Transportation System Plan

Ashland Transportation System Plan

Ashland, Oregon

Draft

September 2012

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Ashland, Oregon

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Section 1
Existing Transportation System Inventory

EXISTING TRANSPORTATION SYSTEM SUMMARY

This section provides an inventory of the existing transportation system (as of 2010), including elements that influence the transportation system such as land use, population, and environmental constraints. The purpose of this section is to document the baseline existing transportation system within the Transportation System Plan (TSP) Project Area. The information presented in this section was obtained from a number of sources, including the 1998 TSP, the City of Ashland Comprehensive Plan, and the partial update to the TSP performed in 2007. The project team also used Geographic Information System (GIS) files, other data file formats (e.g., excel, PDF), and studies provided by the City of Ashland, Rogue Valley Council of Governments (RVCOG), Rogue Valley Metropolitan Planning Organization (RVMPO), Rogue Valley Transit District (RVTD), Jackson County, and the Oregon Department of Transportation (ODOT) to assemble the inventory and also conducted limited field data collection and verification.

The following elements are inventoried below:

- Land Uses and Population;
- Street System;
- Public Transportation System;
- Rail System;
- Bicycle and Pedestrian Systems;
- Air Transportation System;
- Pipeline System; and
- Water Transportation System.

The majority of the inventory is presented in figures and tabular form with supplemental text provided as needed to further explain the information illustrated.

LAND USES AND POPULATION INVENTORY

This section identifies the existing, planned, and potential land uses as well as environmental constraints to development. The land use and population inventory helped inform the existing and future conditions analyses; particularly, as the project team worked with the community to develop future alternative scenarios that capture the community's vision for the City of Ashland.

Existing maps produced by the City of Ashland illustrate the comprehensive plan, zoning, buildable lands, historic districts, and physical and environmental constraints including floodplain corridors, steep hillside lands, and wildfire lands. A set of these maps is contained in *Appendix A of Technical Memorandum #3: System Inventory in the Technical Appendix*.

Figure 1-1 illustrates the activity centers that are likely destinations for bicyclists, pedestrians, and other active modes of transportation (e.g., rollerblading and skateboarding). These destinations are based on current City of Ashland maps and GIS data. As part of the existing and future conditions analyses, the activity centers shown in Figure 1-1 were integrated into considerations to improve access for pedestrians, bicyclists, and other active modes of transportation. Additional activity centers, such as concentrations of commercial and employment uses, were also considered when making recommendations for enhanced transit service and active transportation improvements.

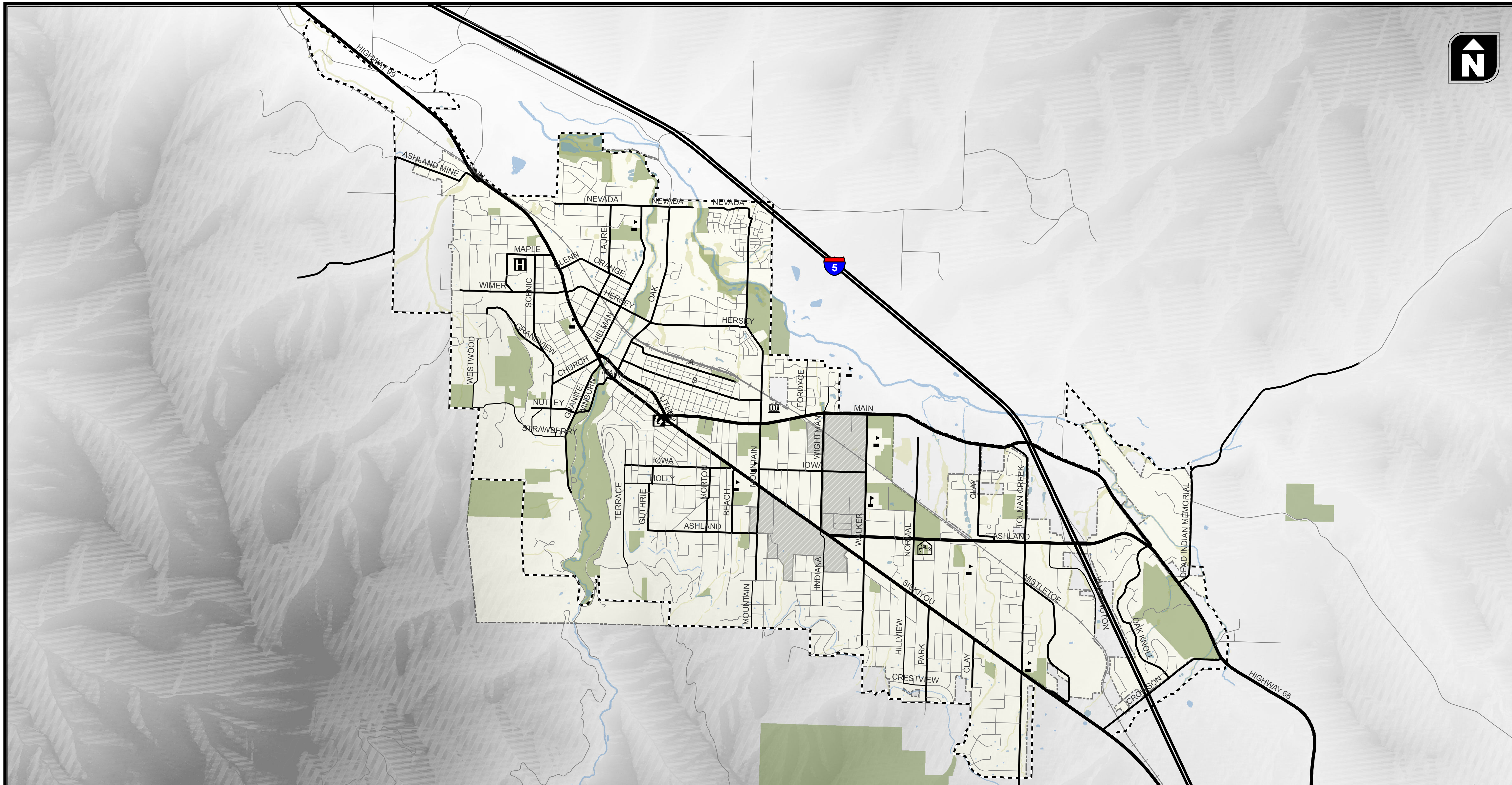
Key destinations identified include Ashland High School, Ashland Middle School, several elementary schools, Southern Oregon University, Ashland Community Hospital and the Ashland Public Library. Lithia Park is the city's largest park, but numerous neighborhood parks also generate significant bicycle and pedestrian travel. The downtown core is a significant pedestrian destination and accommodates the highest levels of pedestrian activity within the city. Exhibits 1-1 and 1-2 are examples of existing destinations in the City of Ashland. Exhibit 1-1 shows Garfield Park, a neighborhood park located off of E Main Street. Exhibit 1-2 is a picture of some of the shopping and downtown activity in Ashland.

Exhibit 1-1: Garfield Park

Exhibit 1-2: Downtown Ashland

Figure 1-2 illustrates the location, by percentage, of the minority population residing within the City of Ashland. Figure 1-3 illustrates the percent of households without access to a personal automobile. The information displayed in Figure 1-2 and Figure 1-3 is based on 2000 Census Data. One notable finding from these figures is that there are currently large concentrations of minority populations located north of Main Street and near Interstate 5 (I-5) that do not have easy walking access to fixed-route transit. Those living near the intersection of Siskiyou Boulevard and Tolman Creek Road and those living between Iowa Street and Siskiyou Boulevard, however, are within a reasonable walking distance of existing transit service.

This base information was used to evaluate public transportation, pedestrian, and bicyclist improvements and opportunities in the existing and future conditions analyses.

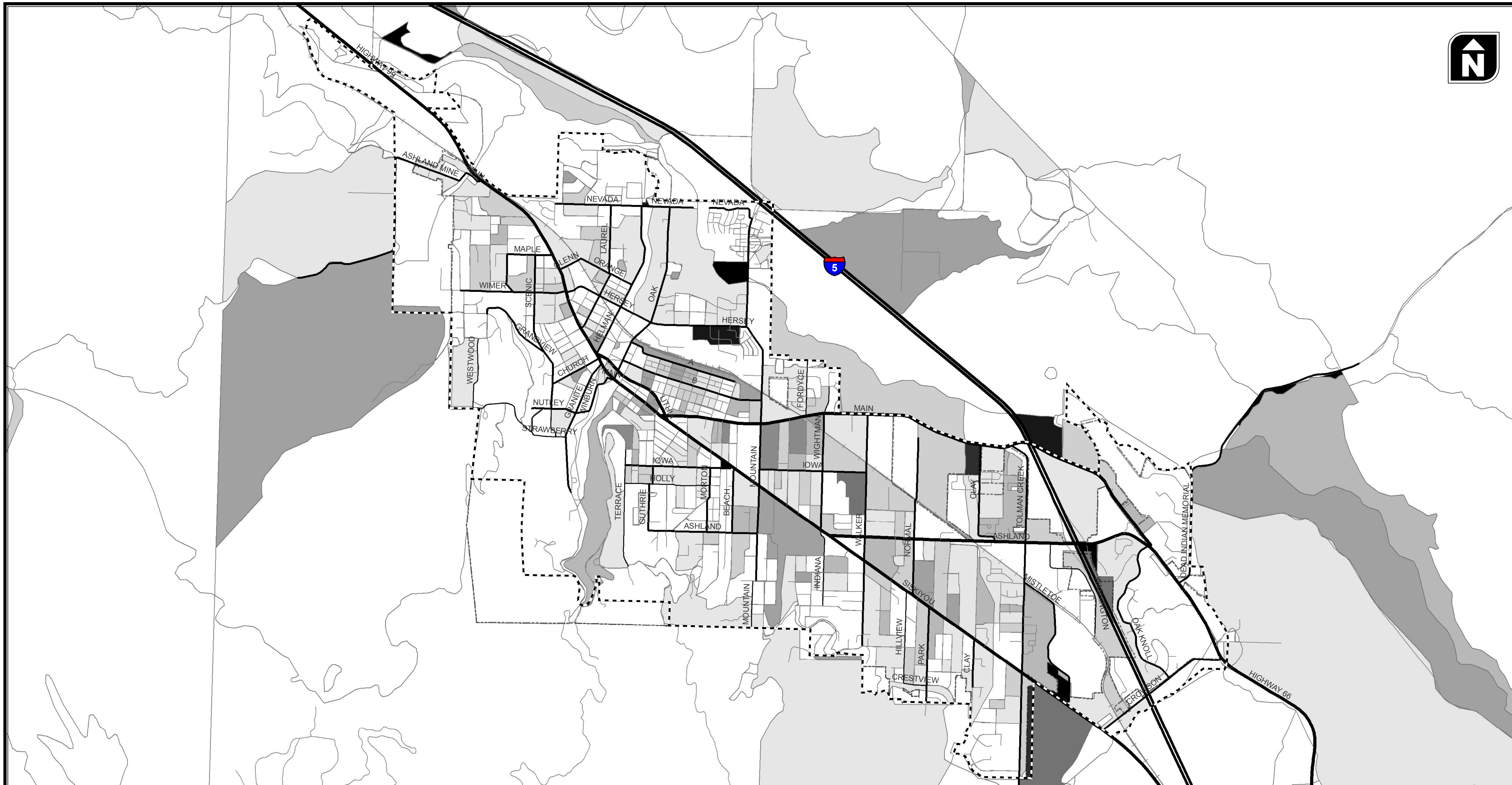


City Hall
Fire Station
Hospital
Library
Schools
SOU Campus
City Limits
City UGB

Ashland Activity Centers

Figure 1-1

H:\proj\file\10633 - City of Ashland TSP Update\gis\Tech Memo 3\Fig1_Activity Centers.mxd



0% - 5%	20% - 25%	40% - 45%	City Limits
5% - 10%	25% - 30%	45% - 50%	City UGB
10% - 15%	30% - 35%	50% - 75%	
15% - 20%	35% - 40%	75% - 100%	

Percent of Population With Minority Status by Census Block

Figure 1-2

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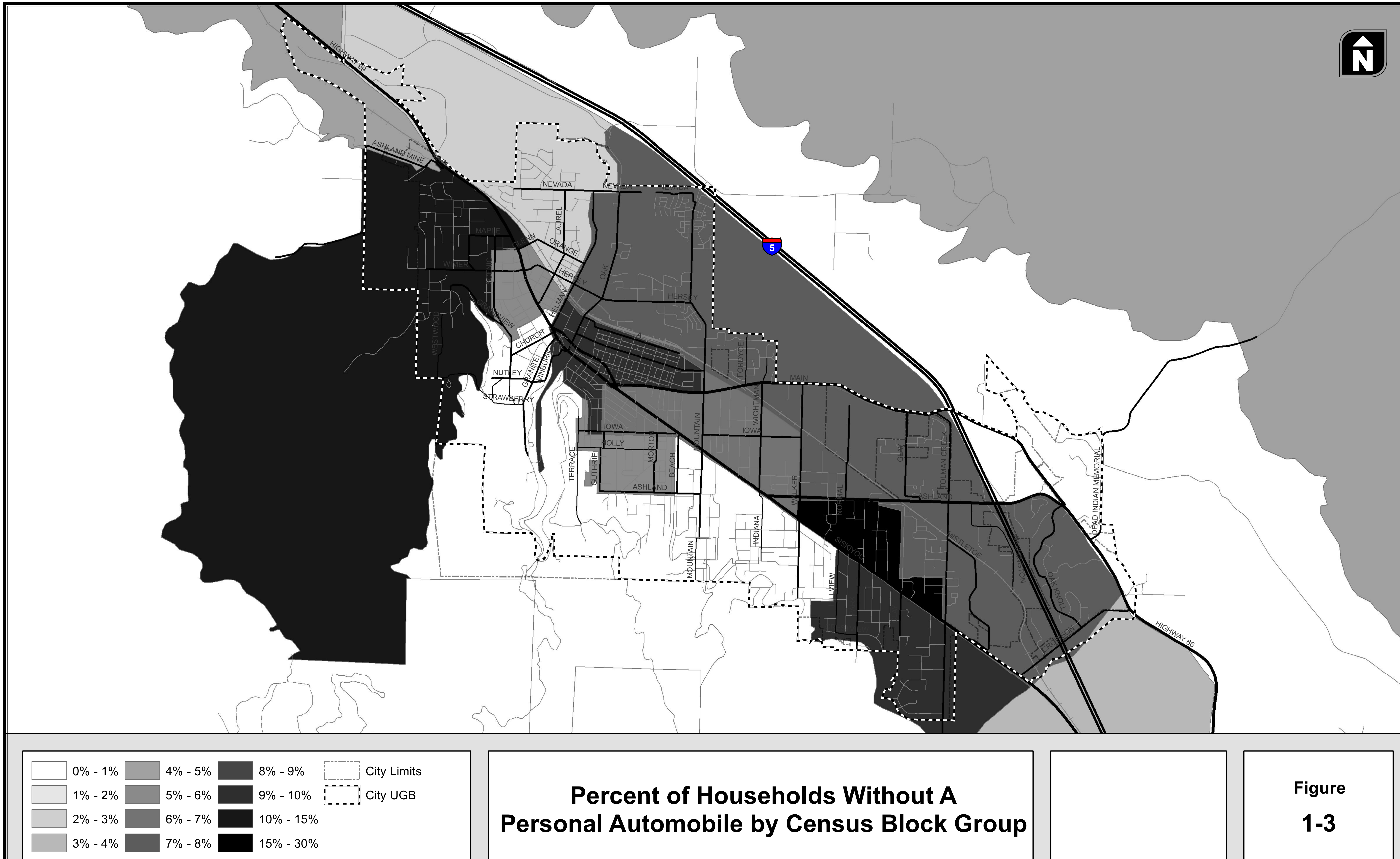
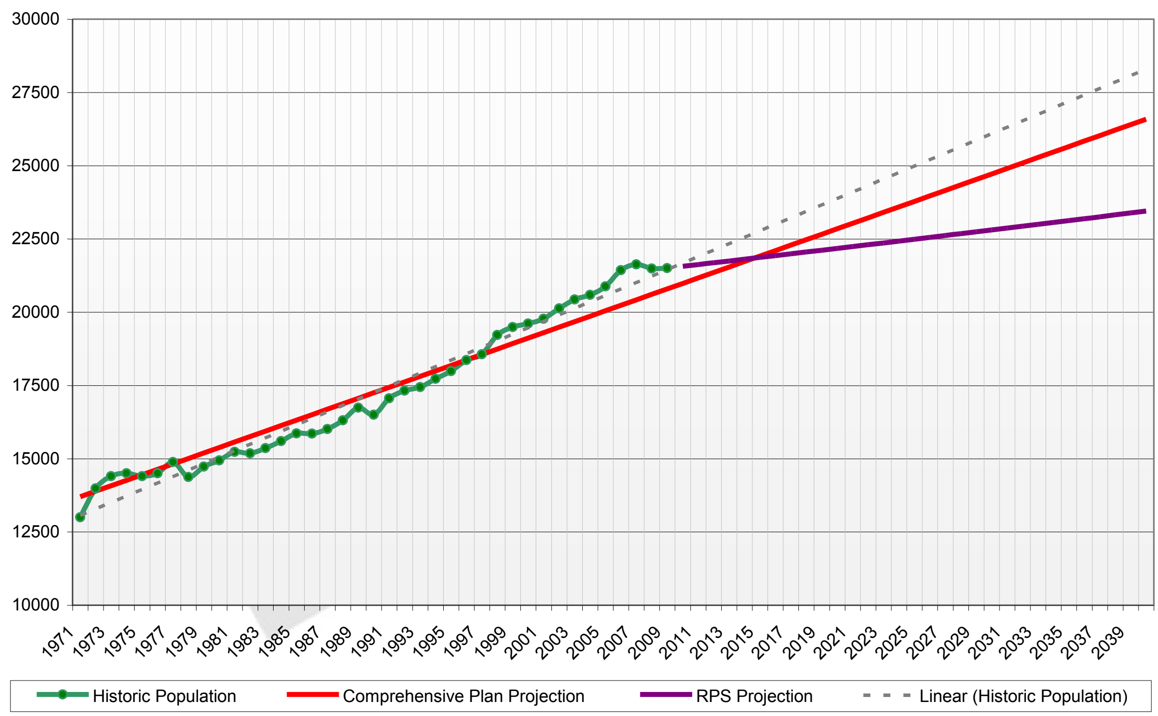


Percent of Households Without A Personal Automobile by Census Block Group

Figure 1-3

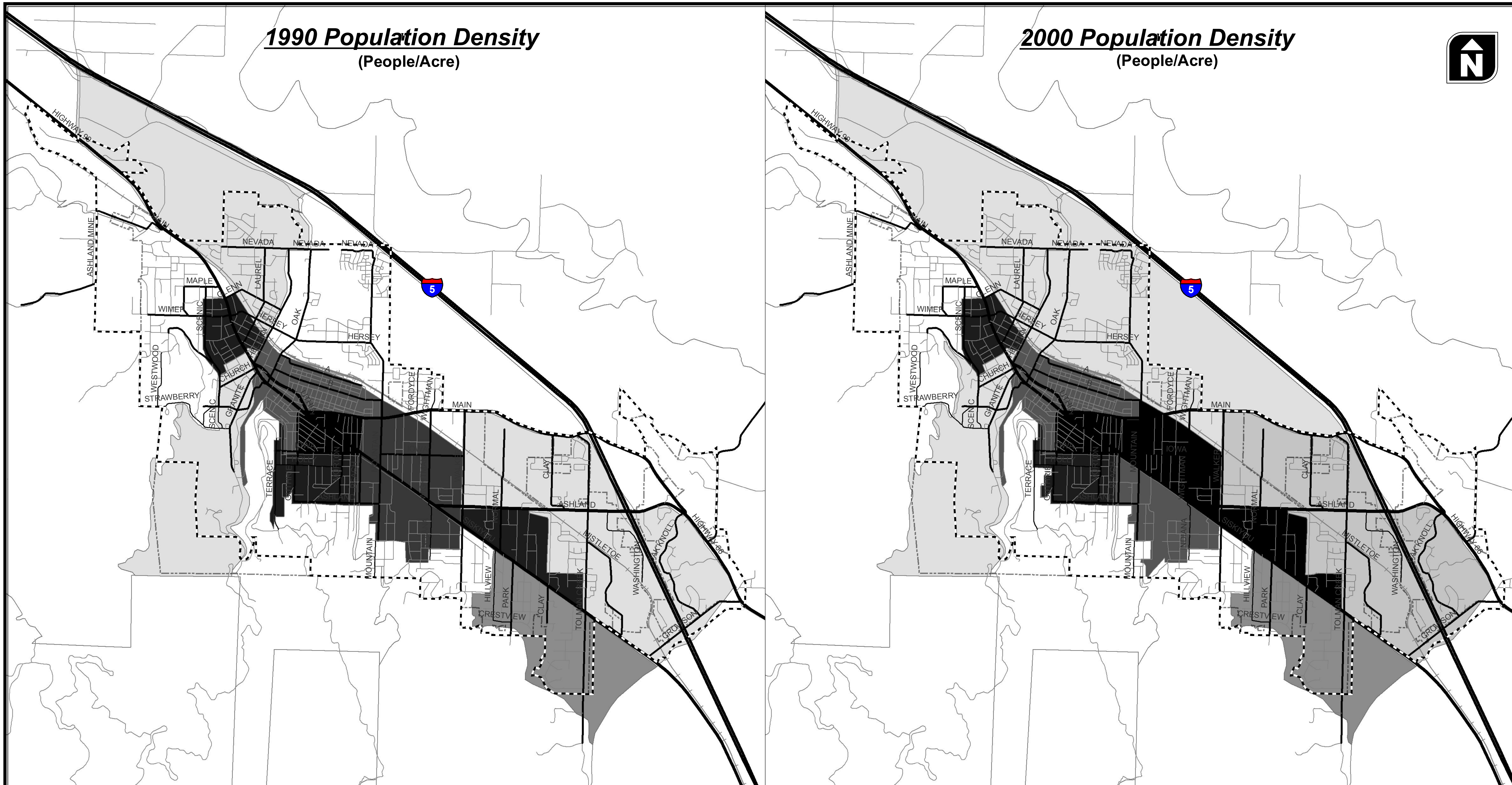
The City of Ashland's historic and projected population is shown in Exhibit 1-3. As shown, the population in 2009 was estimated to be 21,505. Based on the Comprehensive Plan, the population projection for the TSP horizon year of 2034 is 25,464. The annual population growth rate from 1971 to 2009 has averaged 1.45% per year. Historical population growth has tracked closely with population projections from the Ashland Comprehensive Plan, which assumes a higher growth rate than was assumed for Ashland by Jackson County (RPS) projections. Growth projections by the city are reflected in economic opportunities analysis work completed in 2003 and in 2007. Figure 1-4 illustrates where growth has been occurring in the City of Ashland from 1990 to 2000 using 1990 and 2000 US Census Data.

Exhibit 1-3: Historical and Projected Ashland Population



Relative to Jackson County, the age distribution of the recent increases in population indicate lower shares of youth under 20 years of age and lower shares of the typical working-age range of 25 to 64 years. Retirees over the age of 65 years in Ashland are higher than the state average but remain slightly lower that Jackson County. The Economic Opportunities Analysis of 2007, reviewed as baseline data for Technical Memorandum #1, also provides analysis of growth trends for the City of Ashland. Key findings include:

- The population of Ashland is aging and will continue to do so through an in-migration of people nearing retirement age.
- Ashland has a large population of college aged residents.
- The most robust employment growth will likely be Retail, Health Care, Social Assistance, Leisure and Hospitality.



0 - 1	4 - 5	8 - 9
1 - 2	5 - 6	9 - 10
2 - 3	6 - 7	City Limits
3 - 4	7 - 8	City UGB

Population Density by Census Block Group

Figure 1-4

H:\proj\file\10633 - City of Ashland TSP Update\gis\Tech Memo 3\Fig4_Population.mxd

Housing costs in the City of Ashland are the most expensive in Jackson County and may be a constraint on growth, if affordable work force housing is not sufficiently available.

STREET SYSTEM INVENTORY

Roadway development and construction in the City of Ashland has historically been constrained due to the steep hillside topography through the southwestern portions of the City. I-5 borders the City along its northern edge and passes through the southeastern edge of the City. In addition to I-5, two state highways, OR 99 and OR 66, pass through the City of Ashland serving as key boulevards within the urban area. A local network of avenues and neighborhood collectors distribute traffic from OR 99 and OR 66 throughout the remaining urban area.

The following set of figures illustrate the current street characteristics within the urban growth boundary including roadway classifications, roadway jurisdiction, intersection characteristics (e.g., signal locations), number of vehicle travel lanes, posted speed limits, on-street parking and other similar characteristics.

Functional Street Classifications and Jurisdictional Roadway Responsibilities

Prior to this TSP Update, the City of Ashland recognized six functional street classifications in the Transportation Element of the Ashland Comprehensive Plan. These classifications are boulevard (i.e., arterial), avenue (i.e., major collector), neighborhood collector (i.e., minor collector), neighborhood street (i.e., local street), alley, and multiuse path. The Transportation Element of the Ashland Comprehensive Plan provides the following descriptions for the street classifications:

- **Boulevard** – Provide access to major urban activity centers for pedestrians, bicyclists, transit users and motor vehicle users, and provide connections to regional traffic ways such as Interstate 5.
- **Avenue** – Provide concentrated pedestrian, bicycle, and motor vehicle access from boulevards to neighborhoods and to neighborhood activity centers.
- **Neighborhood Collector** – Distribute traffic from boulevards or avenues to neighborhood streets.
- **Neighborhood Street** – Provide access to residential and neighborhood commercial areas.
- **Alley** – A semi-public neighborhood space that provides access to the rear of property; the alley eliminates the need for front yard driveways and provides the opportunity for a more positive front yard streetscape.
- **Multiuse Path** – Off-street facilities used primarily for walking and bicycling; these paths can be relatively short connections between neighborhoods or longer paths adjacent to rivers, creeks, railroad tracks, and open space.

As part of the TSP Update, the street classifications were reviewed and many were updated to be more consistent with the existing and projected future traffic volumes and function. Figure 5-1 in Section 5 provides the updated street functional classifications.

I-5 serves as the major north-south connection to destinations beyond the Rouge Valley Region and links Ashland to Oregon's largest communities including Eugene, Salem and Portland as well as extends south to California. Three freeway interchanges provide access from City of Ashland surface streets to I-5; these interchanges are located at Exits 11, 14, and 19. Exits 11 and 14 provide access to the southern end of Ashland, while Exit 19 provides access to the northern end.

OR 99 and OR 66 serve as the primary east-west boulevards within Ashland. OR 99 provides access from I-5 in the southeastern portion of Ashland through the approximate center of the City's urban area extending beyond the northwestern edge of the City's boundary. OR 66 provides access from I-5 at Exit 14 extending west to intersect with OR 99. OR 66 also extends east beyond the southeastern edge of the City's boundary.

The remaining roadways illustrated provide access to/from OR 66 and OR 99 to the surrounding commercial, residential, recreational, employment, and industrial areas within Ashland. Key avenues in Ashland include Tolman Creek Road, Walker Avenue, Mountain Avenue, Oak Street, Helman Street, Hersey Street, Iowa Street, Wimer Street, and Grandview Drive. These avenues provide north-south and east-west connectivity within the urban boundary.

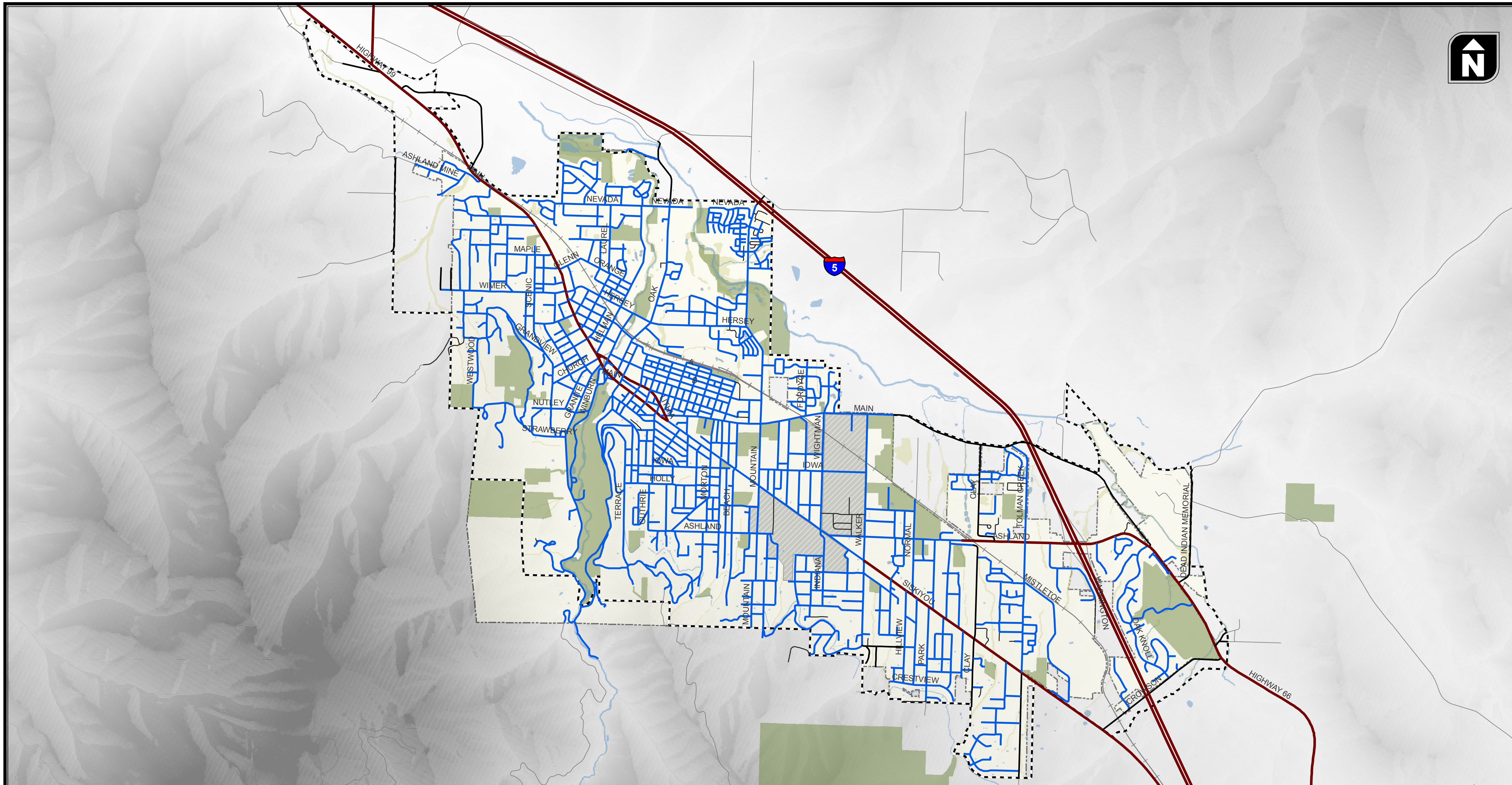
Figure 1-5 illustrates the jurisdictional responsibilities for the streets in the City of Ashland.

