



City of Medford Transportation System Plan and Urban Growth Boundary Amendment



Technical Memorandum #1: Study Area

Date: June 21, 2011 Project #: 10771
To: Alex Georgevitch, City of Medford
Shirley Roberts, ODOT
From: Joe Bessman, Julia Kuhn, and Matt Kittelson
Project: Transportation System Plan Update and Urban Growth Boundary Amendment
Subject: Study Area Review

PURPOSE

This memorandum identifies the recommended study area and considerations for the transportation component of the Medford Urban Growth Boundary (UGB) Amendment and Transportation System Plan (TSP) Update Study. The recommendations are based on a set of study area selection criteria that assess regional significance, existing intersection performance, proximity to developable lands and/or UGB amendment areas and feedback received from agency staff. Data availability was also a consideration in the selection of appropriate locations.

PLAN AMENDMENT PROCESS OVERVIEW

The TSP update and UGB amendment will be completed in two phases. First, the existing City TSP will be updated to reflect a new planning horizon year of 2034. The infrastructure needs identified as part of the TSP update will assume that future growth in Medford's households and employment will occur only within the existing UGB. Second, the UGB amendment will consider changes to the zoning and urban densification that will modify the current boundary.

The TSP update analysis will look at the appropriateness of the City's street hierarchy, classification of streets within this hierarchy, and appropriate right-of-way and pavement widths, bike facilities, pedestrian facilities, and traffic lanes for each of the classified streets. The TSP will also include a list of street and intersection needs for the higher-order Collector and Arterial roadway system.

The analysis of the street segments will include a review of daily traffic volumes throughout the City to ensure that the designation and function of facilities are appropriate, and will also review the connectivity and extents of the facility alignments. These elements will be described within Technical Memorandum #3, which will document the current status of the City's classified roadways and identify areas for changes or new connections based on projected system needs.



Transportation system capacity is most constrained at the intersection of roadway facilities, where conflicting vehicle maneuvers, bicycle travel and pedestrian crossings require the allocation or assignment of right-of-way. As such, the majority of the TSP update will be focused on arterial and collector intersections throughout the City to identify system constraints and potential solutions. Following the completion of the TSP update, another assessment of affected intersections may be necessary, pending the likely UGB expansion scenarios.

Given that the UGB expansion scenarios have not been finalized, the recommendation of study intersections outlined in this memorandum was based on the analyses needs associated with the TSP update.

STUDY AREA SELECTION CRITERIA

The TSP update will include an identification of facilities that are needed to provide an integrated, interconnected system that supports the land use vision, economic development goals and provides for all modes of travel for people and goods movement. In an effort to help the public and elected officials identify, understand and prioritize needed improvements to meet the 2034 needs of the community, we have identified a set of criteria that was used to identify those intersections that can best serve as a gauge for needed improvements. These criteria are shown in Table 1.

Table 1 Study Location Selection Criteria

Criteria	Explanation
Data availability	Is traffic count data available, current, and reliable for the location? If not, can additional data be collected?
Regional Significance	What are those facilities that provide access to and from the area and outside the region, serve major activity centers, and/or provide intermodal connections? ¹
Needs identified in existing TSP	What needs have previously been identified on the system?
Existing operational performance level	Does the location operate at level-of-service "C" or worse today (limited capacity) or is it expected to have operational needs in the future?
Proximity to developable lands and/or UGB amendment areas	Is the location near a potential UGB amendment area or undeveloped lands and could the location be especially sensitive to growth?
Agency comments	Has the location been recommended for study by agency staff due to identified safety or performance concerns or known issues?

A discussion of each of the criteria is provided below.

¹ Per OAR 340-252-0030 (39), this includes at a minimum:

- (a) All principal arterial highways;
- (b) All fixed guideway transit facilities that offer an alternative to regional highway travel; and
- (c) Any other facilities determined to be regionally significant through interagency consultation pursuant to OAR 340-252-0060.

AVAILABLE TRANSPORTATION DATA

To assess this criterion, we compiled all of the traffic data available from the City and ODOT and also reviewed the existing TSP for the City. As part of this assessment, we were able to evaluate historical trends in traffic volumes to ensure that the updated TSP would not be affected by concerns that existing traffic counts (and system performance) are artificially low due to current economic conditions. An illustration of the data that has been compiled can be found at the following link to allow an interactive review and layering of the data: <http://map.project.kittelson.com/MedfordTSP>. More detail on the data is provided below.

Peak Period Traffic Volumes

The City of Medford collects intersection and roadway traffic volumes on an annual basis. These counts are typically conducted between 6:00 a.m. and 8:00 p.m. and include both vehicular and pedestrian volumes. The locations of traffic counts collected in 2007, 2008, and 2009 are illustrated in Figure 1. As shown in Exhibit 1-1 at right, the volumes generally increase steadily throughout the day with the highest volumes on the transportation system generally occurring during the evening commute period (i.e., 4:30 and 5:30 p.m.).

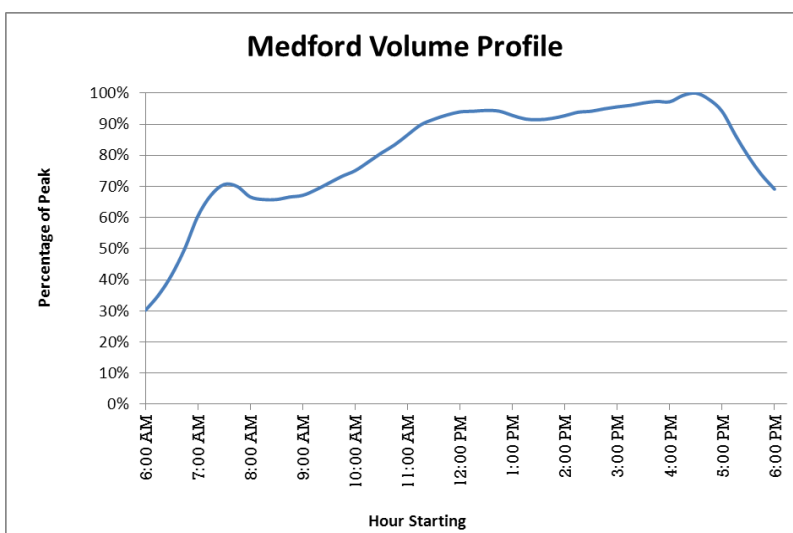


Exhibit 1-1. Illustration of daily volume profiles throughout the City of Medford.

