for the plan to prioritize goal areas that the community felt were most important. During outreach events, community members were asked to provide input on the goal areas that they felt were most critical to achieving the plan's vision. The project team assigned a priority to each goal area based on the feedback that it received. The plan's public engagement process is detailed in Chapter 2.

The six Move 2040 goal areas are shown in Table 1.1, where they are presented in order of priority based on the input collected through the public involvement process. The table also shows how the Move 2040 goal areas and MDT TranPlanMT goals relate to one another. The TranPlanMT goals are not presented here in order of priority.[1]

1 See: https://www.mdt.mt.gov/tranplan/

Table 1.1: Kalispell Goal Areas by Order of Importance

Kalispell Priority	Kalispell Move 2040 Goal Area	MDT TranPlanMT Goal
1	Safety and Security	Safety
2	Congestion Reduction	Accessibility and Connectivity
3	Infrastructure Condition	System Preservation and Maintenance
4	Environmental Sustainability	Environmental Stewardship
5	System Reliability for Freight Movement and Economic Vitality	Mobility and Economic Vitality
6	Reduce Project Delays	Business Operations and Management

The goal areas were used to define the final set of six Move 2040 goals. For each goal, various strategies are defined.

1. Safety and Security

GOAL: Create a transportation system that incorporates safety and security throughout all modes and for all users.

1A. Support Montana's State Highway Safety Plan "Vision Zero" as a goal to move toward zero deaths and zero serious injuries.

1B. Reduce the incidence of all motor vehicle and non-motor vehicle (pedestrian and cyclist) crashes, with an emphasis on serious injury and fatal crashes.

1C. Leverage technology advancements in project development to improve safety.

1D. Partner with Mountain Climber to ensure a safe and secure environment for transit system riders.

1E. Regularly review and update Emergency Routes, coordinating as needed with Flathead County and the MDT to facilitate the rapid movement of first responders and support incident management during times of emergency.

1F. Provide safety education programs for all transportation users.

1G. Target safety improvement projects to address the top 15 High Crash Locations, as identified in Move 2040.

1H. Enhance crash data integration and analysis to support decision making and issue identification.

1I. Improve education on bike safety and increase the awareness of both bicyclists and motorists regarding bike related laws, rules, and responsibilities.

2. Congestion Reduction

GOAL: Create a transportation system that optimizes mobility and connectivity, allowing users to move from one place to another in a direct route with minimal travel times and delays.

2A. Modernize the transportation system and increase efficiency through the implementation of Intelligent Transportation System (ITS) solutions, including improved signal coordination, timing, and active traffic management technologies.

2B. Work with Mountain Climber to improve route efficiency, promote and continue service connecting to major employment centers, education facilities, medical offices, commercial developments, and tourist destinations.

2C. Improve system-wide bicycle and pedestrian connectivity by implementing transportation investments identified within the Move 2040 Bike/Ped element.

2D. Implement a consistent approach for investment, design, connectivity, and maintenance of pedestrian and bicycle facilities.

2E. Identify and consider accessibility and connectivity needs on improvement projects for roads, paths, and sidewalks.

2F. Utilize the development review process to require new developments to provide adequate roads, pedestrian and bicycle access to essential services, amenities, and destinations.

3. Infrastructure Condition

GOAL: Proactively preserve and maintain existing transportation system infrastructure.

3A. Preserve and maintain transportation infrastructure in a state of good repair, including pavement, street signage, bicycle and pedestrian facilities, traffic signals, lighting, and other ITS assets.

3B. Continue to support Mountain Climber to ensure it maintains its transit fleet, equipment, and facilities in a state of good repair.

3C. Continue to utilize a pavement management system to inventory pavement condition and assist in optimizing cost-effective strategies for maintaining pavements in serviceable condition, taking advantage of MDT's Urban Pavement Preservation Program (UPP).

3D. Develop a capital improvement program that implements the prioritized Transportation System

Management and Major Street Network projects presented in Move 2040.

4. Environmental Sustainability

GOAL: Prioritize environmental stewardship in the development, maintenance, and operation of the transportation system.

4A. Minimize the transportation system's impacts on the natural and built environment.

4B. Promote transportation investments that support infill, mixed-use development patterns.

4C. Provide transportation infrastructure design guidance that fits within the context of the built environment.

4D. Plan for and address multimodal transportation system impacts when planning new developments.

4E. Maintain a planning process that integrates and coordinates transportation planning with land use, water, and natural resource conservation.

4F. Foster positive working relationships with resource agencies and stakeholders through early coordination and consultation.

4G. Minimize adverse impacts to established neighborhoods.

5. System Reliability for Freight Movement and Economic Vitality

GOAL: Create a transportation system that supports economic competitiveness, vitality, and prosperity by providing for the efficient movement of people and goods.

5A. Enhance the efficient and safe movement of freight and goods by investing in congestion reduction and safety improvements on critical freight corridors.

5B. Promote transportation investments that enhance the local economy.

5C. Support projects that decrease travel time between major activity centers.

5D. Encourage public/private partnerships to leverage funding from federal, state and other sources.

5E. Give priority to transportation projects that improve and provide access to area tourist destinations and amenities.

5F. Support projects that increase levels of private sector investment in transportation improvements.

5G. Discourage routing commercial traffic and heavy through-traffic in residential areas by creating a more thorough grid system.

5H. Clarify need for preservation of right of way and access management to support function of arterials for through traffic movements.

5I. Improve right-of-way preservation and access management standards to support the reliability of collector and arterial roadway systems to efficiently distribute and move traffic.

5J. Support improved east-west access through Kalispell.

6. Reduce Project Delays

GOAL: Provide efficient, cost-effective management and operation to accelerate transportation project delivery and ensure system reliability.

6A. Explore development of an arterial and collector special assessment district to support projected transportation infrastructure needs.

6B. Leverage existing transportation systems by emphasizing low-cost congestion management investments such as signal timing, signal coordination, and signal system upgrades.

6C. Develop policies to support consistent application of development-related improvement requirements and streamlined project development.

6D. Use the Move 2040 list of prioritized projects to guide transportation investment and make effective use of funding when it becomes available.

6E. Support the pursuit of grant funding to study and improve traffic system performance.

6F. Invest at the appropriate level to ensure adequate funding for system maintenance and operations.

6G. Enhance information technology products and services through modernization of legacy systems and implementation of new technologies to improve efficiency and cost-effectively meet customer and city needs.

6H. Seek out development of a formal venue to engage MDT, Flathead County, Whitefish and Columbia Falls in regional discussion on issues of transportation planning and programming.

MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 2: PUBLIC ENGAGEMENT SUMMARY

PUBLIC ENGAGEMENT SUMMARY

Meaningful public engagement involves two-way communication with diverse stakeholders. A successful planning process provides easy access to project information and addresses questions and concerns, raised by the public and key stakeholders. The objective of public engagement is to have a measurable effect on the plan's outcomes.

The Move 2040 public engagement process was open and respectful. The objective was to educate and inform stakeholders on the importance of the planning process through multiple opportunities. The goal was to enable stakeholders to take an active role in shaping the plan outcomes and to actively incorporate stakeholder input into guide recommendations. Developing a sense of ownership among stakeholders is vital for successful implementation of the plan's recommendations over time.

STAKEHOLDERS

SRC

Development of the Kalispell Urban Area Transportation Plan was guided by the SRC. The SRC was formally appointed by the Kalispell Urban TAC at the onset of the planning process. The SRC included a variety of City, County, and MDT staff. The SRC played a fundamental role throughout the planning process by providing direction at key decision points and helping to ensure that the plan was reflective of the community's transportation vision. The SRC met on 10 occasions and included the following representatives:

- Susie Turner, Public Works Director, City of Kalispell
- Tom Tabler, Senior Traffic Engineer, City of Kalispell
- Keith Haskins, City Engineer, City of Kalispel
- Jarod Nygren, Planning Director, City of Kalispell
- Dave Prunty, Public Works Director, Flathead County
- Rory Young, Urban TAC Representative
- Vicki Crnich, Planner, MDT Statewide & Urban Planning Section
- Rebecca Goodman, MDT Statewide & Urban Planning Section
- James Freyholtz, MDT Missoula District

Community Members

Members of the community were critical in providing input on goals, strategies, and priorities throughout the planning process. The Move 2040 public engagement activities aided the SRC in creating a transportation plan that reflects the needs and desires of the public. Community member input gives life and direction to the planning process, and the project team was careful to incorporate engagement every step of the way.

Methods and Activities

Phase I: Listening Sessions

Overview

Phase 1 of public engagement for Move 2040 consisted of three public input meetings, which were held at the Kalispell Chamber of Commerce over two days on February 12th and 13th, 2020. These meetings, which were referred to as Listening Sessions, were designed to both educate community members on the planning process and gather open-ended input on transportation issues within the study area.

The Listening Sessions were advertised through a variety of channels, including an advertisement in the Daily Inter Lake, the project web site, Cable Channel 190, and social media posts by the City of Kalispell.

Each of the Listening Sessions had three components:

- Brief presentation on the Move 2040 planning process and an overview of data used to support the transportation planning process.
- A tabletop exercise to identify existing and emerging issues and potential big ideas to support the transportation system in the Kalispell area.
- Small group prioritization exercise for goals and performance areas to help support the transportation planning process.

Phase II: Community Updates

Over the summer of 2020, the project team reached out to the Kalispell community to provide a progress report on the Move 2040 planning process. The project team initiated a social media campaign through Instagram and Facebook to provide recently developed materials and information on the planning process. Project updates included the findings of Phase I of the public input process and updated documentation on existing and projected conditions driving the planning process. Updates were directly provided to the following groups:

- Kalispell Development Association
- Kalispell Chamber of Commerce
- Kalispell Business Improvement District
- Flathead County Economic Development Authority
- Evergreen Water & Sewer District
- Evergreen Chamber of Commerce
- Montana West Economic Development

Phase III: Final Outreach and Input

Phase III of the Plan's public outreach component included two in-person open houses held on May 26th at Kalispell City Hall/Council Chambers. The open houses were intended to present the finished plan to community members and provide attendees the opportunity to give feedback on project findings and recommendations. Open houses were offered in both midday and evening sessions, and each provided attendees an informational presentation, a series of graphic posters summarizing key findings and recommendations, and various opportunities to provide feedback. A virtual livestream option was made available for those unable to attend the in-person open houses.

In addition, an interview was given with KGEZ to aid in presenting the results of the final plan to the public.

The Phase III open houses were advertised through a variety of media sources, including various social media and print media.

MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 3: EXISTING CONDITIONS

INTRODUCTION

An understanding of the existing conditions is required to plan for the long-range future transportation needs of a growing community and region. Kalispell is an economic center that relies on the regional transportation network to connect residents of Flathead County with employment, shopping, and recreational opportunities. As such it is important to understand the demographics of not just Kalispell but the surrounding area of Flathead County, Evergreen and the urban area boundary. The existing conditions covers the following socioeconomic trends: population, housing, and economy.

Demographics Overview

Flathead County is the second fastest growing county in Montana since 2000. The total population of Flathead County grew from 39,460 in 1970 to 90,928 in 2010, for an increase of 51,468 residents. Overall population trends during the last 30 years indicate steady growth in the County, punctuated by short periods of slow or no growth associated with regional and national economic downturns.

Between 2000 and 2009, the County's population (as a whole) increased by 20 percent, due in large part to Kalispell's growth. During the same time period, Kalispell's population increased by 42.5 percent, while the unincorporated areas of Flathead County increased by just 8.9 percent. Kalispell has grown 89.3 percent since 1970, with most of the growth occurring since 1990. The 2017 American Community Survey (ACS) estimates a 2017 population of 23,938. Evergreen has more than doubled since 1980. The 2017 ACS estimates a 2017 population of 7,552. Table 3.1 shows the historical population in the study area.

Table 3.1: Historical Population in Study Area

	Flathead County	City of Kalispell	Evergreen	State of Montana
1970	39,460	10,526	—	694,409
1980	51,966	10,648	3,746	786,690
1990	59,518	11,917	4,109	799,065
2000	74,471	14,223	6,215	902,195
2010	90,928	19,927	7,616	989,415
2017 ACS	102,106	23,938	7,552	1,062,305
Annual Average Change	3.38%	2.71%	2.75%	1.13%

Population Dynamics

Kalispell, and the study area in general, has a younger population than the state of Montana. The majority of the study area continues to see growth in the portion of the population under 18 and a decline in the portion of the population older than 64. Since 2000, the median age of Kalispell has decreased from 37.7 to 34.9 in 2017. Evergreen's median age has continued to increase from 35.4 in 2000 to 42 in 2017. Its under 18 population has declined in the same time period. Table 3.2 shows the population dynamics in the study area.

Table 3.2: Population Dynamics

Area	2000	2010	2017
Flathead County			
Median Age	39	41.2	42.3
Younger than 18	25.9%	23.4%	22.4%
18 to 64	61.1%	62.2%	60.1%
Older than 64	13.0%	14.4%	17.5%
City of Kalispell			
Median Age	37.7	34.5	34.9
Younger than 18	24.0%	25.1%	25.5%
18 to 64	57.7%	59.5%	58.8%
Older than 64	18.3%	15.4%	15.7%
Evergreen			
Median Age	35.4	37.8	42
Younger than 18	28.0%	26.3%	24.6%
18 to 64	61.8%	61.6%	60.5%
Older than 64	10.2%	12.1%	14.9%
State of Montana			
Median Age	37.5	39.8	39.8
Younger than 18	25.5%	22.6%	22.0%
18 to 64	61.1%	62.6%	60.9%
Older than 64	13.4%	14.8%	17.1%

Housing

Housing is the bedrock of a community and can determine transportation needs and social, political, and economic conditions. Housing type and variety are important considerations in local land use and transportation decision-making processes. Table 3.3 shows the estimated number of households and average household size. There are an estimated 12,579 households between Kalispell and Evergreen with an average household size of 2.50.

Table 3.3: Housing Trends in Study Area

	Flathead County	City of Kalispell	Evergreen
2000	34,773	6,532	2,532
2010	46,963	9,379	3,147
2017	48,154	9,386	3,193
Percent Change	38.5%	43.7%	26.1%
Persons per Household	2.12	2.55	2.37

Economic Trends

Healthcare, retail trade, and accommodation and food services are the three largest industries in Flathead County, employing nearly 20,000 people. Table 3.4 shows the largest industries in the county as well as their average employment.

Table 3.4: Largest Industries in Flathead County

Industry	Average Employment
Health Care and Social Assistance	7,157
Retail Trade	6,366
Accommodation and food Services	6,130
Government – All Levels	4,976
Food Services and Drinking Places	4,352
Construction	3,296
Manufacturing	2,837
Ambulatory Health Care Services	2,215
Professional and Technical Services	2,042
Specialty Trade Contractors	2,024
Finance and Insurance	1,839

The largest private employers in Flathead County are shown in Table 3.5.

Table 3.5: Largest Private Employers in Flathead County

Employer
More than 1,000 Employees
Kalispell Regional Medical Center
500–999 Employees
Weyerhaeuser
250–499 Employees
AON Service Corporation
Applied Materials Inc.
Glacier Bank
Health Center Northwest
Immanuel Lutheran Home
North Valley Hospital
Super 1 Foods
Teletech
Wal-Mart
Whitefish Mountain Resort
100–249 Employees
A Plus Healthcare
Brendan House
Costco
L C Staffing Service
Lodge at Whitefish Lake
McDonalds
Smith's Food and Drug
Summit Medical Fitness Center

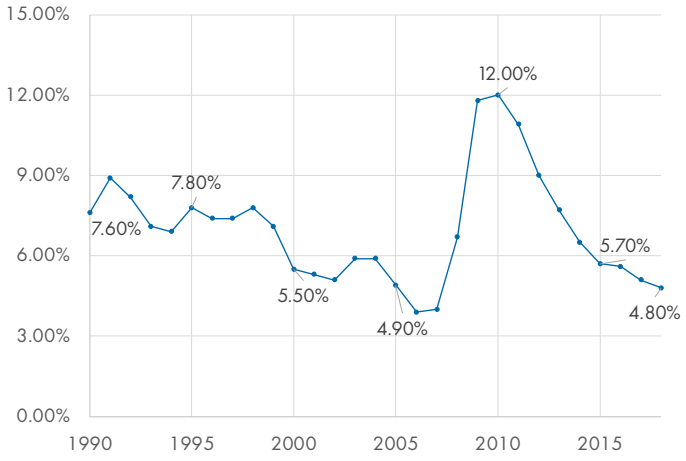
According to the Montana Department of Labor & Industry's Local Area Profile for Flathead County, the county represents a tourism hotspot in Montana due to Glacier National Park, Flathead Lake, the local ski industry at Whitefish Mountain Resort and Blacktail Mountain Ski Area and a proliferation of wilderness found in the Bob Marshall Wilderness. The tourism economy offers significant employment opportunities, although much of this sector of the County's economy is centered on service industry jobs which typically represent lower wage earners.

The county's labor force was estimated at 47,793 in 2018, according to local area unemployment statistics (this number has not been seasonally adjusted). While county unemployment rates have been on a steady decline since the 2008/2009 recession, the current unemployment rate sits at 4.8 percent, over a percentage point higher than the state average unemployment rate of 3.7 percent. Figure 3.1 shows the historical unemployment rates of Flathead County.

According to the 2017 ACS Community Profile narratives for both Kalispell and Flathead County:

- Flathead County's federal, state, and local government sector employment represents 13.4 percent of the workforce in the county. Nearly 80 percent of the workforce is in private industry.
  - Key industries in Flathead County are educational services, health care and social assistance (23.5 percent); retail trade (13.8 percent); arts, entertainment and recreation (10.9 percent); and professional, scientific and tech services (9.8 percent).
- Kalispell's federal, state, and local government sector employment is around 13 percent of the workforce in the city. Nearly 83 percent of the workforce is in private industry.
  - Key industries in Kalispell are educational services, health care and social assistance (26.2 percent); retail trade (19.7 percent); professional, scientific and tech services (9.6 percent); and finance and insurance, real estate, rental and leasing (9.3 percent).

Figure 3.1: Historical Unemployment Rates in Flathead County



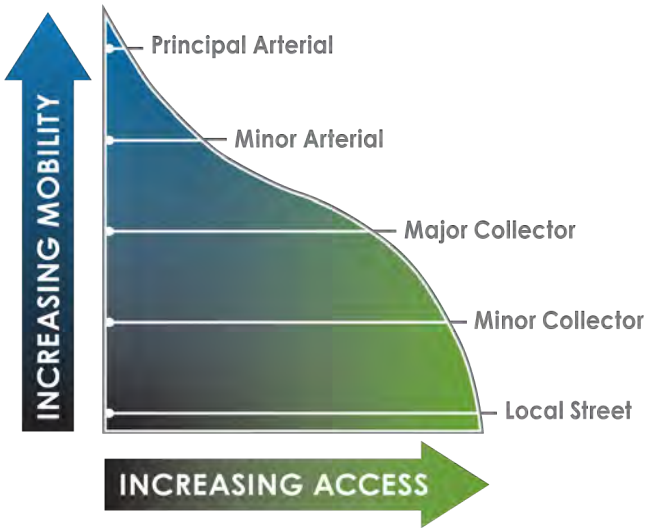
Existing Transportation Conditions

Move 2040 analyzed the existing transportation system to establish baseline traffic conditions and evaluate existing and future issues. This data was provided by MDT, City of Kalispell, and Flathead County. The analysis includes all modes of transportation, including personal automobile, bicycle, pedestrian, transit, truck freight, rail, and air.

Functional Class

The operation of a community's road network is defined by functional classification of the roadway system. These classifications define the service each road segment plays in serving the flow of traffic through the street network. By utilizing this classification system, the operation of traffic can be designed to work in a logical and efficient manner. Roadways are grouped into a hierarchy of six general functional classifications. Figure 3.2 demonstrates the relationship between access and mobility for each functional classification.

Figure 3.2: Functional Class Access and Mobility



Explanation

Most streets and highways have a predominant function: either to provide the motorist with access to abutting land or to allow movement through an area. Traffic that gains access to abutting land is considered "local" whereas all other traffic is considered "through." Through traffic neither originates nor terminates within a designated area, but simply passes through. On the other hand, local traffic has origins or destinations within the designated area.

Urban and rural areas have different characteristics as to density and types of land use, nature of travel patterns, density of street and highway networks, and the way in which all these elements are related to highway function. Federal regulations recognize these differences through separate urban and rural functional classification systems and associated criteria.

- Small Urban Areas have populations between 5,000 and 49,999.
- Urbanized Areas are areas with population over 50,000, as designated by Census Bureau.
- Rural Areas are areas outside the boundaries of small urban and urbanized areas.

Montana has three urbanized areas (Billings, Great Falls, and Missoula) and 16 small urban areas. The Move 2040 study area is a small urban area, since its population base is less than 50,000, but greater than 5,000.

Functional Class Definitions

Below is a definition of each of the functional classifications. These summaries are further defined in Table 3.6. Functionally classified roadways in the study area are shown in Figure 3.3 and Figure 3.4.

Principal Arterials

Principle arterials provide the means of regional and interstate transportation of people and goods. This is done by having roads which have the highest speed and uninterrupted trips and broken into principal and minor arterial routes. In urban areas principal arterials serve as corridors with the highest traffic volume and carry the most trips through urban areas.

Minor Arterials

The minor arterial routes in the street system provide connections and support the principal arterial system. The trips are generally shorter in nature and spread out over a smaller geographic area.

Major and Minor Collectors

Major and minor collector streets are designed for lower speeds and shorter distances that collect and distribute traffic from the arterial streets and local streets. These are designed to provide traffic circulation within residential neighborhoods and commercial and industrial areas. The collectors connect to local streets to deliver the traffic to its destination.

Local Streets

Local streets are all streets not defined above in the hierarchy with the purpose to provide basic access between residential and commercial properties. These streets are generally slower and have the addition of traffic calming measures. These are the largest element in the American public road network in terms of mileage.

Table 3.6: Functional Classification Definitions

Functional Classification	*Characteristics*
Urban Areas (Population Greater Than 5,000)	
Principal Arterial	» Serves major activity centers » Corridors with highest traffic volumes » Longest trip lengths
Minor Arterial	» Connects other Urban principal arterials
Major Collector	» Serves both land access and traffic circulation in higher density residential and commercial/industrial areas » Distributes and channels trips between local streets and arterials usually over a distance of greater than ¾ mile » Extends through residential neighborhoods, often for significant distances
Minor Collector	» Serves both land access and traffic circulation in lower density residential and commercial/industrial areas » Distributes and channels trips between locals and arterials, usually over a distance of less than ¾ mile » Extends through residential neighborhoods, often only for a short distance
Local	» All remaining streets » Direct land access and link to higher classifications
Rural Areas (Population Less Than 5,000)	
Principal Arterial	» Predominant route between major activity centers » Interstate or intrastate significance » Long trip lengths » Heavy travel densities » Provides service to most large urban areas
Minor Arterial	» Links cities and larger towns (or major resorts) » Spaced at intervals so that all developed areas are within a reasonable distance of an arterial » Interconnects network of principal arterial
Major Collector	» Service to travel of primarily intra county importance » Serves important travel generators (i.e., County seats, consolidated schools, mining, or logging areas)
Minor Collector	» Land use access and spaced at intervals consistent with population density
Local	» Access to adjacent land for short distances » All remaining roads not classified under higher system

Evaluation of Existing Functional Class within the Study Area

Currently both the City and MDT have an approved functional class map for the study area. The functional class system used by MDT follows the guidelines developed by the Federal Highway Administration (FHWA) as discussed in this section. Any reference to functional class in this document refers to the system established by FHWA. The system currently employed by the city is a loose interpretation of the FHWA guidelines and has been developed to respond to localized conditions and needs. Upon adoption of this plan, the City of Kalispell will default to a functional class map based on FHWA criteria as used by MDT. Therefore, no additional reference to a locally approved functional class will occur in this document.

The total miles of functionally classified roads within the study area are shown in Table 3.7. Figure 3.3 and Figure 3.4 show the current approved functionally classified roadways for the study area based on FHWA criteria, as used by MDT. The functionally classified system within the study area was evaluated against current FHWA guidelines for recommended percentages for each functional classified roadway. These ranges are based on FHWA best practices for urban areas based on the 2013 Highway Functional Classification Concepts, Criteria and Procedures manual.

Based on a comparison with FHWA guidelines for functionally classified roadways in small urban areas the study area has the following characteristics:

- Too few minor arterial and minor collector roadways.
- Excess number of roadways classified as local.

The current conditions may result in local roadways functioning as minor collector roadways. The shortage of minor arterial roadways is likely putting additional traffic burden on collector roadways.

Later stages of the planning process will allow for a framework of an update of both an existing and future functional class map for the Move 2040 study area. MDT is currently moving through a statewide functional class update. Initial direction will allow for an updated functional class map for the study area that follows FHWA guidelines and integrates with the MDT statewide update.

Changing Functional Classification

Local governments may request functional classification changes at any time significant changes in operating characteristics occur. After receiving a request, MDT staff analyzes the route in accordance with FHWA guidelines to determine if the proposed change is justified and makes a recommendation to the Montana Transportation Commission. If approved by the Commission, it goes to FHWA for final approval.

Table 3.7: Existing Functional Classification Mileage and FHWA Recommended Ranges

Functional Class Name	*Miles*	*% of Total*	*FHWA Recommendation*	*Within Range*
Principal Arterial	33.8	6.5%	4% to 9%	Yes
Minor Arterial	27.3	5.3%	7% to 14%	No
Major Collector	28.2	5.4%	3% to 16%	Yes
Minor Collector	10	1.9%	3% to 16%	No
Local	419	80.8%	62% to 74%	No
Total	**518.5**	**100%**		

Source: Highway Functional Classification Concepts, Criteria and Procedures, FHWA, 2013 Edition

Figure 3.3: Functionally Classified Roadways in the Study Area

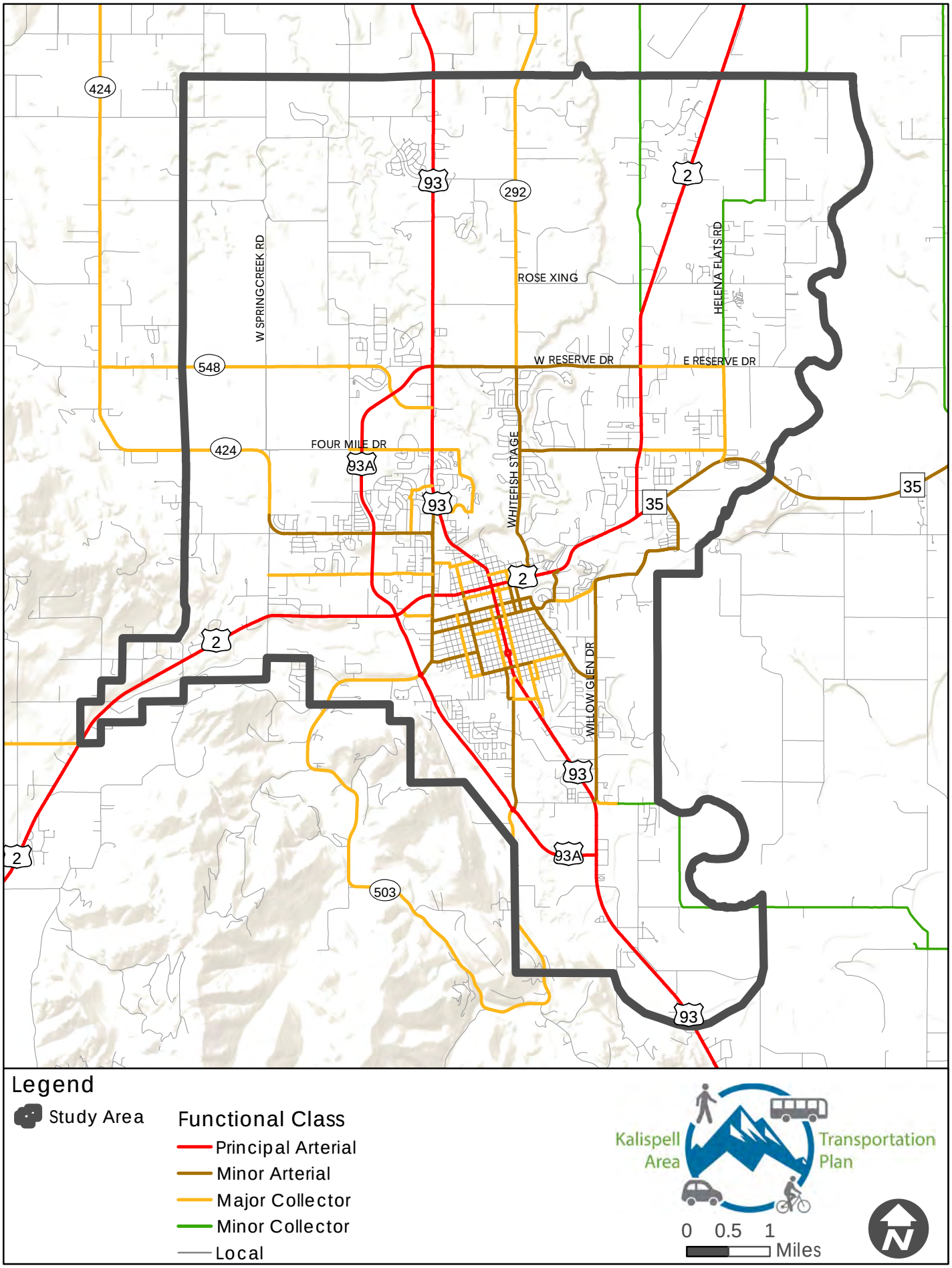
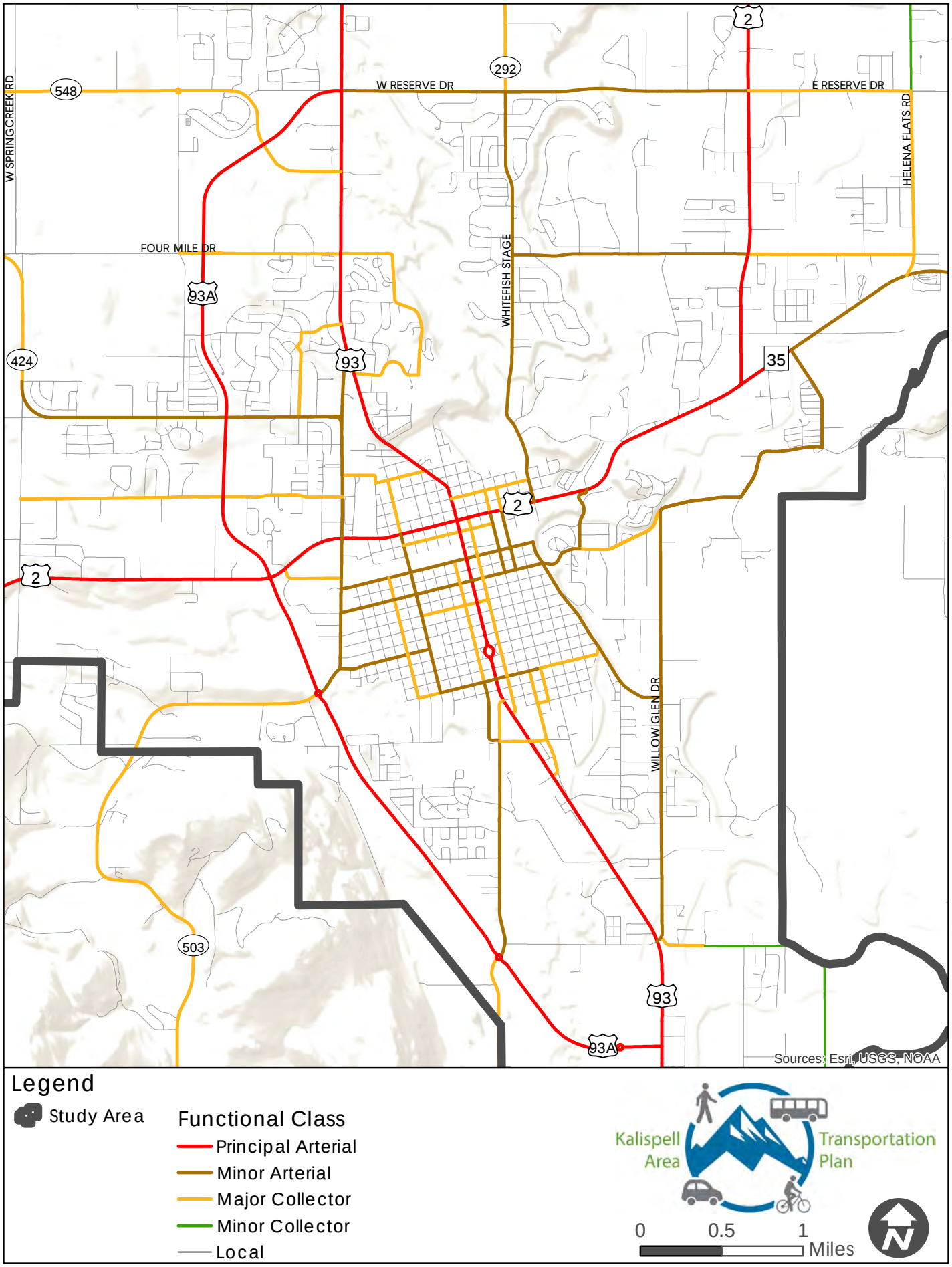


Figure 3.4: Functionally Classified Roadways Inset



Highway Systems in Montana

For the purpose of allocating state and federal highway funds, Montana's public highways and streets are placed on systems based in part on the functional classification system. "Upgrades" in functional classification and highway system designation do not automatically lead to increased funding for improvements. Factors such as funding availability, project eligibility, and project prioritization are equally important considerations. The following system designations are used in Montana to assist with programming and funding of roadways. Specific designations of these roadways within the study area are shown in Figure 3.5.

Federally Designated Highway Systems

National Highway System (NHS)

A federal system of public highways as defined in Title 23, USC and designated by Congress or the Secretary of Transportation that includes the Interstate System as well as other roads important to the nation's economy, defense, and mobility.

Interstate NHS

The Dwight D. Eisenhower National System of Interstate and Defense Highways consists of routes of highest importance to the nation, which connect, as directly as practicable, the principal metropolitan areas, cities, and industrial centers including important routes into, though, and around urban areas, serve the national defense and, to the greatest extent possible, connect at suitable border points with routes of continental importance in Canada and Mexico.

Non-Interstate NHS

Principal arterials other than the Interstate that serve major travel destinations and transportation needs, connectors to major transportation terminals, the Strategic Highway Network and connectors, and high priority corridors identified by law.

State Designated Highway Systems (MCA 60-2-126)

Primary Highway System

Highways functionally classified by MDT as either principal or minor arterials and selected by the Transportation Commission to be placed on the Primary Highway System.

Secondary Highway System

Highways functionally classified by MDT as either minor arterials or major collectors and selected by the Transportation Commission, in cooperation with the boards of county commissioners, to be placed on the Secondary Highway System.

Urban Highway System

Highways and streets in and near incorporated cities with populations of over 5,000 and within urban boundaries established by the Department, functionally classified as either urban arterials or major collectors, and selected by the Transportation Commission, in cooperation with local government authorities, to be placed on the Urban Highway System. [MCA 60-2-125(6)].

State Highways

State highways are a system of roads maintained by MDT, but not part of the NHS, Primary, Secondary or Urban Systems.

Maintenance Responsibility

Roadways in the study area are maintained by different agencies. MDT maintains US Highways such as Highway 93, Highway 2, and the Highway 93 Bypass. MDT is also responsible for State Highways and designated Primary and Secondary roadways such as Reserve Drive, Three Mile Drive, and Farm to Market. Flathead County maintains several roads throughout the study area. The remaining roads are maintained by the City of Kalispell.

Figure 3.6 demonstrates identified roadway maintenance obligations based on functional classification of minor collector or higher.

Figure 3.5: Highway Systems in the Study Area

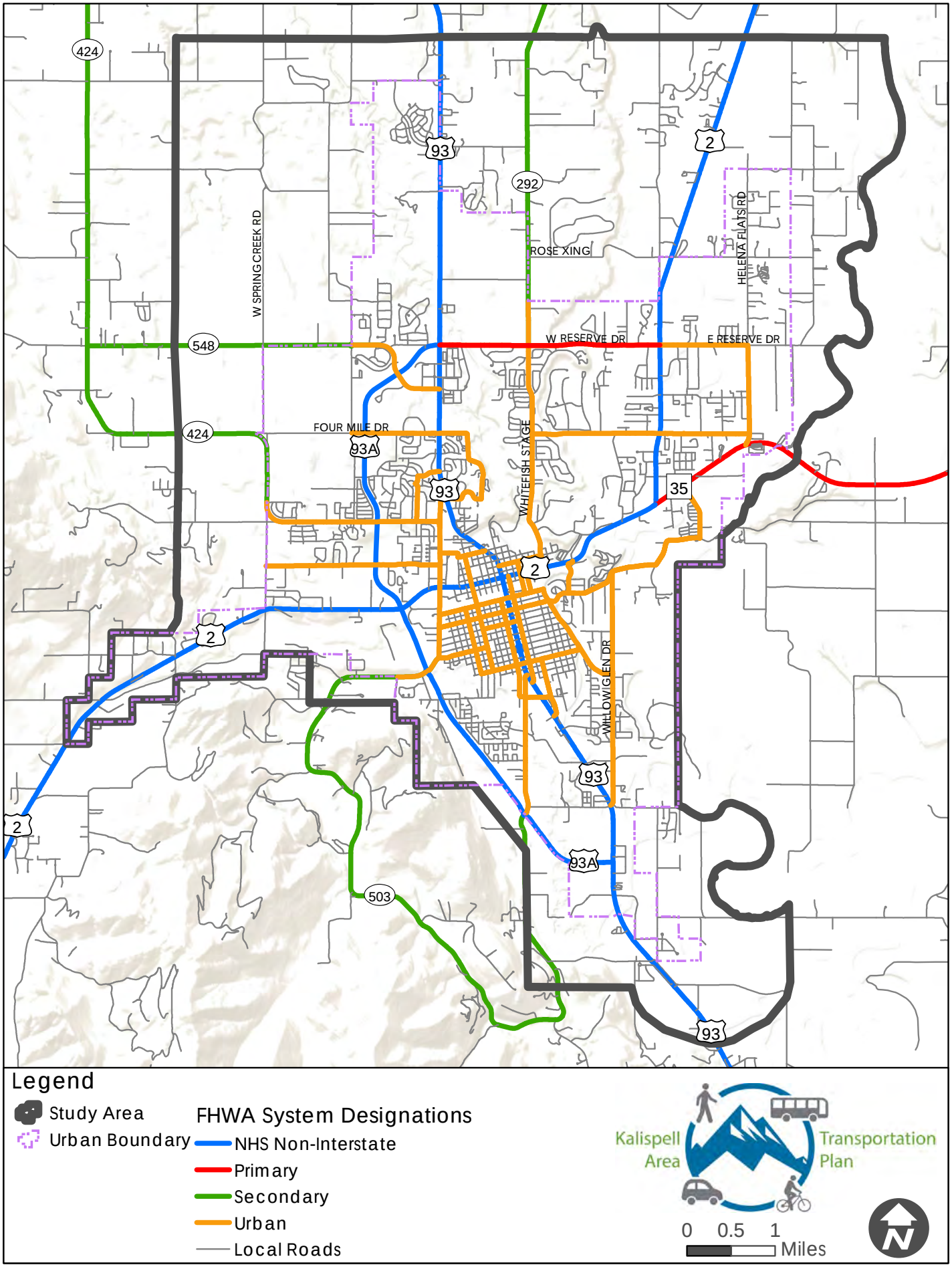
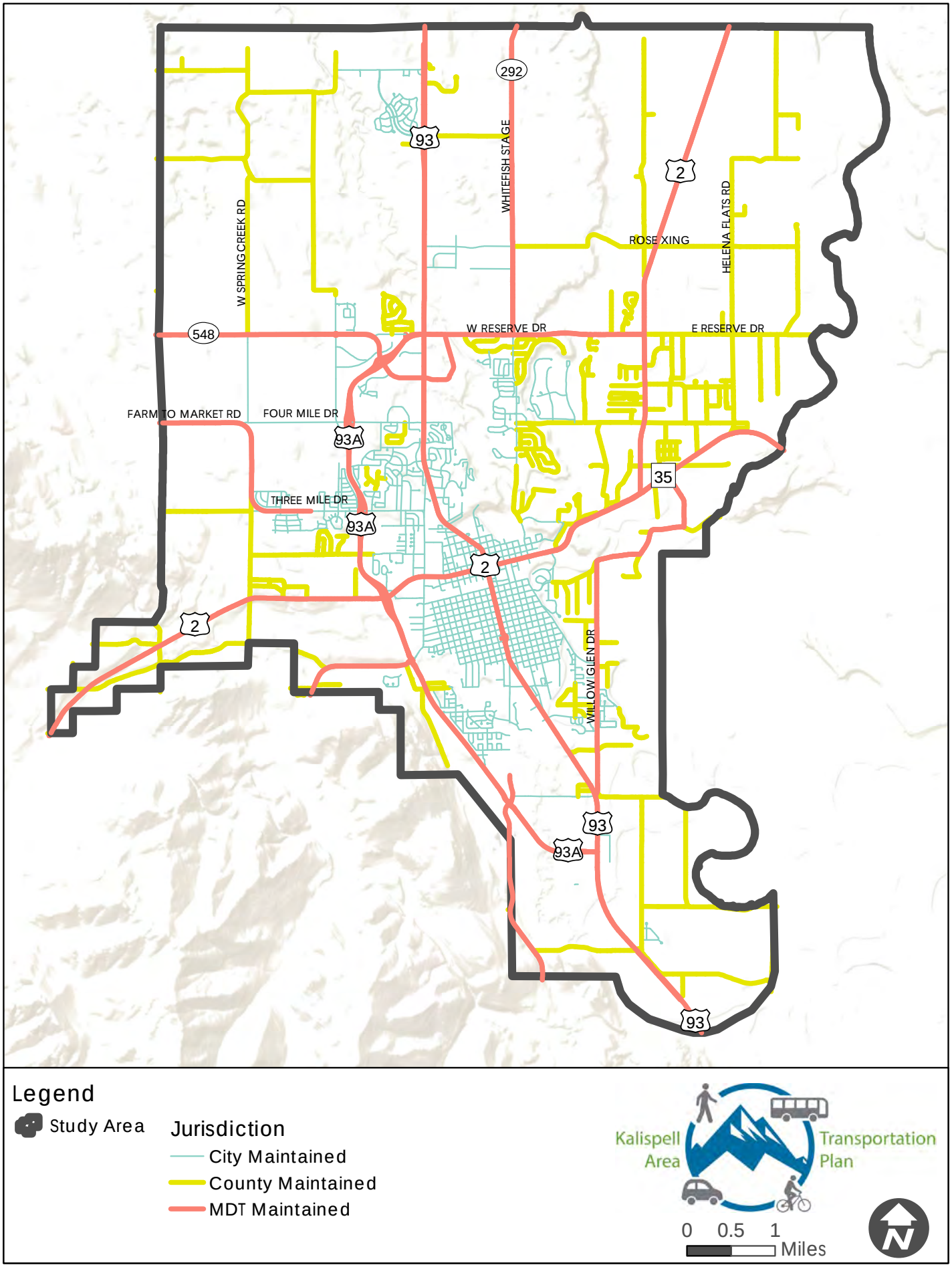


Figure 3.6: Roadway Maintenance Responsibility



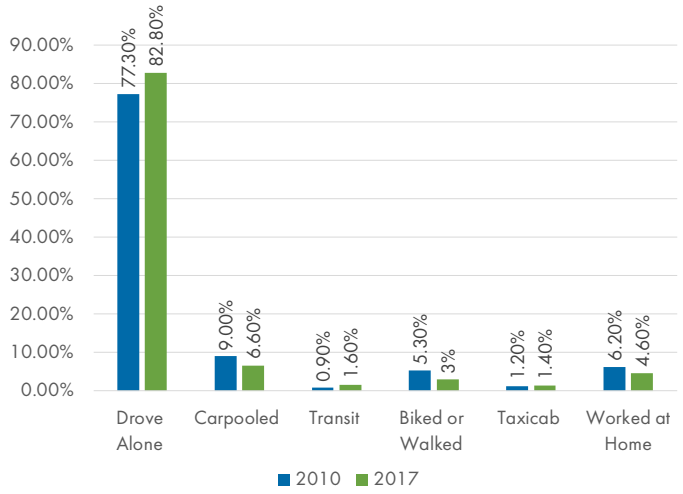
Travel Trends

Mode

Commuting data was gathered from the US Census Bureau which provides a readily available source of information on transportation choices. In the case of Kalispell, the five-year average from 2010 and 2017 was used to provide insight into the transportation choices in the community.

Figure 3.7 shows the modes of transportation to workplaces. The predominant means of commuting is the personal automobile—nearly 83 percent of people used a personal automobile to travel to work in 2017. This mode of transportation increased between 2010 and 2017 by five and a half percent. The use of carpooling has declined by almost two and a half percent while transit has increased by 0.7 percent.

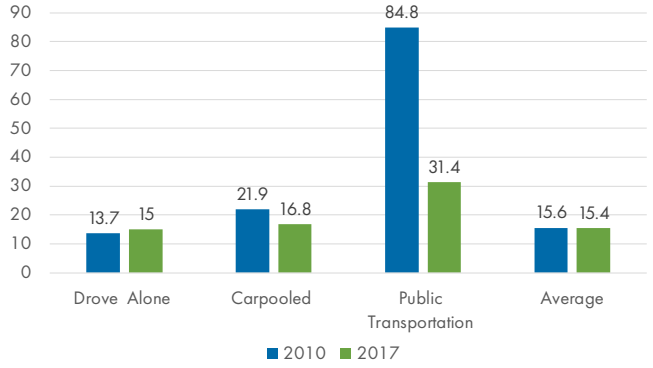
Figure 3.7: Modes of Transportation to Workplaces



Travel Time

Since 2010, the average travel time has remained relatively unchanged at around 15 minutes per trip. The median time to travel on transit has decreased by nearly 63 percent, which is likely related to increased levels of service within the city of Kalispell. Travel time for people who drive alone increased slightly, while those carpooling saw a decrease in their average travel time between 2010 and 2017. Figure 3.8 shows the average travel time to work by mode.

Figure 3.8: Average Travel Time to Work by Mode



Travel Demand Model

Travel demand models are computer models that are often used in area-wide transportation planning. These models use spatially allocated demographic data like the number of households and number of jobs which will be used to estimate future traffic volumes and traffic patterns with expected demographic changes. The MDT-maintained model for the Kalispell area was developed using the TransCAD software.

Base Year (2017) Modeling

To best ensure future year (2040) modeled volumes are accurate enough for transportation planning purposes, travel demand models are first developed and applied for existing conditions (commonly referred to as a base year model). Base year modeled volumes are then compared to field-collected traffic counts using FHWA-prescribed statistical analysis. For the 2017 base year, the Flathead County model results are within FHWA-accepted deviations, meaning the model is sufficiently calibrated and validated for use in future conditions travel demand modeling.

A map showing 2017 base year daily modeled traffic volumes is shown in Figure 3.10 for the entire study area and Figure 3.11 for the urban area.

Base Year Demographic Data

Modeled traffic volumes are a function of the number of households and the number of jobs in the Kalispell area. Travel demand models segment the area into geographies called Traffic Analysis Zones (TAZ), with households and jobs being allocated to each TAZ. 2017 base year household and employment totals by TAZ are shown in Figure 3.12 and Figure 3.13, respectively. More analysis of existing and projected demographic data to support Move 2040 is included in Chapter 4.

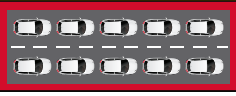
Base Year Volume-to-Capacity Ratios. Travel demand model results can be used to establish planning-level volume-to-capacity ratios (V/C ratios) for study area roadways. These V/C ratios are generally used to identify locations with the most significant capacity constraints that require more detailed and operations-based traffic analysis.

At a planning-level, roadway capacities are a function of roadway functional classifications, speed limits, and the number of travel lanes. For analysis purposes, V/C ratios have been translated to roadway level of service (LOS) based on federal research and guidelines. LOS is a letter grade used to describe traffic operations where LOS A provides travel with nearly no delay and LOS F represents gridlocked travel. Generally, LOS D or worse is considered deficient and in need of improvements. Figure 3.9 demonstrates the level of service thresholds and operations, with the level of service thresholds by V/C ratios shown in Table 3.8.

Based on planning-level capacity analysis, the following roadways experience significant congestion under current conditions:

- US 93 between 12th Street and 8th Street (Downtown Kalispell) operates at LOS F.
- US 93 between Wyoming Street and Four Mile Drive operates at LOS E/F.
- US 2 between West Valley Drive and US 93 Alternative (Kalispell Bypass) operates at LOS E.
- West Reserve Drive between US 93 and Whitefish Stage operates at LOS E.

Figure 3.9: Level of Service Descriptions

CAPACITY	TRAFFIC FLOW	DESCRIPTION
Under		**FREE FLOW** Low volumes and no delays.
		**STABLE FLOW** Low volumes and speeds dictated by travel conditions.
		**STABLE FLOW** Speeds and maneuverability closely controlled due to higher volumes.
Approaching		**RESTRICTED FLOW** Higher density traffic restricts maneuverability and volumes approaching capacity.
At		**UNSTABLE FLOW** Low speeds, considerable delays, and volumes at or slightly over capacity.
Over		**FORCED FLOW** Very low speeds, volumes exceed capacity, and long delays with stop-and-go traffic.

As shown in Figure 3.14 and Figure 3.15, some other roadways have small segments operating at LOS D or worse, however these issues are mainly attributable to intersection operations.

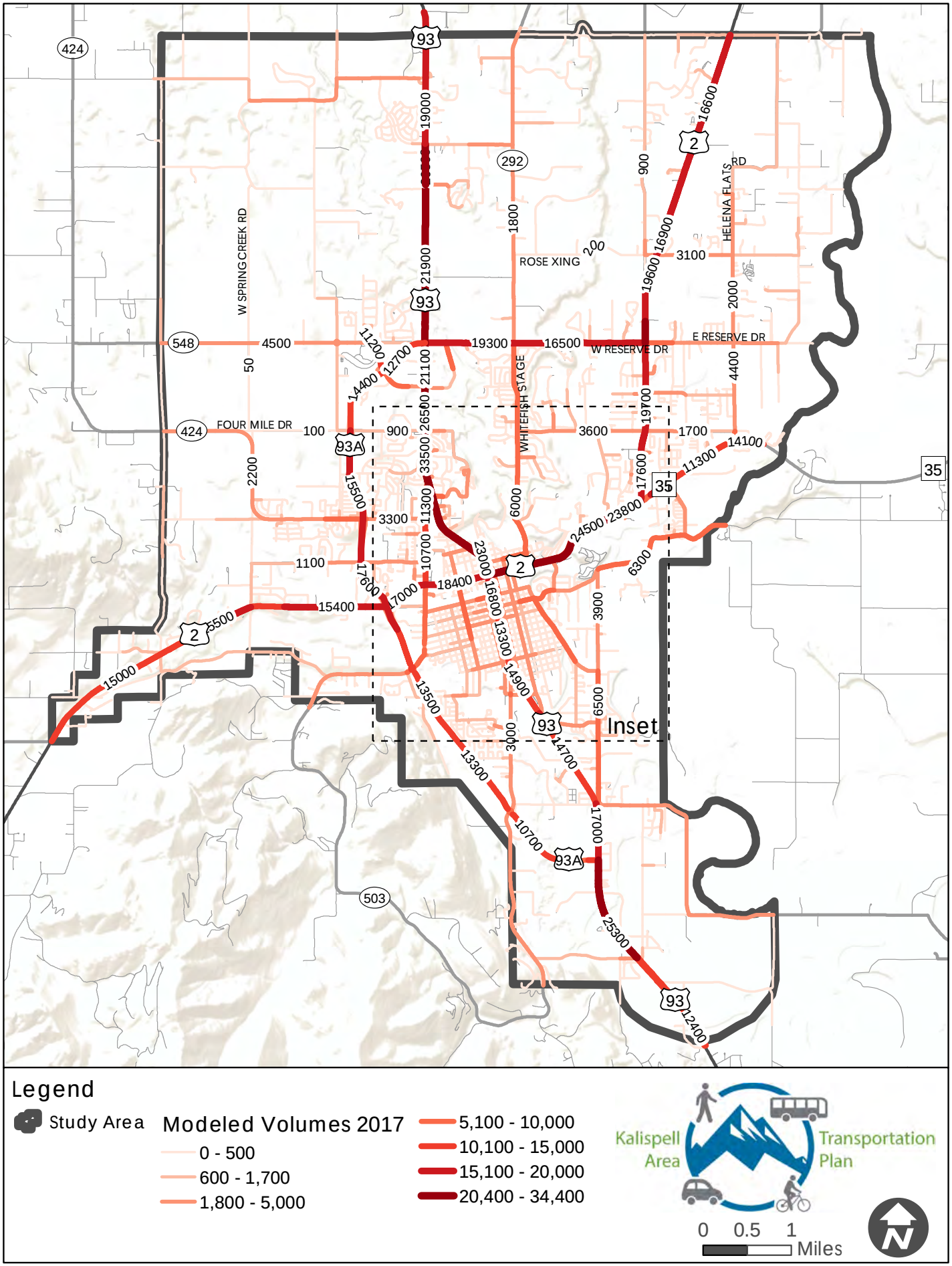
Vehicle Miles Traveled and Vehicle Hours. Traveled Area-wide traffic operations are often quantified in terms of vehicle miles traveled (VMT) and vehicle hours traveled (VHT) throughout an entire study area. VMT and VHT become especially useful metrics when comparing an expanded/improved area-wide roadway network to a base condition to understand the overall community benefit experienced through a series of significant transportation investments.

Table 3.8: Level of Service Thresholds by Volume-to-Capacity Ratio

V/C Ratio	*Level of Service*	*Description*
Under 0.6	LOS A	Near free-flow traffic.
0.6 to 0.7	LOS B	Minor delays.
0.7 to 0.8	LOS C	Some delays, but not resulting in significant traffic congestion.
0.8 to 0.9	LOS D	Delays with some traffic congestion.
0.9 to 1.0	LOS E	Significant delays with significant traffic congestion, approaching capacity.
1.0+	LOS F	Breakdown of traffic flow, major traffic congestion.

Source: NCHRP 387 – Planning Techniques to Estimate Speeds and Services Volumes for Planning Applications

Figure 3.10: 2017 Modeled Volumes in Study Area



Legend

Study Area

Modeled Volumes 2017

0 - 500

600 - 1,700

1,800 - 5,000

5,100 - 10,000

10,100 - 15,000

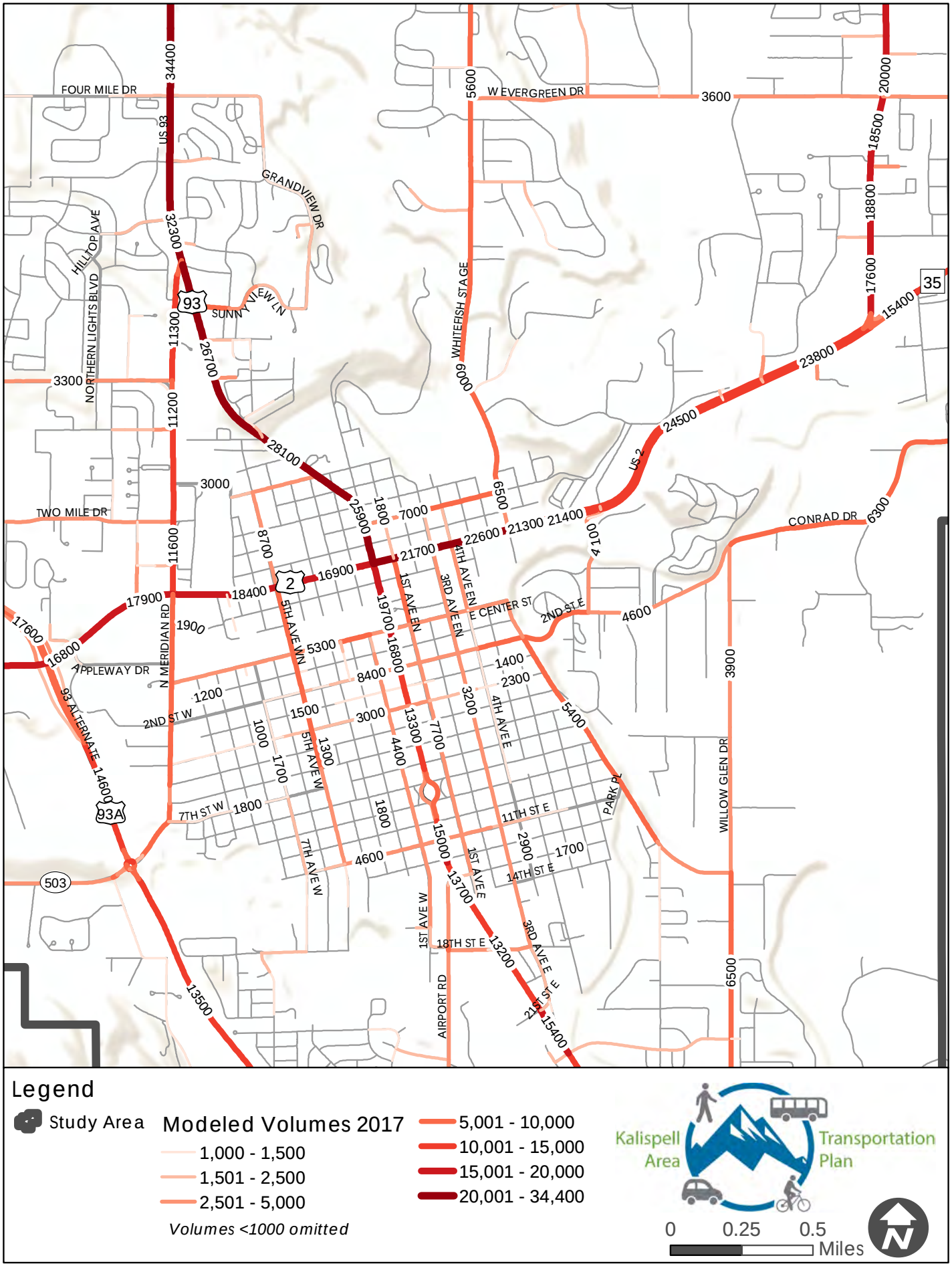
15,100 - 20,000

20,400 - 34,400

Kalispell Area Transportation Plan

0 0.5 1 Miles

Figure 3.11: 2017 Modeled Volumes Inset



Legend

Study Area

Modeled Volumes 2017

1,000 - 1,500
1,501 - 2,500
2,501 - 5,000
Volumes <1000 omitted

5,001 - 10,000
10,001 - 15,000
15,001 - 20,000
20,001 - 34,400

Kalispell Area Transportation Plan

0 0.25 0.5 Miles

Figure 3.12: 2017 Households per Acre

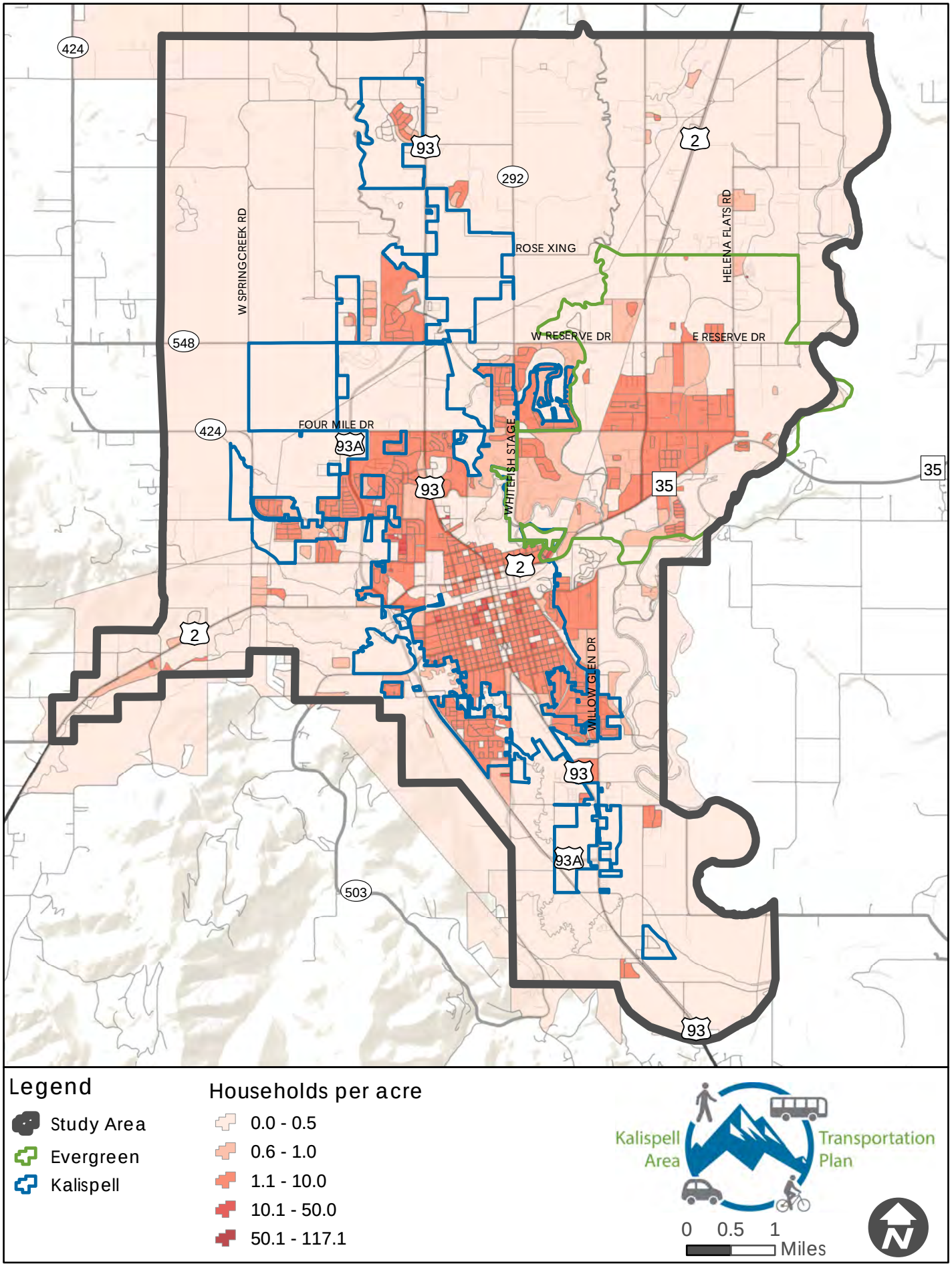


Figure 3.13: 2017 Jobs per Acre

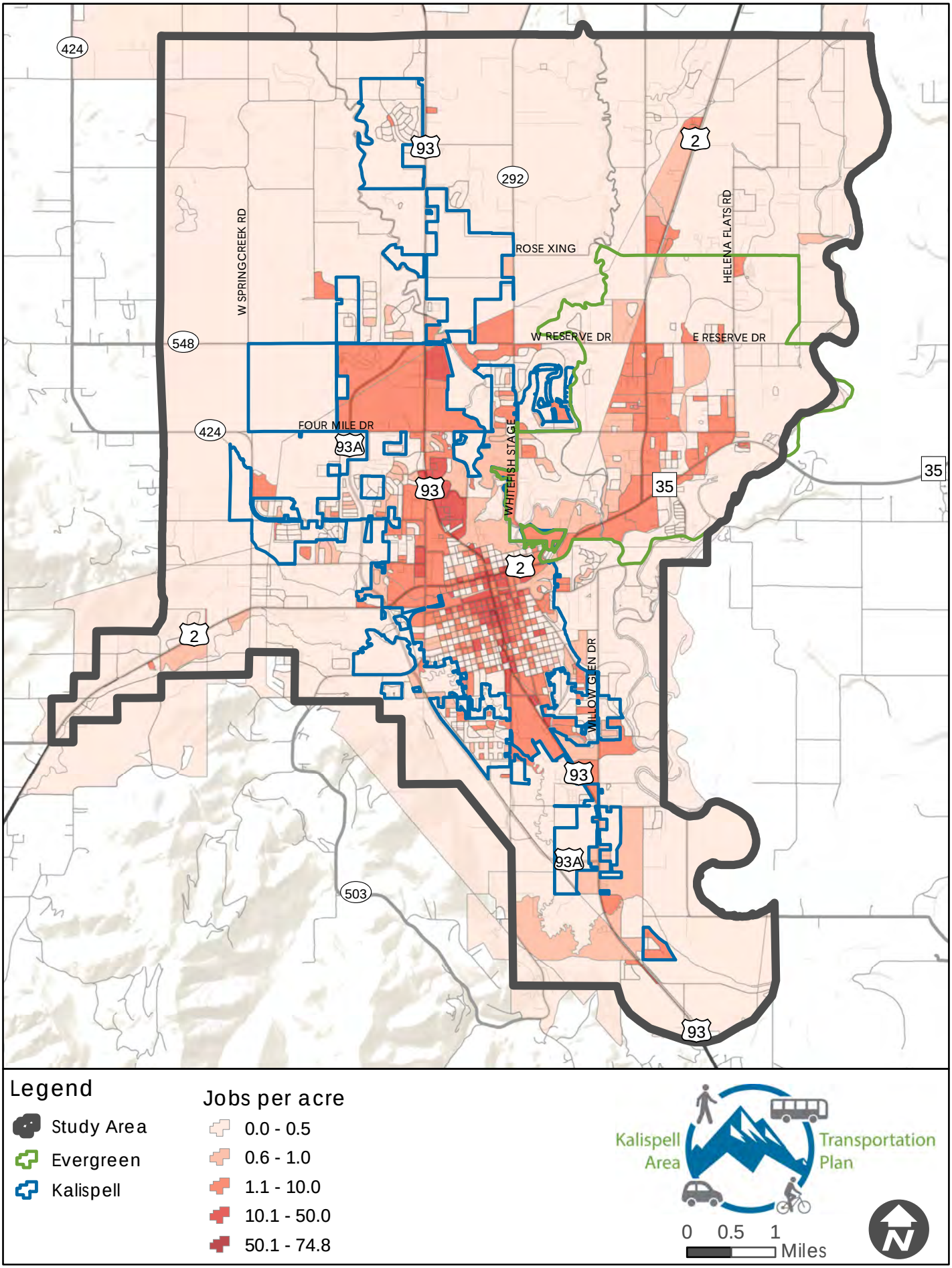


Figure 3.14: Volume-to-Capacity Ratios in Study Area

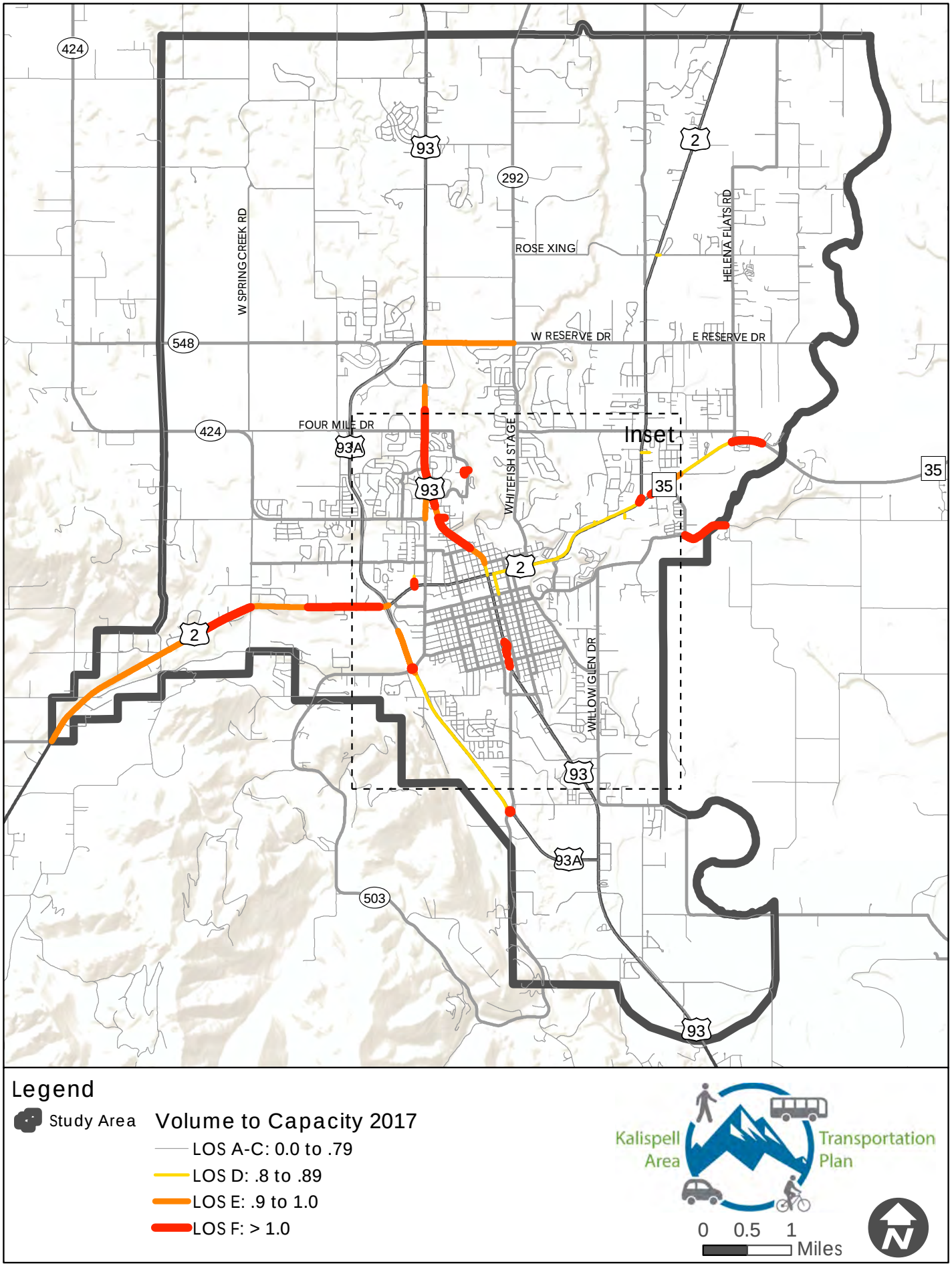
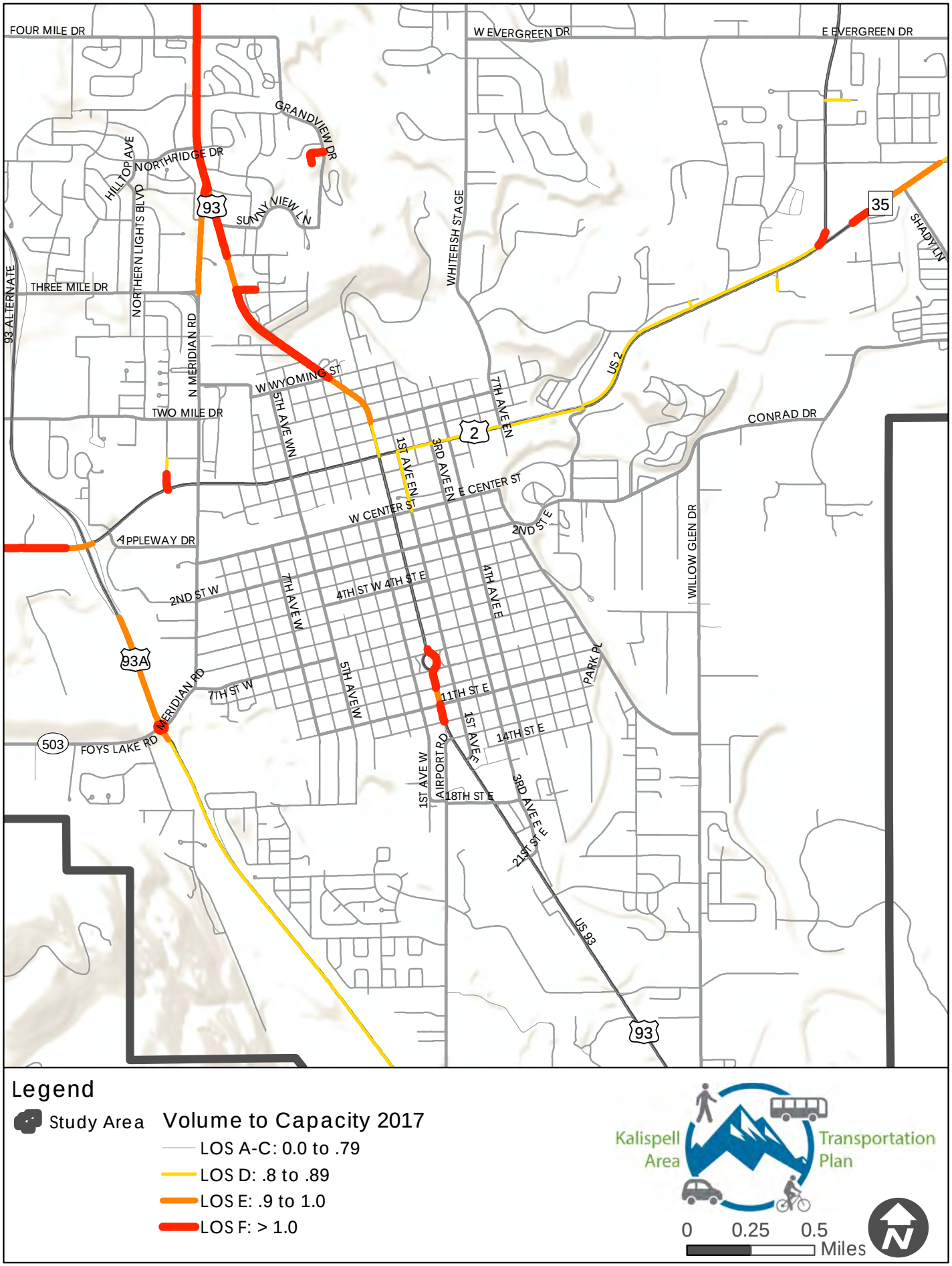


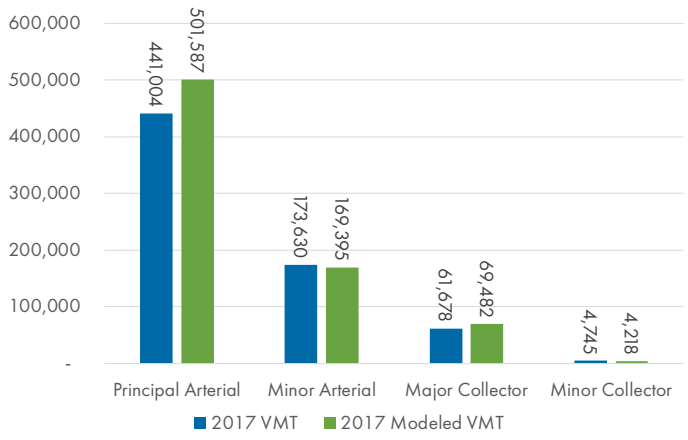
Figure 3.15: Volume-to-Capacity Ratios Inset



Actual Versus Modeled VMT

For the Kalispell urban area, the 2017 field-collected daily VMT was approximately 681,000 compared to the modeled daily VMT of 733,000, meaning the travel demand model estimated around 8% more daily VMT than actual conditions. A breakdown of actual VMT versus modeled VMT by functional classification is shown in Figure 3.16.

Figure 3.16: 2017 Actual Versus Modeled VMT



Modeled VHT

Actual VHT data is not available for comparison. However modeled VHT sums up to approximately 24,500 hours per day for the study area. Later in this study, potential future roadway networks and their associated VHT totals can be compared to a base condition to understand area-wide travel-time benefits gained through transportation investments.

StreetLight Data

StreetLight data was used to supplement existing daily traffic volumes and travel demand model results to provide a better understanding of the existing system operations and travel patterns. StreetLight utilizes anonymized location records from smart phones and navigation devices in cars and trucks to analyze regional travel patterns. The StreetLight data analysis was conducted using the TAZ data exports from the MDT Travel Demand Model and was then combined into similar zone structures to meet data size minimums. Additional pass-through zones (referred to here as "external zones") were added to quantify traffic entering or exiting on regional routes, and interior segment analysis zones were added to assess congestion along specific routes. StreetLight data results were not derived from base year data but were based off an average of 2018 yearly data and then calibrated to 2018 daily traffic volumes published by MDT for external zones on regional roadways. The StreetLight data TAZ zone numbering and additional external and segment analysis zones are shown in Figure 3.18.

Overall Travel Patterns

There were an estimated 367,500 daily trips in the study area based on origin-destination (O-D) data from 33,000 unique devices. These daily trips decreased by as much as 26 percent during the fall-off peak season (November) to 272,000 daily trips and increased up to 10 percent during the summer months (June through August). The O-D data allowed for the analysis of regional and local trips. Figure 3.17, Figure 3.19 on page 36, and Figure 3.20 on page 36 show the origin and destination analysis of traffic for high-volume O-D zones, as well as the external zones. The high-volume O-D zones shown in the figures are those that saw the biggest variation in seasonal volumes.

Figure 3.17: Seasonal Traffic by Zone

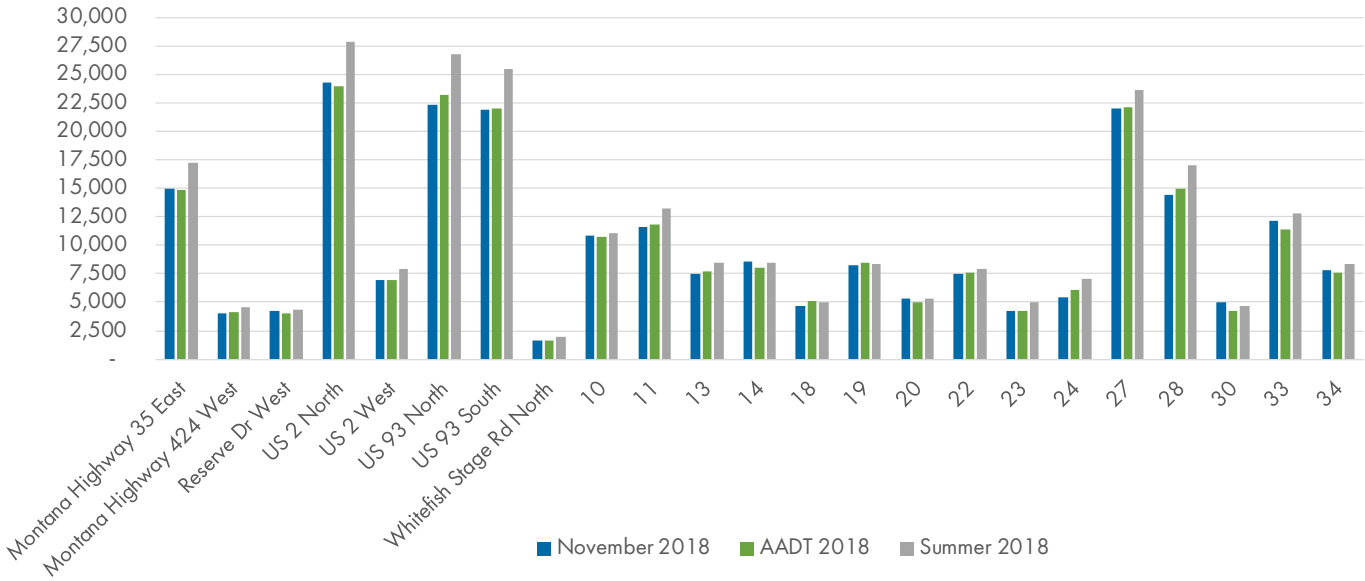


Figure 3.18: StreetLight Daily Destination Zone Volumes

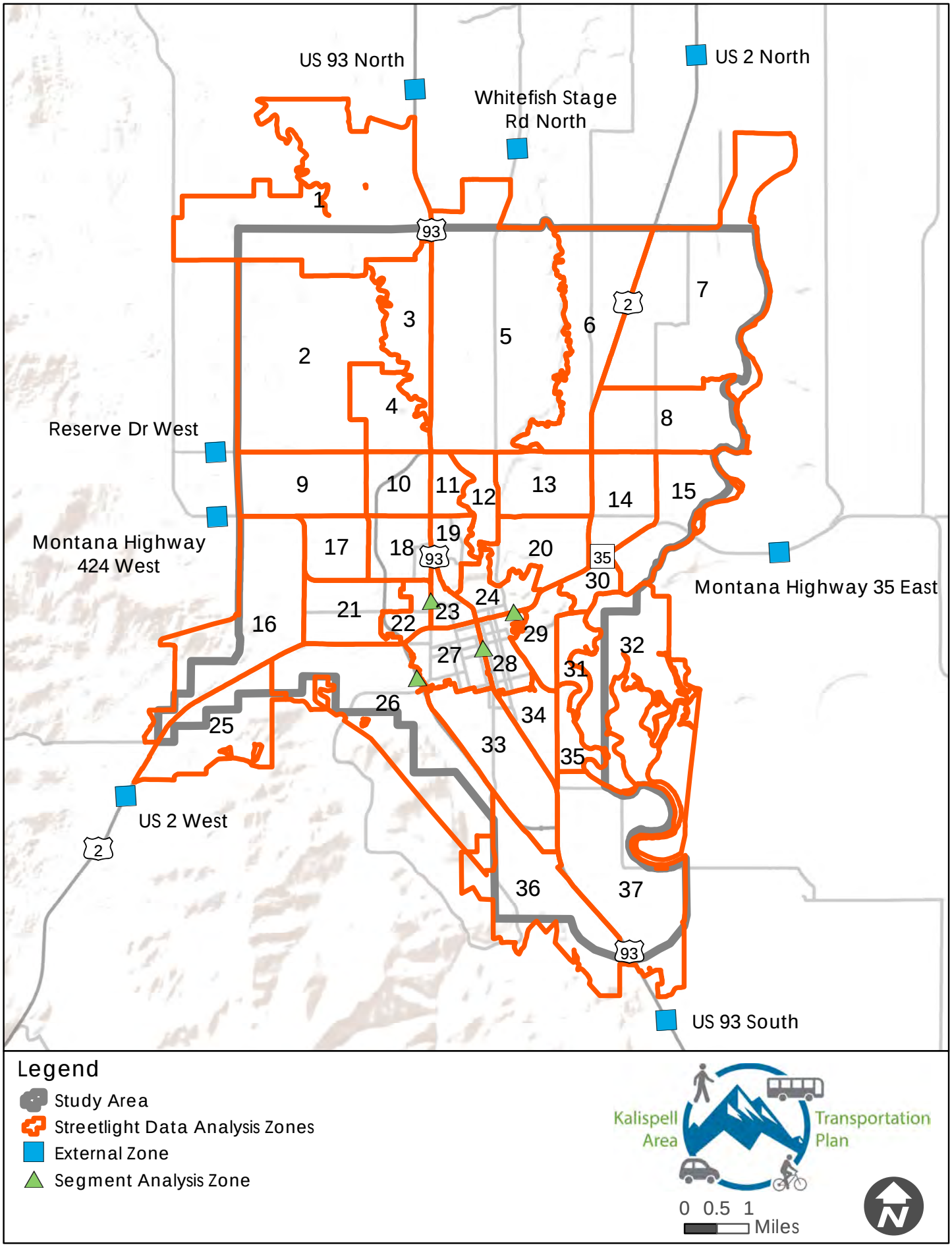


Figure 3.19: Total Daily Traffic by Origin Zone

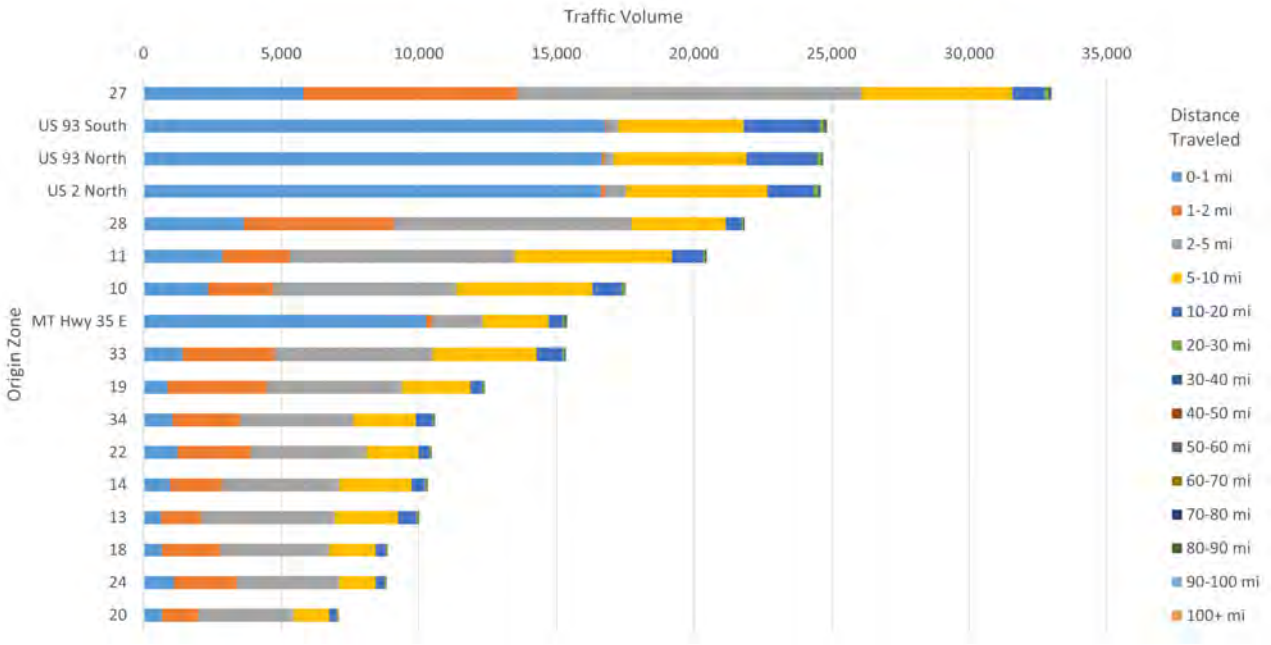
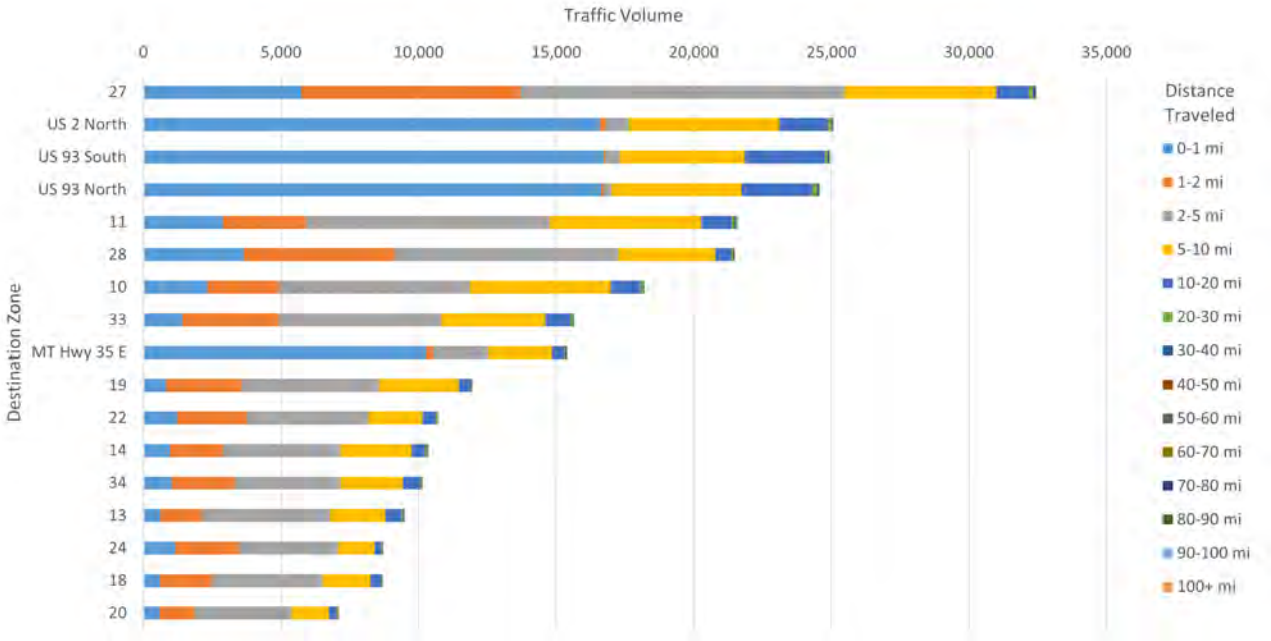


Figure 3.20: Total Daily Traffic by Destination Zone



Seasonal Traffic Changes

Traffic using US 93 to the north and south of Kalispell saw a five percent increase (around 1,000 trips) in its daily traffic during the summer months (June through August). In comparison, regional summer trips on US 93 within Kalispell increased 35 percent, around 600 daily trips, during the same period. The overall trips to-and-from Kalispell on US 2 and US 93 saw a 15 percent increase, between 3,000 and 4,000 daily trips. Figure 3.17 on page 34 shows the volume changes between off-season (November), yearly average daily traffic, and high-season (June through August) for select high-volume O-D zones and external zones.

Origin and Destination Analysis Results

Six corridors were selected for a more detailed analysis of current operational dynamics based on the StreetLight data.

US 93A (Kalispell Bypass). US 93A is impacting trips to-and-from Kalispell as well as regional trips traveling through Kalispell. The O-D data shows that regional trips over 10 miles in length utilize US 93A, instead of US 93, resulting in fewer trips through Downtown Kalispell.