The City of Ashland is responsible for the majority of streets within the urban growth boundary. The exceptions are portions of OR 66 and OR 99, which fall under ODOT responsibility. Portions of OR 99 (Siskiyou Boulevard) have been designated by ODOT with Special Transportation Area (STA) and Urban Business Area (UBA) designations which allow OR 99 to deviate from typical ODOT District OR standards providing the City with additional flexibility when managing and planning their downtown urban core. These sections are located in the downtown Ashland area and on OR 99 northwest of downtown. The specific segments of OR 99 are shown in Figure 1-5. There are also five roadway segments classified as avenues that fall under Jackson County jurisdictional responsibility.

Study Intersection and Street Segment Characteristics

Figure 1-6 summarizes the intersections (and the existing traffic control) that were analyzed operationally in the existing and future conditions analyses. These study intersections are generally located where neighborhood collector facilities and higher-order roadways intersect.

Of the thirty study intersections, eighteen are stop controlled and twelve are controlled by traffic signals. The traffic operations and safety performance of these intersections are presented and discussed below. Figures 1-7 through 1-9 illustrate the roadway segment characteristics including number of lanes, posted speed limits, and type of roadway surface.



Jurisdiction Roadway Responsibilities

Figure 1-5

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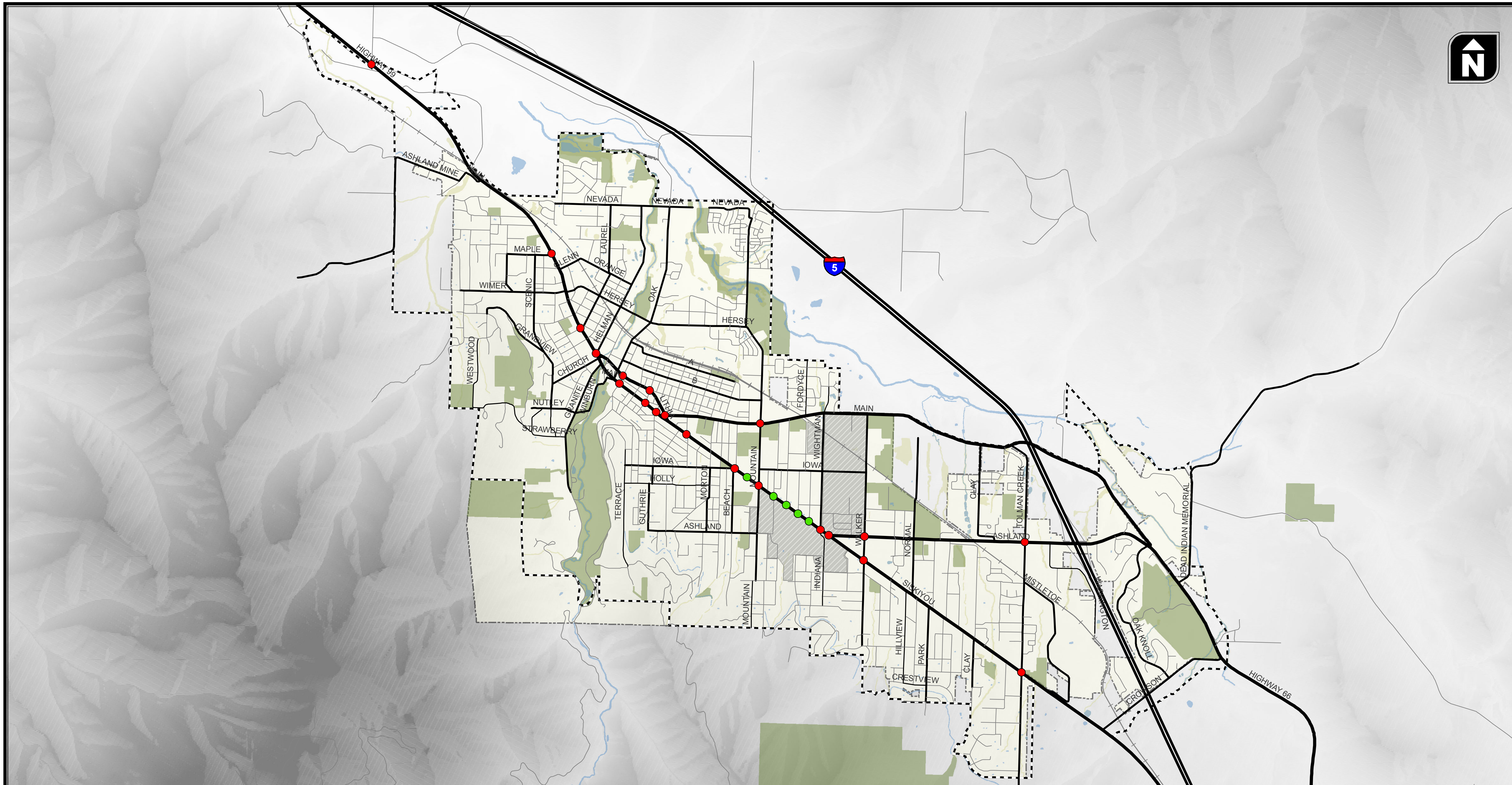

- Traffic Signal
- Pedestrian Signal (Flashing Amber Lights)
- City Limits
- City UGB

Signal Locations

Figure 1-6

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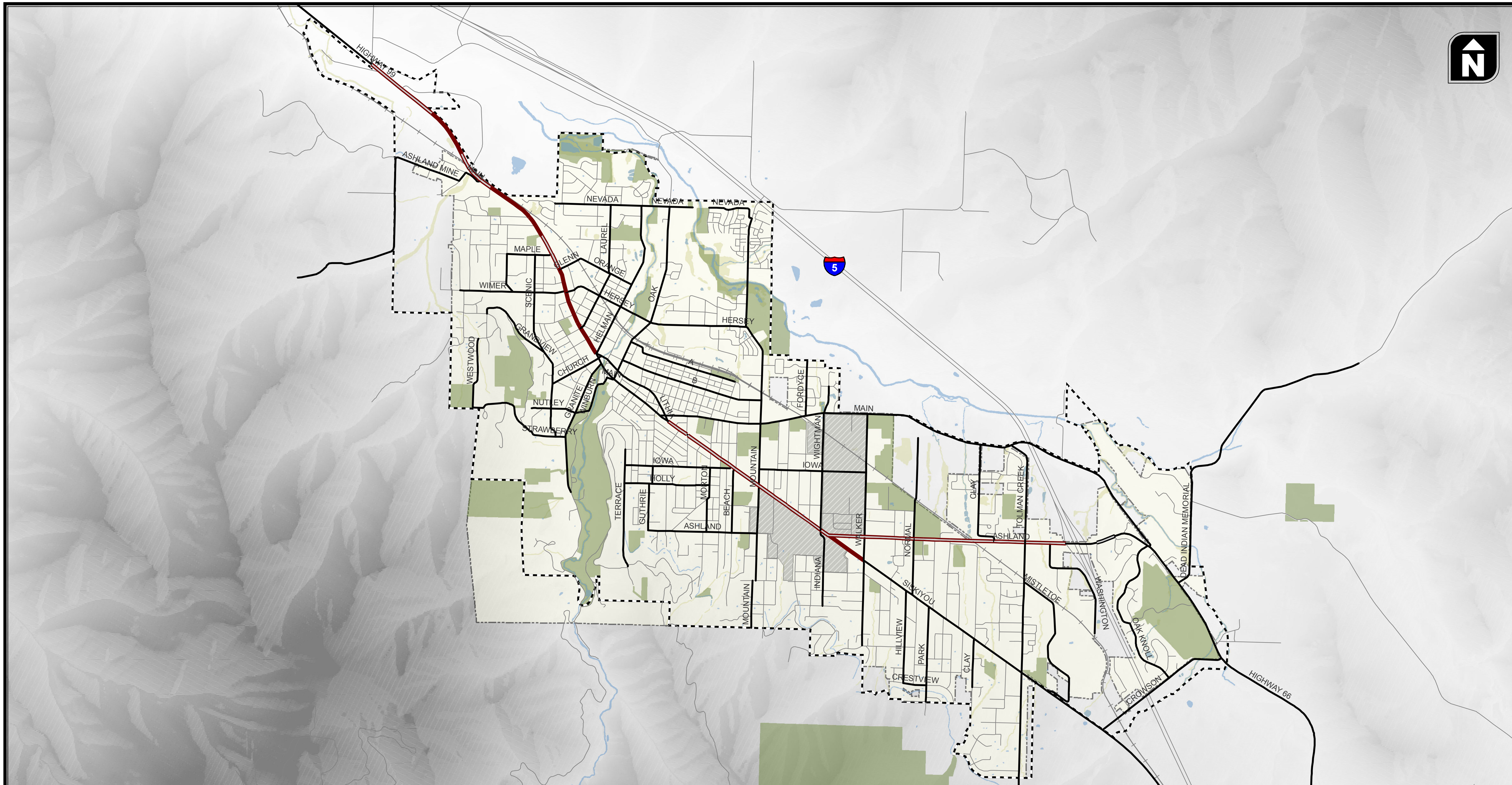


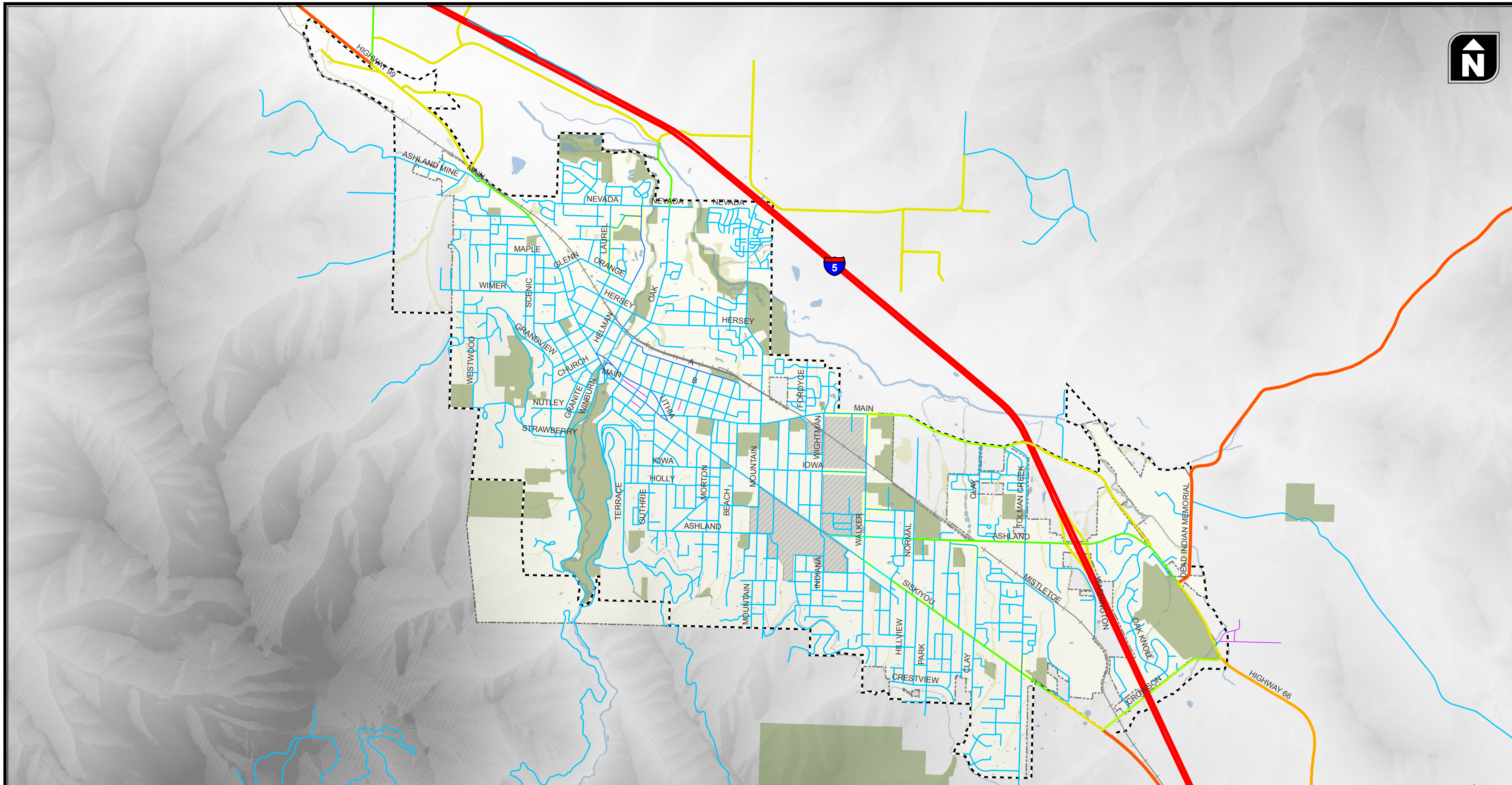
2 Lanes
3 Lanes
4 Lanes
5 Lanes
City Limits
City UGB

Number of Lanes

Figure

1-7

H:\projfile\10633 - City of Ashland TSP Update\gis\Memo-figs\Fig8_Signal Locations

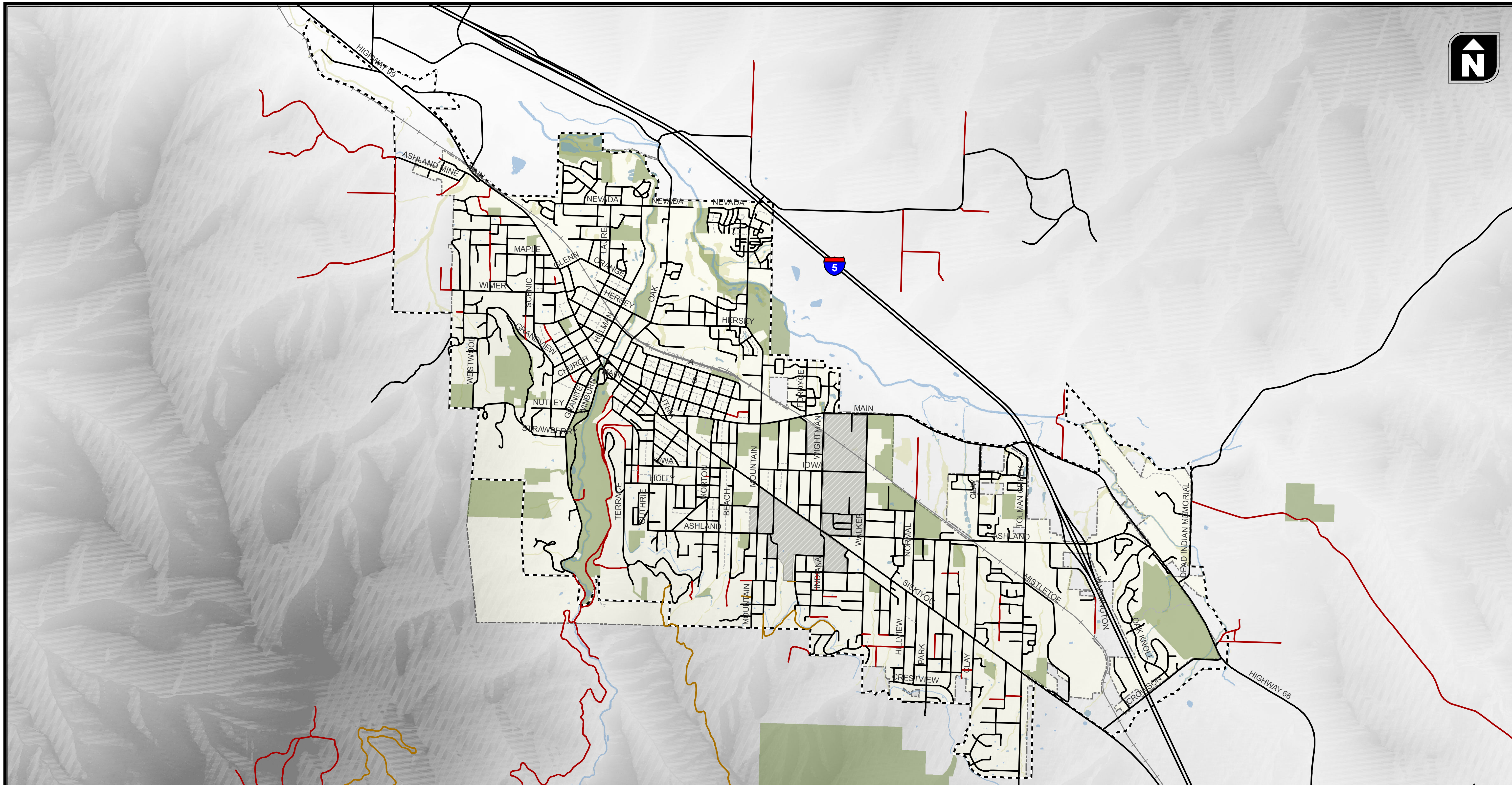


15
20
25
30
35
40
45
50
55
65
School Speed Zone
City UGB
City Limits

Posted Speed Limits

Figure

1-8



Paved

Gravel

Dirt

Unspecified

City Limits

City UGB

Roadway Surface

Figure

1-9

H:\projfile\10633 - City of Ashland TSP Update\gis\Memo-figs\Fig12_Pavement Typecondition

As shown in Figure 1-8 and Figure 1-9, the majority of roadways within Ashland are paved with posted speeds of 25 mph. Roadway facilities such as Siskiyou Boulevard (OR 99) and Ashland Street (OR 66) have higher posted speeds particularly as these facilities approach I-5 and reach the southeastern and northwestern edges of the City limits.

Designated On-Street Parking

Figure 1-10 illustrates designated on-street parking in the City of Ashland. As shown, designated on-street parking is primarily located in the downtown core of Ashland. While on-street parking is permitted in other areas of Ashland, designations in terms of time and use (e.g., loading zones, commercial uses) occur primarily in the downtown shopping and commercial area and near the hospital.

Freight Routes

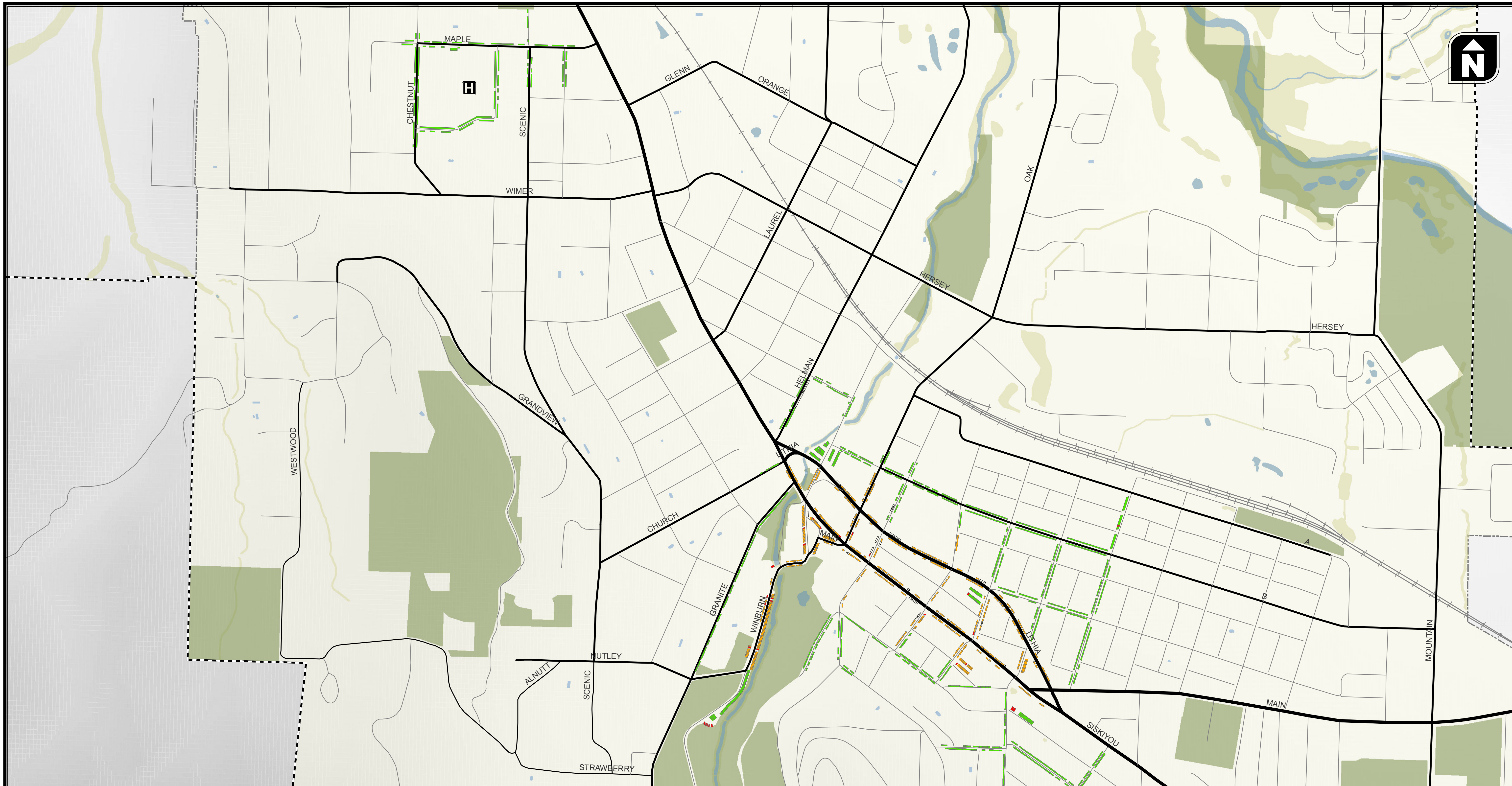
The freight routes within the study area are illustrated in Figure 1-11 and include I-5, OR 99 and OR 66. I-5 is designated as a National OR System Freight Route. The City has designated OR 66 and OR 99 as freight routes through the City. The City designated routes are intended primarily for local freight deliveries and local freight movements. Regional and national truck freight movements are intended to occur via I-5.

ITS Infrastructure

The only Intelligent Transportation System (ITS) infrastructure in the area is outside of the urban growth boundary and is located along I-5. There are two locations along I-5 with dynamic message signs, one weigh in motion station, and an OR advisory signal for motorists; the location of these items are shown in Figure 1-12.

PUBLIC TRANSPORTATION SYSTEM INVENTORY

The Rogue Valley Transit District (RVTD) provides intercity and regional public transit within Jackson County. RVTD serves the City of Ashland as well as Talent, Phoenix and Medford with fixed-route bus and dial-a-ride paratransit service.



Designated On-Street Parking Map

Figure 1-10

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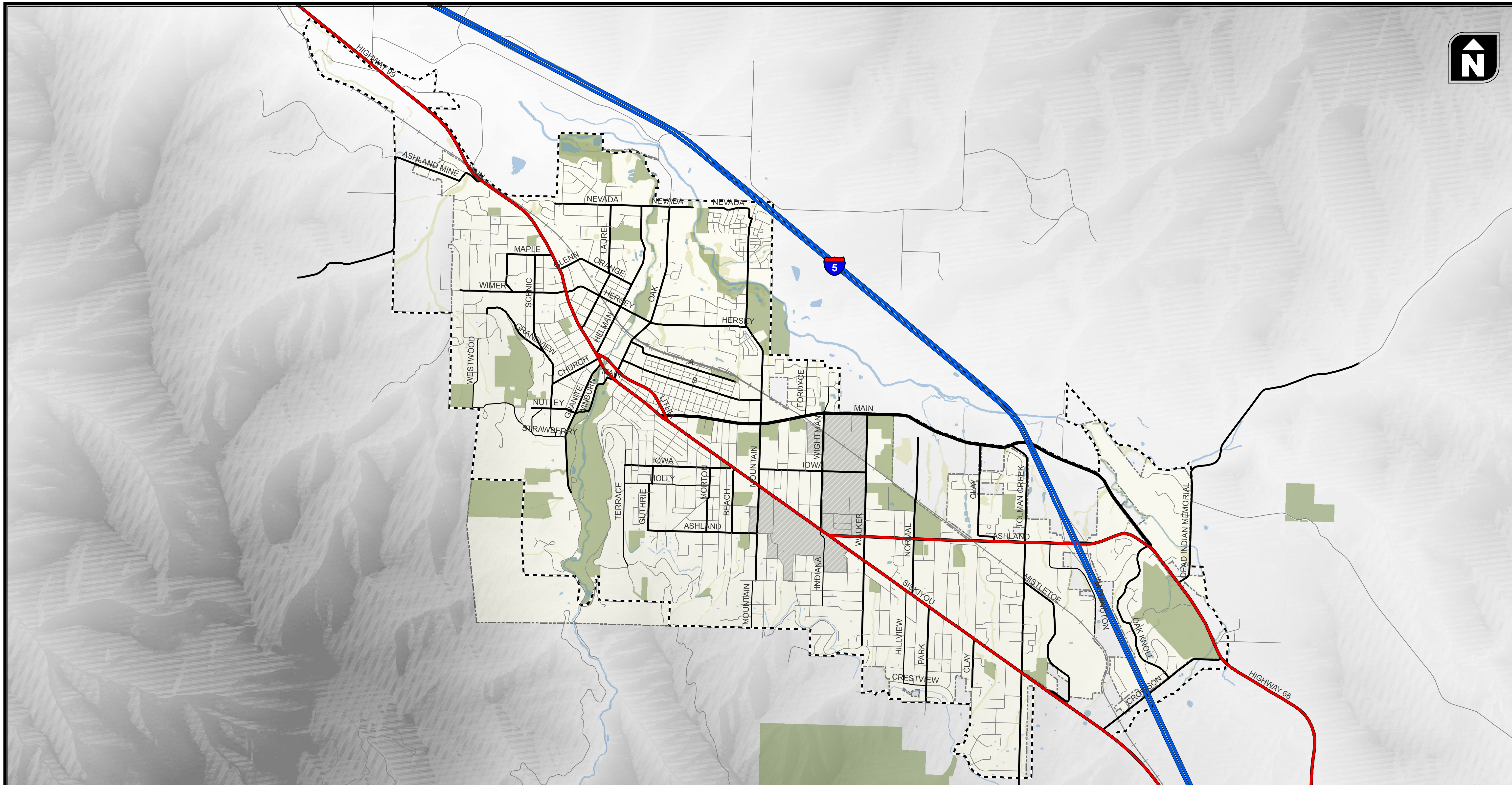

- City Designated Freight Route
- National Highway System Freight Route
- City Limits
- City UGB

Freight Routes

Figure 1-11

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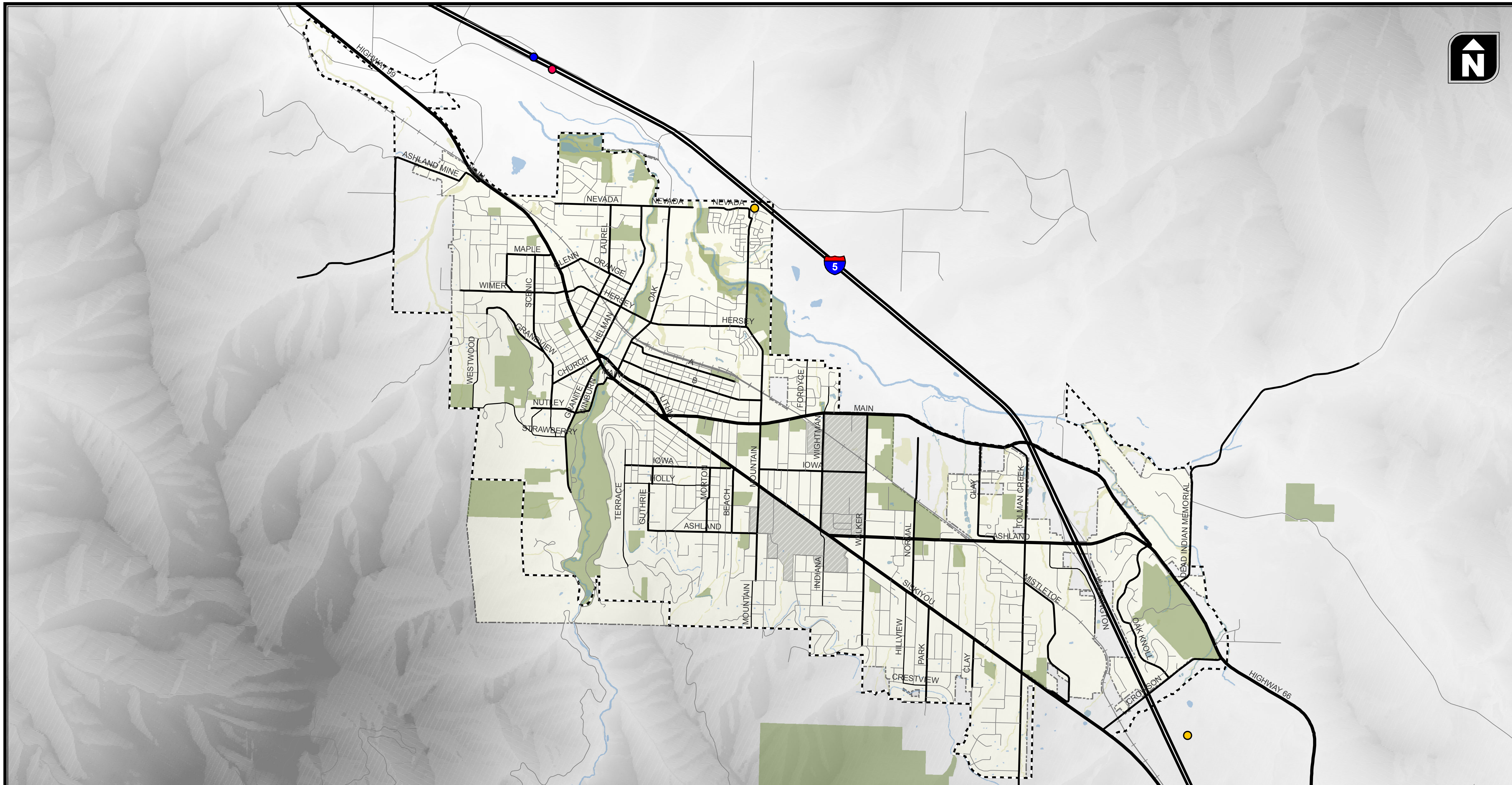


Dynamic Message Sign
Highway Advisory Radios
Weigh in Motion
City Limits
City UGB

ITS Infrastructure

Figure
1-12

H:\projfile\10633 - City of Ashland TSP Update\gis\Memo-figs\Fig16_ITSinfrastructure

Fixed-Route Service

RVTD owns 29 buses assigned to fixed-routes service, six of which are currently listed as retired from service. Routes 10 and 15 currently provide service for Ashland on Monday through Friday. Service hours are approximately 5:00 a.m. to 6:30 p.m. Route 10 has a farebox recovery rate of 32% compared with a farebox recovery of 27% system-wide.