Another important point to note is that midday traffic volumes are nearly 95 percent of those during the evening peak period.

At certain locations, especially near schools, major shopping centers, or other unique land uses, traffic volumes may be higher than the evening peak period. Figure 2 illustrates the different hour of the day that intersections around the City reach their peak volumes. As shown in Figure 2, the evening commute generally represents the highest demand on the entire system. Therefore, to ensure that facilities are appropriately identified to meet the peak travel that occurs on a daily basis, the TSP update will focus on the evening commute peak period.



Legend

Urban Growth Boundary

Functional Classifications

Major Arterial (HWY)

Major Arterial

Minor Arterial

Major Collector (HWY)

Major Collector

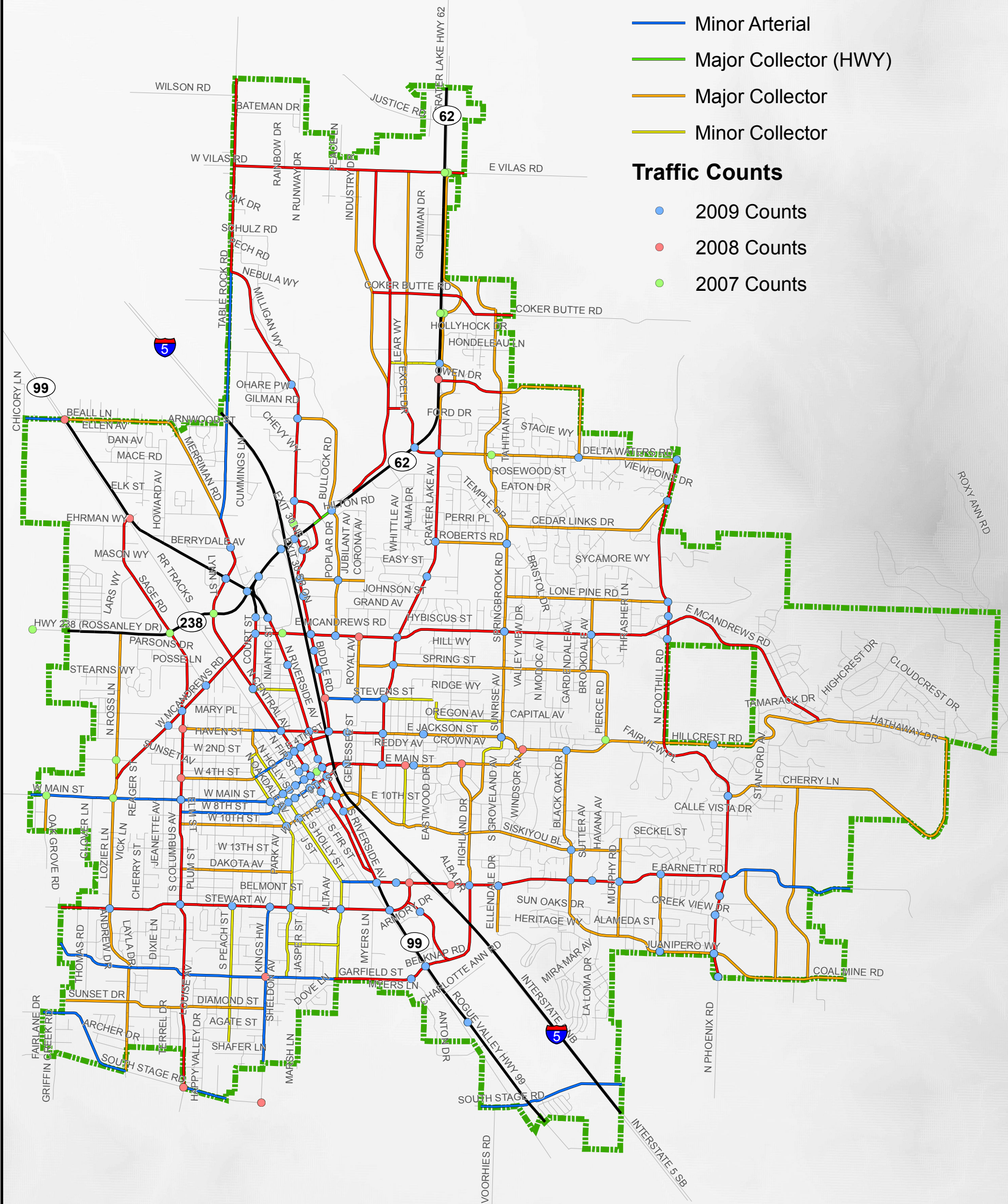
Minor Collector

Traffic Counts

2009 Counts

2008 Counts

2007 Counts



**Functional Classification System
and UGB Amendment**

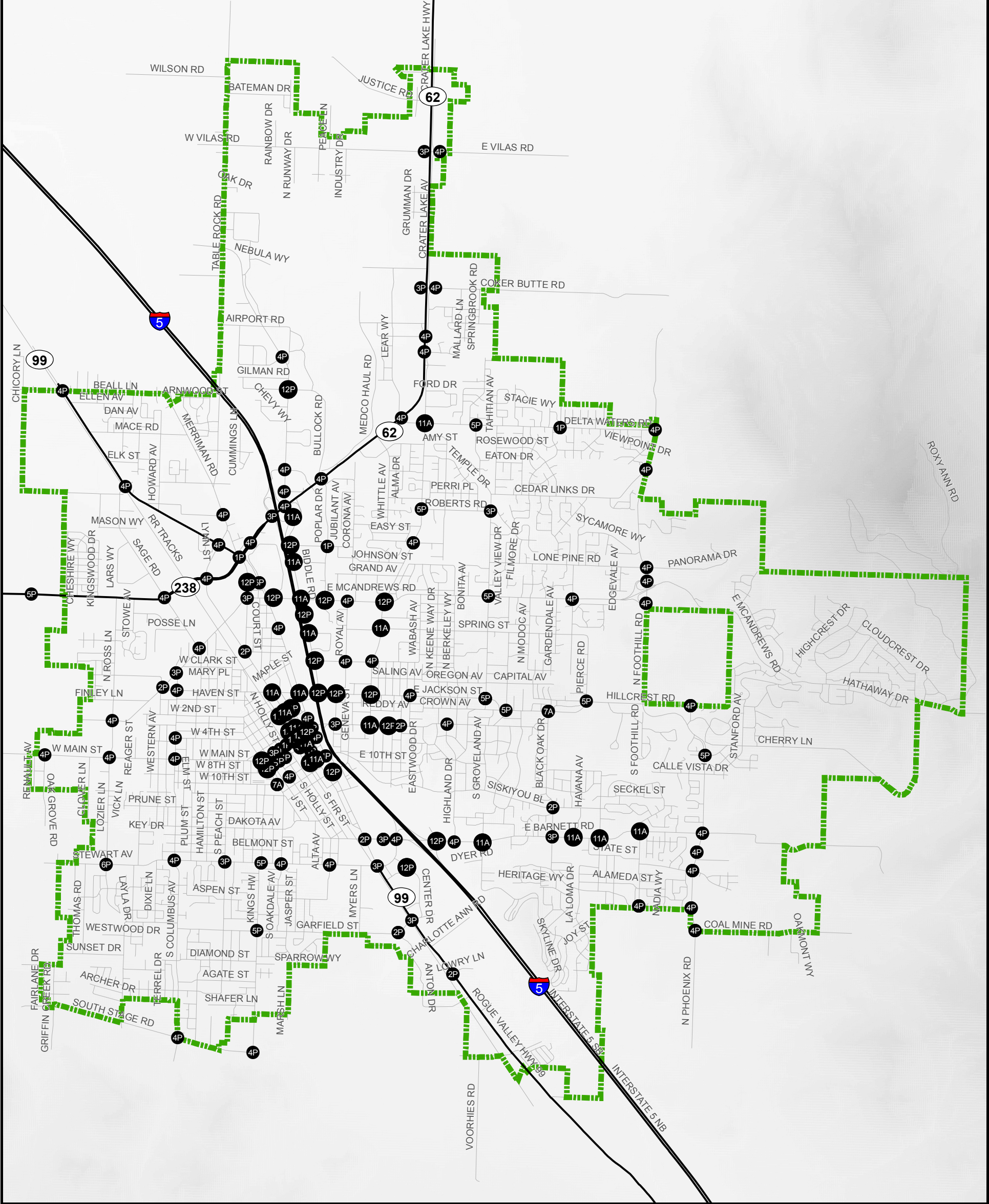
Figure

1



Legend

- Urban Growth Boundary
- Time of Day



Time of Peak Hour Traffic

Figure

2

Annual Traffic Volume Trends