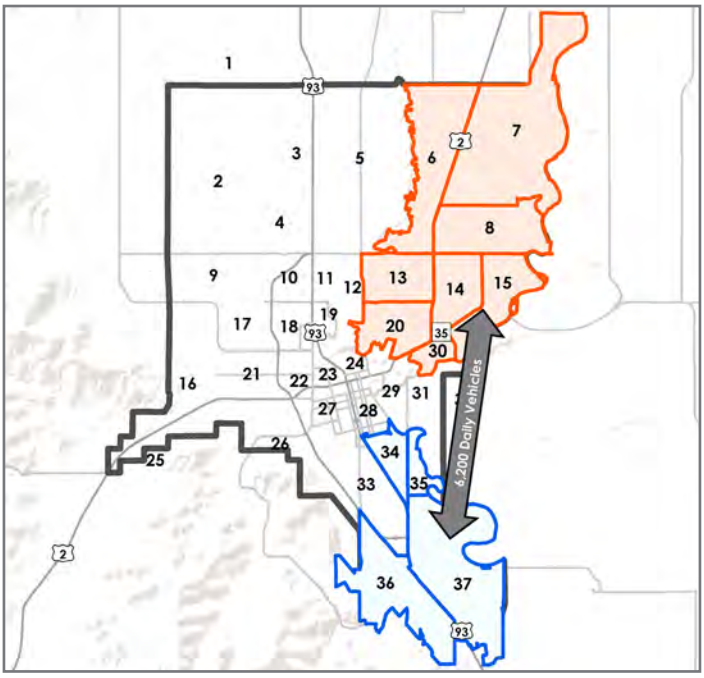
- Sixteen percent, or 1,500 trips per day, of northbound US 93 traffic and eight percent, 800 trips per day, of southbound US 93 traffic is regional traffic traveling through Kalispell. Approximately two-thirds of this traffic uses the US 93A instead of US 93 through Downtown Kalispell.
- Thirteen percent of traffic using US 93 had trips greater than 10 miles compared to 46 percent of traffic using US 93A had trips greater than 10 miles.

Willow Glen Drive. Willow Glen Drive has long been discussed as a future "bypass" on the east side of Kalispell. While it may never be designed or designated like US 93A, it has the potential to be a three-lane urban minor arterial providing an alternate route from US 93 to the south and US 2 to the north.

- 6,200 daily trips from US 93 south and zones in southeast Kalispell are destined to US 2 north or zones in northeast Kalispell.
- 25 percent of trips that may use a Willow Glen Drive connection are originated at or destined for US 2 north.
- 31 percent of trips that may use a Willow Glen Drive connection are originated at or destined for US 93 south.
- Although both major regional roadways represent a high percentage of traffic, only 510 daily trips, or nine percent, are specifically traveling between US 2 north and US 93 south. This means 91 percent of traffic either starts or ends in northeast or southeast Kalispell.

Figure 3.21 shows the Willow Glen Drive travel patterns.

Figure 3.21: Willow Glen Drive Zone Analysis

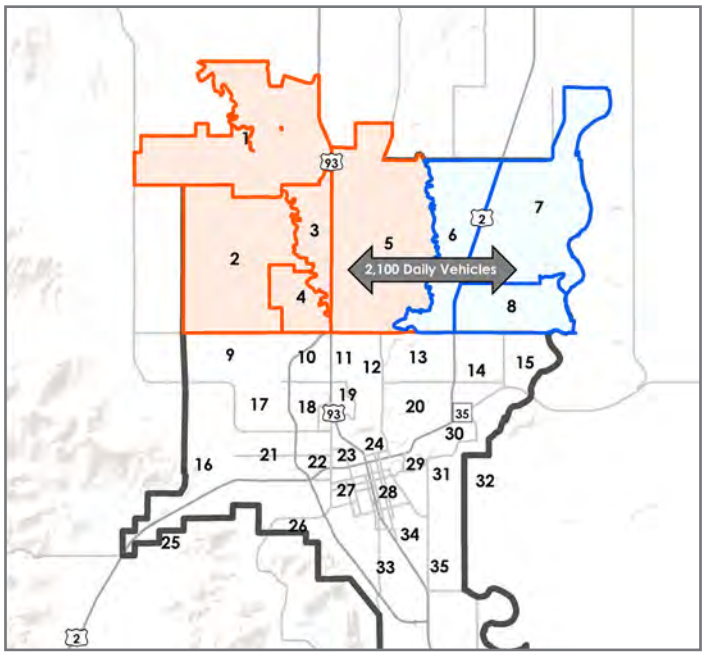


Rose Crossing. Rose Crossing is an existing east-west connection from US 2 to US 93. With congestion on West Reserve Drive increasing over the past several years, Rose Crossing has become a popular cut through between US 2 and US 93.

- Traffic from US 2 north and northeastern zones estimate westbound traffic at about 1,050 daily trips with 43 percent to zone 5 and 22 percent to northbound US 93.
- Traffic from US 93 north and northwestern zones estimate eastbound traffic at about 1,050 daily trips with 47 percent to northbound US 2 and 23 percent to zone 6.
- These traffic estimates match 2019 daily traffic volumes of 1,950 daily vehicles using Rose Crossing.

Figure 3.22 shows the travel patterns for Rose Crossing.

Figure 3.22: Rose Crossing Zone Analysis

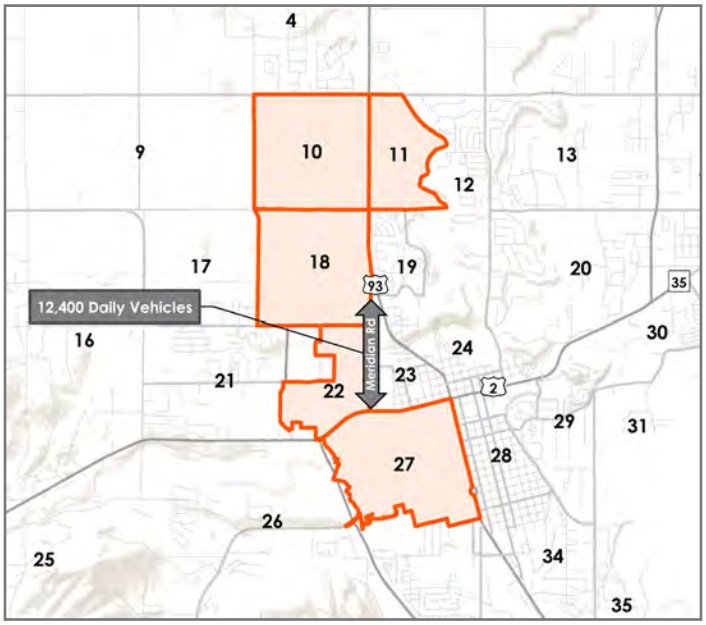


Meridian Road. Meridian Road serves as a northwest Kalispell to downtown Kalispell connection for local traffic. A middle filter analysis (looking only at traffic using Meridian Road between Three Mile Drive and US 2) was conducted to understand the origins and destinations of traffic using this connection.

- The five highest traffic generator zones using the north-south section of Meridian Road is local traffic traveling between zones 10, 11, 18, 22, and 27, which represents 53 percent of total traffic (6,520 trips).
- 77 percent of traffic using Meridian Road has a trip length less than 10 miles.
- There is a clear northwest and southeast regional use of Meridian Road from MT 424 to downtown Kalispell, representing 600 trips.

Figure 3.23 shows the travel patterns for Meridian Road.

Figure 3.23: Meridian Road Zone Analysis

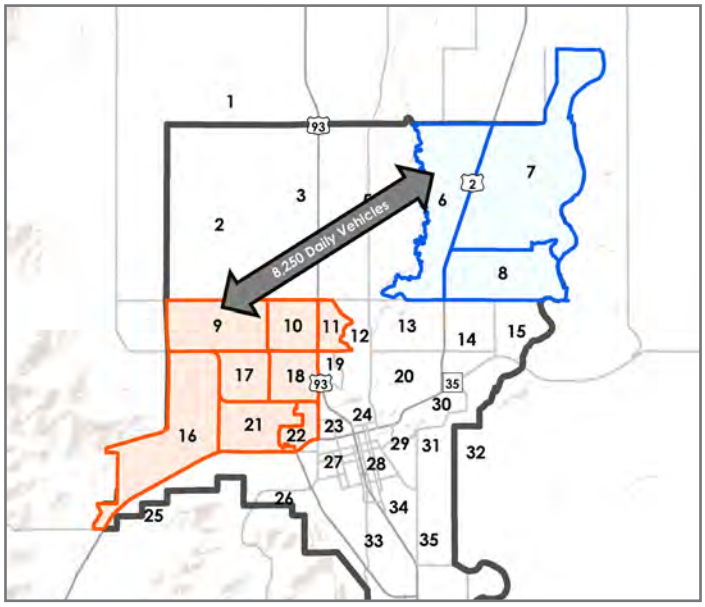


West Reserve Drive. West Reserve Drive has seen an increase in traffic due to the US 93A completion, which creates a continuous east-west route from US 93A to US 2 on the east. About 8,250 daily vehicles are traveling on US 93A and West Reserve Drive between the zones highlighted in Figure 3.24. Only 1,100 daily trips were identified using a northwest to southeast and southeast to northwest route across West Reserve Drive.

- 62 percent of traffic using the west portion of West Reserve Drive has a trip length greater than 10 miles. For trips greater than 10 miles, 44 percent are between 10 and 20 miles and take more than 20 minutes.
- Less than two percent of traffic going to northeastern zones, Whitefish Road, or US 2 is coming from West Reserve Drive at MDT 424 or from zones one, two, or three. About 30 percent of traffic using West Reserve Drive is coming from US 93A, while nearly 50 percent is coming from zones 10 and 11.

Figure 3.24 shows the travel patterns for West Reserve Drive.

Figure 3.24: West Reserve Drive Zone Analysis

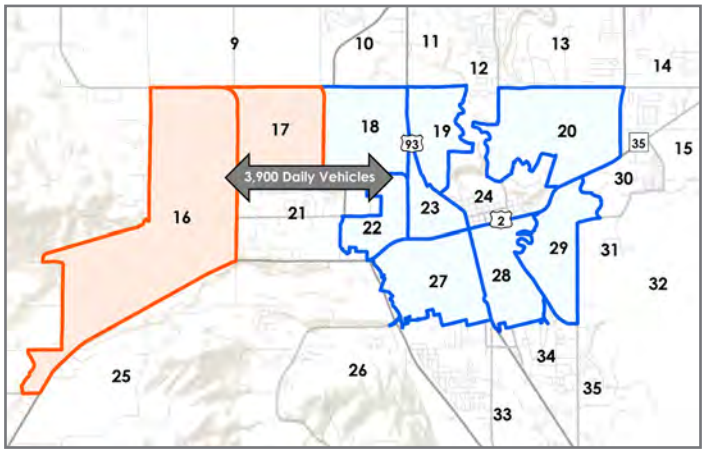


Three Mile Drive. Development to the west continues to impact Three Mile Drive, with most trips destined for Downtown Kalispell and surrounding areas.

- 50 to 60 percent of traffic using Three Mile Drive has a destination in zones 18, 19, 22, 23, 27, and 28 in Downtown Kalispell.
- Four percent is destined for US 93 south, two percent for US 2 west, and 1.5 percent for US 93 north. The rest is spread throughout the outer zones.

Figure 3.25 shows the travel patterns for Three Mile Drive.

Figure 3.25: Three Mile Drive Zone Analysis



Commercial Traffic

Commercial traffic in StreetLight was quantified to understand the major truck patterns in and through Kalispell. While commercial traffic includes all vehicles used for business activities, the metrics from this analysis did identify important traffic trends between external zones and high commercial traffic zones in Kalispell.

Regional results identified US 93 south is the highest truck traffic roadway entering Kalispell representing 33 percent of regional truck traffic in Kalispell. Both US 2 north and US 93 north represent around 22 percent of truck traffic entering Kalispell. East to west regional truck traffic is much less with only 10 percent using US 2 west and 11 percent using MT Highway 35 east.

StreetLight origin-destination (O-D) zones identified as having a higher share of commercial traffic versus all traffic include zones 33, 34, and 37 on the south side of Kalispell which include the Kalispell Airport and many commercial type businesses along US 93. Zone 14 was also identified as having a large share of truck traffic comparatively due to several commercial and shipping companies (FedEx/USPS) being located along US 2 in Evergreen.

Figure 3.26 shows the commercial traffic travel trends through the Kalispell area.

Travel Time/Travel Speed

Travel times along the US 93 and US 93A were quantified to compare the travel time savings that the bypass has provided regional traffic through Kalispell. For southbound traffic, US 93A provides a nearly 10 minute shorter trip for most traffic. Travel times on US 93A are under 20 minutes for 62 percent of the traffic compared to just 13 percent of traffic using US 93. Average travel speeds on US 93A are 53 miles per hour compared to 37 miles per hour on US 93. Average travel times and speeds on US 93 and US 93A are shown in Figure 3.27 and Figure 3.28, respectively.

Figure 3.26: Commercial Traffic Travel Trends

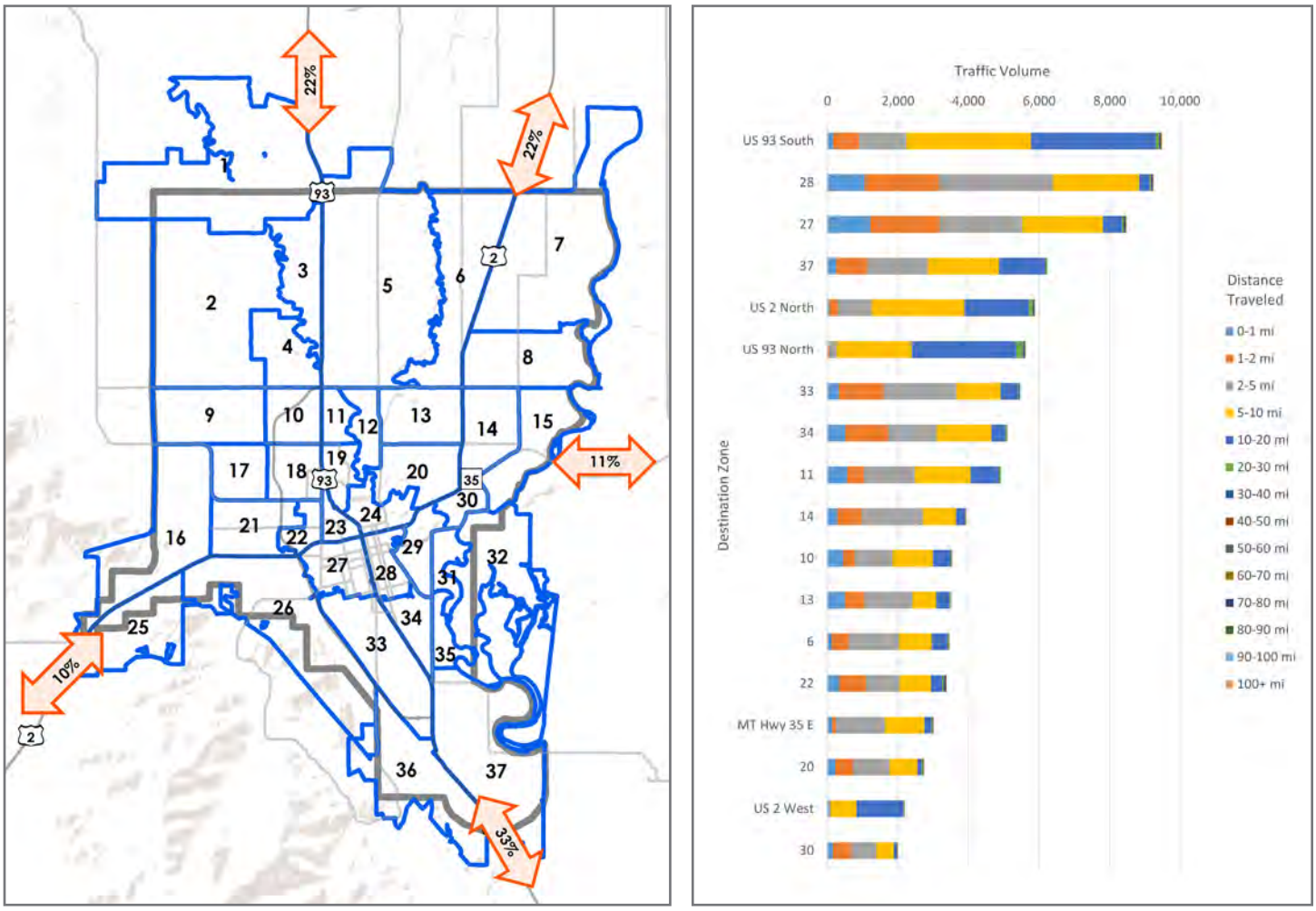


Figure 3.27: US 93 South to US 93 North Trip Duration Comparison

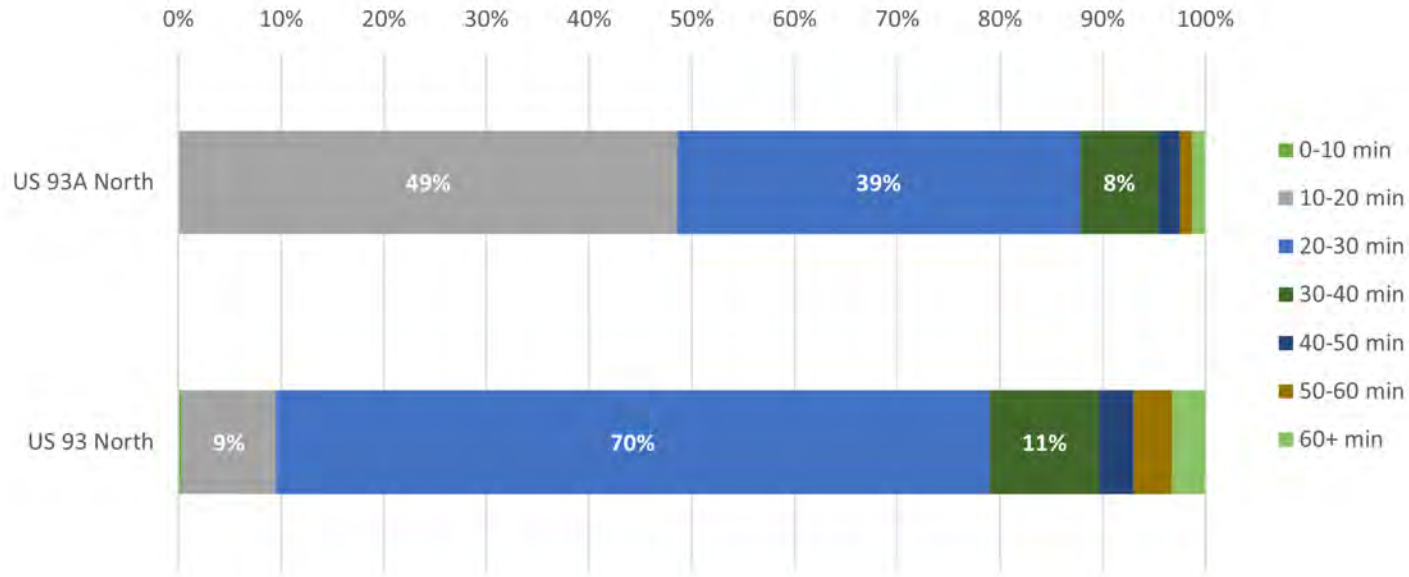
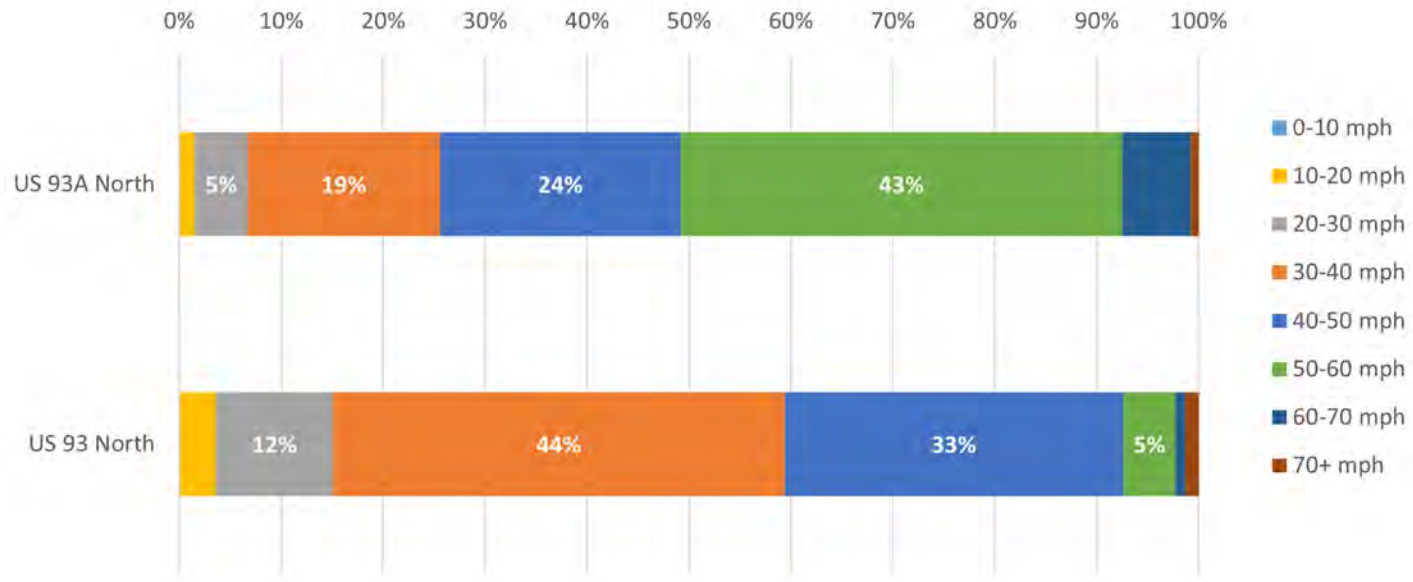


Figure 3.28: US 93 South to US 93 North Average Speed Comparison



Congestion

StreetLight uses existing data to calculate congestion and level of delay.

- During the AM Peak (6 AM to 10 AM), US 2 and US 93 in downtown operate with 21 percent and 30 percent congestion, respectively. This means that US 2 is operating at LOS E or worse for 50 minutes while US 93 is deficient for 72 minutes.
- During the PM Peak (3 PM to 7 PM), US 2 and US 93 in downtown operate with 33 percent and 40 percent congestion, respectively. This means that US 2 is operating at LOS E or worse for 79 minutes while US 93 is deficient for 96 minutes. Meridian Road also exhibits more congestion in the PM Peak showing 22.8 percent congestion.

Figure 3.29 and Figure 3.30 shows the AM and PM peak hour levels of congestions. The maps included in these figures demonstrate the level of congestion at each location, with green indicating the lowest congestion and red indicating the highest congestion areas.

Figure 3.29: AM Peak Hour Congestion

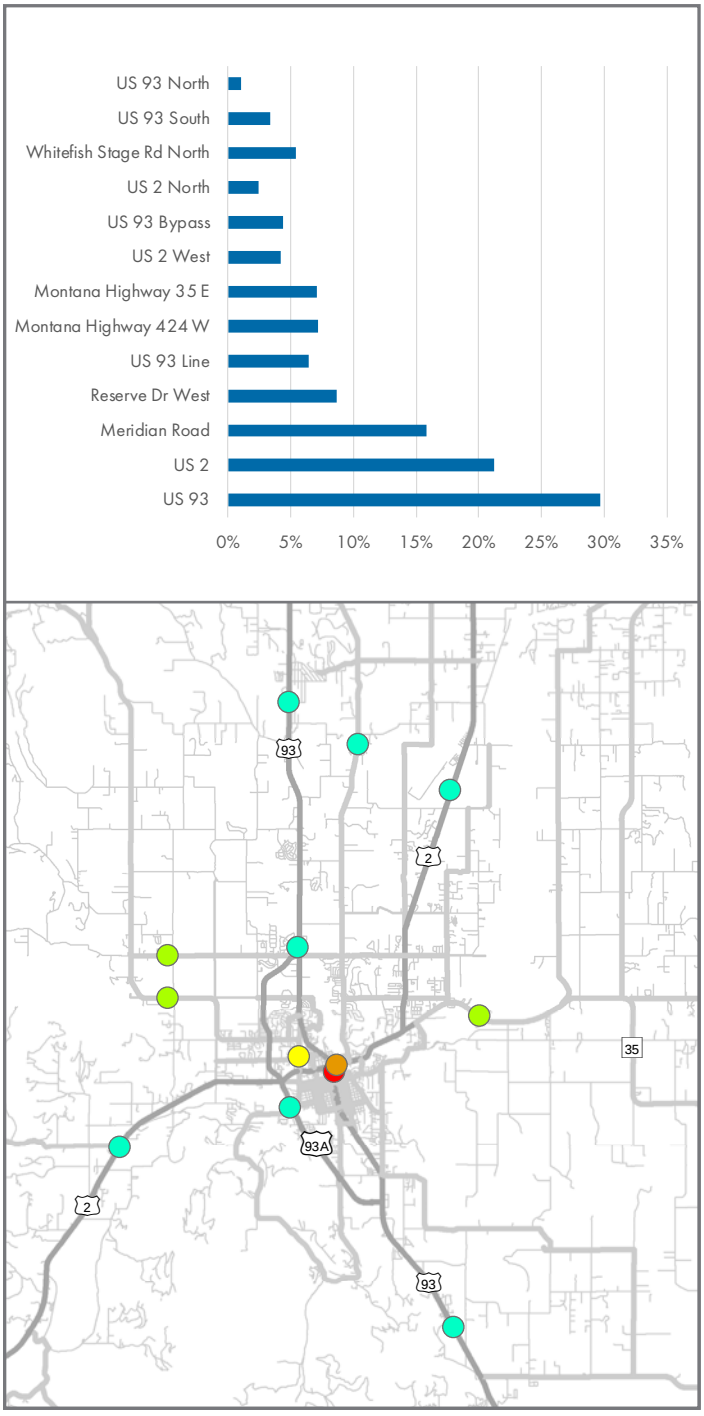
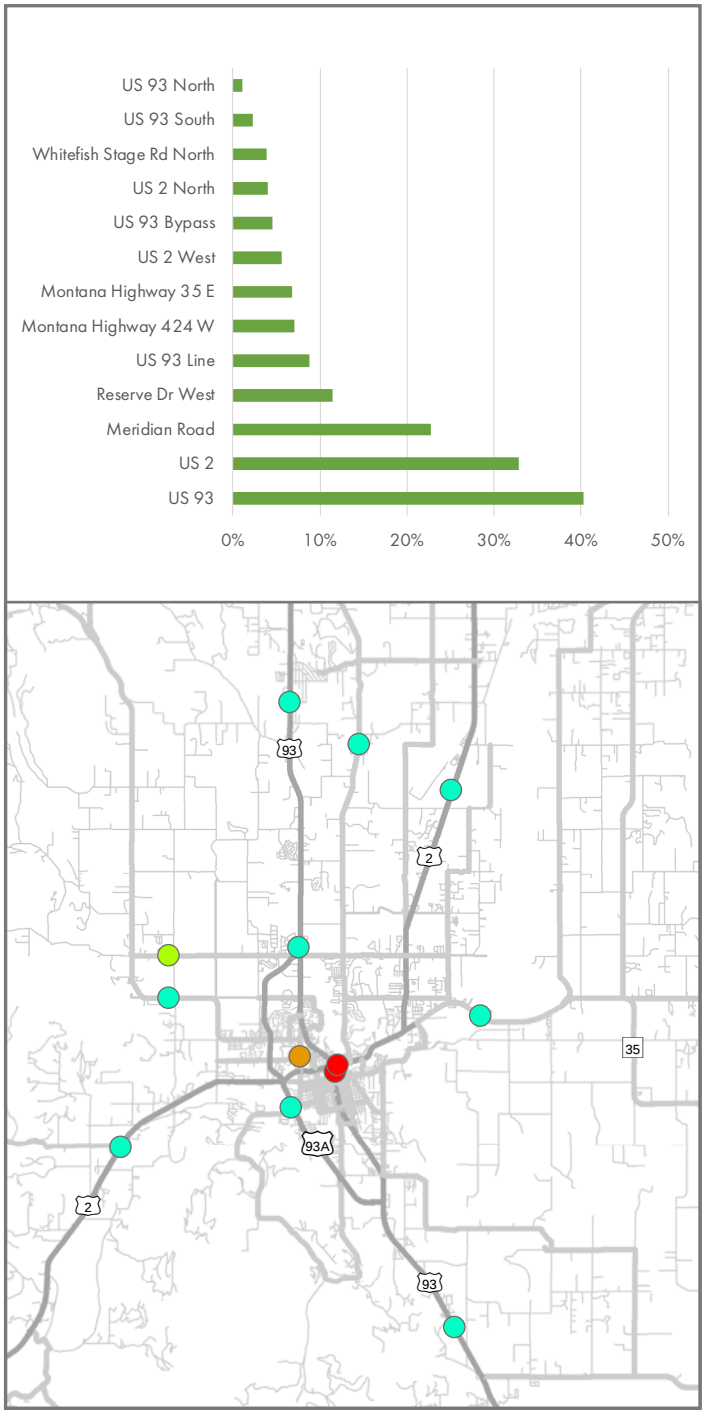


Figure 3.30: PM Peak Hour Congestion



Multimodal Hotspots

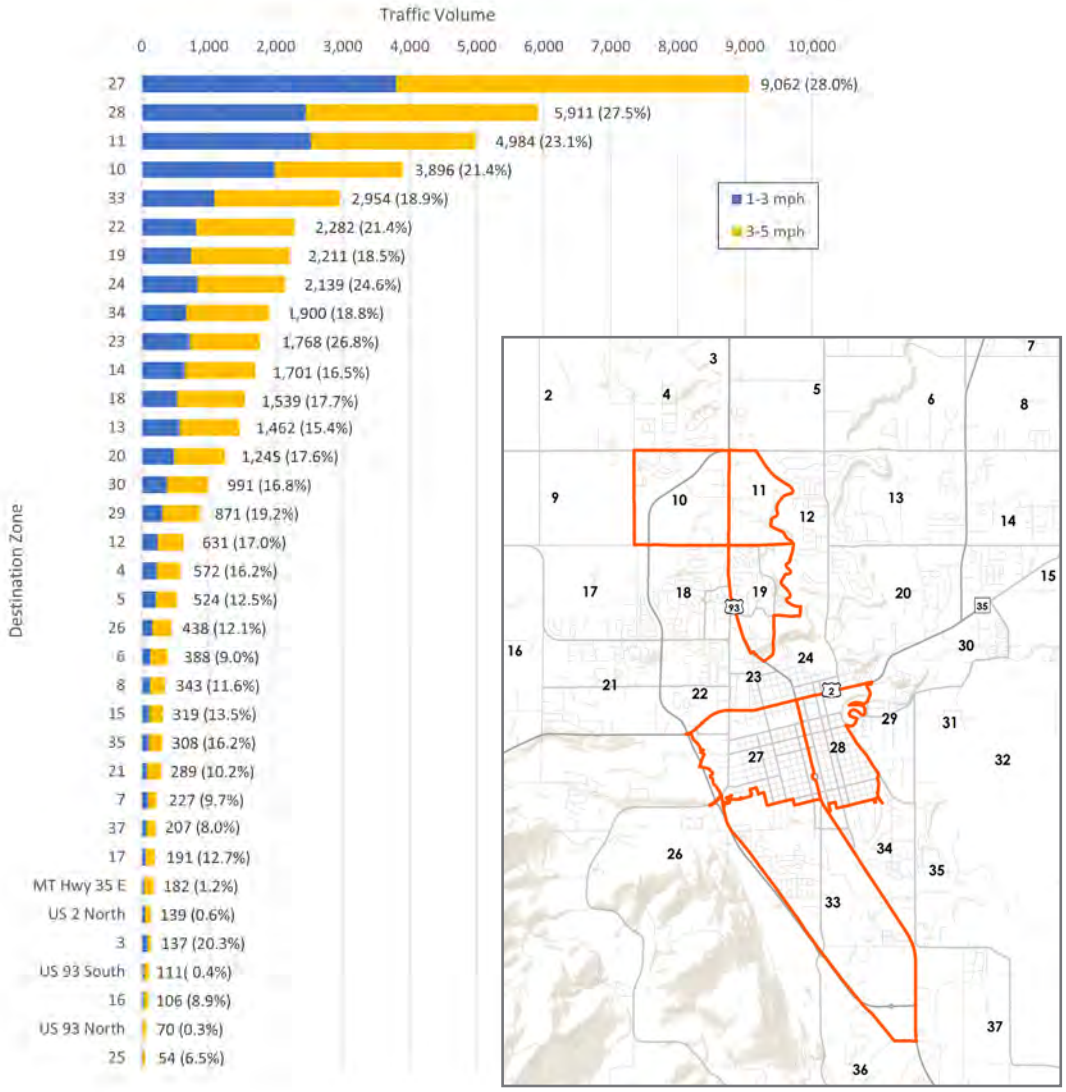
There are an estimated 367,500 daily trips in the study area. Nearly six percent of captured trips (7,300 trips) are between one and three miles per hour and less than one mile. Another nearly nine percent of trips (16,600 trips) are between three and five miles per hour and less than two miles. While these data sets overlap to some extent, they can still be used to identify trips that could be made by walking and biking, as shown in Figure 3.31.

- Zones 27 and 28 represented 18 percent of total multimodal trips in Kalispell and 27 percent of their respective total zone traffic for all modes. These two zones represent the majority of downtown destinations including the Kalispell Center Mall, Historic Downtown, and many other businesses. These zones show 15,960 daily trips that were less than five miles per hour and less than two miles.
- Zone 11 includes Flathead Valley Community College and major retailers. This zone showed 4,600 daily trips that were less than five miles per hour.

The multimodal percentage from each zone was calculated for each zone in Figure 3.31. This chart takes into account the total trip count of each zone and allows zones that have low total trip counts to be identified as a high percentage of possible multimodal use.

- Zones 9, 10, 11, 22, 23, 24, 27, and 28 all show over 20 percent or more of total trips traveling less than five miles per hour. Most of these zones are either downtown or include major retailers where walking is common.
- Zone 9, which is a rural zone, shows 15 percent of trips under three miles per hour which can be attributed to the lowest trip total (26 of 105 total trips) of all zones.
- Zones 1, 2, 6, 16, 25, 31, 32, 36, 37 and all external zones showed potential multimodal use under 10 percent. These zones are generally on the outside of city boundaries and have limited multimodal infrastructure.

Figure 3.31: Multimodal Traffic by Zone



Traffic Operations

Existing traffic operations were evaluated at 32 study intersections using methodologies from the ***Highway Capacity Manual.*** The intersections were selected based upon the availability of recent turning movement data. Peak hour turning movement counts were sourced from counts provided by MDT and the City of Kalispell.

Traffic operations are described in terms of LOS, with levels of service ranging from LOS A to LOS F, as described above. The LOS calculations incorporate traffic volumes, intersection geometry, signal timing, and other parameters to estimate the delay per vehicle at the intersection. LOS A indicates near free-flow traffic conditions with little delay and LOS F indicates breakdown of traffic flow with very high amounts of delay. At oversaturated intersections and approaches, the delay may only reflect the vehicles that can be processed in the analysis period and not the total delay for that intersection, thus underreporting the actual delay experienced by drivers.

LOS C or better is considered acceptable. The LOS thresholds for intersection delay are shown in Table 3.9.

Table 3.9: LOS Thresholds by Intersection Delay

Level of Service	*Unsignalized Intersection (sec/veh)*	*Signalized Intersection (sec/veh)*	*Description*
LOS A	<10	<10	Near free-flow traffic.
LOS B	10–15	10–20	Minor delays.
LOS C	15–25	20–35	Some delays, but not resulting in significant traffic congestion.
LOS D	25–35	35–55	Delays with some traffic congestion.
LOS E	35–50	55–80	Significant delays with significant traffic congestion, approaching capacity.
LOS F	> 50	> 80	Breakdown of traffic flow, major traffic congestion.

Traffic Operations Results

Intersection LOS analysis was performed for 32 intersections within the study area based on existing conditions. Most study intersections operate effectively at LOS C or better during both peak hours, as shown in Table 3.10 and Figure 3.32 and Figure 3.33. However, there are multiple locations with deficient operations under 2020 conditions:

- US 93 and W. Reserve Drive operates deficiently during the AM and PM peak hours. During the AM peak, the eastbound approach operates at LOS F, with overall intersection LOS D.
- US 2 and US 93 operates deficiently during the AM and PM peak hours at LOS D.
- US 93 and 13th Street operates deficiently during the AM and PM peak hour at LOS D.
- W. Reserve Drive and Whitefish Stage Road operates during the AM and PM peak hour at LOS D.
- Other locations experience acceptable overall intersection levels of service but deficient approach levels of service during one or both peak hours.
  - The eastbound and westbound approaches at US 93 and Grandview Drive are deficient at LOS D during both peak hours.
  - The southbound approach at US 2 and 5th Avenue operates at LOS E during both peak hours.
  - The eastbound approach at US 93 and Treeline Road operates at LOS D during the AM peak and LOS E during the PM peak hour.
  - The westbound approaches at US 93 and Sunny View Lane and US 93 and Commons Way operates at LOS D during both peak hours.
  - The eastbound approach at US 93 and 10th Street operates at LOS D during the AM and PM peak hour. During the AM peak hour, the westbound approach is also deficient.
  - The westbound approach at US 93 and 12th Street operates at LOS E during both peak hours.

Table 3.10: AM and PM Peak Hour Intersection LOS

ID	Intersection	Traffic Control	Peak	Level of Service				
				EB	WB	NB	SB	Int
1	US 93 & Reserve Dr	Signal	AM	F	D	C	C	D
			PM	D	D	D	C	D
2	Reserve Dr & Whitefish Stage Rd	Signal	AM	C	D	D	B	D
			PM	D	D	D	C	D
3	US 2 & Reserve Dr	Signal	AM	B	C	B	C	C
			PM	C	D	C	C	C
4	US 93 & Grandview Dr/Four Mile Dr	Signal	AM	D	D	A	A	A
			PM	D	D	B	A	B
5	Helena Flats Rd & MT 35	Signal	AM	A	C	C	C	C
			PM	B	C	B	C	C
6	Meridian Rd & 3 Mile Dr	Signal	AM	B	A	A	B	B
			PM	B	C	A	B	A
7	Meridian Rd & Liberty	Signal	AM	C	C	A	A	A
			PM	C	C	A	A	A
8	Meridian Rd & 2 Mile Dr	Signal	AM	C	C	A	A	A
			PM	C	C	A	A	B
9	Meridian Rd & US 2	Signal	AM	C	B	C	C	C
			PM	C	C	D	C	C
10	US 2 & 5th Ave W	Signal	AM	B	A	D	E	C
			PM	C	B	D	E	C
11	US 2 & US 93	Signal	AM	D	C	D	D	D
			PM	D	D	D	D	D
12	US 93 & Center St	Signal	AM	D	C	C	B	C
			PM	C	C	C	B	C
13	1st Ave EN & E Center St	Signal	AM	A	A	B	B	A
			PM	B	C	B	B	B
14	1st Ave W & 2nd Ave W	Signal	AM	B	A	B	B	B
			PM	B	A	B	B	B
15	Woodland Ave & 2nd St/Conrad Dr	3-way Stop	AM	B	C	B	B	C
			PM	B	C	B	C	C
16	US 93 & 4th St	Signal	AM	B	B	B	A	A
			PM	B	C	B	A	B
17	Woodland Ave & 11th St W	TWSC	AM	B	—	A	A	B
			PM	B	—	A	A	B
18	US 93 & 11th St	Signal	AM	C	C	B	A	B
			PM	C	D	B	C	C
19	US 93 & Treeline Rd	Signal	AM	D	D	A	A	B
			PM	E	C	B	C	C
20	US 93 & Wyoming St	Signal	AM	C	B	B	A	B
			PM	C	B	A	A	A
21	US 93 & Conway Dr	Signal	AM	—	C	A	A	A
			PM	—	C	B	A	B
22	US 93 & Sunny View Ln	Signal	AM	—	D	A	A	A
			PM	—	D	A	A	B
23	US 93 & Commons Way	Signal	AM	C	D	A	B	B
			PM	C	D	C	B	C
24	US 93 & Meridian Rd	Signal	AM	C	—	B	B	B
			PM	D	—	B	B	B
25	US 93 & Commercial Access (Flathead Valley)	Signal	AM	B	C	A	A	A
			PM	B	C	A	A	A
26	W Reserve Dr & Hutton Ranch Rd	Signal	AM	B	A	B	—	A
			PM	B	A	B	—	B
27	US 2 & Evergreen Dr	Signal	AM	C	C	B	B	B
			PM	C	C	B	B	B
28	US 93 & 6th St	Signal	AM	C	C	A	A	A
			PM	D	C	A	A	A
29	US 93 & 13th St	Signal	AM	E	C	A	A	D
			PM	F	C	A	A	D
30	US 93 & 7th St	TWSC	AM	—	B	A	A	B
			PM	—	B	A	A	B
31	US 93 & 10th St	TWSC	AM	D	D	A	A	C
			PM	D	C	A	A	C
32	US 93 & 12th St	TWSC	AM	C	E	A	A	A
			PM	C	E	A	A	C

Figure 3.32: AM Peak Hour Traffic Operations

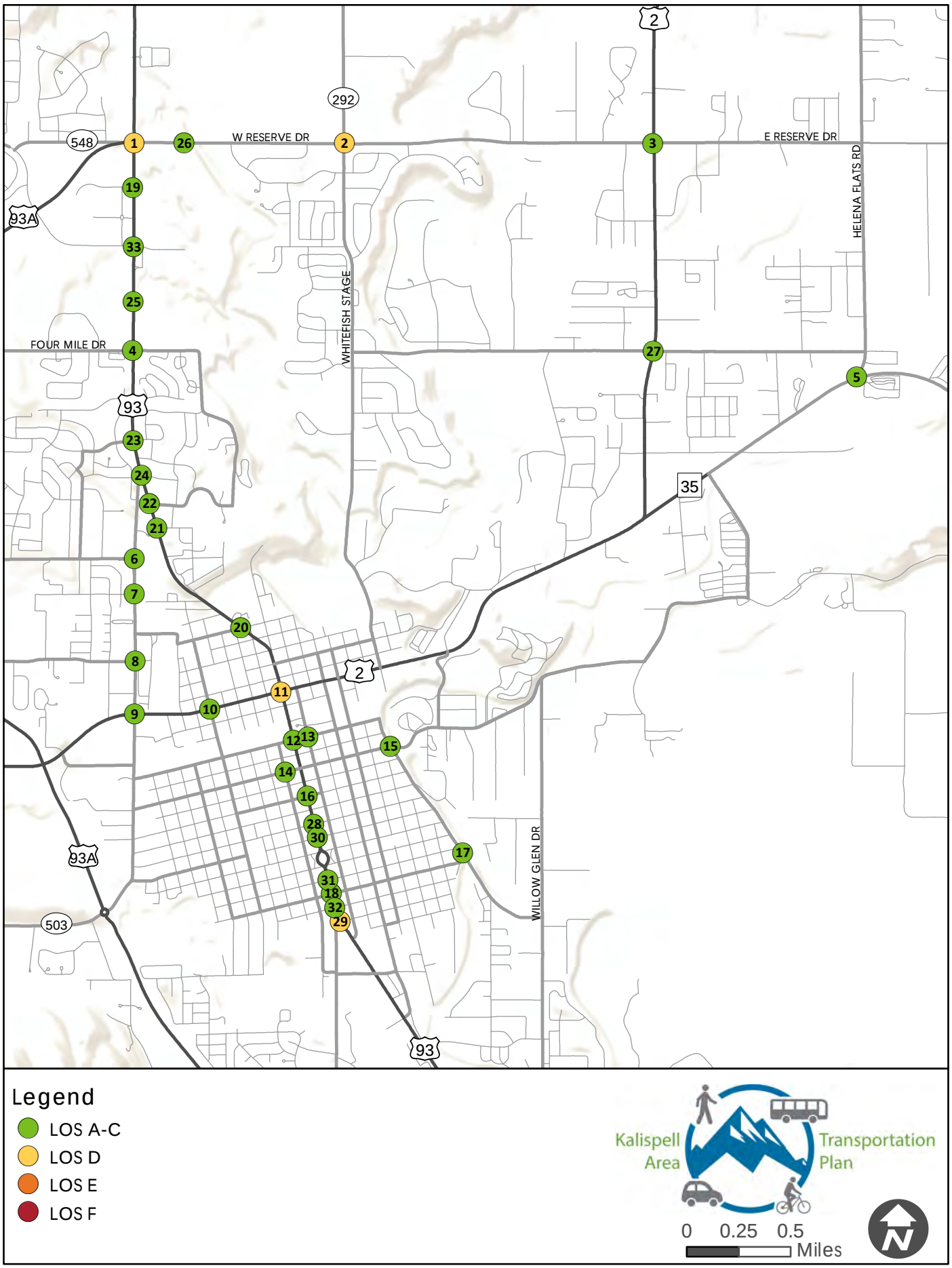
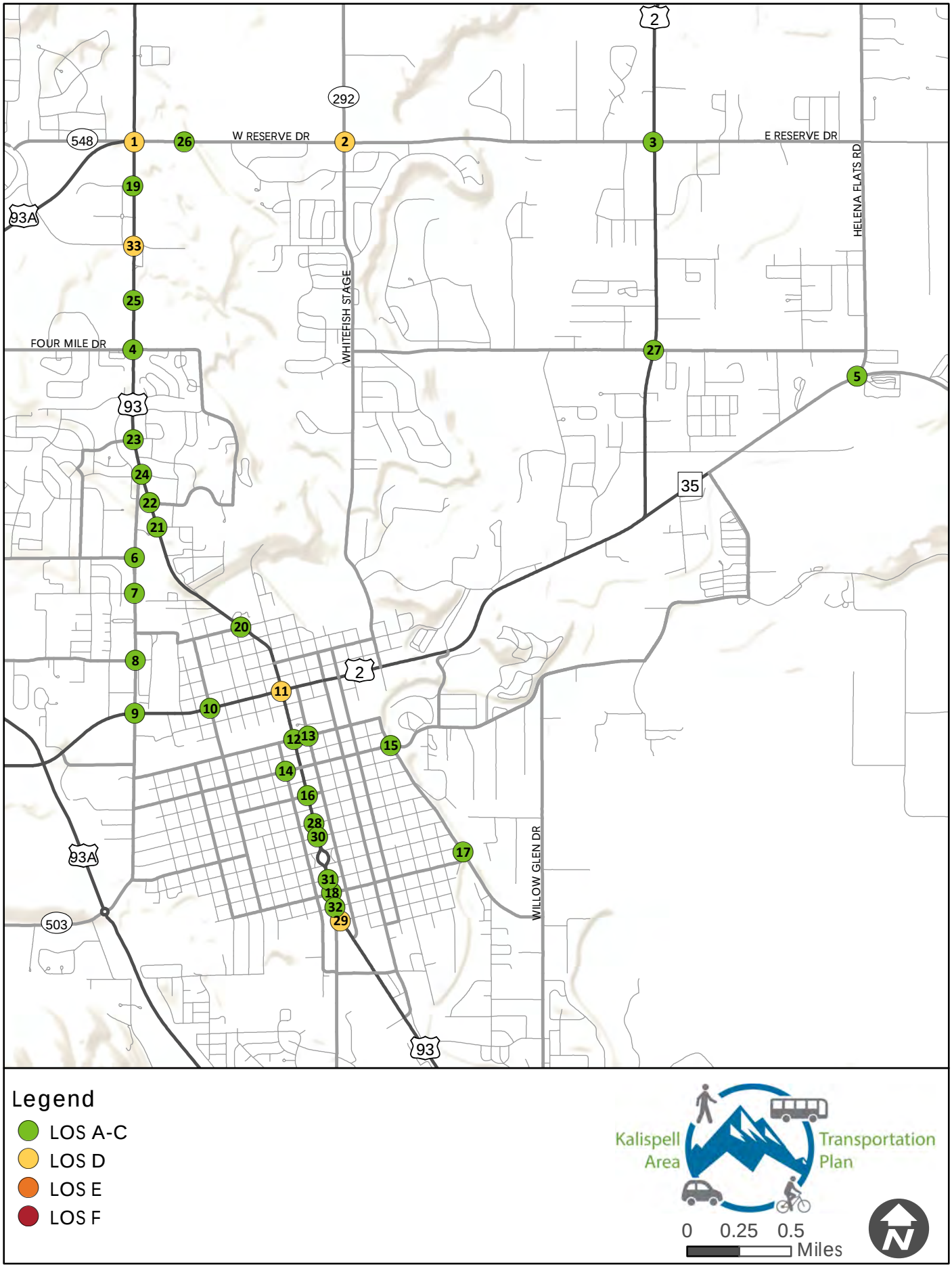


Figure 3.33: PM Peak Hour Traffic Operations



Safety Analysis

Transportation safety is an essential component of the transportation planning process supporting Move 2040. Improving transportation safety requires more than just fixing a road or increasing police patrols. In order to be most effective, safety improvements need to consider the "four Es" of transportation safety: Education, Enforcement, Engineering, and Emergency Services. The objective of Move 2040 is to improve the safety and well-being of all users of the transportation system and work towards achieving MDT's Vision Zero initiative to move towards zero deaths and zero injuries on Montana roads.

Study Area Crash Analysis

Crash data between 2014 and 2018 data was provided by MDT Traffic and Safety Bureau to investigate the traffic crash trends in the study area. Between 2014 and 2018, there were 5,001 crashes reported in the study area. The high level trends are discussed below with more detailed information later in this section.

- There were nine crashes that resulted in a fatality and 123 crashes that resulted in serious injury.
- There were 40 pedestrian involved crashes.
- About 72 percent of crashes occurred within a quarter mile of Kalispell.
- Around 48 percent of crashes occurred at intersections.
- The largest number of crashes occurred on roads with the greatest vehicle miles traveled, such as US 2 and US 93.
- From 2014 to 2018, the number of crashes has declined 9.5 percent.
- From 2014 to 2018, the number of injury crashes has declined 23 percent.

The crash data included the spatial records which were analyzed to understand patterns of existing motorized vehicular crashes and identify high-risk areas. This was done through a hot-spot analysis which identifies clusters of dense accident occurrence, as shown in Figure 3.36 on page 51.

Crash Severity

Crash severity is very important for implementation of safety related counter measures needed to compare and assess the roadway. The crash data categorized the crashes by the following severity levels:

- Fatal Crash
- Suspected Serious Injury Crash
- Suspected Minor Injury Crash
- Possible Injury Crash
- Property Damage Only Crash

Crash severity is categorized based on the most severe injury of the crash. For example, if a crash involved two vehicles that resulted in one serious injury and two possible injury crash, the crash is reported as suspected serious injury crash. A Suspected Serious Injury crash is defined as an injury, other than fatal which prevents the injured individual from walking, driving, or normally continuing the activities they could perform before the injury. There were nine crashes reported that resulted in death, 1,159 crashes that resulted in an injury, and 3,764 crashes that resulted in property damage only. Figure 3.34 shows the number of injury and non-injury crashes by severity type during the analysis period. Injury crashes have declined every year since 2014. While non-injury crashes have varied year to year, they have ultimately declined nearly six percent during the analysis period. Figure 3.37 on page 52 shows the location of fatal and incapacitating injury crashes.

Figure 3.34: Injury and Non-Injury Crashes Since 2014

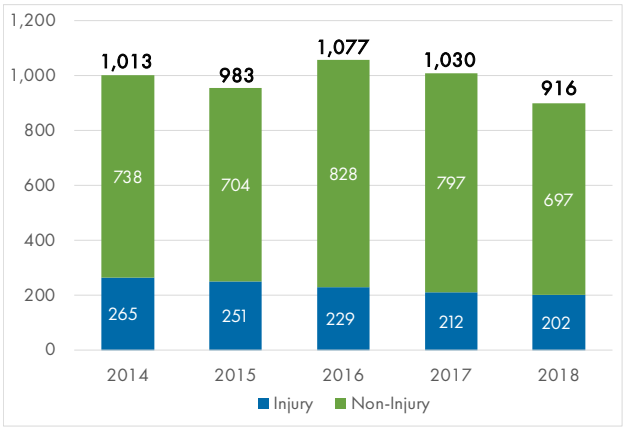
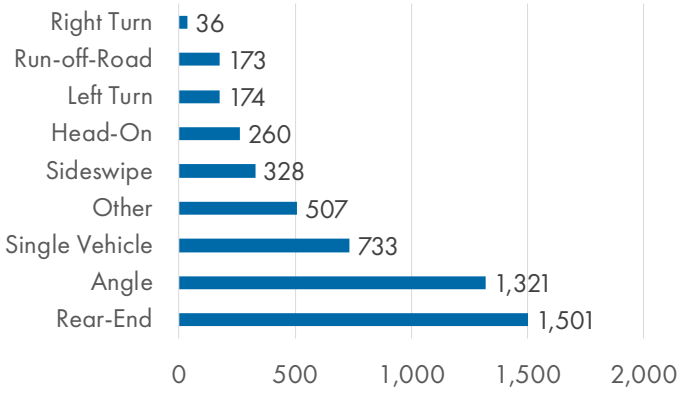


Figure 3.35: Crashes by Crash Type



Crash Type

Identifying crash type at roadways assists in developing counter measures to mitigate or minimize the crash type. During the analysis period, rear end (1,501), angle (1,321), and single vehicle related (733) crashes

represented the typical crash types in the study area. Aggressive driving, failing to stop, following too closely, and excessive speeding are a few factors in a substantial proportion of rear-end crashes. Figure 3.35 shows the crashes by crash type during the analysis period.

Crash Occurrence Period

Crash occurrence statistics assist in refining patrol deployment decisions. Typically, traffic varies significantly by time of day and day of the week, particularly during weekday peak hours. Crash data for the study area was evaluated based on the period of occurrence on the crash with respect to time of the day, week, and month.

- Around 80 percent of crashes occur between 7AM and 7 PM, typically occurring during peak travel periods.
- Around 80 percent of crashes occur during weekdays. The fewest crashes occur on Sundays.
- November through February generally experience more vehicular crashes. December is the peak month for crash frequency. Challenging winter road conditions including snow, sleet, and ice can contribute to the higher number of crashes.

Crashes involving Impaired Drivers

Montana has one of the highest fatality rates in the nation for number of deaths caused by impaired drivers per vehicle mile traveled. The statewide data from 2018 indicates that 64 percent of all fatalities statewide were the result of impaired driving. This is up from 61 percent in 2017. Within the study area, there were 312 crashes involving impaired drivers. Of these crashes 37 percent resulted in injuries.

Crashes Involving Animals

From 2014 to 2018, there were 265 crashes that involved wild animals, which corresponds to 53 crashes per year. This is likely understated as many animal-vehicle collisions go unreported if the crash does not involve property damage or injury. Of these animal-vehicle collisions, 66 percent occurred on high-volume, high-speed roadways like US 2 and US 93. Wild animal crash locations are shown in Figure 3.38 on page 53.

Intersection and Segment Crash Evaluation

To assess the intersections and segments safety performances, two methods were applied: Crash Rate and Severity Rate. These methods apply an easy-to-use statistical test to determine whether the crash rate and severity rate for a location is significantly higher than the average crash rate and severity rate for other locations in the jurisdiction (or region) having similar characteristics.

- The crash rate is calculated as the number of crashes per million entering vehicles for intersections and the number of crashes per million vehicle miles traveled for segments.
- The severity rate applies a weight to crashes based on severity, including 5 for fatal crashes, 4 for incapacitating injury crashes, 3 for non-incapacitating injury crashes, 2 for possible injury crashes, and 1 for property damage only crashes.

If a location is identified as a high crash rate or high severity location, additional evaluation should be used to assess the needs of the location.

Fifteen intersections were identified with the highest number of crashes in the area. Table 3.11 summarizes the crash rate and severity rates of the intersections. Figure 3.39 on page 54 shows the high crash locations.

Table 3.11: High Crash Locations

ID	Intersection	Million Entering Vehicles	Crashes			Crash Rate	Severity Rate
			Injury	Non-Injury	Total		
1	US 2 & US 93	79.0	10	40	**50**	0.63	0.80
2	US 93 & W Reserve Drive	64.9	12	36	**48**	0.74	1.06
3	US 93 & US 93A	38.6	12	43	**55**	1.42	1.94
4	W Reserve Drive & Whitefish Stage	39.5	17	40	**57**	1.44	2.10
5	US 93 & Meridian Road	60.9	15	30	**45**	0.74	1.13
6	US 2 & W Reserve Drive	50.0	15	31	**46**	0.92	1.38
7	US 2 & Meridian Road	53.8	7	34	**41**	0.76	0.95
8	US 93 & Center Street	49.5	13	24	**37**	0.75	1.05
9	US 2 & Evergreen Drive	39.9	11	31	**42**	1.05	1.48
10	US 93 & Four Mile Drive	56.2	14	21	**35**	0.62	0.98
11	W Reserve Drive & Hutton Ranch Road	35.4	8	31	**39**	1.10	1.52
12	Sunset Boulevard & Northridge Drive	54.4	7	24	**31**	0.57	0.74
13	US 2 & 3rd Avenue E	52.7	9	21	**30**	0.57	0.80
14	US 93 & Montana Street	47.5	11	28	**39**	0.82	1.16
15	US 93 & 11th Street	38.2	5	21	**26**	0.68	1.00

Figure 3.36: Crash Hotspots

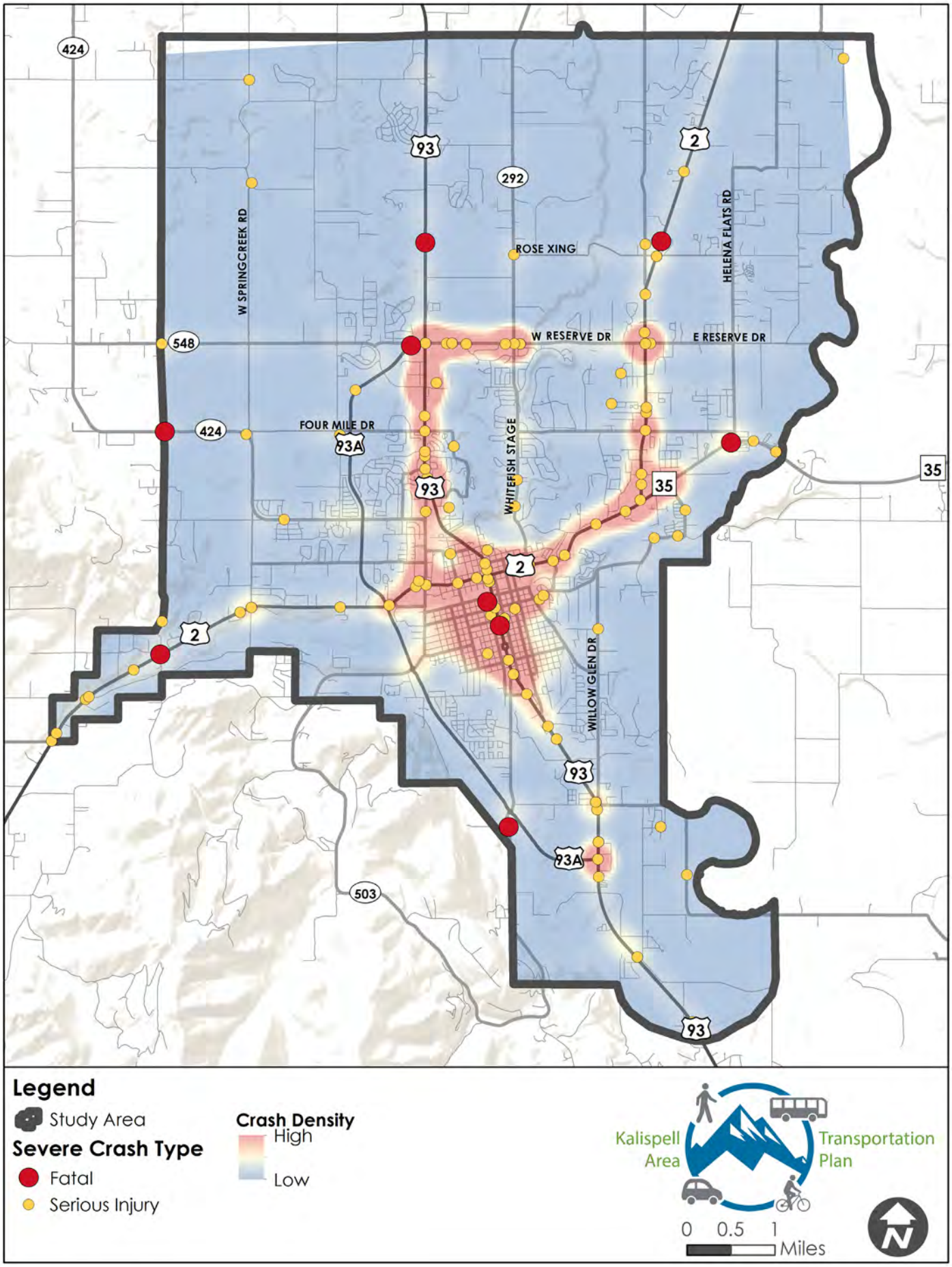


Figure 3.37: Severe Crash Locations

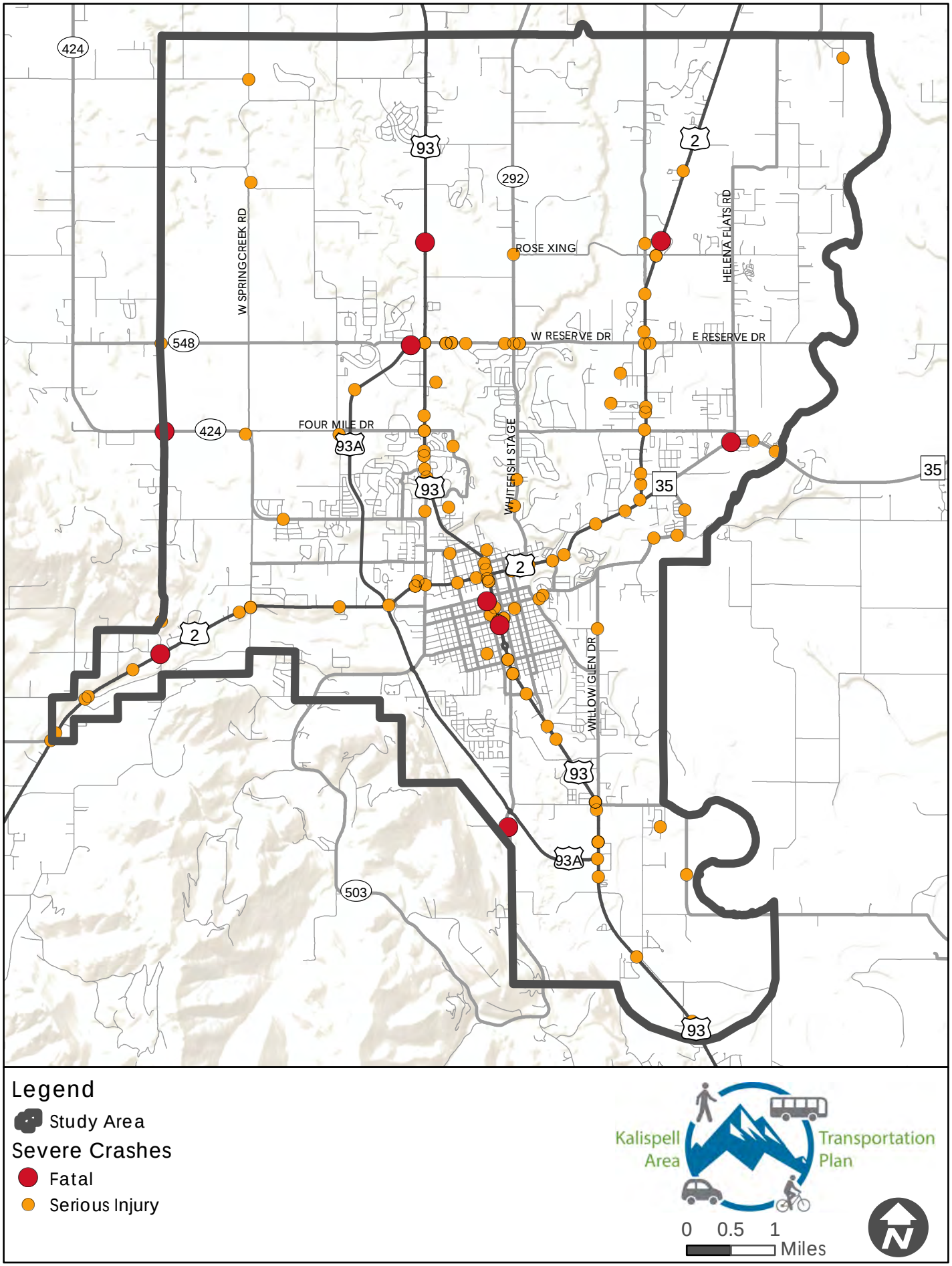


Figure 3.38: Wild Animal Crashes

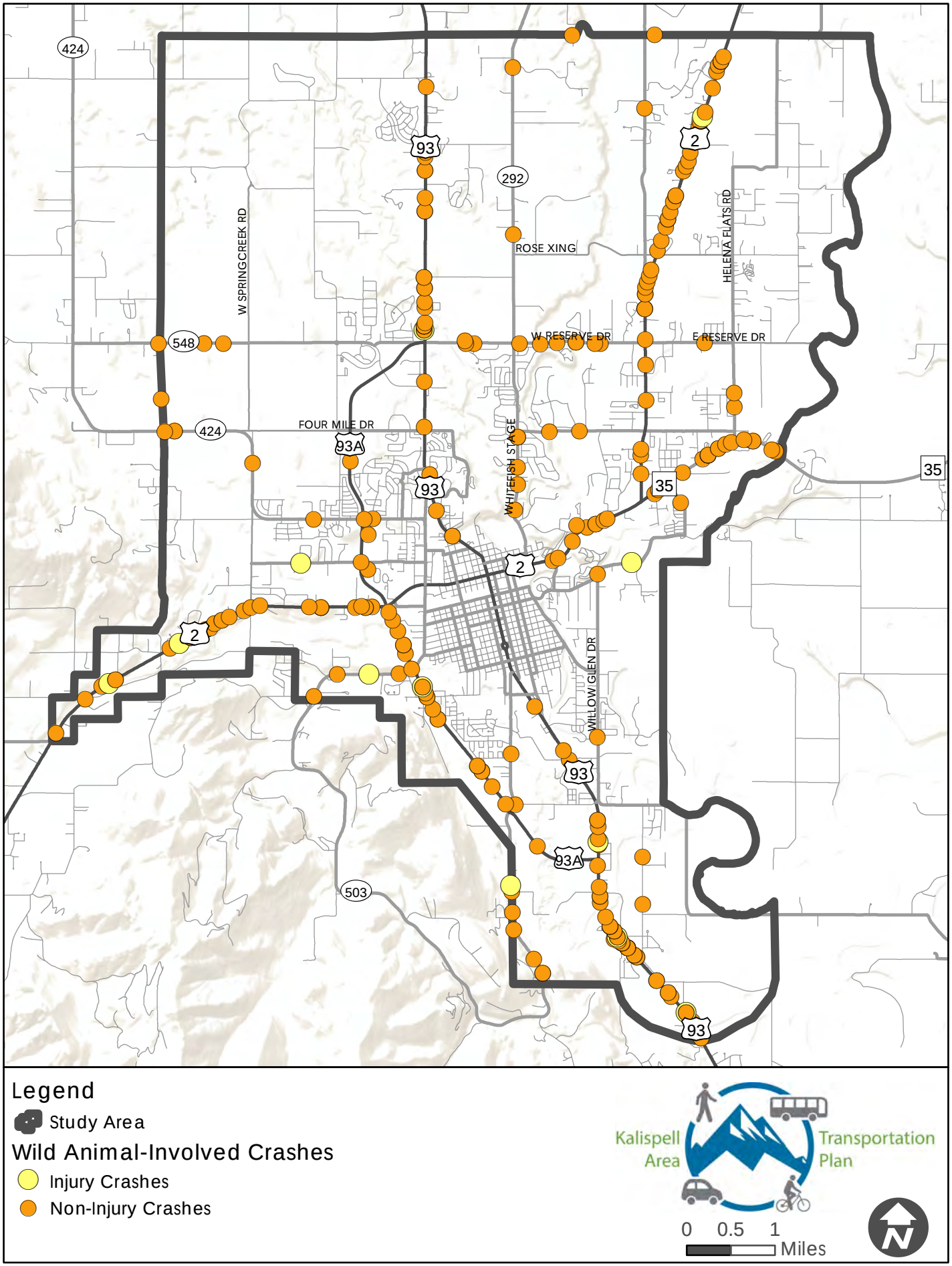
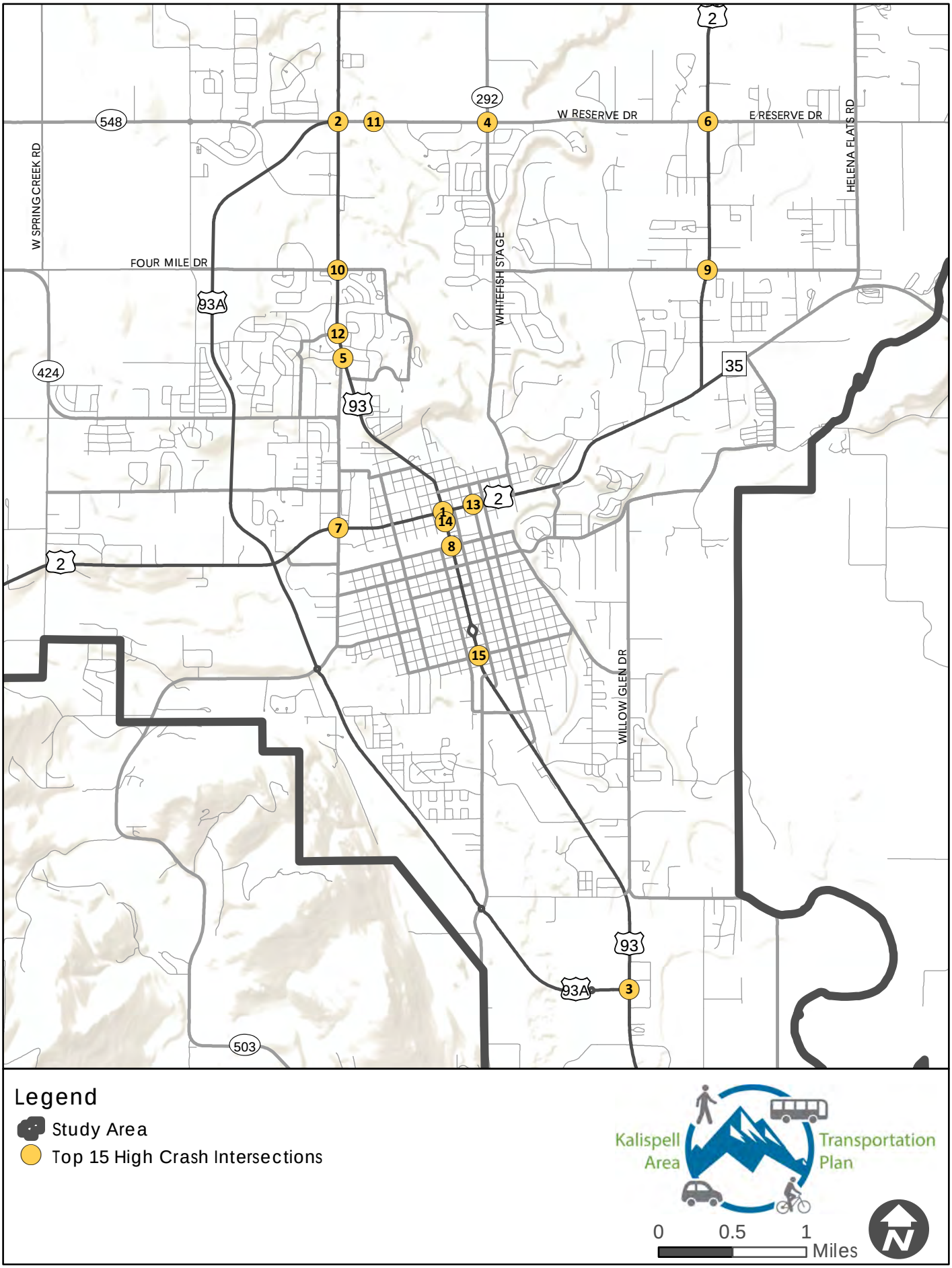


Figure 3.39: Severe Crash Locations



Freight Systems

Trucks

The city of Kalispell is located at the intersection of US 93 and US 2. In addition to those, US 93A is an alternative route that bypasses the central business district of Kalispell. These routes connect Kalispell to regional and national trade routes and provide a vital service for the community. These highways, with the addition of local routes, ensure the safe and efficient movement of freight through the Kalispell study area.

Truck Freight Network

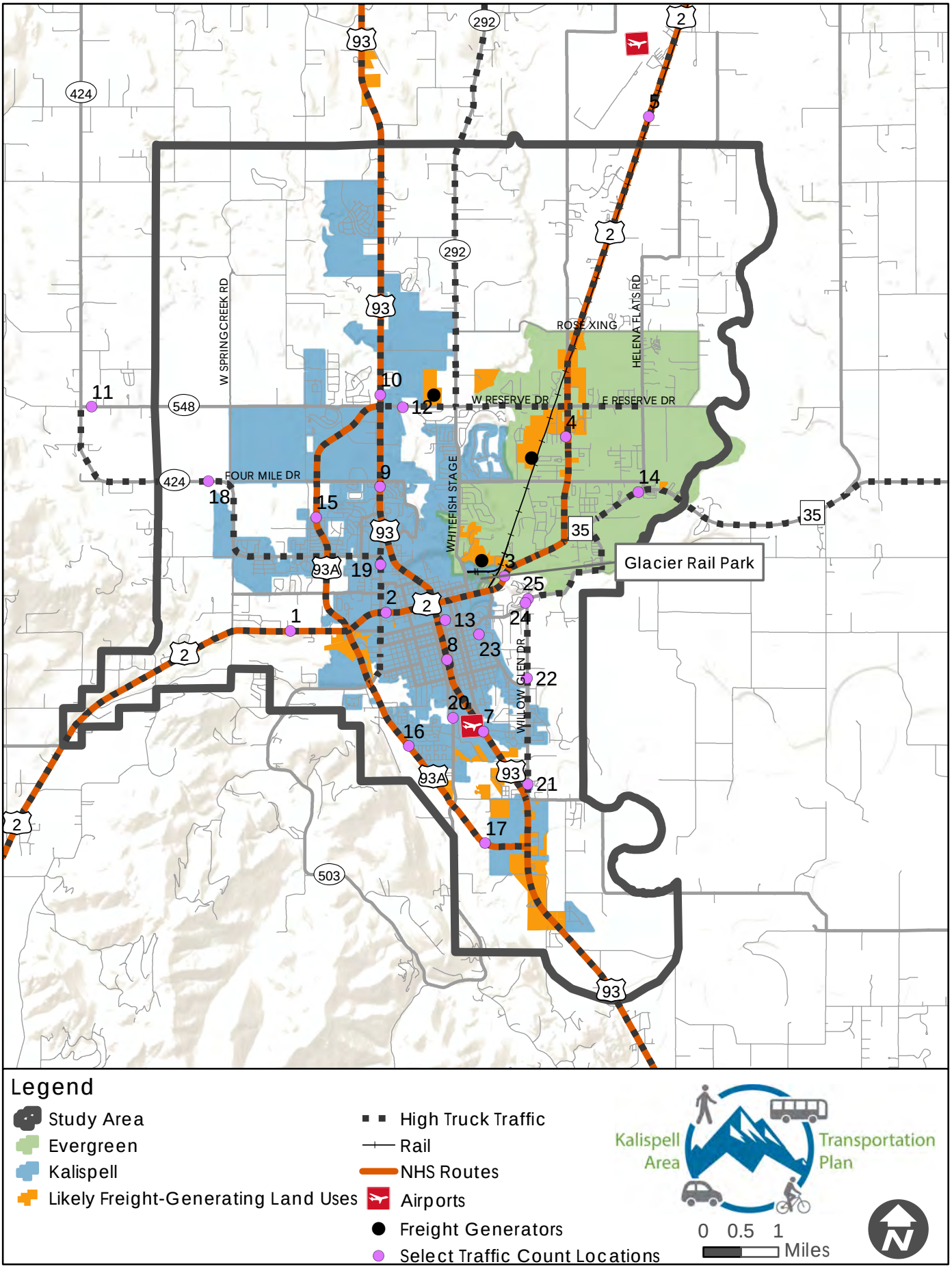
Within the study area, trucks rely on the following system of NHS non-interstate, primary highways, and secondary highways to move through and around Kalispell. These include the following:

- US 93 runs north-south connecting Canada in the north to Arizona in the south. Its termini are the Canada-US border in the north and Wickenburg, Arizona in the south.
- US 93A runs north-south in Kalispell bypassing the central business district of Kalispell. It begins just south of the junction with Secondary Highway 317 and runs north until it reconnects with US 93 north of Kalispell.
- US 2 runs east-west across the state connecting Washington and North Dakota. Its termini are Everett, Washington and St. Ignace, Michigan.
- Montana Highway 35 runs north-south connecting US 93 in Polson, Montana to US 2 in Evergreen.
- Secondary Highway 424 (Farm to Market Road) runs north-south connecting northwestern Kalispell at North Meridian Road and Three Mile Drive to US 93 west of Whitefish.
- Secondary Highway 503 (Foys Lake Rd & Airport Rd) runs north-south beginning at the junction US 2 and Meridian Road and runs to its other terminus at US 93 and 13th Street East.
- Secondary Highway 292 (Whitefish Stage) runs north-south connecting Kalispell in the south to Montana Highway 40 south of Whitefish.

Table 3.12: High Truck Traffic Locations

ID	Location	2018 Daily Traffic	2018 Daily Truck Traffic	Percent Truck Traffic
17	US 93 Bypass (Airport Rd to US 93)	9,086	603	6.64%
14	MT 35 (W of Helena Flats Rd)	11,544	755	6.54%
18	Four Mile Dr (W of Springck Rd)	2,110	125	5.92%
22	Willow Glen Dr (N of Woodland Ave)	4,872	284	5.83%
5	US 2 (S of Airport)	17,370	860	4.95%
15	US 93A (S of Four Mile Dr)	15,017	738	4.91%
21	Willow Glen Dr (N of US 93)	5,863	284	4.84%
4	US 2 (S of Evergreen Dr)	17,173	800	4.66%
16	US 93A (Meridian Rd to Airport Rd)	13,118	603	4.60%
6	US 93 (NW of MT 82)	20,121	889	4.42%
12	W Reserve Dr (E of US 93)	17,902	754	4.21%
1	US 2 (W of Kalispell)	10,635	445	4.18%
25	Conrad Dr (E of Willow Glen Dr)	5,526	185	3.35%
7	US 93 (N of Kelly Dr)	15,521	513	3.31%
8	US 93 (S of 7th St)	17,349	513	2.96%
10	US 93 (N of W Reserve Dr)	19,742	440	2.23%
2	US 2 (E of Meridian Rd)	17,605	389	2.21%
11	W Reserve Dr (W Valley Dr)	2,247	49	2.18%
3	US 2 (E of Flathead Dr)	27,083	567	2.09%
24	Conrad Dr (W of Willow Glen Dr)	3,614	69	1.91%
19	Meridian Rd (N of Liberty St)	12,509	215	1.72%
9	US 93 (S of Grandview Dr)	27,853	440	1.58%
13	Whitefish Stage Rd (W of 2nd Ave)	6,643	84	1.26%
23	Woodland Ave (S of 4th St)	4,537	39	0.86%
20	Airport Rd (S of 18th St)	5,096	33	0.65%

Figure 3.40: Truck Routes and Generators



Impacts of heavy vehicle traffic through Kalispell have been identified as a concern for many years. Using a combination of daily traffic counts and StreetLight data, a deeper understanding of truck movements and impacts can be gained.

- US 93 south is the highest truck traffic roadway entering Kalispell representing 33 percent of regional truck traffic.
- Both US 2 north and US 93 north represent around 22 percent of regional truck traffic each.
- East to west regional truck traffic is much less with only 10 percent using US 2 west and 11 percent using MT 35 east.

Truck activity centers can influence the transportation network by slowing down traffic by stopping in the roadway blocking traffic and creating a safety hazard. To account for this many of the businesses that produce a high volume of truck traffic will be situated in industrial or commercial areas that allow for large unloading area. As such, its important to document location of trucking and rail activity centers located within the study area as shown in Figure 3.40. Table 3.12 on page 55 shows high truck traffic locations.

Rail

For years, the main rail line through Kalispell was owned by BNSF Railway. In 2004, the railway was leased by Watco Companies. However, in 2020 BNSF Railway resumed operations of the rail line from Columbia Falls to Kalispell.

With the development of Glacier Rail Park, Kalispell has removed the railroad from downtown and relocated rail traffic to the Glacier Rail Park. The 1.7 miles of railway downtown is being redeveloped as a future biking and pedestrian trail.

Figure 3.40 displays the location of the new Glacier Rail Park and its rail connection to Columbia Falls.

RAILROAD CROSSINGS

While railroads are privately owned, their interaction with the overall transportation network is important, especially within the realm of freight movement and vehicular and non-motorized safety and mobility on at-grade crossings. At-grade crossings are locations where train-vehicle interactions can conflict and create safety concerns and cause travel delays. There are a total of 11 at-grade crossings that exist within the study area. Traffic control at these sites vary and may include crossbucks, gates, posts with flashing lights, and cantilevers. Figure 3.42 displays the location and traffic control for each at-grade rail crossing within the study area.

RAILROAD CONNECTIONS

Amtrak provides passenger service via the Empire Builder Line which connects Flathead County to Seattle to the west and Chicago to the east. This service stops in Whitefish and the number of passengers boarding and alighting at the station during the 2019 fiscal year was 55,210.

Air Transportation

Kalispell is served by the Kalispell City Airport and the Kalispell-Glacier Park International Airport. Only the Kalispell-Glacier Park International Airport provides scheduled commercial service. The airport locations are shown in Figure 3.40.

KALISPELL-GLACIER PARK INTERNATIONAL AIRPORT

The Kalispell-Glacier Park International Airport lies northeast of Kalispell on US 2. Alaska Airlines, Allegiant, American Airlines, Delta, and United provide regular scheduled commercial flights (Frontier flights beginning in June 2021). These airlines provided flights to 306,487 passengers in 2018, the highest passenger volume ever recorded at the airport. Over the past five years the airport has seen a 33 percent increase in passenger volume and a 75 percent increase since 2010 as seen in Figure 3.41. Starting in 2020, the airport is expanding by 40,000 square feet to keep up with growing passenger volumes.

Figure 3.41: Passenger Volumes at Kalispell-Glacier Park International Airport

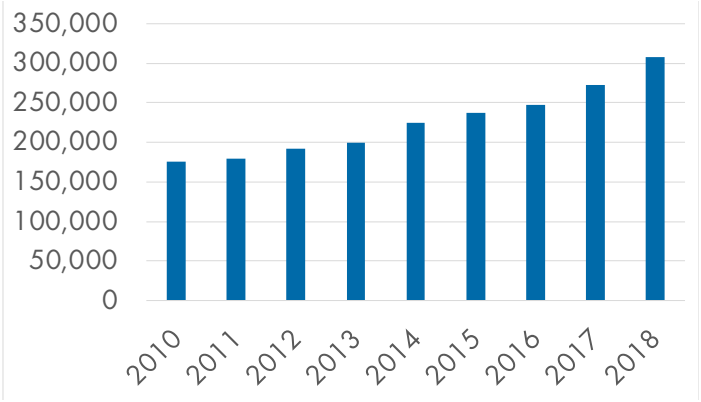
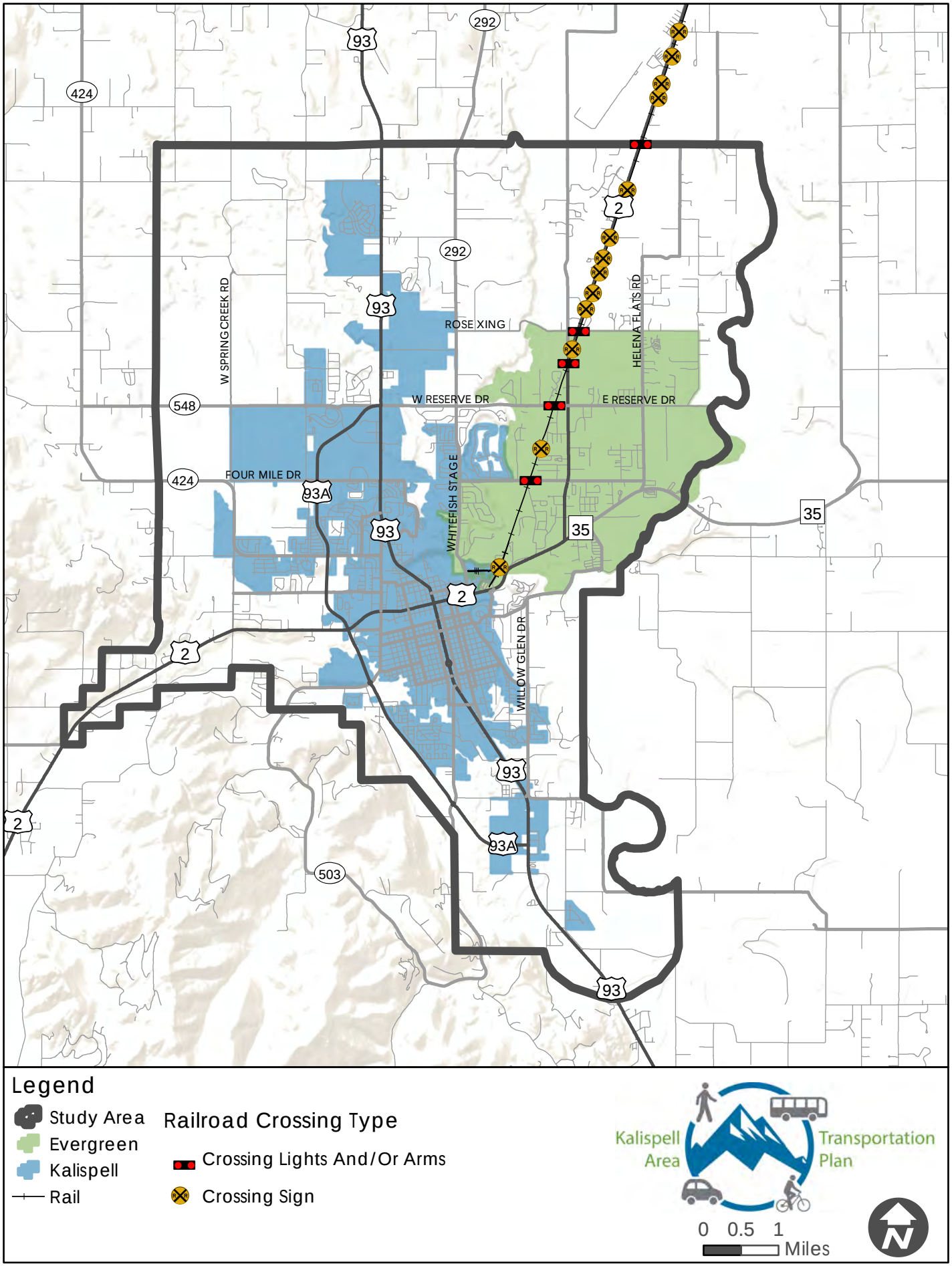


Figure 3.42: Railroad Crossing Control Devices



The following are the major destinations and air carriers of the airport:

- Delta: Salt Lake City, Minneapolis, St. Paul, Atlanta (Seasonal), and Los Angeles (Seasonal)
- United: Denver and Chicago (Seasonal)
- Alaska: Seattle and Portland (Seasonal)
- Allegiant Air: Las Vegas, Phoenix, Oakland (Seasonal), Los Angeles (Seasonal)
- American Airlines: Chicago (Seasonal), Dallas (Seasonal), Los Angeles (Seasonal)

In addition, the following airlines will begin seasonal service starting in 2021. Major destinations are specified for each airline:

- Jet Blue: New York (JFK)
- Sun Country Airlines: Minneapolis
- Frontier: Denver

KALISPELL CITY AIRPORT

Kalispell City Airport is a municipal-owned airport serving the general aviation community. The airport averages 77 aircraft operations each day of which 43 percent are for local general aviation.

Bicycle and Pedestrian System

One of the main recommendations of the Kalispell Growth Policy was the development of a comprehensive pedestrian and bicycle network. In order to progress to that goal, it is important to first identify the existing condition of the dedicated bike and pedestrian facilities. The following bullets describe the existing facilities in Kalispell and the specific amounts are summarized in Table 3.13 and displayed in Figure 3.44. Different bicycle and pedestrian facility examples from around Kalispell are shown in Figure 3.43.

- Sidewalks are paths designated for pedestrians along the side of the roadway.
- Bike lanes are designated lanes within a portion of the roadway typically including striping, signage, and other pavement markings noting the space is for cyclists.
- Separated shared-use recreation routes are separate paths designated for pedestrians and cyclists.

Table 3.13: Bicycle and Pedestrian Facility Types and Mileage

Facility Type	*Miles*
Existing Shared-Use Recreation Route	53.4
Existing Bike Lane	1.7
Existing Sidewalks	140.7

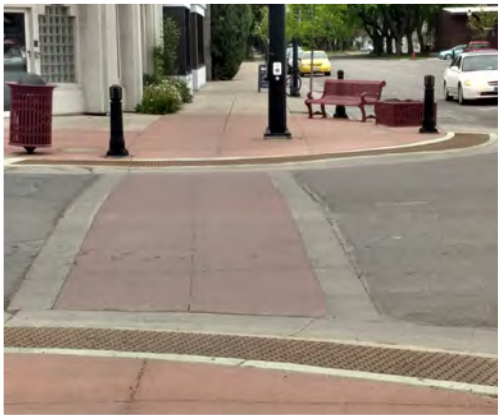
Bicycle and Pedestrian Crashes

From 2014 to 2018 there were 43 pedestrian and 49 bicycle related crashes. Pedestrian and bicycle crash data are typically underreported as many minor crashes that do not involve injury or significant property damage are unlikely to be reported. These crash locations are shown in Figure 3.45 on page 62 and Figure 3.46 on page 63.

