

City of Irrigon Transportation System Plan

Irrigon, Oregon

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Table of Contents

TABLE OF CONTENTS

	PAGE
LIST OF FIGURES	V
LIST OF TABLES	V
PREFACE	V
<i>Management Team:</i>	v
<i>Transportation Advisory Committee:</i>	v
<i>Consultant Team</i>	v
INTRODUCTION	2
STUDY AREA	3
PUBLIC INVOLVEMENT AND STUDY GOALS	3
<i>Goal 1</i>	4
<i>Goal 2</i>	4
<i>Goal 3</i>	4
<i>Goal 4</i>	5
TRANSPORTATION SYSTEM PLAN STUDY METHODOLOGY AND ORGANIZATION	5
EXISTING CONDITIONS	8
INTRODUCTION.....	8
LAND USE HISTORY	8
TRANSPORTATION FACILITIES.....	8
ROADWAY SYSTEM	8
<i>Jurisdictions</i>	8
<i>State Facilities</i>	9
<i>City of Irrigon Facilities</i>	9
PEDESTRIAN SYSTEM.....	10
PUBLIC TRANSPORTATION SYSTEM	11
<i>Morrow County Special Transportation Program</i>	11
<i>Other Services</i>	12
<i>General Comments</i>	12
AIR TRANSPORTATION SYSTEM	12
RAILROAD TRANSPORTATION SYSTEM	12
MARINE TRANSPORTATION SYSTEM.....	12
PIPELINE TRANSPORTATION SYSTEM	13
TRAFFIC OPERATIONS ANALYSIS	13
<i>Traffic Control</i>	13
<i>Traffic Volumes</i>	13
TRAFFIC SAFETY	17
<i>Intersection Accident Analysis</i>	17
OTHER IDENTIFIED EXISTING TRANSPORTATION DEFICIENCIES	18
<i>Highway 730</i>	18
<i>System Connectivity</i>	18
<i>Use of Traffic Control Devices</i>	19
SUMMARY	19
FUTURE CONDITIONS ANALYSIS	21
INTRODUCTION.....	21
TRANSPORTATION DEMAND	21
<i>Land Use/Demographics</i>	21
<i>Population and Employment</i>	21
<i>Anticipated Future Growth</i>	23
<i>Historical Growth</i>	23
<i>Level of Service Analysis</i>	24

<i>Potential Capacity Improvements</i>	26
SUMMARY	26
ALTERNATIVES ANALYSIS	28
INTRODUCTION	28
LAND USE/TRANSPORTATION SYSTEM RELATIONSHIP.....	28
<i>Background</i>	28
<i>Land Use Alternatives Evaluation</i>	30
<i>Land Use Alternative 1: Continue Existing Trend</i>	31
<i>Land Use Alternative 2: Defined Commercial Downtown Area/Refined Parking Strategy</i>	31
<i>Land Use Alternative 3: Development of a Mixed Use Commercial Downtown Zone and Main Street with North-South Connections</i>	32
<i>Zoning Code Issues</i>	33
<i>Preferred Alternative</i>	33
INTERSECTION IMPROVEMENTS	34
<i>Provision of a Traffic Signal along Highway 730</i>	34
<i>Issues Related to Signalizing an Intersection on Highway 730</i>	34
<i>Conclusion</i>	35
CIRCULATION IMPROVEMENTS.....	36
<i>North-South Connectivity</i>	36
<i>East-West Connectivity</i>	36
<i>Access Management and Safety</i>	37
IMPROVEMENT ALTERNATIVES EVALUATION.....	37
<i>Alternative #1 – Reduce Vehicular Reliance through Zoning and Development Code Revisions</i>	38
<i>Alternative #2 – Improve Division Street/include pedestrian facilities</i>	38
<i>Alternative #3 – Signalize 1st Street/Highway 730 Intersection</i>	38
<i>Alternative #4 – Provide Strategic North/South Roadway Extensions</i>	39
<i>Alternative #5 – Provide Strategic East/West Roadway Extensions</i>	40
<i>Alternative #6 – Vacate North East Main Avenue between Tenth Street and Twelfth Street</i>	41
<i>Alternative #7 – Improve Delineation on North East Main Avenue Adjacent to the A.C. Houghton Elementary School</i>	41
<i>Alternative #8 – Inventory and Review Posting of City Traffic Control Devices</i>	41
<i>Alternative #9 – Promote Access Management along Highway 730</i>	42
<i>Alternative #10 – Provide Gateway Treatments along Highway 730</i>	42
<i>Alternative #11 – Enhance Pedestrian Crossings of Highway 730</i>	43
<i>Alternative #12 – Implement Transportation Demand Management Measures</i>	43
<i>Alternative #13 – Pave Key Collector Facilities</i>	44
<i>Alternative #14 – Reconstruct First Street Approach to Highway 730</i>	44
<i>Alternative #15 – Designate an Alternate Escape Route</i>	44
SUMMARY	45
TRANSPORTATION SYSTEM PLAN	47
INTRODUCTION	47
PREFERRED LAND USE PLAN	47
<i>Desirable Elements of the Preferred Alternative</i>	47
<i>Implementation</i>	48
ROADWAY SYSTEM PLAN	50
<i>Functional Classification</i>	50
<i>Arterials:</i>	52
<i>Minor Collectors:</i>	52
<i>Local Streets:</i>	52
<i>New Roadways</i>	52
<i>Street Design Standards</i>	52
ROADWAY IMPROVEMENT PROGRAM.....	55
ACCESS MANAGEMENT STRATEGIES	55
<i>ODOT Access Management Standards</i>	56
<i>City Standards</i>	57
<i>Management Techniques</i>	57
PEDESTRIAN AND BICYCLE SYSTEM PLAN	58

<i>Multi-Use Facilities</i>	58
<i>Other Pedestrian Facilities</i>	59
<i>Bicycle Facilities</i>	59
PUBLIC TRANSPORTATION SYSTEM PLAN	61
<i>Service Enhancements</i>	61
MARINE SYSTEM PLAN	62
AIR TRANSPORTATION SYSTEM PLAN	62
PIPELINE SYSTEM PLAN	63
EVACUATION PLAN	63
IMPLEMENTATION PLAN	63
SUMMARY	63
TRANSPORTATION FUNDING PLAN	65
INTRODUCTION	65
CITY OF IRRIGON FUNDING HISTORY	65
OREGON TRANSPORTATION FUNDING HISTORY	66
<i>Road-Related Funding</i>	66
<i>Transit Funding</i>	68
POTENTIAL TRANSPORTATION FUNDING SOURCES	68
<i>Funding Program</i>	69
SUMMARY	71
POLICIES AND LAND USE ORDINANCE MODIFICATIONS	73
TRANSPORTATION PLANNING RULE COMPLIANCE	75
REFERENCES	80
APPENDIX A – PLANS AND POLICIES REVIEW	1
CITY OF IRRIGON COMPREHENSIVE PLAN	1
CHAPTER II	1
CHAPTER IV	1
CHAPTER VI	2
IMPLEMENTING REGULATIONS	3
<i>Zoning Ordinance</i>	3
<i>Subdivision Ordinance</i>	3
JOINT MANAGEMENT AGREEMENT BETWEEN CITY OF IRRIGON AND MORROW COUNTY	5
STRATEGIC PLAN	6
APPENDIX B – DESCRIPTION OF LEVEL-OF-SERVICE METHODS AND CRITERIA	1
LEVEL OF SERVICE CONCEPT	1
SIGNALIZED INTERSECTIONS	1
UNSIGNALIZED INTERSECTIONS	2
APPENDIX C – EMPLOYMENT AND POPULATION FORECAST METHODOLOGY	1
APPENDIX D – PREFERRED LAND USE ALTERNATIVE GRAPHICAL RENDERINGS	1
APPENDIX E – MAIN STREET MITIGATION DESIGN	1
APPENDIX F – SUPPLEMENTAL FUNDING INFORMATION	1

LIST OF FIGURES

FIGURE 1 – STUDY AREA MAP	3
FIGURE 2 – EXISTING ROADWAY CLASSIFICATION.....	10
FIGURE 3 – EXISTING CONDITIONS ROADWAY INVENTORY	11
FIGURE 4 – EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES	14
FIGURE 5 – TRAFFIC VOLUMES WEEKDAY PEAK HOUR (1998)	15
FIGURE 6 – 1997 ESTIMATED AVERAGE DAILY TRAFFIC VOLUMES.....	16
FIGURE 7 – 2020 FORECAST AVERAGE DAILY TRAFFIC VOLUMES.....	25
FIGURE 8 – 2020 FORECAST TRAFFIC VOLUMES, WEEKDAY PM PEAK HOUR.....	25
FIGURE 9 – IMPROVEMENT ALTERNATIVES.....	39
FIGURE 10 – ROADWAY NETWORK AND FUNCTIONAL CLASSIFICATION SYSTEM.....	51
FIGURE 11A – ARTERIAL CROSS-SECTION	53
FIGURE 11B – COLLECTOR CROSS-SECTION	53
FIGURE 11C – LOCAL STREET CROSS-SECTION.....	54
FIGURE 12 – PEDESTRIAN AND BICYCLE SYSTEM PLAN.....	60

LIST OF TABLES

TABLE 1 – LEVEL OF SERVICE AND VOLUME TO CAPACITY RATIO CRITERIA FOR ARTERIAL AND COLLECTOR STREETS.....	15
TABLE 2 – 1998 PM PEAK HOUR LEVEL OF SERVICE AND VOLUME TO CAPACITY RATIO, UNSIGNALIZED INTERSECTIONS....	17
TABLE 3 – STUDY INTERSECTION ACCIDENT RATES.....	17
TABLE 4 – POPULATION PROJECTIONS.....	21
TABLE 5 – EMPLOYMENT PROJECTIONS.....	22
TABLE 6 – 2020 FORECAST LEVEL OF SERVICE AND VOLUME TO CAPACITY RATIOS (UN-SIGNALIZED INTERSECTIONS).....	24
TABLE 7 – SUMMARY OF IMPROVEMENT ALTERNATIVE RECOMMENDATIONS	45
TABLE 8 – STREET DESIGN STANDARDS	53
TABLE 9 – ROADWAY IMPROVEMENTS	55
TABLE 10 – HIGHWAY 730 ACCESS MANAGEMENT STANDARDS*.....	56
TABLE 11 – MINIMUM INTERSECTION SPACING STANDARDS	57
TABLE 12 – PRIVATE ACCESS DRIVEWAY WIDTH STANDARDS.....	57
TABLE 13 – PEDESTRIAN AND BICYCLE SYSTEM IMPROVEMENTS.....	60
TABLE F-1 – SUMMARY OF ROAD RELATED TRANSPORTATION FUNDING PROGRAMS: FEDERAL SOURCES.....	1
TABLE F-2 – SUMMARY OF ROAD RELATED TRANSPORTATION FUNDING PROGRAMS: STATE SOURCES	1
TABLE F-3 – SUMMARY OF ROAD RELATED TRANSPORTATION PROGRAMS: LOCAL SOURCES	1
TABLE F-4 – CURRENT REVENUE SOURCES FOR CITIES	2
TABLE F-5 – CURRENT REVENUE SOURCES IN OREGON	3

Preface

Preface

This project is partially funded by a grant from the Transportation Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. TGM grants rely on federal Intermodal Surface Transportation Efficiency Act and Oregon Lottery funds. The contents of this document do not necessarily reflect the views or policies of the state of Oregon.

The progress of this plan was guided by the Management Team, Transportation Advisory Committee, and Consultant Team identified below.

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Advisory Committee members devoted a substantial amount of voluntary time and effort to the development of the Transportation System Plan, and their participation was instrumental in the development of the recommendations that are presented in this report. The Consultant Team and Management Team believe that the City of Irrigon's future transportation system will be better because of their commitment.

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Section 1

Introduction

Introduction

The City of Irrigon, in conjunction with Morrow County and the Oregon Department of Transportation (ODOT), initiated a study of the city's transportation system during the summer of 1998. The purpose of this study is two-fold: to guide the management and development of appropriate transportation facilities; and to incorporate the vision of the community into a land use and transportation system that addresses both the potential for infill and redevelopment strategies and the multi-modal needs of the community.

Several community-specific issues that needed to be addressed as part of the study process were identified at the project inception stage. From the beginning, it was recognized that transportation and land use issues are strongly interconnected in the Irrigon community. Accordingly, this study closely examined the interrelationships between transportation and land use and how such relationships will direct future growth and development in Irrigon. For example, the Irrigon urban growth boundary (UGB) covers a large expanse of land; however, low-density development could consume more land than necessary and cause a need to expand the UGB. Irrigon also lacks an established downtown commercial core and needs additional, concentrated commercial development. How and where future commercial development occurs were considered to be pivotal issues in terms of helping Irrigon establish a stronger identity and character while also developing a comprehensive transportation system that corresponds to land uses. The analysis, findings, and recommendations of this report incorporate a diverse spectrum of vehicular, pedestrian, bicycle, and other multi-modal circulation and connectivity solutions.

This study was prepared as part of a Transportation Growth Management Grant. The report is formatted to provide the necessary elements for the City of Irrigon to assemble its Comprehensive Plan and provides Morrow County and ODOT with recommendations for incorporation with their respective planning efforts.

State of Oregon guidelines stipulate that the TSP must be based on the current comprehensive plan land-use map and must provide a transportation system that accommodates the expected 20-year growth in population and employment that will result from implementation of the land use plan. Oregon Revised Statute 197.712 and the Land Conservation and Development Commission (LCDC) administrative rule known as the Transportation Planning Rule (TPR) require that all jurisdictions develop the following:

- a road plan for a network of arterial and collector streets;
- a public transit plan;
- a bicycle and pedestrian plan;
- an air, rail, water, and pipeline plan;
- a transportation finance plan; and,
- policies and ordinances for implementing the transportation system plan

The TPR requires that alternative travel modes be given equal consideration and that reasonable effort be applied to the development and enhancement of the alternative modes in providing the future transportation system. In addition, the TPR requires that local jurisdictions adopt land use and subdivision ordinance amendments to protect transportation facilities and to provide bicycle and pedestrian facilities between residential, commercial, and employment/institutional areas. It is further stipulated that local communities coordinate their respective plans with county and state transportation plans.

STUDY AREA

Figure 1 – Study Area Map

The City of Irrigon is located along Highway 730 in the northeastern quadrant of Morrow County, Oregon, as shown in Figure 1. The city, which is bordered by the Columbia River to the north, is home to an estimated population of 1,780 persons (Portland State University 2003 estimate). Incorporated in 1957, the city's economy is primarily based on agriculture, though the downtown area contains a mix of commercial, residential, and public land uses.

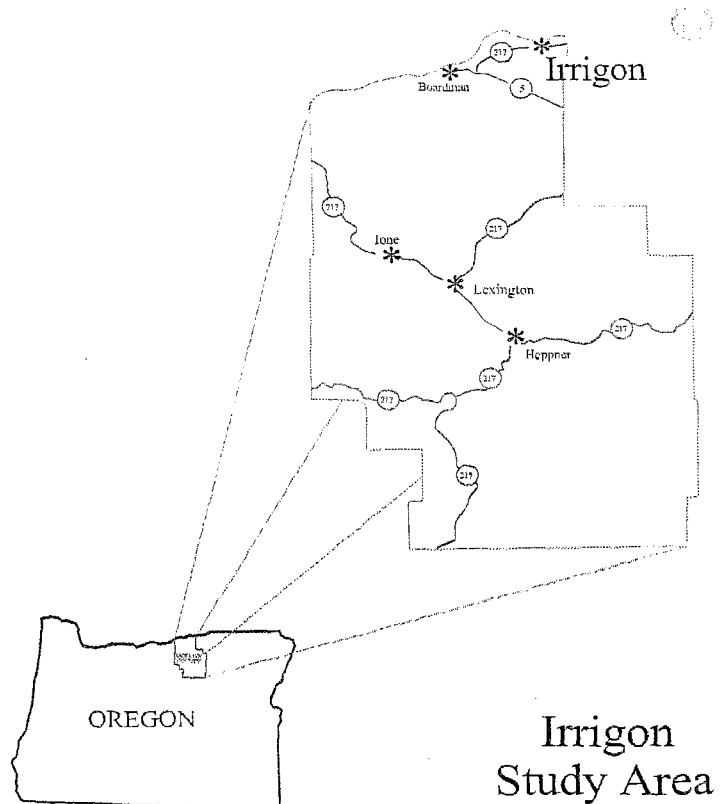
The majority of the commercial land uses within Irrigon are located along Highway 730 while light industrial zoning is provided along the south side of Highway 730. Residential land uses are located throughout the city, with farmland located along the city's southern periphery. Reflecting the area's rural character, Irrigon's residential development is primarily of low-density design. Single-family homes, manufactured homes, and some duplexes on modest lots are located throughout the city.

Future growth may be limited by current water capacity and infrastructure deficiencies. The City will work towards eliminating these deficiencies by the year 2025.

PUBLIC INVOLVEMENT AND STUDY GOALS

The TSP planning process provided the citizens of Irrigon with the opportunity to identify their priorities for future growth and development. Expressing their vision for the future in terms of goals and objectives for the TSP was a central element of the public involvement process. The goals and objectives identified by the community were used as guidelines for developing and evaluating alternatives, selecting a preferred transportation plan, and prioritizing improvements.

Two committees were formed to guide the planning process: the Management Team and the Transportation Advisory Committee (TAC). The Management Team was composed of representatives of the City of Irrigon, Morrow County, ODOT, and the consultant team. The Transportation Advisory Committee included several community members with a specific interest in transportation and land use planning in the community. The two committees convened at several key junctures of the project including: project inception, completion of the existing conditions analysis, presentation of the future conditions and alternatives analysis findings, and presentation of the draft TSP.



Given the city's Comprehensive Plan, and through the direction provided by both the two TSP committees and the public hearing process, a series of transportation system goals and objectives evolved that provided the planning process with direction as well as evaluation criteria. Those goals and objectives are listed below.

Goal 1

Promote a balanced, safe, and efficient transportation system.

Objectives

1. Develop a multi-modal transportation system that avoids reliance upon one form of transportation as well as minimizes energy consumption and air quality impacts.
2. Protect the qualities of neighborhoods and the community.
3. Provide for adequate street capacity and optimum efficiency.
4. Promote adequate transportation linkages between residential, commercial, public, and industrial land uses.
5. Minimize conflicts between through and local traffic on Highway 730 to reduce traffic hazards and expedite the flow of traffic.

Goal 2

Ensure the adequacy of the roadway network in terms of function, capacity, level of service, and safety.

Objectives

1. Develop a functional classification system that addresses all roadways within the study area.
2. In conjunction with the functional classification system, identify corresponding street standards that recognize the unique attributes of the local area.
3. Identify existing and potential future capacity constraints and develop strategies to address those constraints, including potential intersection improvements, future roadway needs, and future street connections.
4. Evaluate the need for modifications to and/or the addition of traffic control devices.
5. Identify access spacing standards on Highway 730 that conform to the Oregon Highway Plan.
6. Provide an acceptable level of service at all intersections in the city, recognizing the rural character of the area. Intersection operations on Highway 730 should conform to the level of service and volume/capacity ratio requirements identified in the Oregon Highway Plan.
7. Identify existing and potential future safety concerns as well as strategies to address those concerns.

Goal 3

Promote alternative modes of transportation.

Objectives

1. Develop a comprehensive system of pedestrian and bicycle routes that link major activity centers within the study area.
2. Encourage the continued use of public transportation services.

Goal 4

Identify and prioritize transportation improvement needs in the City of Irrigon, and identify a set of reliable funding sources that can be applied to these improvements.

Objectives

1. Develop a prioritized list of transportation improvement needs in the study area.
2. Develop construction cost estimates for the identified projects.
3. Evaluate the adequacy of existing funding sources to serve projected improvement needs.
4. Evaluate new innovative funding sources for transportation improvements.

TRANSPORTATION SYSTEM PLAN STUDY METHODOLOGY AND ORGANIZATION

The development of the City of Irrigon's Transportation System Plan began with an inventory of the existing transportation system and a review of the local, regional, and statewide plans and policies that guide land use and transportation planning in the city (Appendix "A" contains the plans and policies review). The inventory included documentation of all transportation-related facilities within the study area and allowed for an objective assessment of the current system's physical characteristics, operational performance, safety, deficiencies, and general function. A description of the inventory process, as well as documentation of the existing conditions analyses and their implications, is presented in **Section 2** of this report. The findings of the existing conditions analysis were presented to and verified by the two TSP committees.

Upon completion of the existing conditions analysis, the focus of the project shifted to forecasting future travel demand and the corresponding long-term future transportation system needs. Development of long-term (year 2020) transportation system forecasts relied heavily on population and employment growth projections for the study area and review of historical growth in the area. Through the city's Comprehensive Plan and land use projections provided by the consultant team, reasonable assumptions could be drawn as to the potential for and location of future development activities. **Section 3** of this report, *Future Conditions Analysis*, details the development of anticipated long-term future transportation needs within the study area.

Section 4 of this report, *Alternatives Analysis*, documents the development and prioritization of alternative measures to mitigate identified safety and capacity deficiencies, as well as projects that would enhance the multi-modal features of the local transportation system. The process where transportation system projects are identified and prioritized included extensive cooperation with both TSP committees. The impact of each of the identified alternatives was considered based on individual merits, conformance with the existing transportation system and land use, as well as potential conflicts to implementation and integration with the surrounding transportation system and land use components. Ultimately, a preferred plan was developed that reflected a consensus as to which elements should be incorporated into the city's long-term transportation system.

Having identified a preferred set of alternatives, the next phase of the TSP planning process involved presenting and refining the individual elements of the transportation system plan through a series of decisions and recommendations. The recommendations identified in **Section 5**, *Transportation System Plan*, include a Roadway Network and Functional Classification Plan, a Pedestrian Plan, a Bikeway Plan, a Public Transportation Plan, and other multi-modal plans.