We also reviewed those locations throughout the city where data was collected during multiple years to understand the historical fluctuations in traffic volumes.

As shown in Exhibit 1-2, between 2007 and 2009 traffic volumes in the City have generally decreased by 10 percent. To ensure that the decrease in traffic volumes due to the economic recession doesn't result in an underestimation of long-term facility needs, the TSP update will use 2007 traffic count data where possible to establish base conditions. At certain locations, major infrastructure changes have influenced travel behavior and route

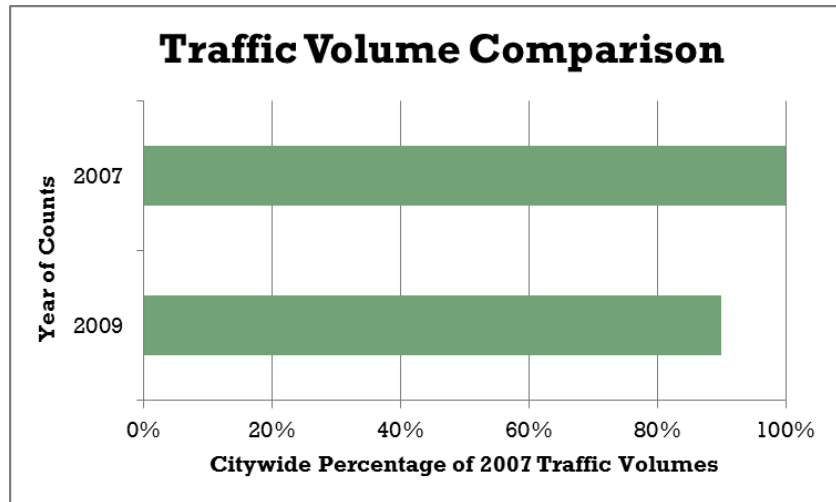


Exhibit 1-2. Comparison of 2007 and 2009 Peak Hour Traffic Volumes



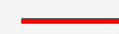
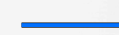


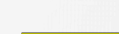
choice (e.g., locations surrounding the south Medford interchange or influenced by construction). In these cases, the 2008 or 2009 data may be more appropriate to use, or new data collection efforts may be required. *Detailed review of the individual intersection comparison can be found in the attachments.*

