Polson Area Transportation Plan

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Prepared for:

CITY OF POLSON,
LAKE COUNTY,
CONFEDERATED SALISH AND KOOTENAI TRIBES
and
MONTANA DEPARTMENT OF TRANSPORTATION

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Final

Prepared by:

CDM

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Executive Summary

This Transportation Plan (Plan) offers guidance on transportation system improvements for decision-makers of the greater Polson community. The Plan contains analysis of a multi-modal transportation system within the Plan's study area boundary. Included are an examination of traffic operations, the roadway network, the non-motorized transportation system, trip reduction strategies, and growth management techniques available to a growing community. This document also identifies the challenges with the transportation system in the greater Polson community and makes specific recommendations for improvement projects and programs that will mitigate existing concerns and/or meet future needs. This Plan has been developed both through meaningful dialogue with the community and stakeholders, and through the analysis and oversight of the Technical Oversight Committee (TOC), which was established for this planning effort.

This Plan provides a balanced approach in addressing existing challenges and in planning for the future. Growth within the Polson area was forecast by using control totals available from the Polson Growth Policy (2006) and US Census Bureau information. From the available data, dwelling unit and employment (retail and non-retail jobs) growth was assigned to those areas within the community most likely to grow during the twenty year planning horizon (year 2030). By using the *TransCAD* travel demand model, the percent increase in roadway traffic volumes between the current year (year 2010) and the planning year (year 2030) to identify those areas most likely to realize increased traffic volumes were developed. This model used current socio-economic data, along with the developed growth trends, to calculate future traffic volumes. As presented in Chapter 3 of the Plan, these projected traffic volumes informed future traffic concerns within the area.

Analysis of the existing transportation system and future traffic conditions indicates a need for numerous infrastructure improvements in the area. These improvements are explained in Chapter 5 of this Plan and are broken down into three categories:

- Major Street Network (MSN) Recommendations;
- Transportation System Management (TSM) Recommendations; and
- Non-Motorized Network Recommendations & Considerations.

The MSN projects focus on upgrading entire corridors and/or constructing new roadways and making intersection improvements. Six (6) MSN projects are recommended at a total cost of approximately $5,205,000. TSM projects focus mainly on intersection improvements, such as the addition of turning lanes and signalization. Sixteen (16) TSM projects are recommended at an estimated cost of about $1,341,300. The Plan also strengthens and/or reinforces policy and programs for both non-motorized and for motorized travel. Chapter 7 of the Plan presents concepts and guidelines for corridor preservation and access management principles, transportation level of service guidance, and for a variety of bicycle design guidelines.

Analysis of the numerous infrastructure projects have been recommended in the Plan shows five (5) projects stand out as being of most value to the community--both in terms of addressing existing concerns and in terms of planning for future growth. Although prioritization of these five projects is best left to elected officials and the community as funding becomes available. The five projects are listed below:

Top Five Projects for Implementation

(in no order of priority)

- MSN-1 7th Avenue (5th Street West to Hillcrest Lane);
- MSN-3 2nd Street East (Kootenai Avenue to 7th Avenue);
- MSN-6 4th Avenue East (1st Street East to US 93);
- TSM-1 US 93 Access Management Plan; and
- TSM-5 Polson Downtown Master Plan.

It is important for the community to plan for the inevitable growth by preserving roadway corridors, when able to do so, and recognize any signs of declining levels of service on area intersections. Although this Plan is a tool that can be used to guide development of the transportation system in the future, both local and state planners must continually re-evaluate the findings and recommendations in this document as growth is realized and development occurs. If higher than anticipated growth is realized in the community, or if growth occurs in areas not originally planned for, then transportation needs may be different from those analyzed in this Plan. Thus an update and re-evaluation of this document is recommended every five years, if at all possible.

Implementation of the many recommendations contained in the Plan does not occur solely through expenditure of funds by the local government. Examples of Plan implementation that occur at little to no cost to the local government can include the process of right-of-way (or easement) acquisition through development, as well as through some Transportation Demand Management (TDM) strategies. Both the elected officials and the community should constantly seek out ways to partner with each other to create a truly multi-modal transportation system for the travelling public.

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Definitions

Access Management/Control – Controlling or limiting the types of access or the locations of access on major roadways to help improve the carrying capacity of a roadway, reduce potential conflicts, and facilitate reasonable land usage.

Average Daily Traffic (ADT) – The total amount of traffic observed, counted or estimated during a single, 24-hour period.

Annual Average Daily Traffic (AADT) – The average daily traffic averaged over a full year.

Americans with Disabilities Act (ADA) – The Federal regulations which govern minimum requirements for ensuring that transportation facilities and buildings are accessible to individuals with disabilities.

Bikeway – Any roadway, path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Bike Path – A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right of way (or easement) or within an independent right of way (or easement).

Bike Lane – A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

Bike Route – A segment of a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational markers, with or without a specific bicycle route number.

Capacity – The maximum sustainable flow rate at which vehicles can be expected to traverse a roadway during a specific time period given roadway, geometric, traffic, environmental, and control conditions. Capacity is usually expressed in vehicles per day (vpd) or vehicles per hour (vph).

Collector Roadway – Provides for land access and traffic circulation within and between residential neighborhoods, and commercial and industrial areas. It provides for the equal priority of the movement of traffic, coupled with access to residential, business and industrial areas. A collector roadway may at times traverse residential neighborhoods.

Congested Flow – A traffic flow condition caused by a downstream bottleneck unable to pass through unsignalized intersections.

Context Sensitive Design (CSD) –Integrates transportation infrastructure improvements to the context of the adjacent land uses and functions, with a greater sensitivity to transportation impacts on the environment and communities being realized.

Delay – The amount of time spent not moving due to a traffic signal being red, or being unable to pass through an unsignalized intersection.

Facility – A length of highway composed of connected section, segments, and points.

Level of Service (LOS) – A qualitative measure of how well an intersection or road segment is operating based on traffic volume and geometric conditions. The level of service "scale" represents the full range of operating conditions. The scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using it, and can be used for both existing and projected conditions. The scale ranges from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion.

Local Roadway – Comprises all facilities not included in a higher system. Its primary purpose is to permit direct access to abutting lands and connections to higher systems. Usually through-traffic movements are intentionally discouraged.

Major Street Network (MSN) – The network of roadways defined for the Transportation Plan effort that include the interstate, principal arterials, minor arterials, collectors and some local roadways.

Minor Arterial Roadway – Interconnects with and augments the Principal Arterial system. It also provides access to lower classifications of roadways on the system and may allow for traffic to directly access destinations. They provide for movement within sub-areas of the study area, whose boundaries are largely defined by the Principal Arterial road system. They serve through traffic, while at the same time providing direct access for commercial, industrial, office and multifamily development but, generally, not for single-family residential properties. The purpose of this classification of roadway is to increase traffic mobility by connecting to both the Principal Arterial system and also providing access to adjacent land uses.

Multi-modal – A transportation facility for different types of users or vehicles, including passenger cars and trucks, transit vehicles, bicycles, and pedestrians.

Oversaturation – A traffic condition in which the arrival flow rate exceeds capacity on a roadway lane or segment.

Peak Hour – The hour of greatest traffic flow at an intersection or on a roadway segment. Typically broken down into AM and PM peak hours.

Principal Arterial Roadway – Is the basic element of the study area's roadway system. All other functional classifications supplement the Principal Arterial network. Access to a Principal Arterial is generally limited to intersections with other principal arterials or to the interstate system. Direct access is minimal and controlled. The purpose of a principal arterial is to serve the major centers of activity, the highest traffic volume corridors, and the longest trip distances in the study area. This classification of roadways carries a high proportion of the total traffic within the study area. The major purpose is to provide for the expedient movement of traffic.

Roadway – The area within a travelling section and is inclusive of all aspects of the structure (not just the "driving" surface).

Service Life – The design life span of roadway based on capacity or physical characteristics.

Transportation Demand Management (TDM) - Programs designed to maximize the people-moving capability of the transportation system by increasing the number of persons in a vehicle, or by influencing the time of, or need to, travel.

Volume to Capacity (V/C) Ratio – A qualitative measure comparing a roadways theoretical maximum capacity to the existing (or future) volumes. Commonly described as the result of the flow rate of a roadway lane divided by the capacity of the roadway lane.

Acronyms

AASHTO	American Association of State Highway and Transportation Officials
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
CSKT	Confederated Salish & Kootenai Tribes
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
ITE	Institute of Transportation Engineers
MDT	Montana Department of Transportation
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
TEA-21	Transportation Efficiency Act for the 21st Century
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
STIP	Statewide Transportation Improvement Program
TIP	Transportation Improvement Program
TOC	Technical Oversight Committee

Chapter 1 Project Introduction and Coordination

1.1 Introduction

The Confederated Salish and Kootenai Tribes (CSKT), Lake County, and the City of Polson-- in partnership with the Montana Department of Transportation (MDT) -- initiated a community-wide transportation planning process both to evaluate existing transportation system performance and to examine future system needs over a 20-year planning horizon. The Polson community has experienced considerable growth not only within the City but also in the outlying areas of the County. Through collaboration and outreach to the greater Polson community, this transportation planning document was developed to provide guidance to decision makers on transportation system improvements.

A Technical Oversight Committee (TOC) was established to help guide the transportation planning process, establish goals and priorities for the Plan, and to review the findings. Included in the TOC were representatives from CSKT, Lake County, the City of Polson, MDT, and the Federal Highway Administration (FHWA). During the Plan development process, the TOC solicited input from the citizens of the greater Polson community who commonly use the area's street and highway system. The Plan was a positive step in assessing and planning for the area's transportation infrastructure.

This plan also drew from the *US 93 Polson Corridor Study (2011)* which was a parallel effort developed in conjunction with this Plan. The outcome of the *US 93 Polson Corridor Study* identified two potential alternate routes of US 93 as being feasible if and when funding becomes available. Therefore, as part of any alignment discussion through or around Polson the existing US 93 corridor will need to be considered as an option.

Included in this Plan are an examination of traffic operations, the roadway network, the non-motorized transportation system, trip reduction strategies, and growth management techniques. This document also identifies concerns with the existing transportation system and offers recommendations in the form of improvement projects and programs that will address existing concerns and/or meet future needs.

1.2 Study Area

All transportation plans begin by defining the study area. Sometimes this study area follows governmental boundaries such as city limits, but most often study areas include areas outside city limits in which future growth may occur. As part of the planning process, the study area boundary was developed for the following two purposes:

1. To include areas where growth has recently occurred, or is anticipated to occur, in the foreseeable future, and

2. To contain the study area originally used in the 2006 Polson Growth Policy.

In the 2006 Polson Growth Policy, the planning area included a two-mile radius of the incorporated city limits of Polson (excluding Flathead Lake). This generally is adequate to capture those areas surrounding the City that are anticipated to grow over the 20-year planning period. However, several areas not formally included in the Plan's study area boundary may exert development pressure which could affect the transportation system within the study area boundary. These generally include most of the unincorporated area of Lake County that may seek services or recreational opportunities in Polson. Even though these areas may be outside of the boundary, travel back and forth into Polson will have an impact on the transportation system and thus has been captured in the analysis techniques for the Plan. This phenomenon was captured primarily via land use forecasting inside the study area boundary and analysis of historic traffic volume growth along US 93 outside the study area boundary. Results of the forecasting became one of the inputs into the *TransCAD* travel demand model, which was used to evaluate impacts to the transportation system.

Figure 1-1 shows the Plan's study area boundary, which includes all of the major employers in the area, and consists of all the areas that may be used for employment centers in the next twenty years. It also involves residential land uses that may develop in the area, and those areas likely to increase the housing supply in the future and subsequently add traffic onto the transportation system. Areas outside the formal study area boundary will still have an effect on the transportation system within the study area boundary. Land use changes outside of the "formal" boundary are still accounted for and incorporated into the travel demand model; however precise transportation system impacts are not identified outside of the "formal" study area boundary.

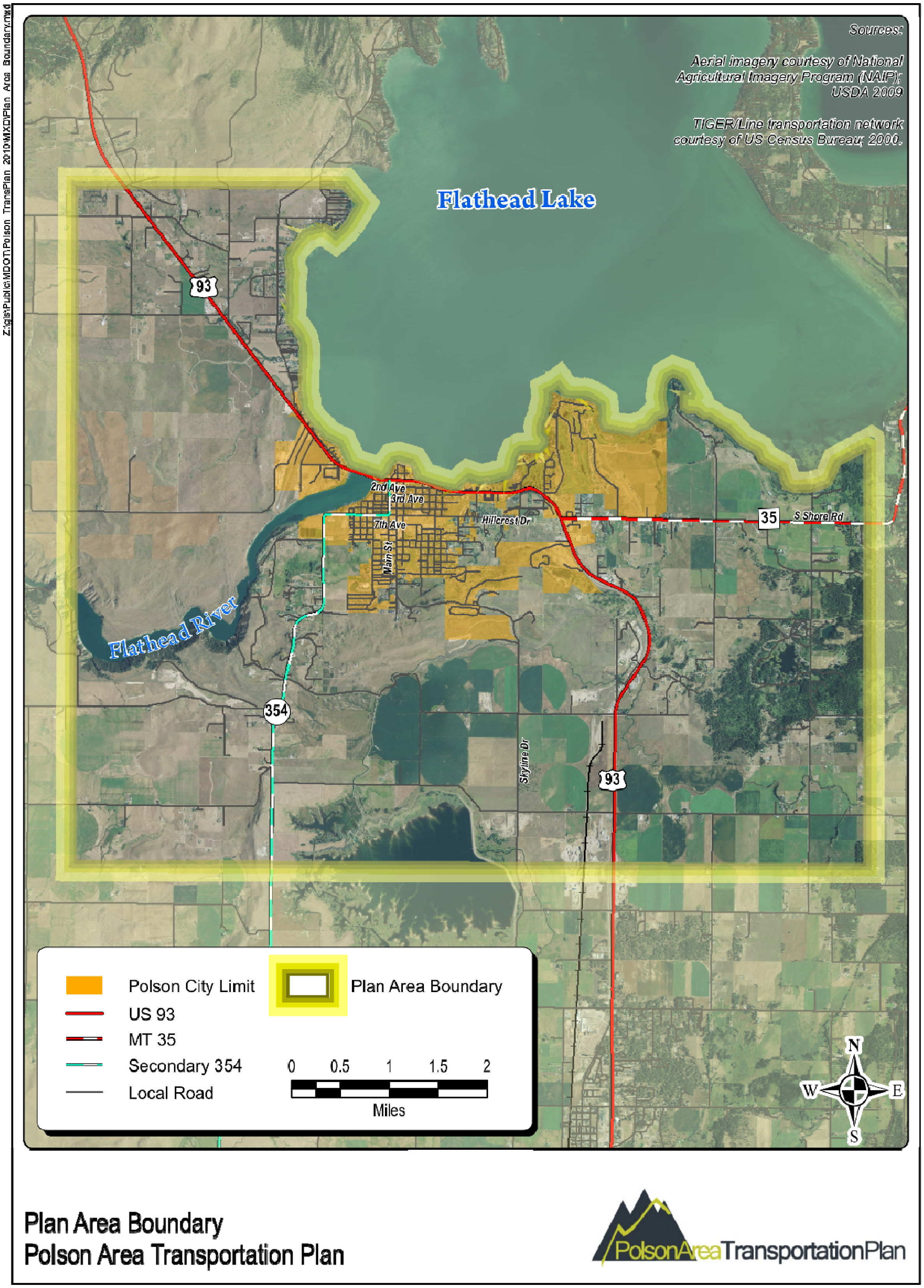


Figure 1-1 Transportation Plan Area Boundary

1.3 Community Transportation Goals and Objectives

The community of Polson has several transportation concerns that affect the efficiency and operations of the existing system because transportation is a major concern to area residents. Thus, various Plan partners expect this concern to remain high as growth continues and as the challenges of accommodating travel needs become more difficult.

Overall, this Plan created an opportunity for tribal, city, county, state officials, and residents to work together in developing the kind of approaches necessary for a transportation system which will not only serve the community's citizens well into the future but which will also comply with state and federal requirements. To achieve this, existing goals and objectives currently in place by each of the Plan partners were reviewed. These goals and objectives were garnered from local planning documents and have been presented to the public via the entities' public review processes. In addition, the existing goals and objectives were reviewed with the community at the first informational meeting held on this planning effort. After this meeting, a set of goals and objectives for this Plan were developed, reviewed by the Plan partners and community, and utilized to guide the Plan. The goals and objectives for this Plan are as follows:

Goal #1: *Provide a safe, efficient, accessible, and cost-effective transportation system that offers viable choices for moving people and goods throughout the community.*

Objectives:

- Plan and implement an efficient, long-range transportation system which will ensure that both public and private investments in transportation infrastructure will support land use decisions of the community.
- Plan a logical, efficient long-range transportation system that can be systematically implemented by right-of-way preservations and by advance acquisition procedures.
- Meet both the current and the future transportation needs of the greater Polson area that can be maintained with available resources.
- Provide adequate emergency service access to residents in and around the Plan's Study Area Boundary.
- Develop a "Major Street Network" that classifies existing roadways or future corridors by functional usage.
- Address the transportation needs of business and commerce both locally and regionally.
- Recognize the cultural diversity found within the Plan's Study Area Boundary.
- Plan for adequate access and egress to high volume traffic generation points.

- Conduct a comprehensive data collection effort that will include vehicular counts, truck counts, bicycle movements, and pedestrian usage at the intersections identified for the Plan.

- Review the most recent three-year accident history and crash statistics to evaluate potential safety concerns and possible mitigation efforts that can improve and/or resolve identified concerns on the existing transportation system.

- Identify comprehensive safety measures, other than engineering and construction, that may educate the public on safety matters and improved safety conditions within the community.

- Examine population and employment growth trends to assess demographic changes and how those changes may affect transportation system users over the 20-year planning horizon.

- Develop a 20-year traffic model that can be used to predict future transportation system needs as growth occurs within the Plan's Study Area Boundary.

- Identify current and foreseeable traffic concerns based on engineering analysis and planning projections.

Goal #2: *Make transit and non-motorized modes of transportation viable alternatives to the private automobile for travel in and around the community.*

<u>Objectives:</u>

- Support alternatives to single occupancy vehicles such as implementing TDM strategies and providing alternative travel modes.

- Establish safe pedestrian and bicycle access in designated areas by:

  - *Considering pedestrian/bicycle needs when new roads are planned and designed.*

  - *Considering the improvement and dedication of bikeways and pedestrian paths through developing areas.*

  - *Providing widened shoulders where practicable to accommodate pedestrians/bicycles on existing roadways,*

  - *Preference to provide for physical separation between motorized and non-motorized traffic where practicable.*

- Encourage the kind of mixed-use development that integrates compatible residential, office, and commercial uses which can reduce the need for automobile trips.

- Encourage walkable neighborhoods, both within existing developed areas and new residential and commercial subdivisions.

- Identify and incorporate, as applicable, Transportation Demand Management (TDM) strategies to provide alternatives to private vehicle travel.
- Integrate climate change strategies into the transportation planning process to the extent practicable by providing an assessment of alternative travel modes.

Goal #3: *Provide an open public involvement process in development of the transportation system and in implementation of transportation improvements so community standards and values (such as aesthetics, cultural and environmental resources, and neighborhood protection) are incorporated.*

Objectives:

- Provide for citizen involvement in the planning and implementation of transportation plans and projects.
- Respect the area's natural, cultural, and historic context and minimize adverse impacts to the environment and existing neighborhoods.
- Minimize negative transportation effects upon residential neighborhoods.
- Encourage the kind of transportation improvements that preserve the natural panorama of skylines and sightlines and that are compatible with historic, cultural, and environmental resources.
- Evaluate and identify transportation system needs of area schools, and address existing and future transportation issues as appropriate.
- Meet the unique transportation needs of the area's elderly, disabled, and disadvantaged populations.
- Carry forward the design philosophy contained in the US 93 Evaro to Polson Memorandum of Agreement (MOA) that recognizes the unique "Spirit of Place" found within the Flathead Reservation. Here, key concepts include "the road as a visitor to the land", and through unique design solutions "the spirit of place" can be preserved and respected to provide inspiration and guidance.

Goal #4: *Provide a financially sustainable Transportation Plan that can be actively used to guide the transportation decision-making process throughout the course of the next 20 years.*

Objectives:

- Review all existing and on-going planning reports and studies for compatibility during development of the Plan.
- Identify funding mechanisms that may be viable to the traditional funding programs currently used to fund transportation system improvements.

Goal #5: Identify and protect future road corridors to serve future developments and public lands.

Objectives:

- Develop a Plan to address forecasted transportation growth needs.
- Identify future corridors and future connections to existing roadways in order to acquire appropriate right of way and improvements. This includes coordination with the US 93 Polson Corridor Study results.

1.4 Previous Transportation Planning Efforts and Information

In the course of data collection, past plans and studies were obtained. From the review of these documents, applicable issues were incorporated into this Plan. These contributing documents are as follows:

- Polson Growth Policy (2006);
- Flathead Reservation Transportation Plan (2007-2017);
- Flathead Reservation Transportation Improvement Program (TIP) (2010-2014);
- City of Polson Standards for Design & Construction (2008);
- Polson Development Code;
- Lake County Subdivision Regulations;
- Montana Department of Labor and Industry data;
- U.S. Census Bureau data;
- Polson Fire District;
- 1996 US 93 Evaro-Polson FEIS;
- 2001 Re-evaluation of US 93 Evaro-Polson FEIS; and
- Socioeconomic data.

1.5 Community Involvement Strategy

A Public Participation Plan was developed to identify community involvement activities necessary for successful completion of the Plan. The Public Participation Plan ensured a proactive community involvement process that involved the public in all phases of the planning process. This was accomplished by providing complete information, timely public notice, opportunities for making comments, and ensuring full access to key decisions.

1.5.1 Goals of Public Involvement & Outreach Effort

Community participation was a key component in this transportation planning process. Numerous community participation strategies were utilized to reach as many people as possible and to gather essential information which would guide the study team.

Education and public outreach were an essential part of fulfilling the local entities' responsibility to inform the public about the transportation planning process.

The goal of the study partners and the consultant was to have ongoing public involvement for the planning process. Education and public outreach were an essential part of fulfilling the local entities' responsibility to inform the public about the transportation plan processes. All four contracting entities (CSKT, Lake County, the City of Polson, and MDT) sought to encourage public involvement and meaningful participation.

1.5.2 Community Participation Procedures

This Plan encouraged community participation in identifying and commenting on transportation issues at every stage of the planning process. Participants in this process included:

- The general public – residents of the City of Polson, the Flathead Reservation, and adjacent unincorporated areas (Lake County) affected by the planning efforts;
- Landowners and business owners affected within the study area boundaries;
- The Technical Oversight Committee (TOC) – made up of 11 representatives of the study partners, including the Federal Highway Administration (FHWA); and
- Stakeholders and Outreach Groups.

The general public was kept informed of all aspects of the planning process, and their input was sought throughout the process.

1.5.3 Publications

Meeting announcements were developed and advertised in local papers, three weeks, and again one week, prior to meetings. The ads announced the meeting location, time, and date, the format and purpose of the meeting, and (when applicable) the locations where documents were available for review.

Also newsletters were made available one month prior to each of the informational meetings. Newsletters described work in progress, results achieved, preliminary recommendations, and other related topics. Each newsletter was delivered in electronic medium to CSKT, Lake County, the City of Polson, MDT, and to select stakeholders for use in posting to their individual internet sites.

1.5.4 Radio and Television

Meetings were also announced on local radio and television stations. Input from the TOC identified the most popular radio and television stations on which announcements were made.

1.5.5 Stakeholder Contact List

A stakeholder contact list was produced that included individuals, businesses, and groups identified by the CSKT, Lake County, City of Polson, and by MDT. The intent of developing the stakeholder list was to identify those individuals and groups to actively seek out and engage in all phases of the development of the Plan. Individuals who attended informational meetings were also added to the stakeholder list.

1.5.6 Document Availability

Documents and newsletters were made available in hard copy format at the offices of CSKT, Lake County, City of Polson, and MDT.

In addition, electronic copies of plan deliverables were posted on the study website at:

http://www.mdt.mt.gov/pubinvolve/polsontransplan/

1.5.7 Meetings

Technical Oversight Committee Meetings

TOC meetings were scheduled every month for the duration of the fifteen-month planning process. Individuals included in the meetings were the Consultant, CSKT, Lake County, City of Polson, FHWA, MDT personnel, and others as needed. Meetings were intended to track progress and to address plan development issues and questions and were considered an important way to exchange information and ideas during the entire development of the plan. Throughout these meetings, many issues, problems, and possible solutions were identified and discussed.

Informational Meetings

Three formal informational meetings were held throughout the duration of the planning process. The first informational meeting was a combined Transportation Plan and *US 93 Corridor Study* meeting to discuss and identify the issues and visioning to help focus community perceptions and goals, as well as to identify issues that should be addressed as part of the transportation planning effort. This initial effort was very interactive and proved to be very effective in gaining community attention and input.

The second informational meeting was also a combined Transportation Plan and *US 93 Corridor Study* meeting that occurred after initial field studies were completed and the transportation-related problems were defined. The purpose of this gathering was to review the identified areas of concern with the community and to assure that all major transportation problems had been included in the analysis.

The third and final informational meeting was held to present the draft transportation plan, take questions, and solicit input from the community. The purpose of the meeting was to highlight the recommended transportation improvement options including major street network (MSN) projects, transportation system management (TSM) projects, and non-motorized network recommendations for the community of Polson.

1.6 *Coordination Summary*

The following table (Table 1.1) summarizes the formal coordination that occurred over the course of this planning project. This includes all scheduled meetings, including TOC meetings and workshops, and formal informational meetings. Additionally, informal dialogue occurred regularly between agency partners and the consultant.

Table 1.1 Summary of "Formal" Local Government and Other Outreach Activities

Date	Agency or Individual
04/26/2010	Scoping Meeting
09/09/2010	Informational Meeting No. 1
12/08/2010	Polson City Council Meeting
12/09/2010	Chamber of Commerce Meeting
02/24/2011	Informational Meeting No. 2
04/21/2011	CSKT Tribal Council Meeting
09/01/2011	Informational Meeting No. 3
09/07/2011	Polson City Council Meeting

Chapter 2 Existing Transportation System

2.1 Introduction

In an effort to clearly understand the existing traffic conditions in the community, it was necessary to gather current information about different aspects of the transportation system. Intersection turning movement counts were collected during the summer and fall of 2010, during the months of August, September, and October, while school was in session. Data were used to determine current operational characteristics, and to identify any traffic concerns that may exist or that may arise within the foreseeable future. A variety of information was gathered to help evaluate the system including:

- Existing roadway functional classifications;
- Existing roadway sections;
- Intersection turning movement counts;
- Current traffic signal operation information;
- Intersection data required to conduct level of service analyses;
- Access location information; and
- Traffic crash records.

2.2 Roadway Functional Classification System

A community's transportation system is made up of a hierarchy of roadways, with each roadway being classified according to certain criteria. Some of these criteria are geometric configurations, traffic volumes, spacing in the community transportation grid, and speeds. It is standard practice to examine roadways that are functionally classified as a collector, minor arterial, or as a principal arterial in a regional transportation plan project. The reasoning for examining the collector, minor arterial, and principal arterial roadways, and not local roadways, is that when the major roadway system (i.e. collectors or above) is functioning to an acceptable level, then the local roadways are not used beyond their intended function. As such, the overall health of a regional transportation system can be typically characterized by the health of the major roadway network. Nine routes within the plan area boundary are defined by FHWA classifications and are functionally classified as follows:

1. US 93 – Principal Arterial
2. MT 35 – Minor Arterial
3. Secondary 354/Main St. & Rocky Point Road – Major Collector
4. Skyline Drive/1st Street East, Tower Road, Valley View Road, Minesinger Trail, and North Reservoir Road – Minor Collector

Roadway functional classifications are typically defined as principal arterials; minor arterials; collector routes; and as local streets. Although these can apply to both an urban and rural area with slight modifications, but since Polson has a population less than 5,000, Polson is classified as a rural area. Traffic volumes may differ on developed and rural sections of a street, it is important to maintain coordinated right-of-way standards to allow for efficient operation of roadways. A description of the rural, functional roadway classifications is provided in the following sections.

Rural Principal Arterial System – The rural principal arterial system consists of a network of routes with the following service characteristics:

1. Corridor movement with trip length and density suitable for substantial statewide or interstate travel with higher travel speeds.
2. Movements between all, or virtually all, urban areas with populations over 50,000 and a large majority of those with populations over 25,000.
3. Integrated movement without stub connections except where unusual geographic or traffic flow conditions dictate otherwise (e.g., international boundary connections or connections to coastal cities).

In the more densely populated states, this class of highway includes most (but not all) heavily traveled routes that might warrant multilane improvements in the majority of states; the principal arterial system provides for relatively high travel speeds and includes most (if not all) existing rural freeways. The rural principal arterial system is stratified into the following two design types: (1) freeways and (2) other principal arterials.

Rural Minor Arterial System – The rural minor arterial road system, in conjunction with the rural principal arterial system, forms a network with the following service characteristics:

1. Linkage of cities, larger towns, and other traffic generators (such as major resort areas) that are capable of attracting travel over similarly long distances.
2. Integrated interstate and intercounty service.
3. Internal spacing consistent with population density, so that all developed areas of the state are within reasonable distances of arterial highways.
4. Corridor movements consistent with items (1) through (3) with trip lengths and travel densities greater than those predominantly served by rural collector or local systems.

Minor arterials therefore constitute routes, the design of which should be expected to provide for increased speeds and minimum interference to through movement.

Rural Collector System – The rural collector routes generally serve travel of primarily intracounty rather than statewide importance and constitute those routes on which (regardless of traffic volume) predominant travel distances are shorter than on arterial routes. Consequently, more moderate speeds may be typical. To define rural collectors more clearly, this system is subclassified according to the following criteria:

- Major Collector Roads. These routes (1) serve county seats not on arterial routes, larger towns not directly served by the higher systems, and other traffic generators of equivalent intracounty importance, such as consolidated schools, shipping points, county parks, and important mining and agricultural areas; (2) link these places with nearby larger towns or cities, or with routes of higher classifications; and (3) serve the more important intracounty travel corridors.

- Minor Collector Roads. These routes should (1) be spaced at intervals consistent with population density to accumulate traffic from local roads and bring all developed areas within reasonable distances of collector roads; (2) provide service to the remaining smaller communities; and (3) link the locally important traffic generators with their rural hinterland.

Rural Local Road System – The rural local road system, in comparison to collectors and arterial systems, primarily provides access to land adjacent to the collector network and serves travel over relatively short distances. The local road system constitutes all rural roads not classified as principal arterials, minor arterials, or as collector roads. A very low-volume rural local road is a road that has a design ADT of 400 vehicles per day or less. The *AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT < 400).*

Table 2.1 contains a summary of the major street network within the plan area boundary along with the associated FHWA functional classifications and route purpose, and also shown in Figure 2-1.

Table 2.1 FHWA Functional Street Classifications for Polson Area

Classification	Primary Function
FHWA Classified Routes	
Principal Arterial ◆ US Highway 93	Mobility
Minor Arterial ◆ MT 35	Land Access / Mobility
Major Collector ◆ Secondary 354/Main Street ◆ Rocky Point Road	Land Access / Mobility
Minor Collectors ◆ Skyline Drive/ 1st Street East ◆ Valley View Road (Kerr Dam Road) ◆ Tower Road ◆ North Reservoir Road ◆ Minesinger Trail	Land Access

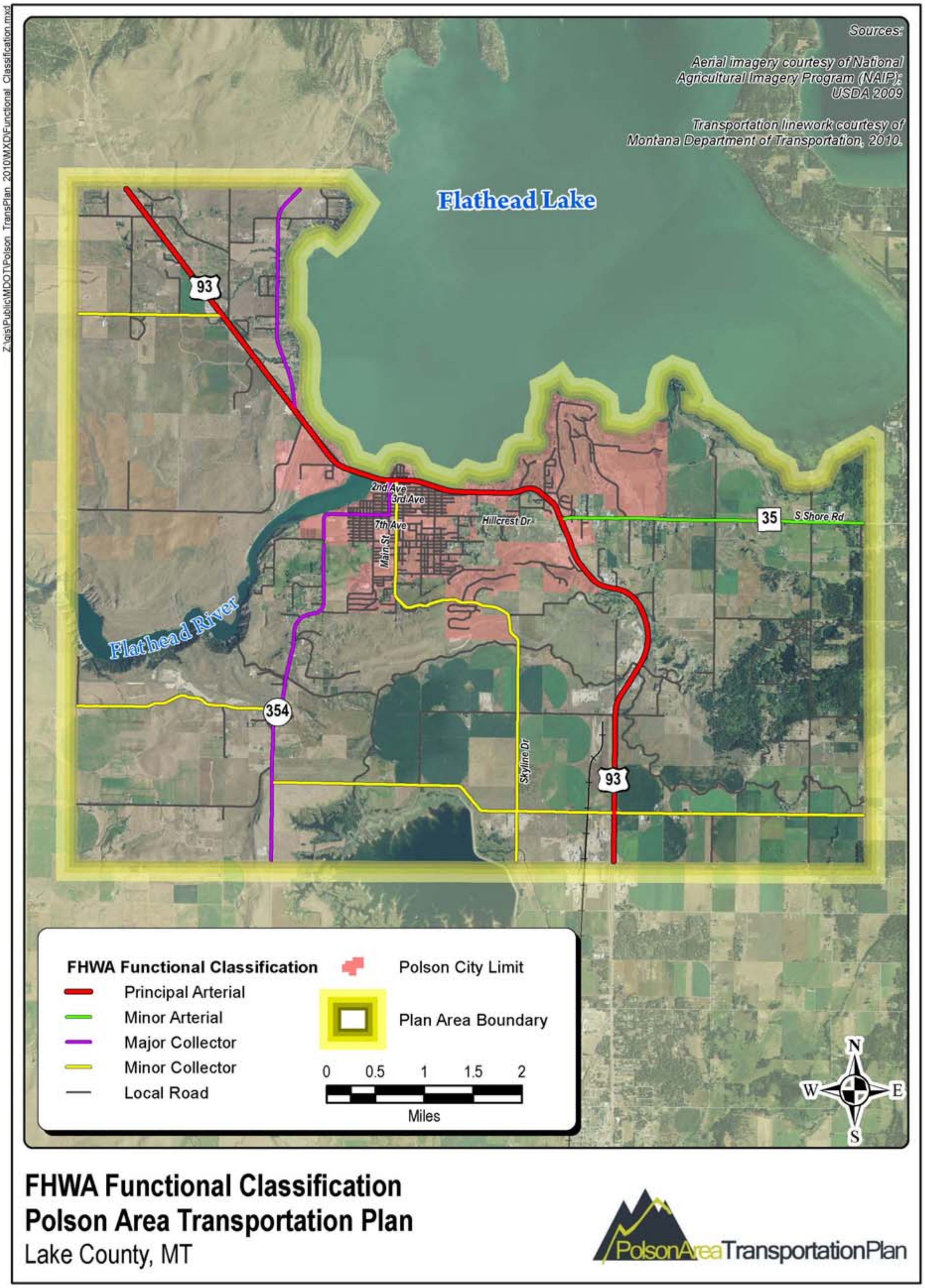


Figure 2-1 FHWA Roadway Functional Classification

2.3 Existing Intersection Levels of Service

Roadway systems are controlled by the function of major intersections within a developed area. Intersection failure directly reduces the number of vehicles that can be accommodated during the peak hours which have the highest demand and the roadway capacity of a corridor. As a result of this strong impact on corridor function, intersection improvements can be a cost-effective means of increasing a corridor's traffic capacity. In some circumstances, corridor expansion projects may be able to be delayed with correct intersection improvements. Due to the substantial portion of total expense for roadway construction projects used for design, construction, mobilization, and adjacent area rehabilitation, a careful analysis must be made of the expected service life from intersection-only improvements. If adequate design life is achieved with only improvements to the intersection, then a corridor expansion is not the most efficient solution. With that key cost factor in mind, it is important to determine how well the major intersections are functioning by determining their Level of Service (LOS).