Just seven percent of pedestrian crashes resulted in property damage only, while 35 percent resulted in a serious injury. There was one fatal pedestrian crash at the intersection of 1st Street W and 1st Avenue W., which occurred after midnight and was a hit and run. For bicycle crashes, 16 percent resulted in property damage only. Just 10 percent of bicycle crashes resulted in a serious injury and there were no bicycle-related fatalities.

There are many contributing factor trends that emerged in the bicycle and pedestrian crash data. For pedestrian crashes, about 54 percent of crashes occurred at intersections or driveways, 32 percent occurred during the evening at locations with no street lighting, and 30 percent occurred where there were no sidewalks or pedestrian facilities. For bicycle crashes, about 80 percent of crashes

Figure 3.43: Bicycle and Pedestrian Facility Examples from Kalispell



occurred at intersections or driveways and 82 percent occurred where there were no bicycle facilities.

Safe Routes to Schools

As part of the bicycle and pedestrian system analysis in Move 2040, special emphasis was placed around the local K-8 schools in the study area. This effort began by assessing the pedestrian conditions adjacent to the schools to identify any gaps that may be present. Later stages of Move 2040 will identify the need for infrastructure improvements based on traffic conditions and best practices for school safety. Schools included in this analysis are:

- Cornelius Hedges Elementary School
- Edgerton Elementary School
- Elrod Elementary School
- Evergreen Elementary School
- Evergreen Junior High School
- Helena Flats School
- Jeannette Rankin Elementary School
- Kalispell Middle School
- Lillian Peterson Elementary School
- Russell Elementary School

Each of these schools were analyzed by creating a quarter-mile buffer around each of the schools. In these buffer areas, the analysis looked for the following criteria:

- Presence of pedestrian facilities
- Bicycle and pedestrian activity
- Daily traffic volumes
- Road signs including stop signs, school speed zones, pedestrian crossings, and traffic control.

Figure 3.47 on page 64 through Figure 3.57 on page 74 show the school locations and site specific details for the safe routes to school analysis.

Figure 3.44: Bicycle and Pedestrian Facilities in the Study Area

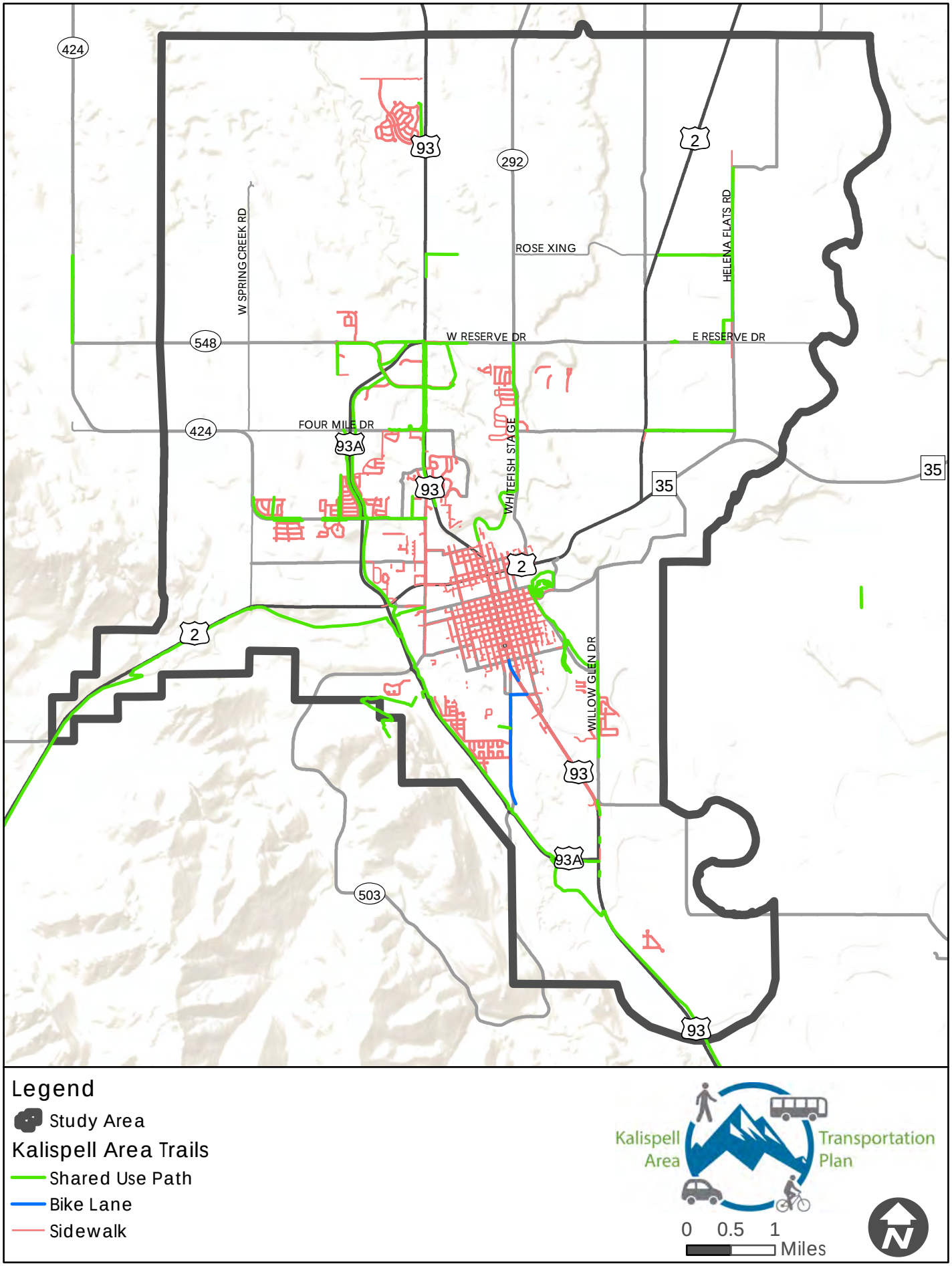


Figure 3.45: Pedestrian Crash Locations

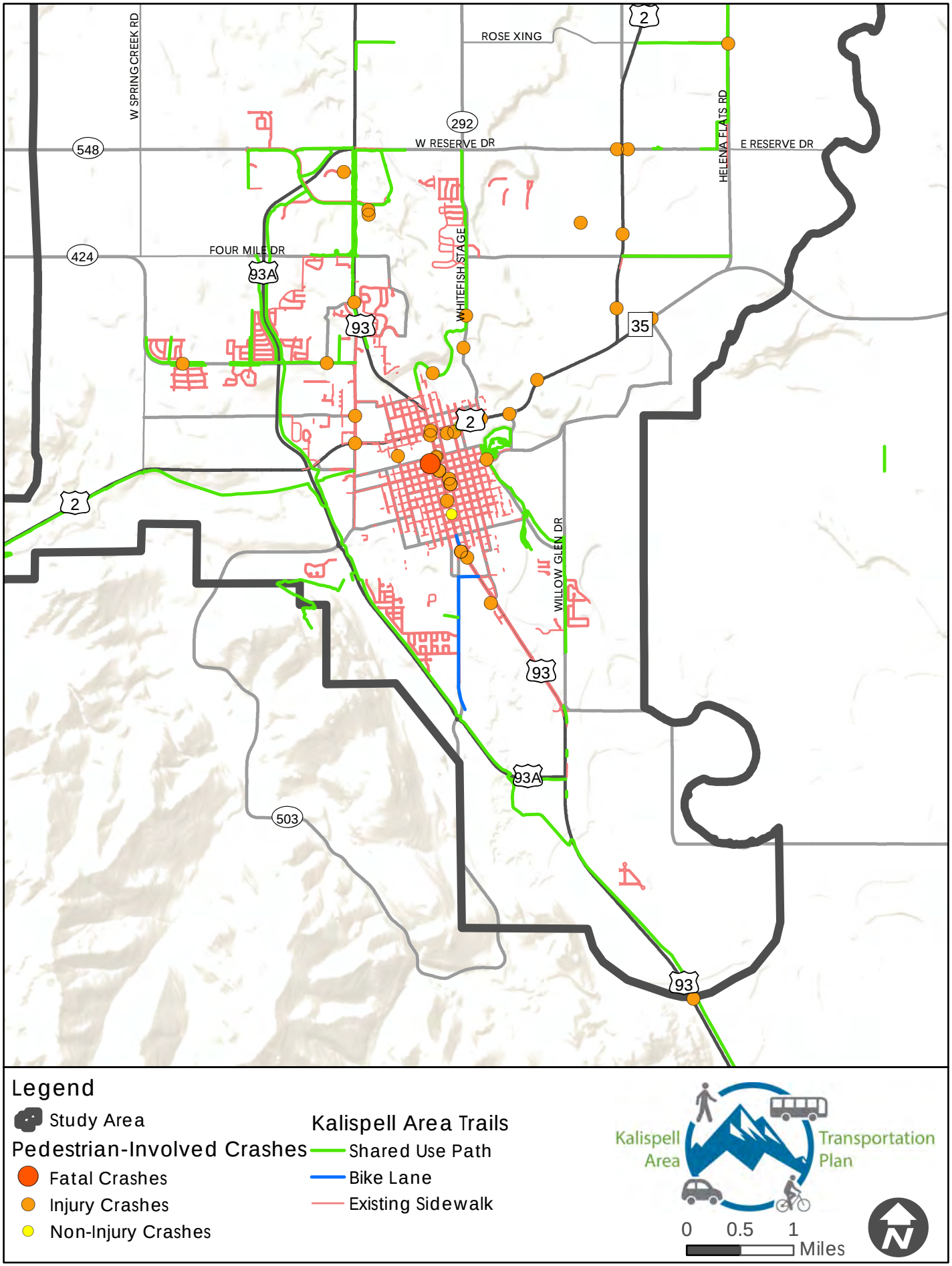


Figure 3.46: Bicycle Crash Locations

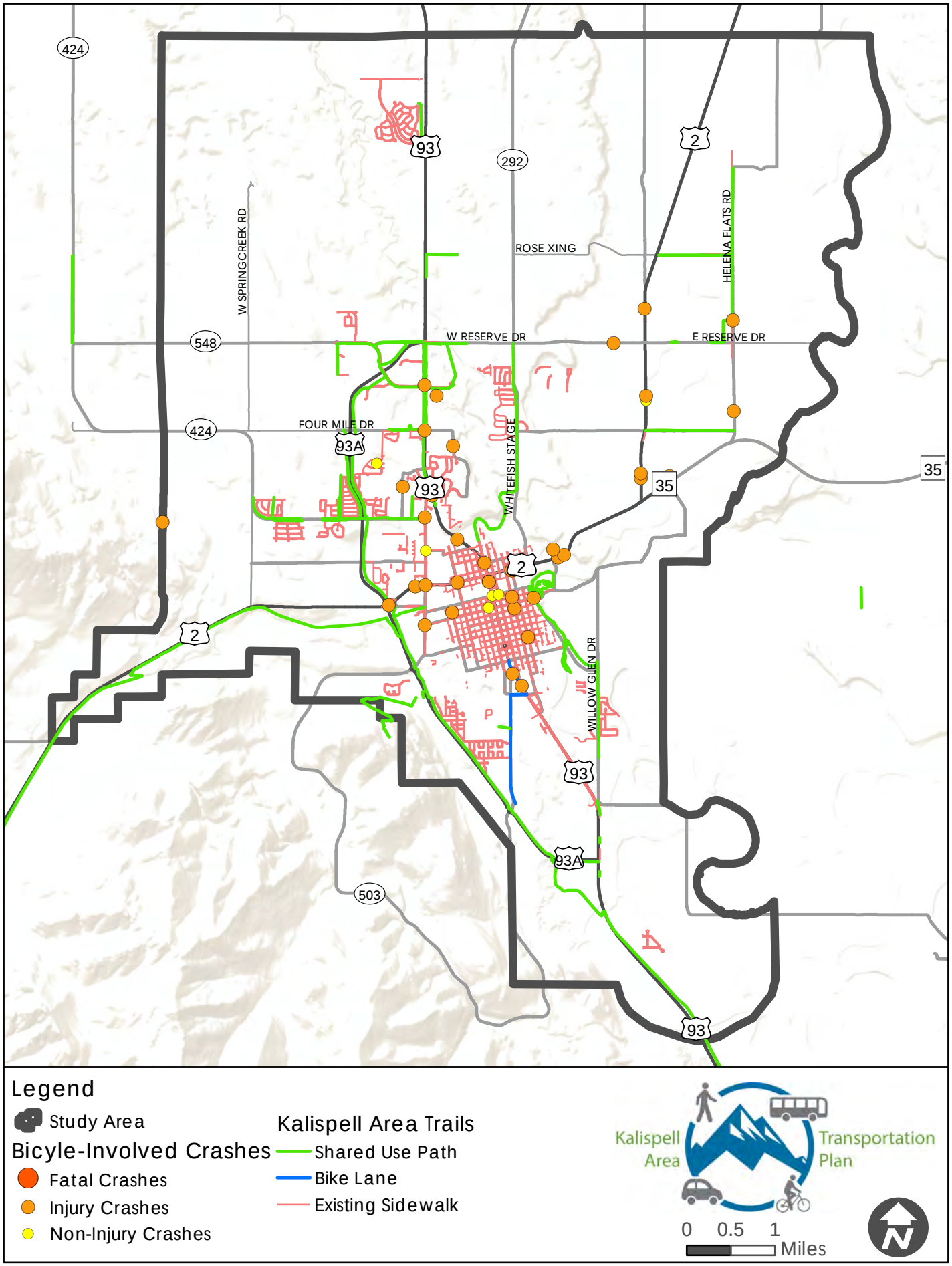


Figure 3.47: K-8 School Analysis Zones in the Study Area

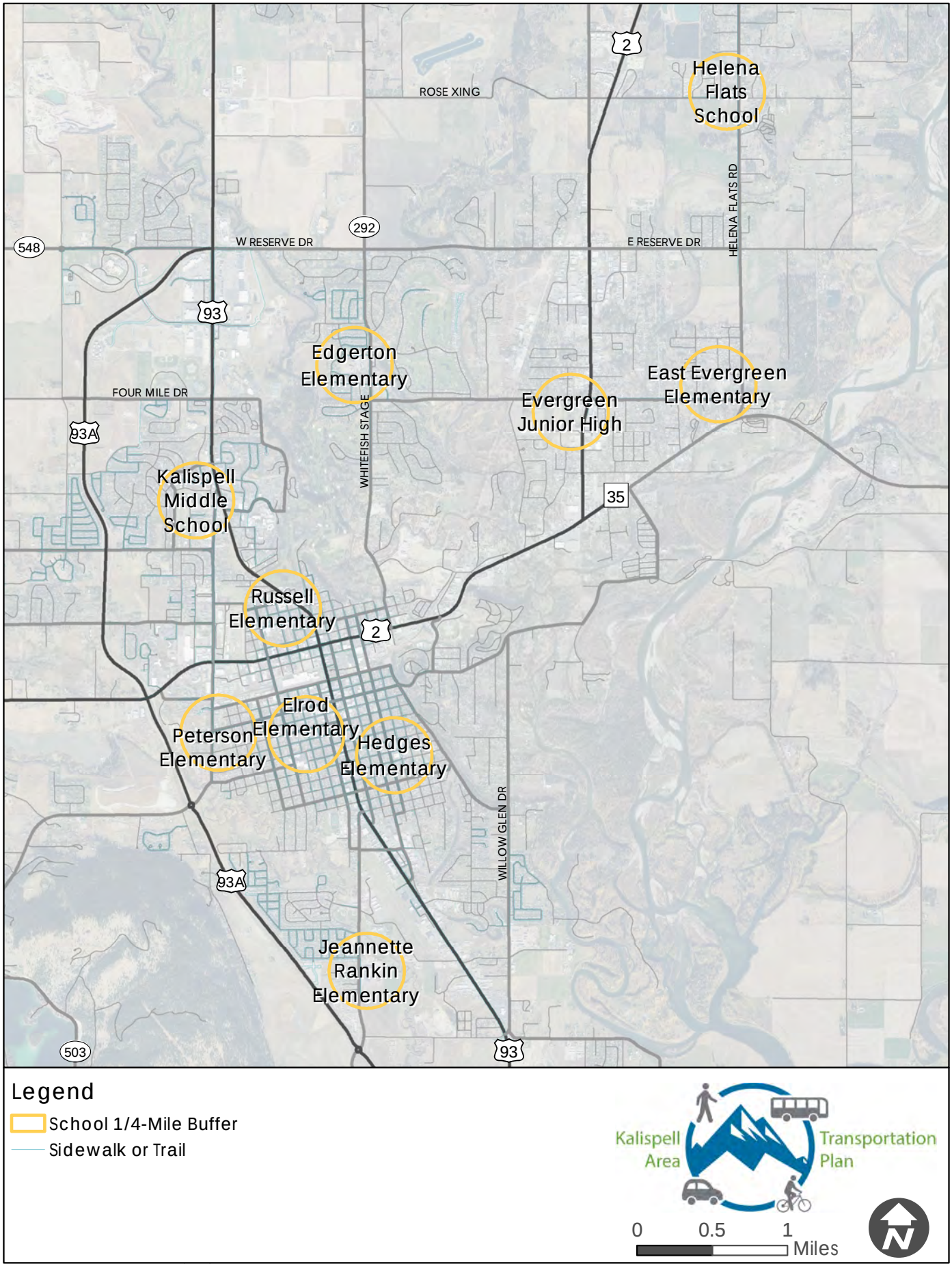


Figure 3.48: Elrod Elementary School

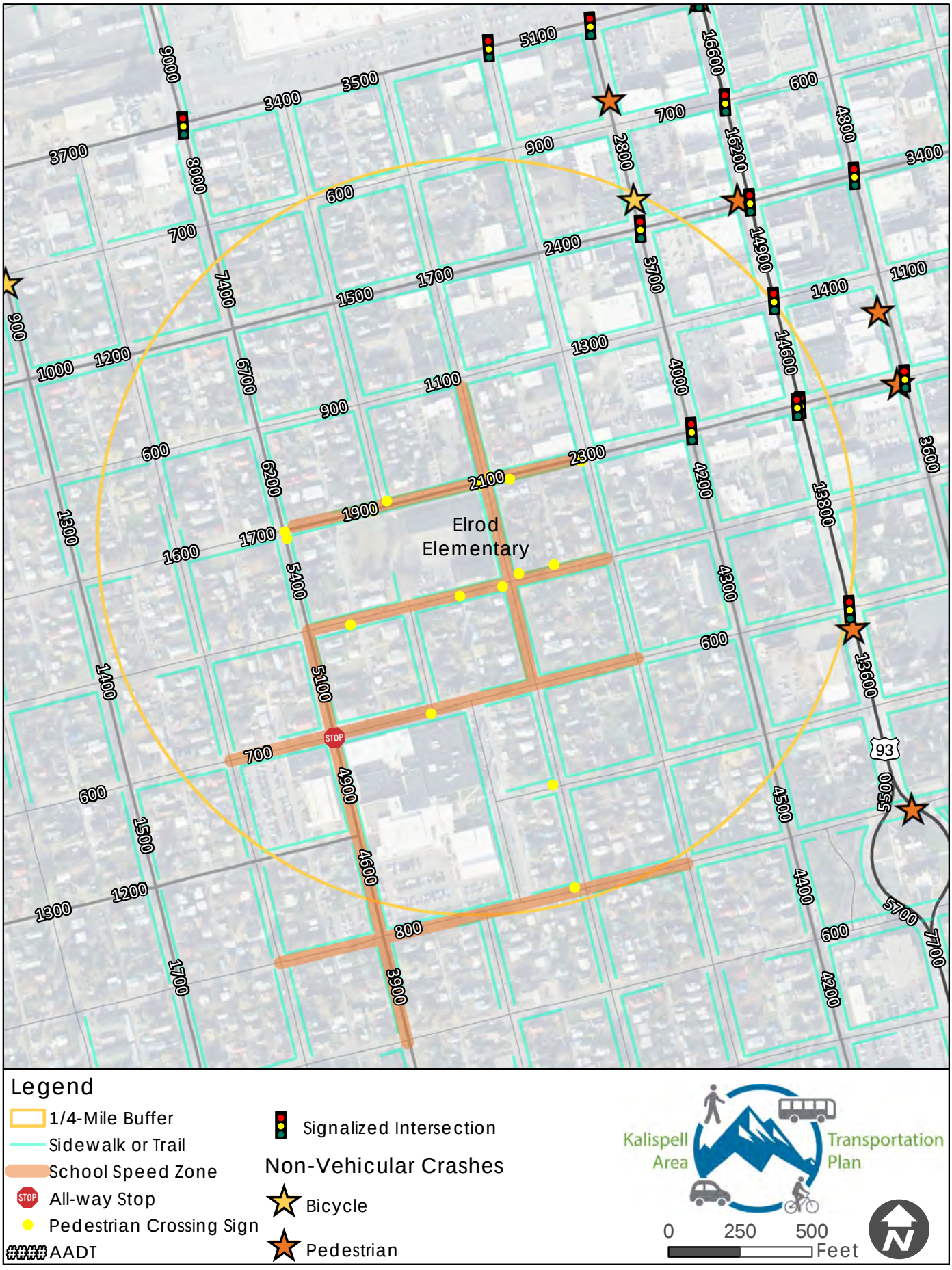


Figure 3.49: Edgerton Elementary School

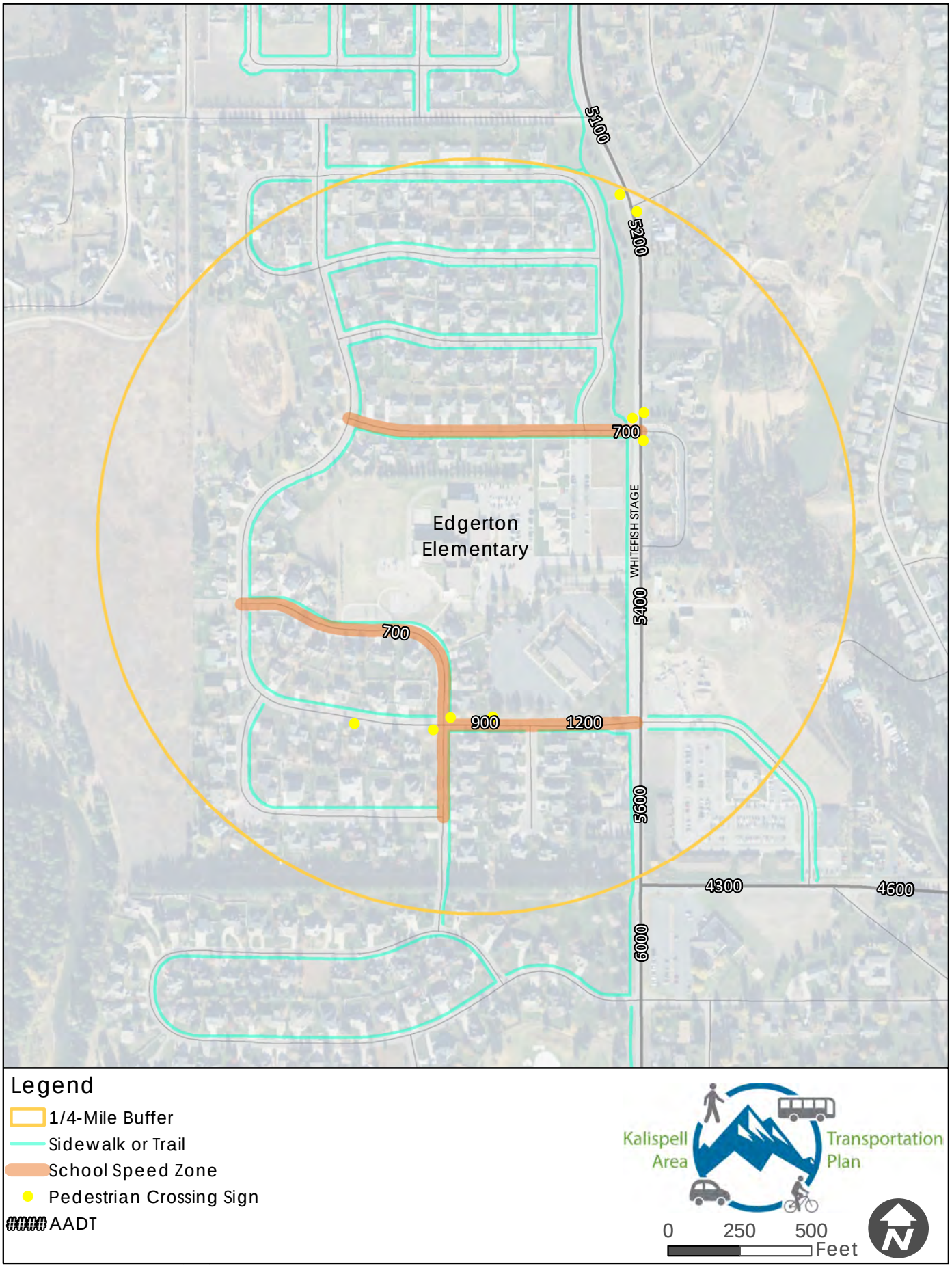


Figure 3.50: Hedges Elementary School

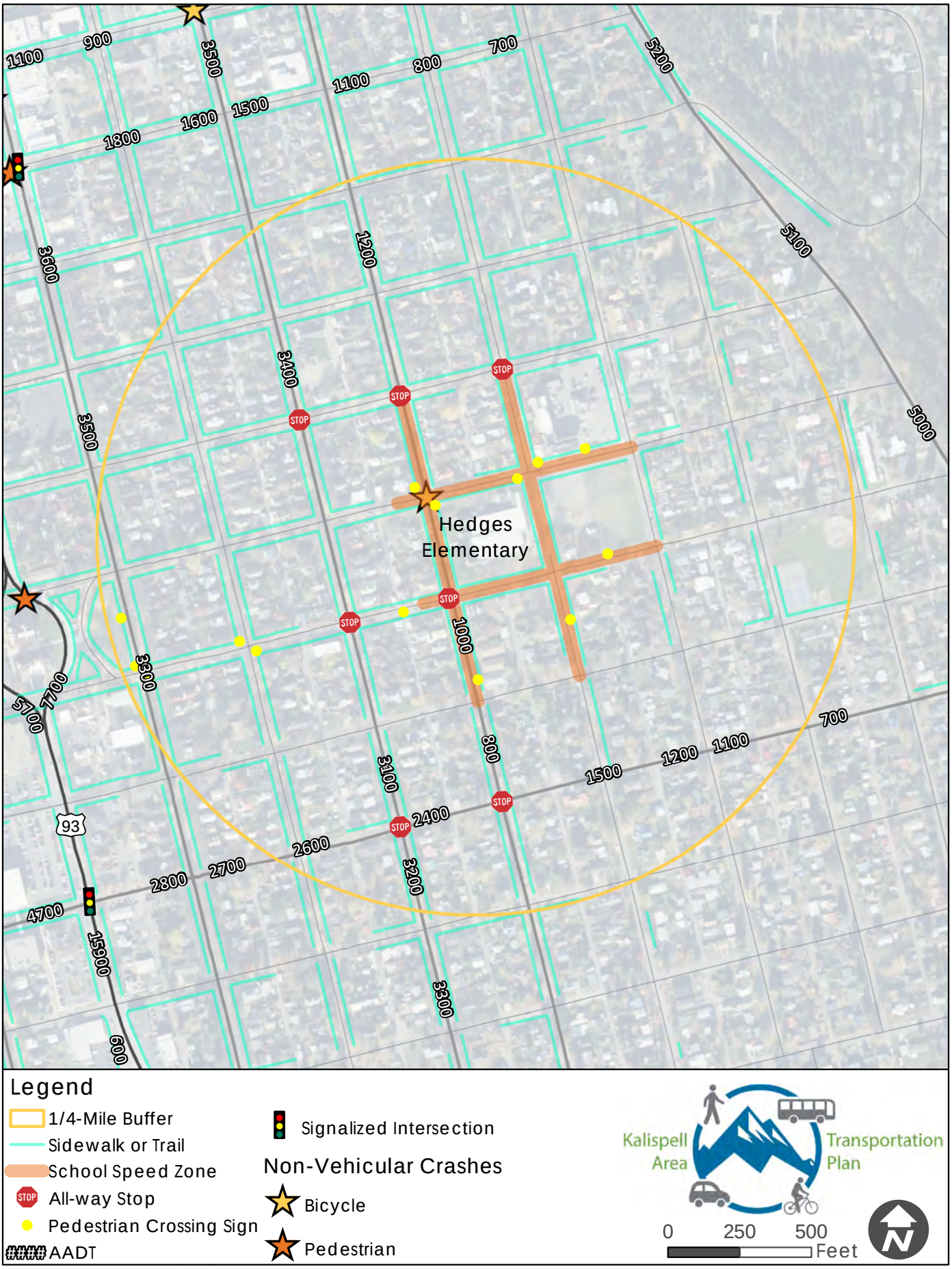


Figure 3.51: Kalispell Middle School

Figure 3.52: Russell Elementary School

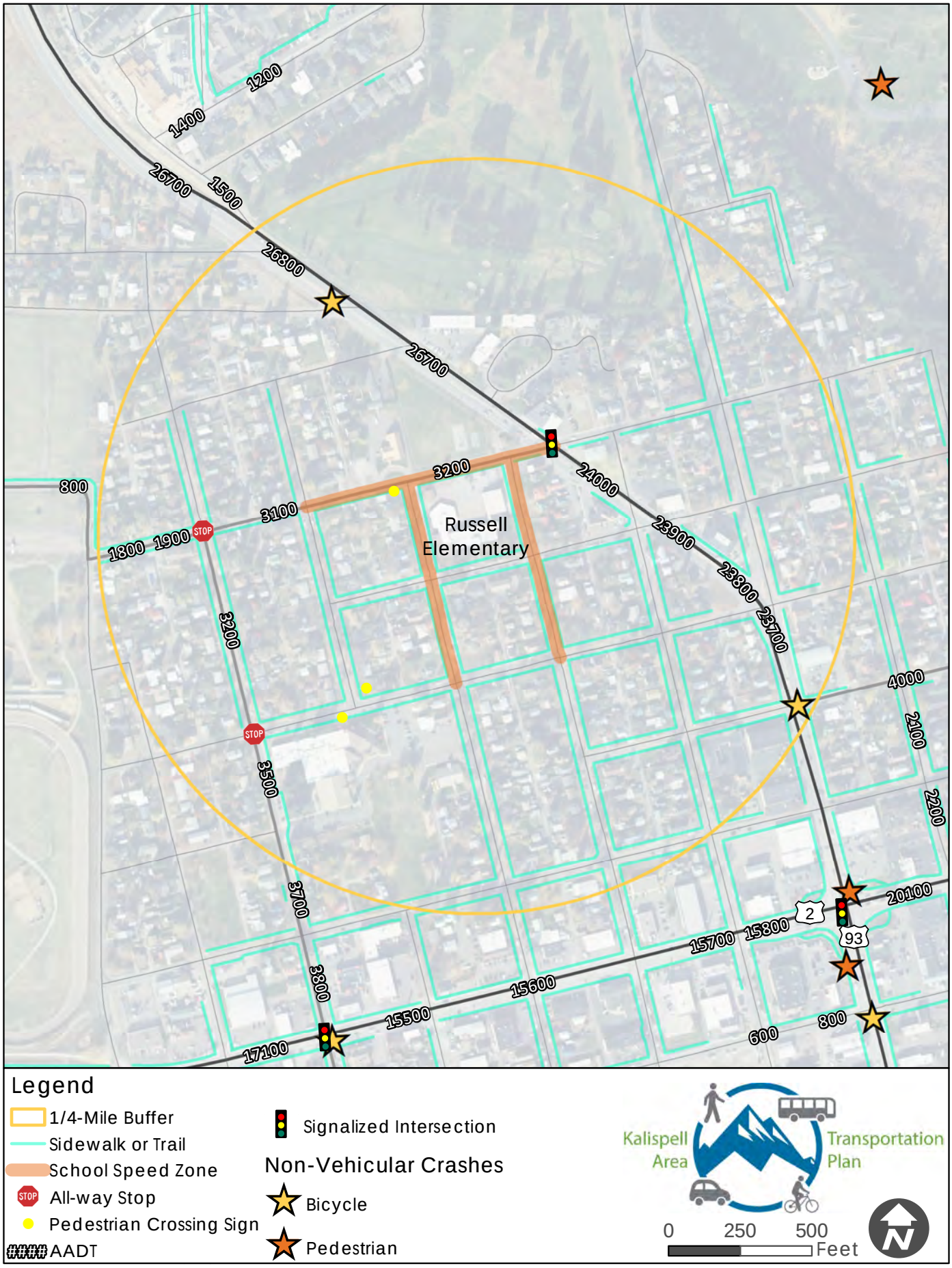


Figure 3.53: Peterson Elementary School

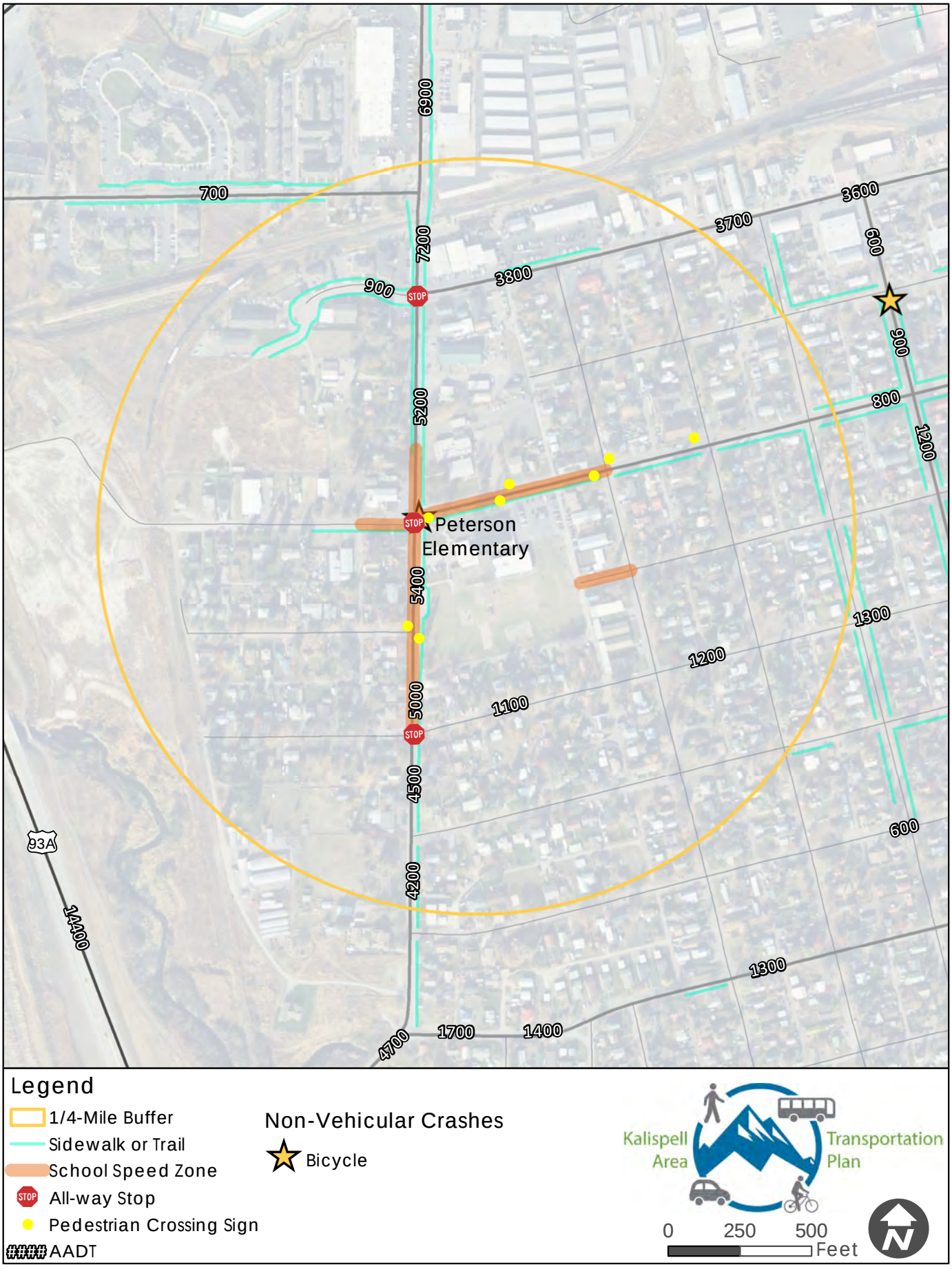


Figure 3.54: Jeanette Rankin Elementary School

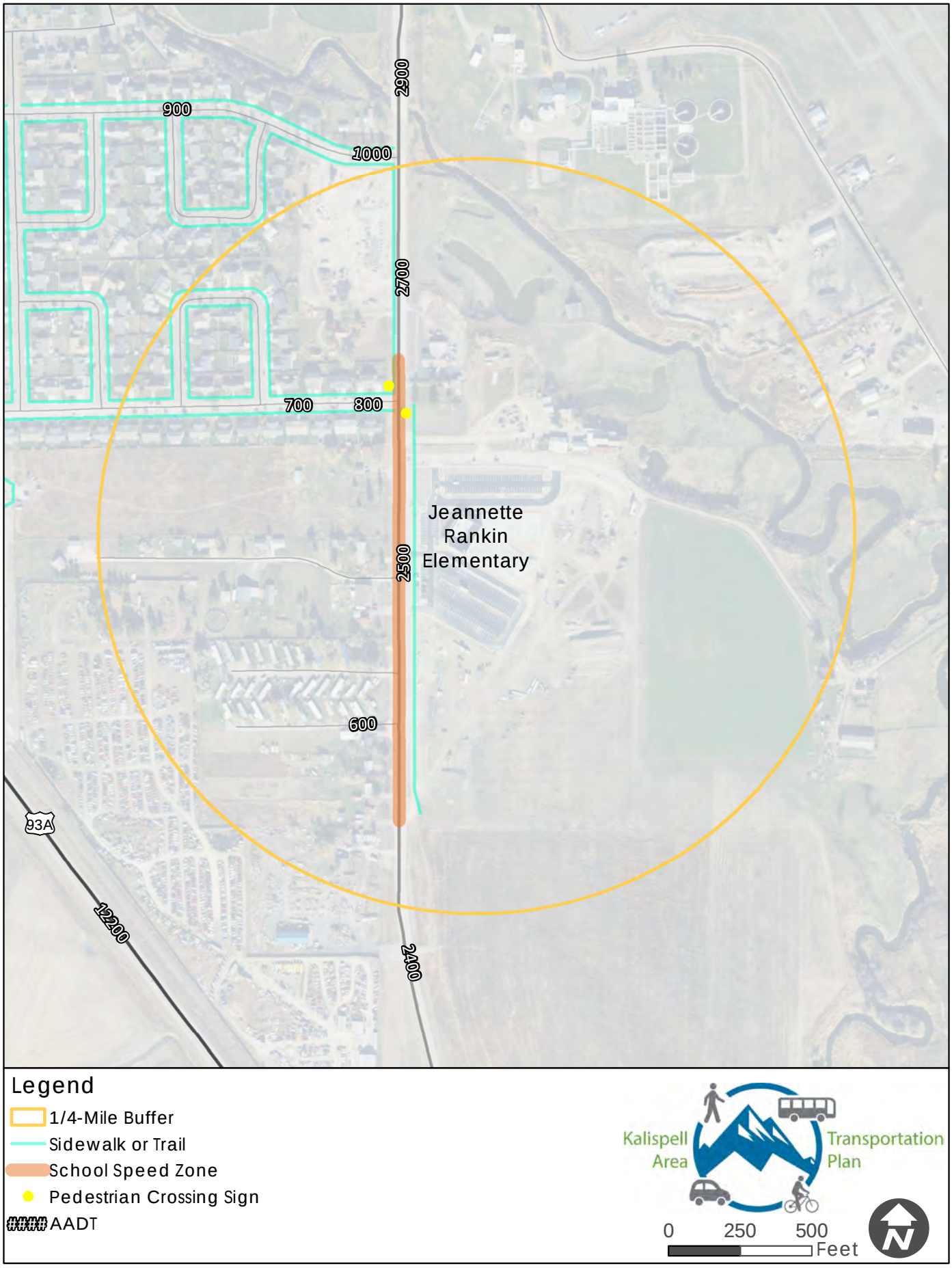


Figure 3.55: Helena Flats School

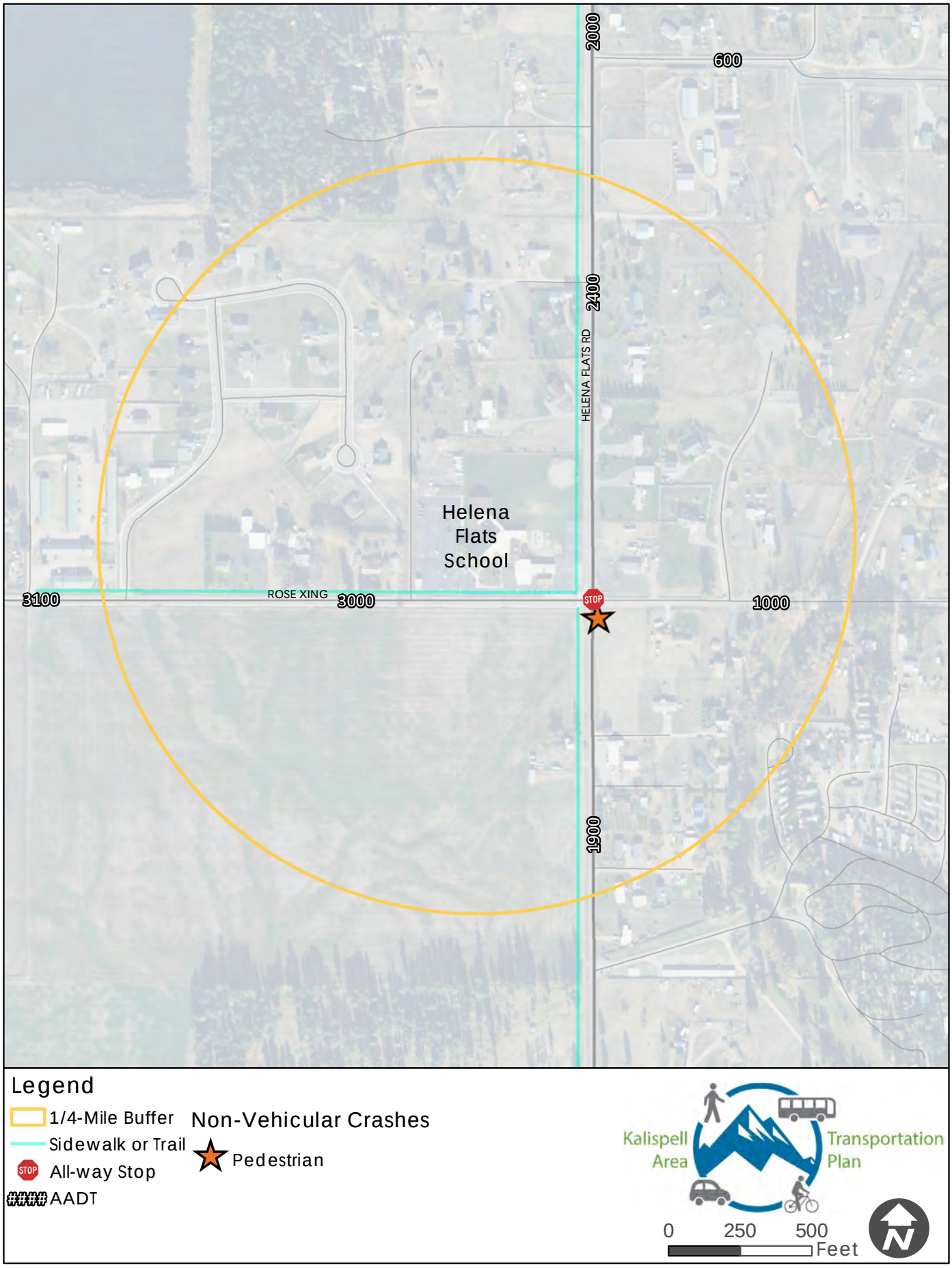


Figure 3.56: Evergreen Junior High School

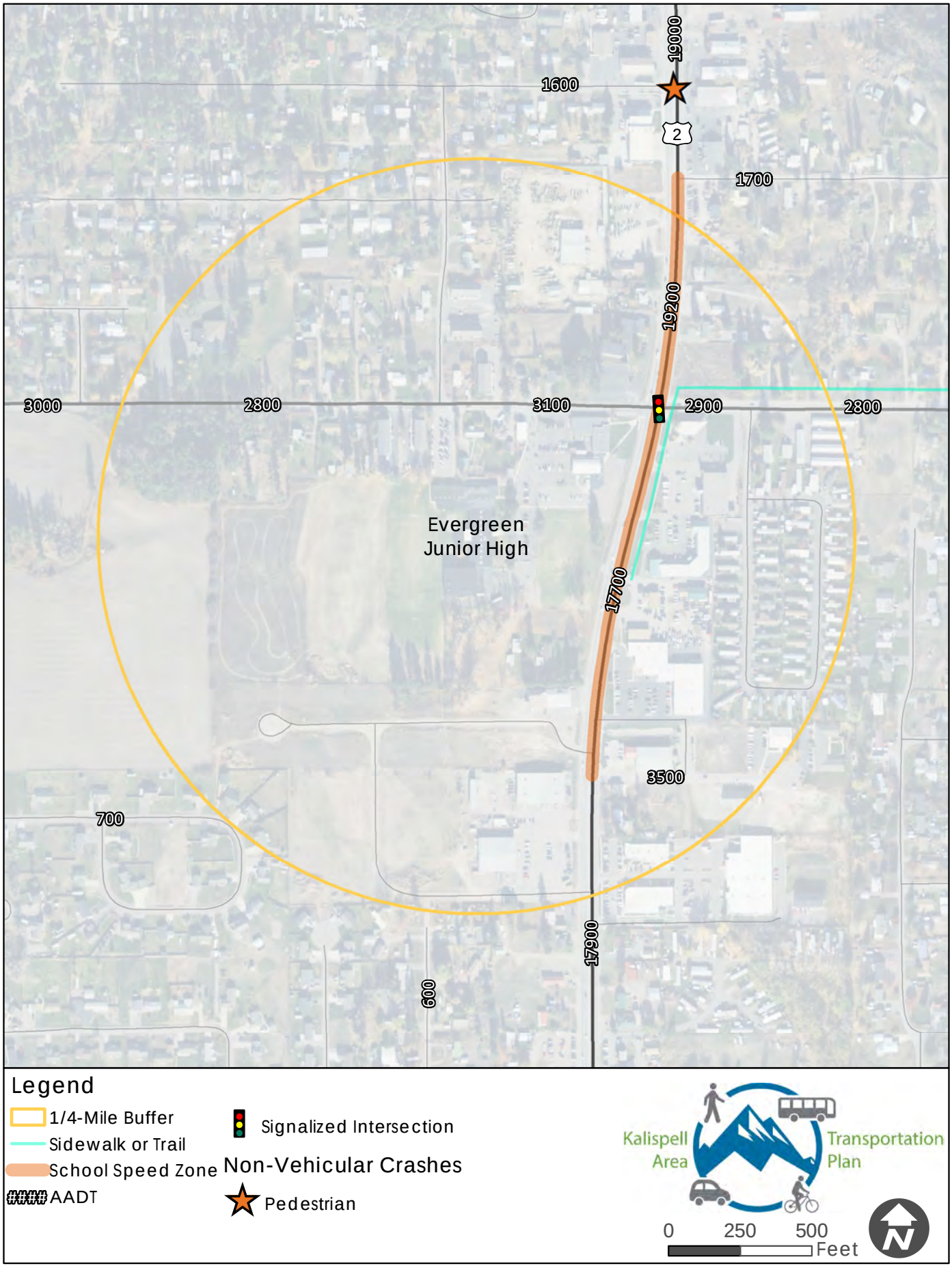
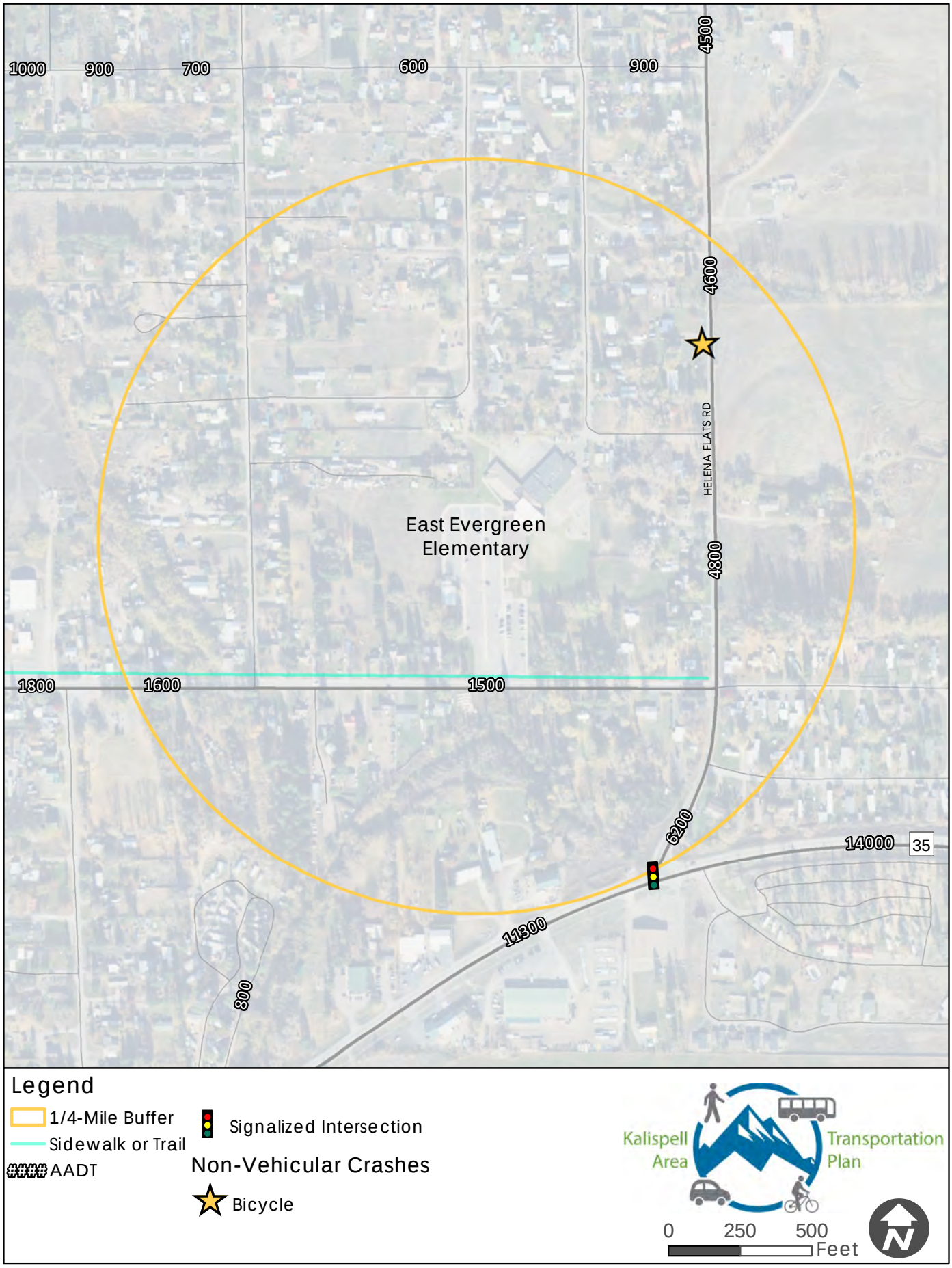


Figure 3.57: East Evergreen Elementary School



Transit System

Mountain Climber provides fixed, fixed-deviated, and paratransit public transportation in Flathead County for the cities of Kalispell, Whitefish, and Columbia Falls.[1] It is operated by Flathead County and the Area IX Agency on Aging. Transit service and investment is guided through the planning efforts in the 2021 Transportation Coordination Plan (TCP), which was adopted in February 2020. Below is a summary of the transit existing conditions. Figure 3.58 on page 77 shows the fixed route routes and stops.

Fixed Route Service

Mountain Climber operates five fixed routes, providing more than 60,000 trips each year since 2012. Of these routes three operate primarily in Kalispell and operate five days per week with service operating between 6:50 AM and 6 PM. They include the following routes:

- Kalispell Green Line
- Kalispell Red Line
- Kalispell Orange Line

The other two routes include the Tri-City Commuter which operates Monday through Friday and offers three rides in the morning and afternoon to Columbia Falls and Whitefish. The S.P.A.R.K. Route is an afterschool program for elementary schools in which Mountain Climber provides one-way service from participating schools to the Summit Medical Fitness Center.

Table 3.14 shows the fixed route service indicators and their trends between 2014 and 2018.

- Fixed route ridership has increased 1.33 percent since 2012, while operating costs have declined by 2.12 percent in the same time period.
- Revenue hours (number of hours transit service is available) has increased by 145 percent since 2014 and passengers per revenue hour has decreased by 58.6 percent. This is primarily attributable to the increase in revenue hours from 4,642 in 2014 to an average of more than 11,200 beginning in 2015.
- Revenue miles (the number of miles driven to provide transit service) has decreased by 0.1 percent, while passengers per revenue mile has increased by 1.5 percent.

Table 3.14: Fixed Route Service Indicators

Fixed Route Service Indicator	2014	2018	Percent Change
Passenger Trips	66,575	67,463	1.3%
Operating Costs	$717,456	$702,271	-2.1%
Passengers per Revenue Hour	14.34	5.93	-58.7%
Passengers per Revenue Mile	0.36	0.37	1.5%
Cost per Passenger	$10.78	$10.41	-3.4%
Cost per Revenue Hour	$154.56	$61.75	-60.1%
Farebox Recovery Ratio	4.69%	3.54%	-24.5%

Source: National Transit Database

The three Kalispell fixed routes operate on thirty-minute frequencies. The orange line was created as of January 2019. The remaining Red and Green lines are split between the Kal City AM and PM accounting for 33,552 rides between them. The next highest route is the S.P.A.R.K.S ridership program with 21,200 rides and averages 1,767 rides a month.

In addition to the three fixed routes, Mountain Climber operated the Glacier National Park commuter service until late 2019. This route provided 12,845 rides to Glacier National Park from July 2018 through July 2019. Due to ongoing funding, safety, and operational concerns, the Flathead County Commissioners terminated the agreement. Going forward, transit service to the park will be provided by LC Staffing of Kalispell.

Paratransit Service

The Americans with Disabilities Act requires fixed route operators to provide paratransit within a three-quarter mile radius of fixed route service. Mountain Climber provides paratransit service within a three quarter mile radius of the Kalispell fixed routes for individuals who meet the functional need eligibility criteria. The service is curb-to-curb, or door-to-door on request, and is available by appointment during the same hours the city buses operate. Mountain Climber's premium dial-a-ride is an appointment-based, curb-to-curb or door-to-door service available to individuals who meet the functional need eligibility criteria who wish to travel within Evergreen and Kalispell. Figure 3.58 on page 77 shows the paratransit service area.

Table 3.15 shows the paratransit service indicators and their trends between 2014 and 2018.

1 Due to impacts related to COVID-19 Mountain Climber is currently restructuring its services. This data reflects operational conditions as of 7/1/2020, and reflect historic conditions.

- Since 2014, paratransit rides have increased 13.2 percent which coincided with a nearly 65 percent increase in the operating costs.
- Revenue hours have increased by 272 percent since 2014, while passengers per revenue hour has decreased by nearly 70 percent.
- Revenue miles have increased by nearly 55 percent, while passengers per revenue mile has decreased by 26 percent.

Table 3.15: Paratransit Service Indicators

Paratransit Service Indicator	2014	2018	Percent Change
Passenger Trips	27,959	31,659	13.2%
Operating Costs	$318,496	$525,160	64.9%
Passengers per Revenue Hour	7.42	2.25	-69.6%
Passengers per Revenue Mile	0.31	0.23	-26.9%
Cost per Passenger	$11.39	$16.59	45.6%
Cost per Revenue Hour	$84.55	$37.40	-55.8%
Farebox Recovery Ratio	4.69%	3.54%	-24.5%

Source: National Transit Database

Vehicle Fleet

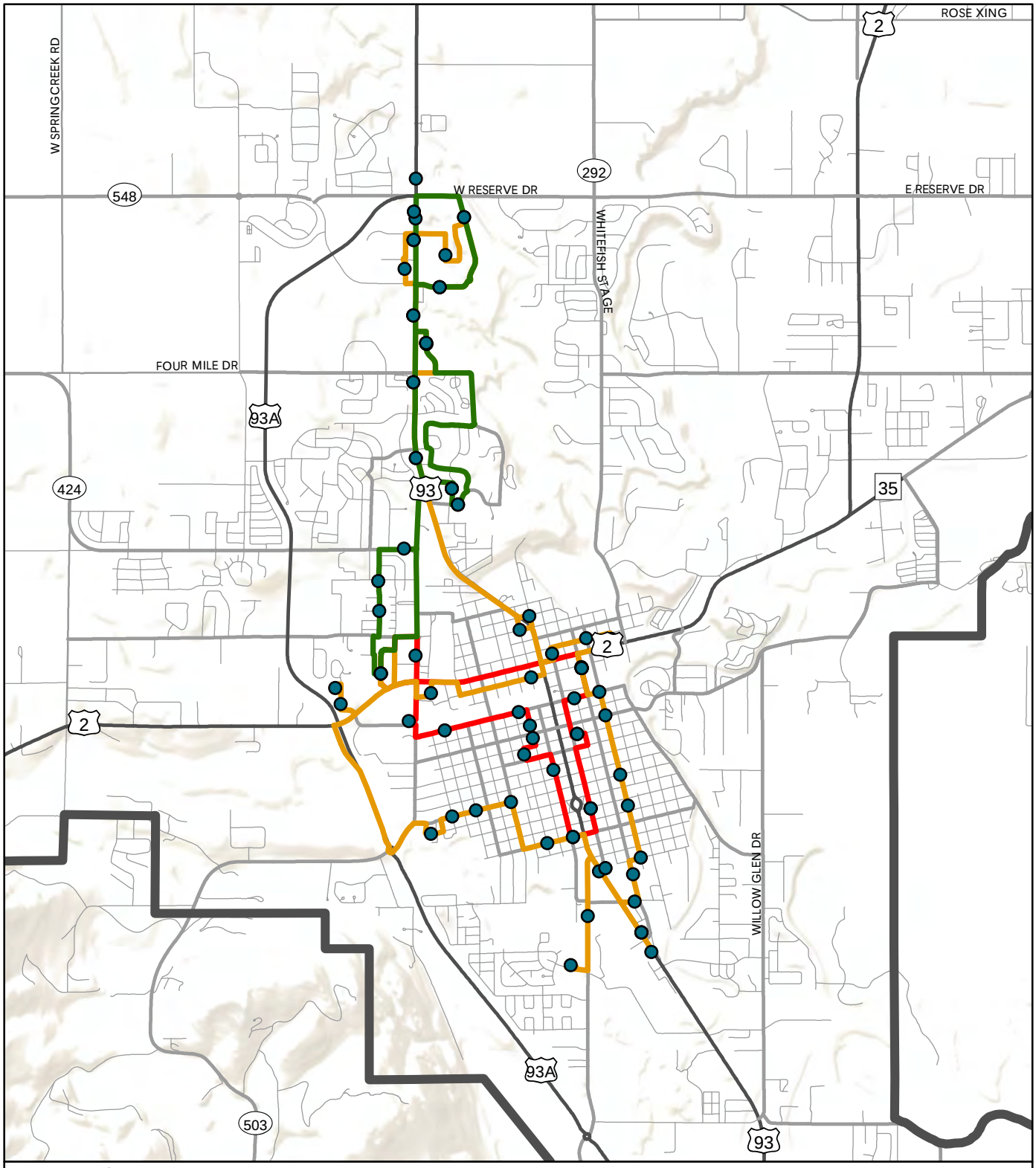
Mountain Climber currently has 16 vehicles for passenger transportation. Nine are used for the fixed route service and seven for demand response and paratransit service. Table 3.16 shows the vehicle inventory and condition.

Table 3.16: Mountain Climber Vehicle Inventory and Condition

Fleet Number	Type	Odometer
2093(2574)	Fixed Route Bus	218,962
Minivan	DR/Paratransit	61,384
892 (8040)	DR/Paratransit	250,403
893(6948)	DR/Paratransit	249,285
2088(1364)	DR/Paratransit	204,864
49(8105)	Fixed Route Bus	219,742
232(2239)	Fixed Route Bus	162,715
233 (3801)	Fixed Route Bus	159,181
234(3723)	Fixed Route Bus	243,483
658(8478)	Fixed Route Bus	141,481
572(7704)	Fixed Route Bus	117,471
8022(3174)	DR/Paratransit	72,933
1495 (3871)	Fixed Route Bus	89,019
6528	DR/Paratransit	38,399
6527	DR/Paratransit	38,023
5556	Fixed Route Bus	9,896

Source: Eagle Transit, 2019 [now Mountain Climber]

Figure 3.58: Kalispell Fixed Transit Routes and Stops



MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 4: GROWTH AND FORECASTS

GROWTH PLANNING

Introduction

The base year of 2017 was established by the MDT for the development and calibration of the travel demand model (TDM) to support the Kalispell Area Transportation Plan (Move 2040). This chapter provides specific information on the development of base year (2017) and 2040 population and employment assumptions.

Population and Employment

TAZ data from the 2017 TDM was fitted to the project study area boundary approved by the SRC. Data for the 2017 base year was reviewed and evaluated prior to setting any projected growth trends to the year 2040. Figure 4.1 and Figure 4.2 on page 83 show the current TAZ structure from the TDM.

Figure 4.3 on page 84 and Figure 4.4 on page 85 shows the current 2017 base year allocations for both employment and households. Employment information is further refined into retail and non-retail categories.

Growth Projections

The first step in the growth projection process was to establish geographic growth assumptions within the Move 2040 study area. The Move 2040 study area was divided into three distinct geographic subareas. They are defined as follows, and shown in Figure 4.5 on page 86:

- Kalispell includes the current annexation boundary for the city of Kalispell and was smoothed to match TAZ Boundaries which otherwise exceed the current annexation boundary of Kalispell.
- Evergreen includes the current census designated place (CDP) of Evergreen. This area encompasses more than the current boundary of the Evergreen Water & Sewer District, including the current Evergreen Waste Water Service Area Boundary developed between City of Kalispell and Evergreen Water & Sewer District.
- Balance of the Study Area includes the remainder of the study area currently outside of either areas defined as Kalispell or Evergreen. These areas are solely within Flathead County.

Household Growth

Overall household growth within the study area was projected to grow by nearly 9,300 households. Household growth was projected for Move 2040 specifically for each of the geographic subareas discussed earlier and adjusted to reflect the evaluation of potential projected conditions related to each subarea within the study area. These are shown in Table 4.1 on page 90.

Figure 4.6 on page 87 shows total household allocations for the 2040 planning horizon. Figure 4.7 on page 88 shows allocation of projected household growth for the years 2018 through 2040. Figure 4.8 on page 89 shows 2040 household density per acre.

Kalispell

A 2.5 percent household growth rate was developed for the Kalispell subarea. This growth rate is slightly more aggressive than the two percent used by the City of Kalispell for recent infrastructure planning to support both its water and wastewater system completed in 2018 and 2019. However, initial work of allocating growth revealed a potential higher rate of growth to the year 2040. The 2.5 percent growth rate is below the trend lines seen by the City of Kalispell between the years 1980 and 2016 (3.1 percent). The 2.5 percent rate represents a balanced middle ground. Projected new household growth in the Kalispell portion of the study area is projected to be 7,005 to nearly 20,000 total households by 2040.

Evergreen

A 2.3 percent growth rate was used for the Evergreen subarea. This growth rate applies to the Evergreen CDP boundary and therefore makes assumptions for growth and development outside of the current Evergreen Water & Sewer District Boundary. The Evergreen Water & Sewer District is currently planning for a two percent growth rate specific to their district boundary. This growth rate is only based on a 10-year growth trend and does not account for the larger CDP. The historical rate of growth for Evergreen (1980–2017) has been 2.7 percent annually. A 2.3 percent rate appeared more realistic in relation to available buildable land and existing water and sewer capacity assumptions. A 2.3 percent household growth rate accounts for nearly 1,700 additional households over the life of planning horizon within the Evergreen CDP, for a total of more than 5,000 households by 2040.

Figure 4.1: TDM TAZ Structure

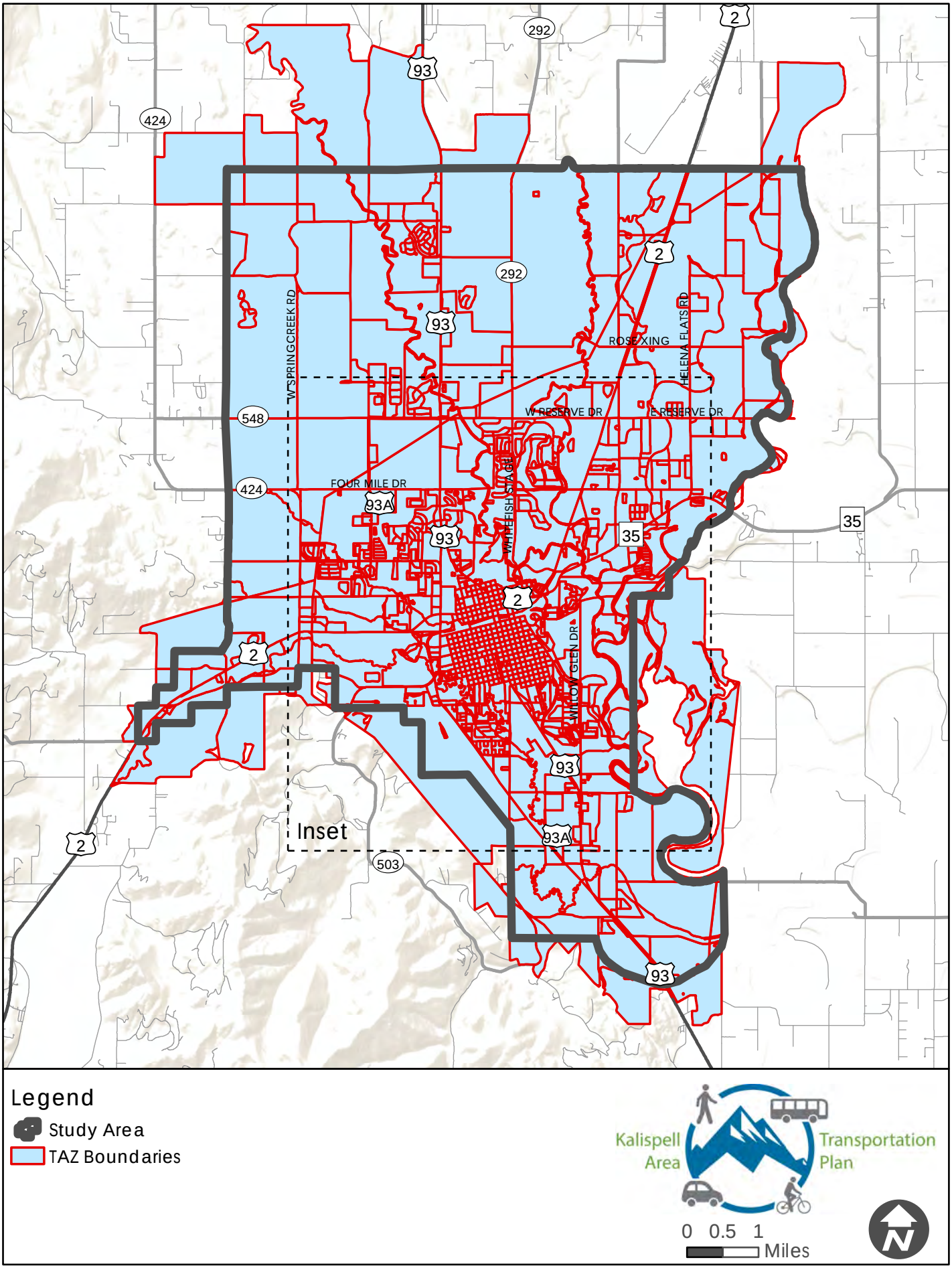


Figure 4.2: TDM TAZ Structure Inset

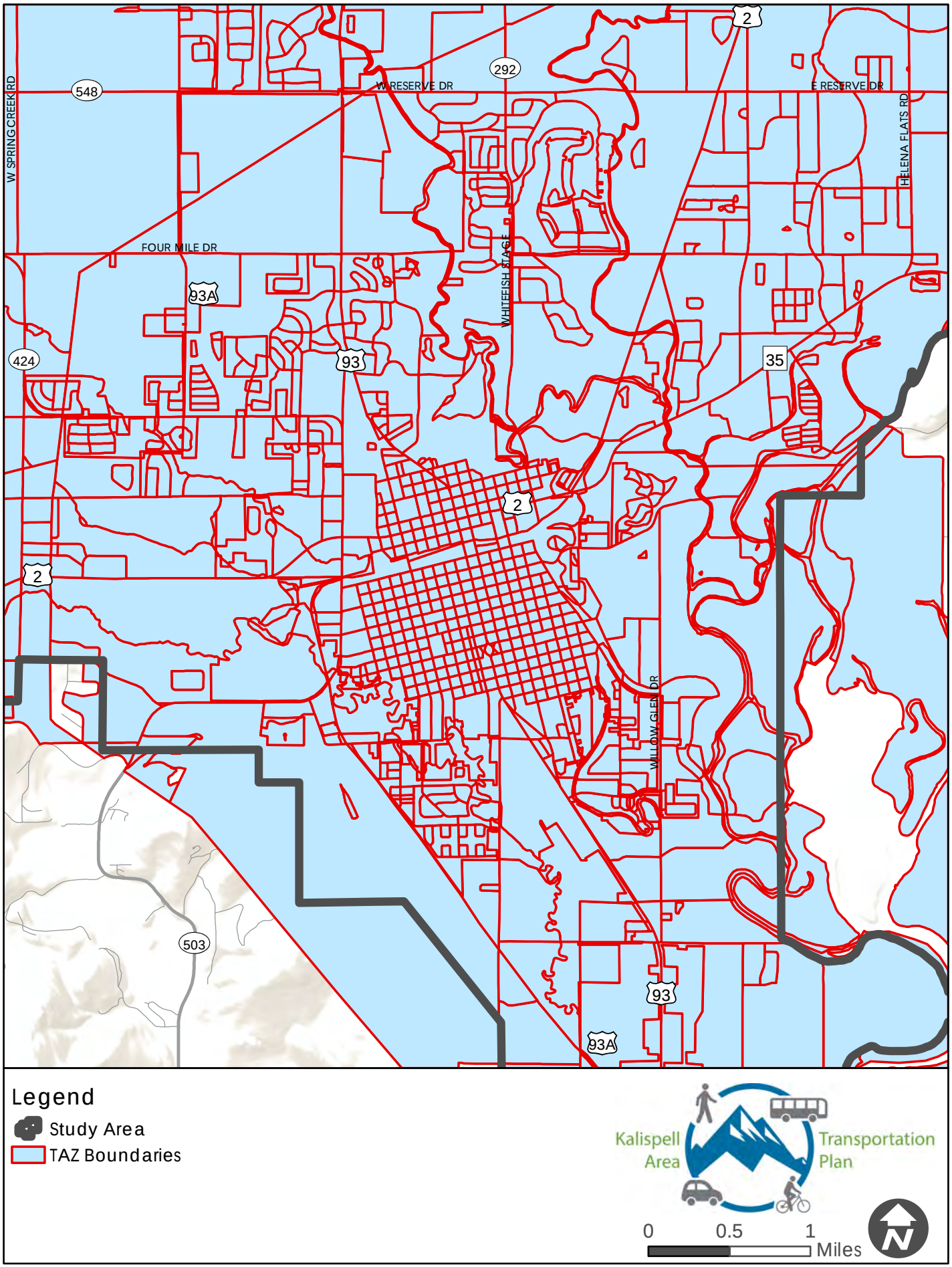


Figure 4.3: Baseline TAZ Household Allocations

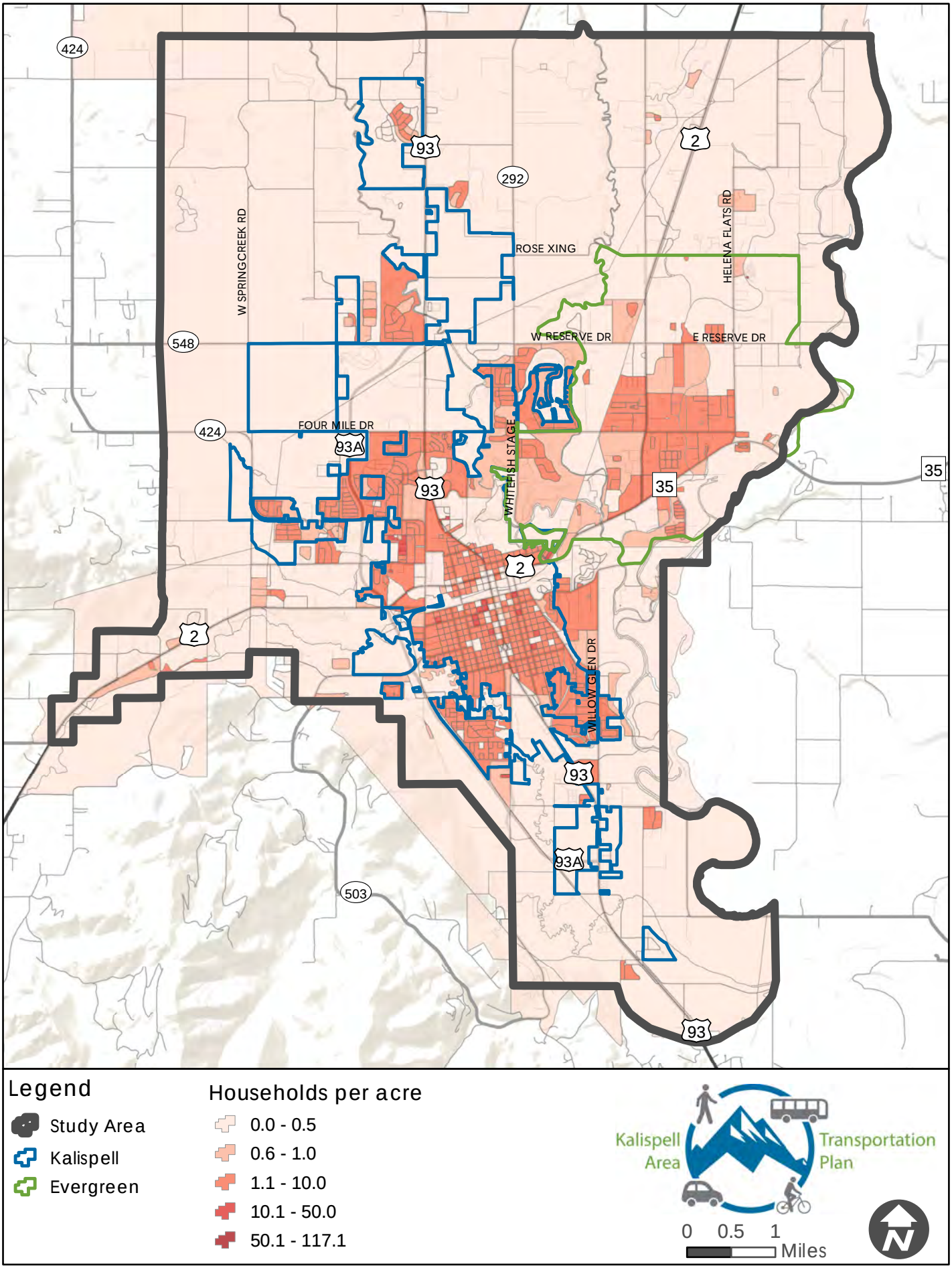


Figure 4.4: Baseline TAZ Employment Allocations

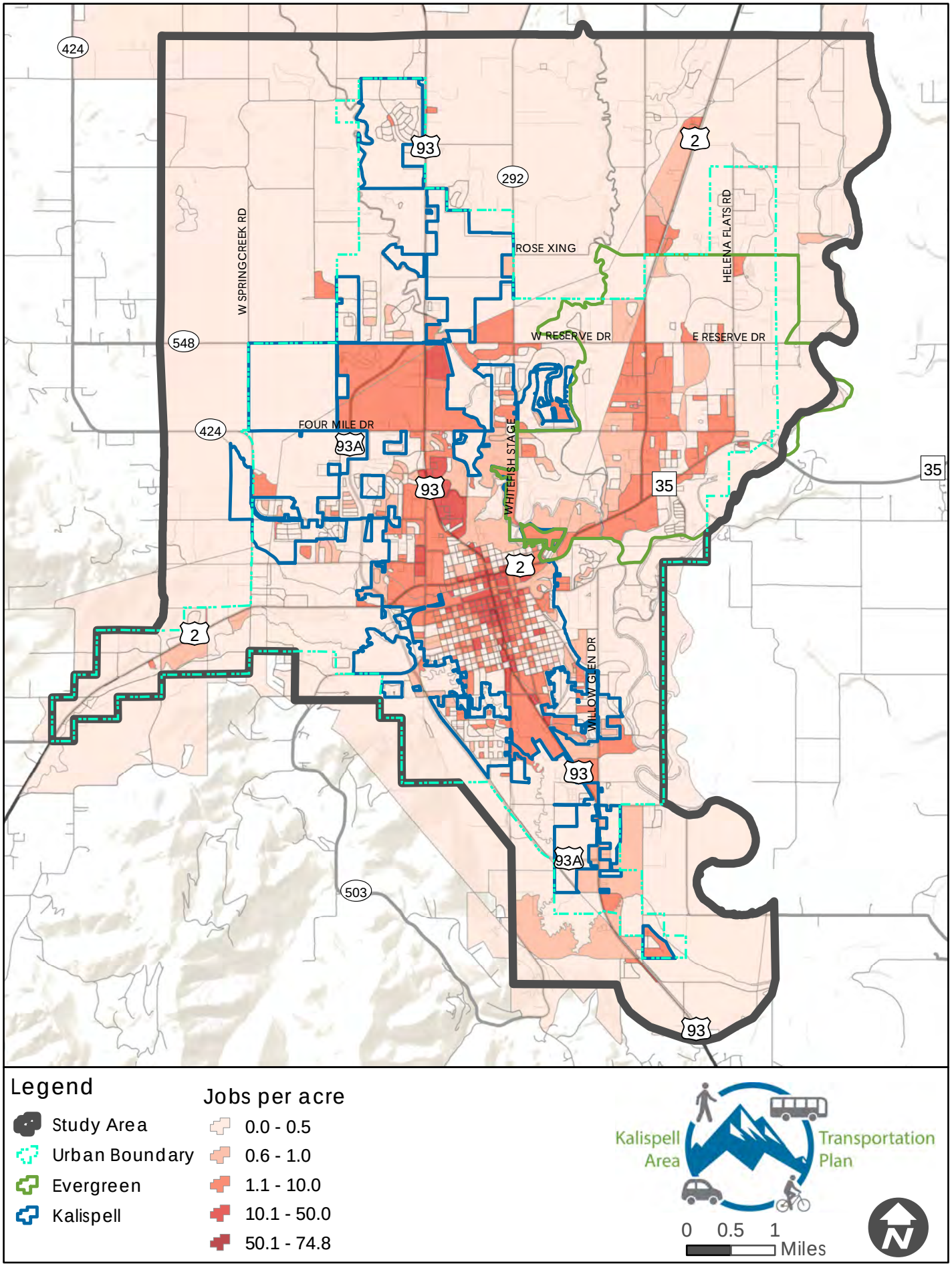


Figure 4.5: Geographic Development Areas

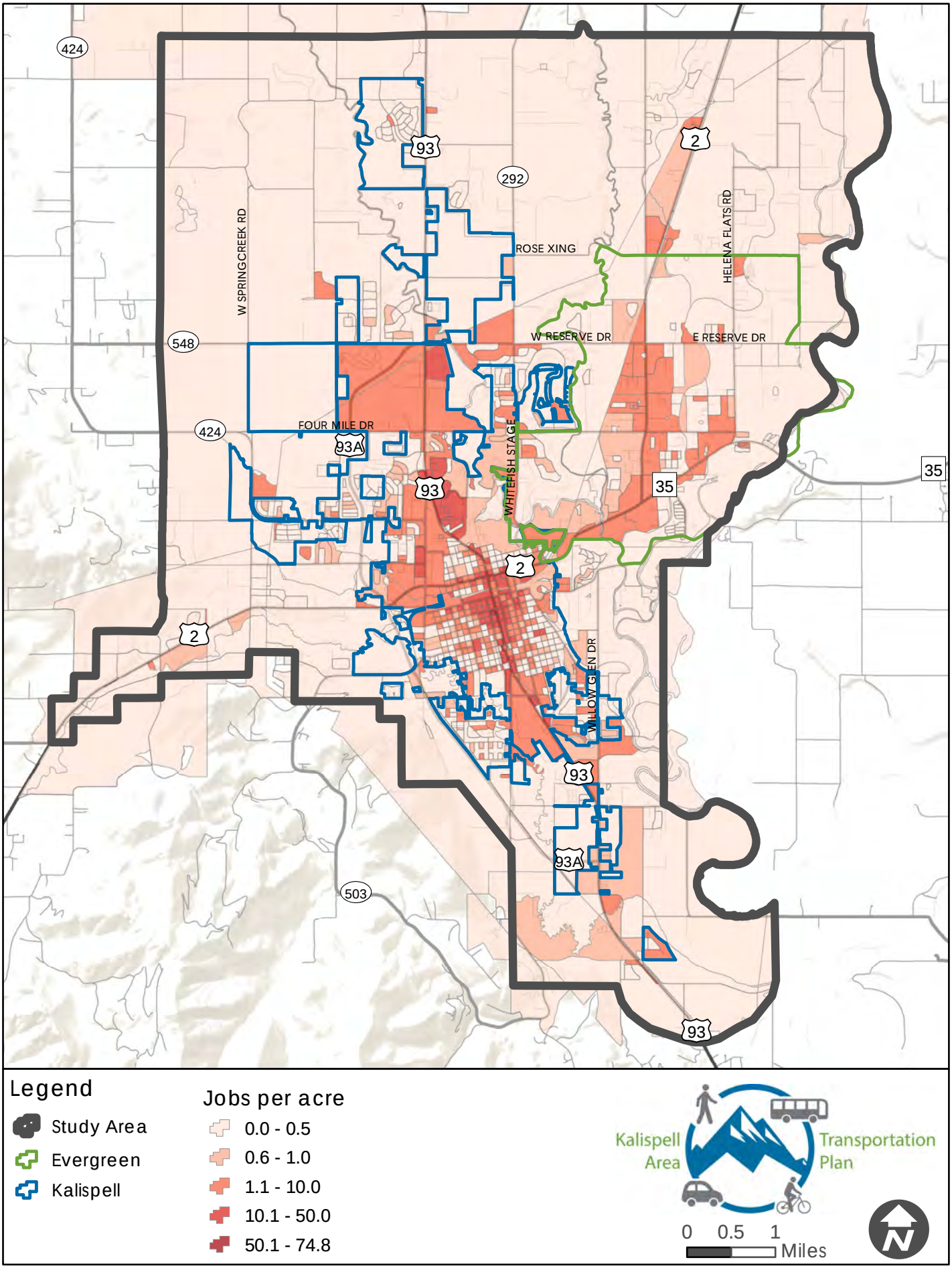


Figure 4.6: 2040 Household Allocations

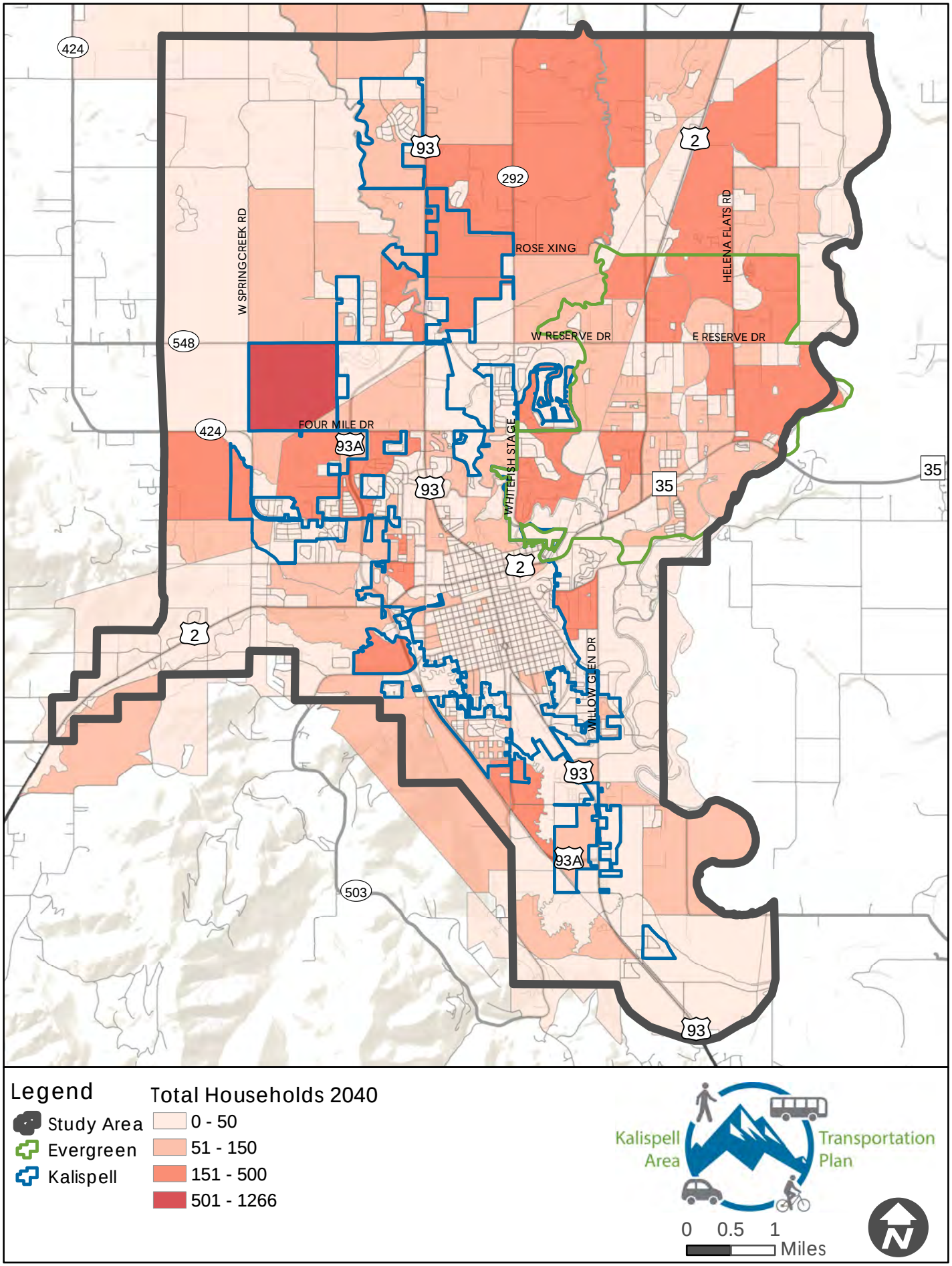


Figure 4.7: Projected Household Growth 2018–2040

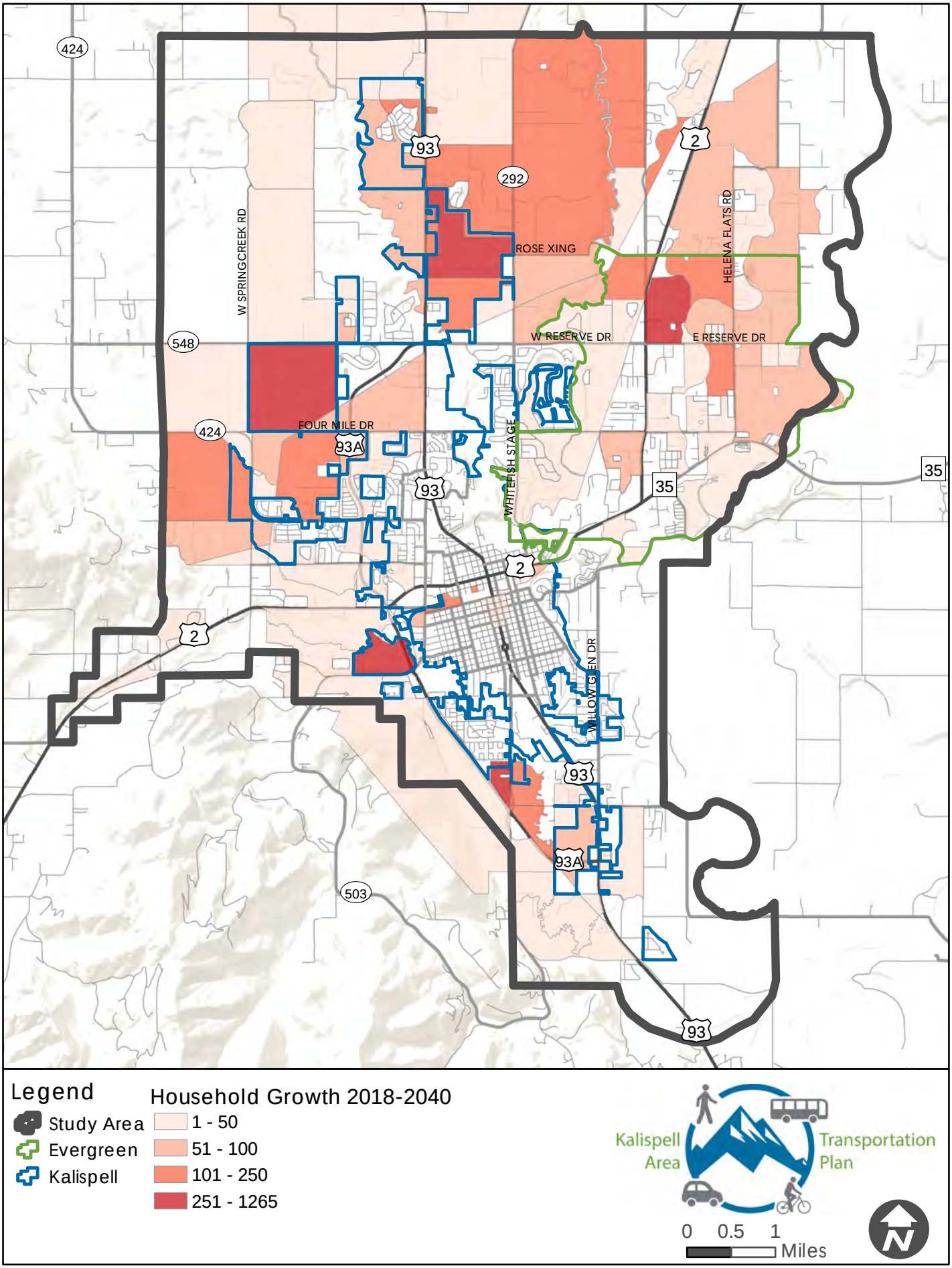
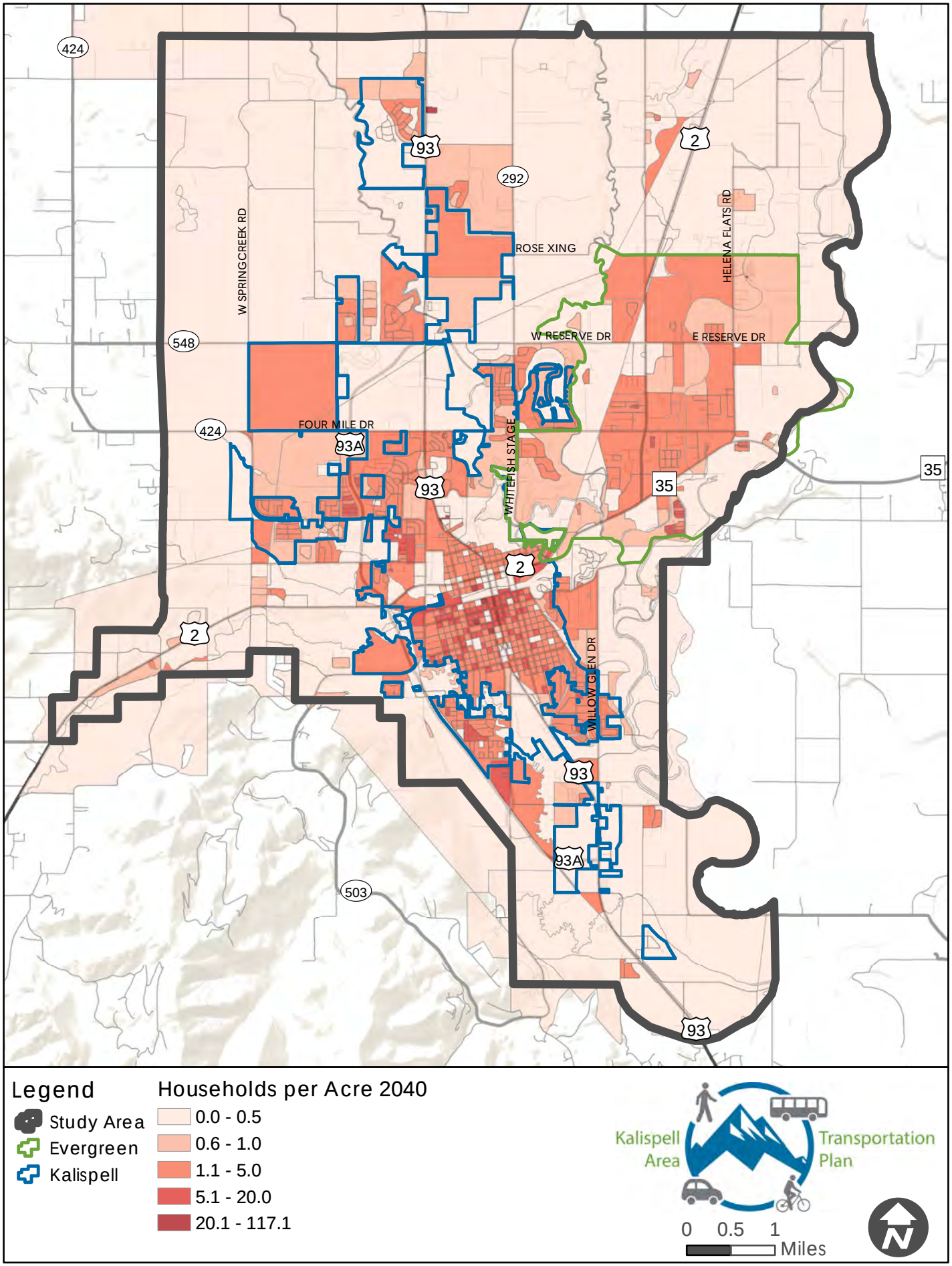


Figure 4.8: 2040 Household per Acre



Balance of the Study Area

A 1.9 percent growth rate was used for the portion of the Move 2040 Study Area outside both Kalispell or Evergreen, otherwise called the Balance of the Study Area. This trend line is slightly higher than the 1.7 percent growth rate between 1990 and 2018 for Flathead County as a whole. However, this rate is higher than the projected rate established by the Montana Census and Economic Information Center (MT CEIC) of 0.9 percent over the next 20 years. The higher projected growth rate reflects the increased development potential adjacent to the Kalispell Urban Area than compared to other parts of Flathead County. This growth rate was the result of high potential for growth north of Evergreen, and generally following the US 2 Corridor north towards the study area boundary. By 2040, this subarea is expected to add nearly 600 new households for a total of 1,970.

