

Silverton Transportation System Plan



Planning for Silverton's transportation needs for the years 2000 to 2020.

November, 2000

TABLE OF CONTENTS

Section 1 Introduction

1.1 Purpose and Content	1
1.2 TSP Study Process	4
1.3 Public Involvement	4

Section 2 Existing Conditions

2.1 Introduction	5
2.2 Functional Classification	7
2.3 Roadway Jurisdiction	10
2.4 Pavement Conditions	13
2.5 Intersection Traffic Control/Lane Configurations	16
2.6 Daily Traffic Volumes	16
2.7 PM Peak Hour Volumes and Intersection Levels of Service	16
2.8 Public Parking	22
2.9 Pedestrian and Bicycle Facilities	22
2.10 Rail Service/Railroad Grade Crossings	26
2.11 Transit Service	26
2.12 Air, Water, and Pipeline Facilities	29
2.13 Zoning	29

Section 3 Future Conditions

3.1 Introduction	31
3.2 Land Development Projections	31
3.3 Traffic Forecasting Methodology	32
3.4 Year 2020 "No-Build" Traffic Projections and Deficiencies	37

Section 4 Transportation System Alternatives

4.1 Introduction	42
4.2 Roadway System Alternatives	42
4.3 Roadway System Evaluation Criteria	44
4.4 Roadway System Evaluation	45

4.5 Pedestrian System Alternatives	53
4.6 Bicycle System Alternatives	56
4.7 Transit System Alternatives	58
4.8 Transportation Demand Management (TDM) Strategies	63
4.9 Rail System Alternatives	65
Section 5 Silverton Road & Highway 214 Access Management Strategies	
5.1 Introduction	66
5.2 Purpose/Components of Access Management	66
5.3 General Access Spacing Standards	67
5.4 Silverton Road Access Management Strategies	67
5.5 Highway 214 North Access Management Strategies	71
Section 6 Transportation System Plan	
6.1 Introduction	77
6.2 Roadway System Plan	77
6.3 Transit System Plan	92
6.4 Pedestrian Facilities Plan	94
6.5 Bicycle Facilities Plan	95
6.6 Access Management Standards	95
6.7 Rail Facilities Plan	96
6.8 Air Facilities Plan	97
6.9 Water Facilities Plan	97
6.10 Pipeline Facilities Plan	97
6.11 Transportation Demand Management	97
6.12 Alternate Zoning	97
6.13 Policy and Ordinance Modifications	98
Section 7 Transportation Financing Plan	
7.1 Introduction	99
7.2 Recommended Transportation System Improvements	99
7.3 City of Silverton Transportation Funding History	104
7.4 Recommended Funding Sources	106
Section 8 Compatibility With Transportation Planning Rule and Other Plans	
8.1 Transportation Planning Rule Compliance	107

8.2 Compatibility With Other Plans	111
Appendix A Level of Service Concepts	113
Appendix B Land Use Scenario Technical Memorandum	114
Appendix C Potential Funding Sources	115
Appendix D Policies to Implement Silverton TSP	121
Appendix E Amendments to Silverton Subdivision Ordinance to Implement the Silverton TSP	126
Appendix F Amendments to Zoning Ordinance to Implement the Silverton TSP ...	128

LIST OF FIGURES

Figure 1 Existing Street Classification	6
Figure 2 Existing Roadway Jurisdiction	12
Figure 3 Existing Pavement Conditions	15
Figure 4 Existing Intersection Traffic Control Lane/Configuration	18
Figure 5 Existing Daily Traffic Volumes	19
Figure 6 Existing Weekday PM Peak Hour Traffic Volumes and Level of Service	20
Figure 7 Existing Downtown Parking Inventory	23
Figure 8 Existing Parking Demands	24
Figure 9 Existing Pedestrian Facilities	25
Figure 10 Existing Transit Service	28
Figure 11 Existing Zoning	30
Figure 12 Traffic Forecasting Process	35
Figure 13 Estimated Oregon Garden Monthly Traffic Variation	36
Figure 14 Year 2020 Baseline Daily Traffic Volumes	39
Figure 15 Year 2020 Base Case Weekday Daily Traffic Volumes	41
Figure 16 Roadway System Alternatives	47
Figure 17 Pedestrian System Alternatives	55
Figure 18 Bicycle System Alternatives	57
Figure 19 Fixed-Route Transit Service alternative #1 Single/Two-Directional Route	61
Figure 20 Fixed-Route Transit Service Alternative #2 Two-One-Way Routes	62
Figure 21 Silverton Road Access Management Strategies	70
Figure 22 Highway 214 North Access Management Strategies North Urban Growth Boundary to Jefferson Street	75
Figure 23 Highway 214 North Access Management Strategies Jefferson to D Streets	76
Figure 24 Roadway Classification Plan	79
Figure 25 Truck Route Plan	82
Figure 26 Roadway Improvement Plan	83
Figure 27 Established Neighborhood Collectors	86
Figure 28 Recommended Transportation Improvements	102

List of Tables

Table 1	Existing Street Cross Section Standards by Functional Classification	7
Table 2	Pavement Condition Rating System	14
Table 3	Source of Existing Traffic Volume Data	21
Table 4	Trip Generation Comparison - Baseline vs Alternative Zoning	40
Table 5	Summary Evaluation of Roadway System Alternatives	48
Table 6	Year 2020 Baseline Weekday PM Peak Hour Level of Service Water Street/Main Street Configuration Option	49
Table 7	Summary Evaluation of Intracity Transit System Alternatives	59
Table 8	Transportation Demand Management Strategies	63
Table 9	Proposed Urban Arterial Cross Sections	89
Table 10	Proposed Urban Collector Cross Sections	90
Table 11	Proposed Local Street Cross Sections	91
Table 12	Minimum Intersection Curb Return Radii	92
Table 13	Proposed Access Spacing Standards for County and City Roadways in Silverton	95
Table 14	City of Salem Driveway Spacing Standards (SRC Chapter 80)	96
Table 15	Recommended Transportation Improvement Program	100
Table 16	Intracity Transit System Improvement Program	103
Table 17	City of Silverton Transportation Funding 1996-2000	104
Table 18	Review of Silverton TSP Compliance with TPR	107

Section 1

Introduction

1.1 PURPOSE AND CONTENT

The Transportation System Plan (TSP) is the City's planning document for its future transportation needs. It allows the City to review its existing transportation facilities in an effort to determine what improvements will be needed for the up-coming 20-year period. The document takes not only street improvement needs into consideration, but also other forms of transportation such as transit, pedestrian, bicycle, rail, air, and water related facilities. The vision, and the recommendations within this document serve as a guide to both the Planning Commission and City Council when receiving land use applications, as well as determining which improvement projects receive funding as part of the City's Capital Improvement Program. The City of Silverton, through a Transportation Growth Management Grant from the TGM Program, administered jointly by the Oregon Department of Transportation (ODOT) and Oregon Department of Land Conservation and Development (DLCD), initiated an update of the City's Transportation System Plan (TSP). The TSP was developed in 1993, but the many land use changes occurring in the Silverton area over the past five years, such as the Oregon Garden development, suggested the need to update the transportation plan and its improvement program. This planning process is the focus of this report, culminating in the presentation of an updated transportation plan and an improvement program for Silverton.

The Oregon Transportation Planning Rule requires each city over 2,500 population in Oregon to prepare and adopt a TSP and implementing regulations (OAR 660-12-015). For a city with the population the size of Silverton, the TSP must include:

1. Determination of transportation needs
2. Road plan for arterials and collectors
3. Bicycle and pedestrian plan
4. Air, rail, water, and pipeline transportation plan
5. Transportation financing plan
6. Policies and land use regulations for implementing the TSP as provided in OAR 660-12-045.

In addition, given the presence of both fixed-route transit and paratransit service in Silverton today, and the assessment of transit needs in the Marion County TSP, the City of Silverton wanted to see transit improvement needs addressed in the updated TSP as well.

This report documents the various technical work tasks that were conducted as part of the Silverton TSP Update process.

Section 3 assesses existing transportation conditions in Silverton, ranging from current street classification and jurisdiction, to existing traffic volumes and level of service, to existing transit service and pedestrian and bicycle facilities.

Section 4 discusses the process of developing Year 2020 traffic projections, based on updated population projections for Silverton, for the "no-build" transportation system alternative, to establish a baseline condition from which transportation system improvement alternatives could be developed. The traffic forecasting process also assessed the impact of a more compact land use scenario in the City. As an input into the plan, an assessment of existing transportation conditions and needs was conducted, as well as an assessment of roadway, transit, pedestrian, and bicycle system alternatives, and an analysis of potential financing mechanisms. As an input into the alternatives analysis and overall needs assessment, traffic projections for the year 2020 were developed for all arterial and collector roadways within the City. An alternate land use scenario involving the creation of more neighborhood commercial areas surrounded with multi-family housing was also identified and evaluated.

Section 5 presents an evaluation of various roadway, transit, pedestrian, and bicycle facility system alternatives, and alternate Transportation Demand Management (TDM) strategies. The roadway system alternatives analysis focused on an evaluation of potential new collector roadways on the west side, north side, and east side of the City, as well as upgrading certain roadways (i.e. N. Second Street, E. Main Street) to minor collector status. The transit system alternatives analysis evaluated potential alternatives to expand the current fixed-route bus service in the City, as well as how a potential future intercity bus service connecting Silverton with Salem, and possibly Woodburn, would tie into the intracity service (including evaluating alternate sites for a new park-n-ride). The pedestrian system alternatives analysis focused on evaluation of adding sidewalks and off-street pathways, while the bicycle system alternatives analysis focused on evaluation of adding bike lanes to the arterial and collector system, as well as potential off-street pathways. Transportation demand management strategies to reduce vehicle trip demand were also evaluated.

Section 6 presents potential access management strategies for the east end of Silverton Road and the north end of Highway 214 through Silverton. Specific access management strategies were identified for Silverton Road and north Highway 214 (north of D Street), to provide a framework for reviewing future site development proposals on these important roadways. The strategies identified are consistent with access spacing standards identified in the Marion County Rural Transportation Plan and with the 1999 Oregon Highway Plan.

Section 7 presents the updated TSP, including new plan maps and updated transportation policies. This included access management plans for Silverton Road and Highway 214 in the City. The Transportation System Plan consists of management strategies for:

- a Roadway Plan
- Transit Plan
- Pedestrian Facilities Plan

- Bicycle Facilities Plan
- Access Management Plan
- Rail Facilities Plan
- Air Facilities Plan
- Water Facilities Plan
- Pipeline Facilities Plan
- Transportation demand

The roadway plan includes an updated road classification system that identifies arterial and collector streets. The plan also identifies updated street cross section standards, including the introduction of added narrower street standards which could be applied under certain conditions. The access management plan includes access spacing standards for arterial, collector, and local streets. The transit plan includes proposals to expand both community and intercity bus service and develop one or more park-and-ride facilities. The pedestrian facilities plan shows having sidewalks on every arterial and collector street in the City, as well as certain new off-street pathways. The bicycle system plan shows the development of bike lanes on all arterials and most collectors, as well as certain off-street bikeways.

Section 8 presents the transportation funding plan, including a prioritized list of transportation improvements, and proposed funding sources. The recommended transportation improvement program identifies a set of short-term, mid-term, and long-term improvements to be implemented over the next 20 years and beyond. A total of about \$22 million in transportation needs over the next 20 years have been identified (in existing year 2000 dollars). This would represent a substantial increase in transportation investment over funding in recent years, which has ranged from \$0.4-\$0.7 million per year. Several identified improvements are on state and county roadways in the City, though both the Oregon Department of Transportation and Marion County have limited funds and will probably be unable to fund all of the identified needs. New funding sources will need to be investigated further. Related to funding for future street maintenance, the feasibility of the City implementing a street utility fee should be explored.

Section 9 presents recommended changes to the Silverton Comprehensive Plan and land use regulations (zoning and subdivision ordinances) to implement the TSP. Modifications to the Silverton Zoning and Subdivision Ordinances and the Comprehensive Plan have been identified to facilitate and guide the implementation of the Silverton Transportation Plan. This includes enhanced provisions addressing street standards, access management standards, site building orientation, bicycle parking facilities, traffic impact study requirements, and land use actions for transportation improvements.

Section 10 discusses how the updated Silverton TSP is in compliance with the Oregon Transportation Planning Rule (TPR).

1.2 TSP STUDY PROCESS

The development of the Silverton TSP involved a series of technical tasks with proper review by local agency staff (City, Marion County, and State) and the public. The technical work tasks included the following:

- review of existing transportation and zoning conditions
- assessment of potential alternate land use scenarios as an input into the 20-year traffic projections
- development of 20-year (Year 2020) baseline traffic conditions for the "no-build" transportation system alternative, and for an alternate land use scenario
- development and evaluation of roadway, transit, pedestrian, bicycle system alternatives, and alternate Transportation Demand Management strategies
- evaluation of existing access along east Silverton Road and Highway 214 North, and development of access management strategies
- development of the transportation system plan, including plan maps and policies
- assessment of historical transportation funding sources in Silverton, and a potential plan for funding identified transportation improvements
- development of revised language in the Silverton Comprehensive Plan and Zoning and Subdivision Ordinances to implement the transportation system plan recommendations.

Technical memorandums were prepared documenting each of the work tasks. These memos were compiled into this TSP document.

1.3 PUBLIC INVOLVEMENT

The Silverton Transportation System Plan development included a structured agency/public involvement process, incorporating input from a Technical Advisory Committee (TAC), Planning Commission, City Council, and the general public.

The TAC was comprised of staff from the City of Silverton Public Works and Community Development Departments, the Oregon DLCD, ODOT, local citizens, City Planning Commission and Historic Silverton, Inc. The TAC met four times during the study to provide input on the technical work tasks and final products. In addition, three briefings with the Silverton Planning Commission were held. At each meeting, the consultant team made a presentation to the Planning Commission, and comments from the public in attendance were solicited. Finally, several work sessions with a combined Planning Commission/City Council were held to carefully review and refine each page of the draft TSP document.

Section 2

Existing Conditions

2.1 INTRODUCTION

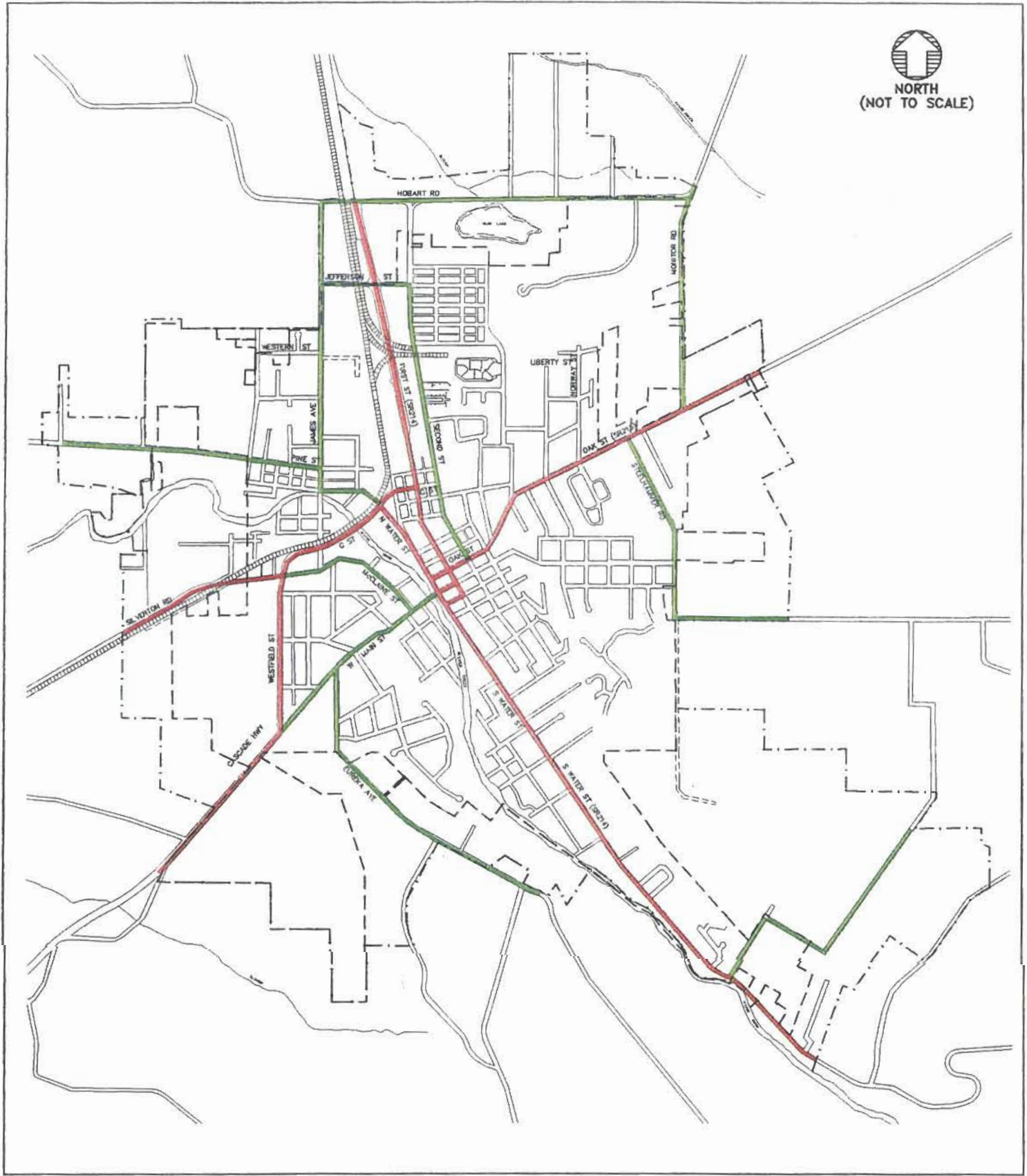
All Transportation System Plans start off with a review of the existing facilities within a city. Each city is different, with its own unique transportation system. Before it can be determined what the transportation system needs are, it must first be determined what exists.

Like all American cities, Silverton is an auto-dependent community which has evolved from a system which was first developed for the needs of horse and buggy's. Located on the east fringe of the Central Willamette Valley, Silverton has had only limited rail and air systems and no water related facilities.

In an effort to better plan for the City's future transportation system needs, it was first necessary to gauge the existing conditions. A summary of the existing transportation conditions within the Silverton Urban Growth Boundary was reviewed and the following conditions addressed:

- street functional classification system
- roadway jurisdiction
- pavement conditions
- intersection traffic control, and lane configuration
- weekday daily and p.m. peak hour traffic volumes
- intersection levels of service
- public parking
- pedestrian and bicycle facilities
- rail service/railroad grade crossings
- transit service
- air, water and pipeline facilities
- zoning

Information on existing conditions was obtained from a review of the 1993 Silverton Transportation System Plan, other recent traffic studies, the most recent City street inventory, and updated traffic counts at certain locations.



LEGEND	
	ARTERIAL
	COLLECTOR
	UGB
	CITY LIMITS

EXISTING STREET CLASSIFICATION

CITY OF SILVERTON, OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE
1



2891\DWG

11F001 DWG

2.2 FUNCTIONAL CLASSIFICATION

The 1993 Silverton Transportation System Plan identified three major categories of roadways:

- arterial
- collector
- local street

The adopted street functional classification plan is shown in Figure 1, and the current roadway standards are summarized in Table 1. For the street standards, local streets have been divided into three categories: local streets, neighborhood local streets, and cul-de-sacs.

Table 1
Existing Street Cross Section Standards by Functional Classification

Street Functional Classification	Minimum Right-of-Way Width	Minimum Curb-to-Curb Width
Arterial	70 feet	48 feet with bike lanes and no parking both sides
Collector Street	70 feet	36 feet, with bike lanes and no parking both sides
Neighborhood Collector	case-by-case	case-by-case
Local Street	50 feet	30 feet, parking limited to one side only
Neighborhood Local Street	60 feet	34 feet, parking allowed on both sides
Cul-de-sac -200 to 400 feet in length	50 feet	30 feet parking limited to one side only
Cul-de-sac -less than 200 feet	45 feet	30 feet parking limited to one side only
Turnarounds	45-foot radius	40-foot radius

Arterials are usually considered to be the backbone of a transportation network. They are intended to expedite the movements of traffic to and from major trip generators and between communities. *Collector* streets collect and distribute traffic to/from arterial streets. Neighborhood collectors are streets which when improved will be exempt to collector road standards. *Local* streets are intended to provide local access to adjacent land uses and are not intended to carry significant volumes of traffic.

There are eight arterial streets that approach the city center of Silverton from each direction. North-south traffic is accommodated on State Route Highway 214, which is locally designated as First Street north of the historic downtown area and as Water Street from the south of the downtown area. In downtown Silverton, Highway 214 becomes a one-way couplet that utilizes both Water Street and First Street. Highway 214 is the major north-south arterial connecting Silverton with

Woodburn and I-5 to the north and Silver Falls State Park and Highway 22 to the south.

State Route 213 is the major east-west arterial in Silverton, passing through the center of town. On the west side of town, this route is signed as Highway 213 but is a Marion County road and not a State route. It utilizes Silverton Road, McClaine Street, and Main Street, providing access from Salem. On the east side of town, Highway 213 uses Oak Street, providing access to Oregon City. A second arterial street connection on the west side of the city is provided via Cascade Highway, which connects with the Stayton area.

The following eight streets are currently classified as *arterial* streets:

- C Street, between McClaine and First Streets
- First Street, between the north U.G.B. and Lewis St.
- Lewis Street, between Water and First Streets
- Main Street, between Water and First Streets
- Oak Street, between Water Street and the east U.G.B.
- Silverton Road, between west U.G.B. and Westfield Street
- Water Street, between C Street and the south U.G.B.
- Westfield Street, between Main and McClaine Streets

The following thirteen streets are currently classified as *collector* streets:

- Eureka Avenue
- Evans Valley Road
- Hobart Road
- Ike Mooney Road
- James Street (Hobart Road to Water Street)
- Jefferson Street (James Street to Second Street)
- McClaine Street (West Main Street to C Street)
- Monitor Road
- Pine Street (James Street to City Limits)
- Second Street (from Jefferson Street to C Street)
- Steelhammer Road
- Water Street (James Street to C Street)
- West Main Street (First Street to Westfield Street)

The following streets are currently classified as *local* streets:

- | | | |
|-----------------|--------------------|------------------|
| •• A Street | •• Ames Street | •• Ash Street |
| •• Adams Street | •• Anderson Street | •• B Street |
| •• Alder Avenue | •• Apple Avenue | •• Boedies Drive |
| •• Ames Court | •• April Lane | •• Barger Street |

- Bartlett Street
- Breyonna Way
- Brooks Street
- Brown Street
- Bryan Court
- Center Street
- Central Street
- Chadwick Street
- Charles Street
- Chee Chee Court
- Cherry Street
- Chester Street
- Chickamin Loop
- Church Street
- Cliff Court
- Coolidge Street
- Cowing Street
- Cox Way
- Craig Street
- Crestview Drive
- D Street
- Digerness Street
- Division Street
- Drake Street
- Edgewood Drive
- Elm Street
- Enstad Lane
- Eska Way
- Fairview Street
- Fenne Lane
- Fifth Street
- Filbert Way
- Fir Street
- First, Jersey to the end
- Fiske Street
- Florida Drive
- Fourth Street
- Grant Street
- Gregory Court
- Halvorson Street
- Hazel Street
- Hicks Street
- Hill Street
- Hillsdale Lane
- Iowa Street
- Jay Street
- Jerome Street
- Johnson Street
- Keene Street
- Kent Street
- Kloshe Court
- Koons Street
- Lane Street
- Liberty Street
- Lincoln Street
- Madison Street
- Maple Street
- Meade Street
- Miller Street
- Monson Road
- Montevista Street
- Norway Street
- Olson Street
- Orchard Street
- Ord Street
- Park Street
- Peach Street
- Phelps Street
- Porter Street
- Reserve Street
- Robinson Street
- Rock Street
- Ronald Way
- Ross Street
- Schlador Street
- Second, from Oak to Koons
- Shelokum Dr.
- Sheridan Street
- Sherman Street
- Short Street
- Silver Loop
- Silver Avenue
- Smith Street
- South Street
- Stark Street
- Third Street
- Trees Court
- Trix Street
- Wall Street
- Walnut Avenue
- Walnut Way
- Washington Street
- Webb Street
- Weiby Avenue
- Welch Street
- Well Street
- Wesley Street
- Western Avenue
- Whittier Street
- Willow Street
- Wilson Street
- Woodland Drive

East Main Street was included as a local street although it has traffic counts which are close to having it be classified as a collector street. This street functions as a collector and is designated as such.

2.3 ROADWAY JURISDICTION

The majority of the roadways in Silverton are under the jurisdiction of the City of Silverton. However, there are several significant roadway segments that fall under the jurisdiction of either Marion County or the Oregon Department of Transportation (ODOT). These segments require special coordination between the City and County or State for maintenance, access permits, etc.

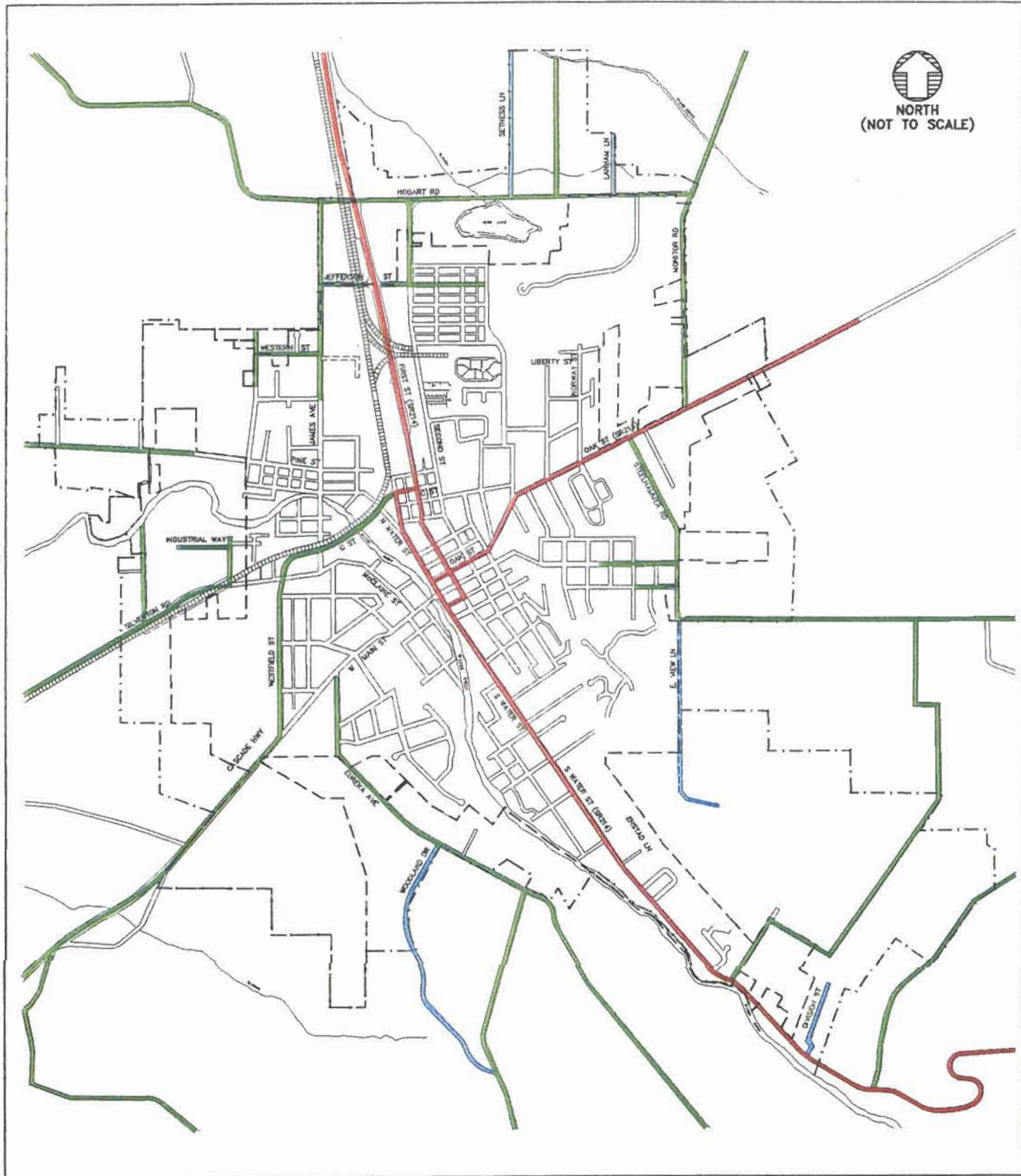
ODOT – As shown in Figure 2, SR 213 and SR 214 are under the jurisdiction of ODOT and are classified as District Highways by ODOT and as Arterial Streets by the City of Silverton. A District Highway is defined in the 1999 Oregon Highway Plan as follows:

District Highways are facilities of county-wide significance and function largely as county and city arterial or collectors. They provide connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic. The management objective is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements. Inside Special Transportation Areas (STA's), local access is a priority. Inside Urban Business Areas, mobility is balanced with local access.

Marion County – Figure 2 also shows the location of Marion County roadway facilities. With several exceptions, these facilities are typically collector streets or arterial streets under the City of Silverton roadway classification system. The roadways which fall under the jurisdiction of the county are:

- C Street (from McClaine Street to Front Street)
- East Main Street (Ames Street to Steelhammer Road)
- Eureka Avenue
- Folsom Road
- Grant Street (north of Florida Drive)
- Hobart Road
- Ike Mooney Road
- Industrial Way
- James Street (north of Florida Drive)
- Jefferson Street
- Monitor Road
- Monson Road
- Pine Street (west of Grant Street)

- Quarry Road (north of Hobart Road)
- Reserve Street (East Park Street to Steelhammer Road)
- Second Street (Jefferson Street to Hobart Road)
- Silverton Road
- Steelhammer Road
- Western Avenue
- Westfield Street
- West Main Street



LEGEND	
—	STATE ROADWAY
—	COUNTY ROADWAY
—	PRIVATE ROADWAY
- - - - -	UGB
- - - - -	CITY LIMITS

EXISTING ROADWAY JURISDICTION

CITY OF SILVERTON, OREGON
 TRANSPORTATION SYSTEM PLAN
 NOVEMBER 1999

FIGURE	K
2	

City of Silverton – All remaining roadways inside the City limits, which are not marked as a State or County roadways in Figure 2, fall under the jurisdiction of the City. However, there are also five private roadways in the area, all inside the Silverton Urban Growth Boundary. On these roadways, it is the owner’s responsibility for roadway maintenance and improvement. They are:

- East View Lane
- Woodland Drive
- Division Street
- Latham Lane
- Setness Lane
- Stack Lane
- western end of Industrial Way

2.4 PAVEMENT CONDITIONS

Figure 3 shows the existing pavement condition of Silverton’s road network. This determination reflects field surveys City Public Works staff have conducted over the past year. The City rated pavement conditions in its street inventory for different street segments into five categories: excellent, good, fair, poor and very poor (Table 2). It was found that the following streets are in need of pavement improvements (either a very poor or poor rating):

- Ames Street, between E. Main and Kent Streets
- Ash Street
- Barger Street, between Central and Smith Streets
- B Street, east of First Street
- Central Street, between Madison and First Streets
- Charles Street, east of Coolidge Street
- Chester Street
- D Street, between Front and First Streets
- E. Main Street, between 5th and Ames Streets
- Fairview Street
- Fifth Street, between Kent and E. Main Streets
- First Street, south of Drake Street
- Hazel Street
- James Street, between Pine Street and Florida Drive
- Kent Street, between 5th and Ames Streets
- Koons Street
- Pine Street, west of James Street
- Ross Avenue
- Second Street, between Chester and Whittier Streets
- South Street
- Weiby Avenue
- Welch Street, south of Cherry Street
- Well Street

- Wesley Street
- Whittier Street

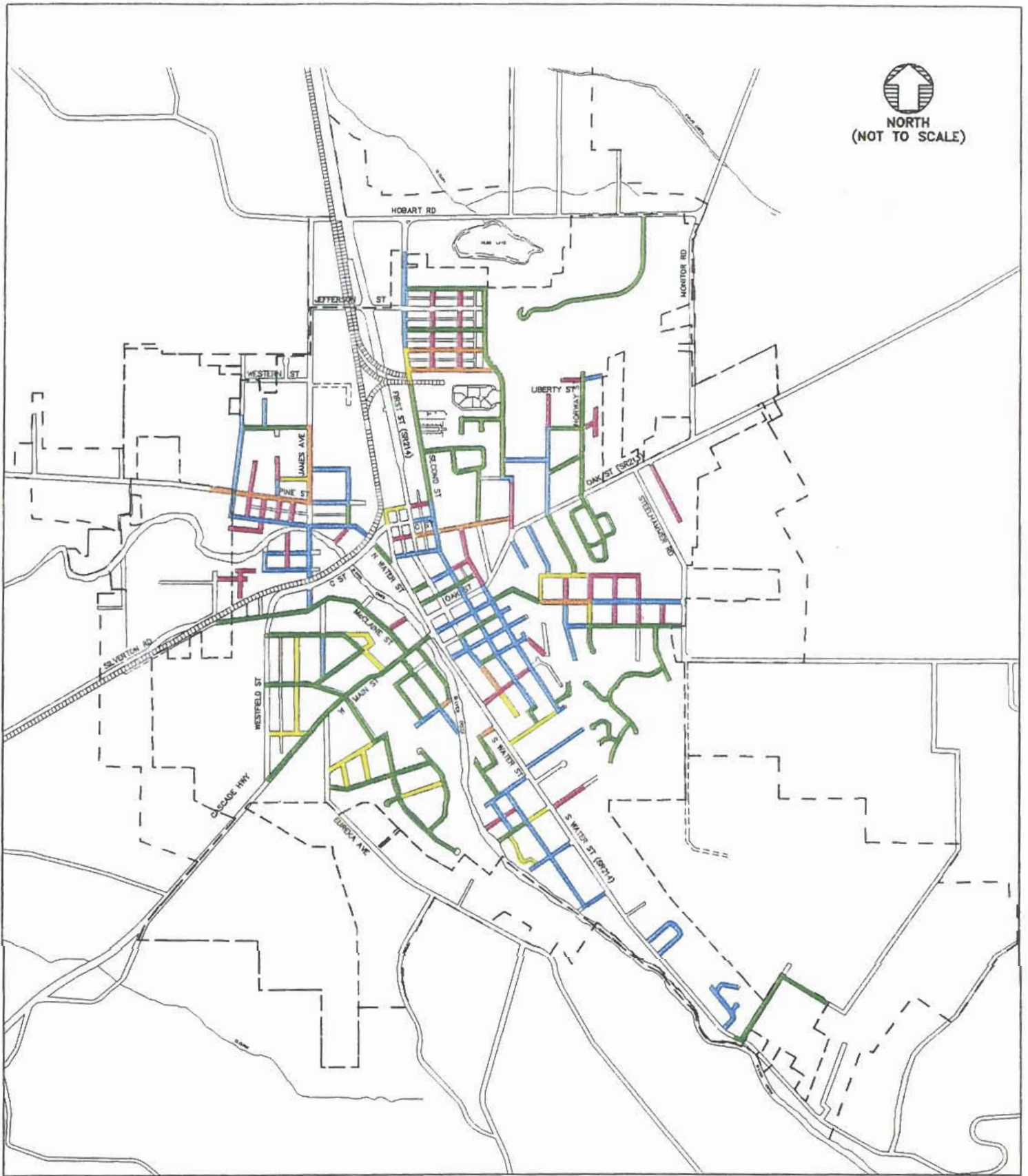
Table 2
Pavement Condition Rating System

Types of Distress	Degree of Distress	Percentage of Area									
		1-15%			16-30%			31% -			
Rutting	Slight	0			2			5			
	Moderate	5			7			10			
	Severe	10			12			15			
Raveling	Slight	5			8			10			
	Moderate	10			12			15			
	Severe	15			18			20			
Flushing	Slight	5			8			10			
	Moderate	10			12			15			
	Severe	15			18			20			
Corrugations	Slight	5			8			10			
	Moderate	10			12			15			
	Severe	15			18			20			
Alligator Cracking	Slight	5			10			15			
	Moderate	10			12			15			
	Severe	15			20			25			
		0	S	PS	NS	S	PS	NS	S	PS	NS
Transverse Cracking	Slight	2	5	8	3	7	10	3	7	12	
	Moderate	5	8	10	7	10	15	7	13	15	
	Severe	8	10	15	10	15	20	12	15	20	
Longitudinal Cracking	Slight	2	5	8	3	7	10	3	7	12	
	Moderate	5	8	10	7	10	15	7	13	15	
	Severe	8	10	15	10	15	20	12	15	20	
Patching	Slight	0			2			5			
	Moderate	5			7			10			
	Severe	7			15			20			

* S = Sealed PS = Partially Sealed NS = Not Sealed

PCI Rating

0-10 Failed
 11-25 Very Poor
 26 - 40 Poor
 41-55 Fair
 56-85 Good
 86-100 Excellent



LEGEND	
	GOOD
	FAIR
	POOR
	VERY POOR
	GRAVEL
	CITY LIMITS
	UGB

EXISTING PAVEMENT CONDITIONS

CITY OF SILVERTON, OREGON
 TRANSPORTATION SYSTEM PLAN
 NOVEMBER 1999

FIGURE
3



2.5 INTERSECTION TRAFFIC CONTROL/LANE CONFIGURATIONS

Existing traffic control and lane configuration at the study intersections are shown in Figure 4. There are currently no traffic control signals in the City of Silverton. When arterial and/or collector streets intersect, one or both streets are typically controlled by stop signs. When local streets intersect a collector or arterial, they are typically controlled by a stop sign for traffic on the local street.

2.6 DAILY TRAFFIC VOLUMES

Estimated existing weekday daily traffic volumes on major streets in Silverton are shown in Figure 5. These were estimated based on weekday P.M. peak hour counts and assuming that the P.M. peak hour would be about 10 percent of the daily traffic flow. (Typically, P.M. peak hour flow is 8 to 12 percent of daily traffic.)