Level of Service (LOS) for an intersection is a qualitative measure developed by the transportation profession to quantify driver perception for such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles. It provides a scale that is intended to match the perception by motorists of the operation of the intersection. LOS provides a way to identify intersections that are experiencing operational difficulties, as well as provide a scale to compare intersections with each other. The LOS scale represents the full range of operating conditions and is based on the ability of an intersection to accommodate the amount of traffic using it. The scale ranges from "A" which indicates little, if any, vehicle delay, to "F" which indicates substantial vehicle delay and traffic congestion. The LOS analysis was conducted according to the procedures outlined in the Transportation Research Board's Highway Capacity Manual – Special Report 209 using the Highway Capacity Software, version 4.1f.

In order to calculate the LOS, traffic volumes at 16 intersections were counted during the summer and fall of 2010. These intersections included five signalized intersections and 11 unsignalized intersections in the Polson area. Each intersection was counted between 7:00 a.m. to 9:00 a.m. and 4:00 p.m. and 6:00 p.m., to ensure that the intersection's peak volumes were represented. Based upon this data, the operational characteristics of each intersection were obtained.

2.3.1 Signalized Intersections

For signalized intersections, recent research has determined that average control delay per vehicle is the best available measure of LOS. Control delay takes into account uniform delay, incremental delay, and initial queue delay. The amount of control delay that a vehicle experiences is approximately equal to the time elapsed from when a vehicle joins a queue at the intersection (or arrives at the stop line when there is no queue) until the vehicle departs from the stopped position at the head of the queue. The control delay is primarily a function of volume, capacity, cycle length, green ratio, and the pattern of vehicle arrivals.

The following table identifies the relationship between LOS and average control delay per vehicle. The procedures used to evaluate signalized intersections use detailed information on geometry, lane use, signal timing, peak hour volumes, arrival types, and other parameters. This information is then used to calculate delays and determine the capacity of each intersection. Generally, an intersection is determined to be functioning adequately if operating at LOS C or better, at all times**.** Table 2.2 shows the LOS by control delay for signalized intersections.

Table 2.2 Level of Service Criteria (Signalized Intersections)

LOS	Control Delay per Vehicle (sec)
A	≤ 10
B	> 10 to 20
C	> 20 to 35
D	> 35 to 50
E	> 50 to 80
F	> 80

Source: The Transportation Research Board's *Highway Capacity Manual*

By using these techniques and the data collected in the summer and fall of 2010, the LOS for the signalized intersections was calculated. Table 2.3 shows the AM and PM peak hour LOS for each individual leg of the intersections, as well as the intersections as a whole. The intersection LOS is shown graphically in Figure 2-2.

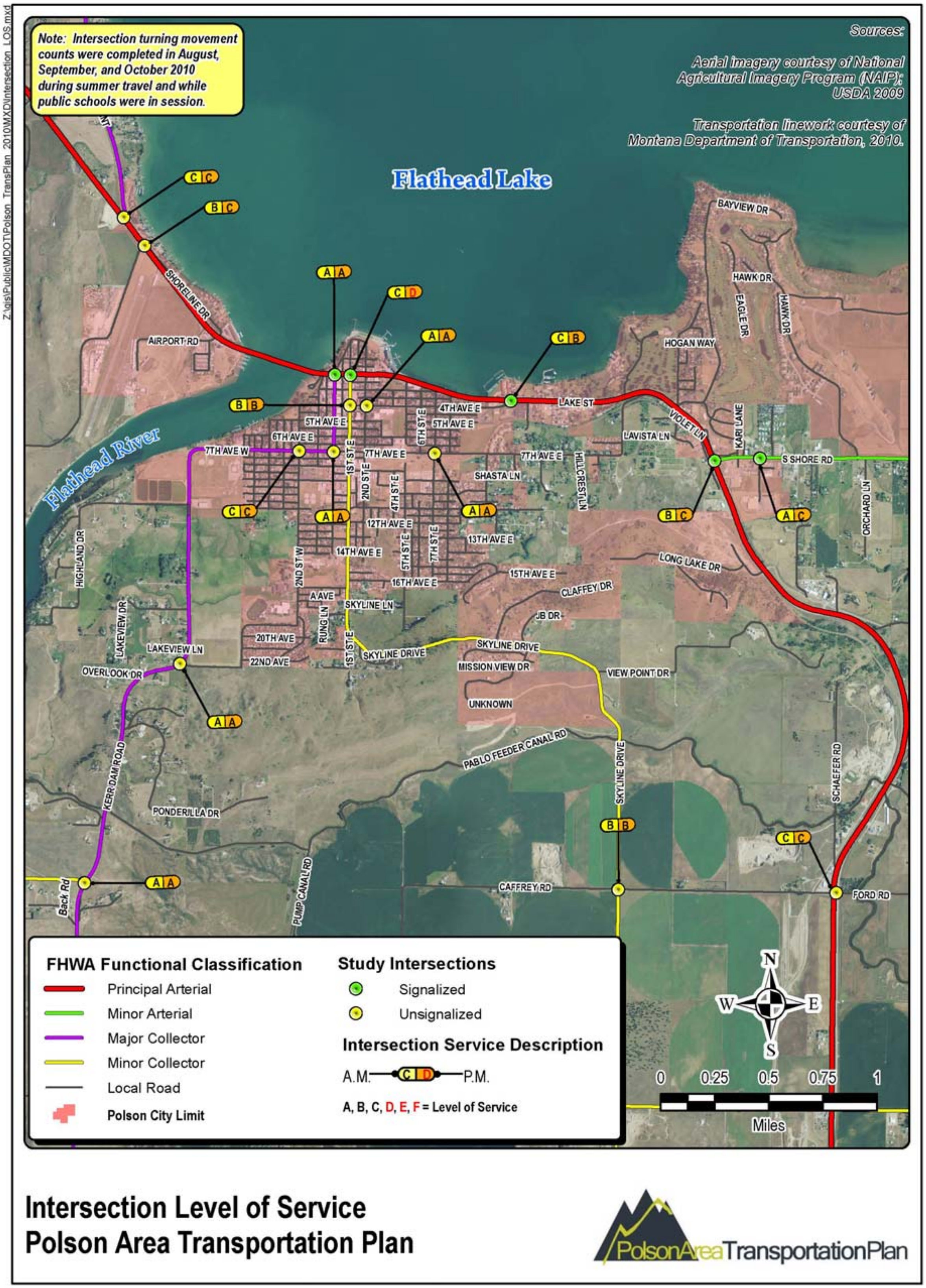


Figure 2-2 Intersection Level of Service

Table 2.3 Existing (2010) Level of Service for Signalized Intersections

Intersection	AM Peak Hour					PM Peak Hour				
	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
US 93 & South Shore Road (MT 35)	-	C	A	B	B	-	C	B	C	C
US 93 (3rd Avenue East) & 4th Avenue East	A	A	F	D	C	A	A	F	D	B
US 93 (2nd Avenue East) & 1st Street East	C	C	C	B	C	C	C	D	C	**D**
US 93 (2nd Avenue East) & Main Street*	A	A	*N/A*	E	A	A	A	*N/A*	E	A
South Shore Road (MT 35) & Heritage Lane	A	A	E	-	A	A	A	F	-	C

(Abbreviations used are as follows: EB = eastbound; WB = westbound; NB = northbound; SB = southbound; INT = intersections as a whole; N/A = not applicable). * Main Street NB approach under construction during time of data collection.

2.3.2 Unsignalized Intersections

Level of service for unsignalized intersections is based on the delay experienced by each movement within the intersection, rather than on the overall stopped delay per vehicle at the intersection. This difference from the method used for signalized intersections is necessary because the operating characteristics of a stop-controlled intersection are substantially different. Driver expectations and perceptions are entirely different. For two-way stop controlled intersections, the through traffic on the major (uncontrolled) roadway experiences no delay at the intersection. Conversely, vehicles turning left from the minor roadway experience more delay than other movements and at times can experience substantial delay. Vehicles on the minor roadway, which are turning right or going across the major roadway, experience less delay than those turning left from the same approach. Due to this situation, the LOS assigned to a two-way stop controlled intersection is based on the average delay for vehicles on the minor roadway approach.

LOS for all-way stop controlled intersections is also based on delay experienced by the vehicles at the intersection. Since there is no uncontrolled roadway, the highest delay could be experienced by any of the approaching roadways. Therefore, the LOS is based on the approach with the highest delay as shown in Table 2.4, which shows the LOS criteria for both the all-way and two-way stop controlled intersections.

Table 2.4 Level of Service Criteria (Unsignalized Intersections)

Level of Service	Delay (seconds/vehicle)
A	0 - 10
B	> 10 to 15
C	> 15 to 25
D	> 25 to 35
E	> 35 to 50
F	> 50

Source: The Transportation Research Board's *Highway Capacity Manual*

By using the above guidelines, the data collected in the summer and fall of 2010 and calculation techniques for two-way stop controls and all-way stop controls, the LOS was calculated for 11 intersections. Table 2.5 shows the detailed results of the performance level turning movement breakout for each unsignalized intersection.

Table 2.5 Existing (2010) Level of Service for Unsignalized Intersections

Unsignalized Intersection	AM Peak Hour			PM Peak Hour		
	Delay (sec/veh)	LOS	v/c	Delay (sec/veh)	LOS	v/c
US 93 & Rocky Point Road						
Eastbound Left/Thru	7.60	A	0.01	8.30	A	0.00
Southbound Left/Right	16.30	C	0.33	15.60	C	0.20
US 93 & Irvine Flats Road						
Eastbound Left/Thru/Right	7.70	A	0.01	8.20	A	0.01
Westbound Left/Thru/Right	8.60	A	0.02	8.00	A	0.01
Northbound Left/Thru/Right	11.80	B	0.02	13.40	B	0.08
Southbound Left/Thru/Right	13.90	B	0.02	18.80	C	0.17
US 93 & Caffrey Road						
Eastbound Left/Thru/Right	12.10	B	0.15	12.60	B	0.17
Westbound Left/Thru/Right	23.60	C	0.04	18.50	C	0.03
Northbound Left	8.30	A	0.11	8.60	A	0.00
Southbound Left	8.20	A	0.00	8.80	A	0.07
4th Avenue East & 1st Street East *						
Eastbound Left/Thru/Right	8.59	A	-	8.82	A	-
Westbound Left/Thru/Right	9.62	A	-	9.92	A	-
Northbound Left/Thru/Right	10.84	B	-	11.30	B	-
Southbound Left/Thru/Right	10.11	B	-	10.95	B	-

Unsignalized Intersection	AM Peak Hour Delay (sec/veh)	AM Peak Hour LOS	AM Peak Hour v/c	PM Peak Hour Delay (sec/veh)	PM Peak Hour LOS	PM Peak Hour v/c
4^{th} Avenue East & 2^{nd} Street East *						
Eastbound Left/Thru/Right	8.31	A	-	8.04	A	-
Westbound Left/Thru/Right	8.25	A	-	7.87	A	-
Northbound Left/Thru/Right	7.87	A	-	8.05	A	-
Southbound Left/Thru/Right	8.38	A	-	7.90	A	-
7^{th} Avenue & Main Street *						
Eastbound Left/Thru/Right	8.45	A	-	8.85	A	-
Westbound Left/Thru/Right	8.73	A	-	9.37	A	-
Northbound Left/Thru/Right	8.00	A	-	8.51	A	-
*Southbound Left/Thru/Right ** *	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
7^{th} Avenue West & 2^{nd} Street West						
Eastbound Left/Thru/Right	7.40	A	0.00	7.60	A	0.00
Westbound Left/Thru/Right	8.30	A	0.21	7.80	A	0.11
Northbound Left/Thru/Right	13.00	B	0.24	13.30	B	0.35
Southbound Left/Thru/Right	24.80	C	0.12	18.40	C	0.11
7^{th} Avenue East & 7^{th} Street East *						
Eastbound Left/Thru/Right	8.22	A	-	9.04	A	-
Westbound Left/Thru/Right	8.10	A	-	8.60	A	-
Northbound Left/Thru/Right	8.18	A	-	8.60	A	-
Southbound Left/Thru/Right	7.84	A	-	8.67	A	-
Skyline Drive & Caffrey Road						
Eastbound Left/Thru/Right	11.3	B	0.01	10.30	B	0.02
Westbound Left/Thru/Right	9.20	A	0.13	9.20	A	0.10
Northbound Left/Thru/Right	7.30	A	0.01	7.30	A	0.01
Southbound Left/Thru/Right	7.40	A	0.04	7.30	A	0.03
Kerr Dam Road (Secondary 354) & Grenier Lane						
Westbound Left/Thru/Right	9.40	A	0.02	9.50	A	0.05
Southbound Left/Thru/Right	7.60	A	0.01	7.40	A	0.01
Northbound Left/Thru/Right	7.30	A	0.00	7.40	A	0.00
Kerr Dam Road (Secondary 354) & Back Road						
Eastbound Left/Thru/Right	9.50	A	0.06	9.40	A	0.03

Unsignalized Intersection	AM Peak Hour			PM Peak Hour		
	Delay (sec/veh)	LOS	v/c	Delay (sec/veh)	LOS	v/c
Southbound Left/Thru/Right	7.40	A	0.00	7.30	A	0.00
Northbound Left/Thru/Right	7.30	A	0.01	7.40	A	0.01

(Abbreviations used are as follows: N/A = not applicable). * HCM methodology does not compute v/c ratios for four–way stop controlled intersections. ** Main Street SB approach under construction during time of data collection.

The existing conditions LOS study in the Polson area shows that one signalized intersection is currently functioning at LOS D or lower. Intersection US 93 (2nd Avenue East) & 1st Street East functions at LOS D during the PM Peak. This intersection of specific concern indicates a potential opportunity for closer examination and further intersection improvement measures to mitigate “operational” conditions.

2.4 Percentage of Truck Traffic

Truck traffic within the study area is a concern both with the public and with local government officials. Based on a data review of the turning movement counts at each of the 16 intersections studied, Table 2.6 shows the percentage of truck traffic for the intersection as a whole during the AM and PM traffic counts.

Table 2.6 Truck Traffic Percentages

Intersection	Traffic Control	AM %	PM %
US 93 & South Shore Road	S	6.6%	3.7%
US 93 (3rd Avenue East) & 4th Avenue East	S	5.8%	3.1%
US 93 (2nd Avenue East) & 1st Street East	S	5.0%	3.5%
US 93 (2nd Avenue East) & Main Street *	S	3.8%	3.7%
South Shore Road (MT 35) & Heritage Lane	S	7.4%	3.2%
US 93 & Rocky Point Road	U-1W	4.3%	4.0%
US 93 & Irvine Flats Road	U-1W	4.9%	5.2%
US 93 & Caffrey Road	U-2W	6.2%	4.4%
4th Avenue East & 1st Street East	U-4W	2.6%	2.0%
4th Avenue East & 2nd Street East	U-4W	0.6%	0.2%

Intersection	Traffic Control	AM %	PM %
7th Avenue & Main Street *	U-4W	2.7%	0.9%
7th Avenue West & 2nd Street West	U-2W	3.7%	1.4%
7th Avenue East & 7th Street East	U-4W	2.7%	1.9%
Skyline Drive & Caffrey Road	U-2W	12.3%	12.4%
Kerr Dam Road & Grenier Lane	U-1W	5.0%	5.1%
Kerr Dam Road & Back Road	U-1W	9.7%	6.3%

S=Signalized; U-1W=Unsignalized one-way stop controlled; U-2W=Unsignalized two-way stop controlled; U-4W=Unsignalized four-way stop controlled. *Main Street under construction during data collection.

2.5 Existing Crash Analysis

The purpose of this section is to document different crash characteristics of the 16 major intersections within the plan area, as identified by the Technical Oversight Committee. Three different methods of intersection analysis were performed to identify those specific intersections that may warrant further study. These included: 1) ranking the intersections by number of crashes, 2) MDT's severity index, and 3) intersection crash rate. The crash information, which was provided by MDT's Traffic and Safety Bureau, covered the three-year time period from January 1, 2007 to December 31, 2009.

The first analysis looks at the total number of crashes over the three-year period at each intersection and ranks them from most (16) to fewest (0) number of crashes. Results are listed in Table 2.7 and shown on Figure 2-3.

Table 2.7 Intersection Crashes in the Three-Year Period

(January 2, 2007 thru December 31, 2009)

INTERSECTION	Traffic Control	# CRASHES
Intersections with 15 - 19 crashes		
US 93 & South Shore Road	S	16
Intersections with 10 - 14 crashes		
US 93 & 4th Avenue East	S	11
Intersections with 5 - 9 crashes		
US 93 & Main Street	S	6
7th Avenue & Main Street	U-4W	5
Intersections with 0 - 4 crashes		
US 93 & 1st Street East	S	4

INTERSECTION	Traffic Control	# CRASHES
US 93 & Rocky Point Road	U-1W	4
US 93 & Irvine Flats Road	U-1W	3
Kerr Dam Road & Grenier Lane	U-1W	3
4th Avenue East & 2nd Street East	U-4W	2
7th Avenue East & 7th Street East	U-4W	2
South Shore Road & Heritage Lane	S	1
4th Avenue East & 1st Street East	U-4W	1
7th Avenue West & 2nd Street West	U-2W	1
Skyline Drive & Caffrey Road	U-2W	1
US 93 & Caffrey Road	U-2W	0
Kerr Dam Road & Back Road	U-1W	0

S = Signalized intersection;
U-1W = Unsignalized one-way stop controlled;
U-2W = Unsignalized two-way stop controlled;
U-4W = Unsignalized four-way stop controlled.

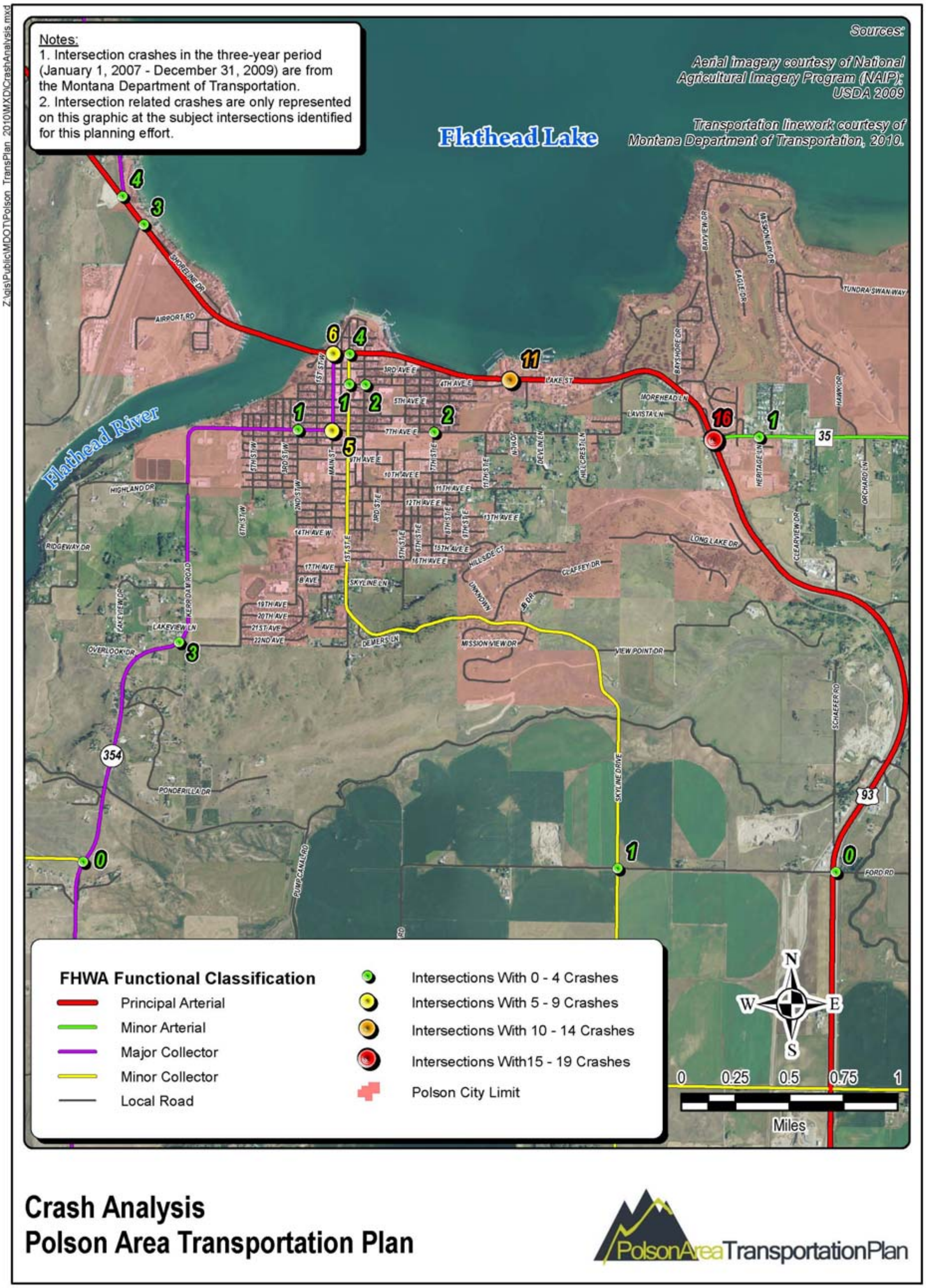


Figure 2-3 Crash Analysis

The second analysis calculated the MDT "severity index rating." The severity index is a ratio used to identify where the most severe types of crashes occur. Crashes were broken into three categories of severity: property damage only (PDO), non-incapacitating injury or possible injury crash, and fatality or incapacitating injury. Each of these three types is given a different rating: one (1) for a property damage only crash; three (3) for a non-incapacitating injury or possible injury crash; and eight (8) for a crash that resulted in a fatality or incapacitating injury. The MDT severity index for the intersections in the analysis is shown in Table 2.8. The calculation used to figure the severity index rating is as follows:

$$\textit{MDT Severity Index} = \frac{1(\#PDO) + 3(\#\text{ Non - Incapacitating or Possible Injury}) + 8(\#\text{Fatality or Incapacitating Injury})}{\text{Total Number of Crashes}}$$

Table 2.8 Intersection Crash Analysis – MDT Severity Index

(January 2, 2007 thru December 31, 2009)

INTERSECTION	PDO	Possible/Non-Incapacitating Injury	Fatality/ Incapacitating Injury*	Severity Index
Intersections with 4.00 – 4.99 Severity Index				
7th Avenue East & 7th Street East	1	0	1	4.50
Intersections with 3.00 – 3.99 Severity Index				
7th Avenue West & 2nd Street West	0	1	0	3.00
Skyline Drive & Caffrey Road	0	1	0	3.00
Intersections with 2.00 – 2.99 Severity Index				
US 93 & South Shore Road**	11	3	2	2.25
US 93 & Rocky Point Road	2	2	0	2.00
Intersections with 1.00 – 1.99 Severity Index				
7th Avenue & Main Street	3	2	0	1.80
US 93 & 4th Avenue East	7	4	0	1.73
US 93 & Irvine Flats Road	2	1	0	1.67
Kerr Dam Road & Grenier Lane	2	1	0	1.67
US 93 & 1st Street East	3	1	0	1.50
US 93 & Main Street	6	0	0	1.00
South Shore Road & Heritage Lane	1	0	0	1.00
4th Avenue East & 1st Street East	1	0	0	1.00
4th Avenue East & 2nd Street East	2	0	0	1.00
Intersections with 0.00 – 0.99 Severity Index				
US 93 & Caffrey Road	0	0	0	0.00
Kerr Dam Road & Back Road	0	0	0	0.00

*Crashes were incapacitating injuries only.

**Even though this intersection has 2 incapacitating injury crashes, it also exhibited 11 PDs, which influence the calculation of the severity index.

The third analysis ranked the number of crashes against the annual average daily traffic (AADT) entering each intersection, expressed in crashes per million entering vehicles (MEV). A summary of the intersections in the analysis is shown in Table 2.9. The formula used to determine the intersection crash rate is as follows:

$$\textit{Intersection Crash Rate} = \frac{\textit{Total number of crashes in study period} \times 10^6}{\textit{AADT} \times 365\ \textit{Days/Year} \times \textit{Study Period (in years)}}$$

Table 2.9 Intersection Crash Rate

(January 2, 2007 thru December 31, 2009)

Intersection	Traffic Control	Number of Crashes	Volume	Rate
Intersections with 1.00 – 1.49 Crash Rate				
Kerr Dam Road & Grenier Lane	U-1W	3	1,860	1.47
Intersections with 0.50 – 0.99 Crash Rate				
7th Avenue & Main Street	U-4W	5	4,740	0.96
US 93 & South Shore Road	S	16	17,310	0.84
US 93 & 4th Avenue East	S	11	13,820	0.73
4th Avenue East & 2nd Street East	U-4W	2	3,090	0.59
US 93 & Main Street	S	6	10,950	0.50
US 93 & Rocky Point Road	U-1W	4	7,240	0.50
Intersections with 0.00 – 0.49 Crash Rate				
Skyline Drive & Caffrey Road	U-2W	1	2,040	0.45
7th Avenue East & 7th Street East	U-4W	2	4,320	0.42
US 93 & Irvine Flats Road	U-1W	3	7,770	0.35
US 93 & 1st Street East	S	4	14,400	0.25
7th Avenue West & 2nd Street West	U-2W	1	5,880	0.16
4th Avenue East & 1st Street East	U-4W	1	6,790	0.13
South Shore Road & Heritage Lane	S	1	9,540	0.10
US 93 & Caffrey Road	U-2W	0	11,190	0.00
Kerr Dam Road & Back Road	U-1W	0	1,470	0.00

S = Signalized intersection;
U-1W = Unsignalized one-way stop controlled;
U-2W = Unsignalized two-way stop controlled;
U-4W = Unsignalized four-way stop controlled.
**AADT was calculated by adding the entering peak PM volumes of all legs of the intersection and multiplying by 10. (Assumes peak hour PM volumes are 10% of AADT.)*

In order to give the intersections included in the crash analysis an even rating, a composite rating score was developed on the basis of three analyses presented above. Intersections were rated on the basis of their position on each of the three previous tables, giving each equal weight. For example, the intersection of US 93 and South Shore Road was given a ranking of 1 for its position in Table 2.7, another ranking of 4 for its position in Table 2.8, and a ranking of 3 for its location in Table 2.9. Thus its composite rating is 8. Table 2.10 shows the composite rating of each intersection.

Table 2.10 Intersection Crash Analysis – Composite Ranking

(January 2, 2007 thru December 31, 2009)

Intersection	Crash # Ranking	Severity Index Ranking	Crash Rate Ranking	Composite Ranking
US 93 & South Shore Road	1	4	3	8
7th Avenue & Main Street	4	6	2	12
US 93 & 4th Avenue East	2	7	4	13
US 93 & Rocky Point Road	5	5	6	16
Kerr Dam Road & Grenier Lane	7	8	1	16
7th Avenue East & 7th Street East	9	1	9	19
US 93 & Main Street	3	11	6	20
Skyline Drive & Caffrey Road	11	2	8	21
7th Avenue West & 2nd Street West	11	2	12	25
US 93 & Irvine Flats Road	7	8	10	25
4th Avenue East & 2nd Street East	9	11	5	25
US 93 & 1st Street East	5	10	11	26
4th Avenue East & 1st Street East	11	11	13	35
South Shore Road & Heritage Lane	11	11	14	36
US 93 & Caffrey Road	15	15	15	45
Kerr Dam Road & Back Road	15	15	15	45

The composite rating method identified the top five intersections that need to be evaluated further to determine what type of mitigation measures may be possible to reduce specific crash trends (if any) and/or severity. These five intersections are as follows:

- US 93 & South Shore Road;
- 7th Avenue & Main Street;
- US 93 & 4th Avenue East;
- US 93 & Rocky Point Road; and
- Kerr Dam Road & Grenier Lane.

2.6 *Statewide Safety Data Trend Analysis*

Transportation safety is more than just fixing a road or writing a citation. Transportation safety has to be a multi-faceted, coordinated effort that includes Education, Enforcement, Engineering, and Emergency Medical Services (the 4 E's of safety) in order to be most effective.

In addition to assessing the number and locations of crashes in the greater Polson area, comprehensive safety data were also reviewed to examine potential trends in age groups, crash types, impaired crashes, and other influences. The examination of comprehensive safety is strongly encouraged by the MDT and FHWA to better understand the cause of crashes, and to determine whether there are trends that could be correctable. Although not a true "Comprehensive Safety Analysis" (i.e. this analysis only examines the data and portrays a brief summary), this section does document the crash data provided by MDT for the 2005 to 2009 period for Polson, as compared to all the incorporated cities in Montana. Thus, the information provided in this section of the Plan highlights specific crash characteristics that occurred in Polson in variance to all incorporated Montana cities. Overall, the examination of crash data is very important in identifying specific crash trends and traffic safety issues in the greater Polson community.

2.6.1 General Crash Information

In the five-year time span, there were 295 reported crashes in Polson that resulted in 104 reported injuries. There were no fatalities related to crashes from 2005 to 2009.

Crash Severity: The crash severity of the 295 reported crashes is summarized in Table 2.11, and the trend is consistent with statewide averages.

Table 2.11 Crash Severity

(Crash data for 2005 - 2009)

Crash Severity	Polson		All Montana Cities	
	No.	Percent	No.	Percent
Fatal	0	0.0%	125	0.2%
Injury	66	22.4%	13,499	23.6%
Property Damage Only	229	77.6%	43,651	76.2%
Total Crashes	295	-	57,278	-

Crashes by Month, Day, and Hour: In Polson, crash data show a high frequency of crashes in the summer months, a rate higher than other Montana cities. This frequency could be associated with an increase in tourism traffic during the summer months. Mondays and Fridays are the most common days in which crashes occur in Polson with a prevalence of crashes taking place during late-morning and late-afternoon hours. The crash day and crash hour statistics are higher in Polson than in other Montana cities. Table 2.12 shows the crashes in Polson and other Montana cities by month, day, and hour.

Table 2.12 Crashes by Month, Day, and Hour

(Crash data for 2005 - 2009)

	Polson	All Montana Cities
Crash Month		
June/July/August	33.2%	23.6%
December/January	13.9%	21.2%
Crash Day		
Monday	18.3%	15.4%
Friday	22.0%	18.1%
Crash Hour		
9 A.M. – Noon	18.3%	14.4%
2 P.M. – 5 P.M.	31.5%	25.1%

Crashes by Weather, Light, and Road Conditions: Most reported crashes in Polson occur on clear days, during daylight, and on dry roads. This is typical of all incorporated cities in Montana, but it happens more often in Polson. When compared to other cities, reported Polson crashes tend not to occur on wet or icy roads. Table 2.13 shows crashes by weather, light, and by road conditions.

Table 2.13 Crashes by Weather, Light, and Road Conditions

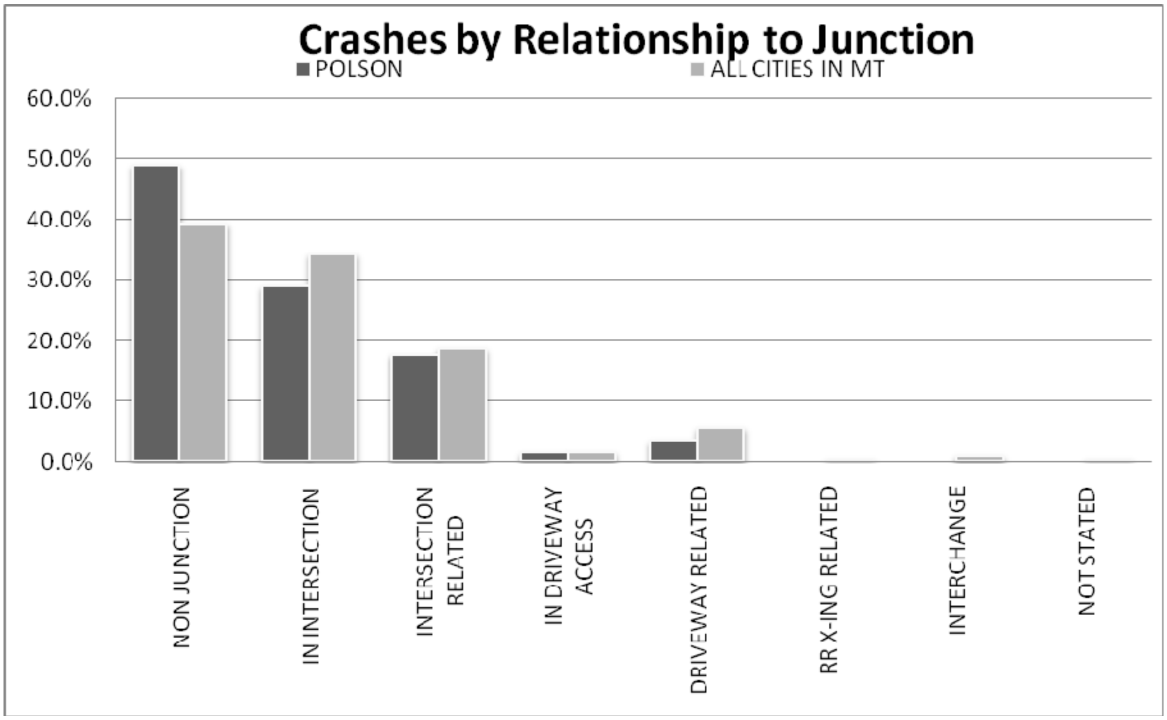
(Crash data for 2005 - 2009)

	Polson	All Montana Cities
Crashes by Weather Condition		
Clear	72.2%	59.8%
Cloudy	18.0%	26.6%
Rain	2.0%	1.2%
Snow	4.7%	5.7%
Crashes by Light Condition		
Daylight	79.7%	73.6%
Dark – Lighted	10.2%	15.2%
Dark – Not Lighted	8.5%	7.1%
Crashes by Road Condition		
Dry	77.3%	69.0%
Wet	6.1%	9.8%
Snow or Slush	8.1%	8.2%
Ice	7.5%	11.3%

Crashes by Relationship to Junction: Chart 2-1 shows the crash relationships relative to the junction of an intersection, driveway, interchange, or railroad crossing. Nearly half of the crashes in Polson are non-junction related, which is higher than other cities. The high percentage of non-junction related crashes could be associated with the high frequency of access points. The prevalence of access points may cause acceleration and deceleration issues as drivers attempt to negotiate into and out of accesses.