Table 4.1: Existing and Projected Household Growth

	2017	*2040*	*Change*	*Annual Percent Change*
Kalispell	12,831	19,836	7,005	2.5%
Evergreen	3,356	5,028	1,672	2.3%
Balance of Study Area	1,392	1,970	578	1.9%
Total	**17,579**	**26,834**	**9,255**	**2.4%**

Employment Growth

Overall employment growth within the study area was projected to grow by 1.9 percent, or nearly 11,700 jobs. Employment growth was projected for Move 2040 specifically for each of the geographic subareas discussed earlier and adjusted to reflect the evaluation of potential projected conditions related to each geographic subarea within the study. These are shown in Table 4.2.

Figure 4.9 shows allocation of projected employment growth for the years 2018 through 2040. Figure 4.10 on page 92 shows total employment allocation for the 2040 planning horizon and Figure 4.11 on page 93 shows total employment density per acre.

The 1.9 percent study area growth rate is in line with the 1.8 percent historical trends reported for the Northwest Region of Montana for the years 2013 through 2018, per the Montana Department of Labor & Industry (MTDLI). A 1.9 percent growth rate outpaces the 10-year MTDLI projected average for the Northwest Region of Montana of 1.0 percent for the years 2018 through 2028. Based on MTDLI projections, the study area would capture about one-third of the projected employment growth for Northwest Region for the years 2018 through 2028.

Kalispell

An employment growth rate of 2.1 percent was utilized for Kalispell which roughly matches the 2.5 percent household growth discussed earlier. By 2040, Kalispell is expected to add nearly 10,000 jobs to a total of 32,031.

Evergreen

An employment growth rate of 1.2 percent was utilized for Evergreen. This lower growth rate was determined in consultation with the SRC and stakeholders from Evergreen. By 2040, Evergreen is expected to add more than 1,000 jobs to a total of 5,022.

Balance of the Study Area

A 2.3 percent growth rate was projected for employment in the Balance of the Study Area identified for Move 2040. Given its proximity to the Kalispell Urban Area, growth trends on the edges of the study area are anticipated to be higher than other parts of unincorporated Flathead County. As is discussed later, much of this growth is anticipated in the northeastern portion of the planning area.

There is anticipated to be continued pressure for employment growth north along US 2 towards the edge of the study area boundary. Growth and development along this corridor are also justified given the recent expansion plans announced by the Glacier Park International (GPI) Airport. By 2040, the balance of the study area is expected to add nearly 700 jobs for a total of 2,057.

Table 4.2: Existing and Projected Employment Growth

	2017	*2040*	*Change*	*Annual Percent Change*
Kalispell	22,072	32,031	9,959	2.1%
Evergreen	3,999	5,022	1,023	1.2%
Balance of Study Area	1,361	2,057	696	2.3%
Total	**27,432**	**39,110**	**11,678**	**1.9%**

Figure 4.9: 2040 Projected Employment Growth 2018–2040

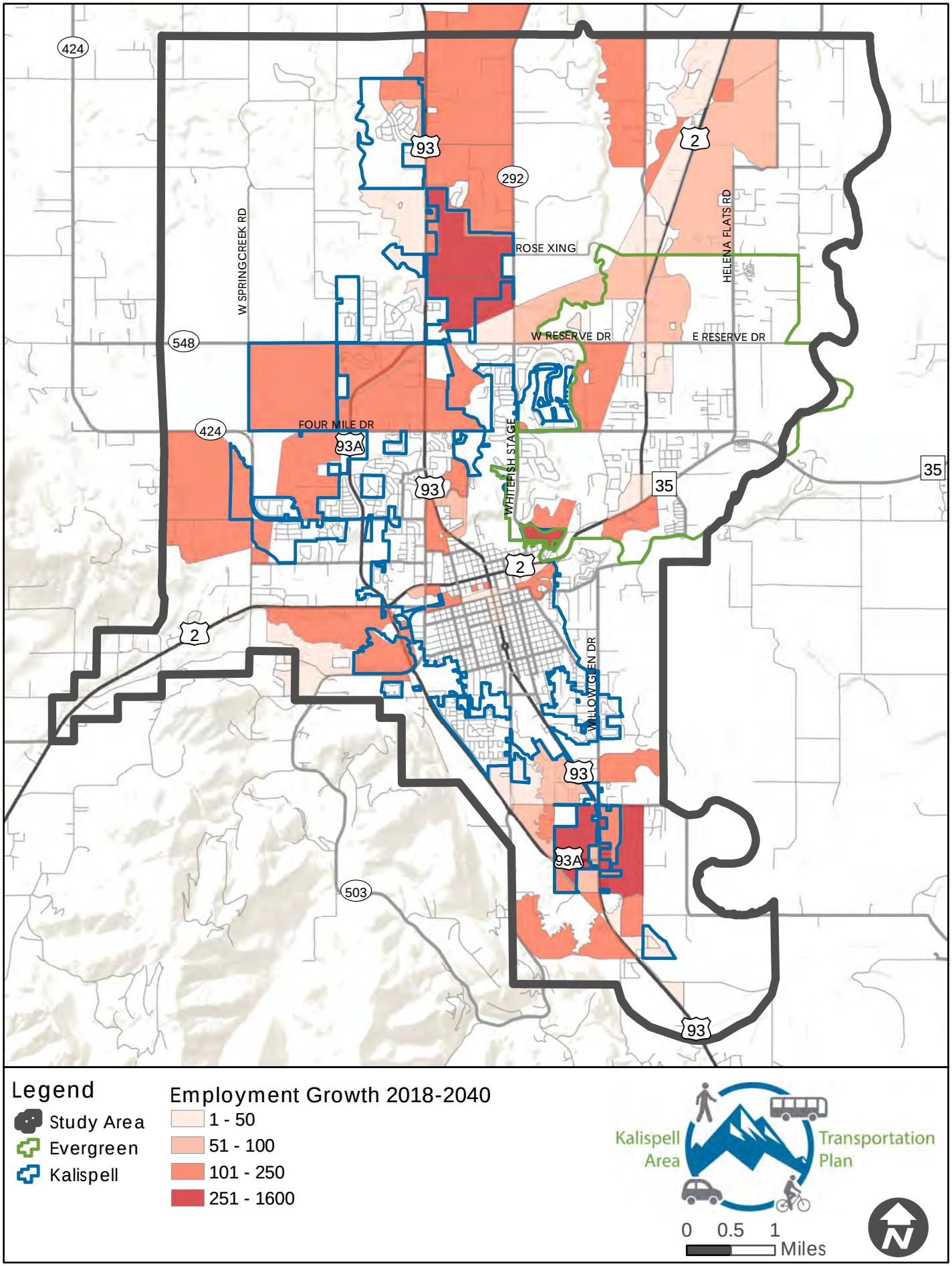


Figure 4.10: 2040 Employment Allocations

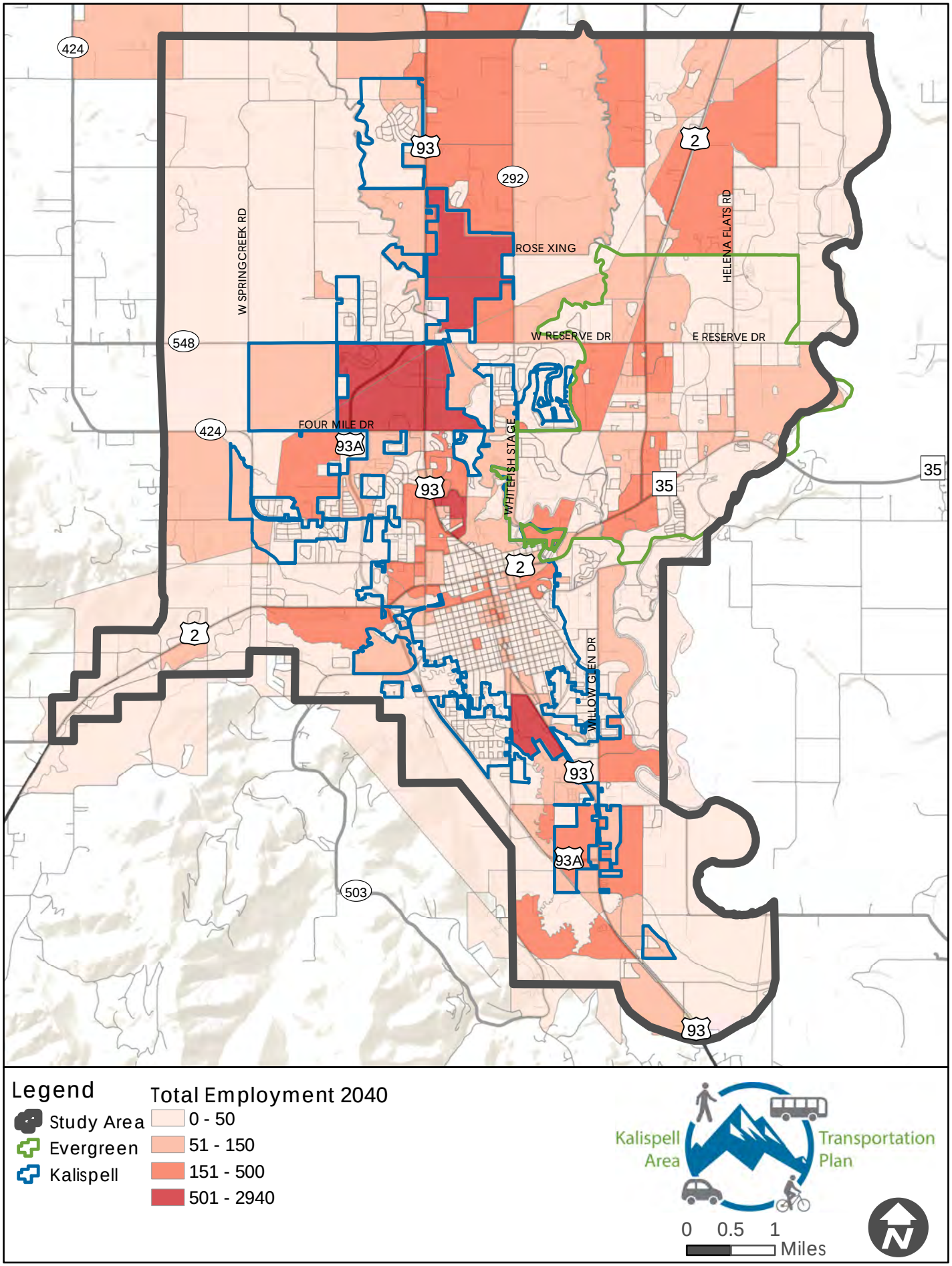
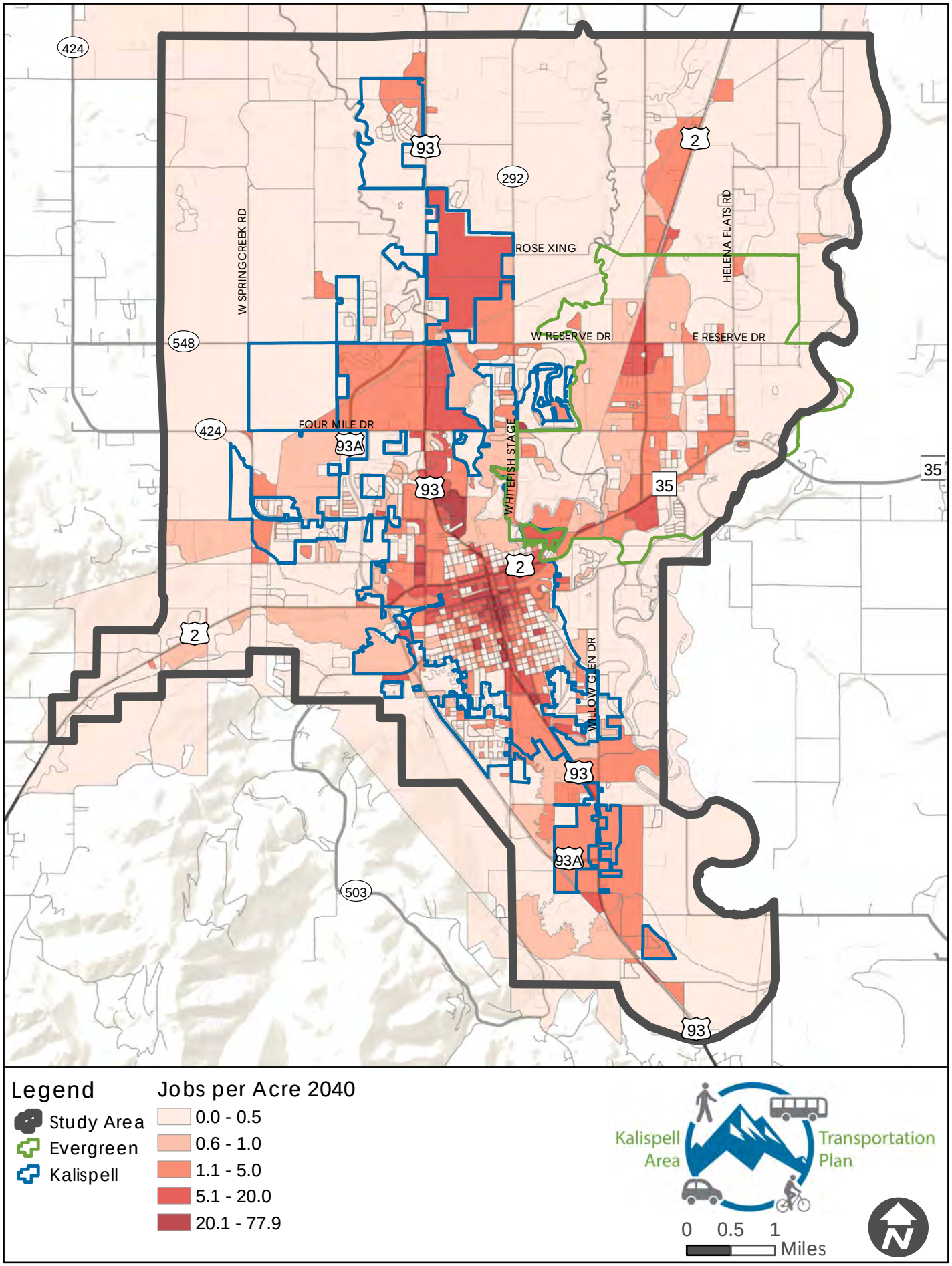


Figure 4.11: 2040 Jobs per Acre



GROWTH ALLOCATION

The second step in the growth project process involved the allocation of 2040 projected household and employment growth to the TAZs. Significant consideration was given to recent infrastructure planning developed by both the City of Kalispell and the Evergreen Water & Sewer District. The announcement of the $100 million GPI expansion was also factored into how growth was allocated. The following methods were used to allocate the projected household and employment growth.

Kalispell

The allocation for Kalispell generally followed the growth allocation methods used in the Kalispell Wastewater Facility Plan update completed in June 2019. This plan allocated growth in three increments: five years, 15 years, and full build-out (FBO) or 50 years. Allocations of growth were directly extracted for the five year and 15-year time frames, which equated to projected growth through the year 2033. For the final seven years of the transportation plan planning horizon (2034 through 2040) 20 percent of the remaining growth between the 15-year time frame and FBO from the Kalispell Wastewater Facility Plan was prorated.

Effort was applied to account for infill of the Glacier Rail Park within the city's northeastern quadrant, as well as infill and reinvestment in the Kalispell core area.

Evergreen

Based on consultation with the Evergreen Water & Sewer District, growth was allocated within the current Evergreen CDP. Nearly two-thirds of the projected household growth was allocated outside of the Evergreen Wastewater Service Area. Most of the projected employment growth in Evergreen was allocated within the current Wastewater Service Area and accounted for infill along and in relative proximity to the US 2 corridor.

Balance of the Study Area

The balance of the study area is a relatively small segment of projected household and employment growth. Allocation of projected growth within the balance of the study area is significantly focused within the northeast corner of the study area and reflects projected future demand along the US 2 corridor and areas north of Evergreen. This area is anticipated to be influenced by the GPI Airport expansion and the potential expansion of wastewater capacity in that general area.

MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 5: PROJECTED CONDITIONS

BACKGROUND

As part of the Kalispell Area Transportation Plan (Move 2040), an analysis was performed on the 2040 E+C model for the study area. Similar to the 2017 base year model, the 2040 E+C (Existing plus Committed) model output generated volumes, capacity, and the resulting V/C and LOS.

DEVELOPMENT OF 2040 E+C MODEL

Addition of Committed Projects

The 2040 E+C modeled road segments include "committed" improvements to the transportation network within the study area. This means these improvements were not in place at the time of base model development (2017) but are committed by either a local agency or MDT by the year 2024. The 2040 E+C network includes the following improvements not considered in the 2017 base model:

- Highway 93A and Foys Lake Road interchange
- Highway 2 and Dern Road intersection control changes
- MT 35 and Helena Flats intersection control changes
- Four Mile Drive – Northland Drive to Highway 93 addition of two-way center left turn lane
- Highway 93 and Treeline Road southbound right turn lane on Highway 93 and eastbound and westbound left turn lanes on Treeline Road
- Rose Crossing – Highway 93 to Whitefish Stage Road addition of two-lane roadway
- Three Mile Drive and West Spring Creek Road intersection changes

Projected 2040 Growth Allocations

As discussed in Chapter 3, households and employment growth were projected to the year 2040 for the Move 2040 study area. The 2040 E+C model reflects the addition of this growth to the study area for the purpose of developing future traffic projections. Therefore, the 2040 E+C model shows year 2040 projected travel demand on the E+C roadway network.

ANALYSIS OF PROJECTED CONDITIONS

Network Conditions

Areawide network analysis of projected conditions was based on outputs from both the 2017 and 2040 E+C models. A total of approximately 418 miles were analyzed for the 2040 model.

Vehicle Miles and Hours Traveled

VMT and VHT were calculated for both the 2017 and 2040 E+C models. Both metrics increased significantly, with VMT increasing by 80 percent from 733,000 in 2017 to 1.3 million in 2040. This growth in VMT suggest the amount of vehicle miles traveled in the study area will nearly double over the life of Move 2040. VHT increased by 42 percent from 24,500 in 2017 to 34,912 in 2040. This growth in VHT can be likely attributed to two factors. First, as the community grows outward, trips may become longer adding to the number of vehicle hours and second, areas of the transportation network that are over capacity cause additional congestion leading to additional travel time. Given VMT increases at a far higher rate than VHT, it is likely trip length is the primary driver of increased VHT. Comparison between 2017 and 2040 VHT and VMT can be seen in Table 5.1.

Table 5.1: 2017 and 2040 VMT and VHT

	2017	2040	% Change
VMT	733,000	1,325,942	80.9%
VHT	24,500	34,912	42.5%

Volume-to-Capacity Ratios

Travel demand model results can be used to establish planning-level V/C ratios for study area roadways. These V/C ratios are generally used to identify locations with the most significant capacity constraints that require more detailed and operations-based traffic analysis.

At a planning-level, roadway capacities are a function of roadway functional classifications and the number of travel lanes. For analysis purposes, V/C ratios have been translated to roadway LOS based on federal research and guidelines. LOS is a letter grade used to describe traffic operations where LOS A provides travel with nearly no delay and LOS F represents gridlocked travel. Generally, LOS D or worse is considered deficient and in need of improvements. The level of service thresholds by V/C ratios shown in Table 5.2.

Table 5.2: LOS Thresholds by V/C Ratio

V/C Ratio	Level of Service	Description
Under 0.6	LOS A	Near free-flow traffic.
0.6 to 0.7	LOS B	Minor delays.
0.7 to 0.8	LOS C	Some delays, but not resulting in significant traffic congestion.
0.8 to 0.9	LOS D	Delays with some traffic congestion.
0.9 to 1.0	LOS E	Significant delays with significant traffic congestion, approaching capacity.
1.0+	LOS F	Breakdown of traffic flow, major traffic congestion.

Source: NCHRP 387 – Planning Techniques to Estimate Speeds and Services Volumes for Planning Applications

A comparison was completed between existing (2017) and projected (2040) conditions based on outputs of the E+C TDM. The comparison looked at the miles of roadway for each year which were either LOS A–C or LOS D–F. LOS D–F was considered congesting/congested for the purposes of the analysis.

Analysis of both existing and projected systems were based upon the system designations of NHS, Primary, Secondary, and Urban, thus reflecting all on-system roads in the study area.

In 2017 there were 15 miles of on-system roadways congesting/congested, or 15 percent of on-system roads. By 2040 this increases to 31 miles of congesting/congested on-system roadways, or roughly 31 percent of on-system roads. Table 5.3 provides a summary comparison between the existing 2017 and projected 2040 conditions.

NHS

In 2017, approximately 27 percent of the NHS is congesting/congested. Between 2017 and 2040, the number of congesting/congested miles on the NHS grows from approximately 12 to 22 miles of roadway. By 2040, 50 percent of the NHS corridors are congesting/congested.

In 2017, seventy-five (75) percent of all congesting/congested roadways are on the NHS. By 2040, the percent of all congesting/congested roadways on the NHS drops to 54 percent.

Primary

For the modeling analysis, MT 35 was the only portion on the Primary System in the study area. This area is congesting/congested in 2017 and remains congested in 2040.

Secondary

In 2017, there is no congesting/congested roadways on the secondary system. By 2040 12 percent is congesting/congested.

Table 5.3: 2017 and 2040 E+C Model, LOS, and Miles for On-System Roads

System and Level of Service			2017	% of Total	2040 E+C	% of Total
Total On-System Roads	Miles LOS A–C		85.5	85%	69.1	69%
	Miles LOS D–F		15.0	15%	31.4	31%
LOS By System	NHS	Miles LOS A–C	31.5	73%	21.7	50%
		Miles LOS D–F	11.8	27%	21.6	50%
	Primary	Miles LOS A–C	0.3	16%	0.3	16%
		Miles LOS D–F	1.5	84%	1.5	84%
	Secondary	Miles LOS A–C	10.6	100%	9.4	88%
		Miles LOS D–F	0.0	0%	1.3	12%
	Urban	Miles LOS A–C	43.2	96%	37.7	84%
		Miles LOS D–F	1.8	4%	7.1	16%

Analysis conducted with West Reserve classified as an Urban route.

Urban

In 2017, four percent of the urban system is congesting/congested. By 2040, approximately 16 percent of the urban system is congesting/congested.

In 2017, 11 percent of all congesting/congested roadways are on the Urban systems. By 2040, 17 percent all congested/congesting are on the Urban System.

In addition to the congested conditions listed above, 20 percent of the congested roadways in the 2040 E+C are not currently functionally classified. This suggests a significant growth in projected needs on urbanizing/growth area corridors which will require some consideration of potential future functional class designation.

These mileages as well as their comparison to 2040 can be seen in Table 5.3. Levels of Service can be seen in Figure 5.1 on page 101 and Figure 5.2 on page 102. In addition to LOS, simple volume changes from 2017 to 2040 can be seen in Figure 5.3 on page 103.

Intersection Traffic Operations

Future traffic operations were evaluated at the 33 study intersections using methodologies from the **Highway Capacity Manual.**

Traffic operations are described in terms of LOS, ranging from LOS A to LOS F, as previously described. The LOS calculations incorporate traffic volumes, intersection geometry, signal timing, and other parameters to estimate the delay per vehicle at the intersection. LOS A indicates near free-flow traffic conditions with little delay and LOS F indicates breakdown of traffic flow with very high amounts of delay. At oversaturated intersections and approaches, the delay may only reflect the vehicles that can be processed in the analysis period and not the total delay for that intersection, thus underreporting the actual delay experienced by drivers. LOS C or better is considered acceptable. The LOS thresholds for intersection delay are shown in Table 5.4.

Table 5.4: LOS Thresholds by Intersection Delay

Level of Service	*Unsignalized Intersection (sec/veh)*	*Signalized Intersection (sec/veh)*	*Description*
LOS A	<10	<10	Near free-flow traffic.
LOS B	10–15	10–20	Minor delays.
LOS C	15–25	20–35	Some delays, but not resulting in significant traffic congestion.
LOS D	25–35	35–55	Delays with some traffic congestion.
LOS E	35–50	55–80	Significant delays with significant traffic congestion, approaching capacity.
LOS F	> 50	> 80	Breakdown of traffic flow, major traffic congestion.

Traffic Operation Results

Intersection LOS analysis was performed for 33 intersections within the study area based on projected 2040 conditions. Many locations begin to experience deficiencies during one or both peak hours, as discussed below and shown in Table 5.5 on page 104, Figure 5.4 on page 105, and Figure 5.5 on page 106.

» Multiple intersections are expected to operate deficiently through both peak hours with all approaches operating deficiently, including US 93 and Reserve Drive, US 2 and Reserve Drive, and US 2 and US 93.

- Reserve Drive and Whitefish Stage Road operates at LOS F during both peak hours. During the PM peak all approaches are deficient; during the AM peak only the southbound approach operates acceptably.

» Multiple intersections operate deficiently in both peak hours due to deficient side street operations.

- Woodland Avenue and 2nd Street/Conrad Drive operates deficiently at LOS D during both peak periods. Only the westbound approach is deficient at LOS E (during both peak hours).
- US 2 and Evergreen Drive operates deficiently at LOS D during both beak periods. Only the northbound approach operates acceptably at LOS C during both peak periods.
- US 93 and 13th Street operates deficiently at LOS E during the AM peak and LOS F during the PM peak. During the AM peak only the eastbound approach is deficient however during the PM peak the eastbound and westbound approaches are deficient.
- US 93 and 10th Street operates deficiently at LOS D during the AM and PM peak. The eastbound and westbound approaches are deficient during both peak hours.

» Multiple intersections operate deficiently during one peak hour.

- US 93 and Grandview Drive/Four Mile Drive operates at LOS E during the PM peak.
- Helena Flats Road and MT 35 operates deficiently at LOS D during the AM peak.
- US 2 and Meridian Road operates deficiently at LOS D during the PM peak.
- US 93 and Treeline Road operates deficiently at LOS D during the PM peak.
- US 93 and Hutton Ranch Drive operates deficiently at LOS D during the PM peak hour.

Figure 5.1: 2040 LOS

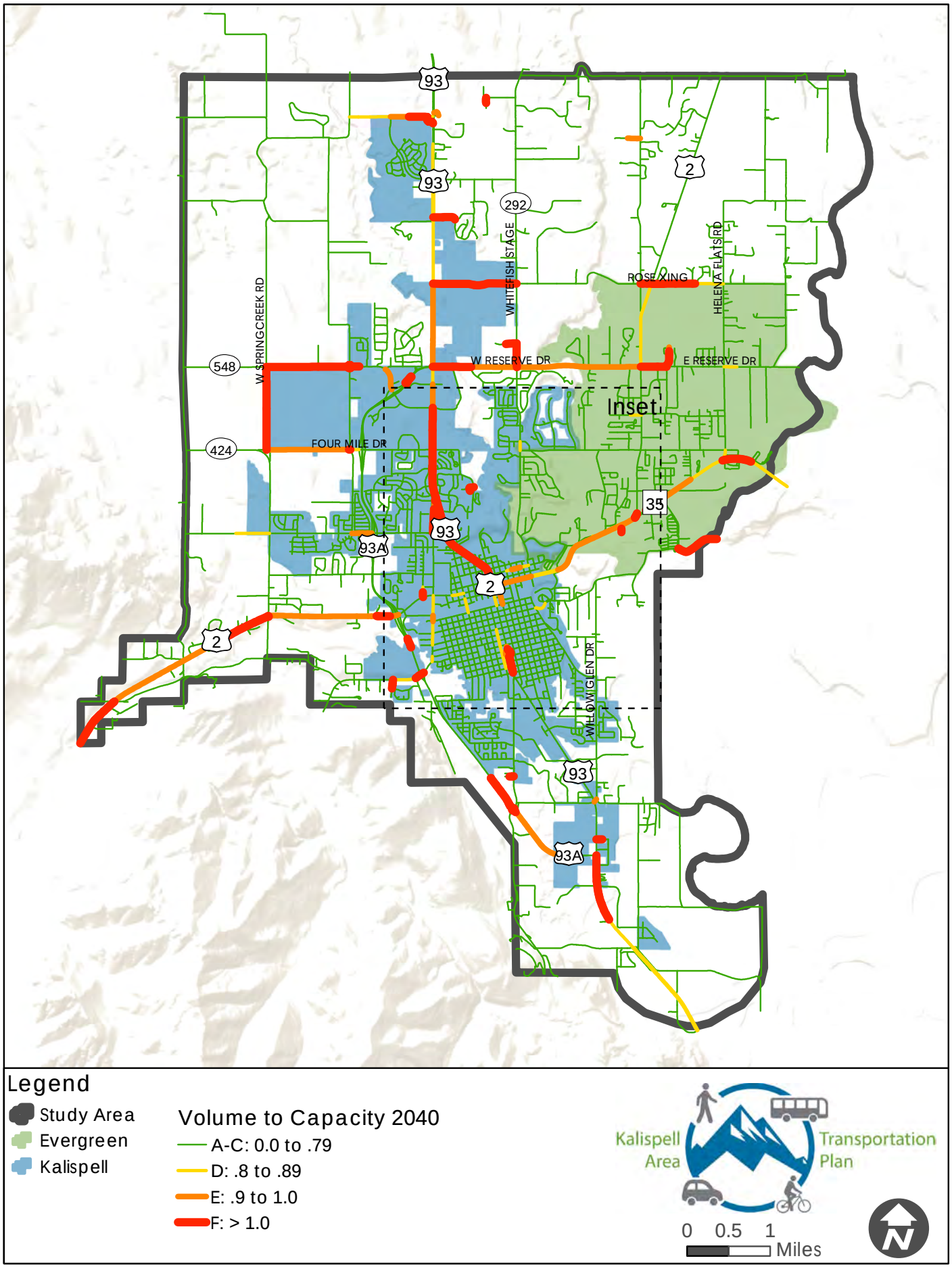


Figure 5.2: 2040 LOS (Inset)

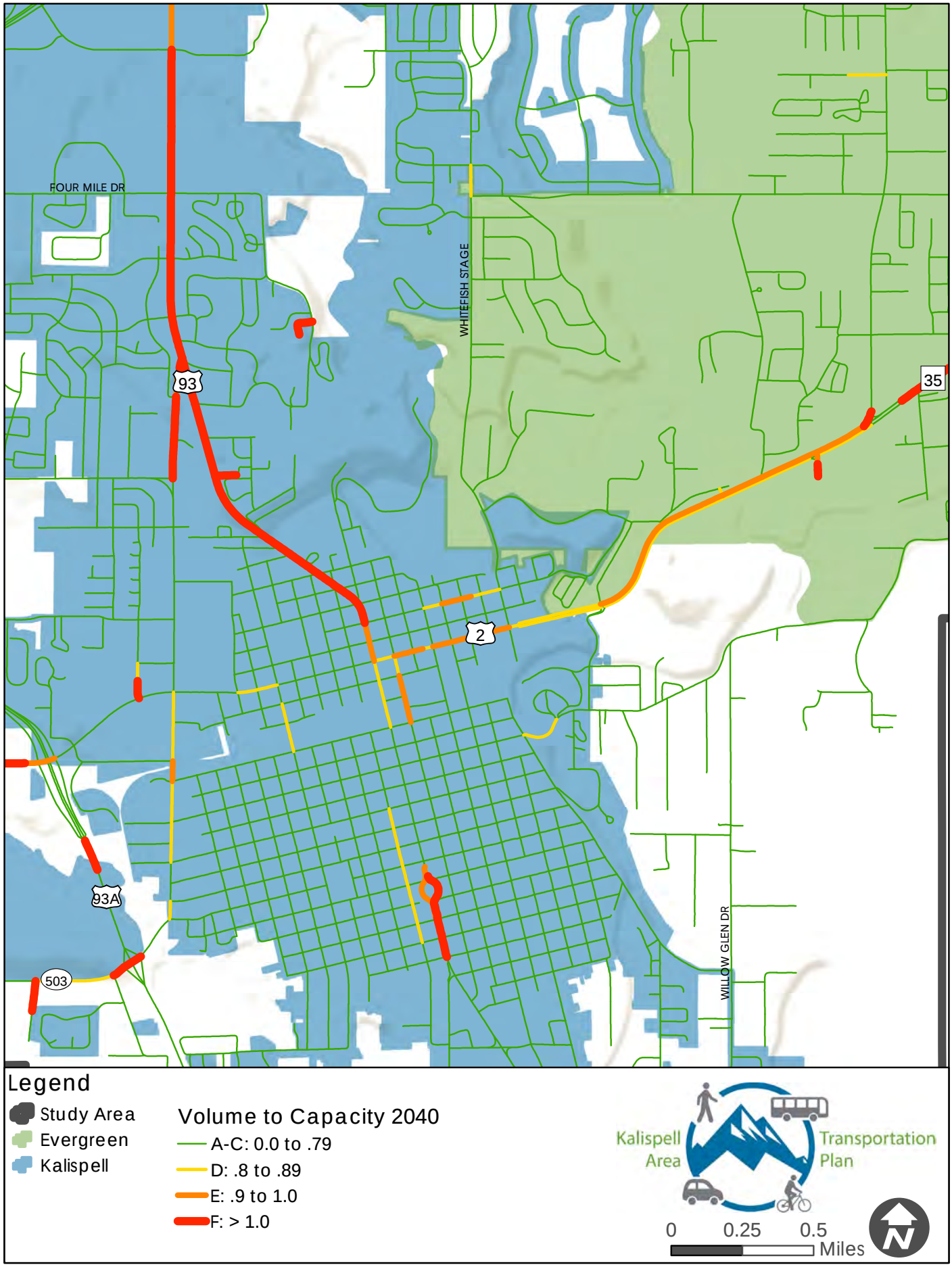


Figure 5.3: Traffic Volume Changes from 2017 to 2040

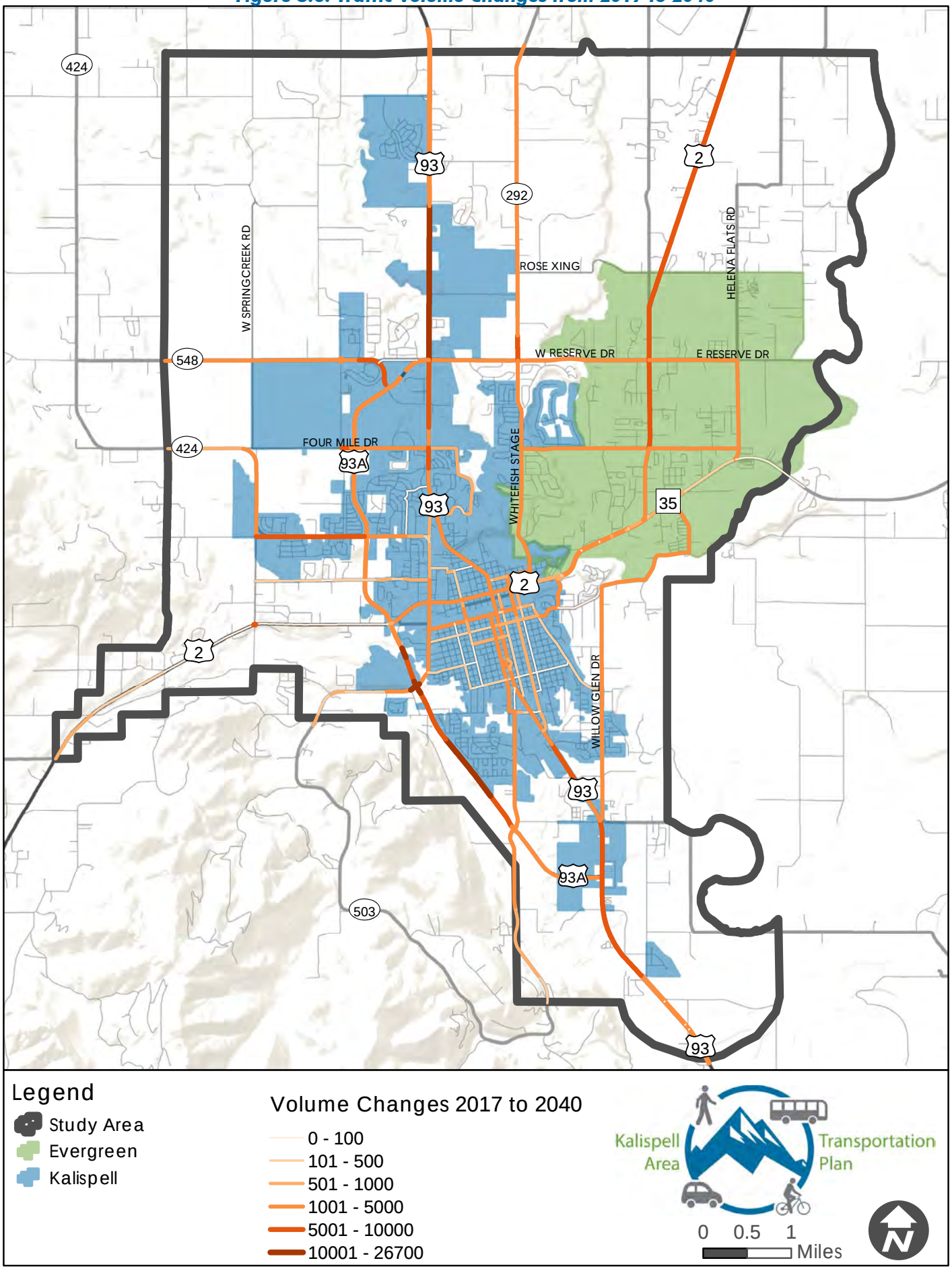


Table 5.5: 2040 AM and PM Peak Hour Intersection LOS

ID	Intersection	Traffic Control	Peak	Level of Service				
				EB	WB	NB	SB	Int
1	US 93 & Reserve Dr	Signal	AM	F	F	D	D	F
			PM	E	F	E	D	E
2	Reserve Dr & Whitefish Stage Rd	Signal	AM	F	F	F	C	F
			PM	F	F	F	E	F
3	US 2 & Reserve Dr	Signal	AM	E	F	D	E	E
			PM	F	F	E	F	F
4	US 93 & Grandview Dr/Four Mile Dr	Signal	AM	B	B	C	B	B
			PM	C	C	F	D	E
5	Helena Flats Rd & MT 35	Signal	AM	A	D	D	E	D
			PM	C	C	C	D	C
6	Meridian & 3 Mile Dr	Signal	AM	B	A	A	B	A
			PM	B	C	A	B	B
7	Meridian & Liberty	Signal	AM	C	C	A	A	A
			PM	C	C	A	A	A
8	Meridian Rd & 2 Mile Dr	Signal	AM	C	C	A	A	A
			PM	C	C	A	A	B
9	US 2 & Meridian Rd	Signal	AM	C	C	C	D	C
			PM	D	D	D	D	D
10	US 2 & 5th Ave W	Signal	AM	B	A	B	B	B
			PM	A	A	B	B	B
11	US 2 & US 93	Signal	AM	E	D	E	D	D
			PM	E	D	E	E	E
12	US 93 & Center St	Signal	AM	D	C	C	B	C
			PM	C	C	C	B	C
13	1st Ave EN & E Center St	Signal	AM	A	A	B	B	B
			PM	C	C	B	A	B
14	1st Ave W & 2nd St W	Signal	AM	B	B	B	B	B
			PM	C	B	C	C	C
15	Woodland Ave & 2nd St/Conrad Dr	All-way Stop	AM	C	E	C	C	D
			PM	C	E	C	C	D
16	US 93 & 4th St	Signal	AM	B	B	B	A	B
			PM	B	B	B	B	B
17	Woodland Ave & 11th St W	TWSC	AM	B	—	A	A	B
			PM	B	—	A	A	B
18	US 93 & 11th St	Signal	AM	C	D	B	A	B
			PM	C	E	B	D	C
19	US 93 & Treeline Rd	Signal	AM	D	C	A	B	B
			PM	E	C	C	D	D
20	US 93 & Wyoming St	Signal	AM	C	B	B	A	B
			PM	C	C	A	A	A
21	US 93 & Conway Dr	Signal	AM	—	C	A	A	A
			PM	—	C	C	A	B
22	US 93 & Sunny View Ln	Signal	AM	—	D	A	A	A
			PM	—	D	A	A	C
23	US 93 & Commons Way	Signal	AM	C	D	B	B	B
			PM	C	D	C	C	C
24	US 93 & Meridian Rd	Signal	AM	C	—	A	B	B
			PM	D	—	B	B	B
25	US 93 & Commercial Access (Flathead Valley)	Signal	AM	A	C	A	B	A
			PM	B	C	A	A	A
26	W Reserve Dr & Hutton Ranch Rd	Signal	AM	B	A	B	—	B
			PM	C	B	C	—	B
27	US 2 & Evergreen Dr	Signal	AM	F	E	C	D	D
			PM	F	F	C	D	D
28	US 93 & 6th St	Signal	AM	C	C	A	A	A
			PM	D	C	A	A	A
29	US 93 & 13th St	TWSC	AM	F	C	A	A	E
			PM	F	D	A	A	F
30	US 93 & 7th St	TWSC	AM	—	B	A	A	B
			PM	—	B	A	A	B
31	US 93 & 10th St	TWSC	AM	F	F	A	A	D
			PM	F	D	A	A	D
32	US 93 & 12th St	TWSC	AM	C	F	A	A	B
			PM	D	E	A	A	C
33	US 93 & Hutton Ranch Dr	Signal	AM	C	C	B	C	C
			PM	D	F	C	D	D

Figure 5.4: 2040 AM Peak LOS

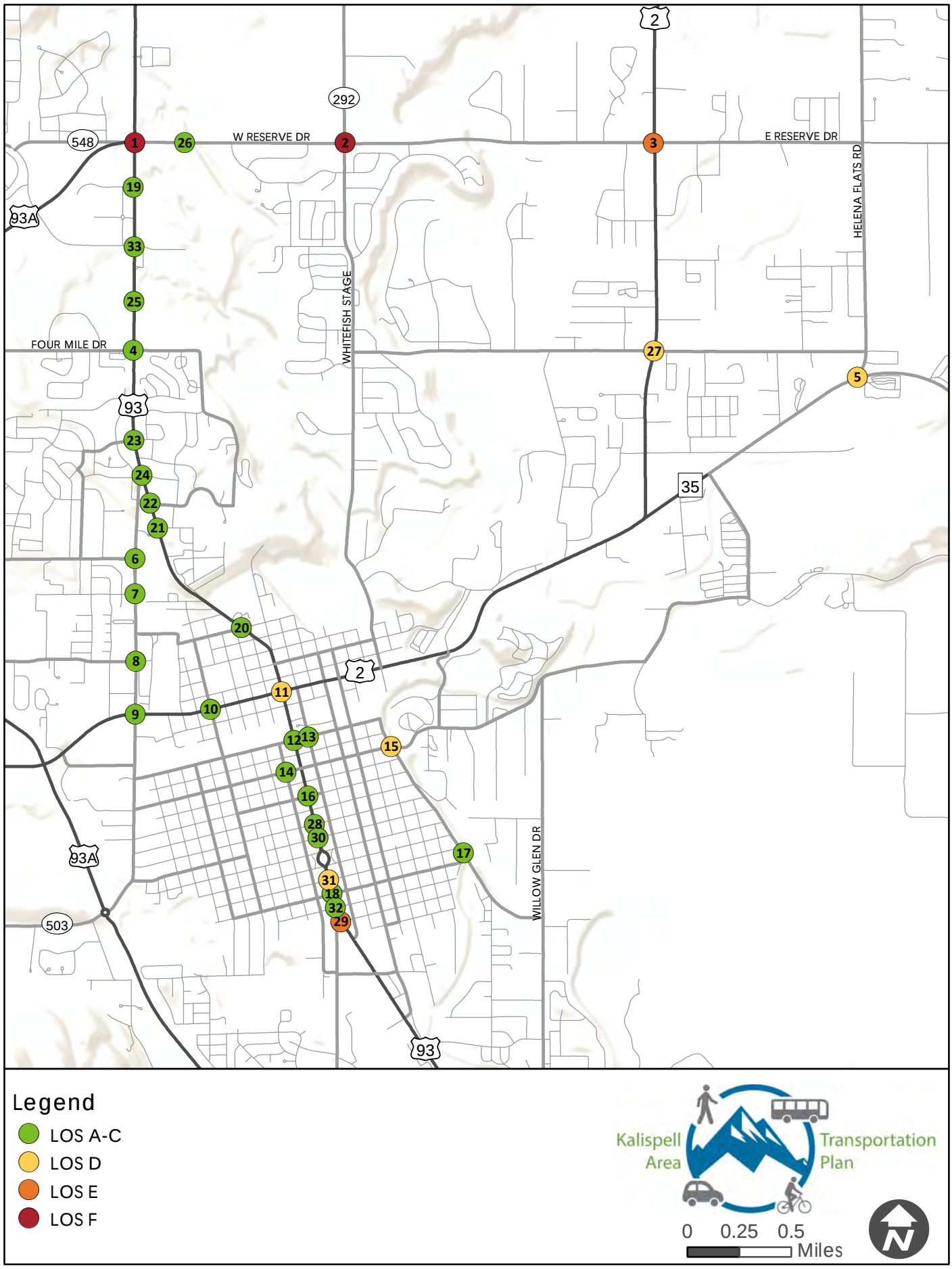
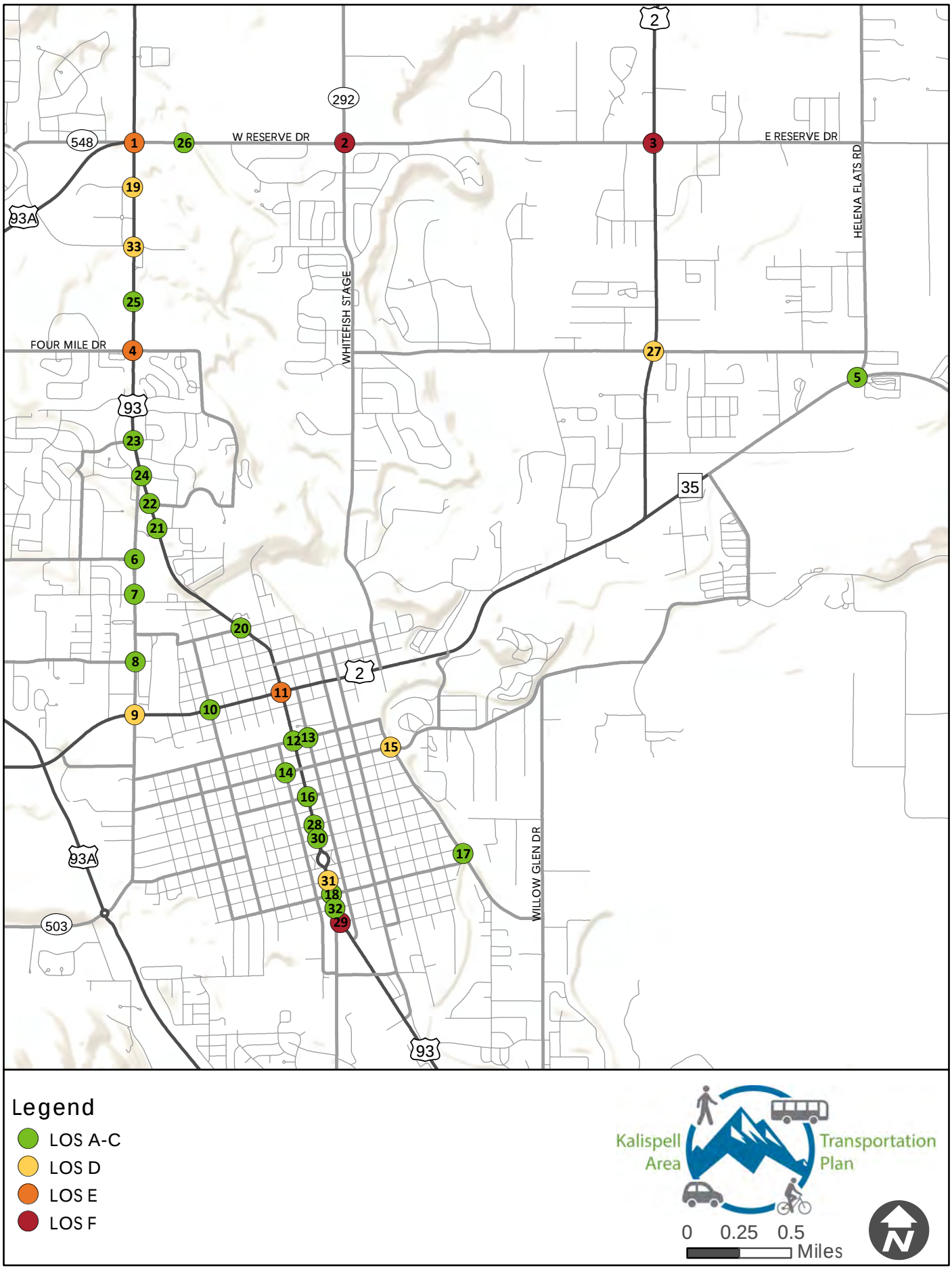


Figure 5.5: 2040 PM Peak LOS



MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 6: ALTERNATIVES ANALYSIS

INTRODUCTION

As part of the Kalispell Urban Area Transportation Plan, Move 2040, an alternatives analysis was completed to evaluate a range of 10 different alternatives, some of which consider sub alternatives which combined various base alternatives. In total, model runs were performed for 14 model alternatives. Alternatives were designed to replicate the potential improvement to a corridor or set of corridors for the purposes of evaluating the relative benefit of those improvements. Each alternative considered the addition of one or more changes to the transportation system in the Move 2040 study area.

Each alternative is evaluated against the original outputs from the 2040 E+C model network, which forecast traffic conditions assuming that only committed projects will be added beyond existing facilities. Thus, each alternative can be viewed as a "2040 build" condition which assumes that some level of investment will be made beyond currently committed projects. The 2040 E+C network can be considered the "2040 No Build" condition, which assumes that only currently committed projects will be completed through 2040.

As shown in Table 6.1, the results of each alternative were evaluated against area-wide travel indicators such as VMT, VHT, and miles of congested roadways. Congested roadways were defined as segments of roadway with a LOS of D, E or F. Alternatives were also evaluated against corridor level travel indicators such as change in annual daily traffic (ADT) and V/C or LOS.

Table 6.1: Summary System-Wide VMT and VHT Changes

Alternative	*Total VMT (% Change VMT Compared to No Build)*	*Total VHT (% Change VHT Compared to No Build)*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,942	34,912	9.5%
2040 Build – Alternative #1	1,319,894 (-0.5%)	34,735 (-0.5%)	9.7%
2040 Build – Alternative #2	1,303,435 (-1.7%)	34,310 (-1.7%)	9.7%
2040 Build – Alternative #2A	1,333,650 (+0.6%)	35,106 (+0.6%)	9.9%
2040 Build – Alternative #3	1,323,036 (-0.2%)	35,073 (+0.5%)	9.5%
2040 Build – Alternative #3A	1,309,370 (-1.2%)	34,674 (-0.7%)	9.5%
2040 Build – Alternative #4	1,323,432 (-0.2)	35,097 (+0.5%)	9.6%
2040 Build – Alternative #5	1,325,811 (+0.0%)	35,122 (+0.6%)	10.0%
2040 Build – Alternative #5A	1,326,513 (+0.0%)	35,148 (+0.7%)	9.9%
2040 Build – Alternative #6	1,322,904 (-0.2%)	35,083 (+0.5%)	10.0%
2040 Build – Alternative #6A	1,316,698 (-0.7%)	34,707 (-0.6%)	9.8%
2040 Build – Alternative #7	1,311,885 (-1.1%)	34,622 (-0.8%)	9.3%
2040 Build – Alternative #8	1,328,490 (0.2%)	35,220 (+0.9%)	8.7%
2040 Build – Alternative #9	1,326,616 (0.1%)	35,047 (+0.4%)	8.6%
2040 Build – Alternative #10	1,322,458 (-.2%)	34,537 (-1.1%)	7.9%

Alternative 1: Completed Highway 93A (Kalispell Bypass)

Alternative 1 assumes the completion of the southern leg of the Highway 93A corridor from Foys Lake Road to its southern junction with Highway 93. This assumed expansion of the two-lane elements of the corridor to four lanes, including completion of a grade separated interchange at Airport Road and intersection improvements at Foys Lake. The current two-lane roundabout at Base Camp Drive was left in place as it currently exists.

Alternative 1 was tested against area-wide metrics to determine the potential benefits of the proposed improvements. The intent was to measure the full benefit of the completed Highway 93A on other elements of the transportations system.

Area-Wide Impacts

Area-wide impacts of Alternative 1 were measured against the 2040 No Build network related to VMT, VHT and percent of congested roadway segments on the systems (as measured in miles). Alternative 1 is comparable in terms of congestion, VMT, and VHT to a no-build scenario, as can be seen in Table 6.2. The percentage of congested roadway segments increases from 9.5 percent to 9.7 percent. Both total VMT and total VHT decrease by 0.5 percent.

Corridor Level Impacts

Impacts of Alternative 1 were evaluated on several corridor segments throughout the study area which were anticipated to see an impact from the completion of Highway 93A corridor. Please see Table 6.3 and Figure 6.1 on page 112. Key findings include:

- Highway 93A – As expected, the completion of the Kalispell Bypass will increase its volume, with improved LOS from US 93 to Airport Road and worsening LOS from Airport Road to US 2.
- Highway 93S – Improved LOS along portions of Highway 93S, especially just south of downtown.
- Highway 93/Main St – Reduction in travel demand through downtown.
- Worsening LOS on Meridian Road.
- Minor changes on 1st Ave E and 1st Ave W.

Table 6.2: Alternative 1 Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #1	1,319,893	34,735	9.7%

Conclusions

The completion of the Highway 93A as a four-lane limited access corridor reduces travel demand on Highway 93 South and Highway 93/Main Street through Kalispell anywhere from 15 to 20 percent. This suggests Highway 93A will continue to divert traffic away from Highway 93.

Once fully completed Highway 93A only minimally impacts travel demand on the commercial areas along Highway 93 North between Four Mile Drive and West Reserve. This is to be expected given the amount of existing and projected new growth along this stretch of Highway 93. Under Alternative 1 Highway 93A would operate below capacity except for a small segment north of Old Reserve Drive.

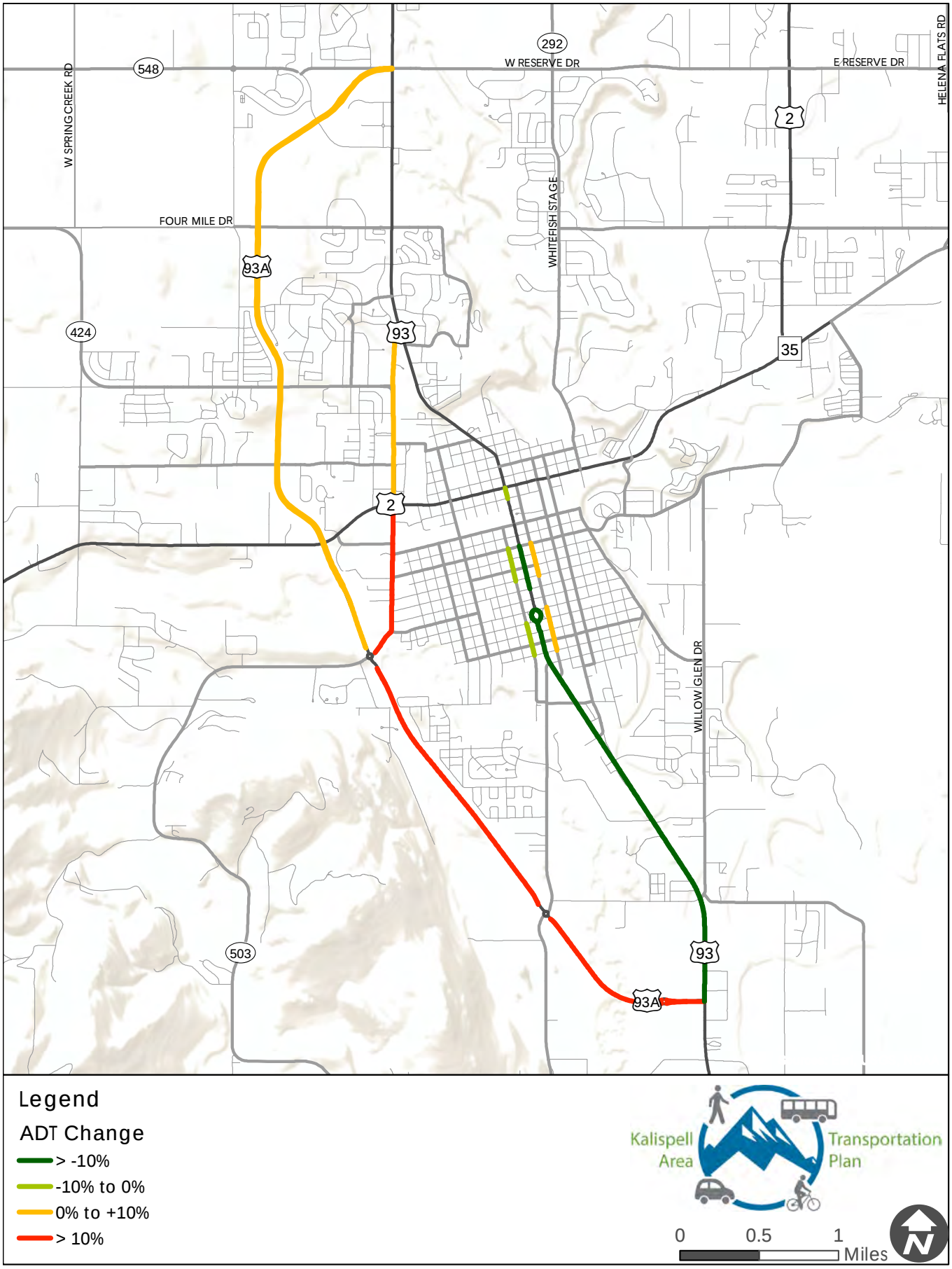
A completed Highway 93A will cause an increase in traffic along the Meridian Road corridor, specifically between Highway 2/Idaho and West 7th Street/Foys Lake Road. Volumes generally increase along Meridian Road all the way to its intersection with Highway 93. Given the residential nature of Meridian Road south of West Center, these conditions support an evaluation of this corridor as improvements are completed along Highway 93A.

Table 6.3: Alternative 1 Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 1			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Hwy 93A	Basecamp Drive	Airport Road	15,100	0.99	E	17,900	0.58	A	18.5%
	Kismet Court	Bluestone Dr	19,300	0.63	B	24,600	0.80	D	27.5%
	Foys Lake	4th Street W	20,400	0.67	B	22,200	0.73	C	8.8%
Hwy 93S	United Drive	Cemetary Road	24,000	0.75	C	19,500	0.61	B	-18.8%
	Kelly Road	3rd Avenue E	20,400	0.72	C	16,100	0.57	A	-21.1%
	11th Street	10th Street	21,700	1.60	F	17,600	1.30	F	-18.7%
Main Street (Hwy 93)	8th Street	7th Street	20,100	1.49	F	16,300	1.21	F	-18.7%
	4th Street	3rd Street	19,800	0.73	C	16,200	0.60	B	-18.1%
	Montana	Idaho (Hwy 2)	22,700	0.84	D	20,700	0.77	C	-9.0%
Meridian Road	3rd Street W	2nd Street W	10,300	0.86	D	12,000	1.00	F	16.5%
	Appleway Drive	Fishtail Drive	11,200	0.85	D	12,500	0.95	E	11.6%
	2 Mile Drive	W Wyoming Street	11,700	0.65	B	12,700	0.71	C	8.5%
	Westview Park Place	Parkway Drive	12,100	1.01	F	12,700	1.06	F	5.0%
1st Avenue E	11th Street	10th Street	3,500	0.39	A	3,800	0.42	A	8.6%
	5th Street	4th Street	3,900	0.43	A	4,200	0.47	A	7.7%
1st Avenue W	11th Street	10th Street	7,500	0.83	D	7,100	0.79	C	-6.8%
	5th Street	4th Street	7,400	0.82	D	7,000	0.78	C	-5.4%

Modeled volumes on Highway 93/Main Street were adjusted to match 2017 AADT. Model generated growth factors were applied to the 2017 AADT to derive the 2040 E+C and 2040 Alternative model run outputs for Highway 93/Main Street.

Figure 6.1: Alternative 1 ADT Change on Select Corridors



Alternative 2

Alternative 2 evaluates a three-lane section on Highway 93/Main Street from 7th Street to West Center Street. The intent of this alternative was to understand the impacts to ADT and LOS along the Highway 93/Main Street corridor. Previously developed traffic analysis has dismissed a three-lane option for the Main Street portion of Highway 93, due to capacity related concerns. Recent past plans developed by the City of Kalispell support local preference to convert the Main Street portion of Highway 93 to a more pedestrian friendly and downtown orientated corridor. Any efforts or action to adjust the roadway section on Highway 93/Main Street will require coordination with MDT and account for criteria related to the NHS.

Area-Wide Impacts

Area-wide impacts of Alternative 2 were measured against the 2040 No Build network related to VMT, VHT and percent of congested roadway segments on the systems (as measured in miles). Alternative 2 has decreases in total VMT and VHT with reductions in each by 1.7 percent. The percentage of congested roadway segments rises slightly from 9.5 percent to 9.7 percent. Totals can be seen in Table 6.4.

Corridor Level Impacts

Impacts of Alternative 2 were evaluated on several corridor segments throughout the study area which were anticipated to see an impact from the conversion of downtown Main St. Please see Table 6.5 and Figure 6.2 on page 115. Key findings include:

- Highway 93/Main St – Travel demand reduced by as much as 15 percent; however, LOS falls to F with reduced capacity.
- Minor changes on Meridian Road.
- ADT increases on 1st Ave E and 1st Ave W with minor LOS changes.
- No additional travel demand on Highway 93A.

Table 6.4: Alternative 2 Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #2	1,303,435	34,310	9.7%

Conclusions

Previous traffic planning efforts have discarded a three-lane alternative along Highway 93Main Street based on projected capacity and LOS issues. However, local public opinion including a series of recent reports and studies developed by the City of Kalispell favor a more pedestrian friendly corridor. The conversion of Highway 93/Main Street to a three-lane section reduces travel demand by as much as 15 percent from north of the Courthouse through 2nd Street. LOS along this stretch of Highway 93/Main Street is reduced to F with a reduction in capacity.

Modeling results show an increase in travel demand along both 1st Avenue East and West, but no increase in travel demand on Highway 93A. Both 1st Avenue East and West are projected to have additional capacity to handle traffic changes which could result from changes to Highway 93/Main Street.

Table 6.5: Alt 2 Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 2			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Hwy 93S	11th Street	10th Street	21,700	1.60	F	18,800	1.39	F	-13.3%
Main Street (Hwy 93)	8th Street	7th Street	20,100	1.49	F	17,300	1.28	F	-14.0%
	4th Street	3rd Street	19,800	0.73	C	16,700	1.13	F	-15.5%
	Montana	Idaho (Hwy 2)	22,700	0.84	D	21,900	0.81	D	-3.9%
1st Avenue E	5th Street	3rd Street	3,900	0.43	A	4,500	0.50	A	15.4%
Meridian Road	Idaho (Hwy 2)	Three Mile Road	11,700	0.65	B	11,700	0.65	B	0.0%
	Three Mile Road	Hwy 93	12,100	1.01	F	12,000	1.00	F	-0.8%
1st Avenue E	12th Street	9th Street	3,500	0.39	A	3,800	0.42	A	8.6%
	5th Street	3rd Street	3,900	0.43	A	4,500	0.50	A	15.4%
1st Avenue W	12th Street	9th Street	7,500	0.83	D	8,100	0.90	E	8.0%
	5th Street	3rd Street	7,400	0.82	D	8,100	0.90	E	9.5%

Modeled volumes on Highway 93/Main Street were adjusted to match 2017 AADT. Model generated growth factors were applied to the 2017 AADT to derive the 2040 E+C and 2040 Alternative model run outputs for Highway 93/Main Street.

Figure 6.2: Alternative 2 ADT Change on Select Corridors

Alternative 2A: Alternatives 1 & 2 Combined

Alternative 2A carries forward the same assumptions from Alternative 1, however also assumes the full build out of Highway 93A as discussed in Alternative 1. Alternative 2A evaluates Highway 93/Main Street with reduced capacity in tandem with a fully completed Highway 93A.

Area-Wide Impacts

Area-wide impacts of Alternative 2A were measured against the 2040 No Build network related to VMT, VHT and percent of congested roadway segments on the systems (as measured in miles). Alternative 2A has increases in total VMT and VHT—the greatest increase in VMT of all alternatives. The percentage of congested roadway segments rises as well, from 9.5 percent to 9.9 percent. Totals can be seen in Table 6.6.

Table 6.6: Alternative 2A Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #2A	1,333,649	35,105	9.9%

Corridor Level Impacts

Impacts of Alternative 2A were evaluated on several corridor segments throughout the study area which were anticipated to see an impact from the conversion of downtown Main Street along with Highway 93A buildout. Please see Table 6.7 and Figure 6.3 on page 118. Key findings include:

- Highway 93A will see significant increases in travel demand along its entirety. However LOS will improve on the section from Highway 93 to Airport Rd.
- Highway 93S will have decreases in ADT and improved LOS.
- Highway 93/Main Street experiences over a 25 percent reduction in travel demand. LOS through downtown fall to LOS F and E due to reduced capacity.
- Meridian Rd increases in ADT.
- ADT increases on 1st Ave E and 1st Ave W.
- Shady Lane and Conrad Dr both have increases in ADT and worsening LOS.

Conclusions

Alternative 2A assumes a completed Highway 93A and capacity reductions to Highway 93/Main Street. The completion of Highway 93A coupled with a conversion to a three-lane section along Highway 93/Main Street reduces travel demand through downtown Kalispell by between 20 to 30 percent.

The combination of a full build Highway 93A and a three-lane section on Highway 93/Main Street show decreased travel demand on Highway 93 South between 20 to 25 percent.

Like changes seen along Meridian Road in Alternative 1, changes to both the Highway 93A and Highway 93/Main Street tend to push more traffic along the balance of the Meridian Road. Given the residential nature of Meridian Road south of West Center, these conditions are reason to suggest more evaluation of this corridor following completion of Highway 93A.

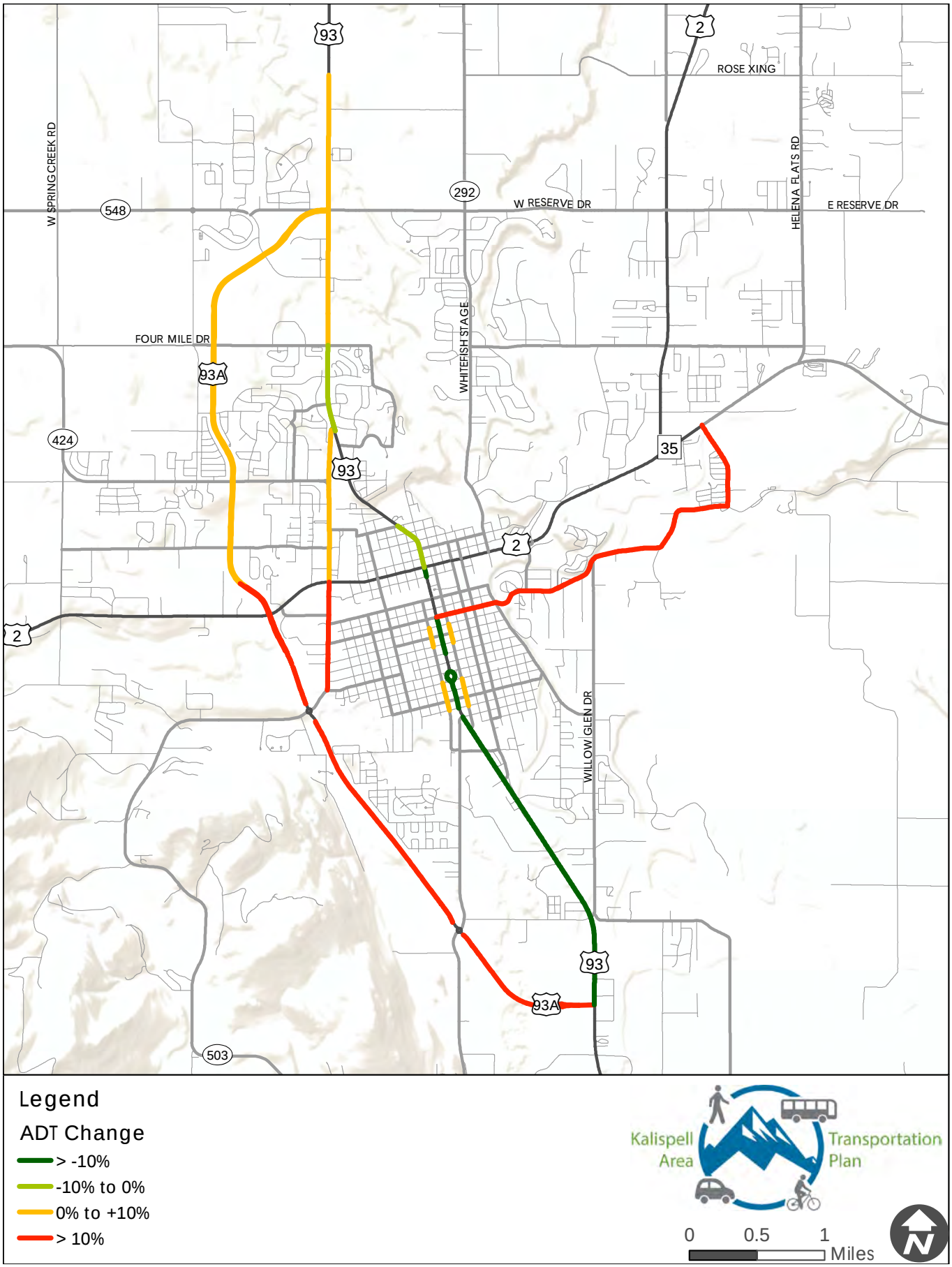
LOS along Highway 93/ Main Street remain LOS E/F from just south of the couplet to West Center. Overall congestion along Highway 93/Main Street is less severe in Alternative 2A than other alternatives that modeled reduced capacity.

Table 6.7: Alternative 2A Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 2A			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Hwy 93A	Hwy 93	Airport Road	15,100	0.99	E	18,300	0.60	A	21.2%
	Airport Road	Foys Lake	19,300	0.63	B	25,000	0.82	D	29.5%
	Foys Lake	Hwy 2	20,400	0.67	B	22,500	0.74	C	10.3%
	Old Reserve	Hwy 93	20,300	0.56	A	22,300	0.62	B	9.9%
Hwy 93S	Hwy 93A	Cemetary Road	24,000	0.75	C	19,100	0.59	A	-20.4%
	Cemetary Road	13th Street	20,400	0.72	C	15,500	0.55	A	-24.0%
	11th Street	10th Street	21,700	1.60	F	15,700	1.17	F	-27.3%
Main Street (Hwy 93)	8th Street	7th Street	20,100	1.49	F	14,600	1.08	F	-27.3%
	4th Street	3rd Street	19,800	0.73	C	14,300	0.96	E	-27.7%
	Montana	Idaho (Hwy 2)	22,700	0.84	D	20,200	0.75	C	-11.2%
Meridian Road	7th Street	Center Street W	10,300	0.86	D	12,100	1.01	F	17.5%
	Center Street W	Idaho (Hwy 2)	11,200	0.85	D	12,400	0.94	E	10.7%
Shady Lane	MT 35	Conrad Drive	5,100	0.38	A	5,800	0.43	A	13.7%
Conrad Drive	Woodland Ave	Willow Glen	4,500	0.44	A	6,300	0.62	B	40.0%
	Willow Glen	Shady Lane	8,300	0.61	B	10,200	0.75	C	22.9%
2nd Street East	Woodland Dr.	Main Street (Hwy 93)	5,300	0.44	A	6,300	0.53	A	18.9%
Meridian Road	Idaho (Hwy 2)	Three Mile Road	11,700	0.65	B	12,700	0.71	C	8.5%
	Three Mile Road	Hwy 93	12,100	1.01	F	12,800	1.07	F	5.8%
1st Avenue E	12th Street	9th Street	3,500	0.39	A	3,600	0.40	A	2.9%
2nd Avenue E	5th Street	3rd Street	3,900	0.43	A	4,200	0.47	A	7.7%
1st Avenue W	12th Street	9th Street	7,500	0.83	D	7,600	0.84	D	1.3%
2nd Avenue W	5th Street	3rd Street	7,400	0.82	D	7,500	0.83	D	1.4%

Modeled volumes on Highway 93/Main Street were adjusted to match 2017 AADT. Model generated growth factors were applied to the 2017 AADT to derive the 2040 E+C and 2040 Alternative model run outputs for Highway 93/Main Street.

Figure 6.3: Alternative 2A ADT Change on Select Corridors



Alternative 3: New 8th Ave and 3rd Ave Connections

Alternative 3 evaluates the benefits of connecting both 8th Avenue WN and 3rd Avenue WN between Highway 2/Idaho Street and West Center Street. The assumption is that the development of a new travel corridor along 3rd Avenue WN may be possible if future commercial re-development occurs at the Center Mall. Extension of 8th Avenue WN seems more feasible with the removal of the rail line through the core area of Kalispell.

Area-Wide Impacts

Area-wide impacts of Alternative 3 were measured against the 2040 No Build network related to VMT, VHT and percent of congested roadway segments on the systems (as measured in miles). Alternative 3 has a minor decrease in total VMT and slight increase in total VHT. The percentage of congested roadway segments remains at 9.5 percent. Totals can be seen in Table 6.8.

Corridor Level Impacts

Impacts of Alternative 3 were evaluated on several corridor segments through out the study area which were anticipated to see an impact from the completion of Highway 93A corridor. Please see Table 6.9 and Figure 6.4 on page 121. Key findings include:

- Center Street West of Main sees significant increases in ADT but minor changes in LOS.
- 2nd Street E sees significant ADT increases between Woodland Drive and Highway 93.
- Other potentially impacted corridors were studied and can be seen in Table 6.9.

Table 6.8: Alternative 3 Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #3	1,323,035	35,073	9.5%

Conclusions

Creating better connections between Highway 2/Idaho and downtown Kalispell through adding connections on both 3rd Avenue and 8th Avenue attract about 2,400 and 2,200 vehicles to each corridor respectively. Conditions slightly improve along Meridian Road between Highway 2/Idaho and West Center. Traffic increases along both East and West Center and 2nd Street East, however both corridors operate efficiently with these changes. The improvements to 3rd and 8th Avenues would improve connectivity within the northern portion of downtown, south of Highway 2/Idaho. However, these changes don't serve to positively or negatively impact other existing or projected travel conditions.

These improvements should be further evaluated if redevelopment opportunities present themselves in the years ahead. Any improvements which serve to better connect roadways adjacent to Highway 93/Main Street and Highway 2/Idaho should be considered beneficial to the overall transportation network in the core area of Kalispell.

Table 6.9: Alternative 3 Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 3			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Center Street	Meridian Road	5th Avenue W	4,900	0.41	A	6,000	0.50	A	22.4%
	5th Avenue W	Main Street (Hwy 93)	4,900	0.20	A	5,700	0.24	A	16.3%
2nd Street East	Woodland Dr.	Main Street (Hwy 93)	5,300	0.44	A	6,300	0.53	A	18.9%
3rd Avenue WN	Idaho	Center Street W	NA	NA	NA	2,400	0.40	A	NA
8th Avenue WN	Idaho	Center Street W	NA	NA	NA	2,200	0.37	A	NA
Meridian Road	Center Street W	Idaho (Hwy 2)	11,200	0.85	D	10,100	0.77	C	-9.8%
1st Avenue E	12th Street	9th Street	3,500	0.39	A	3,200	0.36	A	-8.6%
	5th Street	3rd Street	3,900	0.43	A	3,700	0.41	A	-5.1%
1st Avenue W	12th Street	9th Street	7,500	0.83	D	7,400	0.82	D	-1.3%
	5th Street	3rd Street	7,400	0.82	D	7,400	0.82	D	0.0%

Figure 6.4: Alternative 3 ADT Change on Select Corridors

Alternative 3A: Alternatives 2 & 3 Combined

Alternative 3A combines the assumption of Alternatives 2 and 3. This would measure improved north-south connectivity between Idaho and West Center Street as well as reduced capacity along the Main Street portion of Highway 93 north of the couplet to West Center Street.

Area-Wide Impacts

Area-wide impacts of Alternative 3A were measured against the 2040 No Build network related to VMT, VHT and percent of congested roadway segments on the systems (as measured in miles). Alternative 3A has a significant decrease in total VMT of 1.2 percent and decrease in total VHT of 0.7 percent. The percentage of congested roadway segments remains at 9.5 percent. Totals can be seen in Table 6.10.

Table 6.10: Alt 3 Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #3A	1,303,435	34,310	9.7%

Corridor Level Impacts

Impacts of Alternative 3A were evaluated on several corridor segments throughout the study area. As expected, major impacts can be seen on mostly the same corridors as Alternatives 2 and 3. Please see Table 6.11 and Figure 6.5. Key findings include:

- Highway 93/Main Street experiences reduction in travel demand; however, LOS is reduced to F through downtown.
- Center St west of Main sees significant increases in ADT but minor changes in LOS.
- 1st Avenue E sees significant ADT increases between 5th St and 3rd St.

Conclusions

Conditions remain roughly constant to those experienced in Alternative 3. Alternative 3A experiences roughly the same traffic diversion away from Highway 93/Main Street experienced in Alternative 2. Due to changes in capacity along Highway 93/Main Street, LOS drops to an F.

Table 6.11: Alternative 3A Change on Select Corridors

Corridor	*Segments (Termini)*		*2040 E+C*			*Alternative 3A*			
			ADT	*V/C*	*LOS*	*ADT*	*V/C*	*LOS*	*ADT Change*
Main Street (Hwy 93)	8th Street	7th Street	20,100	1.49	F	17,300	1.28	F	-14.0%
	4th Street	3rd Street	19,800	0.73	C	16,700	1.13	F	-15.5%
	Montana	Idaho (Hwy 2)	22,700	0.84	D	19,300	0.71	C	-15.3%
Center Street	Meridian Road	5th Avenue W	4,900	0.41	A	6,000	0.50	A	22.4%
	5th Avenue W	Main Street (Hwy 93)	4,900	0.20	A	5,800	0.24	A	18.4%
3rd Avenue WN	Idaho	Center Street W	NA	NA	NA	2,500	0.42	A	NA
8th Avenue WN	Idaho	Center Street W	NA	NA	NA	2,200	0.37	A	NA
Meridian Road	Center Street W	Idaho (Hwy 2)	11,200	0.85	D	10,300	0.78	C	-8.0%
1st Avenue E	12th Street	9th Street	3,500	0.39	A	3,800	0.42	A	8.6%
	5th Street	3rd Street	3,900	0.43	A	4,400	0.49	A	12.8%
1st Avenue W	12th Street	9th Street	7,500	0.83	D	8,000	0.89	D	6.7%
	5th Street	3rd Street	7,400	0.82	D	8,000	0.89	D	8.1%

Modeled volumes on Highway 93/Main Street were adjusted to match 2017 AADT. Model generated growth factors were applied to the 2017 AADT to derive the 2040 E+C and 2040 Alternative model run outputs for Highway 93/Main Street.

Figure 6.5: Alternative 3A ADT Change on Select Corridors

Alternative 4: Willow Glen/ Conrad/Shady Lane

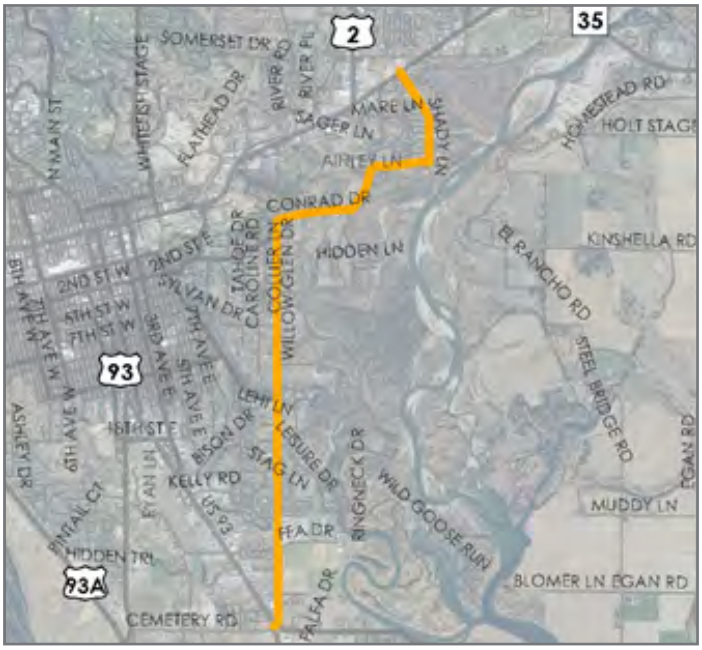
Alternative 4 evaluates the development of a three-lane roadway along the Willow Glen corridor from Highway 93 South to Conrad Road, then continuing along Conrad Road to Shady Lane, where it would continue until its junction with MT 35. This corridor improvement has been studied in the past and is widely believed to help provide some east side relief for traffic origin-destination patterns from south Kalispell to the Evergreen area along Highway 2/Lasalle Road, and points north.

Area-Wide Impacts

Area-wide impacts of Alternative 4 were measured against the 2040 No Build network related to VMT, VHT and percentage of congested roadway segments on the systems (as measured in miles). Alternative 4 has a modest 0.2 percent decrease in total VMT and 0.5 percent increase in total VHT. The percentage of congested roadway segments rises slightly to 9.6 percent. Totals can be seen in Table 6.12.

Table 6.12: Alternative 4 Area-Wide Impacts

Alternative	Total VMT	Total VHT	Percent of Congested Roadway Segments
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #4	1,323,432	35,096	9.6%



Corridor Level Impacts

Impacts of Alternative 4 were evaluated on several corridor segments throughout the study area. As expected, impacts can be seen on Shady Lane and Conrad Drive. Please see Table 6.13 and Figure 6.6 on page 126. Key findings include:

- Shady Lane is expected to see a 17.6 percent increase in ADT with no significant change to LOS.
- Conrad Drive increases significantly in ADT and LOS gets worse from Woodland Ave to Willow Glen
- 2nd St E also sees increased ADT from Woodland Dr. to Main.