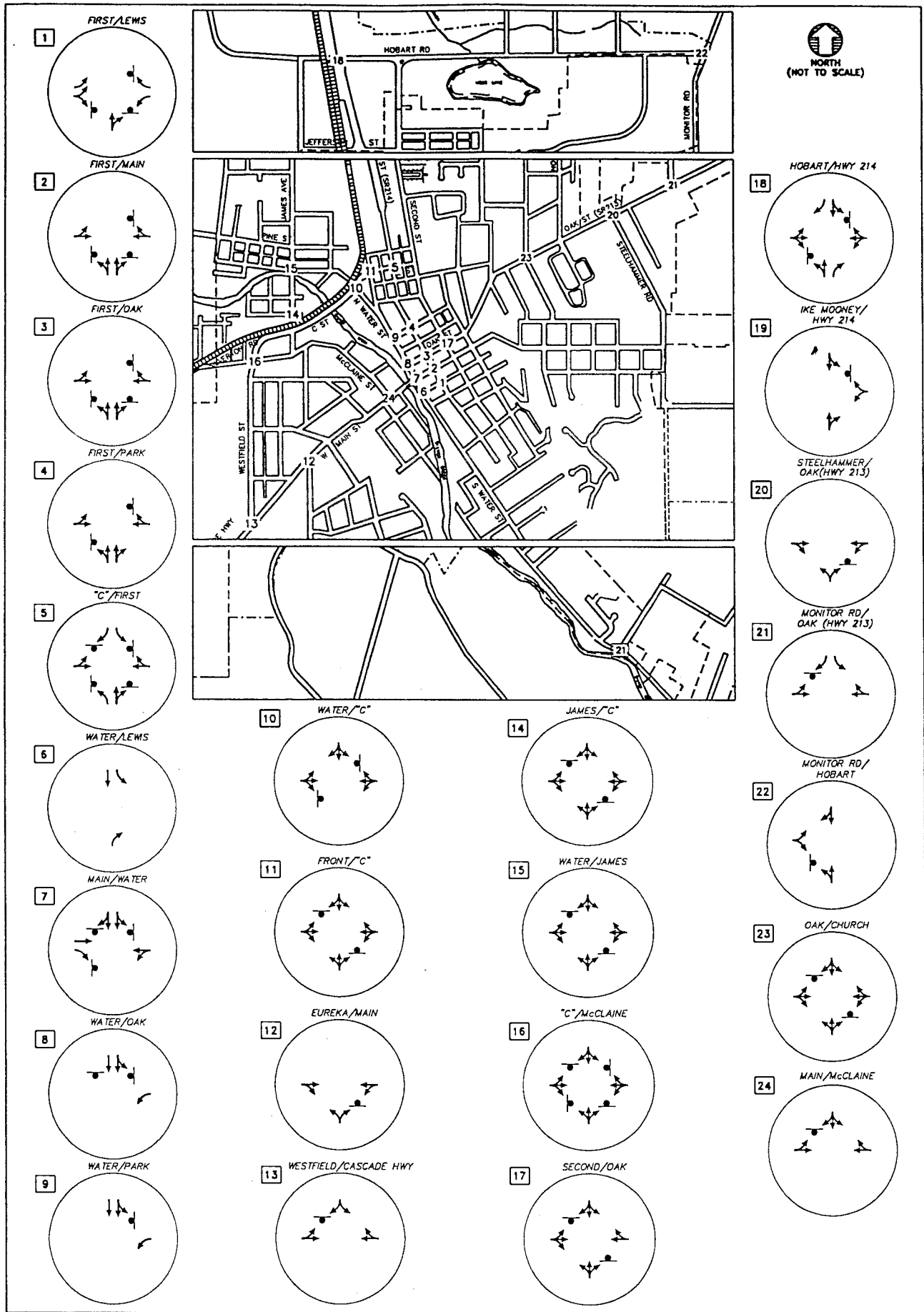
Traffic volumes in Silverton are highest on sections of the two state highways - State Highway 213 and 214, and on West Main Street, C Street, and Silverton Road. Highway 214 traffic volumes approach 9,000 vehicles a day on the north side of town, while Highway 213 traffic volumes exceed 5,600 vehicles a day on Oak Street east of downtown. The most heavily traveled roadway segment is West Main Street between Water and McClaine Streets, with over 10,400 vehicles a day; Silverton Road, west of C Street, has 9,600 vehicles a day; and C Street between Westfield and First Streets ranges from 9,000 to 10,000 vehicles a day.

2.7 P.M. PEAK HOUR VOLUMES AND INTERSECTION LEVELS OF SERVICE

Figure 6 shows intersection levels of service and the traffic volumes used to calculate the intersection levels of service, for the 1998 weekday P.M. peak hour. The traffic counts were derived from recent traffic counts, and where such counts were not available, factoring up the intersection turning movement counts obtained in 1993 for the original Silverton TSP. Table 2 identifies the source of each intersection count. The methodology used in the intersection traffic operations analysis is consistent with that of the 1994 Highway Capacity Manual, and applied the TRAFFIX model to estimate intersection delay, volume to capacity ratio, and level of service.

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) experienced by motorists as they travel through an intersection or roadway segment. LOS is expressed as a letter grade that ranges from "A", indicating that vehicles will experience little, if any delay, to "F", indicating that significant traffic congestion and motorist delay will occur. For unsignalized intersections, LOS "E" is considered to be the minimum acceptable grade in urban areas, while "D" is considered to be the minimum acceptable grade for signalized intersections. Appendix A discusses the level of service concept further.

Traffic operations are generally acceptable in Silverton (intersections have a level of service "A", "B" or "C" during the weekday P.M. peak hour), with the exception of peak period operations on C Street near Water Street and near First Street. At the intersection of C Street and Water Street, there is not adequate capacity for through movements on C Street (level of service "F"). Traffic will frequently back-up on C Street for an extended distance, reflecting the stop sign control as traffic on Water Street north of this intersection cannot be stopped due to the proximity of the at-grade railroad crossing.



LEGEND
 ● - STOP SIGN

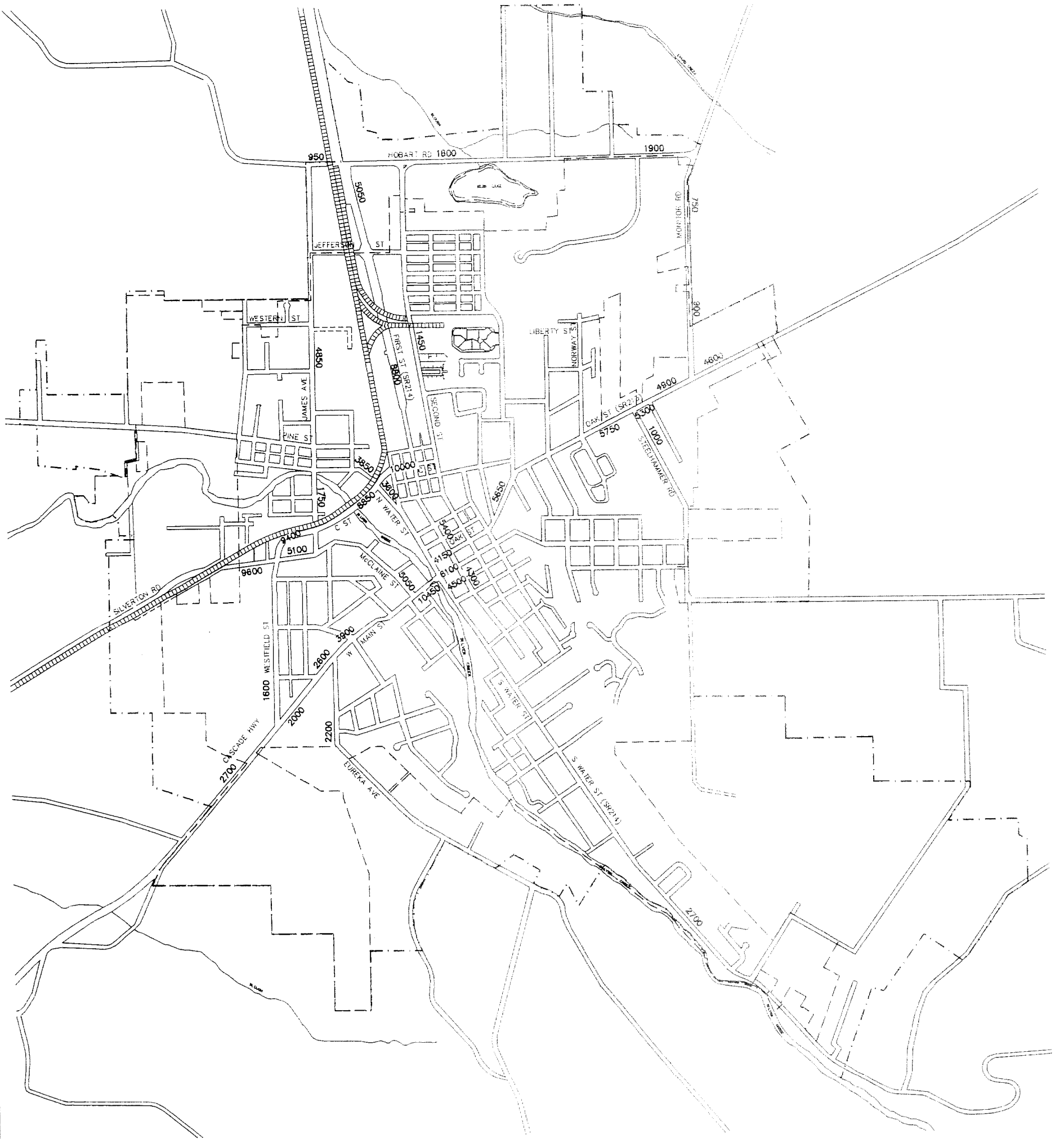
EXISTING INTERSECTION TRAFFIC CONTROL AND LANE CONFIGURATIONS

CITY OF SILVERTON, OREGON
 TRANSPORTATION SYSTEM PLAN
 NOVEMBER 1999

FIGURE
4



2891\DWG5\FINAL699\2891F004.DWG

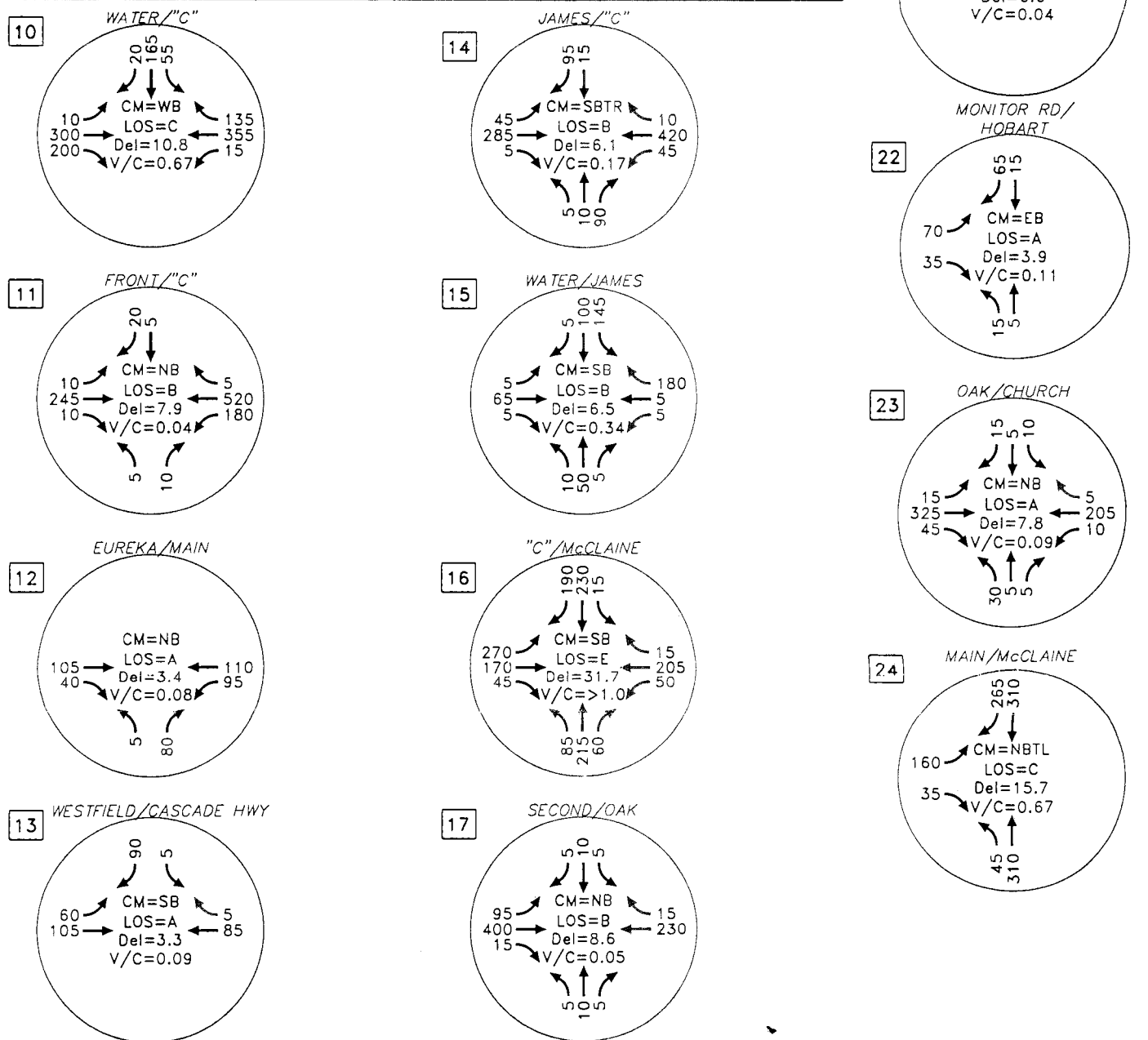
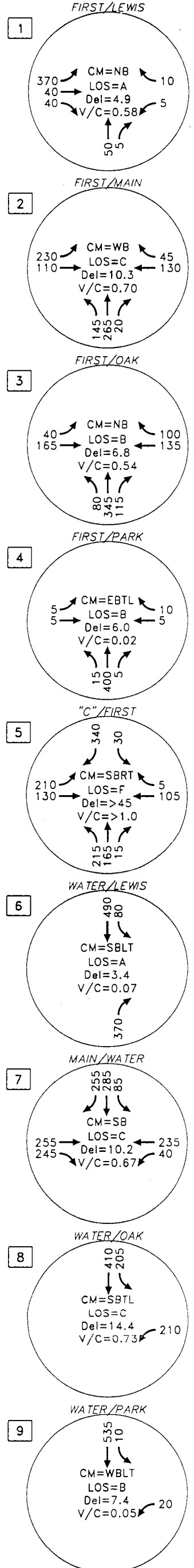
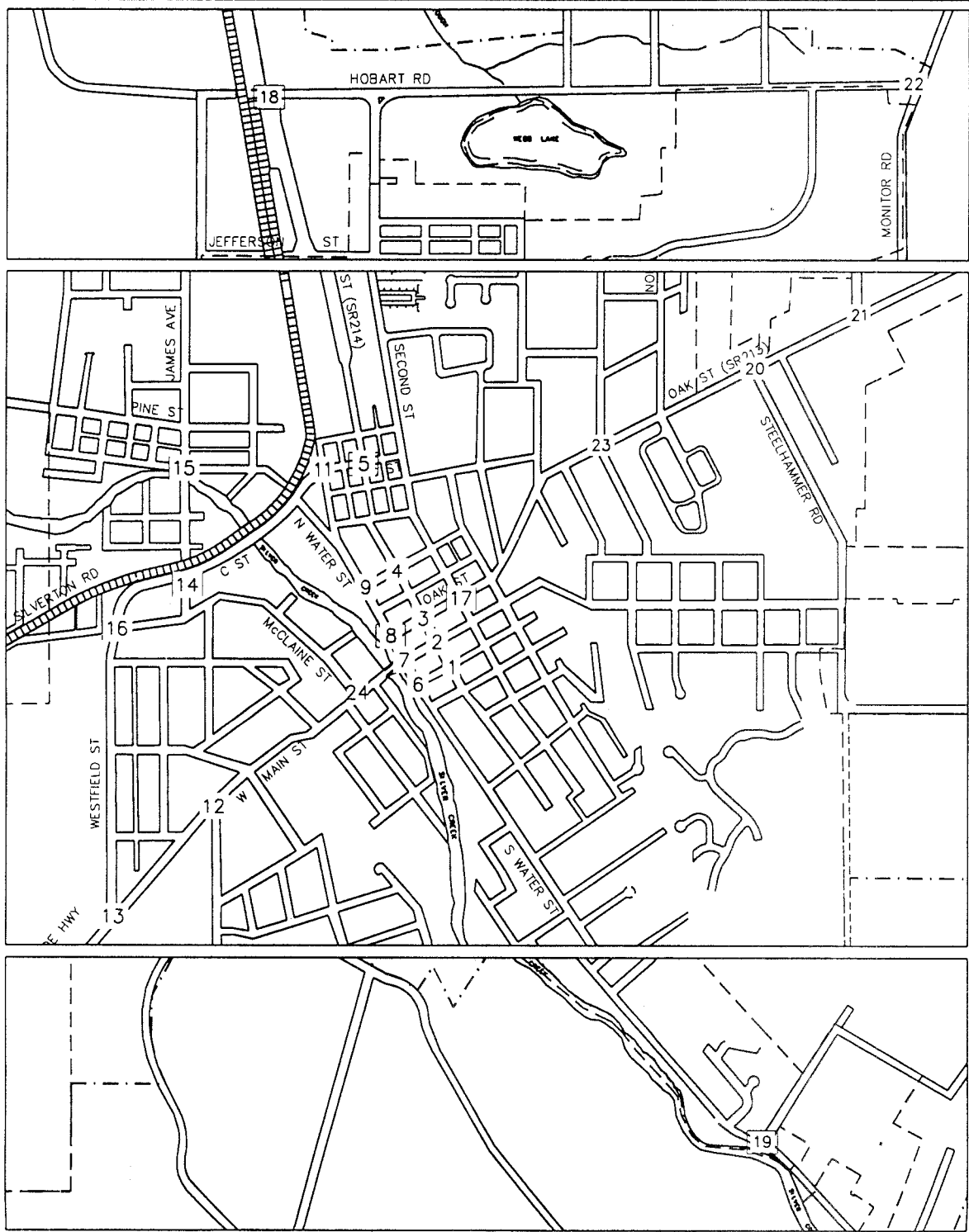


**EXISTING AVERAGE WEEKDAY
 TRAFFIC FLOW (TWO-WAY)**

SILVERTON TSP UPDATE
 SILVERTON, OREGON
 NOVEMBER 1999

FIGURE
5





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

**EXISTING WEEKDAY PM PEAK HOUR
 TRAFFIC VOLUMES AND
 LEVELS OF SERVICE**

CITY OF SILVERTON, OREGON TRANSPORTATION SYSTEM PLAN NOVEMBER 1999	FIGURE 6	
--	--------------------	--

Table 3
Source of Existing Traffic Volume Data

Intersection	1994 Count (Growth Factored to 1999)	1999 Count
First/Lewis	X	
First/Main	X	
First/Oak	X	
First/Park	X	
"C"/First	X	
Water/Lewis	X	
Main/Water	X	
Water/Oak	X	
Water/Park	X	
Water/"C"		X
Front/"C"	X	X
Eureka/Main	X	
Westfield/Cascade	X	
James/"C"	X	
Water/James	X	
"C"/ McClaine	X	
Second/Oak	X	
Hobart/Hwy 214	X	
Ike Mooney/Hwy 214	X	
Steelhammer/Oak	X	
Monitor Road/Oak	X	
Monitor Road/Hobart	X	
Oak/Church	X	
Main/McClaine		X

2.8 PUBLIC PARKING

A parking study, Silverton Downtown Parking Study, was completed in November 1998 for the central portion of the City of Silverton to address issues of parking for customers, residents and employees with future growth of the city. The study concluded that while there currently is sufficient parking capacity if the use of the Copeland Lot, with its approximate 50 spaces, were to be not available for public use the effect would be detrimental. Currently, there are approximately 1,080 parking spaces in the downtown core. This represents approximately 40 percent of these parking spaces during the weekday peak period, and about 25 percent during the Saturday peak period. Figure 7 shows the current parking inventory, while Figure 8 shows the existing parking demand profile on weekdays and Saturdays, as well as parking duration characteristics.

Overall, parking demand was observed to rise sharply in the morning and level off from 10:00 a.m. to about 4:00 p.m., with a slight increase in parking demand mid-afternoon, and then settling back down to low parking demand levels after 4:00 p.m. Most motorists are parked for no more than one hour duration. This pattern was observed both on a weekday and on a Saturday.

2.9 PEDESTRIAN AND BICYCLE FACILITIES

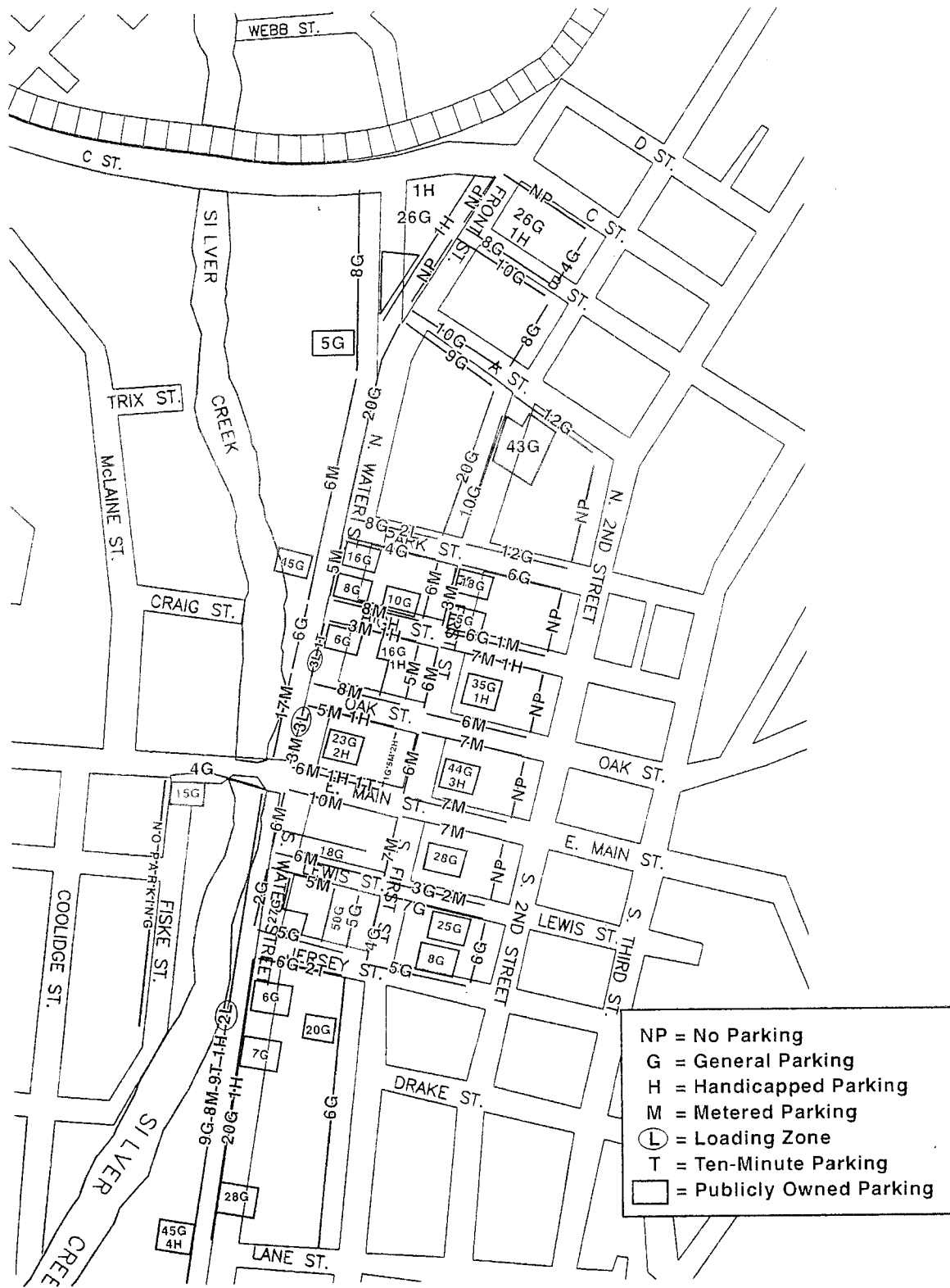
Figure 9 shows the location of pedestrian facilities in the City of Silverton, and their relationship to major activity centers. Overall, the existing pedestrian facility system is deficient due to lack of connectivity.

Sidewalks are present on the downtown streets, although further from the city center sidewalk linkages are missing. In some cases sidewalks are only provided on one side of the street and pedestrians are forced to cross the street in order to continue walking on the sidewalk along the same road.

Arterial and collector street sections currently without sidewalks include the following segments:

- C Street, between First Street and Westfield Street
- Eureka Avenue
- First Street, north of the railroad crossing
- Hobart Road, west of Lanham Drive
- James Street, north of Florida Drive
- Jefferson Street
- Monitor Road
- Oak Street, east of Norway Street
- Second Street, between Jefferson and Whittier Streets
- Steelhammer Road
- Water Street, south of Smith Street

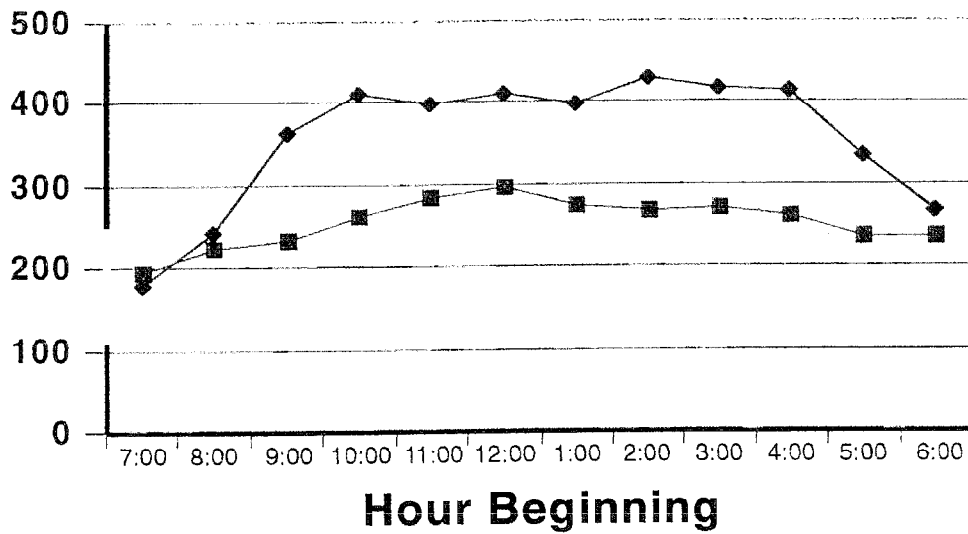
Currently, Silverton has no designated on-street bike lanes, or off-street bikeways.



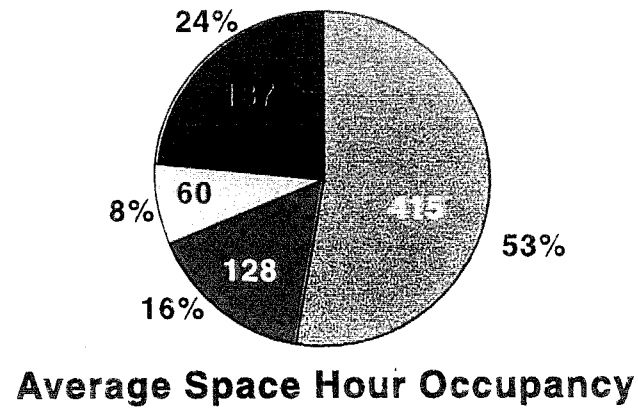
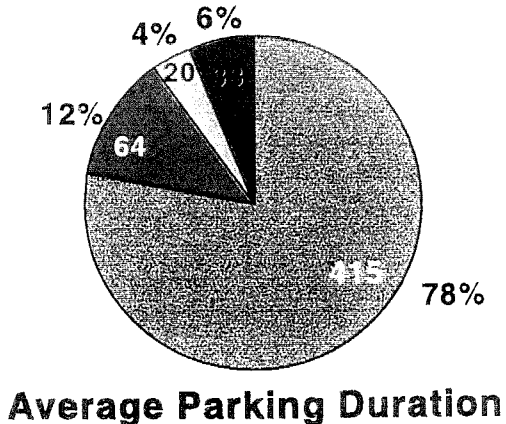
**EXISTING DOWNTOWN
PARKING SUPPLY**

SILVERTON TSP UPDATE SILVERTON, OREGON APRIL 1999	FIGURE 7	K
---	--------------------	----------

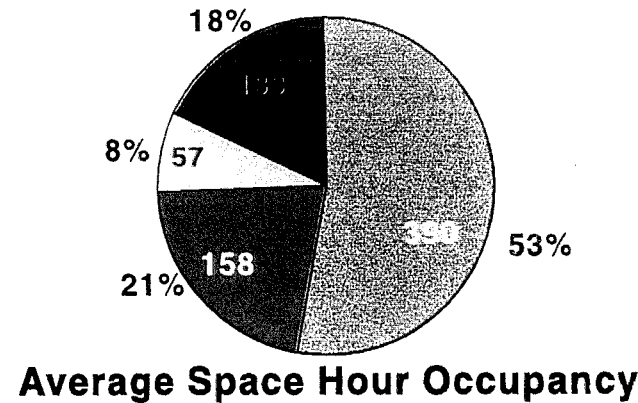
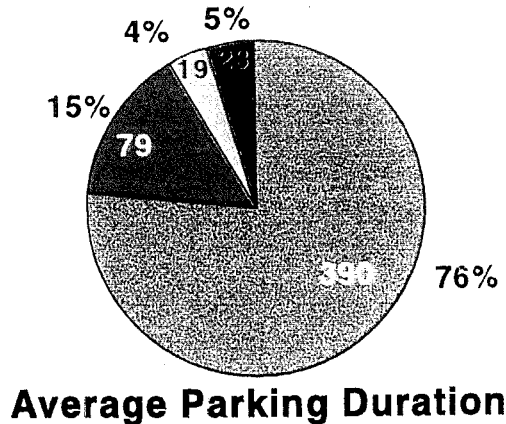
Total Parking Demand



WEEKDAY



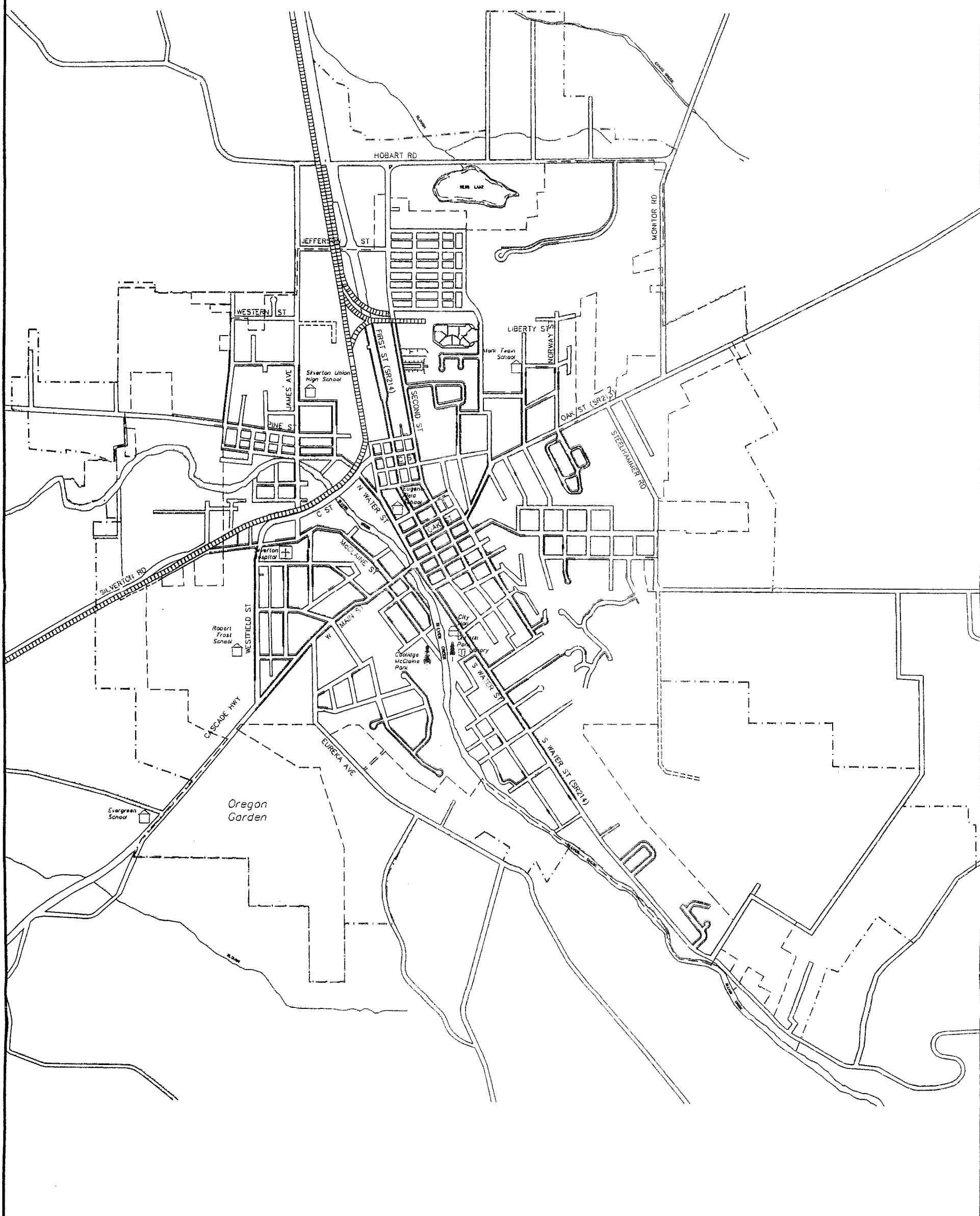
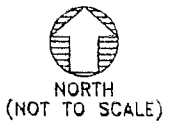
SATURDAY



EXISTING DOWNTOWN PARKING DEMANDS

CITY OF SILVERTON OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE 8



LEGEND	
	EXISTING SIDEWALK (ONE SIDE)
	EXISTING SIDEWALK (BOTH SIDES)
	UGB
	CITY LIMITS

EXISTING PEDESTRIAN FACILITIES	
SILVERTON TSP UPDATE SILVERTON, OREGON	
NOVEMBER 1999	FIGURE 9

2.10 RAIL SERVICE/RAILROAD GRADE CROSSINGS

The Willamette Valley Railroad currently provides branch line rail service for the shipment of commodities between Salem and Woodburn through Silverton. The rail which passes through Silverton is considered to be an "exempted line". This means that it is limited to only freight with speeds 10 miles per hour or less. This line connects to the rail line in Woodburn to the north and terminates in Stayton to the south. Passenger rail transportation service to Silverton residents is provided by AMTRAK in Salem or Portland, Oregon.

There are six existing railroad/highway grade crossings in Silverton:

First Street, south of Whittier Street
Hobart Road, west of Highway 214
James Street, north of C Street
Jefferson Street, west of Highway 214
Silverton Road, west of C Street, and
Water Street, north of C Street

Gates and flashing lights are provided at the grade crossings on First and Water Streets and Silverton Road, with only stop sign control at the other three crossings on Hobart Road and James and Jefferson Streets.

2.11 TRANSIT SERVICE

Transit service available in Silverton includes Silverton Community Transportation, which is comprised of The Silver Trolley, a fixed-route and dial-a-ride service, and Seniors Plus, a demand responsive medical transportation service; a local taxi service; and a special intercity bus service.

The Silver Trolley, a general public transportation service, has been in operation for just over one year. The City of Silverton owns and operates the 14-passenger van used for this service. An Advisory Committee provides suggestions and input regarding operations. The route of The Silver Trolley serves many of the City's major retail establishments (Roth's Family Market, Hi-School Pharmacy, Rite-Aid and Safeway), two mobile home villages for seniors (Silverton Mobile Estates and Stardust Mobile Village), Silvertowne I & II, Twilight Courts and Town Square Park (see Figure 10). The Silver Trolley runs eight times daily on Mondays and Wednesdays from 8:30 A.M. to 4:30 P.M., stopping at some stops only four times daily. The fare is \$1.00 for a day pass. On Fridays from 8:30 A.M. to 4:00 P.M., a dial-a-ride service with curbside assistance operates. The Silver Trolley currently provides connections with the intercity bus service provider - Wheels Community Transportation - at Roth's Family Market, and Silver Falls Library. The connection allows passengers from outside the community to link into the Silverton service area. It also allows passengers from within the community to have access to services in Salem and Woodburn.

In addition to The Silver Trolley, Silverton Hospital runs Seniors Plus and Woodburn Express, which includes a medical transportation program that has operated successfully for over nine years. While the service is primarily for seniors over 55 years of age and disabled citizens of any age, any person may schedule demand-response rides for medically-related appointments between the hours of 8:30 A.M. and 4:30 P.M., Monday through Friday. Senior Plus services are available to those qualified users who are residents of Silverton, Scott Mills, Mt. Angel, Woodburn, Canby, Gervais, Hubbard, and Molalla.

Other public transportation providers include:

- The Silverton School District contracts to provide school buses taking school children to and from school
- The Silverton Taxi service, which has one cab available for general use
- Various vehicles owned and used by religious and residential organizations.

Transportation services for the transportation disadvantaged is a recognized significant local and regional transportation service inadequacy. The transportation disadvantaged are recognized to be all persons without the ability or capability to use personal conveyance to travel. These include but are not limited to:

Seniors - Anyone 55 years of age or older

Mobility Limited - A person 16 years of age or older who has a temporary or permanent physical, mental or emotional impairment that limits them from going outside their place of residence alone.