Chart 2-1

(Crash data for 2005 - 2009)



2.6.2 Driver Information

Driver demographics identify trends based on gender and age of drivers involved in crashes. There is approximately a 50-41 split in male to female drivers. Driver's age is commonly recorded in Polson crashes. Drivers with the highest percent involvement in crashes are 15- to 19-year-olds, which is typical in Montana city crashes. However, there is a higher involvement of drivers from 40- to 44-years-old and 50- to 74-years-old in Polson crashes. Although there are very few drivers under the age of 15 involved in crashes (7 reported in Polson from 2005-2009), as a percent of all drivers involved in crashes this is markedly higher than in other cities in Montana. Chart 2-2 and 2-3 show drivers by gender and age, respectively.

Chart 2-2

(Crash data for 2005 - 2009)

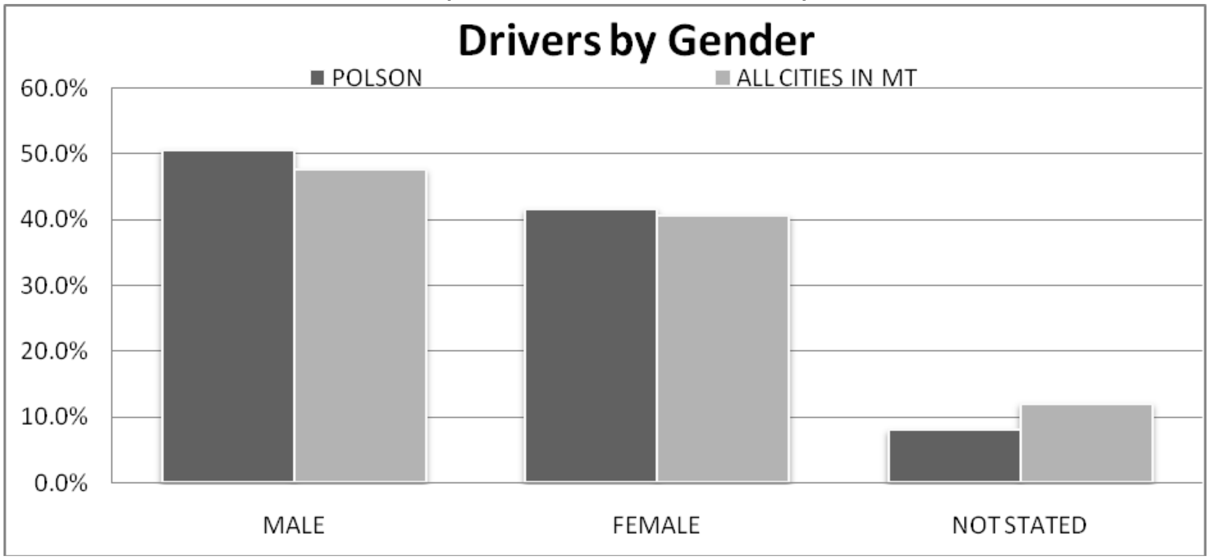
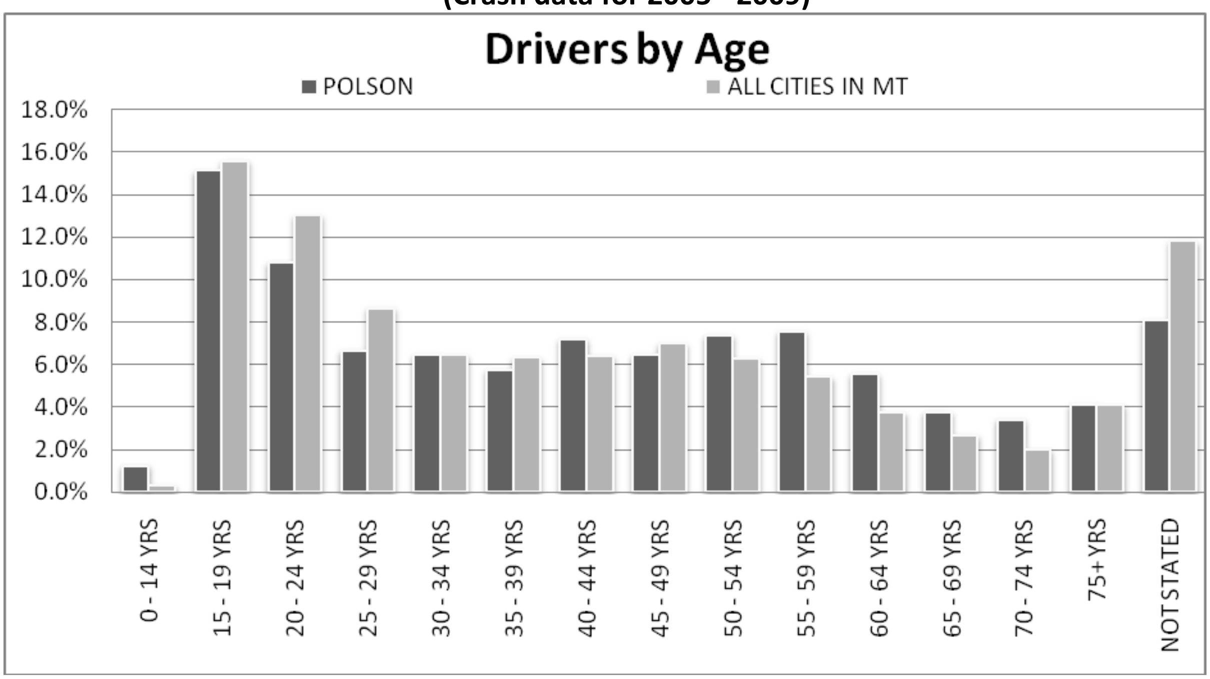


Chart 2-3

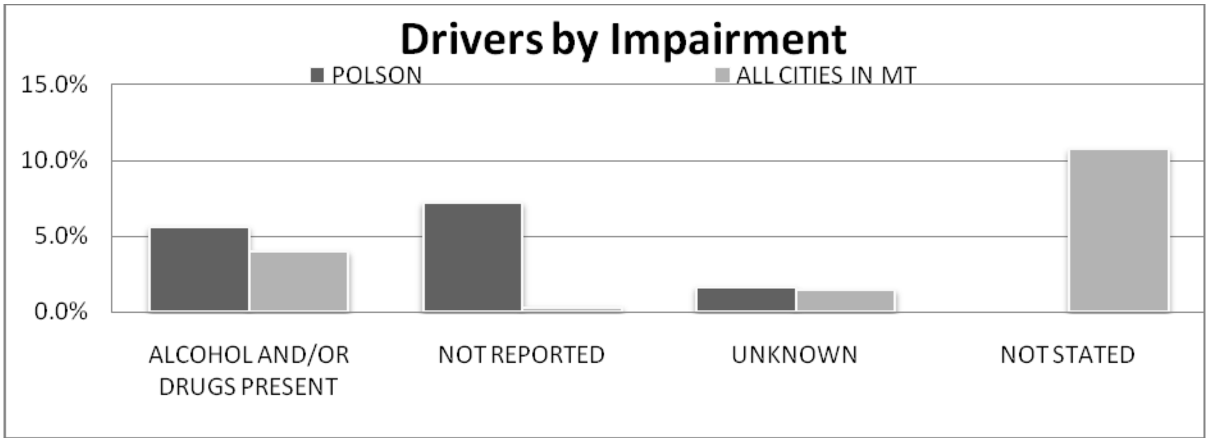
(Crash data for 2005 - 2009)



Over the past five years in Polson, 14.4% of the reported drivers had the presence of alcohol and/or drugs, which is lower than 16.5% for all cities in Montana. In order to effectively show the drivers by impairment, Chart 2-4 represents only those drivers that had some level of alcohol and/or drugs present or if the presence of alcohol and/or drugs was not reported by the law enforcement officer, it was unknown, or not stated. The chart shows that when the presence of alcohol and/or drugs was known, stated, and/or reported, Polson had a higher percent of drivers with the presence of alcohol and/or drugs (5.6% of the drivers), compared to all cities in Montana (4.0% of the drivers).

Chart 2-4

(Crash data for 2005 - 2009)



2.6.3 Injury Information

As stated previously, there were 104 injuries in traffic crashes and no fatalities in Polson from 2005 to 2009. Such a small number does not allow for too much in-depth analysis of any apparent problems.

Types of Injuries: As a percent of all injuries, Polson has fewer incapacitating and non-incapacitating injuries than all the incorporated cities. There are a higher percent of "other" injuries which are complaints of injuries without outward, physical signs (such as whip-lash or headaches). The types of injuries are shown in Table 2-14.

Table 2.14 Types of Injuries

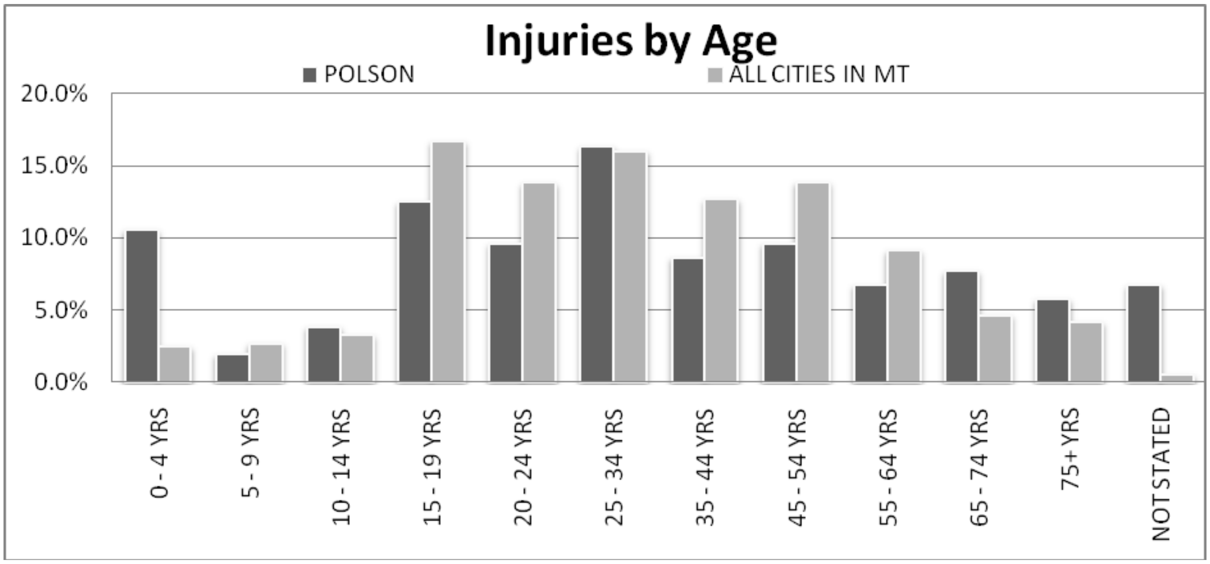
(Crash data for 2005 - 2009)

Injuries	Polson		All Montana Cities	
	No.	Percent	No.	Percent
Fatal	0	0.0%	130	0.7%
Incapacitating	6	5.8%	1,446	7.5%
Non-Incapacitating	17	16.3%	3,617	18.7%
Other	81	77.9%	14,149	73.2%
Total Injuries	104	-	19,342	-

Injuries by Age: Although the ages of those injured in crashes in Polson vary widely, the highest number of injuries occurs to 25- to 34-year-olds. Seven of the injured people did not have an age stated on the crash report, and these seven "age-less" people could make Chart 2-5 vary greatly if the ages were known. It was reported that eleven children between the ages of 0 and 4 were injured. As a percent of all injured, this number is over four times the percent of injuries this age group sees compared to other Montana city crashes. The injuries by age are shown in Chart 2-5.

Chart 2-5

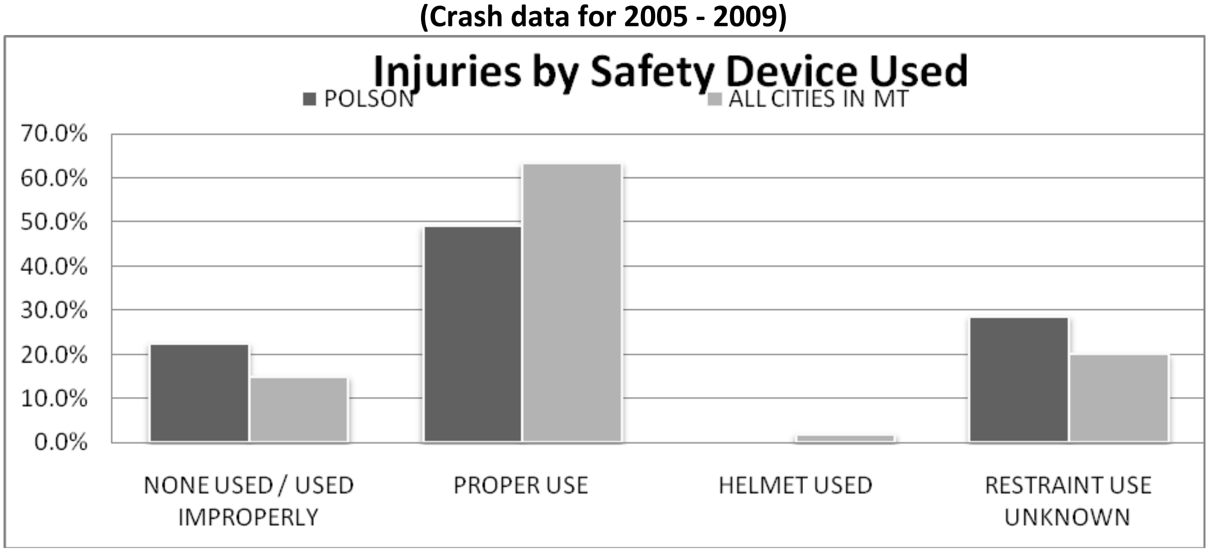
(Crash data for 2005 - 2009)



Injuries by Safety Device Used: A higher number of people injured in crashes in Polson did not use their seat belt properly compared to other Montana cities (49% of the people injured in Polson crashes versus 63.4% in all cities). Chart 2-6 shows the percent of injuries for vehicle occupants and motorcyclists based on the proper use of a safety device (seat belt, child safety seat, motorcycle helmet).

Chart 2-6

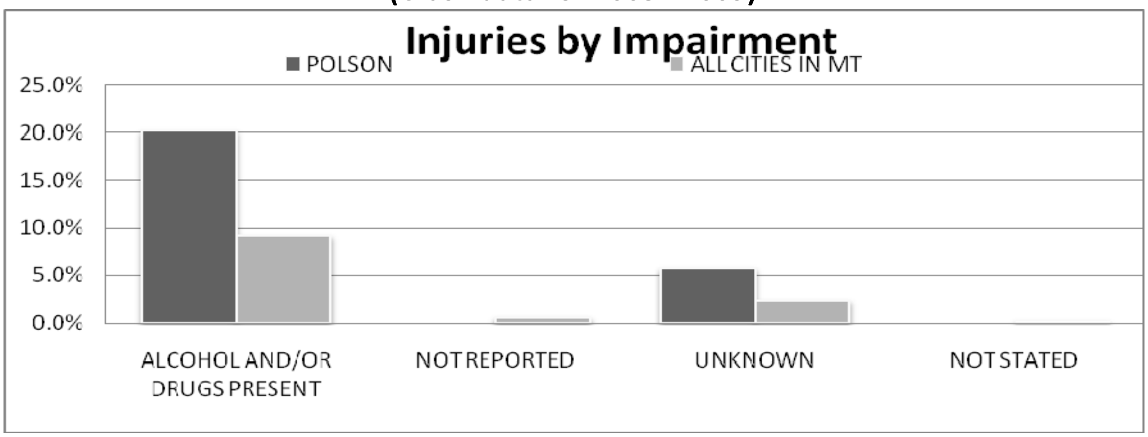
(Crash data for 2005 - 2009)



Injuries by Impairment: Whereas Chart 2-4 represented the drivers by impairment, this discussion only includes data when an injury occurred. When an injury occurred during a crash between 2005 and 2009, 26% of the reported injuries in Polson had the presence of alcohol and/or drugs, compared to 22.4% for all cities in Montana. Chart 2-7 represents only those injuries that had alcohol and/or drugs present, it was not reported by the law enforcement officer, it was unknown, or not stated. The chart shows not only the higher percent of injuries with the presence of alcohol and/or drugs in Polson, but also shows the higher percent of injuries listed on crash reports with their sobriety unknown compared to all cities in Montana. All of the injuries from crashes in Polson had some sort of sobriety information reported.

Chart 2-7

(Crash data for 2005 - 2009)



2.6.4 Vehicle Information

There were 556 vehicles involved in the 295 crashes in Polson from 2005 to 2009. Polson follows the normal trend for urban crashes, 83.1% of the crashes involve multiple vehicles. Pickups, truck-tractors, and bicycles have a higher occurrence of being involved in crashes in Polson compared to crashes in other Montana cities. Table 2-15 shows those body styles most commonly seen in urban crashes.

Table 2.15 Types of Vehicles Involved in Crashes

(Crash data for 2005 - 2009)

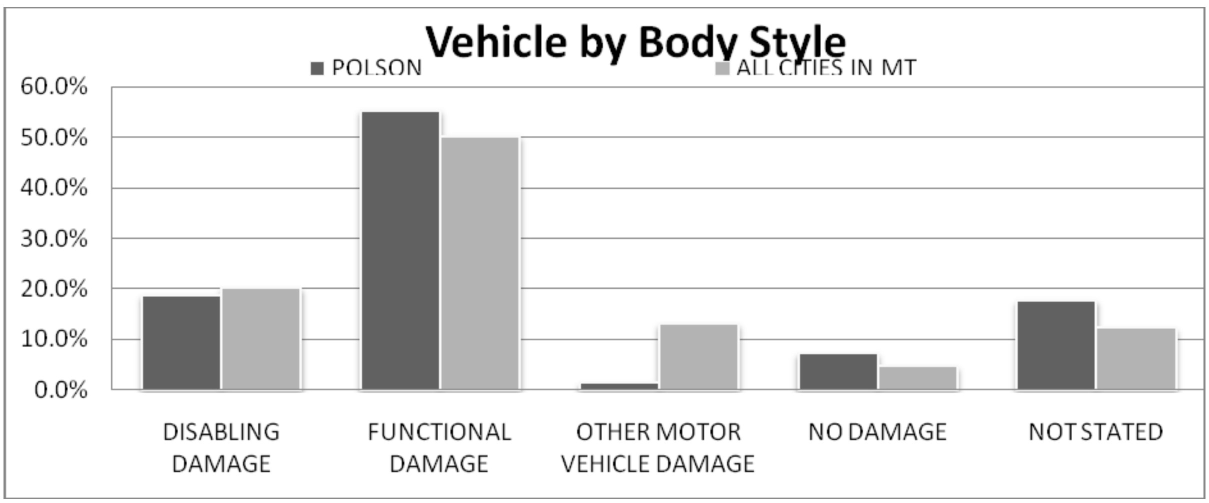
Vehicle by Body Style	Polson	All Montana Cities
Passenger Car	45.9%	49.8%
Pickup	25.4%	23.1%
SUV	13.9%	13.2%
Van/Mini-Van	5.4%	5.6%
Truck-Tractor	3.3%	1.8%
Motorcycle	0.7%	0.8%
Bicycle	1.3%	0.7%
Unknown/Not Stated	3.0%	2.1%

Vehicles involved in urban crashes typically do not have trailers attached to them (95.4% of all vehicles involved in crashes in all incorporated cities in Montana). The same is true in Polson with 95.9% of all vehicles involved. In the case where a trailer style has been stated in the report, they typically are utility trailers, cargo trailers, and recreational trailers. It also does not mean that the trailer attached to the vehicle caused the crash.

Montana vehicles are the predominant vehicles involved in Polson crashes, while 4.1% of the vehicles are from out of state. Chart 2-8 shows the damage severity of the vehicle. This is another measure of the severity of the crash, especially for property-damage only crashes. Over 17% of the vehicles do not have damage severity stated, so the full extent of the severity of crashes as demonstrated by damage to vehicles occurring in Polson is unknown.

Chart 2-8

(Crash data for 2005 - 2009)

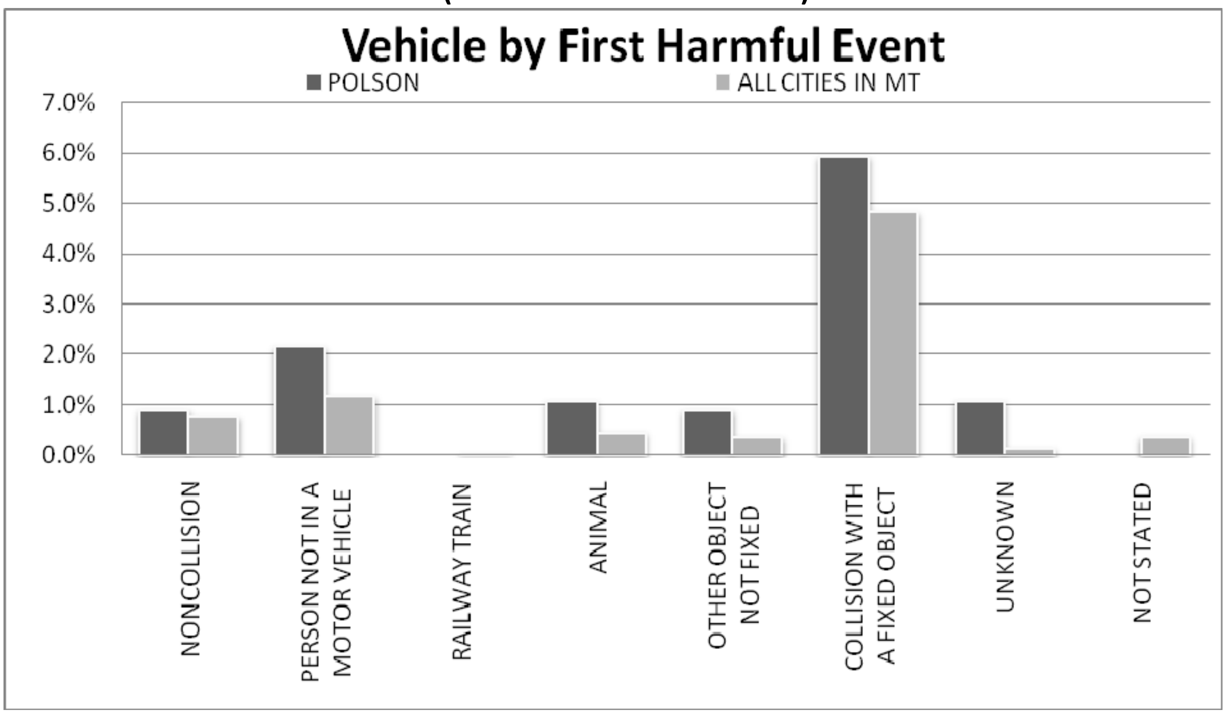


Crashes were analyzed based on "vehicle by first harmful event" to identify collision types. It is known that most of the crashes in Polson were multi-vehicle crashes. Therefore, "collisions with another motor vehicle" is the most common first harmful event reported per vehicle with 77.9% of the report crashes. Chart 2-9 shows the percent of vehicles by the reported first harmful event, excluding collisions with another motor vehicle in order to show variations in other collision types.

Collisions with fixed objects are the most common first harmful event and are higher than other cities in Montana. Fixed objects include, but are not limited to, utility poles, trees, and embankments.

Chart 2-9

(Crash data for 2005 - 2009)

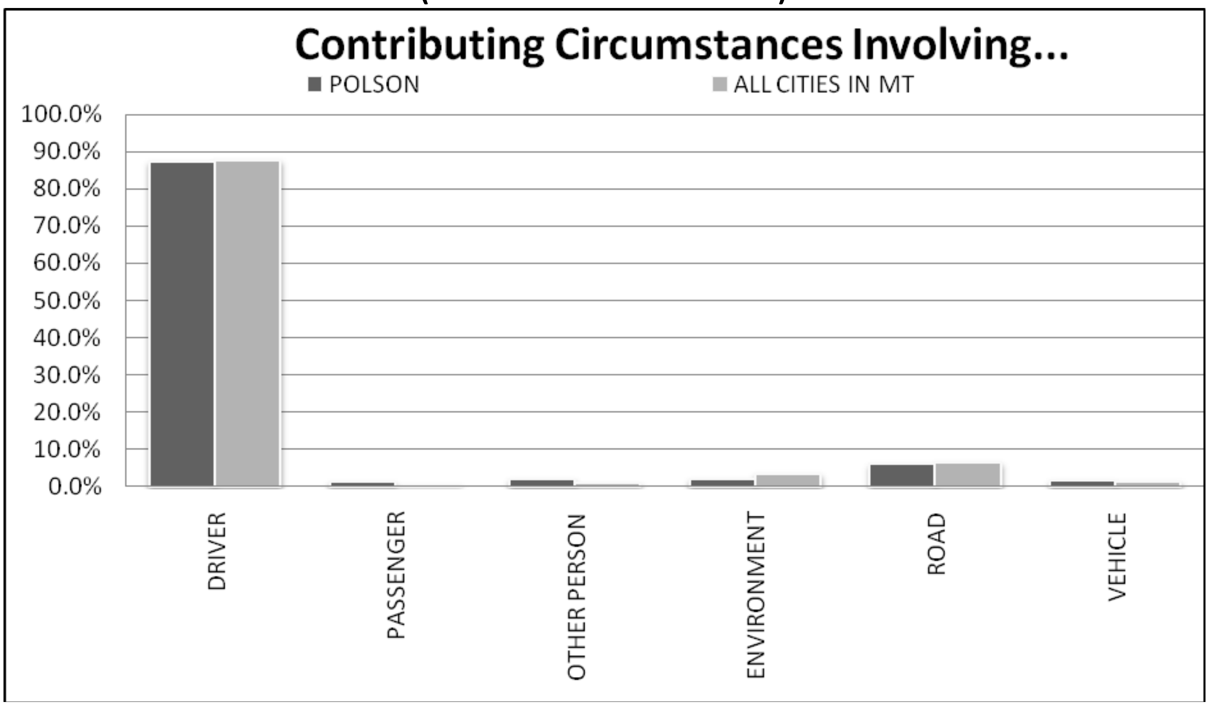


2.6.5 Contributing Circumstances

In crash reports, zero to five contributing circumstances can be listed for each vehicle involved in the crash. Contributing circumstances fall under six categories: driver, passenger, other person, environment, road, and vehicle. Generally, the responding officer identifies the single most probable contributing circumstances of the crash. As shown in Chart 2-10, contributing circumstances involving the driver of the motor vehicle are largely the most common. Determining contributing circumstances in crash reports is very subjective and may vary according to the officers completing the reports. Thus, caution should be taken when using contributing circumstances as an indicator of traffic safety issues.

Chart 2-10

(Crash data for 2005 - 2009)

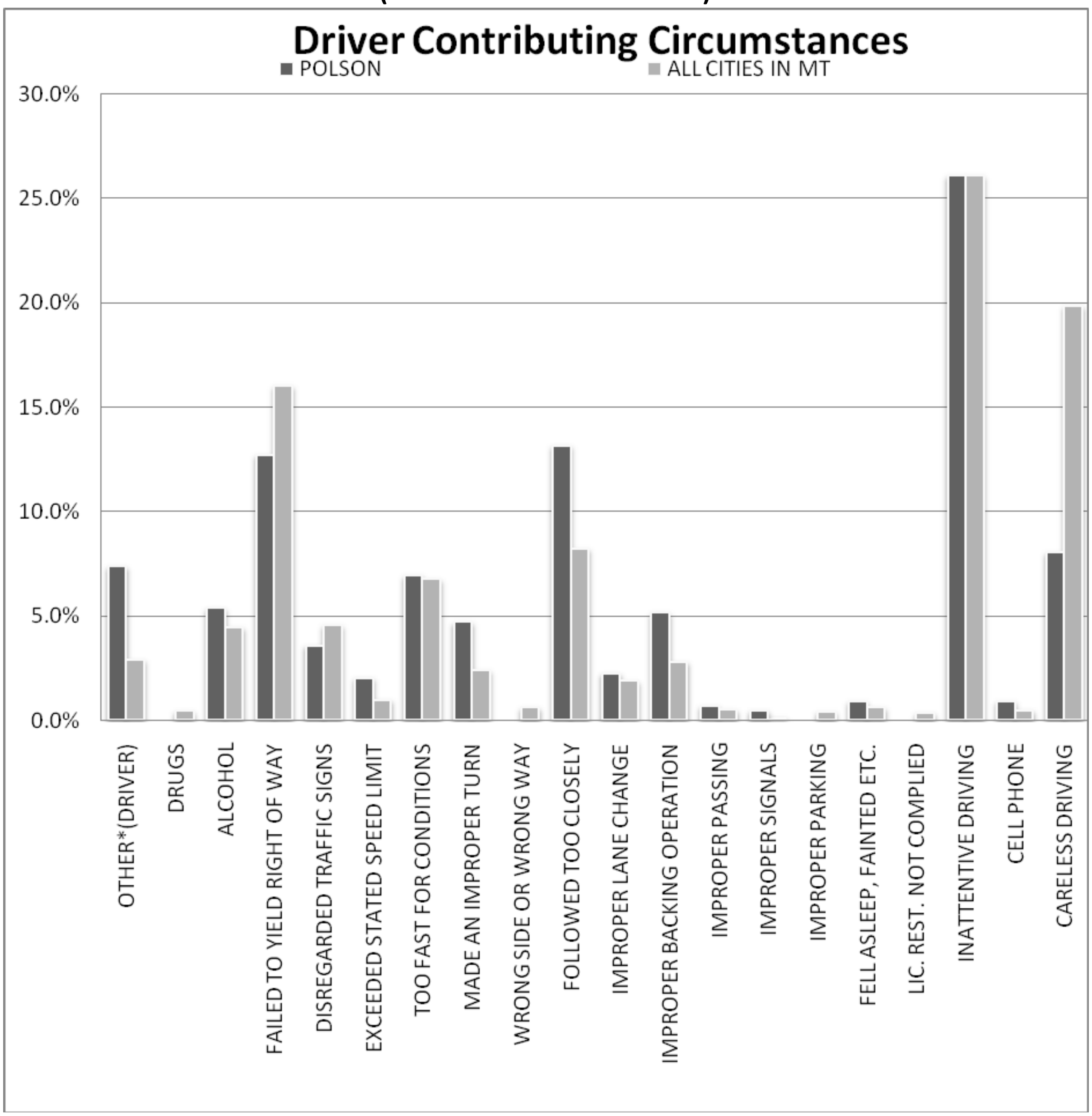


Ice is the major contributing circumstance involving roads and is common in Montana. Obstructions and other road conditions were also noted in Polson crashes. Environmental factors commonly reported in Polson crashes were rain or snow, sign obstruction, and other. These environmental factors were also noted in urban crashes in other Montana cities. When the other person is noted as being a contributing circumstance to a crash, most of the time the reason was due to the other person failing to yield the right-of-way or disregarding the traffic control device.

Since contributing circumstances involving drivers are predominant in Polson crashes, it is important to determine if there are trends associated with the drivers. Chart 2-11 represents contributing circumstances involving the driver. “Inattentive driving” is the most prevalent circumstance in Polson, similar to other Montana cities. “Failed to yield to right of way” and “following too closely” are both other common contributing circumstances, with “following too closely” in Polson occurring more frequently than in other Montana cities.

Chart 2-11

(Crash data for 2005 - 2009)



Chapter 3 Travel Demand Forecasting

3.1 Introduction

This chapter has two purposes: (1) to provide general information for public and elected officials to support discussion of and decisions about transportation issues in Polson; and (2) to develop estimates of the amount and location of growth in population and employment that can be used as a basis for transportation analysis and modeling.[1]

3.2 Context for the Evaluation

3.2.1 Objectives

A main purpose of socioeconomic and land-use evaluations in transportation planning is forecasting growth: the expected number, type, and location of new households and employees. Though our purposes relate primarily to transportation, the information we assemble about the likely amount and distribution of growth is also of value for other planning the City might be doing for infrastructure, land use, and for economic development.

3.2.2 Methods

In the context of land use and transportation, the main variables to forecast in a socioeconomic analysis are population and employment, which are then used to forecast the demand for new built space (housing, commercial uses, etc.), which in turn becomes travel origins and destinations for trips that use the transportation system.

Any forecast has uncertainty, and the longer the forecast period, the greater the uncertainty. Less appreciated and perhaps counterintuitive is that forecasting for small areas can be more uncertain than forecasting for large areas. Small areas (like Polson) are less complex than larger metropolitan areas, but because they are small their growth rates can be changed substantially by developments that would be lost in the averages in large metropolitan areas. Some of the issues are as noted below:

- Projections for population in most cities and counties are not based on deterministic models of growth; they are simple projections of past growth rates into the future. They have no quantitative connection to the underlying factors that explain why and how much growth will occur.

- Even if planners had a sophisticated model that links all these important variables together (which they do not), they would still face the problem of having to forecast the future of the variables that they are using to forecast growth (in, say, population or employment). In the final analysis, all forecasting requires making assumptions about the future.

[1] The modeling included the use of MDT's *TransCAD* travel-demand model, which required as inputs the expected growth in population (households) and employment (retail and non-retail jobs) by subarea in the City.

- Comparisons of past population projections to subsequent population counts have revealed that even sophisticated methods "are often inaccurate even for relatively large populations and for short periods of time."[2] The smaller the area and the longer the period of time covered, the worse the results for any statistical method.
- Small areas start from a small base. A new subdivision of 200 homes inside a large city has a small effect. That same subdivision in a small city would be a substantial increase in the community's housing stock and would have a big effect on its growth rate.
- Problems of small size are compounded in areas with the potential for fast growth. The area around Flathead Lake, including Polson, has a strong tourism and seasonal economy, and is a desirable location for seasonal and second homes.
- Public policy makes a difference. Cities can affect the rate of growth through infrastructure, land supply, incentives, and other policies. Such policies generally do not have an impact on growth rates in a region, but may cause shifts of population and employment among cities.

In summary, the longer the forecast, the greater the potential that actual population growth will vary from the forecast. This implies that cities should closely monitor actual population growth so that either (1) plans can be modified to account for variations, or (2) policies can be implemented that increase the likelihood of achieving the population growth.