Table 6.13: Alternative 4 Change on Select Corridors

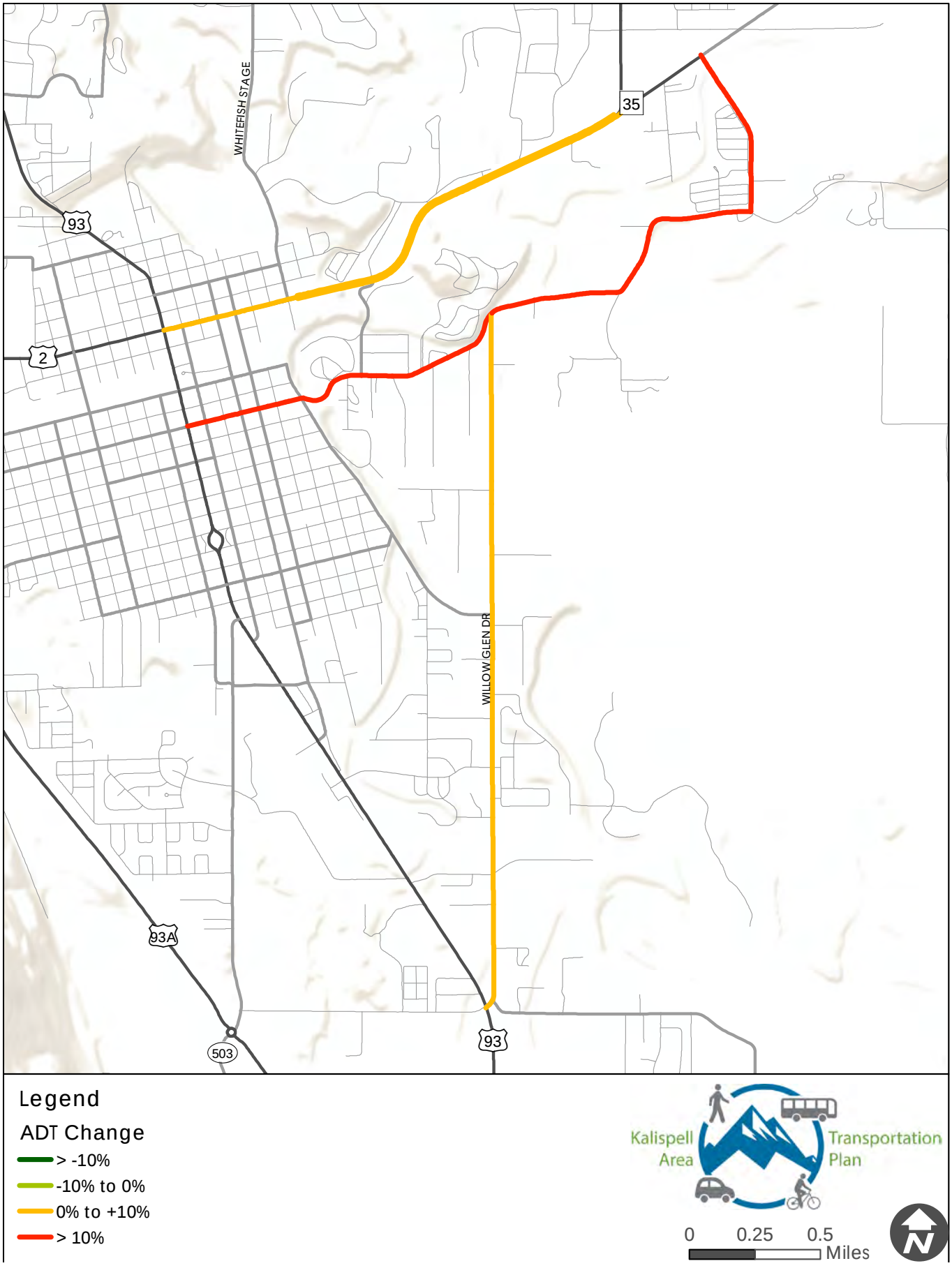
Corridor	Segments (Termini)		2040 E+C			Alternative 4			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Shady Lane	MT 35	Conrad Drive	5,100	0.38	A	6,000	0.40	A	17.6%
Conrad Drive	Woodland Ave	Willow Glen	4,500	0.44	A	6,600	0.65	B	46.7%
	Willow Glen	Shady Lane	8,300	0.61	B	10,600	0.71	C	27.7%
2nd Street East	Woodland Drive	Main Street (Hwy 93)	5,300	0.44	A	6,400	0.53	A	20.8%
Willow Glen	Hwy 93	Woodland Drive	8,100	0.68	B	8,500	0.64	B	4.9%
	Woodland Drive	Conrad Road	5,500	0.40	A	5,900	0.39	A	7.3%
Woodland Park Dr	Conrad Dr	Idaho (Hwy 2)	5,400	0.45	A	5,600	0.47	A	3.7%
Highway 93S	Airport Way	Kelly Road	20,100	0.71	C	19,700	0.70	C	-2.0%
Main Street (Highway 93)	4th Street	3rd Street	16,500	0.61	B	16,500	0.61	B	0.0%

Conclusions

One possible constraint to Alternative 4 is resident opposition. The current corridor is largely residential with large lots with a semi-rural character. An arterial may be unpopular as improvements attract additional traffic to all segments of the corridor. The most significant increases are seen along Shady Lane, Conrad Drive and 2nd Street East. Slight increases are seen along Willow Glen, with a small increase along Woodland Park Drive.

Improvements along Willow Glen/Conrad Road appear to have no impact on conditions along Highway 93. These improvements alone minimally reduce traffic along Highway 2/Idaho between MT 35 and Highway 93. Nothing within the TDM results would suggest changing the historical sentiment to pursue improvements on this general travel corridor constituting Willow Glen, Conrad Road and Shady Lane. As is shown later, improvement to this travel corridor is improved through finding new north-south connectivity, either along 7th Street EN/Whitefish Stage or a possible LaSalle Extension.

Figure 6.6: Alternative 4 ADT Change on Select Corridors



Alternative 5: LaSalle Extension

Alternative 5 considers the potential connection between LaSalle Road/Highway 2 and Conrad Road. Alternative 5 creates a new connection from the junction of Highway 2 and MT 35 south to Conrad Road. This alternative has been modeled in the past and is considered to have the potential to improve access into downtown Kalispell, relieve potential congestion on Highway 2/Idaho Street and improve north-south mobility through the study area.

Area-Wide Impacts

Area-wide impacts of Alternative 5 were measured against the 2040 No Build network related to VMT, VHT and percentage of congested roadway segments on the systems (as measured in miles). Alternative 5 has no change in total VMT and 0.6 percent increase in total VHT. However the percentage of congested roadway segments rises to 10 percent—tied with Alternative 6 for the highest percentage of congested roadway segments. Totals can be seen in Table 6.14.

Table 6.14: Alternative 5 Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #5	1,325,810	35,122	10.0%

Corridor Level Impacts

Impacts of Alternative 5 were evaluated on several corridor segments throughout the study area. Please see Table 6.15 and Figure 6.7 on page 129. Key findings include:

- Willow Glen and Conrad Dr see increases in ADT and worsening LOS.
- Woodland Dr and Shady Lane both see decreases in ADT and improvements to LOS.
- 2nd St E also sees increased ADT from Woodland Dr. to Main.
- Other hand-selected corridors for analysis can be seen in Table 6.15.
- No changes on Highway 93/Main Street.
- Reduction in volumes on Highway 93S from Cemetery Road to 13th Street.

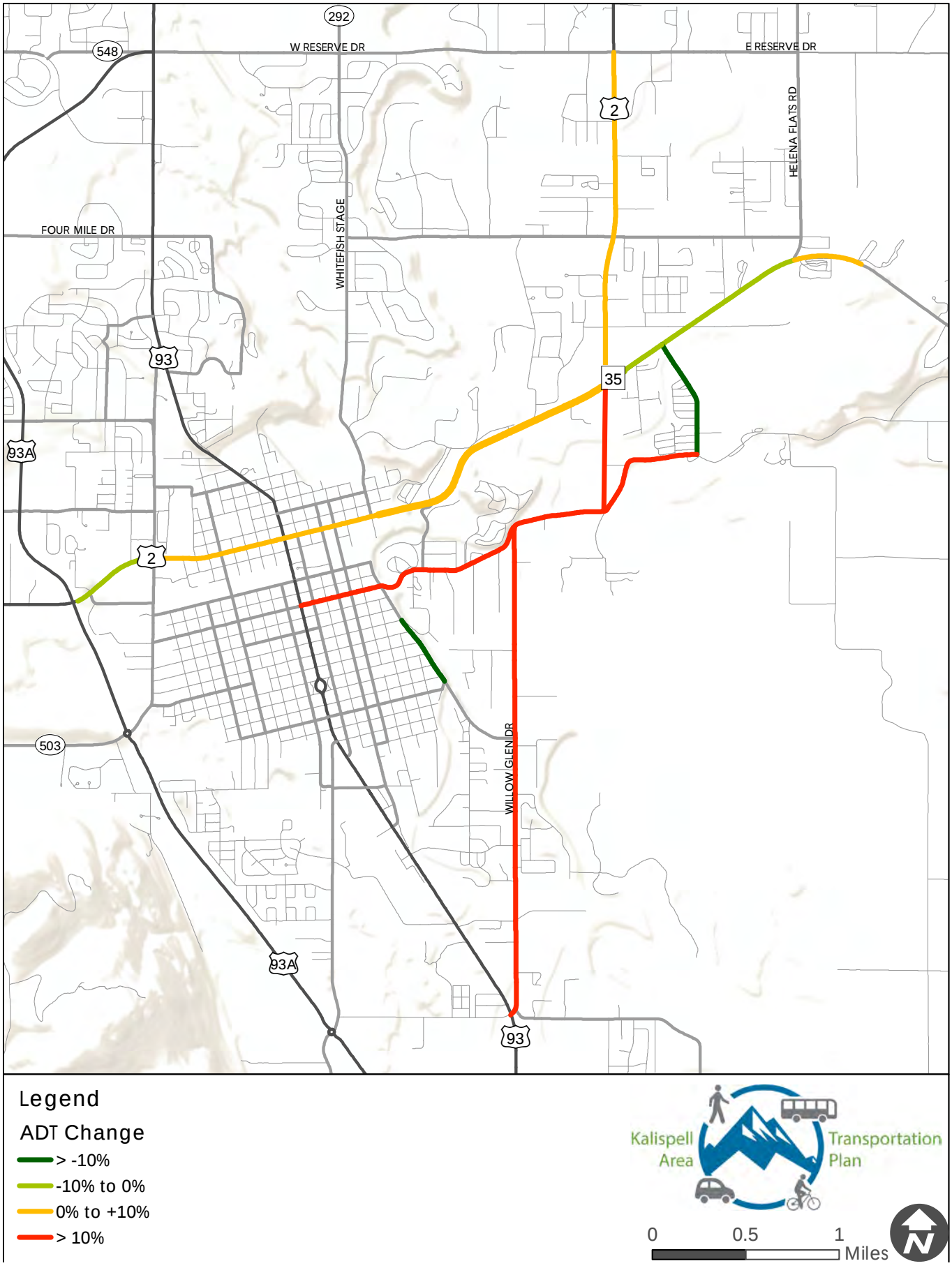
Conclusions

A new connection between Highway 2 and Conrad Road would attract 7,200 vehicles daily. This so-called LaSalle Extension would reduce travel demand on Woodland Drive, Woodland Park Drive and Shady Lane. With this new roadway segment, travel demand would increase on 2nd Street East and Conrad Drive. Accordingly, travel demand would increase on Willow Glen. Increases on Willow Glen with the LaSalle Extension are greater than those seen with improvements only to the Willow Glen/Conrad Road/Shady Lane corridors. Projected travel demand increases along existing corridors don't appear significant enough to negatively impact future operations within the general area of influence.

Table 6.15: Alternative 5 Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 5			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Willow Glen	Hwy 93	Woodland Drive	8,100	0.68	B	9,100	0.76	C	12.3%
	Woodland Drive	Conrad Road	5,500	0.40	A	8,300	0.61	B	50.9%
Woodland Drive	12th Street	5th Street	5,800	0.48	A	4,500	0.38	A	-22.4%
Shady Lane	MT 35	Conrad Drive	5,100	0.38	A	3,100	0.23	A	-39.2%
Conrad Drive	Woodland Ave	Willow Glen	4,500	0.44	A	5,300	0.52	A	17.8%
	Willow Glen	Shady Lane	8,300	0.61	B	12,600	0.93	E	51.8%
2nd Street East	Woodland Dr.	Main Street (Hwy 93)	5,300	0.44	A	6,000	0.50	A	13.2%
New Network Segment	US2/MT35	Conrad Dr	NA	NA	NA	7,200	0.71	C	NA
Hwy 2 (Idaho)	Hwy 93A	Meridian Road	18,300	0.65	B	18,300	0.65	B	0.0%
	Meridian Road	5th Avenue W	21,800	0.77	C	21,900	0.77	C	0.5%
	5th Avenue W	Main Street (Hwy 93)	19,400	0.72	C	19,600	0.73	C	1.0%
	Main Street (Hwy 93)	3rd Avenue EN	24,400	0.90	E	25,300	0.94	E	3.7%
	3rd Avenue EN	7th Avenue EN/Whitefish Stage	25,600	0.95	E	26,200	0.97	E	2.3%
	7th Avenue EN/Whitefish Stage	Woodland Park	23,300	0.86	D	24,200	0.90	D	3.9%
	Woodland Park	LaSalle/MT 35	27,100	0.89	D	27,200	0.89	D	0.4%
MT 35	Hwy 2/ LaSalle	Shady Lane	15,900	1.04	F	15,800	1.03	F	-0.6%
	Shady Lane	Helena Flats	12,000	0.88	D	11,900	0.88	D	-0.8%
	Helena Flats	Flathead River	14,100	1.04	F	14,400	1.06	F	2.1%
Woodland Park Dr	Conrad Dr	Idaho (Hwy 2)	5,400	0.45	A	4,300	0.36	A	-20.4%

Figure 6.7: Alternative 5 ADT Change on Select Corridors



Alternative 5A: Alternatives 4 & 5 Combined

Alternative 5A would combine the assumptions from Alternatives 4 and 5. This would improve the Willow Glen/Conrad Road/Shady Lane corridor in addition to providing for a new connection between Highway 2 and Conrad Road.

Area-Wide Impacts

Area-wide impacts of Alternative 5A were measured against the 2040 No Build network related to VMT, VHT and percentage of congested roadway segments on the systems (as measured in miles). Like Alternative 5, Alternative 5A has no change in total VMT but has a slightly greater 0.6 percent increase in total VHT. The percentage of congested roadway segments falls to 9.9 percent compared to Alternative 5. Totals can be seen in Table 6.16.

Table 6.16: Alternative 5A Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #5A	1,326,513	35,147	9.9%

Corridor Level Impacts

Impacts of Alternative 5A were evaluated on several corridor segments throughout the study area. Combining Alternatives 4 and 5 seems to strengthen the effects of both. Please see Table 6.17 and Figure 6.8 on page 132. Key findings include:

- Willow Glen has increases in ADT and worsening LOS.
- Woodland Dr and Shady Lane both see decreases in ADT and improvements to LOS.
- Conrad Dr. worsens to a greater degree than either base alternative alone.
- ADT increases at 2nd St E with little change in LOS.
- Other selected segments can be seen in Table 6.17.
- No changes on Highway 93/Main Street
- Reduction in volumes on Highway 93S from Cemetery Road to 13th Street.

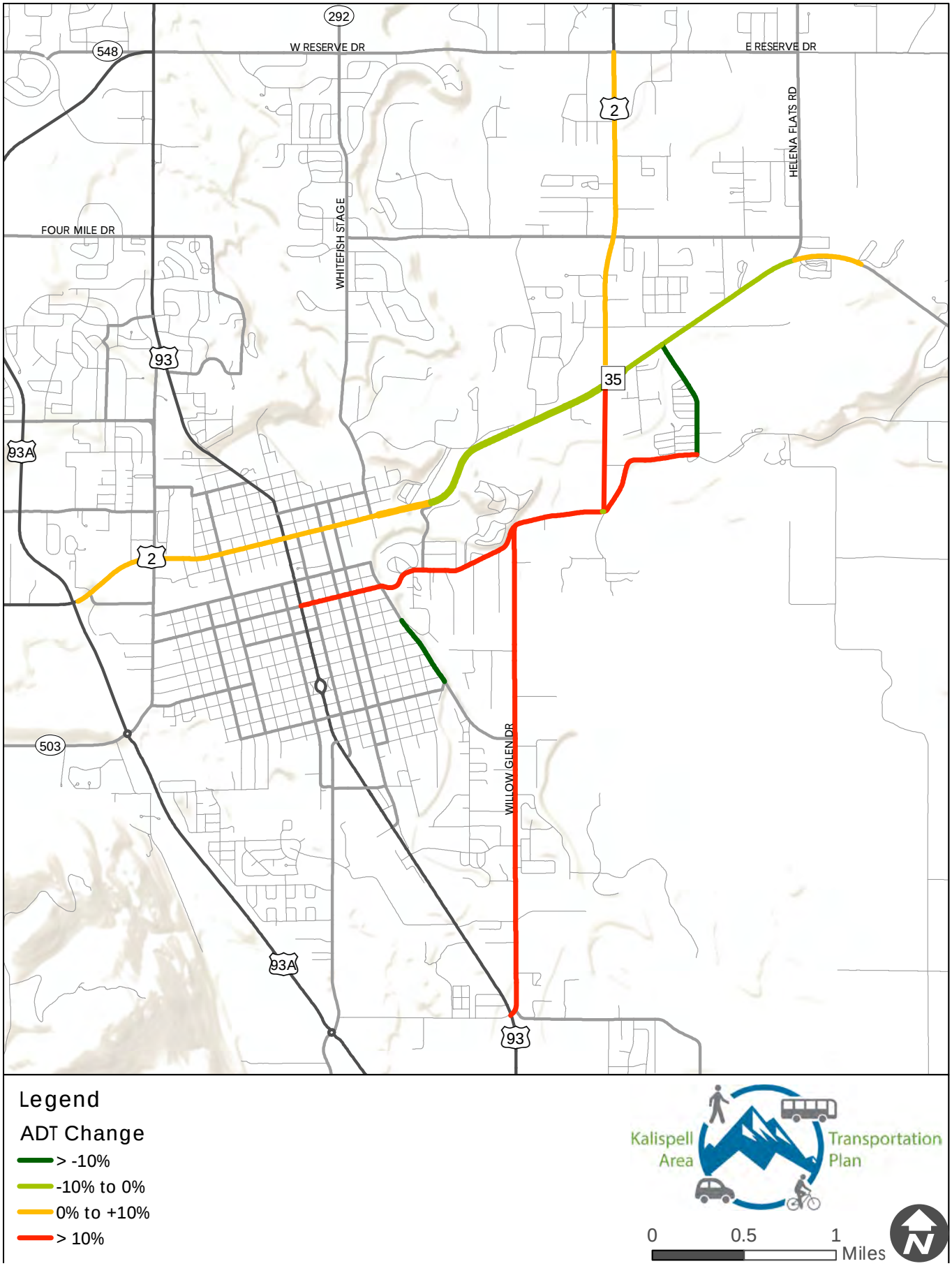
Conclusions

Combining improvements along Willow Glen/Conrad Road/Shady Lane with the LaSalle Extension further increase the attractiveness of an improved east side corridor. The results of Alternative 4, 5 and 5A demonstrate the potential need to ensure an improved connection to Highway 2 in combination with an east side corridor such as Willow Glen. Projected travel demand increases along existing corridors don't appear significant enough to negatively impact future operations within the general area of influence.

Table 6.17: Alternative 5A Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 5A			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Willow Glen	Hwy 93	Woodland Drive	8,100	0.68	B	9,400	0.71	C	16.0%
	Woodland Drive	Conrad Road	5,500	0.40	A	8,600	0.57	A	56.4%
Woodland Drive	12th Street	5th Street	5,800	0.48	A	4,600	0.38	A	-20.7%
Shady Lane	MT 35	Conrad Drive	5,100	0.38	A	2,900	0.19	A	-43.1%
Conrad Drive	Woodland Ave	Willow Glen	4,500	0.44	A	5,700	0.56	A	26.7%
	Willow Glen	Shady Lane	8,300	0.61	B	13,300	0.89	D	60.2%
2nd Street East	Woodland Dr.	Main Street (Hwy 93)	5,300	0.44	A	6,100	0.51	A	15.1%
New Network Segment	US2/MT35	Conrad Dr	NA	NA	NA	7,600	0.75	C	NA
Hwy 2 (Idaho)	Hwy 93A	Meridian Road	18,300	0.65	B	18,400	0.65	B	0.5%
	Meridian Road	5th Avenue W	21,800	0.77	C	21,900	0.77	C	0.5%
	5th Avenue W	Main Street (Hwy 93)	19,400	0.72	C	19,600	0.73	C	1.0%
	Main Street (Hwy 93)	3rd Avenue EN	24,400	0.90	E	25,200	0.93	E	3.3%
	3rd Avenue EN	7th Avenue EN/Whitefish Stage	25,600	0.95	E	26,000	0.96	E	1.6%
	7th Avenue EN/Whitefish Stage	Woodland Park	23,300	0.86	D	24,100	0.89	D	3.4%
	Woodland Park	LaSalle/MT 35	27,100	0.89	D	26,700	0.87	D	-1.5%
MT 35	Hwy 2/ LaSalle	Shady Lane	15,900	1.04	F	15,600	1.02	F	-1.9%
	Shady Lane	Helena Flats	12,000	0.88	D	11,900	0.88	D	-0.8%
	Helena Flats	Flathead River	14,100	1.04	F	14,400	1.06	F	2.1%
Woodland Park Dr	Conrad Dr	Idaho (Hwy 2)	5,400	0.45	A	4,100	0.34	A	-24.1%

Figure 6.8: Alternative 5A ADT Change on Select Corridors



Alternative 6: 7th Ave Extension

Alternative 6 assumes an extension of 7th Avenue EN from Highway 2/Idaho Street to East Center Street/ Woodland Avenue. This could be considered an extension of Whitefish Stage Road. The improvement is similar to Alternatives 4 and 5 and is aimed at trying to increase north-south mobility through the study area.

Area-Wide Impacts

Area-wide impacts of Alternative 6 were measured against the 2040 No Build network related to VMT, VHT and percentage of congested roadway segments on the systems (as measured in miles). Alternative 6 along with Alternative 5 has the highest percentage of congested roadway segments of any alternative at 10.0 percent. VMT has a modest decrease of 0.2 percent while VHT increases 0.5 percent. Totals can be seen in Table 6.18.

Table 6.18: Alternative 6 Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #6	1,322,904	35,082	10.0%

Corridor Level Impacts

Impacts of Alternative 6 were evaluated on several corridor segments throughout the study area. Please see Table 6.19 and Figure 6.9 on page 135. Several downtown corridors see significant changes. Although many corridors have significant increases in ADT and worsening levels of service, LOS remains level A–C:

- Willow Glen has increases in ADT and worsening LOS.
- Woodland Dr sees increases in ADT and worsening LOS.
- Conrad Dr. has significantly increased ADTs and worsening LOS.
- Center St sees increases in ADT.
- 1st St E sees increases in ADT but no signficant LOS change.
- 2nd St E sees increases in ADT.
- No changes on Highway 93/Main Street.

Conclusions

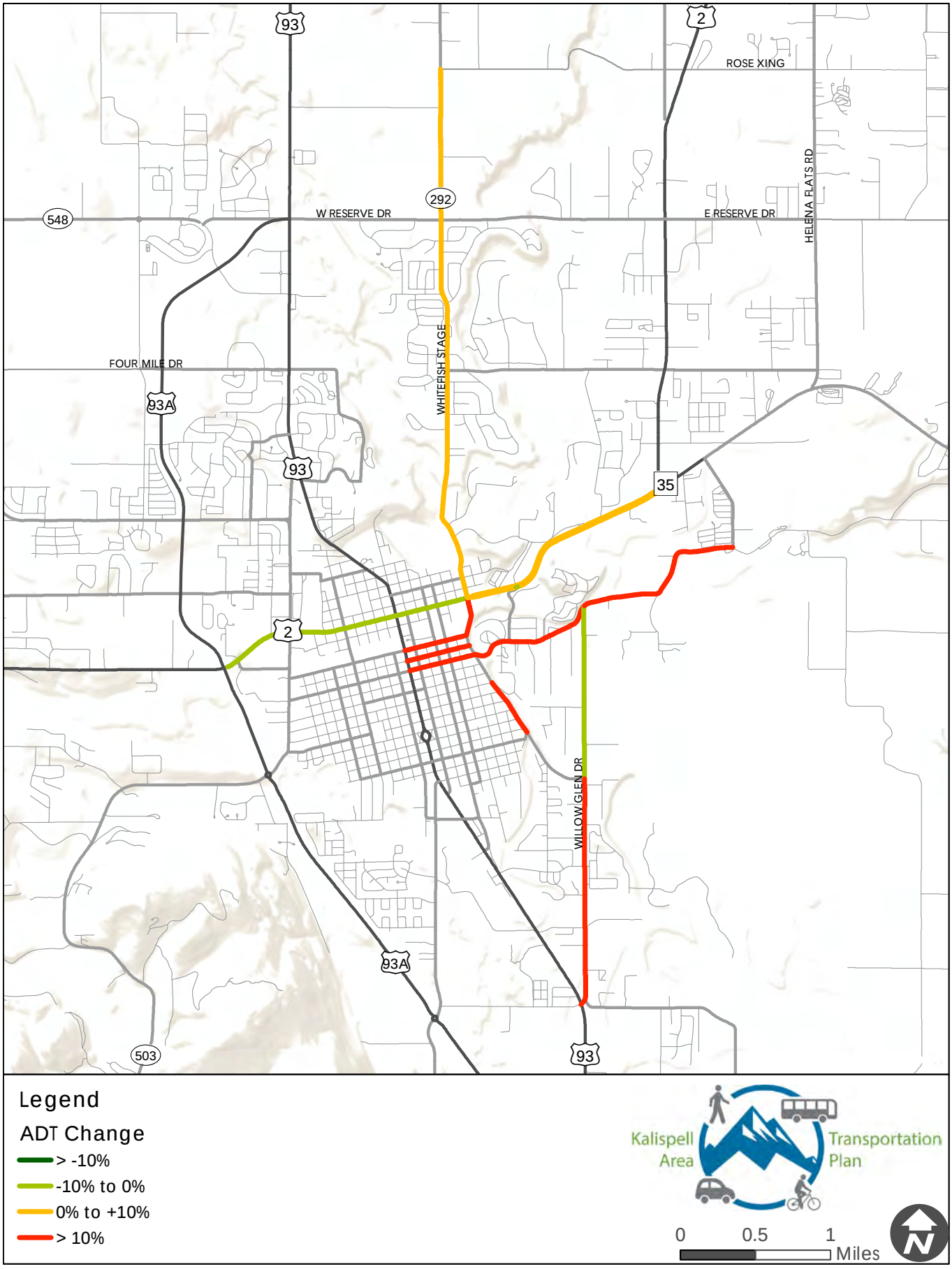
The addition of a connection between Highway 2/Idaho and East Center Street at 7th Street EN/Whitefish Stage would attract 10,000 vehicles per day. This new connection increases travel demand on a series of adjacent corridors including Conrad Drive, Center Street, 1st Street and 2nd Street. Additionally, this new connection would generate increased traffic demand along Willow Glen from Highway 93 South to Woodland Drive and points north.

The proposed connection also serves to increase travel demand along the Whitefish Stage corridor north of Highway 2/Idaho. This change in travel demand is expected given the new connectivity provided in the middle of the study area. For the most part, increases in travel demand on existing corridors doesn't appear to negatively impact projected conditions. Travel demand increases to Woodland Drive would not be significant enough to degrade the current residential character of the neighborhood. Consideration should be given to improve roadway safety along the Woodland Avenue corridor with improved shoulders and related delineation, improved pedestrian facilities including marked crosswalks and a review of appropriate lane widths for a residential corridor.

Table 6.19: Alternative 6 Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 6			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Willow Glen	Hwy 93	Woodland Drive	8,100	0.68	B	9,500	0.79	C	17.3%
Woodland Drive	12th Street	5th Street	5,800	0.48	A	7,800	0.65	B	34.5%
Conrad Drive	Woodland Ave	Willow Glen	4,500	0.44	A	6,800	0.67	B	51.1%
	Willow Glen	Shady Lane	8,300	0.61	B	10,200	0.75	C	22.9%
Center Street	Main Street (Hwy 93)	Woodland Drive	5,400	0.45	A	6,800	0.57	A	25.9%
1st Street East	Woodland Dr.	Main Street (Hwy 93)	400	0.11	A	600	0.16	A	50.0%
2nd Street East	Woodland Dr.	Main Street (Hwy 93)	5,300	0.44	A	6,800	0.57	A	28.3%
New Network Segment	7th Ave EN	7th Ave EN	NA	NA	NA	10,000	1.11	F	NA
Willow Glen	Woodland Drive	Conrad Road	5,500	0.40	A	5,300	0.39	A	-3.6%
Hwy 2 (Idaho)	3rd Avenue EN	7th Avenue EN/Whitefish Stage	25,600	0.95	E	24,100	0.89	D	-5.9%
	7th Avenue EN/Whitefish Stage	Woodland Park	23,300	0.86	D	25,100	0.93	E	7.7%
Whitefish Stage	Idaho (Highway 2)	Evergreen	8,100	0.60	A	8,900	0.65	B	9.9%
	Evergreen	Reserve Drive	9,200	0.77	C	9,700	0.81	D	5.4%
	Reserve Drive	Rose Crossing	6,100	0.60	A	6,400	0.63	B	4.9%
Woodland Park Dr	Conrad Dr	Idaho (Hwy 2)	5,400	0.45	A	3,900	0.33	A	-27.8%

Figure 6.9: Alternative 6 ADT Change on Select Corridors



Alternative 6A

Alternative 6A combines the assumption of both Alternative 4 and 6. Alternative 6A combines a Whitefish Stage/7th Street extension with improvements to the Willow Glen/ Conrad Road/Shady Lane corridor.

Area-Wide Impacts

Area-wide impacts of Alternative 6A were measured against the 2040 No Build network related to VMT, VHT and percentage of congested roadway segments on the systems (as measured in miles). Alternative 6A has a lower percentage of congested roadway segments compared to Alternative 6 (10.0 percent) but higher than Alternative 4 (9.6 percent). VMT has a decrease of 0.7 percent while VHT decreases 0.6 percent. Totals can be seen in Table 6.20.

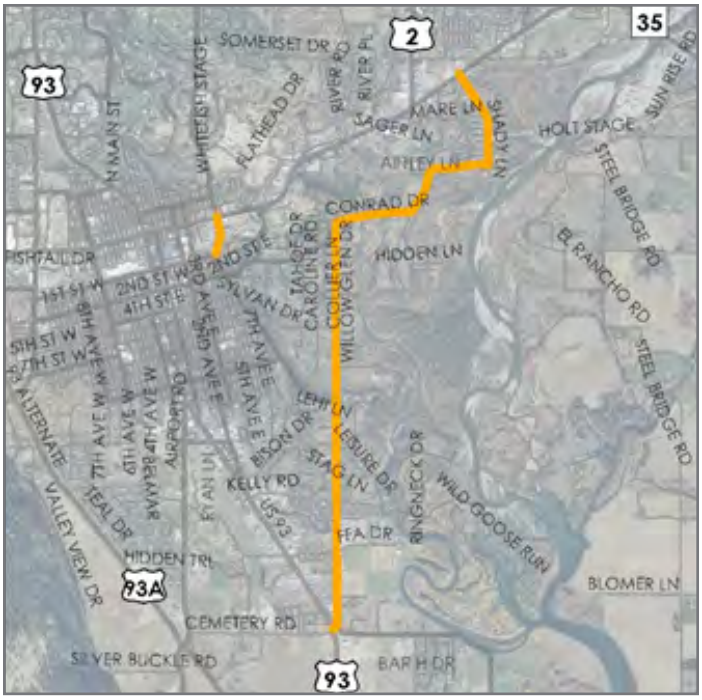
Table 6.20: Alternative 6A Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #6A	1,316,697	34,706	9.8%

Corridor Level Impacts

Impacts of Alternative 6A were evaluated on several corridor segments throughout the study area. Please see Table 6.21 and Figure 6.10 on page 138. Corridor impacts are comparable to Alternatives 4 and 6:

- Willow Glen has increases in ADT and worsening LOS.
- Conrad Dr. has increased ADTs and worsening LOS.
- Center St sees increases in ADT.
- 1st St E sees increases in ADT but no significant LOS change.
- 2nd St E sees increases in ADT.
- Woodland Park Dr decreases ADT and improves LOS.
- No changes on Highway 93/Main Street.



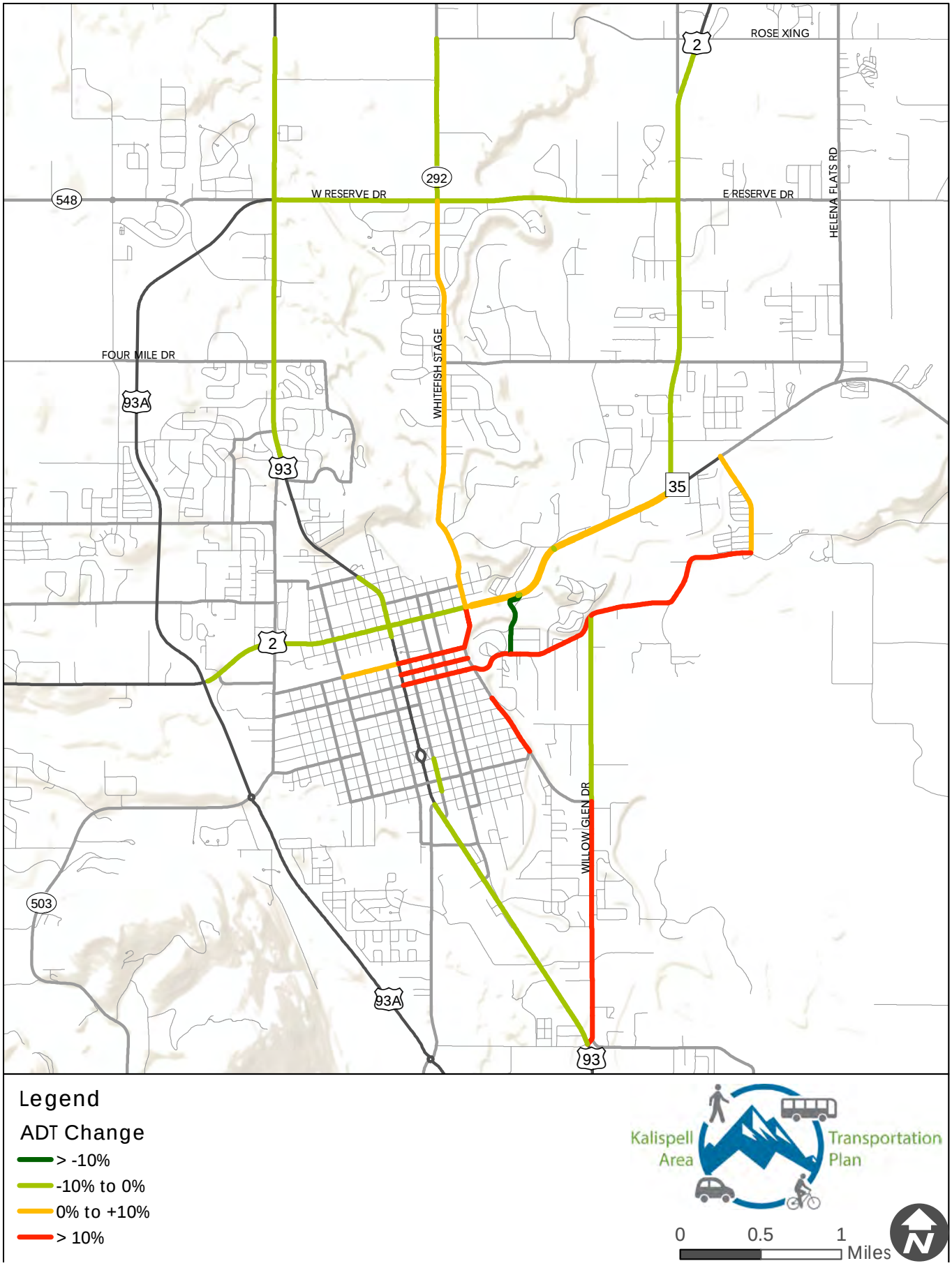
Conclusions

Combining the 7th Street EN/Whitefish Stage connection with previously identified improvements along Willow Glen/Conrad Road/Shady Lane doesn't dramatically change those patterns seen through just adding the new connection. As was expressed earlier, the attractiveness of existing or improved east side corridors such as Willow Glen are enhanced if additional north-south connectivity is provided through either a 7th Street EN/Whitefish Stage connection or the LaSalle Extension. Traffic increases to Woodland Drive would not degrade the current residential character of the neighborhood.

Table 6.21: Alternative 6A Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 6A			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Hwy 93S	Cemetary Road	13th Street	20,400	0.72	C	19,000	0.67	B	-6.9%
Hwy 2 (Idaho)	3rd Avenue EN	7th Avenue EN/Whitefish Stage	25,600	0.95	E	24,000	0.89	D	-6.3%
	7th Avenue EN/Whitefish Stage	Woodland Park	23,300	0.86	D	24,900	0.92	E	6.9%
Willow Glen	Hwy 93	Woodland Drive	8,100	0.68	B	9,900	0.75	C	22.2%
Woodland Drive	12th Street	5th Street	5,800	0.48	A	7,900	0.66	B	36.2%
Whitefish Stage	Idaho (Highway 2)	Evergreen	8,100	0.60	A	8,900	0.65	B	9.9%
	Evergreen	Reserve Drive	9,200	0.77	C	9,800	0.82	D	6.5%
Shady Lane	MT 35	Conrad Drive	5,100	0.38	A	5,500	0.37	A	7.8%
Conrad Drive	Woodland Ave	Willow Glen	4,500	0.44	A	6,900	0.68	B	53.3%
	Willow Glen	Shady Lane	8,300	0.61	B	10,500	0.70	C	26.5%
Center Street	5th Avenue W	Main Street (Hwy 93)	4,900	0.20	A	5,300	0.22	A	8.2%
	Main Street (Hwy 93)	Woodland Drive	5,400	0.45	A	6,800	0.57	A	25.9%
1st Street East	Woodland Dr.	Main Street (Hwy 93)	400	0.11	A	600	0.16	A	50.0%
2nd Street East	Woodland Dr.	Main Street (Hwy 93)	5,300	0.44	A	6,800	0.57	A	28.3%
1st Avenue E	12th Street	9th Street	3,500	0.39	A	3,300	0.37	A	-5.7%
New Network Segment	Idaho	Center Street E	100	0.01	A	10,000	1.11	F	NA
Woodland Park Dr	Conrad Dr	Idaho (Hwy 2)	5,400	0.45	A	3,800	0.32	A	-29.6%

Figure 6.10: Alternative 6A ADT Change on Select Corridors



Alternative 7

Alternative 7 evaluates the development of an improved three-lane corridor along Evergreen/Four Mile Drive from Whitefish Stage to its junction with Farm-to-Market Road. Alternative 7 assumes the development of a new crossing of the Stillwater River to make the connection between Whitefish Stage and Highway 93. Evaluated in past plans, the improvement looks to improve east-west mobility through the north-central portions of the study area.

Area-Wide Impacts

Area-wide impacts of Alternative 7 were measured against the 2040 No Build network related to VMT, VHT and percentage of congested roadway segments on the systems (as measured in miles). Alternative 7 has a 1.1 percent decrease in VMT and 0.8 percent decrease in VHT over the no-build scenario. The percentage of congested roadway segments is about average among all alternatives at 9.3 percent. See totals in Table 6.22.

Table 6.22: Alternative 7 Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #7	1,311,884	34,621	9.3%

Corridor Level Impacts

Impacts of Alternative 7 were evaluated on several corridor segments throughout the study area. Corridor impacts are significant for the northern portions of the study area. Please see Table 6.23 and Figure 6.11 on page 142. Key findings include:

- Highway 93A increases in ADT with little change in LOS.
- Highway 93 from Idaho to Wyoming St improves LOS from F to E.
- ADT increases on Four Mile Dr/Evergreen.
- ADT decreases (and impacts to LOS) at:
  - Three Mile Drive
  - Stillwater Road
  - Farm to Market
  - Reserve Dr
  - Whitefish Stage
- ADT increases at:
  - Springcreek Road
  - Helena Flats
  - Rose Crossing

Conclusions

The addition of a new connection across the Stillwater River connecting Evergreen Drive with Grandview Drive/ Four Mile Drive would have a dramatic impact on the transportation network. The new roadway segment will attract 12,200 vehicles per day. This new connection improves the utility of the overall travel corridor between Helena Flats and Farm to Market Road. Projected travel demand along the corridor generally stays within projected capacity. The new connection appears to assist in facilitating regional mobility relative to projected growth trends.

The new connection reduces travel demand along Whitefish Stage, Highway 2/Idaho, segments of Highway 93 North, as well as other future growth corridors on the west side of Highway 93A. Noticeable travel demand reductions are seen along West Reserve from Whitefish Stage to points west. Relative to several other alternatives, improvements to the Evergreen/Grandview/Four Mile Drive corridor shows the most potential to reduce travel demand along Highway 2/Idaho. Additionally, the new connection also serves to reduce travel demand along MT 35 from Helena Flats to its intersection with Highway 2.

The new connection impacts travel demand along Helena Flats as the corridor appears to continue to develop as a more enhanced parallel route to Highway 2/LaSalle. While this currently occurs to some degree, this trend is accentuated with the improved connection across Evergreen/Grandview/Four Mile Drive. Projected conditions don't appear to outstrip capacity along Helena Flats, however future considerations would be needed for an urban roadway section, as opposed to an improved rural section.

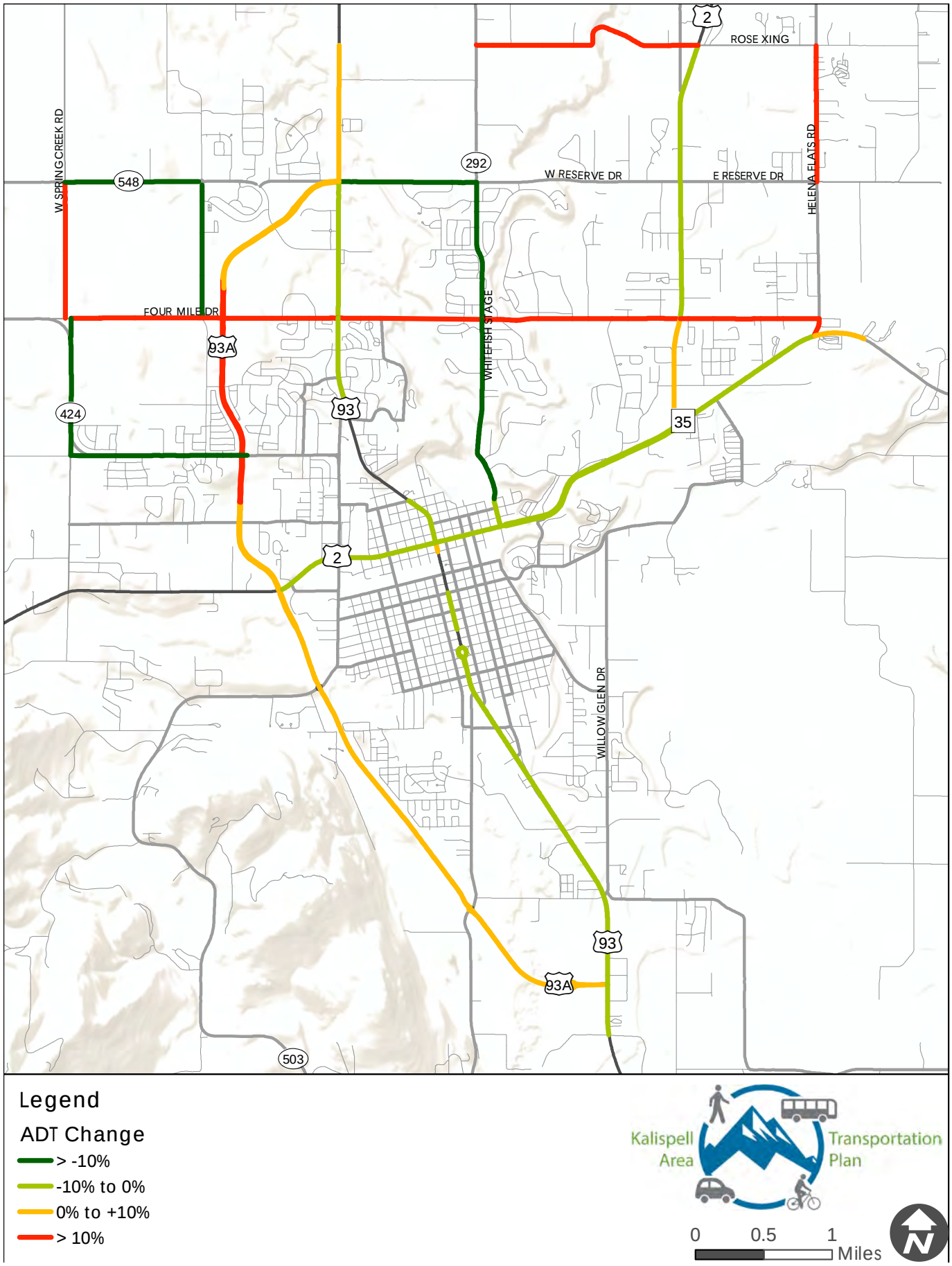
Table 6.23: Alternative 7 Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 7			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Hwy 93A	Three Mile Drive	Four Mile Drive	24,000	0.67	B	27,000	0.75	C	12.5%
Hwy 93N	Idaho (Hwy 2)	Wyoming Street	29,800	1.10	F	26,900	1.00	E	-9.7%
Four Mile Drive/ Evergreen	Helena Flats	LaSalle/Hwy 2	3,700	0.36	A	5,000	0.49	A	35.1%
	Hwy 2/LaSalle	Whitefish Stage	6,400	0.47	A	10,700	0.79	C	67.2%
	Hwy 93	Hwy 93A	2,300	0.23	A	6,800	0.52	A	195.7%
	Hwy 93A	Farm to Market Road	3,500	0.93	E	10,000	1.01	F	185.7%
Three Mile Drive	Farm to Market Road	Hwy 93	10,000	0.74	C	8,200	0.60	B	-18.0%
Stillwater Road	Four Mile Drive	West Reserve	1,500	0.40	A	1,100	0.29	A	-26.7%
Springcreek Road	Four Mile Drive	West Reserve Drive	4,400	1.17	F	6,000	1.60	F	36.4%
Farm to Market (MT 424)	Three Mile Drive	Four Mile Drive	4,100	0.40	A	1,600	0.16	A	-61.0%
Reserve Drive	Spring Creek Drive	Stillwater Road	9,500	1.06	F	7,000	0.78	C	-26.3%
	Hwy 93	Whitefish Stage	20,700	1.00	E	18,600	0.89	D	-10.1%
Whitefish Stage	Idaho (Highway 2)	Evergreen	8,100	0.60	A	7,200	0.53	A	-11.1%
	Evergreen	Reserve Drive	9,200	0.77	C	5,700	0.48	A	-38.0%
Helena Flats	MT 35	Evergreen Drive	9,100	0.89	D	10,400	1.02	F	14.3%
	East Reserve	Rose Crossing	4,000	0.59	A	4,500	0.66	B	12.5%
Rose Crossing	Lasalle (Hwy 2)	Whitefish Stage	2,500	0.48	A	2,800	0.53	A	12.0%
New Network Segment	Evergreen Drive Extension	Evergreen Drive Extension	NA	NA	NA	12,200	0.92	E	NA

...continued on page 141

Corridor	Segments (Termini)		2040 E+C			Alternative 7			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Hwy 2 (Idaho)	Hwy 93A	Meridian Road	18,300	0.65	B	17,800	0.63	B	-2.7%
	Meridian Road	5th Avenue W	21,800	0.77	C	20,800	0.73	C	-4.6%
	5th Avenue W	Main Street (Hwy 93)	19,400	0.72	C	18,500	0.69	B	-4.6%
	Main Street (Hwy 93)	3rd Avenue EN	24,400	0.90	E	22,000	0.81	D	-9.8%
	3rd Avenue EN	7th Avenue EN/ Whitefish Stage	25,600	0.95	E	23,400	0.87	D	-8.6%
	7th Avenue EN/ Whitefish Stage	Woodland Park	23,300	0.86	D	21,600	0.80	D	-7.3%
	Woodland Park	LaSalle/MT 35	27,100	0.89	D	25,300	0.83	D	-6.6%
LaSalle (Hwy 2)	Idaho/MT 35	Evergreen	23,300	0.73	C	24,600	0.77	C	5.6%
	Evergreen	West Reserve	25,200	0.78	C	24,800	0.77	C	-1.6%
	West Reserve	Rose Crossing	26,400	0.82	D	26,300	0.82	D	-0.4%
MT 35	Hwy 2/LaSalle	Shady Lane	15,900	1.04	F	14,800	0.97	E	-6.9%
	Shady Lane	Helena Flats	12,000	0.88	D	10,900	0.80	D	-9.2%
	Helena Flats	Flathead River	14,100	1.04	F	14,200	1.04	F	0.7%

Figure 6.11: Alternative 7 ADT Change on Select Corridors



Alternative 8

Alternative 8 develops an improved three-lane facility along the Rose Crossing corridor from Helena Flats to the Highway 93. The improvement is developed to provide additional east-west connectivity between Highway 2 and Highway 93 in the northern portion of the study area.

Area-Wide Impacts

Area-wide impacts of Alternative 8 were measured against the 2040 No Build network related to VMT, VHT and percentage of congested roadway segments on the systems (as measured in miles). Alternative 8 has a 0.2 percent increase in VMT and 0.9 percent increase in VHT, giving it the highest VHT of all alternatives. The percentage of congested roadway segments is among the lowest of all alternatives at 8.7 percent. See totals in Table 6.24.

Table 6.24: Alternative 8 Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #8	1,328,490	35,219	8.7%

Corridor Level Impacts

Impacts of Alternative 8 were evaluated on several corridor segments throughout the study area. Corridor impacts are significant for the northern portions of the study area. Please see Table 6.25 and Figure 6.12 on page 145. Key findings include:

- Four Mile Dr/Evergreen decreases ADT with little change to LOS.
- Helena Flats increases ADT with little change to LOS.
- Expected ADT increases on Four Mile Dr/Evergreen.
- Rose Crossing increases ADT.
- Helena Flats has minor impacts to ADT and LOS.
- Travel demand on Highway 93A increases.

Conclusions

An improved Rose Crossing has a measurable impact on the overall transportation network. The corridor itself west of Highway 2/LaSalle experiences a doubling in travel demand. However, these increases are within the projected capacity anticipated for this corridor.

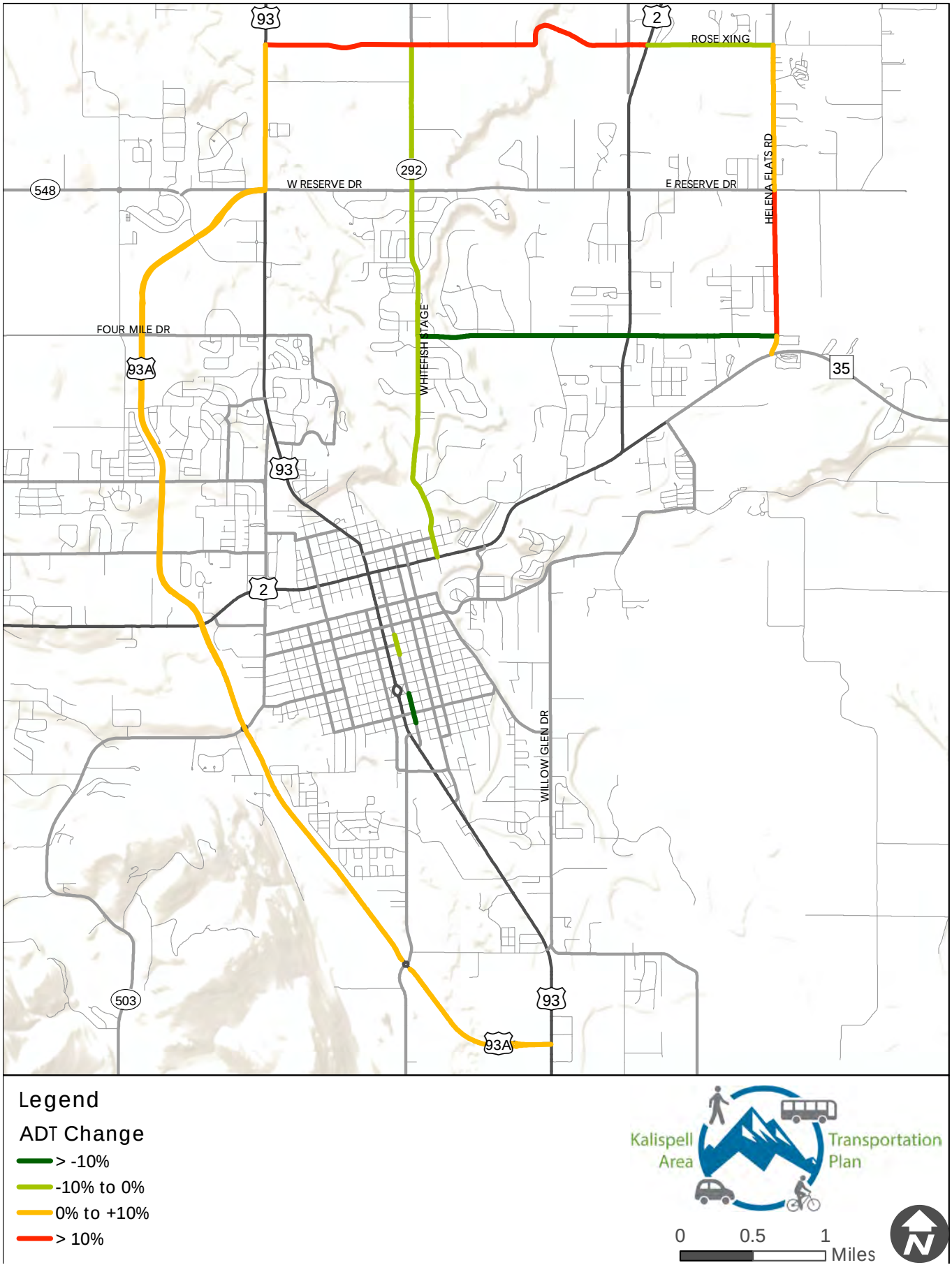
As with improvements to the Evergreen/Grandview/Four-Mile Drive corridor, the improvement to Rose Crossing accentuates the function of Helena Flats as a parallel roadway to Highway 2/LaSalle. The improved connection across Rose Crossing also serves to reduce traffic on the northern segment of Whitefish Stage from Evergreen Drive to Rose Crossing.

The improvement along Rose Crossing tends to drive up travel demand along Highway 93 North from Rose Crossing to West Reserve, and then along Highway 93A from West Reserve to Two Mile Drive. Percentage of congested roadway segments is among the lowest at 8.7 percent.

Table 6.25: Alternative 8 Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 8			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Four Mile Drive/ Evergreen	Helena Flats	LaSalle/Hwy 2	3,700	0.36	A	3,100	0.30	A	-16.2%
	Hwy 2/LaSalle	Whitefish Stage	6,400	0.47	A	5,700	0.42	A	-10.9%
Helena Flats	Evergreen Drive	East Reserve	5,900	0.58	A	6,700	0.66	B	13.6%
Rose Crossing	Helena Flats	LaSalle (Hwy 2)	5,300	1.25	F	5,000	0.67	B	-5.7%
	Lasalle (Hwy 2)	Whitefish Stage	2,500	0.48	A	5,900	0.32	A	136.0%
	Whitefish Stage	Hwy 93	5,300	1.01	F	10,300	0.56	A	94.3%
Hwy 93A	Three Mile Drive	Four Mile Drive	24,000	0.67	B	24,900	0.69	B	3.8%
	Four Mile Drive	Old Reserve	21,400	0.59	A	22,300	0.62	B	4.2%
	Old Reserve	Hwy 93	20,300	0.56	A	21,400	0.69	B	5.4%
Whitefish Stage	Idaho (Highway 2)	Evergreen	8,100	0.60	A	8,100	0.60	A	0.0%
	Evergreen	Reserve Drive	9,200	0.77	C	8,700	0.73	C	-5.4%
	Reserve Drive	Rose Crossing	6,100	0.60	A	5,500	0.54	A	-9.8%
Helena Flats	MT 35	Evergreen Drive	9,100	0.89	D	9,400	0.92	E	3.3%
	Evergreen Drive	East Reserve	5,900	0.58	A	6,700	0.66	B	13.6%
	East Reserve	Rose Crossing	4,000	0.59	A	4,400	0.65	B	10.0%
Rose Crossing	Helena Flats	LaSalle (Hwy 2)	5,300	1.25	F	5,000	0.67	B	-5.7%
	Lasalle (Hwy 2)	Whitefish Stage	2,500	0.48	A	5,900	0.32	A	136.0%
	Whitefish Stage	Hwy 93	5,300	1.01	F	10,300	0.56	A	94.3%
1st Avenue E	12th Street	9th Street	3,500	0.39	A	3,100	0.34	A	-11.4%
	5th Street	3rd Street	3,900	0.43	A	3,600	0.40	A	-7.7%

Figure 6.12: Alternative 8 ADT Change on Select Corridors



Alternative 9

Alternative 9 combines the assumptions from Alternative 7 and 8 and models improved east-west connectivity along both Four Mile Drive/Evergreen and Rose Crossing.

Area-Wide Impacts

Area wide impacts of Alternative 9 were measured against the 2040 No Build network related to VMT, VHT and percentage of congested roadway segments on the systems (as measured in miles). Alternative 8 has a 0.1 percent increase in VMT and 0.4 percent increase in VHT. See totals in Table 6.26.

Table 6.26: Alternative 9 Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #9	1,326,615	35,046	8.6%

Corridor Level Impacts

Impacts of Alternative 9 were evaluated on several corridor segments throughout the study area. Please see Table 6.27 and Figure 6.13 on page 148. Impacts include a combination of impacts from Alternatives 7 and 8:

- Highway 93A ADT increases with little LOS change.
- Highway 93N shows a decrease in ADT and improvement in LOS.
- Four Mile Drive/Evergreen shows significant increases in ADT and worsening LOS.
- Decreases in ADT at:
  - Three Mile Drive
  - Stillwater Road
  - Farm to Market
  - Reserve Drive
  - Whitefish Stage
- Increases in ADT at:
  - Springcreek Road
  - Helena Flats
- Rose Crossing has mixed results.
- Other Changes in Table 6.27.

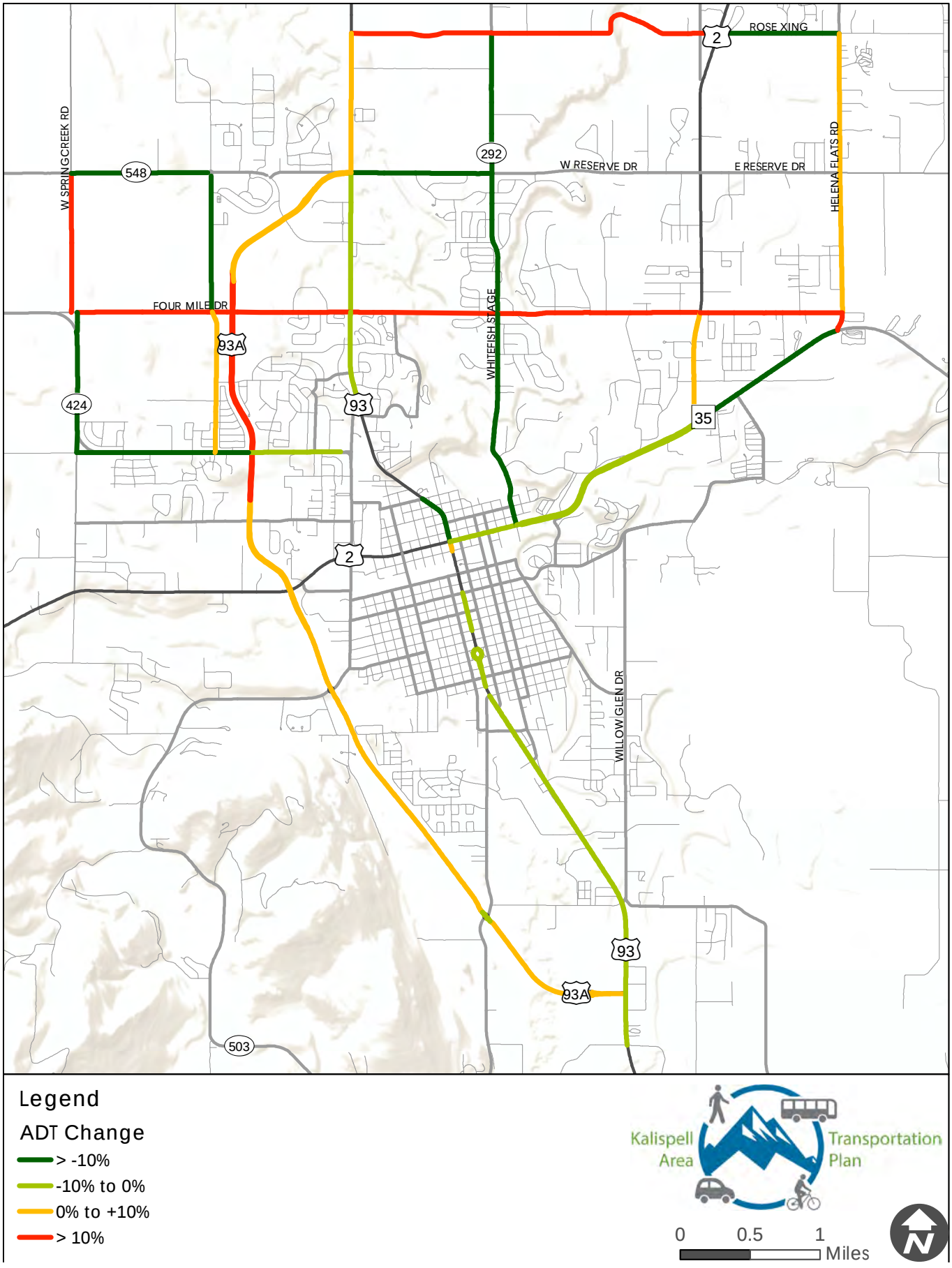
Conclusions

The combination of the Rose Crossing improvements and the improvements to the Evergreen/Grandview/Four Mile Drive travel corridor accentuate the overall trends seen when analyzing each improvement individually. Overall, the key takeaway is that the study area would greatly benefit from improved east-west connectivity. Improvements to both travel corridors should be retained in Move 2040.

Table 6.27: Alternative 9 Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 9			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Hwy 93A	Three Mile Drive	Four Mile Drive	24,000	0.67	B	26,900	0.75	C	12.1%
Hwy 93N	Idaho (Hwy 2)	Wyoming Street	29,800	1.10	F	26,700	0.99	E	-10.4%
Four Mile Drive/ Evergreen	Helena Flats	LaSalle/Hwy 2	3,700	0.36	A	5,500	0.54	A	48.6%
	Hwy 2/LaSalle	Whitefish Stage	6,400	0.47	A	10,600	0.78	C	65.6%
	Hwy 93	Hwy 93A	2,300	0.23	A	6,800	0.52	A	195.7%
	Hwy 93A	Farm to Market Road	3,500	0.93	E	10,100	1.02	F	188.6%
Three Mile Drive	Farm to Market Road	Hwy 93	10,000	0.74	C	8,200	0.60	B	-18.0%
Stillwater Road	Four Mile Drive	West Reserve	1,500	0.40	A	1,000	0.27	A	-33.3%
Springcreek Road	Four Mile Drive	West Reserve Drive	4,400	1.17	F	6,100	1.63	F	38.6%
Farm to Market (MT 424)	Three Mile Drive	Four Mile Drive	4,100	0.40	A	1,500	0.15	A	-63.4%
Reserve Drive	Spring Creek Drive	Stillwater Road	9,500	1.06	F	6,800	0.76	C	-28.4%
	Hwy 93	Whitefish Stage	20,700	1.00	E	18,300	0.88	D	-11.6%
Whitefish Stage	Idaho (Highway 2)	Evergreen	8,100	0.60	A	7,100	0.52	A	-12.3%
	Evergreen	Reserve Drive	9,200	0.77	C	6,100	0.51	A	-33.7%
	Reserve Drive	Rose Crossing	6,100	0.60	A	5,000	0.49	A	-18.0%
Helena Flats	MT 35	Evergreen Drive	9,100	0.89	D	11,200	1.10	F	23.1%
Rose Crossing	Helena Flats	LaSalle (Hwy 2)	5,300	1.25	F	4,600	0.61	B	-13.2%
	Lasalle (Hwy 2)	Whitefish Stage	2,500	0.48	A	5,600	0.30	A	124.0%
	Whitefish Stage	Hwy 93	5,300	1.01	F	9,300	0.50	A	75.5%
Hwy 93N	Meridian Road	Four Mile Drive	38,000	1.41	F	36,300	1.34	F	-4.5%
	Four Mile Drive	West Reserve	26,400	0.98	E	24,600	0.91	E	-6.8%
Hwy 2 (Idaho)	Main Street (Hwy 93)	3rd Avenue EN	24,400	0.90	E	22,100	0.82	D	-9.4%
	3rd Avenue EN	7th Avenue EN/ Whitefish Stage	25,600	0.95	E	23,500	0.87	D	-8.2%
	7th Avenue EN/ Whitefish Stage	Woodland Park	23,300	0.86	D	21,800	0.81	D	-6.4%
	Woodland Park	LaSalle/MT 35	27,100	0.89	D	25,800	0.84	D	-4.8%
LaSalle (Hwy 2)	Idaho/MT 35	Evergreen	23,300	0.73	C	25,300	0.79	C	8.6%
MT 35	Shady Lane	Helena Flats	12,000	0.88	D	10,800	0.79	C	-10.0%
Three Mile Drive	Hwy 93	Meridan Road	4,500	0.33	A	4,100	0.30	A	-8.9%
Stillwater Road	Three Mile Drive	Four Mile Drive	1,300	0.31	A	1,400	0.33	A	7.7%

Figure 6.13: Alternative 9 ADT Change on Select Corridors



Alternative 10

Following the discussion and evaluation of the previous nine model runs, a tenth and final model run was developed. The tenth model run was fashioned to include the corridor level improvements determined to constitute a preferred build condition. Alternative 10 improvments include:

- Completion of the Kalispell Bypass (Alternative 1)
- Three Lane Highway 93/Main Street – Couplet to West Center (Alternative 2)
- Whitefish Stage/7th Avenue Extension (Alternative 6)
- Evergreen Extension/Four Mile Drive Corridor Improvements (Alternative 7)
- Rose Crossing Corridor Improvements (Alternative 8)
- West Reserve Corridor Improvements (West Reserve was modeled as a five-lane principal arterial from Highway 93 to Highway 2/LaSalle)

Area Wide Impacts

Area wide impacts of Alternative 10 were measured against the 2040 No Build network related to VMT, VHT and percentage of congested roadway segments on the systems (as measured in miles). Alternative 10 has a 0.3 percent decrease in VMT and 1.1 percent decrease in VHT. The percentage of congested roadway segments is the lowest of all alternatives at 7.9 percent. See totals in Table 6.28.

Table 6.28: Alt 10 Area-Wide Impacts

Alternative	*Total VMT*	*Total VHT*	*Percent of Congested Roadway Segments*
2040 No Build	1,325,941	34,911	9.5%
2040 Build – Alternative #10	1,322,458	34,537	7.9%

Conclusions

Alternative 10 shows a redistribution of traffic across the study area. Improvements in modeled east-west capacity serve to distribute traffic throughout the system. Please see Table 6.29 and Figure 6.14 on page 152. LOS issues along the Highway 93A corridor materialize with the addition of the new east-west capacity, coupled with completion of Highway 93A. Segments of Highway 93A are congesting (LOS E) in Alternative 10 between Airport Road and Four Mile Drive.

Please see Figure 6.15 on page 153. Travel demand on Highway 93 South and Highway 93/Main Street are reduced by between 25 to 40 percent. Highway 93/Main Street operates at LOS E south of the Courthouse Couplet, and LOS D from the Courthouse Couplet to West Center. Alternative 10 shows the best LOS along Highway 93/Main Street of the options which modeled reduced capacity. However, the corridor remains congested with an LOS D or worse through the modeled three-lane section. Please refer to Figure 6.16 on page 154 and Figure 6.17 on page 155.

Alternative 10 serves to further trends witnessed in Alternative 9, in which traffic moves towards the completed Highway 93A, putting new travel demand on Highway 93A.

Alternative 10 shows projected reductions in travel demand along segments of both Highway 93 North, Highway 93 South, and Highway 2/Idaho. Increases in traffic along Meridian Road, Whitefish Stage (North of Highway 2), and Helena Flats experienced in earlier Alternatives are no longer visible in Alternative 10. However, the new proposed extension of 7th Avenue EN from Highway 2/Idaho Street to East Center Street/Woodland Avenue is projected to operate at LOS F under this Alternative.

Table 6.29: Alt 10 Change on Select Corridors

Corridor	Segments (Termini)		2040 E+C			Alternative 10			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Hwy 93A	Hwy 93	Airport Road	15,100	0.99	E	20,900	0.68	B	38.4%
	Airport Road	Foys Lake	19,300	0.63	B	28,700	0.94	E	48.7%
	Foys Lake	Hwy 2	20,400	0.67	B	29,100	0.95	E	42.6%
	Hwy 2	Three Mile Drive	27,600	0.77	C	35,100	0.98	E	27.2%
	Three Mile Drive	Four Mile Drive	24,000	0.67	B	33,600	0.93	E	40.0%
	Four Mile Drive	Old Reserve	21,400	0.59	A	25,700	0.71	C	20.1%
	Old Reserve	Hwy 93	20,300	0.56	A	25,000	0.69	B	23.2%
Hwy 93S	11th Street	10th Street	21,700	1.60	F	13,000	0.96	E	-40.0%
Main Street (Hwy 93)	8th Street	7th Street	20,100	1.49	F	12,100	0.89	D	-40.0%
	4th Street	3rd Street	19,800	0.73	C	12,000	0.81	D	-39.4%
	Montana	Idaho (Hwy 2)	22,700	0.84	D	17,900	0.66	B	-21.5%
Hwy 93N	Idaho (Hwy 2)	Wyoming Street	29,800	1.10	F	22,400	0.83	D	-24.8%
	Meridian Road	Four Mile Drive	38,000	1.41	F	33,100	1.23	F	-12.9%
	Four Mile Drive	West Reserve	26,400	0.98	E	26,400	0.98	E	0.0%
	West Reserve	Rose Crossing	32,100	1.00	E	34,100	1.06	F	6.2%
Hwy 2 (Idaho)	Meridian Road	5th Avenue W	21,800	0.77	C	19,400	0.68	B	-11.0%
	5th Avenue W	Main Street (Hwy 93)	19,400	0.72	C	17,000	0.63	B	-12.4%
	Main Street (Hwy 93)	3rd Avenue EN	24,400	0.90	E	19,800	0.73	C	-18.9%
	3rd Avenue EN	7th Avenue EN/ Whitefish Stage	25,600	0.95	E	20,700	0.77	C	-19.1%
	Woodland Park	LaSalle/MT 35	27,100	0.89	D	24,300	0.79	C	-10.3%
Four Mile Drive/ Evergreen	Helena Flats	LaSalle/Hwy 2	3,700	0.36	A	4,900	0.48	A	32.4%
	Hwy 2/LaSalle	Whitefish Stage	6,400	0.47	A	9,300	0.68	B	45.3%
	Hwy 93	Hwy 93A	2,300	0.23	A	10,500	0.80	C	356.5%
	Hwy 93A	Farm to Market Road	3,500	0.93	E	10,200	1.03	F	191.4%
New Segment (Four Mile Drive/ Evergreen)	Whitefish Stage	Hwy 93	NA	NA	NA	10,600	0.80	D	NA
Three Mile Drive	Farm to Market Road	Hwy 93	10,000	0.74	C	8,400	0.62	B	-16.0%
Stillwater Road	Four Mile Drive	West Reserve	1,500	0.40	A	1,000	0.27	A	-33.3%
Springcreek Road	Four Mile Drive	West Reserve Drive	4,400	1.17	F	6,100	1.63	F	38.6%

...continued on page 151

Corridor	Segments (Termini)		2040 E+C			Alternative 10			
			ADT	V/C	LOS	ADT	V/C	LOS	ADT Change
Farm to Market (MT 424)	Three Mile Drive	Four Mile Drive	4,100	0.40	A	1,500	0.15	A	-63.4%
Willow Glen	Woodland Drive	Conrad Road	5,500	0.40	A	4,800	0.35	A	-12.7%
	Hwy 93	Woodland Drive	5,500	0.40	A	4,800	0.35	A	-12.7%
Reserve Drive	Spring Creek Drive	Stillwater Road	9,500	1.06	F	7,000	0.78	C	-26.3%
	Hwy 93	Whitefish Stage	20,700	1.00	E	27,900	0.70	C	34.8%
	Whitefish Stage	Lasalle (Hwy 2)	18,900	0.91	E	26,900	0.68	B	42.3%
	LaSalle (Hwy 2)	Helena Flats	7,500	0.74	C	8,100	0.79	C	8.0%
Woodland Drive	12th Street	5th Street	5,800	0.48	A	7,500	0.63	B	29.3%
Whitefish Stage	Idaho (Highway 2)	Evergreen	8,100	0.60	A	7,500	0.55	A	-7.4%
	Evergreen	Reserve Drive	9,200	0.77	C	6,500	0.54	A	-29.3%
	Reserve Drive	Rose Crossing	6,100	0.60	A	6,100	0.60	A	0.0%
New Segment (7th St/ Whitefish Stage)	Idaho	Center Street	100	0.01	A	9,600	1.07	F	191.0%
Rose Crossing	Helena Flats	LaSalle (Hwy 2)	5,300	1.25	F	4,300	0.57	A	-18.9%
	Lasalle (Hwy 2)	Whitefish Stage	2,500	0.48	A	3,700	0.20	A	48.0%
	Whitefish Stage	Hwy 93	5,300	1.01	F	6,900	0.37	A	30.2%
Center Street	Main Street (Hwy 93)	Woodland Drive	5,400	0.45	A	6,200	0.52	A	14.8%
1st Street East	Woodland Dr.	Main Street (Hwy 93)	400	0.11	A	600	0.16	A	50.0%
Merdian Road	7th Street	Center Street W	10,300	0.86	D	10,000	0.83	D	-2.9%
	Center Street W	Idaho (Hwy 2)	11,200	0.85	D	10,500	0.80	C	-6.3%
	Idaho (Hwy 2)	Three Mile Road	11,700	0.65	B	11,600	0.64	B	-0.9%
	Three Mile Road	Hwy 93	12,100	1.01	F	12,300	1.03	F	1.7%
Helena Flats	MT 35	Evergreen Drive	9,100	0.89	D	10,000	0.98	E	9.9%
	Evergreen Drive	East Reserve	5,900	0.58	A	5,700	0.56	A	-3.4%
	East Reserve	Rose Crossing	4,000	0.59	A	4,200	0.62	B	5.0%
LaSalle (Hwy 2)	Idaho/MT 35	Evergreen	23,300	0.73	C	24,200	0.75	C	3.9%
	Evergreen	West Reserve	25,200	0.78	C	24,400	0.76	C	-3.2%
	West Reserve	Rose Crossing	26,400	0.82	D	27,900	0.87	D	5.7%

Modeled volumes on Highway 93/Main Street were adjusted to match 2017 AADT. Model generated growth factors were applied to the 2017 AADT to derive the 2040 E+C and 2040 Alternative model run outputs for Highway 93/Main Street.

Figure 6.14: Alternative 10 ADT Change on Select Corridors

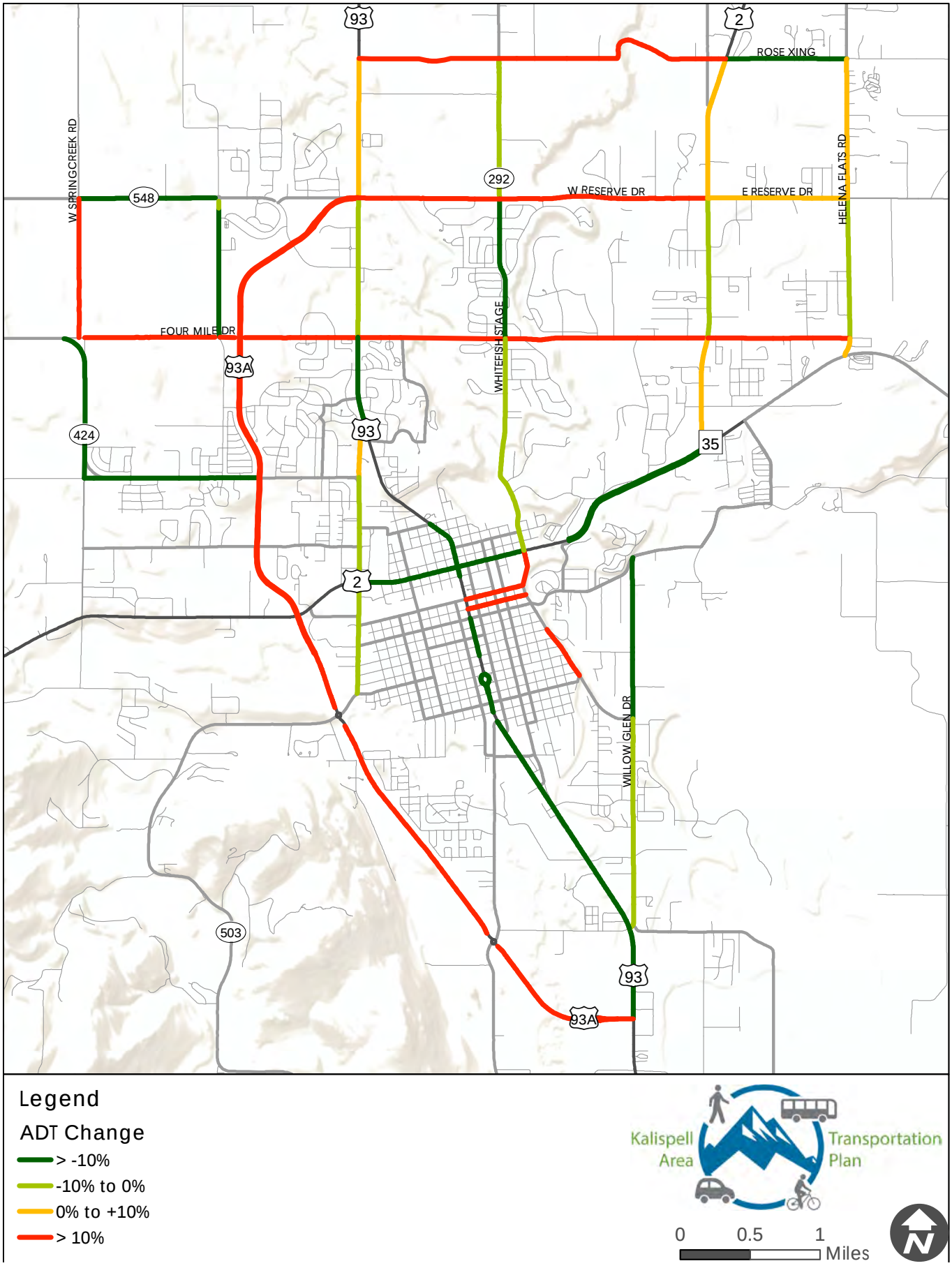


Figure 6.15: 2040 Alternative 10 LOS

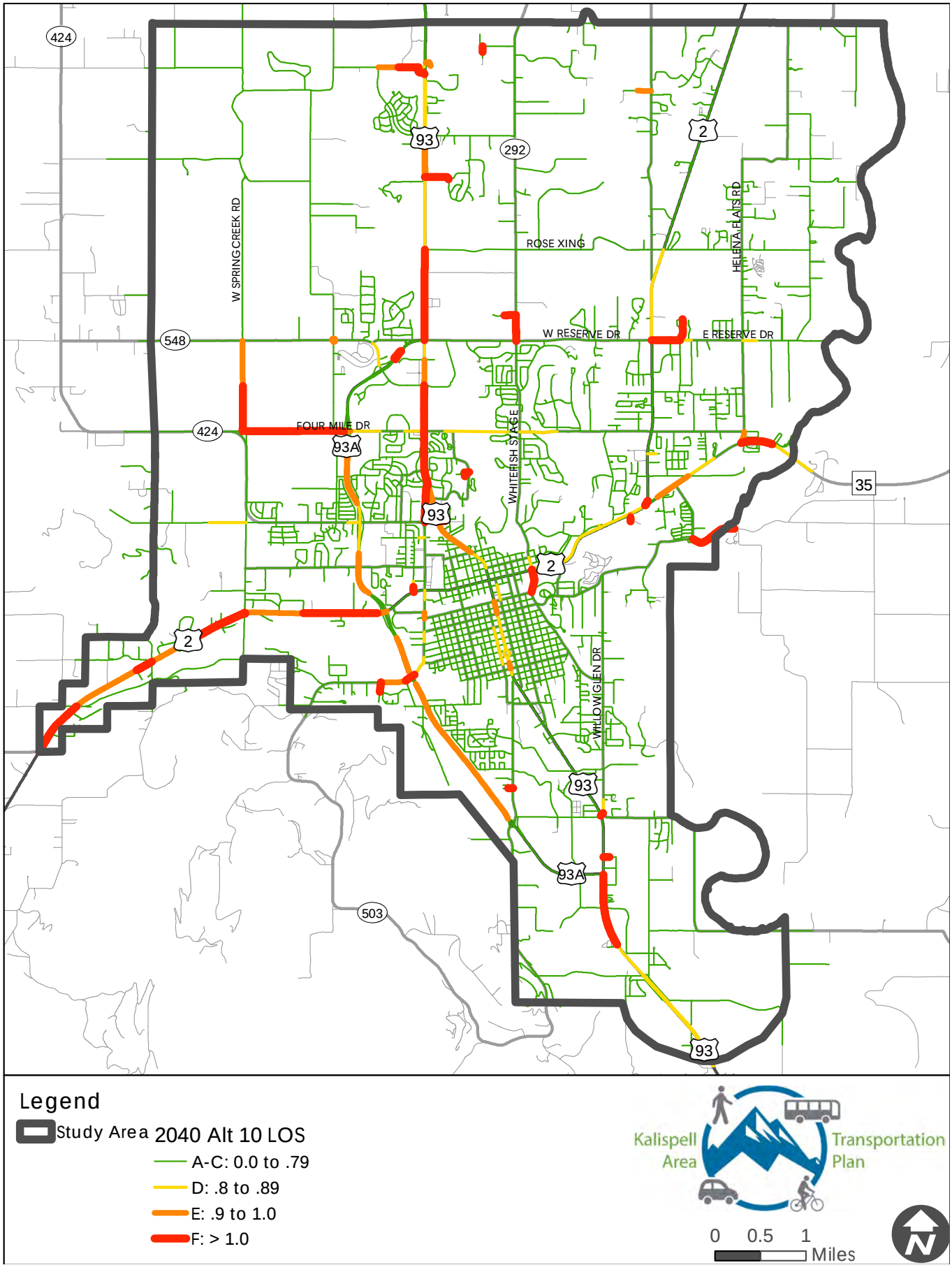


Figure 6.16: Volumes Comparison 2017 to 2040 E+C to 2040 Full Build

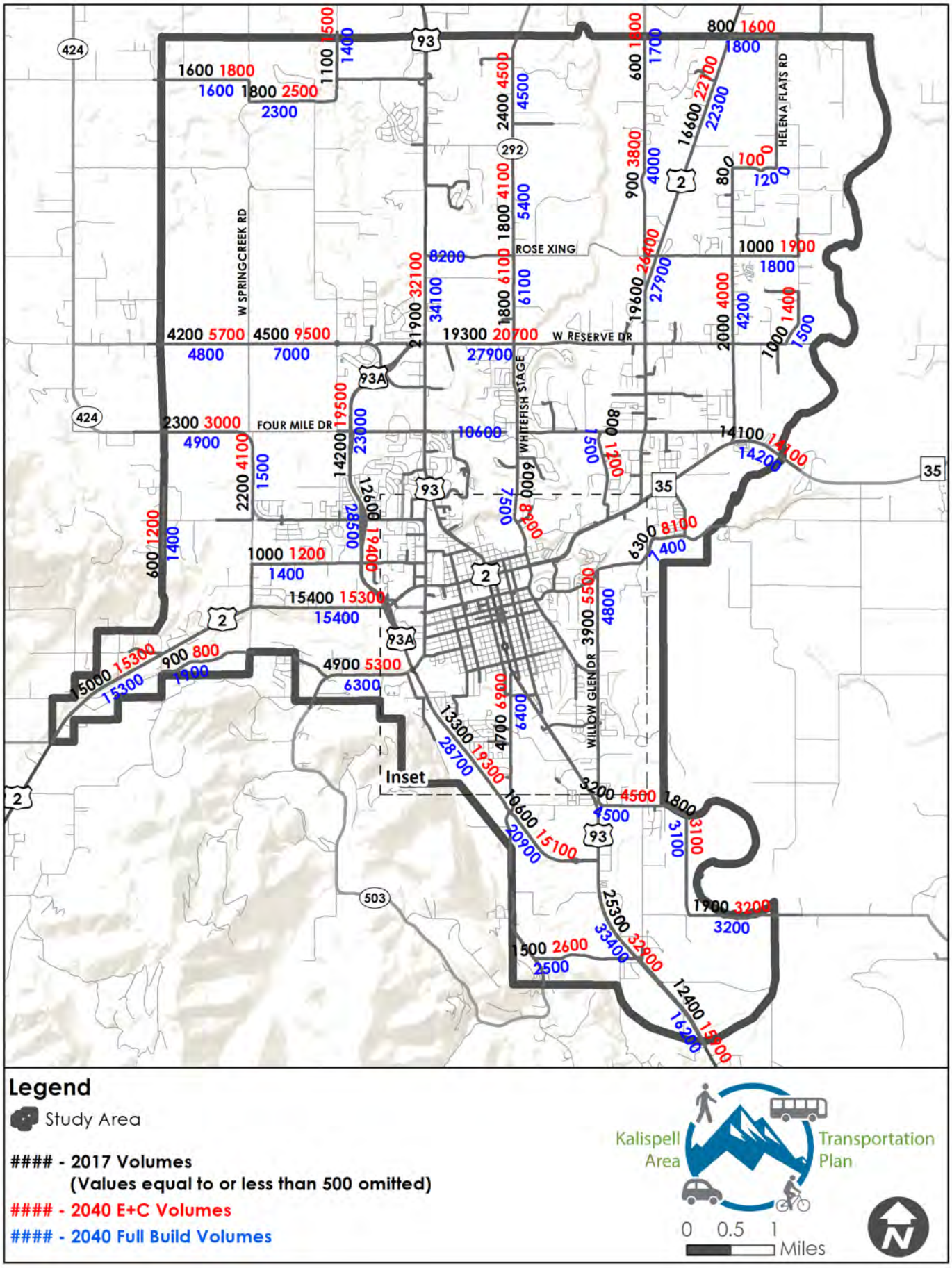
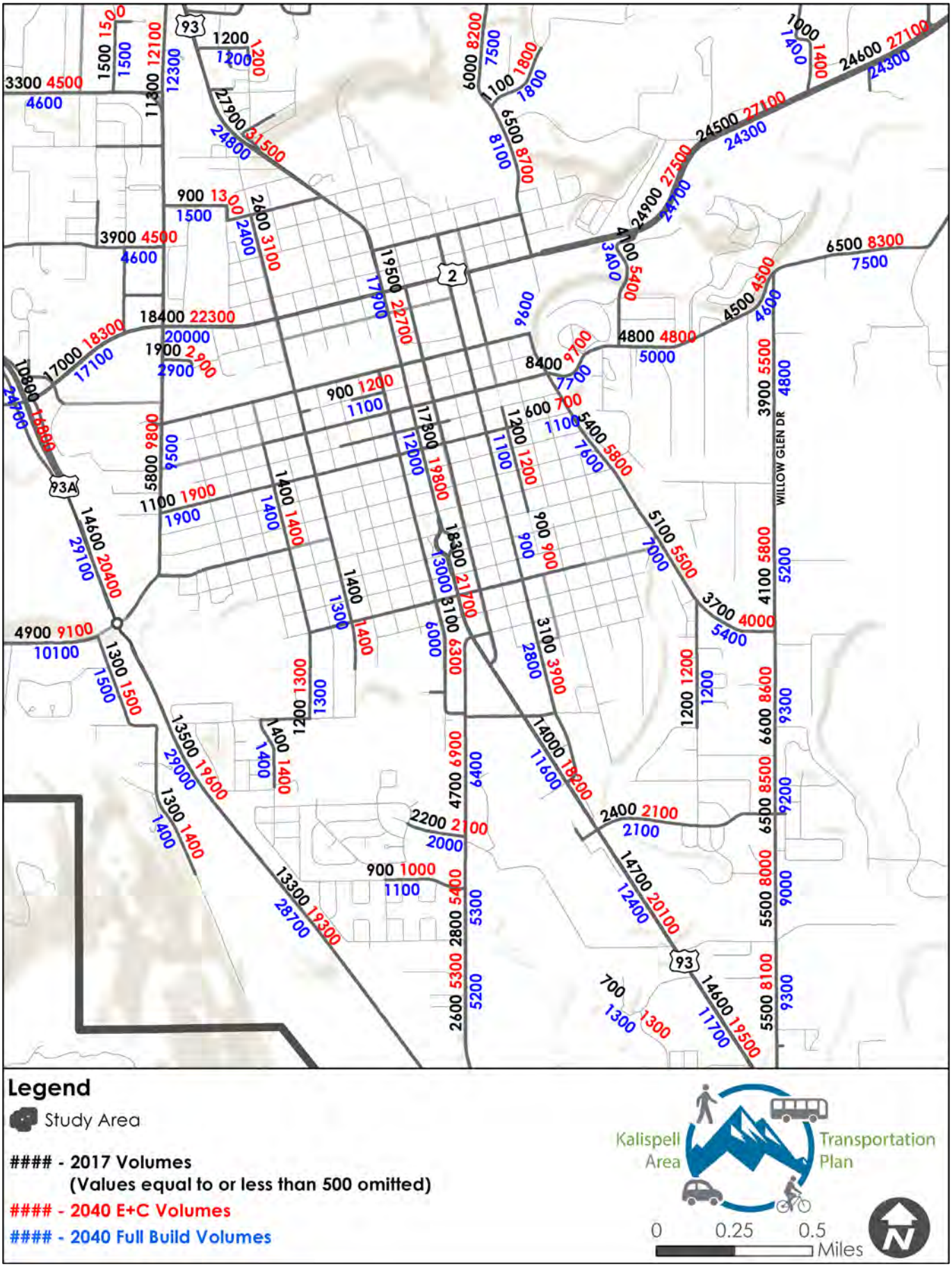


Figure 6.17: Volumes Comparison 2017 to 2040 E+C to 2040 Inset



MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 7: PROJECT DEVELOPMENT AND IDENTIFICATION

INTRODUCTION

The recommendations identification process identified recommended projects in two categories: **Transportation System Management (TSM)** and **Major Street Network (MSN)**. This process is generally described below.

- First, a consistency review of the previous transportation plan was completed. Recommended projects which have already been completed were removed from the potential project list.
- Second, new safety and operational data was reviewed. Previously identified recommendations were compared to the new data.
- Third, projected areas of congestion (based on poor level of service), as well as high crash locations were used to establish any new project recommendations based on updated existing and projected needs. The evaluation of TSM and MSN project recommendations against congestion and safety conditions is shown in Figure 7.1 and Figure 7.2.