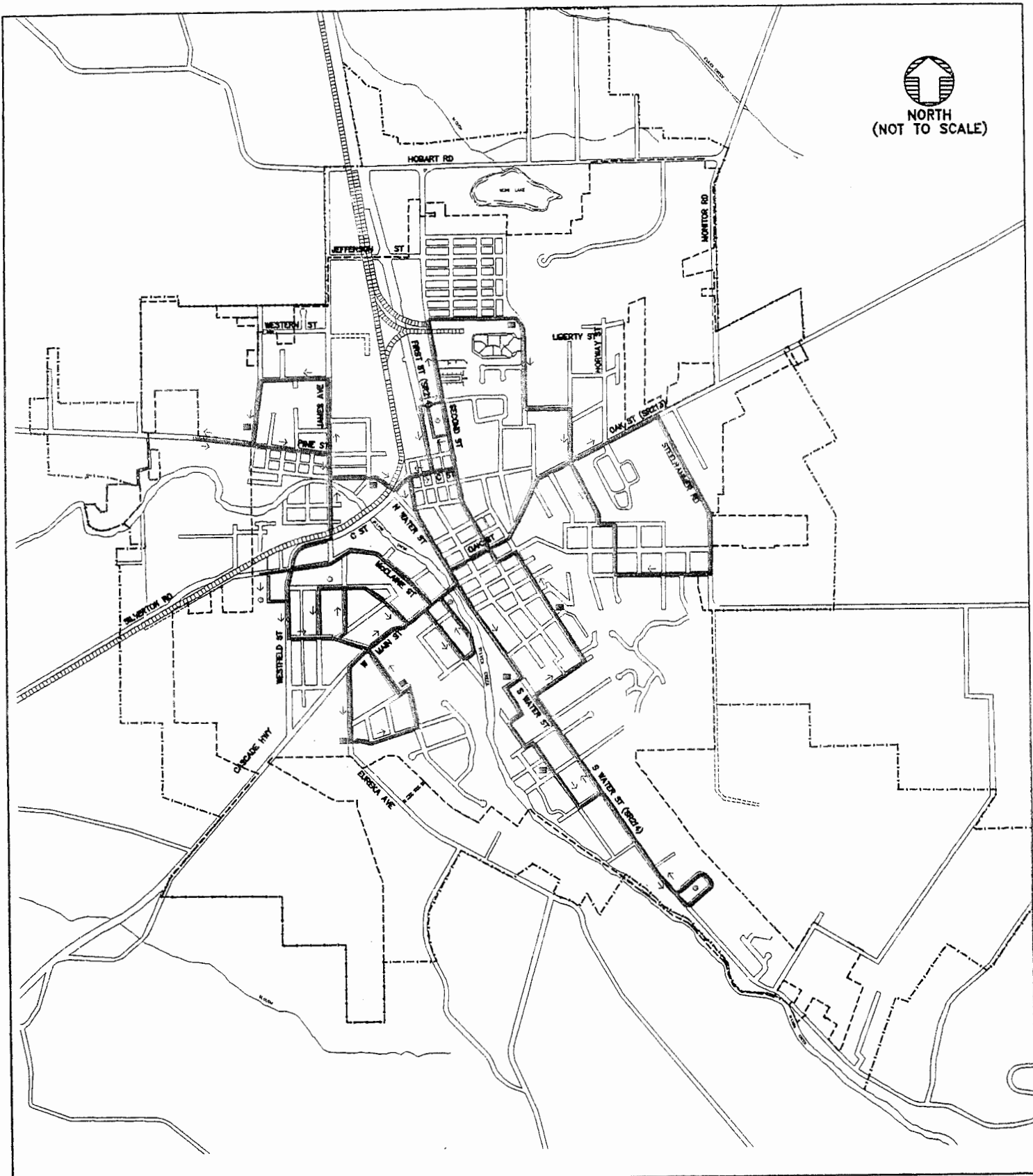
Youth - Anyone between 12 and 16 years of age.

Resource Limited - Individuals in a household with low to moderate incomes who are unable to meet basic human needs due to lack of financial resources and who generally may have no personal auto access.

The Salem Area Mass Transit District (SAMTD) has been given the role to disperse federal and state funds for the benefit of the transportation disadvantaged in Marion and Polk Counties. It works through the Special Transportation Advisory Committee (STAC) and has prepared and adopted a strategic plan entitled, "Moving Towards Action." The Marion and Polk Counties Regional Transportation Enhancement Plan, August 1998 (RTEP): The focus of this strategy is to maximize available resources and bring to the region an improved level of transportation services for those citizens who are transportation disadvantaged.

The Community Care Silver Trolley Advisory Committee is in the process of reviewing and updating an American's with Disabilities Act (ADA) Plan to address the needs of those individuals with a qualifying disability as noted in the fore mentioned strategic plan.

The City of Silverton recognizes the RTEP as an important and necessary step in providing cost effective services for the Transit disadvantaged, and ultimately the general public.



LEGEND	
	EXISTING SILVER TROLLEY ROUTE
	REGULAR BUS STOP
	FLAG BUS STOP
	CITY LIMITS
	UGB

EXISTING TRANSIT SERVICE

CITY OF SILVERTON, OREGON
 TRANSPORTATION SYSTEM PLAN
 NOVEMBER 1999

FIGURE	
10	

2891\DWG 10001F010 DWG

2.12 AIR, WATER, AND PIPELINE FACILITIES

Silverton does not currently have a publicly-owned or operated airport. Regional and commercial air service for passengers and freight is provided at the Portland International Airport. The nearest public general aviation facility is at Salem Regional Airport. No public air strip is available within the Silverton Urban Growth Boundary.

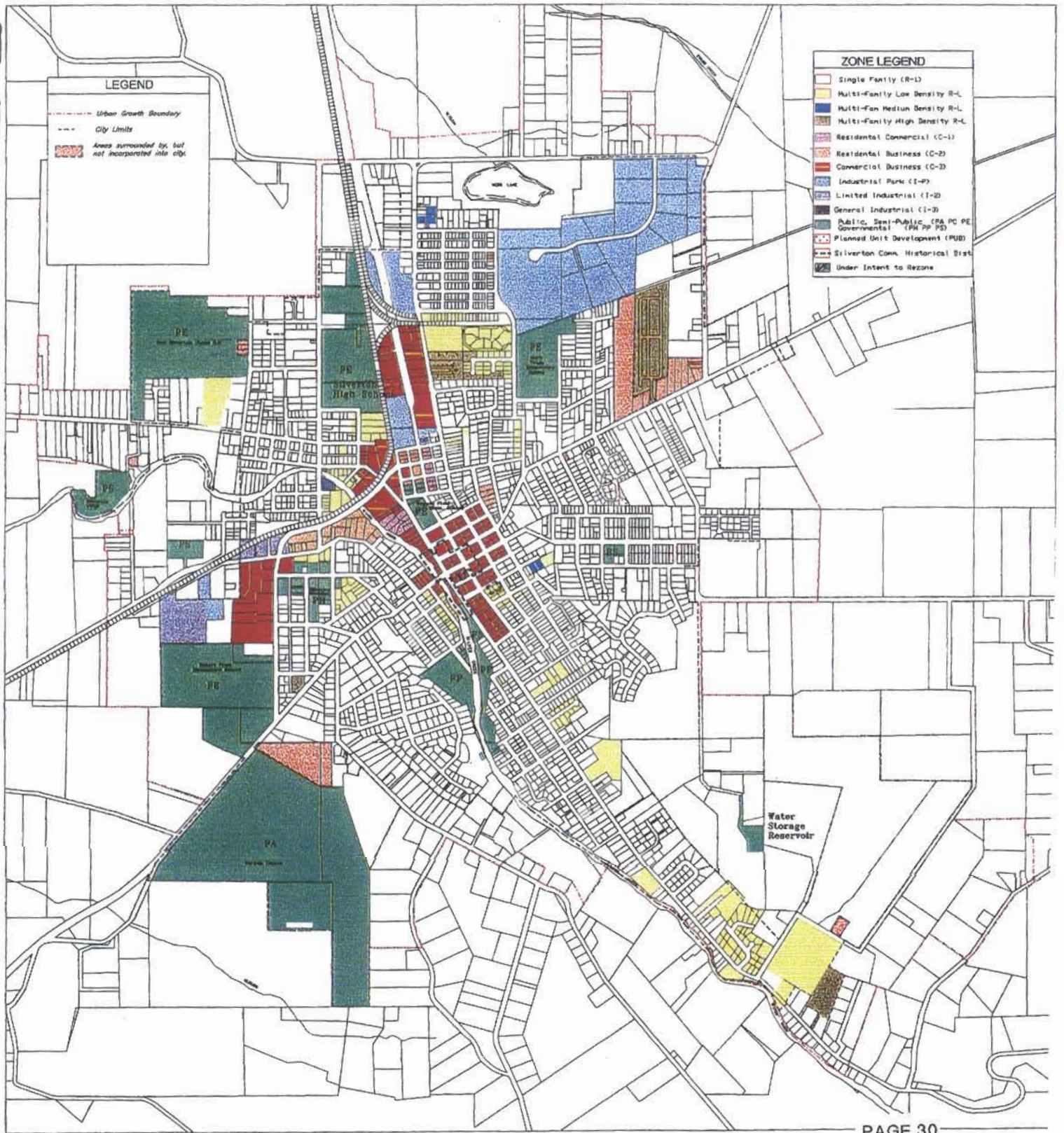
There is a site northwest of the City of Silverton which has historically been used as both a public and private airport from the 1920's to the early 1980's. The area is flat and contains an unimproved landing strip. Urban residences are located to the south, along with a new high school to the southeast. Agricultural uses are to the north and west. Any potential flight patterns would need to be directed away from both the school and nearby residences consistent with federal and state regulations. It is unlikely that a public airport would be either owned or operated by the City and so will likely need to be privately owned, but open for commercial and recreational use. At the present time the property is outside the Silverton Urban Growth Boundary and under Marion County's jurisdiction for land use regulations. Marion County regulations do not allow a public airport within an Exclusive Farm Use zone, but will allow a private airstrip for personal use as a conditional use. Any use of the site for the purpose of either a private airstrip or public airport will require review and approval of the applicable jurisdiction for zoning matters.

Pipeline transportation in and through the Silverton urban area includes transmission lines for electricity, cable television and telephone service; and pipeline transport of water, sanitary and storm sewer, and natural gas.

Recreational boating on nearby streams and lakes is the only form of waterborne transportation near the Silverton urban area. No waterways are located within the Silverton Urban Growth Boundary that are of significant transportation interest. The Silverton Reservoir (located outside the urban growth boundary), is owned by the City and used for recreation.

2.13 ZONING

Silverton's zoning is illustrated in Figure 11. The core of the city is a commercial area built on an urban grid system in the center of town, on the east side of Silver Creek. Commercial employment-generating land uses are generally concentrated in downtown Silverton, along Highway 214 north of downtown, and in the vicinity of the C Street/McClaine Street/Westfield Street intersection. An Industrial Park is located in the north side of Silverton, along Hobart Road. New residential development, while spread throughout the city, will most likely occur in the future on the east side of town, where a substantial amount of land is zoned for residential development.



LEGEND

- Urban Growth Boundary
- City Limits
- Areas surrounded by, but not incorporated into city.

ZONE LEGEND

- Single Family (R-1)
- Multi-Family Low Density R-L
- Multi-Family Medium Density R-L
- Multi-Family High Density R-L
- Residential Commercial (C-1)
- Residential Business (C-2)
- Commercial Business (C-3)
- Industrial Park (I-P)
- Limited Industrial (I-2)
- General Industrial (I-3)
- Public, Semi-Public (PA, PC, PE, Governmental) (PM, PP, PS)
- Planned Unit Development (PUD)
- Silverton Comm. Historical Dist.
- Under Intent to Rezone

Section 3

Future Conditions

3.1 INTRODUCTION

This section provides a summary of the process to develop baseline traffic forecasts for the year 2020 to be used in assessing transportation system needs for the Silverton Transportation System Plan. This section discusses the current population projections for the City of Silverton, the traffic forecasting methodology, the year 2020 traffic projections for the "no-build" transportation system alternative, the estimated year 2020 weekday p.m. peak hour level of service at key intersections under the "no-build" alternative, and the impact of potential alternate zoning in certain areas of the city on traffic projections.

3.2 LAND DEVELOPMENT PROJECTIONS

Current 20-Year Population Projections

The most recent population projections for Silverton have been prepared by Marion County for the year 2020. The year 2020 projection is estimated to be about 9,965 residents which represents about a 2% increase per year. This is slightly less than the 10,500 population projection for year 2015 used in the development of the 1993 Silverton Transportation System Plan. There has been little change in the population projections even though the projection year has increased five years from 2015 to 2020. The population projections reflect the development of vacant land in the City per the existing City zoning of property.

Land Use Zoning Alternatives

A separate Technical Memorandum (see Appendix B) addresses certain sections of Silverton where there are alternate development patterns from that reflected in the current city zoning map.

This alternative zoning was assessed per the State Transportation Planning Route requirement to assess in TSP development the feasibility and impact more compact development patterns would have on reducing traffic volumes and congestion. Alternate zoning in five sections of the City was addressed (see Figure B-1):

Area 1: Mixed business and light industrial along the west side of N. 2nd Street, north of D Street

- Area 2: Residential mode between Silverton Road and Cascade Highway with a commercial mode adjacent to Silverton Road.
- Area 3: Overstory residential in the downtown core area
- Area 4: Mixed use neighborhood residential on Oak Street (Highway 213)
- Area 5: Mixed use neighborhood commercial on Water Street near Ike Mooney Road.

The five areas combined result in the following overall land use changes (see Table B-1):

- 88,200 sq.ft. of added neighborhood commercial
- 565 added multi-family residential units.

This added neighborhood commercial and residential development would be integrated into mixed-use development, where shorter vehicle trips would result within Silverton, and pedestrian and bicycle access to work and shopping would be more convenient. The overall added multi-family residential development identified with this scenario would require less residential development of the same magnitude in other portions of the city, to maintain the year 2020 population control total for Silverton. If not, commuter trips into Salem and to outlying employment centers would increase.

3.3 TRAFFIC FORECASTING METHODOLOGY

Figure 12 illustrates the traffic forecasting process applied to develop future traffic projections for major roadways and intersections in Silverton.

Analysis Period

The year 2020 was chosen as the future analysis year for traffic projections and transportation system improvement needs, as the State Transportation Planning Rule requires that a 20-year horizon be addressed in preparing a transportation system plan. A summer weekday p.m. peak hour was chosen as the critical analysis period, as it incorporates the commuter peak hour and seasonal increase in tourist traffic and Oregon Garden visitor traffic. This peak hour also reflects a 30th highest hourly volume with respect to the design of improvements on the state highways (Highway 213 and 214) through Silverton (per the ODOT Highway Design Manual). More specifically, a July weekday p.m. peak hour was assumed to be reflective of a 30th highest hourly traffic volume condition.

Baseline Condition (Current Zoning)

The baseline condition in the year 2020 traffic projections incorporates the baseline traffic projections developed for the year 2015 for the 1993 Silverton Transportation System Plan. This is because the population projections associated with each condition are similar (earlier population projection of 10,500 for year 2015 and new population projection of 9,625 for year 2020). The year

2015 baseline condition reflected no development on the Oregon Garden site, whose development was not yet identified when the 1993 TSP was developed. Also the baseline year 2015 traffic projections reflected February conditions, and not peak summer conditions reflecting increased recreational traffic on the state highway system through the area.

For intersections in the central city area, year 2020 weekday p.m. peak hour baseline traffic projections were developed using the TRAFFIX model developed for the 1993 Silverton TSP, which was developed to generate traffic projections for downtown couplet alternatives. However, the TRAFFIX model earlier developed did not extend to the extremities of the Silverton area, and thus was not useful in generating year 2020 weekday p.m. peak hour baseline turning movement projections at the intersections outside of the central city area. Year 2020 baseline traffic projections at these intersections for the weekday p.m. peak hour were developed by taking the intersection approach traffic volumes identified in the 2015 "No-Build" Alternative for these intersections, and existing turning movement percentages on each intersection approach, and applying the TURNFLOW model to develop estimated turning volumes.

Oregon Garden Traffic

A site traffic impact study for the Oregon Garden site was completed in 1997. That study developed traffic projections for year 2020 summer Saturday peak hour conditions (assumed to be August), and then estimated changes in hourly traffic, daily traffic, and monthly traffic over the course of the year. Figure 13 identifies the hourly, daily, and monthly variation of traffic estimated for the Oregon Garden. For the year 2020 July weekday p.m. peak hour condition used in developing the traffic projections for the TSP, Oregon Garden peak summer weekday traffic was lowered by 10%.

Recently, the Oregon Department of Transportation indicated that directional signing for the Oregon Garden off I-5 would be focused on the Brooks interchange for southbound traffic and the Market Street interchange for northbound travelers, as opposed to the Highway 214 interchange in Woodburn, as assumed in the 1997 site traffic study. This would increase the amount of Oregon Garden traffic using Pine, Silverton Road, and Water Streets to access the facility, and decrease the use of Highway 214. This shift in site traffic was accounted for in developing a refined Oregon Garden traffic assignment component to the year 2020 baseline traffic projections (25% added site traffic was assigned to Pine and Water Streets).

Through Traffic

The year 2015 traffic projections from the 1993 Silverton TSP reflected February traffic conditions, as they were generated off traffic counts during the same time of year. To reflect the 30th highest hourly volume on Highways 213 and 214, the month of July was used to develop the updated year 2020 traffic projections. As such, it was felt it would be appropriate to increase estimated through traffic volumes on Highways 213 and 214 to reflect higher recreational traffic during summer conditions. This would be the typical increase in traffic reflecting existing conditions in the Silverton area, not accounting for the even greater impact associated with the Oregon Garden.

To develop a February to July growth factor for through traffic, the ODOT permanent traffic count station on Highway 213 in Marquam east of Silverton was used. With this station being the closest to Silverton in a rural area, the monthly traffic variation experienced at this station was felt to best replicate the growth in through traffic in the Silverton area due to added summer recreational traffic. A growth rate of 20% for the February to July period was identified. This growth rate was applied to the approach volumes on Highways 213 and 214 and Silverton Road entering Silverton at the City limits, with the resulting traffic volume assigned through downstream intersections on these highways through the City, including connections between the highways in the downtown area.

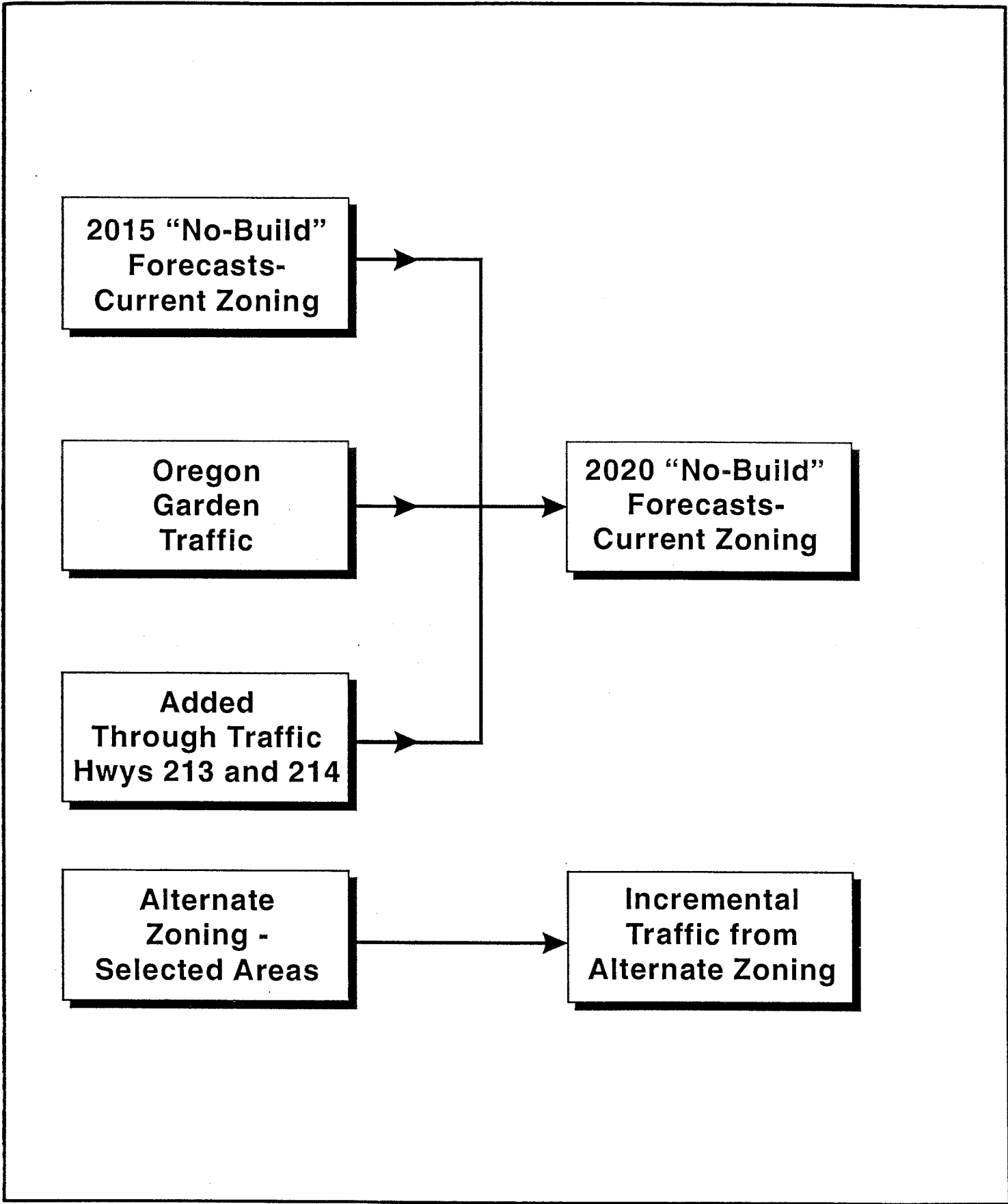
Incremental Trips from Alternate Zoning

For the alternate zoning scenario, with the estimated added 88,200 square feet of neighborhood commercial development and 565 multi-family residential units, an added 1,130 vehicle trips per day and 585 trips during the p.m. peak hour would be generated (see Table 3). This accounts for an assumption that 20% of all trips to and from the new neighborhood commercial development would be made from the neighborhood around this development (with corresponding reduction in residential vehicle trips) during the weekday p.m. peak hour that would use the external arterial and collector street system to travel to other parts of the City and outside the City.

Given that the new year 2020 population projections are similar to the older 2015 projections, to hold a similar population control total for the City, population in other areas of the City would have to be reduced if population were to increase in the alternate zoning areas. Thus there would be some shifting of residential-based travel within the Silverton City limits to reflect this shifting of population location. This travel shifting would result in a decrease of about 290 residential-based vehicle trips during the weekday p.m. peak hour in the other areas of the City. This would result in a net increase of about 300 vehicle trips during the weekday p.m. peak hour.

The TRAFFIX model developed for the 1993 Silverton TSP did not extend beyond the central city area, and is not structured to properly be used to assign the differential traffic arising from the alternate zoning proposals to the entire street system within the City limits, given the lack of trip distribution information to the boundaries of the study area. Thus a detailed traffic assignment was not performed for the alternate land use scenario realizing that the added 300 vehicle trips on the entire street system is insignificant over the year 2020 baseline scenario, in impacting roadway and intersection operations.

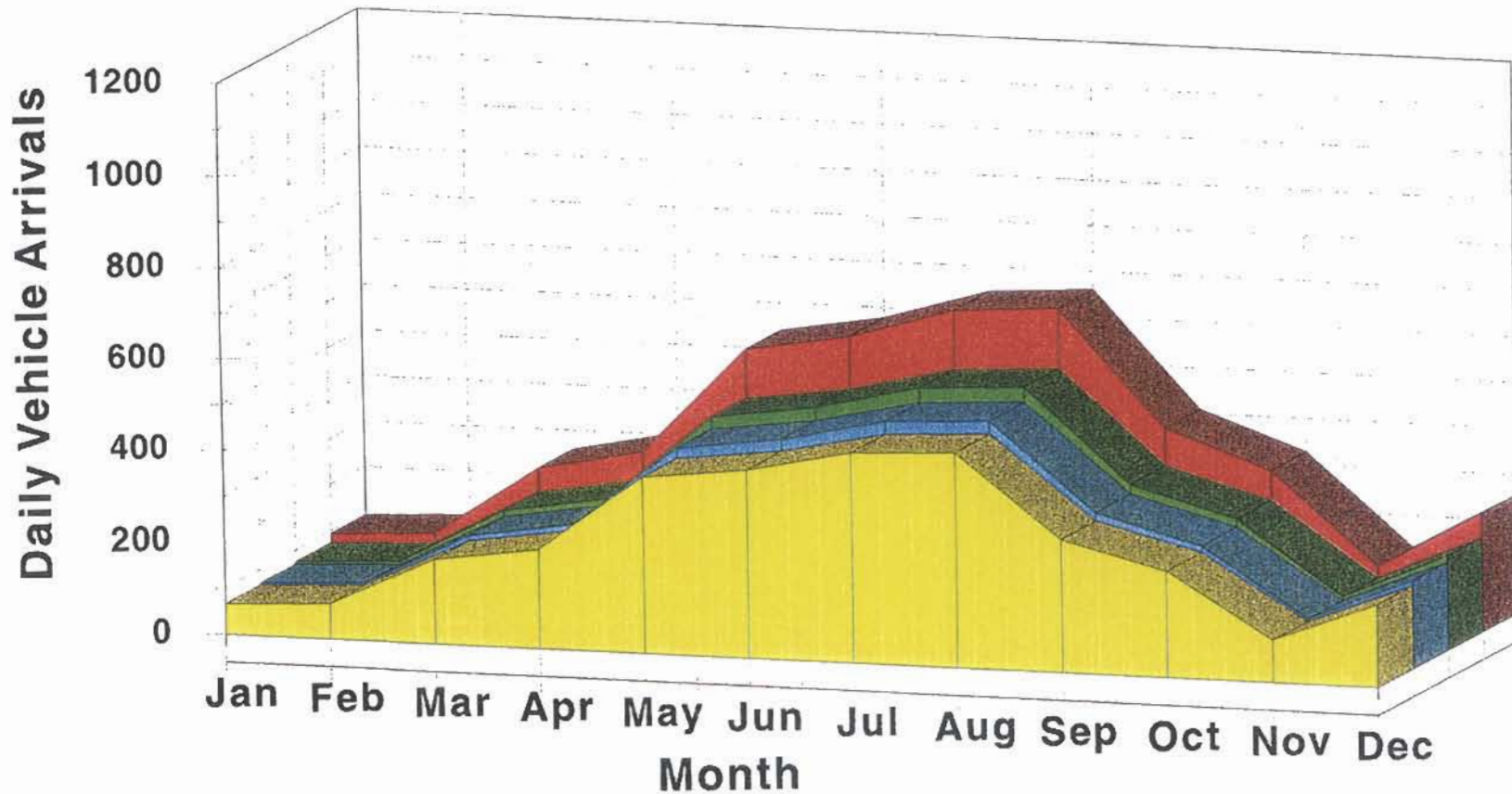
The primary benefit of the alternate zoning concept (assuming overall population control totals in Silverton are maintained, and commuter traffic does not increase over baseline conditions) is the overall reduced vehicle miles of travel (VMT) as residential development is located closer to commercial development. Unfortunately, there is insufficient information on current vehicle trip length characteristics in Silverton, and with the simplicity of the TRAFFIX model which does not provide "system" statistics such as vehicle miles and hours of travel, a good estimate of the VMT reduction impact of the alternate zoning can not be developed. But the concept of the development is in the spirit of reducing vehicle travel as identified in the State Transportation Planning Rule.



TRAFFIC FORECASTING PROCESS

Monthly Variation in Vehicle Trip Generation *

Typical Weekday



Auto Occupancy Rate Assumptions			
■	2.4	■	3.0
■	3.2	■	3.4

* Assumes 400,000 Annual Attendance

ESTIMATED OREGON GARDEN
MONTHLY TRAFFIC VARIATION

CITY OF SILVERTON, OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE
13



3.4 YEAR 2020 "NO-BUILD" TRAFFIC PROJECTIONS AND DEFICIENCIES

Baseline Condition with Oregon Gardens/Added Through Traffic

Traffic Projections

Figure 14 identifies the estimated year 2020 weekday daily traffic projections for the Silverton arterial and collector street system, for the "no-build" transportation system alternative (no improvements) with current zoning, and added Oregon Garden and through traffic on Highways 213 and 214. The volumes reflect adjusting the p.m. peak hour traffic volumes to reflect these volumes representing 10% of the daily volumes. The Oregon Garden traffic assumed the estimated site trip generation the 1997 site traffic study and the modified site trip distribution reflective of the current I-5 directional signing plan.

By year 2020, daily traffic volumes are projected to increase substantially on several major streets in Silverton. Traffic volumes on Highway 214 would range from 11,000-14,000 vehicles a day, while traffic on Highway 213 east of downtown would be approximately 10,000 vehicles a day. Traffic volumes on C Street would range from 10,000-15,000 vehicles a day. Traffic volumes on West Main Street west of Silver Creek would be about 14,000 vehicles a day, while traffic volumes on Cascade Highway near Oregon Garden would be about 6,000 vehicles a day.

Intersection Operations Analysis/Roadway System Deficiencies

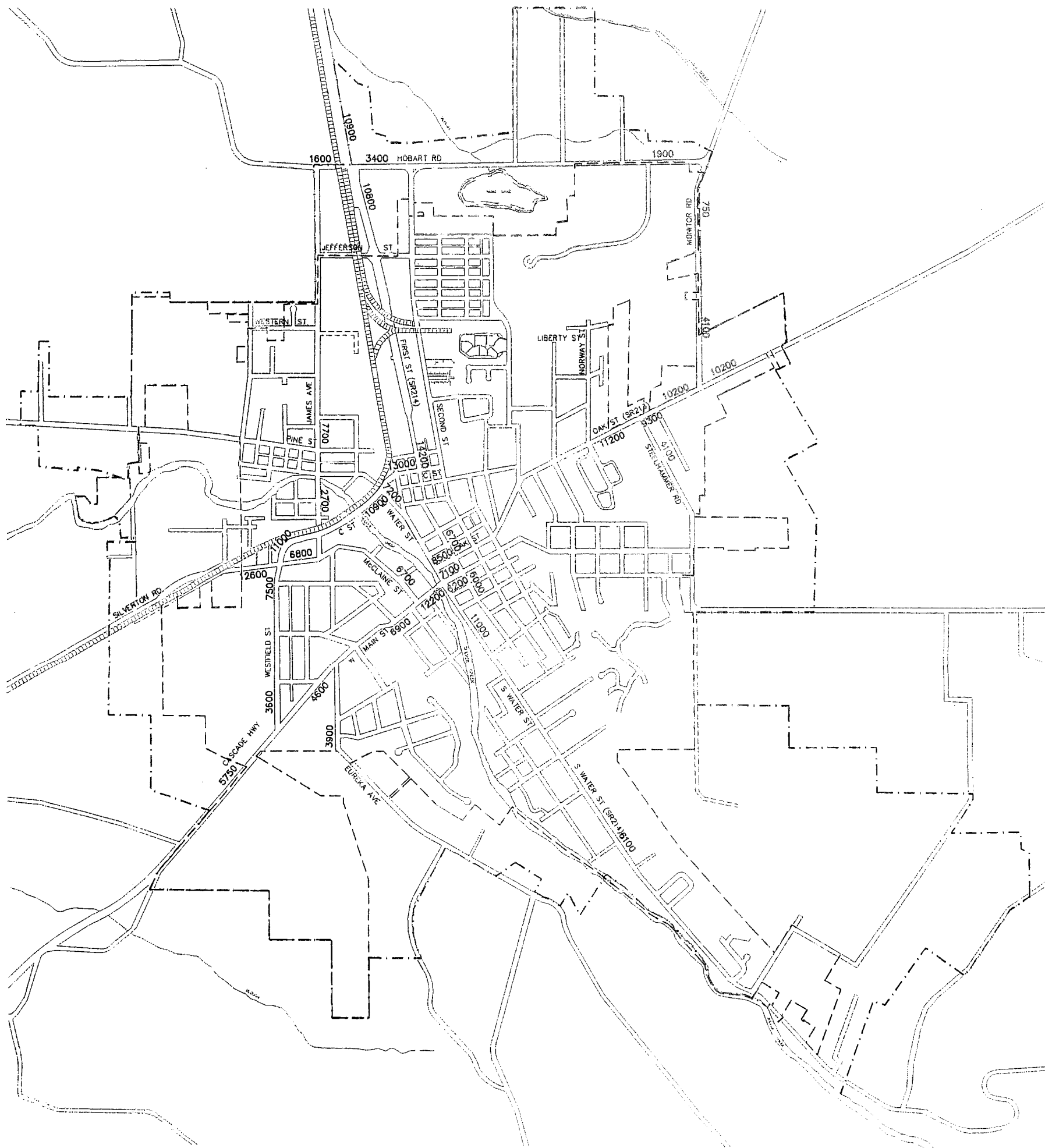
Figure 15 identifies the estimated year 2020 weekday p.m. peak hour traffic volumes for the study area intersections. The figure also identifies intersection delay, volume to capacity ratio, and level of service for this analysis period with the existing intersection lane and traffic control configuration. The operations analysis reveals that the following intersections will have critical movements operating at level of service "F" during this time period:

- C Street/First Street
- C Street/McClaine Street
- C Street/Water Street
- Main Street/Water Street
- Water Street/Oak Street.

Traffic control, and/or lane configuration modifications, will be required at these intersections to achieve an acceptable level of service in the future. A separate study by Kittelson & Associates, Inc. is evaluating traffic signal vs. roundabout configurations at two of these intersections: C Street/McClaine Street, and C Street/Water Street. The poor level of service "E" on the Steelhammer Road approach to Oak Street in the future could be mitigated by adding a left turn lane on the Steelhammer approach, if this roadway were a part of a future east side collector roadway (as

assumed in the 2020 baseline condition). All other study area intersections would have side street approaches operating at level of service "D" or better.

The added Oregon Garden traffic to Silverton Road is not anticipated to impact intersection improvement needs on C Street, at the Front, Water, and McClaine Street intersections. Traffic control modifications will still be required at each intersection in the future.



YEAR 2020 BASE CASE SUMMER
DAILY TRAFFIC VOLUMES

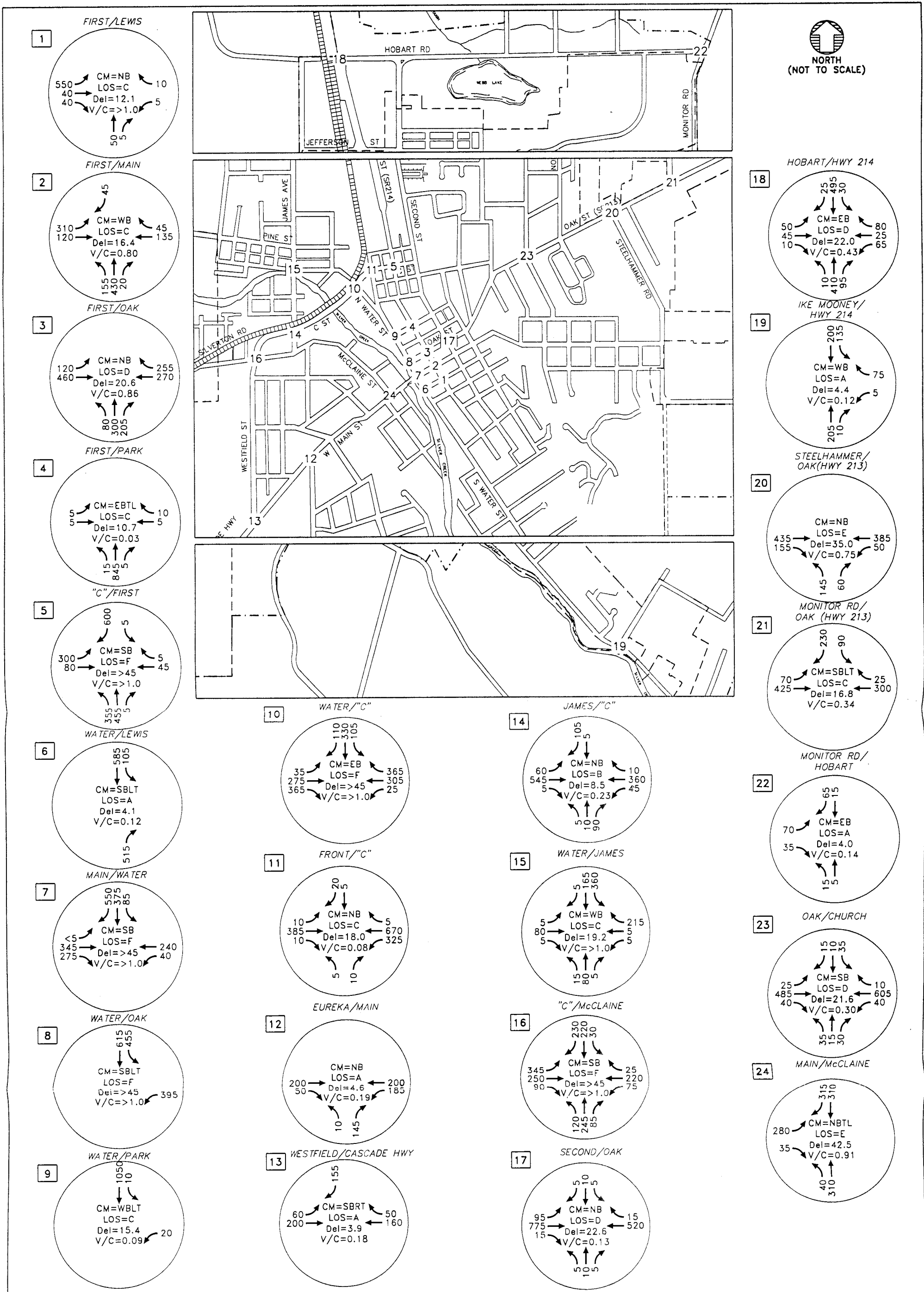
CITY OF SILVERTON, OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE
14



Table 4
Trip Generation Comparison - Baseline vs Alternative Zoning

Area	Existing		Proposed		Plan/Zone Designation	Weekday Daily Trip Generation	Weekday P.M. Peak Hour Trip Generation		
	Plan/Zone Designation	Acreage	Plan/Zone Designation	Acreage			Differential Amount	Total	In
1. Mixed Business & Light Industrial	Commercial	3.6	Industrial/New Office - Light Industrial Zone	32.3	More office use No change in floor area	—	—	—	—
	Industrial/I-P	28.7							
2. Mixed Use Residential & Commercial	Single Family Residential	18.4	New Neighborhood Commercial(NC)	3.0	29,400 sq ft of Neighborhood Comm.	(1200) 960	(195) 155	(95) 75	(100) 80
	Industrial	16.7	Multiple Family Residential	13.7	Multiple Family Residential 437 dwelling units	(1120) 880	(240) 200	(155) 135	(85) 65
			Single Family Residential	18.4	Industrial 163,400 sq ft	-2630	-110	-15	-95
					NET CHANGE	-790	245	195	50
3. Overstory Residential	Commercial	27.3	Commercial	27.3	No change	—	—	—	—
4. Mixed Use Neighborhood Commercial	Single Family Residential	4.4	New Neighborhood Commercial(NC)	3.0	29,400 sq feet of Neighborhood Comm.	(1200) 960	(195) 155	(95) 75	(100) 80
			Multiple Family Residential	1.4	Multiple Family Res. 23 Dwelling Units	-(930) -740	-(20) 0	-(15) 0	-(5) 0
					Net Change	220	155	75	80
					Total Net Change	1130	585	370	215



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

**YEAR 2020 BASELINE WEEKDAY P.M.
 PEAK HOUR TRAFFIC VOLUMES AND
 INTERSECTION LEVEL OF SERVICE**

CITY OF SILVERTON, OREGON
 TRANSPORTATION SYSTEM PLAN
 NOVEMBER 1999

FIGURE
15

Section 4

Transportation System Alternatives

4.1 INTRODUCTION

This section presents alternatives identified for the Silverton transportation system and an analysis of these alternatives. Alternatives addressed include changes to the roadway, pedestrian and bicycle, and transit systems, and implementation of Transportation Demand Management strategies. Much of the development of alternatives arose from discussions with City staff, the public input from the initial workshop on the Silverton Transportation System Plan, and from the previous 1993 TSP.