In many cases, the longer the period of observation, the greater the confidence one can have in using the trend to forecast the future: cyclical variation gets averaged out in a long-run trend. But forecasting based on trends implicitly assumes that the conditions that influenced past growth will be similar in the future. If there are reasons to believe that certain causal factors will change substantially in the future, then there are reasons to adjust a trend-based forecast. For example, vehicle-miles traveled in all states in the US have consistently grown faster than population for 100 years. But the rate of increase has begun to decrease in the last few years because of changes in many of the causal variables (attenuation of the trend of women entering the labor force, saturation of automobile ownership, real increases in fuel prices, and so on).

The exact time period used in assessing a trend is less important than the annual rate of growth for whatever period is being assessed. Working with rates of growth, rather than with absolute amounts of growth, also helps address the problems that (1) not all of the data from the 2010 US Census are available, and (2) Polson is a relatively small city for which there are not many good sources of estimates for non-Census years. Thus, in some cases it is important to look at average annual growth between 1980 and 2010 and at estimates in the Polson Growth Policy of 2006 to estimate rates of growth that can be used for forecasting growth beyond 2010.

To establish baseline assumptions and estimate future growth in population and employment in Polson through the year 2030, available documents and data were reviewed, including the Polson Growth

[2] Murdock, Steve H., *et. al.* 1991. "Evaluating Small-Area Population Projections." *Journal of the American Planning Association*, Vol. 57, No. 4, page 432.

Policy 2006, Lake County Growth Policy, state of Montana labor market information, and 1980/1990/2000/2010 Census data. For population, the analysis used historical growth patterns coupled with population and household estimates from the Polson Growth Policy to generate future population growth forecasts.[3] For employment trends, two primary sources of data were used: (1) US Census and (2) Quarterly Census of Employment and Wages (QCEW). The Census gathers employment data (by industry) as part of its survey of households[4] and includes all employment (including workers not covered by unemployment insurance). QCEW gathers information directly from reports submitted by employers to the Montana Unemployment Insurance Program. It is a tabulation of employment and wage information for workers covered by state unemployment insurance laws (it does not include armed forces, the self-employed, proprietors, domestic workers, unpaid family workers, and railroad workers covered by the railroad unemployment insurance system).

Both sources (Census and QCEW) use the North American Industry Classification System (NAICS) to categorize industries. NAICS was developed as the standard for use by federal statistical agencies in classifying business establishments. In 1997, NAICS replaced the Standard Industrial Classification system (SIC). An implication for this analysis, and many other analyses of employment growth, is that direct comparison of employment sectors between 1990 and 2000 is not possible. Further, both sources are limited by the geographies they cover. For example, the Census does not provide employment estimates for small areas (like Polson) for the years 2000-2009/2010. While QCEW data are available for Polson during that time, some of the information is confidential because it could be used to identify individual businesses. The combination of the SIC-NAICS conversion and the geographical limitations of Census and QCEW underscore the challenges of preparing forecasts for small areas.

So far the methods we used to forecast *total* population and employment in the study area have been described. But for transportation modeling planning, some method for distributing (allocating) the total population sub-areas in the study area is required: where the growth goes makes a difference to how the transportation system will perform. Judgments about where growth would go are made by considering (1) available and potential infrastructure; (2) platted but undeveloped lots; (3) vacant land; and (4) the opinions of local experts. The methods utilized are described in detail in Section 3.4.

3.3 Trends

3.3.1 Population

Counties in Montana have experienced uneven population growth over the last 20 years. With some exceptions, many eastern counties have experienced population decline while western counties have experienced growth, especially as a result of in-migration (i.e., people moving to Polson from other states and other counties in Montana, in contrast to growth in Polson from "natural increase"—an excess of births over deaths).[12] Table 3.1 shows population in Montana, Lake County, and Polson in

[3] Population and demographic analysis for areas with less than 20,000 people (like Polson) are not included in the annual U.S. Census American Community Survey, the most reliable source of demographic and economic data for communities.
[4] Because the data are gathered from households, the employment data are by *place of* <u>*residence*</u>, not *place of* <u>*work*</u>, which makes comparing certain data difficult (discussed later).

1990, 2000, and 2010. In 2010, Census data show that Polson's population was 4,488, Lake County's was 28,746, and Montana's was 989,415. Over the 20-year period, Polson's population grew by 37% or 1.58% annually—mimicking growth in Lake County and higher than the annual rate of Montana.

Table 3.1 Population in Montana, Lake County, and Polson (1990 – 2010)

				Change 1990 - 2010		
	1990	2000	2010	Number	Percent	AAGR
Montana	799,065	902,195	989,415	190,350	24%	1.07%
Lake County	21,041	26,507	28,746	7,705	37%	1.57%
Polson	3,283	4,041	4,488	1,205	37%	1.58%

Source: U.S. Census 1990, 2000, and 2010
Note: Polson AAGR is not corrected for annexation. Please see narrative text below.

To properly compare growth rates, however, a City's population growth must take annexations into account. If a city annexes property that people already live on, the population of the city will increase even if the population of the larger region is not growing. For most purposes, analysts want estimates of net new growth, not transfers based on boundary adjustments. Polson has grown in part through expansion of its boundaries and in part through natural population growth. Analysis in the Polson Growth Policy gives some idea about annexation for the period between 1990 and 2000.

During this ten-year period, Polson's population increased from 3,283 to 4,041 – a 2.10% annual growth rate. However, considering boundary expansions between this same period, the City grew in size from 1,152 to 1,733 acres. The Polson Growth Policy estimates that approximately 42% of the growth in the City's population between 1990 and 2000 was attributable to annexation. Thus, the increase of 758 people occurred because 318 people were added through boundary expansion, and 440 were added as a result of natural increase and in-migration within the 1990 boundary. After subtracting the amount attributable to boundary expansion, growth averaged about 1.26% per year, which is lower than the rate for Lake County during that period (about 1.63%) and faster than the State of Montana during that period (1.05%).

It is important to realize that the 2010 Census Population for Polson of 4,488 persons is slightly lower than the 2006 Polson Growth Policy projection (4,714 persons) for the year 2010. The difference in the two of 226 persons can be attributed to more current data that inherently recognizes the recent trends as provided by the Census Bureau that was not available when the Polson Growth Policy was developed beginning back in 2005.

The median age in Polson has increased over time, from 36 in 1990 to 40.0 in 2010, which is lower than Lake County (41.3), but higher than Montana (39.8) and the nation (37.2). The US Census estimates that the median age in the state will increase to 46 by 2030.[5] Table 3.2 shows the change in age composition

[5] US Census Population Projections Demographic and Summary Indicators for States, 2010

in Polson between 1980 and 2010. The fastest-growing age groups between 1980 and 2010 were 45-54 year olds (162% growth over the period), under 10-year olds (111%), and 30-44 year olds (61%).

Table 3.2 Population by Age, Polson, 1980 and 2010

	1980		2010		Change 1980-2010	
Age	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Under 10	304	11%	641	14%	337	111%
10 to 19	373	14%	539	12%	166	45%
20 to 29	391	15%	610	14%	219	56%
30 to 44	443	17%	713	16%	270	61%
45 to 54	207	8%	542	12%	335	162%
55 to 64	295	11%	559	12%	264	89%
65 and over	668	25%	884	20%	216	32%
Total	**2,681**	**100%**	**4,488**	**100%**	**1,807**	**67%**

Source: Census Bureau, 1980, 2000, 2010, and Polson Growth Policy 2006
Note: Percents may not add to 100 exactly due to rounding

Lake County has a higher percentage of American Indians (discussed below) than the state average. American Indians tend to have a younger average age than the white population (which is over two–thirds of the area's population).[6]

The state Department of Labor and Industry expects the working age population in the state of Montana to decline starting in 2012 and the population over 65 years old to increase.[7] An increasingly older population can impact the way a community grows in the future. People over 60 tend to drive less than those in their 30s and 40s.[8] Lower school enrollment and a declining workforce can also reduce vehicle miles traveled.

Table 3.3 shows race and ethnicity in Polson in 1980 and 2010. Over the period, the American Indian population of Polson increased from 22 to 706.

[6] According to the US Census, the median age for American Indians in Montana is 26.5, significantly younger than the white population (40.1).
[7] *Economic Recovery and the Effects of Montana's Aging Workforce*, Montana Department of Labor and Industry, 2010
[8] *National Household Travel Survey*, US Department of Transportation, 2001

Table 3.3 Population by Race, Polson, 1980 and 2010

Race/Ethnicity	1980		2010	
	Number	**Percent**	**Number**	**Percent**
White	2,637	98%	3,352	75%
Black/African American	22	1%	8	0%
American Indian/Alaskan Native	22	1%	706	16%
Asian	0	0%	35	1%
Native Hawaiian/Pacific Islander	0	0%	2	0%
Other or Multiple	0	0%	231	5%
Hispanic or Latino	0	0%	154	3%
Total	**2,681**	**100%**	**4,488**	**100%**

Source: Census Bureau, 1980 and 2010

The race/ethnicity make-up of Polson is similar to that of Montana, with the exception of the American Indian population. According to the Census, American Indians make up about 6% of the state's population, but about 16% of Polson's. Regarding the change between 1980 and 2010, research suggests that several factors make the comparison unreliable.[9]

Table 3.4 shows the level of educational attainment for population above the age of 25 in Polson in 1990 and 2000. Note that 2010 Census data was not available at the time of this analysis.

[9] Table 3.3 shows that the proportion of the population that was American Indian increased from less than 1% in 1980 to more than 16% in 2010. Communications with tribal representatives suggest that the large increase is primarily the result of enhanced outreach efforts from the tribal government and the Census Bureau, starting in the 1980s, to encourage tribal members to complete the Census household survey. Some of the increase can also be attributed to tribal members returning to the reservation between 1980 and 2010 (voicemail correspondence between Jeff Key (CDM) and Janet Camel, Land Use & Development, Confederated Salish and Kootenai Tribes). Moreover, Census methods changed during that period: from an interviewer attribution of race to a respondent attribution: "The data on race in Census 2010 are not directly comparable to those collected in previous censuses." http://quickfacts.census.gov/qfd/meta/long_68184.htm

Table 3.4 Educational Attainment for Population Above 25, Polson, 1990 and 2000

Highest Educational Attainment	1990		2000		Change 1990-2000	
	Number	Percent	Number	Percent	Number	Share
Less than 9th grade	218	9%	128	5%	-90	-4%
Some high school, no diploma	413	17%	293	12%	-120	-6%
High school graduate	944	40%	875	34%	-69	-6%
Some college, no degree	357	15%	633	25%	276	10%
Associate degree	133	6%	153	6%	20	0%
Bachelor's degree	175	7%	332	13%	157	6%
Graduate or professional degree	123	5%	132	5%	9	0%
Total	**2,363**	**100%**	**2,546**	**100%**	**183**	**0%**

Source: Census Bureau 1990 and 2000, and Polson Growth Policy 2006

In general, the City's population is becoming more educated. Eighteen percent of Polson residents had a bachelor's degree or higher in 2000, up from 12% in 1990. In 2000, 17% of Polson residents had not finished high school compared to 26% in 1990. The most likely explanation for the change is that the influx of people in the 30 – 54 age cohort have, on average, more education.

In summary, Polson and Lake County have been growing faster than the state of Montana for the last 20 years. Demographically, the area has become older, more educated, and more ethnically diverse than the rest of the state. The strong growth in the 30 – 54 age cohort, and in the 0 – 19 age cohort, suggests in-migration of families, which implies a growth in jobs to sustain them (few people 30 – 54 are retiring; most need income and a job to generate it).

3.3.2 Employment

A hundred years ago, the economy of Polson/Lake County was focused on agriculture and wood products. In the 1980s and 1990s, the Polson area transitioned to an economy focused on retail and service, government, healthcare, and manufacturing.[10] The Polson Growth Policy suggests that in recent years, the area has seen growth in tourism and residential real estate development in and around Polson, and that much of the growth in residential real estate development is due to construction of retirement or second homes.

The unemployment rate in Lake County is estimated to be about 11.0% (June 2011), which is higher than both the national level (9.3%) and Montana's rate of 7.8% for the same time period.[11] Major employers

[10] Montana Department of Labor and Industry, 2010 & Polson Growth Policy, 2006
[11] Montana Department of Labor and Industry, 2010

in Lake County are the school districts, the tribal government, the electric utility (Mission Valley Power), Community Bank, DRS Technical Services (defense technology and logistics), St. Joseph Hospital, S&K Electronics (electronics manufacturing), and the Jore Corporation (power tool manufacturing).[12] S&K and the Jore Corporation were established by the Confederated Salish and Kootenai Tribes and are based in Ronan, about 13 miles south of Polson.

The US Census estimates that the total number of people living in Lake County and who were employed[13] grew from 11,069 in 2000 to 12,143 in 2009, which is an average annual growth rate of 1.03%. During that same time period, total employment in Montana grew from 425,977 to 473,186, a rate of 1.17%.

Table 3.5 shows employment by sector in Lake County in 2000 and 2009. Because of differences in reporting and estimating methods, total employment reported from the Census and QCEW cannot be compared directly. The QCEW data in Table 3.5 include only employees covered by state unemployment insurance: other work completed suggests that 15% to 20% of employees are not covered, and that specific percentage is even larger for Lake County. Thus, Table 3.5 is presented to get an idea of the relative composition of employment and how it has changed over time.

Table 3.5 Employment by Place of Work, by Sector, Lake County, 2000 and 2009

Industry Sector	2000		2009		Change 2000-2009		
	Number	Percent	Number	Percent	Number	Percent	Share
Agriculture, Forestry, Fishing & Hunting	68	1%	110	1%	42	62%	0%
Mining	26	0%	23	0%	-3	-12%	0%
Utilities	*	--	*	--	--	--	--
Construction	378	5%	438	6%	60	16%	0%
Manufacturing	1,324	19%	593	7%	-731	-55%	-11%
Retail trade	1,027	14%	1,108	14%	81	8%	0%
Transportation and Warehousing	42	1%	53	1%	11	26%	0%
Information	94	1%	133	2%	39	41%	0%
Finance and Insurance	244	3%	233	3%	-11	-5%	0%

[12] *Lake County Profile*, Montana Department of Labor and Industry, 2010
[13] In other words, the US Census reports employees by place of residence, not place of work. Some of the people reported as employees work outside the County; some people outside the County work in jobs that are in the County. Data was not available to tell whether those effects are directly offsetting. Because Polson is in the center of a relatively large county, a reasonable assumption is that almost all of the people working in Polson live in Lake County.

Real Estate and Renting and Leasing	46	1%	58	1%	12	26%	0%
Professional and Technical Services	142	2%	199	3%	57	40%	1%
Management of Companies & Enterprises	89	1%	22	0%	-67	-75%	-1%
Administrative and Waste Services	323	5%	94	1%	-229	-71%	-3%
Educational Services	*	--	38	0%	--	--	--
Health Care and Social Assistance	932	13%	1,137	14%	205	22%	1%
Arts, Entertainment, and Recreation	73	1%	75	1%	2	3%	0%
Accommodation and Food Services	758	11%	708	9%	-50	-7%	-2%
Other Services, Ex. Public Admin	200	3%	218	3%	18	9%	0%
Total Government	1,341	19%	2,680	34%	1,339	100%	15%
Total Covered Employment	**7,107**	**100%**	**7,920**	**100%**	**813**	**11%**	**0%**

Source: Montana Department of Labor and Industry, based on QCEW data
http://www.ourfactsyourfuture.org/cgi/dataanalysis/AreaSelection.asp?tableName=Industry

Note: Due to confidentiality and small number of employers, Quarterly Census of Employment and Wages data are not disaggregated for all industries. Utilities and Educational services are excluded from this table.

Most industries stayed close to their relative share of employment over the period, with two exceptions: manufacturing and government, the two largest sectors in the County. In 2000, there were close to the same number of jobs in manufacturing as there were in government, about 1,300. In nine years, manufacturing jobs fell to about 600 while government jobs grew to nearly 2,700.[14]

Retail trade, the third-largest sector in 2000, grew by 8%. Health care and social assistance, the fourth-largest in 2000, grew by 22% and became the second-largest sector in the County because of the drop in manufacturing.[15]

Taken together, these data show a shift from a manufacturing to a service economy, a trend common across the US at all levels of geography. That shift is consistent with another shift that several of the people we interviewed presumed was occurring: an increase of retirees and tourists. But the data are difficult to interpret because (1) Table 3.2 suggests growth of workers, not retirees, and (2) the

[14] That much growth in government was a surprising finding. Interviews conducted in the Polson area and with state economic analysts suggest that the purported growth is more likely to be a result of a change in definitions or reporting than a real increase in government jobs.

[15] The drop in manufacturing jobs may be a result of reclassification of some manufacturing jobs to "government" to reflect that they are owned or managed by the tribal government. In addition to providing governmental services, such as health care services, law enforcement and land management for tribal lands, some of Lake County's major employers are owned and/or managed by the tribal government (e.g. Mission Valley Power, S&K Technologies).

employment in the Construction sector (which one would expect to be building retirement and second homes) grew slowly, but did not increase its share of total employment.[16]

Several sectors in Lake County grew faster between 2000 and 2008 than the national average for those sectors, including farming, construction, retail, and real estate. Others grew slower, including health care, food and accommodations, and management. Overall, County employment overall grew at a slightly slower rate than national employment, but that was because County employment is weighted more heavily in sectors that grew slower nationally.

The share of retail vs. non-retail jobs is a key input in MDT's *TransCAD travel* demand model. Employment data from the federal Bureau of Economic Analysis for 2008 for Lake County show retail at 11.4% of total employment, and food and accommodation at 5.8% (the two main components of "retail"). But many "services" might also be considered "retail": arts and entertainment was 2%, and other services were 5.6%. Table 3.6 is for Polson, not Lake County. It shows about a 42% increase in total employment between 1990 and 2000, or about 502 jobs, separated into retail and non-retail sectors. Polson had about the same share of retail employees in 2000 as it did in 1990 (28%).[17]

Table 3.6 Retail and Non-Retail Employment, Polson, 1990 and 2000

	1990		2000	
	Number	**Percent**	**Number**	**Percent**
Retail employment	328	28%	480	28%
Non-retail employment	862	72%	1,212	72%
Total employment	**1,190**	**100%**	**1,692**	**100%**

Source: U.S. Census 1990 and 2000
Note: 2000 retail employment contains NAICS categories: Retail Trade" and "Accommodations and Food Services"

3.4 Forecasts

This section has three subsections. Section 3.4.1, Factors That Affect Growth in Polson and Lake County, sets the context for forecasts of population and employment; Section 3.4.2. and 3.4.3 provide those forecasts in two parts: (1) aggregate forecast of growth for the entire study area for 20 years, and (2) an allocation of that growth to different parts of the study area. As noted previously, by being more specific the allocations are also more uncertain, but for the transportation modeling to occur, the growth must be allocated to areas smaller than the entire study area. The allocations on maps that are provided

[16] Discussions with team members at CDM suggest that some larger homebuilders and their employees are located outside of Lake County and therefore these data would not show an increase in construction employment despite an increase in residential construction in Polson.
[17] As the 1990 and 2000 Censuses used different industry classification systems, a straight comparison of retail and non-retail was not made. For 1990, the only industry considered "retail employment" is SIC 580-699 Retail Trade. For 2000, the new industry sector Accommodations and Food Services was included, as it is generally considered to be a category of retail employment.

herein have underlying census tract boundaries so that the growth forecasts can be allocated to Census tracts, a requirement of the *TransCAD* model being used for this planning effort.

In large metropolitan areas, allocations are often done by looking at where growth has gone historically. But in those areas (and, for the reasons discussed in Section 3.2. 3, Methods, even more so in small cities) the supply of land can have a big effect on the location of growth. Thus, it is common to allocate growth based on a combination of demand- and supply-side considerations, with an emphasis on supply: where is the buildable, serviceable land, and especially, where are the platted lots? That is the approach taken in the evaluation that follows.

One can try to work from secondary data sources (e.g., building permits, assessment data), but expert opinion, especially in small areas, is often superior, especially in dealing with factors that affect buildability but that do not show up in secondary data bases (e.g., certain policy constraints, landowner preferences).

3.4.1 Factors that affect growth in Polson and Lake County

This section describes factors that may affect population and economic growth in Polson and Lake County between now and 2030. An implicit assumption in this analysis is that the factors that have influenced growth in the past are approximately the same ones that will influence growth in the future and that they will do it in approximately the same way (i.e. that conditions will not change radically). Implicitly we assume there will not be any severe land use restrictions that would prevent or restrict future growth.

Population and economic growth over the next 20 years will occur in the context of long-run national and state-wide trends. While short-term national trends will affect economic growth in the region, these trends are difficult to predict. At times these trends may run counter to long-term trends. Some of the key national and state trends:

- **Aging population and increases in life expectancy.** Nationally, the number of people age 65 and older is predicted to more than double by 2050, while the number of people under age 65 will grow only 22 percent.[18] Montana has the eighth oldest population in the US (14.6% are 65 or older compared to 12.9% nationally during 2009), and the percentage of Montana residents over 65 is projected to grow from 15% in 2010 to 24% of the population by 2023.[19] The economic effects of this demographic change include a slowing of the growth of the labor force, an increase in the demand for healthcare services, and an increase in the percent of the federal budget dedicated to Social Security and Medicare. The aging population also means that growth in the labor force is projected to slow and the need for

[18] The Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, 2008, *The 2008 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, April 10, 2008.
[19] *Economic Recovery and the Effects of Montana's Aging Workforce*, Montana Department of Labor and Industry, 2010

workers to replace retiring baby boomers will outpace job growth. The state of Montana predicts a shortage of workers beginning in 2012.[20]

- More directly relevant to this study are the implications for transportation and land use in Polson. An older population is more likely to live in smaller dwelling units and in urban areas where services are more readily available, and to drive less and shorter distances.
- **Continued shift of employment from manufacturing and resource-intensive industries to the service-oriented sectors of the economy.** Increased worker productivity and the international outsourcing of routine tasks lead to declines in employment in the major goods-producing industries. Projections from the Bureau of Labor Statistics indicate that U.S. employment growth will continue to be strongest in healthcare and social assistance, professional and business services, and other service industries. Construction employment will also grow, but manufacturing employment will decline.[21]
- **Continued westward and southward migration of the U.S. population.** Although there are some exceptions at the state level, a 2006 U.S. Census report documents an ongoing pattern of interstate population movement from the Northeast and Midwest to the South and West.[22] Lake County is among the eight fastest growing counties in the state and among the counties experiencing in-migration from other states.

In addition to national and state trends, other local factors will impact future growth in Polson and Lake County:

- **Quality of life and natural amenity.** Polson is known for its proximity to numerous natural and recreational amenities, including Flathead Lake, Flathead National Forest, Glacier National Park and the National Bison Range. This proximity and its impact on overall quality of life make the area attractive to retirees, tourists, and to second-home owners.
- **Flathead Reservation.** A large portion of Lake County is made up of lands within the Flathead Reservation. The Confederated Salish and Kootenai Tribes employ a significant percentage of the local area workforce through its government and companies it owns (e.g. tribal government, Jore Corporation, S&K Electronics, Mission Power), suggesting that the tribe's economic development activities will continue to influence employment growth in the Polson area.
- **Location relative to major markets.** Polson is located in the northwest part of the state. It is 70 miles from Missoula, 180 miles to Helena, and 200 miles from Spokane/Coeur D'Alene. Polson's location on the main highway between the growing economies of Kalispell and

[20] Given the growth in the 30-55 age cohort, it is recognized that Polson may be attracting a working-age population.
[21] Eric B. Figueroa and Rose A. Woods, 2007, "Industry Output and Employment Projections to 2016," *Monthly Labor Review*, November 2007, pp. 53-85.; Arlene Dohm and Lyn Shniper, "Occupational Employment Projections to 2016," *Monthly Labor Review*, November 2007, pp. 86-125.
[22] Marc J. Perry, 2006, *Domestic Net Migration in the United States: 2000 to 2004*, Washington, DC, Current Population Reports, P25-1135, U.S. Census Bureau.

Missoula give it some advantages, but its distance from major employment centers and markets is an impediment to some types of economic expansion. Increases in real fuel prices (which many analysts expect over the next 20 years) will increase the impediment. That is not to say that local growth will not occur—it seems likely that it will. Rather, it is a comment on the type and amount of employment that is likely in Lake County.

The above factors suggest that Polson will see its population and economy continue to grow over the next 20 years.

According to the Montana Department of Labor and Industry, some of the fastest growing industry sectors in the state over the next 5-10 years will be Arts, Entertainment, and Recreation; Fishing, Hunting, and Trapping Administrative and Support Services; and Professional and Businesses Services. The first two sectors account for less than 5% of the employment in Lake County. The State also projects that through 2018, Region 1 (which contains Lake County) will see growth in Arts, Entertainment, and Recreation, Administrative and Support Services, Professional Services, Education and Health Services, Leisure and Hospitality, Manufacturing, (but not in Fishing, Hunting, and Trapping).[23]

If the area continues to change the way it has historically, it will see agriculture and wood products manufacturing continue to be relatively less important to the economy, while the area's proximity to recreational opportunities and natural amenity will continue to attract tourists and retirees, thus making recreation, retail, real estate, construction, retirement-related industries, and health care a larger share of the economy over time.

3.4.2 Population and households

Totals

The City of Polson does not have an adopted population forecast, but the 2006 Polson Growth Policy cites a Lake County population forecast performed for the State of Montana by NPA Data Services, and estimates population within Polson city limits based on Polson's share of Lake County growth between 1990 and 2000. Table 3.7 shows the NPA's Lake County forecast and City's local population forecast for the 2000-2025 period.

Table 3.7 Population Forecast, Lake County and Polson, 2005-2025

Year	Lake County	Polson
2000	26,507	4,041
2005	28,920	4,372
2010	31,410	4,714
2015	33,910	5,056

[23] Industry Employment Projections, 2018, Montana Department of Labor and Industry, 2010

Year	Lake County	Polson
2020	36,430	5,402
2025	39,000	5,755
	Change 2000-2025	
Number	12,493	1,714
Percent	47%	42%
AAGR	1.56%	1.42%

Source: Polson Growth Policy 2006
Note: AAGR: Average annual growth rate

The inherent problems of forecasting for small areas are well documented and described in Section 3.2.3.[24] In large metropolitan areas forecasters are helped by large numbers: they can be wrong about individual projects and still get it close to right on average. In a small area, just one large development project can substantially change a city's rate of growth. Thus, there can be more uncertainty about small area forecasts in growing regions.

One response to that uncertainty is to forecast not a "point" but a "range." For example, "we think that there is a 90% probability that the future population will be between x and y." Another response is to not get too fussy about the forecast, remembering that a 20 – 30 year forecast will probably get done every five years, and that while it might be nice to be right in 20 years, it is more important to have some broad ideas about the right direction for short-run policy.

Table 3.9 is based on the Polson Growth Policy's forecast from 2000-2025. It shows Polson growing at about 1.4%, slightly slower than Lake County. These estimates are not adjusted for annexations, which means that the average annual growth rates may be high (we know this is true for Polson).

Table 3.8 Population Projection, City of Polson, 2000-2030

Year	Population	Households
2000	4,041	1,796
2005	4,372	1,943
2015	5,056	2,247
2025	5,755	2,558

[24] For one example, see Murdock, Steve, Rita Hamm, Paul Voss, Darrell Fannin, and Beverly Pecotte. 1991. *Evaluating Small-Area Population Projections*. Journal of the American Planning Association 57,4: 432-43.

Year	Population	Households
2030	6,128	2,724
	Change 2000-2030	
Number	2,087	928
Percent	52%	52%
AAGR	1.40%	1.40%

Source: Polson Growth Policy 2006, ECONorthwest

To provide some idea about a reasonable range for population growth rates in Polson, Table 3.9 shows average annual growth rates for Polson and five comparison cities for three periods (1980-1990, 1990-2000, and 2000- 2008). Cities within a few hundred miles of Polson are presented that were similar in size (3,500 to 8,500 people, compared to Polson at 4,488 in 2010), and had a moderate or strong tourism / second-home component to their economies.

Table 3.9 Average Annual Growth Rates for Population in Polson and Comparison Cities (Various Years)

	2000-2009	1990-2000	1980-1990
Polson	2.91%	2.07%	1.64%
Polson	3.33%	3.07%	0.28%
Lewistown	0.23%	-0.48%	-1.52%
Livingston	0.83%	0.22%	-0.43%
Shelby	1.02%	1.53%	-1.28%
Whitefish	5.86%	1.43%	1.67%
Sandpoint	2.28%	2.77%	1.55%

Source U.S. Census Population Estimates 2009, http://ceic.mt.gov/historicalpopdata.asp
U.S. Decennial Census 1990 and 2000, http://www.sandpoint.com/Community/stats.asp

Polson, Whitefish, and Sandpoint all have strong tourism economies. None ever had a negative growth rate; in general, their average growth rates for any nine- or ten-year period were over 1.4%; average growth rates over 2% were more common than not. These points were true for Polson also. The data in Table 3.9 suggest that a future average annual growth rate for population in Polson in the range of 1.4% to 2.5% would be reasonable.

For the purposes of this study, a rate of 1.4% is used because (1) that is the rate used in the Polson Growth Policy report, and (2) it is easily supported by the data. The actual rate may be higher or lower, but Table 3.9 suggests that it is more likely to be higher than lower. Assuming the US recovers from the current recession, economic and demographic forces suggest continued growth in and around Polson.

Population growth can be translated into household growth (and number of dwelling units) by understanding the average household size of an area. The average household size in Polson grew from 2.16 in 1980 to 2.25 in 2000, though it still remains lower than Lake County (2.54), Montana (2.45) and the US (2.59). Overall population growth trends in Polson suggest in-migration of a working-age population and an increasingly older population, which may mean the household size will remain stable. Thus, the average household size of 2.25 (from the 2000 Census) is utilized to conclude that Polson's population growth rate translates into approximately 928 households, or an average of 31 households per year over the 30-year period from 2000 – 2030. The period from 2000 – 2010 appears to be consistent with that estimate. Thus, the forecast is for another 620 dwelling units to be built over the next 20 years.

It is important to realize that the 2010 Census Population for Polson of 4,488 persons is slightly less than the 2006 Polson Growth Policy projection for the year 2010 of 4,714. The difference in the two of 226 persons can be attributed to more current data that inherently recognizes the recent trends as provided by the Census Bureau that was not available when the Polson Growth Policy was developed beginning back in 2005.

A check on the growth rate of a small area is to review residential building trends. The Polson Growth Policy estimates about 22 housing units were constructed per year between 1990 and 2000. That rate increased to about 33 housing units per year from 2001 to 2005.[25] This is generally consistent with the City's estimated growth rate described above.

The Growth Policy estimated that in 2000 approximately 1,497 people lived outside of Polson City limits but within a two-mile Polson Growth Policy Planning area buffer. If this unincorporated area grows at the same rate as the City of Polson, it would grow by about 775 people (344 households) between 2000 and 2030, about 11 households per year.

In summary, for the 20-year planning period from 2010 to 2030:

- The population forecast for the City and the larger study area is based on an assumption of an average annual growth rate of 1.4%. In rough terms, it is likely that the actual growth rate for that period will be in the range of 1.0% to 2.5%.
- Polson will see about 620 new dwelling units constructed during that period; outside of Polson but in the study area, there will be another 225 new dwelling units constructed during that period.

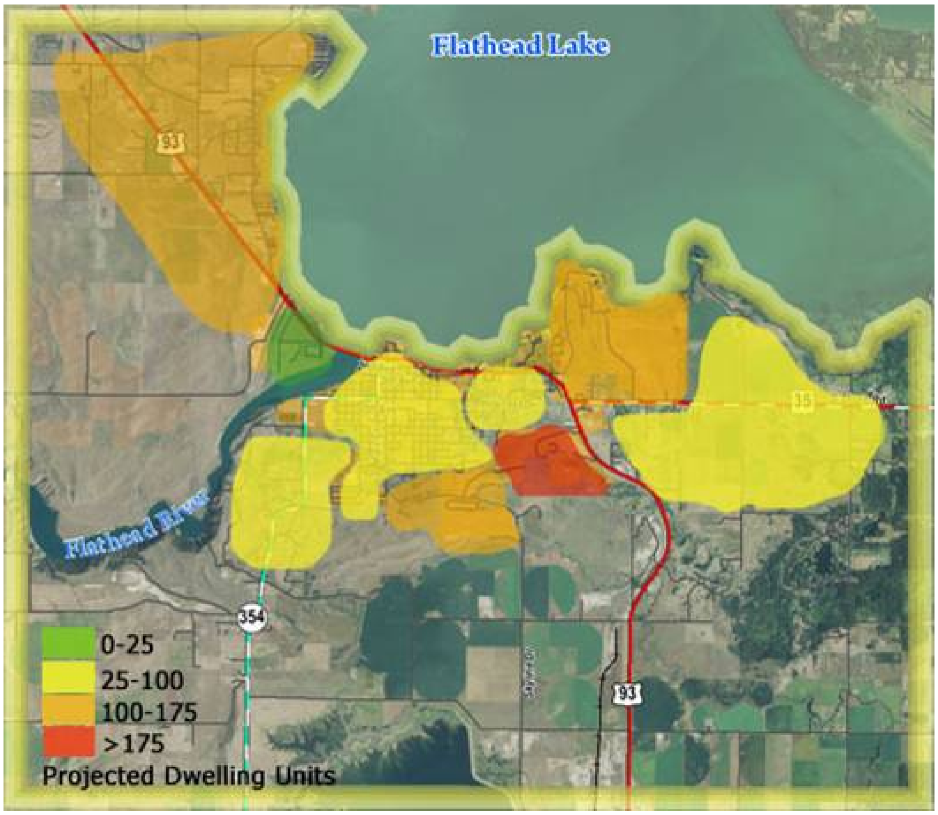
[25] The Growth Policy does not indicate whether data about new housing units was generated by the City (i.e. from building permit data) or from the Census Bureau (which gathers permit data based on local reporting)

Allocations to the study area

Judgments about where growth would go are made by considering (1) available and potential infrastructure; (2) platted but undeveloped lots; (3) vacant land; (4) city and county policy, and (5) the opinions of local experts. The main points:

- As with all cities, residential development is most likely to occur on land zoned for residential purposes. Polson has such land.
- Polson has many platted lots with existing or proximate water and sewer. These include the following areas (with approximate number of vacant lots):
    - *Skyline (100)*
    - *Mission Bay (150)*
    - *Cougar Ridge (200)*
    - *Hillcrest (100)*
- Land in the south hills of Polson, especially on the south side, has been constrained by poor water supply/pressure, and to a lesser extent by transportation. The City is improving its sewer treatment plan, has extended water lines, and is improving Skyline Drive
- Some land is constrained. Within the city limits vacant land zoned for medium- and low-density residential north and west of the high school (south of 11th Avenue and west of Second Street) has large areas that are wetlands. Land farther south (in the agricultural flat land outside the city limits) has water from irrigation canals, but deep groundwater. Land farther west is platted and substantially developed for low-density residential. The south entry to the City on Highway 93 is hilly on the west and mainly commercial along the east until the city limits.
- Outside the City limits but in the study area, the main expansion areas are to the east and northwest (Stonehorse development alone is planned for 250 units).