Figure 1-13 illustrates the transit routes and stops. Currently, there are no park and ride locations within the City of Ashland. Connectivity to other transit is through the Front Street Station in Medford.

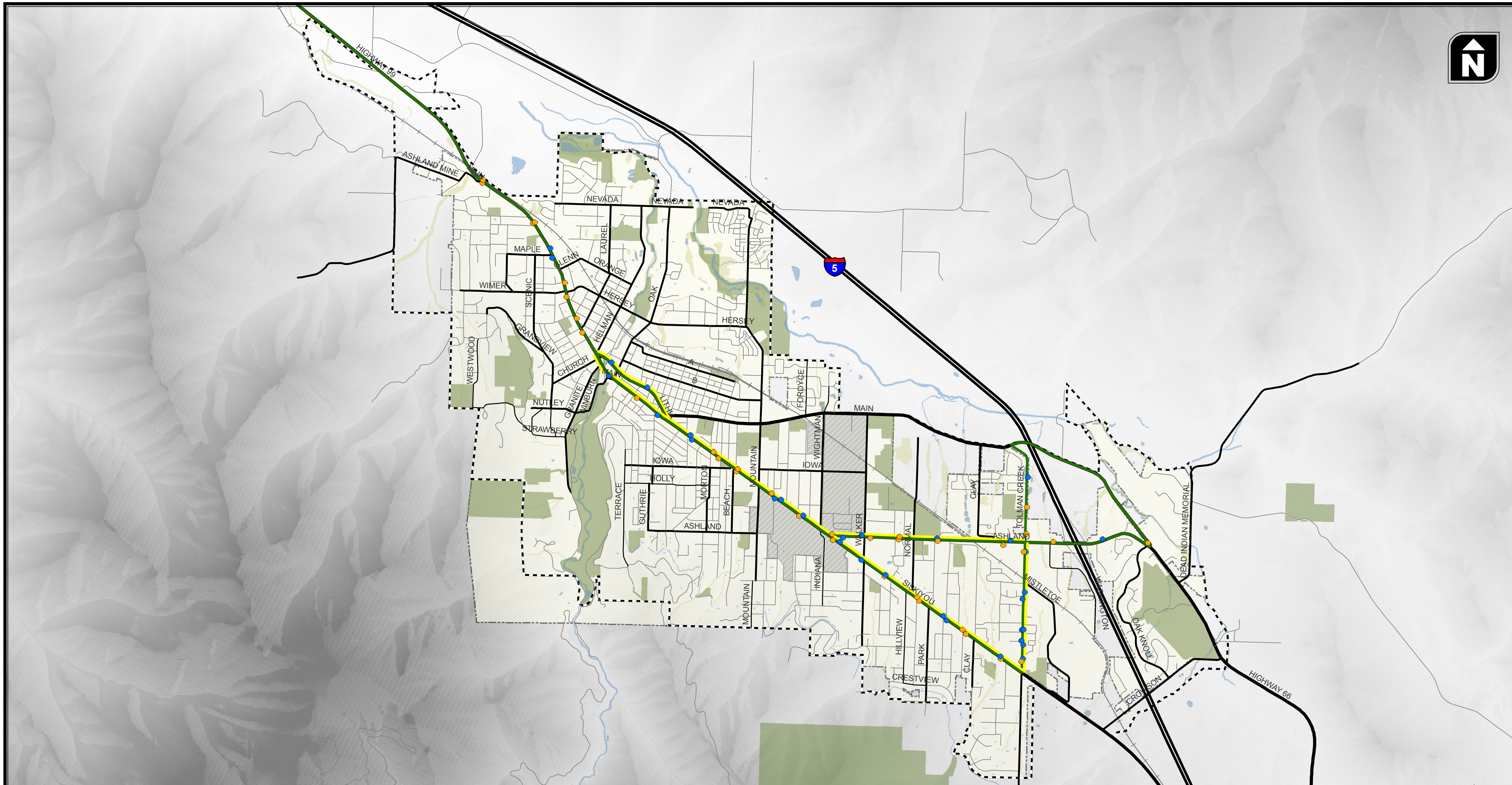
Ridership levels for the City of Ashland have fluctuated with changes in fares and service. Historically, ridership system-wide and within the City of Ashland have increased in response to sharp increases in fuel prices. Peak ridership levels were reached during 2003 through mid-2006 when no fares were charged to Ashland riders. When fares were increased and the Route 5 loop service was discontinued, ridership dropped sharply. Loop service was restored in 2009 (Route 15); however, fares were increased from $0.50 to $1.00 (which still represented a significant city subsidy to the $2.00 fare on the rest of the RVTD system) and the overall fixed route ridership has been declining over the past two years. Similarly, ridership for the Valley Lift paratransit service, described below, has also had minor but steady decline since 2005 (data is not available prior to 2005).

Stop amenities for RVTD's fixed-route bus service include shelters and bike racks at some locations. In addition to the shelters provided by RVTD, the City of Ashland has purchased shelters for additional stops and pays for repair and maintenance of those shelters. RVTD is currently developing new bus stop standards and policies that will determine which stops will qualify for shelters in the future.

Dial-a-Ride Service

RVTD also operates a paratransit service through their Valley Lift Program and TransLink. The Valley Lift Program is a shared ride, curb-to-curb, wheelchair accessible transportation service for people with disabilities preventing them from using RVTD's fixed-route bus service. Valley Lift service is provided within ¾ mile buffer on either side of the RVTD fixed-route system. This transportation option fulfills requirements of the Americans with Disabilities Act. RVTD owns and maintains the vehicles; the drivers are contracted through Paratransit Services. Users of this service fall into three categories of eligibility: temporary, conditional and unconditional. During the last fiscal year, ridership averages 750-800 trips per month. The fare is $2.00 and provides a low cost recovery since each trip costs $20-30.

TransLink is a 7-county Medicaid transportation service provided to eligible Oregon Health Plan (OHP) and eligible Medicaid clients traveling to authorized medical services. TransLink is funded through the Oregon Department of Human Services. RVTD is considered the Lead Special Transportation Service for ODOT Region 3. In that administrative capacity, the agency schedules and dispatches rides through multiple providers.



Bus Route 15

Bus Route 10

Bus Stop W/ Seating

Bus Stop W/out Seating

City Limits

City UGB

Transit Routes and Stops

Figure

1-13

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RAIL SYSTEM INVENTORY

Freight rail service is provided through and within the city limits by the Central Oregon and Pacific Railroad (CORP) and the White City Terminal and Utilities (WCTU). The rail line provides service to several local manufacturers, including the timber industry and plants in the White City industrialized area just north of Medford. CORP acts as a feeder line to Union Pacific.

The Siskiyou Line of the Southern Pacific Rail System runs from Springfield, Oregon through Roseburg, Grants Pass, central Point, Medford, Phoenix, Talent and Ashland. The line continues into California under the name Black Butte Line. Rail Tex owns the entire rail line from Springfield to Montague, California.

The rail enters the City from the north by crossing eastward over OR 99 and passing southeast through the city limits approximately ½ mile to the east of downtown and OR 99. It runs parallel to OR 99 south of the city and crosses over I-5 where OR 99 merges into I-5. The rail alignment through Ashland is primarily single track with a section of double track extending approximate 1,500 feet west of Oak Street transitioning to a triple track extending approximately 3,000 feet east of Oak Street and then transitioning back to a double track and then single track over a few hundred feet. Figure 1-14 illustrates the railroad track alignment through Ashland along with the traffic control devices at each of the railroad crossings.

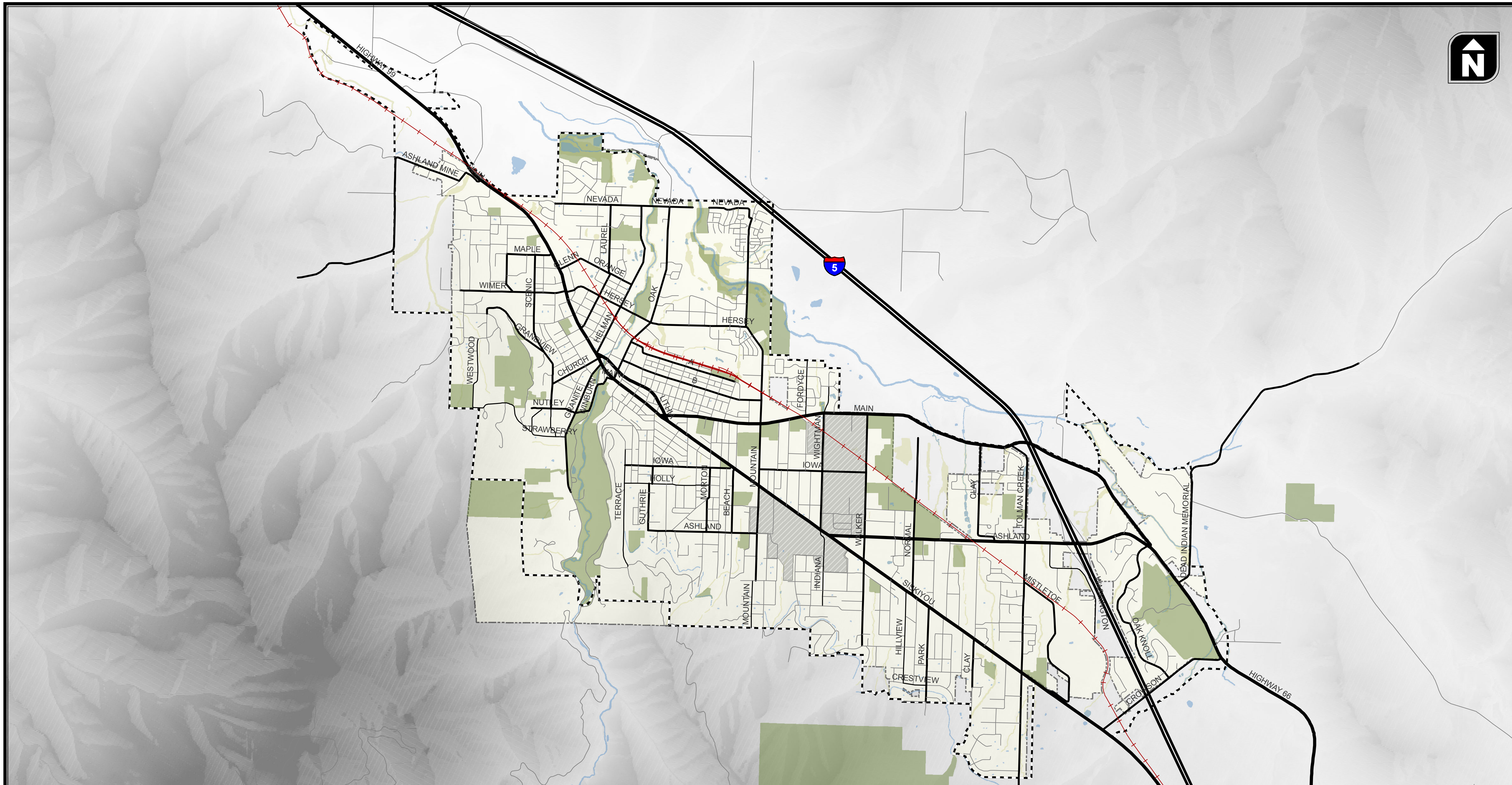
The lines are maintained as FRA Class 2, which allows train speeds of 25 mph. Historically the rail lines have primarily handled products of the timber industry including lumber, plywood, veneers, sand, clay, cements, siding, particleboard and feed and fertilizers. Currently the line is not being used by any industry. tThere is no passenger rail service along the rail line that passes through Ashland (and Medford). The nearest passenger rail service stops is located in Klamath Falls, approximately 80 miles to the east of Ashland.

BICYCLE AND PEDESTRIAN SYSTEM INVENTORY

This section provides an inventory of existing pedestrian and bicycle systems in the City of Ashland based on data provided by the City. The GIS data used to identify existing sidewalks and sidewalk gaps was created by the project team based on information in the city's impervious surface GIS layers. Some modifications to the City's GIS bicycle network were also made based on field observations. Travel trends as well as facility types and demands are discussed below.

Pedestrian Network

The existing pedestrian network is shown on Figure 1-15. Table 1-1 summarizes the existing sidewalk network coverage within Ashland's UGB.



Central Oregon & Pacific Railroad

City Limits

City UGB

Rail Lines Owners/Operators

Figure

1-14

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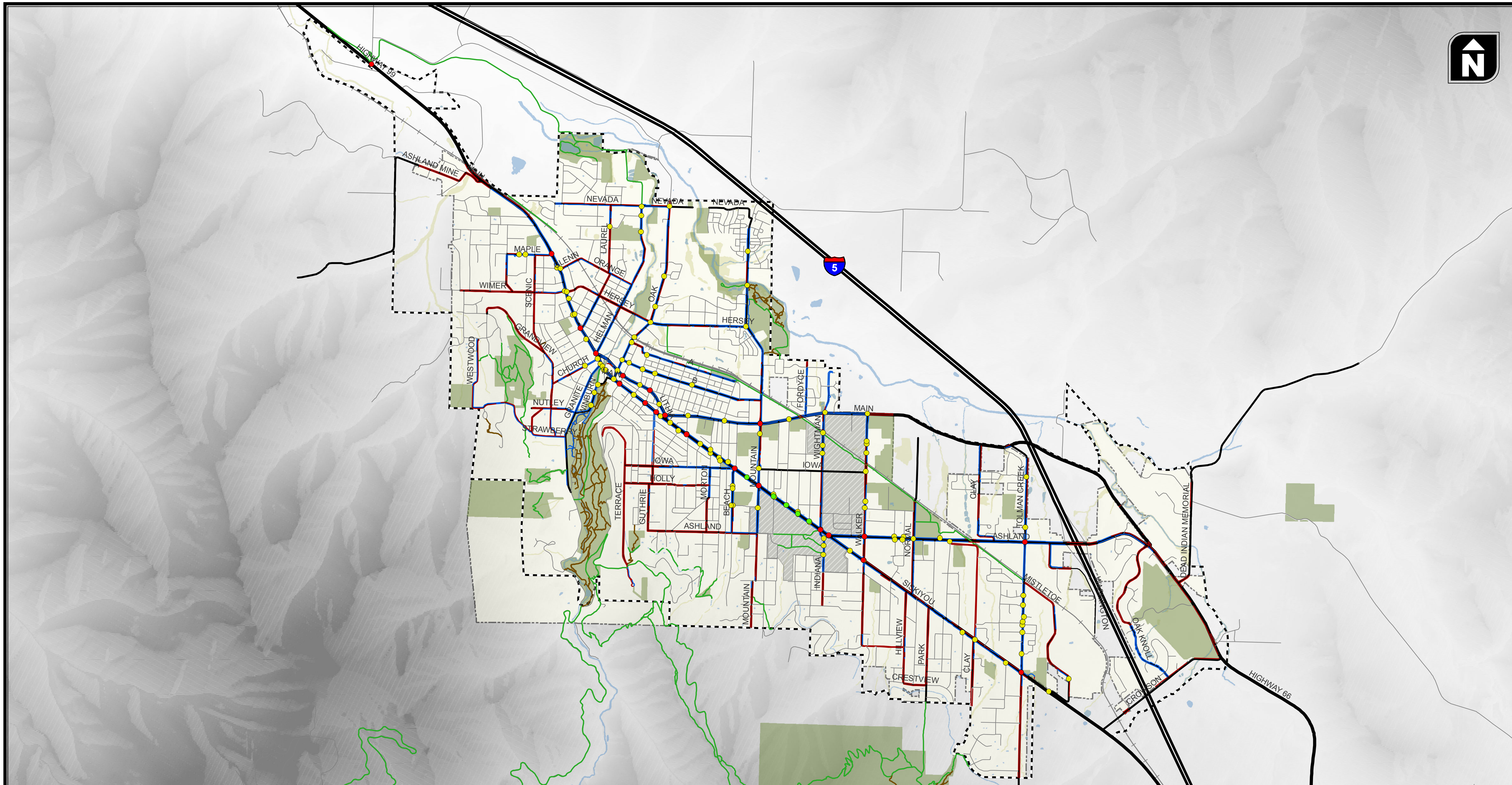


Sidewalk	Traffic Signal	City Limits
Sidewalk Gaps	Pedestrian Signal	City UGB
Hiker Path	Crosswalk	
Shared-Use Path		

Pedestrian Network

Figure

1-15

H:\projfile\10633 - City of Ashland TSP Update\gis\Memo-figs\Fig22_Pedestrians

Table 1-1 City of Ashland Sidewalk Inventory

Sidewalk Present	Neighborhood Collectors	Avenues	Boulevards	Neighborhood Collectors, Avenues, and Boulevards
Both Sides	0.6 miles (13%)	6.6 miles (24%)	5.1 miles (34%)	12.3 miles (26%)
One Side	1.4 miles (30%)	6.4 miles (24%)	1.5 miles (10%)	9.3 miles (20%)
No Sidewalk	2.7 miles (57%)	14.0 miles (52%)	8.6 miles (56%)	25.3 miles (54%)
Total	4.7 miles (100%)	27.0 miles (100%)	15.2 miles (100%)	miles (100%)

In general, the higher density areas of the City including the downtown and surrounding residential streets are well served with a comprehensive network of sidewalks and crossings. Sidewalk coverage declines as you travel further from downtown and the primary traffic corridor (Main Street – Siskiyou Boulevard), although a number of the newer residential developments on the outskirts of the City have been constructed with sidewalks on both sides of all streets.

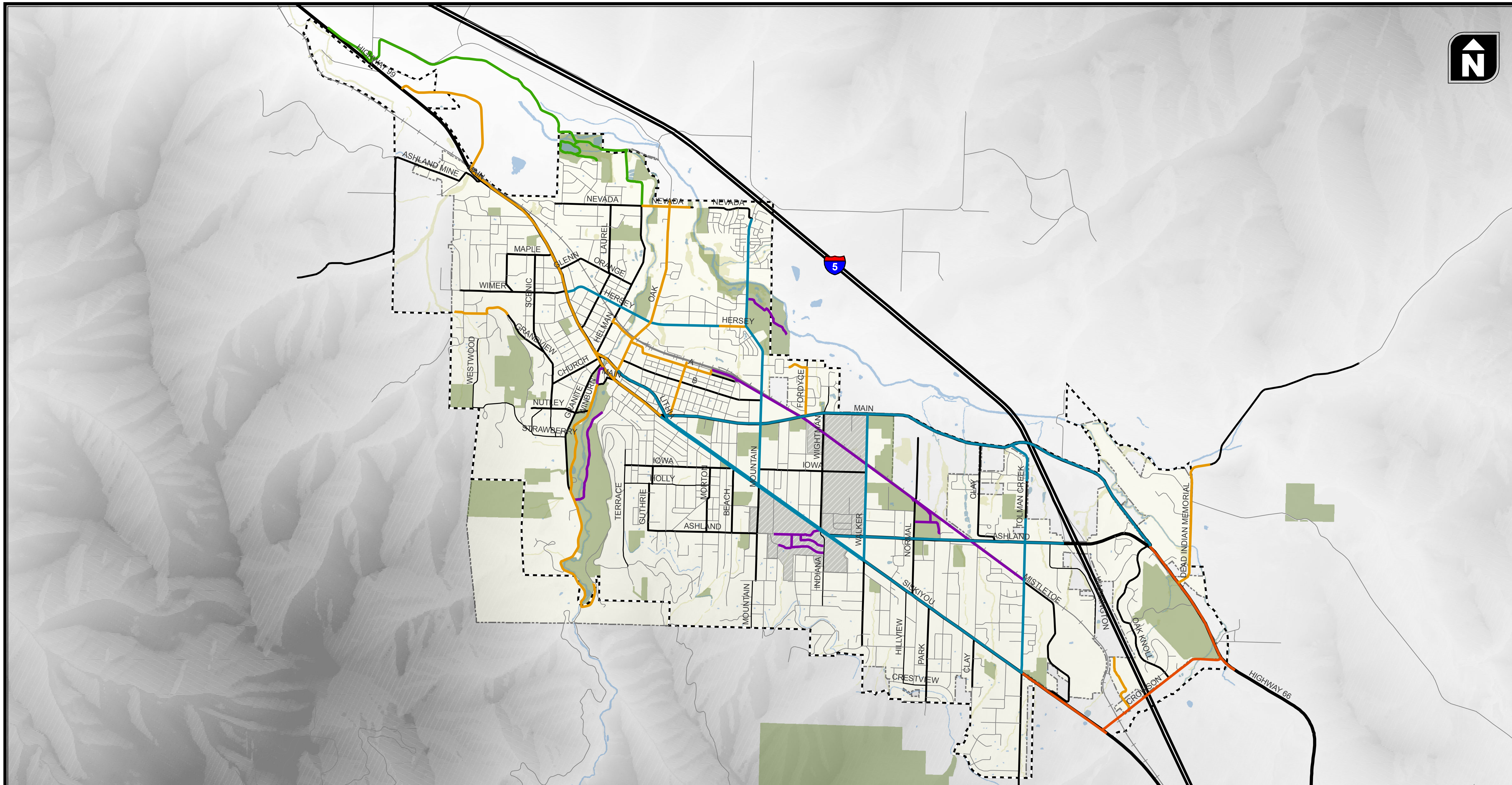
Table 1-1 shows that just over half (54%) of the major street network (i.e., neighborhood collectors, avenues and boulevards) does not have sidewalks. The network of boulevards have sidewalks on both sides along just over a third (34%) of its length and on one side for a another 10%. Avenues are covered by 24% with sidewalks on both sides and 24% with sidewalks on one side, i.e. over half of avenues in the City of Ashland (52%) are without sidewalks on either side. Similarly, 57% of neighborhood collectors have no sidewalks. In addition to the sidewalk network, there is approximately 6.8 miles of off-street shared use path.

The density of designated crosswalks, i.e. signalized or marked crosswalks is approximately 2.9 crossings per mile along boulevards (i.e. one every 0.35 miles or approximately 3-4 minutes walking distance to the closest crossing) and 2.5 crossings per mile along avenues (i.e. one every 0.4 miles or 4 minutes walking distance). In general the downtown and other high-density locations are well served with frequent crossing opportunities. Further from these areas, crossing density is less, but traffic volumes may reduce sufficiently to allow safe and frequent crossing opportunities.

Bicycle Network

An inventory of the bicycle network (Figure 1-16) shows the following breakdown of bicycle facilities:

- Shared roadway / signed shared roadway: 8.3 miles
- Shoulder bikeway: 2.1 miles
- Bike lanes: 12.7 miles
- Shared use path: 4.06 miles
- Greenway Trails: 2.89 miles



Bike Lane
Bike Path
Greenway
Shared Lane
Shoulder lane
City Limits
City UGB

Bicycle Network

Figure 1-16

H:\proj\file10633 - City of Ashland TSP Update\gis

Overall, the on-street bicycle network (i.e., bicycle lanes, shared roadways, and shoulder bikeways) covers approximately 48% of the major road network (i.e. neighborhood collectors, avenues and boulevards) with bike lanes covering 26% of the major roadway network. The local street network has not been included in this analysis, but it is likely many local streets provide a comfortable environment for bicyclists and could form part of a future network of bicycle boulevards.

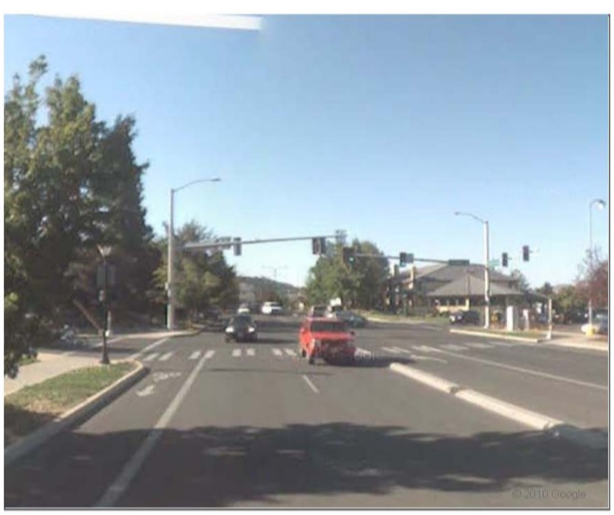
Exhibits 1-4 and 1-5 are photos of some of the existing bicycle network elements in Ashland. Exhibit 1-4 shows an example of on-street bicycle parking provided in downtown Ashland. Exhibit 1-5 shows one of the shared use paths in Ashland.

Exhibit 1-4: Bicycle Parking in Downtown Ashland

Exhibit 1-5: Shared Use Path in Ashland

Example Cross-Sections with Pedestrian and Bicycle Facilities

Example cross-sections for boulevards, avenues and local streets are shown below in Exhibit 1-6 which provides examples of the pedestrian and bicycle facilities provided in Ashland.



Siskiyou Boulevard – East of Sherman Street

Siskiyou Boulevard – East of Walker Avenue

Sidewalks both sides On-street bike lanes

E Hersey Street –West of Carol Street
Sidewalk one side, On-street bike lanes

Sidewalk one side, Bike lane one side, shoulder bikeway other side

Crispin Street
Sidewalk both sides, Cyclists share roadway

Exhibit 1-6: Cross-Sections with Pedestrian and Bicycle Facilities

AIR TRANSPORTATION INVENTORY

The Ashland Municipal Airport is located 3 miles northeast of downtown at the eastern boundary of the city limits. The airport has two runways, both 3,600 feet long, paved in asphalt and in good condition. The surface area of the airport is approximately 95 acres. The airport is only for general aviation and private use. The land within the Ashland city boundary and within the Airport Overlay Zone is zoned as E-1, RR-1, R-110 and C-1. Figure 1-17 shows the location of Ashland Municipal Airport.

The Ashland Municipal Airport does not offer any commercial flights. The nearest commercial flights are out of the Rogue Valley International-Medford Airport. Medford offers both passenger and freight service to cities throughout the Northwest with connections to larger airports and markets. The Rogue Valley International-Medford Airport is 989 acres in size and is located 3 miles north of the Medford central business district near I-5. Figure 1-18 illustrates the location of Rogue Valley International Medford Airport as well as several other smaller municipal or regional airports.