Future MSN project recommendations developed should include accommodations for bicycle and pedestrian users. A more specific set of recommendations related to active transportation is included in Chapter 9.

TSM Projects

The TSM recommendations list reflects intersection-level improvements which respond to both safety and traffic operations-related issues at an isolated location, typically an intersection. TSM project recommendations are developed based on a review of more localized existing and projected conditions.

Each TSM recommendation listing includes a summary of the corridor location, related intersections, short description, and planning-level project cost. TSM project recommendations are listed in Table 7.1 on page 162 and shown in Figure 7.3 on page 164 and Figure 7.4 on page 165. All cost estimates are shown as present-day (2020) dollars.

TSM Cost Methods

Planning level cost assumptions were used to support project cost information for TSM Recommendations. Projects already agreed to through a development agreement or programmed in the STIP are listed as committed. Planning level cost assumptions for the following improvement types were developed and include construction, construction engineering and a 25 percent contingency.

- **Roundabout (small):** $1,500,000
- **Roundabout (large):** $3,000,000
- **Major Intersection Modification:** $1,400,000
- **Minor Intersection Modification:** $700,000
- **Turn Lane Addition:** $80,000

TSM Studies Recommendations

A series of corridor level studies are included in the TSM Recommendations. The inclusion of the studies in the TSM Recommendations provides footing for future programming support of these efforts. The studies are localized and regional in nature. These recommended studies assist with the development of additional corridor level analysis not typically possible through a long-range transportation plan. These recommendations are based on existing and projected needs. The lead agency on these studies in most cases would be MDT. It is expected the City of Kalispell could lead or initiate studies with a direct impact to the City of Kalispell.

MSN Projects

The MSN recommendations list reflects larger corridor-level improvements aimed at both improving existing corridors or upgrading corridors which are projected to require a higher standard related to safety and operations.

Each MSN recommendation listing includes a summary of the corridor location, related termini, short description, and planning-level project cost estimate. MSN project recommendations are listed in Table 7.2 on page 166 and are shown in Figure 7.5 on page 169 and Figure 7.6 on page 170. All cost estimates are shown as present-day (2020) dollars.

MSN Cost Methods

Planning level cost assumptions were used to support cost information for the MSN Recommendations. Corridor level construction or reconstruction costs were based on the recommended functional class. Cost assumptions include construction, construction engineering and a 25 percent contingency.

- **Minor/Major Collector:** $1,700,000 per mile
- **Minor Arterial:** $2,500,000 per mile
- **Principal Arterial:** $3,800,000 per mile

Figure 7.1: Recommendations Identification

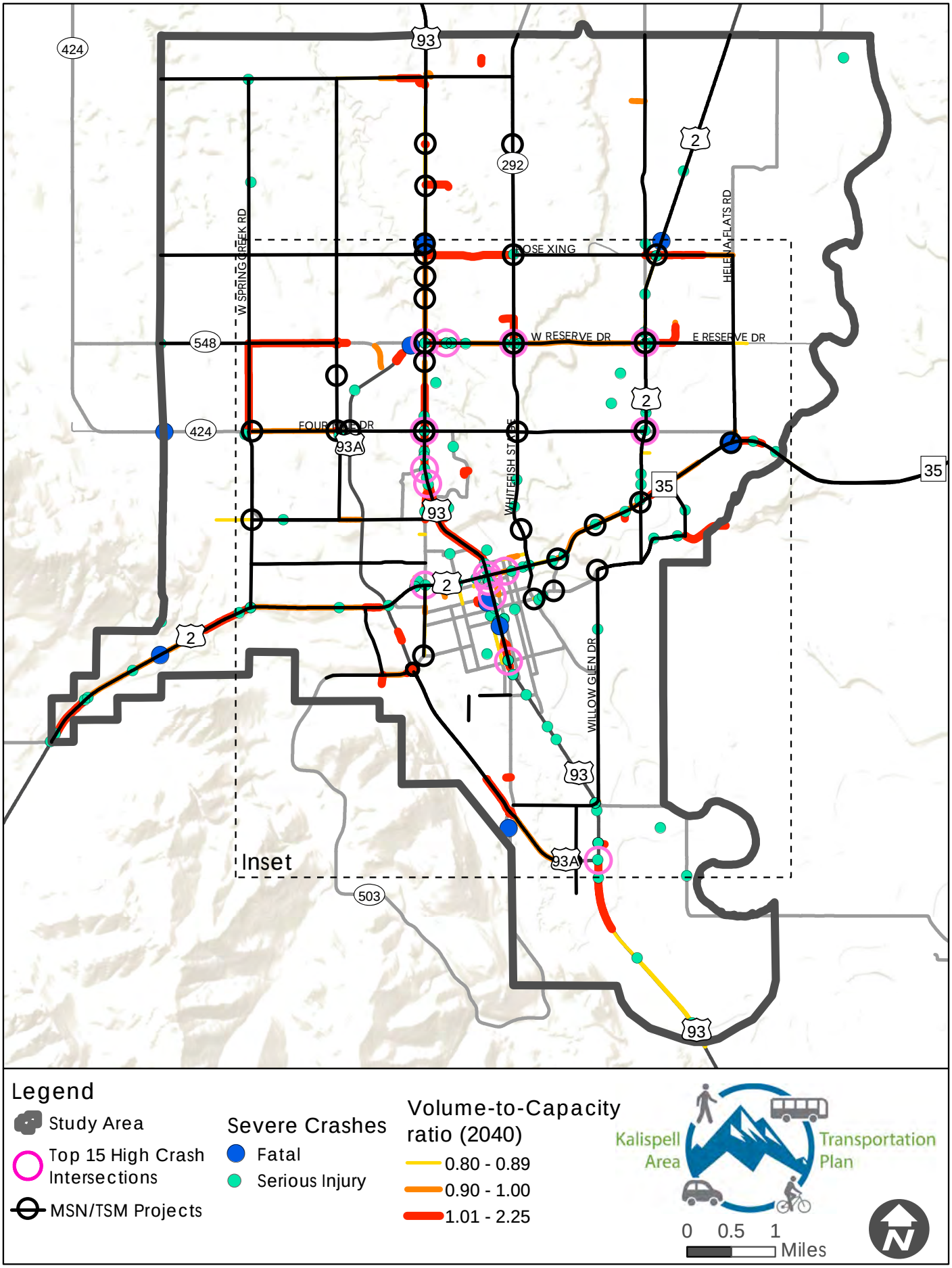


Figure 7.2: Recommendations Identification (Inset)

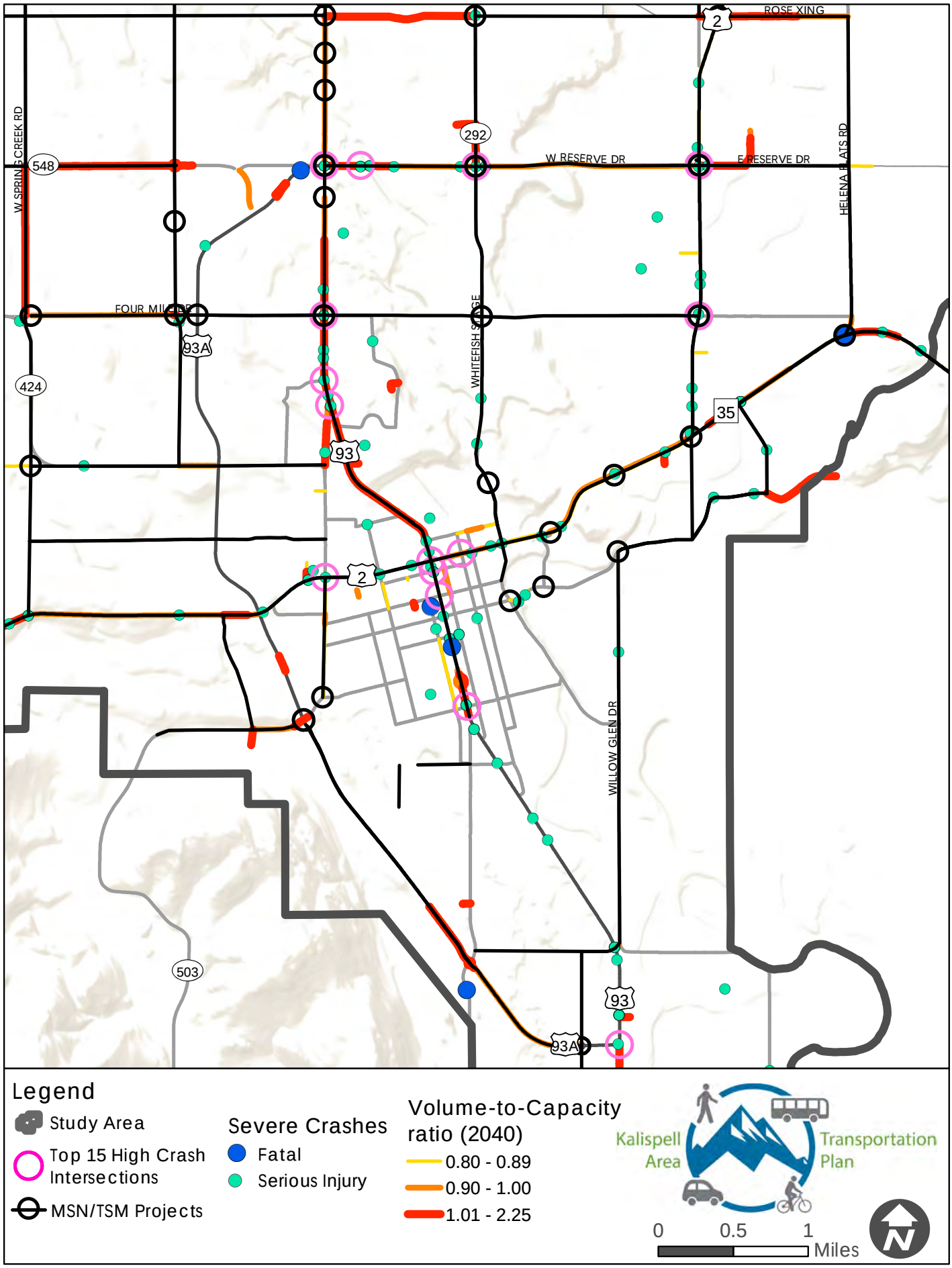


Table 7.1: Transportation System Management Recommendations

Map ID	Corridor	Intersection/Termini		Short Description	Cost
1	Conrad Rd	Willow Glen Dr		Install roundabout	$1,500,000
2	2nd St East	Woodland Ave		Install roundabout	Committed
3	2nd Street East/ Conrad Drive	Woodland Park Dr		Install roundabout	$1,500,000
4	Meridian Rd	7th St W		Install roundabout	$1,500,000
5	Meridian Road	Center Street	Appleway Drive	Increase storage for NB and SB left turn bays	$80,000
6	Four-Mile Dr	W Springcreek Rd		Install roundabout or redesign to four-way intersection (consider as part of MSN 5 or 21)	$2,250,000
7	Three Mile Drive	Heavens Peak Dr.	Stillwater Rd.	Monitor for signal warrants at Stillwater Rd. and Heavens Peak; consider access modifications on other minor intersections (consider as part of MSN 36)	NA
8	Whitefish Stage	Tronstad Road		Monitor & Improve turn lanes and signal control per ongoing study and past TIS	$320,000
9	Whitefish Stage	Rose Crossing		Monitor & Improve turn lanes and signal control per ongoing Corridor Study and past TIS	$320,000
10	Whitefish Stage	West Reserve		Address as part of MSN 27 or 28	NA
11	Whitefish Stage	Evergreen Drive		Install roundabout	$1,500,000
12	Whitefish Stage	Rail Park Drive		Monitor turning movements, evaluate as build out of Rail Park continues	NA
13	Highway 2	Woodland Park Drive/ Flathead Drive		Lengthen EB/WB left turn storage bay	$160,000
14	Highway 2	Montclair Drive		Monitor for need to install WB right turn lane/EB left turn bay extension	NA
15	Highway 2	MT 35		Improve turn bay length on inside EB left turn lane. Modify SB to dedicated right turn, right turn/thru and dedicated left turn. Evaluate EB geometry to support two thru and dedicated EB right turn.	$1,050,000
16	Highway 2	Evergreen		Prioirity Need: EB Left turn Lane and SB Right Turn Lane; Secondary Need: WB left turn lane and NB Right Turn lane.	$320,000
17	Highway 2	Reserve		Add dedicated turn lanes all approaches. Evaluate as part of Reserve Street Corridor Study.	$1,050,000
18	Highway 2	Rose Crossing		EB/WB left turn lanes, SB right turn lane. Imrpove rail grade crossing.	$700,000
19	Highway 93	Silverbrook/Tronstad Road		Convert to 3/4 access	$160,000
20	Highway 93	Wild Pine Drive/Ponderosa Lane		Consolidate into future full movement intersection, monitor for intersection control.	$700,000

...continued on page 163

Map ID	Corridor	Intersection/Termini		Short Description	Cost
21	Highway 93	Eagle Valley Ranch		Future 3/4 Access	NA
22	Highway 93	Rose Crossing		Future Signalized Intersection	Committed
23	Highway 93	Lincoln Street		3/4 access intersection (both sides)	NA
24	Highway 93	.5 mi. north of West Reserve		Future Signalized Intersection	Committed
25	Highway 93	West Reserve		Modify to two EB/WB dedicated left turn lanes, addition of new EB/WB thru lanes.	$875,000
26	Highway 93	Treeline		Modify intersection to add WB & EB left turn lanes & SB right turn lane	Committed
27	Highway 93	Grandview Dr		Add dedicated SB right turn lane	$80,000
28	MT 35	Helena Flats		Add WB right turn lane	$80,000
29	Highway 93A	Four Mile Drive		Monitor for future signal warrants at ramps	NA
30	Stillwater Road	Timberwolf Parkway		Construct Roundabout	Committed
31	Stillwater Road	Four Mile Drive		Monitor for Intersection Control	NA
32	Three Mile Drive	West Springcreek Road		Convert to four-way intersection, monitor for roundabout	Committed
33	Highway 2	West Study Limits	Hwy 93A	Continue to Implement Safety Study/Develop Corridor Study	$200,000
34	Highway 2	LaSalle/MT 35	Birch Grove	Develop Corridor Study	$412,500
35	Highway 2/ Idaho	Hwy 93A	LaSalle	Develop Corridor Study	$240,000
36	Highway 93	Highway 2	West Reserve	Develop Corridor Study	$285,000
37	Highway 93	West Reserve	MT 40	Develop Detailed Access Control Plan	Committed
38	Meridian Road	7th Street W	Highway 2/ Idaho	Develop Corridor Study	$75,000
39	MT 35	Highway 2	MT 206	Develop Corridor Study	$275,000
40	Highway 93 (Main Street)	12th Street	Highway 2 (Idaho)	Develop Corridor Study	$250,000
Study Area Wide				Update Transportation plan on 5-to-7-year cycle	$300,000

Figure 7.3: Transportation System Management Recommendations

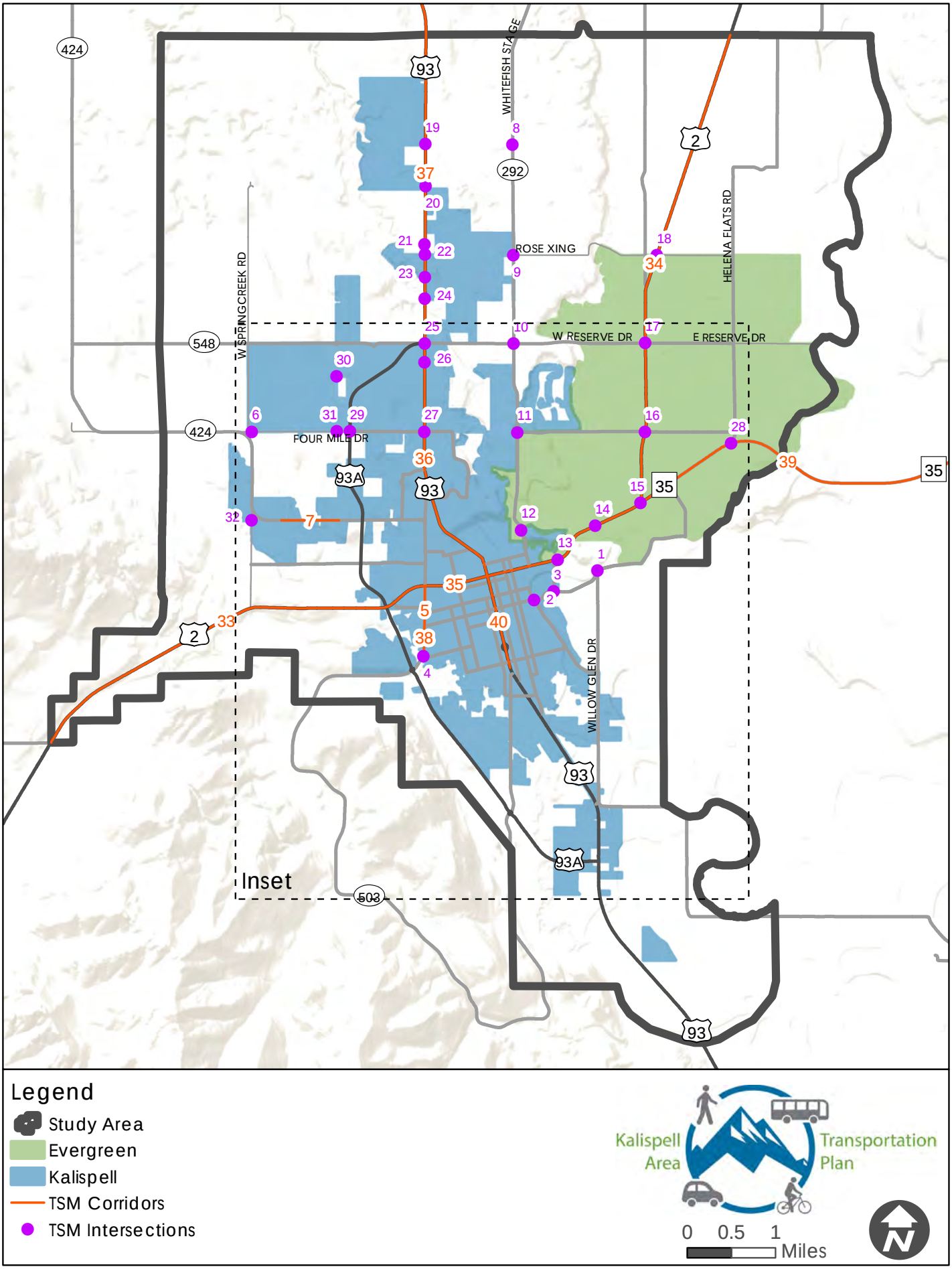


Figure 7.4: Transportation System Management Recommendations (Inset)

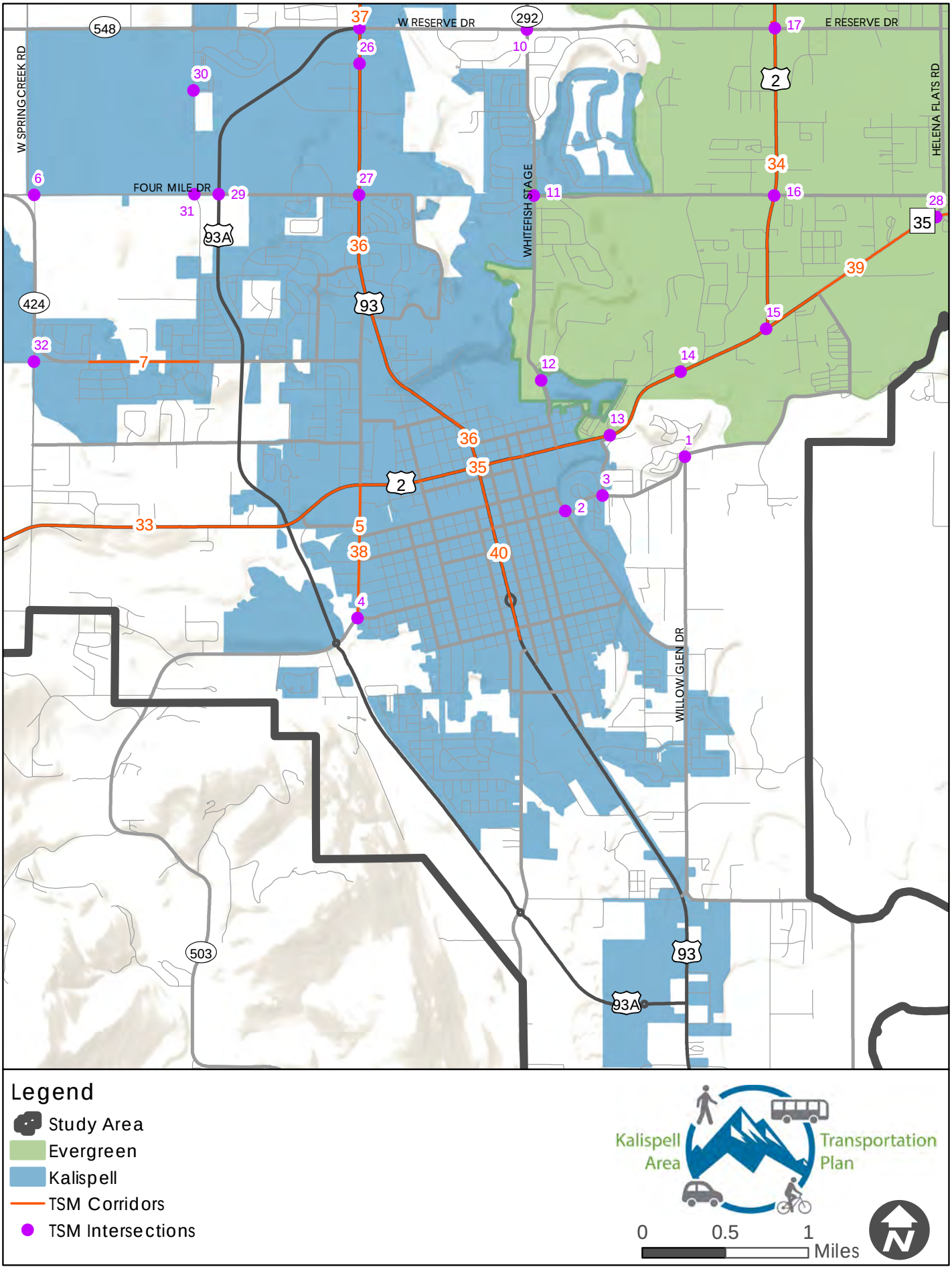


Table 7.2: Major Street Network Recommendations

Map ID	Corridor	Termini	Termini	Short Description	Length (miles)	Cost
1	West Reserve	West Springcreek Road	Stillwater Road	Construct to a three-lane urban minor arterial	1.0	$2,500,000
2	West Reserve	West Valley Road	West Springcreek Road	Construct to a three-lane urban major collector	1.0	$2,500,000
3	Four Mile Drive	Stillwater Rd	Northland Rd	Construct to a three-lane urban minor arterial	0.5	$1,250,000
4	Four Mile Drive	Northland Road	Hwy 93	Construct to a three-lane urban minor arterial	0.3	$750,000
5	Four Mile Drive	W Springcreek Road	Stillwater Road	Construct to a three-lane urban minor arterial	1.0	$2,500,000
6	Whitefish Stage	West Reserve	Rose Crossing	Construct to a three-lane urban minor arterial	1.0	$2,500,000
7	Whitefish Stage	Rose Crossing	Birch Grove	Construct to a two-lane urban major collector	2.5	$4,250,000
8	Whitefish Stage	California Street	Evergreen Drive	Construct to a three-lane urban minor arterial	1.4	$3,500,000
9	Whitefish Stage	Evergreen Drive	West Reserve Drive	Construct to a three-lane urban minor arterial	1.0	$2,500,000
10	7th Avenue EN	Highway 2	California Street	Construct to a three-lane urban minor arterial	0.5	$1,250,000
10a	7th Avenue EN	East Center/ Woodland Dr	Highway 2	Construct to a two-lane urban minor arterial	0.3	$850,000
11	Helena Flats	MT 35	East Reserve Drive	Construct to a two-lane urban major collector	1.1	$2,337,500
12	Helena Flats	East Reserve Drive	Rose Crossing	Construct to a two-lane urban major collector	1.0	$2,125,000
13	Foys Lake Rd	Whalebone Dr	Valley View Dr	Construct to a two-lane urban major collector	0.9	$1,530,000
14	Rose Crossing	Whitefish Stage	Highway 2	Construct to a three-lane urban minor arterial	1.7	$4,250,000
15	Rose Crossing	Highway 2	Helena Flats Road	Construct to a two-lane urban major collector	0.9	$1,530,000
16	Stillwater Rd	Four Mile Drive	West Reserve Drive	Construct to a three-lane urban minor arterial	1.0	$2,500,000
17	Sillwater Road	Three Mile Drive	Four Mile Drive	Construct to a three-lane urban minor arterial	1.0	$2,500,000
18	New Corridor	Foys Lake	US 2	Construct to a two-lane urban minor collector	1.0	$2,700,000
19	W Springcreek Road	Highway 2	Three Mile Drive	Construct to a three-lane urban minor arterial	1.0	$2,500,000
20	W Springcreek Road	Four Mile Drive	West Reserve Drive	Construct to a three-lane urban minor arterial	1.0	$2,500,000
21	Farm to Market (424)	Three Mile Drive	Four Mile Drive	Construct to a three-lane urban minor arterial	1.1	$2,750,000
22	Willow Glen Drive	Woodland Avenue	Conrad Dr	Construct to a three-lane urban minor arterial	1.1	$2,750,000

...continued on page 167

Map ID	Corridor	Termini	Termini	Short Description	Length (miles)	Cost
23	Willow Glen Drive	Highway 93	Woodland Avenue	Construct to a three-lane urban minor arterial	1.5	$3,750,000
24	Conrad Dr	Willow Glenn	Shady Lane	Construct to a two-lane urban minor arterial	1.2	$2,040,000
25	Shady Ln	Conrad Drive	MT 35	Construct to a two-lane urban minor arterial	0.7	$1,190,000
26	Trumble Creek	Rose Crossing	Birch Grove	Upgrade to a two-lane urban major collector	2.5	$4,250,000
27	West Reserve Drive	Highway 93	Whitefish Stage	Construct to a five-lane urban principal arterial	1.0	$6,600,000
28	West Reserve Drive	Whitefish Stage	Highway 2	Construct to a five-lane urban principal arterial	1.5	$8,500,000
29	East Reserve Drive	Highway 2	Helena Flats Road	Construct to a three-lane urban major collector	1.0	$2,500,000
30	Grandview/ Evergreen	Highway 93	Whitefish Stage	Construct to a two-lane urban minor arterial	1.0	$5,160,000
31	Evergreen Dr	Whitefish Stage	Highway 2	Construct to a three-lane urban minor arterial	1.4	$3,500,000
32	Sunnyside Dr (extension)	5th Avenue W	Airport Road	Construct to a two-lane urban minor collector	0.5	$1,700,000
33	7th Avenue W	Bluestone Dr	Sunnyside	Construct to a two-lane urban minor collector	0.3	$1,020,000
34	New Corridor	Conrad Dr	LaSalle Rd	Construct to a two-lane urban major collector	0.8	$2,720,000
35	MT 35	LaSalle Rd	MT 206	Construct to a five-lane urban minor arterial to Flathead River; transition to a three-lane urban minor arterial for balance of project	5.7	$16,460,000
36	Three-Mile Drive	Farm to Market (424)	Meridian Road	Construct to a three-lane urban minor arterial	2.0	$5,000,000
37	Two-Mile Dr	W Springcreek Road	Meridian Road	Construct to a two-lane urban minor collector	2.0	$3,400,000
38	Highway 93A	Airport Road	Foys Lake	Construct to a four-lane divided urban principal arterial + interchange at Foys Lake	0.4	$15,000,000
39	Highway 93A	Base Camp Dr	Foys Lake	Construct to a four-lane divided urban principal arterial + interchange at Airport Road	1.0	$18,000,000
40	Highway 93A	Highway 93	Base Camp Dr	93A mainline and Base Camp Dr. improvements currently under study (incl. Hwy 93/93A intersection)	0.3	TBD
41	Cemetery Road	Airport Road	Highway 93	Construct to a two-lane urban minor collector	0.9	$1,530,000
42	Base Camp Drive	Highway 93A	Cemetery Rd	Construct to a two-lane urban minor collector	0.8	$2,040,000

...continued on page 168

Map ID	Corridor	Termini	Termini	Short Description	Length (miles)	Cost
43	Base Camp Drive	Ashley Meadows	Highway 93	Construct to a two-lane urban minor collector	0.4	$1,020,000
44	Rose Crossing	West Valley Road	Highway 93	Corridor preservation	3.0	$7,500,000
45	Church Drive	West Valley Road	Highway 93	Corridor preservation	3.3	$5,610,000
46	Church Drive	Highway 93	Whitefish Stage	Corridor preservation	1.0	$1,700,000
47	Stillwater Rd	West Reserve Drive	Church Drive	Corridor preservation	3.1	$7,750,000
48	West Springcreek Road	West Reserve Drive	Church Drive	Corridor preservation	2.9	$7,250,000

Figure 7.5: Major Street Network Recommendations

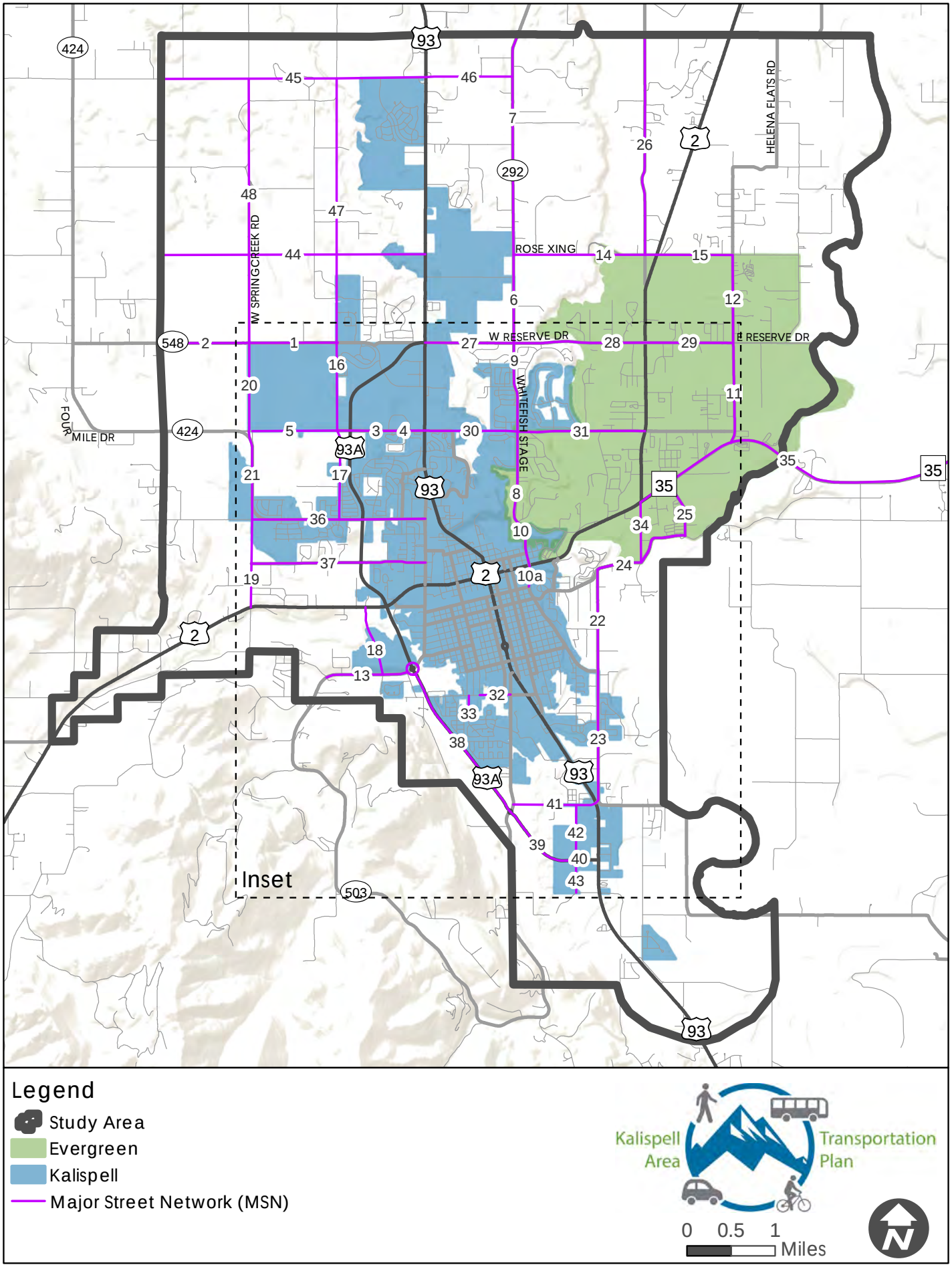
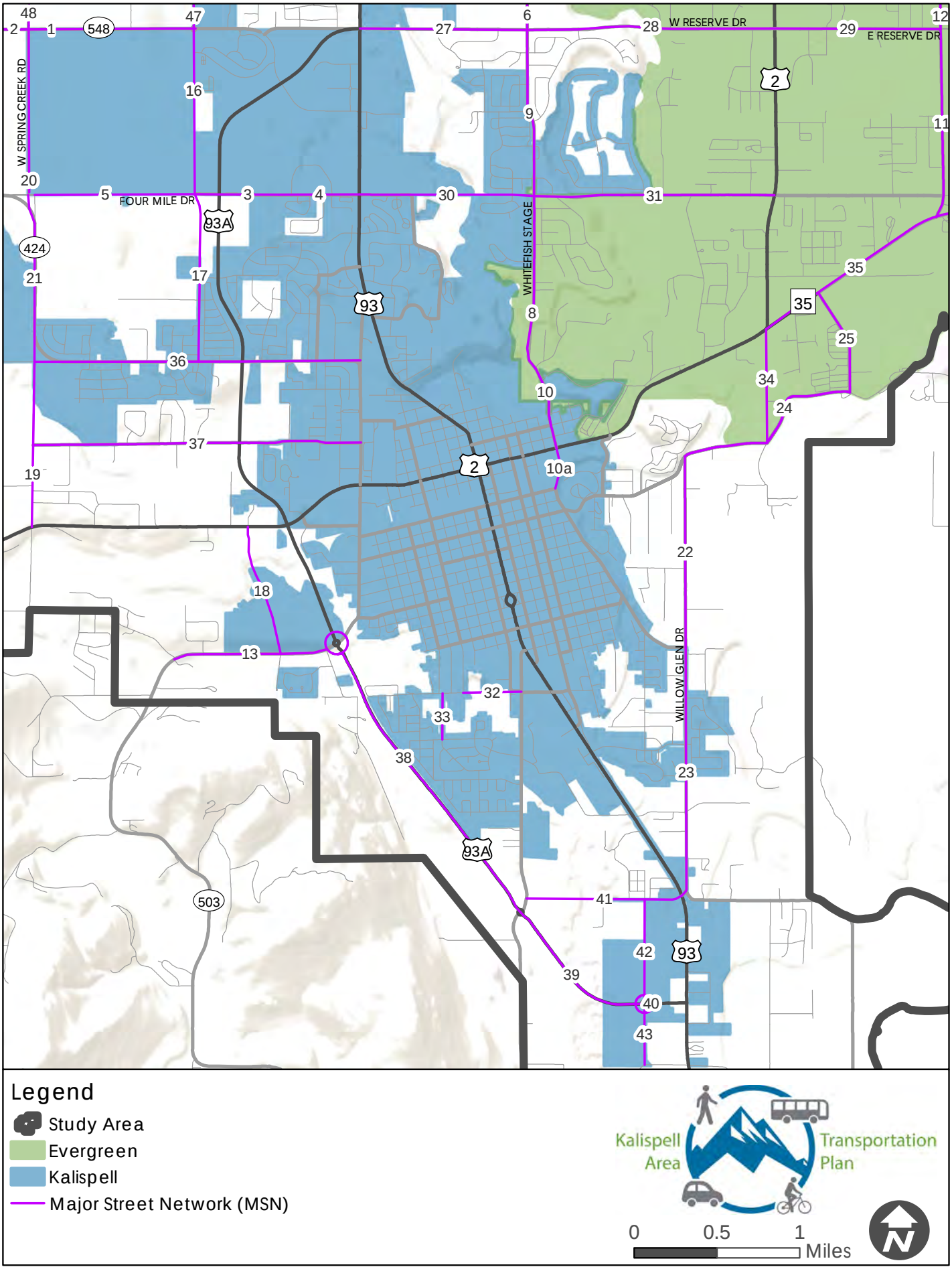


Figure 7.6: Major Street Network Recommendations (Inset)



MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 8: PROJECT PRIORITIZATION

INTRODUCTION

As discussed in Chapter 1, the Move 2040 goals express key priorities and desired outcomes for the Kalispell Urban Area transportation system. The goals help to establish the long-term vision for both the City and adjacent planning area. For this reason, recommended transportation projects should play a role in making progress towards the goals. The goals are not necessarily quantitative in nature, however, and more specific measures are needed to objectively compare various projects based on their adherence to the community's transportation vision. The goals were used as a foundation to develop an objective methodology for prioritizing the MSN and TSM project recommendations.

PRIORITIZATION METHODOLOGY

A project prioritization methodology was developed to reflect the community's assessment of its most critical transportation issues. To do this, the team identified the three top-ranked goals based on input collected during the plan's public involvement process. Then, the team developed prioritization criteria for each of the top three goals based on its ranked importance, as well as additional criteria reflecting key priorities identified through public engagement and emphasized by the City. This process is summarized below.

Goal Ranking

Input collected through the public involvement process allowed the project team to identify the top three goals and assign them a ranking according to the community's assessment of their importance. During outreach events, the public was asked to provide input on the goals and other factors that they felt were most critical to achieving the Move 2040 vision. The feedback collected through these events allowed the project team to arrange the top three goals in order of importance. The top three goals are shown by rank in Table 8.1.

Table 8.1: Top Three Move 2040 Goals by Rank of Importance

Rank	Move 2040 Goal
1	Safety and Security
2	Congestion Reduction
3	Infrastructure Condition

Prioritization Criteria

To develop the prioritization methodology, the study team assigned prioritization criteria for each of the top three goals, with the scoring value of each criteria reflecting the rank of its corresponding goal. For example, the prioritization criteria for "Safety and Security" have the highest value, followed by the criteria for "Congestion Reduction", and so on.

The City also emphasized the importance of prioritizing project recommendations based on their ability to address future growth. To reflect this, the project team developed several criteria that would evaluate projects based on their potential to alleviate future traffic congestion, as well as their location with respect to 2040 High Growth Areas.

Finally, the team allowed for bonus points to be assigned to projects that had been specifically highlighted during public outreach, or that have been designated as having regional significance. The final set of prioritization criteria was designed to allow for an objective evaluation approach which elevates projects that reflect community preferences and support the Move 2040 vision.

The prioritization criteria are presented in Table 8.2.

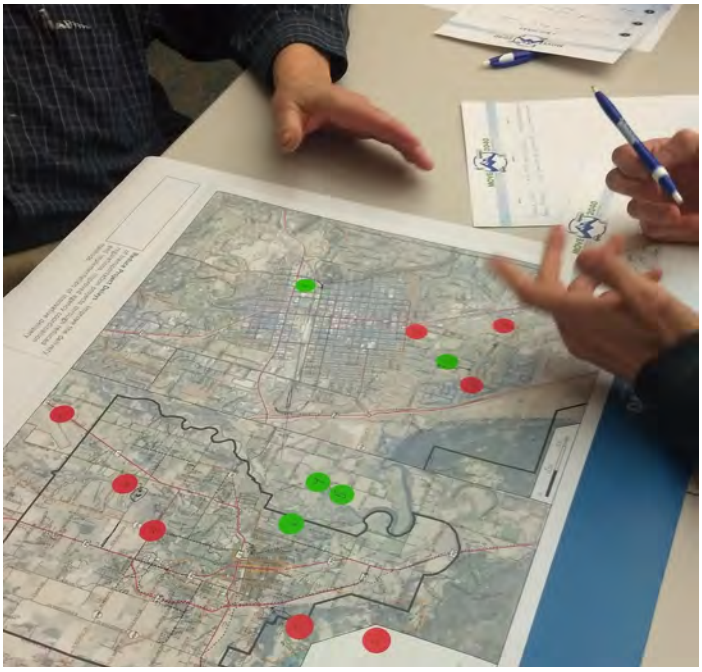


Table 8.2: Move 2040 Project Prioritization Criteria

Criterion	Methodology
Goal 1: Safety and Security	
CRASH FREQUENCY	Project addresses at least one of the top 15 crash locations
CRASH SEVERITY	Project addresses at least one of the severe crash locations
Goal 2: Congestion Reduction	
CORRIDOR CONGESTION	Project addresses a corridor with 2017 V/C equal to or greater than LOS D
INTERSECTION CONGESTION	Project address an intersection with LOS D or worse
Goal 3: Infrastructure Condition	
IMPROVEMENT OF INFRASTRUCTURE WITHIN THE STUDY AREA	Project is within the Kalispell urban boundary and/or Evergreen CDP boundary
Addressing Future Growth	
FUTURE CORRIDOR CONGESTION	Project addresses a corridor with 2040 V/C equal to or greater than LOS D
FUTURE INTERSECTION CONGESTION	Project address an intersection with 2040 LOS D or worse
POPULATION AND ECONOMIC GROWTH	Project serves an identified 2040 High Growth Area
Bonus Points	
PUBLIC INPUT	Project was specifically highlighted during public engagement
REGIONAL SIGNIFICANCE	Project has been designated as having specific regional significance

PRIORITIZATION RESULTS

The prioritization results for TSM and MSN projects are presented in Table 8.3 and Table 8.4 on page 178 and Figure 8.1 on page 176, Figure 8.2 on page 177, Figure 8.3 on page 179, and Figure 8.4 on page 180. Projects were grouped into three tiers according to their prioritization rank relative to other projects, with ***1*** being the highest priority.

While TSM and MSN projects are shown separately for clarity, all projects were scored together (the "Tier" column within the tables communicates the absolute tier of a project when all projects are organized into a single table). A project's Map ID can be used to locate the project on its respective TSM or MSN map.

Bicycle and pedestrian projects are discussed separately in Chapter 9.

Table 8.3: TSM Projects

Map ID	Corridor	Termini/Intersection	Termini/Intersection	Priority Tier
25	Highway 93	@ West Reserve		High
35*	Highway 2/Idaho	Highway 93A	LaSalle	
36*	Highway 93	Highway 2	West Reserve	
40*	Highway 93 (Main Street)	12th Street	Highway 2 (Idaho)	
27	Highway 93	@ Grandview Dr		
34*	Highway 2	LaSalle/MT 35	Birch Grove	
17	Highway 2	@ Reserve		
10	Whtiefish Stage	@ West Reserve		
38*	Meridian Road	7th Street W	Highway 2/Idaho	
16	Highway 2	@ Evergreen		
28	MT 35	@ Helena Flats		
39*	MT 35	Highway 2	MT 206	
18	Highway 2	@ Rose Crossing		Medium
33*	Highway 2	West Study Limits	Highway 93A	
31	Stillwater Road	@Four Mile Drive		
14	Highway 2	@ Montclair Drive		
13	Highway 2	@ Woodland Park Drive/Flathead Drive		
15	Highway 2	@ MT 35		
9	Whitefish Stage	@ Rose Crossing		
5	Meridian Road	Center Street	Appleway Drive	Low
11	Whitefish Stage	@ Evergreen Drive		
4	Meridian Rd	@ 7th St W		
6	Four-Mile Dr	@ W Springcreek Rd		
12	Whitefish Stage	@ Rail Park Drive		
29	Highway 93A	@ Four Mile Drive		
3	2nd Street East/ Conrad Drive	@ Woodland Park Dr		
7	Three Mile Drive	Heavens Peak Dr.	Stillwater Rd.	
21	Highway 93	@ Eagle Valley Ranch		
19	Highway 93	@ Silverbrook/Tronstad Road		
20	Highway 93	@ Wild Pine Drive/Ponderosa Lane		
22	Highway 93	@ Rose Crossing		
8	Whitefish Stage	@ Tronstad Road		
23	Highway 93	@ Lincoln Street		
24	Highway 93	@ .5 mi. north of West Reserve		
1	Conrad Rd	@ Willow Glen Dr		

*Project is a recommended study or plan

Figure 8.1: TSM Project Prioritization

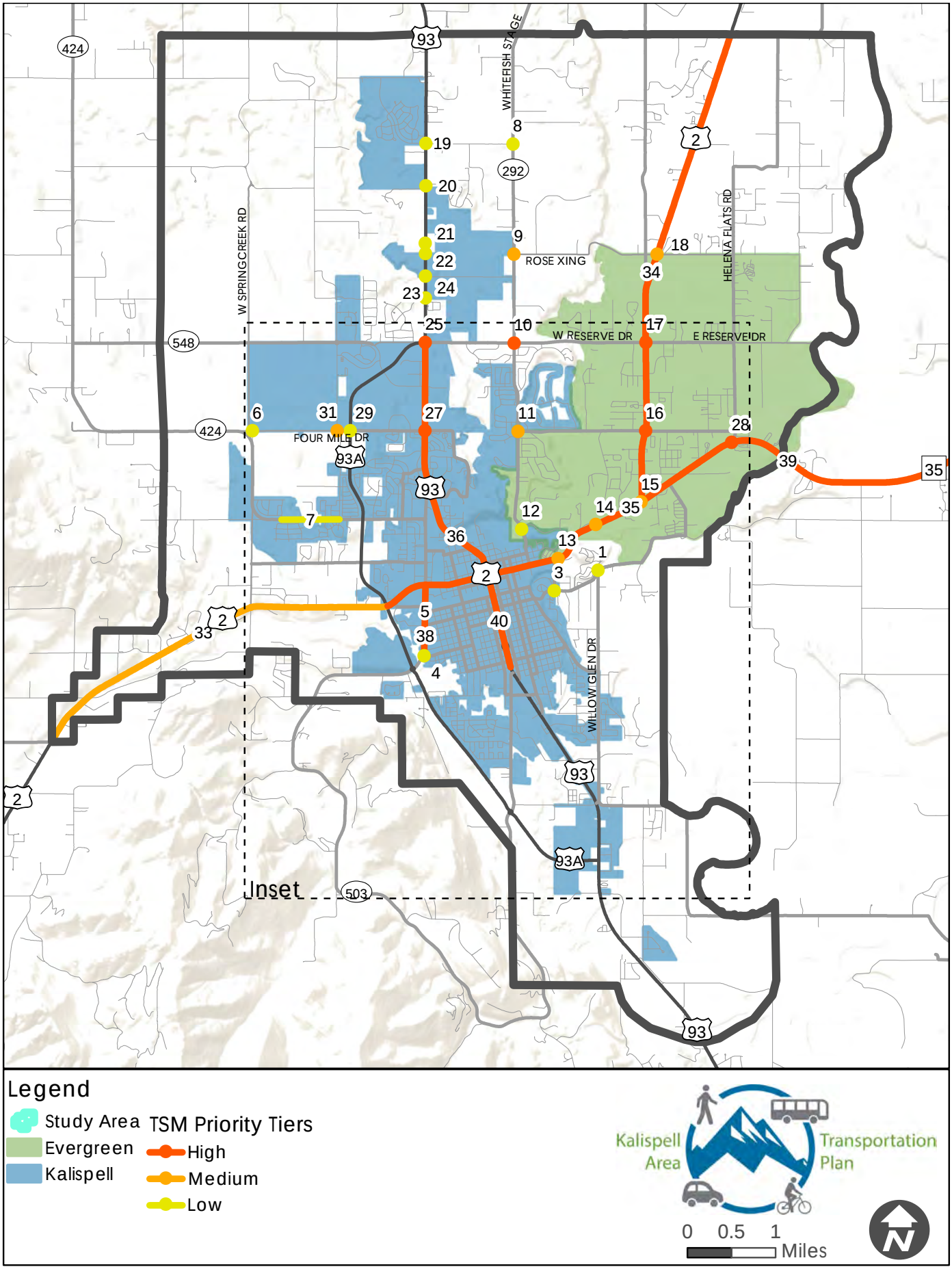


Figure 8.2: TSM Project Prioritization (Inset)

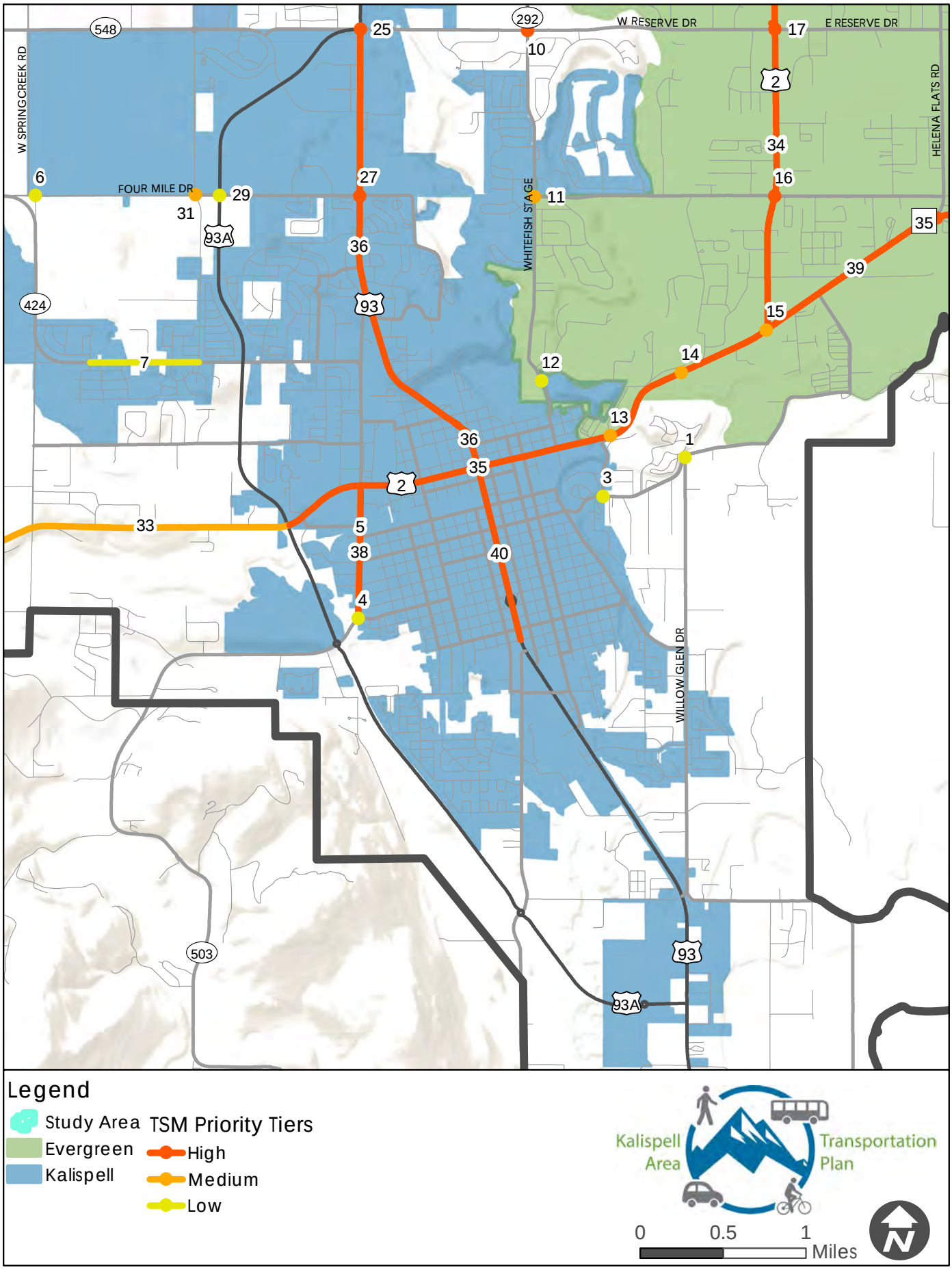


Table 8.4: MSN Projects

Map ID	Corridor	Termini/Intersection	Termini/Intersection	Priority Tier
27	West Reserve Drive	Highway 93	Whitefish Stage	High
28	West Reserve Drive	Whitefish Stage	Highway 2	
4	Four Mile Drive	Northland Road	Hwy 93	
30	Grandview/Evergreen	Highway 93	Whitefish Stage	
6	Whitefish Stage	West Reserve	Rose Crossing	
9	Whitefish Stage	Evergreen Drive	West Reserve Drive	
29	East Reserve Drive	Highway 2	Helena Flats Road	
11	Helena Flats	MT 35	East Reserve Drive	
10a	7th Avenue EN	East Center/Woodland Dr	Highway 2	
14	Rose Crossing	Whitefish Stage	Highway 2	
15	Rose Crossing	Highway 2	Helena Flats Road	
35	MT 35	LaSalle Rd	MT 206	
10	7th Avenue EN	Highway 2	Stillwater River	
31	Evergreen Dr	Whitefish Stage	Highway 2	
19	W Springcreek Road	Highway 2	Three Mile Drive	
36	Three-Mile Drive	Farm to Market (424)	Meridian Road	
39	Highway 93A	Base Camp Dr	Foys Lake	Medium
24	Conrad Dr	Willow Glenn	Shady Lane	
25	Shady Ln	Conrad Drive	MT 35	
18	New Corridor	Foys Lake	US 2	
34	New Corridor	Conrad Dr	LaSalle Rd	
8	Whitefish Stage	Oregon Street	Evergreen Drive	
7	Whitefish Stage	Rose Crossing	Birch Grove	
17	Sillwater Road	Three Mile Drive	Four Mile Drive	
26	Trumble Creek	Rose Crossing	Birch Grove	
41	Cementary Road	Airport Road	Highway 93	
23	Willow Glen Drive	Highway 93	Woodland Avenue	
3	Four Mile Drive	Stillwater Rd	Northland Rd	
5	Four Mile Drive	W Springcreek Road	Stillwater Road	
38	Highway 93A	Airport Road	Foys Lake	
12	Helena Flats	East Reserve Drive	Rose Crossing	
22	Willow Glen Drive	Woodland Avenue	Conrad Dr	
1	West Reserve	West Springcreek Road	Stillwater Road	
13	Foys Lake Rd	Whalebone Dr	Valley View Dr	
20	W Springcreek Road	Four Mile Drive	West Reserve Drive	
21	Farm to Market (424)	Three Mile Drive	Four Mile Drive	
42	Base Camp Drive	Highway 93A	Cemetary Rd	
43	Base Camp Drive	Ashley Meadows	Highway 93	
40	Highway 93A	Highway 93	Base Camp Dr	Low
16	Stillwater Rd	Four Mile Drive	West Reserve Drive	
37	Two-Mile Dr	W Springcreek Road	Meridian Road	
44	Rose Crossing	West Valley Road	Highway 93	
47	Stillwater Rd	West Reserve Drive	Church Drive	
32	Sunnyside Dr (extension)	5th Avenue W	Airport Road	
33	7th Avenue W	Bluestone Dr	Sunnyside	
45	Church Drive	West Valley Road	Highway 93	
2	West Reserve	West Valley Road	West Springcreek Road	
46	Church Drive	Highway 93	Whitefish Stage	
48	West Springcreek Road	West Reserve Drive	Church Drive	

Figure 8.3: MSN Project Prioritization

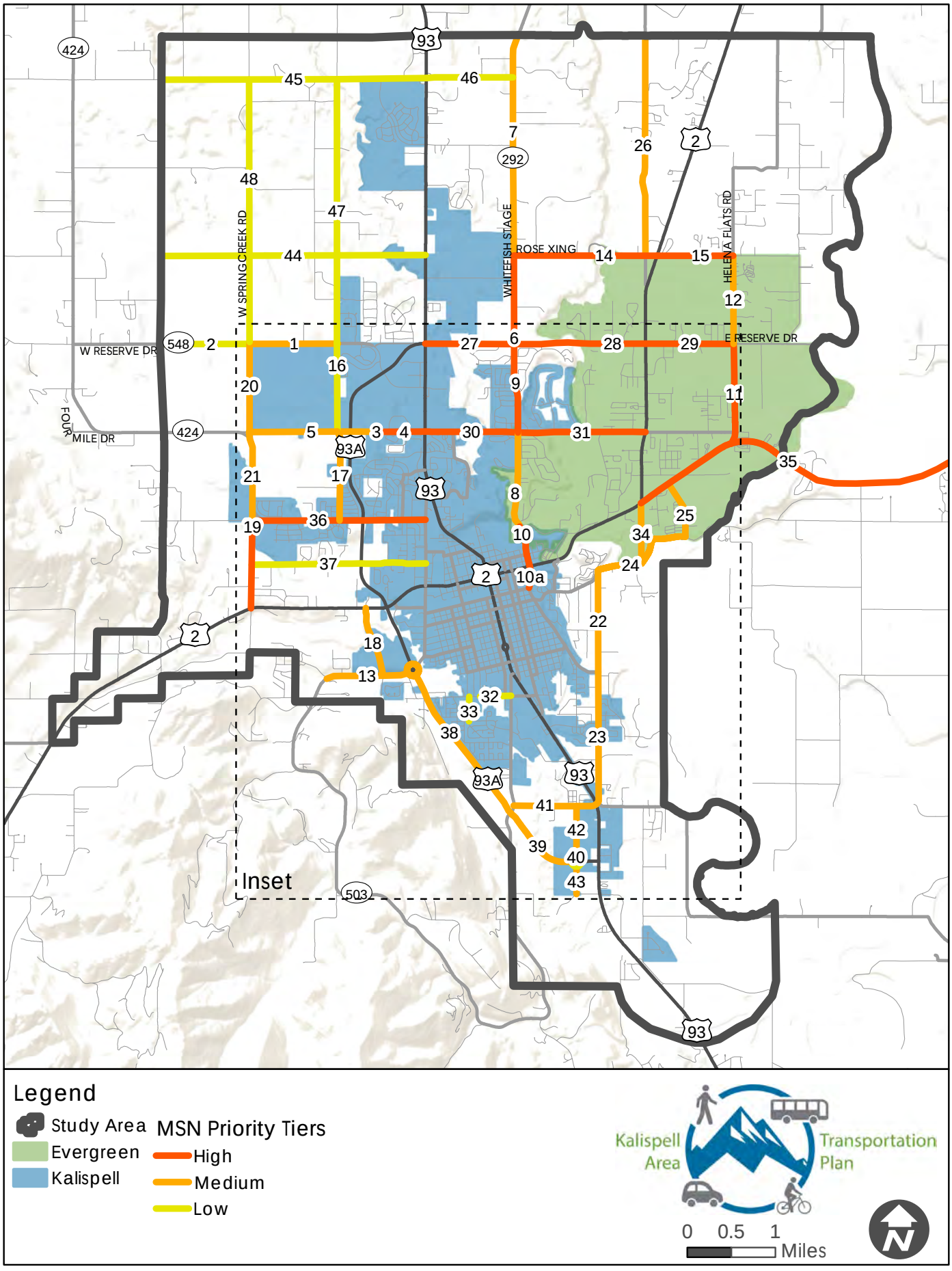
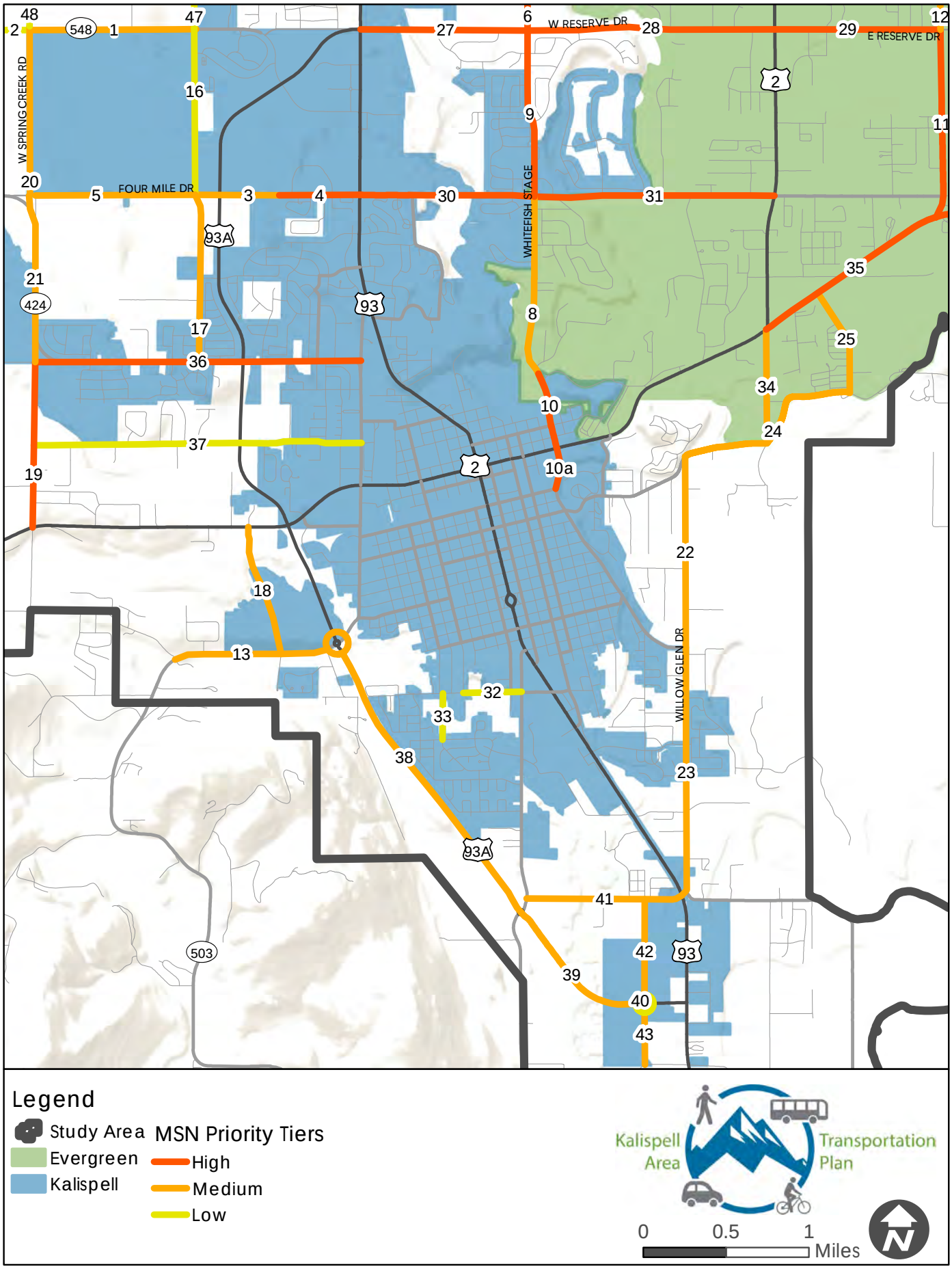


Figure 8.4: MSN Project Prioritization (inset)

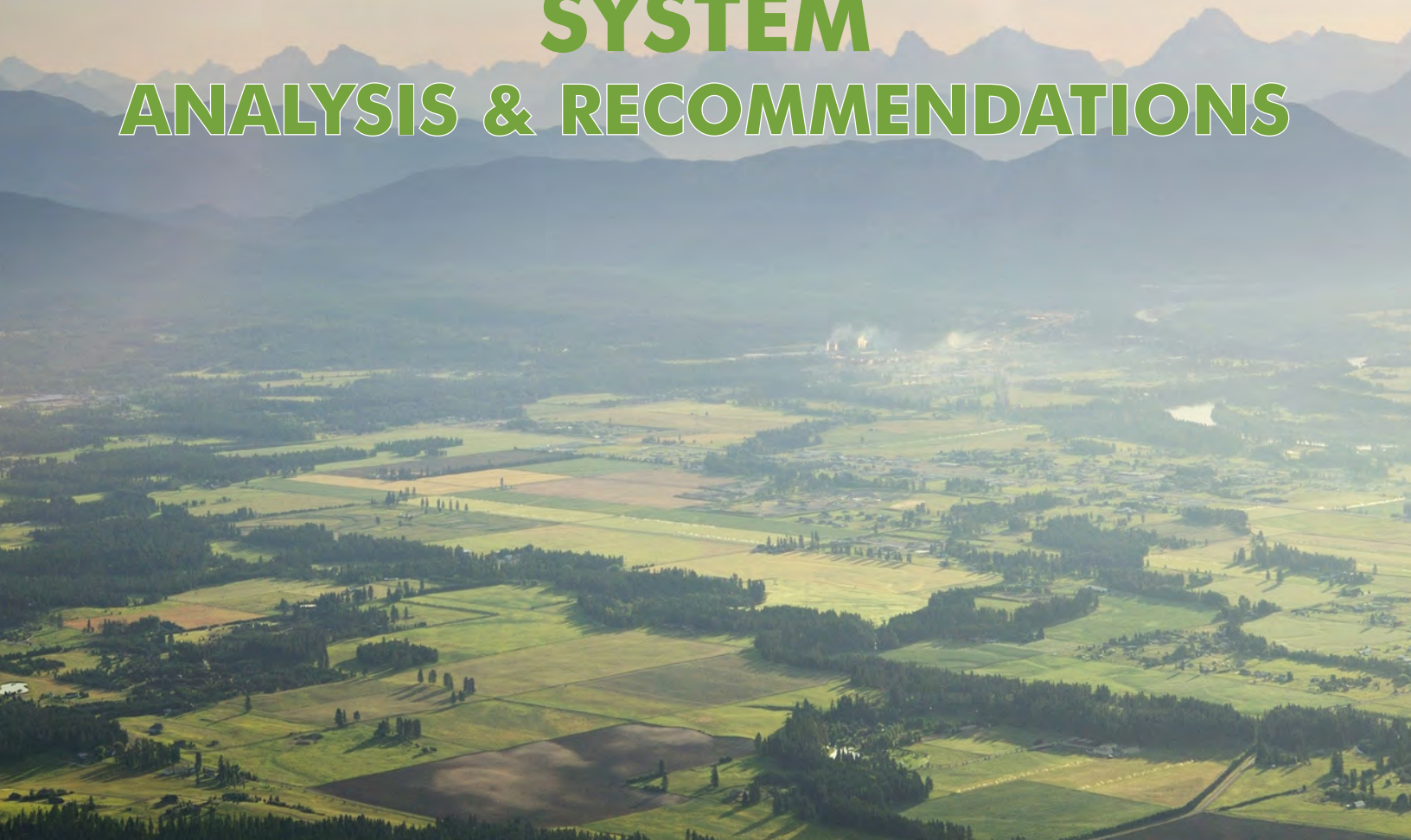


MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 9: BICYCLE AND PEDESTRIAN SYSTEM

ANALYSIS & RECOMMENDATIONS



BACKGROUND

Bicycle and pedestrian infrastructure is a critical component of moving people to and through the Flathead Valley, particularly within the Move 2040 study area. As the population continues to grow, demand for sidewalks, bike lanes and shared use paths as a safe and effective means of getting from one place to the next will continue to be a priority. Studies have shown that sidewalks and bike lanes provide a direct economic benefit to communities, in addition to improving public health and wellness. Given the focus on recreational amenities in the Kalispell area coupled with growth projections over the next twenty year planning horizon, closing gaps and improving access to safe bike and pedestrian facilities should be a focus when considering holistic transportation improvements.

This chapter provides a detailed analysis of existing and proposed bicycle and pedestrian facilities based on a core set of conditions, applying a weighted score to those facilities and connections that are most beneficial to public safety and the growing community.

PRELIMINARY ANALYSIS

Preliminary analysis of the bicycle and pedestrian network focused on existing and proposed routes that were developed by the City during the Kalispell Pedestrian and Bicycle Plan process. The Pedestrian and Bicycle Plan provided a logical point from which to begin this analysis, tying into the outcomes and project priorities of this long-range transportation planning process. To support the work already completed and limit duplication of efforts, the analysis in this chapter focuses on network gaps and priority connections that should be improved alongside future system-wide transportation projects.

Methodology

Proposed bicycle and pedestrian routes were separated into the following categories for evaluation:

- Shared use paths (SUP)
- Sidewalks and paths (S)
- On-street designated bike lanes (BL)
- On-street shared bike routes (BR)

Within each category, routes were further broken into segments by type, allowing for a detailed analysis of specific projects and potential connections based on a set of established criteria. Segments were determined by evaluating a number of conditions including localized speed limits, intersection orientation, vehicular movement and circulation, signage, sight lines and vision triangles; these elements were evaluated using Google Earth and ArcGIS aerial data as well as in-person ground-truthing to establish the most appropriate segment lengths, types and networks. Each segment is numbered using the route type abbreviation and distinct line color and type for identification purposes as shown on Figure 9.1 on page 185 and Figure 9.2 on page 186.

Once segments were determined, a set of existing and future conditions were used to evaluate, rank and prioritize potential non-motorized improvements projects. Through this analysis, some segments were removed or replaced and some route types changed; this accounts for the few skips and gaps in the numerical order of each route type listed in the tables that follow.

Final route segments were ranked according to whether, and how, the following conditions applied. If a condition was determined to be present, or if the project would facilitate the condition in the future, the segment was given a score of "1". A determination was made that certain conditions should be emphasized in terms of their importance when prioritizing projects; this determination was partially influenced by areas of emphasis identified by the public. Where present, the following conditions have been scored higher to elevate the importance of infill, redevelopment and public health and safety:

- Segments supporting infill development and connectivity to existing residential, commercial and recreational amenities are awarded 2x the points available.
- Segments supporting Safe Routes to Schools (SRTS) are awarded 3x the points available.
- Segments where public safety is a factor due to bicycle or pedestrian crashes and frequency are awarded 4x the points available.

Type of Connection

Segments were evaluated to determine the type of connection each would establish and the extent to which that connection would:

- Provide a link to and between existing neighborhoods or established residential areas, where growth is expected to remain stable but infill development is projected or can be accommodated.
- Provide a link to and between established neighborhoods and those areas projected for significant future residential density in the planning area.
- Provide a link to and between existing neighborhoods or established residential areas and existing economic hubs, connecting current populations with goods and services as well as current job centers.
- Provide a link to and between existing neighborhoods or established residential areas and future economic centers, connecting current populations with areas

slated for significant future economic growth, job opportunities and retail.

- Provide a link between established neighborhoods and existing recreation amenities.
- Provide a link between established neighborhoods and future recreation amenities.
- Facilitate the completion of a localized network, providing a key connection that serves cyclists and/or pedestrians in a specific area or neighborhood.
- Facilitate the expansion of the regional bicycle and pedestrian network, providing a critical connection serving the broader population and linking neighborhoods, communities or amenities.
- Facilitate connectivity between future development projected for the planning area, specifically that which will occur on predominantly undeveloped lands.

School Facilities

Segments were evaluated on their impact in furthering SRTS, specifically whether the segment:

- Provides a connection that completes or contributes to the broader SRTS network, such as linking a nearby neighborhood to school facilities or completing a critical route connection that would support a safer route for children to walk or bike to school.
- Is located within the established ¼-mile walking radius of a school facility. If any portion of a segment fell within this radius, points were awarded based on the anticipated impact it would have.

Non-Vehicular Crashes

Segments were evaluated based on the type—pedestrian or cyclist-involved—and frequency of non-vehicular crashes recorded along each route or within ¼-mile of a route or terminus point. This information helped to illustrate segments that would positively influence public health and safety should they be constructed in the future.

Non-Motorized Equity

Segments located in or serving areas where non-motorized infrastructure and connectivity is currently lacking also received a point score. Improving non-motorized connectivity in under-served areas will have a significant impact on the overall transportation network and improve public health and safety exponentially. These areas tend to be overlooked when prioritizing key connections or gaps, as entire neighborhoods are often considered "gaps" in the network and looked upon as insurmountable to address.

Length and Cost

Finally, each segment was measured to establish the overall length of future connections, and an approximate planning cost per linear foot assigned to the segment based on the type of route and anticipated construction costs. For instance, painting "sharrows" and striping bike lanes costs much less per linear foot than building a separated shared use path. These numbers have no bearing on the overall scoring and ranking of each segment and are intended to be informative, for use by the City and County in determining budgetary needs and priorities in the future.

Approximate costs should be viewed as estimates, providing the City and County with a baseline for budgeting purposes, but in no way representative of actual construction-level costs. Those will be established based on material and installation costs at the time improvements are bid.

Figure 9.1: Potential Project Identifier Map

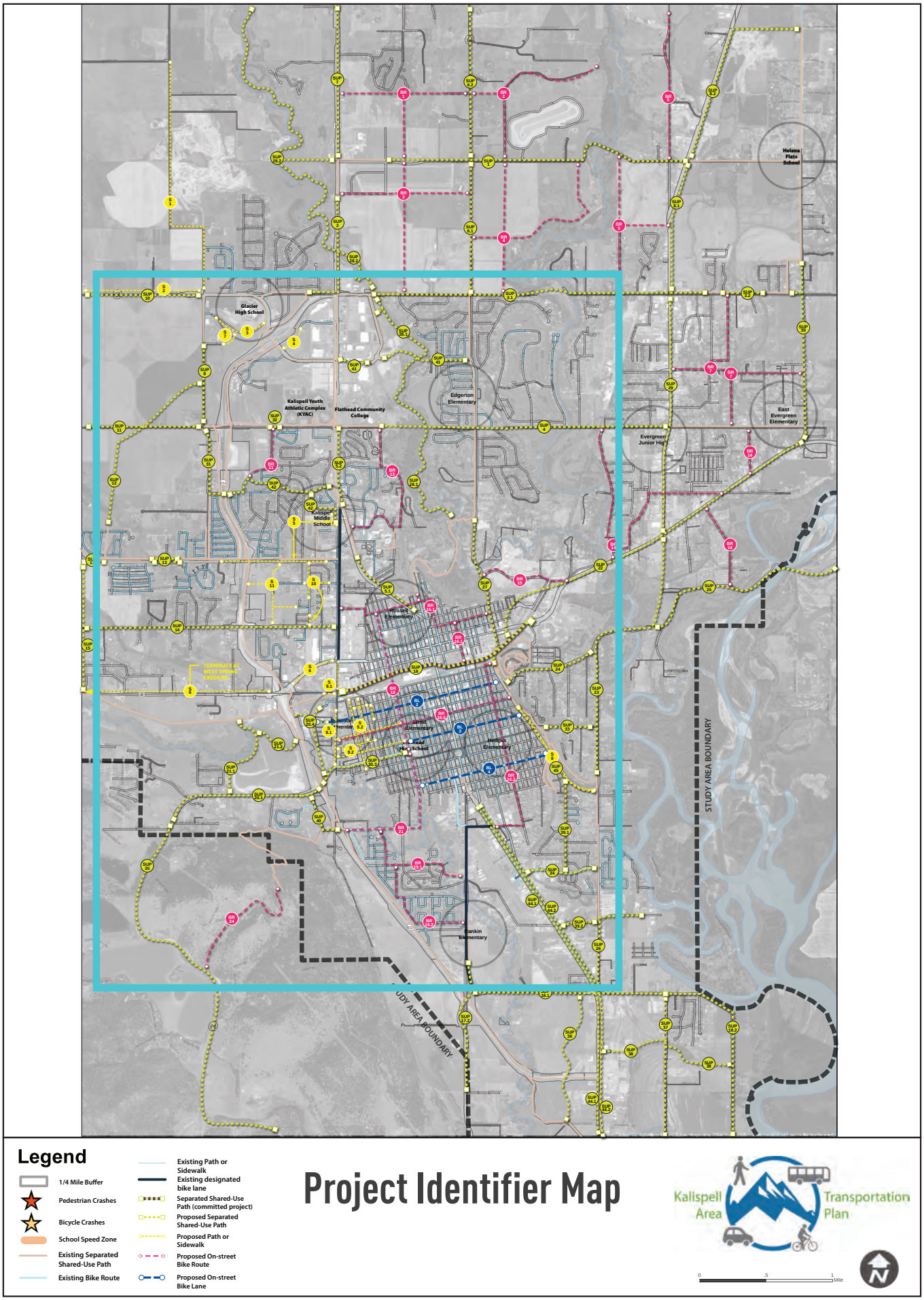
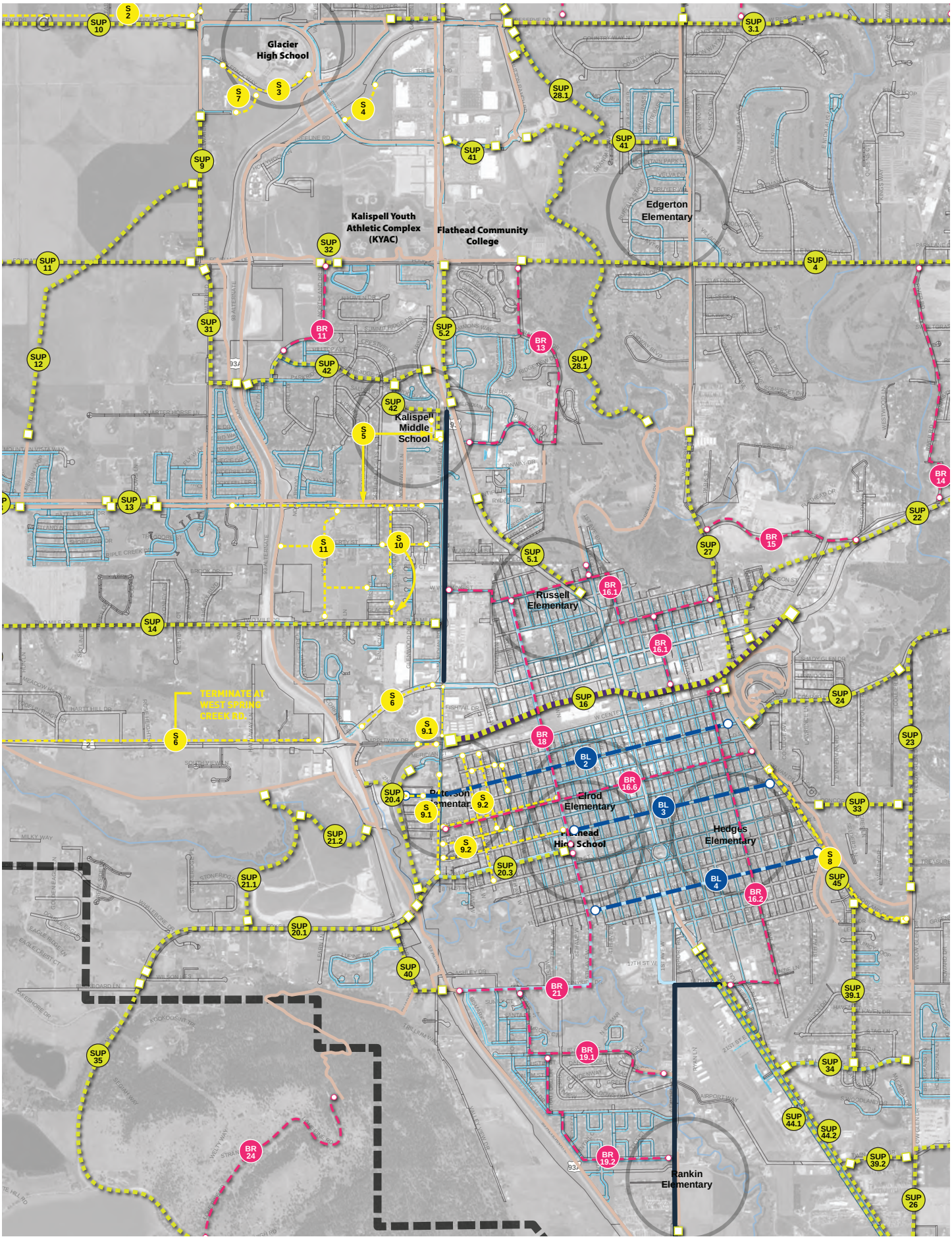


Figure 9.2: Potential Project Identifier Map (Inset)



PRIORITY RANKING

After each route segment was evaluated and assessed points based upon the conditions present, these numbers were tallied to produce a final score upon which the segments were ranked by category. Each category (SUP, S, BL or BR) has its own matrix that lays out this ranking methodology in detail in the following pages. Projects were then classified as "high", "medium" or "low" priorities based on the following scoring range:

- **High Priority** = a score of 20 or more points
- **Medium Priority** = a score between 10 and 19 points
- **Low Priority** = a score of less than 10 points

The following section lists the highest scoring priority segments for each route category alongside a brief discussion of the existing conditions and why infrastructure improvements are needed. Specific improvements recommended for each of these priorities, and bicycle and pedestrian infrastructure generally, alongside discussion on non-motorized best practices can be found in the following sections.

Certain connections failed to score high enough to be top priorities according to the ranking methodology but may still be critical projects based on the transportation demand modeling data and public input. Potential connections and networks to explore, in addition to those priorities ranked in the following pages, include:

S #9.1 – South Meridian Sidewalk Connection

The area along Meridian Road south of Highway 2 and especially south of Center Street presents a challenge for pedestrians and cyclists given its auto-centric design. Intermittent sidewalks, numerous driveway and uncontrolled access points, and fast-moving traffic make travel along this corridor on foot or by bike potentially unsafe. Travel demand modeling suggests that traffic will continue to increase along South Meridian in the future. Given the corridor serves Peterson Elementary and a popular Rails-to-Trails trailhead, the need for safer pedestrian connectivity should be taken into account through consideration of a sidewalk along this corridor.

S #8 – Woodland Avenue Connection

A gap in the non-motorized network currently exists between Willow Glen Drive and 8th Street. While a shared use path exists traveling north from Willow Glen along the small creek that parallels Woodland, the sidewalk network stops at the intersection of Woodland and Willow Glen, leaving those traveling on foot few options to connect to the shared use path or make the connection between neighborhoods. While this connection scores low on the priority list given the conditions, the completion of a sidewalk along Woodland Avenue would have a significant impact on the surrounding neighborhoods.

Shared Use Paths

SUP #3.1 – West Reserve/By-Pass Connection

Current conditions along the West Reserve corridor linking the terminus of the Kalispell Bypass at Highway 93 to Highway 2 are not conducive to the amount of future growth and development projected for this area on the north side of Kalispell. This corridor provides a major connection between the west and east valleys, but bicycle and pedestrian facilities are lacking. Some sidewalks have been constructed as a result of more recent development, but the network is incomplete on the north side of West Reserve. The construction of a shared use path is viewed as the safest alternative to moving cyclists and pedestrians along this busy thoroughfare.

SUP #4 – Flathead Valley Community College/Highway 2 Connection

This proposed mixed recreational shared use path would provide a new connection between the Flathead Valley Community College (FVCC) campus and neighborhoods to the east, as well as future connectivity to Evergreen and the Junior High School. Connectivity in this area is complicated due to the Whitefish and Stillwater Rivers, the rail line, and historical development patterns in Evergreen, resulting in a gap in east/west movement between Highway 93 and Highway 2 for both vehicles and pedestrians.

SUP #5.1 – Highway 93 Connection – South

The connectivity between downtown and the Kalispell Regional Medical Center (KRMC), the College campus, and the commercial and residential development on the north side of Kalispell is broken by a significant gap in bicycle and pedestrian infrastructure— the section of Highway 93 extending from the Highway 2 intersection north to KRMC. This section of the highway lacks sidewalks, bike lanes, and shared use paths, offers poor site distances, has numerous intersections and access points with limited control, and has traffic speeds of 35 mph and higher. When combined, these conditions make walking or biking along this route unsafe and impractical, limiting connectivity between two major employment centers in the community.

SUP #5.2 – Highway 93 Connection – North

Similar to SUP segment #5.1, the east side of Highway 93 extending north from Commons Way to Grandview Drive and serving the FVCC campus and neighborhoods in between is unsafe for bikes and pedestrians. A limited shoulder and travel speeds of 35 mph and higher make this road segment undesirable as a bike route, and no sidewalk or path currently exists to connect pedestrians to the commercial services in and around the hospital complex or to the educational and recreational opportunities provided by FVCC. Establishing a shared use path along this section of highway will link to the existing sidewalk and path network present to the north and south of this recommended route segment, completing a key connection along the Highway 93 corridor.

SUP #22 – Highway 2 East Connecting East Evergreen

The Evergreen community is lacking in sidewalks, bike lanes, and shared use paths; this is especially apparent along the Highway 2 corridor traveling east from Kalispell into Evergreen. The existing network is limited to disconnected footpaths and occasional sidewalks in between businesses, interrupted by uncontrolled access to businesses and industry. With five lanes of traffic traveling at speeds of 35 mph and more, this corridor poses unsafe conditions for a cyclist or pedestrian. The addition of a shared use path along either (or both) sides of Highway 2 would offer a key connection to and from established neighborhoods in Kalispell and Evergreen, and serve the business community in between.

SUP #29 – Highway 2 North Connection

Sidewalk present along Highway 2 traveling north through Evergreen is intermittent and infrequent, and existing pedestrian paths are interrupted by multiple access points for business and industry. Coupled with five-lanes of traffic traveling 45 mph and faster, this route is unsafe for cyclists and pedestrians, especially school-aged children walking to and from the Junior High. A shared use path along the western side of the highway, extending from the intersection of Highway 35 and the West Reserve corridor, would support safer travel by foot and bike to school from the surrounding neighborhoods.

SUP #30 – Helena Flats Connection

The Helena Flats corridor has seen residential growth over the past decade and continues to be viewed as an area that will accommodate more families and homes in the years to come, with the East Evergreen and Helena Flats Elementary Schools poised to serve a growing school-aged population. Helena Flats Road presents a number of challenges for cyclists and pedestrians, with little shoulder, two lanes and traffic speeds of 35 mph. There is an incomplete network of shared use paths installed as requisites for past development proposals, but the network is inconsistent in connecting neighborhoods and schools. The addition of a shared use path from the intersection with Highway 35 north to Pine Loop Road could improve connectivity in this area.

SUP #39.1 – Kalispell Neighborhood Connection

It can be challenging to move safely across the Center Street and Highway 2 West corridors, presenting a barrier to connectivity between the west side neighborhoods and the West North neighborhoods. The establishment of a shared use path along 5th Avenue West would provide a safe option for cyclists and pedestrians to travel from the west side and destinations like Flathead High School and Elrod Elementary to Russell Elementary and the County fairgrounds. This shared use path would supplement the existing sidewalk network and offer a clear and safe crossing point at the intersection of 5th Avenue and Highway 2.

Please refer to the shared use paths summary in Table 9.1 on page 193 and Figure 9.3 on page 199.

Sidewalks

S #5 – Three Mile Drive Connection

Three Mile Drive has seen significant growth in the last decade, further compounded by the completion of the by-pass. Much of the existing residential development on the north side of Three Mile is served by a (nearly) continuous path that runs west along Three Mile until it bends north toward West Valley. The south side of Three Mile has an intermittent path serving the neighborhoods west of the bypass, but the property to the east between the by-pass and North Meridian has no non-motorized infrastructure. Future infill development targeted for this area would be better served by a complete network of sidewalks serving residents on both sides of Three Mile and providing safe access from the neighborhoods to Kalispell Middle School.

S #6 – Hwy 2 West Connection

Highway 2 West serves significant residential and limited commercial development between Kila and Kalispell. While the south side of Highway 2 has a popular shared use path connecting residents and recreationalists, the northern side of the highway lacks any paths or pedestrian infrastructure. By extending a path or sidewalk from the intersection at North Meridian west to Springcreek Road, a safe route for pedestrians in the neighborhood north of Highway 2 would be established and a beneficial connection made between those residents and the existing Rail Trail access at Springcreek.

Please refer to the sidewalks summary in Table 9.2 on page 200 and Figure 9.4 on page 201.

Bike Lanes

BL #2 – Second Street East to West Connection

Second Street East and West offer the best opportunity to establish a striped, dedicated bike lane connecting the neighborhoods that flank downtown Kalispell. While numerous east/west routes exist through town, Second Street offers a wider road width to accommodate a dedicated lane and provides important connectivity between Peterson Elementary School on the west side and Woodland Park on the east side. It also serves as a primary thru-route for vehicle traffic and, as a result, is signed and signalized to minimize conflict and congestion. Suggested improvements would also benefit cyclists and add to the safety of having a dedicated lane for bikes.

Please refer to the bike lanes summary in Table 9.3 on page 202 and Figure 9.5 on page 203.

Bike Routes

BR #11 – Four Mile to Hilltop Drive

Residential development off of Four Mile Drive offers an opportunity to establish a safe route for cyclists to access the Youth Athletic Complex, FVCC, and commercial development along Highway 93 North. New and existing roads are wide enough and traffic speeds low enough to allow for safe routes through and between older neighborhoods surrounding Kalispell Middle School and newer neighborhoods west of the bypass. This route would connect an established network of existing shared use paths and sidewalks within these neighborhoods and along Four Mile and Highway 93 North, completing a broad network of bicycle and pedestrian facility options.

BR #13 – Four Mile Drive Connection

Continuing the established bike route from the Flathead Valley Community College campus south along Grandview Drive to the Kalispell Regional Medical Center campus effectively links these two community resources and provides an alternate route for cyclists to navigate.

As the KRMC continues to grow in prominence in the Valley, it will become more important to offer safe routes for employees who bike to work and opportunities for employees and guests to connect to the surrounding offices and local business by bike. The proposed bike routes that form this network would connect the medical campus to surrounding businesses and offer a link to existing shared use paths on either side of Highway 93. The network would also support safer connectivity to Kalispell Middle School, located across Highway 93, for students living in the residential neighborhoods in and around the medical center.

BR #14 – River Road/Cottonwood Drive Connection

Beginning at the terminus of River Road and West Evergreen Drive, looping through established neighborhoods along Cottonwood Drive and continuing south of Highway 35 to Meadow Manor Village, this route would connect the north and south sides of Evergreen while providing a safe and established bike route away from primary traffic corridors and significant intersections. It would also serve as a connection between two high-priority shared use path connections, further expanding the bicycle and pedestrian network in this under-served area.