Section 6, *Transportation Funding Plan*, provides an analysis and summary of the alternative funding sources available to finance the identified transportation system improvements.

The city's existing comprehensive plan and zoning ordinances were limited and did not allow the city to develop the type of transportation system desired. In an effort to rectify this situation and ensure compliance with the TPR, several comprehensive plan and zoning ordinance modifications have been developed. Development review guidelines were also drafted. The recommended modifications presented in **Section 7, *Policies and Land Use Ordinance Modifications***, address major land use and transportation issues identified through development of the TSP and reflect the desire to enhance all modes of the transportation system.

Finally, **Section 8, *Transportation Planning Rule Compliance***, lists the requirements and recommendations of the Oregon Transportation Planning Rule (OAR 660 Division 12) and identifies how the City of Irrigon TSP satisfies that criterion.

Section 2

Existing Conditions

Existing Conditions

INTRODUCTION

The development of this transportation system plan began with an assessment of the existing land use and transportation system conditions. This section describes the existing land uses and conditions for all transportation modes that the transportation system plan will address, including trucks, cars, pedestrians, bikes, transit, air, marine, and pipeline facilities. The purpose of this section is to provide an inventory description of existing facilities while setting the stage for a basis of comparison to future conditions.

LAND USE HISTORY

Settled first in 1861 as a supply point for the gold fields of Montana, Idaho, and eastern Oregon, Irrigon was incorporated in 1957. Early transportation of goods focused on the river. The first railroad serving the area was completed in 1883 and the first highway, the Columbia River Highway, was completed in 1921. In 1964, planners were hired to provide guidance on the city's long-term development goals – a water supply and distribution system and the eventual need for sewer collection. In the 1970's, when the highway system was expanded, Highway 30 became Highway 730. The Columbia River Highway, relocated, still serves as the main transportation route through the city today.

The majority of the commercial land uses within Irrigon are located along Highway 730 while light industrial zoning is provided along the south side of Highway 730. Residential land uses are located throughout the city, with farmland located along the city's southern periphery. Reflecting the area's rural character, Irrigon's residential development is primarily of low-density design. Single-family homes, manufactured homes, and some duplexes on modest lots are located throughout the city. Figure 2 illustrates the local zoning.

Irrigon has grown quite rapidly since the expansion of the highway system in the 1970's. Population increased 47% from 1990 to 1997 – from 737 to 1,200 people. Population in 2003 has reached 1780. Growth in the region continues to be generated by regional economic forces, including expansion at the Port of Morrow in Boardman, the new correctional facility in Umatilla County, the Army Depot Incinerator in north Umatilla and Morrow Counties, a new Wal-Mart distribution facility in Hermiston, and the expansion of Union Pacific Railroad's Hinkle Rail yard in Hermiston.

Conversations with members of the Irrigon TAC indicate that residents feel that there is considerable opportunity for commercial development and redevelopment in town to capitalize on these regional economic impacts.

TRANSPORTATION FACILITIES

The City of Irrigon's transportation system includes facilities that serve several different modes. All of these facilities are identified and discussed in detail in the remainder of this section.

ROADWAY SYSTEM

Jurisdictions

All public roadways within the City of Irrigon are operated and maintained under the auspices of one of three jurisdictions – the Oregon Department of Transportation (ODOT), Morrow County, and/or the city. The following paragraphs highlight the existing roadway network, which is illustrated in Figure 3.

State Facilities

Highway 730

Highway 730, also known as the Columbia River Highway, is operated and maintained by ODOT and classified as being a Regional Highway as identified by the 1999 Oregon Highway Plan. The primary function of a Regional Highway is to provide connections and links to areas within regions of the state, between small, urbanized areas and larger population centers, and to higher-level facilities. The highway generally parallels the Columbia River, providing a continuous east-west route between Interstate 84 and the State of Washington and serves as a city-to-city link between neighboring cities.

Highway 730 provides the backbone of the city's transportation system and serves as the primary east-west corridor through the community. The cross-section design of Highway 730 consists of three lanes throughout the city with the speed limit posted as 35 miles per hour. Given the location of Highway 730, the roadway effectively bisects the city. As a result, while the highway links the east and west portions of the community, it also limits north-south connectivity by creating a barrier that affects adjacent land use as well as pedestrian and bicycle access.

City of Irrigon Facilities

The City of Irrigon's roadway system is comprised of a number of north-south and east-west streets that provide connections to Highway 730. A basic grid network of roads is provided on the north side of Highway 730 within the city. The transportation related study prepared for the city in 1993 identifies the street classification used by the city as having three distinctive groups, arterials, collectors, and local roads (Reference 2). The classification of city streets is summarized below and in Figure 2.

Arterials:

- Highway 730

Minor Collectors:

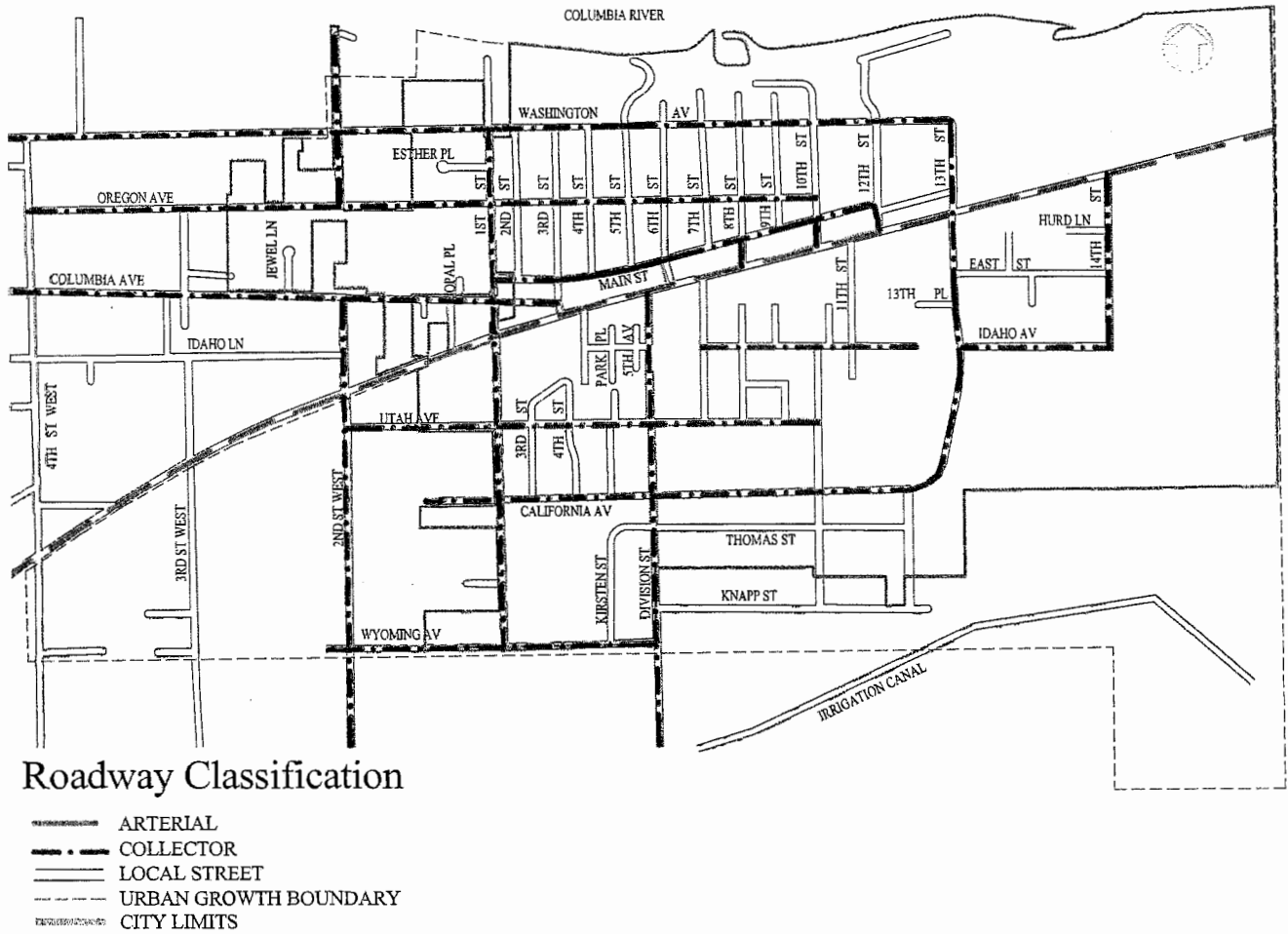
- Washington Avenue
- North East Main Avenue
- Utah Avenue
- Second Street West
- First Street
- Division Street
- Thirteenth Street
- Wyoming Avenue (Future)
- Fourteenth Street (Future)
- Oregon Avenue (Future)
- California Avenue (Future)
- Idaho Avenue (Future)

The remainder of the streets within the City of Irrigon is classified as local streets.

The city's Street, Sidewalk, Bikeway, and Handicapped Access Study identifies street cross-section design standards. No striped on-street parking is provided within the city, though several homeowners appear to park off the shoulders of local streets within the residential areas.

Figure 3 identifies the existing pavement condition of roadways within the city. As suggested by Figure 3, there is unimproved gravel roadways within the city, primarily within the expanding residential areas located on the south side of the city. Some of the roadways exhibit half-street paving projects, apparently completed in conjunction with development activities.

Figure 2 – Existing Roadway Classification



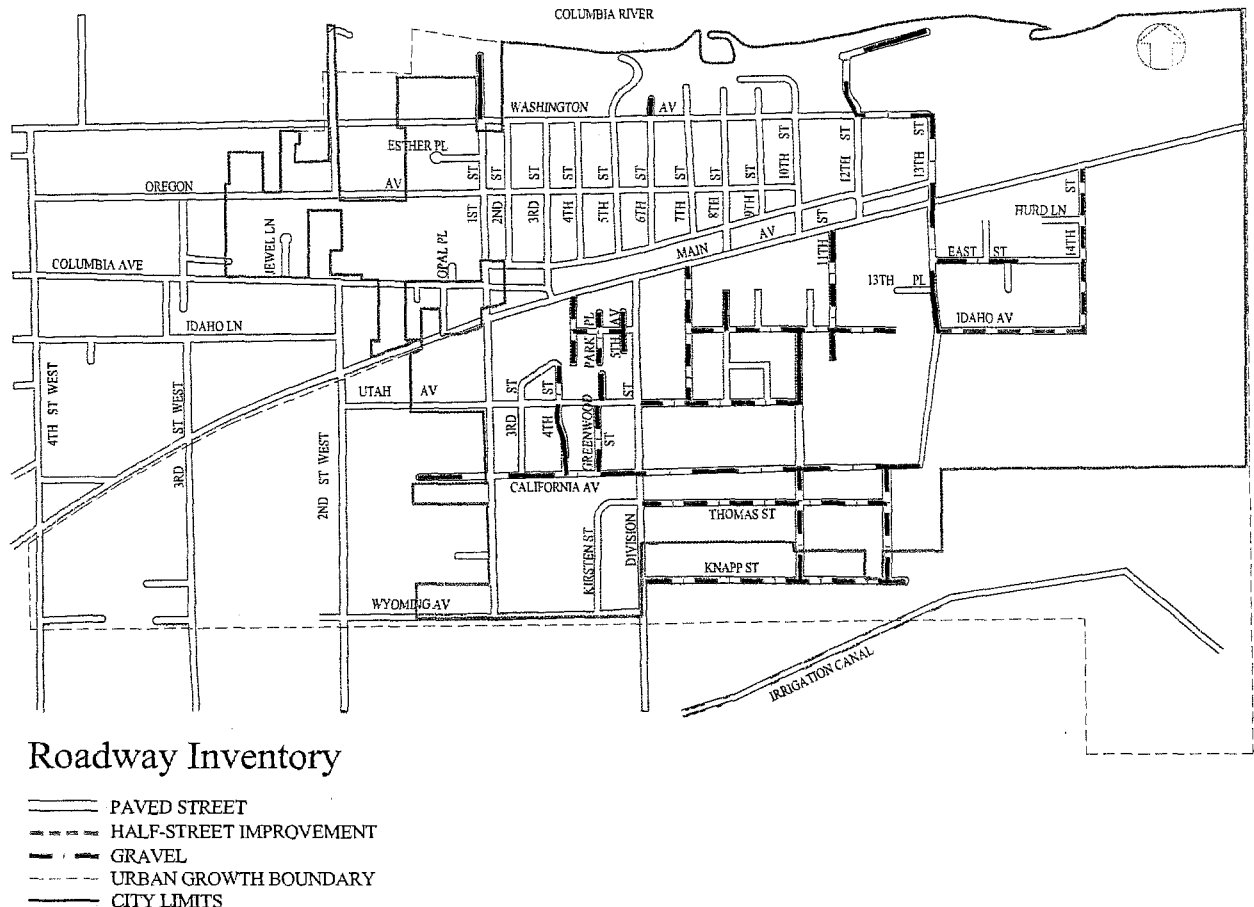
PEDESTRIAN SYSTEM

The City of Irrigon does not currently have sidewalk facilities except on the property of some public buildings and the multiuse path along Highway 730. Instead, the city’s pedestrian network relies exclusively on shared roadways and unimproved footpaths.

The city’s *Street, Sidewalk, Bikeway, and Handicapped Access Study* previously reviewed the locations of pedestrian generators within the city and documents suggested pedestrian circulation routes for students, senior citizens, and recreational/residential interests though there is currently no infrastructure to support those routes. The suggested circulation patterns seek to minimize the number of crossings of Highway 730, thereby reducing the number of potential locations of pedestrian/vehicle interaction.

The community has discussed potential crosswalks on Highway 730 and suggested that a pedestrian crossing of Highway 730 be constructed at Division Street in conjunction with provision of supplemental pedestrian facilities on Division Street. A multiuse path has been constructed to convey pedestrians along the north side of Highway 730. Placement of raised median (safety) islands or pedestrian refuges on Highway 730 has been discussed as potential ‘gateway’ elements to connect pedestrian paths to and from the new post office and the grade school. Sidewalks and curbs along 730 would greatly improve pedestrian safety in the area.

Figure 3 – Existing Conditions Roadway Inventory



BICYCLE SYSTEM

There are few designated bicycle facilities within the City of Irrigon. However, the city's *Street, Sidewalk, Bikeway, and Handicapped Access Study* recommends construction of a bike lane to facilitate the travel of students to and from the two local school buildings. In conjunction with the previously discussed pedestrian issues, the city is also considering development of a bike facilities on the along Division Street and providing safe crossings of Highway 730 through raised safety islands or some other treatment measures. Off-street bike paths linking the middle school and elementary school have also been evaluated but not yet implemented.

PUBLIC TRANSPORTATION SYSTEM

Within the City of Irrigon, limited public transportation services are available through the county, the local school district, the RSVP/CAPECO program, and Greyhound (Boardman).

Morrow County Special Transportation Program

Morrow County provides two public transportation programs that serve the City of Irrigon. A senior bus service is available to groups by appointment and provides service for seniors, disabled persons, and low-income persons. Other users are welcome as long as they do not displace the primary users (i.e., seniors, the disabled, and the disadvantaged). A dial-a-ride service is also available by appointment to serve the same audience. Both programs are funded through Special Transportation Funds and rely on a volunteer pool of drivers. While increased usage of these services is desirable, there are no current or pending plans to expand public transportation services to the area. Further information regarding the program may be found by calling Stokes Landing Senior Center at (541) 922-3603.

Other Services

The local school district provides school bus service to portions of the city on school days, and the RSVP/CAPECO program based in Pendleton provides a transportation option. Under the RSVP/CAPECO program, qualified drivers are reimbursed for transporting others in personal vehicles when the local county transportation service is unavailable. This program requires an initial application process and authorization prior to persons being qualified for reimbursement. Reimbursement is then available for qualified trips on a per mile basis. The RSVP Program Contact may be reached by calling (541) 278-5669.

General Comments

Discussions with local agency staff and TAC members indicated that, with the exception of school bus and Greyhound service, the public transportation services available are not as well used as they could be. A commonly repeated theme was the notion that there is a need to create greater awareness of the programs among community members. Community input stressed the need for convenient access to public transit service for the elderly. It was further observed that the population under the driving age is particularly under-served and, as the community grows in geographic size; their overall accessibility will be diminished. Although enhanced service is desired, no segment of the city's population was specifically identified as being without transportation service.

Aside from the aforementioned services, for most of the city's residents, private transportation is the only available option to get to the local medical, social, and retail services and the educational and employment opportunities located in adjacent communities.

AIR TRANSPORTATION SYSTEM

No commercial or private aviation facilities are located within the City of Irrigon. Regional freight cargo and air passenger services are provided at the Eastern Oregon Regional Airport at Pendleton, located approximately 45 miles southeast of Irrigon via I-84, and at the Tri-Cities Airport located approximately 40 miles to the north in Pasco, Washington. Both the Eastern Oregon Regional Airport and the Tri-Cities Airport provide regional passenger air service, connecting to national and international airports. In addition, the City of Hermiston owns and operates a general aviation airport that offers charter service. Port of Morrow is working towards a commercial air service.

RAILROAD TRANSPORTATION SYSTEM

Freight rail service would potentially be available through the Port of Morrow, though intermediate non-rail transport to the Port of Morrow would be necessary. The rail service at Port of Morrow is being upgraded to accommodate greater shipping traffic and adding a spur loop to serve the industrial area. Shippers in the area have the use of two inter-modal facilities, located in Spokane, Washington and Nampa, Idaho.

Passenger rail service was discontinued in May 1997. The nearest service is provided by Empire Builder line (Portland – Spokane) in Pasco, Washington, approximately 35 miles to the north.

MARINE TRANSPORTATION SYSTEM

Irrigon has a small public marine park and recreational boat ramp located on the north side of the community at the end of 10th Street. Marine freight transportation is not available within the City of Irrigon, though the Port of Morrow maintains a barge area along the Columbia River in Boardman, Oregon to the west. To the east of Irrigon, the Port of Umatilla maintains a marina and a freight transfer area along the Columbia River in the City of Umatilla.

PIPELINE TRANSPORTATION SYSTEM

No major pipelines within the City of Irrigon were identified; however, it was noted that a natural gas line owned and operated by Cascade Natural Gas runs parallel to the north side of Highway 730.

TRAFFIC OPERATIONS ANALYSIS

Seven intersections within the city were selected for operational analysis under 1998 existing conditions. Traveling west to east, those intersections include Highway 730 and:

- Second Street West
- First Street West
- Third Street
- Columbia Avenue
- Division Street
- Sixth Street
- Twelfth Street

Traffic Control

Figure 4 illustrates the existing lane configurations and traffic control devices at each of the study intersections, all of which are currently un-signalized.

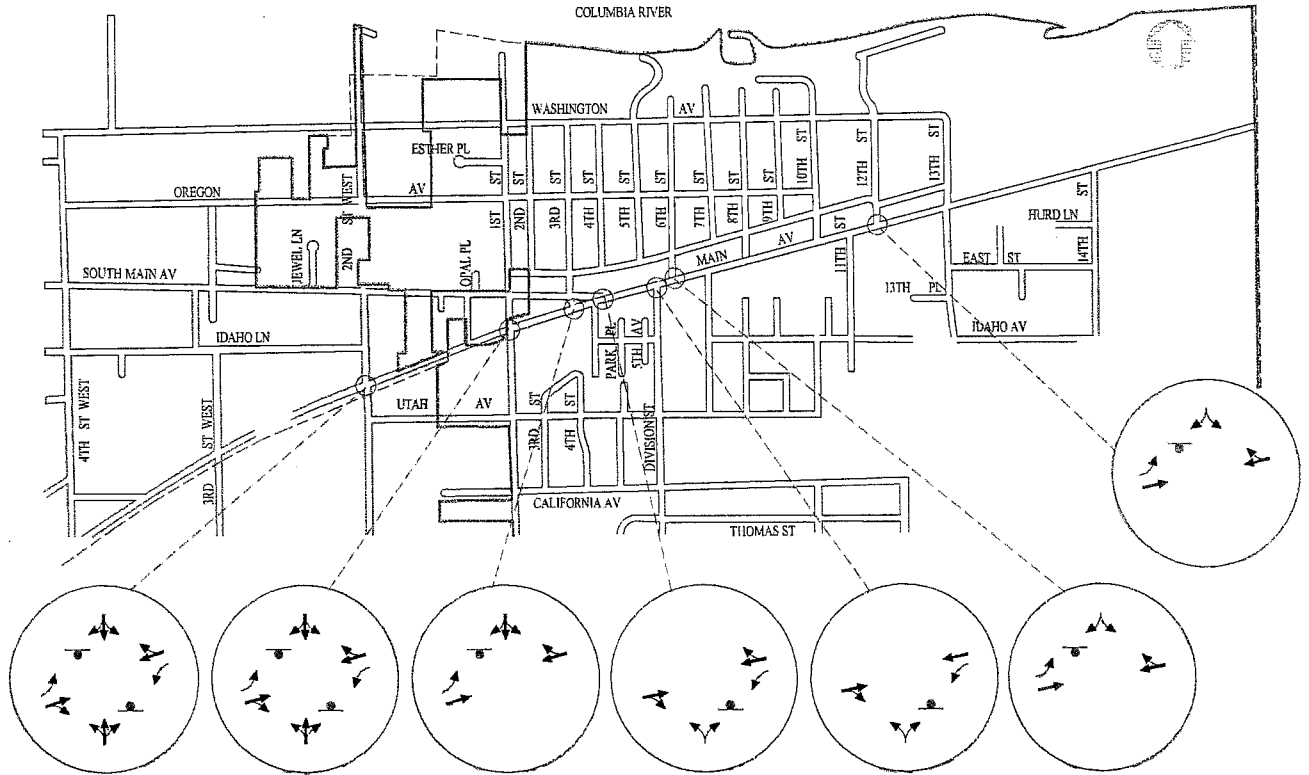
Traffic operations at each of the intersections were examined during the weekday p.m. peak hour. The p.m. peak period represents the worst-case condition for traffic operations on the transportation system. Travel patterns during this weekday time-period typically combine commuting, shopping, and recreational trips, thus generating higher traffic volumes on the transportation system than during any other time-period or day of the week.