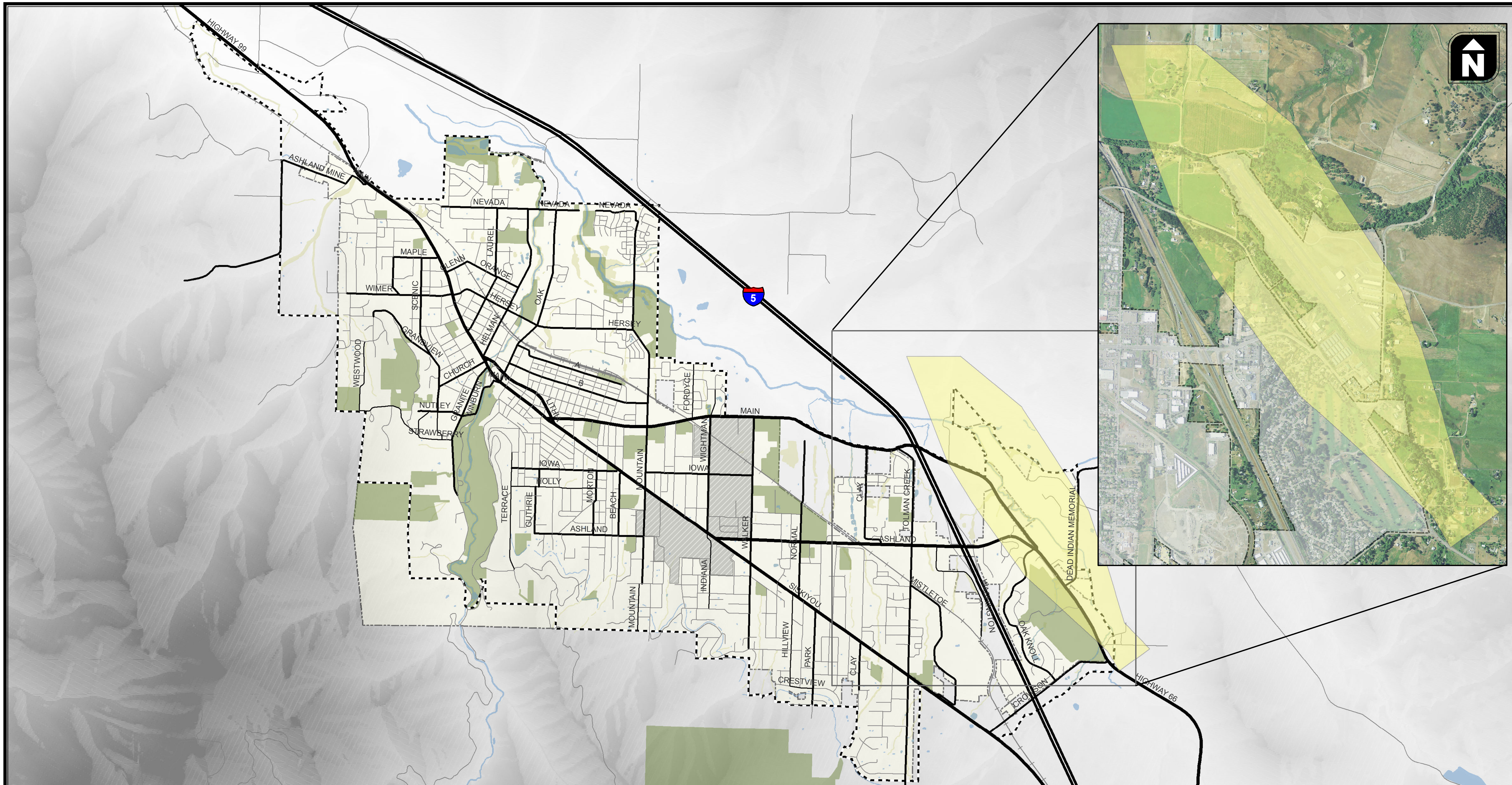
PIPELINE INVENTORY

Within the Rogue Valley there is a natural gas pipeline owned and operated by Avista Corporation. Originally the pipeline extended from Portland to Medford but a subsequent project connected this pipeline to a line that crosses central Oregon. The distribution lines for this pipeline are located along I-5 between Grant's Pass and Ashland and the main pipeline is located within the I-5 corridor.

Recently a new pipeline was installed from Ashland to Klamath Falls to increase the natural gas capacity of the local lines and meet increasing demand. There are no intermodal terminals located in or near Ashland. Natural gas can only be transported by pipeline.

WATER TRANSPORTATION INVENTORY

The Rogue River is the largest body of water in the area but is not large enough to use as a form of transportation, only recreation. The nearest port is located in Coos Bay and is an international/national shipping facility.



Airport Overlay Zone

City Limits

City UGB

Ashland Airport

Figure

1-17

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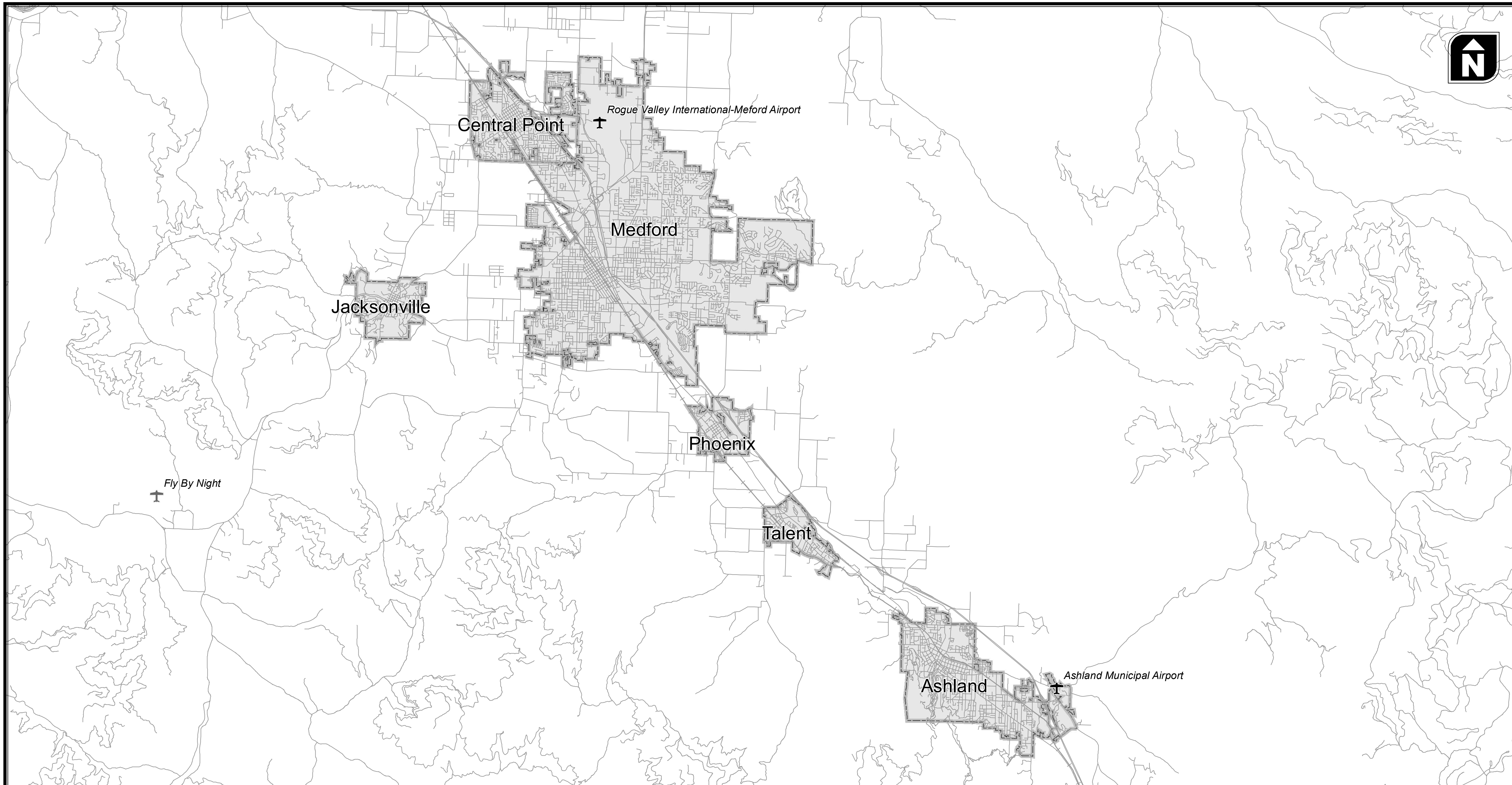

Municipal Airport
Local Airport
City Limits

Regional Airports

Figure
1-18

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Section 2
Transportation Goals & Objectives and Plan & Policy Review

TRANSPORTATION GOALS & OBJECTIVES AND PLAN & POLICY REVIEW

This section presents the City of Ashland's Transportation System Plan goals and objectives. It also summarizes related state, regional and local plans, policies and regulations that influence the City of Ashland.

CITY OF ASHLAND'S TRANSPORTATION GOALS AND OBJECTIVES

In the summer and fall of 2010, the City updated its transportation goals and objectives in collaboration with the City's Transportation Commission and Planning Commission. The goals and objectives provided guidance on the types and priorities of policies, programs, studies and projects that are included in Sections 4 through 10 of this transportation system plan.

Goals and Objectives

Goal #1:

Create a "green" template for other communities in the state and nation to follow.

Objectives for Goal 1:

1A. Create a prioritized list of active transportation (e.g., travel by bicycle, by foot and/or a combination of non-auto modes), green projects that reduce the number of auto trips, auto trip length, and vehicle emissions.

1B. Expand active transportation infrastructure to include features that encourage non-auto travel. Potential features include bicycle boulevards, bicycle lanes, wider bicycle trails, and improved lighting for bicycles and pedestrians.

1C. Establish targets for increasing biking, walking, and transit trips over the next 5, 10, and 20 years.

1D. Develop plans for pedestrian-oriented, mixed land-use activity centers with an active transportation focus and green infrastructure.

1E. Identify ways to reduce carbon impacts through changes to land use patterns and transportation choices to make travel by bicycle, as a pedestrian and by transit more viable.

1F. Update City of Ashland code street design standards to provide more flexibility and options for enhanced active transportation facilities.

1G. Implement environmentally responsible or green design standards.

1H. Investigate creative, cutting edge ways including policies to increase active transportation trips in the City of Ashland.

Goal #2:

Make safety a priority for all modes of travel.

Objectives for Goal 2:

2A. Coordinate with safe routes to school (SRTS) plans for local schools including Southern Oregon University.

2B. Develop an access management plan that can be adopted into code and enforced.

2C. Strategically plan for safety and operational improvements for bicyclists and pedestrians.

2D. Develop recommendations for realigning the highly skewed intersections within the City of Ashland that indicate there is notable potential to improve safety.

2E. Recommend appropriate means for managing state highways and major arterials to meet local and through traffic needs in terms of mobility, access, and safety.

2F. Incorporate the Highway Safety Manual (HSM) into development review and capital projects evaluation processes.

2G. Reduce the number of fatal and serious crashes in the City of Ashland by 50% in the next 20 years.

2H. Reduce the frequency of bicycle and pedestrian related crashes in the City of Ashland by 50% in the next 20 years.

Goal #3:

Maintain small-town character, support economic prosperity and accommodate future growth.

Objectives for Goal 3:

3A. Develop an integrated land use and transportation plan to increase the viability of active transportation.

3B. Consider modal equity when integrating land use and transportation to provide travel options for system users.

3C. Identify opportunities, guidelines and regulations for bicycle, pedestrian and transit supportive land uses within the City of Ashland.

3D. Identify transportation projects or system adjustments that improve development potential and support increased mixed use development within the current Urban Growth Boundary.

3E. Identify adjustments to transportation and land use codes and regulations that will facilitate higher density developments in transit corridors, and shorter trip length and non-motorized modes of travel throughout the City of Ashland.

3F. Incorporate the Highway Capacity Manual multi-modal procedures into development review and capital improvement project evaluation processes.

Goal #4:

Create a system-wide balance for serving and facilitating pedestrian, bicycle, rail, air, transit, and vehicular traffic in terms of mobility and access within and through the City of Ashland.

Objectives for Goal 4:

4A. Identify ways to improve street connectivity to provide additional travel routes to the state highways for bicyclists, pedestrians, and autos.

4B. Identify ways to provide sufficient levels of mobility and accessibility for autos while making minimal investment in new automobile focused infrastructure.

4C. Upgrade pedestrian facilities to ADA compliant standards.

4D. Develop alternative (e.g., multimodal) mobility standards that allow for planned congestion to help achieve multimodal and land use objectives.

4E. Identify corridors where the alternative mobility standards could be beneficial to achieve multimodal and land use objectives.

4F. Recommend creative, innovative ways to more efficiently manage, operate, and fund the transportation system.

4G. Create a comprehensive transportation system by better integrating active transportation modes with transit and travel by auto.

STATE, REGIONAL, AND LOCAL PLAN AND POLICY REVIEW

Review of over forty documents identified a state, regional, and county regulatory context and a community vision that were considered when evaluating alternatives and ultimately updating the City of Ashland *TSP. Technical Memorandum 1 contained in the Technical Appendix presents the detailed review.* The following highlights the key findings.

A few of the City of Ashland documents are not adopted plans; therefore, did not provide a regulatory context. However, they did provide useful "baseline" insight into the recent history of community planning and citizen input with regard to transportation issues and the relationship of those issues to land use development in the future.

- **Ashland Comprehensive Plan:** The Comprehensive Plan was the bedrock of goals, policies, and land use designations for updating the TSP. It provides clear policies and criteria for evaluating transportation improvements, transit corridors, and any land use concepts for pedestrian nodes and locations for increasing density.
- **Ashland Land Use Code:** The land use code is a supporting document for the Comprehensive Plan. The zoning designations provided starting places for investigating opportunities for future pedestrian nodes and other intensification of development that is integrated with multimodal transportation improvements, particularly enhanced transit service. **Ashland in Action 2000 and the Downtown Plan:** Both documents include problem statements and challenges that were considered in updating the TSP. The plans also make

specific improvement proposals for the pedestrian and bicycle circulation, transit service, and parking that were considered and discussed in updating the TSP.

- **A Handbook for Planning and Designing Streets:** The street standards are comprehensive and hierarchical. They were the starting point for any recommended changes to local street design.
- **The SOU Master Plan Update, the Railroad Property Master Plan, and the Croman Mill Site Redevelopment Plan:** Each of these plans is illustrative of important transportation connections and choices that will help define the coming years for the City of Ashland. These plans informed the project lists in the modal plan chapters of this TSP.
- **RVTD Ten Year Long Range Plan:** There will be opportunities for an integrated consideration of transit corridors with enhanced service and intensification of land uses. This integrated planning can help define appropriate levels of transit-oriented development and provide needed data for implementing the Tiered Service Expansion proposed by RVTD. Planning should also include consideration of transportation for the elderly and disabled through paratransit services.
- **RVMPO Regional Transportation Plan (RTP) and Regional Transportation Improvement Plan (TIP):** Opportunities to coordinate local and regional objectives through specific projects and their timelines for funding and implementation. The RTP includes adopted regional goals for transit service.
- **State Plans and Standards:** Coordination of plans and requirements access spacing and design standards for roadway elements will be required for the state highway facilities that also serve as major streets for the City of Ashland.
- **Interchange Area Management Plan for Interchange 14:** The TSP update is consistent with the IAMP.
- **Other References:** These documents can provide useful guidance and best practices examples for improving multimodal facilities.

Section 3
Existing Conditions

EXISTING CONDITIONS

This section documents the current conditions and performance of the City of Ashland's transportation system. Findings from this section were used to identify system deficiencies and opportunities to improve the system to meet the City's goals and objectives. The existing conditions of the following elements of the transportation system are discussed further below:

- Active transportation facilities (facilities for active modes of transportation such as bicyclists and pedestrians);
- Traffic counts and traffic analysis;
- Collisions analysis;
- Access management;
- Bridge conditions;
- Inter-modal and intra-modal connections; and
- Funding analysis.

ACTIVE TRANSPORTATION FACILITIES

The term active transportation refers to modes of transportation that require physical activity on the part of the traveler. Traveling as a pedestrian or bicyclist are the two most common forms of active transportation. However, the term also incorporates skateboards, rollerblades, and other such modes. While some of these active modes are less common than pedestrian and bicycle travel, planning and designing for ways to accommodate multiple active transportation modes can help facilitate non-auto travel at the broadest level and help reduce conflicts or friction between non-auto modes. A simple example is making multi-use paths sufficiently wide to allow for safely accommodating bicycle and pedestrian travel. This section provides an analysis of the existing pedestrian and bicycle system in the City of Ashland. The analysis considers active transportation demand as well as reviews system, network, and location deficiencies in the pedestrian and bicycling networks using risk and gap analyses.

Active Transportation Demand

Active transportation demand potential in Ashland has been determined based on the "relative attractiveness" of key destinations in the area. Each attractor will generate demands from within a "comfortable" walking or cycling radius (referred to as the buffer area) – the amount of that demand depends on the relative strength of the attractor to walking and biking, its geographic proximity to potential users, and conglomerations of multiple attractions.

Relative strength is represented by a multiplier that rates the attraction of one destination compared to another and is based on our experience in other cities. For example, a transit center is likely to be more attractive than an individual bus stop. A list of attractors and their multipliers is included in Table 3-1.

Table 3-1 Attractiveness Multipliers

Attractor	Multiplier
Regional Center	5
Village Center	4
Transit Center	4
Bus Transfer Stop	2
Bus Stop	1
Regional Park	2
Local Park	1
Civic – Justice/Government	1
Civic – Library/Museum	2
Civic – Recreation Center	3
Post-Secondary Institution	4
School (K-12)	2

GIS spatial analyst was used to model potential active transportation demands in Ashland. Areas of high and low potential demand are shown on Figures 3-1 and 3-2 with the pedestrian and bicycle networks overlaid respectively.

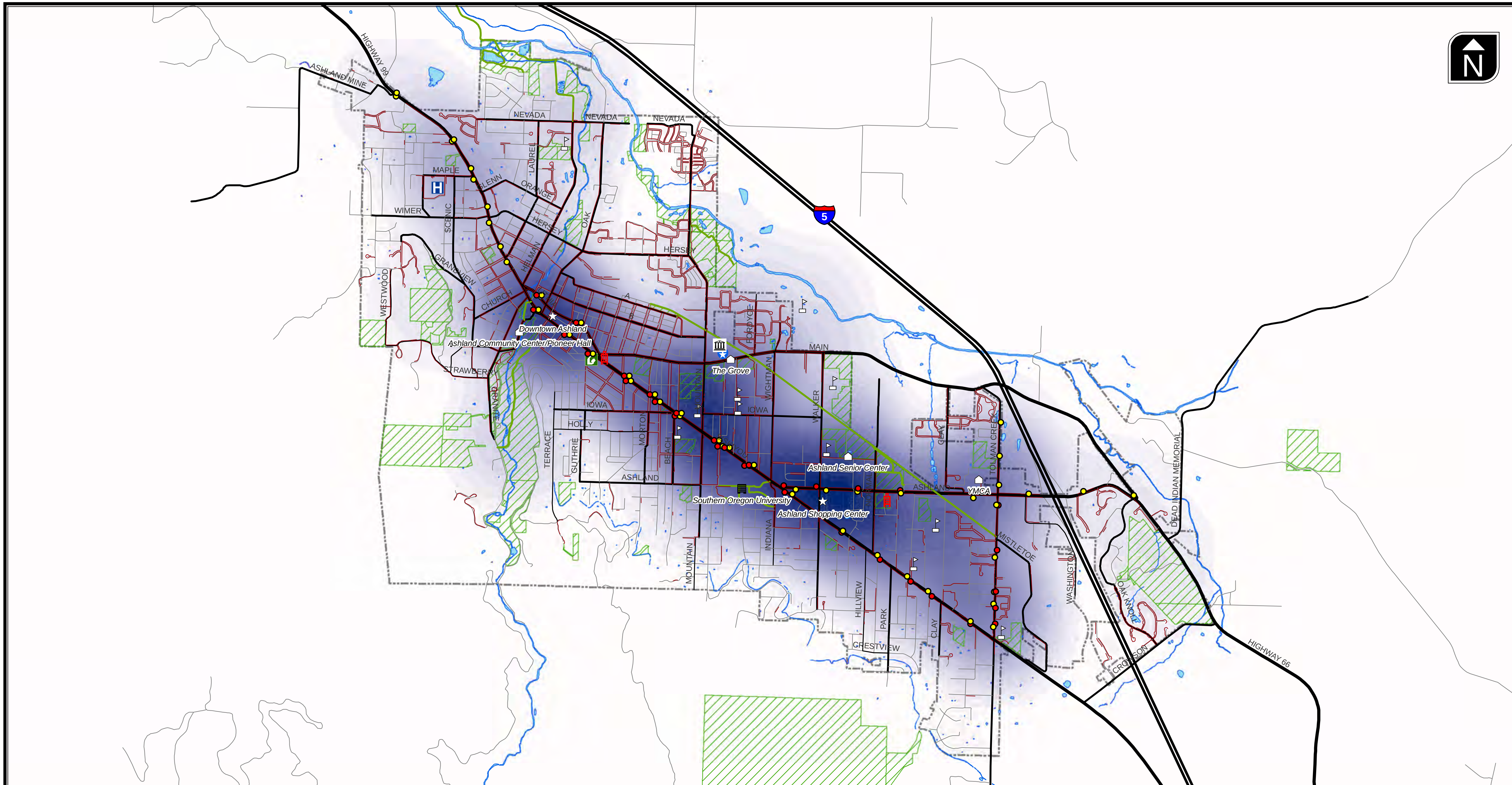
Not surprisingly, the areas of highest demand are located along the boulevard road network. This reflects the historical land use development pattern that has generally followed development of the motor vehicle and has resulted in high concentrations of attractors (e.g. strip retail, commercial centers, education facilities, etc.) along major traffic routes.

Risk Analysis

Figures 3-3 and 3-4 show the location of crashes involving pedestrians or cyclists reported between 1999 and 2009. Crash data used for this risk analysis is from GIS data files provided by the City of Ashland. Pedestrian and bicycle volumes recorded during the weekday p.m. peak hour (3:15 – 4:15 PM) at the 31 intersections included in the 2009 count program are also displayed.

Pedestrian Risk Analysis

In the 10 years between 1999 and 2009 a total of 86 crashes involving pedestrians were reported, including 68 injury crashes and 4 fatal crashes (i.e. approximately 84% of pedestrian-related crashes involved injury or death of the pedestrian). Figure 3-3 shows that crashes involving pedestrians are heavily concentrated along the boulevard road network – in particular along OR 99 and OR 66.



Commercial Center
Community Center
University
School
Library
City Hall
Fire Station
Hospital
Law Enforcement
Sidewalk
Greenway
Water
Park
City Limits

Active Transportation Demand

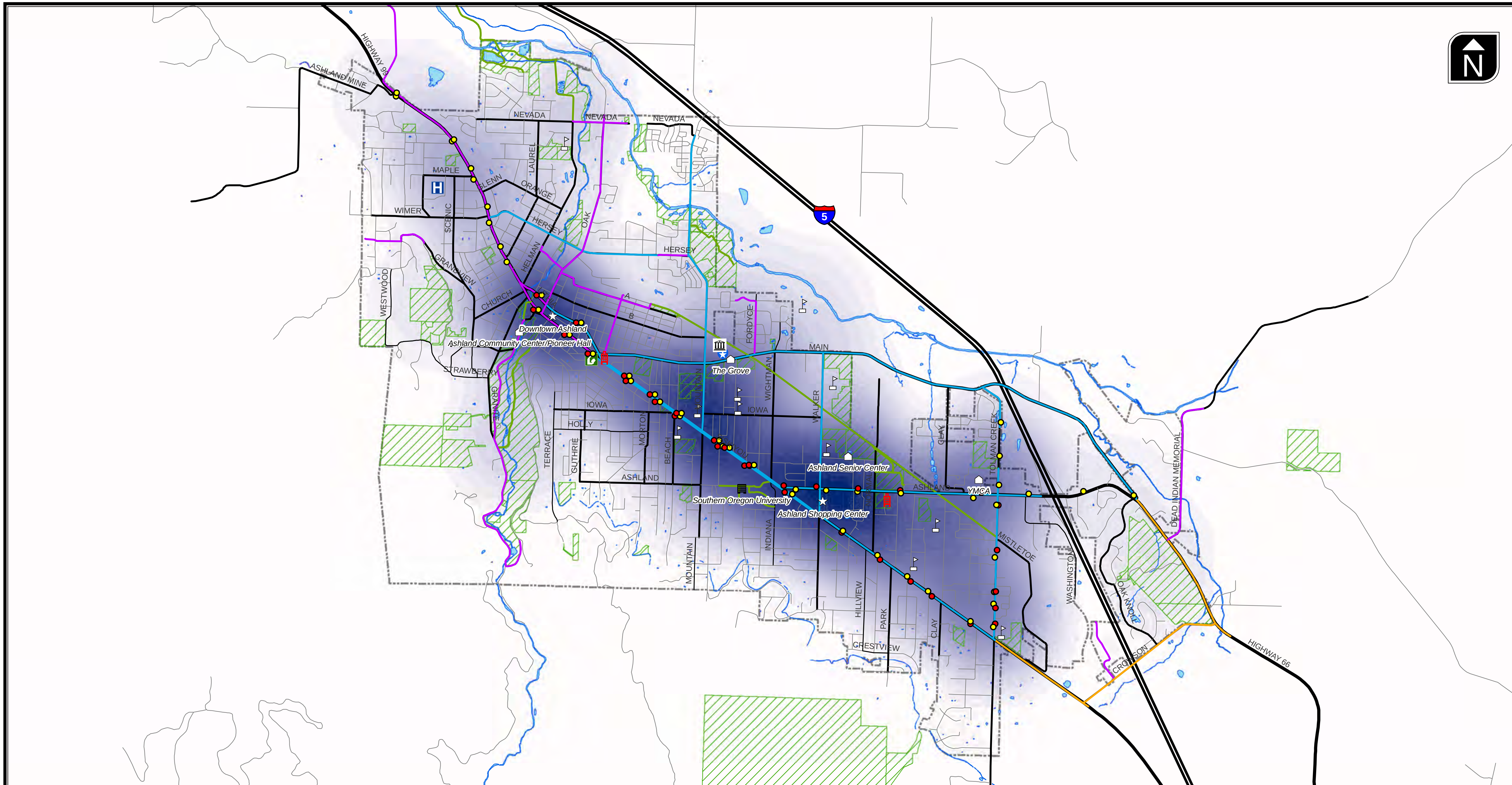
Low — High

Active Transportation Demand and Ashland Pedestrian Network

CITY OF ASHLAND

Figure

3-1



Commercial Center
Community Center
University
School
Library
City Hall
Fire Station
Hospital
Law Enforcement
Bike Lane
Bike Path/Greenway
Greenway
Shared Lane
Shoulder Bikeway
Water
Park
City Limits

Active Transportation Demand

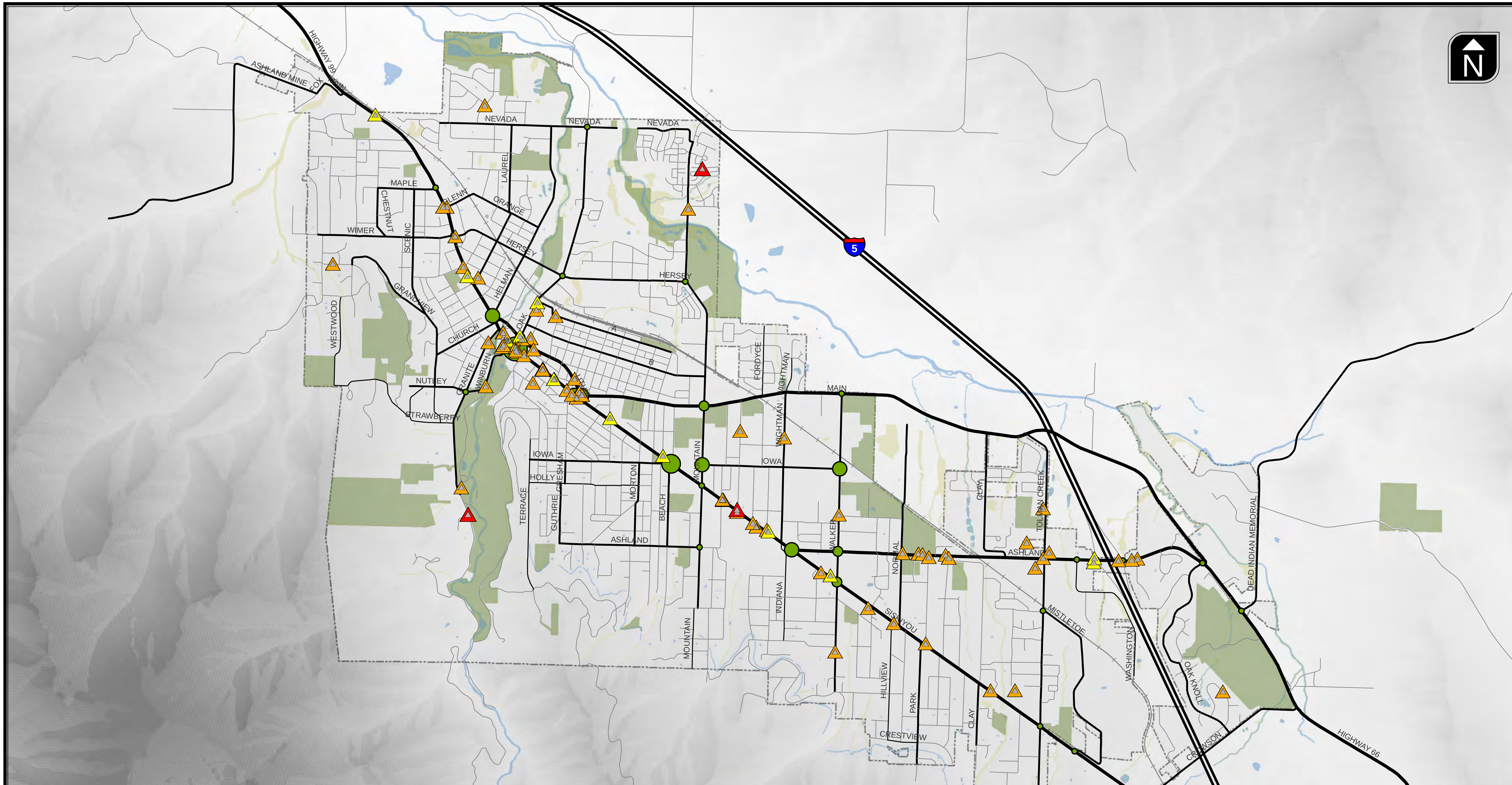
Low High

Active Transportation Demand and Ashland Bicycle Network

CITY OF ASHLAND

Figure

3-2



Pedestrian Collision Severity
- Fatality
- Non-injury
- Injury
- Pedestrian Collisions