BR #16.1 – First Avenue East North Network

This network of segments establishes a clear bike route for cyclists moving through the East North neighborhood of Kalispell, taking advantage of controlled intersections and providing safe access to Lawrence Park. While the East North neighborhood is well-served by sidewalks, bike facilities are lacking and those unfamiliar with the area might not select the safest intersection across Highway 2 or Highway 93. By providing a network of shared bike routes through the neighborhood, safer and clearer access to recreational amenities and proposed paths and trails would result.

BR #16.2 – Fifth Avenue East Connection

Fifth Avenue East provides an alternative north/south route for cyclists moving through Kalispell, avoiding some of the busier intersections closer to downtown and connecting Hedges Elementary with a potential shared-use path across Highway 2 and up towards Lawrence Park along Whitefish Stage. Fifth Avenue has signed intersections, good site distances and offers a wide right-of-way to easily accommodate bikes and vehicles in the same lane.

BR #16.3 – First Avenue East Connection

First Avenue East offers the ability to move cyclists safely through Downtown Kalispell without the need to use Main Street, which is Highway 93. First Avenue East runs the entire length of downtown, extending from Lawrence Park to a terminal point feeding into Highway 93 on the south end of Kalispell. Lane width and reduced speeds afford bikes and cars the ability to interact safely, with controlled intersections and less traffic than one would find on the primary route(s) through town.

BR #16.4 – First Avenue West Connection

Similar to First Avenue East, First Avenue West offers the ability to move cyclists safely and effectively through Downtown Kalispell without the need to use Main Street, (Highway 93). First Avenue West runs the entire length of downtown, extending from the mall property to a terminal point feeding into Highway 93 on the south end of Kalispell. Lane width and reduced speeds afford bikes and cars the ability to interact safely, with controlled intersections and less traffic than one would find on primary route(s).

BR #16.5 – Eighth Avenue West Connection

The southwest corner of the established West Side neighborhood in Kalispell is an area with exceptionally poor bicycle and pedestrian infrastructure. While installing sidewalks may be a long-term goal, an easy mechanism to improve connectivity between established networks and safe routes through the west side and to those developments further south is the creation of a shared bike route connecting Eighth Avenue to Eleventh Street West.

BR #16.6 – Fourth Street East/West Connection

While the bike lane recommended for Second Street East/West provides a primary connection between these neighborhoods, establishing a shared bike route along Fourth Street East/West could provide an alternative and expand safe travel through these neighborhoods.

BR #27 – Kalispell Middle School Neighborhood Connection

Building upon BR segment #11, these bike routes would connect newer development off of Four Mile and the bypass to and through existing, established neighborhoods adjacent to and around Kalispell Middle School. Many of these neighborhoods lack sidewalks, and the winding street grid can be confusing to navigate. Establishing a clear route for cyclists to use could offer more direct access from those neighborhoods west of the by-pass to major employment centers like KRMC. This network would also support SRTS for students attending the middle school.

BR #21 – Sunnyside Drive Connection

Similar to SUP segment #39.1, there is a need to connect residents of neighborhoods on the south end of Kalispell to the community core, school facilities, and residents on the north side of town to recreational amenities such as the shared use path along the bypass, the Rail Trail leading west of town, Foy's Lake and Lone Pine Park. By continuing a shared use path connection from the high school south along 5th Avenue West and along Sunnyside Drive, a key north/south connection can be established that provides a safe route to and through town for residents on the western side of Kalispell.

Please refer to the bike routes summary in Table 9.4 on page 204 and Figure 9.6 on page 207.

Table 9.1: Shared Use Paths Analysis

CRITERIA		SHARED USE PATH (SUP) SEGMENT								
		1	2	3.1	3.2	4	5.1	5.2	6.1	6.2
		Corridor Description								
		Rose Crossing/Nob Hill Loop to Hwy 2	Hwy 93 North/West Reserve to Nob Hill Loop	West Reserve Dr./Hutton Ranch to Mountain View	West Reserve Dr./ Granite View to Rock Dr.	New Connection/ Grandview Dr. to Hwy 2	Hwy 93 North/Nevada St. to Ryder Rd.	Hwy 93 North/E. Meridian to West Reserve Dr.	Whitefish Stage/West Reserve Dr. to Rose Crossing	Whitefish Stage/Rose Crossing to Tronstad Rd.
CONNECTION TYPE	Connects and supports existing neighborhoods			2	2	2	2	2		2
	Connects and supports future neighborhoods	1	1	1	1	1	1	1		
	Connects and supports existing economic centers	2	2	2		2	2	2	2	2
	Connects and supports future economic centers	1	1	1		1	1	1		
	Connects and supports existing recreation amenities		2	2	2	2	2	2		
	Connects and supports future recreation amenities					1	1	1		
	Facilitates localized network expansion	1	1	1	1	1	1	1		
	Facilitates regional network expansion	1	1	1		1	1	1	1	1
	Facilitates connections to future development	1	1	1					1	1
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network		3	3	3	3	3	3		
	Route segment located within ¼-mile school zone					3	3			
NON-VEHICULAR CRASH TYPE	Pedestrian-involved			4			4	4		
	Cyclist-involved			4		4	4	4		
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment			4			4	4		
MOBILITY EQUITY	Route segment supports an under-served neighborhood	1			1				1	1
Score		**8**	**12**	**26**	**10**	**21**	**29**	**26**	**5**	**7**
LENGTH	Route segment length (linear feet)	12,717	3,838	12,945	1,559	11,476	3,110	3,109	6,561	5,267
COST	Cost per linear foot	$238								
Approximate Cost		**$3,026,600**	**$913,400**	**$3,080,900**	**$371,000**	**$2,731,300**	**$740,200**	**$739,900**	**$1,561,500**	**$1,253,500**

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CRITERIA		SHARED USE PATH (SUP) SEGMENT								
		7	8.1	8.2	9	10	11	12	13	14
		Corridor Description								
		Hwy 93 North/Rose Crossing to Hagerman Ln.	Hwy 2 East/West Reserve Dr. to Rose Crossing	Hwy 2 East/Rose Crossing to and along Helena Flats Rd.	Stillwater Rd./Four Mile Drive to Timberwolf Pkwy.	Old Reserve Dr./Stillwater Rd. to Farm View Ln.	Four Mile Dr./Stillwater Rd. to West Springreek Rd.	New Connection/Mtn. Vista across Four Mile to Stillwater	Three Mile Dr./Gap between Meadows and Camp Crook	Two Mile Dr./North Meridian to West Springcreek Rd.
CONNECTION TYPE	Connects and supports existing neighborhoods								2	2
	Connects and supports future neighborhoods	1				1	1	1	1	
	Connects and supports existing economic centers	2	2	2	2	2				2
	Connects and supports future economic centers	1	1	1	1	1	1	1	1	
	Connects and supports existing recreation amenities				2	2	2			
	Connects and supports future recreation amenities				1		1			
	Facilitates localized network expansion				1				1	
	Facilitates regional network expansion	1	1	1	1	1	1	1	1	1
	Facilitates connections to future development	1	1	1	1	1	1	1	1	1
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network				3	3				
	Route segment located within ¼-mile school zone									
NON-VEHICULAR CRASH TYPE	Pedestrian-involved								4	
	Cyclist-involved		4							
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment									
MOBILITY EQUITY	Route segment supports an under-served neighborhood	1	1	1		1	1	1		1
	Score	**7**	**10**	**6**	**12**	**12**	**8**	**5**	**11**	**7**
LENGTH	Route segment length (linear feet)	6,556	5,329	8,220	3,127	4,646	4,194	7,848	2,156	10,358
COST	Cost per linear foot	$238								
	Approximate Cost	**$1,560,300**	**$1,268,300**	**$1,956,400**	**$744,200**	**$1,105,700**	**$998,200**	**$1,867,800**	**$513,100**	**$2,465,200**

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CRITERIA		SHARED USE PATH (SUP) SEGMENT								
		15	16	17.2	18.1	18.2	20.1	20.3	20.4	21.1
		Corridor Description								
		West Springcreek Dr./Hwy 2 West and Three Mile Dr.	Hwy 2/North Meridian to Woodland Park Dr.	Airport Rd./Kacu Ln. to Franklin Elementary School	Cemetery Rd./Airport Rd. to Demersville Rd.	Lower Valley Rd./ Demersville Rd. to Foys Bend Ln.	Foys Lake Rd./Wilson Hts. to Hwy 93 Bypass	Seventh St./Hwy 93 Bypass to Hwy 93	Rail Spur Path/South Meridian to West Center (trailhead)	New Connection/Foys Lake Rd. to Rail Trail West
CONNECTION TYPE	Connects and supports existing neighborhoods	2	2		2		2	2	2	
	Connects and supports future neighborhoods			1	1	1	1	1	1	1
	Connects and supports existing economic centers		2					2	2	
	Connects and supports future economic centers		1		1					1
	Connects and supports existing recreation amenities		2			2		2	2	2
	Connects and supports future recreation amenities						1			
	Facilitates localized network expansion	1	1	1				1	1	
	Facilitates regional network expansion	1	1	1	1	1	1			
	Facilitates connections to future development			1	1		1			1
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network		3	3				3	3	
	Route segment located within ¼-mile school zone		3	3				3	3	
NON-VEHICULAR CRASH TYPE	Pedestrian-involved		4							
	Cyclist-involved		4					4	4	
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment		4							
MOBILITY EQUITY	Route segment supports an under-served neighborhood	1		1	1	1	1	1	1	1
	Score	**5**	**27**	**11**	**7**	**5**	**7**	**19**	**19**	**6**
LENGTH	Route segment length (linear feet)	5,096	8,675	5,329	7,685	7,965	6,320	3,950	3,959	3,997
COST	Cost per linear foot	$238								
	Approximate Cost	**$1,212,800**	**$2,064,700**	**$1,268,300**	**$1,829,000**	**$1,895,700**	**$1,504,200**	**$940,100**	**$942,200**	**$951,300**

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CRITERIA		SHARED USE PATH (SUP) SEGMENT								
		21.2	22	23	24	25	26	27	28.1	28.2
		Corridor Description								
		New Connection/Hwy 93 Bypass to SUP 21.1 Segment	Hwy 2 and Hwy 35/ Flathead Drive to Helena Flats Rd.	Willow Glen Dr./Woodland Ave. to Hwy 2 and 35	Conrad Dr./Sylvan Dr. to Willow Glen Dr.	Holt Stage Rd./Conrad Dr. to Homestead Rd.	Willow Glen Dr./Lower Valley Rd. to and along FFA Dr.	Whitefish Stage/Woodland Ave. to Lawrence Park Dr.	New Connection/Lawrence Park Dr. to West Reserve Dr.	New Connection/West Reserve Drive Along Stillwater River
CONNECTION TYPE	Connects and supports existing neighborhoods		2	2	2	2		2	2	
	Connects and supports future neighborhoods			1	1			1	1	1
	Connects and supports existing economic centers		2	2				2	2	2
	Connects and supports future economic centers		1	1				1	1	1
	Connects and supports existing recreation amenities	2	2	2	2	2		2	2	2
	Connects and supports future recreation amenities							1	1	1
	Facilitates localized network expansion						1	1	1	
	Facilitates regional network expansion		1	1	1	1	1	1	1	1
	Facilitates connections to future development						1			1
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network		3						3	
	Route segment located within ¼-mile school zone		3							
NON-VEHICULAR CRASH TYPE	Pedestrian-involved		4		4			4		
	Cyclist-involved		4							
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment		4					4		
MOBILITY EQUITY	Route segment supports an under-served neighborhood		1	1	1	1	1			1
	Score	**2**	**27**	**10**	**11**	**6**	**4**	**19**	**14**	**10**
LENGTH	Route segment length (linear feet)	2,011	14,763	11,466	4,472	7,991	4,471	5,935	13,753	22,504
COST	Cost per linear foot	$238								
	Approximate Cost	**$478,600**	**$3,513,600**	**$2,728,900**	**$1,064,300**	**$1,901,900**	**$1,064,100**	**$1,412,500**	**$3,273,200**	**$5,356,000**

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CRITERIA		SHARED USE PATH (SUP) SEGMENT								
		29	30	31	32	33	34	35	36	37
		Corridor Description								
		Hwy 2 North/Hwy 35 to West Reserve Dr.	Helena Flats Rd./Hwy 35 to Pine Loop Road	Stillwater Rd./Parkridge Dr. to Four Mile Dr.	Four Mile Dr./Northland Dr. to Meadow Vista Loop	Concord Ln./Existing Shared Use Path to Willow Glen Dr.	Kelly Rd./Hwy 93 to Willow Glen Dr.	Foys Lake Rd./Wilson Hts. to Orchard Ridge Rd.	New Development Connection/Ashley Mdws to Cemetery Rd.	Demersville Rd./Lower Valley Rd. to Foys Bend Ln.
CONNECTION TYPE	Connects and supports existing neighborhoods	2	2			2	2			
	Connects and supports future neighborhoods	1	1	1	1	1				
	Connects and supports existing economic centers	2			2		2			2
	Connects and supports future economic centers	1		1	1		1		1	1
	Connects and supports existing recreation amenities				2	2	2	2		
	Connects and supports future recreation amenities				1			1		
	Facilitates localized network expansion		1	1	1	1	1			
	Facilitates regional network expansion	1		1	1			1		
	Facilitates connections to future development		1	1	1				1	1
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network	3	3			3				
	Route segment located within ¼-mile school zone	3	3							
NON-VEHICULAR CRASH TYPE	Pedestrian-involved	4								
	Cyclist-involved	4	4							
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment	4	4							
MOBILITY EQUITY	Route segment supports an under-served neighborhood	1	1	1		1	1	1	1	
	Score	**26**	**20**	**6**	**10**	**10**	**9**	**5**	**4**	**4**
LENGTH	Route segment length (linear feet)	9,487	7,260	3,240	497	2,244	3,005	17,031	5,664	5,395
COST	Cost per linear foot	$238								
	Approximate Cost	**$2,257,900**	**$1,727,900**	**$771,100**	**$118,300**	**$534,100**	**$715,200**	**$4,053,400**	**$1,348,000**	**$1,284,000**

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CRITERIA		SHARED USE PATH (SUP) SEGMENT								
		38	39.1	39.2	40	41	42	44.1	44.2	45
		Corridor Description								
		New Development Connection/Hwy 93 to Lower Valley Rd.	S. Woodland Dr./Kelly Rd. to Woodland Ave.	Twin Acres Dr./Hwy 93 to Willow Glen Dr.	Valley View Dr./Sunnyside Drive to Foys Lake Rd.	Hutton Ranch Rd. through Walmart to Whitefish Stage	Northridge Dr./Northland Dr. to Hwy 93	West Side of Hwy 93/Ashley Meadows to 21 st St. E.	East Side of Hwy 93/Ashley Meadows to 21 st St. E.	Woodland Ave./Willow Glen Dr. to Eight St. E.
CONNECTION TYPE	Connects and supports existing neighborhoods		2		2	2	2			2
	Connects and supports future neighborhoods	1				1	1			1
	Connects and supports existing economic centers			2		2	2	2	2	
	Connects and supports future economic centers	1	1	1		1		1	1	
	Connects and supports existing recreation amenities				2	2				2
	Connects and supports future recreation amenities				1	1				1
	Facilitates localized network expansion		1		1	1	1	1	1	1
	Facilitates regional network expansion	1						1	1	1
	Facilitates connections to future development	1			1	1	1			
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network			3		3				3
	Route segment located within ¼-mile school zone									
NON-VEHICULAR CRASH TYPE	Pedestrian-involved					4		4	4	
	Cyclist-involved						4	4	4	
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment							4	4	
MOBILITY EQUITY	Route segment supports an under-served neighborhood	1	1	1	1		1			
	Score	**5**	**5**	**7**	**9**	**18**	**12**	**17**	**17**	**11**
LENGTH	Route segment length (linear feet)	7,789	3,768	1,621	2,123	5,469	7,217	14,685	14,685	5,939
COST	Cost per linear foot	$238								
	Approximate Cost	**$1,853,800**	**$896,800**	**$385,800**	**$505,300**	**$1,301,600**	**$1,717,600**	**$3,495,000**	**$3,495,000**	**$1,413,500**

Figure 9.3: Shared Use Paths Project Priority Map

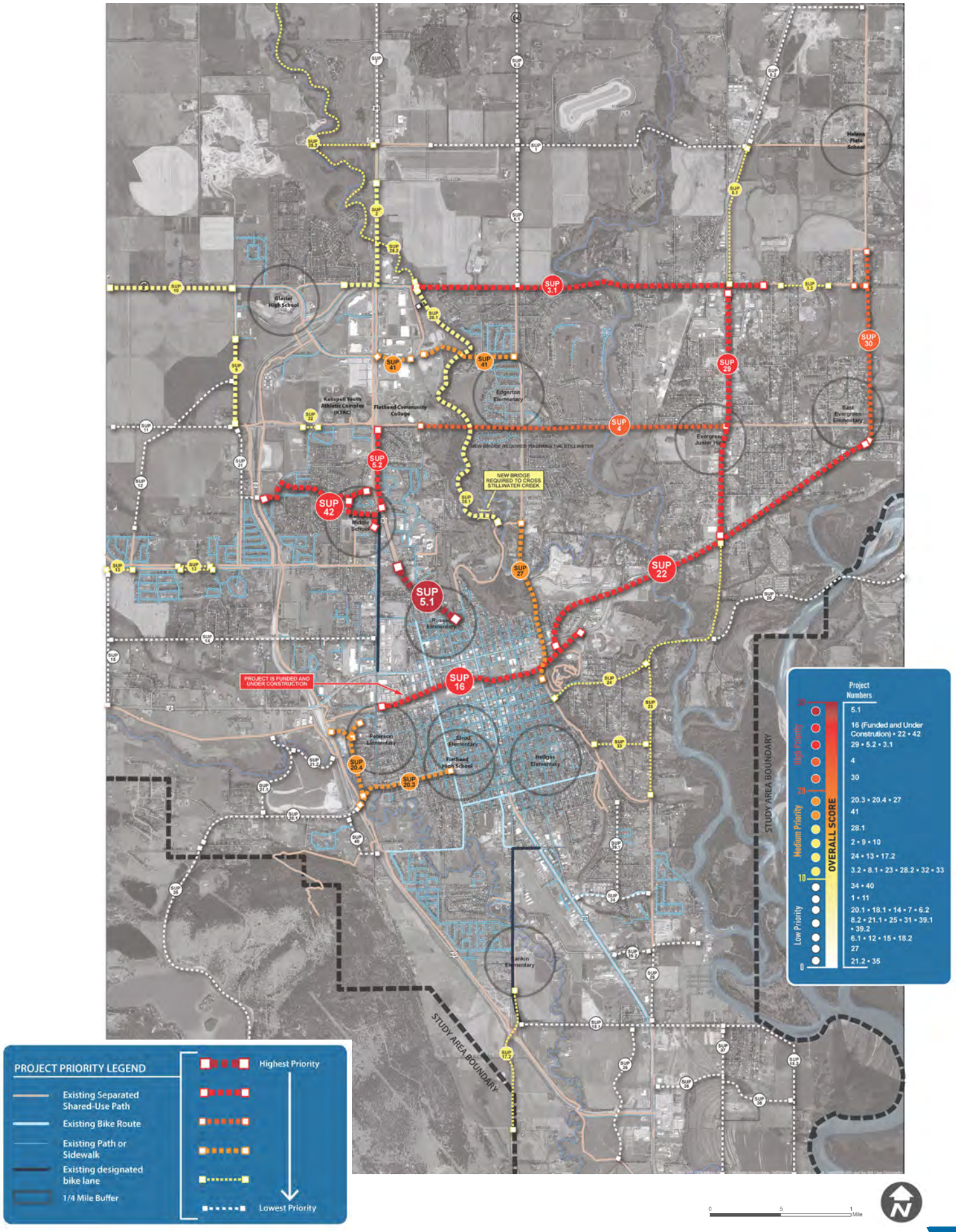


Table 9.2: Sidewalks Analysis

CRITERIA		SIDEWALK (S) SEGMENT								
		1	2	3	4	5	6	8	9.1	9.2
		Corridor Description								
		Stillwater Rd./West Reserve Dr. to Clark Dr.	West Reserve Dr./Stillwater Rd. to West Springcreek Rd.	Wolfpack Way/Stillwater Rd. to Old Reserve Dr.	Treeline Road Connector	Three Mile Dr. Connector and Kalispell Middle School	Hwy 2 West/North Meridian to West Springcreek Rd.	Woodland Ave./Willow Glen Dr. to Eight St. E.	South Meridian/West Center St. to Seventh St. West	West Side Neighborhood Sidewalk Network
CONNECTION TYPE	Connects and supports existing neighborhoods					2	2	2	2	2
	Connects and supports future neighborhoods		1	1						
	Connects and supports existing economic centers				2	2	2		2	2
	Connects and supports future economic centers			1	1	1	1			
	Connects and supports existing recreation amenities			2				2	2	2
	Connects and supports future recreation amenities			1						
	Facilitates localized network expansion			1	1	1	1	1	1	1
	Facilitates regional network expansion		1				1	1		
	Facilitates connections to future development	1	1	1	1					
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network	3	3	3		3		3	3	3
	Route segment located within ¼-mile school zone			3		3			3	3
NON-VEHICULAR CRASH TYPE	Pedestrian-involved					4	4			
	Cyclist-involved					4	4		4	4
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment					4	4			
MOBILITY EQUITY	Route segment supports an under-served neighborhood	1	1				1			
Score		**5**	**7**	**13**	**5**	**24**	**20**	**9**	**17**	**17**
LENGTH	Route segment length (linear feet)	10,430	5,209	2,398	1,146	649	10,736	4,901	3,200	13,262
COST	Cost per linear foot (assumes 4' width, 4" thickness)	$15								
Approximate Cost		**$156,500**	**$78,100**	**$36,000**	**$17,200**	**$9,700**	**$161,000**	**$73,500**	**$48,000**	**$198,900**

Figure 9.4: Sidewalks Project Priority Map

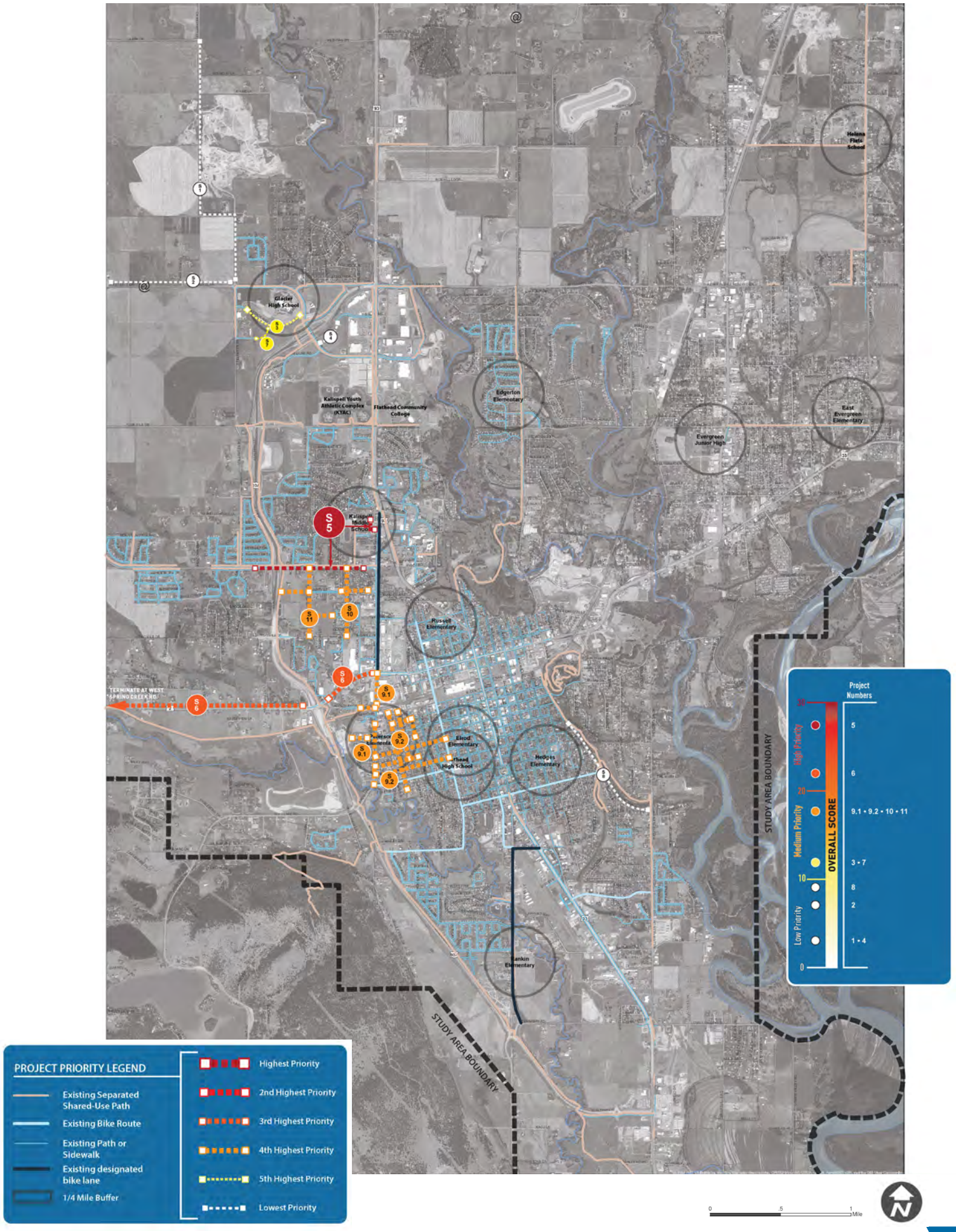


Table 9.3: Bike Lanes Analysis

CRITERIA		BIKE LANE (BL) SEGMENT		
		2	3	4
		Corridor Description		
		Stillwater Rd./West Reserve Dr. to Clark Dr.	West Reserve Dr./ Stillwater Rd. to West Springcreek Rd.	Wolfpack Way/ Stillwater Rd. to Old Reserve Dr.
CONNECTION TYPE	Connects and supports existing neighborhoods	2	2	2
	Connects and supports future neighborhoods			
	Connects and supports existing economic centers			
	Connects and supports future economic centers			
	Connects and supports existing recreation amenities	2	2	2
	Connects and supports future recreation amenities	1		
	Facilitates localized network expansion	1	1	1
	Facilitates regional network expansion	1	1	1
	Facilitates connections to future development			
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network	3	3	3
	Route segment located within ¼-mile school zone	3	3	3
NON-VEHICULAR CRASH TYPE	Pedestrian-involved	4	4	
	Cyclist-involved	4		
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment	4		
MOBILITY EQUITY	Route segment supports an under-served neighborhood			
	Score	**25**	**16**	**12**
LENGTH	Route segment length (linear feet)	7,528	5,227	5,210
COST	Cost per linear foot of construction	$10		
	Approximate Cost	$75,300	$52,300	$52,100

Figure 9.5: Bike Lanes Project Priority Map

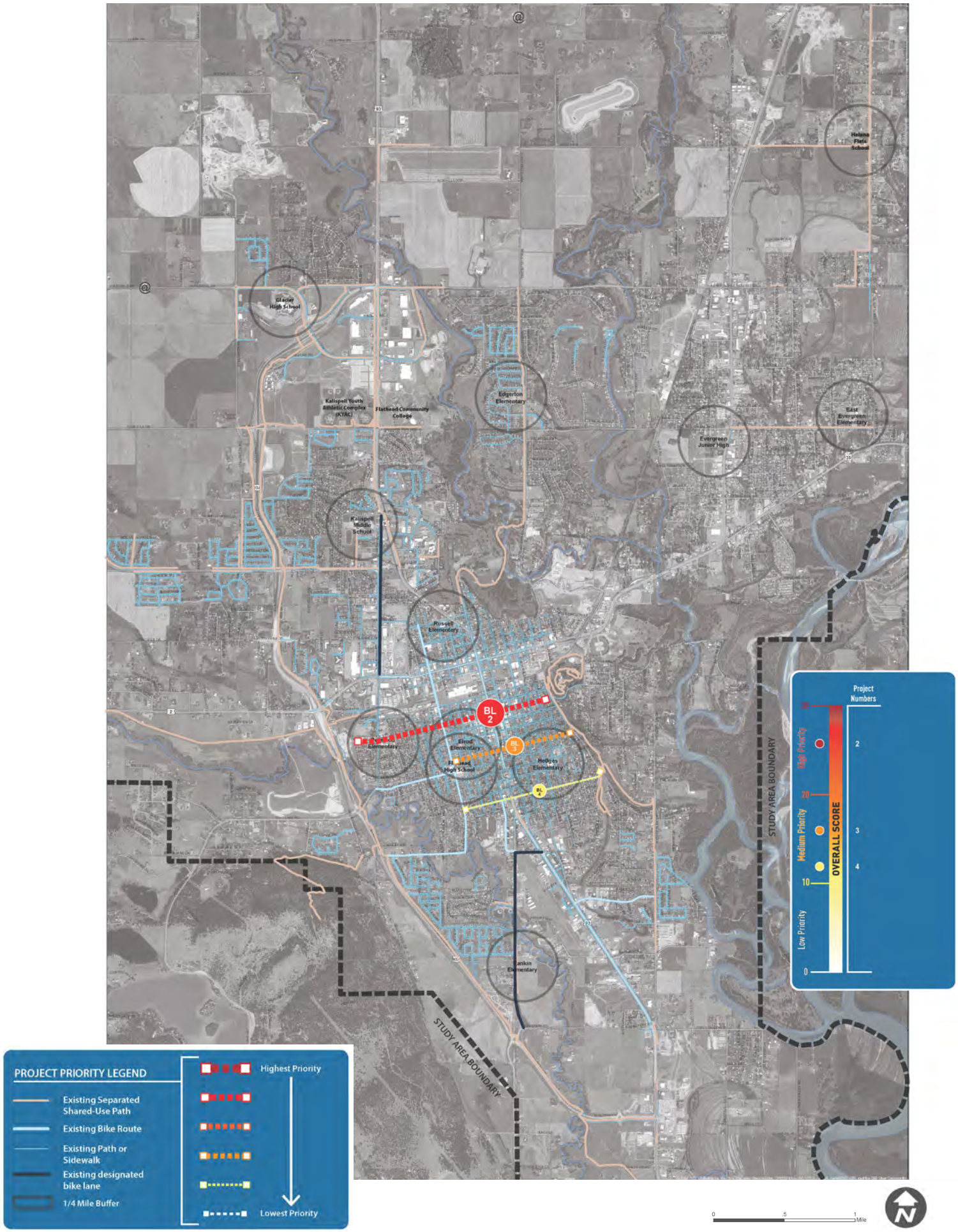


Table 9.4: Bike Routes Analysis

CRITERIA		ON-STREET BIKE ROUTE (BR) SEGMENT							
		1	2	3	4	5	6	7	11
		Corridor Description							
		New Development Connection/Jackson View Trail south	Stillwood Dr. to Pine Grove Ln. to Rose Crossing	New Development Connection/ Nob Hill Loop and south	New Development Connection/Rose Crossing to W. Reserve	Scenic Drive Extension/Rose Crossing to West Reserve	Trumble Creek Rd./Rose Crossing to Birch Grove Rd.	West Reserve to Helena Flats to West Evergreen Dr. to Hwy 2	Northland Dr./Four Mile Dr. to Parkridge Dr.
CONNECTION TYPE	Connects and supports existing neighborhoods					2		2	2
	Connects and supports future neighborhoods	1		1	1	1	1	1	1
	Connects and supports existing economic centers					2	2	2	2
	Connects and supports future economic centers	1		1			1	1	1
	Connects and supports existing recreation amenities		2						2
	Connects and supports future recreation amenities		1						1
	Facilitates localized network expansion		1			1		1	1
	Facilitates regional network expansion	1		1	1				
	Facilitates connections to future development	1		1	1	1			
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network							3	3
	Route segment located within ¼-mile school zone								3
NON-VEHICULAR CRASH TYPE	Pedestrian-involved								4
	Cyclist-involved					4		4	4
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment								4
MOBILITY EQUITY	Route segment supports an under-served neighborhood	1	1		1	1	1	1	
	Score	**5**	**5**	**4**	**4**	**12**	**5**	**15**	**28**
LENGTH	Route segment length (linear feet)	7,789	8,458	10,381	12,560	7,217	5,807	11,035	2,724
COST	Cost per linear foot	$6							
	Approximate Cost	**$46,700**	**$50,700**	**$62,300**	**$75,400**	**$43,300**	**$34,800**	**$66,200**	**$16,300**

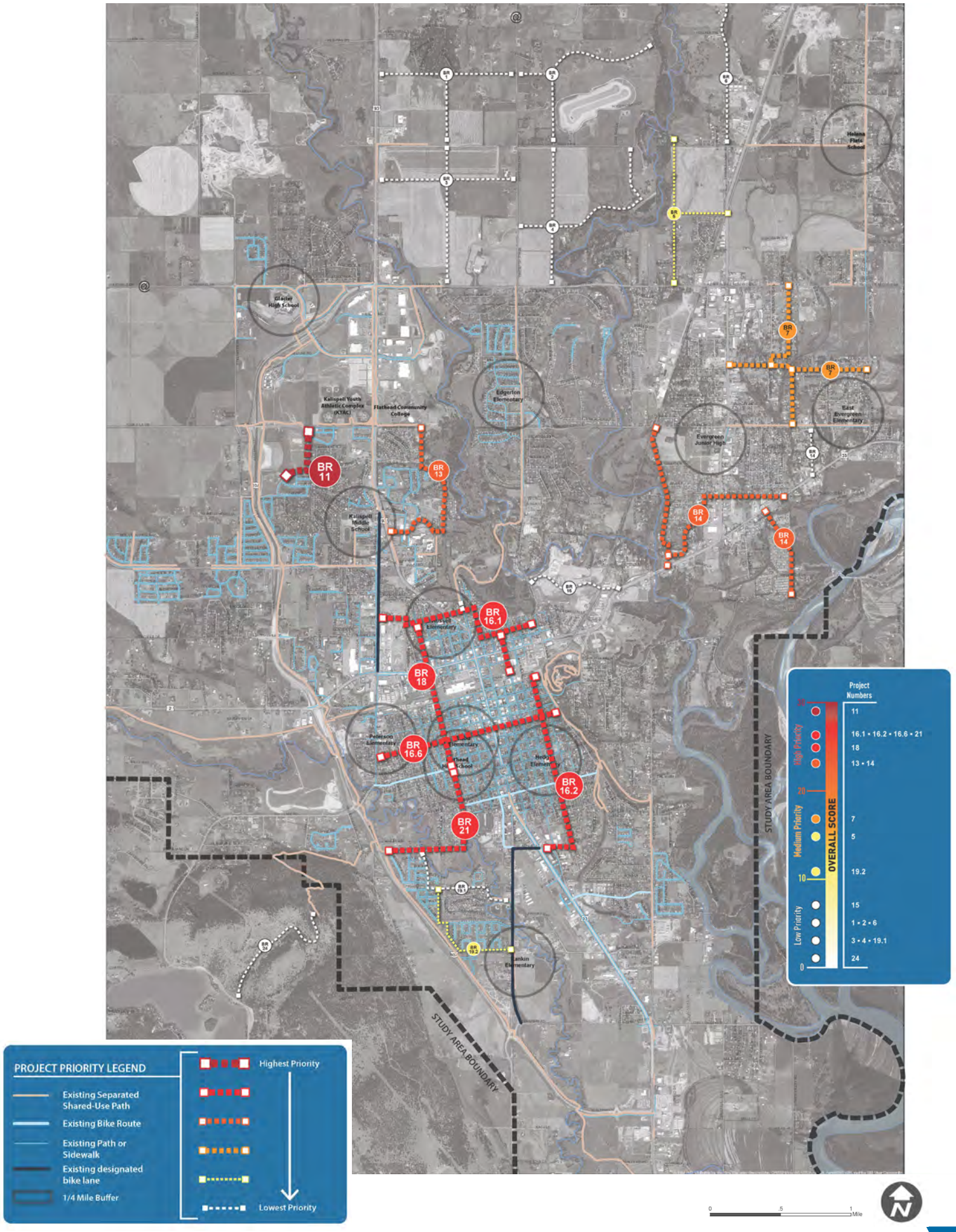
...continued on page 205

CRITERIA		ON-STREET BIKE ROUTE (BR) SEGMENT							
		13	14	15	16.1	16.2	16.6	18	19.1
		Corridor Description							
		Grandview Dr. to Sunnyview Ln./KRMC Campus	River Rd. to W. Cottonwood Dr./cont'd South of Hwy 35	Montclaire Dr./Hwy 2 to Whitefish Stage Rd.	W. Wyoming St. to E. Oregon St./N. Meridian to Whitefish Stage	Fifth Ave. East/East Center St. to 18th St. East	Fourth St./S. Meridian Rd. to Woodland Ave.	Sixth Ave./Seventh St. W. to California St.	Begg Park Dr. to Bluestone Dr. to Sunnyside Dr.
CONNECTION TYPE	Connects and supports existing neighborhoods	2	2		2	2	2	2	2
	Connects and supports future neighborhoods		1						1
	Connects and supports existing economic centers	2	2	2	2	2	2	2	
	Connects and supports future economic centers	1	1						
	Connects and supports existing recreation amenities	2		2	2	2	2	2	
	Connects and supports future recreation amenities	1						1	
	Facilitates localized network expansion	1	1		1	1	1		1
	Facilitates regional network expansion							1	
	Facilitates connections to future development								
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network	3	3		3	3	3	3	
	Route segment located within ¼-mile school zone	3			3	3	3	3	
NON-VEHICULAR CRASH TYPE	Pedestrian-involved		4	4	4	4	4	4	
	Cyclist-involved	4	4		4	4	4	4	
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment	4	4		4	4	4	4	
MOBILITY EQUITY	Route segment supports an under-served neighborhood		1						
	Score	***23***	***23***	***8***	***25***	***25***	***25***	***26***	***4***
LENGTH	Route segment length (linear feet)	6,806	16,263	2,975	8,928	8,213	2,710	5,585	5,031
COST	Cost per linear foot	$6							
	Approximate Cost	**$40,800**	**$97,600**	**$17,900**	**$53,600**	**$49,300**	**$16,300**	**$33,500**	**$30,200**

...continued on page 206

CRITERIA		ON-STREET BIKE ROUTE (BR) SEGMENT				
		19.2	21	24	25	26
		Corridor Description				
		Merganser Dr. to Stratford Dr. to Sunnyside Dr.	Sunnyside Dr. to Sixth Ave./ Hwy 93 Bypass to Seventh St.	Lone Pine Rd./Valley View Dr. to Foys Lake Rd.	Northern Lights Blvd./South of Meridian Rd.	Hawthorne Ln./South of Meridian Rd.
CONNECTION TYPE	Connects and supports existing neighborhoods	2	2			
	Connects and supports future neighborhoods	1			1	1
	Connects and supports existing economic centers		2			
	Connects and supports future economic centers				1	
	Connects and supports existing recreation amenities		2	2		
	Connects and supports future recreation amenities		1	1		
	Facilitates localized network expansion	1		1		
	Facilitates regional network expansion		1		1	1
	Facilitates connections to future development				1	1
SCHOOL FACILITIES	Supports localized safe routes to schools (SRTS) network	3	3			
	Route segment located within ¼-mile school zone	3	3			
NON-VEHICULAR CRASH TYPE	Pedestrian-involved		4			
	Cyclist-involved		4			
NON-VEHICULAR CRASH FREQUENCY	Multiple non-vehicular crashes along route segment		4			
MOBILITY EQUITY	Route segment supports an under-served neighborhood			1		1
Score		**10**	**26**	**5**	**4**	**4**
LENGTH	Route segment length (linear feet)	4,705	5,857	8,458	10,381	12,560
COST	Cost per linear foot	$6				
Approximate Cost		$28,200	$35,100	$50,700	$62,300	$75,400

Figure 9.6: On-Street Bike Routes Project Priority Map



RECOMMENDATIONS

Project Priorities

When considering project priorities for improvements to, or expansion of, bicycle and pedestrian infrastructure, it is best to consider the transportation network holistically and plan for facility upgrades in concert with TSM and MSN improvements. This approach will result in cost efficiencies and minimize unnecessary repairs or reconstruction of recently installed facilities, capitalizing on project overlap that minimizes construction length and leads to better results.

Through extensive modeling and analysis, this plan identifies priority corridor projects relating to Kalispell's specific MSN and TSM infrastructure needs. When compared to the bicycle and pedestrian connections analyzed in this chapter, overlapping priorities and project opportunities begin to emerge. The top ten corridor infrastructure projects coincide with bicycle and pedestrian improvements as shown in Table 9.5.

Overlapping priorities indicate clear direction on project goals and future transportation improvements for vehicles, bicycles, and pedestrians. The top project identified for major street network improvements is the connection between Highway 93 North at the present by-pass terminus and Highway 2 North along West Reserve Drive. While sidewalks exist sporadically along either side of West Reserve Drive, prioritized improvements resulting from this plan's recommendations afford the City an opportunity to create a safe and unified route for bikes and pedestrians as part of corridor upgrades. A shared use path in line with the suggested design shown in Figure 9.7 on page 210 is identified as one of the highest-ranking priorities for bicycle and pedestrian connectivity—this segment scored 26 points when analyzed according to the methodology introduced in the previous pages.

The top scoring bike and pedestrian facility improvement at 29 points is the corridor between the intersection of Highway 93 and Highway 2 in the heart of downtown Kalispell, and the intersection of Highway 93 and West Reserve Drive—more specifically, the segment identified as SUP 5.1 extending from the Highway 93 and 2 intersection up to Ryder Road. This corridor ranked 8th overall according to the transportation modeling, but is the 3rd highest transportation safety measure recommended in the plan. The corridor is plagued by limited right-of way, site distances, multiple uncontrolled access points, and a turn on grade. Careful analysis suggests a shared

Table 9.5: Project Priorities

Project Identifier	*Transportation Corridor*	*To*	*From*	*Project Type*	*Project Identifier*	*Non-Motorized Project Priority*
27	West Reserve Drive	Whitefish Stage	Highway 93	MSN	SUP 3.1	West Reserve/By-Pass Connection
28	West Reserve Drive	Highway 2	Whitefish Stage	MSN		
4	Four Mile Drive	Hwy 93	Northland Road	MSN	SUP 32	Four Mile Dr./Northland Dr. to Meadow Vista Loop
30	Grandview/ Evergreen	Whitefish Stage	Highway 93	MSN	SUP 4	New Connection/ Grandview Dr. to Hwy 2
6	Whitefish Stage	Rose Crossing	West Reserve	MSN	SUP 6.1	Whitefish Stage/West Reserve Dr. to Rose Crossing
26	Intersection	Highway 93	West Reserve	TSM		
33	Highway 2/Idaho	LaSalle	Hwy 93A	TSM	S 6	Hwy 2 West Connection
34	Highway 93	Highway 2	West Reserve	TSM	SUP 5.1 and SUP 5.2	Hwy 93 North/Nevada St. to Ryder Rd. and Hwy 93 North/E. Meridian to West Reserve Dr.
35	Highway 93	West Reserve	MT 40	TSM	SUP 2 and SUP 7	Hwy 93 North/West Reserve to Nob Hill Loop and Hwy 93 North/Rose Crossing to Hagerman Ln.
38	Highway 93 (Main Street)	12th Street	Highway 2 (Idaho)	TSM		

use path be constructed along the east side of the roadway to ensure both bikes and pedestrians have a safe means of travel from downtown to the hospital complex and surrounding neighborhoods. However, acquisition of right-of-way necessary to construct such a facility may not be possible; therefore alternative design recommendations have been made, for this segment and other priority non-motorized projects.

Prioritization of a new corridor connection between Grandview Drive and Whitefish Stage also aligned with bicycle and pedestrian connectivity priorities, reinforcing the potential for a shared use path in this location. While a recreational shared use path (SUP 4) is recommended for the short-term, long-term plans to construct a road in this location will result in the need for sidewalk connectivity, with an eye toward future shared-use path construction similar to that which exists along the west side of Whitefish Stage.

Other corridor projects were less aligned with bicycle and pedestrian infrastructure improvement priorities. SUP 32 connecting the Kid Sports facility with Northland Drive and Meadow Vista Loop ranked relatively low when evaluated according to the established criteria and methodology in this chapter. Similarly, shared use path connections along Highway 93 North to serve new development planned for this corridor scored low. It is important to note, however, that where improvements to the transportation network are prioritized, related bicycle and pedestrian infrastructure should also be prioritized for construction, regardless of whether it has been identified and recommended as a project priority according to this analysis. Any opportunity to close network gaps should be encouraged; using MSN and TSM corridor projects to do so ensures a cohesive transportation network is achieved over time.

Facility Design

The successful design of bicycle and pedestrian facilities is critical to the overall safety and usability of Kalispell's non-motorized network. Figure 9.7 provides guidance on the suggested design of bicycle and pedestrian facilities outlined in this plan. These design recommendations are based on industry best practice for facility construction and should be used as a baseline when determining the right treatment for a corridor improvement project, depending on the context surrounding a particular connection.

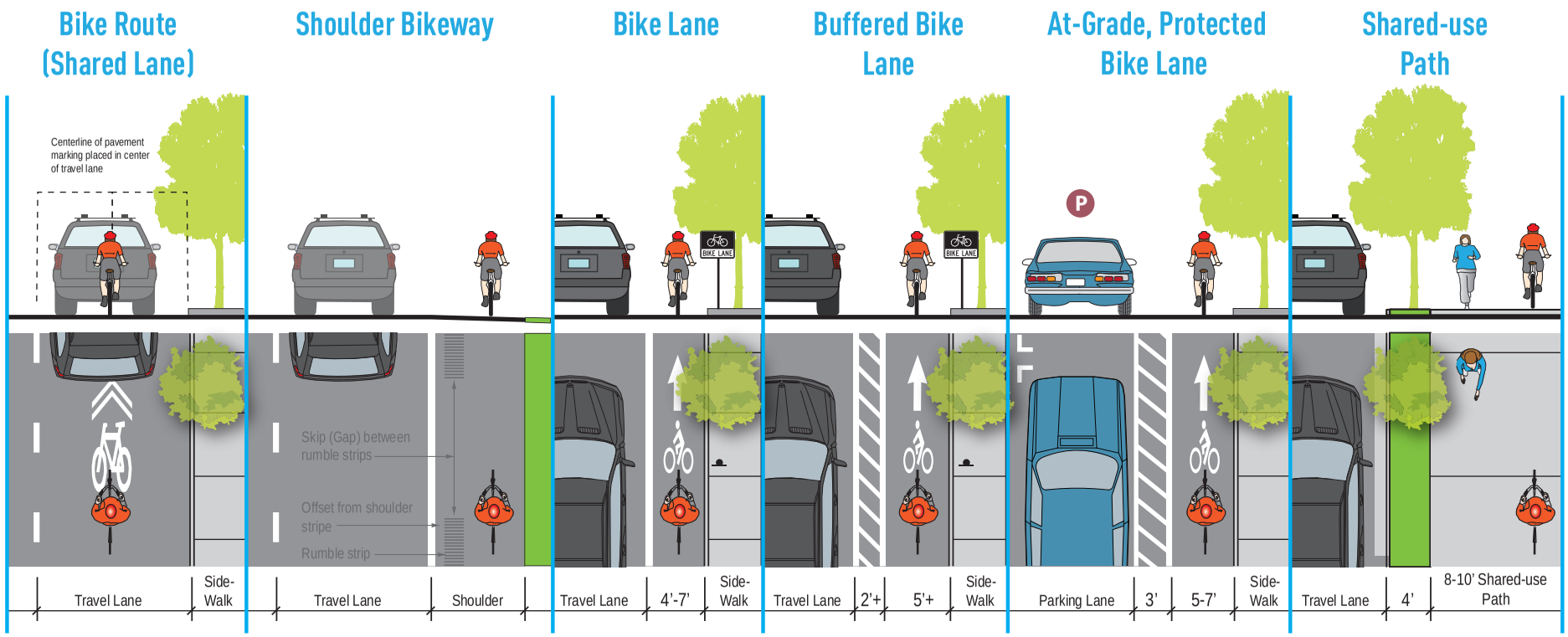
In addition to the design and construction of the connection itself, other safety and design elements should be considered to improve the experience for cyclists and pedestrians. The following toolbox expands on the cross-sections in Figure 9.7:

- **Shared Lane Markings (SLMs).** Shared lane markings, often referred to as "sharrows," are defined by the National Association of City Transportation Officials as road markings that indicate a shared lane environment for bicycles and automobiles. Sharrows reinforce the presence of bicycle traffic on the street, dictate proper bicyclist positioning, and may be configured to offer directional and wayfinding guidance. They should not be considered a substitute for bike lanes, shared use paths, or other separation treatments where these types of facilities are otherwise warranted or space permits.
- **Buffering.** Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent travel lane or parking lane. For a lane to be considered appropriately buffered it must include word or symbol markings to define the bike lane and designate that portion of the street for preferential use by bicyclists, and two solid white lines on both edges of the buffer space indicating where crossing is discouraged, though not prohibited. Additionally, where a buffer is three feet or wider, diagonal or cross-hatching shall be used to designate the space. Buffering can also be accomplished using changes in color or texture of pavement. Physically protected bike lanes are also considered "buffered" but use physical barriers like concrete, planters, or parking.

When an intersection or mid-block crossing is considered as part of a corridor improvement, the following design elements should be considered to improve bicycle and pedestrian safety:

- **Bike Boxes.** A bike box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase. This type of facility should be used in areas of high traffic and is typically designated by lines and markings, changes in color and texture, and different paving applications.
- **Crosswalk Improvements.** Improving the crosswalk experience for pedestrians is key to creating a safe and walkable environment and making successful connections throughout Kalispell's growing non-motorized network. Crosswalk treatments may include elevating the crosswalks to increase visibility and vehicular awareness of pedestrians; this also serves to slow traffic. Other paving treatments such as rumble strips or raised caps also trigger awareness of pedestrian zones. Curb extensions at corners and pedestrian refuge zones at mid-block crossings should be incorporated wherever possible, to reduce the distance a pedestrian must travel to cross the street. Additionally, signage and signaling can be used to further reinforce a crossing in the third dimension.

Figure 9.7: Bicycle Facilities



- Positions bicyclists in the travel lane
- Alerts motorists to the presence of bicyclists
- Encourages bicyclists to ride an appropriate distance away from the "door zone" on streets with parking
- Should never be used as a replacement for bicycle lanes

- Paved shoulder used as a bicycle travel lane
- Rumble strips reducs possibility that motorists will stray into bicyclists' path
- For shoulder widths equal to or greater than 4', rumble strips are encouraged
- For shoulder widths less than 4', rumble strips are usually omitted or the width of the offset from the shoulder stripe and rumble strip widths are reduced
- Skips (Gaps) in the rumble strips should be 12-13' in length every 40' - 60'

- Exclusive bicycle travel lane increases safety and promotes proper riding
- Reduces possibility that motorists will stray into bicyclists' path
- Visual reminder of bicyclists' right to the road
- 6' width recommended. 4' width in constrained locations
- Bike lanes wider than 7' may encourage vehicle loading in bike lane

- Provides cushion of space to mitigate friction with motor vehicles on streets with frequent or fast motor vehicle traffic
- Allows bicyclists to pass one another or avoid obstacles without encroaching into the travel lane
- Increases motorist shy distance from bicyclists in the bike lane
- Requires additional roadway space and maintenance
- Reduces risk of 'dooring' compared to a bike lane

- Dedicates and protects space for bicyclists and improves perceived comfort and safety
- Reduces risk of 'dooring' compared to a bike lane, and mitigates the risk of a doored cyclist being run over by a motor vehicle
- Low implementation cost through use of existing pavement using parking lane as a barrier
- Use along roadways with high motor vehicle volumes and/or speeds
- Best on streets with parking lanes with a high occupancy rate

- Planting strip adjacent to curb should be 4' min. but 6' is preferred
- Depending on volume of pedestrian and bicycle traffic, the path can be striped for two-way lanes but is not necessary.

Least Protected Facility → **Most Protected Facility**

» **Signaling.** For uncontrolled or mid-block crossings, signaling can be more effective than signage to alert drivers to pedestrians crossing. The following types of signals are recommended as best practices when implementing this plan.

- **Flashing beacons.** Flashing beacons at crosswalks can improve pedestrian safety by alerting motorists of mid-block crossings or establishing visible cues for intersections and crossings that are wide or lack sufficient facilities for pedestrian safety. Beacons can be especially useful in school zones where pedestrians are smaller and lower to the ground, creating situations where driver awareness is critical. Multiple beacon options exist, but the type most often recommended as a best practice (especially in schools zones) are the Rectangular Rapid Flash Beacons (RRFBs). These beacons use irregular flash patterns similar to those used by police vehicles, reinforcing a driver's reaction to similar stimuli by encouraging them to slow down or stop when visible. These types of beacons can be successfully installed along any roadway, from local streets to multi-lane collectors and arterials, and have been shown to drastically improve vehicle yielding compliance compared to the standard flashing yellow ball beacons formerly used in such applications.
- **HAWK Crossings.** This style of hybrid beacon, also known as a High-intensity Activated Crosswalk (HAWK), consists of a signal-head with two red lenses over a single yellow lens on the major street, and pedestrian signal heads for the minor street or trail crossing. There are no signal indications for motor vehicles on the minor street approaches. Hybrid beacons are used to improve non-motorized crossings of major streets in locations where side-street volumes do not support installation of a conventional traffic signal. Hybrid beacons can operate in areas of heavy traffic and multiple travel lanes where a RRFB would be less effective.
- **In-Road Warning Lights (IRWL).** In-road treatments alert motorists to pedestrians crossing at uncontrolled locations. Both sides of a crosswalk are lined with encased raised lights installed to be level with the asphalt; these are typically LED strobe lighting and face towards the driver. When a pedestrian enters a crosswalk, the in-pavement lighting system is activated and research has shown a decline in vehicle speed as a result.

Safe Routes to School Zones

Strategies and Recommendations

These treatments are especially important when it comes to safety for cyclists and pedestrians in school zones. Kalispell's SRTS infrastructure is well intact in the City's core, but newer school zones and areas on the periphery of the urban boundary that have seen continued growth over the past decade are less equipped with signage, signaling, and adequate bicycle and pedestrian infrastructure to ensure children arrive at their destination safely. One of the higher priority shared use path connections identified through this analysis was SUP 29 along the west side of Highway 2 as it extends north through Evergreen. This corridor has limited sidewalks and crosswalks and many uncontrolled access points along and adjacent to Evergreen Junior High School. Moving west into the neighborhoods, sidewalks become intermittent or non-existent and road infrastructure fails to designate routes that are safest and most appropriate for bikes. Signaling, signage, and implementation of crosswalk infrastructure is key for this area; focusing sidewalk improvements in and around Evergreen Junior High, as well as in neighborhoods surrounding East Evergreen Elementary (also a high ranking priority connection in SUP 30) will help to improve safety and walkability for the students served.

School zone expansion is another recommendation that may improve overall access for students in those parts of the City experiencing rapid development. Designated school zones surrounding Hedges Elementary, Elrod Elementary, Russel Elementary, and Flathead High School are all served by a cohesive network of sidewalks, well-signed crosswalks, and signaling. Select intersections along the 5th Avenue West corridor may require improvements in the future, but for the most part these facilities meet the safety needs of those students walking and biking to school. Edgerton Elementary School is also well served by sidewalk network and signage, and easily accessed by adjacent neighborhoods using the shared use path currently in place along the west side of Whitefish Stage Road.

As one moves beyond the downtown core, however, the SRTS network begins to break down. The deficiencies surrounding Evergreen Junior High School have been previously discussed, but of note are the limited bicycle and pedestrian facilities available to serve Peterson Elementary School, Kalispell Middle School, East Evergreen Elementary, and Glacier High School. Some of these schools are newer and located in areas where residential growth has occured more recently. Even with this newer development, limited sidewalk networks add to the difficulty in moving pedestrians—especially school-aged children—safely to their destination. Considering schools like Helena Flats and Rankin Elementary, an expanded

school zone may be necessary to account for the larger geographies and less dense development these institutions are serving. While the typical school zone for SRTS treatment is a 1/4 mile radius, in the exurban areas an expanded 1/2 mile radius may be appropriate to reinforce walk-ability and bike-ability for students. City policy requiring sidewalks for all new development and prioritizing sidewalk infrastructure expansion on an annual bases for those areas previously built-out but which do not have sidewalks will aide in creating a cohesive SRTS network over time.

General Best Practice

The Plan/Policy Relationship

With any planning effort it is important that priority recommendations acknowledge the realities of federal, state, and local policy. Integrating plans and priorities for bicycle and pedestrian improvements provides the City with a consistent means to approach capital planning and budgeting for infrastructure needs and reinforce the importance of these facilities and connections to the overall transportation network. Identification and prioritization of bicycle and pedestrian facilities ensures that improvements are considered as future development occurs or as state and federally-funded road improvement projects are undertaken. The City recently developed a comprehensive bicycle and pedestrian plan that provides more detailed guidance on facility construction, management, and maintenance, dovetailing with recommendations included in this plan. This policy will serve as an important tool to guide day-to-day decision-making and direct improvements that may be driven by private development or public desire in the short, mid, and long-term plan horizon.

In developing these recommendations, the policy directives of the state transportation department were also considered. On-system improvements within MDT right of way must be coordinated with MDT to comply with policies and design standards, meaning further analysis to determine feasibility of these facilities on a case by case basis will be required. MDT generally recommends these facilities be located outside of state-owned right of way whenever possible. However, in some instances state right-of-way is the only feasible option to ensure facility construction and connectivity. Additionally, bicycle and pedestrian facilities are acknowledged and supported by the 2017 TranPlan MT.

Municipalities and other local jurisdictions are typically responsible for planning, constructing, and maintaining pedestrian and bicycle facilities. As previously discussed, identifying key connections and priority projects allows MDT to consider and plan for these projects as part of MDT facility improvements, or as non-MDT project encroachments. Because there are limited federal funds available for the construction of pedestrian and bicycle facilities, MDT evaluates bicycle and pedestrian projects viability based on long-term ownership and maintenance responsibility, transportation purpose, location in proximity to city limits and urban (developing) areas, enhancement of traffic safety, connectivity, impact to the Highway State Special Revenue Account, and cost. MDT's planning, engineering, and maintenance divisions also work together to identify paths in need of repairs and consider the timing for inclusion in the scope of work for future projects where right-of-way overlaps.

As pedestrian facilities are considered in the planning and project development process, it is imperative that equitable access to all transportation users be considered. According to MDT's ADA Transition Plan, the department is committed to creating and supporting an accessible transportation system throughout the state by removing barriers to access along MDT controlled, federal-aid eligible routes. Ensuring connectivity of all residents and mobility types automatically alleviates a physical barrier to access, such as that which is present in places like Evergreen within this transportation plan. However, many routes in Evergreen are locally-controlled and will require coordination between state and local governments to ensure these accessibility benchmarks are met.

Construction and Maintenance

The fiscal realities of facility construction and maintenance weigh heavily on capital improvements planning efforts, and must be taken into consideration given other priorities and the context in which each facility exists. While bike routes and lanes are less fiscally burdensome to plan and budget for, the construction of new sidewalks and shared use paths is significantly more expensive and must be balanced with the needs of the overall transportation network, available funding mechanisms, and long-term maintenance projections.

Planning and budgeting for infrastructure maintenance can be equally challenging. Shared use paths typically require greater capital maintenance activities with age, often needing full reconstruction at some point in their lifetime. Some jurisdictions focus on eventual reconstruction and treat this as a maintenance item to be budgeted for, whereas others treat this as a separate capital project to be considered in the future. There is no right or wrong way to approach maintenance, but having a consistent plan for ongoing and necessary improvements is vital to keeping the non-motorized network safe and effective. Bicycle and pedestrian infrastructure is important but will only serve its purpose if kept in working order.

Given these considerations and the overall recommendations, the TAC felt it was important to identify key policy decisions affecting the implementation of this plan.

» Bike routes and bike lanes identified will not be implemented until the roadway is updated to meet the necessary widths and acceptable design standards approved by Public Works.

» There will be no additional symbols placed in the road way to identify bike routes at this time. Pending additional resources to support the Public Works Department in the application and upkeep required for bike route signage and pavement markings, these symbols will serve as a recommendation only and not be prioritized for implementation.

» Designated bike lanes and bike routes shall not receive special or additional snow plowing or deicing treatment outside of the City's current Policy and Procedure Manual for Snow and Ice Removal at this time. While this does not preclude a facility identified from being implemented, it is important that the public understand the seasonality of bike routes and lanes. Without additional resources to add plowing and deicing capacity, users should not expect clear bike lanes through winter months.

MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 10: FUNDING PROGRAMS

INTRODUCTION

This element of Move 2040 provides a general overview of transportation funding relevant to the study area. Most transportation dollars directed to the study area are derived from federal and state sources. MDT administers several programs that are funded from state and federal sources. The City of Kalispell is dependent on a number of these programs to support transportation infrastructure investments. Additionally, the City of Kalispell uses a street maintenance fund to support operations and maintenance projects. As recommended earlier in this plan, the City of Kalispell should consider an Arterial and Collector Special Assessment policy to support future transportation investments.

Each year, in accordance with Montana Code Annotated (MCA) 60-2-127 the Montana Transportation Commission allocates a portion of available federal-aid highway funds for construction purposes and for projects located on the various systems in the state as described throughout this document.

The Fixing America's Surface Transportation Act (FAST Act) was signed into law on December 4, 2015, and authorizes federal transportation funding for federal fiscal years 2016 through 2020. Funding sources and allocations changes with each authorization and may vary following completion of the next federal authorization.

Federal Funding Sources

The following sections summarize relevant federal transportation funding categories received by the state through US Code Title 23 and US Code Title 49, including state developed implementation or sub-programs that may be potential sources for projects. To receive project funding under these programs, projects must be included in the State Transportation Improvement Program (STIP), where relevant.

National Highway Performance Program

The National Highway Performance Program (NHPP) funds are federally apportioned for the NHS roads and bridges, which includes the Interstate and non-Interstate NHS routes. The purpose of the NHS is to provide an interconnected system of principal arterial routes which will serve major population centers, international border crossings, intermodal transportation facilities, and other major travel destinations; meet national defense requirements; and serve interstate and interregional travel. The NHS includes all Interstate routes, a large percentage of urban and rural principal arterials, the defense strategic highway network, and strategic highway connectors.

Allocations and Matching Requirements

NHPP funds are federally-apportioned to Montana and allocated to financial districts based on need by the Montana Transportation Commission. Also, consideration is given to balancing needs using the MDT Performance Programming Process. Based on system performance, the funds are allocated to three programs:

- Interstate Maintenance
- National Highway System (Non-Interstate)
- NHPP Bridge

Figure 3.3 and Figure 3.5 in the Existing Conditions chapter shows the roadways eligible for NHPP funds.

Eligibility and Planning Considerations

Activities eligible for NHPP funding include:

- Construction, reconstruction, resurfacing, restoration, and rehabilitation of roadways on the NHS.
- Construction, replacement, rehabilitation, preservation and protection of NHS bridges.
- Projects or part of a program supporting national goals for improving infrastructure condition, safety, mobility, or freight movements on the NHS.
- Operational improvements and highway safety improvements are also eligible.
- Other miscellaneous activities that may qualify for NHPP funding include bikeways and pedestrian walkways, environmental mitigation, restoration and pollution control, infrastructure based intelligent transportation systems, vehicle-to-infrastructure communication equipment, traffic and traveler monitoring and control, and construction of intra or inter-city bus terminals serving the NHS.

The Transportation Commission establishes priorities for the use of NHPP funds and projects are let through a competitive bidding process.

Surface Transportation Block Grant Program

Surface Transportation Block Grant Program (STBG) funds are federally apportioned to Montana and allocated by the Montana Transportation Commission to various programs including the Surface Transportation Program Primary Highways (STPP), Surface Transportation Program Secondary Highways (STPS), the Surface Transportation Program Urban Highways (STPU), and the Surface Transportation Program – Bridge Program (STPB), as well as set-asides for programs including Transportation Alternatives (TA) and Recreational Trails (RT). The federal share for these projects is 86.58 percent with the state

share typically funded through a Highway State Special Revenue Account (HSSRA).

The Montana Transportation Commission establishes priorities for the use of STBG funds and projects are let through a competitive bidding process.

Primary Highway System (STPP)[1]

The federal and state funds available under this program are used to finance transportation projects on the state-designated Primary Highway System. The Primary Highway System includes highways that have been functionally classified by MDT and FHWA as either principal or minor arterials and that have been selected by the Montana Transportation Commission to be placed on the primary highway system MCA 60-2-126(b).

Allocations and Matching Requirements

Primary funds are distributed statewide (MCA 60-3-205) to each of five financial districts. The Commission distributes STPP funding based on system performance. The federal share for this program is 86.58 percent and the State is responsible for the remaining 13.42 percent. The state share is funded through the HSSRA.

Eligibility and Planning Considerations

STPP funds are eligible for resurfacing, rehabilitating or reconstructing roads and bridges on the Primary System.

Secondary Highway System (STPS)[2]

The federal and state funds available under this program are used to finance transportation projects on the state-designated Secondary Highway System. The Secondary Highway System includes any highway that is not classified as a local route or rural minor collector and that has been selected by the Montana Transportation Commission to be placed on the Secondary Highway System. Funding is distributed by formula and is utilized to resurface, rehabilitate, and reconstruct roadways and bridges on the Secondary System.

Allocations and Matching Requirements

Secondary funds are distributed statewide (MCA 60-3-206) to each of five financial districts, based on a formula, which takes into account the land area, population, road mileage, and bridge square footage. Federal funds for secondary highways must be matched by non-Federal funds. The federal share for this program is 86.58 percent and the State is responsible for the remaining 13.42 percent. Normally, the match on these funds is from the HSSRA.

Eligibility and Planning Considerations

Eligible activities for the use of Secondary funds fall under three major types of improvements: reconstruction, rehabilitation, and pavement preservation in addition to vehicle-to-infrastructure communication equipment. The reconstruction and rehabilitation categories are allocated at 65 percent of the program funds with the remaining 35percent dedicated to pavement preservation. Priorities are identified in consultation with the appropriate local government and approved by the Montana Transportation Commission.

Urban Highway System (STPU)[3]

The federal and state funds available under this program are used to finance transportation projects on Montana's Urban Highway System (MCA 60-3-211). STPU allocations are based on a per capita distribution and are recalculated each decade following the census.

Allocations and Matching Requirements

State law guides the allocation of STPU funds to Montana's urban areas (population of 5,000 or greater) through a statutory formula based on each area's population compared to the total population in all urban areas. The federal share for this program is 86.58 percent and the State is responsible for the remaining 13.42 percent. The state share is funded through the HSSRA.

Table 10.1: Montana's Urban Areas

Anaconda	Columbia Falls	Helena	Miles City
Belgrade	Kalispell	Glendive	Missoula
Billings	Great Falls	Laurel	Sidney
Bozeman	Hamilton	Lewistown	Whitefish
Butte	Havre	Livingston	

1 State funding program developed to distribute Federal funding within Montana.

2 State funding program developed to distribute Federal funding within Montana.

3 State funding program developed to distribute Federal funding within Montana.

Eligibility and Planning Considerations

STPU funds are eligible for rehabilitation, resurfacing, reconstruction of existing facilities, operational improvements, vehicle-to-infrastructure communication equipment, bicycle facilities, pedestrian walkways, carpool projects, and traffic operation projects on the 430 miles of the State-designated Urban Highway System. Priorities for the use of STPU funds are established at the local level through local planning processes with final approval by the Montana Transportation Commission.

Bridge Program (STPB)

The federal and state funds available under this program are used to finance bridge projects for on-system and off-system routes in Montana. Title 23 U.S.C. requires that a minimum amount (equal to 15 percent of Montana's 2009 Federal Bridge Program apportionment) be set aside for off-system bridge projects. The remainder of the Bridge Program funding is established at the discretion of the state. Bridge Program funds are primarily used for bridge rehabilitation or reconstruction activities on Primary, Secondary, Urban, or off-system routes. Projects are identified based on bridge condition and performance metrics.

UPP[1]

The UPP is a sub-allocation of the larger Surface Transportation Program that provides funding to urban areas with qualifying Pavement Management Systems (as determined jointly by MDT and FHWA). This sub-allocation is approved annually by the Transportation Commission and provides opportunities for pavement preservation work on urban routes (based on system needs identified by the local Pavement Management Systems).

Set-Aside (Previously "Transportation Alternatives (TA) Program" under MAP-21)

The Set-Aside Program (TA) requires MDT to obligate 50 percent of the funds within the state based on population, using a competitive process, while the other 50 percent may be obligated in any area of the state.

Funds may be obligated for projects submitted by:

- Local governments
- Transit agencies
- Natural resource or public land agencies
- School district, schools, or local education authority
- Tribal governments
- Other local government entities with responsibility for recreational trails for eligible use of these funds

Eligibility and Planning Considerations

Eligible categories include:

- On-road and off-road trail facilities for pedestrians and bicyclists, including ADA improvements.
- Historic Preservation and rehabilitation of transportation facilities.
- Archeological activities relating to impacts for a transportation project.
- Any environmental mitigation activity, including prevention and abatement to address highway related stormwater runoff and to reduce vehicle/animal collisions including habitat connectivity.
- Turnouts, overlooks, and viewing areas.
- Conversion/use of abandoned railroad corridors for trails for non-motorized users.
- Inventory, control, and removal of outdoor advertising.
- Vegetation management in transportation right of way for safety, erosion control, and controlling invasive species.
- Construction, maintenance, and restoration of trails and development and rehabilitation of trailside and trailhead facilities.
- Development and dissemination of publications and operation of trail safety and trail environmental protection programs.
- Education funds for publications, monitoring, and patrol programs and for trail-related training.
- Planning, design, and construction of projects that will substantially improve the ability of students to walk and bicycle to school.
- Non-infrastructure-related activities to encourage walking and bicycling to school, including public awareness campaigns, outreach to press and community leaders, traffic education and enforcement near schools, student sessions on bicycle and pedestrian safety, health, and environment, and funding for training.

Competitive Process

The State is required to allocate TA funds through a competitive process which allows eligible applicants an opportunity to submit projects for funding. MDT's process emphasizes safety, ADA, relationships to State and community planning efforts, existing community facilities, and project readiness.

1 State funding program developed to distribute Federal funding within Montana.

National Highway Freight Program

The National Highway Freight Program (NHFP) was created by the FAST Act to invest in freight projects on the National Highway Freight Network. This program is apportioned to states by formula and a state must have had a freight plan in place beginning FY 2018 to receive formula funding. Activities eligible for NHFP funding include planning, environmental review, preliminary engineering, design work, construction, reconstruction, rehabilitation work and/or operational improvements that directly result in improved system performance – as well as interchange improvements, truck-only lanes, shoulder widening, traffic signal optimization, highway ramp metering and roadway capacity projects (that address freight bottlenecks). Generally, the federal share for this program is 91.24 percent and the State is responsible for the remaining 8.76 percent. The State share is typically funded through the HSSRA for projects on state highways and local governments provide the match for local projects.

Highway Safety Improvement Program

Highway Safety Improvement Program (HSIP) funds are apportioned to Montana for safety improvement projects approved by the Commission and are consistent with the strategic highway safety improvement plan. In Montana, the primary focus of the HSIP program involves identifying locations with crash trends (where feasible countermeasures exist) and prioritizing work according to benefit/cost ratios. However, MDT also advances systemic improvements (such as rumble strip projects, curve signing and wrong-way warnings) to address safety issues at the network level. Additionally, a portion of Highway Safety Improvement Program funds are designated to improve safety at railroad crossings via the installation of protective devices or the elimination of hazards. The Commission approves and awards the projects which are let through a competitive bidding process. Generally, the federal share for the HSIP projects is 90 percent and the State is responsible for the remaining 10 percent. Typically, the state share is funded through the HSSRA.

Congestion Mitigation and Air Quality Improvement Program

Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds available under this program are used to finance transportation projects and programs to help improve air quality and meet the requirements of the Clean Air Act. Montana's air pollution problems are attributed to carbon monoxide (CO) and particulate matter 10 micrometers or less in diameter (PM_{10}).

Allocations and Matching Requirements

CMAQ funds are federally-apportioned to Montana and allocated to various eligible programs by formula and by the Commission. As a minimum apportionment state, a federally-required formula based distribution of CMAQ funds goes to projects in Missoula since it was Montana's only designated and classified air quality non-attainment area. The remaining, non-formula funds, referred to as "flexible CMAQ" are primarily directed to areas of the state with emerging air quality issues through various state programs. The Commission approves and awards all projects on MDT right-of-way. Infrastructure and capital equipment projects are let through a competitive bidding process. The federal share for this program is 86.58 percent and the State is responsible for the remaining 13.42 percent. The state share is funded through the HSSRA for projects on state highways and local governments provide the match for local projects.

Eligibility and Planning Considerations

In general, eligible activities include transit improvements, ADA upgrades, traffic signal synchronization, bicycle pedestrian projects, intersection improvements, travel demand management strategies, traffic flow improvements, air-quality equipment purchases, vehicle-to-infrastructure communication equipment, and public fleet conversions to cleaner fuels. At the project level, the use of CMAQ funds is not constrained to a particular system (i.e., Primary, Urban, and NHS). A requirement for the use of these funds is the estimation of the reduction in pollutants resulting from implementing the program/project. These estimates are reported yearly to the FHWA.

CMAQ (Formula)

Mandatory CMAQ funds that come to Montana based on a Federal formula are directed to Missoula, Montana's only classified, moderate CO non-attainment area. Projects are prioritized through the Missoula metropolitan planning process.

Montana Air and Congestion Initiative–Guaranteed Program (Flexible)[1]

The Montana Air and Congestion Initiative (MACI) – Guaranteed Program is a state program funded with flexible CMAQ funds that the Commission allocates annually to Billings and Great Falls to address carbon monoxide issues in these designated, but "not classified", CO non-attainment areas. The air quality in these cities is roughly equivalent to Missoula. However, these cities are "not classified" so they do not get direct funding through the federal formula. Projects are prioritized through the respective Billings and Great Falls metropolitan planning processes.

1 State funding program developed to distribute Federal funding within Montana.

Montana Air and Congestion Initiative– Discretionary Program (Flexible)[1]

The MACI – Discretionary Program provides funding for projects in areas designated non-attainment or recognized as being "high-risk" for becoming non-attainment. Since 1998, MDT has used MACI-Discretionary funds to get ahead of the curve for CO and PM_{10} problems in non-attainment and high-risk communities across Montana. District administrators and local governments nominate projects cooperatively. Projects are prioritized and selected based on air quality benefits and other factors. The most beneficial projects to address these pollutants have been sweepers and flushers, intersection improvements and signal synchronization projects.

Federal Lands Access Program

The Federal Lands Access Program (FLAP) was created by the "Moving Ahead for Progress in the 21st Century Act" (MAP-21) to improve access to federal lands and is continued in the FAST Act. FHWA's Western Federal Lands Division administers the program and MDT is an eligible applicant for the funds.

The program is directed towards public highways, roads, bridges, trails, and Ttansit systems that are under state, county, town, township, tribal, municipal, or local government jurisdiction or maintenance and provide access to federal lands. FLAP funds improvements to transportation facilities that provide access to, are adjacent to, or are located within federal lands. The program supplements state and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators. Program funds are subject to the overall federal-aid obligation limitation. Funds are allocated among the states using a statutory formula based on road mileage, number of bridges, land area, and visitation.

Eligibility and Planning Considerations

The following activities are eligible for consideration on federal lands access transportation facilities:

- Preventive maintenance, rehabilitation, restoration, construction, and reconstruction.
- Adjacent vehicular parking areas.
- Acquisition of necessary scenic easements and scenic or historic sites.
- Provisions for pedestrian and bicycles.
- Environmental mitigation in or adjacent to Federal land to improve public safety and reduce vehicle-wildlife mortality while maintaining habitat connectivity.
- Construction and reconstruction of roadside rest areas, including sanitary and water facilities.
- Operation and maintenance of transit facilities.

Proposed projects must be located on a public highway, road, bridge, trail or transit system that is located on, is adjacent to, or provides access to Federal lands for which title or maintenance responsibility is vested in a state, county, town, township, tribal, municipal, or local government.

Allocation and Matching Requirements

The federal share for this program is 86.58 percent and the State provides match for projects on state highways that address MDT identified infrastructure condition deficiencies; local governments provide the match for off-system projects. The state share is funded through the HSSRA. Funding is authorized and allocated for each state under U.S.C. Title 23, Chapter 2, MAP-21, Division A, Title I, Subtitle A, Section 1119 distribution formula.

Congressionally-Directed or Discretionary Funds

Congressionally-directed funds may be received through highway program authorization or annual appropriations processes. These funds are generally described as "demonstration" or "earmark" funds. Discretionary funds are typically awarded through a federal application process or Congressional direction. If a locally-sponsored project receives these types of funds, MDT will administer the funds in accordance with the Montana Transportation Commission Policy #5 – "Policy resolution regarding Congressionally-directed funding: including Demonstration Projects, High Priority Projects, and Project Earmarks."

Nationally Significant Freight and Highway Projects

This program was also established by the FAST Act to create competitive grants or Transportation Infrastructure Finance and Innovation Act (TIFIA) loans for projects greater than $100 million. This is a discretionary freight-focused grant program that allows states, metropolitan planning organizations, local governments, tribal governments, special purpose districts, public authorities (including port authorities), and other parties to apply for funding to complete projects that improve safety and hold the greatest promise to eliminate freight bottlenecks and improve critical freight movements. Generally, the federal share for this program is 91.24 percent and the State is responsible for the remaining 8.76 percent. The State provides match for projects on state highways that addresses MDT identified infrastructure condition deficiencies; local

1 State funding program developed to distribute Federal funding within Montana.

governments provide the match for off-system projects. The state share is typically funded through the HSSRA.

Eligible Activities

- Highway freight projects on the National Highway Freight Network.
- NHS highway/bridge projects, projects in National Scenic Areas.
- Freight rail/intermodal/port projects.
- Rail-highway grade crossings or grade separation projects.

Transit Capital & Operating Assistance Funding

The MDT Transit Section provides federal and state funding to eligible recipients through federal and state programs. Federal funding is provided through the Section 5310 and Section 5311 transit programs and state funding is provided through the TransADE program. MAP-21 incorporated the JARC and New Freedoms Programs into the Section 5311 and 5310 programs, respectively. It also created a new bus and bus facilities discretionary formula program (Section 5339) for fixed route bus operators. All projects funded must be derived from a locally developed, coordinated public transit-human services transportation plan (a "coordinated plan").

The coordinated plan must be developed through a process that includes representatives of public, private, and nonprofit transportation and human service providers and participation from the public.

Bus and Bus Facilities (Section 5339)

This program provides capital funding to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities. Federal funds pay 80 percent of capital costs. The remaining 20 percent must come from the local recipient. Funds are eligible to be transferred by the state to supplement urban and rural formula grant programs (5307 and 5311, respectively).

Enhanced Mobility of Seniors and Individuals with Disabilities (Section 5310)

Section 5310 authorizes capital grants to eligible organizations to assist in providing transportation for the elderly and/or persons with disabilities. Federal Transit Administration (FTA) funds 80 percent of all costs for equipment, with 20 percent match provided by the local recipient. Eligible recipients for this program are private, nonprofit organizations; public bodies approved by the State to coordinate services for elderly persons; and persons with disabilities; or public bodies which certify to the Governor that no nonprofit organization is readily available in a service area to provide this transportation service. Ten percent of the state's Section 5310 apportionment can be used to administer the program, to plan, and to provide technical assistance.

Formula Grants for Rural Areas (Section 5311)

This program enhances the access of people in non-urbanized areas by providing public transportation. Federal funds pay 86.58 percent of capital costs and 54.11 percent of deficit operating costs, 80 percent of administrative costs, and 80 percent of maintenance costs. The remaining 13.42, 45.89, 20, and 20 percent respectively must come from the local recipient. Eligible recipients of these funds can be a state agency, a local public body, a nonprofit agency, or an operator of public transportation services. Ten percent of the state's Section 5311 apportionment is dedicated to carry out a program to develop and support intercity bus transportation.

State Funding Sources

Rail/Loan Funds

Administration and Matching Requirements

The Montana Rail Freight Loan Program (MRFL) is a revolving loan fund administered by the Montana Department of Transportation to encourage projects for construction, reconstruction, or rehabilitation of railroads and related facilities in the state and implements MCA 60-11-113 to MCA 60-11-115. Loans are targeted to rehabilitation and improvement of railroads and their attendant facilities, including sidings, yards, buildings, and intermodal facilities. Rehabilitation and improvement assistance projects require a 30 percent loan-to-value match. Facility construction assistance projects require a 50 percent match.

Eligibility and Planning Consideration

Eligible applicants for loans under the program include railroads, cities, counties, companies, and regional rail authorities. Port authorities may also qualify, provided they have been included in the state transportation planning process. Projects must be integrally related to the railroad transportation system in the state and demonstrate that they will preserve and enhance cost-effective rail service to Montana communities and businesses.

TransADE

The TransADE grant program offers operating assistance to eligible organizations providing transportation to the elderly and persons with disabilities.

Allocations and Matching Requirements

This is a state funding program within Montana statute. State funds pay 54.11 percent of deficit operating costs, 80 percent of administrative costs, and 80 percent of maintenance costs. The remaining 45.89, 20, and 20 percent respectively must come from the local recipient. Applicants are also eligible to use this funding as match for the federal transit grant programs.

Eligibility and Planning Considerations

Eligible recipients of this funding are counties, incorporated cities and towns, transportation districts, or non-profit organizations. Applications are due to the MDT Transit Section by the first working day of March each year. To receive this funding the applicant is required by state law (MCA 7-14-112) to develop a strong, coordinated system in their community and/or service area.

State Funds for Transit Subsidies

The 46th Montana Legislature amended Section 7-14-102 MCA providing funds to offset up to 50 percent of the expenditures of a municipality or urban transportation district for public transportation. The allocation to operators of transit systems is based on the ratio of its local support for public transportation to the total financial support for all general purpose transportation systems in the State. Local support is defined as:

$$\text{LOCAL SUPPORT} = \frac{\text{Expenditure for public transportation operations}}{\text{Mill value of City or urban transportation district}}$$

State Fuel Tax Allocations

The State of Montana assesses a tax on each gallon of gasoline and clear diesel fuel sold in the state and used for transportation purposes. According to State law, each incorporated city and town within the State receives an allocation of the total tax funds based upon:

1. the ratio of the population within each city and town to the total population in all cities and towns in the State, and
2. the ratio of the street mileage within each city and town to the total street mileage in all incorporated cities and towns in the State. (The street mileage is exclusive of the Federal-Aid Interstate and Primary Systems.)

State law also establishes that each county be allocated a percentage of the total tax funds based upon:

1. the ratio of the rural population of each county to the total rural population in the state, excluding the population of all incorporated cities or towns within the county and State;
2. the ratio of the rural road mileage in each county to the total rural road mileage in the State, less the certified mileage of all cities or towns within the county and State; and
3. the ratio of the land area in each county to the total land area of the State.

Effective July 1, 2017, HB473, the Bridge and Road Safety and Accountability Act (BaRSAA) incrementally increases Montana's fuel tax rate for gasoline and for special fuel. HB473 directs the fuel tax rate increase each biennium, until 2023, at the following increments as shown in Table 10.2.

Table 10.2: BaRSAA Increases

Date	State Gas Rate	State Diesel Rate
July 1, 2017	0.315	0.2925
July 1, 2019	0.32	0.2945
July 1, 2021	0.325	0.2955
July 1, 2023	0.33	0.2975

A portion of the revenue generated by the increase will be allocated to local governments in addition to the existing fuel tax distributions provided for in MCA 15-70-101 and 7-14-102(2). BaRSAA funds are allocated in the same proportion and using the same ratios provided for in MCA 15-70-101(2)(b), (2)(c), and (3). Allocations are calculated based upon the statutory formula.

Local governments can use BaRSAA funds for the construction, reconstruction, maintenance, and repair of rural roads or city streets and alleys the local government has the responsibility to maintain which does not include the purchase of capital equipment. Funds may also be used to match federal funds used for the construction of roads and streets that are part of the national, primary, secondary or urban highway systems; or road and streets a local government has the responsibility to maintain.

Beginning March 1, 2018, local governments have been able to request distribution of their allocation from MDT. Local governments must match each $20 requested for distribution with at least $1 of local government budgeted matching funds. Local governments can request distributions of allocated funds between March 1 and November 1 of the calendar year the funds were allocated. Reservation requests can be made between September 1st and November 1st.

For State Fiscal Year 2020, the City of Kalispell will receive $390,204. 41 and Flathead County will receive $ 484,914.69 from MCA 15-70-101 and $ 5,767.30 from MCA 7-14-102(2) for a total of $ 490, 681.99 in State fuel tax funds. The amount varies annually. For calendar year 2020, the City of Kalispell will be allocated $445,646.47 and Flathead County will be allocated $ 553,813.64 in BaRSAA funds.

Priorities for the use of these funds are established by each jurisdiction.

Summary of Move 2040 Funding

As discussed in Chapter 7, Move 2040-identified TSM and MSN recommendations exceeding $200 million of roadway costs.

Expenditures will far outstrip revenues over the 20-year planning horizon. Assuming only federal, state and local funds available to the City of Kalispell and Flathead County, more than 70 percent of transportation needs identified in this plan remain unfunded.

MDT's asset management-based funding approach will account for some portion of system needs identified in this plan.

MOVE 2040

Kalispell Area Transportation Plan

CHAPTER 11: POLICY PLAN

INTRODUCTION

The Policy Plan element of Move 2040 provides the City of Kalispell policy guidance to support development of the transportation system. The Plan encompasses the priorities and policy direction established within other local plans, and leverages collaboration with stakeholders and agency partners to set forth a vision for mobility, accessibility, and connectivity that will serve the community for decades to come.

The Transportation Policy Plan covers several policy areas that will support the economic success and vibrancy of the Kalispell Urban Area. The policy areas included in the Plan are summarized below:

- **Downtown-Highway 93 Main Street:** Discusses the redevelopment of Kalispell's downtown with a focus on the U.S. Highway 93/Main Street corridor.
- **Future Functional Class Map:** Presents and discusses Kalispell's future functional class map.
- **Typical Street Cross Sections:** Presents street cross section concepts for principal and minor arterials, major and minor collectors, and local roads.
- **Access Management:** Provides an overview of access management and discusses best practices to operate an effective access management program.
- **Traffic Impact Study (TIS) Guidelines:** Discusses standards for the requirement, format, and content of a TIS.
- **Traffic Calming:** Presents a sample toolbox of traffic calming techniques, and discusses their appropriateness for different road types.
- **Overview of Roundabouts:** Presents an overview of best practices for roundabouts, including types of roundabouts, their warrants, and a comparison with other traffic control devices.
- **ITS:** Provides an overview of ITS and presents several solutions for consideration within the Kalispell area.

DOWNTOWN – HIGHWAY 93/MAIN STREET

The redevelopment of Kalispell's downtown is part of the City's vision to promote economic development, improve employment opportunities, improve housing opportunities, and expand the community's tax base. The downtown is an important tourism destination for the City and greater Flathead Valley, and is a home to residents, businesses, banks and local government offices. In addition to the economic benefits of the downtown, it is the City's epicenter of arts, culture and historic conservation.

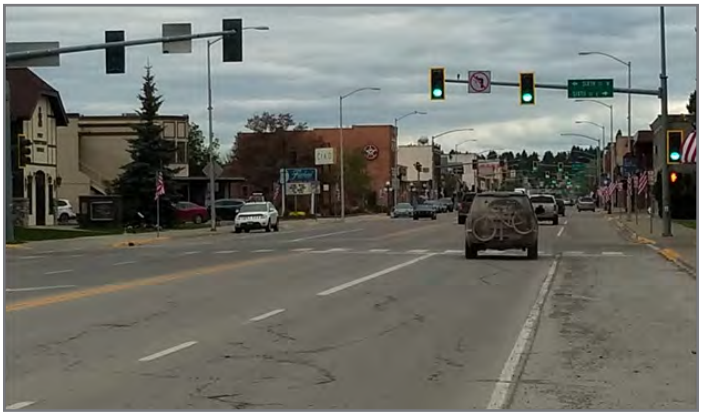
While the downtown remains a centerpiece of the community, it has changed from the bustling, pedestrian friendly destination that it was mid-century (Figure 11.1). High traffic volumes, commercial truck use, vehicle speed, and a lack of pedestrian facilities are some of the primary factors that have changed the historic character of Main Street and the downtown area. Downtown Kalispell at present is shown in Figure 11.2.

It will be important for the City to balance local desires and its vision for Highway 93/Main Street with the expectations for the corridor as a part of the NHS. As part of the NHS, MDT will be focused on maximizing vehicular mobility and reducing congestion on Highway 93/Main Street. The City and MDT should work collaboratively on future discussions and studies involving multi-modal mobility of Highway 93/Main Street.

The City understands that restoring the character of Main Street is essential to the revitalization of the historic downtown. To emphasize the importance of the U.S. Highway 93/Main Street corridor, the City has provided policy recommendations in several of its planning documents, including the Downtown Plan (2017), the Urban Renewal Plan (2018), and Growth Policy Plan (Plan-It 2035) (2017). These policy recommendations are summarized in the following sections.

Figure 11.1: View of Downtown Kalispell in 1940

Figure 11.2: View of Downtown Kalispell Today



Downtown Plan

The Downtown Plan puts forth a vision for reviving the historic character of Kalispell's downtown and reinforcing its identity as the heart of the community. One of the most important factors for this vision is the U.S. Highway 93/ Main Street corridor, which the plan looks to reclaim as a pedestrian-scale hub of tourism, shopping, jobs, civic and cultural activity. However, public feedback has indicated several challenges to achieving this vision, including high traffic volumes and commercial truck use, vehicle speeds, and the associated noise and dust from traffic on Main Street. While U.S. Highway 93 was designed and is managed as a 4-lane thoroughfare, the community of Kalispell aspires to reclaim this corridor as "Main Street", the social and economic hub of the City. The Downtown Plan highlights several challenges associated with the current design of the U.S. Highway 93/Main Street corridor. The challenges are summarized below:

CHALLENGES:

- **Four wide (12-foot) travel lanes:** This design feature emphasizes vehicle speed and volume over local commerce.
- **Narrow parallel parking lanes:** The two parallel parking lanes provide minimal parking and are difficult to access because of the speed and volume of adjacent traffic.
- **Narrow sidewalks:** The narrow sidewalks provide minimal space for street lighting, trees, pedestrian amenities such as benches, and pedestrian traffic.
- **No left turns:** The lack of left turns throughout the corridor is discouraging to drivers seeking local access to downtown storefronts.
- **Lengthy pedestrian crossings:** Long crossing distances force pedestrians to walk the full width of Main Street, exposing them to six lanes of traffic.