Traffic Volumes



Weekday p.m. peak hour manual traffic volume counts at the intersections were conducted in mid-November 1998. Manual turning movement traffic-counts were conducted between 3:30 p.m. and 5:30 p.m. on a mid-week day. The highest one-hour flows during these periods were used in this study.

Based on the turning movement counts conducted at study area intersections, the system-wide p.m. peak hour of traffic on a typical weekday afternoon was estimated to occur between 4:30 and 5:30 p.m. Existing weekday p.m. peak hour traffic volumes are shown in Figure 5. Traffic volumes have been rounded to the nearest five vehicles per hour. For comparative purposes, local average daily traffic (ADT) volume data obtained from ODOT are summarized in Figure 6.

Figure 4 – Existing Lane Configurations and Traffic Control Devices



Lane Configurations and Traffic Control Devices

-  - STOP SIGN
-  - APPROACH LANE, INDICATING ALLOWED MOVEMENTS
- URBAN GROWTH BOUNDARY
- CITY LIMITS

LEVEL OF SERVICE AND VOLUME TO CAPACITY RATIO ANALYSIS

Transportation engineers have established various standards for measuring traffic capacity of roadways or intersections. Each standard is associated with a particular level of service (LOS). The LOS concept summarized in Appendix B, requires consideration of factors that include travel speed, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort and convenience, and operating cost. In the 1991 Oregon Highway Plan, levels of service were defined by a letter grade from A-F, with each grade representing a range of volume to capacity (v/c) ratios. A volume to capacity ratio (v/c) is the peak-hour traffic volume on a highway divided by the maximum volume that the highway can handle. If traffic volume entering a highway section exceeds the section's capacity, then disruptions in traffic flow will occur, reducing the level of service. LOS A represents relatively free-flowing traffic and LOS F represents conditions where the street system is totally saturated with traffic and movement is very difficult. The 1999 Oregon Highway Plan maintains a similar concept for measuring highway performance, but represents LOS by specific v/c ratios to improve clarity and ease of implementation. Table 1 presents the level of service criteria and the corresponding volume to capacity ratio for arterial and collector streets.

Figure 5 – Traffic Volumes Weekday Peak Hour (1998)

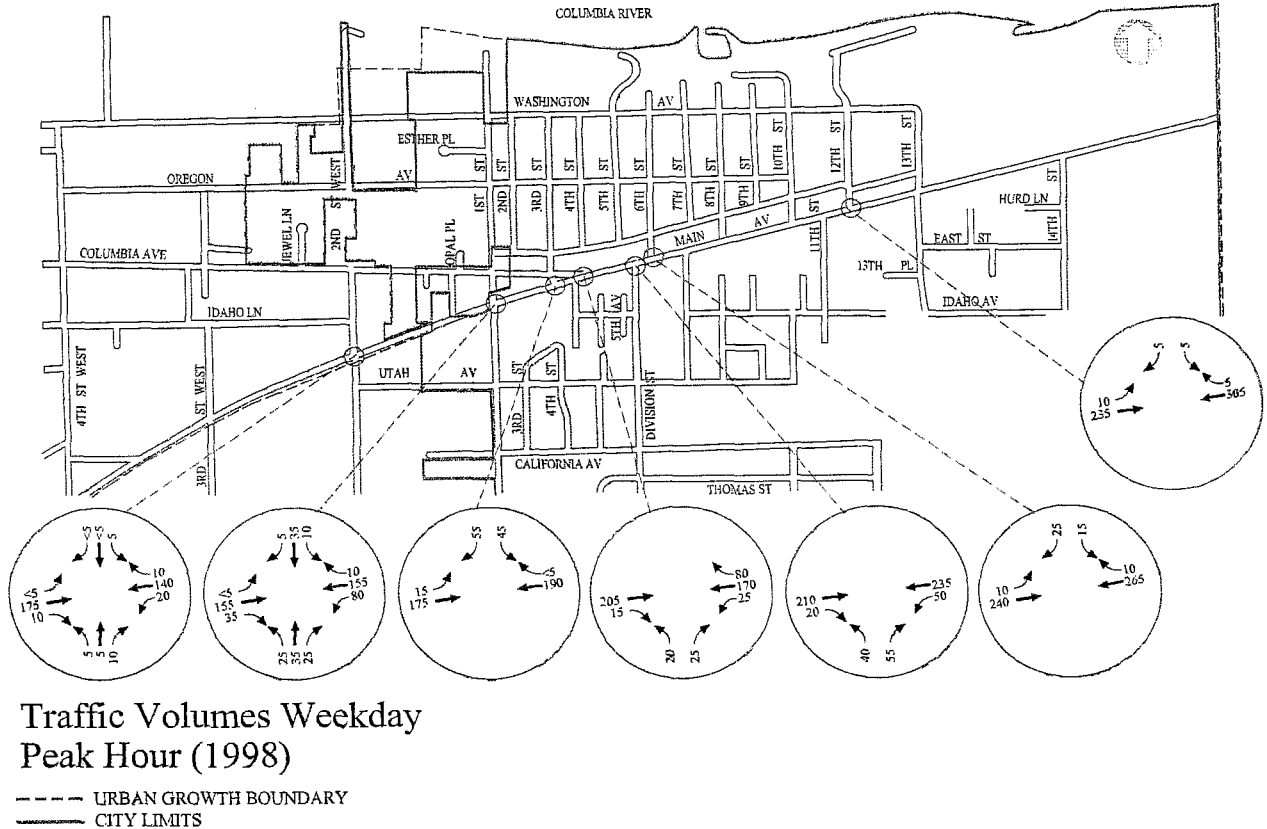


TABLE 1 – LEVEL OF SERVICE AND VOLUME TO CAPACITY RATIO CRITERIA FOR ARTERIAL AND COLLECTOR STREETS

Service Level – (Volume to Capacity Ratio)	Typical Traffic Flow Conditions
A (0.00 – 0.48)	Relatively free flow of traffic with some stops at signalized or stop sign controlled intersections. Average speeds would be at least 30 miles per hour.
B (0.49 – 0.59)	Stable traffic flow with slight delays at signalized or stop sign controlled intersections. Average speed would vary between 25 and 30 miles per hour
C (0.60 – 0.69) C-D (0.70 – 0.73)	Stable traffic flow with delays at signalized or stop sign controlled intersections. Delays are greater than at level B but still acceptable to the motorist. The average speeds would vary between 20 and 25 miles per hour
D (0.74 – 0.83) D-E (0.84 – 0.87)	Traffic flow would approach unstable operating conditions. Delays at signalized or stop sign controlled intersections would be tolerable and could include waiting through several signal cycles for some motorists. The average speed would vary between 15 and 20 miles per hour.
E (0.88 – 0.97) E-F (0.98 – 0.99)	Traffic flow would be unstable with congestion and intolerable delays to motorists. The average speed would be approximately 10 to 15 miles per hour.
F (> 1.00)	Traffic flow would be forced and jammed with stop and go operating conditions and intolerable delays. The average speed would be less than 10 miles per hour

Source(s): Transportation Research Board, *Highway Capacity Manual*, Special Report 209; ODOT, *SIGCAP Users Manual*. ODOT, 1984

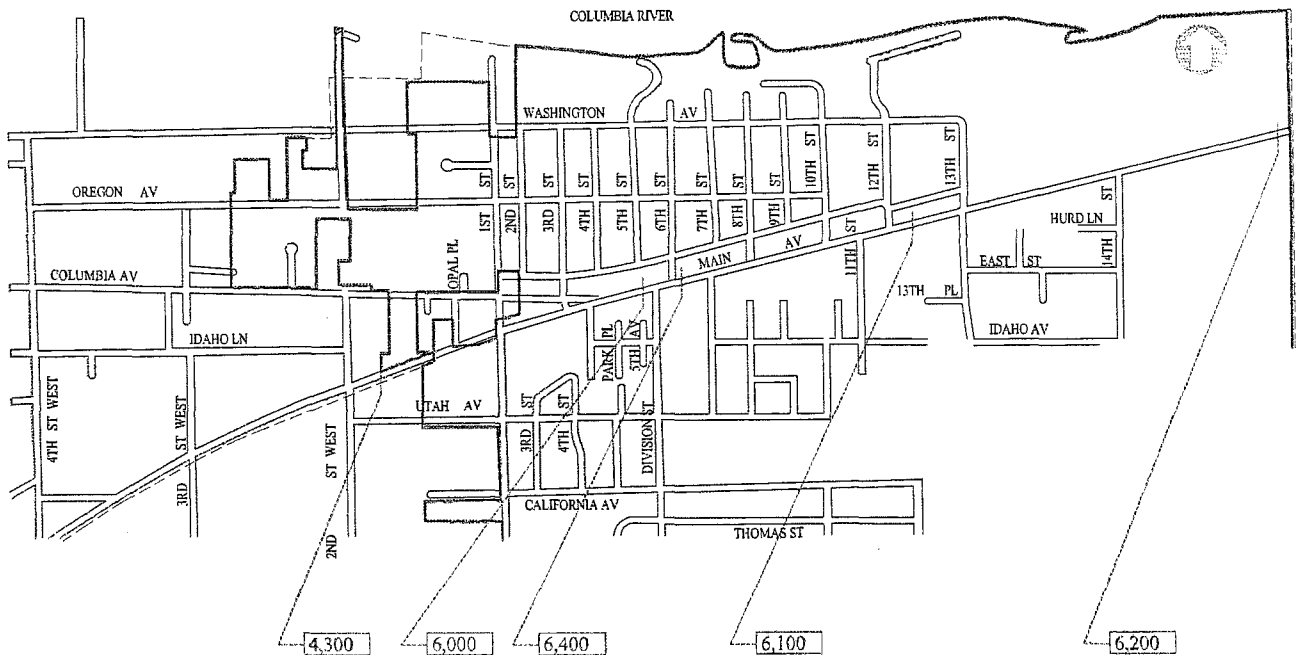
Using the weekday p.m. peak hour turning movement volumes shown in Figure 6, an operational analysis was conducted at each of the study area intersections to determine existing levels of service. All level of service analyses described in this study was conducted in accordance with the 1994 Highway Capacity Manual, published by the Transportation Research Board (Reference 3). Appendix “B” summarizes the level of service concept.

To ensure that this analysis was based on a reasonable worst-case scenario, the peak 15 minute flow rate during the weekday p.m. peak hour was used in the evaluation of all intersection level of service and volume to capacity ratio analyses. For this reason, the analyses reflect conditions that are only likely to occur for 15 minutes out of each average weekday p.m. peak hour. Traffic conditions during all other weekday periods will likely operate under better conditions than those described in this report. It should be noted that peak seasonal traffic conditions typically occurs during the summer harvest season, hence Design Hour Volumes may be up to 25 percent higher than the peak hour analyzed in the TSP.

Un-signalized Intersections

For un-signalized two-way stop-controlled (TWSC) intersections, level of service (LOS) and volume to capacity ration (v/c ratio) is based on an intersection’s capacity to accommodate the worst, or critical, movement. Typically, the left-turn from the stop-controlled approach is the most difficult movement for drivers to complete at a TWSC intersection. This is due to this movement being exposed to the greatest potential number of conflicting, higher-priority movements at the intersection. Available gaps in the through traffic flow of the uncontrolled approach(s) are used by all other conflicting movements before the side-street left-turn can be negotiated. Therefore, the number of available gaps for the side street left-turn to negotiate its movement safely is likely to be substantially lower than any other movement. As a result, the side-street left-turn typically experiences the highest delays and the worst level of service. For the Highway 730 corridor through the City of Irrigon, the Oregon Highway Plan stipulates that a maximum volume to capacity ratio of 0.80 (Reference 1). Table 2 summarizes the level of service and volume to capacity ratio results for the un-signalized study intersections.

Figure 6 – 1997 Estimated Average Daily Traffic Volumes



Estimated Average Daily Traffic Volumes (1997)

----- URBAN GROWTH BOUNDARY
 _____ CITY LIMITS

TRAFFIC VOLUMES BASED ON 1997 ODOT TRANSPORTATION VOLUME TABLES

TABLE 2 – 1998 PM PEAK HOUR LEVEL OF SERVICE AND VOLUME TO CAPACITY RATIO, UNSIGNALIZED INTERSECTIONS

Intersection	Critical Movement	V/C	Average Delay (sec/veh)	Critical Movement LOS	Major Street LOS
2 nd Street West/Highway 730	Southbound	0.02	5.9	B	A
1 st Street/Highway 730	Southbound	0.12	7.6	B	A
3 rd Street/Highway 730	Southbound	0.17	5.7	B	A
South Main Street/Highway 730	Northbound	0.08	5.7	B	A
Division Street/Highway 730	Northbound	0.18	6.8	B	A
6 th Street/Highway 730	Southbound	0.08	5.9	B	A
12 th Street/Highway 730	Southbound	0.02	6.4	B	A

Legend: LOS = Level of Service; V/C = Volume/Capacity Ratio

As Table 2 indicates, all of the un-signalized study area intersections well below maximum volume to capacity ratios under existing weekday p.m. peak hour conditions.

TRAFFIC SAFETY

Another important aspect of the transportation system is safety. The safety analysis described in the following section focuses on the accident history for Highway 730 within the City of Irrigon urban growth boundary.

Intersection Accident Analysis

The accident history of the study intersections was examined for potential and existing safety problems. ODOT accident data for the period January 1993 through June 1998 were used for this analysis. In addition, the ODOT District 12's 1996-1998 Safety Priority Index System (SPIS) lists were reviewed. The SPIS list identifies locations with relatively high accident rates and locations that have been the site of one or more fatal accidents.

Table 3 presents accident rates for the individual study intersections. Accident rates for intersections are calculated by relating the total entering volume of traffic at the intersection, on an average daily basis, to the number of reported accidents for a given period. The accident rate for intersections is expressed as the number of accidents per million entering vehicles (acc/mev).

TABLE 3 – STUDY INTERSECTION ACCIDENT RATES

Intersection	Number of Accidents	Accidents/MEV
2 nd Street West/Highway 730	0	0
1 st Street/Highway 730	4	0.35
3 rd Street/Highway 730	0	0
South Main Street/Highway 730	0	0
Division Street/Highway 730	0	0
6 th Street/Highway 730	0	0
12 th Street/Highway 730	1	0.09

*ODOT Accident data search period of 1993 – 1998

As shown in Table 3, the only study intersections with reported accidents during the review period were the First Street/Highway 730 intersection and the 12th Street/Highway 730 intersection. A single accident was reported at the 12th Street/Highway 730 intersection in August of 1994. There were no SPIS sites within the city limits.

During the study period, the First Street/Highway 730 intersection had four reported accidents, all of which involved vehicles on First Street not yielding to vehicles traveling on Highway 730. Field inspection revealed that the First Street approach to Highway 730 was below the grade of the highway and was aligned at a skew, potentially contributing to the potential for accidents at the intersection. Local residents further noted that sun glare looking to the west from First Street during the evening hours often makes entry to the highway difficult. The First Street/Highway 730 intersection needs to be improved to accommodate the intended functionality of First Street (Collector) and maintain appropriate north/south connectivity.

OTHER IDENTIFIED EXISTING TRANSPORTATION DEFICIENCIES

As an extension of the existing conditions analysis, different aspects of the transportation system with existing deficiencies were identified. A description of the deficiencies and potential improvements follows. The summary is based on field data/observations and information/suggestions that were made by members of the respective transportation agencies and the public.

Highway 730

Members of the Irrigon community raised several concerns regarding the cross-section and function of Highway 730. These issues reflect both vehicular and pedestrian/bicycle access concerns and include:

- The current lack of pedestrian or bicycle facilities along the highway raise safety issues with the exception of the multiuse path on the North side of Highway 730. Several agency staff members and citizens noted that, although there are no sidewalk facilities or bicycle facilities, children routinely walk along and across the highway going to and from school. Several other citizens also routinely cross the highway to reach residences and/or commercial destinations on opposite sides of the highway. Ultimately, there is a lack of safe places for pedestrians to cross Highway 730 due to few breaks in the traffic stream and the width of the roadway itself.
- Growing traffic volumes on the highway impact community mobility, making access to Highway 730 from side streets increasingly difficult, though adequate capacity currently exists for ingress and egress. (As previously documented, approximately 6,000 vehicles currently traverse Highway 730 through the city on a daily basis.)
- There is a perception among local residents that drivers' speeds along the highway are too fast
- The parking of large trucks along the shoulders of the highway (and to a lesser extent, cars) was noted to obstruct visibility for drivers at adjacent intersections.
- Parking availability along fruit stands within the community is limited and is a safety concern. Sidewalks and curbs along Highway 730 would help define these areas and control traffic ingress and egress.

System Connectivity

During the TAC meeting process, it was noted that there is a continuing need to provide strategic north-south connections across Highway 730 for both vehicles and pedestrians. Similarly, there is a need to ensure that the city provides adequate east-west facilities parallel to Highway 730 such that the community does not become entirely dependent on highway access to facilitate local trips. In addition,

with the large amount of residential development occurring on the south side of the city, there is a need to review the layout of the city's roads to ensure that reasonable connectivity is preserved.

Use of Traffic Control Devices

The placement of some traffic control devices within the City of Irrigon was questioned by local citizens. Based on field inspection, it appears that both stop and yield signs have been inappropriately installed in the past as traffic calming measures. An example of this situation exists along Washington Street. There are several All-Way stops that have been installed along Washington Street, apparently at the request of local residents who were hoping to lower speeds on the roadways.

There are two primary concerns associated with the inappropriate placement of traffic control devices:

1. The placement of the traffic control devices represents a liability to the city if they are inappropriately used (Placement standards are identified in the Manual on Uniform Traffic Control Devices, Reference 4).
2. The inappropriate use of traffic control devices tends to result in disrespect for the device; potentially leading to driver complacency and future accidents (for which the city may then be liable).

SUMMARY

Through an inventory of existing conditions, several key findings were identified. Those findings include:

- The City of Irrigon's roadway network is focused around Highway 730 with supplemental access to local commercial and residential areas provided by city streets.
- The future growth potential of Irrigon is currently limited by existing water and sewer infrastructure deficiencies.
- Few sidewalk facilities are provided along public roadways within the city. There is a need for pedestrian facilities linking residential neighborhoods to the existing and proposed school buildings, as well as to facilitate safe pedestrian crossings of Highway 730.
- Few bicycle facilities were identified within the city.
- Public transit service is available in the form of a senior bus and dial-a-ride service provided through Morrow County. Other transportation services include bus service provided by the local school bus service, and a personal vehicle reimbursement program for special needs that is funded through RSVP/CAPECO.
- On a typical weekday afternoon, the transportation system experiences its peak roadway traffic demand between 4:30 and 5:30 p.m. During this peak period, the transportation system operates well within established standards.
- Review of accident data from the study intersections did not identify any specific safety deficiencies, though field inspection of the 1st Avenue/Highway 730 intersection suggests that the geometric design of the intersection could be improved.
- Since the realignment of Highway 730 in 1999, the intersection of NE 3rd, Columbia Lane, and Highway 730 has created an intersection that does not operate as intended. This has a detrimental effect on the commercially zoned properties within this proximity.
- The use of some traffic control devices within the city is inappropriate.

Section 3

Future Conditions Analysis

Future Conditions Analysis

INTRODUCTION

This section presents estimates of long-term future travel conditions within the TSP study area. The long-term future transportation needs for the City of Irrigon were examined based on available employment and population forecasts, identified development activities, review of the proposed roadway network, results from the operational analysis of the existing street system, and extensive discussions with regional transportation personnel and local citizens.

TRANSPORTATION DEMAND

Future transportation demand within the City of Irrigon urban growth boundary was estimated based on expected growth in the study area population, employment, and traffic traveling through the study area for the horizon year 2020. Alternative land uses were compared with the land use mix proposed in the city's Comprehensive Plan during development of the long-term travel demand forecast. The unique trip making characteristics of residential as well as employment-based activities were then considered in the development of the future travel demand estimates. As part of this analysis, planned developments and transportation improvement projects were identified and reviewed within the city's urban growth boundary. Historic transportation trends were compared with proposed future site-specific growth to arrive at a reasonable forecast condition.

Land Use/Demographics

Year 2020 traffic volumes on the City of Irrigon transportation system were forecast based on population and employment estimates developed by the State of Oregon for Morrow County and the city. Estimates were compared with development trends, planned developments, and area forecast growth rates. This information was provided by local agencies to verify their appropriateness. The 20-year planning horizon was chosen to ensure compliance with the Transportation Planning Rule.

Population and Employment

Tables 4 and 5 summarize population and employment projections prepared for the City of Irrigon in conjunction with the TSP process. The population information is based on forecasts prepared by the State Economist's office for Morrow County. In reviewing the two tables, it should be noted that the estimates contained in Table 4 include the population within the city limits as well as the Urban Growth Boundary (UGB). The employment estimates shown in Table 5 are for the city only.