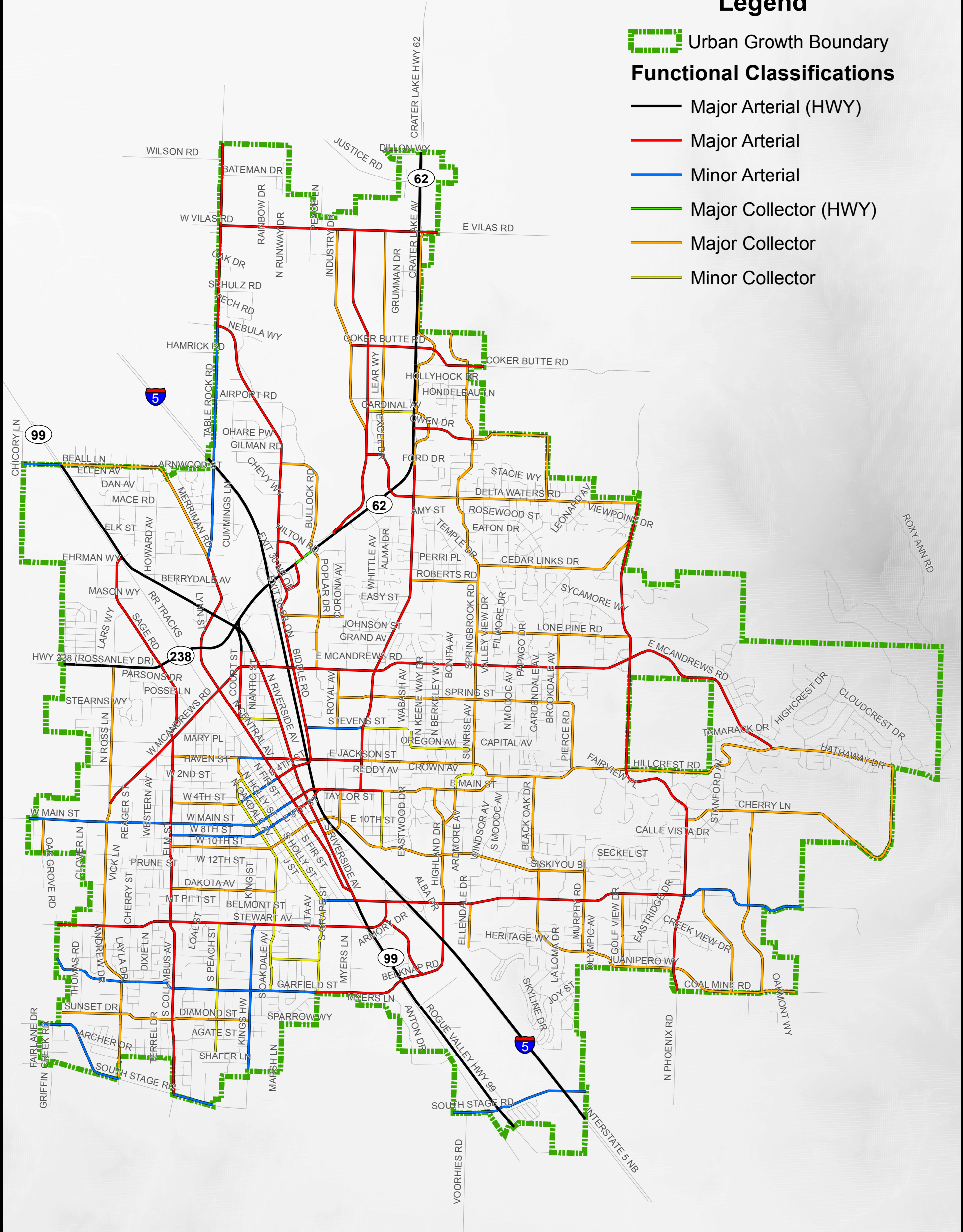
Regional Significance

The Regional Transportation Plan (RTP) prepared by the Rogue Valley Metropolitan Planning Organization identifies those facilities that are considered "regionally significant" according to federal and state guidance. In addition, the current TSP identifies those facilities that the City classifies as *Collectors* and *Arterials*. These facilities are also shown in Figure 3. The TSP Update efforts will focus on regionally significant facilities identified by the RTP as well as all arterials and major collectors within the City.



Legend

-  Urban Growth Boundary
- Functional Classifications**
-  Major Arterial (HWY)
-  Major Arterial
-  Minor Arterial
-  Major Collector (HWY)
-  Major Collector
-  Minor Collector



Functional Classification System

Figure

3

Previously Identified System Needs

Review of the City’s 2003 TSP identified improvement needs on the transportation system to accommodate traffic in a 2023 planning horizon. Some of these improvements, such as the South Medford Interchange, have subsequently been constructed, but other improvement needs remain. Primary vehicular system needs identified in this plan are summarized within Figure 5-1 of the TSP and are summarized in Table 2.

Table 2
Previously Identified Intersection Needs

Intersection	Projected LOS in 2023
4 th at Central	A ¹
4 th at Riverside	F
Hwy 99 at South Stage Rd	E
Hwy 62 at Poplar/Bullock	F
Hwy 62 at Hwy 99/Hwy 238	E
Hwy 62 at Delta Waters	F
Hwy 62 at Vilas	E
Hwy 238 at Sage	F
Barnett at Black Oak	E
Barnett at N Phoenix	E
Jackson at Crater Lake	F
Main at Columbus	F
Main at Ross	F
Biddle at McAndrews	E
Crater Lake at Delta Waters	F

¹4th at Central operates with an acceptable level of service but was noted to require a change from permissive to protected left turn signal phasing.

Source: City of Medford TSP Table 5-1.

Existing Operational Performance

In addition to traffic count data, the City maintains a Synchro model that includes the majority of the collector and arterial system. Separate models are available to assess the weekday a.m., midday, and p.m. peak hour performance throughout the system. The City uses the model to assist with signal timing plans, monitor development impacts as part of its concurrency process, and identify capital improvements. The information contained within the model enables a review of the citywide intersection operational performance, including level of service, volume to capacity ratios, and intersection delays.

Of the 167 intersections included within the Synchro model, 28 intersections operate at Level of Service “A” and 47 operate at Level of Service “B”. The highest density of intersections operating at LOS “A” or “B” occurs in the downtown City core within the one-way roadway network. Capacity-enhancing transportation improvements within this area are unlikely due to the higher emphasis on active travel modes and the efficient auto system provided with the one-way grid

network. For these reasons, intersections within the downtown core were not considered representative study locations.

Figure 4 illustrates the traffic conditions throughout the City of Medford based on the City's weekday p.m. peak period model. As shown in the figure, 92 intersections operate a level-of-service "C" or worse today. These intersections may require mitigation in the future to meet city and/or ODOT performance standards and will therefore be included in the TSP update analyses.

Proximity to Internal UGB Study Areas

As previously discussed, the TSP Update will focus on growth and transportation facility needs within the existing UGB, whose boundary is also shown in the figures. Additional study intersections and roadways may be identified in the future to help inform the UGB Amendment processes. Although both efforts are expected to have significant overlap in the analyses areas, the location of potential densification or UGB expansion areas will play a critical role in defining the study area for these efforts.

Agency Comments

Given the intimate knowledge that agency officials have of the existing and long-term system needs agency comments were prioritized in the selection of study intersections.

INTERSTATE SYSTEM

The I-5 corridor bisects the City of Medford and plays a significant regional role in the movement of freight, intercity, and interstate travel. Medford also serves as an intermodal hub for the transference of interstate freight loads from double trailer trucks to triple trailer trucks.







A review and assessment of the I-5 corridor is on-going as part of the *I-5 Rogue Valley Corridor Plan* being prepared by ODOT and DEA, which is considering system needs between Ashland and Central Point. The findings and recommendations of the I-5 Corridor study will be incorporated into the City TSP and ultimately adopted as a TSP amendment. Issues that will be addressed as part of the I-5 study will include the adequacy of corridor segments, merge points, diverge points, and interchange ramp terminals, as well as potential strategies for system management or improvements.