This section addresses the following:

- Roadway System Alternatives
- Roadway System Evaluation Criteria
- Roadway System Evaluation
- Pedestrian System Alternatives
- Bicycle System Alternatives
- Transit System Alternatives
- Transportation Demand Management Strategies

4.2 ROADWAY SYSTEM ALTERNATIVES

A number of roadway improvement scenarios were considered in the development of the updated Transportation System Plan. This section outlines the alternatives that were considered. The presentation of alternatives is grouped into four areas: downtown, west side, east side, and north side. Silver Creek is the general divider between east and west. The North side is approximately defined as the area to the north of C Street. The location of the alternatives considered are shown in Figure 16. The alternatives reflect discussions with City of Silverton staff and feedback from the first public workshop.

Downtown Couplet Reconfiguration

A number of alternatives to the existing one-way couplet in the downtown were considered in the previous TSP. These were revisited briefly as a part of the update. Additional alternatives for the downtown circulation system were also suggested through the community input process. These are addressed herein as well.

Briefly, the alternatives considered are:

- Do nothing
- Change all streets to two-way streets
- Move the one-way couplet to other streets
- Increase or shorten the length of the couplet
- Modify the end treatments of the couplet so that the transitions are clearer to motorists

In addition to these general changes which were previously addressed, a new suggestion of modifying the one-block segment of S. Water Street between E. Main Street and Lewis Street from a one-way street to a two way street. This change would simplify the travel paths for northbound to westbound traffic from S. Water Street to W. Main Street. This would operate either ending with a left-turn only to W. Main Street, or it could end as a left-or right turn only onto W. Main Street or to E. Main Street.

West Side Collector Improvements

New West Side Collector – Several options for this connection were considered. The options considered were:

1. A collector road between the Cascade Highway (at or near the entrance to Oregon Garden) and Silverton Road.
2. A collector road between the Cascade Highway (at or near the entrance to Oregon Garden) and Pine Street, including a new bridge across Silver Creek.
3. A collector road between Silverton Road and Pine Street, including a new bridge across Silver Creek.

North Side Collector Street Improvements

Northeast Area Collector System – A need for additional street connectivity is recognized for the area between N. Second Street and Monitor Road, to the north of Oak Street. A new collector road is in the existing Silverton TSP. Alternatives to this include:

1. In addition to the above concept, extend the east-west collector street to N. First Street (Highway 214).
2. Use local streets to provide connections to Oak Street, Monitor Road, and N. Second Street.

North Second Street – Change the designation of N. Second Street between Jefferson Street to Hobart Road to a collector street. This would be consistent with its function and with current classification of N. Second Street south of Jefferson Street.

New Connection between N. First Street and N. Second Street – Two options for a new connection between these two streets were considered:

1. An extension of the east-west collector (if built) using the existing railroad spur.
2. The new street constructed to the north of the existing Roth's Supermarket allows for a possible future extension across the railroad tracks to Schlador Street.

East Side Collector Street Improvements

1. *New east side Collector*, east of or along Steelhammer Road from Oak Street (Highway 213) to South Water Street (Highway 214) at Ike Mooney Road (or a new street to the south of Ike Mooney Road). Alternate alignments were considered for both the north and south ends of this corridor. In the north portion of the corridor, the following alternatives were evaluated:
 - A. An extension of Monitor Road south of Highway 213, with a portion of the alignment south of Evans Valley Road outside the Urban Growth Boundary.
 - B. Diverting a portion of the extended Monitor Road alignment to East View Lane to keep the corridor completely within the Urban Growth Boundary.
 - C. An extension of Monitor Road to connect with East View Lane at Steelhammer Road.
 - D. Following Steelhammer Road and East View Lane (no Monitor Road extension).
1. In the south portion of the corridor, the following alternatives were evaluated:
 - A. Tying the alignment into the west end of Ike Mooney Road near Highway 214.
 - B. Tying the alignment into Ike Mooney Road further north (north of the "S" curves) using existing Ike Mooney Road to access Highway 214).
 - C. Extending the east end of Ike Mooney Road directly south along the city limits to connect with Highway 214 (eliminating the need to traverse the "S" curves on existing Ike Mooney Road to access Highway 214).

These alternatives are illustrated in Figure 16.

4.3 ROADWAY SYSTEM EVALUATION CRITERIA

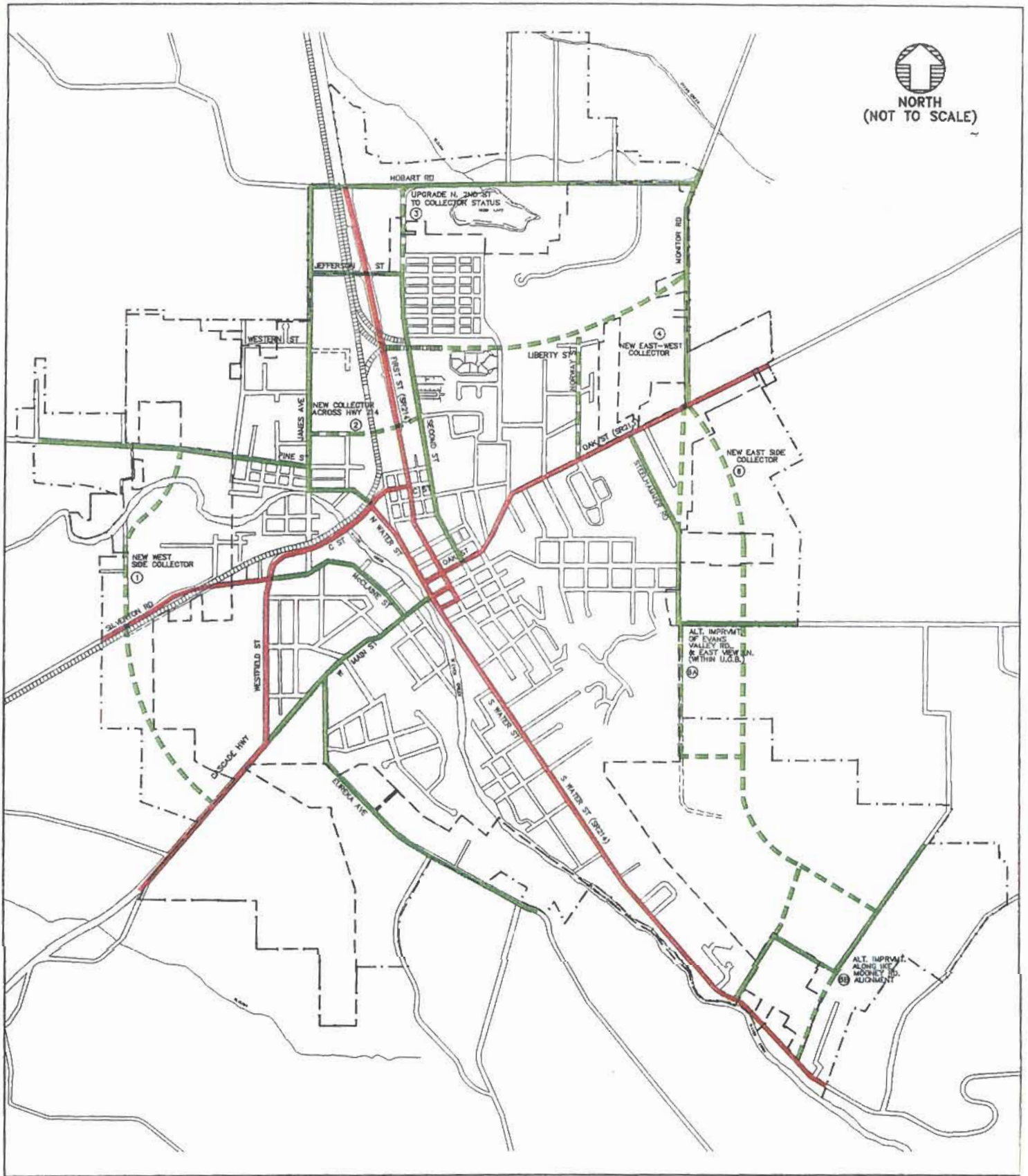
A number of decisions need to be made by the community to select which of the roadway improvement alternatives should be included in the TSP. The following criteria were determined to be of significance in this decision process:

- The ability of the improvement to improve *access/connectivity* throughout the community
- The capacity needs of the roadway system construction cost,
- Land use impacts

- Both left and right turns would be permitted onto Main from northbound Water

The analysis (Table 5) revealed that the level of service at the Water/Main Street intersection will be "F" in the year 2020 weekday p.m. peak hour, with the existing stop sign control whether or not Water Street, between Lewis and Main Streets, becomes two-way operation. With a signal installed at this intersection, adequate traffic operations can be provided in the long-term with a two-way operation for South Water Street, south of the intersection. Intersection level of service at the First and Lewis and First and Main intersections would also be improved.

In the short-term (years 0-6), if this improvement were implemented without a traffic signal, the overall level of service at the Water Street/Main Street intersection would be "E" (using existing traffic volumes). This indicates that a signal is critical to the successful operation of this intersection with such a reconfiguration. The approximate cost of this improvement would be about \$200,000. There would be no significant impacts and the design would result in less delay for northbound to westbound travelers, but in higher delay for movements on southbound Water Street. In the interim period the City has been utilizing traffic control personnel at the C / McClaine Street intersection and the C / Water Street intersection. They are employed during peak AM and PM periods.



LEGEND	
	ARTERIAL
	COLLECTOR
	ROADWAY IMPROVEMENT ALTERNATIVE
	UGB
	CITY LIMITS

ROADWAY SYSTEM ALTERNATIVES

CITY OF SILVERTON, OREGON
 TRANSPORTATION SYSTEM PLAN
 NOVEMBER 1999

FIGURE
16



2891\DWG:

F016.DWG

Table 5
Summary Evaluation of Roadway System Alternatives

Roadway Alternative	Evaluation Criterion				
	Access/ Connectivity	Capacity	Estimated Construction Cost (Existing \$) ¹	Land Use Impacts	Environmental Impacts
Downtown Couplet Reconfiguration					
Decoupling of First and Water (from 1993 TSP)	Improved accessibility within downtown	Adequate capacity with certain signal improvements	\$900,000	Could have positive economic impact on businesses	Negligible
Convert S. Water St. to 2-Way Between Lewis and Main	Improves connection from NB Hwy 214 to WB Hwy 213	Adequate capacity at Main/Water to handle modification	\$200,000	Negligible	Negligible
West Side Collector Street Improvements					
New West Side Collector	Provides direct connection between Hwy 213 and Cascade Hwy., new crossing of RR tracks	Relieves traffic /improves LOS at C St./McClaine St. Intersection	\$6,500,000 (with connection to Pine) \$3,400,000 (with connection to Silverton Rd.)	Within UGB/will stimulate development north of Cascade Hwy	New crossing of Silver Creek required
North Side Collector Street Improvements					
New East-West Collector Street/Upgrade Norway Street	Provides collector connection between Hobart Rd. and Oak St.	Reduces traffic on Oak St.	\$3,100,000	Within UGB/will stimulate development in NE portion of City/ Eliminate ability to use corridor as rail spur line in future	Impact on residential backgrounds
Upgrade Second St. North of Jefferson to Collector	Parallel reliever facility to Highway 214	Added north-south collector capacity in north end of City	\$600,000	Some impact on adjacent residences with road widening	Negligible

¹Conceptual-level cost estimates, based on a limited number of quantities and assuming a 20% cost contingency.

New Collector between James St. & N. Second St.	Provides another connection across Hwy 214, relieving C St., requires crossing of RR tracks	Reduces traffic on Highway 214	\$850,000	Impact on school parking lot	Negligible
East Side Collector Street Improvements					
New Eastside Collector (North-South Alignment)	Provides reliever facility to Hwy 214, improves connectivity across east side of City	Reduces traffic on Highway 214	\$7,400,000 (with upgrading of Evans Valley Rd. & E. View Ln.) \$6,000,000 (alt. outside UGB) \$6,000,000 with entire Steelhammer Rd. alignment	State Planning Rule goal compliance difficulties if outside UGB/will stimulate development on east side of City	Significant earthwork to develop alignment north of Ike Mooney Rd.
New Eastside Collector (South Connection to Hwy 214)	Same as above	Same as above	\$1,400,000 (Connection to east end of Ike Mooney Rd.) \$1,300,000 (City Limits alignment)	Some impact on adjacent residences on Ike Mooney Rd. with road widening	Negligible

Table 6

**Year 2020 Baseline Weekday P.M. Peak Hour Level of Service
Water Street/Main Street Configuration Option**

Water/Main Intersection Configuration Option	Intersection Level of Service			
	Water/Main	Water/Lewis	First/Main	First/Lewis
Existing Configuration	F (B with signal)	A	D	C
NB Left Turn from Water to Main	F (C with signal)	A	B	B
NB Left and Right Turns from Water to Main	F (C with signal)	A	C	A

West Side Collector Improvements

New West Side Collector – Three alternatives for this concept were evaluated. The goal of a new connection would be to provide new development with access to both the north and the south so that the short trips could be made with minimal impact to the arterial system, which would ultimately result in overall shorter trip lengths.

Alternative 1. In this alternative a collector road between Cascade Highway (at or near the entrance to Oregon Garden) and Silverton Road would satisfy the goal of providing good connectivity for new development in this area. The purpose of a collector road in general is to collect traffic from the residential development in the area and distribute it to the arterial system (Silverton Road and the Cascade Highway in this case). While this would provide a direct connection between Cascade Highway and Silverton Road for new development, it would also provide a bypass of downtown Silverton for traffic heading to and from the Oregon Garden. If the new road's primary use was to serve the Oregon Garden, then it would function as an extension of the arterial system and not as a collector road as intended. An advantage to this connection is that traffic volumes would be reduced in other areas (such as the downtown) and overall connectivity would be increased. A potential disadvantage is that such a road connection could impact downtown business if traffic is drawn away from the downtown area. The impact could be alleviated with proper directional signing of the downtown area. Another significant disadvantage is with regards to the potential intersection with Cascade Highway. In discussions with Marion County, it was determined that they would have concerns over the location of a new intersection near the planned entrance to the Oregon Garden.

Alternative 2 This alternative would extend the above collector street from Silverton Road across Silver Creek to Pine Street. This would provide an additional connection to the northwest part of town. This connection would provide alternative access/egress for the High School; divert traffic away from the heavily congested intersection of Water Street and C Street; and provide a fourth crossing over Silver Creek.

Alternative 3 The third alternative was to implement a policy that requires the local roadway system to connect Cascade Highway and Silverton Road as the area in between is developed. This could be done with or without a collector street extension to Pine Street. The connectivity provided would allow new residents to access both Silverton Road and Cascade Highway. However, local street design standards and the potential lack of a direct connection would tend to discourage by-pass trips. In short, this option would meet the goal of providing connectivity while avoiding the negative attributes of bypass traffic.

North Side Collector Street Improvements

NE Area Collector System – Connectivity between N. Second Street and Monitor Road (to the north of Oak Street) was addressed by considering two alternatives:

1. The collector street system presented in the 1993 Transportation System Plan included a collector designation of Norway Street, which runs north-south, and a new east-west collector street between Monitor Road and N. Second Street, with an optional connection to N. First Street (Highway 214). The new connection would be to provide an optimum level of connectivity to adjacent arterial streets. At the time of plan development, some objections were raised to this connection for the

following reasons: much of the east-west segment of the new roadway would not be driven by new development; part of the alignment would border the back side of the school playground on an industrial property whose access would be more appropriately located to the north on Hobart Road; and the road would traverse the backyard of homes already constructed on Whittier Street. In addition, there have been recent discussions by existing Silverton Industrial Park businesses of preserving the opportunity to re-establish a rail spur line along the east-west corridor, which would not be possible if a roadway were developed along this alignment.

2. Require local street connections between Oak Street, Monitor Road, and N. Second Street. This would meet the connectivity needs of the area without raising concerns mentioned above.

North Second Street – One alternative to the system plan would be to change the designation of N. Second Street between Jefferson Street to Hobart Road to a collector street. Since this is consistent with the function and the current classification of N. Second Street south of Jefferson Street, it would be logical to extend this roadway classification to the north.

New Connection between James Street and N. Second Street – Two options for a new connection between these two streets were considered. Both of these have the advantage of increasing connectivity and potentially reducing vehicle-miles traveled.

1. If the new north side collector were built between Monitor Road and N. Second Street, it would be a logical place to connect N. First Street and N. Second Street.
2. A new street connecting N. First and N. Second Streets is being constructed to the north of the existing Roth's Family Market. The advantages of this improvement are: the number of driveway accesses to the Roth's store could be reduced, and the cut-through traffic through the existing Roth's parking lot would be accommodated by a more appropriate facility. The extension of the connection across the railroad tracks to connect to Schlador Street would provide an alternative access for the school and would improve connectivity to the northwest section of town. The disadvantages of the extension to Schlador Street is that a new railroad crossing would be required and some school parking spaces would be removed. In order to gain approval of a new rail crossing, it might be necessary to close an existing grade crossing at another location.

East Side Collector Street Improvements

- A new east side collector street is in the current Silverton Transportation System Plan. This road could be located along Steelhammer Road, or to the east of and parallel to Steelhammer Road, and would run from Oak Street (Highway 213) at

Monitor Road Highway to S. Water Street (Highway 214) at Ike Mooney Road (or a new street to the south of Ike Mooney Road). The new collector road would be needed to accommodate new residential development on the east side of Silverton. The alternatives relate to the alignment of the new collector at the north and south ends of the corridor. At the north end, the alignment could connect with Highway 213 at either Steelhammer Road or Monitor Road. In the central portion of the corridor, along an extended Monitor Road alignment, there is a place where the road would extend outside the UGB if constructed as originally proposed. The alternative would be to introduce a number of turns to the road so that it remains inside the UGB, which is less desirable from a transportation system alternative. It appears that the portion of the roadway where the UGB would be crossed would be a logical area where over the long term (perhaps beyond the 20-year horizon of this study) the UGB should be expanded. In the meantime, it may be appropriate to construct this road so that it passes outside the UGB and restrict all access to the road (other than farm access). In this way it can retain better functionality as a collector road; reduce traffic on the state highways; and not conflict with the land use policies outside of the UGB.

At the southern end of the new collector, two of the alignment alternatives would provide a direct connection to S. First Street (Highway 214). One alignment would tie into the westerly portion of existing Ike Mooney Road just north of Highway 214. The second alignment option would extend south from the easterly section of Ike Mooney Road to connect with Highway 214. A third alternative would use the existing Ike Mooney Road "S" curve alignment with some out of direction to access Highway 214.

Recommended Improvements

Given the results of the technical evaluation of the different collector street improvement alternatives, and further insights from City of Silverton staff, City Planning Commission and City Council, the following new roadways were identified to be integrated into the 20-year Transportation System Plan:

- New collector street from Silverton Road to Pine Street, along an alignment within the Urban Growth Boundary. The specific alignment would be resolved during a follow up alignment alternatives study.
- New collector street along a new alignment as a approximate extension of Monitor Road south of Highway 213, with a portion of alignment outside the urban growth boundary, (the specific alignment would be resolved during a follow up alignment alternatives study). This collector would tie into the easterly section of Ike Mooney Road, with a new connection to Highway 214. However, future consideration of the use of the west Ike Mooney Road connection is not ruled out by the adoption of this plan. Future engineering information and evaluation of the total area impacts may make the west end connection the best choice for the City of Silverton transportation

system.

4.5 PEDESTRIAN SYSTEM ALTERNATIVES

Outside of downtown Silverton, there is a fairly discontinuous system of sidewalks along existing streets in Silverton, as well as an absence of off-street pathways. Many sections of arterial and collector streets do not have sidewalks at all or only on one side. There are several locations where pedestrian connections between adjoining neighborhoods or subdivisions have not been developed or are circuitous.

Figure 17 identifies the pedestrian system alternatives in Silverton surfacing from discussions with City staff, input from the public at the first and second TSP workshops, a review of the current street functional classification, and a drive-through of the City. The alternatives consist of the following:

1. Adding Sidewalks to Collector/Arterial Streets Where None Currently Exist

There are several sections of arterial and collector streets within the Silverton UGB without sidewalks on either side of the street, including sections of Highways 213 and 214. With the higher traffic volumes and speed of traffic on these facilities, adequate pedestrian facilities along these corridors are important to safely separate motor vehicle and pedestrian traffic. The road segments where sidewalks would be appropriate include:

- Cascade Highway west of Westfield Street
- C Street between McClaine and Front Streets
- Eureka Avenue
- Hobart Road between Highway 214 and Lanham Lane
- James Street north of Florida Drive
- Jefferson Street between N. Second Street and James Street
- Monitor Road
- N. Second Street north of Whittier Street
- Oak Street east of Norway Street
- Pine Street west of Grant Street
- Steelhammer Road
- S. Water Street (Highway 214) south of Peach Street
- East Main Street

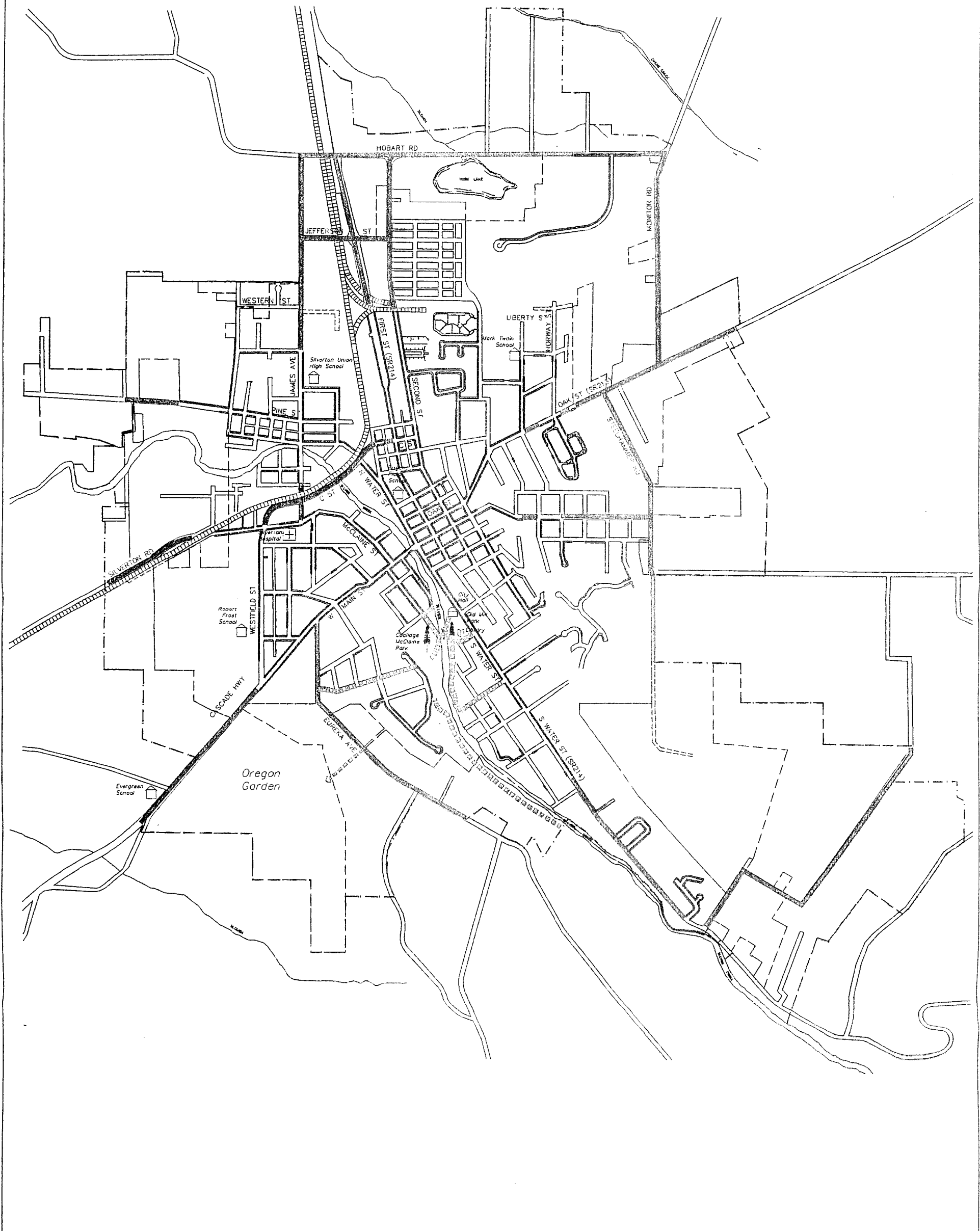
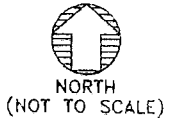
2. Development of Off-Street Pathways

There are few off-street pathways currently in Silverton, focused around Coolidge McClaine Park associated with the existing pedestrian bridge over Silver Creek. With the opening of Oregon Garden, there has been an expressed desire to develop a backdoor pedestrian connection off the West

Main Street/Cascade Highway corridor to provide access from downtown Silverton to the Garden, following Fiske Avenue, Coolidge Street, and Keene Avenue. This would involve construction of a new pedestrian bridge over Silver Creek at Jersey Street.

The 1993 Silverton Bicycle Plan also identified a pathway along the west side of Silver Creek through the City. The intent of this pathway would be to accommodate both bicyclists and pedestrians, with a potential connection to the new pathway connection to the Oregon Garden. The pathway would become discontinuous in the vicinity of West Main Street due to the proximity of buildings on the west side of Silver Creek. Pedestrians must use on-street sidewalks in that area. A second new pedestrian bridge over Silver Creek at Cowing Street could be constructed to tie the south end of a new west side pathway into the sidewalk system north of the creek.

Further review of the potential west side pathway alignment revealed a very restricted area west of Craig Street. Any plans to develop such a facility will be hampered by building and topographic constraints. Also the City Planning Commission and City Council have expressed an opinion that the north and south ends of a pathway should be tied back into the existing street system, and not extend to the Urban Growth Boundary, given there are no plans by Marion County to further extend the facility. The City has identified a preference to pursue sidewalks on those segments of designated arterials and collector streets where none exist. The two new pedestrian bridges across Silver Creek would improve pedestrian system continuity and do not have major engineering obstacles to their construction.



LEGEND

—	EXISTING SIDEWALK (ONE SIDE)	—	COLLECTOR/ARTERIAL
—	EXISTING SIDEWALK (BOTH SIDES)	—	ADD SIDEWALKS (streets without existing sidewalks)
—		—	OFF-STREET PATHWAY OPTION

PEDESTRIAN SYSTEM ALTERNATIVES

CITY OF SILVERTON, OREGON
 TRANSPORTATION SYSTEM PLAN
 NOVEMBER 1999

FIGURE
17



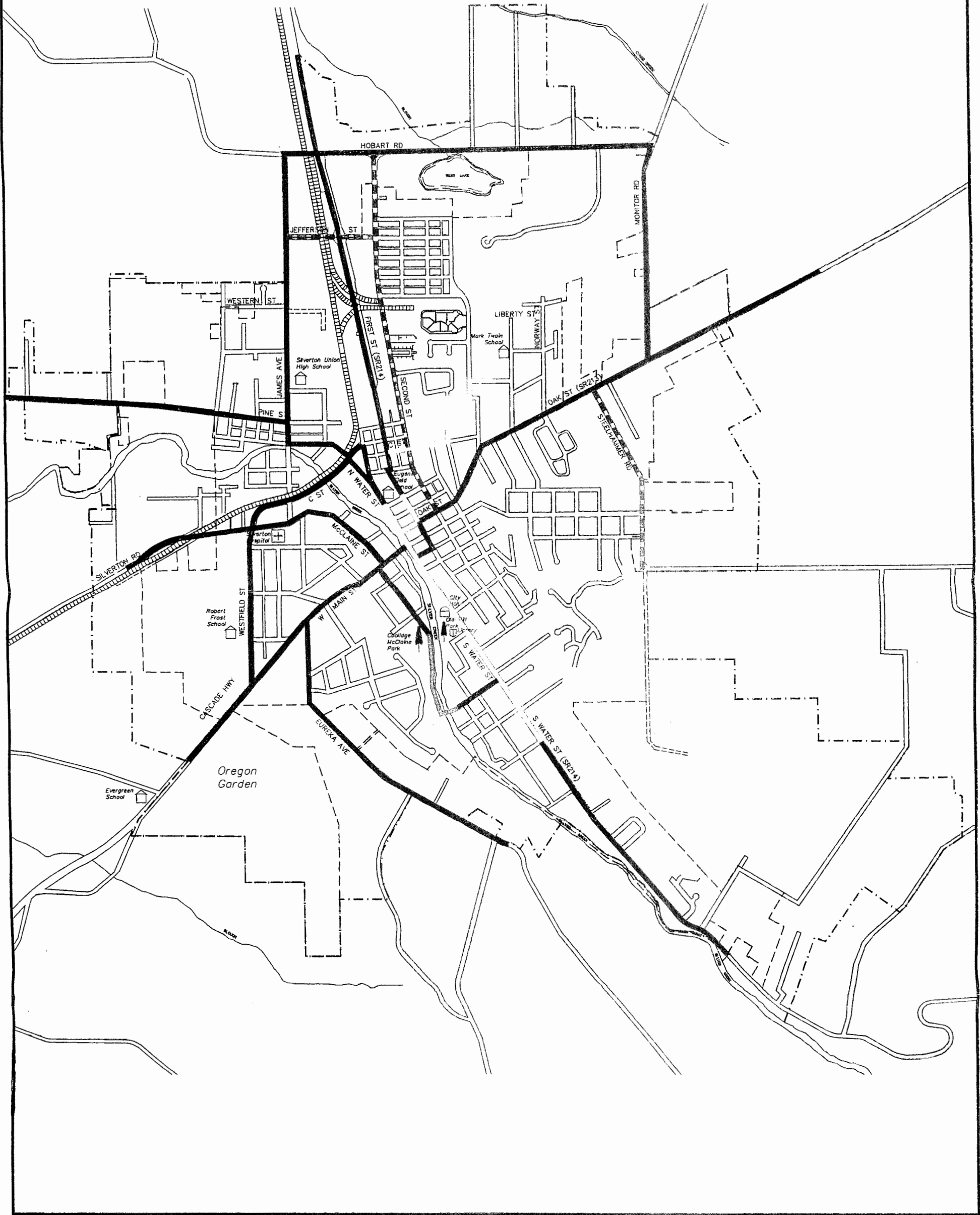
4.6 BICYCLE SYSTEM ALTERNATIVES

There are no existing dedicated on-street bicycle facilities in Silverton. The 1993 Silverton Bicycle Plan identified a number of arterial and collector streets for either on-street bike lanes (along curbed street sections), or shoulder bikeways (along rural street sections at the outer limits of the City) To accommodate these improvements, roadway widening along several streets will be required. In addition, bike lanes should be developed on all new collector roadways constructed, such as the west side and east side collectors.

In the downtown Silverton area and along S. Water Street (Highway 214) to Smith Street, only on-street bike routes with no special bike lane designation is possible, due to the presence of on-street parking and/or inability to widen the streets.

The key off-street bikeway improvement identified in the 1993 Silverton Bicycle Plan was a bikeway along the west side of Silver Creek within the Silverton UGB. It might also be possible to incorporate bicyclists into a backdoor pedestrian pathway from downtown to the Oregon Garden as mentioned previously.

Given the identified difficulty and questionable merit of developing a west side bikeway all the way to the urban growth boundary at the north and south ends of the city, a more limited section between Coolidge Park and Cowing Streets south of West Main Street has been identified as a reasonable alternative. Bikes would use the pathway proposed for pedestrians in this section as well as the new Silver Creek bridge crossing at Cowing Street. In addition, the City Planning Commission and City Council felt that bike lanes should not be provided on some collector streets in established residential areas if roadway widening would be required. Instead, these streets would be designated on-street bike routes.



LEGEND

- Bike Route - Proposed Bike Lanes & Shoulder Bikeways (1993 Silverton Bicycle Plan)
- Bike Route - Proposed Shared Roadway) (1993 Silverton Bicycle Plan)
- Bike Route - (Proposed Off-Street) (1993 Silverton Bicycle Plan)
- Bike Route - (Potential Added Bike Lanes on Collectors)

BICYCLE SYSTEM ALTERNATIVES

CITY OF SILVERTON, OREGON
 TRANSPORTATION SYSTEM PLAN
 NOVEMBER 1999

FIGURE
18



4.7 TRANSIT SYSTEM ALTERNATIVES

Today in Silverton transit service consists of the Silver Trolley and paratransit services provided by Silverton Hospital, as well as a local taxi service, an intercity bus service, and school district bus service. With future population and employment growth in Silverton, the necessity of providing transit access for the transportation disadvantaged, and with the opening of the Oregon Garden in year 2000, there is a need to evaluate the configuration and overall feasibility of enhanced transit service to and within the city. Transit system improvement alternatives in Silverton consist of both community and intercity bus service improvements in conjunction with the RTEP (Rural Transportation Enhancement Plan, August 1998).

Community Bus Service

The current Silver Trolley comprises a long, circuitous route with one-way operation, operating Mondays and Wednesdays between 8:00 a.m. and 4:30 p.m. In its overlapping configuration, the bus route serves some route segments and bus stops more than others, and in general provides 60-90 minute headways along the route. Although the route may be inefficient, as it operates on several local streets which are close to collector and arterial streets, it does serve the mission set forth by the Community Care Silver Trolley Advisory Committee to provide general transportation access in most neighborhoods within the city limits. It does not serve the north side of the City where emerging employment is located, and does not in general have much direct routing between major activity centers. The service is oriented to the general public, though does not currently focus on tying population and employment areas together.

Figure 19 illustrates a concept of expanding the Silver Trolley service by developing a modified route structure that focuses on operating on the collector and arterial street system in the city, yet serves major activity centers. The modified route structure would extend transit service to the Hobart Road corridor, where existing and future employment is concentrated. The service would also extend to the west on Cascade Highway to directly serve the Oregon Garden. With this route structure, two-way bus operation would be instituted, which would double the amount of service provided and significantly reduce travel time due to overall more direct bus routing.

Figure 20 illustrates a second transit service improvement concept where two one-way routes would be established, one serving the north side of the City, and the other the south side of the City. This would allow more intensive coverage of the different parts of the City, with more frequent service possible for a given number of buses. The two routes would connect to allow transfers at one or more designated locations, preferably at a location where there would be an interface with intercity bus service, to facilitate transfers between the different bus services.

Table 6 summarizes the characteristics of each intracity fixed-route bus service improvement option, and is compared to the current fixed-route bus service provided by the hospital. Service for the identified two transit improvement alternatives reflects expanded Monday through Friday service, with expanded hours of service from 7 a.m. to 7 p.m. each day. If the transit service is expanded to

provide broader, more frequent service, the City of Silverton might become involved in operating and/or subsidizing the service, unless a county wide transit district were eventually created which could provide the service.

**Table 7
Summary Evaluation of Intracity Transit System Alternatives**

Alternative	Evaluation Criterion						
	Service Frequency	Route Miles (one way)	# of Buses Required	Vehicle Miles/Year	Vehicle Hours/Year	Added Vehicle Capital Cost	Added Vehicle Hours/Year
Existing	60-90 min. (8 a.m.- 4:30 p.m. - Mondays & Wednesdays)	11.7	1	8,400	885	None	\$17,000
Modified Route - Two-Way Operation	60 min.(7 a.m.-7 p.m. - Monday-Friday)	20.9	2	64,000	6,120	\$110,000	\$128,000
Two One-Way Routes	30 min (7 a.m.-7 p.m. - Monday)	13.4	3	82,000	6,120	\$220,000	\$164,000

Note: Assumes bus operation only on weekdays for 51 weeks per year (thus accounting for no service on holidays), and vehicle operating cost of \$2.00/vehicle mile.