Pedestrian Traffic Volume (Weekdays PM)
- Less than 25
- 25 to 50
- 50 to 75
- 75 to 100
- More than 100

- Rivers
- Parks
- Wetlands
- City Limits

Pedestrian Traffic Volumes and Collision

CITY OF ASHLAND

Figure 3-3

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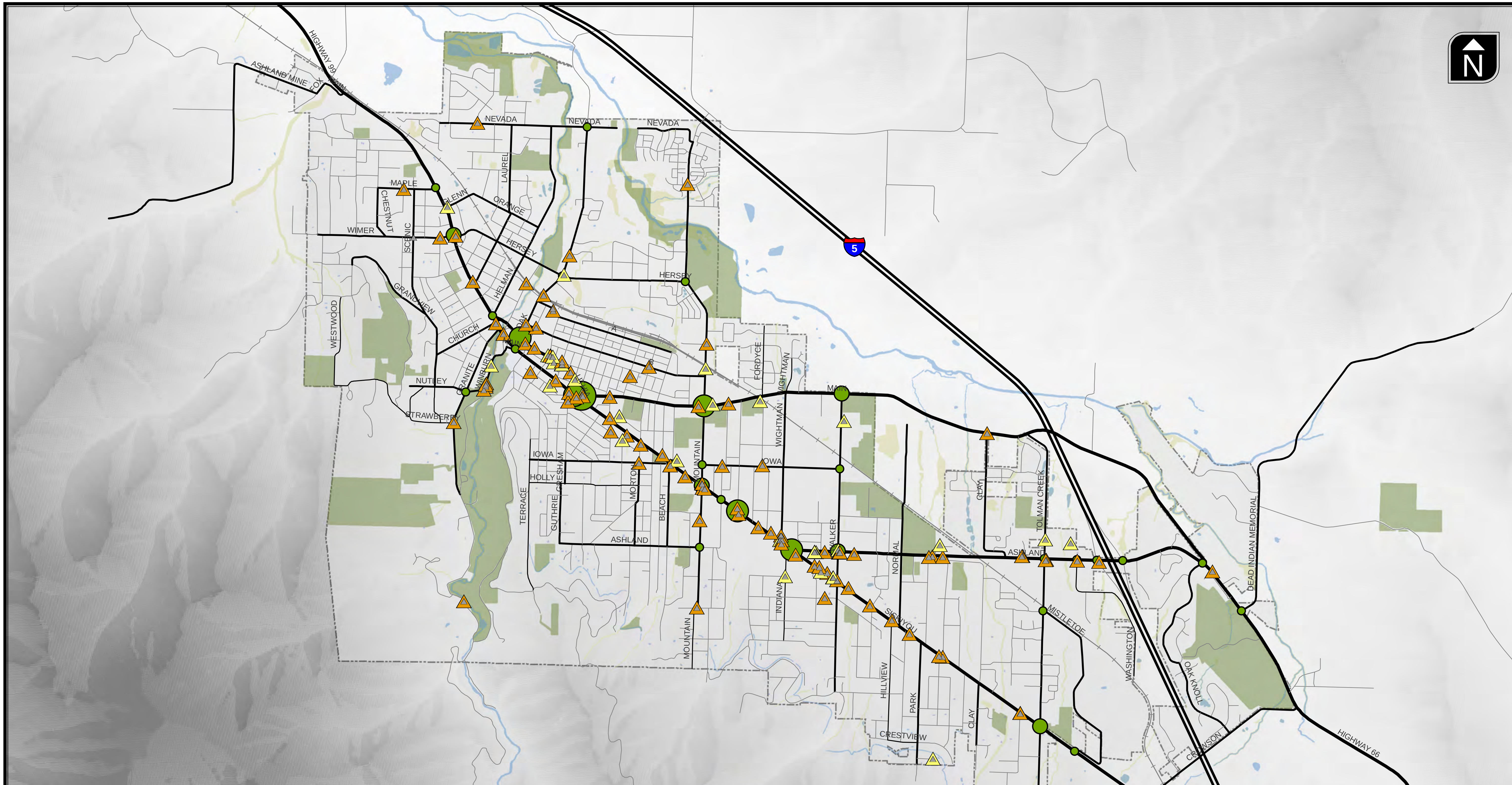

Bicycle Collision Severity

- Non-injury
- Injury
- Bicycle Collisions

Bicycle Traffic Volume (Weekdays PM)

- Less than 10
- 10 to 20
- 20 to 30
- More than 30

- Rivers
- Parks
- Wetlands
- City Limits

Bicyclist Traffic Volumes and Collisions

CITY OF ASHLAND

Figure 3-4

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A segment analysis of these two highways (within the City of Ashland) is included in Table 3-2 and compares the pedestrian-involved crash rate with environmental factors including vehicular traffic volumes, sidewalk coverage, and signalized crossing density and coverage.

Table 3-2 Pedestrian Analysis of Boulevard Segments

Segment			Crashes Involving Pedestrians (crashes/mi /year)	Traffic Volume* (vph)	Sidewalk Coverage (%)	Signalized Crossing Density (cr/mi)	Signal Coverage (sig/int)
Road	To	From					
OR 99 (N Main St)	Valley View Rd	Maple St	0.2	-	56%	1.7	20%
OR 99 (N Main St)	Maple St	Helman St	1.0	1,500	83%	1.7	30%
OR 99 (N Main St)	Helman St	Siskiyou Blvd	2.4	1,500	85%	6.0	35%
OR 99 (Siskiyou Blvd)	Union St	Ashland St	1.1	900	95%	5.0	70%
OR 99 (Siskiyou Blvd)	Ashland St	Normal Ave	0.8	800	65%	0.0	30%
OR 99 (Siskiyou Blvd)	Normal Ave	Boundary	0.2	500	52%	1.1	7%
OR 66 (Ashland St)	Siskiyou Blvd	Clay St	0.6	1,100	80%	1.0	20%
OR 66 (Ashland St)	Clary	Boundary	1.0	1,250	65%	1.7	7%

*Weekday p.m. peak hour traffic volumes (3:15-4:15PM) collected in September/October 2009.
**Sidewalk coverage calculation determined by presence of sidewalks on both sides of the street.

In general the road segments with the highest pedestrian-involved crash rates were those where high numbers of pedestrian crossings interact with high traffic volumes – such as in and near downtown – and where there is higher traffic volumes and fewer intersections treated with signals.

Bicyclist Risk Analysis

In the 10 years between 1999 and 2009 a total of 122 crashes involving cyclists were reported including 90 injury crashes (i.e., approximately 74% of crashes involving cyclists resulted in an injury to the cyclist). There were no fatal crashes involving cyclists during this time. Figure 3-4 shows that, similar to pedestrian-involved crash distribution, crashes involving cyclists also tend to be concentrated along the boulevard road network – particularly along OR 99 and OR 66.

Cyclist-involved crash rates for segments of OR 99 and OR 66 have been compared to bicycle traffic volume, vehicular traffic volume, bike lane coverage (note: this does not include shared roadways), and signalized crossing density and coverage in Table 3-3.

Table 3-3 Bicycling Analysis of Boulevard Segments

Segment			Crashes Involving Cyclists (crashes/ mi/year)	Bike Volume* (bph)	Traffic Volume* (vph)	Bike Lane Coverage (%)	Signalize d Crossing Density (cr/mi)	Signal Coverage (sig/int)
Road	To	From						
OR 99 (N Main St)	Valley View Rd	Maple St	0.0	-	-	0%	1.7	20%
OR 99 (N Main St)	Maple St	Helman St	0.5	11	1,500	0%	1.7	30%
OR 99 (N Main St)	Helman St	Siskiyou Blvd	1.7	14	1,500	43%	6.0	35%
OR 99 (Siskiyou Blvd)	Union St	Ashland St	1.7	9	900	100%	5.0	70%
OR 99 (Siskiyou Blvd)	Ashland St	Normal Ave	2.2	13	800	100%	0.0	30%
OR 99(Siskiyou Blvd)	Normal Ave	Boundary	0.4	15	500	80%	1.1	7%
OR 66 (Ashland St)	Siskiyou Blvd	Clay St	1.1	14	1,100	100%	1.0	20%
OR 66 (Ashland St)	Clary	Boundary	1.0	3	1,250	50%	1.7	7%

*Weekday p.m. peak hour bike and traffic volumes (3:15-4:15PM) collected in September/October 2009.

There are no obvious trends to explain why one segment performs better than another. In fact, a number of segments that are fully covered by on-street bike lanes and had lower traffic volumes than other segments recorded higher rates of crashes involving cyclists.

Gap Analysis

System, network, and location deficiencies in the pedestrian and cycling networks have been assessed through a desktop inspection of the existing networks. The findings of this analysis are included below.

Pedestrian Network

There are a number of gaps in the City's major street (i.e., neighborhood collectors, avenues, and boulevards) sidewalk network. As described in Section 1, 34% of the 15.2 miles of boulevard network has sidewalks on both sides of the street and 44% has sidewalks on at least one side of the street. For avenues and neighborhood collectors, sidewalk coverage on at least one side of the street is approximately 48% and 43% respectively.

Signalized crossings are generally located along the boulevard road network, with the highest concentrations located downtown, in front of the Southern Oregon University, and near the intersection of OR 99 and OR 66. Detailed signal warrants have not been undertaken given the limited availability of data; however, ODOT's AADT-based preliminary signal warrants can be used to determine if an intersection generally meets the volume levels for signalization.

Crossing locations where higher pedestrian / bicycle volumes interact with higher motorized traffic volumes and/or vehicle speeds should be prioritized for engineering studies to consider what (if any) enhanced pedestrian crossing treatments such as marked crosswalks, pedestrian-activated signals and traffic signals are warranted. Based on pedestrian and traffic volumes recorded during the weekday p.m. peak hour (3:15 – 4:15 PM) at the 31 intersections included in the 2009 count program, the following unsignalized intersections observe the highest conflicts of vehicle and pedestrian traffic:

- OR 99 (NB) / Oak Street;
- OR 99 (SB) / Oak Street;
- OR 99 / Wimer Street / Hersey Street;
- Walker Avenue / Iowa Street; and
- Mountain Avenue / Iowa Street.

There may be other intersections, mid-block locations, or railway crossings that were not included in the count program that may also qualify for further study. Existing under-serviced demands, such as where "illegal" crossings or informal trails have developed should be considered in the evaluation along with latent demands, which are those pedestrians that would use a crossing or facility if safe and convenient opportunities were provided.

Bicycling Network

The land use and road network pattern in Ashland is a "fishbone" network that consists of one or two east-west "spines" (OR 99 and OR 66) supported by a north-south collector system. The spinal corridors provide a regional traffic mobility function as well as hosting the majority of the City's attraction-based land uses including its retail, commercial, service, and educational hubs. These locations are also attractive to bicycle riders (see Figure 3-1).

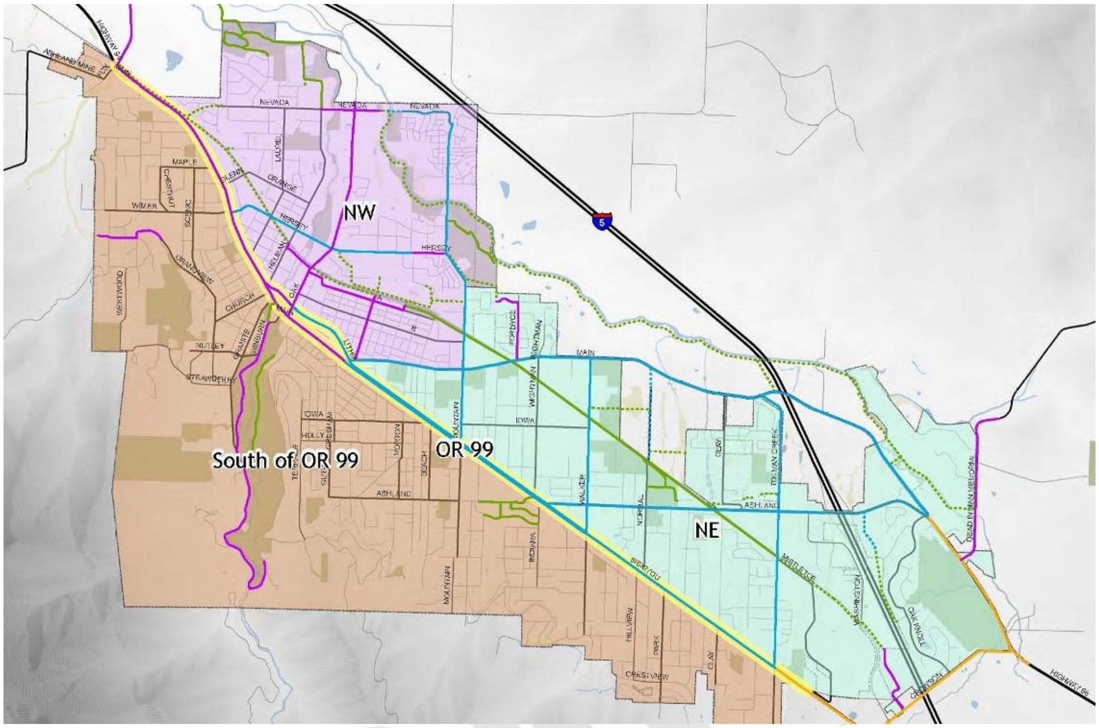
The existing bikeway network reflects the same structure as the major road network (i.e., neighborhood collectors, avenues, and boulevards); there are few continuous alternatives to the boulevard network, particularly routes that connect riders to the major land use attractions.

Overall, the City has approximately 30 miles of bikeway facilities. Approximately half of these are dedicated on-street facilities (i.e., bike lanes or bike shoulders) that cover approximately 32% of the major road network (i.e., neighborhood collectors, avenues and boulevards) in Ashland. An additional 23% of the bikeway network is off-street (i.e., either shared use path or greenway trails) with the remainder of the network consisting of shared roadway or signed shared roadway facilities.

Network Analysis

An analysis of the bicycle network has been conducted that describes the existing system and provides some general comments on gaps in the existing system with a particular focus on facilities that cater towards the "interested but concerned" cycling group. For the purposes of the analysis, the City has been organized into four analysis areas: the north-east quadrant (generally north of Siskiyou Boulevard and east of downtown), the north-west quadrant (north of E Main Street including and west of downtown), south of OR 99, and along OR 99. Exhibit 3-1 illustrates these analysis areas.

Exhibit 3-1 Network Analysis Areas



North-East Quadrant

Currently, there is approximately 7 miles of off-street pathway or trail network in the City of Ashland that caters to the “interested but concerned” cyclist. Some of this is contained within parklands and tends to attract recreational cyclists.

The shared-use path adjacent to the rail corridor between Tolman Creek Road and 6th Street provides the basis of a comprehensive bike network in the north-east quadrant of the City. On-street bike lanes on E Main Street, OR 66 (Ashland Street), Tolman Creek Road, Walker Avenue, and Mountain Avenue provide connections to the attractions along OR 99 and OR 66 at regular spacing – approximately every 0.5 to 1.0 mile.

Future development of the network in the north-east quadrant could include “in-filling” existing connections between the shared-use pathway and OR 99 and OR 66 with a greater emphasis on facilities more appropriate for “interested but concerned” cyclists. This could include on-street (preferably buffered or separated) bike lanes or bicycle boulevards along lower volume streets and alleyways.

North-West Quadrant

Bicycle facilities in the north-west quadrant consist of three primary north-south bikeways including on-street bike lanes on Mountain Avenue and shared lanes on Oak Street and 4th Street (the latter in downtown only). Only Mountain Avenue provides protected facilities and there are no north-south bikeways west of Oak Street.

East-west bikeways include shared lanes along Nevada Street and A Street (downtown) and on-street bike lanes along Hersey Street. A Street may be an appropriate street, in-terms of directness and traffic environment, to provide an interim on-street alternative to the continuation of the shared-use pathway along the rail corridor. There are a number of gaps along the Nevada Street bikeway including an incomplete connection across the creek between Kestrel Parkway and Oak Street and the section west of Helman Street. Apart from those already provided, there are few opportunities for additional east-west bikeway connections due to geographical and physical barriers.

Continuing the shared-use pathway along the rail corridor would provide a comfortable "distributor" function for bicyclists in the north-west quadrant. A number of pathway "stubs" would provide connection to existing bikeways such as Nevada and Hersey Streets as well as development areas such as the lands south of Hersey Street between Mountain Avenue and Oak Street.

Similar to the north-east quadrant, connections to OR 99 can be provided along low volume streets or alleyways in the form of bicycle boulevards or using buffered or separated on-street bike lanes where appropriate. These will supplement or upgrade the existing connections to OR 99 that include an on-street bike lane along Hersey Street and shared roadways along Oak Street, and 4th Street. Additional connections may include a central connection to downtown (perhaps a bicycle boulevard along 1st or 2nd Street) and a north-south connection between Helman and Hersey Streets. A north-south connection reaching into the residential areas west of Oak Street and north of Hersey Street would also be appropriate. This could connect to the existing greenway trail north of Nevada Street.

South of OR 99

The existing cycling network is sparse south of OR 99 with a few off-street pathways provided in the Southern Oregon University campus and in Lithia Park and a shared roadway route along Winburn Way.

There appears to be fewer opportunities to create a continuous bicycle route parallel to OR 99 as is provided by the rail corridor trail on the north side of OR 99. However, there is an opportunity to provide a more circuitous bicycle boulevard network that winds through the local street and alleyway network. This will require additional signing and striping to highlight changes in direction, but would provide an alternative to OR 99 for "interested but concerned" cyclists that are generally less concerned with speed and direct routes.

There are few north-south connections currently. It is recommended that north-south connections to OR 99 occur at a spacing of at least every mile initially to be filled in later to every 0.5 miles or less. At a minimum these should consist of on-street bike lanes, but preferably would consider separated or protected bike lanes along heavier traffic streets or utilize lower volume streets and alleyways to create bicycle boulevards.

OR 99

OR 99 provides the quickest and most direct route through the City as well as between land use attractions which are generally concentrated along the highway. The existing policy of developing on-street bike lanes will continue to attract the "strong and fearless" and "enthused and confident" cycling groups. Therefore, continuing on-street bike lanes north of the E Main Street / Siskiyou Boulevard intersection is still appropriate.

However, to attract the "interested but concerned" cycling group, a system of protected or buffered bike lanes along OR 99 or a parallel alternative route along lower volume streets or an off-street shared pathway is recommended. North of the highway, there are no continuous parallel streets and the shared-use path adjacent the rail corridor is approximately 0.5 miles north of OR 99. There is more potential for a parallel route south of OR 99, although this would be a circuitous combination of local streets. The potential for protected bike lanes along OR 99 should be investigated further.

Some locations along OR 99 may warrant enhanced crossing treatments for less experienced cyclists. This could include median refuge crossings and pedestrian-activated signals with bicycle push buttons. Enhanced crossings should be considered where crossing opportunities are limited by traffic volumes or vehicle speeds or where there is a safety risk for crossing bicyclists.

TRAFFIC ANALYSIS

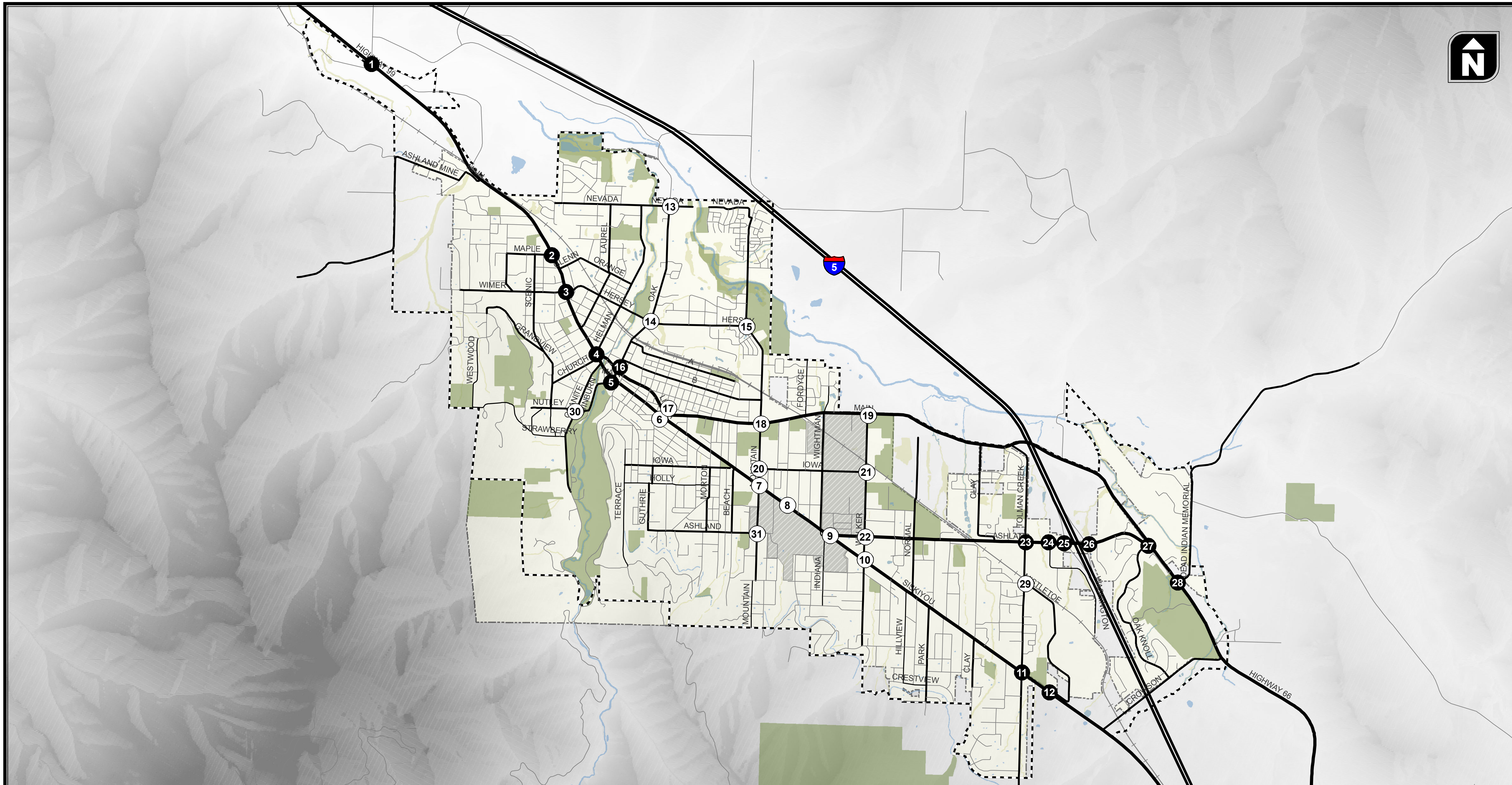
Section 1 includes a detailed inventory of the City of Ashland's roadway facilities for those classified as neighborhood collectors and higher (i.e., neighborhood collectors, avenues, and boulevards). The inventory includes information on functional classification, jurisdictional responsibilities, posted speed limits, surface type, number of lanes and other similar roadway characteristics. The focus of this section is to document the existing traffic operations for the study intersections identified for the TSP update.

Study Intersection Operations Assessment

Existing conditions traffic operations analysis was conducted for 31 key intersections within the City of Ashland during the weekday p.m. peak hour. Technical Memorandum #3 contains detailed information on the traffic count data used in the analysis, the analysis methodology applied, the operational standards used to assess the results, and the development of peak hour traffic volumes for the analysis. The following documents the results of the analysis for the study intersections under existing traffic conditions.

Intersection Delay and Capacity Analysis

Figures 3-5, 3-6, and 3-7 illustrate the study intersection locations, lane configurations and traffic control devices, and the traffic operations results, respectively.



ODOT Study Intersection
City Study Intersection

Existing Traffic Conditions

Figure

3-5

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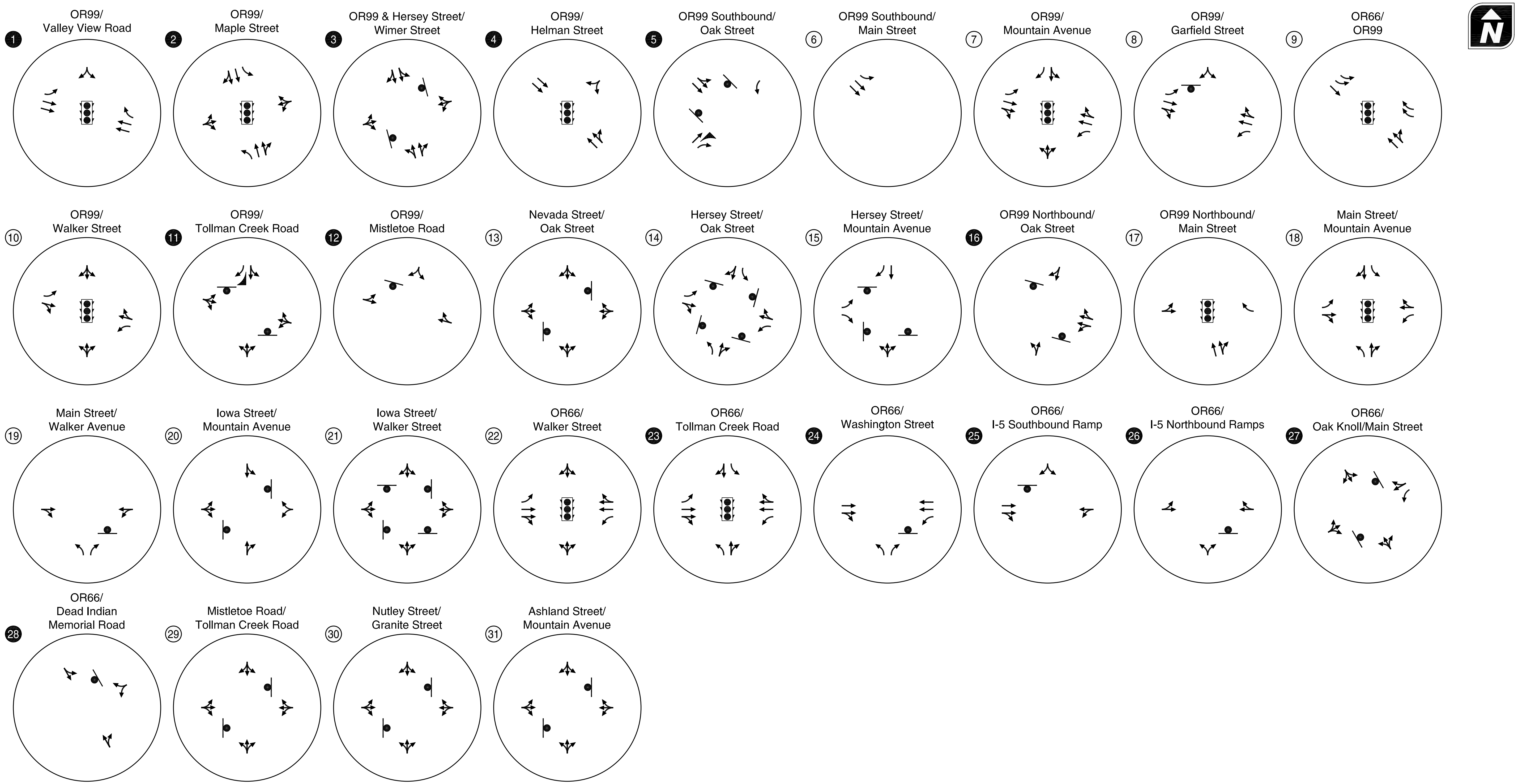
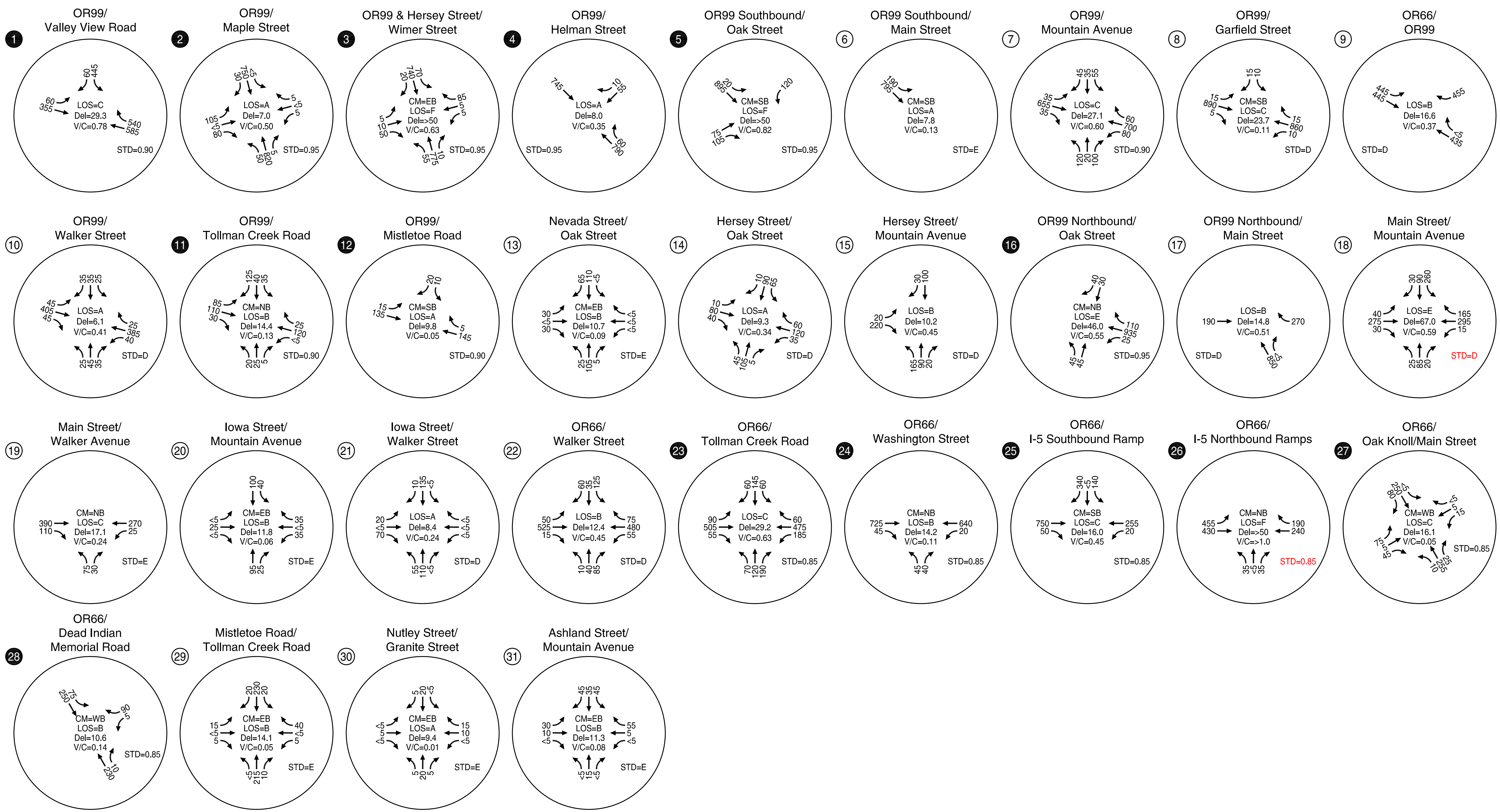


- ODOT STUDY INTERSECTION
- SITY STUDY INTERSECTION
- STOP SIGN
- TRAFFIC SIGNAL

Existing Lane Configurations and Traffic Control Devices

CITY OF ASHLAND

Figure 3-6



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
STD = OPERATIONAL STANDARD

Existing Traffic Conditions
Weekday PM Peak Hour

CITY OF ASHLAND

Figure 3-7

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As shown, there is one study intersection under ODOT's jurisdiction that does not meet its applicable mobility standard. There is also one study intersection under the City of Ashland's jurisdiction that exceeds the LOS D threshold identified for traffic signal controlled intersections in the City of Ashland. The LOS D threshold is not a formal City of Ashland standard (the City does not currently have adopted mobility standards). The LOS D threshold was set for the purpose of this analysis to identify intersections under the City's jurisdiction that may experience existing operational issues.