The forecast is for another 620 and 225 dwelling units to be built in Polson and the rest of the Study area, respectively, over the next 20 years. The estimates above suggest that Polson and the larger study area can come close to accommodating that number on existing platted lots. That fact strongly influences the allocation, which is illustrated in Figure 3-1.



Source: ECONorthwest, based on analysis presented in the text of this report

Figure 3-1 Growth of Housing Units / Households, by sub-area, 2010 to 2030

3.4.3 Employment

Totals

Table 3.10 shows the 2006 Polson Growth Policy's employment projections from 2000-2025. The projections relied on a Lake County employment forecast, which assumed that Polson's portion of Lake County employment would remain constant over the period. Between 2000 and 2025, the Growth Policy projects employment growth of 1,004 employees, an increase of 59% or 1.9% annually.

Table 3.10 Employment Forecast, Lake County and Polson, 2000-2025

Year	Lake County	Polson
2000	11,069	1,692
2005	12,383	1,892

PolsonAreaTransportationPlan

Year	Lake County	Polson
2015	15,008	2,294
2025	17,633	2,696
Change 2000-2025		
Number	6,564	1,004
Percent	59%	59%
AAGR	1.9%	1.9%

Source: Polson Growth Policy 2006

That employment growth forecast is relatively close to Lake County's growth rate between 1990 and 2000 (over 2.0%), but higher than the more recent growth rate between 2000 and 2009 (1.03%). It is also higher than the forecasted employment growth rate for Montana between 2008 and 2018 (1.1%)[26].

A growth rate of 1.9% per year for employment in Polson could be reasonable given that (1) Lake County and Polson (along with the western part of the state) have seen higher population growth rates than other parts of the state, (2) the population growth rate from the Polson Growth Policy could be on the low side: it could easily be 1.9% rather than 1.4%, and it would not be unreasonable to expect employment to grow at the same rate as population, and (3) it is not unreasonable to expect an employment growth to outpace population growth: that can happen when a growing county has small cities and has a large amount of residential growth happening outside of cities, while a large amount of employment growth is happening inside cities.

That said, all the small-area forecasting problems mentioned previously certainly apply here. Given the uncertainty, it is better to talk about a range of future employment than about a point estimate. If employment in the City grew at a rate consistent with the State and the County, the City's employment would grow by 1.1% to 1.9% per year, or add about 20 to 40 jobs per year.

For the purposes of MDT's *TransCAD* travel demand model inputs, forecasted employment growth in the city was divided into retail and non-retail employment. Table 3.11 shows the total projected employment growth allocated between retail and non-retail related industries using (1) the high-end annual growth rate for employment assumed by the Polson Growth Policy (1.9%), and (2) the ratio of retail employees to total employees in Polson between 1990 and 2000, which remained relatively constant at 28%.

[26] 10-year Industry Employment Projections 2019, Montana Department of Labor and Industry, 2010

Table 3.11 Retail and Non-Retail Employment Forecasts, High-End Growth Rate, City of Polson, 2000-2030

Year	Employment	Retail Employment	Non-retail Employment
2000	1,692	480	1,212
2005	1,892	537	1,355
2015	2,294	651	1,643
2025	2,696	765	1,931
2030	2,959	840	2,120
Change 2000-2030			
Number	1,267	360	908
Percent	75%	75%	75%
AAGR	1.9%	1.9%	1.9%

Source: Polson Growth Policy 2006, ECONorthwest
Note: Totals may be affected by rounding

The data available to about 2008 suggest that employment growth in Polson has been tracking the forecasts in Table 3.11 since 2000. Thus, Table 3.11 suggests that slightly fewer than 850 employees will be added to Polson between 2010 and 2030, with about 250 of them in the retail sector. Other data sources suggest that the retail component could be lower (say 20% as opposed to the 28% we used to create Table 3.11), but (1) the overall differences for the *TransCAD* modeling are probably small, and (2) modelers can adjust the allocations if they desire.

These forecasts are for the Polson city limits *only*, *not* (as for population) for the larger two-mile area. Comparable data for sub-areas outside the city limits is not available. The presumption is that any employment growth near Polson but outside its city limits will be along Highway 93 and near the city limits. There is Highway Commercial zoning southeast of the City and Commercial-Industrial zoning northwest of the City. Outside the city limits along Highway 35 the land is suited for employment development except that it is not zoned for it, so no employment was allocated there. Additional employment in the range of 3% to 10% of the total for the City is possible for these areas, but is more likely to be at the lower than the higher end. It is projected at 5%—about 60 employees—and that half of them will be retail.

Allocations to the study area

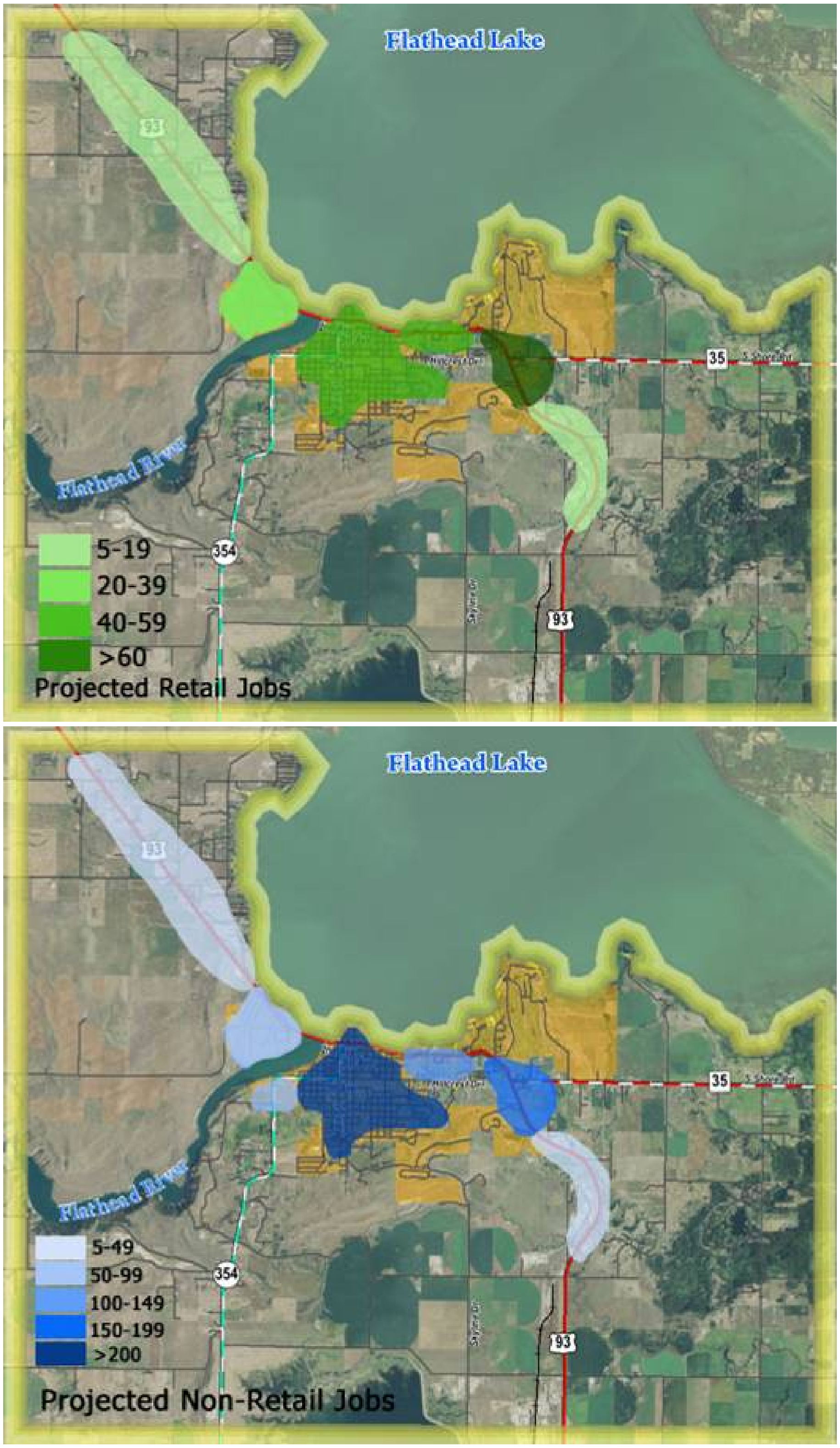
The areas for employment growth are relatively well defined. Existing areas are:

- Highway 93 commercial strip.
    - *There are large tracts of land on both sides of the south entrance to the City. This area would be especially attractive to big-box retail (e.g., Walmart).*
    - *There are many opportunities for infill development and redevelopment in the stretch along the lake.*
    - *There is vacant commercial land northwest of the river at the north entrance to the city.*
    - *Per the discussion in the previous section, a small percentage of the total growth will be outside but near the city limits along Highway 93.*
- Downtown. Primarily the area between First West and Second East, north of Seventh Avenue, to the lake.

Potential areas for employment, which would require rezoning, are:

- South of Seventh Avenue East. Again, certain re-routings of Highway 93 might make this more feasible, but those are speculative.

Without developing a more detailed model, the allocations of where new employment will go are informed guesses. Figure 3-2 shows a broad assessment of where retail and non-retail employment growth is likely to occur between 2010 and 2030. It allocates 250 retail and 850 non-retail employees to subareas *within* the City, and 30 retail and 30 non-retail employees to subareas *outside* the city limits.



Source: ECONorthwest, based on analysis presented in the text of this report

Figure 3-2 Growth of Retail and Non-Retail Employment, by Sub-Area, 2010 to 2030

3.5 Using the Results

The ultimate purpose of the analysis in this chapter is to get to reasonable estimates of households and employment, by sub-area, that can be used for the transportation modeling that is part of the Transportation Plan. In that context, the forecasts described earlier are summarized as follows:

- Ultimately, the transportation model (*TransCAD*) wants as inputs the location of total households and jobs by Census block in a base year (2010) and the forecast year (2030).
- For 2010, MDT modelers already have in the *TransCAD* model estimates of existing (2010) households and employment.
- This chapter documented estimates of growth (i.e., of new households and employment) by sub-area between 2010 and 2030 (Table 3.11 and Figure 3-2). MDT used these estimates as control totals for a further allocation of growth to Census blocks.
- For 2030 modeling, MDT summated the 2010 estimates and the 2010-2030 growth forecasts.

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Chapter 4 Identification of Concerns

4.1 Introduction

This chapter identifies areas of the transportation system that do not meet typical industry standards of traffic engineering and transportation planning and also the expectations and/or perceptions of the community. Ideally, it is desirable to first identify issues and concerns before mitigation strategies can be developed. The identification of “concerns” results from intensive data analysis, field observation, and community input. These techniques have been used to assess the collected data and identify possible existing and future “concerns” with the existing transportation system. This approach is a necessary step and forms the basis for developing mitigation strategies. These strategies (i.e. project recommendations and policy suggestions) become the follow-up steps to plan for correction of the identified concerns. Identified concerns may fall into one or more of the following categories:

- Intersection levels of service;
- Safety (i.e. crash analyses);
- Access management ; and
- Community concerns.

4.2 Intersection Levels of Service

Section 2.3 of this Transportation Plan discussed the standards and methodologies used in the traffic engineering profession relative to intersection “levels of service.” In order to calculate the LOS, traffic volumes on 16 intersections in and around Polson were counted during the summer and fall of 2010. These intersections included five signalized intersections and 11 unsignalized intersections in the Polson area. Each intersection was counted between 7:00 a.m. to 9:00 a.m. and between 4:00 p.m. and 6:00 p.m., to ensure that the intersection’s peak volumes were represented. Based upon this data, the operational characteristics of each intersection were observed.

An intersection within city limits (urban) is determined to be functioning adequately if operating at LOS C or better, at all times. An intersection outside the city limits (rural) is considered to be functioning adequately if operating at LOS B or better, at all times. The LOS study in the Polson area shows that one signalized and one unsignalized intersection is currently functioning below acceptable levels of service under existing traffic conditions. These two intersections indicate potential opportunities for closer examination and further intersection improvement measures to mitigate operational conditions. These two intersections are shown in Table 4-1.

Table 4.1 Existing Intersections Failing Level of Service

Intersection	AM Peak	PM Peak
US 93 (2nd Avenue East) & 1st Street East *(Urban)*	C	**D**
US 93 & Caffrey Road *(Rural)*	**C**	**C**

In addition to operational characteristics identified through the Level of Service analysis described in Chapter 2 and summarized above, field reviews were performed at each of the sixteen (16) intersections. Observations were made and recorded and are presented on the following pages.

4.2.1 Signalized Intersections Field Observations

US 93 & South Shore Road (MT 35)

- Westbound vehicles on South Shore Road (MT 35) were observed turning northbound onto US 93 (i.e. right turn) and suddenly breaking and/or near collisions with vehicles. This is due to the short merging distance available as merging occurs from two lanes to one lane on the north approach of the intersection.
- Long vehicle queues on the westbound approach of South Shore Road.

US 93 (3rd Avenue East) & 4th Avenue East

- Long vehicle queues on both eastbound and westbound approaches of US 93.
- High pedestrian activity across the southbound leg of the intersection (residential area).
- Several vehicles observed on 4th Avenue East running yellow and/or red lights.

US 93 (2nd Avenue East) & 1st Street East

- Northbound traffic on 1st Street East experienced long queues which blocked street parking.
- Northbound vehicles on 1st Street East used an "unofficial" right turn lane due to a wide road and no restrictions.
- Businesses have conflicting approaches with close proximity to the intersection and cause delay and sudden breaking because of turning maneuvers. A tire shop is located in the southwest corner of the intersection, and a bank is located in the southeast corner of the intersection. Both businesses experience frequent traffic.

US 93 (2nd Avenue East) & Main Street

- The northbound leg of Main Street was under construction during the time data were collected.

- Moderate pedestrian activity was observed in the area of the intersection.
- On-street parking in proximity to the intersection created some sight obstruction issues.
- The location of the gas station in the southwest corner of the intersection caused conflicting traffic movements and congestion.

South Shore Road (MT 35) & Heritage Lane

- Vehicles were observed running yellow and red phases of the signal cycle, primarily on the Heritage Lane leg of the intersection.
- Vehicle queues up to seven vehicles were observed on Heritage Lane.
- Heavy truck traffic and recreational vehicle traffic were also observed at this location.

4.2.2 Unsignalized Intersections Field Observations

US 93 & Rocky Point Road

- The hill located on the west side of the intersection causes a sight obstruction for vehicles waiting to turn off Rocky Point Road, which is a skewed approach.
- Observed westbound vehicles on US 93 creating an “unofficial” right turn lane onto Rocky Point Road. The road is wider at this location, but not paved for an official right turn. Several vehicles were observed running the stop sign on Rocky Point Road to enter the US 93 traffic stream.

US 93 & Irvine Flats Road

- High recreational vehicle traffic was observed because of the RV campground located near the intersection.
- High amounts of bicycle traffic (in the afternoon) were observed through the business center parking lot on the north side of the intersection.
- High vehicle traffic was observed in and out of the business center parking lot.

US 93 & Caffrey Road

- Up to four4 cars in queue were observed for the northbound left turn from US 93 to Caffrey Road.

4th Avenue East & 1st Street East

- Heavy pedestrian activity, which may be due in part to the location of the County Courthouse and the Tribal Health Center, was observed near the intersection. With parking spaces in close proximity to the intersection, pedestrian sight distance appeared to be an issue.

- Diagonal street parking caused some sight distance obstructions for vehicles backing out of parking spaces.
- Two to five vehicles were observed in queues at the intersection.

4th Avenue East & 2nd Street East

- Diagonal parking spaces caused some sight obstructions for vehicles entering the intersection. Parking spaces are for the courthouse, school, and residential properties.
- Vehicles were observed running the 4-way stop control.
- Several near misses and rear end collisions were observed here.

7th Avenue & Main Street

- On-street parking close to the intersection caused some sight obstructions.
- Eastbound and westbound traffic on 7th Street had several vehicles backed up (6 to 8 cars) that extended nearly an entire city block (may be due to the construction taking place on Main Street at the time).
- Business owner near the intersection expressed the need for a light at the intersection.

7th Avenue West & 2nd Street West

- Heavy school traffic and pedestrian movements observed to and from school.
- Vehicles northbound on 2nd Street West were observed encroaching into the intersection for visibility because of street parking that caused a sight obstruction.

7th Avenue East & 7th Street East

- There was no "on-street" parking, although some vehicles were parked on sidewalks.
- Heavy pedestrian activity observed. Pedestrian pathways are located on the south side of the intersection.
- Vehicles observed backed up primarily due to bus stops in the residential area.

Skyline Drive & Caffrey Road

- High volumes of truck traffic observed to and from the northbound approach on Skyline Drive and to and from the eastbound approach on Caffrey Road (possibly due to construction in the area).

Kerr Dam Road (S 352) & Grenier Lane

- Sight obstruction observed due to the hill and curve at the south end of Kerr Dam Road. There is also a bus stop at this location which experiences frequent stops.
- Heavy pedestrian movements observed to and from the school and the residential development(s). Also several people used the trail along the east side of Kerr Dam Road.

Kerr Dam Road (S 352) & Back Road

- Heavy haul truck traffic to the landfill observed.
- Very little automobile traffic observed here.

4.3 Corridor Volumes, Capacity, and Levels of Service

Roadway capacity is of critical importance when studying the growth of a community. As traffic volume increases, the vehicle flow deteriorates. When traffic volumes approach and exceed the available capacity, the roadway begins to "fail." The capacity of a roadway is a function of a number of factors including intersection function, land use adjacent to the roadway, access and intersection spacing, roadway alignment and grade, speed, turning movements, vehicle fleet mix, adequate roadway design, land use controls, roadway network management, and good planning and maintenance. Proper use of all of these tools will increase the number of vehicles that a specific lane segment may carry. However, the number of lanes is the primary factor in evaluating roadway capacity because any lane configuration has an upper volume limit regardless of how carefully it has been designed.

The size of a roadway is based upon its anticipated traffic demand. It is desirable to size the arterial network to comfortably accommodate the traffic demand that is anticipated to occur 20 years from the time the roadway is constructed. The selection of a 20-year design period represents a desire to receive the most benefit from an individual construction project's service life within reasonable planning limits. The design, bidding, mobilization, and repair to affected adjacent properties can consume a significant portion of an individual project's budget. Frequent projects to make minor adjustments to a roadway can therefore be prohibitively expensive. Because roadway capacity generally is provided in large increments, a long term horizon is necessary; and the collector and local roadway networks are often sized to meet the local needs of the adjacent properties.

There are two measurements of a roadway's capacity, Average Daily Traffic (ADT) and Peak Hour. ADT measures the average number of vehicles a given roadway carries over a 24-hour period. Because traffic does not usually flow continuously at the maximum rate, ADT is not a statement of maximum capacity. Peak Hour measures the number of vehicles that a roadway can physically accommodate during the busiest hour of the day. It is therefore more of a maximum flow rate measurement than ADT. When the Peak Hour is exceeded, the traveling public will often perceive the roadway as "broken" even though the roadway's ADT is within the expected volume. Therefore, it is important to consider both elements during design of corridors and intersections.

The size of the roadway and the required right-of-way is a function of a land use that will occur along the roadway corridor. These uses will dictate the vehicular traffic characteristics, travel by pedestrians and bicyclists, and need for on-street parking. The right-of-way required should always be based upon the ultimate facility size. The actual amount of traffic that can be handled by a roadway is dependent upon the presence of parking, number of driveways and intersections, intersection traffic control, and roadway alignment. Data presented in Table 4.2 indicate the approximate volumes that can be accommodated by a particular roadway in “Vehicles per Day” (VPD). As indicated in Table 4.2, the actual traffic that a roadway can handle will vary on the basis of a variety of elements that include: roadway grade; alignment; pavement condition; number of intersections and driveways; the amount of turning movements; and the vehicle fleet mix. Roadway capacities can be increased under “ideal management conditions” (Column 2 in Table 4.2) that take into account such factors as limiting direct access points to a facility, adequate roadway geometrics, and improvements to sight distance. By implementing these control features, vehicles can be expected to operate under an improved Level of Service and potentially safer operating conditions.

Table 4.2 Approximate Volumes for Planning of Future Roadway Improvements

Road Segment	Historical Management Volumes	Ideal Management Volumes
Two Lane Road	Up to 12,000 VPD	Up to 15,000 VPD
Three Lane Road	Up to 18,000 VPD	Up to 22,500 VPD
Four Lane Road	Up to 24,000 VPD	Up to 30,000 VPD
Five Lane Road	Up to 35,000 VPD	Up to 43,750 VPD

Table 4.2 shows capacity levels which are appropriate for planning purposes in developing areas within the study area. In newly developing areas, there are opportunities to achieve additional lane capacity improvements. The careful, appropriate, and consistent use of the capacity guidelines listed above can provide for long-term cost savings and can help maintain infrastructure at a scale comfortable to the community.

Two important factors to consider in achieving additional capacity are peak hour demand and access control. Traffic volumes shown in Table 4.2 are 24-hour averages; however, traffic is not smoothly distributed during the day. The Major Street Network shows significant peaks of demand, especially the work “rush” hour and summer travel. These limited times create the greatest periods of stress on the transportation system. By concentrating large volumes in a brief period of time, a roadway’s short-term capacity may be exceeded and a roadway user’s perception of congestion is strongly influenced. The use of pedestrian and bicycle programs as discussed in Chapter 5 and TDM measures can help to smooth out the peaks and thereby extend the adequate service life of a specific roadway configuration. The Transportation Plan strongly recommends the pursuit of such measures as low-cost means of meeting a portion of expected transportation demand.

Each time a roadway is intersected by a driveway or another roadway, it raises the potential for conflicts among transportation users. The resulting conflicts can substantially reduce the roadway's ability to carry traffic as conflicts substantially reduce the roadway's ability to carry traffic if conflicts occur frequently. This basic principle is the design basis for the interstate highway system, which carefully restricts access to designated entrance and exit points. Arterial roadways are intended to serve the longest trip distances in an area and the highest traffic volume corridors. Access control is therefore very important on the higher-volume elements of a given community's transportation system. Collector roadways, and especially local roadways, do provide higher levels of immediate property access required for transportation users to enter and exit the roadway network. In order to achieve volumes in excess of those shown in Column 3 of Table 4.2, access controls should be put in place by the appropriate governing body. It is strongly recommended that access control standards appropriate to each classification of roadway be incorporated into local regulatory documents in place for the CSKT, the City of Polson, and for Lake County.

4.4 Projected Intersection Level of Service

Section 4.2 summarized the intersection operational concerns under existing traffic conditions. It is important to determine what the Level of Service for each intersection would be like in 20 years <u>if no improvements occur</u> on the transportation system. By calculating the "projected level of service" out to the planning year (2030), a baseline is created to compare improvements. To calculate level of service for intersections during the planning year (2030), the *TransCAD* modeling software was used to identify the percent change in volumes for individual intersection legs between the year 2010 and 2030. The resulting percent changes were then manually applied to the known intersection counts to arrive at theoretical year 2030 intersection turning movement counts. These "year 2030" intersection counts were then entered into the highway capacity software to determine intersection level of service. Note that the intersection turning movement counts completed along the existing US 93 were generally made during the month of August, 2010 to capture the peak hour tourism phenomena. Tables 4.3 and 4.4 show the year 2030 level of service, for both the urban and rural intersections, without the inclusion of an alternate route (studied under the *US 93 Polson Corridor Study*) or any improvements to the existing US 93.

Table 4.3 Projected (2030) Urban Intersection LOS

Intersection	AM Peak Hour					PM Peak Hour				
	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
US 93 & South Shore Road (MT 35)*	-	D	A	C	**B**	-	C	B	C	**C**
US 93 (3rd Avenue East) & 4th Avenue East*	A	A	F	D	**C**	A	A	F	D	**F**
US 93 (2nd Avenue East) & 1st Street East*	C	C	C	B	**C**	D	D	D	C	**D**
US 93 (2nd Avenue East) & Main Street*	A	A	D	D	**A**	A	A	F	F	**F**
South Shore Road (MT 35) & Heritage Lane*	A	A	E	-	**A**	A	A	F	-	**D**

Intersection	AM Peak Hour					PM Peak Hour				
	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
US 93 & Rocky Point Road	A	-	-	B	**B**	A	-	-	B	**B**
US 93 & Irvine Flats Road	A	A	B	-	**B**	A	A	B	-	**B**
4th Avenue East & 1st Street East	A	A	B	A	**B**	A	A	B	B	**B**
4th Avenue East & 2nd Street East	A	A	A	A	**A**	A	A	A	A	**A**
7th Avenue & Main Street	B	A	A	-	**A**	B	A	A	-	**A**
7th Avenue West & 2nd Street West	A	A	B	E	**C**	A	A	C	D	**C**
7th Avenue East & 7th Street East	A	A	A	A	**A**	A	A	A	A	**A**

** Note: These intersections are signalized intersections*
(Abbreviations used are as follows: EB = eastbound; WB = westbound; NB = northbound; SB = southbound; INT = intersections as a whole; N/A = not applicable).

Table 4.4 Projected (2030) Rural Intersection LOS

Intersection	AM Peak Hour					PM Peak Hour				
	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
US 93 & Caffrey Road	B	D	A	A	**C**	C	D	A	A	**C**
Skyline Drive & Caffrey Road	-	A	A	A	**A**	-	A	A	A	**A**
Kerr Dam Road (S 354) & Grenier Lane	-	A	A	A	**A**	-	B	A	A	**B**
Kerr Dam Road (S 354) & Back Road	A	-	A	A	**A**	A	-	A	A	**A**

(Abbreviations used are as follows: EB = eastbound; WB = westbound; NB = northbound; SB = southbound; INT = intersections as a whole; N/A = not applicable).

Tables 4.3 and 4.4 show that multiple intersections would not meet a desirable LOS of B or better (for rural areas) or C or better (for urban areas). For urban intersections, four intersections would not meet the LOS C or better criteria. These intersections are as follows:

- US 93 & 4th Avenue East;
- US 93 & 1st Street East ;
- US 93 & Main Street ; and
- MT 35 & Heritage Lane .

The only rural intersection that would not meet LOS B or better would be US 93 and Caffrey Road.

Chapter 5 Transportation System Recommendations

This Plan makes various transportation system recommendations that have been identified by the Plan partners for future recommended major street network improvements. Both the specific projects and/or procedural or policy recommendations are recognized within the general confines of the following two categories:

- Major Street Network (MSN) Improvement Projects; and
- Transportation System Management (TSM) Improvement Projects.

This chapter briefly summarizes the improvement projects and presents newly identified transportation system improvement projects.

5.1 Committed Improvement Projects

A list of committed improvement projects and their status as of the development of this Plan are listed in this section. Table 5.1 shows the improvement projects that include three Major Street Network (MSN) projects by MDT and one MSN project by Lake County. One project is currently under construction, but the others have not yet started.

Table 5.1 Improvement Projects from the Plan Partners

Project ID	Location of Project	Recommendation	Commitment Time and Source	Jurisdictional Partner
1	S-354 (from RP 0.3 to 0.8)	Mill/Fill, Seal & Cover	2014 STIP	MDT
2	Skyline Drive (Off-system, from RP 1.4 to 3.0)	Safety project to install guardrail, signing, and delineation	2014 STIP	MDT
3	Skyline Drive (from RP 3.0 to 6.7)	Safety project to install signing and delineation	2011 STIP	MDT
4	Skyline Drive	Road widening	In Progress (2011) (result of TIGER grant)	Lake County

5.2 Recommended Major Street Network (MSN) Improvement Projects

During the preparation of this Plan, a number of MSN projects were identified. Estimated project costs are included for each project. These costs are "planning level" estimates and do not include possible right-of-way, utility, traffic management, or other heavily variable costs. However, they do include mandatory "incidental & indirect cost" (IDIC) factors as required by federal requirements.

Many of the recommended roadway improvements call for "urban" type roadways in areas that are currently "rural" in nature. In many cases, roadway typical sections have been identified to match existing City of Polson standard typical sections. This approach is not an effort to force urban roadway sections on all rural roadways; however, as the community grows, these corridors will likely require certain urban features as traffic volumes increase, in context with adjacent land uses.

The following list of MSN projects is **<u>not</u>** in any particular priority order:

MSN-1 <u>7th Avenue (5th Street West to Hillcrest Lane)</u>

Identified Concerns: Operational, Capacity, Safety, & Multi-Modal
Project Timeline: Long Term Implementation (>10 years)

Project Description: Improvements to 7th Avenue are recommended from 5th Street West to Hillcrest Lane. Reconstruct 7th Avenue as an "urban" collector street with curb, gutter, and sidewalks. The minimum right-of-way required is 55 feet, in accordance with the City of Polson standards. This project will improve east-west travel via improved drainage, improved non-motorized features, and better visibility for vehicles and pedestrians.

Estimated Cost: *$1,800,000*

MSN-2 <u>US 93 and Rocky Point Road</u>

Identified Concerns: Operational, Capacity, & Safety
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: Stripe a westbound right-turn lane on US 93 at the intersection to allow right-turning vehicles to exit the stream of traffic. Currently, the pavement is wide enough for vehicles to utilize the space as an unofficial right-turn lane. The skewed intersection provides access to several residential parcels on the west shore of Flathead Lake. Due to the skew and location of a hill to the west of the intersection, sight distance appears to be an issue. It is also recommended a speed study be completed to determine if eastbound traffic on US 93 should decrease speed.

Estimated Cost: *$65,000*

MSN-3 <u>2nd Street East (Kootenai Avenue to 7th Avenue)</u>

Identified Concerns: Maintenance
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: Mill and overlay this segment of 2nd Street East as funding becomes available and in accordance with the City of Polson's overall priority system. This segment of roadway experiences residential, commercial, and seasonal traffic because of the connections to Flathead Lake, the courthouse, to school, downtown, and to residential neighborhoods.

Estimated Cost: *$85,000*

MSN-4 US 93 and MT 35 (South Shore Road)

Identified Concerns: Operational & Safety
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: This intersection has several recorded crashes primarily related to westbound right-turns which may be due in part to the short distance allowed for the lane merge on the north side of the intersection. It is recommended that signal phase timing be evaluated to determine if a protected right-turn phase can be accommodated. Because the intersection to the north is in close proximity, it is not possible to reconfigure the northbound section by extending the merge lane. In the long term, the opportunity may exist to reconstruct this section to avoid the lane merge.

Estimated Cost: *$30,000*

MSN-5 1st Street East (US 93 to Skyline Drive)

Identified Concerns: Maintenance
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: Improvements to 1st Street East are recommended from US 93 to Skyline Drive. 1st Street East may be reconstructed to a standard arterial street with curb and gutter and sidewalks. The minimum right-of-way required is 60 feet, in accordance with the City of Polson standards. This project will improve north-south travel via improved drainage, improved non-motorized features, and better visibility for vehicles and pedestrians. 1st Street East is currently being used as an emergency response route.

Estimated Cost: *$2,100,000*

MSN-6 4th Avenue East (1st Street East to US 93)

Identified Concerns: Roadway Deterioration, Capacity, Safety
Project Timeline: Long Term Implementation (> 10 years)

Project Description: Improvements to 4th Avenue East are recommended from 1st Street East to US 93. Reconstruct 4th Avenue East as an “urban” collector street with curb, gutter, and sidewalks. The minimum right-of-way required is 55 feet, in accordance with the City of Polson standards. This project will improve east-west travel via improved drainage, improved road surfacing, and provision of pedestrian facilities.

Estimated Cost: *$1,125,000*

Note: Conceptual improvements to the existing US 93 through Polson is discussed in Chapter 8 of this report.

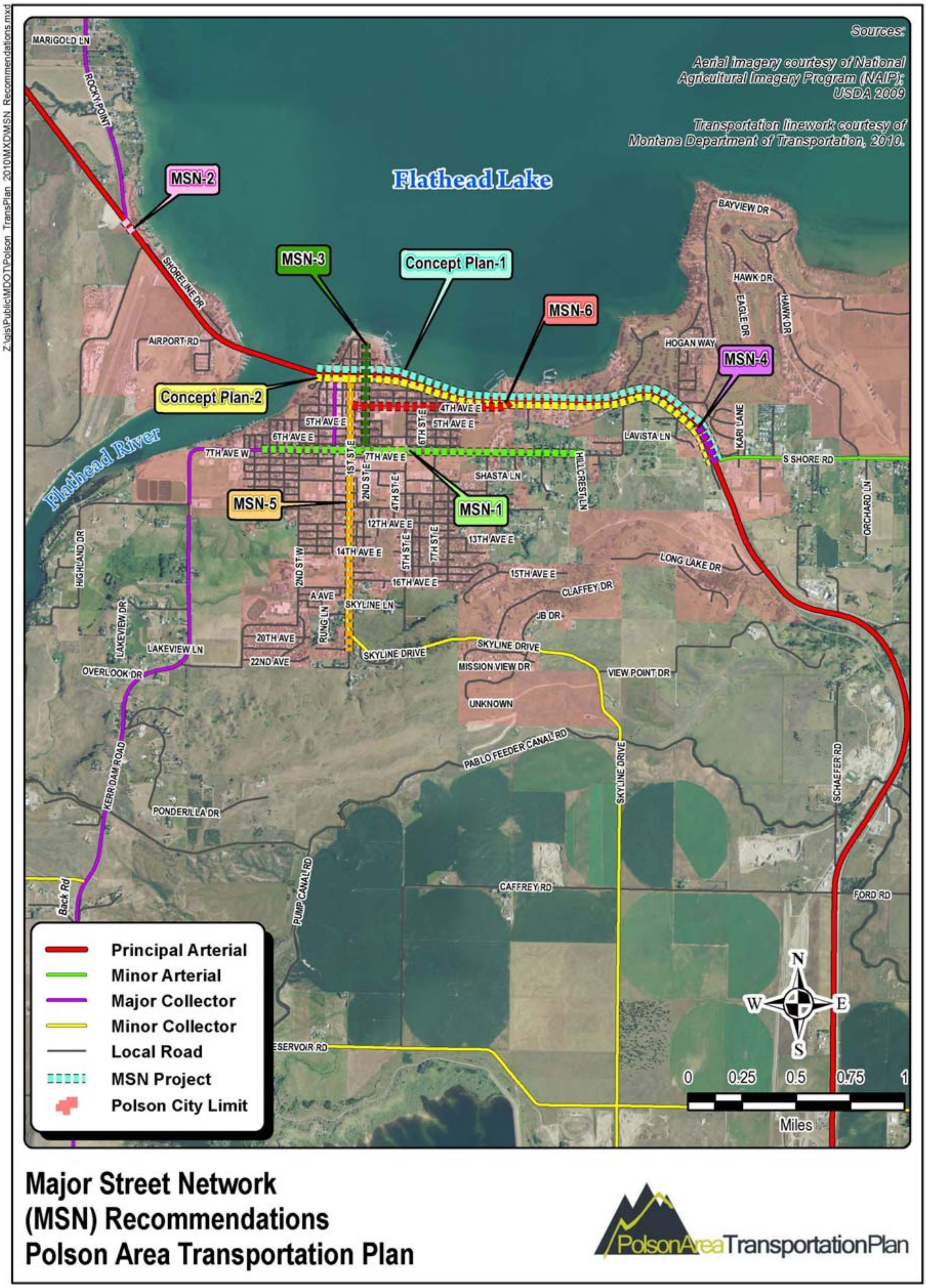


Figure 5-1 Major Street Network Recommendations

5.3 Recommended Transportation System Management (TSM) Improvement Projects

During the preparation of this Plan, a number of transportation system management (TSM) projects were identified. TSM projects typically are lower cost projects and range from simple signage up to adding turn bays at intersections. Estimated project costs for the TSM projects are included for each recommended project. These costs are "planning level" estimates and do not include possible right-of-way, utility, traffic management, or other heavily variable costs. However, the projects do include mandatory "incidental & indirect cost (IDIC)" factors as required by federal requirements.