Intercity Bus Service

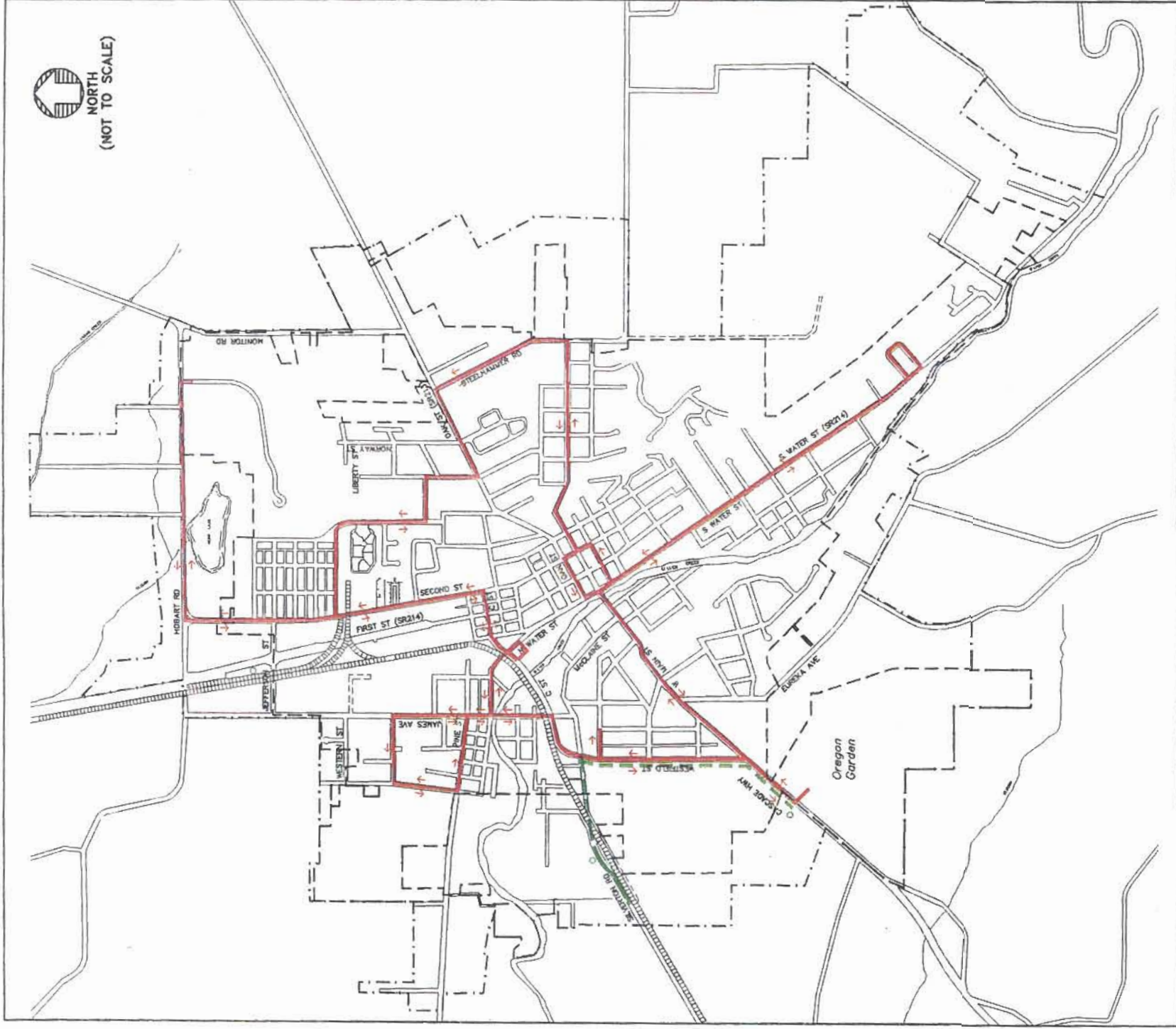
The Marion County Rural Transportation Plan recommends a future intercity bus route to operate between Salem and Silverton. The service would enter and leave Silverton via Silverton Road. The Plan calls for operating 20-25 passenger buses providing daily service between 6:30-9:00 a.m. and 3:30-6:00 p.m., oriented to serving commuter trips between Silverton and Salem. The estimated cost of the service is as high as \$17,000 per month, or \$204,000 per year. The County is not a public transportation provider and is not in a position to operate a commuter shuttle program at this time. However, the County will support and work with local providers to implement a commuter shuttle program.

Though not identified in the Marion County Rural Transportation Plan, intercity bus service along the Highway 214 corridor between Silverton and Woodburn could be possible in the future. This would tie these two cities together providing a transit option for those who do not have access to an auto for trips between the two cities. The Woodburn Transportation System Plan also calls for the institution of intercity bus service from Woodburn to Portland, which certain Silverton residents could take advantage of if intercity bus service were provided.

When intercity bus service is instituted in the Silverton Road corridor (scheduled to begin March 13, 2000) and possibly the Highway 214 corridor, there will be a need to develop one or more park-n-ride locations where people could drive to access the intercity bus service. Both routes will be provided by Wheels Community Transport. It would be possible, with an expanded Silver Trolley bus service within Silverton, to also provide a bus transfer point at this location between the intracity and intercity routes. For Silverton Road intercity bus service, a park-n-ride location on the west side of Silverton would be preferable. One potential site is on the north side of Silverton Road just west of the railroad near the City of Silverton Shops. Another potential site is at or across from the Oregon Garden site (assuming the bus would access that site off Silverton Road via Westfield Street (or a future west side collector). A potential site for a Highway 214 bus service park-n-ride would be north of Jefferson Street, along the west side of Highway 214, or north of Hobart Road along the east side of Highway 214.



NORTH
(NOT TO SCALE)



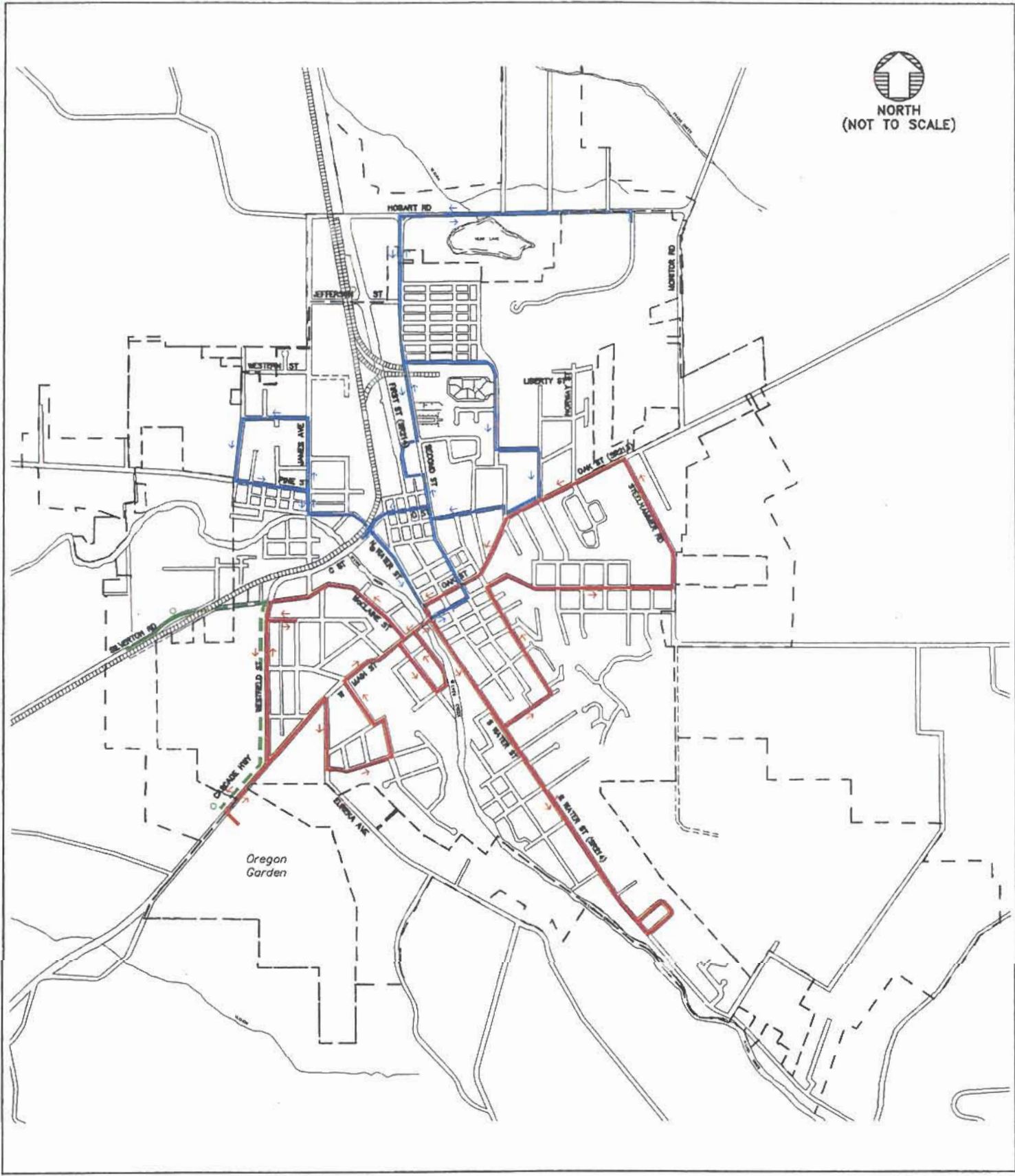
**FIXED-ROUTE TRANSIT SERVICE
ALTERNATIVE #1
SINGLE TWO-DIRECTIONAL ROUTE**

- LEGEND**
- REVISED SILVER TROLLEY ROUTE
 - INTERCITY BUS ROUTE (TO/FROM SALEM)
 - - - OPTIONAL INTERCITY BUS ROUTE (TO OREGON GARDENS)
 - OPTIONAL PARK-N-RIDE LOCATION

CITY OF SILVERTON, OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE
19





LEGEND	
	INTRACITY SILVER TROLLEY ROUTE #1
	INTRACITY SILVER TROLLEY ROUTE #2
	INTERCITY BUS ROUTE (TO/FROM SALEM)
	OPTIONAL INTERCITY BUS ROUTE (TO OREGON GARDENS)
	OPTIONAL PARK-N-RIDE LOCATION

**FIXED-ROUTE TRANSIT SERVICE
ALTERNATIVE #2
TWO ONE-WAY ROUTES**

CITY OF SILVERTON, OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE	
20	

4.8 TRANSPORTATION DEMAND MANAGEMENT (TDM) STRATEGIES

The concept of Transportation Demand Management, or TDM, denotes the implementation of programs and policies to attract people to use modes of travel other than the single occupant auto for their travel, at least to their workplace. This strategy is an integral component of the Oregon Transportation Planning Rule. Many TDM strategies are instituted or are supported by employers. There is very limited application of TDM strategies by existing employers or businesses in Silverton.

There are several potential TDM strategies that could have greater application in Silverton. The characteristics of each strategy are discussed (refer to Table 7 for a summary).

Table 8
Transportation Demand Management Strategies

TDM Strategy	Development Applicability	Site Design	Impact Category			
			Employer Policy	Parking Reduction incentives	Cost	Potential Impact on Trip Reduction
Transit Fare Subsidies	C, S, O, I	NO	YES	YES	Could be high pending employer interest & level of subsidy	Limited until bus service is expanded
Carpool Matching Program	C, S, O, I	NO	YES	YES	Minimal	Fairly high if combined with preferential carpool parking
Carpool/ Bicycle Parking Program	C, S, O, I	YES	NO	NO	Minimal if tied to parking reduction strategy	Fairly high if combined with carpool matching program
Flexible Work Hours	S, O	NO	YES	YES	Minimal	Impact on reduction peak hour congestion
Telecommuting	C, S, O, I	NO	YES	MAYBE	Minimal	Limited currently
Direct Pedestrian/Bus Stop Connections from Adjacent Development	C, S, O, I	YES	NO	YES	Minimal with proper site planning	Fairly high if tied to other TDM measures

C= commercial, S= services, O=office, I=industrial

Transit Fare Subsidies

With the current Silver Trolley bus service in Silverton and the potential for transit system expansion in the future (including intercity bus service between Silverton and Salem), there will be an opportunity for employers to encourage their employees to ride transit to/from work by helping to

subsidize bus passes. The Silver Trolley has no subsidy program for regular riders, though costs are minimal at this time (\$1 per day pass). Many jurisdictions or transit agencies operating bus services have instituted a partial subsidy program, with employees either receiving discounted bus passes or being reimbursed by their employer for actual bus fares.

Carpool Matching Programs

Likewise employers can sponsor carpool matching programs where a service is provided to match employees who live close to one another and on the same shift such that they can carpool together to and from work. In some cases, employers might actually purchase company vans which can be issued to certain employees who become designated vanpool drivers.

Carpool Parking Programs

An employer can also designate certain close up parking spaces to their building for recognized carpools or vanpools. The City of Silverton could carry this a step further by instituting an ordinance that would reduce parking requirements for new developments if a certain number of parking spaces were reserved for carpools/vanpools. This parking limitation concept typically would encompass an overall employer ridesharing program including carpool matching programs and transit subsidies.

Flexible Work Hours

As most of the traffic congestion in an urban area occurs during commuter peak hours, employer provisions for flexible work hours will allow spreading of the peak hour during a weekday thus reducing congestion for any given peak period.

Telecommuting

Finally, with the development of computers and communication software, including the Internet, it is becoming increasingly attractive for employers and businesses to allow their employees opportunities for telecommuting on their jobs, or to conduct other business. This in general reduces the number of vehicle trips on the street system.

Pedestrian/Transit-Oriented Development

The development of more pedestrian and transit-oriented developments, through added and direct sidewalk connections, bus stop provisions, and proper building orientation, can attract more local trip making to these developments via non-auto modes, thus serving as TDM strategies to an extent.

4.9 RAIL SYSTEM ALTERNATIVES

There are no plans currently to modify the existing Willamette Valley Railroad freight service through Silverton. The City is interested in the development of passenger train service along this corridor, primarily for tourists. Such a service would need to be developed to not conflict with freight operations, and require broader sponsorship and railroad support. Improvement alternatives at rail/highway crossings in Silverton would focus on upgrading to gate/signal control at the existing unprotected crossings on Hobart Road and James and Jefferson Streets.

Section 5

Silverton Road & Highway 214 Access Management Strategies

5.1 INTRODUCTION

This section summarizes potential access management strategies along two sections of roadway in Silverton: 1) Silverton Road between the west urban growth boundary of Silverton and the Westfield/McClaine Street intersection, and 2) Highway 214 between the north urban growth boundary of Silverton and D Street. These sections of roadway experience some of the highest traffic volumes in Silverton, each with substantial development possible in the future. Both roadways also serve as "gateways" to Silverton and The Oregon Garden.

5.2 PURPOSE/COMPONENTS OF ACCESS MANAGEMENT

The purpose of access management is to facilitate the efficient flow of traffic and to improve the safety of the roadway corridor. Access management strategies are applied to a major roadway facility in order to maintain the function that the facility was intended to provide for travel into and through the corridor. Without access management, traffic conditions in a corridor may become congested due to queues forming across driveways, long delay in entering or exiting the route, and increased accidents in the corridor.

Access management strategies that must be considered in designing a new route or the reconstruction of an existing route include:

- traffic signal spacing
- traffic signal operation
- number of travel lanes
- driveway spacing
- driveway location in relation to driveways on the opposite side of the street
- driveway location in relation to public street intersections
- left-turn median
- width of left-turn median
- raised medians
- local street circulation system

There are also off-system characteristics that should be evaluated in developing an access management plan. Off-system characteristics are defined as those characteristics which are not part of the roadway system. These off-system characteristics include the layout of internal parking lots circulation for adjacent development to encourage travel within/between developments as opposed to using the adjacent highway.

5.3 GENERAL ACCESS SPACING STANDARDS

For information on current access spacing standards, the newly adopted 1999 Oregon Highway Plan was reviewed. The new access spacing standards were used as a benchmark in assessing the need for and opportunities to consolidate access locations along the Highway 214 corridor. Highway 214 is a designated District Highway. Silverton Road is a Marion County roadway, and is classified as an arterial roadway. In urban areas, Marion County applies the City of Salem access spacing standards, per the Salem Transportation Plan, which were applied to Silverton Road.

5.4 SILVERTON ROAD ACCESS MANAGEMENT STRATEGIES

Introduction

The study section of Silverton Road between the west urban growth boundary and Westfield Street is 0.5 mile in length. This roadway is no longer on the State Highway System, and is now a Marion County facility and is classified as an arterial. Access spacing for this facility, in a newly developed area, when applied to the City of Salem standards (assumed equivalent to a minor arterial in the City standards), is 400 feet for driveways and minor road connections.

The Willamette Valley Railroad line parallels this highway along the south side and is within 70 feet of the highway. There are three public roadway connections along the north side of this highway section and two public street access points along the south side of the highway. The two public street connections on the south side of the highway are the same roadway (Railway Avenue) which forms a parallel loop road approximately 1/3 mile in length.

For analysis purposes, the 0.5-mile roadway was broken into two segments. Figure 21 illustrates the existing conditions and potential access management strategies in the Silverton Road corridor.

West Urban Growth Boundary to Railroad Crossing (Segment 1) Figure 21

Existing Conditions

This segment is 1,800 feet in length. There is one travel lane in each direction, a six-foot safety shoulder and no sidewalks or curbs. The posted speed is 45 mph. There are three public street access points in this segment, two on the north side and one on the south side. In addition, there are four private access driveways in this segment.

Current land use along this roadway segment includes scattered rural residential and light industrial development, as well as the Silverton City Shops. Existing zoning consists of Single-family Residential (R-1), Residential, Commercial (C-1), Industrial park (I-P), and public uses.

Access Management Strategy

The access management strategy from the west urban growth boundary to the railroad crossing would include several measures. Realignment of Railway Avenue to intersect across from Monson Road is needed to eliminate the off-set street intersections. This measure would correct a conflict in left turn traffic from the highway to the cross street. An internal road system should be developed on the north side of Silverton Road shown on Figure 21. One road would extend east from Rogers Lane to Monson Road. Another road further to the north could be developed east of Monson Road to tie into Industrial Way and then Fosholm Street. A new north-south road would be developed east of Monson Road connecting with Silverton Road. This internal circulation road system will decrease the traffic accessing the highway at the Rogers Lane and Monson Road intersections. The distance between the Rogers Lane intersection and the Monson Road intersection is 350 feet, which is slightly less than the desirable 400 feet public street spacing for this type of facility.

This internal circulation road system will allow removing the existing access points along Silverton Road serving the Traffic Detection Inc., and Silverton City shops properties, as well as removing the undesirable intersection of Fosholm Road with Silverton Road at the railroad crossing. Improved access for future land development and highway operation would be achieved with the suggested internal circulation road. The impact of a raised median on local access would be reduced in this area if a new east-west connector roadway north of Silverton Road were developed, with full movement access focused at public street intersections.

A raised median could be developed along this section of Silverton Road in the future if a "gateway" treatment with plantings would be desirable. A logical location to start the median would be just east of a realigned Railway Avenue/Monson Road intersection.

Railroad Crossing to Westfield Street (Segment 2) Figure 21

Existing Conditions

This segment of Silverton Road is 800 feet in length. The posted speed through this segment is 25 mph. The intersection of Silverton Road/Westfield Street/C Street is controlled with an all-way stop sign. There is one travel lane each direction and a center lane for left turns. There are eleven driveways along this 800-foot segment. Four driveways are located along the south side of the highway serving the Rite-Aid/Safeway shopping center, Centex gas station, and Silverton Cemetery. Seven driveways are located along the north side of the highway serving a gasoline/food market, an espresso stand, and the Wilco Farm Supply store.

Existing zoning in this segment is Limited Industrial use (I-2) on the north side of the roadway, and Commercial Business use (C-3) on the south side of the roadway.

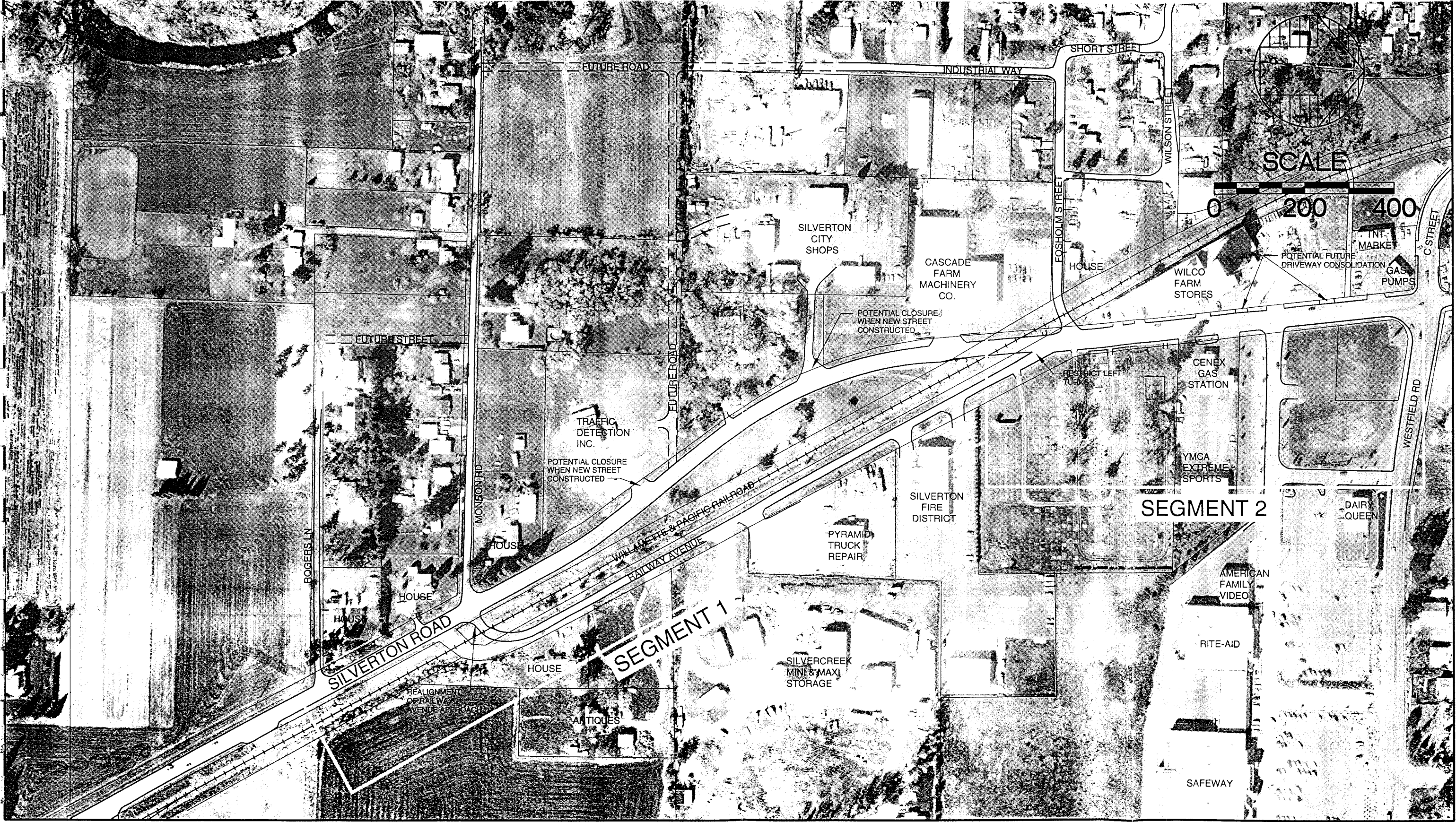
Access Management Strategy

The access management strategy for the railroad crossing to Westfield Street segment is limited due to the depth of the property resulting from the railroad line along the south side of the highway. The cemetery on the south side of the highway also limits the opportunity to develop internal circulation roads.

The City of Salem 400-foot access spacing standard (+ or - 20%) for newly developed areas is not applicable to this segment of Silverton Road as it is largely developed. In this case, special design considerations related to arterials would apply, which encourage future driveway consolidation and shared access development. A 175-foot driveway spacing is considered to be the minimum acceptable with a roadway operating speed of 25 mph (consistent with minimum standards under ODOT's "Urban Other" classification for District Highways), which have a similar function to Silverton Road.

Because of the existing parcel size and the restricted lot depth along this section of Silverton Road, the desirable driveway spacing cannot be achieved with existing development. A potential access plan for the existing land development is shown on Figure 21. Possible access modifications include consolidation of some of the driveways serving the Wilco Farm Supply Store, which could be required if this property redevelops in the future. Also, access to the vacant property on the south side of Silverton Road west of Westfield Street should be off of the existing road off Silverton Road serving the shopping center.

A raised median as a "gateway" treatment could be extended into this segment of Silverton Road from west of the railroad tracks, or initiated on the east side of the tracks. This segment would derive more traffic operations benefits from a raised median due to the more frequent driveways and higher traffic volumes. Even without a median westbound left turns off Silverton Road into the Safeway/Rite Aid Center may need to be restricted when an eastbound left turn lane is provided at the C Street/Westfield Street intersection. Left turns out of Railway Avenue could also be restricted given the alternate Railway Avenue connection at Monson Road, which would reduce traffic conflicts at the Fosholm Road intersection.



SILVERTON ROAD
ACCESS MANAGEMENT STRATEGIES

CITY OF SILVERTON, OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE
21



5.5 HIGHWAY 214 NORTH ACCESS MANAGEMENT STRATEGIES

Introduction

A large part of the operation and safety achieved with an improved north Highway 214 corridor in Silverton will be associated with developing an Access Management Plan as a part of that improvement.

Several access management strategies were analyzed for the north Highway 214 corridor in Silverton, for that section between the north Urban Growth Boundary and D Street. For the purpose of this analysis the approximate 0.8-mile section of Highway 214 was divided into four highway segments to analyze the appropriate access management strategies for each segment as well as for the overall section.

Highway 214, between the north City urban growth boundary of Silverton and D Street, is classified as an ODOT District Roadway in the 1999 Oregon Highway Plan. Highway 214, through this section, is posted between 50 mph at the north end and 35 mph near D Street. ODOT standards for driveway spacing and public street spacing this facility is identified in the 1999 Oregon Highway Plan, and varies between 400 and 550 feet depending upon the posted speed with the minor deviation limits from 275 to 475 feet. The Willamette Valley Railroad parallels Highway 214 throughout the study corridor (about 200 feet west of the highway), limiting the amount of property which can be developed and accessed off Highway 214 on the west side of the highway.

Figures 22 and 23 illustrate the existing conditions and potential access management strategies in the north Highway 214 corridor.

North Urban Growth Boundary (Hobart Road) to Jefferson Street (Segment 1)

Existing Conditions

This segment of Highway 214 is 1,200 feet in length with no public street intersections or active private driveways. One private driveway approach exists 730 feet south of Hobart Road; however, the driveway dead-ends within 20 feet of the highway. Highway 214 is a two-lane rural roadway design in this segment with a posted speed of 50 mph. There are no curbs or sidewalks along this segment. A six-foot shoulder is in place for emergency parking and bicycle activity.

Existing land use in this segment includes primarily vacant land. Busters Trading Post has access off Hobart Road.

Access Management Strategy

Future access to property on either side of Highway 214 should be controlled through a variety of strategies such as combining driveways or by requiring a frontage street to provide access. North of Jefferson Street, Second Street should be improved as a two-lane roadway with curbs and sidewalks in accordance with City of Silverton standards for a collector street.

The property to the west of Highway 214 is limited in terms of access due to the railroad track which parallels Highway 214 at a distance of 200 feet to the west. This is a potential site for a new park-n-ride facility. If and when this area is developed, primary access should be obtained from Hobart Road and from Jefferson Street.

A logical starting point to develop a "gateway" treatment into Silverton on north Highway 214 is at Hobart Road. This treatment could be a raised median which would restrict local access in this segment. ODOT has already purchased access rights in this segment.

Jefferson Street to Railroad Spur Line (Segment 2)

Existing Conditions

This section of Highway 214 is 1,050 feet in length and is posted at 45 mph. There is one travel lane each direction with no curb or sidewalk. A six-foot paved shoulder is in place on each side of the roadway.

Existing land use in this segment consists of several commercial businesses, including Abiqua Barkdust and More, Abiqua Rental, The Feed Barn, and Silverton Auto Body. Existing zoning is Industrial Park (I-P) on both sides of the roadway.

There is only one driveway in this section serving several properties to the west of Highway 214. Properties to the east of Highway 214 are served off N. Second Street. This section of Highway 214 meets the access spacing standards as described in the 1999 Oregon Highway Plan.

Access Management Strategy

N. Second Street in this section should be improved to include sidewalks and bike lanes. The land on both sides of Highway 214 is currently developed; consequently the request for new access from Highway 214 will only occur with redevelopment of the properties. There is one driveway on the west side of Highway 214 which provides the only opportunity to serve this land. Access to new development or redeveloped properties on the east side of Highway 214 should be provided off N. Second Street.

A raised median could be developed in this segment as a "parkway" treatment with a single full movement access potentially provided to serve the existing businesses on the west side of Highway 214, (as what exists today).

Railroad Spur Line to Roth's Family Market (Segment 3)

Existing Conditions

This section of Highway 214 is one lane each way with a two-way left turn lane and a posted speed of 45 mph. This section is 1,180 feet in length.

There are eight active driveways and four curb cuts on this segment of Highway 214. A new public street between N. Second Street and Highway 214 north of Roth's Family Market is being constructed. Three driveways are located on the west side of Highway 214. The existing driveway spacing does not meet the ODOT access spacing standard of 475 feet for a District highway with a posted speed of 45 mph.

Five active driveways along with four curb cuts exist on the east side of Highway 214. The inactive curb cuts serve either vacant property or provide access to storage yards that are gated and used only occasionally. The access spacing does not meet the ODOT access spacing standards.

Existing land use in this segment consists of several commercial businesses including Les Schwab Tire Center, Mini-Storage, Silverton Glass and Mirror, McDonalds, and Total Body Health Club on the west side, and Copeland Lumber Company and Home Place Restaurant on the east side. Existing zoning is Commercial Business (C-B) on both sides of the roadway.

Access Management Strategy

N. Second Street through this segment is an improved street with curbs and sidewalks. Two of the curb cuts on Highway 214 serving the vacant tract on the east side of Highway 214 should be closed and access provided off N. Second Street when this property develops. Also, the property north of Roth's Family Market could access the road being developed between N. Second Street and Highway 214 in that area.

There is little opportunity for shared access of properties on the west side of Highway 214 due to the type of land use and the limited depth of property. If the property redevelops the access locations should be reviewed. The vacant tract on the west side of Highway 214 south of Les Schwab Tire Center should have future access off the north side driveway serving the Bruce Pac development.

A raised median in this segment as a "parkway" treatment would have greater impact on access to businesses on the west side of Highway 214, as east side businesses have alternate access to N. Second Street. The current left turn median would allow a raised treatment to be developed with minimal added road widening.

Roth's Family Market to D Street (Segment 4)

Existing Conditions

This segment of Highway 214 is 700 feet in length and is posted at 35 mph. Curbs and sidewalks are in place on each side of Highway 214. There are no safety shoulders or on-street parking. There is one travel lane each direction with a two-way left turn lane.

There are six driveways and two curb cuts in this segment of Highway 214. One driveway and two inactive curb cuts are located along the west side of Highway 214 and five driveways along the east side of the highway. N. Second Street is improved for about one-half of this segment.

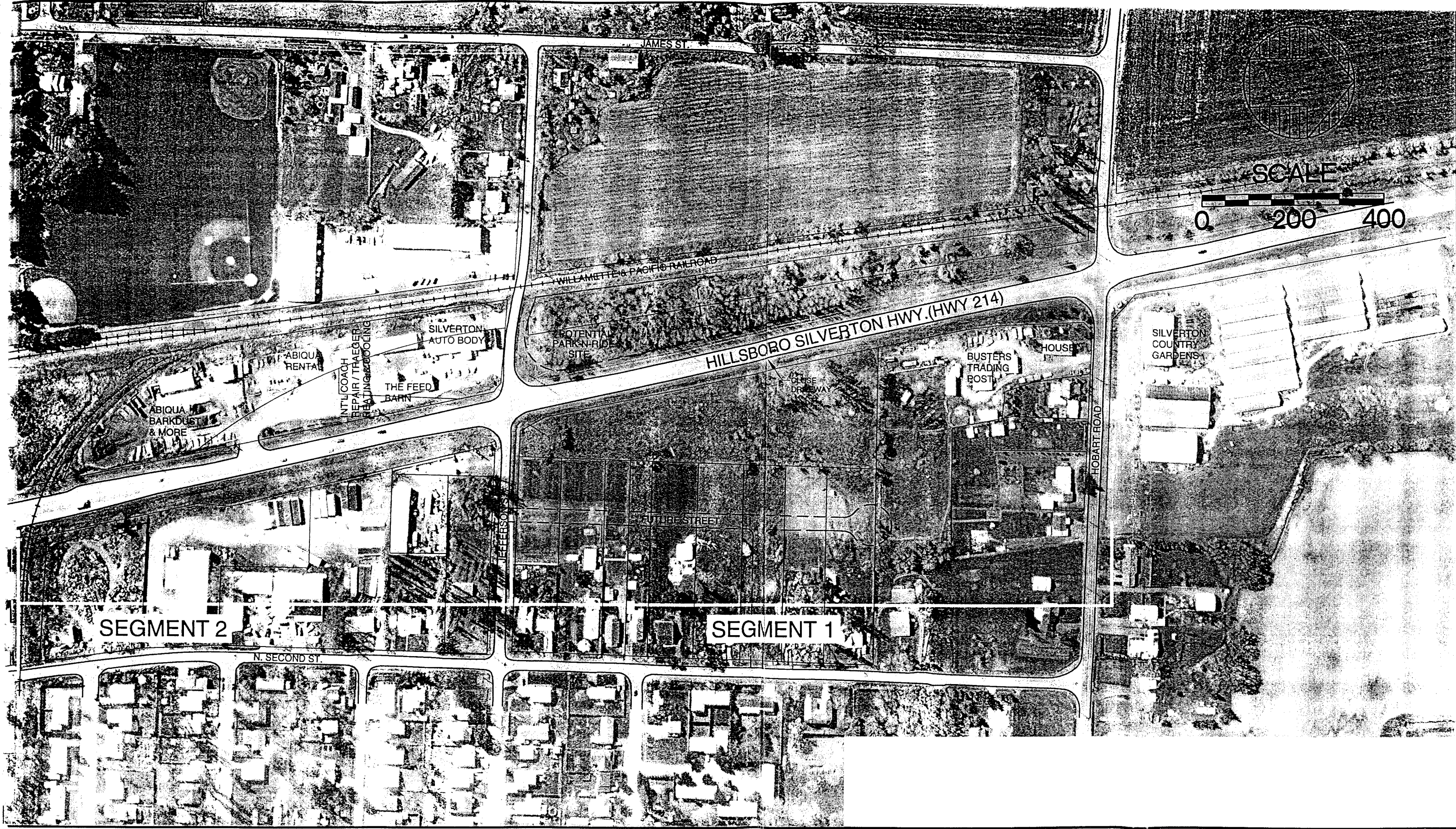
Existing land use along this segment consists of Bruce Pac on the west side of the roadway, and Roth's Family Market, a vacant office building, and a house on the east side. Existing zoning consists of Commercial Business (C-3) for Roth's, and Industrial Park (I-P) for Bruce Pac and the vacant office building.

Access Management Strategy

The driveway on the west side of the highway (serving Bruce Pac) does not meet the ODOT access spacing standard of 400 feet for this type facility with the posted speed of 35 mph, but it does meet ODOT's deviation of 275 feet. There are two curb cuts on the west side adjacent to the Bruce Pac building which have been closed by means of a 4-foot chain link fence around the property and which do not serve any intended purpose as they abut the building.

There are five driveways on the east side of Highway 214. Three of the five driveways serve Roth's Family Market with one of the driveways used by some traffic to access N. Second Street and Lone Oaks Loop. This connection will be improved with the new public street being built on the north side of Roth's parking lot. Alternate parking for Roth's, replacing any lost by development of this street, could be provided on the vacant land south of the supermarket. The driveway on the far south side of Roth's should be improved as a primary site access location, and the middle site driveway to the north potentially closed, as the new north access off the street currently being constructed would serve middle driveway traffic. If, or when, the property on the corner of Highway 214 and D Street redevelops, access should be provided from D Street.

If the new east-west street is eventually connected to Schlador street west of Highway 214, a pedestrian crosswalk across Highway 214 should be developed as an important access to the high school. A raised median in this segment as a "parkway" treatment would have minimal impact to Bruce Pac and Roth's if full access is provided to both properties at the new street access on the north side of Roth's.



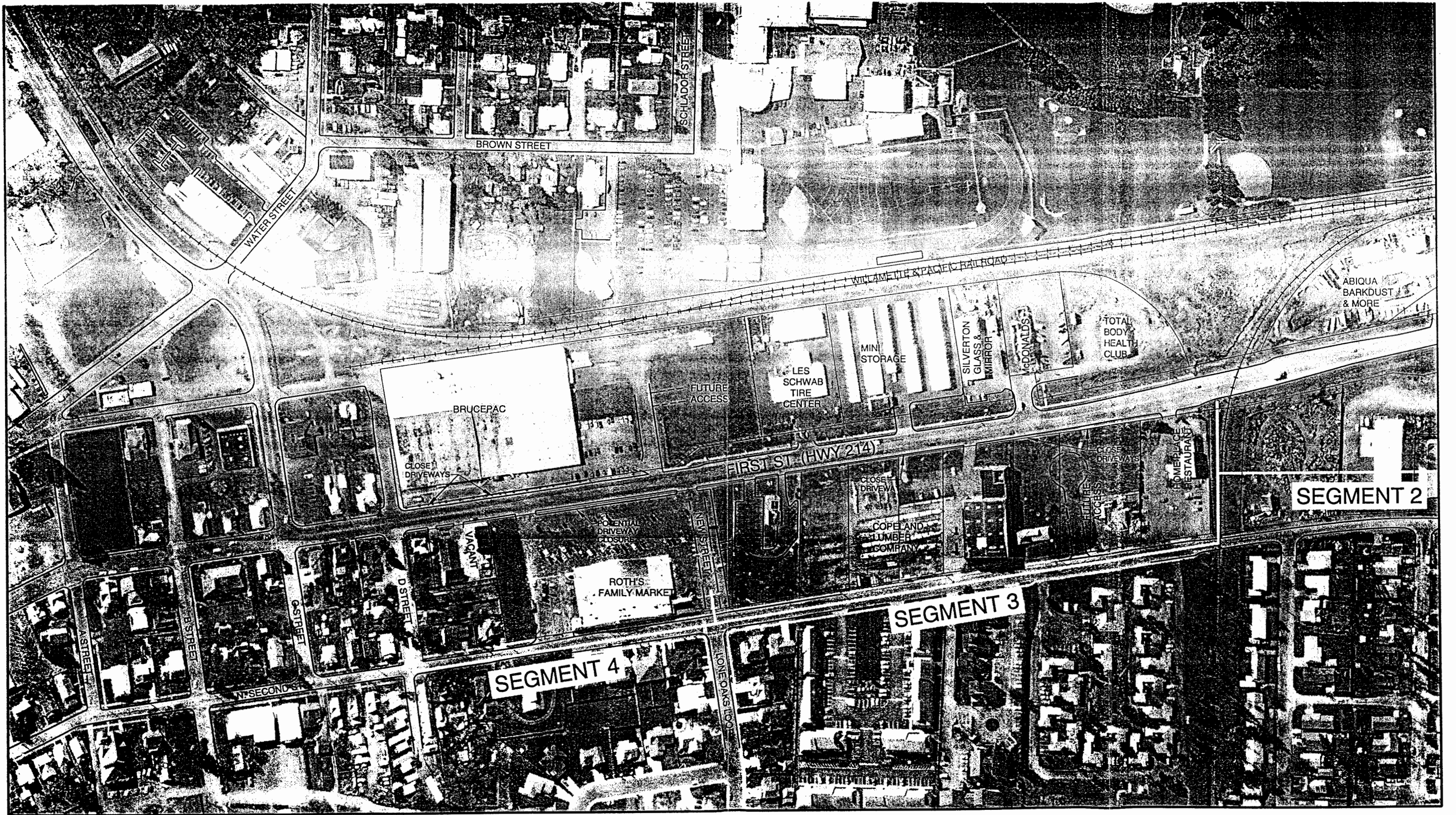
HIGHWAY 214 NORTH
ACCESS MANAGEMENT STRATEGIES

CITY OF SILVERTON, OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE
22



2891\DWG 11FC22.DWG



HIGHWAY 214 NORTH
ACCESS MANAGEMENT STRATEGIES

CITY OF SILVERTON, OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE
23 

Section 6

Transportation System Plan

6.1 INTRODUCTION

Based on the input received from the City of Silverton staff, the Silverton TSP Study Technical Advisory Committee, the general public at TSP Workshops #2 and #3, and the City Planning Commission and City Council in the joint work sessions, the transportation system alternatives presented were refined into an updated Silverton Transportation System Plan. The roadway, pedestrian, bicycle, and transit facility components are represented in a series of plan maps and policies, identifying facilities and services to be developed over the next 20+ years. These facilities and services are also translated into a prioritized set of improvements over the next 20+ years, recognizing estimated funding sources and levels of funding available.