TABLE 4 – POPULATION PROJECTIONS

Year	1990	1997	2000	2002	2005	2010	2015	2020	1997-2020 Average
City of Irrigon Projections									
Projected Population	737	1,200	1,470	1,683	1,776	1,922	2,071	2,209	--
-including UGB		-1,444	-1,769	-2,025	-2,137	-2,313	-2,492	-2,658	--
Annual Percent Change	--	7.2%	7.0%	7.0%	1.8%	1.6%	1.5%	1.3%	2.7%
Morrow County Projections									

Projected Population	--	9,895	11,131	12,039	12,701	13,750	14,812	15,801	--
Annual Percent Change	--	--	4.0%	4.0%	1.8%	1.6%	1.5%	1.3%	2.1%

TABLE 5 – EMPLOYMENT PROJECTIONS

Year	1990	1997	2000	2002	2005	2010	2015	2020
City of Irrigon Projections								
Projected Employment	236	290	317	336	356	384	403	422
Annual Percent Change	--	3.0%	3.0%	3.0%	1.9%	1.5%	1.0%	0.9%
Morrow County Projections								
Projected Employment	2,232	2,924	3,283	3,449	3,613	3,890	4,097	4,290
Annual Percent Change	--	3.9%	3.9%	2.5%	1.6%	1.5%	1.0%	0.9%

As shown in Table 4, the City of Irrigon population (including those persons in the UGA) is forecast to grow by an average annual rate of 2.7 percent (approximately 1,215 people) between 1997 (estimated population of 1,444) and 2020 (projected population of 2,658). During the same 23-year period, approximately 130 additional employment opportunities are anticipated in the city. The growth projections prepared for the city suggest that the city’s growth will be substantial in the near-term and will moderate in the long-term.

Over the course of the same forecasting period, the population of Morrow County is projected to increase by approximately 2.1 percent annually (from an estimated population of 9,895 in 1997 to a projected population of 15,801 in 2020). The County is anticipating strong growth in the near-term horizon with the annual growth rate more closely paralleling Irrigon after the year 2005. Clearly, the City of Irrigon will be contributing significantly to the near-term growth of the overall county population.

Such findings are reflective of the current development patterns being experienced in the area, including unprecedented development activities that have been transpiring within Irrigon in the last few years. The availability of new employment opportunities related to the Two Rivers Correctional Facility, the U.S. Army Chemical Weapons Incinerator Project, the Wal-Mart Distribution Center, and other projects in neighboring communities is expected to result in continued residential development in Irrigon.

If population and employment growth in Irrigon meets the projected growth rates, the ratio of employment to population will decrease from 1/3 in 1990 to 1/5 in 2020. This is a significant decrease and represents a major imbalance between population and employment. The 1997 population and employment estimates indicate that the employment to population already has dropped to below 1/4 in that year. This is the result of extremely high population growth in the 1990s and relatively low estimated employment growth during the same period.

The employment rate in Irrigon was estimated to be lower than the population growth rate for the period 1990 through 1997 because of Irrigon “bedroom community” characteristics. Irrigon historically has been a bedroom community for people employed in nearby cities such as Boardman and Hermiston. This trend continued during the 1990s and population growth is expected to remain high in the short term (the next two to three years). At the same time, employment growth is expected to continue to lag, with no major planned employment opportunities in Irrigon in the near term. Consequently, most of the continued exacerbation of Irrigon employment/population imbalance will occur in the next several years. In the longer term, the growth projections indicate that population and employment growth rates will even out

somewhat (i.e., the situation will not continue to worsen) but there will continue to be a serious imbalance between the number of people living and working in Irrigon.

Further details regarding the employment and growth assumptions for this report are detailed in Appendix “C”.

While the contractor produced population figures for transportation demand for this document, ODOT continues to monitor needs within the community. ODOT continually updates current needs based on development and traffic movement within the community.

It is important to recognize that the City of Irrigon uses an annual average growth rate of 5% growth. They base this average annual growth rate on a 1977 report prepared for the City of Irrigon by J. Val Toronto and Associates, Inc., listed the following populations for the City.

YEAR	POPULATION
1960*	232
1970*	261
1976	390
1980*	700

While updating their population the City hired Anderson-Perry and Associates to evaluate the City’s water system in 1984. That report indicated a 1984 population of 900.

YEAR	POPULATION
1984	900
1990*	737
1997	1245
1998	1447**
2000*	1702

**City staff estimated the 1998 population.

SCM Consultants, Inc., the City of Irrigon’s engineering company, calculated an average annual growth rate for the City from the period of 1960 to 1998—a period of 38 years—of 4.94%. Furthermore, SCM suggested using a 5% rate for all future growth calculations. The City of Irrigon bases all population estimates on a 5% annual average growth rate.

Anticipated Future Growth

In an effort to account for regional traffic growth, a net annual growth rate was chosen to forecast the year 2020 traffic analysis. This rate was determined based on a review of historical traffic volume trends, anticipated population and employment growth, regional population densities, and local knowledge of planned development.

Historical Growth

A review of local Oregon Department of Transportation traffic volume data on Highway 730 indicated a historical 0.6 percent growth rate between 1960 and 1996. Considering only the past five years and using additional data available for Interstates 82 and 84, the annual traffic growth rate was approximately three percent. Based on the data available, it appears that the relationships between historical employment, population, and traffic growth trends in the study area have been relatively consistent. Given this information, the addition of new residents in the area over the next 20 years is expected to result in a

growth in traffic of approximately 2.9 percent annually. The traffic growth can be expected to parallel population growth; hence, the near-term growth in traffic volumes is expected to be more substantial than the long-term growth rate.

FORECAST FUTURE TRAFFIC VOLUMES/DEFICIENCIES

Future conditions within the City of Irrigon were forecast by applying the 2.9 percent annual growth rate assuming a “no-build” condition (i.e., no new roadways would be constructed in the 23-year horizon) to the 1997 local average daily traffic (ADT) volume data (refer to the Existing Conditions section). Figure 6 illustrates the resulting forecast year 2020 average daily traffic volumes under the no-build condition.

A similar analysis of traffic volumes at the study intersections was completed by applying the 2.9 percent annual growth factor to the 1998 existing intersection traffic counts identified in Figure 7. Figure 8 summarizes the forecast year 2020 weekday p.m. peak hour traffic volumes at the study intersections under the no-build condition.

Typically, a two-lane rural highway with geographic features similar to Highway 730 (i.e. relatively flat and straight) can accommodate a maximum of 15,000 to 20,000 vehicles (including vehicles in both directions) daily based on the Highway Capacity Manual (Reference 3). It should, however, be noted that the daily traffic volumes on the Highway 730 should be in the range of 9,000 to 12,000 vehicles to maintain the level of service that residents of Irrigon are accustomed to.

Reviewing the volumes shown in Figure 6, the forecast volumes suggest that the downtown area of Highway 730 east of First Street will experience increased delay in the future that result in a degradation of service below levels currently experienced. While delay will increase, congestion in a commercial area such as Highway 730 should be expected. The forecast volumes clearly indicate that no capacity deficiencies are anticipated for highway traffic.

Level of Service Analysis

For the Highway 730 corridor through the town of Irrigon, ODOT stipulates a maximum volume to capacity ratio of 0.80.

To ensure that the local study area intersections will continue to operate at an acceptable volume to capacity ratio, the forecast future traffic-volumes were analyzed. The findings of this analysis are summarized in Table 6.

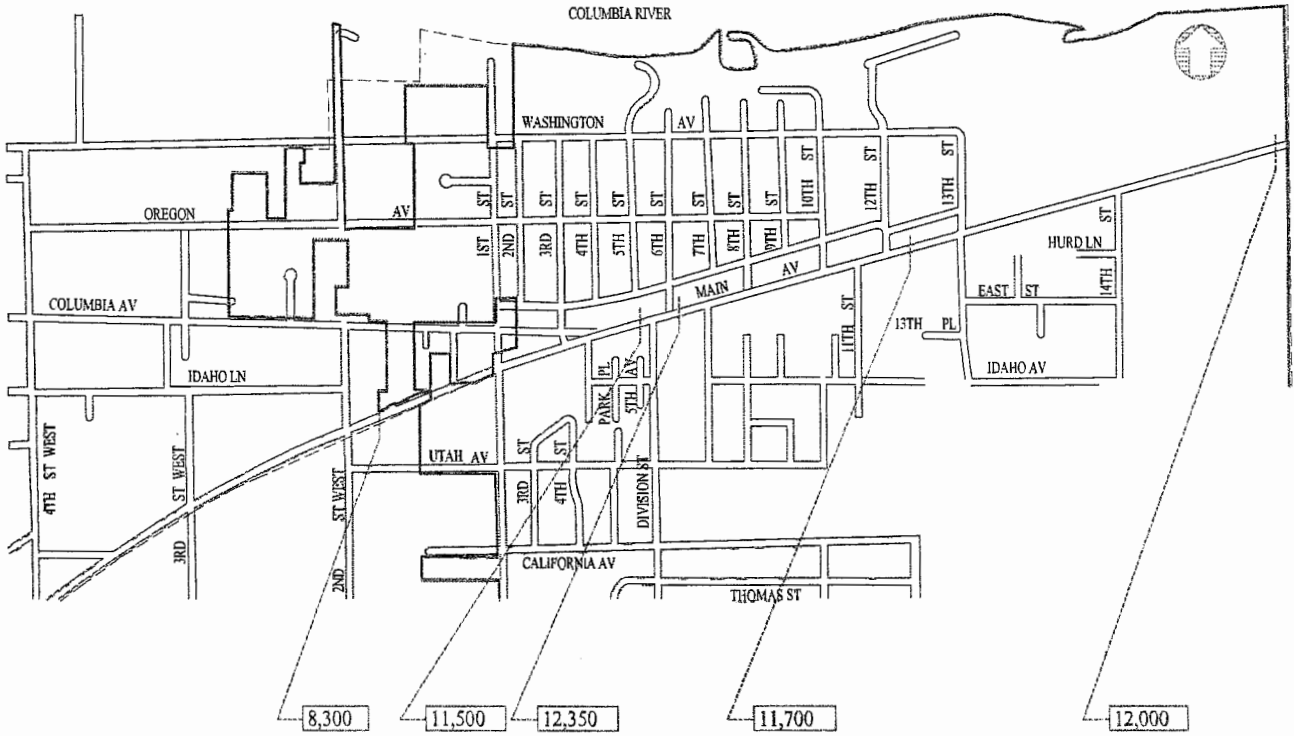
TABLE 6 – 2020 FORECAST LEVEL OF SERVICE AND VOLUME TO CAPACITY RATIOS (UN-SIGNALIZED INTERSECTIONS)

Intersection	Critical Movement	V/C	Average Delay (sec/veh)	Critical Movement LOS	Major Street LOS
Second Street West/Highway 730	Southbound	0.06	8.1	B	A
First Street/Highway 730	Southbound	0.64	30.1	E	A
Third Street/Highway 730	Southbound	0.17	16.6	C	A
South Main Street/Highway 730	Northbound	0.23	10.2	C	A
Division Street/Highway 730	Northbound	0.63	26.7	D	A
Sixth Street/Highway 730	Southbound	0.24	12.5	C	A
Twelfth Street/Highway 730	Southbound	0.07	13.1	C	A

Legend: LOS = Level of Service, V/C = Volume/Capacity Ratio

As Table 6 indicates, the major street movements of all of the un-signalized study area intersections are forecast to continue operating at acceptable volume to capacity ratios under year 2020 weekday p.m. peak hour conditions.

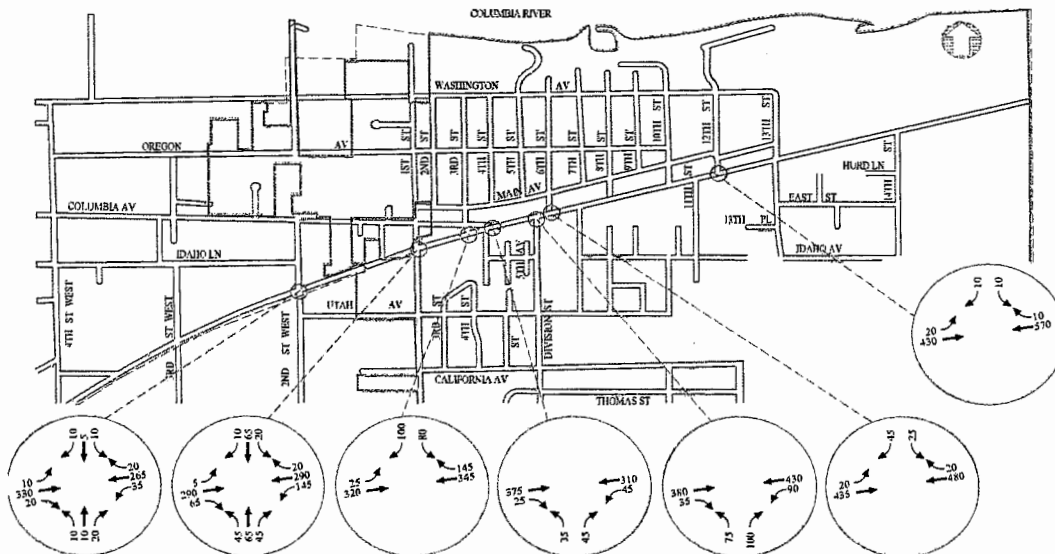
Figure 7 – 2020 Forecast Average Daily Traffic Volumes



Forecast Average Daily Traffic Volumes (2020)

- URBAN GROWTH BOUNDARY
- CITY LIMITS

Figure 8 – 2020 Forecast Traffic Volumes, Weekday PM Peak Hour



Forecast Traffic Volumes Weekday PM Peak Hour (2020)

- URBAN GROWTH BOUNDARY
- CITY LIMITS

Potential Capacity Improvements

The potential need for signalization of the First Street/Highway 730 intersection was examined based on the forecast traffic volumes. Signal warrant analysis results suggest that a traffic signal will be warranted at the intersection within the 20-year planning horizon.

Placement of a traffic signal along Highway 730 within the city will be driven largely by whether First Street or Division Street becomes the primary north-south conduit to Highway 730 and how land uses near those intersections are developed. This in turn, is partially dependent on whether geometric improvements are made to the First Street/Highway 730 and/or Division Street approach. For more information refer to the Existing Conditions section - an accident history exists at the First Street/Highway 730 intersection which is partially attributed to the intersection's existing geometric design and Division Street changes slope from flat to sloped near Highway 730.

The potential need for, and placement of, a traffic signal on Highway 730 within the 20-year planning horizon will be further discussed in Section 4, **Alternatives Analysis**. That discussion includes consideration of the impact of a signal on Highway 730, the potential effects a traffic signal could have on adjacent un-signalized intersections, as well as overall safety for both vehicles and pedestrians.

With the exception of a potential traffic signal along Highway 730, no roadway capacity-related mitigation measures are anticipated. The next section of the TSP presents an analysis of potential improvement alternatives that address existing and future forecast traffic conditions.

SUMMARY

Several significant findings were identified through the future conditions analysis, most notably:

- The City of Irrigon's population (including those persons in the UGB) is forecast to grow by an average annual rate of 2.7 percent (approximately 1,215 people) between 1997 (estimated population of 1,444) and 2020 (projected population of 2,658). The growth projections prepared for the city suggest that the city's growth will be substantial in the near-term and moderate in the long-term. The current population of 1780 (2003) far exceeds the projected 2.7 percent average annual growth rate that was assumed for this project.
- During the same period, the population of Morrow County is projected to increase approximately 2.1 percent annually from an estimated population of 9,895 in 1997 to a projected population of 15,801 in 2020.
- The City of Irrigon's transportation system is generally expected to accommodate forecast future growth in travel demand without triggering the need for major capacity-related roadway improvements. One potential capacity-related improvement that warrants further consideration is the long-term need for a traffic signal along Highway 730.

Section 4

Alternatives Analysis

Alternatives Analysis

INTRODUCTION

This section presents a summary of future transportation improvement alternatives that could be implemented to mitigate existing and projected future transportation system deficiencies. Potential roadway improvement alternatives are presented and recommendations are offered as to their feasibility. As potential deficiency mitigation projects were developed, consideration was given to how a multi-modal approach could contribute to individual projects. Thus, while the primary impetus for a given mitigation alternative may center on increasing vehicular capacity, provision of appropriate bicycle and pedestrian facilities was given equal consideration.

Special effort was provided in considering and recommending improvements to the pedestrian and bicycle systems. Recommendations were developed that create direct linkage to all identified pedestrian/bicycle generators and provide for a core pedestrian and bicycle transportation system. The alternative analysis and subsequent recommendations process were handled separately to ensure that a complete system for each mode was identified without constraint.

It should be noted that, in this section, formal alternatives development and analysis have only been presented for the roadway network and its components. Other elements of the transportation system such as pedestrian access, bicycle access, etc. currently exist at a level such that an entire network needs to be developed. The **Transportation System Plan** section of this report contains the recommended improvements to all of the modal systems.

The remainder of this section is organized into two parts. First, a general discussion of improvement needs and associated ramifications is presented. A discussion of specific improvement alternatives, including estimated costs, then follows.

LAND USE/TRANSPORTATION SYSTEM RELATIONSHIP

The existing and future land uses within the City of Irrigon have a substantial impact on the local transportation system. As a result, the city's transportation system will continue to reflect a strong relationship to local land use well into the future. For illustrative purposes, the following discussion presents some of the transportation implications associated with various land use alternatives.

Background

As stated in the **Existing Conditions** section, most of the opportunities associated with development and redevelopment over the next 20 years focus on Highway 730 and the parallel North Main Street. Land use opportunities and constraints are described below for industrial, commercial, and residential land. A description of land use alternatives available to the city is then presented.

One of the most prominent opportunities for Irrigon in terms of land use in the context of the transportation system is the abundance of commercially zoned land, including 22 currently vacant and redevelopable acres in the Urban Growth Boundary. Sixteen of these were estimated in the buildable lands inventory to be in excess of the amount needed for the next twenty years. Excess commercial land often contributes to a diffused pattern of commercial development and detracts from objectives to create commercial focal points such as a downtown area. An over supply of land will help keep land prices low but at the expense of efficient use of the land supply. Inexpensive, abundant land is a disincentive to efficient land use resulting in extremely auto-dependent land uses and site design, large parking lots with excessive parking and disconnected development.

While it would seem that the city is attractive for commercial development because it has such a large supply, the opposite can actually be the case to achieve long-term, stable business development.

Scattered commercial development also has these disadvantages:

- Difficulty of creating pedestrian-oriented commercial districts. Auto-dependency increases vehicle trips and can disadvantage those who cannot drive automobiles to access needed services.
- The inability to create synergistic effects where businesses can benefit themselves and the community through co-location such as customer patronage and increased sales, shared parking and signage, landscaping, managed access, etc.
- The difficulty in establishing a strong business district identity that in turn can attract more business development.
- The difficulty in establishing a strong community identity that contributes to the community's social fabric and sense of well-being.

Future residential growth will provide an increased local market for a range of goods and services that will also benefit existing residents. The current arrangement of commercial land in Irrigon is strip commercial along the Highway without defined parking areas. To summarize, this arrangement, exacerbated by lack of definition of the city's beginning and end, risks distracting the consumer base from stopping and shopping. Additionally, the lack of defined access to stores poses not only a consumer but a safety hazard.

Related land use opportunities include:

- The commercial center at the west end of the city (including the bank, Bakes, the Sentry Market and the hotel) is the most defined downtown center area and can be considered the downtown commercial center.
- Several fruit market stands along Highway 730 in the highway right-of-way are a regional draw and enjoy a considerable reputation. Although these have historically developed in a dispersed fashion along the highway, centralization of this market type, with available parking and signage, could encourage an increased consumer base and add to the agricultural aspect of the city's identity. One location for such a use could be between Fifth Street and Sixth Street to the north of Highway 730 as a transitional use between the commercial zone and the city park. (Refer to Figure 2 and the land use scenario maps contained in Appendix "D" for conceptual illustrations of the proposed zone changes.
- There are currently a number of residential uses on commercial land in Irrigon. By allowing non-commercial uses in commercially zoned areas, the city may be inhibiting the potential for future main street or commercial core development/redevelopment and encouraging strip commercial development along both Highway 730 and North Main Street.
- At the time the buildable lands inventory for Irrigon was completed in 1997, there were over 700 acres of residentially zoned property within the Irrigon Urban Growth Area that were vacant, redevelopable, or had the potential for infill. Redevelopment was projected to occur at densities similar to existing densities (3.5 – 5.5 units per acre). Neither multi-family housing nor mobile home parks are allowed outright in any of Irrigon's residential zones. Mobile homes are allowed outright on single lots in the R-1 zone. Since the buildable lands inventory has been completed, much of the Northwest quadrant was removed from the Irrigon UGB.
- There are approximately 50 acres of industrially zoned land on the eastern city limit that is not being used for industry. Due to the retail commercial, rather than industrial economic nature of Irrigon, and the excess regional supply of industrial land, particularly owned by the Port of Morrow in Boardman, members of the City Council are considering rezoning some or all of this land. Rezoning the industrial

land to commercial where it is currently located at the western end of town could dilute consumer draw from the eastern end of town where the immediate potential for a downtown center is pronounced.

Irrigon thus has an opportunity to create a downtown or main street character to help define the “center” of the city. The existence of a downtown, central commercial core or other focus for retail business is important to the city for a variety of reasons:

- Downtowns perform an important economic function. A downtown provides a center where businesses can congregate and mutually support each other, providing a stronger benefit to each other and the community than when they are separated.
- Downtowns provide a convenient, central location where the community can obtain a variety of goods and services. It performs a social function, especially if civic buildings are located in the downtown, by bringing people together with a sense of pride and ownership in the community.
- Downtowns provide an organizing element to the physical growth and development of the community that help establish logical arrangements of land use that are mutually supportive.
- Downtown’s help a community establish its identity.

Traditionally, downtown’s have these characteristics:

- Grid system of streets;
- 200’ – 300’ blocks;
- wide sidewalks;
- combination of on-street and off-street parking;
- shallow front yard set-backs;
- zero side yard setbacks with attached buildings;
- rear alleys and loading areas; and
- mix of uses – retail, services, public buildings and residential (often above retail businesses)

Many, but not all downtowns have also incorporated landscaping, distinctive lighting, and other street fixture design or design themes.

Whether in a downtown or Main Street, public investment is often a critical factor in creating successful new centers or revitalizing older ones. The location of post offices, city halls, libraries, public safety buildings and other similar facilities helps create the environment of community activity and supports retail businesses. These also help downtowns and main streets be more interesting places, become centers of community life and contribute to the community’s identity and self-image.