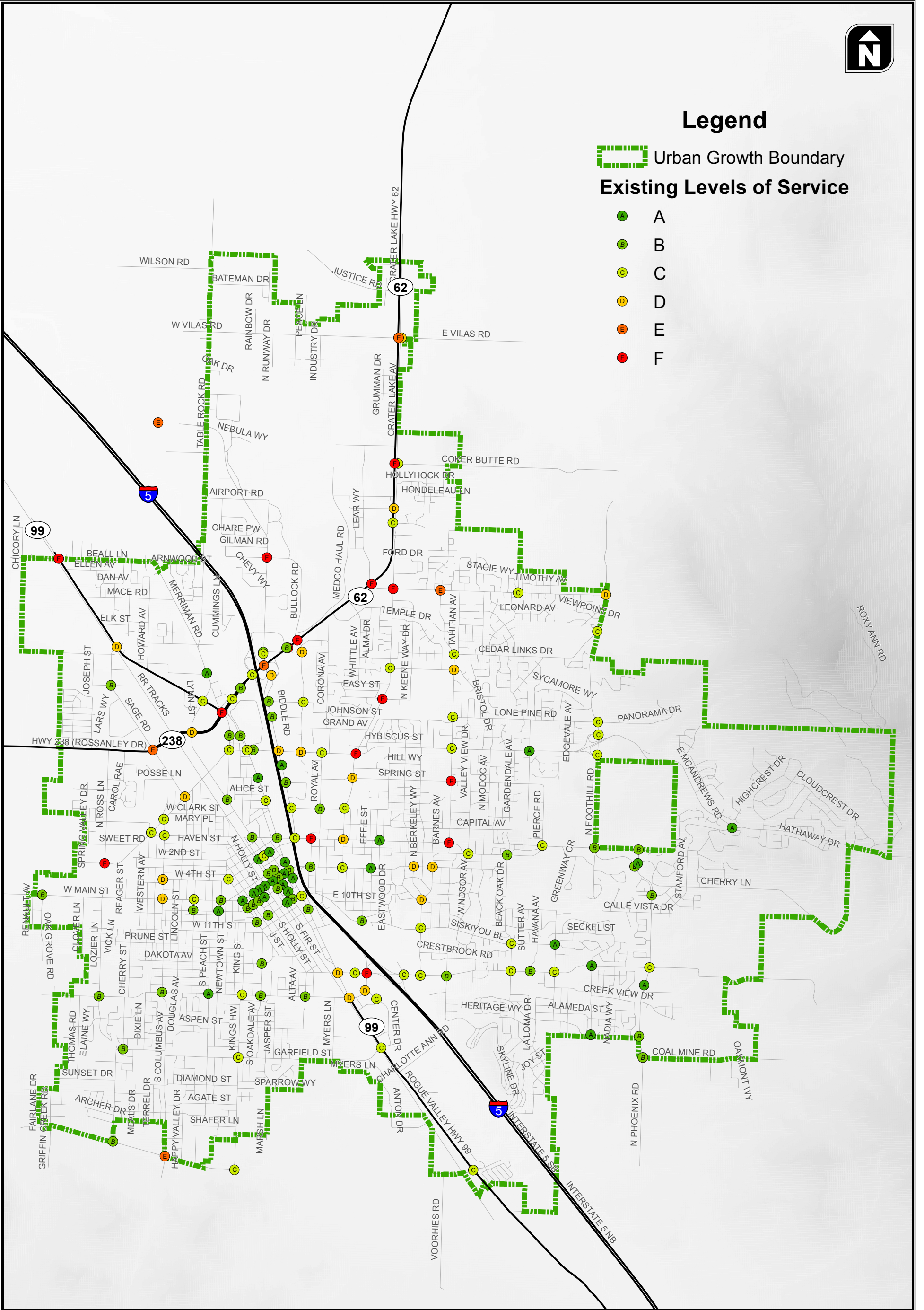


Legend

 Urban Growth Boundary

Existing Levels of Service

-  A
-  B
-  C
-  D
-  E
-  F



Existing Level of Service

Figure

4

RECOMMENDED STUDY AREA

Based on the screening criteria described above, in addition to review of the adequacy, connections, and design of the City's classified roads, Figure 5 and Table 3 provides a summary of the intersections that are recommended for inclusion in the City TSP Update. Freeway operations and system needs will be incorporated through reference to the I-5 Corridor Plan.

Please review the list of study area methodology and assessment and provide us comments by February 17th. Pending confirmation of the study area selection process and study intersections, our next steps will be as follows:

- Finalize the study intersection list.
- Identify additional data collection needs (signal timing data, tube count data, missing count locations, etc.).
- Compare the available traffic counts to identify what count year is appropriate for each location.
- Amend the Synchro model with missing intersections, review of the geometric configurations, and signal timing data review.
- Identify the appropriate intersection performance standard for each of the study intersections.
- Develop templates to apply the NCHRP Report 255 methodology when the modeling data becomes available.

Please call us with any questions at (541) 312-8300 and provide any written comments to jbessman@kittelson.com.