6.2 ROADWAY SYSTEM PLAN

A critical component of the Silverton TSP Update is an updated roadway plan which identifies the following:

- An appropriate functional classification of streets and associated design standards
- A recommended plan for widening and pavement rehabilitation of existing streets
- A recommended plan for new street construction.

Functional Classification

The updated Silverton Transportation System Plan includes a three-tier roadway classification of arterials, collectors, and local streets. This is similar to the street classification system in the 1993 City TSP.

Simple definitions of each roadway classification are as follows:

Arterials - Major roadways that connect Silverton with destinations outside of the area, and serve crosstown traffic within the City. Proper access management to control access is desirable on such roadways. Arterials have bike lane provisions incorporated into their cross section. These roadways typically would have traffic volumes exceeding 5,000 vehicles per day.

Collectors - Streets that connect arterials with local streets and serve moderate length trips and activity centers. These streets provide some degree of access to adjacent land uses, and typically have bike lanes. These roadways typically would have traffic volumes between 1,000-10,000 vehicles per day. Lower volume collector streets serve specific neighborhoods.

Neighborhood collector:

Streets which are identified on Figure 27 (page 87) of the Transportation System Plan are designated to be neighborhood collectors. The intent of this designation is to recognize that certain segments of these streets have predominant characteristics such as street trees, narrow streets, substandard rights-of-way and/or substandard home setbacks located in well established neighborhoods. If the street were automatically improved to full collector standard it would reduce its livability attributes. Because new wider urban collector street widths could destroy the appearance and character of the neighborhood, the City desires to specifically exempt a street or segment of a street which is designated as a neighborhood collector from future consideration for upgrades that would use the new urban collector standard. Figure 27 shows the Established Neighborhood Collector streets that have been determined to be exempt from the full urban collector standard.

Unlike new collectors it is difficult to come up with a specific standard of what the cross section of a neighborhood collector would look like since by definition it is intended to be designed on a case by case basis. The question of who should decide to what extent these streets be improved is a valid one. The most efficient way to determine what level of improvement is appropriate for a particular neighborhood collector is for the City Engineer to make design recommendations to the City Council, with the Council making the final determination.

Local Streets - Streets that primarily provide access to abutting uses.

Figure 24 shows the functional classification plan for each of the roads within the Silverton Urban Growth Boundary. The major street designations are as follows

Arterials

- C Street (between N. First Street and McClaine Street)
- Highway 213 east of Highway 214 (Oak Street)
- Highway 214 (N. First Street and S. Water Street)
- Lewis Street (between Water and First Streets)
- Silverton Road (between Westfield Street and west UGB)
- W. Main Street (Formerly called Cascade Highway, from Westfield to UGB)
- Westfield Street
- Water Street (between C Street and south UGB)
- Oak Street (between Water Street and the east UGB)
- First Street (between Lewis Street and north UGB)

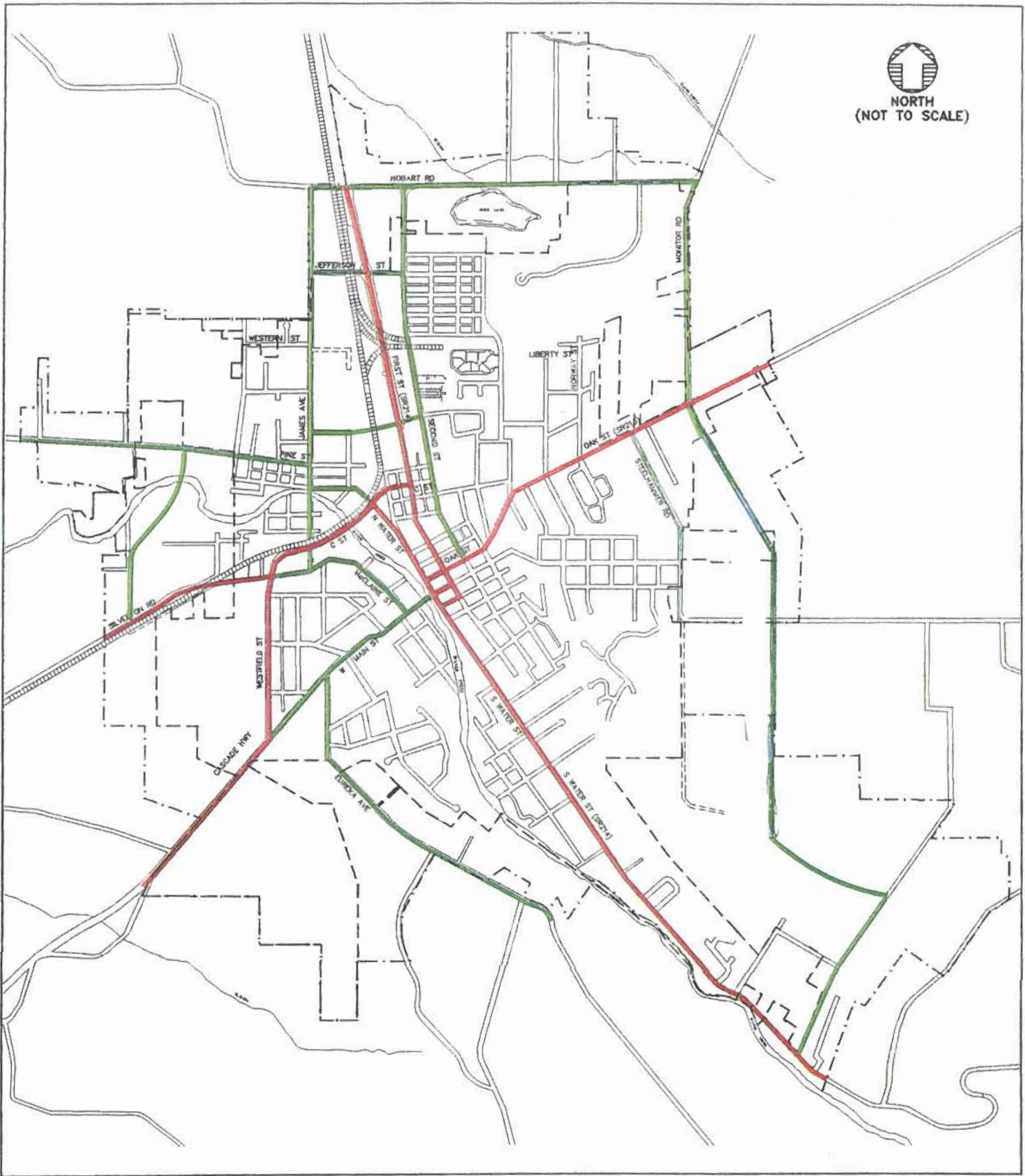
Collectors

- Future east side Collector between Highway 213 and Ike Mooney Road
- Eureka Avenue
- Hobart Road
- James Street (between Hobart Road to Water Street)

- Jefferson Street (between James Street to Second Street)
- Ike Mooney Road
- Monitor Road
- Future east-west collector between North First Street and James Street
- N. Second Street
- Pine Street (James Street to Second Street)
- Future west side Collector (Silverton Road to Pine Street)
- Steelhammer Road
- East Main Street
- Evans Valley Road
- Water Street (James Street to C Street)
- West Main Street (First Street to Westfield Street)

Neighborhood collectors

- East Main Street, from Steelhammer Road to Third Street
- Steelhammer Road, from Oak Street to Crestview Drive
- West Main Street, from Eureka Avenue to Silver Creek bridge
- McClaine Street, from West Main Street to James Street
- James Street, from Schaldor Street to railroad tracks
- Pine Street, from James Street to Grant Street
- North Water Street, from James Street to railroad tracks



LEGEND

- ARTERIAL
- COLLECTOR
- - - UGB
- - - CITY LIMITS

ROADWAY CLASSIFICATION PLAN

CITY OF SILVERTON, OREGON
 TRANSPORTATION SYSTEM PLAN
 NOVEMBER 1999

FIGURE
24



2891\DWG:

0004.DWG

Proposed Collector Roadways

As part of the TSP, conceptual alignments for future new collector roadways have been developed. The purpose of identifying future roadways is to:

- provide access to property through multiple locations,
- increase connectivity of future development to the existing neighborhoods
- provide the City of Silverton with guidelines for roadway alignments as future development occurs.

As shown in Figure 24, new collector roadways are proposed at the following locations (all within the current Silverton Urban Growth Boundary):

- East side collector using an extension of Monitor Road and Ike Mooney Road (using the easterly section of existing Ike Mooney Road and a new roadway to access Highway 214). The adoption of this plan does not eliminate for future consideration of the west end connection alternatives for Ike Mooney Road as shown on Figure 16. Future engineering information and evaluation of the total area impacts may make the west end connection the best choice for the City of Silverton's transportation system. Such consideration would involve public input at the Planning Commission or Council level.
- West side collector between Silverton Road and Pine Street, west of Westfield Street

It should be noted that the location of the new collector roadways is approximate and that the actual roadway alignment will be determined based on further engineering studies and specific site plans for particular areas. Figure 26 also shows several new local streets and/or local street extensions. These include:

- Extension of Industrial Way to connect to Monson Road.
- New local street connecting Silverton Road to Industrial Way
- Two new local streets on the East side of Hwy 214 which will provide access to parcels.
- A new local connection between Monitor Road and Norway Street.

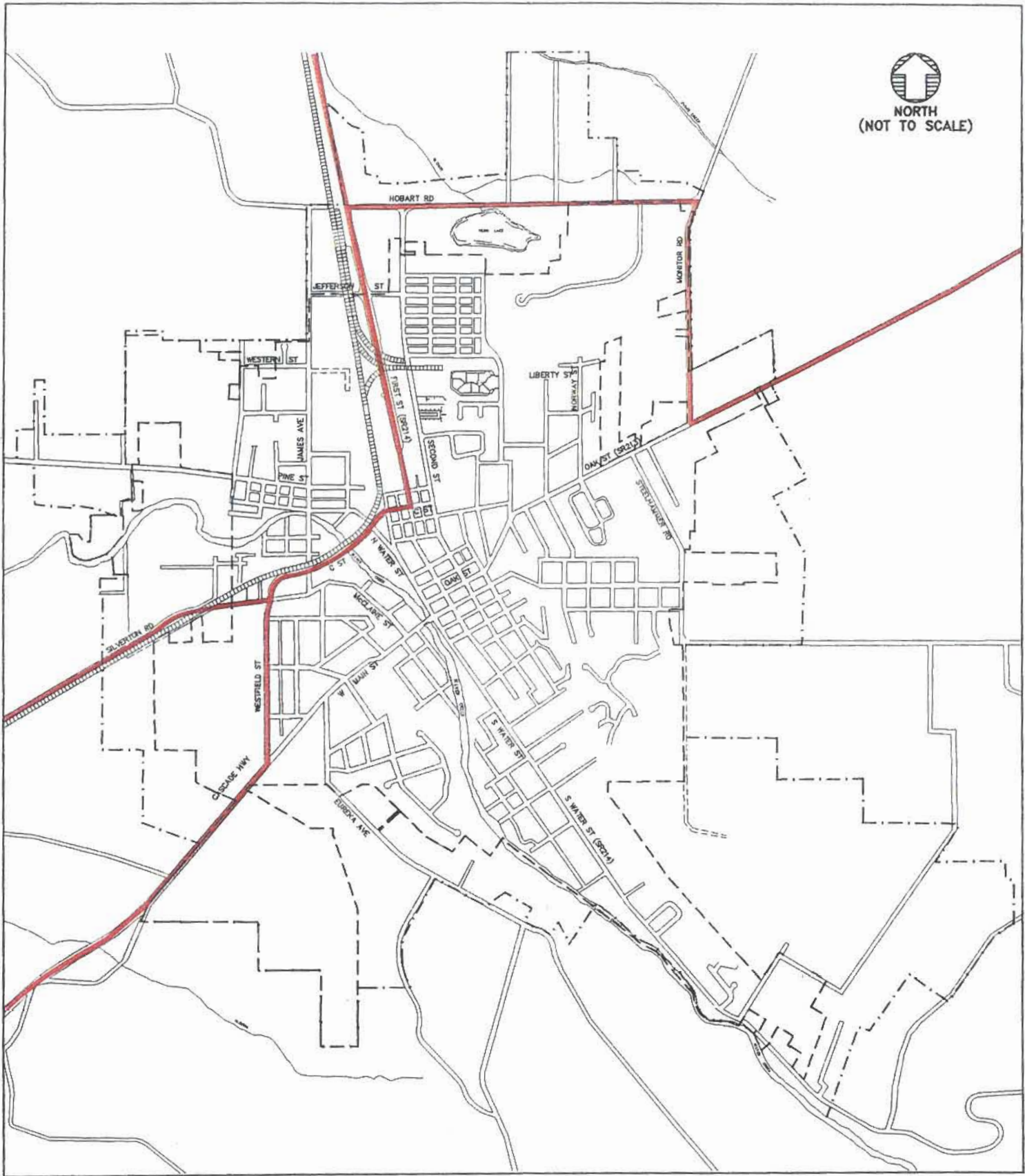
Truck Routes

Figure 25 identifies designated commercial truck routes within Silverton. This route system avoids having trucks enter the Silverton downtown area. The routes focus on the designated arterial street system, in particular north Highway 214 using N. First Street, Hobart Road and Monitor Road to access Highway 213 east of town, and C Street, Silverton Road, Westfield Street, and Cascade Highway on the west side of town. Hobart Road west of Highway 214 is also proposed as a truck route. Though not designated truck routes, South Water Street and Eureka Avenue would continue




to serve the needs of agricultural vehicles and local trucks.

Roadway Improvements


Figure 26 shows the roadway system improvements plan which includes intersection improvements (channelization and traffic control improvements), new collector roadway construction, and improvements to existing streets (to correct current major pavement and/or street width deficiencies in selected areas). This plan identifies all improvements through the year 2020.

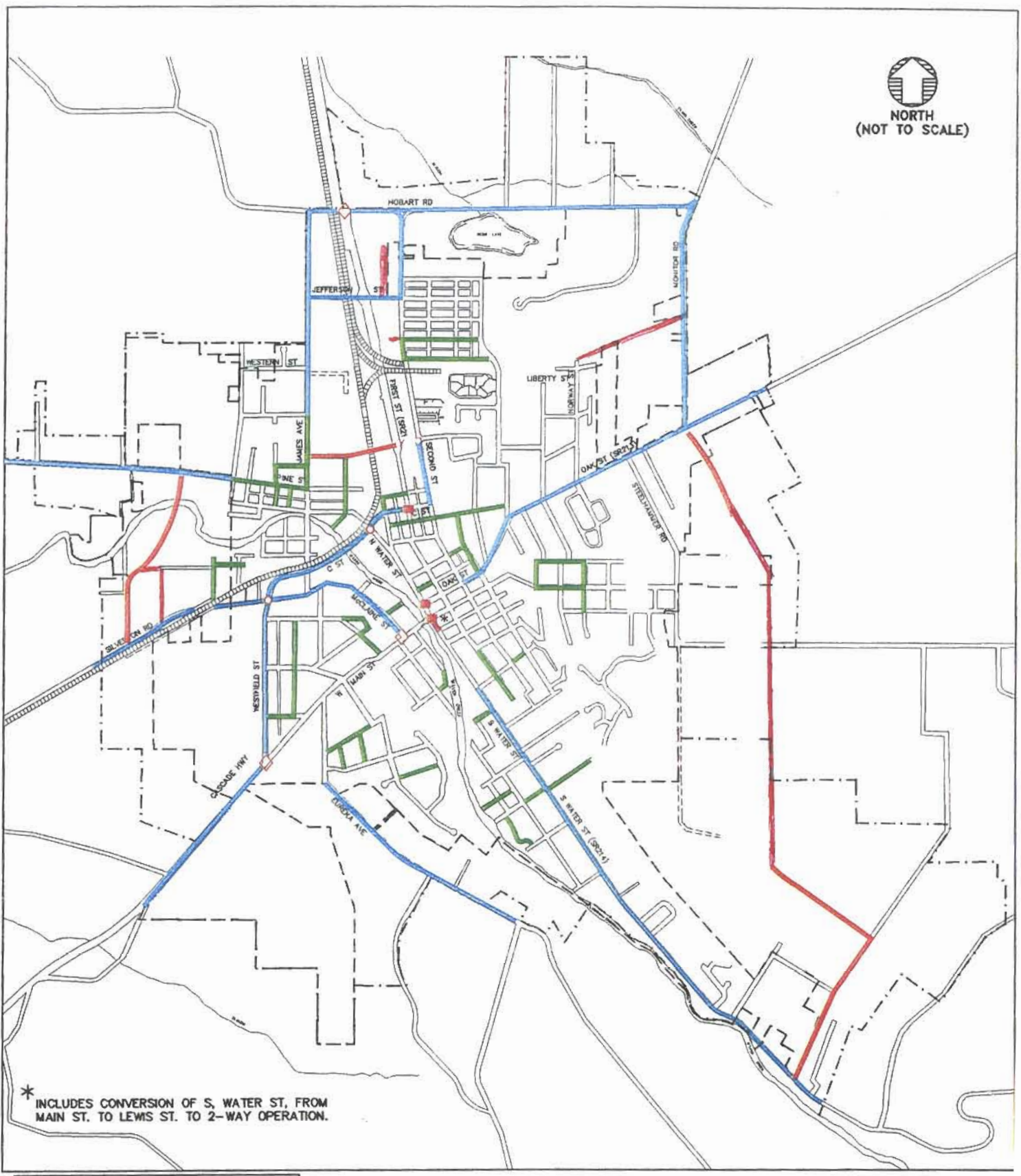


LEGEND

-  DESIGNATED TRUCK ROUTE
-  UGB
-  CITY LIMITS

TRUCK ROUTE PLAN
CITY OF SILVERTON, OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE
25 



* INCLUDES CONVERSION OF S. WATER ST. FROM MAIN ST. TO LEWIS ST. TO 2-WAY OPERATION.

LEGEND	
—	NEW ROADWAY CONSTRUCTION
—	ROADWAY RECONSTRUCTION
—	PAVEMENT REHABILITATION
■	TRAFFIC SIGNAL
○	SIGNAL OR ROUNDABOUT
◇	CHANNELIZATION
- - -	UGB
- - -	CITY LIMITS

ROADWAY IMPROVEMENT PLAN

CITY OF SILVERTON, OREGON
 TRANSPORTATION SYSTEM PLAN
 NOVEMBER 1999

FIGURE
26



Intersection Improvements

There are several intersections in Silverton which today or in the future will experience operational problems, and where added turn lanes, rechannelization, and/or new traffic signals or other intersection control such as roundabouts would be appropriate. These intersections include:

- C Street/First Street - add new signal
- C Street/McClaine Street/Westfield Street - add left turn lanes, new traffic signal or roundabout
- C Street/Water Street - add turn lanes, new traffic signal
- First Street/Oak Street - add traffic signal
- Water Street/Main Street - add traffic signal, convert south approach to two-way operation
- Water Street/Oak Street - add traffic signal
- W. Main Street/McClaine Street - add left turn lane on McClaine Street

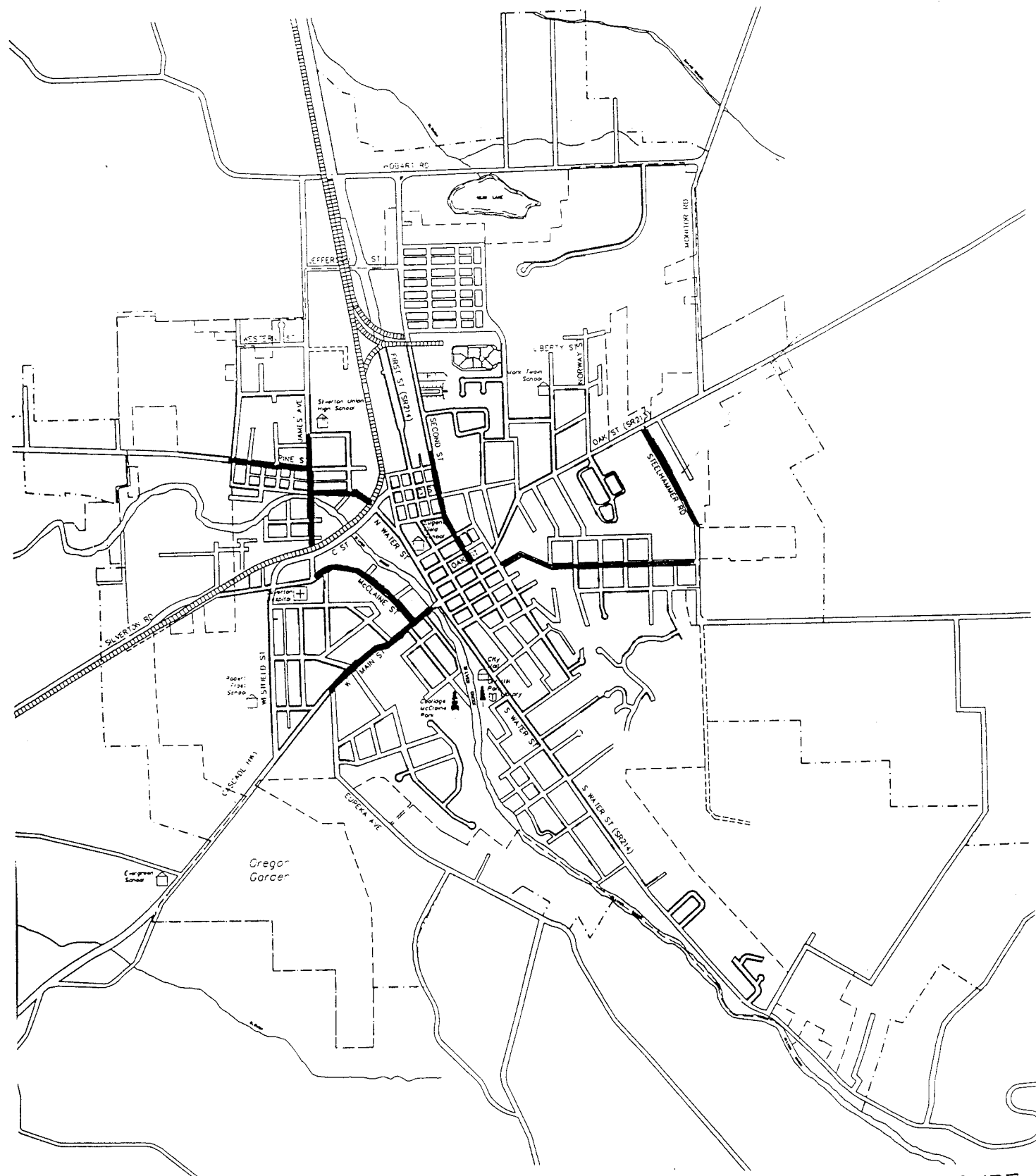
To maintain acceptable arterial operations and travel speeds along Water Street through downtown Silverton, synchronized traffic signals at Oak and Main Streets may need to be installed. This would be the subject of further study.

Street Widening and Extensions

Recommended new collector roadways to be constructed were identified in the Functional Classification section. They include the new East side and West side collectors. These roadways would have two travel lanes, with bike lanes and sidewalks.

There are several existing arterial and collector streets which need to be widened to an adequate width (to meet the new standards, and to accommodate bike lanes). The City of Silverton has identified only collectors outside older existing neighborhoods which will be improved in the future, and where street widening and improvements would not be a major disruption on adjacent properties.

- Cascade Highway
- C Street, between N. First Street and McClaine Street
- Eureka Avenue
- Hobart Road, between N. Second Street and Monitor Road
- James Street, north of Water Street
- Jefferson Street, between N. Second Street and James Street
- Monitor Road
- N. Second Street, between Whittier Street and Hobart Road, and between Roths Market and A Street
- Oak Street, between Church Street and Steelhammer Road
- Pine Street, west of Grant Street
- Silverton Road, west of Railroad
- S. Water Street, south of Smith Avenue
- Westfield Street



ESTABLISHED NEIGHBORHOOD COLLECTOR

FIGURE
27

- East Main Street
- Steelhammer Road

These streets, when improved, should include applicable new sidewalk and bike lanes provided, per the Pedestrian and Bicycle System Plans. Based on discussions between the Planning Commission and the City Council, it is not intended that certain segments of streets which have predominant characteristics, such as large existing street trees in developed residential neighborhoods, are to be automatically improved if such improvements would reduce its livability attributes.

Certain specific sections of the City's collector streets are located in well established neighborhoods with special features such as street trees, narrow streets, substandard rights-of-way and/or substandard home setbacks. Because new wider urban collector street widths could destroy the appearance and character of the neighborhood, the city desires to specifically exempt this neighborhoods from future consideration for upgrades that would use the new urban collector standard. Figure 27 shows the Established Neighborhood Collector streets that have been determined to be exempt from the full urban collector standard.

Neighborhood collectors

- East Main Street, from Steelhammer Road to Third Street
- Steelhammer Road, from Oak Street to Crestview Drive
- West Main Street, from Eureka Avenue to Silver Creek bridge
- McClaine Street, from West Main Street to James Street
- James Street, from Schaldor Street to railroad tracks
- Pine Street, from James Street to Grant Street
- North Water Street, from James Street to railroad tracks

Pavement Rehabilitation

Existing paved arterial, collector, and local streets which need major pavement rehabilitation in the future (based on a "very poor" or "poor" rating in the current City pavement condition inventory), include the following: (Table 2)

- Ames Street, between E. Main and Reserve Streets
- Ash Street
- Barger Street, between Central and Smith Streets
- C Street, east of First Street
- Central Street, between Madison and First Streets
- Chester Street
- D Street, between Front and First Streets
- E. Main Street, between 5th and Ames Streets
- Fairview Street
- First Street, south of Drake Street
- Fifth Street, between Kent and E. Main Streets

- Fiske Street, east of Coolidge Street
- James Street, between Pine Street and Florida Drive
- Kent Street, between 5th and Ames Streets
- Koons Street
- Pine Street, west of James Street
- Second Street, between Chester and Whittier Streets
- South Street
- Weiby Avenue
- Welch Street, south of Cherry Street
- Well Street
- Wesley Street
- Whittier Street

In addition, there are gravel streets within Silverton that should eventually be paved thereby improving local street connectivity, public safety, and livability of these streets. Some of these have been identified on the City's Gravel Streets Priority Improvement List to be paved. These include:

- Ames Street, north of Main Street
- B Street, west of Highway 214
- Brooks Street, between Alder and Short Streets
- D Street between First and Second
- Elm Street
- N. Third Street, north of Oak Street
- Ord Street
- Park Street
- Fosholm Street
- Johnson Street
- Lane Street east of N. Second Street
- Orchard Street
- Short Street

Other gravel streets include:

- Bartlett Street
- N. Church Street
- Craig Street
- Eastview Lane
- Fir Street
- Fourth Street
- Hill Street
- Iowa Street
- Kent Street
- Liberty Street
- Maple Street
- Olson Road
- Rock Street
- Sheridan Street
- Sherman Street
- Wall Street
- Webb Street
- Willow Street
- Wilson Street

Street Standards

Tables 8 through 10 present typical cross sections for the various street functional classifications.

The cross sections reflect the desire to develop multi-modal roadway facilities in Silverton, incorporating sidewalks and bike lanes where possible. The identified cross sections are intended for planning and design purposes for new road construction, and where it is physically and economically feasible to improve existing streets.

The street sections incorporate provisions for optional parkway strips, that would separate the curb from sidewalk. This "detached sidewalk" concept allows for grade transitions between the sidewalk and local driveways to meet Americans with Disabilities Act standards.

Attached sidewalks are preferable in the downtown area due to limited street right-of-way and limited number of private driveways.

The typical street sections present standards for both traditional local residential streets, as well as narrower streets with restricted width (so-called "skinny" streets). The City of Silverton has elected to only include a narrower street width standard for a local street with parking on one side. The City would have the prerogative of allowing developers to construct narrower streets in their new developments to reduce cost and provide more of a pedestrian environment, particularly applicable to more compact residential areas (often referred to as "neo-traditional development"). For "skinny streets" to be applied, special design measures such as added off-street parking, periodic vehicle pullout areas, and/or residential sprinkler systems might be required. The Silverton Fire and Police Departments should be involved in the review of any skinny street design proposal associated with new development. "Skinny streets" are not intended to be through streets.

A key street standard is the required size of curb returns at urban street intersections. This is critical to provide for adequate turning movements for certain vehicles, yet at the same time not make intersections too large so that pedestrian crossings cannot be facilitated. Table 11 identifies a minimum intersection curb return radius for the highest street classification of two intersecting streets. Minimum curb returns vary from 15 feet for local street intersections to 30 feet for arterial intersections.

Table 9
Proposed Urban Arterial Cross Sections

Design Speed = 35-45 MPH

Road Classification	Criteria	Right-of-Way (Feet)	Paved Width (Feet)	# of Lanes	Side-walk (Feet)	Curb & Planting Strip (Feet)	Parking Lane (Feet)	Bike Lane (Feet)	Curb Travel Lane(s) (Feet)	Median or Center Turn Lane	Curb Travel Lane (Feet)	Bike Lane (Feet)	Parking Lane (Feet)	Curb & Planting Strip (Feet)	Side-walk (Feet)
		A	B		C	D	E	F	G	H	G	F	E	D	C
Arterial	With Parking	80	50	3	6	0.5-6.5	7	6	12	0	12	6	7	0.5 - 6.5	6
	Without Parking	80	50	3	6	0.5-6.5*	0	6	12	14**	12	6	0	0-6*	6

*Planting strip preferred

** Raised median with potential landscaping where "gateway" treatment to be developed

Table 10
Proposed Urban Collector Cross Sections

Design Speed = 25-35 M.P.H.

Road Classification	Criteria	Right-of-Way (Feet)	Paved Width (Feet)	# of Lanes	Side-walk (Feet)	Curb & Planting Strip (Feet)	Parking Lane (Feet)	Bike Lane (Feet)	Travel Lane(s) (Feet)	Center turn Lane	Travel Lane(s) (Feet)	Bike Lane (Feet)	Parking Lane (Feet)	Curb & Planting Strip (Feet)	Side-walk (Feet)
		A	B		C	D	E	E	F	G	F	E	E	D	C
Collector	With Parking/ Bike lanes	70	50	2	5-6	0.5-5.5	7	6	12	0	12	6	7	0.5-5.5	5-6
	Without Parking	70	36	2	5-6	0.5-10.5*	0	6	12	.	12	6	0	0.5-10.5*	5-6
	Without Bike Lanes	70	36	2	5-6	0.5-10.5*	0	6	12	0	12	6	0	0.5-10.5*	5-6

*Planting strip required unless the Right-of-Way is determined to not warrant it where at least three feet is available.

Table 11
Proposed Local Street Cross Sections

Road Classification	Criteria	Right-of-Way (Feet)	Paved Width (Feet)	Side-walk (Feet)	Curb & Planting Strip (Feet)	Parking Lane (Feet)	Travel Way (Feet)	Parking Lane (Feet)	Curb & Planting Strip (Feet)	Side-walk (Feet)
		A	B	C	D	E	F	E	D	C
Local Residential	Traditional/Parking Both Sides	60	34	5	0.5-4.5*	7	20	8	0.5-4.5*	5
	Traditional/Parking One Side	50	30	5	0.5-4.5*	7	22	--	0.5-4.5*	5
	Skinny/ Parking One Side	46	27	5	0.5-4.5*	7	20	--	0.5-4.5*	5
Local Commercial & Industrial	Parking both sides	65	44	5	0.5-4.5*	10	24	10	0.5-4.5*	5

* Planting Strip Preferred

** Reduced pavement width allowed if certain design features are accommodated, with the approval of the City Fire and Police Departments. These might include one of the following: 1) providing at least two off-street parking spaces per unit, 2) limited back length, periodic vehicle pullouts, 3) rolled curbs with attached sidewalks, and/or 3) approved residential sprinkler systems.

Table 12
Minimum Intersection Curb Return Radii

Highest Street Classification of Two Intersecting Streets	Minimum Curb Return Radius
Arterial	30 feet
Collector	25 feet
Local Residential Street	15 feet
Local Commercial/Industrial Street	30 feet

Neighborhood Traffic Calming

The City of Silverton has no established program to evaluate and install traffic calming treatments on local streets to reduce through traffic volumes and speeds through neighborhoods. Treatments which could be applied include speed humps, stop signs, traffic diverters, traffic circles and curb extensions. It is recommended that the city budget funds on an annual basis to install traffic calming devices, as appropriate per public requests. However, the issue of traffic calming along arterial streets has been studied. In particular, West Main Street between Westfield and the Marion County Shops and further north on West Main Street (Cascade Highway) will be used as a model for this type of treatment.

6.3 TRANSIT SYSTEM PLAN

The transit plan for the City of Silverton includes improved community bus service, new intercity bus service, and improved paratransit service.

Community Bus Service

Phase 1 (Table 16) of the community bus service improvement plan would modify the Silver Trolley routing and expand the hours of operation to serve both population centers and emerging employment areas, such as the Hobart Road corridor. Once a park and ride lot is established this service would also provide linkage to one or more outside intercity bus service providers, moving the connecting points to the park and ride. This should be an improvement within the next five years. A specific bus routing plan will be developed with further input from Silverton Hospital and City staff, based on further review of the bus service alternatives presented in Section 5 of this plan. Alternative #1 (single/two-directional route) appears to be the most cost-effective route of the two routing alternatives evaluated in the TSP process.

Phase 2 of the community bus service expansion would consist of adding two more vehicles. This would allow for the route to shift from a two-vehicle service to a four-vehicle service, allowing for a more intensive coverage of the community with an increase in service frequency to a broader area. Phase 2 would be a mid-term goal within the 20-year plan horizon.

In the long term (20 years and beyond), further expansion of the service would occur, with added vehicles and possible added routes. A specific bus service plan will be developed with added input from Silverton Hospital and City staff.

In the future, as the transit service expands, consideration should be given to the City of Silverton assuming responsibility for operations of the community bus service, and/or may subsidize the service to the Chemeketa Area Regional Transportation System (CARTS), which is currently under formation as the Marion and Polk County Transit Brokerage. Silverton Hospital has proposed the establishment of a Transit Advisory Board to oversee and review ongoing issues and policies related to the operations of The Silver Trolley and consult with the Hospital's Transportation System Manager. The purpose of such a board would be to analyze and establish the most effective routing system for consistent and dependable service. The appointment of such a board would develop links with participating institutions to formally establish a community liaison with regional transportation efforts. Intercity Bus Service

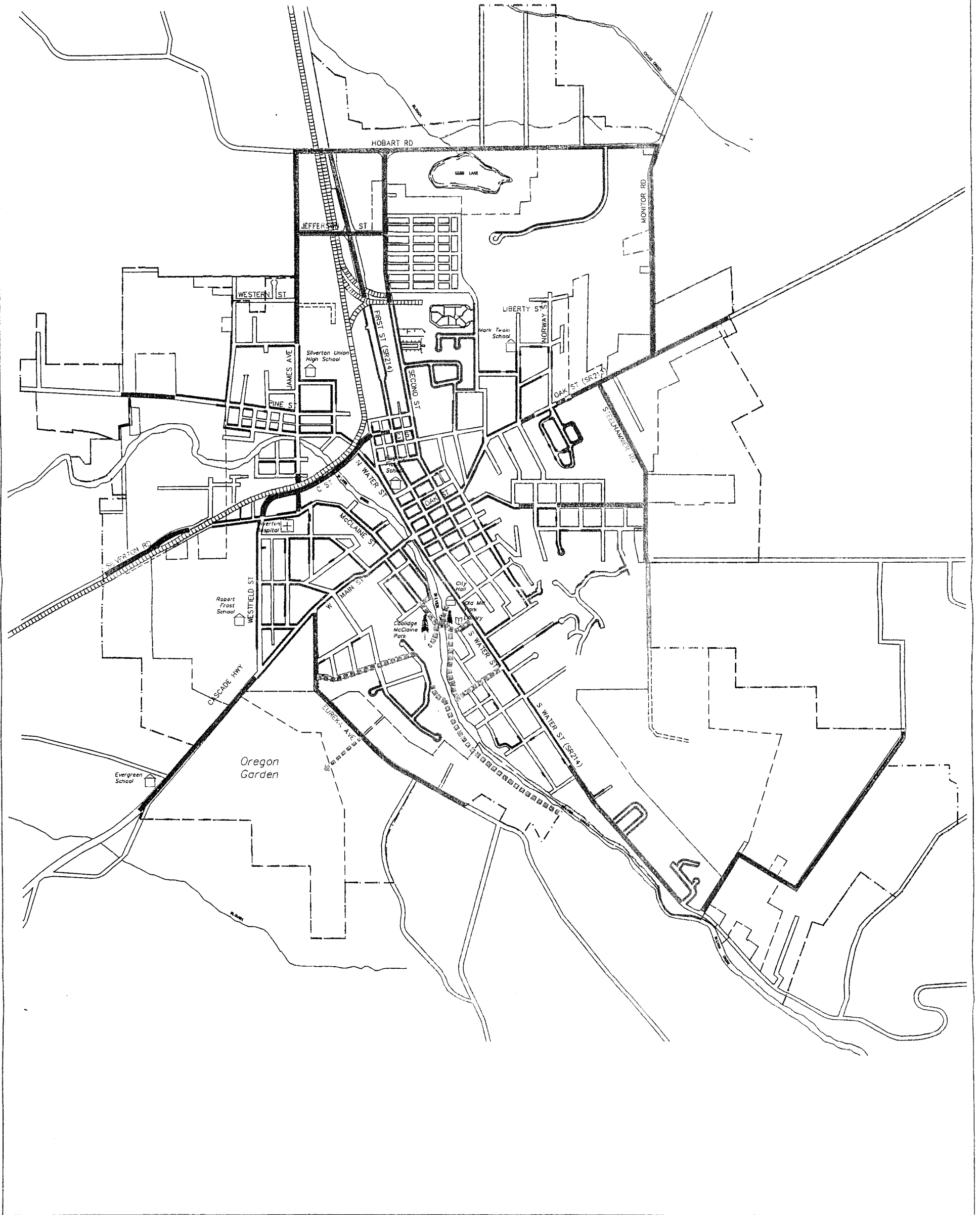
A new intercity bus route connecting Silverton with Salem, via Silverton Road, is proposed in the Marion County Rural Transportation Plan. This service would operate on weekdays and Saturdays, with up to four trips each way per day. Again further study is required to assess if this service should be provided by a regional transit operator, such as the Salem Transit District, or a private party. Marion County is not a public rural transportation provider, but supports and will work with local providers to implement the improved transit service.