Land Use Alternatives Evaluation

The abundant supply of land in Irrigon, while presenting problems and challenges, is also an opportunity, presenting the community with several choices on how to develop the Main Street, residential and commercial areas.

This analysis presents three alternatives for consideration by the community: 1) continuation of the existing trend, 2) development of a defined commercial downtown center, and 3) development of a mixed-use commercial downtown zone and main street.

Land Use Alternative 1: Continue Existing Trend

If the existing development pattern is continued, strip commercial development pattern along Highway 730 will result. Lack of multi-family housing will encourage continued development of RV and mobile home parks in a scattered nature throughout the city and urban growth boundary. Undefined commercial and associated parking areas will contribute to a confused transportation system on Highway 730 for both residents and visitors, and risks diffusing the potential market base. Appendix “D” Figure D-1 contains an illustration of this alternative.

Advantages:

- Allows market to operate freely, generally unconstrained;
- Requires limited commitment by city to promote or regulate;
- Ample area for expansion; and
- Diffuses traffic impacts associated with commercial development

Disadvantages:

- Continues undefined strip commercial development pattern;
- May be difficult to attract quality commercial development along entire strip;
- Commercial development unrelated to residential development;
- Spreads out development making it virtually impossible to achieve a ‘downtown’ character in any one area;
- Diffuses potential market base;
- Not conducive to pedestrian use;
- Tends to increase infrastructure costs; and
- Lack of definition of end or beginning of city, such as ‘gateways’.

Land Use Alternative 2: Defined Commercial Downtown Area/Refined Parking Strategy

Land Use Alternative 2 would build upon areas of existing development and refines city zoning to develop a concentrated commercial downtown between the western city limits and Sixth Street. The primary elements of this alternative include: 1) defined commercial zoning and design standards focus commercial development in the downtown and desired Main Street areas, 2) a parking strategy for both the downtown (refer to Appendix Figure D-2, Character 1) and Main Street areas (Figure D-2), Character 2), and 3) development of recognizable “gateways” to the city.

To ensure infill and redevelopment opportunities, existing ordinances would be reviewed to ensure that they do not contain regulations that could inhibit infill and redevelopment of parcels in the city core.

Advantages:

- Allows current uses to continue;
- Creates a small, tight area as a commercial focus;
- Stimulates efficient use of commercial land, infill and redevelopment activity;
- Commercial area close to open space/park area and City Hall;

- Provides a more defined main street feel with pedestrian and bicycle accessibility and facilities at key areas; and
- Can be expanded over time.

Disadvantages:

- Tighter traffic circulation; potential conflicts between inter and intra-city traffic, including freight traffic without adequate signage;
- Will need to be revised, expanded over time; and
- Potential for conflict between auto, pedestrian and bicycle uses.

Land Use Alternative 3: Development of a Mixed Use Commercial Downtown Zone and Main Street with North-South Connections

Lacking any zone where multi-family housing is allowed in Irrigon, a commercial downtown zone lends itself to a mixed-use blend of development. Under Alternative 3, property would be rezoned to allow residential development above commercial/retail development in the Main Street area (C1), a new C2 zone for more auto-oriented uses would be created for the western and eastern ends of the community (see Figure D-3), and access alley parking would be allowed in the downtown and Main Street zones. Such a development pattern would decrease safety/access problems associated with currently undefined parking on Highway 730. A new multifamily zone would also be designated in the Main Street area of the city as depicted in Figure D-3, close to pedestrian and bicycle facilities, public use areas, and retail/commercial zoning.

Advantages:

- Creates a small, tight area as a commercial focus;
- Makes use of and builds upon what is already developed;
- Builds upon the city's geographic location and recreational opportunities;
- Allows for more compact commercial and residential development;
- Stimulates efficient use of commercial land, infill and redevelopment activity as well as multifamily units close to key services and transportation routes;
- Utilizes open space/park area;
- Provides a more defined main street feel with pedestrian and bicycle accessibility and amenities at key areas, including commercial center and City Hall;
- Consolidates parking both in front of and behind businesses;
- With consolidated parking behind businesses, more left-turn lanes for commercial access are possible;
- Enhances recreational and tourism opportunities; and
- Can be expanded over time.

Disadvantages:

- Tighter traffic circulation; could cause conflicts between inter and intra-city traffic, including freight traffic and
- Will need to be revisited and evaluated with potential for commercial area expansion over time.

Zoning Code Issues

Several zoning code issues were considered in selecting a preferred land use alternative. These issues are presented below.

1. Commercial lands supply and uses allowed in zone.

- The 1997 buildable lands inventory identified buildable commercial land within the city limits and the urban growth boundary. At that time, the study identified 32 acres of vacant and redevelopable commercial land, 17 acres in excess of need through the year 2017 based upon projected population and employment growth.
- The study found that residential uses are allowed in the commercial zone, eroding the developable commercial base, and encouraging commercial sprawl or strip commercial development. As previously described, unconstrained strip commercial development is likely to pose market and aesthetic disadvantages over the long term.
- Currently, there are no residential uses allowed above retail in Irrigon, a historic development pattern that can be very conducive to a downtown 'main street' environment.
- The City Park between North Main Street and Highway 730 is currently zoned commercial.

2. Residential supply and lack of a multifamily residential zone.

- At the time of the 1997 buildable lands study, there were an estimated 178 vacant residential lots in the city (363 acres) and the opportunity for 121 units of infill, or building of additional dwelling units on large lots (52 acres). This supply exceeded projected demand by 176 acres for the next 20 years.
- The buildable lands study also described the need, based upon local demographics, for a variety of housing types in Irrigon, including allowing multifamily development in at least one residential zone as an outright permitted use. Lack of a designated zone could discourage provision of needed housing.

3. Related traffic safety issues.

- The **Existing Conditions** section identified ingress and egress between Highway 730 and commercial land uses as a subject of existing pedestrian and traffic safety issues. The proximity of commercial development to Highway 730 coupled with the lack of definition of the roadways, driveways and parking areas results in driver confusion and safety problems for both vehicles and pedestrians. Sidewalks and curbs along with a parking strategy will help to minimize these conflicts.

Preferred Alternative

To address the issues described above, Land Use Alternative 3, the Mixed Use Commercial Downtown Zone and Main Street alternative is the recommended preferred alternative, with modifications, including creation of an additional commercial zone. The primary reasons for and benefits of this alternative include:

- Efficient use of vacant and redevelopable commercial land for 20 years of community growth in retail and service needs in a pattern conducive to focused commercial growth.
- Provision of areas for multifamily development in areas that take advantage of residential proximity to downtown services and uses. Brings zoning code into compliance with statewide land use planning Goal 10 (Housing) requiring a range of housing types.

- The ability to incorporate and surround the downtown with public uses, mixed use, single and multiple family development within walking and bicycling distance of commercial services.
- The capacity of the current and future street system to accommodate growth of commercial and residential development over a long period, simultaneously increasing the safety of the street network, particularly regarding Highway 730.
- To focus commercial development that allows retail uses above the ground floor in close proximity to the central business district.
- The potential to establish a strong identity for the city that will foster community cohesion and pride.

Appendix “D” contains graphical renderings that illustrate elements of the preferred land use alternative. Section 5 of this TSP, **Transportation System Plan**, provides additional information on the implementation of the preferred land use alternative.

There are also several transportation improvements that will be necessary in the future. The remainder of this section provides improvement alternatives that could be implemented to mitigate existing and anticipated transportation system deficiencies.

INTERSECTION IMPROVEMENTS

The need for mitigation of existing and future roadway/intersection operations in the City of Irrigon is relatively limited in scope. The long-term future forecast conditions analysis described in the **Forecast Future Conditions** section only identified one anticipated capacity-related intersection deficiency along Highway 730.

Provision of a Traffic Signal along Highway 730

Based on the long-term future forecast traffic conditions, the minor street northbound movement at the First Street/Highway 730 intersection is forecast to operate at a volume to capacity ratio of 0.64 by the year 2020. While the First Street/Highway 730 intersection is considered to operate at a marginally acceptable volume to capacity ratio, the potential need for signalization of the intersection was examined based on the forecast future traffic volumes. Signal warrant analysis results suggest that a traffic signal will be warranted at the intersection within the 20-year planning horizon; however, several issues affect that potential need.

Issues Related to Signalizing an Intersection on Highway 730

There are several interrelated issues that surround the potential installation of a traffic signal along Highway 730 within the City of Irrigon.

Location of a traffic signal

The appropriate location of a signal should be given consideration with respect to its implications on access and circulation for pedestrians, bicyclists, and motorists in the community. The location where the majority of local land uses are concentrated will influence the location of the traffic signal.

The forecast future conditions analysis results suggest that the location which will warrant a traffic signal in the future will depend on whether First Street or Division Street becomes the primary conduit to Highway 730 and how land uses in the vicinity of those intersections are developed. This in turn, is partially dependent on whether geometric improvements are made to First Street’s approach and/or Division Street’s approach near Highway 730. Refer to the Existing Conditions section - an accident history exists at the First Street/Highway 730 intersection that is partially attributed to the intersection’s existing geometric design. Both of these intersections should be improved to improve safety conditions.

Connectivity Considerations

There are also broad connectivity and non-vehicular access issues that will be affected by placement of a traffic signal along Highway 730. One of the issues that have been raised by community members is the need for convenient access across Highway 730 between the north and south sides of the city. Signalization of an intersection on Highway 730 will include installation of pedestrian signals, thereby enhancing safety for both vehicles and pedestrians crossing Highway 730. Given that vehicular, bicycle, and pedestrian crossing of Highway 730 will be facilitated by a traffic signal, the future signalized intersection can be expected to become a community focal point for north-south connections. Considering the implications of that focal effect, it may not be desirable to signalize a particular intersection in order to avoid concentrating traffic in certain areas. Conversely, locating a traffic signal near areas such as the middle school is good for serving pedestrian needs.

Emergency Access to Highway 730

Another potential benefit of a traffic signal would be the ability to facilitate local emergency access to the highway. A traffic signal could be used to pre-empt highway traffic and provide emergency vehicles from the fire station (located on North Main Avenue between 7th Street and 8th Street) with priority access to the highway in response situations. The use of the traffic signal for pre-emptive purposes would be especially useful in instances where emergency vehicles need to respond to incidents on the south side of the city. For the purposes of fire pre-emption, provision of a traffic signal at the Highway 730/ Division Street intersection would be desirable as compared to First Street or Second Street West, though a signal anywhere along Highway 730 would be valuable.

Impact on Adjacent Intersections

Installation of a traffic signal is also expected to have other direct and indirect impacts on the local transportation system. The traffic signal should have a positive impact on adjacent un-signalized intersections due to the gaps created in the Highway 730 traffic stream as vehicles on Highway 730 are occasionally stopped at a signal to allow for side street movements. The gaps in the traffic stream will allow for easier access to Highway 730 from un-signalized intersections.

Impact on Highway 730 Traffic

It should be recognized that the installation of a traffic signal on Highway 730 will increase delay to vehicles on the highway as highway traffic will be stopped during those periods when side-street traffic is served by the traffic signal. Although highway traffic will experience some increase in delay, all highway approaches will operate at an acceptable level of service.

Conclusion

Based on these considerations, the intersections of 2nd Street West/Highway 730, 1st Street/Highway 730, and Division Street/Highway 730 all are potential candidates for signalization. It is anticipated that one of these intersections will warrant signalization within the 20-year planning horizon. The final determination of which intersection to signalize is dependent on signal warrant analysis and consideration of how the traffic signal could be integrated into the overall transportation system. Accordingly, the ODOT and the City of Irrigon should monitor operations at each intersection over the next 20 years to determine when and if a traffic signal is required at any location. *(It should be noted that the addition or modification of a traffic signal on any ODOT facility requires the approval of the State Traffic Engineer. Identification and documentation of the need in this TSP does not guarantee the provision or modification will occur.)*

CIRCULATION IMPROVEMENTS

The City of Irrigon roadway system should be developed to ensure that adequate circulation is provided. Currently, there is a continuing need to provide north-south connections across Highway 730. Similarly, the city needs to ensure that adequate east-west facilities parallel to Highway 730 are provided such that the city does not become entirely dependent on highway access to facilitate local trips. The city should also consider development of access management techniques to further circulation needs. These issues are described further below.

North-South Connectivity

There are several potential opportunities to strengthen north-south connectivity within the City of Irrigon. Some of the improvement alternatives include:

- The potential placement of a traffic signal along Highway 730 at 2nd Street West, 1st Street, or Division Street would create an opportunity to provide the community with a north-south focal point for pedestrian, bicycle, and vehicular connections across the highway.
- 2nd Street West will eventually be extended from Columbia Avenue to Oregon Avenue.
- Extend SE 11th Street to California Avenue.
- Extend SE 7th Street from Utah Avenue to California Avenue.
- 13th Street will eventually be extended from Idaho Avenue to Wyoming Avenue.
- 14th Street will eventually be extended from Idaho Avenue to Wyoming Avenue.
- 15th Street will eventually be extended to Wyoming Avenue.
- Median treatments along Highway 730 that provide an island that serves as a pedestrian refuge and gateway treatments. This project is especially important in the area of schools and the Post Office as well as other pedestrian generators.
- The 1st Street/Highway 730 intersection needs to be improved to accommodate the intended functionality of First Street (Collector) and maintain appropriate north/south connectivity.
- Remove the NE 3rd Street intersection with Highway 730. NE 3rd Street would remain but not connected to Highway 730.
- Other roadway cross-section improvements that more clearly define the shoulders of Highway 730 and/or minimize the straight-line crossing distance for pedestrians and cyclists, such as curbs, bike lanes, and sidewalks.
- Provision of access-management techniques that consolidate access points along Highway 730 as property develops or redevelops and allow for more focused north-south movements across the highway at intersections with public streets. Addition of sidewalks, curbs, and pedestrian refuge facilities would aid in resolving issues along Highway 730.
- Continued development of a grid system as properties develop in the south part of the city.

East-West Connectivity

In addition to improving north-south connectivity, it is important to ensure that convenient east-west connectivity is also preserved such that the city does not become entirely dependent on highway access to facilitate local trips. With the large amount of residential development occurring on the south side of the city, there is a need to ensure that the city's east-west roads are connected in a logical manner.

Further, ODOT has access control lines within the city that limit future connections to Highway 730. Specifically, Highway 730 is access controlled on both sides from milepost 174.1 to milepost 175.5 (approximately from 4th Street West to Columbia Avenue) and on the south side from milepost 165.05 to milepost 178.70 (milepost 178.70 represents the Morrow County line).

Potential opportunities to strengthen east-west connectivity within the City of Irrigon include:

- Wyoming Avenue will eventually be extended from Division Street to 15th Street and from 2nd Street West to 4th Street West.
- California Avenue will eventually extend from 1st Street to 3rd Street West and from 10th Street to 15th Street.
- Utah Avenue will eventually extend from 10th Street to 15th Street.
- Idaho Avenue will eventually extend from 13th Street to 15th Street.

Main Avenue Connectivity/Impact on the A.C. Houghton Elementary School

Columbia Avenue and North East Main Avenue offer city residents a frontage road that is a convenient alternative to Highway 730 for east-west travel. While such a connection is desirable from a connectivity perspective, there is at least one major concern associated with the frontage road concept. The A.C. Houghton Elementary School is located on the north side of NE Main Avenue between 10th Street and 12th Street. Currently, there is not adequate delineation between the lanes of NE Main Avenue and the school parking lot located on the south side of NE Main Avenue. There also are no pullout lanes for school buses to load and unload students, though the *City of Irrigon Street, Sidewalk, Bikeway, and Handicap Access Study* recommends provision of such facilities. Because of the current layout of NE Main Avenue and the school parking lot, this section of NE Main Avenue has been the subject of safety concerns.

Access Management and Safety

The spacing of access points along roadways influences the capacity, safety, and overall performance of a given facility. Accordingly, access locations on roadway sections need to be properly located to ensure safe and efficient travel along roadway corridors. Access locations should be placed appropriately to limit potential conflicting turning movements, weaving maneuvers over short distances, and congestion along facilities.

In general, as the number and proximity of access points along a given road increases, there is an increase in the number of potential conflicting turning movements into and out of those access points. These turning maneuvers ultimately can adversely affect the operations of traffic on the roadway itself.

IMPROVEMENT ALTERNATIVES EVALUATION

The following discussion presents specific improvement alternatives that were considered for inclusion as part of the City of Irrigon Transportation System Plan. Each of the alternatives has been identified by number for reference purposes, with the relative location of each improvement identified in Figure 9.

It should be noted that the order in which the alternatives are presented is not intended to convey the relative rank or significance of the respective projects. Further, the identified improvement alternatives were evaluated based on construction costs and ability to meet identified transportation needs. Other factors, including potential environmental impacts, were not specifically considered. Some environmental impacts that could occur have the potential to increase costs or require project modifications. The required modifications or increased costs could be significant enough to make the project impractical. All cost estimates were based on industry unit costs and do not reflect utility relocation, environmental constraints, property acquisition or inflationary increases in cost over the planning horizon of this document.

Funding resources available to the City of Irrigon and ODOT are limited. It is expected that, for the near future, those funding sources that are available will predominantly be applied to maintenance and preservation of the existing transportation system. In light of the constrained funding situation, it should be recognized that implementation of some of the alternatives presented in this section may not be practical within the 20-year planning horizon.

Alternative #1 – Reduce Vehicular Reliance through Zoning and Development Code Revisions

In part, Oregon’s Transportation Planning Rule seeks to reduce the reliance on personal vehicles as a mode of travel through the creation of environments that foster alternative modes of transportation. Local land uses can have a significant impact on the form of transportation necessary to travel from one location to another. Specifically, by carefully structuring local zoning and development codes, development activities can be focused such that a more self-contained community can be achieved. Construction of mixed-use developments, the location of commercial/service businesses near residential land uses, and the provision of employment opportunities near residential areas are all means by which the need for travel by personal automobile can be reduced.

In relatively rural areas such as Irrigon, the need to travel long distances to employment, commercial, and service opportunities fosters a travel environment dependent on personal automobiles. Implementation of the Mixed Use Commercial Downtown Zone with North-South Connections concept, as described in the Preferred Land Use Alternative, will help reduce the need for vehicular reliance. The proposed location of multi-family residential zones as well as allowing residential development above retail uses in the downtown and main street areas will offer, when the residential units are constructed, increased pedestrian and cycling alternatives to automobile-only oriented transportation.

Recommendation

Implementation of the preferred land use alternative, the Mixed Use Commercial Downtown Zone with North-South Connections concept, is recommended. Provision of appropriate zoning and development code revisions should be made by the city.

Alternative #2 – Improve Division Street/include pedestrian facilities

Improve Division Street to accommodate auto and pedestrian traffic. This is a main thoroughfare for transporting people to the local schools (Irrigon Elementary, Irrigon High School).

The cost of this improvement is estimated to be \$130,000.

Recommendation

This improvement alternative is recommended for implementation in the mid- to long-term future.

Alternative #3 – Signalize 1st Street/Highway 730 Intersection

As previously discussed, there are several potential benefits to having a traffic signal along Highway 730. These potential benefits include enhanced north-south connectivity, enhanced emergency access to and across Highway 730, and improved operations at both the signalized intersection and adjacent un-signalized intersections. Highway 730 traffic will experience some increased delay resulting from a reduction in capacity associated with the traffic signal; however, highway movements will operate at an acceptable level of service.

While traffic signal warrants are not met at any of the un-signalized study intersections at this time, the long-term future forecast suggests that a traffic signal will ultimately be warranted along Highway 730 within the city. This location would focus north-south travel on to First Street and provide a signalized

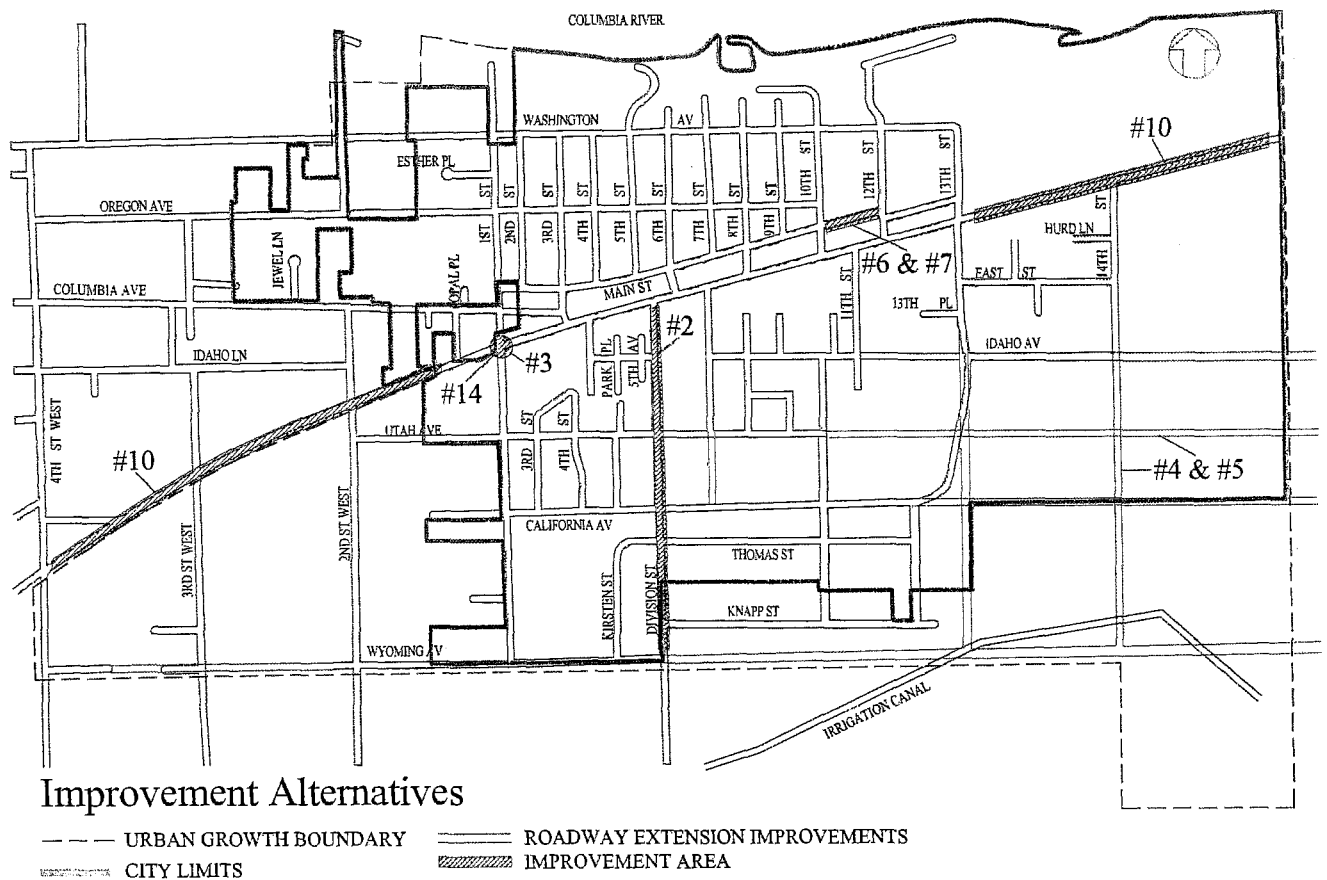
crossing point to serve the core commercial area of the community. The development of community focal point is central to the concept of a core commercial area that the community is trying to achieve through land use and zoning amendments. Further, the location is ideal for pedestrian and bicycle movements.