The intersection under ODOT's jurisdiction that does not meet its applicable mobility standard is OR 66/I-5 Exit 14 NB Ramps intersection. The OR 66/I-5 Exit 14 NB Ramps are located in the southeastern portion of the City. An Interchange Area Management Plan (IAMP) has recently been prepared for the OR 66/I-5 interchange. The intersection improvements identified within the IAMP for the OR 66/I-5 Exit 14 NB Ramps intersection includes converting the existing two-way stop controlled intersection to a signalized intersection, which will help address existing operational issues. The findings and recommendations in the IAMP will be considered when future analysis scenarios are conducted within this TSP update project.

The study intersection under the City of Ashland's jurisdiction identified as potentially experiencing operational issues is East Main Street/Mountain Avenue intersection. The intersection is currently signalized and has exclusive left-turn lanes on all four approaches. The intersection is currently operating with at LOS E with a V/C ratio of 0.59. The southbound left-turn movement in the weekday evening peak hour is the dominant north-south movement and is the likely the contributing factor to the intersections higher average control delay (i.e., LOS E) and relatively low V/C ratio. There are likely signal timing adjustments that could be made to reduce the average control delay at this location.

Intersection Queuing Analysis

Queuing analysis was performed at the study intersections in accordance with the recommendations provided in Section 8.3 of the ODOT *Analysis Procedures Manual*. The 95th Percentile queue lengths reported are from those calculated using Synchro 7 software, which implements the *2000 Highway Capacity Manual* methodology.

As there were 31 intersections included in the analysis, Table 3-4 summarizes the queuing results for the study intersections where storage deficiencies were identified. The queue lengths reported in Table 3-4 were rounded up to the nearest 25 feet. The available storage length is based on the striped storage lane at the intersection. If a striped storage lane is not provided for a movement, the distance between roadways is reported as the available storage. *Appendix D of Technical Memorandum #4: Existing System Conditions in the Technical Appendix* contains the results of the queuing analysis for all of the study intersections.

Table 3-4 95th Percentile Queues at Study Intersections with Storage Deficiencies

Location	Approach/ Movement	95th Percentile Queue (ft)	Striped Storage Available (ft)	Adequate Storage?
OR99/ Valley View Road	WBR	300	100	No
Hersey St/ Mountain Avenue	EBR	150	100	No
OR66/ Tolman Creek Road	EBL	150	100	No
	WBL	225	100	No
	NBL	125	100	No

*The following abbreviations are used in this table: NB: Northbound; SB: Southbound; EB: Eastbound; WB: Westbound; L: Left; LTR: Shared left/through/right lane; LT: Shared left/through lane.

As shown in Table 3-4, seven study intersections were found to have 95th percentile queues on one or more approach that exceed the available storage capacity. The remaining study intersections were found to have adequate storage at each approach.

COLLISION ANALYSIS

Collision analysis was conducted for the Ashland TSP study intersections and key roadway segments within the City. The intersection analysis was performed using ten years of crash data obtained from ODOT; the data covers crashes reported from 2000 through 2009. The segment crash analysis was performed using a GIS data set from the City of Ashland. As part of the analysis, the Statewide Priority Index System (SPIS) was reviewed to determine if ODOT had identified any hazardous locations along OR 99 or OR 66 within the City of Ashland.

Findings from the collision analysis indicated the following.

- ODOT's 2009 SPIS analysis rates OR 99 and OR 66 through Ashland as Category 3 (of 5 categories) or lower indicating 3 to 5 fatal and/or serious injury crashes or fewer per five miles have occurred on OR 66 and OR 99 sometime from 2006 through 2008.
- There are five study intersections with crash rates higher than expected based on crash rates at similar types of intersections within Ashland; these intersections are:
    - OR 99/Hersey Street/Wimer Street;
    - OR 99 SB/Oak Street;
    - OR 99/Tolman Creek Road;
    - OR 99 NB/E Main Street;
    - OR 66/Tolman Creek Road; and
    - OR 66/E Main Street/Oak Knoll Drive.
- The majority of reported crashes on the selected roadway segments were property damage only crashes.

Technical Memorandum4 Existing System Conditions, dated November 23, 2010 presents additional details regarding the collision analysis. The following section summarizes information regarding the safety focus intersections identified based on the collision analysis.

Six intersections were identified as safety focus intersections based on how their crash history compared to other intersections in Ashland with similar characteristics. The safety focus intersections are:

- OR 99/Hersey Street/Wimer Street;
- OR 99 SB/Oak Street
- OR 99/Tolman Creek Road;
- OR 99 NB/Lithia Way/E Main Street;
- OR 66/Tolman Creek Road; and
- OR 66/E Main Street/Oak Knoll Drive.

A more detailed review of the reported crashes at each of these six intersections was conducted to determine potential contributing factors as well as potential countermeasures for reducing crashes. The results of the more detailed review are summarized in Table 3-5. Technical Memorandum 4 Existing System Conditions describes each intersection and the potential improvements in more detail

Table 3-5 Potential Countermeasures at Safety Focus Intersections

Intersection	Potential Countermeasures
OR 99/Hersey Street/Wimer Street	• Add left-turn pockets and/or right-turn lanes on OR 99. • Consider installing a traffic signal or roundabout. • Convert access to Hersey Street and Wimer Street to right-in/right-out access only.
OR 99 SB/Oak Street	• Consider realigning southern approach from off-street parking to occur at closer to a 90-degree angle.
OR 99/Tolman Creek Road	• Prohibit parking on OR 99 in the vicinity of the intersection. • Conduct a speed study and investigate potential speed reduction treatments.
OR 99 NB/Lithia Way/E Main Street	• Consider automated enforcement such as installing red-light running cameras.
OR 66/Tolman Creek Road	• Consider automated enforcement such as installing red-light running cameras.
OR 66/E Main Street/Oak Knoll Drive	• Conduct a sight-distance evaluation at the intersection. • Add left-turn and right-turn pockets on OR 66. • Investigate prevailing vehicle speeds on OR 66 and consider treatments to reduce vehicle speeds. • Increase intersection sight distance by realigning intersection approaches.

BRIDGE CONDITIONS

Using the ODOT Bridge Management System, conditions for ten bridges were investigated based the inspection report database *PONTIS*. No inspection records were found for Hamilton Creek, Highway 21 Bridge (No. 03676A). There are many factors that go into the decision-making process for determining whether a bridge needs to be replaced or rehabilitated. The sufficiency rating (SR) can be a useful assessment tool and used as an indicator to the condition of the bridge. The following are not absolutes, but guidelines that some agencies have used:

- An SR less than 50 is a sign that the bridge may need to be replaced.
- SRs between 50 and 70 indicate that the bridge may need to be rehabilitated.
- SRs above 70 may require some maintenance and repair.

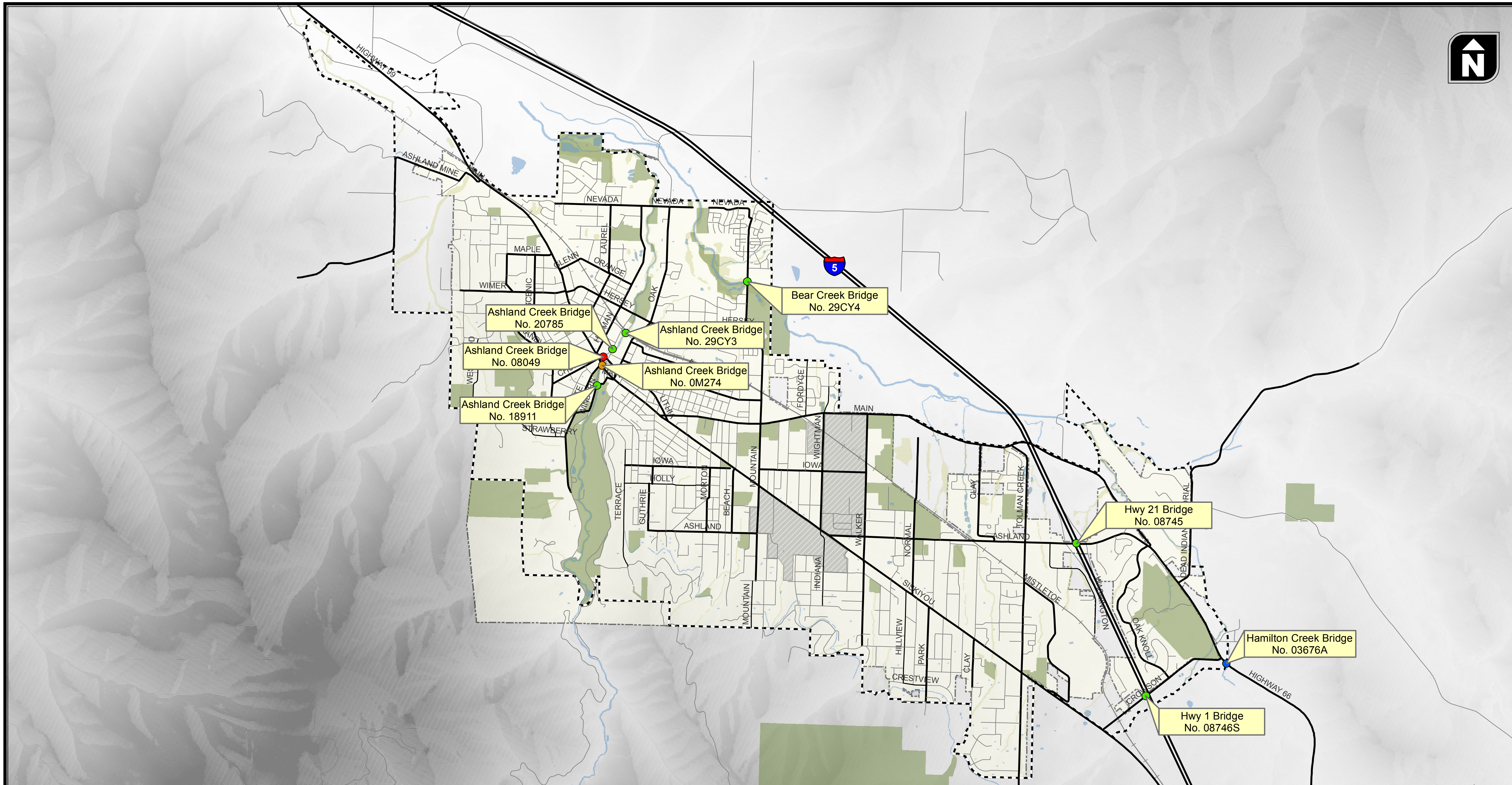
Table 3-6 summarizes the bridge conditions for the ten bridges investigated.

Table 3-6 Bridge Condition Summary

Bridge No.	Bridge Name	Location	Sufficiency Rating	Year Built
08049	Ashland Creek, Hwy 63 NB (Lithia Way)	027 MI N ASHLAND	6.0 (Structurally Deficient)	1956
0M274	Ashland Creek, Hwy 63 SB (N Main Street)	018 MI N ASHLAND SCL	66.5 (Functionally Obsolete)	1911
29CY3	Ashland Creek, Van Ness Ave	0.1 EAST OF HELMAN ST	67.1 (Not Deficient)	1974
08745	Hwy 21 over Hwy 1 (Ashland Street over I-5)	00.0 INTERSECT HWY 001	73.5 (Not Deficient)	1963
18911	Ashland Creek, Winburn Way	WINBURN WY AT LITHIA PARK	79.4 (Not Deficient)	2000
08746S	Hwy 1 SB (I-5 SB) over Crowson Rd	13.3 MI N CA STATE LINE	81.0 (Not Deficient)	1963
20785	Ashland Creek, Water St	0.3 NORTH OF B STREET	82.4 (Not Deficient)	2006
29CY4	Bear Creek, Mountain Ave	MOUNTAIN AVE AT BEAR CR	83.3 (Not Deficient)	1967
03676A	Hamilton Creek, Hwy 21 (OR 66)	002 MI W HWY I		

Note: *Inspection report not available.

Figure 3-8 illustrates the location of each bridge noted in Table 3-6 and its corresponding sufficiency rating. *Appendix H in Technical Memorandum #3: System Inventory in the Technical Appendix contains additional information for each bridge including bridge length, structural materials, and observations from inspection reports.*



Not Deficient

Structurally Deficient

Functionally Obsolete

Report Not Available

Bridge Location and Sufficiency Rating

Figure

3-8

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AIR, RAIL, PIPELINE, AND WATER

In the course of inventorying the existing air, rail, pipeline, and water transportation facilities within the City of Ashland and those serving the City of Ashland deficiencies in these systems were not identified. Forthcoming future conditions analysis will consider the potential demand for expanding such services as passenger rail which is currently not provided to/from the City of Ashland.

INTRA-MODAL AND INTER-MODAL CONNECTIONS

The City of Ashland does not currently contain hubs for intra-modal and inter-modal connections. The nearest transit center is located in Medford, Oregon, which is approximately 15 miles northwest of Ashland. While rail freight passes through Ashland on the Central Oregon and Pacific Railroad there are no major transfer hubs for rail to truck freight movements nor are there such transfer or intra-modal connections between air and truck freight.

Section 4
Future Demand, Land Use, and Funding

FUTURE DEMAND, LAND USE, FUNDING

This section documents the results of the future “No-Build” traffic conditions analysis prepared for the TSP Update. This section includes an evaluation of how the study intersections are expected to operate in the year 2034 assuming growth and development occur without any modifications to the transportation system and an evaluation of existing and future multimodal levels-of-service (MMLOS) along six major roadways throughout the City.

FUTURE “NO-BUILD” TRAFFIC OPERATIONS

Technical Memorandum #4 provides a detailed description of the no-build traffic conditions analysis, including the future population and employment growth assumptions used in the intersection operations and multi-modal level-of-service (MMLOS) analyses and a description of the methodology used to develop forecast traffic volumes at the study intersections. The following presents the results of the analyses and identifies future funding forecasts and funding options for future transportation system improvements.

FUTURE POPULATION AND EMPLOYMENT ASSUMPTIONS

The following documents the modeling assumptions for the 2034 future no-build traffic conditions analysis and evaluates the differences between the population and employment growth assumptions included in the Rogue Valley Metropolitan Planning Organization’s travel demand model (RVMPO2) and existing City plans. As discussed in the following sections, the population and employment assumptions included in the RVMPO2 model are inconsistent with population and employment projections included in the City’s comprehensive plan and the City’s Economic Opportunities Analysis.

Population and Employment Growth

Table 4-1 documents the 2009 certified population estimate for Ashland along with the year 2040 and interim year 2034 population forecasts based on the City’s comprehensive plan. As shown, the comprehensive plan estimates an increase of 3,959 people between 2009 and 2034, or approximately 158 people per year.

Table 4-1 City of Ashland Actual Population and Comprehensive Plan Growth

Year	Population	Difference	Annual Growth	
2009*	21,505			
2034	25,464	3,959 (Year 2034-2009)	158 people/yr	0.74%/yr

*Certified 2009 population by PSU

Table 4-2 provides the 2007 jobs and projected 2037 jobs from the City’s Economic Opportunities Analysis along with 2009 and 2034 jobs interpolated for the purpose of this analysis. As shown in Table

2, the City's EOA estimates an increase of 2,212 jobs between 2009 and 2034, or approximately 88 jobs per year.

Table 4-2 City Economic Opportunities Analysis Job Forecast

Year	Jobs	Difference	Annual Growth	
2007	13,107			
2037	15,761	2,654 (Year 2007-2037)	88 jobs/yr	0.68%/yr
2009*	13,284			
2034*	15,496	2,212 (Year 2009-2034)	88 jobs/yr	0.67%/yr

*Interpolated year using straight-line growth between data provided

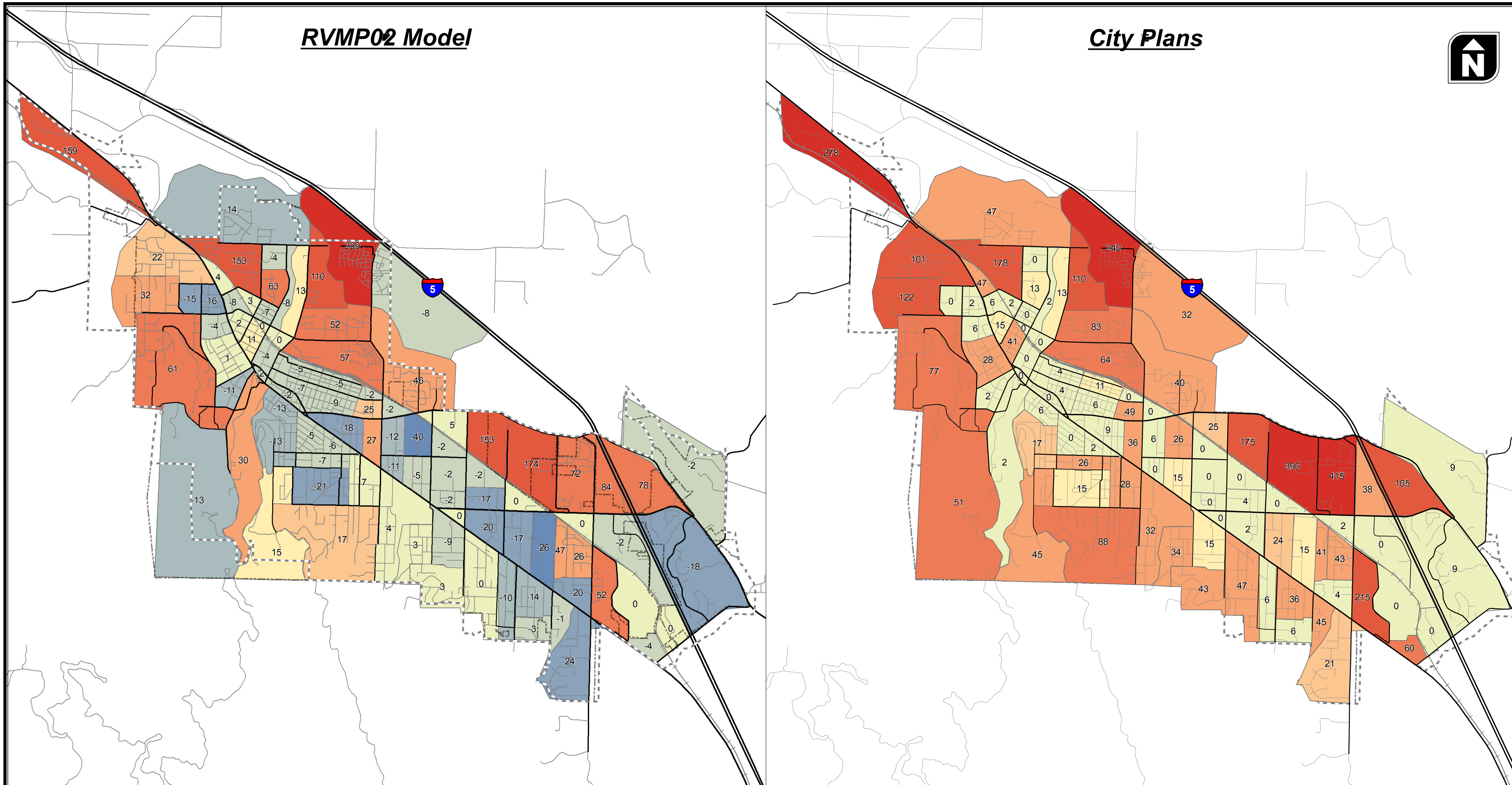
Table 4-3 documents the 2009 and 2034 population and employment growth forecasts within the City's urban growth boundary included in the RVMPO2 travel demand model. It should be noted that the extents of the RVMPO2 model does not align directly with the city's urban growth boundary; therefore, it is the average annual growth rate that is most important and not the 2009 base data.

Table 4-3 RVMPO2 Model and Ashland Projected Population and Employment (within Ashland UGB)

	RVMPO 2 Model				City Plans	
	2009 Base	2034 Base	2009-2034 Difference	Annual Growth	Annual Growth	Source
Households (HH)	10,935	11,604	669	27 HH/yr		
Population (people)	23,941	25,528	1,587	63 people/yr	158 people/yr	City Comp Plan
Employment (jobs)	14,484	18,806	4,322	173 jobs/yr	88 jobs/yr	City EOA

As shown in Table 4-3, the RVMPO2 model population growth is significantly less than what is projected in the city's comprehensive plan and the employment growth is significantly higher than the City's EOA. Figures 4-1 and 4-2 illustrate the differences in the population and employment growth assumptions in the RVMPO2 model and the City's comprehensive plan and EOA. As shown in Figure 4-1, the City's comprehensive plan anticipates significantly more growth in population throughout the city than the RVMPO2, while Figure 4-2 shows that the RVMPO2 model anticipates significantly more growth in employment throughout the city than the City's EOA.

Further evaluation of the differences between the model and City plans is included in the following sections, including an evaluation of how the differences impact traffic operations at the study intersections.



- -50
-49 - -25
-25 - -15
-15 - -10
-10 - 0
0 - 10
10 - 15
15 - 25
25 - 50
50 - 100
100 - 250
250+
City Limits
City UGB

Population Growth Assumptions by TAZ

Figure

4-1

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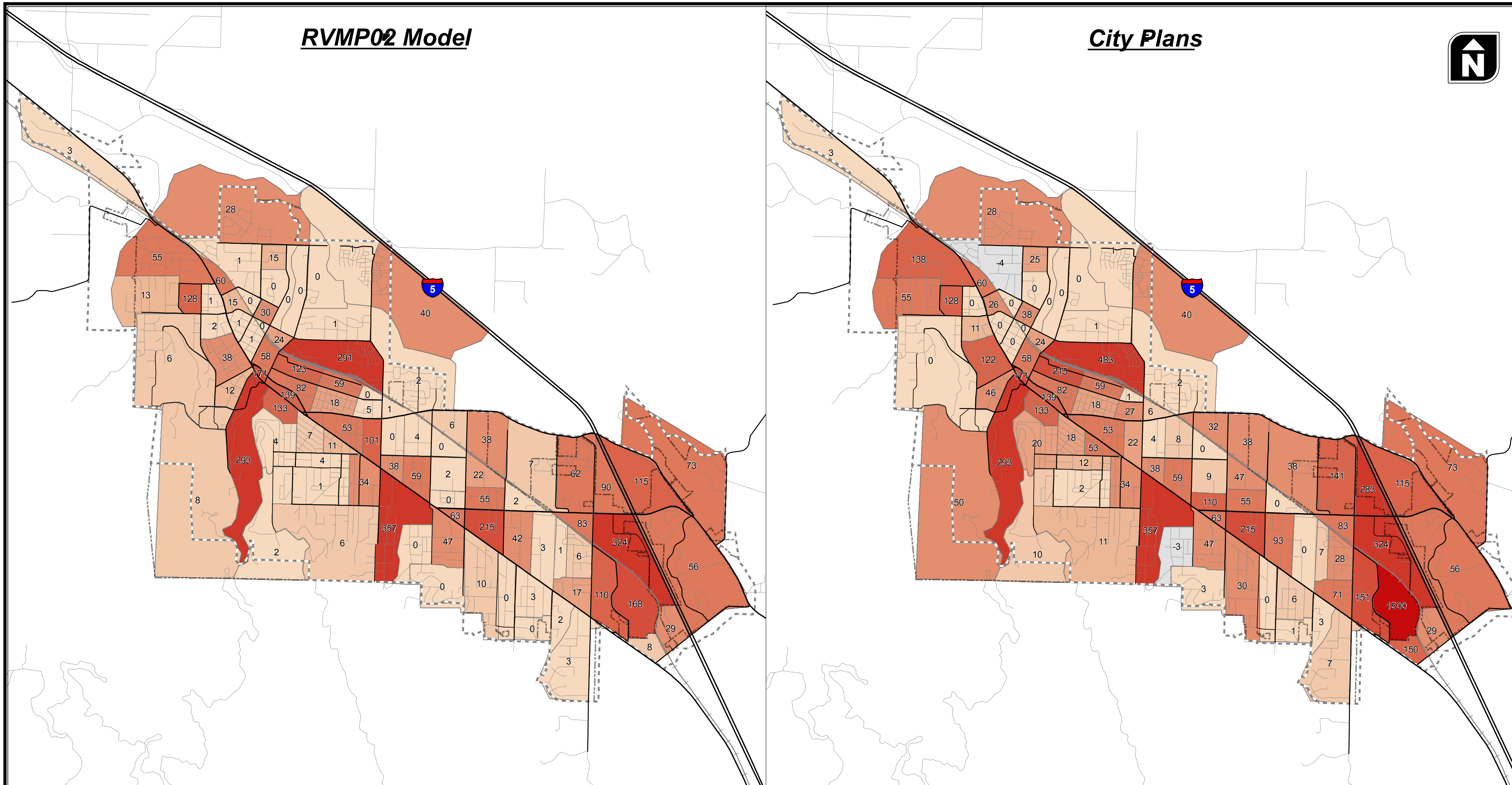

-0	15 - 25	150 - 250	City Limits
0 - 5	25 - 50	250 - 500	City UGB
5 - 10	50 - 100	500 - 1000	
10 - 15	100 - 150	1000+	

Employment Growth Assumptions by TAZ

Figure 4-2

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FUTURE TRANSPORTATION CONDITIONS

The following describes the weekday p.m. peak hour traffic volumes and the projected weekday p.m. peak hour traffic operations under year 2034 no-build traffic conditions.