Though not identified in the Marion County Transportation Plan, a second intercity bus route connecting Silverton with Woodburn would be desirable in the future, particularly if the City of Woodburn expands its current bus service including a possible shuttle service to the Portland area.

Park-n-Ride

Key to the success of the intercity bus service to Silverton will be the development of a park-n-ride facility. This facility could also serve as a transfer point between the intercity and intracity bus routes as well as a parking lot for carpoolers. A typical park-n-ride lot requires about one acre of land, assuming the surface lot is developed. Potential sites include property along Silverton Road west of the railroad (next to the City Shops) or off Cascade Highway, near the Oregon Garden. An Oregon Garden site could be preferable as it would offer a better tie in with the intracity bus system in the future. Further site analysis will be required before a final location for a new park-n-ride can be determined.

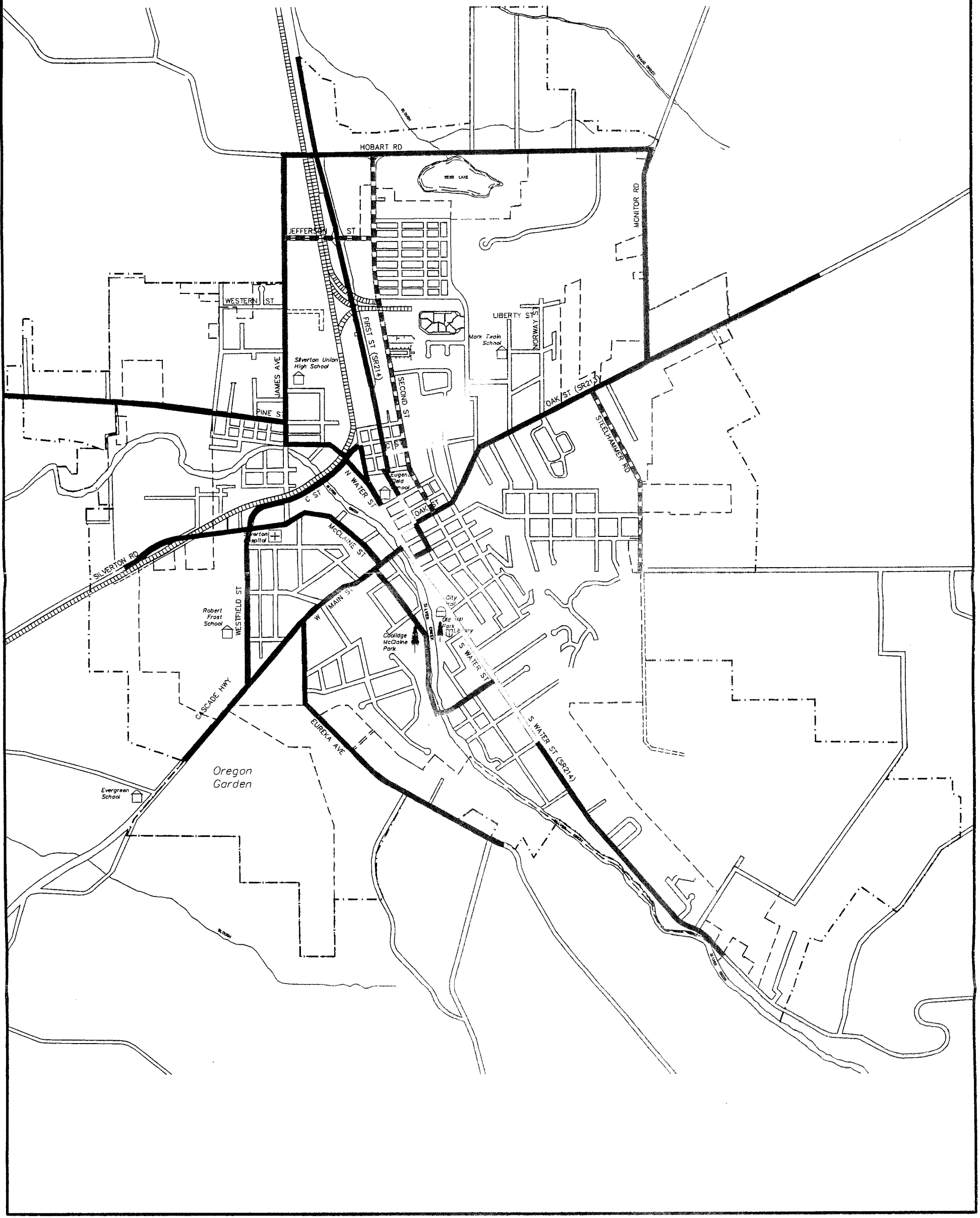
If a second intercity bus route is ever developed connecting Silverton with Woodburn, then a second lot should be developed in the north Highway 214 corridor, north of Jefferson Street.



LEGEND	
—	EXISTING SIDEWALK (ONE SIDE)
—	EXISTING SIDEWALK (BOTH SIDES)
—	COLLECTOR/ARTERIAL
—	ADD SIDEWALKS (streets without existing sidewalks)
—	OFF-STREET PATHWAY OPTION

PEDESTRIAN SYSTEM PLAN

CITY OF SILVERTON, OREGON TRANSPORTATION SYSTEM PLAN NOVEMBER 1999	FIGURE 28	K
--	---------------------	----------



- LEGEND**
- Bike Route - Proposed Bike Lanes & Shoulder Bikeways (1993 Silverton Bicycle Plan)
 - Bike Route - Proposed Shared Roadway (1993 Silverton Bicycle Plan)
 - Bike Route - (Proposed Off-Street) (1993 Silverton Bicycle Plan)
 - Bike Route - (Potential Added Bike Lanes on Collectors)

BICYCLE SYSTEM PLAN

CITY OF SILVERTON, OREGON
TRANSPORTATION SYSTEM PLAN
NOVEMBER 1999

FIGURE
29



6.4 PEDESTRIAN FACILITIES PLAN

Sidewalks

The recommended pedestrian facility plan is the same as the pedestrian system alternatives discussed in Section 5, presented in Figure 17. As shown in this figure, it is recommended that sidewalks be constructed on at least one side of all designated arterials and collectors in the City of Silverton over the next 20 years. This includes the following street segments:

- C Street, between McClaine and Front Streets
- Cascade Highway, west of Westfield Street
- Eureka Avenue
- Hobart Road, between Highway 214 and Lanham Lane
- Jefferson Street, between N. Second Street and James Street
- James Street, north of Florida Drive
- Monitor Road
- N. Second Street, north of Whittier Street
- Oak Street, east of Norway Street
- Pine Street, west of Grant Street
- S. Water Street (Highway 214), south of Peach Street
- Steelhammer Road

It is important that as new developments are constructed or as road improvements are made, that existing sidewalks are connected to new sidewalks. Sidewalks should be included in any reconstruction of arterials and collectors. Local streets without sidewalks should be reviewed periodically and a priority list made to determine the feasibility of installing such a facility.

Off-Street Pathways

The pedestrian facilities plan also includes some new off-street pathways, in the following locations (Figure 18):

- New pathway along portions of a designated route connecting downtown Silverton with the Oregon Garden, via Coolidge Street, Keene Avenue, Eureka Avenue, and an existing easement into the Oregon Garden site
- New pathway on the east side of Silver Creek between Wesley and Cowing Streets, and along Cowing Street to S. Water Street
- New pathway on the west side of Silver Creek between Coolidge Park and Cowing Street
- New pedestrian bridges over Silver Creek in the vicinity of Jersey and Cowing Streets.

Crosswalks

Currently there is a demand for additional pedestrian crosswalks on streets in Silverton due to increasing traffic and pedestrian volumes near major activity centers. At all of the identified six intersections in need of traffic control improvements (whether with traffic signals or

roundabouts), crosswalks will need to be installed on all approaches increasing the accessibility and safety for pedestrian crossings. There could other locations where mid-block pedestrian crossings might be needed in the future if any traffic safety problems arise. Mid-block crossing locations have been identified at the Silver Falls Library and at Eugene Field School.

6.5 BICYCLE FACILITIES PLAN

The recommended Bicycle Facilities Plan is the same as the bicycle system alternatives discussed in Section 5, presented in Figure 19. As shown in the figure, either bike lanes or bike routes are identified on all arterial and collector streets in Silverton. Bike lanes would be developed associated with street improvements in newly developed or redeveloping areas, with bike routes designated on streets where the existing street is not wide enough to develop bike lanes, and widening is not possible. When constructed, this Bicycle Facility Plan will provide a comprehensive system of bike facilities throughout Silverton.

6.6 ACCESS MANAGEMENT STANDARDS

Section 5 of this document identified specific access management strategies for the Silverton Road and north Highway 214 corridors in Silverton, consistent with Marion County and ODOT access spacing standards. For the south section of Highway 214 on S. Water Street, and the east section of Highway 213 on Oak Street, ODOT access spacing standards should be reviewed associated with the review and approval of proposed site access for new development or redevelopment. On local City streets, and on County roadways within the City, new access spacing standards are proposed (see Tables 12 and 13).

Table 13
Proposed Access Spacing Standards for County and City Roadways in Silverton

Functional Classification	Minimum Access Spacing Between Streets or Driveways (Centerline to Centerline)	Signal Spacing
Arterial	400 feet +/- 20% (newly developed areas) (existing developed areas)	½ mile
Collector	150 feet +/- 20% (newly developed areas) (existing developed areas)	1/4 mile

**Table 14
Driveway Spacing Standards**

Driveway Location/ Type	Type of Intersection Street		
	Major One-Way Street (<42' Width)	Major One-Way Street (>42' width)	Major Two-Way Street
Within Central Business District			
Entrance-Only Driveway	At least 50' from downstream intersection and 100' from upstream intersection	Same as for Major One-Way Street (<42')	At least 100' from downstream intersection and 50' from upstream intersection
Exit-Only Driveway	At least 100' from downstream intersection and 50' from upstream intersection	At least 150' from downstream intersection and 50' from upstream intersection	At least 100' from upstream intersection and 50' from downstream intersection
Two Way Driveway	At least 100' from either downstream or upstream intersections	At least 150' from either downstream or upstream intersections	Same as for major one-way street (<42')
Outside Central Business District			
Entrance-Only Driveway	Same as within CBD for this type of intersection	At least 50' from downstream intersection and 125' from upstream intersection	At least 125' from downstream intersection and 75' from upstream intersection
Exit-Only Driveway	At least 125' from downstream intersection and 75' from upstream intersection	At least 150' from downstream intersection and 75' from upstream intersection	At least 75' from downstream intersection and 125' from upstream intersection
Two Way Driveway	At least 125' from downstream intersection and 100' from upstream intersection	Same as within CBD for this type of street	At least 125' from either downstream or upstream intersections

6.7 RAIL FACILITIES PLAN

Currently, the Willamette Valley Railroad provides freight rail service only to Silverton from the Southern Pacific Railroad mainline in Salem as an exempted line with a 10 mph limit. Continued use of this rail line for the movement of goods into and out of Silverton is recommended. In addition, the City of Silverton is interested in having passenger rail service (tourist-oriented) eventually added to the rail line.

There are four rail/highway grade crossings in need of improvement in Silverton associated with this rail line. These include:

- Hobart Road - crossing gates and signals
- James Street - crossing gates and signals
- Jefferson Street - crossing gates and signals
- Water Street - possible crossing modifications associated with nearby C Street intersection improvement.

6.8 AIR FACILITIES PLAN

The airfield northwest of Silverton is a private facility. It is not recommended that the City of Silverton take over ownership and/or operation of this facility. An airport master plan would be required if, and when, public jurisdictional interest in this facility surfaces in the future.

6.9 WATER FACILITIES PLAN

As there are no navigable rivers or lakes within the Silverton Urban Growth Boundary, waterborne transportation is not an issue or a need now, or in the future.

6.10 PIPELINE FACILITIES PLAN

All existing pipelines within and through Silverton should be maintained, as per the plans of the respective utility companies. Any roadway improvements in the future that would impact a particular pipeline will need to properly address any required localized relocation of such a facility.

6.11 TRANSPORTATION DEMAND MANAGEMENT

Section 5 identified potential Transportation Demand Management strategies which could be applied by the public and private sectors in Silverton in the future to reduce vehicle trips. The City of Silverton should consider in its zoning ordinance requirements for developers to provide bicycle/carpool parking and carpool matching services, as well as incentives to employers to provide transit fare subsidies and flexible work hours, as well as telecommuting opportunities. Institution of improved transit service as identified in this TSP also serve as TDM strategies.

The State Employee Commute Option (ECO) Rule mandates that employers with over 50 employees, such as Silverton Hospital, implement TDM strategies to reduce vehicle trip making by 10% over the next five years.

6.12 ALTERNATE ZONING

It is recommended that the specific land use zoning modifications developed for the five areas in Silverton as presented in Appendix B be further analyzed, as to their socio-economic and traffic impacts on Silverton. In addition, further public input on the impacts and feasibility of this development should be solicited. The impacts of these alternate land use patterns on reducing vehicle trip making will require the development of a more sophisticated traffic forecasting model than currently in place in Silverton.

6.13 POLICY AND ORDINANCE MODIFICATIONS

To implement the Silverton Transportation System Plan, specific amendments to the City of Silverton's Comprehensive Plan and land use ordinances need to be developed and adopted to comply with the State Transportation Planning Rule (TPR).

- Silverton Comprehensive Plan (July 1989)
- Silverton Zoning Ordinance (Ordinance No. 498)
- Silverton Subdivision Ordinance (Section 17)
- Silverton Capital Improvement Program
-

Changes in these plans and ordinances must address the following general categories of the TPR:

- Agency Coordination and Review
- Access Management
- Protection of Transportation Facilities
- Implementation
- Bicycles and Pedestrians
- Permitted and Conditional Transportation Improvements
- Street Standards

Specific language for changes in the City's Comprehensive Plan, Zoning, and Subdivision ordinances are included in Appendices D, E, and F.

Section 7

Transportation Financing Plan

7.1 INTRODUCTION

The Transportation Planning Rule (OAR 660-12-040) requires that the City of Silverton Transportation System Plan (TSP) include a transportation financing program. These programs are to include:

- A list of planned transportation facilities and major improvements.
- A general estimate of the timing for planned transportation facilities and major improvements.
- Determination of planning-level cost estimates in existing dollars for the transportation facilities and major investments identified in the TSP (intended to provide an estimate of the fiscal requirements to support the land uses in the acknowledged comprehensive plan(s) and allow jurisdictions to assess the adequacy of existing and possible alternative funding mechanisms).
- A discussion of existing and potential financing sources to fund the development of each transportation facility and major improvement (which can be described in terms of general guidelines or local policies)

The timing and financing provisions in the transportation financing program are not considered a land use decision as defined by the TPR and ORS 197.712(2)(e) and, therefore, cannot be the basis of appeal under State law. In addition, the transportation financing program is to implement the comprehensive plan policies which provide for phasing of major improvements to encourage infill and redevelopment of urban lands prior to facilities which would cause premature development of urbanizable areas or conversion of rural lands to urban uses.

This section summarizes the financing program defined for the City of Silverton TSP as required by the TPR. It identifies specific transportation improvements to be implemented over the next 20+ years, identifies the general timing and rough cost estimates of the improvements, and summarizes the existing and potential future financial resources to pay for these improvements, as a general policy guideline.

7.2 RECOMMENDED TRANSPORTATION SYSTEM IMPROVEMENTS

Table 14 lists proposed transportation system improvements over the next 20 years related to the Silverton transportation system. Improvements are divided into roadway, pedestrian facility, bicycle facility, and transit improvements. The timing of improvements is identified as either

short-term, mid-term, or long-term, with improvements already identified in the City's Capital Improvement Program included. Short-term improvements are associated with 0-5 years, mid-term improvements with 6-10 years, and long-term improvements with 11-20 years.

Table 15 further details improvements to the intra-city transit system over the next 20 years, including both capital and operating cost breakdowns.

Table 15
Recommended Transportation Improvement Program

Type of Transportation Improvement	Estimated Construction Cost (Existing \$)	Timeframe of Improvement*
New Roadways		
East side Collector (Monitor Rd. Extension) (8,500')	\$4,200,000	Long-term
East-West Connector (between N. Second St. and James St.)(1,050')	\$520,000	Short-term
West side Collector & Bridge (Pine St. to Silverton Road)(2400')	\$1,680,000	Long-term
Subtotal	\$6,400,000	
Roadway Reconstruction		
C Street (1,950') (First - Westfield)	\$635,000	Mid-term
W.Main St. (Westfield to Petit Lane)	\$1,880,000	Long-term
Eureka Ave. (5,200') (W.Main to Edison Rd)	\$1,440,000	Long-term
McClaine Street, west of S. Creek Shopping Center (3,500')	\$970,000	Mid-term
N. Second Street, R/R to City Limits (1,280')	\$360,000	Short-term
S. Water Street (south of Jersey Street)(1,000')	\$325,000	Long-term
Westfield Street (2,450') (McClaine to W Main)	\$880,000	Mid-term
East Main Street	\$320,000	Short-term
Steelhammer Road	\$320,000	Short-term
Subtotal	\$7,130,000	
Local Street Improvements		
Overlays of existing paved streets,(numerous locations)	\$500,000	Short-term, Mid-term, Long-term

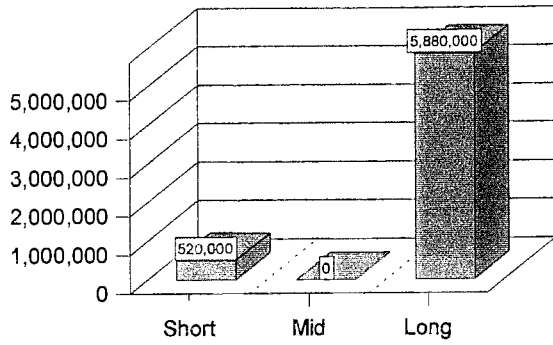
Type of Transportation Improvement	Estimated Construction Cost (Existing \$)	Timeframe of Improvement*
Pave selected gravel streets (5,100') Ames Street, north of Main Street B Street, west of Highway 214 Brooks Street, between Alder and Short Streets D Street between First and Second Elm Street N. Third Street, north of Oak Street Mead Street Ord Street Park Street Fosholm Street Johnson Street Lane Street east of N. Second Street Orchard Street Short Street	\$2,270,000	Short-term, Mid-term, Long-term
Install traffic calming devices on selected local streets	\$500,000	Short-term, Mid-term, Long-term
Subtotal	\$3,270,000	
Intersection Improvements		
Cascade Hwy/Westfield Street (channelization)	\$350,000	Short-term
C Street/Water Street (Signal & Intersection Improvement) C Street/First Street (Signal)	\$600,000 \$150,000	Short-term Mid-term
C Street/McClaine Street (Signal or Roundabout)	\$380,000	Short-term
Hobart Road/Highway 214 (Channelization)	\$100,000	Mid-term
Main Street/Water Street (incl. converting S. Water St. to 2-Way between Lewis and Main)	\$200,000	Mid-term
Main Street/McClaine Street (Channelization)	\$150,000	Mid-term
Oak Street/First Street	\$150,000	Mid-term
Subtotal	\$2,080,000	
Pedestrian Facilities		
Pathway connecting downtown with Oregon Garden (via Coolidge Park Keene St)	\$115,000	Mid-term
Pathway on east side of Silver Creek (Wesley to Cowing St.)	\$70,000	Mid-term
New pedestrian bridges across Silver Creek (at Jersey St. and Cowing St.)	\$170,000	Mid-term
New sidewalks along arterial/collector streets where needed and street not identified for reconstruction	\$500,000	Short-term, Mid-term, Long-term
Subtotal	\$855,000	
Bicycle Facilities		
Bike path on west side of Silver Creek (within Coolidge Park to Cowing St)	\$330,000	Long-term
Bike route signing on streets without bike lanes	\$25,000	Short-term
Subtotal	\$355,000	

Type of Transportation Improvement	Estimated Construction Cost (Existing \$)	Timeframe of Improvement*
Transit System Improvements		
Phase 1 Service Improvements (see Table 16)	\$1,080,000	Short-term
Phase 2 Service Improvements (see Table 16)	\$2,500,000	Mid-term
100-space park-n-ride	\$300,000	Long-term
Subtotal	\$3,880,000	
TOTAL TRANSPORTATION IMPROVEMENTS	\$23,115,000	

*Short-term=0-5 years, Mid-term=6-10 years, Long-term=11-20+ years

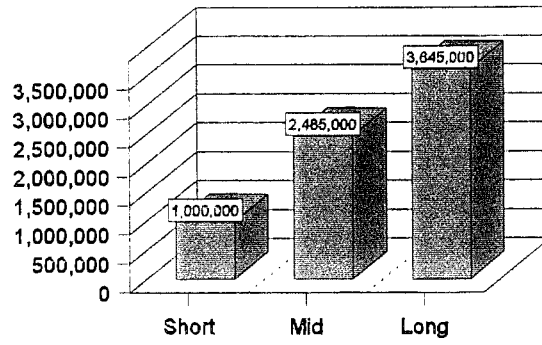
Collector Roads

\$6,400,000 or 27% of TSP projects



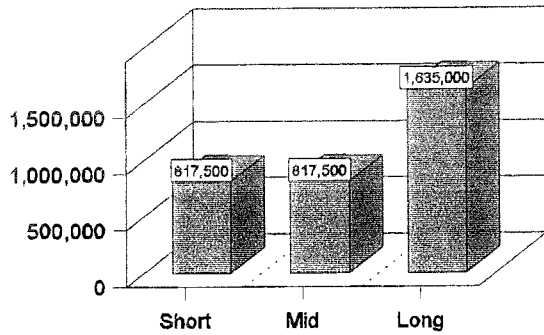
Roadway Reconstruction

\$7,130,000 or 30% of TSP projects



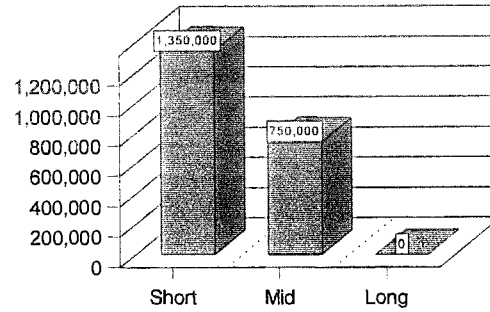
Street Improvements

\$3,270,000 or 14% of TSP projects



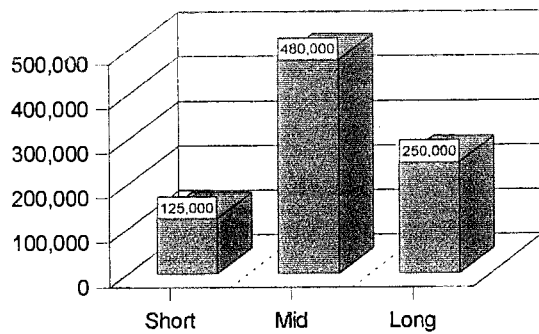
Intersection Improvement

\$2,080,000 or 8% of TSP projects



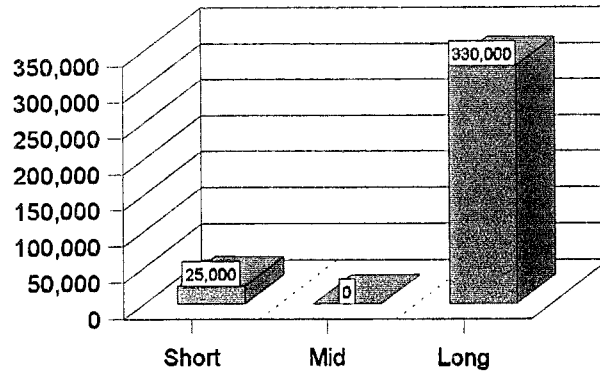
Pedestrian Facilities

\$855,000 or 4% of TSP projects



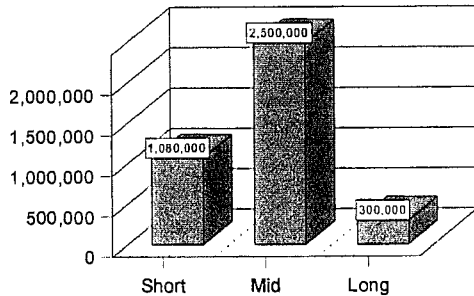
Bicycle Facilities

\$355,000 or 2% of TSP projects



Transit

\$3,880,000 or 16% of TSp projects



Total Project Costs

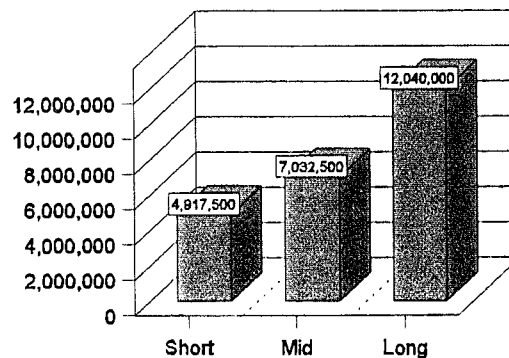


Table 16
Intra-city Transit System Improvement Program

Service	Frequency	# of Vehicles Required	Additional Vehicle Capital Cost ¹	# of Vehicle Hours/Year	Vehicle cost/hour	Total Annual Operating Costs	Labor Requirements ²		
							Driver(s)	Dispatchers	Program Manager
Existing	Fixed Route 8:20 - 4:30 Mon./Wed Dial-a-Ride 8:00 - 4:30 Fri.	1	\$0	992	\$43.00	\$42,656	.61 FTE \$12,444	.96 FTE \$19,584	.76 FTE \$23,256
Phase 1 Complete 2005	Fixed Route 8:20 - 4:30 Mon-Fri	2 includes replace- ment vehicle	\$101,250	4,080	\$43.00	\$175,440	2.5 FTE \$57,375	.96 FTE \$22,032	.76 FTE \$26,202
Phase 2 Complete 2010	Fixed Route 7:00 am - 7:00 pm Mon-Fri.	4 includes purchase of 2 vehicles	\$112,500	12,240	\$39.00	\$477,360	7.5 FTE \$191,250	1.56 FTE \$39,780	1.25 FTE \$47,940

¹ vehicle costs are based on a current price of \$45,000 per vehicle (14 passenger)

² Costs included in total annual operations cost. Costs could be reduced by several variables:

- CARTS - Chemeketa Area Regional Transit Brokerage could manage central dispatch
- Vehicle purchase costs could lower with participation in pooled vehicle program
- City of Silverton could sub-contract services to CARTS, providing local input on management and routing
- Improvements of capital costs would require only 20% local match - Operating costs require 50% match

Phase 1 establishes the concept of expanding the Silver Trolley routing system to include a route structure that services both the population centers and emerging employment areas such as the Hobart Road corridor. Once the park-and-ride lot is established, this service would also continue linkage to an outside provider, moving the connecting points to the park-and-ride. The Phase 1 expansion of the service should be complete within 6 years, by year 2005.

Phase 2 of expanding The Silver Trolley route includes the addition of two more vehicles. This will allow for the route to shift from a two-vehicle service to a four-vehicle service allowing for a more intensive coverage of the community with an increase in frequency to a broader area. Phase 2 should be complete by year 2010.

The final Phase and expansion of The Silver Trolley route during this 20 year plan encompasses an expansion to five vehicles; four vehicles departing from a central location and pulsing into four quadrants within Silverton and a fifth vehicle as a back-up. The four vehicles could provide alternating inter-city connections with Salem. Phase 3 would be complete by year 2020.

The City of Silverton should support a continuation of Paratransit services established by the existing provider, Silverton Hospital.

The total transportation improvement program over the next 20 years is estimated to have construction costs of approximately \$23,675,500 in existing dollars. About 28% of this cost (\$6.3 million in existing dollars) is associated with reconstruction of arterials and collectors to meet the designated roadway cross section standards to include adequate travel lane width and bike lanes. Most of these improvements are envisioned to be long term, in the 10-20 year period. Several of these are state and county roadways. Another \$6.4 million is associated with new collector roadway construction. The remaining million would cover intersection improvements, pavement overlays, neighborhood traffic calming, special pedestrian and bicycle facilities, and expanded intracity bus service. Actual costs will be higher when accounting for added right-of-way costs (not estimated in this study), and improvements being staged over the 20 year period.

7.3 CITY OF SILVERTON TRANSPORTATION FUNDING HISTORY

A summary of City of Silverton funding on transportation system maintenance and improvements from 1996 to 2000 is shown in Table 16. In recent years the City of Silverton has had three funds for financing transportation improvements on the City Street system: 1) a Street Fund, 2) a Street System Improvement Fund, and 3) a Street Lighting Fund.

**Table 17
City of Silverton Transportation Funding - 1996-2000**

Transportation Fund	Adopted or Proposed Budget			
	FY 1996-97	FY 1997-98	FY 1998-99	FY 1999-2000
Street Fund				
State Gas Tax	\$284,847	\$262,355	\$296,000	\$298,755
Interest	\$6,205	\$6,526	\$3,000	\$5,000
Misc. Billings & Receipts	\$1,989	\$4,701	\$2,600	\$2,100
Available Cash	\$0	\$113,361	\$80,633	\$82,633
Transfer from Parking Fund	\$1,000	\$1,000	\$1,000	\$1,000
Total	\$294,041	\$387,943	\$383,233	\$389,488
Street Improvement Fund				
Interest	\$10,795	\$10,569	\$9,000	\$13,000
Transportation SDC	\$64,016	\$61,709	\$60,000	\$40,000

Available Cash	\$0	\$134,306	\$228,431	\$336,376
Undergrounding Program	\$0	\$0	\$0	\$800,000
Roundabout Program	\$0	\$0	\$0	\$450,000
ODOT Fund Exchange	\$29,646	\$59,978	\$30,000	\$30,000
ODOT Sidewalk Grant	\$0	\$0	\$0	\$71,575
Transfer in from Streets	\$0	\$20,000	\$20,000	\$20,000
Transfer from Silverton Industrial Park Fund	\$0	\$16,228	\$0	\$0
Total	\$104,457	\$302,791	\$347,431	\$1,760,951
Street Lighting Fund				
Property Taxes	\$99,718	\$89,426	\$91,898	\$0
Interest	\$4,774	\$8,317	\$3,000	\$0
Available Cash	\$0	\$141,109	\$136,500	\$250,000
Total	\$104,492	\$238,852	\$231,398	\$250,000

Street Fund

The Street Fund is used for funding routine street maintenance, using primarily State Gas Tax revenues. Over the past three fiscal years, and in the proposed 1999-2000 budget, about \$300,000 per year has or will be spent on street maintenance, such as minor pavement overlays, sidewalk repair, drainage improvements, and street sweeping.

Street Improvement Fund

The Street Improvement Fund has been funded using ODOT grants, Transportation System Development Charge revenues, and transfers from other funds. This program has funded roadway reconstruction, new sidewalks, and intersection improvements in the past, and is proposed in the year 2000 budget to pay for potential intersection roundabout projects and the undergrounding of power lines in downtown Silverton (using federal Transportation Enhancement Program funds if approved). In the last two fiscal years, this fund has had about \$350,000 approved. In the proposed 1999-2000 budget, this fund is proposed at \$1.76 million, assuming that federal Transportation Enhancement Program is approved for utility undergrounding and intersection roundabouts.

Street Lighting Fund

The Street Lighting Fund has typically funded routine maintenance of street lights in the City, as well as some capital improvements. In the last two fiscal years (1997-98 and 1998-99), about

\$240,000 has been allocated to this fund. The proposed undergrounding of street lights and power lines in downtown Silverton in the proposed 1999-2000 budget will come out of the Street Improvement Fund.

7.4 RECOMMENDED FUNDING SOURCES

Silverton should continue to pursue federal, state and county funds for transportation projects. Given the high level of annual expenditures needed for construction of the transportation projects identified, the transportation system development charge and existing sources of transportation revenue will not be adequate to meet the demand for new projects. To meet the additional fund needs, the city may wish to consider three additional revenue-generating options: 1) a local gas tax, 2) street maintenance fees and 3) street levies on general obligation bonds. The City should also review its current transportation SDC structure and increase rates if considered appropriate.

Section 8

Compatibility With Transportation Planning Rule and Other Plans

8.1 TRANSPORTATION PLANNING RULE COMPLIANCE

In April 1991, the Land Conservation and Development Commission (LCDC), with the concurrence of ODOT, adopted the Transportation Planning Rule (TPR), OAR 660 Division 12. The TPR requires local jurisdictions greater than 2,500 to prepare and adopt a Transportation System Plan (TSP). Outlined below is a list of recommendations (designated by italics) and requirements for a TSP for an urban area with a population between 2,500 and 25,000, and how each of those were addressed in the City of Silverton TSP. The comparison (see Table 17) demonstrates that the City of Silverton TSP is in compliance with the provisions of the TP

Table 18
Review of Silverton TSP Compliance with TPR

TPR Recommendations/Requirements	City of Silverton TSP Compliance
Public and Interagency Involvement	
Establish Advisory Committee.	A Technical Advisory Committee was established at the outset of the project. Membership on the Technical Advisory Committee included members of the City, ODOT and DLCD staff, and business community representatives
Develop informational material	Technical memoranda were published and made available to the public throughout the project. Press releases concerning the project and opportunities for participation at public workshops were published and materials (including report text, charts, and maps) were prepared for review defining critical components of the city's TSP.
Schedule informational meetings, review meetings and public hearings throughout the planning process. Involve the community.	Three public meetings were held through the planning process as part of project briefings to the Silverton Planning Commission. The meetings were advertised by distribution of meeting notices.
Coordinate Plan with other agencies.	Coordination with local government agencies was accomplished by including them on the project mailing list, individual project briefings/meetings, and participation on the Technical Advisory Committee.

Review Existing Plans, Policies, Standards, and Laws	
Review and evaluate existing comprehensive plan.	The following plans were reviewed as part of the development of the TSP: 1991 Oregon Highway Plan, (June, 1991); 1996 Oregon Bicycle and Pedestrian Plan; City of Silverton Comprehensive Plan, (1984); Draft Statewide Transportation Improvement Program (2000-2003).
Land use analysis - existing land use/vacant lands inventory.	In developing the forecast of transportation needs, population and employment projections developed for the City of Silverton by the County were obtained and applied. These projects reflect current land use designations and land status within the project area to determine the capacity for growth, which would increase demand for transportation services. Estimates of needed housing, commercial, and employment lands were derived from these forecasts.
Review existing ordinances - zoning, subdivision, engineering standards.	The existing City Subdivision Ordinance, Zoning Ordinance, and street standards were reviewed for adequacy in the development of the City of Silverton TSP.
Review existing significant transportation studies	Significant transportation studies reviewed as part of the City of Silverton TSP include the above mentioned comprehensive plan and the associated transportation element, the Marion County Rural TSP, and the City's Parks and Recreation Plan.
Review existing capital improvements programs/public facilities plans.	The City of Silverton Capital Improvement Program was reviewed to identify transportation projects for review and the appropriate integration of these improvements into the TSP.
Americans with Disabilities Act requirements.	The ADA requirements were reviewed and acknowledged as part of the City of Silverton TSP development
Inventory Existing Transportation System	
Street system (number of lanes, lane widths, traffic volumes, level of service, traffic signal location and jurisdiction, pavement conditions, structure locations and conditions, functional classification and jurisdiction, truck routes, number and location of accesses, safety, substandard geometry).	An inventory of the existing street network, traffic volumes, traffic control devices, accident history, and levels of service is provided in Section 2: Existing Conditions
Bicycle ways (type, location, width, condition, ownership/jurisdiction).	As noted in Section 2: Existing Conditions, there are no current bicycle facilities within the City of Silverton.
Pedestrian ways (location, width, condition, ownership/jurisdiction)	As noted in Section 2: Existing Conditions, there are several existing sidewalks within the City of Silverton
Public Transportation Services (transit ridership, volumes, route, frequency, stops, fleet, intercity bus, passenger rail, special transit services).	A summary of the existing public transportation services is presented in Section 2: Existing Conditions.
Intermodal and private connections	A summary of the existing intermodal and private carrier transportation services is presented in Section 2: Existing Conditions

Air transportation.	A summary of existing air transportation facilities is provided in Section 2: Existing Conditions
Freight rail transportation.	A summary of existing freight rail services is provided in Section 2: Existing Conditions
Water transportation	A summary of water transportation services is provided in Section 2: Existing Conditions
Pipeline transportation.	A summary of pipeline transportation services is provided in Section 2: Existing Conditions.
Environmental constraints	There are no known environmental constraints within the City of Silverton.
Determine Transportation Needs	
Forecast population and employment.	Population and employment forecasts from Marion County were reflected in the year 2020 traffic projections. The projections reflected regional growth prospects and City of Silverton's economic role. This information is summarized in Section 3: Future Conditions.
Determination of transportation capacity needs (cumulative analysis, transportation gravity model).	Travel demand forecasts were undertaken as part of this project. The methodology for travel forecasting and assumptions used in the transportation model are contained in Section 3: Future Conditions, which presents an analysis of future transportation conditions and identifies capacity needs.
Other roadway needs (safety, bridges, reconstruction, operation/maintenance)	Non-capacity related transportation needs are identified and recommended for implementation in Section 6: Transportation System Plan
Freight transportation needs.	Freight transportation needs are adequately met via rail and motor carrier freight services.
Public transportation needs (special transportation needs, general public transit needs).	Public transportation needs and recommended improvements are discussed in Section 6: Transportation System Plan
Bikeway needs. Pedestrian needs.	Future bicycle and pedestrian improvements are to be made in conjunction with roadway improvements to provide cyclists and pedestrians with full accessibility to City of Silverton's street system. Plans for these facilities are shown in Section 6: Transportation System Plan.
Develop and Evaluate Alternatives Update community goals and objectives	Goals were established as part of the TSP development
Establish evaluation criteria.	Evaluation criteria was established from the study goals and objectives and used to develop the Preferred Alternative presented in Section 6: Transportation System Plan.