This improvement is viewed as being preferable to other locations because it addresses both capacity and safety issues, while also creating a safer environment for pedestrians and cyclists to cross Highway 730. Estimated cost for this improvement is \$250,000.

Recommendation

This improvement alternative is recommended for implementation in the long-term future. (NOTE: The addition or modification of a traffic signal on any ODOT facility requires the approval of the State Traffic Engineer. Identification and documentation of the need in this TSP does not guarantee the provision or modification will occur.)

Figure 9 – Improvement Alternatives



Alternative #4 – Provide Strategic North/South Roadway Extensions

In reviewing the local roadway system, several gaps in north-south roadway network were identified. Recognizing the need to provide convenient roadway connections, the following north-south roadways could be extended and/or connected as shown in Figure 9:

- Extend 7th Street from Utah Avenue to California Avenue. (estimated cost \$270,000)
- Extend 13th Street between Idaho Avenue and Wyoming Avenue (estimated cost \$475,000)
- Extend 14th Street from Idaho Avenue to Wyoming Avenue (estimated cost \$475,000)
- Extend 15th Street to Wyoming Avenue (estimated cost \$475,000)

The need for the facilities identified in Figure 9 will be driven by how and where future development occurs. Although each of the identified facilities serves different needs, it is expected that all of the facilities could be required to support local transportation needs if the area were fully built-out. Provision of one or more of these new north-south roadway connections is likely to be completed in conjunction with development activities. The cost of the new roadway connections could be borne by adjacent development activities and/or by the city and ODOT. *It should be stressed that the locations of the potential new roadways as shown in Figure 9 are approximate and that the actual roadway alignments will need to be determined based on identified constraints and specific development plans for individual areas. Further, the identified cost estimates are also conceptual and do not include right-of-way acquisition.*

Recommendation

The identified north-south roadway extensions should be implemented as local development activities warrant.

Alternative #5 – Provide Strategic East/West Roadway Extensions

Similar to the need for north-south connectivity, there are several east-west connectivity needs. As shown in Figure 9, several gaps in east-west roadway network were also identified. Recognizing the need to provide convenient roadway connections alternative to Highway 730, the following roadways could be extended and/or connected:

- Extend Idaho Avenue from 13th Street to 15th Street. Some portions of Idaho Avenue already have either an existing gravel base or half-street improvements; the purpose of this project would be to link and improve the existing roadway segments such that a continuous improved roadway is ultimately provided (estimated cost \$630,000).
- Extend Utah Avenue from 10th Street to 15th Street (estimated cost \$475,000);
- Extend California Avenue from 3rd Street West to 15th Street. Some portions of California Avenue already have either an existing gravel base or half-street improvements; the purpose of this project would be to link and improve the existing roadway segments such that a continuous improved roadway is ultimately provided (estimated cost \$795,000)
- Extend Wyoming Avenue from Fourth Street West to Second Street West and from Division Street to 15th Street (estimated cost \$725,000).

The need for the facilities identified in Figure 9 will be driven by future development. Provision of one or more of these new east-west roadway facilities is likely to be completed in conjunction with local development activities and all the facilities are likely to be required to support full build-out of the area. The cost of the new roadway connections could be borne by adjacent development activities and/or by the city. *It should be stressed that the locations of the potential new roadways as shown in Figure 9 are approximate and that the actual roadway alignment will need to be determined based on identified constraints and specific development plans for individual areas. Further, the identified cost estimates are also conceptual and do not include right-of-way acquisition.*

Recommendation

The identified east-west roadway extensions should be implemented as local development activities warrant.

Alternative #6 – Vacate North East Main Avenue between Tenth Street and Twelfth Street

Recognizing the potential for an accident because the roadway separates the school facilities from the parking lot and forces school buses to load/unload buses on the street, the local school district has previously requested that North Main Avenue be vacated between 10th Street and 12th Street. Upon vacation, the school district intends to restrict access on the effected section of road to one-way movements of school vehicles.

Currently, the amount of traffic using North East Main Avenue between 10th Street and 12th Street is relatively small as the land uses to the east are limited in number and scope (to date, those land uses have primarily been developed for single-family residential purposes). The school district has posted signs restricting access to this segment of road during certain hours of the day. While these conditions may limit the near-term potential for conflicts, it should be recognized that traffic volumes on North East Main Avenue in this area might increase substantially in the future if North East Main Avenue is extended to the east to serve as a frontage road for future developments along Highway 730. For this reason, vacation of North Main Avenue in the near-term will jeopardize the long-term ability of the city to provide a parallel frontage road along the north side of Highway 730.

Recommendation

In recognition of the frontage road function of North East Main Avenue, the roadway should not be vacated between 10th Street and 12th Street. Instead, alternative improvement measures should be identified and implemented.

Alternative #7 – Improve Delineation on North East Main Avenue Adjacent to the A.C. Houghton Elementary School

The *City of Irrigon Street, Sidewalk, Bikeway, and Handicap Access Study* recommends improvements that could be implemented along North East Main Avenue between Tenth Street and Twelfth Street to improve channelization of the roadway and more clearly delineate the parking area (refer to Appendix E). Potential locations for a bus loading/unloading area are also identified.

Costs associated with this improvement alternative are estimated at \$30,000.

Recommendation

The conceptual improvement plan developed in the *City of Irrigon Street, Sidewalk, Bikeway, and Handicap Access Study* for Main Avenue should be implemented in the near-term future.

Alternative #8 – Inventory and Review Posting of City Traffic Control Devices

As discussed in the **Existing Conditions** section, the current use of several posted traffic control devices within the city is questionable. Inappropriate placement of traffic control devices has the potential to create a liability issue for the city and encourages disrespect for those traffic control device, potentially contributing to safety problems.

Under this improvement alternative, the City of Irrigon would inventory all existing traffic control devices within the city's jurisdiction and evaluate whether those devices comply with the placement methodology identified in the Manual on Uniform Traffic Control Devices (Reference 4). Any traffic control devices that are not compliant should then be replaced with an appropriate alternative device or eliminated.

The cost for this project will depend on how it is administered. With proper guidance and instruction, the field inventory could be completed relatively inexpensively by a summer intern. Further, it is unlikely that many will need to be purchased given the number of inappropriately placed signs. Accordingly, the primary cost associated with this alternative would involve mobilizing local crews to remove and/or replace identified traffic control devices as appropriate.

Recommendation

This improvement alternative should be implemented immediately to promote public safety. Specifically, it is recommended that the city only install “Stop” or “Yield” signs to assign right of way, not to slow vehicle speeds. For example, “Stop” signs on roadways such as Washington Avenue would be removed while the traffic control devices on the minor street approaches to Washington Avenue would remain.

Alternative #9 – Promote Access Management along Highway 730

The *Oregon Highway Plan* has established access spacing standards for Highway 730. These standards, which are presented in detail in Section 5, are intended to ensure the long-term safety and efficiency of the Highway 730 corridor. Implementation of the standards as they relate to local development activities will be essential to ensure the long-term viability of the Highway 730 corridor.

The future conditions analysis, as presented in this document, assumes that current public roadway spacing along Highway 730 will be maintained into the long-term future. As long as access spacing standards along Highway 730 are maintained and new private access points are allowed in accordance with the access spacing standards presented in Section 5, it is expected that the forecast traffic conditions will be reflective of long-term operations along the Highway 730 corridor. Conversely, if multiple additional access points are granted along Highway 730, it can be expected that additional incremental delay will be added to the highway’s operations.

Recommendation

Access Management should be implemented in the immediate future. No specific construction need is evident to implement this improvement as it simply promotes compliance with existing roadway policy. No immediate land use actions would be required either. Instead, as property along Highway 730 is developed or redeveloped, appropriate action should be taken by local and state agencies to ensure that the relevant access spacing standards are reasonably enforced. Section 5, **Transportation System Plan**, includes a full access management plan and corresponding implementation strategy complete with typical spacing standards, driveway widths, etc.

Alternative #10 – Provide Gateway Treatments along Highway 730

Through the public meeting process, it was noted that the City of Irrigon currently lacks a defined core area that is evident traveling along Highway 730. The lack of a defined downtown has an indirect impact on highway operations in that drivers perceive a wide-open environment and tend to speed on Highway 730 through the city limits. Streetscape treatments such as landscape strips, pedestrian refuges and bike lanes may be valuable to the city in the future as an instrument by which the character of roadways can be influenced. The graphical renditions contained in Appendix “E” identify potential locations for gateway treatments such as pedestrian refuges, landscaped medians, etc. These treatments provide an indication to drivers that the adjacent land uses necessitate slower speeds.

Recommendation

The city should develop gateway treatments along the highway in conjunction with implementation of the preferred land use alternative. Further, through new roadway and land-use standards, future development activities and roadway improvements along Highway 730 should be focused to influence the streetscape of the highway. By modifying the highway streetscape, driver’s perceptions can be influenced and travel speeds may be reduced. Section 5, **Transportation System Plan**, presents recommended street standards that will assist in fostering a more constrained perception of the highway travel environment. Appendix “D” contains conceptual renderings of potential streetscapes that could be incorporated into the gateway concept.

No cost estimate is provided for these treatments, as their nature would be best addressed by a community master plan.

Alternative #11 – Enhance Pedestrian Crossings of Highway 730

The public input process and the existing conditions analysis of the TSP identified community concerns involving pedestrian crossings along Highway 730, especially near the elementary school. The combination of Highway 730's wide cross-section, growing traffic volumes, and the commercial orientation of Highway 730 confirm the need for additional pedestrian facilities. In addition to sidewalk and multi-use path facilities there are other enhancements that should be considered along Highway 730 including:

- provision of additional street lighting to enhance visibility of pedestrians at night
- construction of curb extensions that reduce the exposed crossing distance pedestrians must walk; and
- use of median treatments that provide pedestrians with a “safe-haven” at a mid-crossing

Recommendation

Implementation of specific improvement measures will be dependent on local development activities and the city's ability to create some form of gateway treatment that influences the character of Highway 730. The Recommended Pedestrian and Bicycle System Plan contained in Section 5 identifies specific pedestrian and bicycle improvement projects along the Highway 730 corridor along with appropriate roadway standards.

Alternative #12 – Implement Transportation Demand Management Measures

Transportation Demand Management (TDM) measures identify opportunities to reduce the impact of trips generated by various land uses. Specifically, TDM techniques typically seek to reduce reliance on single-occupant vehicle trips and promote the use of alternative travel modes by persons accessing a given area or facility. The Transportation Planning Rule encourages the evaluation of TDM measures as part of the TSP development process.

TDM strategies often focus on major employers or other sources of traffic that can be influenced through scheduling changes, alternative transit opportunities such as carpools and buses, and other means. Oftentimes, financial disincentives are included in programs as a revenue generator to support other elements of an overall program. The success of fee parking and other commonly used disincentives is dependent on the environment in which a given employer is located.

Given the rural nature of Eastern Oregon and the City of Irrigon, the TDM measures available to the city are limited in scope as compared to larger metropolitan areas. Given the limited employment opportunities in the community, one of the most promising options available to the city is the provision of a carpool or vanpool service for people who live in Irrigon and work in neighboring communities such as Umatilla and Hermiston. Coordination of a vanpool and/or carpool(s) to the major employers in the area such as the Two Rivers Correctional Facility in Umatilla, the Wal-Mart Distribution Center in Hermiston, Union Pacific's Hinkle Rail yards in Hermiston, and the U.S. Army Chemical Weapons Incinerator at the Umatilla Depot could help to reduce the number of single occupant vehicle commute trips from Irrigon. This type of transportation option would help the community achieve the objectives of transportation demand management.

Provision of a park-and-ride facility at a key location within the community is another means by which the use of non-auto dependent travel can be encouraged. Further, the city could also promote carpooling to out-of-town employers through education.

The cost of implementing a TDM program is dependent on the type and variety of measures selected. Facilitation of carpools, vanpools, or a park-and-ride facility could be completed through a volunteer network and/or coordination with major employers at minimal cost.

Recommendation

It is recommended that the City of Irrigon focus TDM efforts on supporting carpools and/or vanpools to major employers through education, coordination with employers, and provision of appropriate facilities such as park-and-ride areas.

Alternative #13 – Pave Key Collector Facilities

As a part of the development of the city's roadway infrastructure, the city should pave collector level roadways within the city. Roadway improvements can be made gradually and may be required as part of adjacent development activities. Section 5 of this report, **Transportation System Plan**, identifies key collector roadways within the city. For the city's planning purposes, a cost estimate for paving the roadways is approximately \$350 per lineal foot. The \$350 per lineal foot estimate includes curbs, drainage, and pavement.

Recommendation

Alternative #13 should be implemented in the near-term future using the roadway functional classification and cross-section standards identified in Section 5 of this report. It is recognized that the paving projects will extend into the long-term future as the respective roadways are gradually brought up to standard.

Alternative #14 – Reconstruct First Street Approach to Highway 730

The existing First Street/Highway 730 intersection has a vertical curve on the southbound approach to the intersection that limits intersection sight distance and results in issues relating to vehicles' ability to adequately accelerate as they enter the highway. The intersection should be reconstructed to limit the grade differential between Highway 730 and First Street and support the North/South connectivity concerns of the community. The intersection should be constructed such that it supports the appropriate function of the local road system (collector). Pedestrian facilities should also be provided in conjunction with the reconstruction of the intersection. The estimated cost to complete this project is \$35,000.

Recommendation

Alternative #14 should be implemented in the near- to mid-term future, potentially in conjunction with roadway improvements made by the state along Highway 730.

Alternative #15 – Designate an Alternate Escape Route

Currently, Highway 730 serves as the only escape route for the residents of Irrigon should they face an emergency created at the Army Chemical Depot. Identification of an alternative route would provide the community safety and piece of mind in response to an emergency.

Recommendation

Alternative #15 should be implemented in the near to mid-term. This project will require working closely with US Fish and Wildlife, Oregon Department of Fish and Wildlife, the Port of Morrow, ODOT, and the public.

SUMMARY

This section has presented the alternatives that have been developed and evaluated to address the near-term and long-range transportation deficiencies within the City of Irrigon urban growth boundary. Table 7 summarizes the potential improvement alternatives.

TABLE 7 – SUMMARY OF IMPROVEMENT ALTERNATIVE RECOMMENDATIONS

Alternative Number	Improvement Description	Estimated Cost*	Implementation Timeline	Responsible Jurisdiction
#4	Provide Strategic North/South Roadway Extensions	\$1,270,000	Concurrent with local development	Private
#5	Provide Strategic East/West Roadway Extensions	\$3,905,000	Concurrent with local development	Private
#12	Implement Transportation Demand Management Measures	No estimate	As appropriate	City/Private
#13	Pave Key Collector Facilities	\$350/lineal foot	Concurrent with local development and as funds are available	City/County/ODOT/Private
Near-Term				
#1	Reduce Vehicular Reliance Through Zoning and Development Code Revisions	No estimate	Near -term	City
#7	Improve Delineation on North Main Avenue Adjacent to the A.C. Houghton Elementary School	\$30,000	Near-term	City/Private
#8	Inventory and Review Posting of City Traffic Control Devices	No estimate	Near-term	City
#9	Promote Access Management Along Highway 730	No estimate	Near-term	ODOT/City
#10	Provide Gateway Treatments Along Highway 730	No estimate	Near-term	City/ODOT
#11	Enhance Pedestrian Crossings of Highway 730	No estimate	Near-term	ODOT
#15	Designate an alternate escape route	No estimate	Long-term	ODOT/County/City
Mid-Term				
#2	Improve Division Street and include pedestrian facilities	\$130,000	Mid-term	City
#14	Reconstruct First Street Approach to Highway 730	\$130,000	Mid-term	City/ODOT
Long-Term				
#3	Signalize the 1 st Street/Highway 730 Intersection	\$250,000	Long-term	City/ODOT
#6	Vacate North Main Avenue Between Tenth Street and Twelfth Street	No estimate	Not recommended for implementation	—

*Estimated costs are in 1999 dollars and do not include right-of-way acquisition

The privately funded projects identified in Table 7 will be funded and constructed as adjacent properties develop. Implementation of identified city transportation projects over the next 20 years is estimated to cost \$395,000 plus administrative charges. Assuming a dedication of \$20,000 per year towards the identified projects over the next 20 years, it is reasonable to conclude that the city can fund the recommended improvement alternatives.

Section 5, which follows, incorporates the recommended improvements for each transport mode into the city's transportation system.

Section 5

Transportation System Plan

Transportation System Plan

INTRODUCTION

This section describes the individual elements of the City of Irrigon Transportation System Plan. The preferred alternative presented in this TSP consists of those land use and transportation improvements necessary to support the City of Irrigon's Comprehensive Land Use Plan. The TSP addresses several components for development of the future transportation network including:

- Preferred Land Use Plan
- Roadway System Plan
- Access Management Plan
- Pedestrian System Plan
- Bicycle System Plan
- Public Transportation System Plan
- Marine System Plan
- Air/Water/Pipeline System Plan
- Evacuation Plan
- Implementation Plan

The individual plans and policies presented in this section were developed specifically to address the requirements of Oregon's Transportation Planning Rule. Projects associated with each plan element have been identified and costs have been estimated as described herein. The recommendations set forth by this plan reflect the findings of the existing and forecast future conditions analyses, the alternatives analysis, and the concerns expressed by both the citizens of Irrigon and the public agencies that serve them.

PREFERRED LAND USE PLAN

Desirable Elements of the Preferred Alternative

To gain the community benefits of a well-defined, mixed-use downtown area, the following are considered beneficial elements that should be explored in the planning and design, preferably through amendments to the comprehensive plan, implementing ordinances and local street network:

- Defining a mixed use commercial downtown and main street area by defining new multifamily and mixed use commercial zones and rezoning some excess commercial land to residential use
- Limiting residential uses in the commercial (C-1) zone, except above ground floor retail
- Creating an additional commercial zone (C-2) to enhance development of a downtown central business district in the C-1 zone
- Providing for the development of multifamily residential structures around the mixed use commercial zones as outright permitted uses in a new multifamily residential (MF) zone
- Creating 'gateways' to the downtown zone that definitively mark entry and exit to the city's downtown commercial area
- Taking full advantage of good connections to the Columbia River as a recreational amenity and tourist destination
- Creating an area for tourist-oriented commercial development to take advantage of the Columbia River as a recreational amenity and tourist destination

- Retaining commercial zoning between 5th Street and 6th Street and NE Main Street and Highway 730 to allow development of a formalized farmers market taking advantage of tourist travel on Highway 730 and reinforcing Irrigon's identity as an agricultural products community
- Careful arrangement of buildings, parking and access that will promote a compact, pedestrian-oriented design
- Defining priority routes for pedestrian and bicycle paths, including sidewalks
- A mix of off-street and on-street parking, including shared parking arrangements and rear-access alleys for additional off-street access and parking

Additionally, due to the amount of industrial land available regionally at the Port of Morrow in Boardman, the city might explore the potential for rezoning the 40 acres of currently undeveloped industrial land at the east end of the city to residential use compatible with neighboring properties.

Implementation

The creation of a focused, vibrant mixed-use downtown and main street area will be challenging and require a considerable commitment, perseverance and patience by members of the community. A partnership between the city and property owners to plan and implement the plan, including establishing appropriate zoning and development regulations, will be necessary to make such an effort successful. The city and property owners should seek technical and financial assistance from state and federal agencies to conduct the planning and help with implementation. Involvement by the citizens of the community in planning, design and financing of the downtown will also be beneficial to the city's ability to sustain a commitment over a long period.

Public/Private Partnerships

There are many examples in Oregon where private landowners and city governments have worked together to create developments that meet public objectives and make a profit for the property owner and developer. In some cases, a public agency has provided all of the funding, in others the property owner has provided all of the funding and in a number of others, contributions have been made from both the public and private sectors. The Transportation and Growth Management (TGM) program in Oregon has been a beneficial source of funding for this type of activity in recent years. The Department of Land Conservation and Development (DLCD) could assist the city to identify models of public/private partnerships that have worked in other communities.

Another possible source of assistance could be one of the state's universities. Students within urban planning, architecture and landscape architecture schools are often seeking challenging projects as part of work/study degree requirements. A group of students may find developing a downtown master plan for Irrigon a challenging and rewarding project.