The Plan presents several strategies to meet these challenges and realize its vision for Downtown. The strategies are summarized as follows:

STRATEGIES:

- **Widen sidewalks to 16 feet:** Widen sidewalks by six feet to create opportunities for outdoor eating areas and merchant displays, space for trees/landscape features, and space for pedestrian amenities.
- **Provide intersection corner bump-outs:** Provide bump-outs to make pedestrian street crossings safer.
- **Reduce travel lanes to two:** Reduce travel lanes to one lane in each direction in order to decrease vehicle speeds and discourage freight use.
- **Incorporate a center turn lane:** Incorporate a two-way left-turn lane to increase traffic flow and allow for access to storefronts along Main Street.
- **Widen parallel parking isles:** Widen parking lanes to better separate pedestrians from traffic and facilitate parking.
- **Install pedestrian-scaled lighting:** Add appropriate lighting to convey simplicity, safety, and charm to visitors.

Urban Renewal Plan

One of the primary goals of the Urban Renewal Plan is the creation of a downtown tax increment district (TID) to help fund the implementation of the Downtown Plan. To establish a TID, the state requires that a determination of blight be made. The Urban Renewal Plan satisfies this requirement by highlighting the blighted conditions within the downtown area as presented in the Downtown Plan.

The Urban Renewal Plan reinforces the importance of the U.S. Highway 93/Main Street corridor by restating the challenges presented in the Downtown Plan. The Urban Renewal Plan presents these challenges in the context of blight, which supports the determination of blight necessary for the establishment of a downtown TID.

Like the Downtown Plan, the Urban Renewal Plan cites among the corridor's principal challenges a roadway design that encourages high speeds and freight traffic, long pedestrian crossing distances and a lack of multimodal facilities, and impediments to local traffic circulation. The Urban Renewal Plan also puts forth the core redesign recommendations presented in the Downtown Plan, including the addition of a center left-turn lane, widening of sidewalks, addition of bump-outs, addition of landscaping and trees, and pedestrian-scale lighting.

Growth Policy Plan (Plan it 2035)

The Growth Policy Plan recognizes the historic downtown as central to Kalispell's growth framework due to its role as an economic hub and tourist destination, as well as the community's epicenter of arts, culture and historic conservation. The Growth Policy Plan identifies a series of issues affecting the downtown at present; the first issue listed emphasizes the conditions of the U.S. Highway 93/ Main Street corridor: "Excessive through vehicular and truck traffic in the downtown and core area detracts from the preservation and maintenance of the historical and cultural character and undermines pedestrian and bicycle safety and access."

The Plan addresses this issue by encouraging the design of urban streets to provide for convenient circulation, safe

pedestrian and bicycle access, and to avoid excessive road width. Further, the Plan establishes a goal that commercial truck through traffic be diverted from the downtown and surrounding neighborhoods to a more appropriate route.

Future Travel Demand Downtown

A series of areawide TDM runs were evaluated during the Alternatives Analysis phase of Move 2040. Outputs from the analysis allowed for the comparison of various system-wide improvements related to both Highway 93A and Highway 93/Main Street. The analysis clarified the effects of various investments on both regionally and nationally significant corridors.

Two potential improvements are of particular importance to the downtown—completion of U.S. Highway 93A and a lane reduction on a portion of the Highway 93/ Main Street corridor. Four alternatives explored the effects of these improvements:

- **Alternative 1:** Completed Highway 93A corridor.
- **Alternative 2:** Reduction in capacity on Highway 93/ Main Street from 7th Street to W Center Street from four lanes to three lanes.
- **Alternative 2A:** Combination of Alternative 1 and 2, a completed Highway 93A and reduced capacity on Highway 93/Main Street.
- **Alternative 10:** A combination of several anticipated improvements understood to serve the intent of a best-fit set of future improvements.

Through a series of model runs it was possible to observe how the Highway 93/Main Street corridor may function with different system improvements. Key takeaways from the analysis are summarized below and Table 11.1 compares model outputs for these alternatives along Highway 93/Main Street/Highway 93 S and U.S. Highway 93A.

- Completion of U.S. Highway 93A (Alternative 1) reduces traffic volumes by as much as 18 percent from south of the Courthouse Couplet through 2nd Street. Completion of U.S. Highway 93A will continue to attract additional travel demand.
- The reduction in capacity on Highway 93/Main Street (Alternative 2) does not increase travel demand on U.S. Highway 93A.
- The combination of a lane reduction on Highway 93/Main Street and completion of U.S. Highway 93A (Alternative 2A) reduces travel demand on the Highway 93/Main Street corridor by nearly 30 percent. LOS remains E or worse on segments modeled with reduced capacity.
- Alternative 10 results in LOS E along Highway 93/ Main Street just south of the Courthouse Couplet and LOS D through from 8th Street to West Center.

Additional detailed corridor-level analysis is recommended to fully understand the specific viability of Highway 93/ Main Street with less than current capacity. Future analysis needs to consider more detailed operational factors, issues related to the NHS and involve intimate coordination with MDT. A detailed presentation of the Alternatives Analysis can be found in Chapter 6.

Table 11.1: Comparison of 2040 TDM Alternatives for U.S. Highway 93 and U.S. Highway 93A

Corridor	From	To	2040 E+C		Alt 1		Alt 2		Alt 2A		Alt 10	
			ADT	V/C	ADT	V/C	ADT	V/C	ADT	V/C	ADT	V/C
Highway 93	Ashley Meadows	Hwy 93A	34,800	1.08	34,800	1.08	34,800	1.08	34,800	1.08	35,100	1.09
	Hwy 93A	Cemetary Road	24,000	0.75	19,500	0.61	23,900	0.74	19,100	0.59	17,600	0.55
	Cemetary Road	13th Street	20,400	0.72	16,100	0.57	20,200	0.71	15,500	0.55	12,500	0.44
	11th Street	10th Street	21,700	1.60	17,600	1.30	18,800	1.39	15,700	1.17	13,000	0.96
	8th Street	7th Street	20,100	1.49	16,300	1.21	17,300	1.28	14,600	1.08	12,100	0.89
	4th Street	3rd Street	19,800	0.73	16,200	0.60	16,700	1.13	14,300	0.96	12,000	0.81
	Montana	Idaho (Hwy 2)	22,700	0.84	20,700	0.77	21,900	0.81	20,200	0.75	17,900	0.66
Highway 93 Alt	Hwy 93	Airport Road	15,100	0.99	17,900	0.58	15,200	0.99	18,300	0.60	20,900	0.68
	Airport Road	Foys Lake	19,300	0.63	24,600	0.80	19,400	0.63	25,000	0.82	28,700	0.94
	Foys Lake	Hwy 2	20,400	0.67	22,200	0.73	20,400	0.66	22,500	0.74	29,100	0.95
	Hwy 2	Three Mile Drive	27,600	0.77	29,300	0.81	27,800	0.77	29,900	0.83	35,100	0.98
	Three Mile Drive	Four Mile Drive	24,000	0.67	25,800	0.72	24,200	0.67	26,400	0.73	33,600	0.93
	Four Mile Drive	Old Reserve	21,400	0.59	22,900	0.64	21,600	0.60	23,400	0.65	25,700	0.71
	Old Reserve	Hwy 93	20,300	0.56	21,500	0.60	20,400	0.57	22,300	0.62	25,000	0.69

RECOMMENDED FUNCTIONAL CLASS MAP

The project team worked with the City to create a recommended functional classification map. To develop the map, the team evaluated the existing functional classification system within the study area against FHWA guidelines for recommended percentages for each functionally classified roadway. These ranges are based on FHWA best practices for urban areas based on the 2013 Highway Functional Classification Concepts, Criteria and Procedures manual. As discussed in Chapter 3, the City of Kalispell will default from its locally approved functional class system to a functional class map based on FHWA criteria, as used by MDT. The new map, based on FHWA criteria, was used for this evaluation. The project team's assessment revealed the following for the existing system:

- Too few minor arterial and minor collector roadways.
- Excess number of roadways classified as local.

The City's recommended functional classification map addresses these issues in order to bring the roadway system into alignment with FHWA best practices. Table 11.2 shows total mileage by functional classification for the existing and recommended functional classification maps, and provides a comparison with FHWA best practices.

The city's recommended functional classification map is shown in Figure 11.3 and Figure 11.4. For an existing built roadway, the recommended functional class map shows the recommended function of the roadway such that it meets both existing and projected demand. These designations should be used in cooperation with MDT to assist with the next functional class map update for the Kalispell Urban Area. These designations should guide future roadway investments in terms of access and typical section standards.

For roadways not yet constructed or currently not yet urbanized (i.e., paved or gravel rural standard roadways) the recommended functional class map shows a proposed functional class standard to which that roadway should be built as it is improved. This is particularly important for roadways in growth areas which have not yet been urbanized to support access management and right-of-way preservation.

Table 11.2: Total Mileage by Functional Classification – Existing and Recommended Functional Classification Maps

Functional Class Name	FHWA Recommendation (% of total)	Existing FC Map			Recommended FC Map		
		Miles	% of Total	Within Range	Miles	% of Total	Within Range
Principal Arterial	4% to 9%	33.8	6.5%	Yes	35.6	6.4%	Yes
Minor Arterial	7% to 14%	27.3	5.3%	-8.95 miles	58.7	10.5%	Yes
Major Collector	3% to 16%	28.2	5.4%	Yes	59.4	10.6%	Yes
Minor Collector	3% to 16%	10	1.9%	-26.24 miles	37.3	6.7%	Yes
Local	62% to 74%	419	80.8%	+35.33 miles	367.4	65.8%	Yes
Total		**518.5**	**100%**		**558.4**	**100%**	

Figure 11.3: Recommended City of Kalispell Functional Classification Map

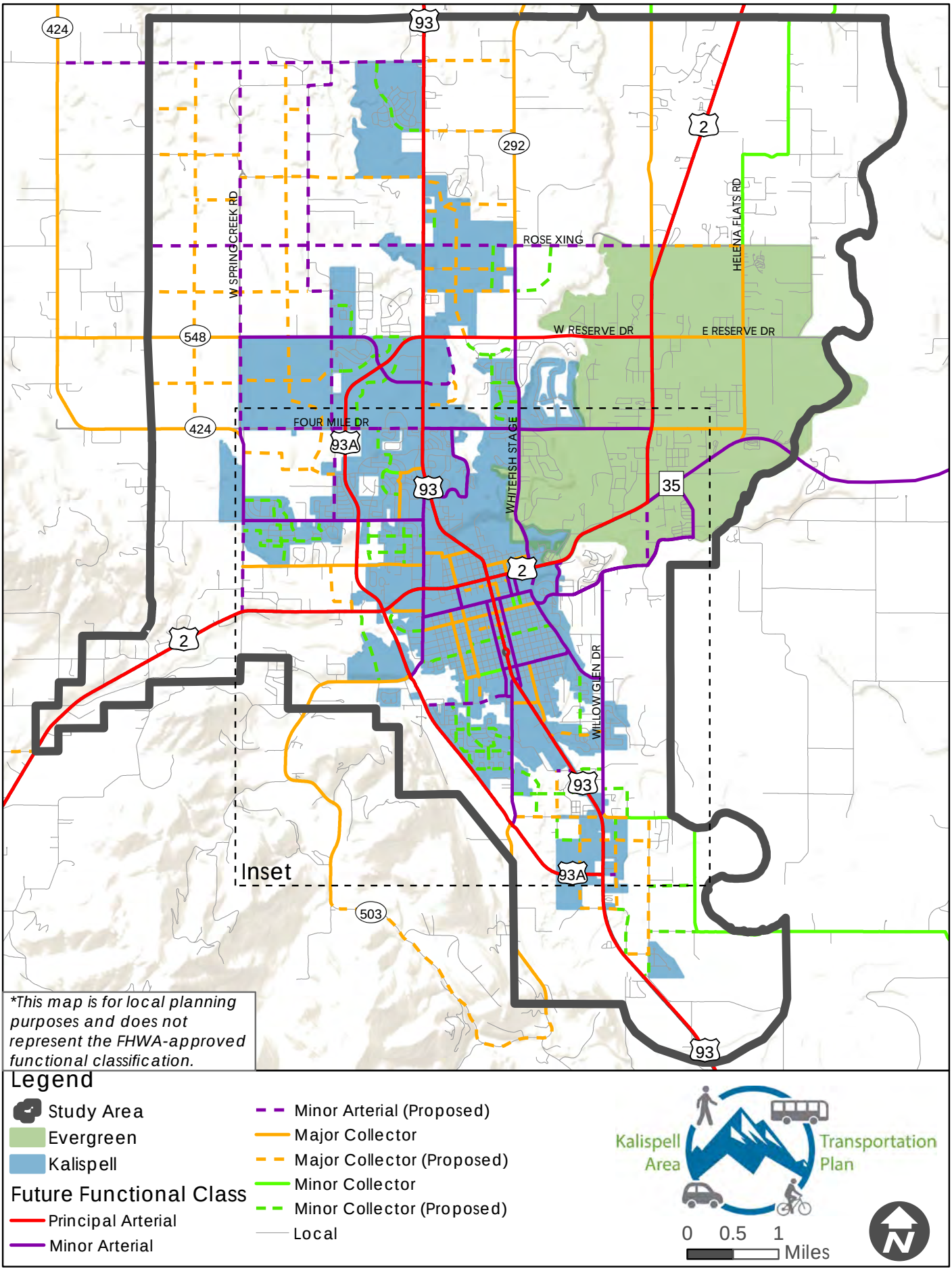
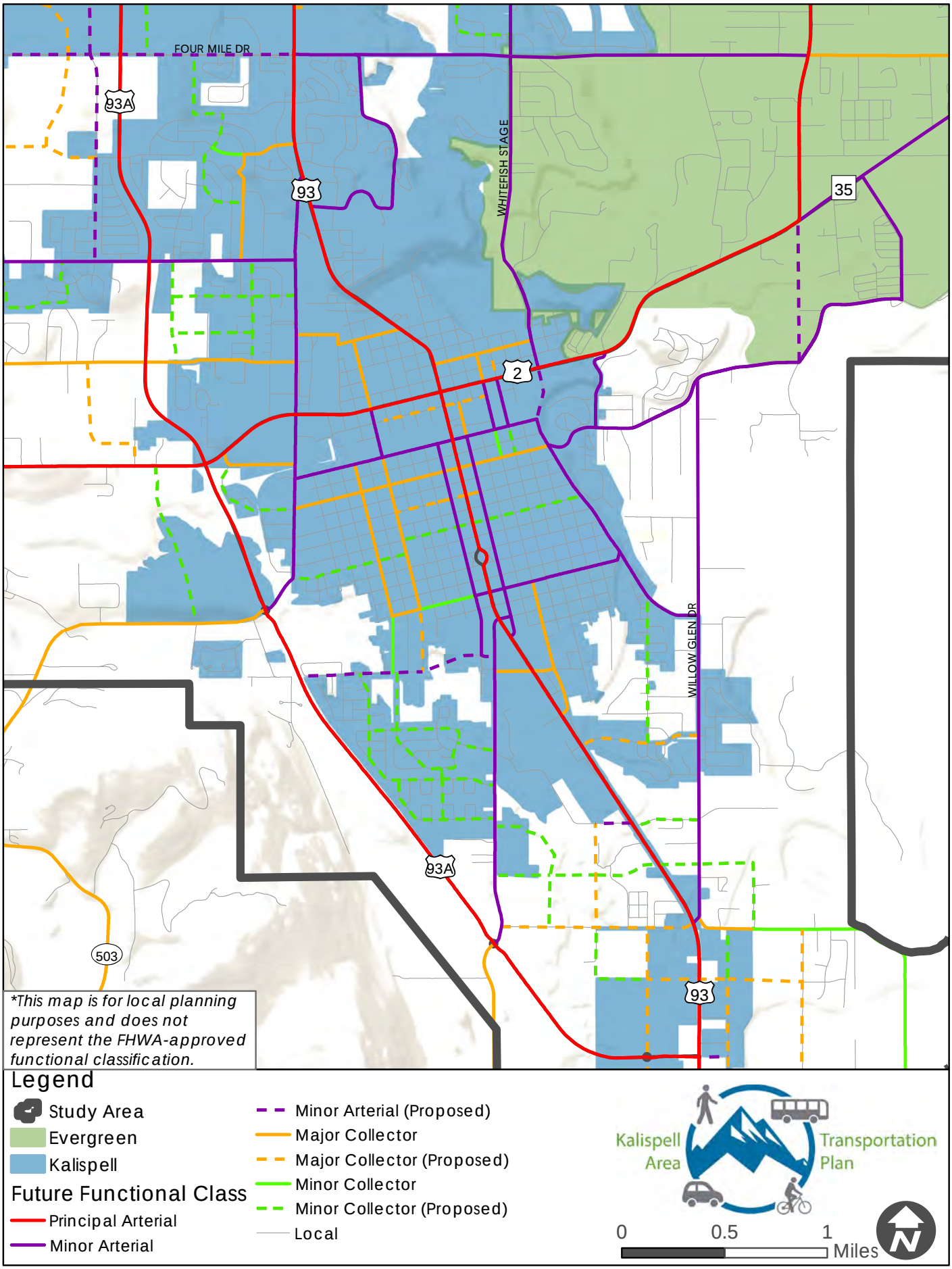


Figure 11.4: Recommended City of Kalispell Functional Classification Map (Inset)



TYPICAL STREET CROSS SECTIONS

To support the Functional Classification Map, planning level roadway cross sections are presented below for Kalispell. The concepts presented here are intended to be illustrative and aspirational, and do not constitute approved or compulsory standards. Typical cross sections concepts are provided for the following functional classifications:

PRINCIPAL AND MINOR ARTERIALS | *MAJOR AND MINOR COLLECTORS* | *LOCAL STREETS*

Principal Arterial

The principal arterial cross section is presented as a five-lane divided facility with the following characteristics:

- 100′ ROW
- 12′ outside travel lane
- 12′ inside travel lane
- 12′ left turn lane
- 8′ sidewalks
- 8′ boulevards

Figure 11.5: Principal Arterial Cross Section

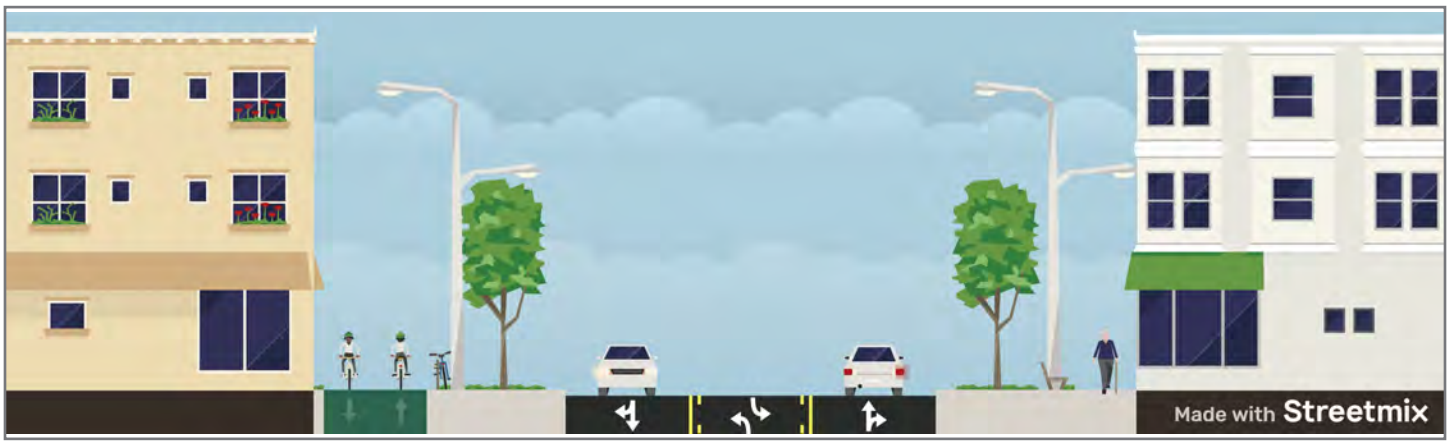
Potential streetscape elements for the principal arterial concept include a shared-use path, benches and other pedestrian amenities, street trees, and bike racks. A dedicated bicycle/pedestrian facility (rather than on-street bike lanes) is proposed due to the high vehicle speeds and volumes on this road type.

Minor Arterial

The minor arterial cross section is presented as a three-lane undivided facility with the following characteristics:

- 80′ ROW
- 12′ travel lanes
- 12′ TWCLTL
- 6′ sidewalks
- 10′ shared use path
- 11.5′ boulevards
- No on-street parking

Figure 11.6: Minor Arterial Cross Section



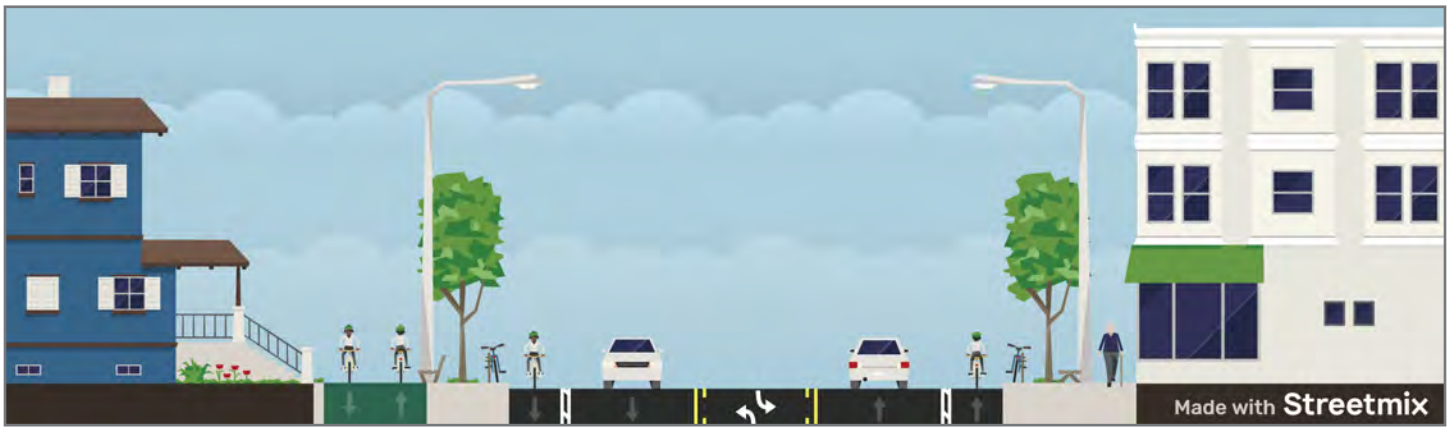
Potential streetscape elements for the minor arterial concept include a shared-use path, benches and other pedestrian amenities, street trees, and bike racks. A dedicated bicycle/pedestrian facility (rather than bike lanes) is proposed due to the high vehicle speeds and volumes on this road type.

Major Collector

The major collector cross section is presented as a three-lane facility with the following characteristics:

- 80′ ROW
- 12′ travel lanes
- 12′ TWCLTL
- 5′ sidewalks
- 5′ bike lanes
- 10′ shared use path
- 8′ boulevards

Figure 11.7: Major Collector Cross Section



Potential streetscape elements for the major collector concept include protected bike lanes, benches and other pedestrian amenities, street trees, and bike racks. A dedicated bicycle/pedestrian facility is proposed, as well as striped on-street bike lanes. The major collector concept could also be designed to incorporate a parking lane on one side of the street by removing the two-way center left-turn lane and on-street bike lanes.

Minor Collector

The minor collector cross section is presented with two travel lanes and a parking lane:

- 60′ ROW
- 12′ travel lanes (sharrows)
- 10′ parking lane
- 5′ sidewalks
- 6′ boulevards
- Option for no parking/ TWCLT

Figure 11.8: Minor Collector Cross Section

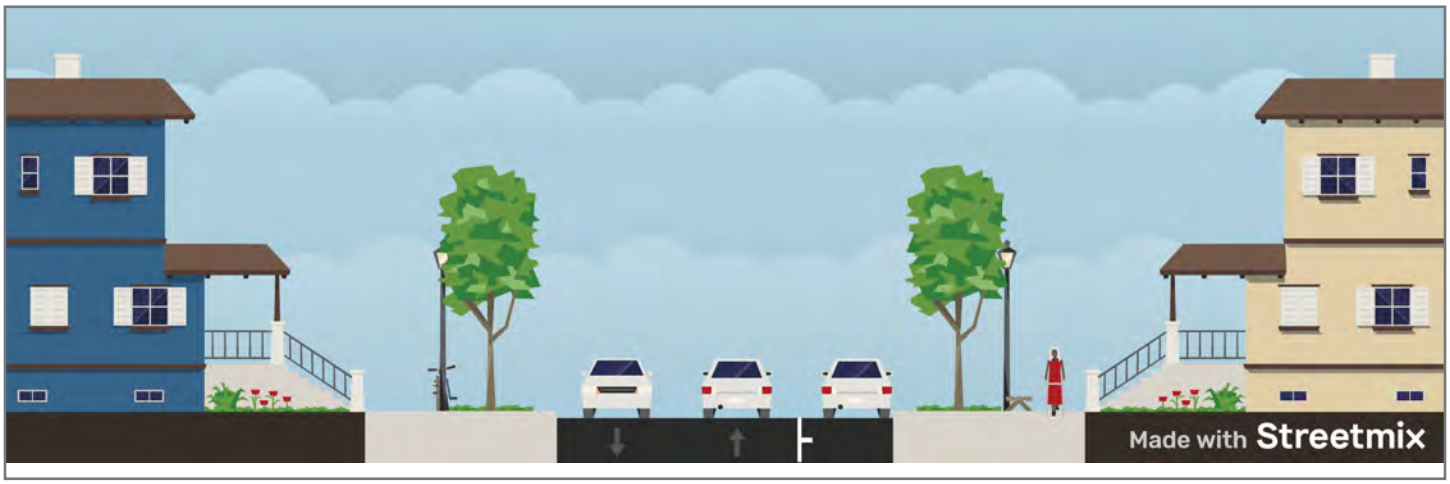
Potential streetscape elements for the minor collector concept include sharrows within the travel lanes, benches and other pedestrian amenities, street trees, and bike racks. While the major collector concept (above) does not leave room for a parking lane due to the inclusion of a center turn lane, the minor collector provides a 10-foot parking lane on one side of the street.

Local Road

The local road cross section is presented with two travel lanes and a parking lane:

- 60′ ROW
- 10′ travel lanes
- 8′ parking lane
- 5′ sidewalks
- 9′ boulevards

Figure 11.9: Local Road Cross Section



Potential streetscape elements for the local road concept include benches and other pedestrian amenities, street trees, and bike racks.

ACCESS MANAGEMENT

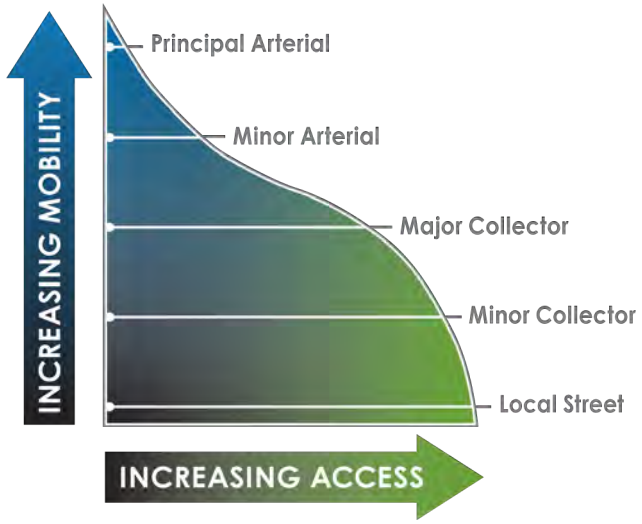
According to MDT, access management is a "strategy for managing the type of development along and physical connections to transportation corridors by regulating the frequency or location of access points along roadways".[1] While access points, such as intersections, pedestrian crossings, and driveways, are essential in allowing users to reach their destinations, poorly designed access management can increase the risk of crashes among vehicles and other roadway users.

Access management addresses the classic trade-off between corridor-wide throughput (or "mobility") and local accessibility (Figure 11.10). At one extreme, no minor street conflicts exist on a corridor and traffic flows freely, with influences on function limited to density, weather, and integrity of the roadway. When minor-street conflicts are introduced, the mainline flow is affected by the resulting combination of slowing, turning, merging, entering, and stopped vehicles. Inadequate access management may result in growing corridors that deteriorate functionally and aesthetically. The characteristics of good and poor access management are compared in Table 11.3.

Access Management Best Practices

Each access point along a facility creates opportunities for conflict between turning vehicles and through traffic. Access management seeks to limit the number, spacing, and location of vehicle-to-vehicle conflict points, reduce the speed differentials between turning vehicles and through traffic, and require proof of necessity for access from developers.

Figure 11.10: Access and Mobility



There are six basic principles of access management that are used to achieve the desired outcome of safer and more efficient roadways:

1. Limit the number of conflict points
2. Separate the different conflict points
3. Separate turning vehicles from through traffic
4. Locate traffic signals to facilitate traffic movement
5. Maintain a hierarchy of roadways by function
6. Limit direct access on higher speed roads

Access management encompasses a set of techniques that local governments can use to control access to highways, major arterials, and other roadways. The following represents a "toolbox" of access management best practices that can be used to preserve roadway capacity, improve safety, and plan for future growth.

Table 11.3: Characteristics of Good and Poor Access Management

Good Access Management	Poor Access Management
» Reduced congestion and better overall traffic flow	» Poor capacity throughput
» Lower potential for crashes due to fewer opportunities for vehicle conflicts with other vehicles, with pedestrians and with bicyclists	» Increases in crashes and crash rates
» Decreased travel times for commuters, truck drivers, and others	» Reduced roadway efficiency
» Easier movement between properties, increasing the attractiveness of adjacent neighborhoods	» Decreased property values and less livable neighborhoods
» Preservation of public investment in transportation infrastructure	» Waste of public funds resulting from disrupted traffic movement (public not "getting what they paid for" in terms of the intended function of a roadway)
» Better control over the intended character of a corridor and its adjacent neighborhoods	» Potential for unsightly strip development » Potential for unwanted neighborhood cut-thru traffic » Less desirable corridor user experience; "chilling effect" on new investment

1 Please see: https://www.mdt.mt.gov/research/toolkit/m1/pptools/ds/am.shtml

Access Denial, Removal, or Relocation

A city may control the number of conflict points by denying, removing, relocating, and consolidating access points. If proof of necessity cannot be adequately demonstrated for a proposed access onto a major roadway, then the access permit request may be denied and alternate means of access explored.

A TIS may be required before a new access is permitted. The purpose of a TIS is to evaluate the effects of a proposed development on the surrounding transportation network. The TIS assesses the ability of the intended land use traffic to efficiently and safely enter/exit the site. The TIS makes recommendations for any mitigation measures needed to accommodate the additional traffic volumes resulting from the proposed entrances. TISs are discussed in detail under the "Traffic Impact Study" section.

Access Spacing Standards

Access spacing standards establish the minimum distance between access points with the intent of separating potential conflict points involving turning vehicles and through-moving vehicles. Access spacing standards govern the distance between driveways, between unsignalized intersections, and between intersections and the nearest driveway. Access spacing standards will vary based on the functional classification of the adjacent roadway, the desired land use, and the type of access. An indirect method to reinforce the minimum access spacing requirements is to require an increased minimum lot frontage on major roadways for all new development.

Frontage Roads

Frontage roads can reduce the frequency of conflicts along the main travel lanes of high-volume roadways. Direct access to adjoining property is provided from the frontage road and is restricted or prohibited from the main roadway. The restricted access along the main roadway allows for fewer access points with increased spacing.

Median Alternatives

Medians can be used to create space between access points, restrict some turning movements at access points, and facilitate auxiliary lanes for turning vehicles. For example, use of a non-traversable median is an effective way to limit disruptive left-turn movements into and out of access points to only those spots designed for turning vehicles. All other mid-block access points would be restricted to right-turn only movements, reducing dangerous cross-traffic movements.

Property Access Restriction

The regulation of access location can be accomplished by restricting each parcel to a specific number of access points, typically one. If a parcel is further subdivided, the new lots would have to share the single permitted access point. Denying major roadway access would force developments to provide internal lot access and utilize minor street networks or other pre-approved access roads. This technique encourages a connected street system with residential access served by low-volume neighborhood streets rather than major arterials or collectors.

Turn Lanes

Turn lanes can serve as an effective access management technique as they separate through traffic from vehicles slowing and turning. Separating traffic turning from through traffic reduces the speed differentials that increase the risk of crashes and increase delay, thereby improving safety and increasing capacity. Turn lanes are often incorporated as a separate lane or traversable median, such as a two-way left-turn lane, or are included as turning bays within non-traversable medians.

Traffic Signal Spacing

Signalized intersections should be spaced uniformly to maintain optimal signal timing and progression. The installation of traffic signals can assist access management by establishing the location and spacing of major access points. The signalized access points allow for protected movements to and from these accesses. Signal design and timing operation often incorporate access management techniques involving turn lanes and medians to efficiently remove potential conflicts between turning and through traffic.

Corridor Preservation Measures

Corridor preservation is the process of preventing or minimizing development along a defined transportation corridor through the use of building setback standards and local guidelines. These measures are intended to address potential future land development and transportation improvements along the corridor, which may include additional vehicle travel lanes, bikeways, multi-use trails, high occupancy vehicle lanes, and fixed-rail lines, etc. Corridor preservation measures ensure that new developments along planned transportation corridors are designed to accommodate future transportation facilities.

State, regional, and local governments across the country use access management programs to preserve the functionality of their roadway systems. This is often done by designating an appropriate level of access control for each of a variety of facilities. For example, local

residential roads are allowed full access, while major highways and freeways allow very little. Between these classifications are a series of road types that require standards to help ensure the free flow of traffic and minimize crashes, while still allowing access to major businesses and other land uses along a road.

For roadways on the State system and under the jurisdiction of MDT, MDT develops an access control plan defining minimum access point spacing, access geometrics, etc. For other roadways, the adoption of an access classification system based upon the functional classification of the roadway is recommended. These local regulations should serve to govern minimum spacing of driveway approaches/connections and median openings along a given roadway in an effort to fit the roadway into the context of the adjacent land uses and the overall roadway system.

Sample Guidelines by Functional Classification

While the development of specific access and spacing guidelines is beyond the scope of Move 2040, the project team compiled a set of sample standards by roadway type to aid the City as it considers improvements to its existing access management program. The sample standards are based upon peer research, and represent the approach used by various small (<50,000) cities within the Midwest. It is important to note that, while the sample guidelines provide a valuable point of reference, an effective access management program must be tailored to consider a roadway's specific context and reflect the community's unique transportation and land use goals.

Table 11.4 provides sample guidelines for minimum access spacing by roadway functional classification.

Note: When determining minimum spacing for one intersection with respect to another intersection of a different access roadway functional classification, it is recommended that the minimum spacing corresponding to the lower-tier functional classification intersection be used.

A Closer Look: Four Mile Drive

The project team used the sample access management standards to conduct a preliminary assessment of a sample corridor: Four Mile Drive from Farm to Market Road to U.S. Highway 93. The assessment considered the corridor under 2040 "build" conditions, with roadway classifications reflecting those defined in the Move 2040 future functional classification map. Alternative 10 (Chapter 6) was used to evaluate traffic volumes along the corridor. The corridor is shown in Figure 11.11.

Table 11.4: Access Spacing Guidelines

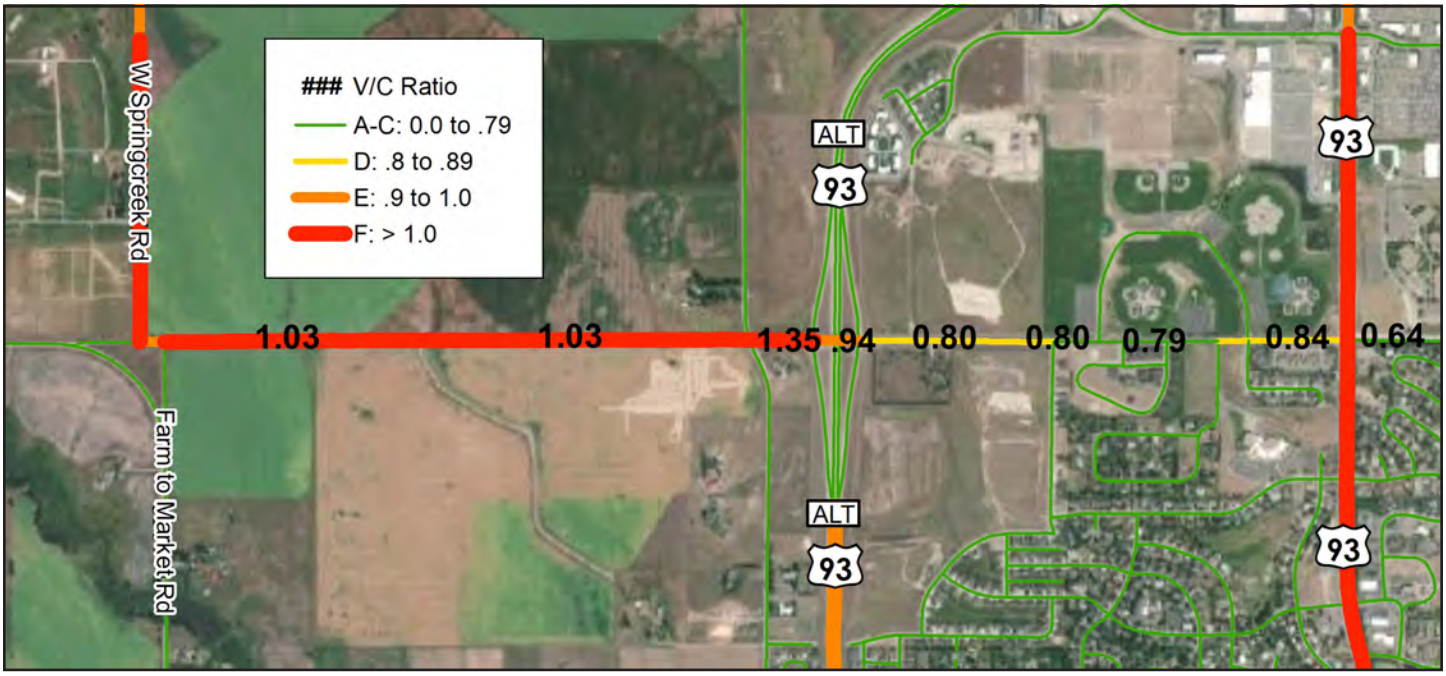
Type of Access	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Road
Private Residential Driveways	No direct access	No direct access	No direct access	No direct access	As required
Commercial Driveways	No direct access	No direct access	1/8 mile (660′)	1/8 mile (660′)	Based on: Speed, Traffic Volume, Sight Distances, etc. (min. 100 ft.)
Non-Continuous[1] Local Roads	No direct access	1/8 mile (660′)	1/8 mile (660′)	1/8 mile (660′)	(150′)
Continuous Local Roads	No direct access	1/4 mile (1,320′)	1/8 mile (660′)	1/8 mile (660′)	(150′)
Collector Streets	1/2 mile (2,640′)	1/4 mile (1,320′)	1/8 mile (660′)	1/8 mile (660′)	1/8 mile (660′)
Minor Arterials	1 mile (5,280′)	1/2 mile (2,640′)	1/4 mile (1,320′)	1/4 mile (1,320′)	1/4 mile (1,320′)
Minimum Spacing Between Intersection and Nearest Driveway[2]	N/A	N/A	330′	330′	100′ for commercial driveways; 35′ for residential driveways

1 "Non-continuous" roads refer to cul-de-sacs or short length streets, typically less than one-half mile in length, which do not cross the roadway providing access (three-legged intersections).

2 See: Access Management Guidelines for the Urbanized Area (https://ccrpc.org/wp-content/uploads/2015/03/access-management-2013-04-17-final.pdf)

Figure 11.11: Four Mile Corridor from Farm to Market Road to U.S. Highway 93

Figure 11.12: Four Mile Drive Corridor from Farm to Market Road to U.S. Highway 93



Context

The future functional classification map defines Four Mile Drive from Farm to Market Road to U.S. Highway 93 as a minor arterial, and conversion of the corridor to a three-lane facility is designated as a high-priority project within Move 2040. While the corridor does not experience congestion at present, sections of the corridor become congested when analyzed under 2040 "build" conditions. Under these conditions, annual average daily traffic (AADT) ranges from 13,400 at the center of the corridor to 10,500 on the east, with volume-to-capacity ratios ranging from 1.35 west of U.S. Highway 93A to .79 east of the highway. Speed limits along the roadway will be increased to 35 by 2040.

The corridor under 2040 "build" traffic conditions is shown in Figure 11.12. The corridor is surrounded by agricultural land uses to the west of Stillwater Road, with rural residential properties located at the northwest and southeast quadrants of the Four Mile Drive-Stillwater Road intersection, respectively (these properties do not have driveway access to Four Mile Drive). To the east of Stillwater Road, density increases gradually, with several subdivisions, athletic fields, and office land uses concentrated between Northland Drive and U.S. Highway 93.

Existing and Approved Access

Two new intersections along the corridor west of Stillwater Road were approved in late 2020. These access points will be extensions of interior roads serving the 430 Stillwater Road subdivision abutting the Four Mile Drive to the north. No additional access points are located on the corridor west of Stillwater Road.

The two rural residential properties located at the Four Mile Drive-Stillwater Road intersection do not have direct access to Four Mile Drive, but instead have driveways connecting to Stillwater Road north and south of the intersection.

U.S. Highway 93A is located to the east of the intersection. Immediately east of this, two new intersections have been approved to serve the Bloomstone subdivision. The new intersections include Treeline Road (a future minor collector) and Foxglove Drive (a future local road).

From the Foxglove Drive intersection east, both private and public access points become frequent and closely spaced, with access points concentrated between Northland Drive and U.S. Highway 93.

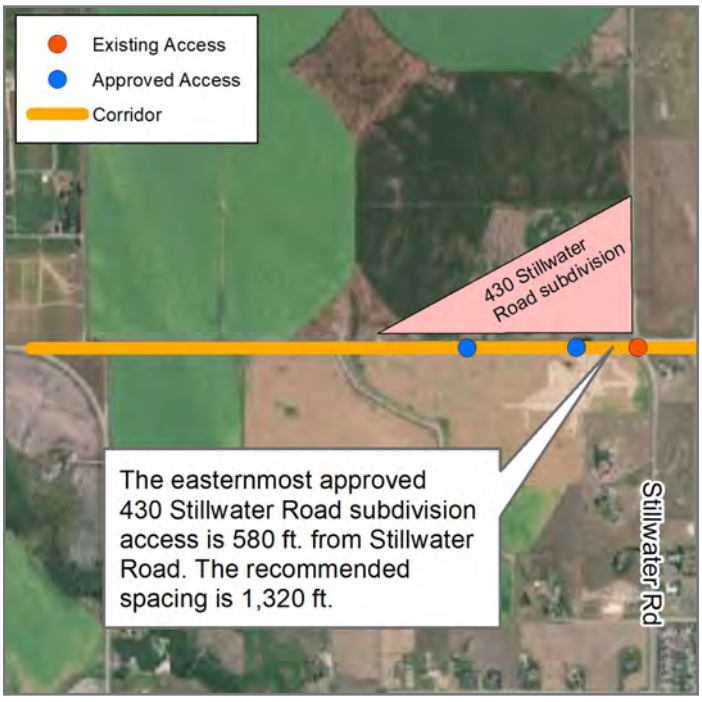
Assessment

Public and private access points are closely spaced along the corridor, increasing the potential for conflicts between turning vehicles and through-moving vehicles. New intersections have been approved within a close distance of existing intersections. The safety and efficiency issues caused by frequent access points will likely become more apparent as the corridor approaches its forecast 2040 traffic conditions. Finally, the future conversion of Four Mile Drive to a three-lane facility may be complicated by the high costs of acquiring right-of-way that has been developed by abutting developments.

West of Stillwater Road

Two new intersections (the westernmost a non-continuous local road connection; the easternmost a major collector connection) have been approved to the west of Stillwater Road to provide access to the 430 Stillwater Road subdivision. The subdivision will be located immediately northwest of the Four Mile Drive-Stillwater Road intersection. The new intersections are located 1,050 ft. from one another, and the easternmost intersection is located roughly 580 ft. to the west of the Four Mile Drive-Stillwater Road intersection.

While the two new intersections are spaced sufficiently from one another (the minimum recommended distance for a non-continuous local road on a minor arterial is 660 ft.), the easternmost intersection is far too close to the Four Mile Drive-Stillwater Road intersection (collector access on a minor arterial should be located a minimum of 1,320 from a minor arterial (Stillwater Road).

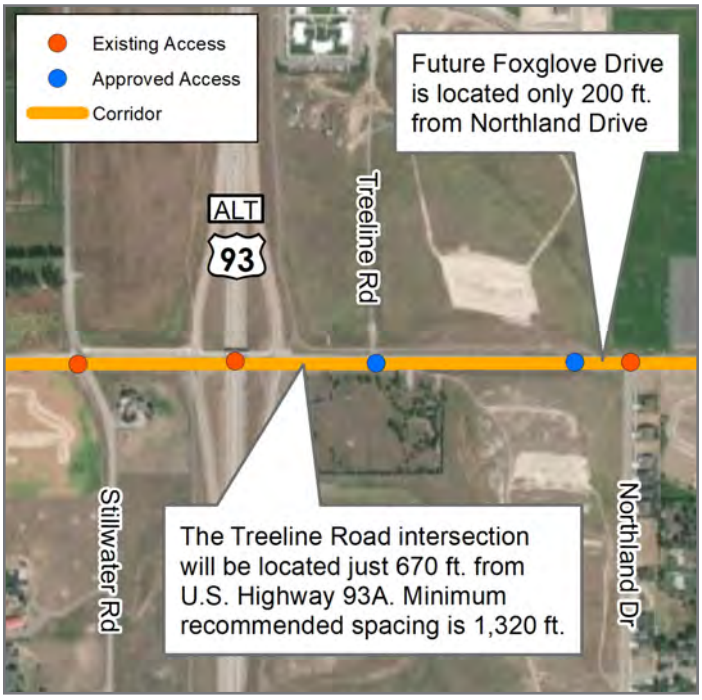


Stillwater Road to Northland Drive

The U.S. Highway 93A mainline is located 760 ft. east of the Four Mile Drive-Stillwater Road intersection. Further east, two new intersections have been approved for the Bloomstone subdivision, one to be located 670 ft. from

U.S. Highway 93A (Treeline Road) and the other to be located approximately 930 ft. east of the first (Foxglove Drive). The Foxglove Drive intersection will be located at a distance of roughly 200 ft. from the Northland Drive intersection farther east.

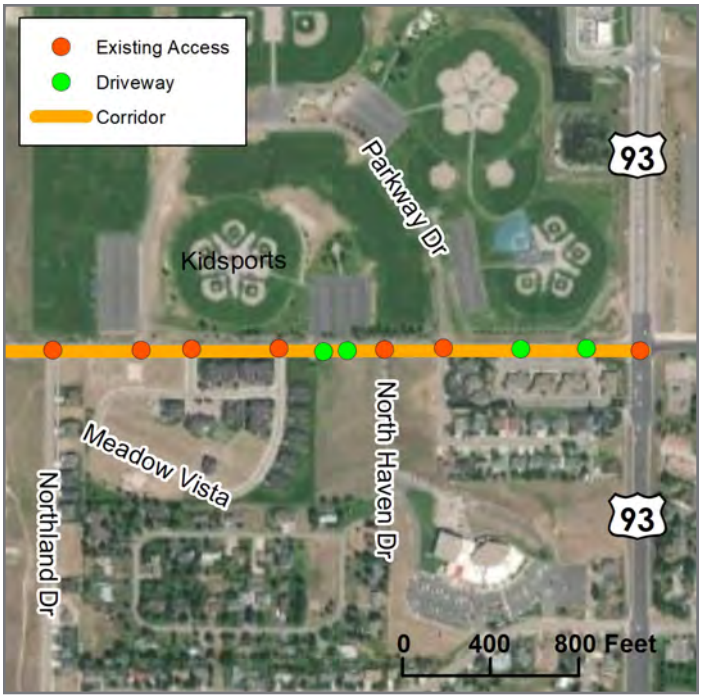
Access spacing along this section of the corridor would be considered inadequate. Stillwater Road, a future minor arterial, should be located at least half-a-mile (2,640 ft.) from U.S. Highway 93A. Treeline Road, a future minor collector, should be located a minimum 1,320 ft. from the highway. Foxglove Drive, a future non-continuous local road, is located only 200 ft. from Northland Drive – the recommended minimum spacing between these intersections is 660 ft.



East of Northland Drive

A large number of tightly spaced intersections with non-continuous local roads and driveways are located between Northland Drive and U.S. Highway 93. Specifically, Parkway Drive connects to the corridor at two locations, Meadow Vista Loop connects to the corridor at two locations, and North Haven Drive connects to the corridor at one location. Commercial driveways are dispersed throughout this section of the corridor, including two serving the Kidsports facility and two serving the office land use abutting U.S. Highway 93.

Access spacing along this section of the corridor would be considered inadequate. Local road intersections are closely spaced, with no intersection at a distance of more than 400 ft. from its neighboring intersection. Such intersections should be separated by at least 660 ft. on a minor arterial. Driveway access should ideally be prohibited altogether on minor arterial roadways.



Recommendations

Driveways: Several driveways provide access to non-residential uses along the corridor east of Northland Drive. Non-residential driveway access appears to be permissible under Standards for Design and Construction section 8.1.3.E, which only prohibits "residential driveways" on arterials. The City should consider prohibiting all driveways on arterials, and explore the possibility of relocating existing driveway access to a local road, where feasible.

Local Street Access: Standards for Design and Construction section 8.1.3.E specifies that intersections of local streets with arterials shall be kept to a minimum. However, there are a large number of tightly-spaced non-continuous local roads intersecting the corridor. In the future, the City should enforce the use of frontage roads and require that subdivisions provide access to adjacent parcels. In addition, existing access locations that are adjacent to new subdivisions should be reviewed for incorporation into proposed plats.

Spacing Minimums: As discussed above, access spacing along the corridor is seldom sufficient. On a minor arterial, this results in high propensity for conflict, disrupted traffic flow, and general deterioration of the roadway's functionality. The City defines a 35 ft. minimum distance between driveways and intersections—this is largely the extent of the City's access spacing guidelines at present. It is recommended that the City increase the minimum spacing between driveways and intersections for higher-tier roadways, and that it develop a clear and comprehensive policy on access spacing by functional classification.

Turn Lanes: The conditions described above are made more acute by the fact that the corridor is an undivided two-lane facility. Both left- and right-turning movements obstruct the flow of through traffic. The conversion of Four Mile Drive to a two-lane facility with a two-way center left turn lane will improve this issue.

The information provided in this section makes use of a variety of guidance documents, including:

- https://www.mdt.mt.gov/research/toolkit/m1/pptools/ds/am.shtml
- https://www.dot.state.pa.us/public/Bureaus/Cpdm/WEB/BestPracticesinAccessManagement.pdf
- https://flathead.mt.gov/planning_zoning/documents/FTP_Final_Small.pdf
- https://ccrpc.org/wp-content/uploads/2015/03/access-management-2013-04-17-final.pdf

TRAFFIC IMPACT STUDY

Overview

One of the City's chief responsibilities is to operate and maintain a safe and efficient roadway system. The review and management of development-generated traffic is an integral part of this effort. The sample TIS procedures outlined in this section are provided to help guide this process.

A TIS identifies existing traffic volumes and conditions, development traffic volumes and conditions and their combined impacts on the existing and future roadway system. Additionally, a TIS analyzes traffic circulation both on- and off-site. This is a useful tool for early identification of potential traffic problems and can play an important part in the success of a development and functionality of the surrounding transportation system. The need for a TIS should be assessed as early as possible in the development process when there is maximum flexibility to mitigate traffic-related problems.

Prior to obtaining any permits, the developer should have received the City's acceptance of the completed TIS. Typically, the City will provide a summary of any issues regarding the proposed development outlined in the TIS. The developer would need to address the City's issues prior to moving forward with the permitting process.

Traffic Impact Study Categories

A regulating agency's TIS procedures may make use of a variety of approaches. A common aspect of TIS regulations is the use of analysis categories, which increase the content and level of analysis required of the preparer as the potential impact of a development increases. For example, the City of Middleton, WI requires that a TIS include additional elements based on peak-hour trip thresholds. Similarly, the City of Corona, CA requires that developments generating less than 50 peak-hour trips prepare only an abbreviated "Focused Site Traffic Impact Study", with developments generating 50 peak-hour trips or more required to prepare full analysis. It is also common for a city to give the reviewing authority the discretion to waive the requirement for a TIS under certain circumstances. An example of TIS categories from the City of Peoria, AZ is shown in Figure 11.13.

References

- https://www.cityofmiddleton.us/DocumentCenter/View/293/Traffic-Impact-Analysis-Guidelines?bidId=
- https://www.coronaca.gov/home/showpublisheddocument?id=454
- https://www.peoriaaz.gov/home/showpublisheddocument?id=1969

Figure 11.13: Traffic Impact Analysis Categories Example (Peoria, Arizona)

TIA CATEGORY	TRIP GENERATION THRESHOLD[1]	HORIZON YEAR(S)[2]	STUDY AREA
Traffic Impact Study	Developments that are estimated to generate less than 100 trips during the highest peak hour.	Opening Year	To be determined by City Traffic Engineer
1	Developments that are estimated to generate greater than 100 but less than 500 vehicle trips during the highest peak hour.	Opening Year and 5 years in the future	1. Site access drives 2. All major signalized and unsignalized intersections within ¼ mile and all major driveways within 500 feet 3. All roadway segments within ¼ mile of the project site boundary
2	Developments that are estimated to generate more than 500 but less than 1,000 vehicle trips during the highest peak hour.	Opening Year plus 5 and 10 years in the future (phasing of the development must also be considered)	1. Site access drives 2. All major signalized and unsignalized intersections and all major driveways within a ½ mile radius of the project site boundary 3. All roadway segments within ½ mile of the project site boundary
3	Developments that are estimated to generate more than 1,000 but less than 1,500 vehicle trips during the highest peak hour.	Opening Year plus 5, 10, 15 years in the future (phasing of the development must also be considered)	1. Site access drives 2. All major signalized and unsignalized intersections and all major driveways within a 1-mile radius of the project site boundary 3. All roadway segments within 1 mile of the project site boundary
4	Regional Development generating 1,500 or greater trips during the highest peak hour.	Opening Year plus 5, 10, 15, and 20 years in the future or as specified in the Phasing Schedule	1. Site access drives 2. All major signalized and unsignalized intersections and all major driveways within an impact area defined during the scoping meeting 3. All roadway segments within an impact area defined during the scoping meeting

1. The trip generation used for determining the TIA category shall not be reduced for internal or pass-by trips unless approved by the City Traffic Engineer. For deveopments with peaks different than the typical adjacent street peak such as churches, schools, shift work, sports complex, movie theater, etc., the peak hour of the generator shall be calculated.

2. The Traffic Impact Analysis shall consider the phasing of the development and make infrastructure improvement recommendations so an adequate level of services (LOS) is maintained with each phase of development.

Traffic Impact Study Format and Content

As stated above, there is no single standard for TIS requirements. However, several elements of the content and format of a TIS document are widely incorporated by regulating agencies. The project team considers the 2021 guidelines provided by the Wisconsin Department of Transportation to reflect the prevailing standards and best practices for TIS requirements. Using these guidelines, the project team presents the following annotated outline as a recommended approach to the format and content of a TIS document. Further details regarding specific outline items can be found within the WisDOT Traffic Impact Analysis Guidelines[1].

Chapter 1. Introduction and Executive Summary

Chapter 1 briefly describes the development and provides a summary of its potential traffic impacts. This chapter should identify the purpose of the report and highlight who conducted the analysis and why. There should also be a discussion of the study objectives to provide context for review of the report. The chapter should provide a short synopsis of the important findings and conclusions. It is helpful if the executive summary can be understandable as a stand-alone document.

a. Purpose of Report and Study Objectives
b. Executive Summary
c. Chapter 1 Exhibits

Chapter 2. Proposed Development

Chapter 2 provides the narratives and exhibits necessary so that the reviewer has a complete description of the proposed development. Descriptions should explain the time frame and stages/phases for the development, location of the site, planned land use, and intensity of the development. If the development will not take place all at one time, the site plan should illustrate the development-staging plan to highlight the location where each phase of the development will occur in relationship to the full project buildout.

a. On-Site Development
    i. Development Descriptions and Site Locations
    ii. Land Use and Intensity
    iii. Site Plan
    iv. Development Phasing and Timing
b. Study Area
c. Off-Site Land Use and Development
d. Site Accessibility
e. Chapter 2 Exhibits

1 See: https://wisconsindot.gov/dtsdManuals/traffic-ops/manuals-and-standards/tiaguide.pdf

Chapter 3. Analysis of Existing Conditions

Chapter 3 presents the analysis of existing conditions for the study area, which serves as the base against which to measure the incremental traffic impacts of the proposed development. Specifically, this chapter should address the physical characteristics of the existing transportation system and any planned improvements, existing traffic volumes in the study area, level of service analysis, and documentation of all data used to complete the analyses.

a. Physical Characteristics
b. Traffic Volumes
c. Capacity/Level of Service Analysis
d. Sources of Data
e. Chapter 3 Exhibits

Chapter 4. Projected Traffic

Chapter 4 presents an analysis of future traffic volumes in the study area, which should consist of background traffic, development traffic, and the additional off-site development traffic. Traffic volumes should be forecast for all horizon years, as determined by the reviewing agency.

Because the quality of the traffic analysis depends upon the accuracy of the traffic projections, it is important that the preparer document all assumptions and methodologies used in the preparation of future traffic volumes so that the reviewing agency can assess the analysis for reasonableness and completeness.

a. Background Traffic Forecasting
b. On-Site and Off-Site Development Traffic Forecasting
    i. Trip Generation
    ii. Mode Split
    iii. Determination of Pass-By + Linked-Trip Traffic
    iv. Trip Distribution
    v. Trip Assignment
c. Build and Total Traffic
d. Chapter 4 Exhibits

Chapter 5. Traffic and Improvement Analysis

Given the total projected traffic for each horizon year, Chapter 5 presents an analysis of the future traffic conditions, identifies needs, and analyzes alternative improvements for the study area.

a. Proposed Site Access
b. Future Capacity/Level of Service Analysis
c. Queuing Analysis
d. Multimodal Considerations
e. Speed Considerations/Sight Distance
f. Traffic Control Needs
g. Traffic Signal Warrant Analysis
h. Chapter 5 Exhibits

Chapter 6. Conclusions and Recommendations

Chapter 6 provides a discussion of conclusions regarding the analysis of existing and future conditions. Based on the conclusions of the analysis, this chapter presents recommendations to mitigate identified operational and safety-related deficiencies.

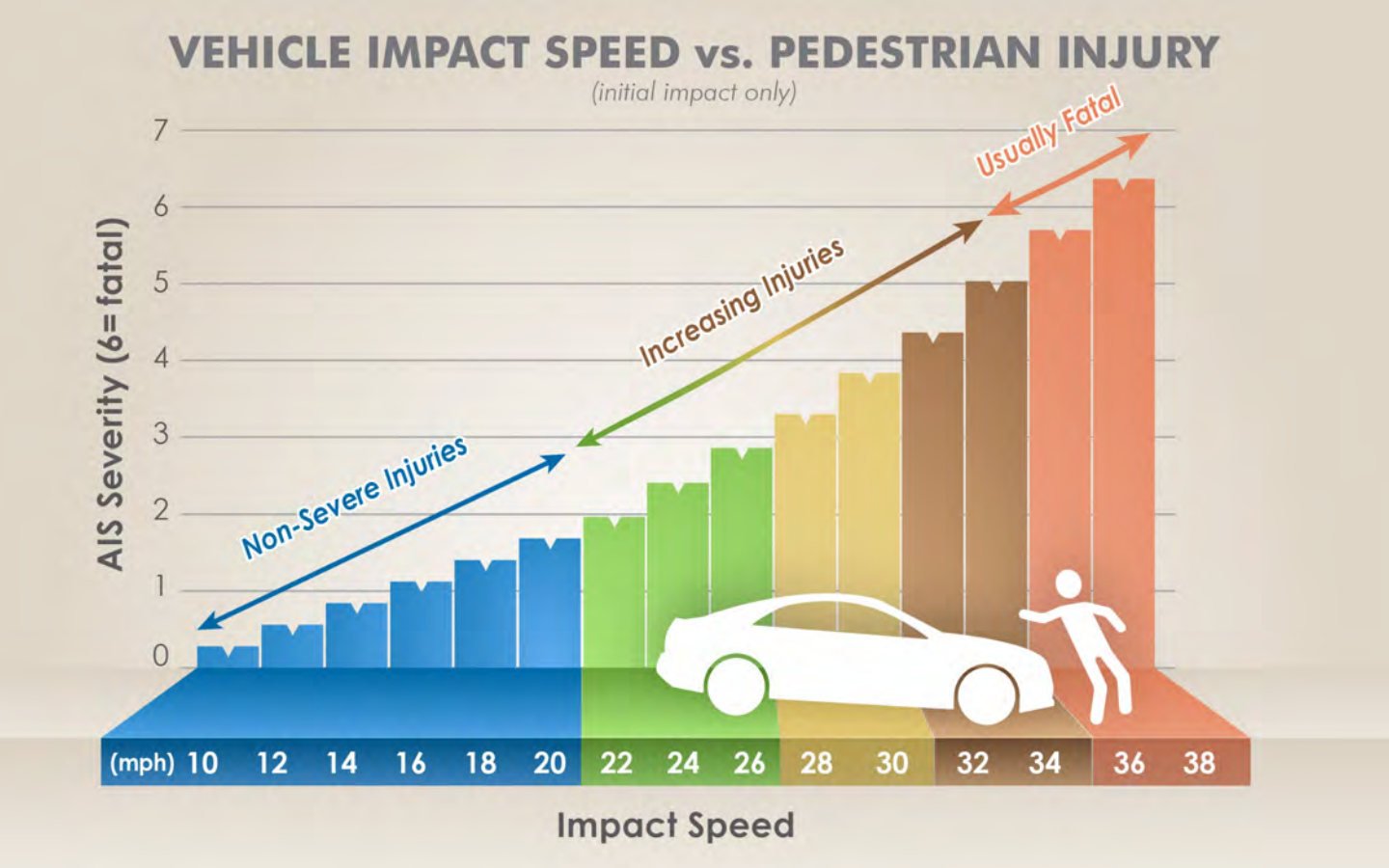
a. Conclusions
b. Recommendations
c. Chapter 6 Exhibits

TRAFFIC CALMING

Traffic calming supports the livability and vitality of residential and commercial areas through improvements in non-motorist safety, mobility, and comfort. These objectives are achieved by reducing vehicle speeds or volumes on a single street or a street network. Traffic calming approaches use a variety of physical measures and driver-perception techniques to produce desired effects. An effective traffic calming program can help to transform streets and aid in creating a sense of place for communities.

The importance of reducing vehicle speeds in an area where there is potential for conflict between a pedestrian and a motor vehicle is undeniable. Simply stated, the slower the speed of a motor vehicle, the greater the chances are for survival for a pedestrian. Figure 11.14 illustrates the relationship between the speed of a vehicle and the potential for pedestrian injury.

Figure 11.14: Speed/Pedestrian Injury Severity Correlation



Traffic Calming Toolbox

The study team compiled a sample toolbox of individual traffic calming measures that may be considered in the development of a traffic calming program. It is important to remember that the application of a calming measure must consider the specific problem to be addressed, as even very effective measures will produce little benefit in the wrong context.

Table 11.5 presents the toolbox of traffic calming measures, including a description of each measure and an indication of the type of roadway for which the measure may be most appropriate. The toolbox is not comprehensive, but rather provides a sample of effective calming measures. Much of the toolbox content was adapted from the FHWA Traffic Calming ePrimer1. The table separates measures into four general categories:

- Horizontal deflection limits the ability of a motorist to drive in a straight line by creating a horizontal shift in the roadway
- Vertical deflection creates a change in the height of the roadway that forces a motorist to slow down in order to maintain an acceptable level of comfort
- Street width reduction makes increases driver attentiveness and naturally lowers vehicle speeds
- Routing restriction prevents turns or through movements into specific areas to reduce traffic or create pedestrian zones
- The appropriateness of a specific measure by road type is indicated with the numbers 3 to 1, with 3 reflecting a high level of potential appropriateness, 2 reflecting a moderate level, and 1 representing a low level.

Conclusion

Traffic calming involves trade-offs between the need to provide an efficient transportation network and maintaining a livable and safe environment for bicyclists, pedestrians, drivers, and adjacent land uses. The challenge of traffic calming is selecting the appropriate measures and locations to reach that balance. The City is encouraged to refer to the FHWA Traffic Calming ePrimer and its recommended resources as it develops and updates its traffic calming plan.

1 see: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Table 11.5: Traffic Calming Toolbox

Measure	*Description*	*Appropriateness*
Horizontal Deflection		
Chicane	A series of alternating curves or lane shifts that force a motorist to steer back and forth out of a straight travel path. The curvilinear path is intended to reduce the speed at which a motorist is comfortable travelling through a facility. Chicane curves can be created with a curb extension that alternates from one side of the street to the other.	Arterials: 1 Collectors: 3 Local Roads: 3
Realigned Intersection	The reconfiguration of an intersection with perpendicular angles to have skewed approaches or travel paths through the intersection. The expectation is that these physical features will discourage fast vehicle movements through the intersection.	Arterials: 1 Collectors: 3 Local Roads: 3
Traffic Circle	A raised island, placed within an unsignalized intersection, around which traffic circulates. A circle forces a motorist to use reduced speed when entering and passing through an intersection, whether the vehicle path is straight through or involves a turn onto an intersecting street.	Arterials: 1 Collectors: 2 Local Roads: 3
Vertical Deflection		
Speed Hump	An elongated mound in the roadway pavement surface extending across the travel way at a right angle to the traffic flow. A speed hump produces sufficient discomfort to a motorist driving above the speed hump design speed to discourage speeding.	Arterials: 1 Collectors: 3 Local Roads: 3
Speed Table	A raised area placed across the roadway designed to limit the speed at which a vehicle can traverse it. Like a speed hump, it extends across the travelway. Unlike a speed hump, a speed table has a long enough flat top (typically 10 feet) to accommodate the entire wheelbase of most passenger cars. This flat top enables comfortable and safe vehicle speeds that are faster than allowed by a speed hump.	Arterials: 2 Collectors: 3 Local Roads: 3
Raised Crosswalk	A variation of a flat-topped speed table, a raised crosswalk is marked and signed as a pedestrian crossing. A raised crosswalk improves pedestrian safety by causing motorist speed to decrease at the crossing. Additionally, the height of the crosswalk increases the visibility of a pedestrian to motorists and improves the line of sight for a pedestrian toward an oncoming vehicle.	Arterials: 2 Collectors: 3 Local Roads: 3
Street Width Reduction		
Curb Extension	A horizontal extension of the sidewalk into the street resulting in a narrower roadway section. This method may be used at either a corner or midblock. A curb extension at an intersection is called a corner extension, while at midblock it is referred to as a choker. A corner extension shortens pedestrian crossing distance, and can be combined with a vertical speed control device (e.g., a raised crosswalk) to achieve a greater reduction in vehicle speed.	Arterials: 3 Collectors: 3 Local Roads: 3
Median Island	A raised island located along the street centerline that narrows the travel lanes at that location, encouraging motorists to slow. A median island can double as a pedestrian refuge island if a cut in the island is provided along a marked crosswalk. When placed at or near the entrance to a neighborhood, a median island provides a visual cue to the motorist about the preferred vehicle speed	Arterials: 3 Collectors: 3 Local Roads: 3
Road Diet	The conversion of an undivided roadway to a cross-section with fewer or narrower through motor vehicle travel lanes. The most common application is the conversion of an undivided four-lane roadway to a three-lane roadway consisting of two through lanes and a center two-way left-turn lane. This lane reduction may also accommodate the inclusion of multimodal elements such as bicycle lanes, sidewalks, pedestrian refuge islands, and transit.	Arterials: 3 Collectors: 3 Local Roads: 2
Routing Restriction		
Diagonal Diverter	A diagonal diverter is a physical barrier placed diagonally across a four-legged intersection. The barrier creates two unconnected intersections. Traffic approaching the intersection is restricted to one receiving leg, rather than three. A strategically placed diagonal diverter can reduce traffic volume by preventing straight-through traffic movements at an intersection.	Arterials: 1 Collectors: 2 Local Roads: 2
Full Closure	A physical barrier placed across a street to close the street completely to through vehicle traffic. Full closure can be done at either an intersection or midblock. A full closure can be designed to allow bicyclists and pedestrians to pass through. It is important to consider where the diverted traffic is likely to shift, in particular the availability, capacity, and appropriateness of the alternative routes.	Arterials: 1 Collectors: 2 Local Roads: 2
Median Barrier	A median barrier is a raised island placed through an intersection, along the centerline of a roadway, preventing a motorist from traveling straight through the intersection on the side street. A median barrier can be designed to allow turns to and from the main street, while preventing through traffic from the side street from crossing the main roadway.	Arterials: 2 Collectors: 3 Local Roads: 3

OVERVIEW OF ROUNDABOUTS

Primary Roundabout Types

Table 11.6 compares the characteristics of the primary roundabout types. The primary types/configurations of the modern roundabout in the United States include:

- A **Multi-Lane Roundabout** (Figure 11.15) has two or more approach lanes for each leg of the intersection and two or more circulating lanes throughout the entire roundabout.
- A **Hybrid Multi-Lane Roundabout** (Figure 11.16), commonly referred to as a "2x1 Roundabout", is classified as having a mixture of one- and two-lane approaches and circulating lanes.
- A **Single-Lane Roundabout** (Figure 11.17) has one approach lane and a circulating lane throughout the entire footprint.
- A **Mini Roundabout** (Figure 11.18) is a single-lane roundabout with design features that make it more compressed and suitable for compact urban environments. Mini roundabouts have become more common across the United States in recent years. In the right circumstances they can achieve the same benefits as a single-lane roundabout at a substantially lower price.

Table 11.6: Roundabout Type Comparison

Characteristics	*Multi-Lane Roundabout*	*Hybrid Multi-Lane Roundabout*	*Single-Lane Roundabout*	*Mini Roundabout*
Desired Entry Speed	25 to 30 mph	Varies	20 to 25 mph	15 to 20 mph
Typical Inscribed Circle (Curb to Curb of the circulating roadway)	150 to 300 ft	Varies	90 to 180 ft	45 to 90ft
Planning Level Entering Volume Capacity	Up to 45,000 for two lane approaches on each leg. Roundabouts with 3+ entry legs require more planning level analysis	Varies	Up to 25,000	Up to 15,000 vpd
Advantages	Large capacity and ability to process traffic volume	Allows for adaptive and creative design where there are right-of-way constraints and has a smaller footprint and cost than a traditional multi-lane roundabout if the capacity is not needed on the minor approach	The maximum safety benefit compared to other roundabout types	Small footprint, usually able to be constructed within the existing curb lines of an intersection which relates to a lower construction cost
Disadvantages	Large footprint and will likely increase the overall frequency of crashes (still greatly reducing severity) compared to other roundabouts. There are concerns with driver entry yielding compliance that is elevated with multi-lane roundabouts. The design process can be very challenging and complex compared to smaller roundabouts.	Inconsistency of lanes in the circulatory roadway may cause additional crossing paths and confusion for motorists. The design process and for multi-lane/ hybrid roundabouts can be complex compared to other roundabouts.	More expensive and larger impact compared to mini roundabouts.	Tight geometry makes navigation for large vehicles difficult. The entire center island must be fully traversable for heavy vehicles.
Applicable Contexts	Multi-lane roundabouts are typically most successful for traffic operation mitigation where a large signalized intersection would have been needed.	A Hybrid roundabout should be used in specific circumstances where traffic volumes are unbalanced but the operations are still deemed to be acceptable.	A Single lane roundabout is the most common and widely applicable roundabout in the United States.	This roundabout should be used in low speed urban areas.

Figure 11.15: Multi-Lane Roundabout – King Avenue and 40th Street, Billings, MT

Figure 11.16: Hybrid Multi-lane Roundabout (2x1) – E North Pacific Avenue and Airway Boulevard, Belgrade, MT

Figure 11.17: Single-lane Roundabout – Smelter Avenue and Division Road, Great Falls, MT

Figure 11.18: Mini Roundabout – Toole Avenue and Scott Street, Missoula, MT

Prevalence of Roundabouts

Roundabouts construction emerged in the 1990s in states like California, Florida, Nevada, Colorado, Vermont, and Maryland. As public perception and safety data improved to show the safety and operational benefits of roundabouts, their implementation increased drastically in the mid to late 2000s.

Kittelson's Lee Rodegerdts played a key role in the NCHRP study and since then has kept a real-time database of roundabouts in the Unites States through his firm Kittelson and Associates since 1997. Figure 11.20 and Figure 11.21 give more perspective on the history and growth of roundabouts in the United States.

The National Cooperative Highway Research Program (NCHRP) conducted a study in 2003 that found that 73% of roundabouts in the United States are single lane and mini roundabouts, 25% are hybrid multi-lane and multi-lane with two approach lanes and circulating lanes, and 2% were multi-lane roundabouts with at least one approach that had three or more lanes. A comparable study has not been completed since then.

MDT began design and public engagement for roundabouts in the early 2000s and constructed their first roundabouts in the late 2000s. To date, there are approximately 56 roundabouts in operation, 10 more in construction, and 18 more in design, planning, or early consideration phases according to MDT records. These numbers are broken out in Table 11.7.

Figure 11.19: Types of Roundabouts in the U.S. (NCHRP)

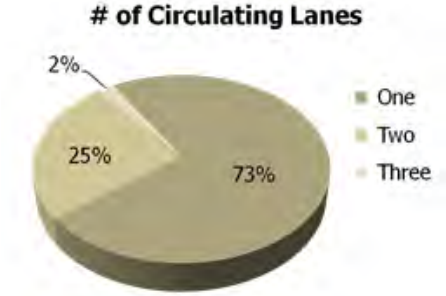


Figure 11.20: Roundabouts by State

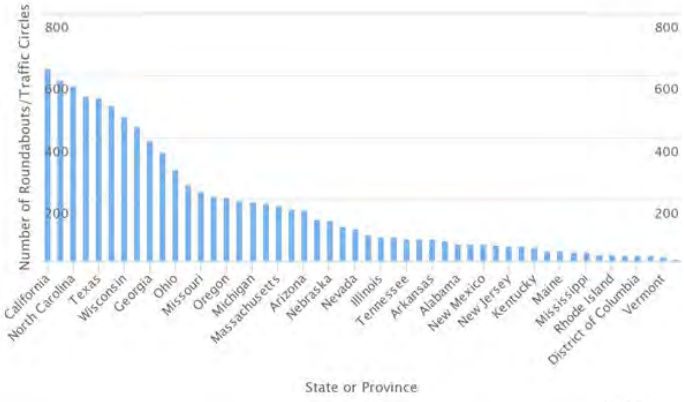


Figure 11.21: Roundabouts by Year Constructed

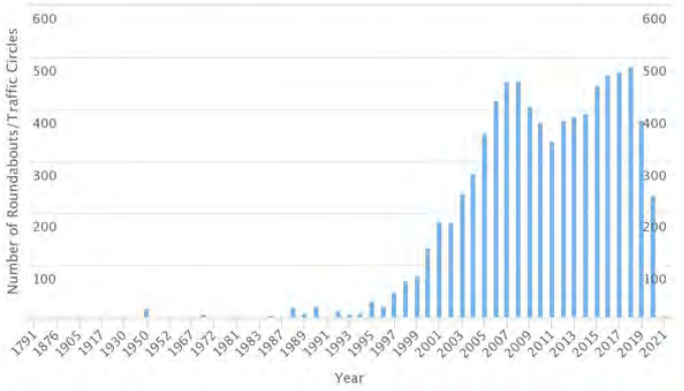


Table 11.7: Montana Roundabouts by Location[1]

General Location	Roundabouts in Operation	Roundabouts under Construction[2]	Roundabouts in Consideration/Planning/ Design Phases
Billings	17	1	5
Bozeman & Belgrade	11	0	1
Great Falls	1	0	3
Helena	5	1	3
Butte	0	1	1
Missoula	11	2	2
Kalispell	7	2	3
Combination of Other Jurisdictions With Less than 10,000 population (Sidney, Poplar, Miles City, Lame Deer, Red Lodge, Browning)	4	3	1
Total	**56**	**10**	**18**

1 See: https://www.mdt.mt.gov/visionzero/roads/roundabouts/locations.shtml. Table numbers are current as of March 2021.

2 Includes roundabouts that are let for construction

Benefits of Roundabouts

Roundabouts have been shown to reduce the number of crashes that occur at an intersection, reduce crash severity, and improve bicycle and pedestrian safety. The two major components that allow the accomplishment of these safety benefits are the ability of the roundabout to reduce conflict points between facility users and reduce vehicle speed. Figure 11.22 and Figure 11.23 help demonstrate how a roundabout physically achieves these concepts.

Roundabouts can also reduce delay and travel time, reduce operation and maintenance costs, be cheaper to construct, offer more flexibility for traffic growth and travel pattern changes, and offer opportunities for placemaking and aesthetics. Table 11.8 provides considerations for roundabouts in comparison to other traffic control types.

Table 11.8: Comparison of Roundabouts to Other Traffic Control Types

Consideration	*Disadvantages*	*Advantages over Side-Street Stop Control*	*Advantages over All-Way Stop Control*	*Advantages over Signal Control*
Safety	There may be an increase in low severity sideswipe crashes and rear end crashes on the major approach when converting from two way stop control. This is especially true of muilti-lane and hybrid roundabouts.	Roundabouts show a 44% reduction in all crashes and up to 87% reduction in serious and fatal crashes.	While there is still expected to be a crash reduction, the comparison to all-way stop control is less drastic than other control types.	Roundabouts show a 48% reduction in all crashes and up to 78% reduction in serious injury and fatal crashes.
Delay	Roundabouts are also less consistent and less capable of servicing large volume intersections or dominant movements when compared to signal actuation, signal time of day plans, or the uncontrolled approach of two-way stop control.	Roundabouts can improve the frequency and duration of gaps for minor street traffic movements when compared to two-way stop control.	Roundabouts are generally able to process traffic faster due to a yield entry condition instead of the full stop and by allowing multiple approaches to enter the intersection simultaneously.	Roundabouts in a variety of cases are able to reduce delay compared to a signal by elimination of loss time (yellow + all-red between phases).
Cost	The geometric footprint of roundabouts frequently cost more than a signal. It is important to complete a benefit/cost analysis for roundabouts when less expensive solutions may be adequate. Maintenance of the center island components should be considered in the cost.	No Cost Advantage.	No Cost Advantage.	Roundabouts of a smaller footprint, especially mini roundabouts, can cost less to construct than signals. Roundabouts also require less maintenance and no electrical equipment.

Figure 11.22: Vehicle Conflict Point Comparison

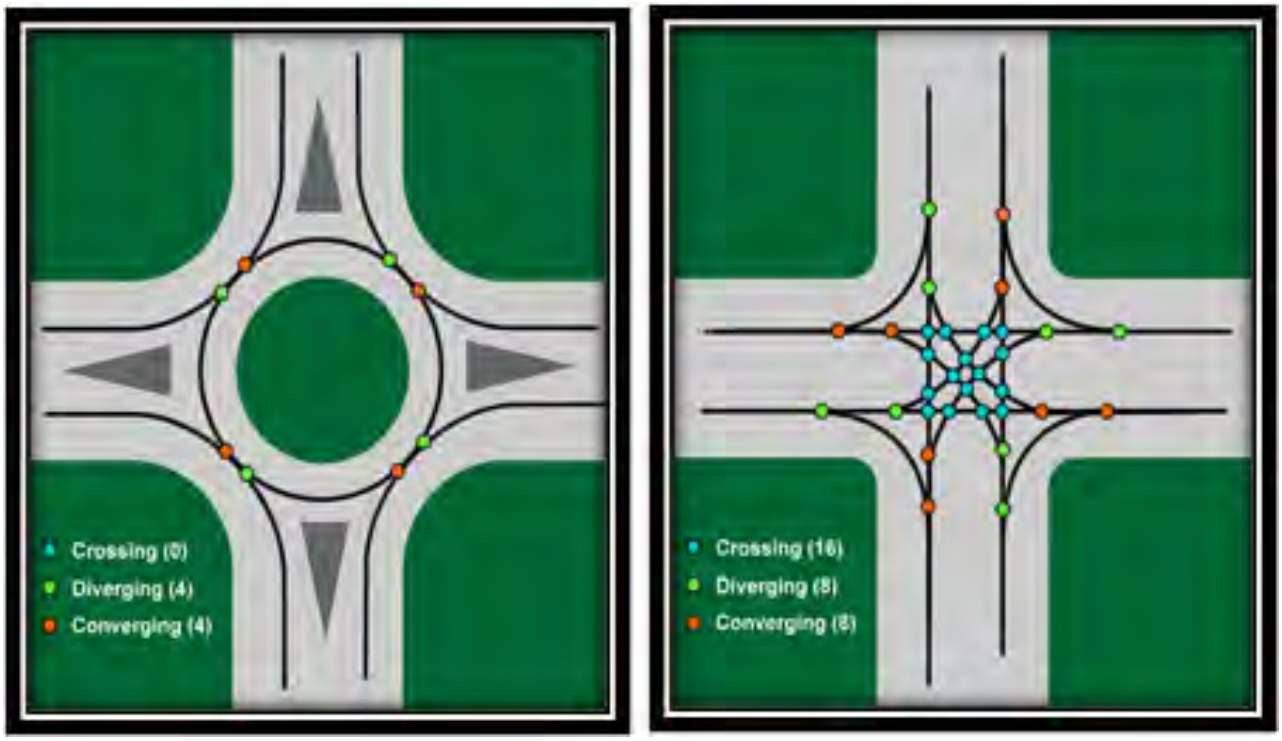
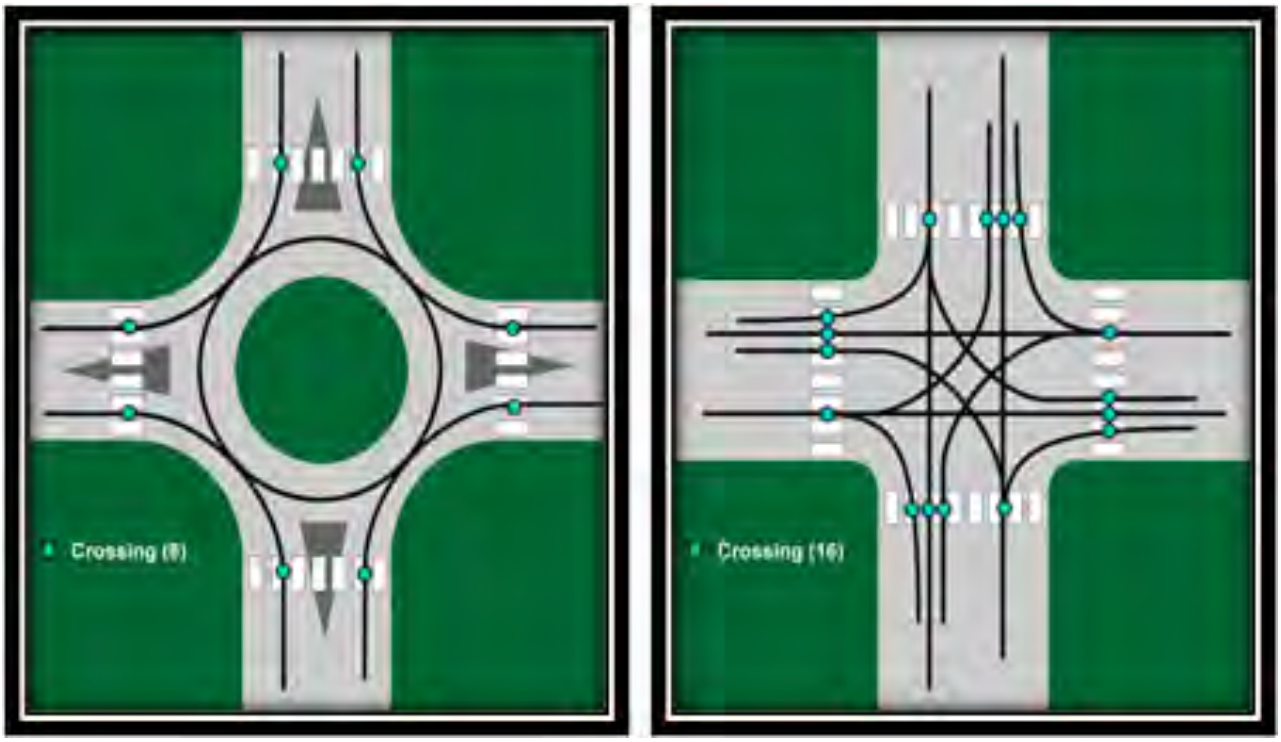


Figure 11.23: Pedestrian Conflict Point Comparison



ITS

ITS applies information, technology, and systems engineering principles to the management and operations of surface transportation facilities and systems, including freeways, arterials, and transit. ITS includes a wide range of applications that process and share information to reduce congestion, improve traffic management, minimize environmental impacts and increase the benefits of transportation to commercial users and the general public. The substantial benefits of ITS can be observed in the areas of travel time improvement, capacity management, incident management, and sustainability.

Many of the most prominent ITS technologies have already been deployed throughout the country (please see the text box to the right).

MDT has employed several ITS solutions to improve the efficiency of Montana's transportation system, with the most notable examples being upgrades to traffic signal systems and implementation of traveler information systems.

MDT has also implemented the 511 system, which allows drivers to access real-time information by phone or internet. The 511 system provides updates on weather-related conditions, road work, commercial vehicle restrictions, road closures, chain requirements and other travel information. Finally, dynamic message signs have been employed at key locations on the road network to advise motorists of changing travel conditions. These technologies allow travelers to make better choices about when they travel, what transportation mode they use, and what route they take.

ITS for Kalispell

USDOT recognizes that there is a subset of ITS solutions and technologies that is most relevant for "rural environments", which it defines to include both rural areas and urban centers with populations of less than 50,000[1]. This is because such areas have different technological infrastructure, fiscal resources, infrastructure usage, and travel patterns relative to urban areas. Considering these unique characteristics, the City may benefit from exploring ITS solutions in the following focus areas:

Traveler Safety and Security

This focus area addresses a driver's ability to operate their vehicle in a safe and responsible way and for improving driver awareness of potentially hazardous driving conditions.

Potential ITS Solutions:

- Dynamic speed warning message signs that communicate a vehicle's actual speed to the driver.
- Animal Warning Systems that warn motorists about the potential or actual presence of animals on the road. These systems utilize electronic sensors to detect animals. Once an animal is detected, signs are activated to warn drivers of the presence of an animal.

EXAMPLES OF ITS IN USE TODAY

- **Ramp Meters (RM)** on freeway ramps alternate between red and green signals to control the flow of entering vehicles. Metering rates are altered based on freeway traffic conditions.
- **Red Light Cameras (RLC)** detect when a motor vehicle runs a red light. The sensors connect to computers in high-speed cameras, which capture license plate information. Law enforcement reviews the information and mails a citation if warranted.
- **Adaptive Signal Control Technology (ASCT)** collects and evaluates traffic data in real time to adjust signal timing and improve traffic flow. ASCT can also respond to traffic incidents and special events.
- **Transit Signal Priority (TSP)** systems use sensors to detect approaching transit vehicles and give them priority at signalized intersections.

Source: USDOT ITS Research Fact Sheets – Benefits of Intelligent Transportation Systems

Tourism and Travel Information Services

This focus area addresses the challenges experienced by drivers unfamiliar with the area through which they are traveling.

Potential ITS Solutions:

- Dissemination of real-time information on parking availability through a cell phone application. Such an application could also provide information on construction projects, etc.
- Dissemination of real-time weather and road conditions information via cell phone applications.

Transit Services

This focus area addresses opportunities to increase the accessibility and coordination of Mountain Climber service.

1 https://www.pcb.its.dot.gov/eprimer/module10.aspx

Potential ITS Solutions:

- TSP technologies, which reduce dwell time at traffic signals for transit vehicles by holding green lights longer or shortening red lights. TSP may be implemented at individual intersections or across corridors or entire street systems.
- Electronic fare payment systems to automate fare collection and processing. Electric payment options include smart phones (e-tickets), magnetic stripe cards, smart cards and credit cards.
- Automatic Vehicle Location (AVL) technology, a computer-based vehicle tracking solution that uses GPS to communicate the real-time location of buses. Transit agencies use AVL systems to improve customer service by communicating arrival times, which can be posted to variable message boards installed at transit stops, websites and smartphone applications. AVL also allows agencies to monitor transit driver performance.
- Automated voice annunciator systems that broadcast bus route and safety information.

Traffic Signals

This focus area addresses the signal system so that traffic operates at an optimal level.

Potential ITS Solutions:

- Traffic signal coordination provides the ability to synchronize multiple intersections to enhance the operation of one or more directional movements in a system. The decision to use coordination is supported by various considerations, but is typically most appropriate when intersections are in close proximity and there is a large amount of traffic on the coordinated street.