The following list of TSM projects are **not** in any particular priority order:

TSM-1 US 93 Access Management Plan

Identified Concerns: Access Management
Project Timeline: Short Term Implementation (0 - 2 years)

Project Description: A comprehensive Access Management Plan should be completed along US 93, beginning at MT 35 (South Shore Road) to Rocky Point Road. This entire length is categorized by multiple approaches, by numerous driveway turning movements, and by vehicle stacking in the center two-way, left-turn lane (TWLTL). The result is conflicting operations because of the prevalence of driveway approaches. A formal Access Management Plan would allow for one-on-one dialogue with each property owner to devise a strategy to combine drive accesses, restrict problematic accesses, and/or to totally remove unneeded accesses. Here, the potential also exists to install raised medians in the center turn lanes at strategic locations to control access operational issues. The success of a formal Access Management Plan depends on aggressive outreach to all affected parties, plus a basic strategy on why access control will benefit both the adjacent land uses as well as the traveling public. MDT would be responsible for initiating this project, with active participation from the City of Polson, Lake County, CSKT, and from affected landowners along the corridor.

Estimated Cost: *$130,000*

TSM-2 Development of Access Management Regulations

Identified Concerns: Access Management
Project Timeline: Short Term Implementation (0 - 2 years)

Project Description: Section 7.2 of this report offers guidance on access management principles and why access management is needed within a community. Because section 7.2 contains guidelines only, a community generally needs to adopt access management regulations both through an Access Management Ordinance and through a Corridor Preservation Ordinance. Thus, it is important MDT, Lake County, City of Polson, and CSKT land use policies and planning of accesses are complementary when land is annexed in the future.

Estimated Cost: *$15,000*

TSM-3 Polson Area Non-Motorized Transportation Plan

Identified Concerns: Multi-Modal
Project Timeline: Short Term Implementation (0 - 2 years)

Project Description: The City of Polson and Lake County should develop a Non-Motorized Transportation Plan for the community. This current Transportation Plan just begins to explore non-motorized planning in the community, and a full Non-Motorized Transportation Plan will allow the community to achieve a higher level of understanding and planning as it relates to bicyclists and pedestrians. There appears to be enough interest in the community to make non-motorized infrastructure a higher priority as the community grows.

Estimated Cost: *$25,000*

TSM-4 Downtown Parking Study

Identified Concerns: Operational & Safety
Project Timeline: Short Term Implementation (0 - 2 years)

Project Description: A parking study is suggested for downtown Polson. The potential study would cover the area north of 5th Avenue to 1st Avenue and the area east of 1st Street West to 2nd Street East. A parking study would evaluate existing parking facilities throughout the community and address the need for additional parking. The Polson community experiences an increase in traffic volumes during the summer months. The parking study would assess potential strategies to provide adequate parking and specific parking solution recommendations. Recommendations would attract tourists and locals to those downtown businesses which are otherwise avoided because of a lack of parking.

Estimated Cost: *$40,000*

TSM-5 Polson Downtown Master Plan

Identified Concerns: Operational & Multi-Modal
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: Comments from the community focused on the need for traffic to be attracted to downtown Polson. It is recommended that a Downtown Master Plan be completed that includes a detailed wayfinding and signage component. A Downtown Master Plan would be valuable to set goals on land use in the downtown, aesthetics, economics, and on infrastructure requirements. Ultimately, the Downtown Master Plan will address the question, "How does the community of Polson want to be envisioned?"

Estimated Cost: *$40,000*

TSM-6 US 93 Signal Interconnect

Identified Concerns: Operational
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: Through coordination with MDT, a hard wire or telemetry interconnect system should be constructed among the four traffic signals of US 93 and the following intersecting roads:

- *Main Street;*
- *1st Street East;*
- *4th Avenue East; and*
- *MT 35 (South Shore Road).*

These improvements may well help establish platoon flows on US 93 and increase available gaps in the traffic stream for side street turning traffic.

Estimated Cost: *$45,000*

TSM-7 US 93 and Main Street

Identified Concerns: Operational
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: This intersection is operating at an acceptable level of service; however, as development and growth occurs within the Polson community over the 20-year planning horizon, this intersection will not meet LOS standards in 2030. As traffic volumes increase, improvements should be made to both the northbound and southbound legs of the intersections. Reconfiguration of the signal as a semi-actuated signal should also be considered.

Estimated Cost: *$200,000*

TSM-8 US 93 and 1st Street East

Identified Concerns: Operational
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: This intersection currently is operating at an acceptable level of service; however, as development and growth occurs within the Polson community over the 20-year planning horizon, this intersection will not meet LOS standards in 2030. As traffic volumes increase, the eastbound, westbound, and northbound legs of the intersection will not meet acceptable levels of service. Reconfiguration of the signal to a semi-actuated condition should be considered. It is also recommended that a northbound right-turn lane be added and that on-street parking in the area be eliminated.

Estimated Cost: *$250,000*

TSM-9 US 93 and Caffrey Road

Identified Concerns: Operational
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: This intersection currently is operating at an acceptable level of service; however, as development and growth occurs within the Polson community over the 20-year planning horizon, this intersection may not meet LOS standards in 2030. As traffic volumes increase, a signal warrant analysis should be completed and when warranted, installed. Currently, a signal is not warranted, but as traffic volumes increase by 2030, heavier northbound and southbound traffic on US 93 will reduce gaps for northbound and southbound left-turning traffic, and traffic will be hindered for eastbound and westbound movements. This intersection should be monitored every three years to see if traffic signal warrants may be met. It is suggested that the City of Polson be responsible for completing this warrant analysis, either in-house or through the use of a consultant. Overall intersection improvements should be considered at the time of the signal analysis and should include a modern roundabout.

Estimated Cost: *$325,000*

TSM-10 US 93 and Bayshore Drive

Identified Concerns: Operational, Safety, & Access
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: This intersection has a large, wide open parking space in the northeast quadrant near the thrift store. With poor definition, this space creates confusion and lends to congestion. It is recommended that the intersection be reconstructed with curb and gutter for delineation and should include a westbound right-turn lane at the intersection.

Estimated Cost: *$140,000*

TSM-11 4th Avenue East and 1st Street East

Identified Concerns: Operational & Safety
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: This intersection has heavy pedestrian and vehicle traffic because of the location of the County Courthouse, Tribal Health Center, and the Post Office. Accidents are common between vehicles making a turn and vehicles backing out of a parking space. Pedestrian visibility is hindered due to traffic volumes and congestion at the intersection. Curb bulb-outs on 4th Avenue East are recommended to heighten visibility of pedestrians in the intersection and to decrease vehicle points of conflict. The bulb-out improvements should be done with sensitivity to storm drainage considerations, snow plowing operations, and to the type of traffic – including the turning radius needs of the City's fire vehicles.

Estimated Cost: *$30,000*

TSM-12 1st Street East or West System Redesignation

Identified Concerns: System Management
Project Timeline: Short Term Implementation (0-2 years)

Project Description: The current secondary route segment on Main Street no longer functions as intended. Thus, 1st Street East or West should be redesignated as a state secondary route, in conjunction with removing Main Street (between US 93 and 7th Avenue) as the current secondary route. A functional classification review of the following two segments is needed: 1) 7th Avenue from Main to 1st Street East or West and 2) 1st Street East or West from 7th Avenue to US 93. To be eligible for the State Secondary System, the roadway must be functionally classified as a major collector or minor arterial and have approval by the Transportation Commission. Any changes to functional classification require FHWA concurrence.

Estimated Cost: *No Cost*

TSM-13 Sharp Left Turn Sign (Grenier Lane and 6th Street West)

Identified Concerns: Safety
Project Timeline: Short Term Implementation (0-2 years)

Project Description: Install a "sharp left turn sign" at the intersection of Grenier Lane and 6th Street West.

Estimated Cost: *$1,000*

TSM-14 US 93 and 4th Avenue East

Identified Concerns: Operational
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: This intersection is operating at an acceptable level of service; however, as development and growth occurs within the Polson community over the 20-year planning horizon, this intersection will not meet LOS standards in 2030 on the northbound and southbound legs. Signal phasing and timing review should be completed every two years to ensure that the level of service is met at the intersection. It is suggested that the City of Polson be responsible for completing the signal phasing analysis, either in-house or through the use of a consultant.

Estimated Cost: *$15,000*

TSM-15 MT 35 and Heritage Lane

Identified Concerns: Operational
Project Timeline: Medium Term Implementation (2 - 5 years)

Project Description: This intersection is operating at an acceptable level of service; however, as development and growth occurs within the Polson community over the 20-year planning horizon, this intersection will not meet LOS standards in 2030 on the northbound leg. Signal phasing should be completed every two years to ensure adequate level of service is met at the intersection. It is suggested that the City of Polson be responsible for completing the signal phasing analysis, either in-house or through the use of a consultant.

Estimated Cost: *$15,000*

TSM-16 Riverside Park, 1st Street West, and US 93

Identified Concerns: Operational, Safety, & Access
Project Timeline: Short to Long Term Implementation (0 - 10 years)

Project Description: This intersection is a concern within the community due to the close proximity of the bank drive-thru access, Riverside Park access, and 1st Street West. It is suggested that the recommended improvements occur in three phases. Phase 1 (short term recommendation) is to provide a “No Left-Turn” sign leaving Riverside Park to US 93. Phase 2 (medium term recommendation) is to install a “raised pork chop island” that would allow: 1) right-turn into Riverside Park from US 93, 2) right-turn out of Riverside Park to US 93, and 3) left-turn into Riverside Park from US 93. Phase 3 (long term recommendation) would require redeveloping the roadway out of Riverside Park on the south side towards 3rd Avenue West. The redevelopment would include traffic calming features along the roadway.

Estimated Cost:	*$300 – Phase 1 (short term recommendation)*
	$10,000 – Phase 2 (medium term recommendation)
	$60,000 – Phase 3 (long term recommendation)

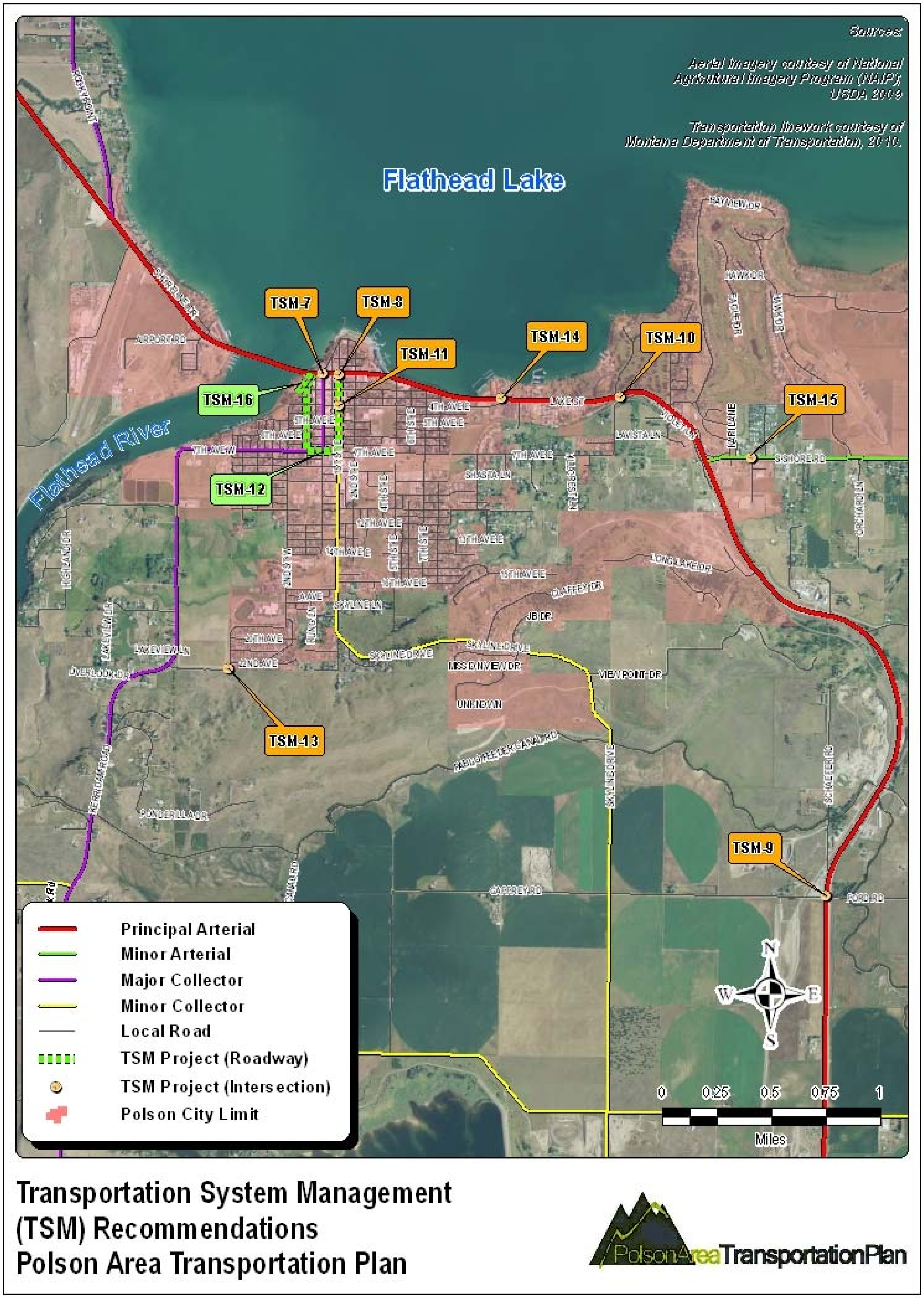


Figure 5-2 Transportation System Management (TSM) Recommendations

5.4 Recommended Non-Motorized Network and Considerations

Non-motorized travel refers to travel by pedestrians and bicyclists within the Polson community and can be further supplemented by equestrian users, skateboarders, by unicyclists, and others. The Polson community has not previously done any planning for non-motorized transportation. The information contained here is the first attempt to plan a non-motorized transportation network within the community. The focus of this planning is to create a non-motorized network that will provide continuity through the community and connect logical destinations. Thus, recommendations have to be balanced with the needs of other travel modes.

Bicycle facilities vary dramatically from simple signage to separated paved facilities along exclusive rights-of-way. The projects in Table 5.2 have been identified through community involvement, existing and anticipated future travel demand, significant destinations for bicycles, and the existing bicycle network. Detailed engineering cost estimates should be developed at the time of project implement for each project.

5.4.1 Bicycle Lanes

A bicycle lane provides a striped and stenciled lane for one-way travel on a street or highway. Many of the identified bicycle lanes could be completed through roadway improvements funded if and when new development is constructed. Some of the identified projects could be completed by the City of Polson, Lake County, or MDT through retrofit or as part of maintenance activities (striping and signage only). Bicycle lanes can provide the following benefits:

For Pedestrians:

- Greater separation from traffic, especially in the absence of on-street parking or a planter strip, increasing comfort and safety. This approach is important to young children walking, playing, or riding their bikes on curbside sidewalks.
- Reduced splash from vehicles passing through puddles (a total elimination of splash where puddles are completely contained within the bike lane).
- An area for people in wheelchairs to travel where there are no sidewalks, or where sidewalks are in poor repair or do not meet ADA standards.
- A space for wheelchair users to turn on and off curb cut ramps away from moving traffic.
- The opportunity to use tighter corner radii, which reduces intersection crossing distance and tends to slow turning vehicles.
- In dry climates, a reduction in dust raised by passing vehicles, as they drive further from unpaved surfaces.

For Motorists:

- Greater ease and more opportunities to exit from driveways due to improved sight distance.
- Greater effective turning radius at corners and driveways, allowing large vehicles to turn into side streets without off-tracking onto the curb.
- A buffer for parked cars, making it easier for motorists to park, enter, and exit vehicles safely and efficiently. This requires a wide enough bike lane so that bicyclists are not "doored."
- Less wear and tear of the pavement, if bike lanes are restriped by moving travel lanes (heavier motor vehicles no longer travel in the same well-worn ruts).

For Other Modes:

- Transit: A place to pull over next to the curb out of the traffic stream.
- Emergency vehicles: Additional pavement area to maneuver around stopped traffic, when compared to roadway sections without bicycle lanes, thereby decreasing response time.
- Bicyclists: Greater acceptance of people bicycling on the road, as motorists are reminded that they are not the only roadway users.
- Non-motorized modes: An increase in use, by increasing comfort to both pedestrians and bicyclists (this could leave more space for motorists driving and parking).

For the Community (Livability factors):

- A traffic calming effect when bike lanes are striped by narrowing travel lanes.
- Better definition of travel lanes where road is wide (lessens the "sea of asphalt" look).
- An improved buffer to trees, allowing greater plantings of green canopies, which also has a traffic calming effect.

Opportunities for bicycle lanes are contained in Table 5.2.

Table 5.2 Recommended Bicycle Lanes

Street	From	To	Notes*
US 93	MT 35 (South Shore Road)	Flathead River Bridge (west end)	Install on-street bicycle lanes on both sides of US 93 when improvements are made to the highway

Street	From	To	Notes*
7th Avenue	11th Street East	Kerr Dam Road	Install on-street bicycle lanes on both sides of 7th Avenue when the roadway is developed to a residential collector

**Proposed bicycle lanes on MDT routes will require MDT approval.*

5.4.2 Shared Roadways

Shared roadways are any on-street facility where bicycles share the travel lanes with automobiles. Typically, these facilities occur on local roadways or on roadways with low traffic volumes and speeds. Treatments most often include "Share the Road" signs and pavement markings. In addition, wayfinding signage, traffic diverters, and other types of traffic calming can be used in urban environments. The level of treatment varies among facilities and is dictated by traffic conditions and safety.

All public roadways in Montana are available for pedestrian and bicycle travel. "Share the Road" activities within urban settings should be limited to roadways within lower speed limits, 30 mph or lower. The use of "Share the Road" signs in rural conditions needs to be carefully considered and planned. The use of signs may give the bicycle rider a false sense of security as they may be interpreted as defining a "safe" place for bicyclists to travel. Conversely, the expense and resources of adding "Share the Road" signs may be excessive for some municipal budgets, and as such careful consideration is needed.

Suggested shared roadways are identified in Table 5.3.

Table 5.3 Suggested Shared Roadways

Street	From	To	Notes*
Kerr Dam Road	7th Avenue	Back Road (Kerr Dam Road)	This roadway should be signed as a "share-the-road" facility
Pablo Feeder Canal Road	Kerr Dam Road	Skyline Drive	This roadway should be signed as a "share-the-road" facility

**Proposed shared roadway signage on MDT routes will require MDT approval.*

5.4.3 Roadway Shoulders

Roadway shoulders can offer many of the benefits of bicycle lanes without the same level of infrastructure cost associated with bicycle lane stencils and signage. Roadway shoulders are ideal for rural roadways where bicyclists are present. Roadway shoulders should be a minimum of 4 feet wide. If a rumble strip is necessary, it should be as close to the white (fog) line as possible and have regular skips to allow bicyclists to leave the shoulder to avoid obstructions or obstacles if necessary.

The American Association of State Highway and Transportation Officials (AASHTO) acknowledge the following benefits of shoulder bikeways in three important areas: safety, capacity, and maintenance.

Safety – highways with paved shoulders have lower accident rates with the following benefits:

- Provide space to make evasive maneuvers
- Accommodate driver error
- Add a recovery area to regain control of a vehicle, as well as lateral clearance to roadside objects such as guardrail, signs, and poles (highways require a "clear zone," and paved shoulders give the best recoverable surface)
- Provide space for disabled vehicles to stop or drive slowly
- Provide increased sight distance for through vehicles and for vehicles entering the roadway
- Contribute to driving ease and reduced driver strain
- Reduce passing conflicts between motor vehicles and bicyclists and pedestrians
- Make the crossing pedestrian more visible to motorists
- Provide for storm water discharge farther from the travel lanes, thus reducing hydroplaning and splash and spray to following vehicles, pedestrians, and to bicyclists.

Capacity – highways with paved shoulders can carry more traffic with the following benefits:

- Provide more intersection and safe stopping sight distance
- Allow for easier exiting from travel lanes to side streets and roads (also a safety benefit)
- Provide greater effective turning radius for trucks
- Provide space for off-tracking of truck's rear wheels in curved sections
- Provide space for disabled vehicles, mail delivery, and bus stops
- Provide space for bicyclists to ride at their own pace

Maintenance – highways with paved shoulders are easier to maintain with the following benefits:

- Provide structural support to the pavement
- Discharge water further from the travel lanes, thereby reducing the undermining of the base and subgrade
- Provide space for maintenance operations and snow storage

- Provide space for portable maintenance signs

Roadways within the study area boundary that are recommended for shoulder bikeways are listed in Table 5.4.

Table 5.4 Recommended Expanded Shoulder (Minimum of 4-feet)

Street	From	To	Notes
US 93	Flathead River Bridge (west end)	Rocky Point Road	MDT facility – any future shoulder widening would be coordinated/approved by MDT

5.4.4 Shared-Use Paths

A shared-use path provides bicycle travel on a rideable surface within a right-of-way completely separated from any street or highway. Shared-use paths should be designed to be ten feet wide, or wider if necessitated by local bicycle/pedestrian volumes with consideration to peak summer volumes. Table 5.5 lists the recommended shared-use paths to complement the existing network. Although not shown in Table 5.5, the community of Polson favors a shared-use path along US 93.

Table 5.5 Recommended Shared-Use Paths

Street/Route	From	To	Notes*
Caffrey Road Skyline Drive 1st Street East	US 93 Caffrey Road Skyline Drive	Skyline Drive 1st Street East 14th Avenue East	This shared-use path is part of the TIGER Grant currently under development
7th Avenue East 7th Street East 9th Avenue East 4th Street East 11th Avenue Polson Sports Complex	End of existing path 7th Avenue East 7th Street East 9th Avenue East 4th Street East Polson Sports Complex	7th Street East 9th Avenue East 4th Street East 11th Avenue East Polson Sports Complex Beginning of existing path	City of Polson envision connecting shared use paths – from end of railroad grade to Kerr Dam Road
2nd Street West	11th Avenue	17th Avenue	City of Polson envisions connecting path
17th Avenue 2nd Street West 19th Avenue 6th Street West Grenier Lane	2nd Street West 17th Avenue West 2nd Street West 19th Avenue 6th Street West	1st Street East 19th Avenue West 6th Street West Grenier Lane Kerr Dam Road	City of Polson envisions connecting path to TIGER Grant path
Salish Point	5th Street East (KwaTaqNuk Resort)	Riverside Park	

**Proposed shared-use paths on MDT routes will require MDT approval.*

Figure 5-3 shows the existing and potential non-motorized network for the greater Polson community.

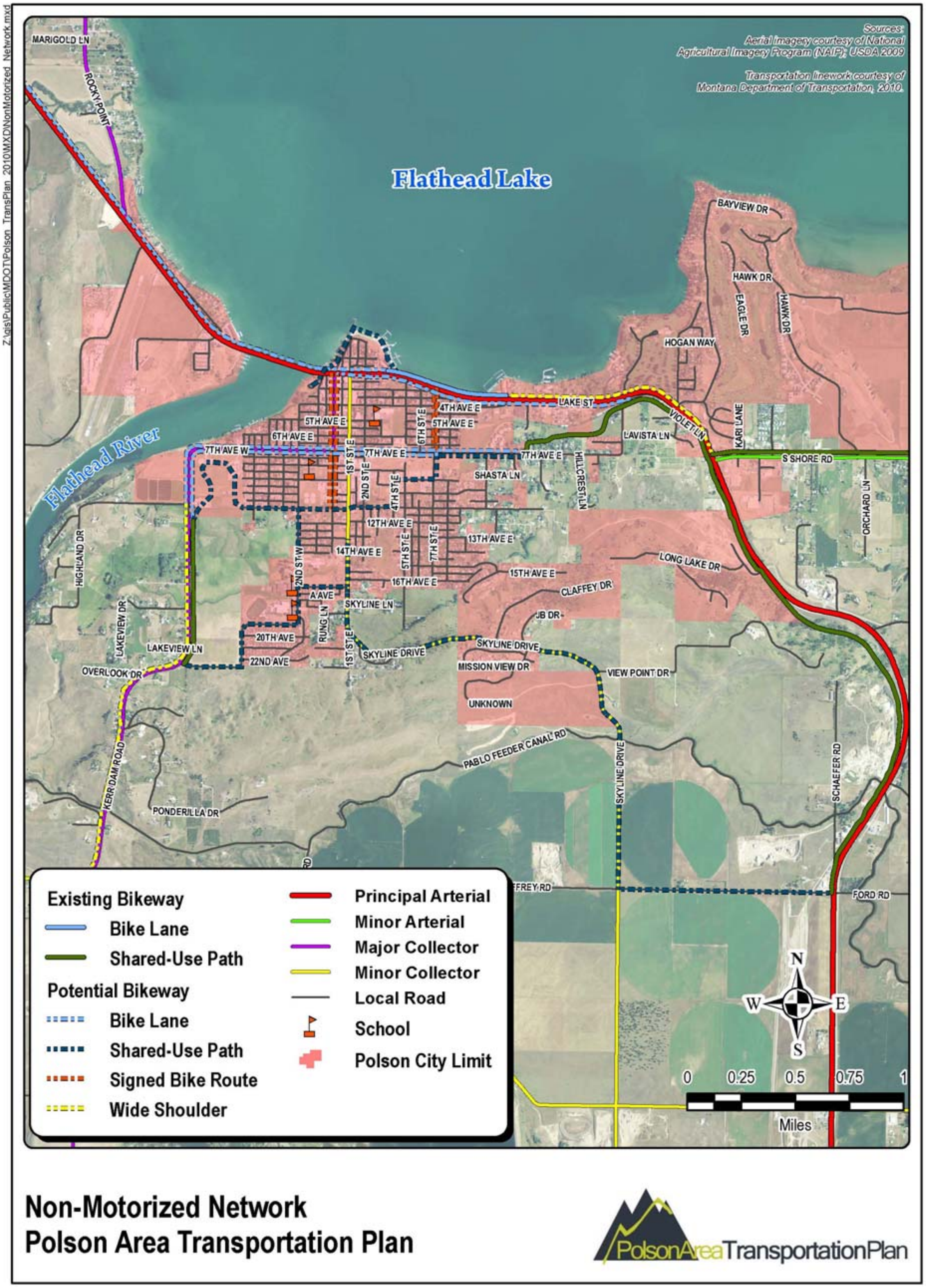


Figure 5-3 Non-Motorized Network

5.5 Recommended Policies & Procedures

As a general rule, a community Transportation Plan is an advisory document and as such does not "set" policy. However, the Plan can recommend policies through language that local elected officials can evaluate for further consideration. This section of Chapter 5 suggests several policies and procedures for consideration by the local elected officials. The first and perhaps most important of these policies is the setting of a "level of service" standard, as discussed in Section 5.5.1.

5.5.1 Level of Service Standard

Level of service (LOS) is a qualitative measure developed by the transportation profession to quantify driver perception for such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles. It provides a scale that is intended to match the perception by motorists of the operation of the intersection. Level of Service provides a means for identifying intersections that are experiencing operational difficulties, as well as providing a scale to compare intersections with each other. The level of service scale represents the full range of operating conditions. The scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using it. LOS values range from an "A" which is the best performing value and has free flow characteristics, to an "F" which represents the worst performing value and has traffic that flows at extremely slow speeds and is considered to be in a forced or breakdown state.

Roadway LOS vs. Intersection LOS

Roadway LOS

In order to calculate the LOS of a roadway, a number of characteristics must be examined. Factors such as lane widths, lateral clearances, access frequency, terrain, heavy vehicle traffic, and driver population characteristics are used to establish base conditions for a roadway. Once these factors are determined, the free-flow speed can be determined. The free-flow speed is the mean speed of traffic on the road when the flow rates are low. After the free-flow speed is determined, the flow rate can be calculated. To determine the flow rate, the highest volume in a 24-hour period (peak-hour volume) is used, with adjustments being made for hourly variation, for heavy vehicle traffic, and for driver characteristics. Once these parameters are defined, the LOS for the roadway can be calculated by using an additional set of calculated factors.

The primary factor for calculating roadway LOS is percent time delay. Percent time delay is defined as the average percent of the total travel time that all motorists are delayed while traveling in platoons due to the inability to pass. Multi-lane highways have a demand for passing that increases as the traffic volume increases. However, the opportunities for passing decrease as the traffic volume increases. This effect causes the LOS to decrease as the traffic levels increase. The secondary factors that go into LOS calculations are average travel speed and capacity utilization. Average travel speed is used to determine the mobility of the roadway. Capacity utilization represents accessibility to the roadway and is defined as the ratio of the demand flow rate to the capacity of the facility. Other factors that go into LOS calculations include terrain type, land and shoulder widths, heavy vehicle traffic, and the peak hour factor. All of these parameters are used to calculate a single LOS that is used to represent the overall characteristic of the roadway.

The Highway Capacity Manual – 2000 defines the LOS categories for roadways as follows:

- LOS A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or to pedestrian is excellent. (Free flow)
- LOS B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior. (Reasonably free flow)
- LOS C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level. (Stable flow)
- LOS D represents high-density, but stable flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level. (Approaching unstable flow)
- LOS E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because even small increases in flow or minor perturbations within the traffic stream will cause breakdowns. (Unstable flow)
- LOS F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse it and queues begin to form. Operations within the queue are characterized by stopping and starting. Over and over, vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop. LOS F is used to describe operating conditions within the queue, as well as the point of the breakdown. It should be noted, however, that in many cases once free of the queue, traffic may resume to normal conditions quite rapidly. (Forced or breakdown flow)

Intersection LOS

The current practice to analyze intersection LOS is to use average vehicle delay to determine the LOS of the intersection as a whole. Individual LOS values can also be determined for each approach leg and turning lane for intersections based on the average vehicle delay on that lane. There are multiple types of intersections, all of which receive a LOS value based on vehicle delay.

Signalized intersections are considered to be ones that have a signal control for every leg of the intersection. This type of intersection takes an average of the delay for each vehicle that uses the intersection and determines the LOS based on that average vehicle delay. An unsignalized intersection is one that does not have traffic signal control at the intersection. These intersections use the average vehicle delay for the entire intersection to determine the LOS (for four-way stop-controlled). Two-way stop-controlled (TWSC) intersections utilize stop control on the minor legs of the intersection while allowing free flow characteristics on the major legs. TWSC intersections take the average vehicle delay for the entire intersection, to determine the LOS of the intersection. This can cause problems at intersections with high volumes of traffic along the uncontrolled major legs. Left turns off of the minor approach legs may be difficult at these intersections and may cause high delay values and poor levels of service. The LOS for this type of intersection is based on the LOS for the worst case minor approach leg. Under these traffic conditions, the worst case minor approach leg can easily have a high delay from a low number of vehicles wanting to make a left-turn onto the major approach and may result in a poor LOS for the entire intersection.

A description and average delay range for each LOS value for signalized and unsignalized intersections, as defined by the Highway Capacity Manual (HCM) 2000, is found in Table 5.6.

Table 5.6 Intersection Level of Service Criteria

LOS	Unsignalized Intersections		Signalized Intersections	
	Description	Average Delay (sec/veh)	Description	Average Delay (sec/veh)
A	Little or no conflicting traffic for minor street approach.	< 10	Uncongested operations; all queues clear in a single cycle.	< 10
B	Minor street approach begins to notice presence of available gaps.	10 – 15	Very light congestion; an occasional phase is fully utilized.	10 – 20

LOS	Unsignalized Intersections		Signalized Intersections	
	Description	Average Delay (sec/veh)	Description	Average Delay (sec/veh)
C	Minor street approach begins experiencing delay while waiting for available gaps.	15 – 25	Light congestion; occasional queues on approaches.	20 – 35
D	Minor street approach experiences queuing due to a reduction in available gaps.	25 – 35	Significant congestion on critical approaches, but intersection is functional.	35 – 55
E	Extensive minor street queuing due to insufficient gaps.	35 – 50	Severe congestion with some longstanding queues on critical approaches.	55 - 80
F	Insufficient gaps of sufficient size to allow minor street traffic to safely cross through major traffic stream.	> 50	Total breakdown, stop-and-go operation.	> 80

Recommended LOS Standard

A LOS standard for the greater Polson area is suggested and defined in this section of the Transportation Plan. These standards should be used to determine if there are sufficient transportation improvements being made to meet the requirements for proposed developments. LOS values shall be determined by using the methods defined by the Highway Capacity Manual – 2000. A development shall be approved only if the LOS requirements are met by the developer through mitigation measures. In general, LOS will decline at area intersections given normal growth without mitigation to prevent the decline. Accordingly, a list of suggested LOS standards is presented below:

- Signalized intersections shall have a minimum acceptable LOS of “C” for the intersection as a whole; individual movement and approach leg LOS lower than “C” shall be allowed such that the total intersection LOS is a “C” or higher.
- Unsignalized intersections shall have a minimum acceptable LOS of “C” for the intersection as a whole for four-way stop controlled; individual movement and approach leg LOS lower than “C” shall be allowed such that the total intersection LOS is “C” or higher.

- Two-way stop-controlled (TWSC) intersections shall have a minimum acceptable LOS of "C" or higher for the stop-controlled, minor legs.
- An intersection with a roundabout shall have a minimum acceptable LOS of "C" or higher for the intersection as a whole.

It is recommended that the entire intersection LOS be the controlling factor in determining if an intersection performs at a proper level for all intersections except a "two-way, stop-controlled (TWSC)" intersection. In the TWSC scenario, the intersection LOS should be for the stop-controlled minor legs.