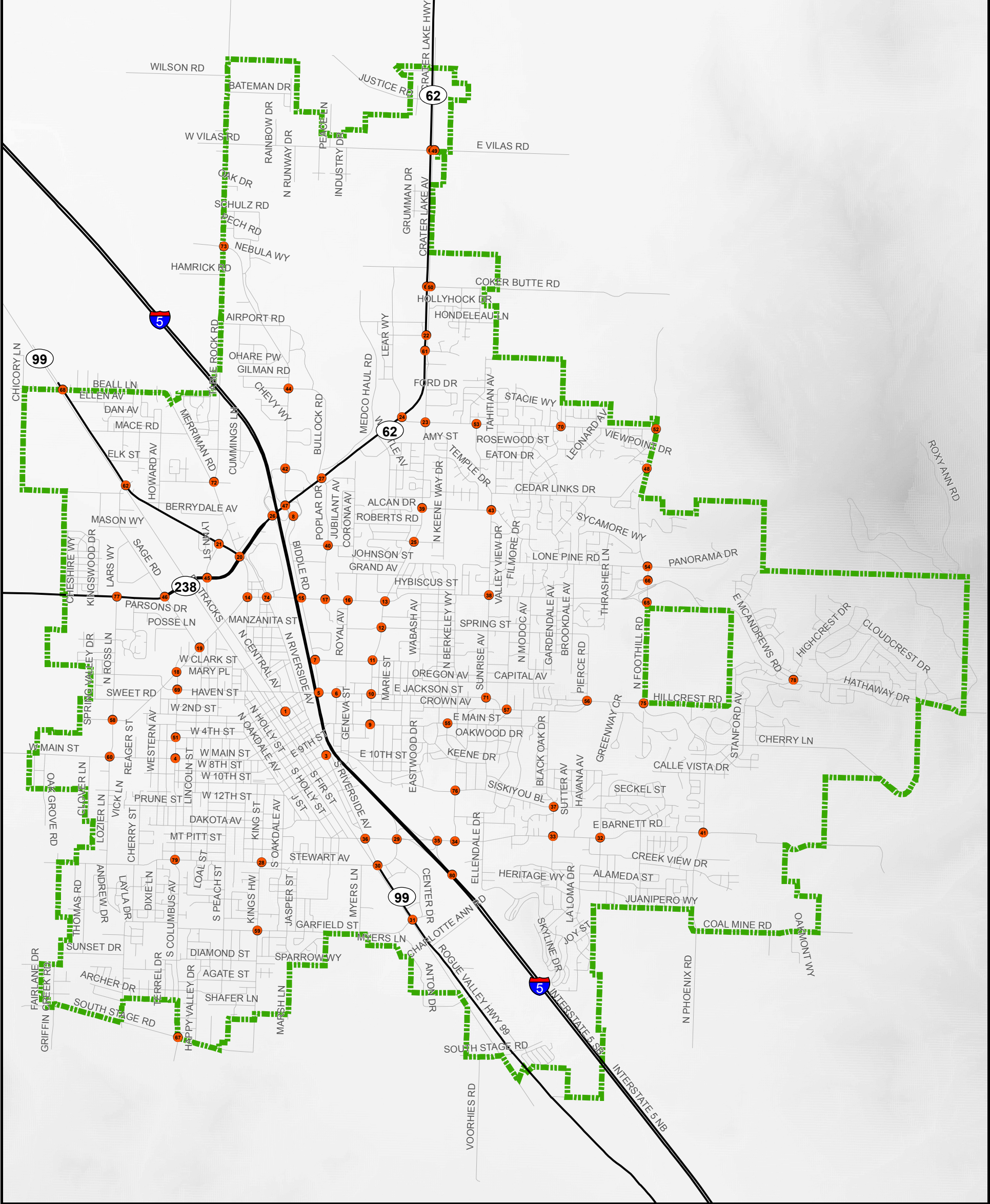
Attachments

Attachment 1: Traffic Volume Comparison and Plots



Legend

- Recommended Intersections
- Urban Growth Boundary



Recommended Study Intersections

Figure

5

Table 3 Recommended Study Intersections

Int. No.	Street Name	
	North-South	East-West
1	CRATER LAKE HWY	VILAS
2	CRATER LAKE AV	VILAS
3	TABLE ROCK	BIDDLE
4	CRATER LAKE HWY	COKER BUTTE
5	CRATER LAKE AVE	COKER BUTTE
6	CRATER LAKE HWY	CARDINAL
7	CRATER LAKE AV	OWEN
8	N PACIFIC HWY	BEALL
9	BIDDLE	LAWNSDALE
10	CRATER LAKE HWY	DELTA WATERS
11	CRATER LAKE AVE	DELTA WATERS
12	SPRINGBROOK	DELTA WATERS
13	MCLOUGHLIN	DELTA WATERS
14	FOOTHILL	DELTA WATERS
15	FOOTHILL	CEDAR LINKS
16	N PACIFIC HWY	SAGE
17	TABLE ROCK	MERRIMAN
18	BIDDLE	CLH RAMPS AND HILTON
19	POPLAR AND BULLOCK	CRATER LAKE HWY
20	CRATER LAKE AV	ROBERTS
21	SPRINGBROOK	ROBERTS
22	I5 SB OFF/ON RAMPS	CRATER LAKE HWY
23	I 5 NB OFF/ON RAMPS	CRATER LAKE HWY
24	BIDDLE	CL HWY RAMPS
25	ROSS	ROSSANLEY
26	SAGE RD	HWY 238
27	N CENTRAL	HWY 238
28	N. PACIFIC HWY	TABLE ROCK AND N. CENTRAL
29	HWY 99 AND RIVERSIDE	HWY 62 AND HWY 238
30	POPLAR	MORROW
31	CRATER LAKE AV	BROOKHURST
32	COURT ST	MCANDREWS RD
33	RIVERSIDE	MCANDREWS
34	BIDDLE	MCANDREWS
35	POPLAR AND TOWN CENTER	MCANDREWS
36	ROYAL	MCANDREWS
37	CRATER LAKE AVE	MCANDREWS
38	SPRINGBROOK	MCANDREWS
39	FOOTHILL	LONE PINE
40	FOOTHILL	WB MCANDREWS RAMPS
41	FOOTHILL	MCANDREWS EB RAMPS
42	CRATER LAKE AVE	SPRING
43	SAGE AND SUMMIT	MCANDREWS
44	BIDDLE	STEVENS
45	CRATER LAKE AVE	STEVENS
46	HILLCREST	MCANDREWS

(Continued)

Int. No.	Street Name	
	North-South	East-West
47	COLUMBUS	MCANDREWS
48	COLUMBUS	JACKSON
49	BIDDLE AND 4TH	JACKSON
50	HAWTHORNE	JACKSON ST
51	CRATER LAKE AVE	JACKSON ST
52	SUNRISE	JACKSON
53	VALLEY VIEW	HILLCREST
54	PIERCE	HILLCREST
55	FOOTHILL	HILLCREST
56	ROSS LN	MCANDREWS RD
57	COLUMBUS	4 TH
58	CENTRAL	4 TH
59	RIVERSIDE	4TH
60	CRATER LAKE AVE	E MAIN
61	HIGHLAND	E. MAIN
62	ROSS LOZIER	MAIN
63	COLUMBUS	W. MAIN
64	RIVERSIDE	10TH
65	HIGHLAND	SISKIYOU
66	BLACK OAK	SISKIYOU
67	RIVERSIDE	BARNETT
68	BARNETT	STEWART
69	ALBA AND NB OFF RAMP	BARNETT
70	HIGHLAND	BARNETT
71	BLACK OAK	BARNETT
72	MURPHY	BARNETT
73	N PHOENIX	BARNETT
74	COLUMBUS	STEWART
75	KING AND KINGS HWY	STEWART
76	RIVERSIDE AND S PACIFIC	STEWART
77	I-5 RAMPS	GARFIELD
78	KINGS HWY	GARFIELD
79	S PACIFIC HWY	GARFIELD
80	COLUMBUS	S STAGE