Development Regulations

The establishment of a regulatory framework to accomplish the city's objectives will be extremely important. Regulations also assist the developer and property owner in at least three ways:

1. Eliminate potentially competitive sites that can diffuse the market for downtown commercial development.
2. Ensure a compatible mix of commercial and residential uses that will foster sustained investment.
3. Provide clear guidance to property owners and developers as to the location and requirements regarding commercial and residential development.

As part of the Transportation Growth Management program, two model ordinances have been developed to assist cities in establishing appropriate regulations – a model zoning ordinance for small communities and an infill and redevelopment ordinance. The model zoning ordinance and accompanying guidebook was developed specifically for small cities with populations under 10,000. Cities are encouraged to refer to the model ordinance and guidebook for strategies and model code provisions that can be readily adapted, adopted, and implemented locally to focus and stimulate urban residential and commercial development.

Rezoning

Irrigon has more vacant and redevelopable commercial land than will be needed for all commercial uses over a 20-year period. This excess of supply and lack of differentiated commercial zones risks diffusing the potential market and may make it difficult to focus future retail commercial uses to the downtown core area. A summary of recommended rezoning actions is presented in Section 7, **Policies and Land Use Modifications**. It is recommended that these properties be examined and rezoned before further strip development occurs outside of the recommended downtown and main street focus areas.

To guide and focus commercial development in downtown Irrigon and to correct the lack of outright permitted multifamily housing, the following general changes to the zoning code are recommended:

- Selected amendments to the Commercial (C) zone and renaming this zone C-1
- Create a new commercial zone (C2) for the area at the far east and west ends of town, outside of the downtown core for more auto-oriented uses
- Rezone the blocks north of North Main Street residential
- Create new multifamily (MF) residential development zones between 4th and 7th on the block west on NE Main Street and between 7th and 11th Streets north of Idaho street and south of the commercial zone
- Rezone the park along Highway 730 to permanent open space between 6th and 11th Streets; and
- Create a small commercial district near the Columbia River (between Washington Street between 8th and 10th Streets and the River) to allow for some limited, river-oriented retail use near the river, a major tourist amenity

Strict design controls should be created for these zones. The list of permitted and conditional uses, including specific development standards, should be revisited during preparation of the zoning ordinance revisions in consultation with DLCDC's model ordinance and guidebook.

Development Standards

Appropriate development standards for the Main Street and downtown areas will also be important. Development standards should be developed in a master plan to address:

- Building massing, height and lot area coverage (floor area ratios)
- Parking, including on-street and shared parking (to keep the amount of land devoted to parking to a minimum and to minimize conflicts)
- Sidewalks and streetscape amenities
- Landscaping
- Building design, including architectural theme (optional)
- Public investment in the downtown commercial and Main Street areas

The most successful downtowns, including those that have been redeveloped and revitalized in recent years, have had a significant amount of public investment. Public investment attracts private investment and creates the type of interdependence and synergy that makes development successful, especially downtown development. The city and other public and non-profit agencies can contribute investment through:

1. Capital improvements such as utilities, street improvements, and parks
2. Purchase and development of land for public buildings and uses

Other Land Use Recommendations

- Develop ‘gateway’ markers for the commercial district at 10th Street on the east end of the city and at the western city limits along Highway 730 to define the entrance to the commercial district.
- Consider reducing the minimum lot size in the R-1 zone or create a different zone that allows smaller lots, e.g., 5,000 square foot, close in to the city’s core downtown area.
- Refine definitions of ‘retail trade’ in the C-1 and C-2 zones according to size, bulk and other characteristics of uses. Specify which retail uses are desirable in each zone.

Appendix “D” contains graphical illustrations of the recommended zoning changes in Irrigon, depictions of street plans, and street cross-section renderings.

ROADWAY SYSTEM PLAN

Based on the identified existing and anticipated operational and circulation needs, the roadway system plan was developed. The city’s roadway system plan provides guidance as to how to best facilitate travel within the city by addressing two key issues:

- a roadway functional classification system and corresponding roadway design standards, and
- roadway connectivity, including new and improved streets to meet future capacity, circulation, and safety needs

Functional Classification

The purpose of classifying roadways is to create a mechanism through which a balanced transportation system can be developed that facilitates mobility for all modes of transportation. A given roadway’s functional classification determines its intended purpose, the amount and character of traffic, commitment to serve and promote non-auto travel, and its design standards.

The classification of a given street is intended to convey the requirements, capabilities, and capacity of each respective roadway while recognizing that roadway’s contribution to the overall transportation system. It is imperative that the classification of streets is considered in relation to adjacent properties, the land uses that they serve, and the modes of transportation that can be accommodated. Further, each roadway must be appropriately designed to accommodate vehicles local to the roadway (i.e., passenger cars, heavy trucks, pedestrians, and bicycles). The public right-of-way must also provide sufficient space for utilities to serve adjacent land uses.

Based on a review of the city street classification map set forth in the *City of Irrigon Street, Sidewalk, Bikeway, and Handicap Access Study*, the functional classification plan for the City of Irrigon is revised to incorporate three functional categories: arterials, collectors, and local streets.

Arterials

Arterials are roadways that are primarily intended to serve traffic entering and leaving the urban area. Arterials tend to carry significant interurban travel between downtown areas and outlying residential areas. While arterials may provide access to adjacent land, that function is subordinate to the travel service provided to major traffic movements. Arterials are the longest distance, highest volume roadways within the urban growth boundary. Although focused on serving longer distance trips, pedestrian and/or bicycle activities often are associated with the arterial streetscape.

Collectors

Collector facilities link arterials with the local street system. As implied by their name, collectors are intended to collect traffic from local streets (and sometimes from direct land access) and channel it to arterial facilities. Collector facilities tend to carry lower traffic volumes at slower speeds than arterials. On-street parking is more prevalent and pedestrian facilities are typically provided. On collectors, bicycle facilities may be exclusive lanes or shared roadways.

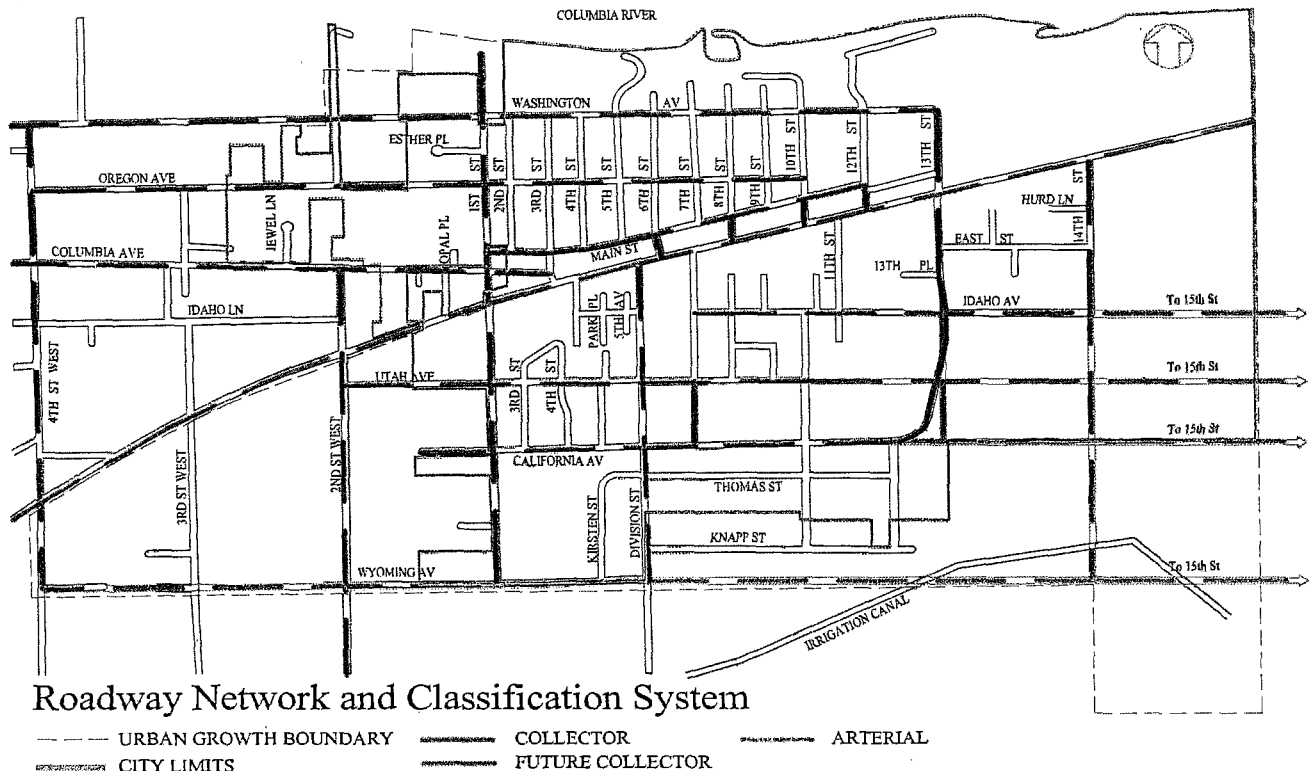
For the purposes of Transportation Planning Rule (TPR) compliance, all collector facilities in this TSP are considered Minor Collectors. (The TPR requires that sidewalks and bike lanes be provided on all Major Collectors within a given Urban Growth Boundary).

Local Streets

Local streets are primarily intended to provide access to abutting land uses. Local street facilities offer the lowest level of mobility and consequently tend to be short, low-speed facilities. As such, local streets should primarily serve passenger cars, pedestrians, and bicyclists; heavy truck traffic should be discouraged. On-street parking is common and sidewalks are typically present.

Using the three roadway designations described, all current and future streets within the city have been designated in the Functional Classification Plan presented in Figure 10.

Figure 10 – Roadway Network and Functional Classification System



As identified in Figure 10, the major roadway designations are as follows:

Arterials:

- Highway 730

Minor Collectors:

- | | | |
|--------------------------|-------------------------------|------------------------------|
| • Washington Avenue | • Division Street | • Fourteenth Street (Future) |
| • North East Main Avenue | • Thirteenth Street | • Oregon Avenue (Future) |
| • Utah Avenue | • Columbia Avenue | • California Avenue (Future) |
| • Second Street West | • Wyoming Avenue (Future) | • Idaho Avenue (Future) |
| • First Street | • Fourth Street West (Future) | |

Local Streets:

The remaining roads in the city are designated as local streets.

New Roadways

As part of the TSP development process, conceptual alignments for future collector roadways were identified as shown in Figure 10. The purpose of identifying these potential future roadways was to:

- provide for appropriate future roadway infrastructure to serve areas with future development potential
- increase the connectivity of future development with respect to existing neighborhoods and infrastructure
- provide access to property through multiple locations
- provide the city with guidelines for roadway alignments as future development occurs

The need for the facilities identified in Figure 10 will be driven by future development within the city's urban growth boundary, constraints, and specific development plans in a particular area.

Street Design Standards

Street design standards are based on the functional and operational characteristics of streets such as travel volume, capacity, operating speed, and safety. The standards also are established to provide appropriate separation between travel lanes and pedestrian and bicycle facilities. They are necessary to ensure that the system of streets, as it develops, will be capable of safely and efficiently serving the traveling public while also accommodating the orderly development of adjacent lands. Figure 13 presents the typical cross sections for the various roadways identified in the functional classification system. The typical roadway cross sections comprise the following elements: right-of-way, number of travel lanes, bicycle and pedestrian facilities, drainage, and optional amenities such as landscape strips.

The design cross sections illustrated in Figures 11a, 11b, and 11c reflect the desire to develop multi-modal roadway facilities within the City of Irrigon in the future incorporating multi-use paths where appropriate. The identified cross sections are intended for planning and design purposes for new road construction as well as for those locations where it is physically and economically feasible to improve existing streets.

The typical cross sections present standards for roadways allow for flexibility in defining the actual roadway width through optional features such as landscape strips and on-street parking. The use of on-street parking and planter strips would be subject to the discretion of the City of Irrigon which would

determine whether such amenities are required on a given street (in the case of Highway 730, appropriate representatives from ODOT would have ultimate authority over the roadway design).

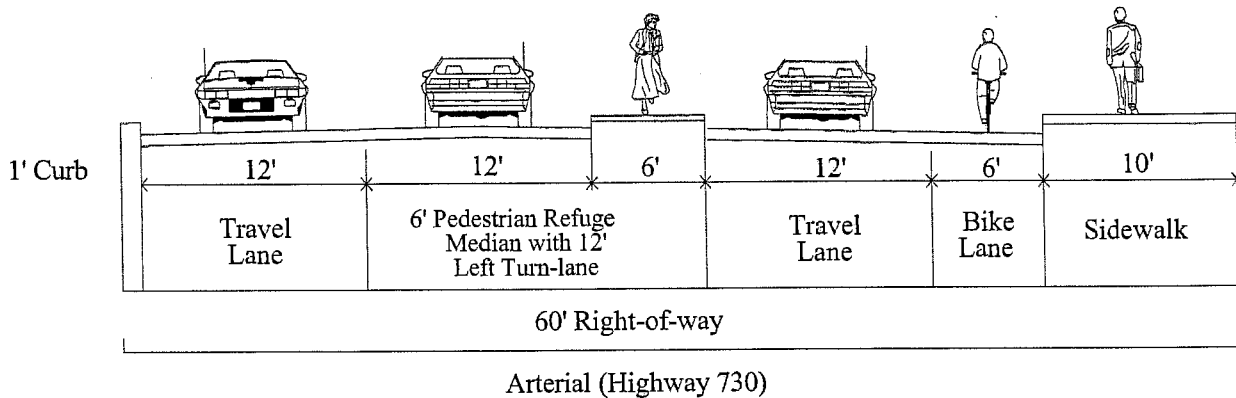
Arterials (Highway 730), as shown in Figure 11a, contain two 12-foot travel lanes, a center left-turn lane, 10 foot sidewalk on the South side of the Highway, and a 6 foot striped bike lane on the South side of Highway 730. The alternative incorporates a 6-foot pedestrian refuge median, allowing for the potential of wider sidewalks, and makes a provision for the future use of raised pedestrian medians as appropriate at intersections and as gateway treatments. Given the raised pedestrian median, access management along Highway 730 would be improved along with safety for motorists and pedestrians.

Table 8 summarizes the street design standards for the different roadway classifications.

TABLE 8 – STREET DESIGN STANDARDS

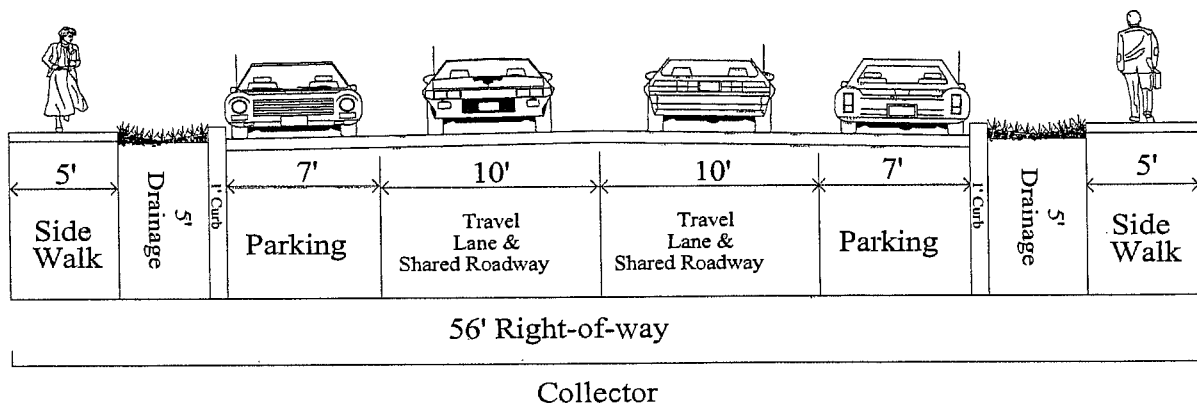
Classification	Right-of-Way	Turn Lanes	Travel Lanes	Bike Lanes	Sidewalks	On-Street Parking	Landscape Strip
Arterial	60 Feet	Yes with pedestrian refuges/median	12 Foot	6 Foot South Side	10 Foot on South Side	No	No
Minor Collector	56 feet	No	10 foot	Shared Roadway	5 Foot on both sides	7 Foot on both sides	5 Foot swale (drainage)
Local Street	45 feet	No	10 Foot	Shared Roadway	5 Foot on both sides with a 6" Curb	7 Foot swale (parking, drainage)	No

Figure 11a – Arterial Cross-Section



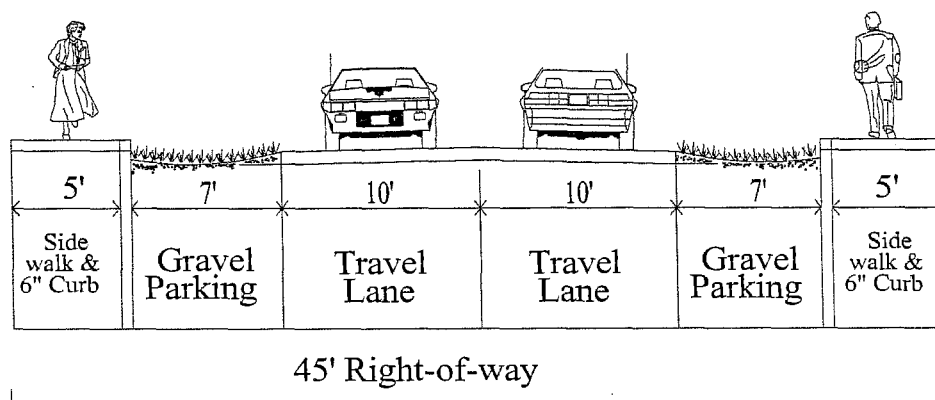
Minor collector streets will have a right-of-way requirement of 56 feet and a required cross-section consisting of two 10-foot wide travel lanes, 7-foot parking on both sides, and one-foot slotted curbs. The cross-section will also contain a 5-foot landscape strip that will serve as drainage, and a five-foot wide sidewalk.

Figure 11b – Collector Cross-Section



Local streets will have a right-of-way requirement of 45 feet, consisting of two 10-foot wide travel lanes, 7-foot gravel parking/drainage, and 5-foot raised sidewalks with a 6" curb.

Figure 11c – Local Street Cross-Section



Local Street

Through the flexible requirements provided in Table 8, the City of Irrigon will have an ability to reduce impervious surface and provide site-specific standards for roadway improvement projects that reflect local conditions. The optional availability of streetscape treatments such as landscape strips, pedestrian refuges, and bike lanes will be valuable to the city in the future as an instrument by which the character of roadways can be influenced.

Relation to Development Activities

At the time development activities are proposed, the City of Irrigon, when appropriate, will require half-street improvements as part of a given project's conditions of approval. The conditions of approval are recommended to require that roadways adjacent to development activities be constructed to comply with the street standards presented in this TSP. Section 7, **Policies and Land Use Ordinance Modifications**, provides sample development review guidelines that are recommended for adoption by the city.

Relation to County Facilities

The Morrow County Transportation System Plan (Reference 5) identified roadway standards for county facilities. The county's right-of-way requirement for Rural Access Roadways is 60 feet; as opposed to the 50-foot requirement identified for local roads in this TSP. Although the county's Rural Access Roadways may be applicable to some roadways within the City of Irrigon Urban Growth Area, the roadway standards stated in the City of Irrigon TSP do not conflict with the county's standards. The county's Rural Access Roadway standards are intended for roads that do not exhibit substantial traffic volumes but are expected to increase in the future. It is likely that the county roads will become collectors when incorporated into city limits.

By comparison, the 45-foot right-of-way required on city streets designated as being local roads reflects the expectation that these roadways will not require additional widening in the long-term future. The city's collector designation would be an appropriate counterpart to the county's Rural Access Roadway designation.

Parking Restrictions

To ensure adequate intersection sight distance, curbside parking should be prohibited within 20 feet of the edge of a given intersection.

Access spacing standards for the respective roadway classifications are presented later within this section.

ROADWAY IMPROVEMENT PROGRAM

The required transportation improvements in the City of Irrigon over the next 20 years, to meet both short- and long-term needs, are listed below in Table 9. The projects have been divided into 3 periods; 0 to 5 years, 5 to 10 years, and 10 to 20 years.

TABLE 9 – ROADWAY IMPROVEMENTS

Improvement Description	Estimated Cost*	Responsible Jurisdiction
Near-Term, High Priority Projects (0-5 years)		
Inventory and Review Posting of City Traffic Control Devices	No estimate	City
Improve Delineation on North Main Avenue Adjacent to the A.C. Houghton Elementary School	\$35,000	City/Private
Pave Key Collector Facilities	No estimate	City/County/ODOT/Private
Provide Gateway Treatments Along Highway 730	No estimate	ODOT
Reduce Vehicular Reliance Through Zoning and Development Code Revisions	No estimate	City
Enhance Pedestrian Crossings of Highway 730	No estimate	ODOT
Mid-Term Projects (5-10 years)		
Reconstruct First Street Approach to Highway 730	\$30,000	ODOT
Implement Transportation Demand Management Measures	No estimate	City/Private
Remove 3 rd Street Access to Highway 730	No Estimate	ODOT/City
Long-Term Projects (10-20 years)		
Signalize the 1 st Street/Highway 730 Intersection	\$250,000	ODOT
Concurrent with Development		
Provide Strategic North/South Roadway Extensions	\$1,270,000	Private
Provide Strategic East/West Roadway Extensions	\$3,905,000	Private
Development of Downtown Core	No estimate	City
Promote Access Management Along Highway 730	No estimate	ODOT/City

*Estimated costs are in 1999 dollars and do not include right-of-way acquisition

ACCESS MANAGEMENT STRATEGIES

As the City of Irrigon continues to develop, the arterial/collector/local street system will become more heavily relied upon for a variety of travel needs. As such, it will become increasingly important to manage access on the existing and future arterial/collector street system as new development occurs. Access locations on roadway sections need to be properly located to ensure safe and efficient travel along a given transportation facility. Access locations should be placed appropriately to limit potential conflicting turning movements, weaving maneuvers over short distances, and congestion along facilities.