It is recommended, however, that individual movement and approach LOS still be calculated and presented in the various traffic impact studies to determine if the network as a whole functions properly and if additional steps need to be examined.

It should be noted that these standards should be applied to the peak hour periods of consideration because these periods are typically the "worst case" operational periods on the transportation system. This period typically coincides with the AM peak hour period (between 7:00 and 9:00 am) and the PM peak hour period (4:00 and 6:00 pm). For MDT facilities, these levels of service standards are already defined in the MDT Traffic Engineering Manual.

Chapter 6 Transportation Demand Management (TDM) Strategies

6.1 *Role of TDM in the Transportation Plan*

Transportation Demand Management (TDM) measures came into being during the 1970's and 1980's in response to a desire to save energy, improve air quality, and to reduce peak period congestion. TDM strategies focused on identifying alternates to single occupant vehicle use during commuting hours. Therefore, such things as walking and bicycling for work purposes are most often associated with TDM. Many of these methods were not well received by the commuting public and, therefore, provided limited improvement to the peak-period congestion problem. Because of negative experiences with these traditional TDM measures over the past few decades, it became clear that the whole TDM concept needed to be changed. TDM measures that have been well received by the commuting public include bicycling and walking. In addition to addressing commute trip issues, managing demand on the transportation system in the Polson area includes addressing traffic congestion associated with special events, such as the local Farmer's Market, Arts Festival, Cherry Festival, Hoop Shoot, or sporting events. A definition of TDM follows:

> *TDM programs are designed to maximize the people-moving capability of the transportation system by increasing the number of persons in a vehicle, or by influencing the time of, or need to, travel. (FHWA, 1994)*

Since 1994, TDM has been expanded to also include route choice. A parallel arterial with excess capacity near a congested arterial can be used to manage the transportation system to decrease congestion for all transportation users.

The Polson area is projected to grow. The accompanying expansion of transportation infrastructure is expensive and usually lags behind growth. Proper management of demand now will maximize the existing infrastructure and delay the need to build more expensive additional infrastructure. TDM is an important and useful tool to extend the useful life of a transportation system. It must be recognized that TDM strategies aren't always appropriate for certain situations and may be difficult to implement.

As communities such as Polson grow, the growth in number of vehicles and travel demand should be accommodated by a combination of road improvements; bicycle and pedestrian improvements; and a program to reduce travel (vehicle trips and the vehicle miles traveled) via transportation demand management in conjunction with appropriate land use planning. This section of the Transportation Plan contains a variety of TDM measures, many of which may not be appropriate and acceptable for the Polson community. The selection of appropriate TDM strategies for the community is best left for the local governing bodies.

TDM strategies are an important part of the Plan due to their inherent ability to provide the following benefits to the commuting public:

- Better transportation accessibility;

- Better transportation predictability;
- More, and timelier, information;
- A range of commute choices; and
- Enhanced transportation system performance.

TDM measures can also be applied to non-commuter traffic and are especially easy to adapt to tourism, to special events, emergencies, and to construction. The benefits to these traffic users are similar to those for commuters and are listed as follows:

- Better transportation accessibility;
- More transportation reliability;
- More, and timelier, information;
- A range of route choices; and
- Enhanced transportation system performance.

These changes allow the same amount of transportation infrastructure to effectively serve more people. They acknowledge and work within the mode and route choices which motorists are willing to make and can encourage a sense of community. Certain measures can also increase the physical activity of people getting from one place to another.

Such things as alerting the traveling public to disruptions in the transportation system caused by construction or vehicle crashes can manage demand and provide a valuable service to the traveling public.

Overall, congestion can be avoided or managed on a long-term basis through the use of an integrated system of TDM strategies.

6.2 List of TDM Strategies

TDM strategies, which are or have been used by other communities in the United States, which may be appropriate for Polson, include:

Bicycling

Bicycling can substitute directly for automobile trips. Communities that improve cycling conditions often experience significant increases in bicycle travel and related reductions in vehicle travel. Even a one percent shift in travel modes from vehicle trips to bicycle trips can be viewed as a positive step in the Polson community. Although this mode may not be a measurable statistic pertinent to reducing congestion, providing increased bicycling opportunities can help and can also contribute to quality of life issues. Bicycling characteristics within the Polson area is primarily recreational in nature, and by implementing the bikeway network improvements as described in Chapter 5, a gradual shift to bicycling as a commuter mode of travel should be realized. Incentives to increase bicycle usage as a TDM strategy include: construction improvements to bike paths and bike lanes; correcting specific roadway hazards (potholes, cracks, narrow lanes, etc.); development of a more connected bikeway street network; development of safety education, law enforcement, and encouragement programs; and the solicitation and addressing of bicycling security/safety concerns. Potential costs of this TDM strategy are expenses associated with creating and maintaining the bikeway network, potential liability and accident risks (in some cases), and increased stress to drivers.

Walking

Walking as a TDM strategy has the ability to substitute directly for automobile trips. A relatively short non-motorized trip often substitutes for a longer car trip. For example, a shopper might choose between walking to a small local store versus driving a longer distance to shop at a supermarket. Incentives to encourage walking in a community can include: making improvements to sidewalks, crosswalks, and paths by designing transportation systems that accommodate special needs (including people using wheelchairs, walkers, strollers, and hand carts); providing covered walkways, loading, and waiting areas; improving pedestrian accessibility by creating location-efficient, clustered, mixed land use patterns; and soliciting and addressing pedestrian security/safety concerns. Costs are similar to that of bicycling and are generally associated with program expenses and facility improvements.

Traffic Calming

Traffic Calming (also called Traffic Management) refers to various design features and strategies intended to reduce vehicle traffic speeds and volumes on a particular roadway. Traffic Calming projects can range from minor modifications of an individual street up to comprehensive redesign of a given road network. Traffic Calming can be an effective TDM strategy in that its use can alter and/or deter driver characteristics by forcing the driver to either use a different route or to use an alternative type of transportation (such as transit, bicycling, walking, etc.). Costs of this TDM strategy include construction expenses, problems for emergency and service vehicles, potential increase in drivers’ effort and frustration, and potential problems for bicyclists and visually impaired pedestrians.

Identifying and Using Special Routes and Detours for Emergencies or Special Events

This type of TDM strategy centers around modifications to driver patterns during special events or emergencies. Modifications can typically be completed with intensive temporary signing or traffic control personnel. Temporary traffic control via signs and flaggers could be implemented to provide a swift and safe exit after applicable events.

By capitalizing on the use of these options, the existing vehicular infrastructure can be made to function at acceptable levels of service for a longer period of time. Ultimately, this will result in lower per year costs for infrastructure replacement and expansion projects, not to mention less disruption to the users of the transportation system.

While some of these options may work well in the Polson area, it is clear that some may be inappropriate. Additionally, some of these options are more effective than others. To provide a TDM system that is effective in managing demand, a combination of these methods will be necessary.

6.3 Conclusions Based on Preliminary TDM Evaluation for the Polson Area

The object of this analysis is to provide the planners and policy-makers in the greater Polson area with a range of TDM programs, strategies, and estimated impacts in terms of reducing traffic. Information provided will help facilitate a consensus on the preferred TDM program to be included in the Plan update. The following overall conclusions are offered:

- **Employer-based programs will have limited long-term impacts.** Alone, these programs do not sufficiently reduce regional traffic volumes because the Polson area is comprised of relatively small employers that are generally less effective in facilitating commute alternatives.

- **Employer programs should be considered as an interim step.** Even though employer programs are less effective due to the employment composition of the Polson area, a voluntary program, focused on either City, County, or Tribal government, or on large employers, should be considered. A demonstration program would provide local planners and policymakers with valuable information on specific strategies and marketing techniques to encourage commute alternatives. Unlike efforts aimed at the general population, this program should target large employers and work through appointed and dedicated coordinators. The program should be launched by local government (City, County, and Tribal) employers.

- **Land use and non-motorized TDM strategies can be effective.** The implementation of land use policies that are TDM-friendly, combined with improvements to bicycle and pedestrian facilities, can impact all types of travel. The potential impact of these strategies may be greater in the long run than traditional employer-based TDM measures. These measures, considered alone, could reduce vehicle trips and vehicle miles traveled (VMT), although the impacts may be somewhat weather-dependent.

Chapter 7 Miscellaneous Transportation System Considerations

7.1 Safe Routes to School (SRTS) Program

The Safe Routes to School (SRTS) Program was initiated via Section 1404 of the *Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users Act* (SAFETEA-LU), signed into law on August 10, 2005. The SRTS Program can provide reimbursement support for both behavioral and infrastructure investments that make bicycling and walking to school a safer and more attractive alternative for students in kindergarten through middle school (K-8). In general terms, the overriding purpose of the program is two-fold:

- Enable and encourage children, including those with disabilities, to walk and bicycle to school; and
- Make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age.

Funding is available to attain these objectives within the confines of the program guidelines. Montana is called a minimum apportionment state, which means the state receives $1 million dollars annually to carry out program objectives. Of this amount, up to 70 percent can be designated for infrastructure projects, with the remaining 30 percent available for non-infrastructure projects. SRTS programs and/or projects are encouraged to focus on a combination of the “five E’s,” which include:

- Evaluation;
- Education;
- Encouragement;
- Engineering; and
- Enforcement.

SRTS funding may be used within two miles of K-8 schools for the following purposes:

- Pedestrian and bicycle crossing improvements;
- Bicycle and pedestrian facilities;
- Community assessments of walking and bicycling facilities and programs;
- Public awareness campaigns and outreach;
- Development of community action plans;
- Traffic education and enforcement;

- Student sessions on bicycle and pedestrian safety, health, and environment;
- Safe Routes to School (SRTS) training; and
- Tracking and performance monitoring.

Chapter 9 of this Transportation Plan Update contains further information on funding availability and MDT's grant application process.

7.2 Corridor Preservation and Access Management Guidelines

Corridor preservation is the application of measures to prevent or minimize development within the right-of-way of a planned transportation facility or improvement within a defined corridor. That includes corridors, both existing and future, in which a wide array of transportation improvements may be constructed. Included here are roadways, bikeways, multi-use trails, equestrian paths, high occupancy vehicle lanes, fixed-rail lines, and more.

Corridor preservation is important because it helps to ensure that a transportation system will effectively and efficiently serve existing and future development within a local community, region or state, and will prevent costly and difficult acquisitions after the fact. Corridor preservation policies, programs, and practices provide numerous benefits to communities, taxpayers, and to the public at large. These include, but are not limited to, the following:

- Reducing transportation costs by preservation of future corridors in an undeveloped state. By acquiring or setting aside right-of-way well in advance of construction, the high cost to remove or relocate private homes or businesses is eliminated or reduced.
- Enhancing economic development by minimizing traffic congestion and improving traffic flow, thereby saving time and money. Low cost, efficient transportation helps businesses contain final costs to customers and makes them more competitive in the marketplace. Freight costs, for instance, accounts for ten percent of the value of agricultural products, the highest for any industry.
- Increasing information sharing so that landowners, developers, engineers, utility providers, and planners understand the future needs for developing corridors. An effective corridor preservation program ensures that all involved parties understand the future needs within a corridor and that state, local, and private plans are coordinated.
- Preserving arterial capacity and right-of-way in growing corridors. Corridor preservation includes the use of access management techniques to preserve the existing capacity of corridors. When it is necessary, arterial capacity can be added before it becomes cost prohibited by preserving right-of-way along growing transportation corridors.
- Minimizing disruption of private utilities and public works. Corridor preservation planning allows utilities and public works providers to know future plans for their transportation corridor and to make their decisions accordingly.

- Promoting urban and rural development compatible with local plans and regulations. Both state and local agencies must work closely together to coordinate their efforts. Effective corridor preservation will result in development along a transportation corridor that is consistent with local policies.

To effectively achieve the policies and goals listed above, corridor management techniques can be utilized. These techniques can involve the systematic application of actions that:

- Preserve the safety and efficiency of transportation facilities through **access management**; and
- Ensure that new development along planned transportation corridors is located and designed to accommodate future transportation facilities (**corridor preservation measures**).

These are discussed further below.

7.2.1 Access Management Guidelines

Access management techniques are increasingly fundamental to preserving the safety and efficiency of a transportation facility. Access control can extend the carrying capacity of a roadway, thereby reducing potential conflicts and facilitating appropriate land usage. There are six basic principles of access management that are used to achieve the desired outcome of safer and efficient roadways. These principles are:

- Limit the number of conflict points;
- Separate the different conflict points;
- Separate turning volumes from through movements;
- Locate traffic signals to facilitate traffic movement;
- Maintain a hierarchy of roadways by function; and
- Limit direct access on higher speed roads.

It is recommended that the City of Polson adopt a set of Access Management Regulations through which the need for access management principles can be evaluated on a case-by-case basis. For roadways on the State system and under the jurisdiction of the Montana Department of Transportation (MDT), access control guidelines are available which define minimum access point spacing, access geometrics, etc., for different roadway facilities. For other roadways (non-State), the adoption of an access classification system based upon the functional classification of the roadway (principal arterial, minor arterial, or major collector) is desirable. These local regulations should help govern minimum spacing of drive approaches/connections and median openings along a given roadway in an effort to fit the given roadway into the context of the adjacent land uses and the roadway purpose. A local Access

Management Ordinance should be adopted to adequately document the city's desire for standard approach spacing, widths, slopes, and type for a given roadway classification.

Different types of treatment that can assist in access control techniques are:

- Non-traversable raised medians;
- Frontage roads;
- Consolidation and/or closure of existing accesses to the roadway;
- Directional raised medians;
- Left-turn bay islands;
- Redefinition of previously uncontrolled access;
- Raised channelization islands to discourage turns; and
- Regulate number of driveways per property.

7.2.2 Corridor Preservation Measures

Another tool used to meet the policies and goals listed earlier in this chapter is that of specific corridor preservation measures. As was stated above regarding developing a local Access Management Ordinance, it is desirable to develop a Corridor Preservation Ordinance as well. Such an ordinance would accomplish the following:

- Establish criteria for new corridor preservation policies to protect future transportation corridors from development encroachment by structures, parking areas, or drainage facilities (except as may be allowed on an interim basis). Some possible criteria could include the on-site transfer of development rights and the clustering of structures.
- Establish criteria for providing right-of-way dedication and acquisition while mitigating adverse impacts on affected property owners.

7.3 Secondary Highway Designations

Secondary routes are designated by the Montana Transportation Commission, in cooperation with local governing authorities. When revisions to the system are proposed, the Transportation Commission may require when adding mileage that a reasonably equal amount of mileage be removed. Whether mileage is added, or just re-classified, a process is in place that must be followed. To add, delete, or re-classify a secondary route from the system, the process is as follows:

1. Requests for new route designations or changes in existing designations are initiated by the local government. Requests must have the support of local elected officials and local transportation committees (if applicable).

2. MDT staff reviews the requests to determine whether the routes meet eligibility requirements.

3. If a route does not meet functional classification eligibility requirements, MDT staff advises the local government about the process for requesting a formal review of the route's functional classification.

4. If necessary, MDT staff advises the local government about the Montana Transportation Commission policy that requires no significant net change in secondary highway mileage within the affected county or urban area as a result of designation changes. Local governments may have to adjust their original request to comply with this requirement.

5. If the proposal meets all eligibility requirements and complies with Transportation Commission policy, MDT staff asks the Transportation Commission to consider the request. If a functional classification revision is also required, commission approval is contingent on FHWA approval of the functional classification revision.

6. If the Transportation Commission and FHWA (when applicable) approves the request, MDT staff notifies the affected local governments and makes appropriate changes in MDT records.

7.4 Pedestrian and Bicycle Infrastructure Design Guidelines

The design of pedestrian and bicycle infrastructure is governed by many local, state, and federal standard documents. These documents include the Montana Public Works Standard Specifications, the Manual of Uniform Traffic Control Devices, the AASHTO Guide for the Development of Bicycle and Pedestrian Facilities, and the Americans with Disabilities Act Access Board (ADAAG) Guidelines. This section provides additional guidance that could benefit the Polson area with some found in the above standards, and some experimental.

7.4.1 Pedestrian Facilities

The design of the pedestrian environment will directly affect the degree to which people enjoy the walking experience. If designed appropriately, the walking environment will not only serve the people who currently walk, but will also be inviting for those who may consider walking in the future. Therefore, when considering the appropriate design of a certain location, designers should not just consider existing pedestrian use, but should also consider how the design will influence and increase walking in the future. Additionally, designers must consider the various levels of walking abilities and local, state, and federal accessibility requirements. Although these types of requirements were specifically developed for people with walking challenges, their use will result in pedestrian facilities that will benefit all people.

Crosswalks

Crosswalks are a critical element of the pedestrian network. It is of little use to have a complete sidewalk system if pedestrians cannot safely and conveniently cross intervening streets. Safe crosswalks support other transportation modes as well. Transit riders, motorists, and bicyclists all may need to cross the street as pedestrians at some point in their trip.

Frequency

In general, people will not travel out of direction unless it is necessary. This behavior is observed in pedestrians, who will cross the street wherever they feel it is convenient. The distance between comfortable opportunities to cross a street should be related to the frequency of uses along the street that generate crossings (shops, High Pedestrian Use areas, etc.). In areas with many such generators, like High Pedestrian Use areas, opportunities to cross should be very frequent. In areas where generators are less frequent, good crossing opportunities may also be provided with less frequency.

Table 7.1 Crosswalk Spacing Guidance

Where	Generally Not Further Apart Then	Generally Not Closer Together Than
High Pedestrian Use Areas	200 – 300 feet (60 – 90 m) where blocks are longer than 400 feet (120 m)	150 feet (45 m)
Local Street Walkways and low Pedestrian Use Areas	Varies, based on adjacent uses. Do not prohibit crossing for more than 400 feet (120 m)	150 feet (45 m)

Crosswalk Pavement Markings

Marked crosswalks indicate to pedestrians the appropriate route across traffic, facilitate crossing by the visually impaired, and remind turning drivers of potential conflicts with pedestrians. Crosswalk pavement markings should generally be located to align with the Through Pedestrian Zone of the Sidewalk Corridor.

Marked crosswalks should be used:

- At signalized intersections, all crosswalks should be marked.
- At unsignalized intersections, crosswalks should be marked when they
    - help orient pedestrians in finding their way across a complex intersection, or
    - help show pedestrians the shortest route across traffic with the least exposure to vehicular traffic and traffic conflicts, or
    - help position pedestrians where they can best be seen by oncoming traffic.
- At mid-block locations, crosswalks are marked where

- there is a demand for crossing, and
- there are no nearby marked crosswalks.

Three common types of crosswalk striping are currently used in Montana and include the Piano Key, the Ladder, and the standard Transverse crosswalk. Types of textured or colored concrete surfacing may also be used in appropriate locations where it helps establish a sense of place such as at shopping centers and downtown Polson. Figure 7-1 shows these types of crosswalks.

Ladder or piano key crosswalk markings are recommended for most high use crosswalks in the Polson area that are not on the Federal Highway urban aid system. This includes school crossings, across arterial streets for pedestrian-only signals, at mid-block crosswalks, and where the crosswalk crosses a street not controlled by signals or stop signs. Note that on MDT routes, ladder or piano key crosswalks are usually reserved for school crossing locations only. A piano key pavement marking consists of 2 ft (610 mm) wide bars spaced 2 ft apart and should be located such that the wheels of vehicles pass between the white stripes. A ladder pavement marking consists of 2 ft (610 mm) wide bars spaced 2 ft apart and located between 1 ft wide parallel stripes that are 10 ft apart.

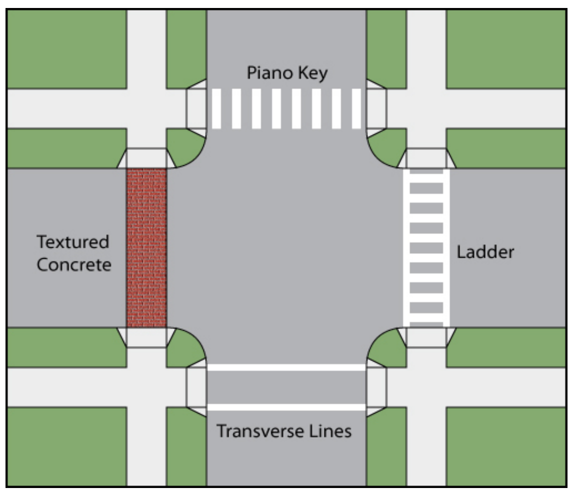


Figure 7-1 Types of Crosswalks

Curb Extensions

Curb extensions (sometimes called curb bulbs or bulb-outs) have many benefits for pedestrians. They shorten the crossing distance, provide additional space at the corner (simplifying the placement of elements like curb ramps), and allow pedestrians to see and be seen before entering the crosswalk. Curb extensions can also provide an area for accessible transit stops and other pedestrian amenities and street furnishings.

Curb extensions are advisable for local or collector roadways and may be used at any corner location, or at any mid-block location where there is a marked crosswalk, provided there is a parking lane into which the curb may be extended. Curb extensions are not generally used where there is no parking lane because of the potential hazard to bicycle travel. Under no circumstances should a curb extension block a bike lane if one exists.

In high pedestrian use areas such as downtown Polson, curb extensions are a preferred element for corner reconstruction except where there are extenuating design considerations such as the turning radius of the design vehicle, or transit and on-street parking factors.

Curb extensions can be compatible with snow removal operations provided that they are visibly marked for crews. Where drainage is an issue, curb extensions can be designed with storm drain inlets, or pass through channels for water.

It is important to note that curb extensions must be designed to accommodate the required turning radii of the vehicle to be encountered along a given facility. For example, on MDT routes, curb extensions are required to allow a large semi-truck (commonly referred to as a WB-67 design vehicle) to maneuver around the curb extension without traversing the raised curb. In residential or commercial areas, a smaller design vehicle may be allowed, thereby increasing the potential size of the island. The turning radii of the appropriate design vehicle must always be checked prior to installation of curb extensions.

Refuge Islands

Refuge islands allow pedestrians to cross one segment of the street to a relatively safe location out of the travel lanes, and then continue across the next segment in a separate gap. At unsignalized crosswalks on a two-way street, a median refuge island allows the crossing pedestrian to tackle each direction of traffic separately. This strategy can significantly reduce the time a pedestrian must wait for an adequate gap in the traffic stream.

7.4.2 Bicycle Facilities

Similar to pedestrian facilities, the overall safety and usability of the bicycle network lies in the details of design. The following guidelines provide useful design considerations that fill in the gaps from the standard manuals such as the MUTCD and the AASHTO Guide for the Development of Bicycle Facilities.

Shared-Use Paths / Bike Paths

Facilitates two-way, off-street bicycle and pedestrian traffic, which also may be used by skaters, wheelchair users, by joggers, and by other non-motorized users. These facilities are frequently found in parks and in greenbelts, or along rivers, railroads, or utility corridors where there are few conflicts with motorized vehicles. Shared use facilities can also include amenities such as lighting, signage, and fencing (where appropriate). In Montana, design of shared-use facilities should follow guidance in the AASHTO Guide for the Development of Bicycle Facilities. Chapter 5 of this Plan contains several long-term conceptual locations for shared-use pathways, including a river recreational trail, and a future trail that uses the existing Montana Rail Link (MRL) track easement. Both will be subject to private landowner participation.

General Design Practices

Shared-use paths can provide a good facility, particularly for novice riders, for recreational trips, and for cyclists of all skill levels who prefer separation from traffic. Shared-use paths should generally provide directional travel opportunities not provided by existing roadways. Some of the elements that enhance off-street path design include:

- Implementing frequent access points from the local road network -- if access points are spaced too far apart, users will have to travel out of direction to enter or exit the path, which will discourage use;
- Placing adequate signage for cyclists -- including stop signs at trail crossings and directional signs to direct users to and from the path;
- Building to a standard high enough to allow heavy maintenance equipment to use the path without causing it to deteriorate;
- Limiting the number of at-grade crossings with streets or driveways;
- Terminating the path where it is easily accessible to and from the street system -- preferably at a controlled intersection or at the beginning of a dead-end street. Poorly designed paths can put pedestrians and cyclists in a position where motor vehicle drivers do not expect them when the path joins the street system.

At-Grade Crossings

When a grade-separated crossing cannot be provided, the optimum at-grade crossing has either light traffic or a traffic signal that trail users can activate. If a signal is provided, signal loop detectors may be placed in the pavement to detect bicycles if they can provide advance detection, and a pedestrian-actuated button provided (placed such that cyclists can press it without dismounting). A trail sized stop sign (R1-1) should be placed about 5 feet before the intersection with an accompanying stop line. Direction flow should be treated either with physical separation or a centerline approaching the intersection for the last 100 feet. Additional design considerations that can slow bicyclists as they approach the crossing include chicanes, bollards, and pavement markings.

If the street is above four or more lanes or two/three lanes without adequate gaps, a median refuge should be considered in the middle of the street crossed. The refuge should be 8 feet at a minimum, but 10 feet is desired. Another potential design option for street crossings is to slow motor vehicle traffic approaching the crossing by means of speed bumps in advance of the crossing, a table-top crossing, or a painted or textured crosswalk.

Grade Separated Crossings

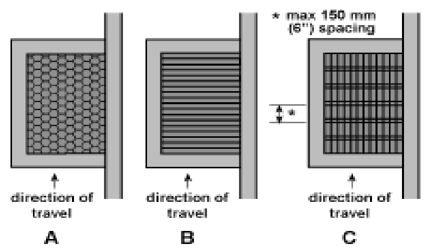
When the decision to construct an off-street multi-use path has been made, grade separation should be considered for all crossings of major thoroughfares. At-grade crossings introduce conflict points. The greatest conflicts occur where paths cross roadway driveways or entrance and exit ramps. Motor vehicle drivers using these ramps are seeking opportunities to merge with other motor vehicles; they are not expecting bicyclists and pedestrians to appear at these locations. However, grade-separated crossings should minimize the burden for the user, and not, for example, require a steep uphill and/or winding climb. Undercrossings should be lighted if in high use areas or if longer than 75 feet.

Bicycle Lanes

Bicycle lanes are defined as a portion of the roadway that has been designated by striping, signage, and by pavement markings for the preferential or exclusive use of bicyclists. Bicycle lanes are generally found on major arterial and collector roadways and should be 5 feet or wider, to provide enough separation to prevent “dooring”. Bicycle lanes should be designed following AASHTO guidelines.

Additional Considerations

Poorly designed or placed drainage grates can often be hazardous to bicyclists. Drainage grates with large slits can catch bicycle tires. Poorly placed drainage grates may also be hazardous, and can cause bicyclists to veer into the auto travel lane.



Bicycle-Friendly Drainage Grates

Figure 7-2 Bicycle-Friendly Drainage Grates

Bicycle Friendly Rumble Strips

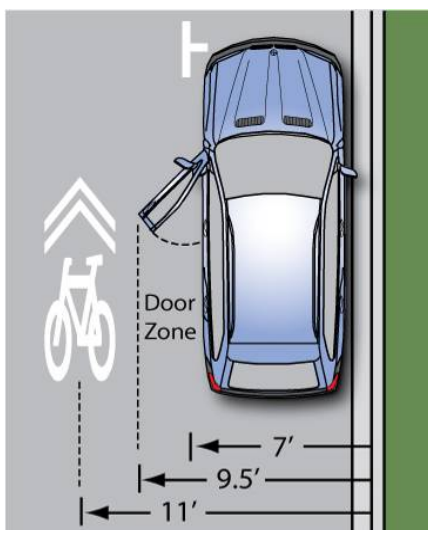
Rumble Strips can hamper bicycling by presenting obstacles through trapped debris on the far right of the road shoulder and the rumble strip to the left. Consequently, special care needs to be exercised for bicyclists when this treatment for motorist safety is planned and built, with a robust maintenance schedule put into place. Rumble strip design and placement are also important; placing the rumble strip as close to the fog line as possible will leave the maximum shoulder area available for cyclists. Certain rumble strip designs are safer for bicyclists to cross and will still provide the desired warning effect for motorists.

FHWA studied the design of rumble strips in 2000 and reviewed reviewing different techniques of installation and various studies by ten state DOT's from the point of view of motorists and bicyclists. Information provided by the FHWA study recommended that design for a rumble strip should be of a milled design rather than rolled and should be 1 foot (300mm) wide with 5/16 ± 1/16 in (8 ± 1.5 mm) in depth. Rumble strips are recommended to be installed only on roadways with shoulders in excess of 5 feet (1.5 m). Bicyclists prefer a shallow depth of the milled portions of the rumble strips. Since the roadway shoulder can become cluttered with debris, it is recommended to include a skip (or gap) in the rumble strip to allow bicyclists to cross from the shoulder to the travel lane when encountering debris. This skip pattern is recommended to be 12 feet (3.7 m) in length with intervals of 40 or 60 feet (12.2 or 18.3 m) between skips.

It is anticipated MDT will be using rumble strips in much of the Polson area, but with limited use in areas of substantial development. Placement of rumble strips farther from the edge of travel will be developed under certain conditions. This would accommodate bicyclists' safety and reduce noise adjacent to development.

Shared Lane Markings (SLM's)

Recently, Shared Lane Marking (SLM's) stencils (also called "Sharrows") have been introduced for use in the United States as an additional treatment for shared roadway facilities. The stencil can serve a number of purposes, such as making motorists aware of bicycles potentially in their lane, showing bicyclists the direction of travel, and, with proper placement, reminding bicyclists to bike further from parked cars to prevent "dooring" collisions. Shared Lane Markings would be valuable additions to the proposed bicycle routes in Chapter 5.



Recommended SLM placement.

Figure 7-3 Recommended Shared Lane Marking (SLM) placement

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Chapter 8 Concept Plans to Existing US 93

8.1 Introduction

US 93 through Polson is the major transportation route in the community. Earlier it was noted that the community partners, in conjunction with the MDT and FHWA, prepared a pre-NEPA/MEPA Corridor Study that examined the feasibility of an alternate route to US 93. The conclusion of the corridor study was that two alternate routes are likely feasible if and when the community decides to address traffic issues on the existing US 93. This study follows up on the US 93 Evaro to Polson EIS further reducing the number of alternate alignments from eight as identified in the EIS down to two. This study will be used as a basis for determining the impacts and subsequent mitigation for the selected alignment in any future NEPA/MEPA document. It should be noted that although a reconstructed US 93 through Polson was screened out during the Corridor Study process, the TOC felt strongly that consideration be given to including the existing US 93 as part of any future environmental process. Therefore, as part of any US 93 discussion through or around Polson, improving the existing US 93 corridor will need to be considered as one of the improvement options.

This chapter of the Transportation Plan will present various conceptual options that may be considered during a future NEPA/MEPA process. The environmental document could cover the existing US 93, between the intersection of US 93 with MT 35 (on the south end of the corridor), and the east end of the existing bridge over the Flathead River (on the north end of the corridor). This is the segment of US 93 that traverses both along the lakefront and also through the downtown core of Polson. Four conceptual options are presented. Two of the concept plans assume an alternate route would be in place for the community someday. The other two concept plans assume that an alternate route would not be realized. These concept plans are identified as noted below, and are further expanded in this chapter.

<u>With Alternate Route in Place</u>

- Three-Lane Section Without Urban Amenities
- Three-Lane Section With Urban Amenities

<u>Without Alternate Route in Place</u>

- Five-Lane Section Without Urban Amenities
- Five-Lane Section With Urban Amenities

Any project (or projects) developed will need to be in compliance with the Code of Federal Regulations (CFR) Title 23 Part 771 and the Administrative Rules of Montana (ARM) 18, sub-chapter 2 which sets forth the requirements for documenting environmental impacts on highway projects.

The suggested roadway section through the corridor, pending community dialogue and acceptance, is a combination of sections that minimize impacts to adjacent properties and that provide for an acceptable multi-modal corridor. As US 93 is a NHS route on the urban aid system, any improvements must be reviewed and approved by MDT.

8.2 Three-Lane Section Without Urban Amenities

The section between MT 35 and the east end of the Flathead River Bridge is already a three-lane section at most locations; however, it does not include "urban" features. A three-lane section can be described as having a single travel lane in each direction, with a two-way center turn lane (TWCTL) or left turn (TWLTL) lane in the middle lane. This type of configuration is seen in many urban areas where there are private approaches directly adjacent to the roadway. In some locations along the existing US 93, on-street parking is available (such as downtown Polson), and in other areas (near the lakefront) it is not available.

This concept would build upon what is currently in place by formalizing the "minimum" three-lane section with curb and gutter/storm drainage, new asphalt surfacing, and the perpetuation of the three-lane configuration. A consistent treatment between MT 35 and the east of the Bridge would be desirable, such that lane merges and drop-offs are removed. In the downtown area, parking would remain as is currently in place. This concept does not provide for any non-motorized amenities such as on-street bicycle lanes, sidewalks, or raised medians. Crosswalks on the appropriate legs of US 93 would be provided. The three-lane section lends to the usage of traffic signal control or modern roundabouts at the busier intersections. This section would consist of the following:

- One 12 foot driving lane (in each direction);
- A single 14 foot flush median;
- Two foot curb and gutter (each side); and
- Six foot sidewalk (each side directly adjacent to the back of the curb).

This type of standard section could accommodate between 18,000 and 22,000 vehicles per day, depending on many factors unknown at the present time. An example would be the density of approaches. If approaches can be removed and/or combined, the "minimum" three-lane facility could carry more capacity and potentially reach the 22,000 vpd volumes. However, as documented in the *US 93 Polson Corridor Study* report, traffic volumes elevate during the summer months, and if the desire is to design to peak summer conditions, then the minimum three-lane capacity may result in a LOS less than acceptable standards out to the 20-year planning horizon.

8.3 Three-Lane Section With Urban Amenities

A modification to the three-lane section described above in section 8.2 is the three-lane section with urban amenities. This section consists of the three-lanes as previously described, but also includes urban amenities such as on-street bicycle lanes, on-street parking, a narrow landscaped boulevard behind the curb, and a sidewalk on both sides. This section would require a consistent eighty-six (86) foot right-of-way width for its application the entire length of the corridor.

This section provides several benefits that include on-street bicycle facilities, on-street parking, sidewalk facilities, landscaped boulevard, and curb and gutter to control storm water runoff. The middle lane could either be a flush median lane, or in some cases could be raised median to provide pedestrian refuge areas and control access. This section would consist of the following:

- One 12 foot driving lane (in each direction);
- A single 14 foot flush (or raised) median;
- One 5 foot on-street bicycle lane (in each direction);
- An 8 foot on-street parking lane (each side);
- Two foot curb and gutter (each side);
- A 3 foot landscaped boulevard (each side); and
- Five foot sidewalk.

Figure 8-1 below shows a representative section of this configuration, noting that in this representation the median is a flush median.