Traffic Operations Analysis Results

Level-of-service (LOS), volume-to-capacity (v/c) ratios, and 95th percentile queue lengths were calculated for each of the study intersections. The following present the results of these analyses and discusses which intersections do not meet the applicable standards under future no-build traffic conditions. While the results of the analyses are based on the assumptions in the RVMPO2 model, an evaluation of how a model based on the City's Comprehensive Plan and EOA is also provided for informational purposes.

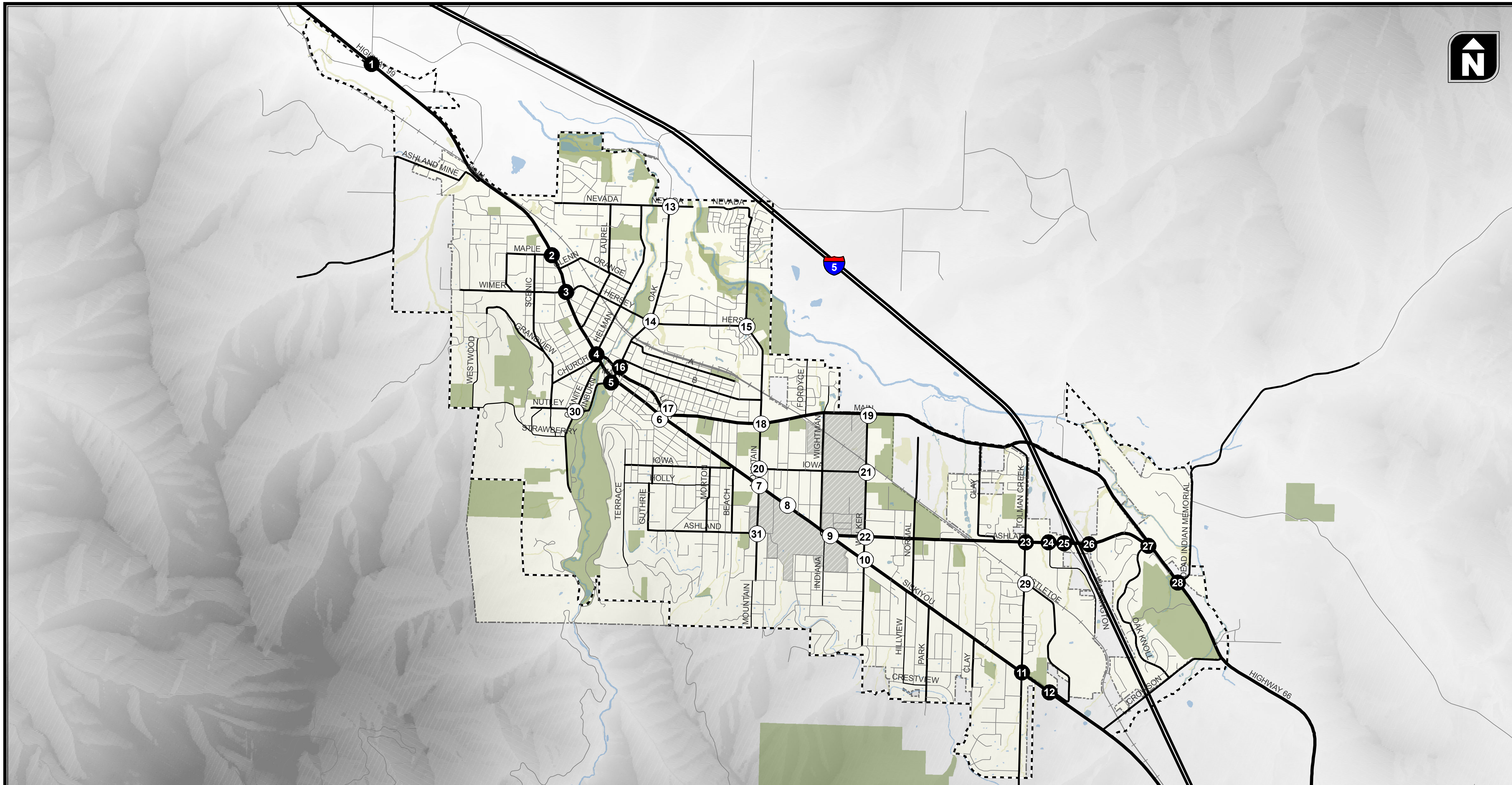
Intersection Delay and Capacity Analysis

Figures 4-3, 4-4, and 4-5 illustrate the study intersection locations, lane configurations and traffic control devices, and the traffic operations results, respectively.

As shown in Figure 4-3, there are three study intersections under ODOT's jurisdiction that are forecast to exceed the applicable OHP mobility standard under future no-build traffic conditions. Improvements at these intersections as well as those potentially impacted by other future "build" improvements will need to satisfy the mobility standards identified previously. Alternatively, the City and ODOT may seek alternative mobility standards for these intersections. Further evaluation of operations at the study intersections based on link volumes derived from the City's Comprehensive Plan and EOA is provided below.

OR 66 (Ashland Street)/I-5 Northbound/Southbound Ramp Terminals

Operations at the Ashland Street (OR66)/I-5 Northbound/Southbound Ramp terminals reflect intersection improvements currently underway, including the conversion of the existing two-way stop controlled intersections to signalized intersections. As indicated in the existing conditions analysis, an Interchange Area Management Plan (IAMP) has recently been prepared for the OR 66/I-5 interchange, which includes additional access management measures near the interchange. The findings and recommendations of the IAMP will be considered when future "build" analysis scenarios are conducted within this TSP update project.



ODOT Study Intersection
City Study Intersection

Year 2034 Future No-Build Study Intersections

Figure

4-3

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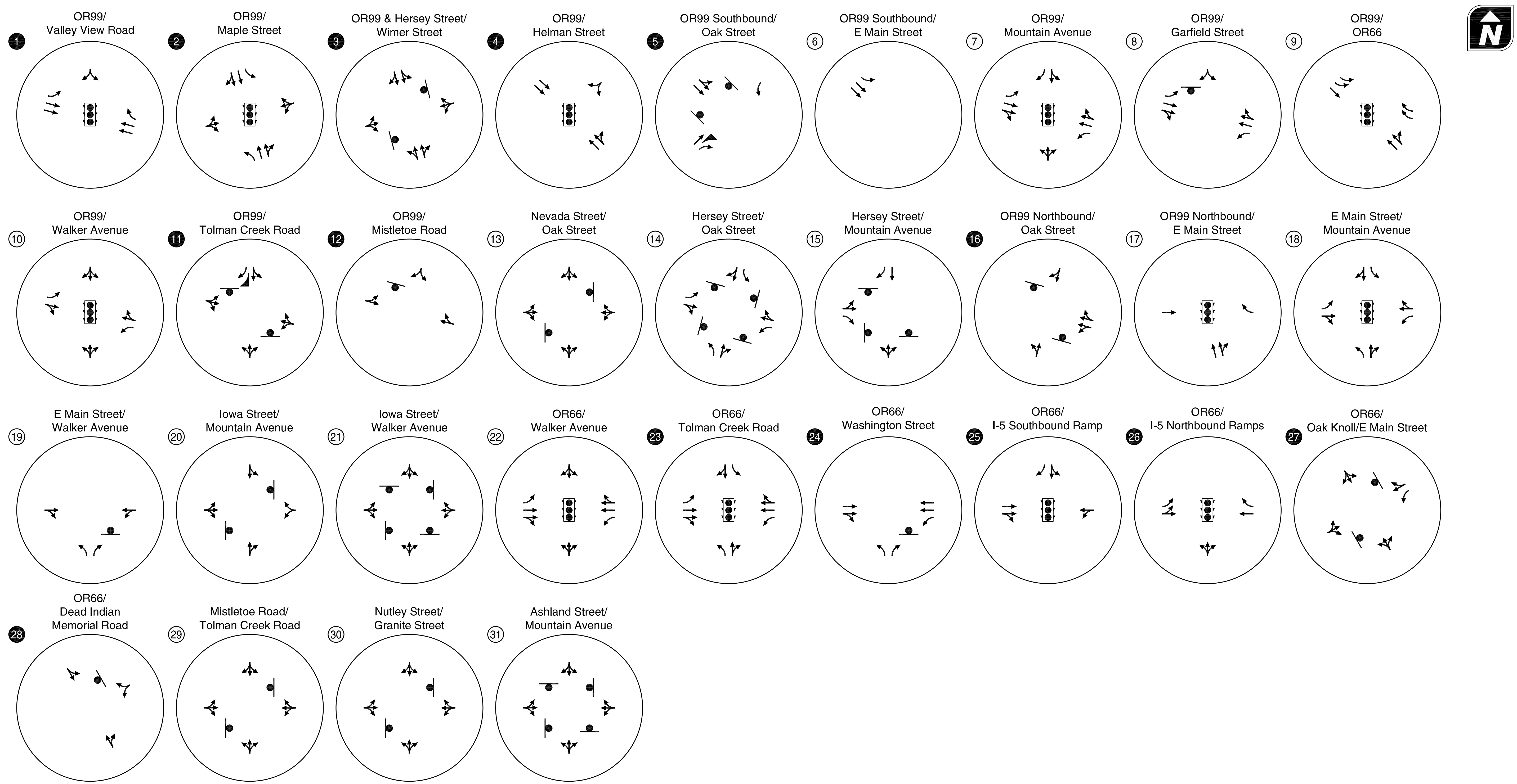
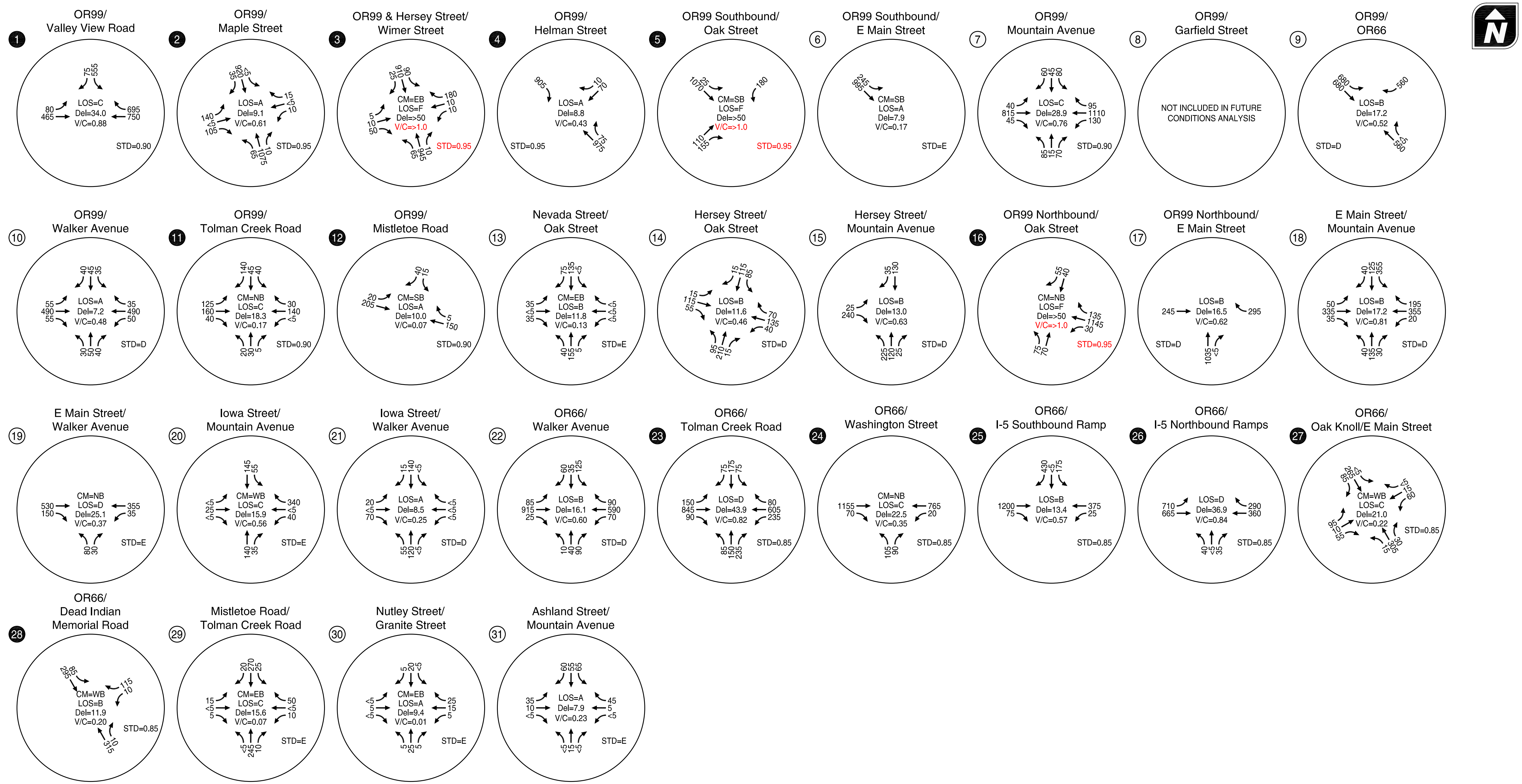


- ODOT STUDY INTERSECTION
- SITY STUDY INTERSECTION
- STOP SIGN
- TRAFFIC SIGNAL

Year 2034 Future No-Build Lane Configurations and Traffic Control Devices

CITY OF ASHLAND

Figure 4-4



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
STD = OPERATIONAL STANDARD

Year 2034 Future No-Build Traffic Conditions
Weekday PM Peak Hour

CITY OF ASHLAND

Figure 4-5

N Main Street (OR99)/Wimer Street

The N Main Street (OR99)/Wimer Street intersection is a four-leg, stop-controlled intersection with two north-southbound travel lanes and one east-westbound shared left-through-right lane. Both the east and westbound approaches to the intersection are forecast to operate at LOS F and above capacity during the weekday p.m. peak hour under future no-build traffic conditions with relatively few minor street left-turns or through movements. Signal Warrants at the N Main Street (OR99)/Wimer Street intersection are presented in the next section.

E Main Street (OR99 SB)/Oak Street

The E Main Street (OR99 SB)/Oak Street intersection is a four-leg intersection with two eastbound travel lanes, one stop-controlled southbound left-turn lane, one stop-controlled northbound through lane, and a free-flow northbound right-turn lane. The northbound approach to the intersection is forecast to operate at LOS F and below capacity during the weekday p.m. peak hour with 108 northbound through movements and 153 northbound rights while the southbound approach is forecast to operate at LOS F and above capacity with 182 southbound rights. Signal warrants at the E Main Street (OR99 SB)/Oak Street intersection are presented in the next section.

Lithia Way (OR99 NB)/Oak Street

The Lithia Way (OR99 NB)/Oak Street intersection is a four-leg intersection with two westbound travel lanes, one northbound shared left-through travel lane, and one southbound shared through-right travel lave. The north and southbound approaches are currently stop controlled. The northbound approach to the intersection is forecast to operate a LOS F and above capacity during the weekday p.m. peak hour with 77 northbound lefts and 70 northbound throughs, while the southbound approach is forecast to operate at LOS E and below capacity with 42 southbound throughs and 54 southbound rights. Signal Warrants at the Lithia Way (OR99 NB) /Oak Street intersection are presented in the next section.

Traffic Signal Warrants

Traffic signal warrants were evaluated at the unsignalized intersections identified above in accordance with the methodology described in Section 7.4.1 of the ODOT *Analysis Procedures Manual*. For a long-term future conditions analysis signal warrants 1, Case A and Case B, which deal primarily with high volumes on the intersecting minor street and high volumes on the major-street must be met. Meeting preliminary signal warrants does not guarantee that a signal shall be installed. Before a signal can be installed a field warrant analysis is conducted by the Region. If warrants are met, the State Traffic Engineer will make the final decision on the installation of a signal. Table 4-4 summarizes the signal warrant analysis for the study intersections under future no-build traffic conditions.

Table 4-4 Signal Warrant Analysis - 2034 future traffic Conditions

Intersection	Peak Hour Traffic Volumes				Preliminary Signal Warrants	
	EB	WB	NB	SB	Case A - Minimum Vehicular Volumes	Case B – Interruption of Continuous Traffic
N Main Street (OR99)/ Wimer Street	181	191	1,021	1,019	No	No
E Main Street (OR99 SB)/ Oak Street	1,094	0	108	182	No	No
Lithia Way (OR99 NB)/ Oak Street	0	1,312	147	96	No	No

[1] All of the eastbound rights and a majority of the westbound rights were excluded from the signal warrant analysis at the N Main Street/Wimer Street intersection based on the methodology described in Section 7.4.1 of the APM.

As shown in Table 4-4, preliminary signal warrants were not met at any of the intersections identified as deficient under future no-build traffic conditions. Additional signal warrants, including the Four Hour and Peak Hour warrants were also evaluated at the intersections under future no-build traffic conditions. However, these warrants were also not met. While traffic signal warrants are not met under future conditions based on the existing lane configurations, traffic signal warrants are likely to be met at each of these study intersections if the number of through lanes were to be reduced.

Intersection Queuing Analysis

A queuing analysis was performed at the study intersections under future traffic conditions in accordance with the recommendations provided in Section 8.3 of the APM. The APM recommends the use of SimTraffic for estimating queues at intersections belonging to a coordinated signal systems. SimTraffic performs microsimulation and animation of vehicle traffic, modeling travel through signalized and unsignalized intersections and arterial networks, with cars, trucks, pedestrians and buses. SimTraffic includes the vehicle and driver performance characteristics developed by the Federal Highway Administration for use in traffic modeling. SimTraffic is primarily used by ODOT for the analysis of signal systems and vehicle queue estimation, especially in congested areas and locations where queue spillback may be a problem.

The results of the queuing analysis represent an average of 5 consecutive, random runs of the SimTraffic model as recommended by the APM. As there were 30 intersections included in the analysis, Table 4-5 summarizes only the queuing results for the study intersections where storage deficiencies are anticipated. The queue lengths reported in Table 4-5 were rounded up to the nearest 25 feet. The available storage length is based on the striped left and right-turn storage lanes at the intersection.

Table 4-5 95th Percentile Queues at Study Intersections with Storage Deficiencies

Location	Approach/ Movement	95th Percentile Queue (ft)	Striped Storage Available (ft)	Adequate Storage?	Additional Storage Required (ft)
OR99/ Valley View Road	EBL	200	150	No	50
	WBR	150	100	No	50
Mountain Avenue/ Siskiyou Blvd (OR99)	WBL	175	125	No	50
	SBL	150	100	No	50
Mountain Avenue/ E Main Street	EBL	125	100	No	25
	SBTR[1]	250	200	No	50
Ashland Street (OR66)/ Walker Avenue	EBL	150	100	No	50
	WBL	125	100	No	25
Ashland Street (OR66)/ Tolman Creek Road	EBL	150	100	No	50
	WBL	150	100	No	50
	NBL	175	100	No	75
	SBL	150	100	No	50
Ashland Street (OR66)/ Washington Street	NBL	225	150	No	75

[1]The 95th percentile queue for the southbound through-right (SBTR) turn movement extends beyond the 200-feet of available storage into the southbound left turn lane, which is the dominant movement at the intersection.

*The following abbreviations are used in this table: NB: Northbound; SB: Southbound; EB: Eastbound; WB: Westbound; L: Left; LTR: Shared left/through/right lane; LT: Shared left/through lane.

As shown in Table 4-5, there are six study intersections that were found to have 95th percentile queues on one or more approach that exceed the available storage capacity under future no-build traffic conditions. The remaining study intersections were found to have adequate storage at each approach.

Intersection Queuing Analysis - Synchro

The 95th percentile queues shown in the Synchro analysis results were further reviewed to identify the study intersections where 95th percentile traffic volumes are expected to either exceed the capacity of the intersection or be metered by an upstream intersection. The reported queues at these locations are expected to be longer than what is shown in Synchro. Table 4-6 summarizes the study intersections and the individual turning movements where 95th percentile traffic volumes either exceed capacity or are being metered. Per direction from ODOT's Transportation Planning Analysis Unit, the information shown in Table 4-6 is for informational purposes and is not be used as a basis for TSP project decisions.

Table 4-6 95th Percentile Volumes that Exceed Capacity or are Metered

Intersection	Movement	95th Percentile Volumes	
		Exceeds Capacity?	Metered?
OR99/S Valley View Road	EBL	Yes	No
	WBR	Yes	No
	SBL	Yes	No
Mountain Avenue/Siskiyou Blvd (OR99)	EBT	Yes	No
	WBT	Yes	No
	SBR	No	Yes
Mountain Avenue/E Main Street	WBT	Yes	No
	NBL	No	Yes
	NBT	No	Yes
	SBL	Yes	No
Tolman Creek Road/Ashland Street (OR66)	EBT	Yes	No
	WBL	Yes	No
	NBT	Yes	No
Ashland Street (OR66)/I-5 SB Ramp	WBT	No	Yes
Ashland Street (OR66)/I-5 NB Ramp	EBL	Yes	No
	EBT	Yes	No
	WBT	Yes	No

*The following abbreviations are used in this table: NB: Northbound; SB: Southbound; EB: Eastbound; WB: Westbound; L: Left; LTR: Shared left/through/right lane; LT: Shared left/through lane.

RVMPO2 VS COMPREHENSIVE PLAN AND EOA

As indicated previously, operations at the study intersections were further evaluated based on link volumes derived from the City's Comprehensive Plan and EOA. A preliminary review of the City's link volumes indicates that there are relatively minor differences along many of the major roadways throughout the City. The differences that are shown include link volumes that are both higher in some areas and lower in others. In areas where the City's link volumes were found to be higher, the impacts on operations at the intersections were evaluated following the same methodology described above. Table 4-6 summarizes the study intersections with link volumes on one or more approaches that were significantly higher than the link volumes from the RVMPO2 model. Table 4-7 also summarized the operations at the study intersections given both sets of volumes.

Table 4-7 RVMO2 Model vs. City Plans

Intersection	Mobility Standard	RTP Model			City Plans		
		V/C	Delay	LOS	V/C	Delay	LOS
Mountain Avenue/Siskiyou Blvd (OR99)	0.90	.76	28.9	C	.77	26.5	C
Tolman Creek Road/Siskiyou Blvd (OR99)	0.90	.17	18.3	C	.27	25.7	D
Mistletoe Road/Siskiyou Blvd (OR99)	0.90	.07	10.0	A	.31	12.4	B
Oak Street/Nevada Street	LOS E	.13	11.8	B	.14	12.1	B
Oak Street/Hersey Street	LOS D	.46	11.6	B	.47	11.9	B
Mountain Avenue/Hersey Street	LOS D	.63	13.0	B	.60	12.5	B
Tolman Creek Road/Ashland Street (OR66)	0.85	.82	43.9	D	.78	39.4	D
Oak Knoll Drive/Ashland Street (OR66)	0.85	.22	21.0	C	.40	19.3	C
Tolman Creek Road/Mistletoe Road	LOS E	.07	15.6	C	.10	20.9	C

As shown in Table 4-7, the overall impact of the City's higher link volumes on one or more approach to the study intersections was not sufficient to cause any of the intersections to fail to meet their applicable mobility standards. In addition, lower link volumes on one or more approaches to the intersections often off-set the higher link volumes, and in some cases, improved operations at the intersections (operations at the intersections shown in grey improved with the application of the City's link volumes, despite higher link volumes at one or more approach).

In areas where the City's link volumes were found to be lower on one or more approach, the impact on operations at the intersections found to be failing under the RVMPO2 model were evaluated following the same methodology described above. Table 4-8 summarizes the intersections that were anticipated to fail under the RVMPO2 model and the resulting operations given the application of the City's link volumes.

Table 4-8 RVMO2 vs. City Plans

Intersection	Mobility Standard	RTP Model			City Plans		
		V/C	Delay	LOS	V/C	Delay	LOS
N Main Street (OR99)/Wimer Street	0.95	1.06	226.1	F	1.08	158.1	F
E Main Street (OR99 SB)/Oak Street	0.95	3.55	Err1	F	2.40	718.1	F
Lithia Way (OR99 NB)/Oak Street	0.95	1.10	169.5	F	0.48	46.5	E

[1]When the volume/capacity of an intersection exceeds 3.0, Synchro presents an error in place of the Delay.

As shown in Table 4-8, the Lithia Way (OR99 NB)/Oak Street intersection would meet its applicable mobility standard with a v/c of 0.48, while the remaining intersection would improve slightly either in terms of v/c, delay, or LOS, but continue to fail to meet their individual applicable mobility standards.

It should be noted that the results shown in Tables 4-7 and 4-8 are for informational purposes and can not be used as a basis TSP project decisions unless new population forecasts are adopted by the County, the model is revised and rerun, and this analysis is updated to reflect any changes between the assumptions in the "City Plans" and the final assumptions.

MULTI-MODAL LEVEL-OF-SERVICE

A multi-modal level-of-service (MMLOS) analysis was conducted along six major corridors throughout the City of Ashland; the corridors evaluated were: N Main Street/E Main Street/Siskiyou Boulevard (OR99), Ashland Street (OR66), E Main Street, Mountain Avenue, Walker Avenue, and Tolman Creek Road. Each corridor was divided into several segments based on the location of major study intersections and changes in the roadway characteristics. The analysis was conducted in accordance with the methodology described in the National Cooperative Highway Research Program Report 3-70, which has been included in the 2010 Highway Capacity Manual. It should be noted that the MMLOS methodology was originally developed for smaller scale analyses within a detailed corridor study or evaluation. It was applied here at a larger scale and indicates the general trends in performance for each mode; however, it is not intended to precisely represent users' experiences as a bicyclist, pedestrian, and/or transit user.

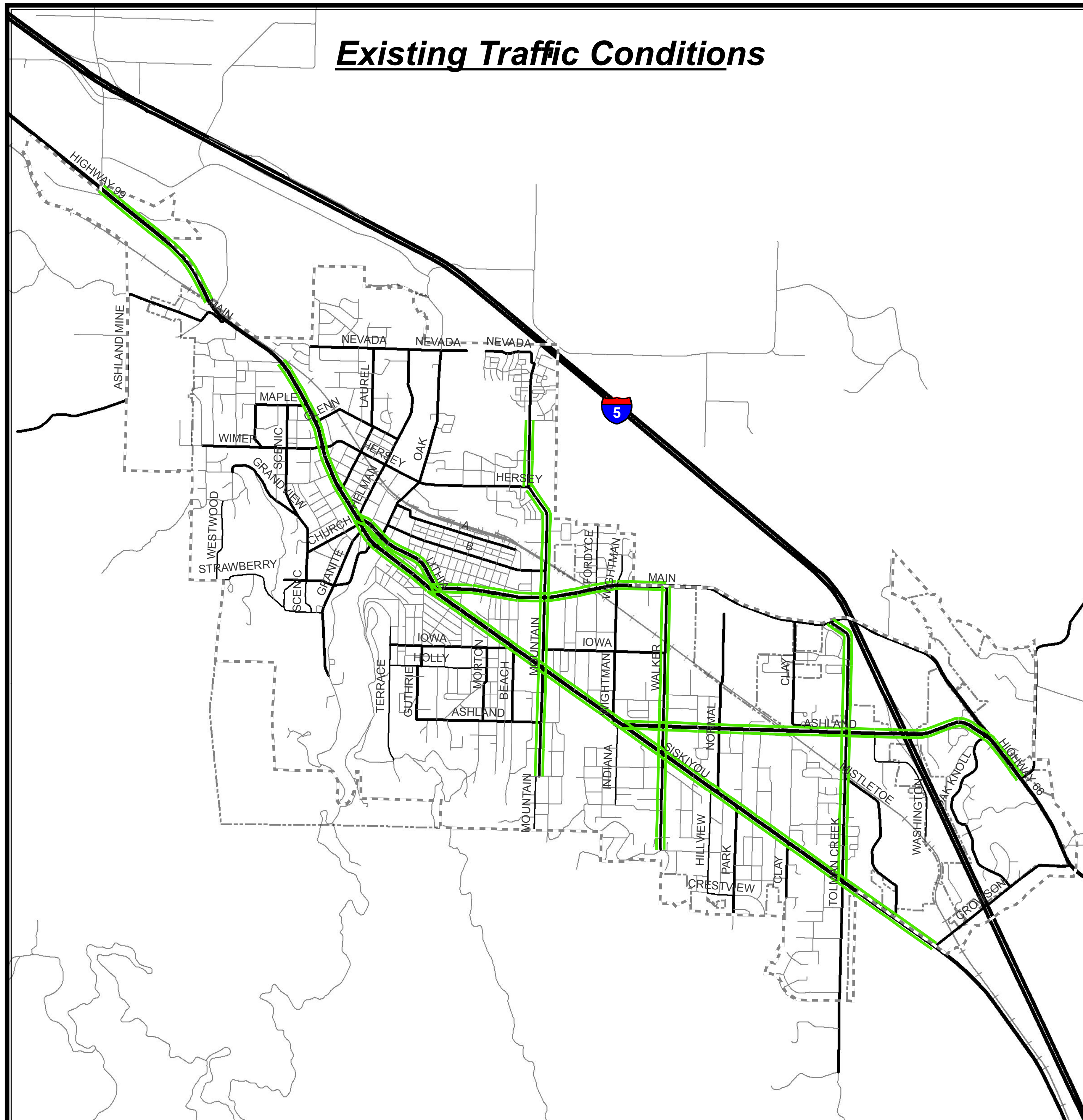
NCHRP 3-70 provides a set of recommended procedures for predicting traveler perceptions of quality of service and performance measures along urban streets. A level-of-service for each mode is derived based on several inputs related to conditions along the roadway. The types of inputs considered by this analysis for bicyclists and pedestrians include peak hour traffic volumes, presence and width of sidewalks and bicycle lanes, crossing delay, and driveway and unsignalized intersection density; for transit users, access to transit facilities, headways, and travel experiences play an important role.