Develop and evaluate alternatives (no-build system, all build alternatives, transportation system management, transit alternative/ feasibility, improvements/additions to roadway system, land use alternatives, combination alternatives)	Section 4: Transportation System Alternatives Analysis includes a summary of the transportation alternatives considered and analyzed the TSP. Roadway alternatives, transportation system management options, transit, bike and pedestrian options were analyzed. Section 3: Future Conditions, includes an alternate land use scenario which was evaluated to reduce vehicle miles of travel
Select recommended alternative.	A recommended alternative for roadways, transit, bikeways, and pedestrian facilities is contained in Section 6: Transportation System Plan.
Produce a Transportation System Plan	
Transportation goals, objectives and policies.	Specific recommendations regarding transportation goals and policies are outlined in Section 6: Transportation System Plan
Streets plan element (functional street classification and design standards, proposed facility improvements, access management plan, truck plan, safety improvements).	The streets (roadway) plan element is outlined in Section 6: Transportation System Plan.
Public transportation element (transit route service, transit facilities, special transit services, intercity bus and passenger rail).	The public transportation element is outlined in Section 6: Transportation System Plan.
Bikeway system element.	The bikeway plan is outlined in Section 6: Transportation System Plan, and shown in Figure 27.
Pedestrian system element.	The pedestrian plan is outlined in Section 6: Transportation System Plan.
Airport element (land use compatibility, future improvements, accessibility/connections/conflicts with other modes)	The airport element is outlined in Section 6: Transportation System Plan.
Freight rail element (terminals, safety).	The rail service plan is outlined in Section 6: Transportation System Plan.
Water transportation element (terminals).	The water transportation element is outlined in Section 6: Transportation System Plan
Transportation System Management element (TSM)	TSM element not applicable per OAR 660-12-020(2)(f) and (g)
Transportation Demand Management element (TDM).	TDM element not applicable per OAR 660-12-020(2)(f) and (g).
Implementation of a Transportation System Plan	
<i>Plan Review and Coordination</i>	
Consistent with ODOT and other applicable plans	See Section 6: Transportation System Plan
<i>Adoption</i>	
Is it adopted?	<i>To follow.</i>
<i>Implementation</i>	

Ordinances (facilities, services and improvements; land use or subdivision regulations).	Included in Section 8: Policies and Land Use Ordinance Modifications.
Transportation financing/capital improvements program.	The transportation finance plan is summarized in Section 7: Transportation Financing Plan.

8.2 COMPATIBILITY WITH OTHER PLANS

Marion County Plans

Rural Transportation Plan

The Marion County Rural Transportation System Plan identifies a comprehensive set of roadway, pedestrian, bicycle, and transit improvements in the rural portions of the County. In the Silverton area, the plan identifies the need to widen Hobart Road between Highway 214 and Monitor Road, which is an identified Silverton Transportation System Plan project. The County Plan also identifies the future need to widen Silverton Road from the Silverton Urban Growth Boundary to Cordon Road outside Salem to four lanes, as well as widen portions of Highway 213 east of Silverton and Highway 214 south of Silverton. These improvements would be outside the Silverton UGB and hence are not addressed in the City TSP.

The Public Transportation Plan component of the County Rural Transportation System Plan identifies a new intercity bus service between Salem and Silverton, which is identified in the plan. It also identifies improved service coordination for paratransit in Silverton with the nearby communities of Mt. Angel and Woodburn. Both of these recommendations are consistent with the transit system element proposed for the Silverton Transportation System Plan.

ODOT Modal Plans

Highway Plan

The access management strategies identified for Highway 214 north as documented in Section 6 of this document are consistent with the access spacing standards identified in the 1999 Oregon Highway Plan. The Highway Plan also identifies the need to eliminate at-grade rail/highway crossings where possible, but this is not considered feasible at this point in light of the limited number of crossings in existence in Silverton, and the importance of each crossing in providing adequate local circulation.

Rail Freight Plan

The 1994 Oregon Rail Freight Plan identifies the preservation of the existing Willamette Valley Railroad through Silverton, but no improvements to the line. The Silverton TSP identifies

improved railroad grade crossings at Hobart Road, Jefferson Street, and James Street, with a proposed new grade crossing associated with the new collector street between N. Second Street and James Street, north of Roths Family Market.

Appendix A

Level of Service Concepts

Appendix A

Level of Service Concept

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various LOS from A to F.¹

Signalized Intersections

The six LOS grades are described qualitatively for signalized intersections in Table B1. Additionally, Table B2 identifies the relationship between level of service and average stopped delay per vehicle. Using this definition, LOS D is generally considered to represent the minimum acceptable design standard.

Table A1
Level of Service Definitions (Signalized Intersections)

Level of Service	Average Delay per Vehicle
A	Very low average stopped delay, less than five seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average stop delay is in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a LOS A, causing higher levels of average delay.
C	Average stopped delay is in the range of 15.1 to 25.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average stopped delays are in the range of 25.1 to 40.0 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average stopped delays are in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average stop delay is in excess of 60 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay levels.

¹ Most of the material in this appendix is adapted from the Transportation Research Board, *Highway Capacity Manual*, Special Report 209 (1994).

Table A2
Level-of-Service Criteria for Signalized Intersections

Level of Service	Stopped Delay per Vehicle (Seconds)
A	@ 5.0
B	5.1 to 15.0
C	15.1 to 25.0
D	25.1 to 40.0
E	40.1 to 60.0
F	> 60.0

Unsignalized Intersections

Unsignalized intersections include two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. The *1994 Highway Capacity Manual* provides new models for estimating total vehicle delay at both TWSC and AWSC intersections. Unlike signalized intersections, where LOS is based on stopped delay, unsignalized intersections base LOS on total vehicle delay. A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table B3. A quantitative definition of LOS for unsignalized intersections is presented in Table B4. Using this definition, LOS E is generally considered to represent the minimum acceptable design standard.

Table A3
General Level-of-Service Descriptions for Unsignalized Intersections

Level of Service	Average Delay per Vehicle to Minor Street
A	<ul style="list-style-type: none"> Nearly all drivers find freedom of operation. Very seldom is there more than one vehicle in the queue.
B	<ul style="list-style-type: none"> Some drivers begin to consider the delay an inconvenience. Occasionally there is more than one vehicle in the queue.
C	<ul style="list-style-type: none"> Many times there is more than one vehicle in the queue. Most drivers feel restricted, but not objectionably so.
D	<ul style="list-style-type: none"> Often there is more than one vehicle in the queue. Drivers feel quite restricted.
E	<ul style="list-style-type: none"> Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. There is almost always more than one vehicle in the queue. Drivers find the delays approaching intolerable levels.
F	<ul style="list-style-type: none"> Forced flow. Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

Table A4
Level-of-Service Definitions (Unsignalized Intersections)

Level of Service	Average Total Delay per Vehicle
A	< 5 Seconds
B	5 to 10 Seconds
C	10 to 20 Seconds
D	20 to 30 Seconds
E	30 to 45 Seconds
F	> 45 Seconds

It should be noted that the LOS criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the total delay threshold for any given LOS is less for an unsignalized intersection than for a signalized intersection. **While overall intersection LOS is calculated for AWSC intersections, LOS is only calculated for the minor approaches and the major street left turn movements at TWSC intersections.** No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection LOS is defined by the movement having the worst LOS (typically a minor street left turn).

Appendix B

Land Use Scenario Technical Memorandum

APPENDIX B



McKeever/Morris, Inc.
209 S.W. Oak Street, Suite 200
Portland, Oregon 97204
503.228.7352
fax 503.228.7365

Silverton Transportation System Plan Technical Memorandum #3

Date: April 21, 1999
To: Alan Danaher
From: Paul Morris, Project Manager
Re: Task 4 - Land Use Scenario

INTRODUCTION

The purpose of this task is to identify potential land use concepts which will be consistent with city land use goals as well as complement the Oregon Garden. These changes are intended to reduce VMT within the city by locating needed commercial business opportunities in service-deficient areas and by providing complementary mixtures of land use to reduce demands placed on the transportation system. In addition to the land use scenarios described below, recommendations are made regarding the city's approach to planned unit development. These land use alternatives will then be evaluated with all other planned land uses in the city to identify transportation system deficiencies which must be addressed.

LAND USE SCENARIOS

The consulting team and the city identified several areas in the city which appeared to have potential for modified approach to future development. Planning Commission review resulted in alternative land use concepts for five areas in the city:

- Area 1:* **Mixed Business and Light Industrial** along the west side of N. 2nd Avenue, north of D Street.
- Area 2:* **Mixed Use Residential and Commercial** between McClain Street and W. Main Street (Cascade Highway).
- Area 3:* **Overstory Residential** in the downtown core area.
- Area 4:* **Mixed Use Neighborhood Commercial** on Oak Street (Highway 213).

Area 5: Mixed Use Neighborhood Commercial on water Street near Ike Mooney Road.

The location of these areas is shown in Figure 1. Table 1 on page 12 compares the five land use concepts with the existing land use designations. The proposed land use concepts for each of the five areas is described in the following sections, and photographic examples of the land use types recommended in the land use concepts are presented as an appendix.

Appendix C

Potential Funding Sources

STATE/FEDERAL TRANSPORTATION FUNDING HISTORY

Roadway Funding

In 1992, Oregon received \$704 million, or 67 percent of its highway revenues, from the collection of user taxes and fees. The second largest category is almost entirely comprised of the sale of timber logged from National Forests. In 1992, these timber receipts raised roughly \$115 million. The remaining revenue sources - road and crossing tolls, general fund appropriations, property taxes, miscellaneous receipts and bond receipts - accounted for \$223.5 million or roughly 21 percent of total transportation revenues.

The most significant portion of Oregon's highway user taxes and fees come from federal fuel and vehicle taxes, state taxes, and general motor vehicle fees. These categories account for 32 percent, 34 percent, and 25 percent, respectively, of all highway user taxes and fees collected in the state. During the 1980's, Oregon's transportation budget was bolstered by a series of two-cent annual gas tax increases. At the same time, the Federal Government was increasing investment in highways and public transportation. The situation is different today. The last two Legislatures failed to increase the gas tax and federal budget cuts are reducing transportation funding available to Oregon. The State Highway Fund is further losing buying power because the gas tax is not indexed to inflation, and increased fuel efficiency of vehicles reduces overall consumption.

Oregon Highway Trust Fund revenues are distributed among state (60.05 percent), County (24.38 percent) and City (15.57 percent) governments to fund their priority road needs. In 1997-99, the state estimated it would collect \$2,284 million in state highway funds. Counties and cities would then receive about \$317 and \$185 million, respectively.

Oregon law allows local government, in addition to receiving state highway trust fund revenues, to levy local fuel taxes for street related improvements. Multnomah and Washington Counties, and some small cities (Tillamook, The Dalles, Woodburn) have used this authorization. Several attempts have been made by other jurisdictions, but have not been supported by the local electorate. As few local governments have implemented this option, non-user road revenues tend to be relied upon to supplement the funds received from state and federal user revenues. Other local funding sources have included property tax levies, local improvement district assessments, bonds, traffic impact fees, road user taxes, general fund transfers, receipts from other local governments, and other miscellaneous sources

Oregon's current fee for cars and other light vehicles weighing 8,000 pounds or less is \$30 biennially. Oregon law permits local governments (counties) and governmental entities to impose local option vehicle registration fees. To date, Marion County has not implemented this tax.

Cities in Oregon have relied more on transfers from their general funds to support roadway improvements, than have counties. Ballot Measure 5, however, approved by the voters in 1990, reduced the range of funding and financing options available to both cities and counties. Measure 5 limited the property tax rate for purposes other than for payment of certain general obligation indebtedness to \$15 per \$1,000 of assessed value. The measure further divided the \$15 per \$1,000 property tax authority into two components: \$5 per \$1,000 dedicated to the public schools; the remaining \$10 dedicated to other local government units, including cities, counties, special service districts, and other non-school entities. The tax rate limitation for cities and counties went into effect in 1992. The school portion of the measure was phased in over a five-year period beginning in FY 1992. In 1996, voters again approved a property tax limitation measure, Ballot Measure 47, which will further impact the ability of cities and counties to pay for needed infrastructure through historic or traditional means.

At the same time that increased growth and increased transportation demands are occurring, cities and counties have lost another traditional source of revenue for infrastructure construction and modernization - timber harvest receipts. Under a 1993 negotiated mitigation plan, federal forest receipts to support county roads are decreasing 3 percent per year. In 1996, counties received 74 percent of their 1986-90 average receipts, and by 2003 they will receive 55 percent of the late 1980s average receipts.

Given this funding environment, current funding levels and sources are not adequate to meet the transportation needs of the State, counties, or cities, for the next 20 years. In response to this gap between needs and funding, Governor Kitzhaber organized the Oregon Transportation Initiative to look at statewide transportation needs and to develop a program to address how these needs will be met. Through a public process led by business and civic leaders across the State, findings and recommendations on the state of transportation needs and methods to address those needs was submitted to the Governor in July 1996.

A result of these recommendations was the appointment of a committee to develop a legislative proposal to the 1997 Legislature regarding transportation funding. Part of that proposal included a process for identifying a "base" transportation system, with a priority of maintenance, preservation, and operation of a system of transportation facilities and services that ensures every Oregonian a basic level of mobility within and between communities. Other components included provisions for realizing efficiencies resulting from better intergovernmental cooperation (shared resources and equipment, better communication on project needs and definition), and elimination of legislative barriers to more efficient and cost-effective methods of providing transportation services. Unfortunately, the State Legislature was unable to reach consensus on the means to collect and distribute the funds, and the package failed. The current legislature is

reviewing a proposal for a 4-cent gas tax increase that includes a \$10/year vehicle registration fee increase. A similar proposal was not passed during the 1997 Legislature.

A part of future transportation funding will include identification of relationships and responsibilities relative to delivery of projects and services. In Oregon, the primary state role has been to construct and maintain the state highway system and to assist local government with funding of other modes. The State also has a role in intercity passenger services and airports. This has historically been minor but would grow significantly, if serious efforts were put into intercity transportation improvements. Local governments provide local transit and airport support, in addition to providing maintenance, preservation, and construction for local roads, streets, and bridges. The Federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) began moving decision-making for federal programs to states and this program and other state policies incorporated in the Oregon Transportation Plan (OTP) encourage reassessment of responsibilities and obligations for funding. The Transportation Equity Act for the 21st Century (TEA21), passed in 1998, has continued the efforts first initiated by ISTEA.

These changing relationships have resulted in two significant issues for State and local governments. First, there is no clear definition of State responsibility. At one time, the State operated on an informal consensus that it should provide one-half the match on federally funded, local, and other projects that served statewide needs. No similar consensus seems to exist today. The State's responsibility for transit, airports, and other local transportation infrastructure and services is not clear. The question of regional equity is raised in considering especially high-cost project needs, such as the Bend Parkway or the Portland area light rail program. Regional equity will probably require consideration of all modes together, because different regions may have different modal needs and financial arrangements.

Given this dynamic transportation funding environment, it is clear that local governments need to reassess traditional methods of funding projects and look creatively at ways to meet public expectations of high quality transportation services.

Transit Funding

Transit service in Oregon has evolved from private development and reliance on user fees for operating revenue to public ownership with public subsidy for operations. No clear philosophy of the state role in providing transit services is evident and the state is continuing its discussion on how the state should raise revenue in support of transit. The state has used general funds, lottery funds, stripper well funds, cigarette tax revenue and other funds at various times to support transit service. These efforts have largely been targeted towards supplying half the required match to federal capital improvement grants. Other than the elderly and disabled program, the state has provided no operating funds for transit. The state role has been one of granting authority to local governments to raise locally-generated operating revenue.

Federal Transit Administration (FTA) grants account for 69 percent of Oregon's funding for transit capital construction, which includes purchase of buses and other equipment. Federal funding for transit was increased through the flexibility provided by ISTEA. While the State's role in transit funding is limited, the ODOT Public Transit Section does currently administer three public transit funding sources. These include Small City and Rural Transit Assistance (Section 18), the Special Transportation Fund (STF), and Section 16.

The Small City and Rural Transit Assistance program is a federally funded initiative that provides capital to operate and acquire vehicles for public transportation systems in cities with populations of less than 50,000 and rural areas. This assistance program is funded annually through an appropriation from the Federal Transit Administration (FTA) to each state with funds allocated to eligible providers based on a three-part formula. Fifty percent of the funds are distributed based on population, 25 percent are based on ridership, and 25 percent are based on service hours. There is a 50 percent local match requirement for operating costs and a 20 percent match for capital costs. The program stipulates that service must be marketed as "public transit"; exclusive transportation services such as those limited strictly to senior citizens or employers are not eligible for funding under this program. Additional funding details, application information, and general assistance with the Small City and Rural Transit Assistance is available through ODOT's Public Transit Division.

The Special Transportation Fund is intended for elderly and disabled citizens and is funded through the State cigarette tax. Funding for the purchase of vehicles and equipment for special transportation providers (i.e., servicing the elderly and disabled) is provided through a federal funding program known as Section 16.

POTENTIAL FUTURE TRANSPORTATION FUNDING SOURCES

There are a variety of methods to generate revenue for transportation projects in Silverton. Funding for transportation improvement projects are derived from three sources: federal, state, and local governments. (Table C-1) provides a summary of federal, state, and local highway, bridge, sidewalk, and bicycle funding programs respectively, which have typically been used in the past. Although property tax is listed as a possible revenue source, the impacts of Ballot Measure 47 severely limit the opportunities for this funding source.

(Table C-2) presents details of the revenue sources for streets, bridges, sidewalks, and bicycle facilities currently used by cities. The information is summarized by type of facility, and indicates the percent of revenue each funding source represents for all cities in Oregon, likely trends for the source, known constitutional or other limitations, and their respective rates.

A similar list of transportation funding sources for transit projects is included in Appendix C (Table C-3). This is summarized with the general status of each funding source in Table C-4.

Federal and State Sources

Most Federal funding is passed through ODOT to the local jurisdictions. A good working relationship with ODOT Region 2 planners and the Region Manager is important to have improvements on Highway 213 and 214 in Silverton included as part of the STIP when it is updated every two years. State and federal funds administered through ODOT are the primary sources of funding for improvements to these facilities. Projects that involve these highways account for \$0.6 million in the next five years. The City and County should take an active role in jointly representing the transportation priorities of Silverton and the surrounding urban areas to ODOT during its process of formally incorporating priorities into the STIP.

Silverton should continue to explore state and federal funding opportunities to meet its long-term transportation needs. State funding is available for funding bike lane modifications, with a state requirement that one percent of the State Highway Fund be spent for the development of pedestrian and bikeways. Federal ISTEA and NEXTEA programs include the Surface Transportation Program that provides funds for any street not classified as a local or rural minor collector. The Transportation Enhancement Program provides funds for enhancing pedestrian and bicycle facilities, landscaping and other scenic beautification, and improvements to scenic or historic sites. This program may be a source of funds for projects that include adding bicycle lanes, sidewalks and off-street pathways. The Highway Enhancement Program provides funds for safety improvement projects on public roads. All of these programs are coordinated through the ODOT Region 2 staff and must be included in the STIP. Wherever local transportation improvements can be directly tied to economic development, Stayton should seek the State's support, through either the Special Public Works or Immediate Opportunity Fund programs. Section 18, Section 16 and Section 3 funds from the Federal Transit Administration will make up a substantial part of the public transportation revenues over the next 20 years. Special Transportation Funds, generated by a 2 percent tax on cigarette sales, provide additional state revenue, but are expected to decrease substantially.

County Sources

Marion County recently completed a Rural Transportation System Plan which identified needs on its transportation system over the next 20 years. The cost to address all the urban and rural transportation improvement needs is estimated to exceed \$100 million. No projects were identified on County roadways within the Silverton UGB in the County Plan. Even if the County were to base funding for future improvements on its roadway system on a pro-rated share of population in the County, Silverton would only qualify for about \$1.5 million total over the next 20 years for improvements within the City. Silverton should continue to work with Marion County to seek County participation in providing needed transportation improvements, but will have to look for other sources to fund those needed improvements on County roads inside the Silverton UGB.

RECOMMENDED FUNDING SOURCES

Silverton should continue to pursue federal, state and county funds for transportation projects. Given the high level of annual expenditures needed for construction of the transportation projects identified, the transportation system development charge and existing sources of transportation revenue will not be adequate to meet the demand for new projects. To meet the additional fund needs, the city may wish to consider three additional revenue-generating options: 1) a local gas tax, 2) street maintenance fees and 3) street levies on general obligation bonds. The City should also review its current transportation SDC structure and increase rates if considered appropriate.

Appendix D

Policies to Implement Silverton TSP

Two options are available to implement the Silverton Transportation System Plan (TSP) goals and policies:

1. Revise and replace the existing Transportation Element (Pages 9-1 to 9-9) of the Silverton Comprehensive Plan with updated information and policies from the TSP.
2. Include the new goals and policies in a chapter of the TSP. Adopt the TSP as an ancillary document to the Comprehensive Plan that updates and replaces the existing Transportation Element of the Comprehensive Plan.

TRANSPORTATION ELEMENT

Goal

Provide and encourage a safe, convenient, balanced, aesthetic and economical transportation system.

Objectives

Quality of Life. Enhance the City's quality of life by providing adequate access to residences, employment, services, social and recreational opportunities.

Land Use Planning. Integrate land use and transportation planning.

Safety. Create a safe transportation system.

Congestion. Operate transportation facilities at a level of service that is cost-effective and appropriate for the area served.

Connectivity. Create an interconnected transportation system to support existing and planned land uses.

Access. Meet the access needs of land development while protecting public safety needs and transportation operations.

Transportation Balance. Provide a balanced transportation system that provides options for all

transportation modes.

Policies

Coordination

1. The City of Silverton will notify ODOT of all project proposals and development applications adjacent to state highways.
2. The City of Silverton will notify Marion County of all project proposals and development applications adjacent to county roads.
3. The City of Silverton will notify ODOT, DLCD and Marion County of proposed changes to this Transportation System Plan.

Access Management

1. New development along arterials and collectors shall conform to the identified City of Silverton access spacing standards in the TSP, and other access management requirements identified in the Oregon Highway Plan and the Marion County Rural Transportation Plan for roads under their jurisdiction. Access permits on state and county roadways shall be obtained from ODOT and Marion County Public Works, respectively.
2. Proposed new development, or redevelopment, on arterials and collectors will include shared access with adjacent properties to the extent possible.

Protection of Transportation Facilities

1. Review of land use proposals and development applications shall include consideration of options to minimize impacts on transportation facilities.
2. All plan map amendments shall conform to the adopted TSP. Proposed amendments shall not substantially impact the functional classification or operation of transportation facilities. To ensure proper review and mitigation, a traffic impact study may be required for proposals that may impact transportation facilities.
3. A list of transportation improvements that are allowed, conditionally allowed or permitted through other procedures will be included in the Zoning Ordinance to implement the TSP.

Street System

1. New roads and roadway improvements shall be consistent with the general location, functional classification and typical cross sections (street standards) as set forth in the TSP.
2. New developments shall provide for street connectivity.
3. New developments shall provide for necessary street improvements which shall be consistent with the street standards as set forth in the TSP and other City ordinances.
4. The City of Silverton shall encourage the use of traffic calming mechanisms as a means to reduce traffic speeds along segments of arterial streets.
5. In recognition that the entry points into the community along Oak Street, North First Street, Silverton Road, Pine, and South Water Street are some of the most heavily traveled routes into the community by tourists, the City of Silverton will develop strategies for "gateway" improvements.
6. The City of Silverton shall continually work towards ensuring that all reasonable effort is made that the identified transportation improvement projects are completed during the identified planning period. The projects listed within the TSP shall conform to projects identified within the City's Capital Improvement Plan (CIP). The CIP shall be reviewed on a bi-annual basis.
7. Streets identified in the City's TSP as "future collector roads" or as new local streets, or local street extensions are determined to be necessary for the proper development of the City of Silverton's transportation system during the 20-year planning period.
8. The developer of property which has a future collector road located on it shall be responsible for the construction of the roadway up to residential street standards. The City of Silverton shall participate in the construction of the roadway above residential street standards.
9. The City of Silverton shall encourage future residential streets and driveways to have direct access onto future collectors.
10. Any segment of a future collector that is located outside the UGB shall not provide access to lands outside of the city limits.
11. When a proposed development is determined by the City to adversely impact the function of either a street or an intersection then the developer shall be responsible for providing necessary improvements to mitigate this impact on the City's transportation facility.

Public Transportation

1. The City of Silverton should support The Silver Trolley to provide transportation service for the transportation disadvantaged in Silverton. This will include both fixed route and paratransit service.
2. The City of Silverton should continue to support the efforts of the Special Transportation Advisory Committee or its successors in the implementation of the Regional Transportation Enhancement Plan (August, 1998 RTEP).
3. In an effort to minimize parking space constraints and to encourage visitors to the commercial downtown core, the City of Silverton shall support efforts to expand the fixed-route bus service.
4. The City of Silverton will support efforts to develop intercity bus and rail service between Silverton and Salem initially, and potentially to Woodburn and Stayton in the future.
5. In an effort to minimize vehicle miles traveled, the City shall support demand management programs such as commuter park-and-ride lots and van pools to reduce single-occupancy auto trips to and from Salem.
6. The City of Silverton shall continue to be active in working with appropriate jurisdictions toward the formation of a coordinated regional transit effort.

Pedestrian System

1. The City of Silverton shall continue to extend its sidewalk system along arterial and collector roads.
2. All new development shall be required to provide sidewalks along the frontage of any arterial or collector road. Any requirement for off-site improvements shall be based on a rough proportionality of the impact of the new development.
3. All new development shall be required to provide new sidewalks along the frontage of any residential street.
4. The City of Silverton shall initiate strategies to fill in the gaps in the existing sidewalk system.
5. Residential streets shall be further assessed and prioritized with respect to sidewalk development.

6. New developments such as subdivisions, schools, etc. shall provide internal sidewalks and/or off-street pathways to allow for connectivity to adjacent parcels which are either developed or planned to be developed.

Bicycle System

1. The City of Silverton shall develop a bike lane/route system along arterial and collector roads.
2. All new developments shall be required to provide new bike lanes along the frontage of any arterial or collector road. Any requirement for off-site improvements shall be based on a rough proportionality of the impact of the new development.
3. Streets shall be further assessed and prioritized with respect to bike lane development.
4. Appropriate bicycle parking facilities shall be provided at all new or redeveloped commercial, industrial, institutional and multi-family developments of four or more units. Bicycle parking facilities shall be located within 50 feet of a primary entrance.

Railroad

1. The City of Silverton shall continue to support the operation of the Willamette Valley Railroad as a means to continue to provide alternative freight transportation services to the community.
2. The City of Silverton shall explore efforts to encourage linkages of commuter and tourist passenger rail services between Silverton, Portland, Salem and other cities.
3. Any future street crossings of the railroad tracks shall be consistent with ODOT and PUC requirements.
4. The City of Silverton shall explore efforts to encourage pedestrian facilities linked to passenger commuter and tourist linkages of rail services between Silverton, Portland, Salem, and other cities.

Air, Pipeline, and Water

1. It is unlikely that a public airport would be either owned or operated by the City.
2. As there are no navigable rivers or lakes within the Silverton UGB, waterborne transportation is not an issue, or a need, now or in the future.
3. All existing pipelines within and through Silverton should be maintained as per the plans

of the respective utility companies.

4. Any roadway improvements in the future that would impact a particular pipeline will need to properly address any required localized relocation of such facility.

Appendix E

Amendments to Silverton Subdivision Ordinance to Implement the Silverton TSP

The City's subdivision regulations adequately address most requirements of the Transportation Planning Rule (TPR). Minor amendments to the subdivision ordinance are recommended to reflect the standards of the Silverton TSP and to comply with the TPR. New ordinance text is shown in underline type.

Amendment #1.

Replace the Table following Section 17.10 (Street Requirements) to reflect the updated street standards in the TSP (pages 84-86):

Street Classification	Right-of-Way Width	Minimum Curb-to-Curb Width
Arterial, with parking	80 feet	50 feet
Arterial, without parking	80 feet	48 feet
Major Collector, with parking	70 feet	48 feet
Major Collector, without parking	70 feet	34 feet
Minor Collector, with bike lanes	70 feet	46 feet
Minor Collector, without bike lanes	70 feet	38 feet
Local Residential, "Traditional" parking both sides	60 feet	34 feet
Local Residential, "Traditional" parking one side	50 feet	30 feet
Skinny Street, parking both sides	50 feet	28 feet**
Skinny Street, parking one side	40 feet	21 feet**
Local commercial and industrial street parking both sides	65 feet	45 feet

** Reduced pavement width allowed if certain design features are provided, with the approval of the City Fire and Police Departments. Features may include providing at least two off-street parking spaces per unit, periodic vehicle pullouts, and/or approved residential sprinkler systems.

See the Silverton TSP for detailed cross-sections of each street type.

Amendment #2

Replace the information in Section 17.14 (Radius at street intersections) to reflect the updated information from the TSP (page 87).

17.14 Radius at street intersections- Intersection street right of ways shall have a circular curve at their intersection points, the minimum radius of which shall be as follows:

<u>Highest Street Classification of Typical Intersecting Streets</u>	<u>Minimum Radius</u>
Arterial	30 feet
Major Collector	25 feet
Minor Collector	25 feet
Local Residential Street	15 feet
Local Commercial/Industrial Street	30 feet

Amendment #3

Revise the information in Section 17.17 (Block requirements) to incorporate comments from DLCD:

17.17 **Block requirements** – Block lengths and widths shall be determined by the distance and alignment of existing blocks and streets adjacent to or in the general vicinity of a proposed subdivision, and by topography, adequate lot size, need for and direction of flow of through and local traffic. Block lengths shall not exceed five hundred (500) feet. Block widths shall not be less than two hundred (200) feet. Block perimeters shall be a maximum of 1,600 feet.

Amendment #4

Revise Section 17.18 (Midblock walks) to incorporate comments from DLCD:

17.18 **Midblock walks-** When block lengths exceed 500 feet, the Planning Commission may require midblock walks and/or bikeways on a right-of-way at least twelve (12) feet in width. All walkways or bikeways between streets shall be subject to the requirements in Section 17.10(b).

Appendix F

Amendments to Zoning Ordinance to Implement the Silverton TSP

Silverton's Zoning Ordinance includes good provisions to address pedestrian and bicycle circulation, building orientation and street connectivity. The City could implement the TSP and comply with the Transportation Planning Rule (TPR) by adopting several piecemeal amendments to different sections of the Zoning Ordinance. However, a new zoning ordinance section is recommended to consolidate transportation planning rule provisions in one section of the Zoning Ordinance. The text for the new section follows. The assigned numbering (Section 120.00) avoids the need to renumber other sections of the ordinance.

NEW SECTION 120.000

TRANSPORTATION PLANNING, STANDARDS AND PROCEDURES

120.01 Purpose

The purpose of this Section is to provide standards and procedures to implement provisions of the State Transportation Planning Rule (OAR 660, Division 12) and local, regional and state transportation plans.

120.02 Public Notice and Coordinated Review

- A. A proposal to amend the Silverton Comprehensive Plan or Zoning Ordinance to change or adopt a new regulation shall be submitted to the Director of the Department of Land Conservation and Development and the ODOT District Manager at least 45 days before the final City Council hearing on adoption.
- B. The City shall provide written notice to the ODOT District Manager and other transportation interest groups if an application for a land division or design review may potentially impact a transportation facility or service. Notice shall be provided at least 20 days prior to the public hearing or decision on the application.
- C. Land use review associated with proposed transportation facilities, services, and improvements shall be coordinated with other jurisdictions such as Marion County and ODOT when appropriate.

120.03 Access Management Standards

- A. For all proposed development or redevelopment of properties accessing a state highway, the developer/owner shall notify and coordinate with the ODOT District Manager to ensure proper access management, consistent with the access management provisions of the Oregon Highway Plan and the Silverton TSP. Specific access management strategies for Highway 214 are included in Section 6.0 of the TSP and are adopted by this reference. ODOT has the jurisdiction over access permits to state highways.
- B. For all proposed development or redevelopment of properties accessing a county road, the developer/owner shall notify and coordinate with the Marion County Public Works Department to ensure proper access management, consistent with the access management provisions of the Marion County Rural Transportation System Plan and the Silverton TSP. Specific access management strategies for Silverton Road are included in Section 6.0 of the TSP and are adopted by this reference. Marion County has the jurisdiction over access permits to county roads.
- C. Land use review associated with proposed transportation facilities, services, and improvements shall be coordinated with other jurisdictions such as Marion County and ODOT when appropriate.
- D. Access to local City streets and County roadways within the City shall comply with the following access spacing standards from the Silverton TSP:

Access Spacing Standards

Functional Classification	Minimum Access Spacing Between Streets or Driveways (Centerline to Centerline)	Signal Spacing
Arterial	400 feet +/- 20% (newly developed areas)	½ mile
Collector	150 feet +/- 20% (newly developed areas)	1/4 mile

- E. Shared driveways along a common property line are strongly encouraged. Access permits may be denied if reasonable alternative access is available.

120.04 Protection of Transportation Facilities

- A. All land use and development proposals shall conform to the adopted Silverton TSP. They shall not substantially impact the functional classification or operation of

transportation facilities. To ensure proper review and mitigation, a traffic impact study may be required for proposals that may impact transportation facilities.

- B. The applicant for a land division or design review shall submit a traffic impact study when the proposal affects a transportation facility, if it:
1. Changes the functional classification of an existing or planned transportation facility
 2. Changes standards implementing a functional classification system
 3. Allows types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation facility
 4. Would reduce the level of service of the facility below the minimum acceptable level identified in the TSP

As a general guide to applicants, a traffic impact study is required when a project is estimated to generate approximately 30 net additional trips during any peak hour period.

- C. The City may attach conditions (such as right-of-way dedication and special setbacks) to land division and design review approvals to protect the existing and planned right-of-way of transportation facilities. The general location of "future collector roadways" identified in the Silverton TSP shall be refined and protected through the development review process.
- D. The developer of property identified in the TSP which has a future collector road located on it shall be responsible for the construction of the roadway up to residential street standards. The City shall participate in the construction of the roadway above residential street standards.

120.05 Transportation Improvements

- A. Changes and refinements of a proposed public road and highway project shall be permitted without a plan amendment if the new alignment falls within a general corridor identified in the TSP.
- B. For ODOT transportation projects that require an Environmental Impact Study (EIS) or Environmental Assessment (EA), the draft EIS or EA shall provide the findings for local land use review, if local review is required.
- C. The following transportation improvements are permitted outright in any zone:

1. Normal operation, maintenance, repair, and preservation activities associated with transportation facilities.
 2. Installation of culverts, pathways, fencing, guardrails, lighting, and similar types of improvements that take place within the existing right-of-way.
 3. Projects specifically identified in the TSP as not requiring further land use regulation.
 4. Landscaping as part of a transportation facility.
 5. Emergency measures as necessary for the safety and protection of property.
 6. Acquisition of right-of-way for public roads, highways, and other transportation projects identified in the TSP are permitted outright, except for those that are located in exclusive farm use or forest zones.
- D. The following transportation improvements are permitted with conditional use approval in any zone:
1. Construction, reconstruction, or widening of highways, roads, bridges, or other transportation projects that are (a) not specifically identified in the TSP, or (b) not designed and constructed as part of a subdivision or planned development subject to design review and/or conditional use review. These projects shall comply with the TSP and applicable standards.
 2. Construction of rest areas, weigh stations and temporary storage and processing sites.
 3. If review under this Section indicates that the transportation improvement is inconsistent with the TSP, the procedure for a plan amendment, including any necessary goal exceptions, shall be undertaken prior to or in conjunction with the conditional use permit review.

120.06 Street Standards

- A. New roads and roadway improvements shall be consistent with the general location, functional classification and typical cross sections (street standards) as set forth in the TSP.
- B. New developments shall provide for street connectivity.

- C. Tables 7 through 9 of the TSP provide typical cross sections for the various street functional classifications and are incorporated by this reference. The cross sections emphasize the desire to develop multi-modal roadway facilities that incorporate sidewalks and bike lanes where possible.
- D. The standards include provisions for parkway strips where determined to be needed, that separate the curb from the sidewalk. This "detached sidewalk" design allows for grade transitions between the sidewalk and local driveways to meet Americans with Disabilities Act (ADA) standards.
- E. Attached sidewalks are the standard in the downtown area due to the limited street-right-of way and limited number of private driveways.
- F. Bike lanes and bikeways shall be provided in accordance with the TSP. Bike lanes shall be five feet wide and shall be provided for each direction of travel allowed on the street. Except as amended or altered by the TSP, bike lanes shall be provided along collector and arterial streets. Bike lanes and bikeways shall be constructed consistent with ODOT bicycle plan standards.
- G. The Planning Director/City Engineer may adjust the street standards by up to 20 percent when it is found that any of the following conditions apply:
 - 1. The existing right-of-way is substandard
 - 2. Exceptional topographic conditions exist
 - 3. Significant trees or vegetation would be removed
 - 4. It is determined to be impractical or unfeasible

120.07 Internal Connections and Building Orientation

General walkway standards

- A. Walkways from the public right-of-way or adjoining development shall be designed to connect with internal circulation patterns within the development. Walkways shall be as direct as possible and shall limit out-of-direction travel. The walkways shall be paved with a hard surface material and shall be no less than five feet in width. If adjacent to a parking areas where vehicles will overhang the walkway, a seven-foot walkway shall be provided. The walkways shall be separated from parking areas and internal driveways using curbing, landscaping,

or distinctive paving material.

B. Connections to the right-of-way

Every commercial, office, and institutional building shall include a pedestrian walkway connected to the public right-of-way. A walkway shall be provided for every 300 feet of street frontage.

C. Connections between developments

Opportunities for at least one pedestrian walkway and one potential vehicular connection shall be provided between adjacent commercial, office, and institutional development. If connections are currently not available, then planned connections shall be designed to retain an opportunity to connect adjoining developments in the future.

D. Building Orientation

New development that is subject to design review shall comply with applicable standards for building orientation and parking lot location set forth in Title 18 (Site Design and Use Standards).

120.08 Bicycle Parking Facilities

- A. Bicycle parking shall be provided for all new multifamily, industrial, commercial, office and institutional development. Each bicycle parking space must be a minimum of six feet in length, two feet in width, and have an overhead clearance of six feet.
- B. Bicycle parking shall be located on site within 50 feet of a primary entrance.
- C. Where sidewalks are sufficiently wide, bicycle parking may be located within the public right-of-way.
- D. Bicycle space requirements follow:
 - 1. Multifamily development (3 or more units): 1 space per unit per every 2 units unless a garage is provided. Bike parking to be spread out evenly throughout the development.
 - 2. Industrial development: 1 space per 10 auto spaces required.
 - 3. Commercial/office/institutional development: A minimum of 2 spaces, plus 1 additional space for each 10 auto spaces required