Attachment 1
Traffic Volume Comparison and Plots

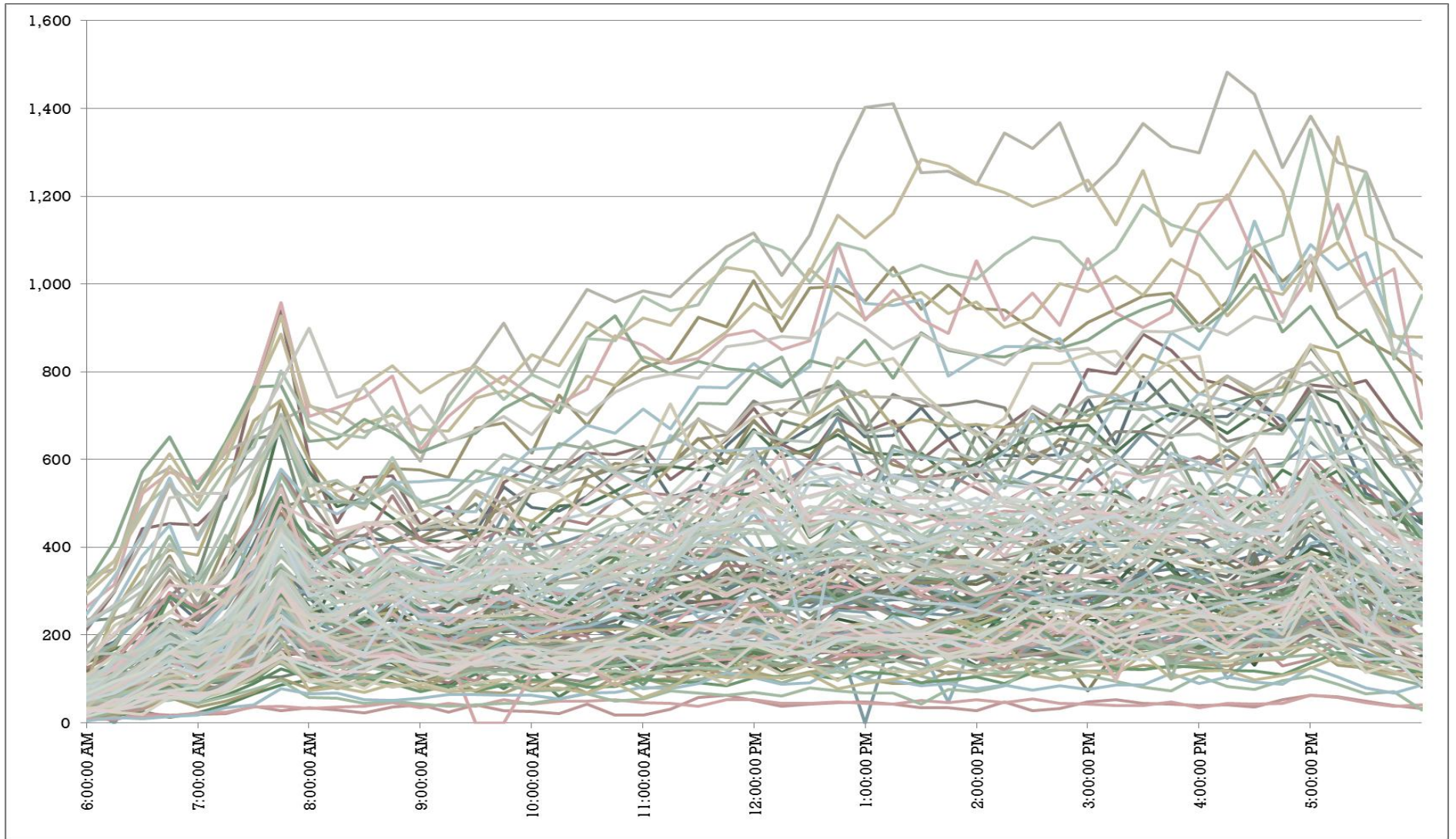


Exhibit A-1. Year 2007 traffic count plots illustrating the total entering volume trends (in fifteen minute increments) and peaking characteristics throughout the City of Medford.