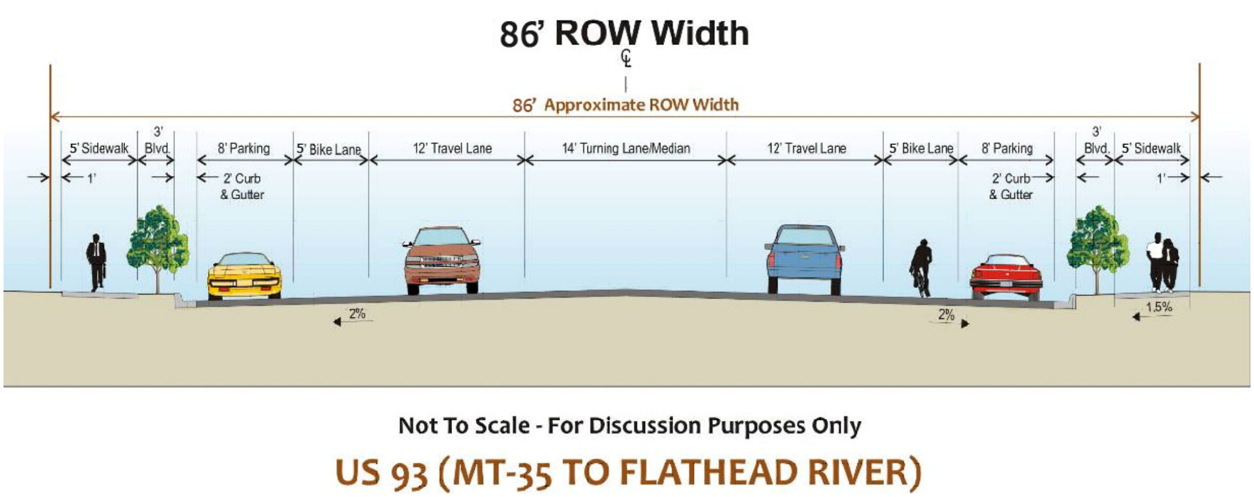

Figure 8-1 Urban 3-Lane Section with Amenities

8.4 Five-Lane Section Without Urban Amenities

If an alternate route to the existing US 93 is not pursued, it is highly likely that near the 20-year planning horizon additional lanes will be warranted along the existing US 93. Although traffic modeling associated with the US 93 Corridor Study suggests that AADT volumes may be able to be accommodated with a three-lane section, peak summer volumes will exceed the capacity of the facility. Because of this, without an alternate route in place, the facility will need to be expanded to a five-lane roadway section. As is the case with the three-lane sections described above, a "minimum" five-lane section is a consideration that will not provide the "urban amenities" such as on-street bicycle lanes, parking, and landscaped boulevards. This section would consist of the following:

- Two 12 foot driving lanes (in each direction)
- A single 16 foot raised median/turning lane
- Two foot "shy distance" on either side of the raised median
- Two foot curb and gutter (each side)
- Six foot sidewalk (each side directly adjacent to the back of curb)

The total width of this "minimum" typical section equals 84 feet, which would lend itself to a recommended 86 foot right-of-way width throughout the corridor. Again, this section would not provide for on-street bicycle lanes, on-street parking, or for a landscaped boulevard between the roadway and the sidewalk.

8.5 Five-Lane Section With Urban Amenities

The "Five-Lane Section With Urban Amenities" builds upon the section described in section 8.4; however, it includes various urban amenities such as on-street bicycle lanes, on-street parking, landscaped boulevards, and pedestrian sidewalks. This section would require the largest right-of-way width – on the order of 116 feet – for consistent application of this section. This right-of-way width would require removal of buildings and parking in some areas along the corridor. This section would consist of the following:

- Two 12 foot driving lanes (in each direction);
- A single 16 foot raised median/turning lane;
- Two foot "shy distance" on either side of the raised median;
- One 5 foot on-street bicycle lane (in each direction);
- An 8 foot on-street parking lane (each side);
- Two foot curb and gutter (each side);
- A 3 foot landscaped boulevard (each side); and
- Five foot sidewalk.

The total width of this typical section equals 114 feet, which would lend itself to a recommended 116 foot right-of-way width throughout the corridor. If this typical section were to be implemented and centered on the existing centerline, the corridor section would potentially impact 25 structures. Figure 8-2 shows a representative section of this configuration, noting that in this representation the median is a raised median.

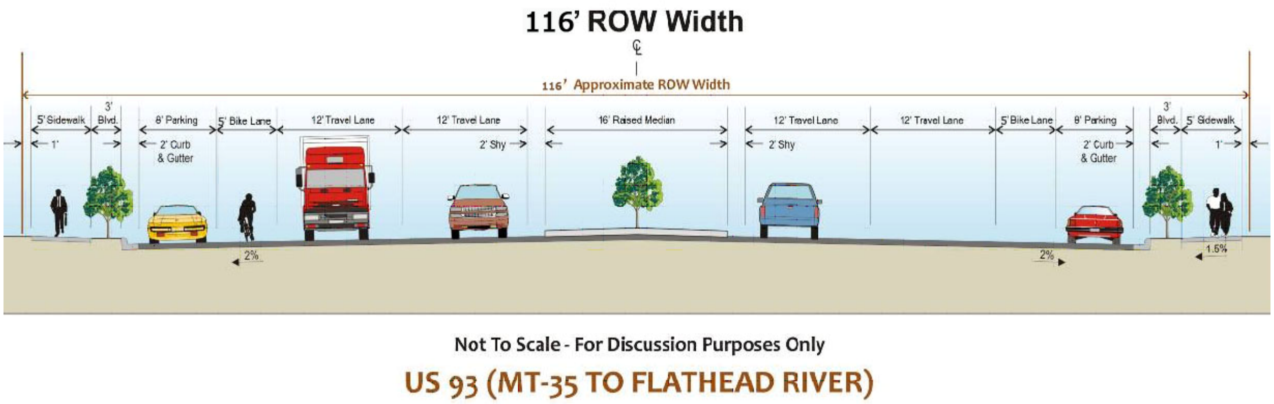

Figure 8-2 Urban 5-Lane Section with Amenities

8.6 Suggested Corridor Concept

The suggested concept for corridor improvements for the existing US 93 is a combination of many of the sections described earlier. Local representatives on the TOC made it clear that improvements to the existing US 93 are their priority. Whether or not an alternate route is pursued further by the local community is a decision that the local partners will have to make over time, and it is realistic to expect an alternate route will be needed farther out than 20-years. The suggested corridor concept is one that is responsive to a variety of travel patterns, improves the aesthetics of the current roadway environment, and one that provides for acceptable traffic flow and travel conditions. The suggested corridor concept is broken out into sections along the corridor, beginning at the intersection of US 93 and MT 35.

8.6.1 Concept Between MT 35 and 4th Avenue East

The suggested corridor concept between MT 35 and 4th Avenue East is reconstruction to the "Five-Lane With Urban Amenities" (see Figure 8-2) typical section. This section will alleviate several issues identified through the planning process. The issues with the vehicle merge off of MT 35 onto US 93 northbound will be eliminated with the creation of a designated through lane on US 93. The 120 foot right-of-way can be realized within this segment of the corridor with no impacts to structures, although right-of-way acquisition would be likely. This section of roadway is generally not in the commercial district, and the additional lanes will allow for traffic to better distribute itself when coming from the west (i.e. downtown) or coming from the east (i.e. MT 35 and US 93 South).

It is debatable whether on-street parking is needed in this location. As there are not any major roadside attractions in this area, it is likely that on-street parking could be removed. In this case, the needed 120 foot right-of-way could be reduced to something on the order of 104 feet.

The suggested concept for this section allows for additional capacity between MT 35 and the grocery store location at the intersection of 4th Avenue East and also provides non-motorized amenities in this area. A raised landscaped median can be provided to improve aesthetics and to create a gateway. At the intersection of 4th Avenue East, either conventional traffic signal control, or a modern roundabout, could be considered for implementation. With this concept, a lane "drop" will occur at 4th Avenue East (in the westbound direction), and a lane "pick-up" will occur at the same location in the eastbound direction. Additionally, the intersection of 7th Avenue East should be considered for traffic signalization as volumes develop and warrants are met because that roadway will realize increased usage over time. Intersection concepts in this segment include:

- MT 35 – Traffic signalization to remain as-is
- 7th Avenue East – Traffic signalization when and if warrants are met
- 4th Avenue East – Traffic signalization **or** modern roundabout

8.6.2 Concept Between 4th Avenue East and 5th Street East

This segment of the corridor travels along the lake front and provides high scenic value and needs for multi-modal travel. There are significant constraints to implementing a "five-lane" section in this area, and it is desirable to slow traffic down and provide alternative travel mode opportunities. The suggested corridor concept in this area is the "Three Lane Section With Urban Amenities" (see Figure 8-1) typical section that consists of a travel lane in each direction, a raised median (or flush median) in the center, on-street bicycle lanes each side, on-street parking lanes on each side, and a narrow boulevard and concrete sidewalk. This section can fit within a 90 foot right-of-way and still provides all of the amenities that the community originally discussed during the development of the *US 93 Polson Corridor Study*.

The potential would exist to remove on-street parking on at least one side of the road prism to reduce the necessary right-of-way needed; however, one of the main complaints heard from the community was a lack of on-street parking along the lakefront. This section would provide pedestrian refuges when crossing the road (via the raised median); and in areas where access is needed, a flush median could be utilized.

At the intersection of 5th Street East, an improved "gateway" intersection is envisioned that could remain a traffic signal, or be a modern roundabout. This gateway intersection could tie into the main access to the KwaTaqNuk facility, and would serve to demarcate the transition from the vibrant downtown area to the scenic lake front.

This section, especially with roundabouts on the ends (i.e. 5th Street East and 4th Avenue East), would serve the community many years until traffic volumes elevate such that an alternate route is pursued again by the local community. Intersection concepts in this segment include:

- 4th Avenue East – Traffic signalization **or** modern roundabout
- 5th Street East – Traffic signalization **or** modern roundabout

8.6.3 Concept Between 5th Street East and Main Street

This segment of the corridor is located in the downtown core. It already provides urban features such as curb and gutter, left turn lanes, on-street parking, and sidewalks. It is recommended that the "Three Lane With Urban Amenities" (see Figure 8-1) typical section be extend to Main Street, with the exception of removing on-street parking to provide room for the on-street bicycle lanes. The on-street parking appears to be minimally used during most times (except for major events), and the necessary 90 foot right-of-way width may not be attainable near Main Street, 1st Street East, and 2nd Street East. Accordingly, the section east of the KwaTaqNuk should be explored without the on-street parking.

Again, either conventional traffic signal control, or modern roundabouts, should be considered at both Main Street and 1st Street East. Intersection concepts in this segment include:

- 5th Street East – Traffic signalization **or** modern roundabout
- 1st Street East – Traffic signalization **or** modern roundabout
- Main Street – Traffic signalization **or** modern roundabout

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Chapter 9 Financial Analysis

The Montana Department of Transportation (MDT) administers a number of programs that are funded from state and federal sources. In most cases, the funds are administered by the MDT at the State level, and MDT staff work with local governments in the planning and design of projects, whatever the specific funding source.

Each year, in accordance with 60-2-127, Montana Code Annotated (MCA) 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 below:

9.1 Federal Funding Sources

The following summary of major Federal transportation funding categories received by the State through Continuing Resolutions of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)-enacted on August 10, 2005, includes state developed implementation/sub-programs. In order to receive project funding under these programs, projects must be included in the State Transportation Improvement Program (STIP).

9.1.1 National Highway System (NHS)

The purpose of the National Highway System (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 National Highway System 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

NHS funds are Federally apportioned to Montana and allocated by the Montana Transportation Commission based on system performance. The Federal share for NHS projects is 86.58%, and the State is responsible for the remaining 13.42%. The State share is funded through the Highway State Special Revenue Account.

Eligibility and Planning Considerations

Activities eligible for the National Highway System funding include construction, reconstruction, resurfacing, restoration, and rehabilitation of segments of the NHS. Operational improvements as well as highway safety improvements are also eligible. Other miscellaneous activities that may qualify for NHS funding include research, planning, carpool projects, bikeways, and pedestrian walkways. The Transportation Commission establishes priorities for the use of National Highway System funds, and projects are let through a competitive bidding process. US 93 is on the National Highway System.

9.1.2 Surface Transportation Program (STP)

Surface Transportation Program (STP) funds are Federally apportioned to Montana and are allocated by the Montana Transportation Commission to various programs that include the Surface Transportation Program Primary Highways (STPP), Surface Transportation Program Secondary Highways (STPS), and the Surface Transportation Program Urban Highways (STPU).

Primary Highway System (STPP)*

Both the Federal and the 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 the MDT as either principal or minor arterials and that have been selected by the Transportation Commission to be placed on the Primary Highway System [MCA 60-2-125(3)].

Allocations and Matching Requirements

Primary funds are distributed statewide [MCA 60-3-205] to each of five financial districts, including the Missoula District (which includes the Polson area). The Commission distributes STPP funding based on system performance. Of the total received, 86.58% is Federal, and 13.42% is State funds from the Highway State Special Revenue Account.

Eligibility and Planning Considerations

Eligible activities include construction, reconstruction, rehabilitation, resurfacing, restoration, and operational improvements. The Transportation Commission establishes priorities for the use of Primary funds, and projects are let through a competitive bidding process. There is one Primary highway within the Polson Area Transportation Plan boundary: Montana Highway 35.

*State funding programs developed to distribute Federal funding within Montana

Secondary Highway System (STPS)*

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 highways have been functionally classified by the MDT as either rural minor arterials or rural major collectors and that have been selected by the Montana Transportation Commission in cooperation with the boards of county commissioners, to be placed on the secondary highway system [MCA 60-2-125(4)].

Allocations and Matching Requirements

Secondary funds are distributed statewide (MCA 60-3-206) to each of five financial districts, including the Missoula District, 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. Of the total received 86.58% is Federal, and 13.42 % is non-federal match. Normally, the match on these funds is from the Highway State Special Revenue Account.

Eligibility and Planning Considerations

Eligible activities for the use of Secondary funds fall under three major types of improvements: Reconstruction, Rehabilitation, and Pavement Preservation. The Reconstruction and Rehabilitation categories are allocated a minimum of 65% of the program funds with the remaining 35% dedicated to Pavement Preservation. Secondary funds can also be used for any project that is eligible for STP under Title 23, U.S.C.

MDT and county commissions determine Secondary capital construction priorities for each district with final project approval by the Transportation Commission. By state law the individual counties in a district and the state vote on Secondary funding priorities presented to the Commission. The Counties and MDT take the input from citizens, from small cities, and from tribal governments during the annual priorities process. Projects are let through a competitive bidding process.

There is one Secondary highway within the Polson Area Transportation Plan boundary: Secondary 354, which is comprised of Main Street, 7th Ave W and Kerr Dam Road.

*State funding programs developed to distribute Federal funding within Montana

*Community Transportation Enhancement Program (CTEP)**

Federal law requires that at least 10% of STP funds must be spent on transportation enhancement projects. The Montana Transportation Commission created the Community Transportation Enhancement Program in cooperation with the Montana Association of Counties (MACO) and the League of Cities and Towns to comply with this Federal requirement.

Allocations and Matching Requirements

CTEP is a unique program that distributes funding to local and tribal governments based on a population formula and that provides project selection authority to local and tribal governments. The Transportation Commission provides final approval to CTEP projects within the State's right-of-way. The Federal share for CTEP projects is 86.58%, and the Local and tribal governments are responsible for the remaining 13.42%.

Eligibility and Planning Considerations

Eligible CTEP categories include:

- Pedestrian and bicycle facilities;
- Historic preservation;
- Acquisition of scenic easements and historic or scenic sites;
- Archeological planning and research;
- Mitigation of water pollution due to highway runoff or reduce vehicle-caused;
- Wildlife mortality while maintaining habitat connectivity;

- Scenic or historic highway programs including provisions of tourist and welcome center facilities;
- Landscaping and other scenic beautification;
- Preservation of abandoned railway corridors (including the conversion and use for bicycle or pedestrian trails);
- Control and removal of outdoor advertising;
- Establishment of transportation museums; and
- Provisions of safety and educational activities for pedestrians and bicyclists.

Projects addressing these categories and that are linked to the transportation system by proximity, function, or impact, and where required, meet the “historic” criteria, may be eligible for enhancement funding.

Projects must be submitted by the local government to the MDT, even when the project has been developed by another organization or interest group. Project proposals must include evidence of public involvement in identifying and ranking of enhancement projects. Local governments are encouraged to use their planning boards (where they exist) to facilitate community participation or to develop a special enhancement committee. The MDT staff reviews project proposals for completeness and eligibility and then submits them to the Transportation Commission and the federal Highway Administration for approval.

Although the City of Polson currently does not have a balance of CTEP funds, its estimated annual (2011) allocation is approximately $20,000 (Federal). Lake County is allocated approximately $100,000 annually (Federal) and currently has a balance of $233,900 for this program. The balances represent funds not obligated towards a selected project.

*State funding programs developed to distribute Federal funding within Montana

9.1.3 Highway Safety Improvement Program (HSIP)

Allocations and Matching Requirements

HSIP is a new core funding program established by SAFETEA-LU. HSIP funds are Federally apportioned to Montana and allocated to safety improvement projects identified in the strategic highway safety improvement plan by the Commission. Projects described in the State strategic highway safety plan must correct or improve a hazardous road location or feature or must address a highway safety problem. 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%, and the State is responsible for 10%.

Eligibility and Planning Considerations

There are two programs that receive HSIP funding: the Highway – Railway Crossing Program, which is not applicable to the Polson Area Transportation Plan, and the High Risk Rural Roads Program.

High Risk Rural Roads Program (HRRR)

Funds are set aside from the Highway Safety Improvement Program funds apportioned to Montana for construction and operational improvements on high-risk rural roads. These funds are allocated to HRRRP projects by the Commission. If Montana certifies that it has met all of the needs on high risk rural roads, these set-aside funds may then be used on any safety improvement project under the HSIP. Montana's set-aside requirement for HRRRP is approximately $700,000 per year.

9.1.4 Highway Bridge Replacement and Rehabilitation Program (HBRRP)

Allocations and Matching Requirements

HBRRP funds are Federally apportioned to Montana and allocated to two programs by the Montana Transportation Commission. In general, projects are funded with 86.58% Federal, and the State is responsible for the remaining 13.42%. The State share is funded through the Highway State Special Revenue Account. The Montana Transportation Commission approves projects which are then let to contract through a competitive bidding process.

Eligibility and Planning Considerations for the two programs are:

On-System Bridge Replacement and Rehabilitation Program

The On-System Bridge Program receives 65% of the Federal HBRRP funds. Projects eligible for funding under the On-System Bridge Program include all highway bridges on the State system. The bridges are eligible for rehabilitation or replacement. In addition, painting and seismic retrofitting are also eligible under this program. MDT's Bridge Bureau assigns a priority for replacement or rehabilitation of structurally deficient and functionally obsolete structures based upon sufficiency ratings assigned to each bridge. A structurally deficient bridge is eligible for rehabilitating or replacement; a functionally obsolete bridge is eligible only for rehabilitation; and a bridge rated as sufficient is not eligible for funding under this program.

Off-System Bridge Replacement and Rehabilitation Program

The Off-System Bridge Program receives 35% of the Federal HBRRP funds. Projects eligible for funding under the Off-System Bridge Program include all highway bridges not on the State system. Procedures for selecting bridges for inclusion into this program are based on a ranking system that weighs various elements of a structure's condition and considers local priorities. MDT Bridge Bureau personnel conduct a field inventory of off-system bridges on a two-year cycle. The field inventory provides information used to calculate the Sufficiency Rating (SR).

9.1.5 Congestion Mitigation & Air Quality Improvement Program (CMAQ)

Federal funds available under this program are used to finance transportation projects and programs to help improve air quality and to meet the requirements of the Clean Air Act. Montana's air pollution problems are attributed to carbon monoxide (CO) and particulate matter (PM^{10} and $PM^{2.5}$).

Allocations and Matching Requirements

CMAQ funds are Federally apportioned to Montana and are allocated to various eligible programs both by formula and by the Transportation Commission. As a minimum apportionment state a Federally required distribution of CMAQ funds goes to projects in Missoula since it is Montana's only designated and classified air quality non-attainment area. The remaining, non-formula funds, referred to as "flexible CMAQ" are directed through various state programs to areas of the state with emerging air quality issues. The Transportation Commission approves and awards both formula and non-formula projects on MDT right-of-way. Infrastructure and capital equipment projects are let through a competitive bidding process. Of the total funding received, 86.58% is Federal, and 13.42% is non-federal match provided by the state for projects on state highways and local governments for local projects.

Eligibility and Planning Considerations

In general, eligible activities include transit improvements, traffic signal synchronization, bicycle pedestrian projects, intersection improvements, travel demand management strategies, traffic flow improvements, 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 FHWA.

*Montana Air & Congestion Initiative (MACI)–Discretionary Program (flexible)**

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 on the basis of 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. Polson is a designated by EPA as a PM 10 non-attainment area and is therefore eligible for funding through this program

*State funding programs developed to distribute Federal funding within Montana

9.1.6 Transportation & Community System Preservation Discretionary Program (TCSP)

This program is funded by the Federal Highway Administration (FHWA) to provide discretionary grants to develop strategic transportation plans for local governments and communities. The goal of the program is to promote livable neighborhoods. Grants may be used to improve the safety and efficiency of the transportation system; reduce adverse environmental impacts caused by transportation; and to encourage economic development through access to jobs, services, and centers of trade. This program is often used to fund capital expenditures. The TCSP Program federal share is 80% or subject to the sliding scale rate in accordance with 23 U.S.C. 120(b).

The recent trend for projects funded through federal discretionary programs such as this has been U.S. Department of Transportation (USDOT) and FHWA funding projects consistent with the federal Congestive Initiative to fight traffic gridlock. Therefore, recent years have seen funding directed to large urbanized communities in a limited number of urban-type states. If this trend continues, it may be difficult for small Montana communities to compete for these types of funds.

9.1.7 Recreational Trails Program

The Recreational Trails Program (RTP) is a federal-aid assistance program to help the states provide and maintain recreational trails for both motorized and non-motorized recreational trail uses. Funds are available to develop, construct, maintain, and rehabilitate trails and trail facilities. Trail uses include hiking, bicycling, wheel chairs, in-line skating, equestrian, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, off-road four-wheel driving, or other off-road motorized vehicles.

Each state develops its own procedures to solicit projects from project sponsors and to select projects for funding in response to recreational trail needs within the state. The RTP encourages trail enthusiasts to work together to provide a wide variety of recreational trail opportunities.

The Montana Department of Fish, Wildlife & Parks (FWP) administers the program. A State Trails Advisory Committee (STAC) advises FWP on the administration and expenditure of funds allocated to the state. The committee is composed of ten trail recreationists and five advisors, four representing government agencies including USDA Forest Service, Bureau of Land Management, Montana Department of Transportation, and Federal Highway Administration. FWP relies on the 2001 State Trails Plan and input from the STAC to identify recreational trail needs and to set priorities for funding. Application for RTP funds can be obtained from the FWP web page at http://fwp.mt.gov/recreation/grants/rtp/default.html or by contacting the Montana Fish, Wildlife & Parks, Trails Program Office, PO Box 200701, Helena, MT 59620-0701.

9.1.8 Safe Routes To School (SRTS)

Allocations and Matching Requirements

Safe Routes To School funds are Federally apportioned to Montana for programs to develop and promote a safe environment that will encourage children to walk and bicycle to school. Montana is a minimum apportionment state and will receive $1-million per year, subject to the obligation limitation. The Federal share of this program is 100%.

Eligibility and Planning Considerations

Eligible activities for the use of SRTS funds fall under two major categories with 70% directed to infrastructure improvements, and the remaining 30% for behavioral (education) programs. Funding may be used within a two mile radius of K-8 schools for improvements or programs that make it safer for kids to walk or bike to school. SRTS is a reimbursable grant program, and project selection is done through an annual application process. Eligible applicants for infrastructure improvements include local governments and school districts. Eligible applicants for behavioral programs include state, local and regional agencies, school districts, private schools, and non-profit organizations. Recipients of the funds will front the cost of the project and will be reimbursed during the course of the project. For grant cycle information visit: http://www.mdt.mt.gov/pubinvolve/saferoutes/

9.1.9 Federal Lands Highway Program (FLHP)

FLHP is a coordinated Federal program comprised of several funding categories: Public Lands Highways – Discretionary Program and Forest Highways Program, Parkways and Park Roads, Indian Reservation Roads, and Refuge Roads. The only category applicable to the Polson Area Transportation Plan is Indian Reservation Roads.

Indian Reservation Roads (IRR)

IRR funding is eligible for multiple activities including transportation planning and projects on roads or highways designated as Indian Reservation Roads. Funds are distributed to Bureau of Indian Affairs (BIA) area offices in accordance with a Federal formula and are then distributed to projects on individual reservations. Projects are usually constructed by BIA forces. There are no matching fund requirements.

Any public road within or leading to a reservation is eligible for the Indian Reservation Road funding. In practice, IRR funds are only rarely expended on state designated routes.

9.1.10 Congressionally Directed Funds

Congressionally Directed funds may be received through either highway program authorization or through annual appropriations processes. These funds are generally described as “demonstration” or “earmark” funds. Receiving Congressionally Directed funds has been a viable mechanism for local governments to secure federal funding for projects. If a local, sponsored project receives this type of funding, MDT will administer the funds in accordance with the Montanan Transportation commission Policy #5 – “Policy resolution regarding Congressionally directed funding: including Demonstration Projects, High Priority Projects, and Project Earmarks.”

9.1.11 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. The new highway bill SAFETEA-LU brought new programs for transit “New Freedoms and Job Access Reverse Commute” (JARC). 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 that also includes human service providers and participation from the public. The following programs may be an eligible source of funding for Polson area transit needs.

Discretionary Grants (Section 5309)

Section 5309 provides capital assistance for fixed guide-way modernization, construction and extension of new fixed guide-way systems, bus and bus-related equipment and construction projects. Eligible applicants for these funds are state and local public bodies.

Capital Assistance for the Elderly and Persons with Disabilities (Section 5310)

The Section 5310 Program provides capital assistance to providers that serve elderly persons and persons with disabilities. Eligible recipients must have a locally developed coordination plan. Federal funds provide 86.58% of the capital costs for purchase of buses, vans, wheelchair lifts, communication, and computer equipment. The remaining 13.42% is provided by the local recipient. Application for funding is made on an annual basis.

Financial Assistance for Rural General Public Providers (Section 5311)

The purpose of the Section 5311 Program is to assist in the maintenance, development, improvement, and use of public transportation systems in rural areas (areas under 50,000 populations). Eligible recipients are local public bodies, incorporated cities, towns, counties, private non-profit organizations, Indian Tribes, and operators of public transportation services. A locally developed coordinated plan is needed to receive funding assistance. Funding is available for operating and capital assistance. Federal funds pay for 86.58% of capital costs, 54.11% for operating costs, 70% for administrative costs, and 80% for maintenance costs. The remainder, or required match, (13.42% for capital, 45.89% for operating, 30% for administrative, and 20% maintenance) is provided by the local recipient. Application for funding is made on an annual basis.

New Freedoms Program (5317)

The purpose of the New Freedom Program is to provide improved public transportation services and alternatives to public transportation, for people with disabilities, beyond those required by the Americans with Disabilities Act of 1990 (ADA). This program will provide additional tools to overcome barriers facing Americans with disabilities who want to participate fully in society. Funds may be used for capital expenses, with Federal funds provided for up to 80% of the cost of the project, or operating expenses with Federal funds provided for up to 50% of the cost of the project. All projects funded must be derived from a locally developed, coordinated public transit-human services transportation plan (a "coordinated plan").

Job Access Reverse Commute (JARC) (5316)

The purpose of this grant program is to develop transportation services designed to transport welfare recipients and low income individuals to and from jobs and to develop transportation services for residents of urban centers and rural and suburban areas to suburban employment opportunities. Funds may be used for capital expenses, with Federal funds provided for up to 80 % of the cost of the project, and operating expenses with Federal funds provided for up to 50 % of the cost of the project.

9.2 State Funding Sources

9.2.1 State Funded Construction (SFC)

The State Funded Construction Program is limited and is funded entirely with state funds from the Highway State Special Revenue Account. State funds are primarily utilized to match Federal funds. Funds are also used for projects that are not eligible for Federal funds.

9.2.2 TransADE

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

Allocations and Matching Requirements

This is a state funding program within Montana statute. State funds pay 54.11% of the operating costs and the remaining 70% of Administrative costs and 80% of the Maintenance cost. The remaining 45.89%, 30%, and 20% respectively must come from the local recipient.

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.

9.3 Local Funding Sources

9.3.1 State Fuel Tax – City and County

Under 15-70-101, MCA, Montana assesses a tax of $.27 per gallon on gasoline and diesel fuel used for transportation purposes. Each incorporated city and town receives a portion of the total tax funds allocated to cities and towns based on:

1. The ratio of the population within each city and town to the total population in all cities and towns in the State;
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 System.

Each county receives a percentage of the total tax funds allocated to counties based on:

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.

All fuel tax funds allocated to the city and county governments must be used for the construction, reconstruction, maintenance, and repair of rural roads or city streets and alleys. The funds may also be used for the share that the city or county might otherwise expend for proportionate matching of Federal funds allocated for the construction of roads or streets on the Primary, Secondary, or Urban Systems. Priorities for these funds are established by the cities and counties receiving them.

For State Fiscal Year 2011, Polson/Lake County's combined allocation was approximately $284,900 (Polson - $102,284 and Lake County - $182,616) in state fuel tax funds. The amount varies annually, but the current level provides a reasonable base for projection throughout the planning period.

9.3.2 General Obligation Bond Funding

If approved by the city's registered electors as required by State statute at 7-7-4221 MCA, General Obligation bonds can be sold, with the proceeds being expended on transportation system improvements. However, the law limits the total bonding capacity of municipalities like the City of Polson. Since these funds are the most general, i.e. can be spent on the widest range of projects and needs of the community, use of the city's bonding capacity for transportation improvements should be weighed against those other, diverse community needs that arise from time to time.

The advantage of this funding method is that when the bond is retired, the obligation of the taxpaying public is also retired. Both the present property tax situation in Montana and recent adverse citizen responses to proposed tax increases by local government would suggest that the public may not be receptive to the use of this funding alternative.

9.3.3 City of Polson Street Maintenance District Funding

In accordance with MCA 7-12-4401, et seq., Polson has created a citywide Street Maintenance District to fund maintenance of road improvements through an annual assessment against properties within the district. As defined in the referenced statutes, the term "maintenance" includes but is not limited to operation, maintenance and repair of traffic signal systems, repair of traffic signs, and placement and maintenance of pavement markings.

9.3.4 Special/Rural Improvement Districts (SID/RID)

An improvement district made up of properties specially benefitted by an improvement can be created and bonds sold to fund design and construction of the improvement project(s). These funds are often used to leverage State and federal funds to make improvements that not only benefit the district properties, but the community at-large.

9.3.5 Urban Transportation Districts

Montana Codes Annotated 7-14-201, et seq., authorizes the establishment of urban transportation districts to "…supply transportation services and facilities to district residents and other persons." If a district was formed by vote of the affected property owners, it would be governed by a transportation board which could levy up to twelve (12) mills for district expenses, exclusive of bond repayment. The maximum amount of bonded indebtedness outstanding at any time shall not exceed 28% of the taxable value of the properties within the district.

9.3.6 City General Fund

There are funds set aside in the city General Fund under highway, streets, and roadways. In the past, these funds have been used as grant matching funds and also used to fund street related drainage facility installation projects.

9.3.7 Tax Increment Financing (TIF)

The funds generated from a TIF district could be used to finance projects which include street and parking improvements, tree planting, installation of new bike racks, trash containers and benches, and other streetscape beautification projects within a defined TIF district.

9.3.8 Developer Exactions

Road construction or roadway improvements are performed by developers as a condition of approval for their development project. Improvements are typically limited to the local roads within, and the road system adjacent to, the proposed development.

9.3.9 County Road Fund

The County Road Fund provides for the construction and operation of all county roadways outside the corporate limits of cities and towns in Lake County. Revenue for this fund comes from intergovernmental transfers (i.e., State gas tax apportionment and motor vehicle taxes), and a mill levy assessed against county residents living outside cities and towns. The county mill levy has a ceiling limit of 15 mills.

County Road Fund monies are primarily used for operating existing facilities allocated for new roadway construction. It should be noted that only a small percentage of the total miles on the county roadway system are located in the study area. Projects eligible for financing through this fund will be competing for available revenues on a county-wide basis.

9.3.10 County Bridge Fund

The Bridge Fund provides financing for engineering services, capital outlays, and routine operations necessary maintenance for bridges on all off system and Secondary routes within the county. These monies are generated through intergovernmental fund transfers (i.e., vehicle licenses and fees), and a county wide mill levy. There is a taxable limit of four mills for this fund.

Chapter 10 References

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Appendix A
Public Comment Matrix (8/26/2011 to 9/9/2011)

The matrix below contains comments received during the *Draft Transportation Plan Document* comment period (8/26/2011 to 9/9/2011) and includes a response when clarification is required.

Date of Comment (sender)	Comment Identifier	Response
September 9, 2011 (Gil Mangels)	**From:** Miracle of America Museum [mailto:museum@cyberport.net] **Sent:** Friday, September 09, 2011 3:19 PM **To:** Ludlow, Sheila **Subject:** Polson Comments re: Polson area I feel a street through from Cougar Ridge, (across from Memory Lane) and Hwy 93 junction, and carry it through to one of the avenues (between 7th and 16th) would alleviate a lot of the downtown congestion. Draw areas include both the Middle and High schools, Hospital, Rest homes, WBC Woodys and Western Bee customers and workers. Some inter city dwellers would also access the aquatics center via this road, totally avoiding HW 93. Polson dreams of itself as a resort community, but most tourists do not see it as such. On a survey we did, a majority of people said if there was a bypass they wouldn't give Polson a second thought. It is often bypassed on the East shore now by folks bent on seeing Glacier Park. While some project a future need for a bypass, the current trend of government is to close down renewable resources like timber. Larger vehicles are frowned upon and there is a push on for smaller vehicles. Can we assume then that there will be more traffic? Your studies show that there has been less. Montana is unfriendly enough to business which is sending our own children away for gainful employment. To violate virgin land and riverbed by a bypass to alleviate the summer traffic problem seems totally wasteful. A bypass will definitely have a negative financial impact on	Thank you for your comments. Growth projections were planned for the community of Polson as described in Chapter 3 of the report.

	this area. City owned day parking would be a better investment of funds. There are vacant lots and waste areas within view of hwy 93 and within easy walking distance, or at least taxi distance of downtown, which should be investigated for parking areas. As the founder of the Miracle of America Museum, we are acutely aware of the importance of easy traffic movement for the tourist. We traveled around the nation, studying locations, effects of bypasses, signage, parking, etc. We interact with our visitors, ask their opinion and visit personally with probably more than most of the businesses in the area. Sincerely, Gil Mangels, 406-883-6804 or 6264	