Figure 4-6, 4-7, 4-8, and 4-9 summarize the results of the MMLOS analyses conducted under existing and future no-build traffic conditions for auto, transit, bicycle, and pedestrian facilities, respectively. As shown there is little difference in the level-of-service between the two travel directions shown along each corridor. Where there are differences, it is typically due to the presence of a sidewalk, bike lane, or unsignalized intersections and/or driveways with high traffic volumes on one side, but not the other. There is also little difference between existing and future no-build traffic conditions. The differences that are present reflect the influence of traffic volumes on the level-of-service for each mode.

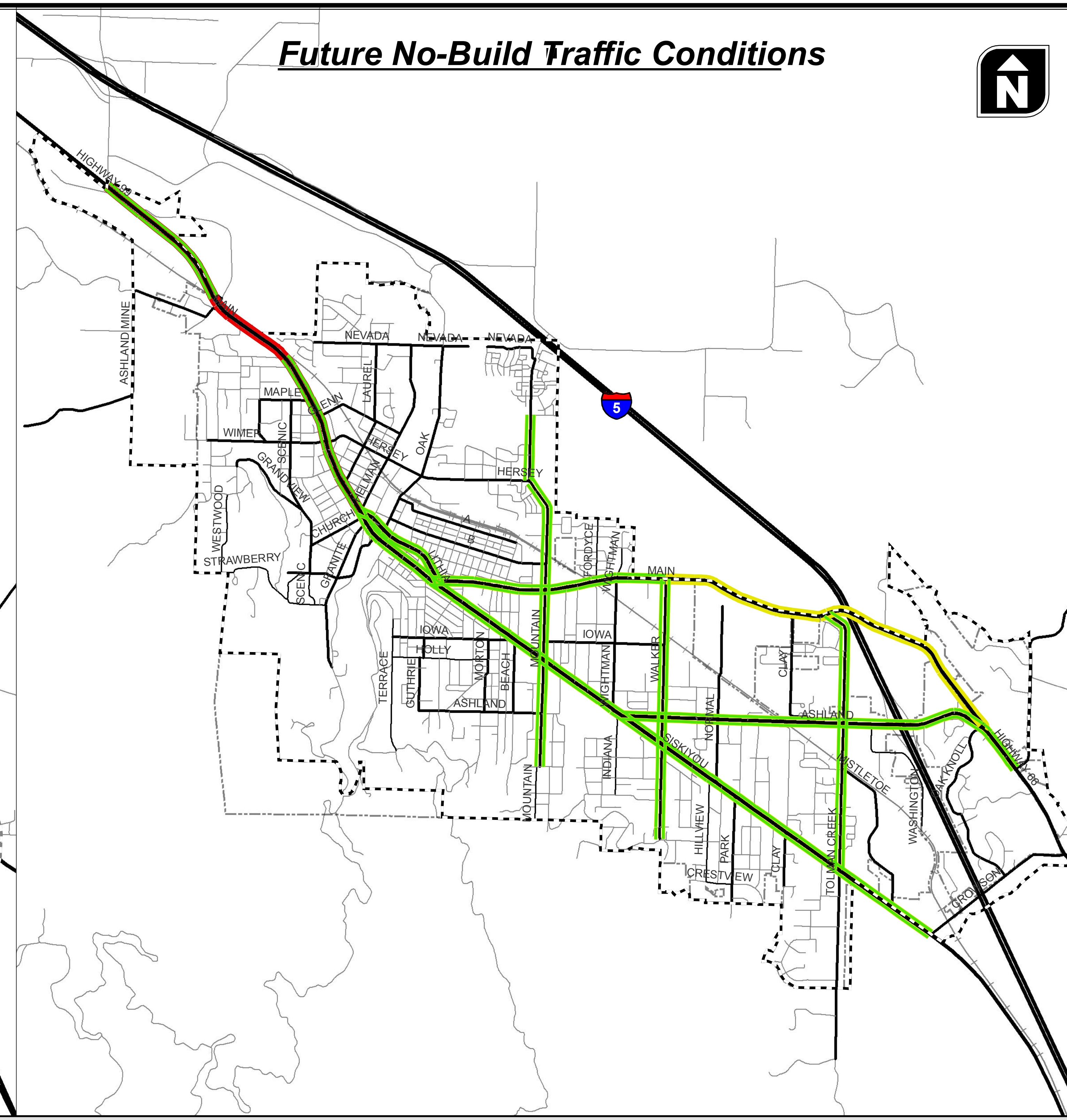
Auto

Auto level of service is primarily measured by the average speed over the length of the corridor and the average of number of stops per mile. Traffic volumes, heavy vehicle percentages, turning percentages, and peak hour factors are all inputs to the auto level of service along with signal timing at signalized intersections and saturation flow rates. Additional information related to Auto level-of-service at the study intersections is provided in Figure 4-5 above.

Existing Traffic Conditions



Future No-Build Traffic Conditions



LOS A-B
LOS C-D
LOS E-F
City UGB
City Limits

Multimodal Level-of-Serivce - Auto
Weekday PM Peak Hour

Figure
4-6

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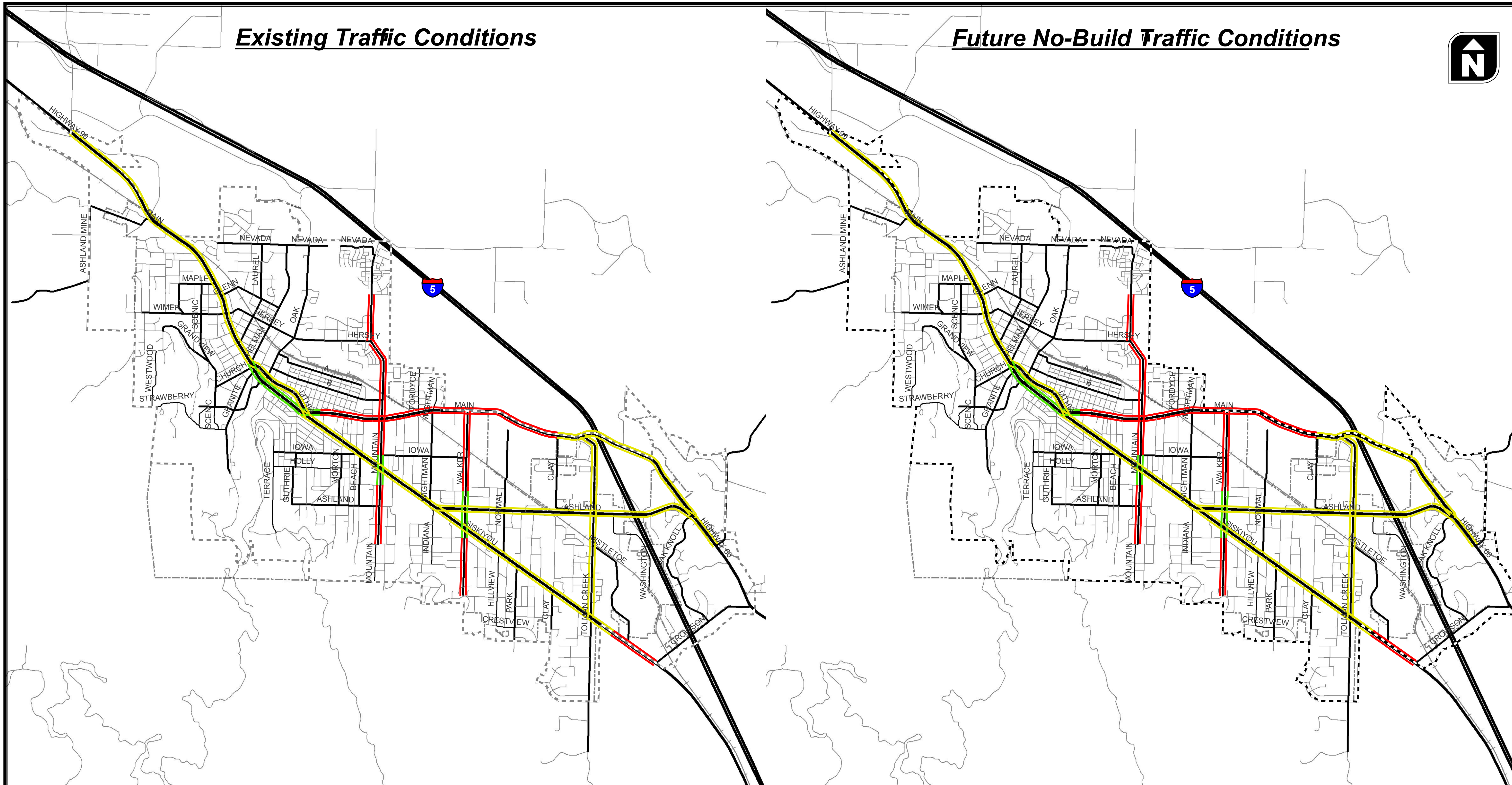

LOS A-B
LOS C-D
LOS EF
City UGB
City Limits

Multimodal Level-of-Serivce - Transit
Weekday PM Peak Hour

Figure
4-7

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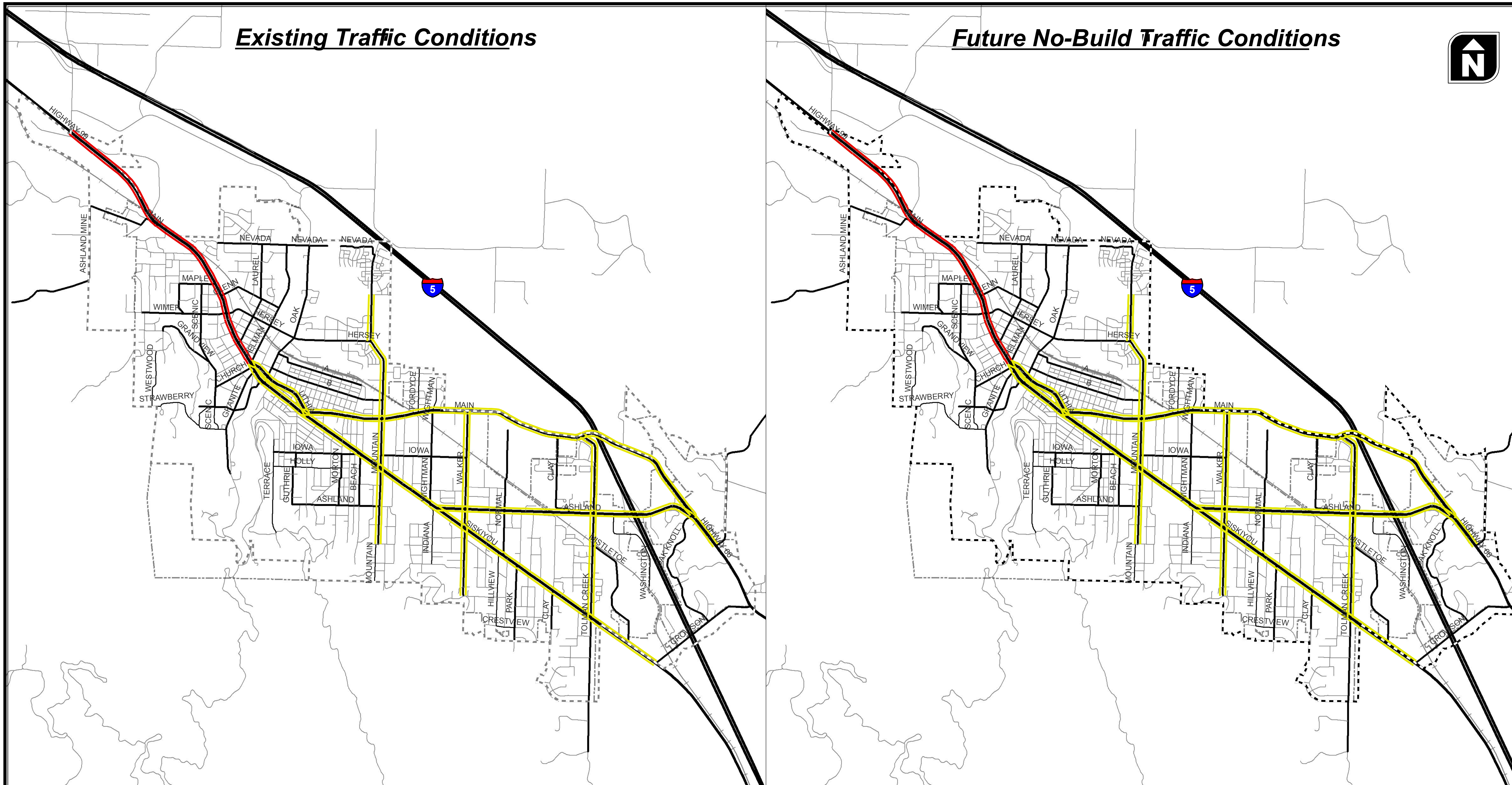

LOS A-B
LOS C-D
LOS E-F
City UGB
City Limits

Multimodal Level-of-Serivce - Bicycle
Weekday PM Peak Hour

Figure
4-8

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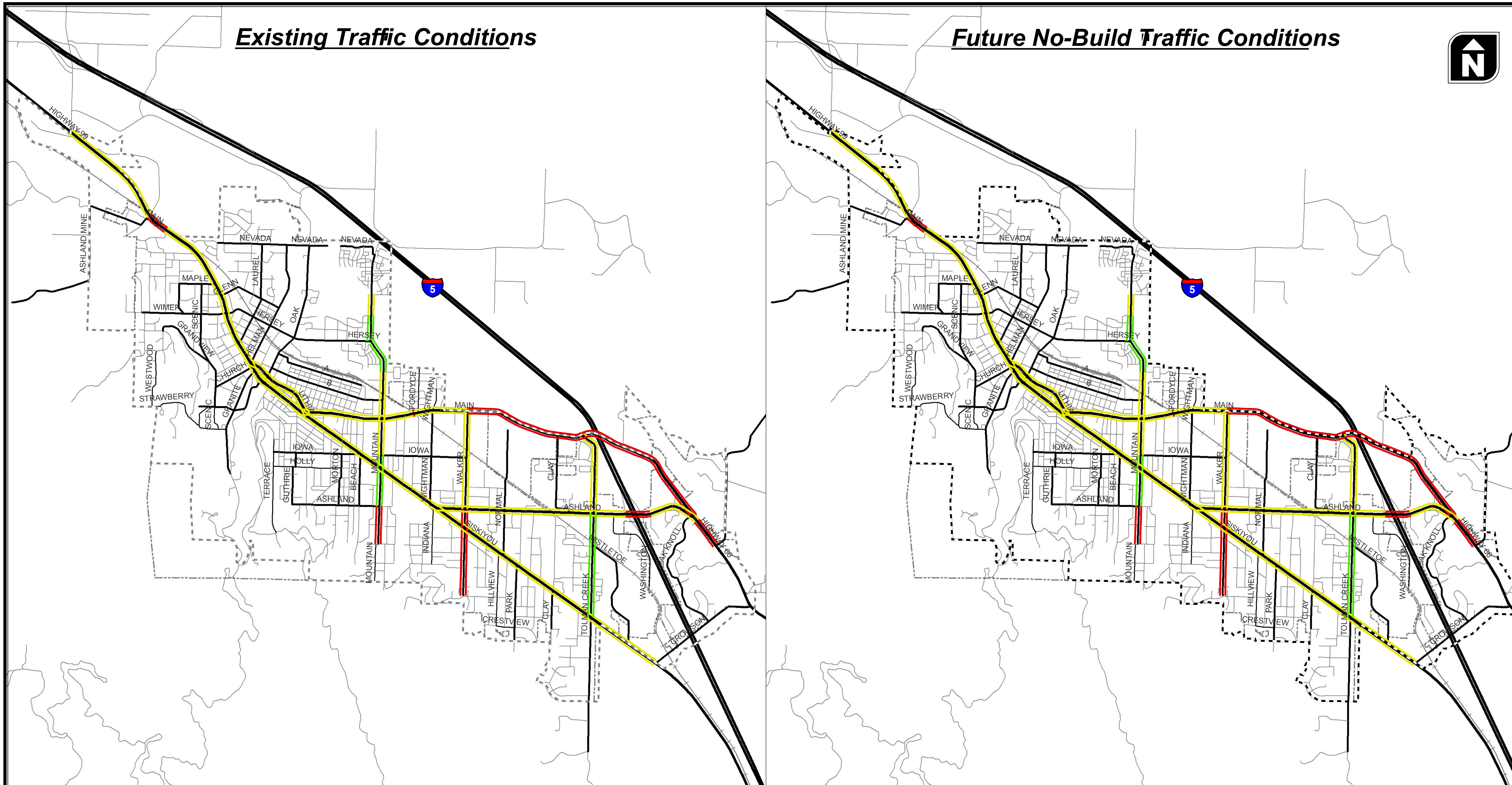

LOS A-B
LOS C-D
LOS E-F
City UGB
City Limits

Multimodal Level-of-Serivce - Pedestrian
Weekday PM Peak Hour

Figure

4-9

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Transit

The three primary performance measures that influence the transit LOS results include access, wait time, and ride experience. Access is represented by the pedestrian level of service score and pedestrian access to bus stops along the corridor. Wait time and ride experience are affected by headways and passenger per seat ratings. For the corridors in Ashland, the MMLOS results for transit facilities are generally well-rated; transit service is provided along each of the roadways included in the analysis except for Mountain Avenue and Walker Avenue. However, both of those roadways cross Siskiyou Boulevard (OR99) and/or Ashland Street (OR66), each of which have transit service, therefore, transit service is provided within a quarter mile of at least a portion of both Mountain Avenue and Walker Avenue. It should be noted that the transit LOS result is biased towards the weekday p.m. peak hour when service is available. It does not take into account that service is not proved after 6:30 p.m. and that no service is provided on Saturdays or Sundays. Opportunities to improve transit service include the provision of bus shelters or seating at key stop locations, shorter headways, longer service hours, and more extensive coverage.

Bicyclists

Similar to the pedestrian LOS, there are two basic performance measures that influence the bicycle LOS results within the MMLOS analysis. One is the feeling of security and quality of experience a bicyclist has riding on a roadway facility (e.g., presence and width of bicycle lanes). The second is the frequency of conflicts with vehicle cross traffic (e.g., frequency of driveways or unsignalized intersections). For the corridors studied in Ashland, the MMLOS results for bicycle facilities indicate bicycling along these roadways may be uncomfortable for many individuals. This is primarily due to the lack of bicycle facilities on some roadways or roadway segments, relatively high traffic volumes, and the frequency of unsignalized intersections and driveways. Opportunities to improve LOS for bicyclists along the major roadways include adding additional bicycle lanes, implementing buffered bicycle lanes, and consolidating driveways.

Pedestrians

There are two basic performance measures that influence the pedestrian LOS results within the MMLOS methodology. One is the feeling of security and quality of experience a pedestrian has walking alongside a roadway facility (e.g., presence and width of sidewalks). The second is the ability pedestrians have to safely and efficiently cross the major roadway. For the corridors studied in Ashland, the MMLOS results for pedestrian facilities indicate pedestrians generally feel safe walking along the major roadways. However, curb-tight sidewalks, high traffic volumes, and the absence of crosswalks at several major intersections degrade the pedestrian experience resulting in a pedestrian LOS that may not be expected on facilities that provide continuous sidewalks. Opportunities to improve the pedestrian LOS include providing landscape strips between the roadway and the sidewalk, increasing the width of sidewalks, and providing additional opportunities for pedestrians to safely and efficiently cross major roadways.

FUTURE TRANSPORTATION FUNDING

The historical funding mechanism for transportation improvements in Ashland is the Street Fund. The Street Fund includes revenue generated through gas taxes, franchise fees, system development charges (SDCs), transportation user/utility fees, specific project funds generated through local improvement districts, and a variety of state and federal grants. Once obtained, these fees are generally dedicated to improvements, and do not require voter approval.

Historically, communities around the state have included funding sources that have leveraged improvements through advance financing by developers, assessed special property tax levies, or used revenue bonds for specific capital improvements which are backed by specific dedicated future revenue sources. With the exception of advance financing by developers, the majority of these funds are dependent on voter approval, which may temper their reliability as a funding source. These funding sources are almost always dependent upon current market and economic conditions, being less robust revenue streams in a 'down economy'.

Future Funding Forecast

The Street Funds three primary sources of revenue for the 2011 fiscal year are intergovernmental revenues (gas tax, state and federal grants), fees, and bond proceeds. The intergovernmental revenues are expected to account for approximately 50 percent of the Street Fund in the 2011 fiscal year. This indicates the importance of the gas tax, and state and federal grants, to the overall streets program for the City of Ashland.

Intergovernmental revenues, fees, and bond proceeds will likely continue to be the primary sources of revenue for the Street Fund in future budget cycles. Bond proceeds and fee increases will continue to be dependent on the state of the economy and voter willingness for passage. The state gas tax, for example, increased from 24 cents to 30 cents on January 1, 2011. This represents a 25 percent increase over the previous tax, and constitutes the first rise in the Oregon gas tax since 1993. However, the tax increase should not be considered a long-term funding source given the improved fuel efficiency of newer vehicles, the rise in ownership of hybrid and electric vehicles, and the increased use of alternative fuels. Additionally, Ashland will not be able to increase its proportional share of that tax increase without legislative action at the state level. It is reasonable to assume the overall total revenue will temporarily increase with the legislative action. However, if the average fuel efficiency of vehicles increases or there is precipitous drop in vehicle miles, a decline in gasoline consumption may lead to a decline in revenue.

Alternative Funding Sources

There is a community desire to enjoy a transportation system that includes enhanced pedestrian and bicycle facilities, reduces vehicle travel, and increases transit service and amenities. Those improved transit choices lend themselves to integration with compact, transit-supportive development. Those objectives can be better achieved through considering alternative ways to fund and promote these initiatives. Alternative funding sources to consider include any combination of those summarized in Table 4-9.

Table 4-9 Alternative Funding Sources

Funding Source	Description	Benefits
User Fee	Fees tacked onto a monthly utility bill or tied to the annual registration of a vehicle to pay for improvements, expansion, and maintenance to the street system. This may be a more equitable assessment given the varying fuel efficiency of vehicles. Regardless of fuel efficiency, passenger vehicles do equal damage to the street system. The cost of implementing such a system could be prohibitive given the need to track the number of vehicle miles traveled in every vehicle. Additionally, a user fee specific to a single jurisdiction does not account for the street use from vehicles registered in other jurisdictions.	Primarily Street Improvements
Street Utility Fees/Road Maintenance Fee	The fee is based on the number of trips a particular land use generates and is usually collected through a regular utility bill. For the communities in Oregon that have adopted this approach, it provides a stable source of revenue to pay for street maintenance allowing for safe and efficient movement of people, goods, and services.	System-wide transportation facilities including: • Streets • Sidewalks • Bike lanes • Trails
Local Fuel Tax	A local tax assessed on fuel purchased within the jurisdiction that has assessed the tax. Some would argue that this tax is unfair given the increased fuel efficiency of today's vehicles. On the other hand, the tax could potentially generate revenue while encouraging fuel efficiency and lessening impacts to the environment.	Primarily Street Improvements
Systems Development Charges (SDCs)	Sometimes referred to as a transportation impact fee, SDCs are fees assessed on development for impacts created to public infrastructure. For example, Washington County implemented a transportation development tax in 2008 to replace their transportation impact fee. A transportation development tax is based on the estimated traffic generated. All revenue is dedicated to transportation capital improvements designed to accommodate growth. SDCs do generate revenue when the economy is doing well, and development is occurring. SDCs should not be considered a reliable source of income given the volatility of today's markets. Even when stable, some would argue that SDCs are not equitable because they are sometimes assessed in locations where services are already available. Nevertheless, they are an accepted source of revenue for many cities in Oregon, and help to offset the cost of new construction on public infrastructure. SDCs should be evaluated on a regular basis to ensure that they are proportional to the impacts created by new development. SDC credits can encourage private development to provide small-scale public improvements that can be constructed by the private sector at a smaller cost. For example, an SDC credit might be given for providing end-of-trip bike facilities within the new development. Eligible projects are on major roads,	System-wide transportation facilities including: • Streets • Sidewalks • Bike lanes • Trails

Funding Source	Description	Benefits
	including sidewalks and bike lanes, as well as transit capital projects.	
Stormwater SDCs, Grants, and Loans	Systems Development Charges, Grants, and Loans obtained for the purposes of making improvements to stormwater management facilities. Some jurisdictions in Oregon have used these tools to finance the construction and maintenance of Green Streets, and should be considered as an alternate funding source for Green Streets in Ashland.	Primarily street improvements
Local Sales Tax	A tax assessed on the purchase of goods and services within a specific location. A sales tax could be assessed only on auto-related goods and services to generate revenue for transportation-related improvements.	System-wide transportation facilities including: • Streets • Sidewalks • Bike lanes • Trails • Transit
Optional Tax	A tax that is paid at the option of the taxpayer to fund improvements. Usually not a legislative requirement to pay the tax and paid at the time other taxes are collected, optional taxes are usually less controversial and easily collected since they require the taxpayer to decide whether or not to pay the additional tax.	System-wide transportation facilities including: • Streets • Sidewalks • Bike lanes • Trails • Transit
Parking In-lieu Fees	Fees that are assessed to developers that cannot or do not want to provide the parking for development.	System-wide transportation facilities including: • Streets • Sidewalks • Bike lanes • Trails • Transit
Sponsorship	Financial backing of a public-interest program or project by a firm, as a means of enhancing its corporate image. This has been used by local transit providers to help offset the cost of providing transit services and maintaining transit related improvements.	Transit Facilities
Incentives	An enticement such as bonus densities and flexibility in design in exchange for a public benefit. Examples might include a Commute Trip Reduction (CTR) program, or transit facilities in exchange for bonus densities.	System-wide transportation facilities including: • Streets • Sidewalks • Bike lanes • Trails • Transit
Congestion Pricing	Competitive pricing of public facilities to discourage non-essential trips during peak travel times and encouraging alternative forms of transportation. Congestion pricing is also a tool that can be used for parking management. Congestion pricing is basically a toll applied to drivers who drive or park within a designated area or on a designated facility during periods of heavy congestion. In some cases, such as parking, higher fees are imposed in certain areas to discourage long term use. Similar variable charges have been successfully utilized in other industries—for example, airline tickets, cell phone rates, and electricity rates.	Primarily street improvements
Public/Private Partnerships	Rarely used for transportation facilities, public/private	System-wide transportation facilities

Funding Source	Description	Benefits
	partnerships are agreements between public and private partners that can benefit from the same improvements. They have been used in several places around the country to provide public transportation amenities within the public right-of-way in exchange for operational revenue from the facilities. These partnerships could be used to provide services such as charging stations, public parking lots, bicycle lockers, or carshare facilities.	including: • Streets • Sidewalks • Bike lanes • Trails • Transit
Tax Increment Financing (TIF)	A tool cities use to create special districts (tax increment areas) and to make public improvements within those districts that will generate private-sector development. During a defined period, the tax base is frozen at the predevelopment level. Property taxes for that period can be waived or continue to be paid, but taxes derived from increases in assessed values (the tax increment) resulting from new development either go into a special fund created to retire bonds issued to originate the development or leverage future improvements. A number of small-to-medium sized communities in Oregon have implemented, or are considering implementing, urban renewal districts that will result in a TIF revenue stream.	System-wide transportation facilities including: • Streets • Sidewalks • Bike lanes • Trails • Transit

Table 4-9 is not an all-inclusive list of alternative funding. Each of these financing tools requires focused research to ensure that it is the right fit for the community, and can be closely matched with achieving the objectives of the TSP update.

Transportation System Development Charge Updates

The City should evaluate the existing TSDC rates. Typically, in other jurisdictions in Oregon, Systems Development Charges account for approximately 10 to 12 percent of revenues that are applied towards the improvement and maintenance of streets. This has not been the case in Ashland since 2007. Prior to 2007, the Systems Development Charges that have been collected by the City accounted for a higher percentage of revenue within the street fund. In the next fiscal year, they will account for less than 1 percent of the revenue in the Street Fund.

Street Fund revenues for the 2011 fiscal year are 63 percent higher than in 2005 when SDCs accounted for approximately 12 percent of the revenues. Since 2008, it would make sense that the revenue generated from SDCs would be lower given the decline in the economy, and the overall lull in construction activity, but revenues generated from SDCs began decreasing well before the 2008 market declines. This trend would suggest that it may be time for the City to evaluate its SDC program to ensure that new construction helps to pay for the impacts that it creates. Several cities in Oregon increase their SDCs annually to keep current with the cost of inflation. Ashland should consider doing the same to ensure that the SDC program continues to pay for the true costs of maintaining and improving its transportation system. SDC's should be considered not only for the street system and location specific capacity improvements. This can be revenue stream to meet community-wide multimodal transportation system goals. From that perspective, funding could emphasize providing city wide pedestrian connectivity through continuous and standard sidewalks (e.g. fill in the gaps where needed), public trails development, enhanced bicycle facilities, enhanced pedestrian facilities on collector and arterial streets, and transit stop amenities beyond those provide by RVTD. The possibility of using SDC credits to encourage private development to meet some of these objectives was previously noted.