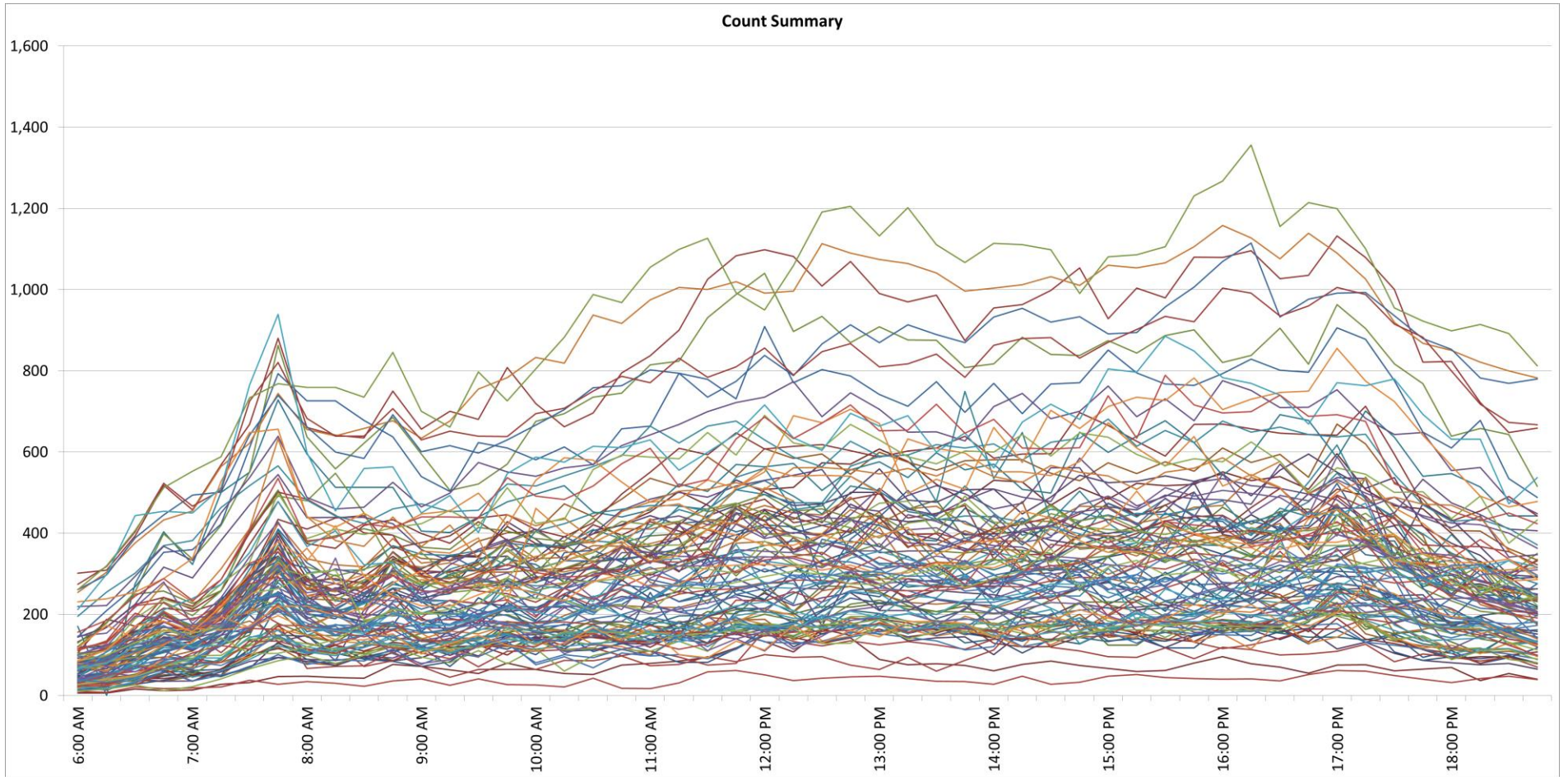


Exhibit A-2. Year 2009 traffic count plots illustrating the total entering volume trends (in fifteen minute increments) and peaking characteristics throughout the City of Medford.

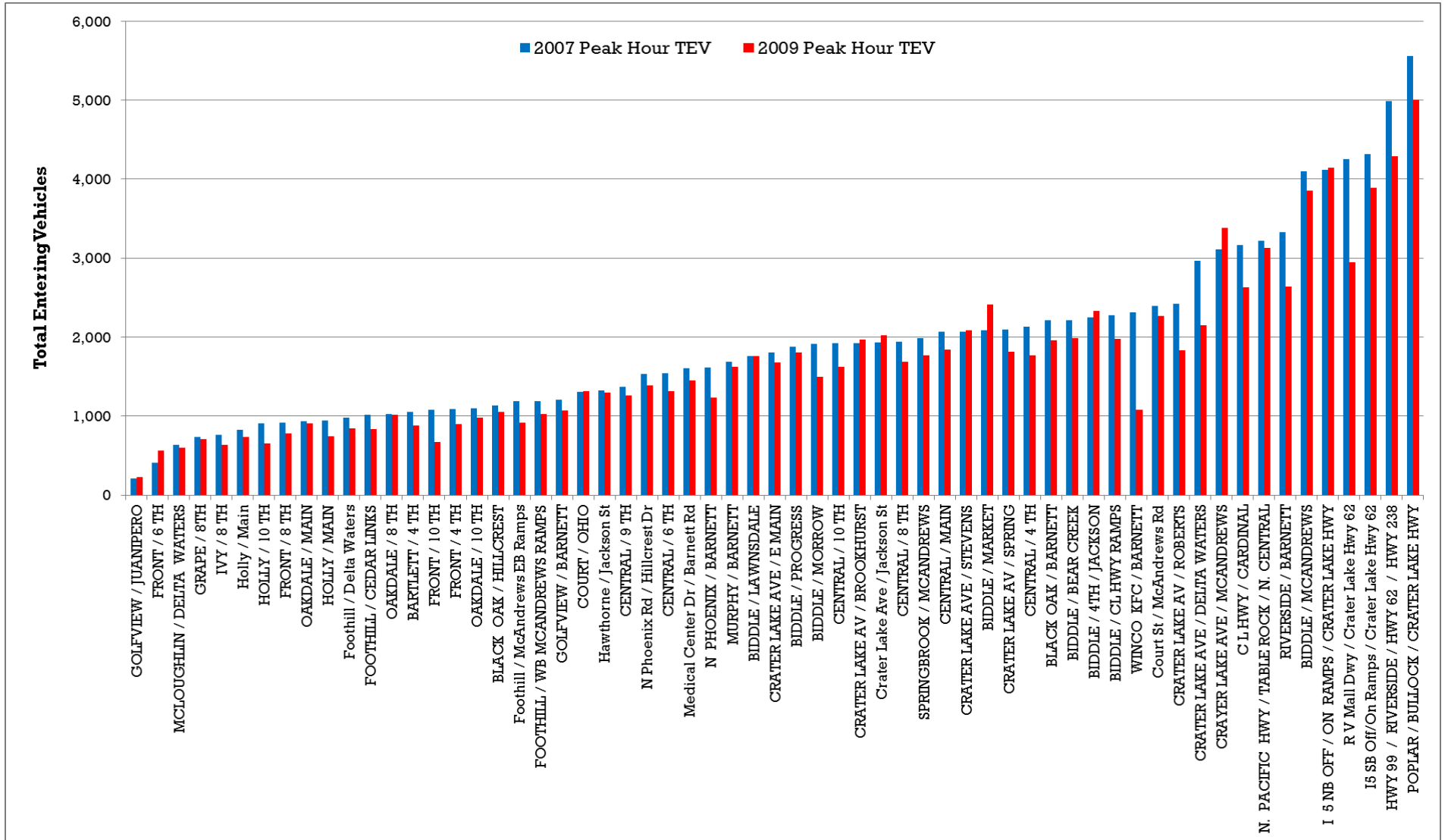


Exhibit A-3. Comparison of year 2007 and 2009 traffic counts at locations throughout the City to highlight the volume trends.