The Oregon Transportation Planning Rule (TPR) defines access management as a set of measures regulating access to streets, roads, and highways, from public roads and private driveways. The TPR requires that new connections to arterials and state highways be consistent with designated access management categories. One objective of the Irrigon TSP was to develop an access management policy that maintains and enhances the integrity (capacity, safety, and level-of-service) of the city's streets. The Oregon Department of Transportation has legal authority to regulate access points along Highway 730 within the city's urban growth boundary. The City of Irrigon will manage access on other collector and local streets within its jurisdiction to ensure the efficient movement of traffic and enhance safety.

Access management standards vary depending on the functional classification and purpose of a given roadway. Roadways in the upper echelon of the functional classification system (i.e. arterials) tend to have stringent spacing standards, while facilities ranked lower in the functional classification system allow more closely spaced accesses. The following discussion presents the hierarchical access management system for roadways in Irrigon.

ODOT Access Management Standards

The *1999 Oregon Highway Plan* (Reference 1) specifies an access management classification system for state facilities and has classified Highway 730 as being a *Regional Highway*. Although Irrigon may designate state highways as arterial roadways within their transportation systems, the access management categories for these facilities should generally follow the guidelines of the Oregon Highway Plan.

Impact on Local Development Activities

Future developments along Highway 730 (zone changes, comprehensive plan amendments, redevelopment, and/or new development) will be required to meet the *1999 Oregon Highway Plan* highway designations and Access Management policies and standards.

As shown in Table 10, within urban or urbanizing areas, a new development will need to maintain an ¼-mile spacing (centerline-to-centerline) between public access points and 500-feet between private access points on both sides of the roadway and to either side of the proposed access point. Additional property frontage along the state highway does not guarantee that additional approach roads will be allowed. The *1999 Oregon Highway Plan* further designates that traffic signal spacing shall maintain minimum ½-mile spacing and that partial or no median control is necessary.

TABLE 10 – HIGHWAY 730 ACCESS MANAGEMENT STANDARDS*

Classification	Intersection				Signal Spacing ³	Median Control ⁴
	Public Road		Private Drive ²			
	Type ¹	Spacing	Type	Spacing		
Regional Highway	At-grade/ Interchange	¼ mile	Left/right turns	600 feet	½ mile	Partial/None

*Source: 1999 Oregon Highway Plan.

¹ The basic intersection design options are as listed. Special treatments may also be considered including partial interchanges, jughandles, etc. The decision on design should be based on function of the highway, traffic engineering, cost effectiveness, and need to protect the highway. Interchanges must conform to the interchange policy.

² Generally, no signals will be allowed at private access points on regional highways. If signal warrants are met, alternatives to signals should be investigated, including median closing. Spacing between public and private access points is to be determined by acceleration needs to achieve 70 percent of facility operating speed. Allowed moves and spacing requirements may be more restrictive than those shown to optimize capacity and safety.

³ Generally, signals should be spaced to minimize delay and disruptions to through traffic. Signals may be spaced at intervals closer than those shown to optimize capacity and safety.

⁴ Partial median control will allow some well-defined and channelized breaks in the physical median barrier. These can be allowed between intersections if no deterioration of highway operation will result.

In addition to the standards shown in Table 10, according to the *1999 Oregon Highway Plan*, the impact in traffic generation from proposed land uses must allow a major street a volume to capacity ratio of 0.60 – 0.69 for mainline traffic to be maintained for Regional Highways within the development’s influence area along the highway. The influence area is defined as the area in which the average daily traffic is increased by 10 percent or more by a single development, or 600 feet in each direction from the property-line of the development (whichever is greater).

The existing legal driveway connections, public street intersection spacing, and other accesses to the state highway system are not required to meet the spacing standards of the assigned category immediately upon adoption of this transportation system plan. However, existing permitted connections not conforming to the design goals and objectives of the roadway classification will be upgraded as circumstances permit

and during redevelopment. At any time, an approach road may need to be modified due to a safety problem or a capacity issue that exists or becomes apparent. By statute, ODOT is required to ensure that all safety and capacity issues are addressed. Proposed land use actions that do not comply with the designated access spacing policy will be required to request consideration for deviation from the City of Irrigon and/or ODOT based on deviation standards and policies outlined in the 1999 Oregon Highway Plan

City Standards

Table 11 identifies the minimum public street intersection and private access spacing standards for the City of Irrigon roadway network as they relate to new development and redevelopment. Table 12 identifies standards for private access driveway widths. In cases where physical constraints or unique site characteristics limit the ability for the access spacing standards listed in Tables 11 and 12 to be met, the City of Irrigon should retain the right to grant an access spacing variance. County facilities within the city’s urban growth boundary should be planned and constructed in accordance with these street design standards.

TABLE 11 – MINIMUM INTERSECTION SPACING STANDARDS

Functional Classification	Public Street (feet)	Private Access Drive (feet)
Arterial	Current Block Length – 600	600
Collector	Current Block Length – 300	60
Local	Current Block Length – 300	15

TABLE 12 – PRIVATE ACCESS DRIVEWAY WIDTH STANDARDS

Land Use	Minimum (feet)	Maximum (feet)
Single Family Residential	10	20
Multi-Family Residential	12	24
Commercial	20	40
Industrial	20	40

Management Techniques

From an operational perspective, the City of Irrigon should consider implementing access management measures to limit the number of redundant access points along roadways. This will enhance roadway capacity and benefit circulation. Improvements that should be considered include:

- planning for and developing intersection improvement programs in order to regularly monitor intersection operations and safety problems
- purchasing right-of-way and closing driveways
- installing positive channelization and driveway access controls as necessary

Enforcement of the access spacing standards should be complemented with the availability of alternative access points. Purchasing right-of-way and closing driveways without a parallel road system and/or other local access could seriously affect the viability of the impacted properties. Thus, if an access management approach is taken, alternative access should be developed prior to “land-locking” a given property. Specifically, provision of key east-west collector facilities as identified in Figure 10 would provide alternative access to land adjacent to Highway 730; thereby reducing or eliminating the need to provide new direct highway access to multiple properties along Highway 730.

As part of every land use action, the City of Irrigon should evaluate the potential need for conditioning a given development proposal with the following items, in order to maintain and/or improve traffic operations and safety along the arterial and collector roadways:

- Crossover easements should be provided on all compatible parcels (considering topography, access, and land use) to facilitate future access between adjoining parcels and would facilitate compliance with access management objectives.
- Conditional access permits should be issued to developments having proposed access points that do not meet the designated access spacing policy and/or have the ability to align with opposing driveways.
- Right-of-way dedications should be provided to facilitate the future planned roadway system near proposed developments.

Using these guidelines, all driveways, and roadways along the highway will eventually comply with the access spacing policy set for a particular segment of roadway as development and redevelopment occurs in the study area though not every parcel can or should be addressed through the process. The topography of the parcel, type of proposed or adjoining use, and/or highway frontage may preclude a development from using consolidated or crossover access points (e.g., consolidating access for a commercial business and an industrial or agricultural land use would be inappropriate).

Section 7, **Policies and Land Use Ordinance Modifications**, contains suggested code language that could be adopted to implement the access spacing standards. Development review guidelines are also included for the city's use.

PEDESTRIAN AND BICYCLE SYSTEM PLAN

The pedestrian and bicycle system plan is shown in Figure 12. The key objective in the development of the pedestrian and bicycle system plan was to provide connectivity between major activity centers. Within the City of Irrigon, these activity centers primarily include the post office, commercial businesses along Highway 730, the schools, recreation areas, and the developing Morrow County Heritage Trail.

The street design standards (refer to Figure 11a, 11b, 11c) would ensure that pedestrian facilities are provided in conjunction with all new or substantially reconstructed collectors and arterials. It is essential that existing sidewalks be connected to new sidewalks as new developments are constructed or as road improvements are made.

Multi-Use Facilities

Recognizing the limited resources available to finance separate pedestrian and bicycle facilities, a system of multi-use paths should be developed that supports both pedestrian and bicycle needs. As illustrated in Figure 12, these shared pedestrian/bicycle facilities are provided at key locations connecting schools, parks, and neighborhoods in an environment free of vehicular traffic. The system also incorporates connections with the proposed Morrow County Columbia River Heritage Trail along the Columbia River. Multi-use facilities would be provided along key circulation routes including portions of 1st Street, Highway 730, 4th Street West, Wyoming Avenue, Division Street, 10th Street, NE Main Avenue, and Utah Avenue.

By extending the multi-use path system to encompass the areas designated in Figure 12, a strong base network of pedestrian/bicycle connections will be available to the community. This base network can then be tapped by local sidewalk facilities to provide a more complete pedestrian and bicycle system in an environment free of vehicular traffic. The cross sections of these multi-use pathways would consist of 10-

foot wide paved paths separated from the roadway by a minimum of 10-feet (accomplished through use of a 10-foot wide landscaping strip would provide the necessary separation).

It should be noted that multi-use paths are especially effective in undeveloped areas. As properties develop/redevelop at urban densities in Irrigon, the city should consider replacing the multi-use paths with sidewalks on all streets and bicycle lanes on arterial and collector streets.

Other Pedestrian Facilities

Alternate and/or additional multi-use paths may be desirable in conjunction with continuing school projects, specifically including the potential construction of a new school building. Further, provision of sidewalks along one or both sides of key collector and local roads not specifically identified in this plan is also encouraged.

In addition to providing the pedestrian system components, there are several other potential enhancements that should be considered along Highway 730 including:

- provision of pedestrian refuge islands at 2nd Street West, 1st Street, 10th Street, and 12th Street
- provision of additional street lighting to provide clear visibility of pedestrians at night;
- provision of curb extensions that reduce the exposed crossing distance pedestrians must walk; and
- use of median treatments that provide pedestrians with a “safe-haven” or refuge at a mid-crossing

These pedestrian system enhancements are also potentially applicable to other roadways within the city.

Bicycle Facilities

In addition to the multi-use pathways, designated on-street bicycle facilities would be provided along Highway 730. The designated on-street bike lanes, in conjunction with the multi-use paths, provide for essential connections into and out of town. Additional bicycle routes within the city’s collector and local-level street system are not considered to warrant roadway treatments and should remain as undesignated shared facilities.

Table 12 provides a summary of pedestrian and bicycle system projects. In reviewing the projects identified in Table 13, it should be recognized that there is limited funding for such facilities and that the identification of projects does not guarantee their completion within the 20-year planning horizon. Nevertheless, as development occurs or street improvements are made, corresponding pedestrian and bicycle improvements should be completed.

Figure 12 – Pedestrian and Bicycle System Plan



Bicycle and Pedestrian System Plan

- FUTURE SIDEWALK
- FUTURE COUNTY MULTI-USE PATH
- BIKE LANE
- FUTURE ROADWAY
- URBAN GROWTH BOUNDARY
- CITY LIMITS
- * PEDESTRIAN/BICYCLE GENERATOR
- MULTI-USE PATH

NOTE: SIDEWALK & MULTI-USE PATH ALIGNMENTS ARE CONCEPTUAL. FURTHER ENGINEERING IS REQUIRED TO DETERMINE FEASIBLE ALIGNMENT ALTERNATIVES.

TABLE 13 – PEDESTRIAN AND BICYCLE SYSTEM IMPROVEMENTS

General Alignment	Project Start/End Point	Improvement Description	Estimated Cost*	Responsible Jurisdiction
Near-Term, High Priority Projects (0-5 years)				
North East Main Avenue	1 st Street to 12 th Street	Sidewalk	\$171,000	City/ODOT
First Street	Wyoming Avenue to Washington Avenue	Sidewalk	\$142,000	School District/City
Wyoming Avenue	1 st Street to Division Street	Sidewalk	\$67,500	City
Utah Avenue	2 nd Street West to 10 th Street	Sidewalk	\$210,000	City
Tenth Street	Washington Avenue to North East Main Avenue	Sidewalk	\$124,000	City
Tenth Street	North East Main Avenue to Morrow County Western Heritage Trail	Sidewalk	\$94,500	City
Highway 730	Extend Multiuse Path to 15 th Street (North side of Highway 730)	Multi-Use Path	\$60,000	ODOT/City
Mid-Term Projects (5-10 years)				
Highway 730	2 nd Street West to 15 th Street (South side of Highway 730)	Sidewalk	\$100,000	ODOT
California Avenue	1 st Street to Division Street	Sidewalk	\$15,000	City
Highway 730	Western UGB to eastern UGB	Bike lanes	\$2,600	ODOT
Division Street	Wyoming Avenue to Highway 730	Sidewalk	\$160,000	City
Long-Term Projects (10-20 years)				
2nd Street West	Wyoming Avenue to Washington Avenue	Sidewalk	\$53,000	City

Washington Ave.	4 th Street West to 10 th Street	Sidewalk	\$22,000	City
California Avenue	3 rd Street West to 13 th Street	Sidewalk	\$77,000	City
Thirteenth Street	California Avenue to Highway 730	Sidewalk	\$31,500	City
North East Main Avenue	12 th Street to eastern terminus	Sidewalk	\$195,000	City
4 th Street West	Wyoming Avenue to Highway 730	Sidewalk	\$8,000	City
4 th Street West	Highway 730 to Columbia Lane	Sidewalk	\$105,000	City
4 th Street West	Columbia Lane to Washington Avenue	Sidewalk	\$14,000	City
Idaho Avenue	10 th Street to 14 th Street	Sidewalk	\$61,000	City
14 th Street	Idaho Avenue to Highway 730	Sidewalk	\$16,500	City

*Estimated costs are in 1999 dollars and do not include right-of-way acquisition

Many of the sidewalk and multi-use facilities presented in Table 13 could be completed incrementally as part of local development projects. Creating “partnership programs” with landowners and businesses to construct such facilities would be one method by which individual projects could be brought to fruition in a timely manner. The pedestrian facilities could be constructed as adjacent properties develop, thereby ensuring alternative modes of access to various land uses. The city would however, need to develop a reasonably equitable methodology of assessing the extent of facilities that individual developers would be required to provide.

PUBLIC TRANSPORTATION SYSTEM PLAN

Transit service provides mobility to community residents who do not have access to automobiles and provides an alternative to driving for those who do. Transit service should meet the needs both of travelers within the city and those of travelers making trips outside of the community.

The *1997 Oregon Public Transportation Plan* identifies minimum level of service standards for rural and frontier communities such as the City of Irrigon (Reference 6). Under the *1997 Oregon Public Transportation Plan*, public transportation in small communities and rural areas in the year 2015 (under Level 3-Respond to State and Federal Mandates and Goals) should:

- Provide public transportation service to the general public based on locally established service and funding priorities
- Provide an accessible ride to anyone requesting service
- Provide a coordinated centralized scheduling system in each county and at the state level
- Provide phone access to the scheduling system at least 40 hours weekly between Monday and Friday
- Respond to service requests within 24 hours (not necessarily provide a ride within 24 hours)

Service Enhancements

Overall, the City of Irrigon should continue to monitor the adequacy of the transit service provided to the community and work with the county to extend service as necessary. The local transit program should also seek to meet the 2015 minimum level of service standards identified in the *1997 Oregon Public Transportation Plan*. Three improvement strategies are identified below for further consideration.

Increase Public Awareness

Both the city and the county should promote a greater public awareness of the available public transit services and the need for additional volunteer dispatchers and drivers. Greater awareness of the service and its needs will likely result in increased usage and availability. Provision of better recognition for drivers and/or driver meetings would be an additional avenue by which to encourage more volunteer participation in the program.

Coordinate Trips

Consideration should be given to coordinating trip requests to other neighboring communities and areas outside the county such as Hermiston and Pendleton. For example, a given day of the week could be designated for trips to Pendleton. This would then allow the city's residents to visit specialized medical service providers or satisfy other needs on a scheduled basis. Similarly, weekly shopping trips to Boardman, Hermiston, or other communities could be established to allow community members to purchase commodities not available through local commercial and service providers.

A recent survey conducted by transportation provider staff suggests that coordination of medical visits could be difficult due to the unpredictable nature of office visits, though the need for such a service should be more closely examined. Assuming that the demand for such a service exists, a scheduled weekly service would lend itself to greater coordination with service providers in the neighboring communities of Boardman and Umatilla.

Close coordination between the City of Irrigon and adjacent communities is also encouraged and should increase ridership and efficiency through better use of the resources available. Such coordination could prove to be especially fruitful if the weekly trips previously discussed are established as a joint community service. Coordinated trips to local community events would likely generate significant interest. Ultimately, if an increased demand for service can be established and documented, additional resources (i.e. funding, equipment) may be successfully pursued through grant applications or other alternative financing sources.

Provide Commuter Service

It is recommended that a carpool or vanpool service be provided for people who live in Irrigon and work in neighboring communities. Provision of a vanpool and/or carpools to major employers in the area could help to reduce the number of single occupant vehicle commute trips from Irrigon and help the community to achieve transportation demand management (TDM) objectives.

MARINE SYSTEM PLAN

As previously noted in the **Existing Conditions** section, the Columbia River borders the City of Irrigon to the north and serves as a means of recreational transportation. The city's public marine facility is capable of accommodating future expansion and can be expected to continue to grow with the surrounding community, though no formal expansion plans have been identified to date. The City of Irrigon should actively support the continued presence and operation of the boat launch as an effective means of recreational transportation. The creation of multi-use paths and other facilities that promote the multi-modal use of the recreational areas along the shore of the Columbia River should be encouraged. Further, the city should support the continued use of port facilities in neighboring communities such as the City of Umatilla and the City of Boardman.

AIR TRANSPORTATION SYSTEM PLAN

Existing regional air service for passengers and freight is provided via a full service commercial airport in neighboring Pendleton and at the Tri-Cities Airport located in Pasco, Washington. Air transport charter-

service is also available through the Hermiston Municipal Airport. The City of Irrigon should work with the county to achieve an intermodal connection to one or both airports, via demand-responsive transit service, subsidized taxi service, or other mutually agreeable means. The continued use of these facilities is recommended.

PIPELINE SYSTEM PLAN

Existing pipeline facilities should be maintained and enhanced as necessary.

EVACUATION PLAN

The Morrow County Planning Department, in conjunction with several local and state agencies, has developed response plans in the unlikely event of an incident at the Umatilla Ordinance Depot. According to county officials, in the event of an incident at the ordinance depot, area residents will be notified of the event and will have two response options.

The first response option will be to shelter in place. Planning officials indicate that sheltering in place, by sealing up a room, may be safer than trying to evacuate in some instances. If, however, a decision is made by emergency coordinators to initiate an evacuation, the second response option is to conduct an orderly exodus from affected areas. County planning staff noted that it is important for persons in an evacuation area not to enter into a “mindset” with only one course of action because specific evacuation routes are subject to change based on the nature of the emergency and climatic conditions such as temperature and wind speed.

If an evacuation were to be necessary, appropriate directions would be provided by local alarms, changeable message signs, and tone-alert radio. The directions would then instruct persons to a safe destination, potentially involving reception areas that have been designated in the Dalles, Heppner, and Pendleton.

IMPLEMENTATION PLAN

This section has outlined specific transportation system improvements as well as a corresponding timeline for implementation of the identified improvements. The sequencing plan presented is not detailed to the point of a schedule identifying specific years when infrastructure should be constructed, but rather ranks projects to be developed over 0 to 5 year, 5 to 10 year, and 10 to 20 year horizon periods. In this manner, the implementation of identified system improvements has been staged to spread investment in this infrastructure over the 20-year life of the plan.

The construction of roads, water, sewer, and electrical facilities in conjunction with local development activity should be coordinated if the City of Irrigon is to develop in an orderly and efficient way. Consequently, the plans identified in the TSP should be considered in light of developing infrastructure-sequencing plans, and may need to be modified accordingly.

SUMMARY

The adoption and implementation of this Transportation System Plan will enable the City of Irrigon to rectify existing transportation system deficiencies while also accommodating growth in the study area.

Section 6

Transportation Funding Plan

Transportation Funding Plan

INTRODUCTION

The Transportation Planning Rule (OAR 660-12-040) requires that the City of Irrigon 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 rough cost estimates 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); and,
- 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).

Section 5 of this TSP identified the recommended improvement projects, an implementation timeline, and estimated improvement costs. This section provides an overview of the City of Irrigon's historic funding levels and available funding sources at a federal, state, county, and local level.

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 intended to implement the comprehensive plan policies, which provide for phasing of major improvements to encourage infill and redevelopment of urban lands, prior to facilities that would cause premature development of urbanizable areas or conversion of rural lands to urban uses.

CITY OF IRRIGON FUNDING HISTORY

The current City of Irrigon Street Fund annual budget allocated approximately \$142,550 to transportation projects. The current street fund allocation included \$80,500 for capital outlay, a \$25,000 grant to improve Division Street, \$10,000 for contractor (no definition provided), and \$12,500 for road repair. Maintenance and preservation are the major work activities performed on the local street system. Virtually the entire annual Street Fund budget is derived from the city's share of the state-wide gasoline tax and motor vehicle fees. This revenue sharing is based on population and distributed on a proportional share basis to all cities and counties.

Rarely have capital improvement projects been accomplished in the city and, when realized, they have often been funded by a developer. The opportunity to make incremental improvements to the existing system is only facilitated by development/redevelopment. When a building permit is requested, the city examines the needs of the transportation facilities along the site frontage and identifies what should be improved/provided in association with the issuance of the permit.

It is expected that, for the foreseeable future, whatever funding is made available to the city through state and county resources will be applied to the maintenance and preservation of the existing street system. Should the city obtain funds in excess of the budget necessary to maintain the existing system, the TPR will seek to balance the application of these funds across all modes of travel. Therefore, the list of identified in this TSP should be the primary source for future projects to be implemented.

The City of Irrigon currently does not have a transportation system development charge, which would be assessed to developers. This charge could be implemented by the city, with both a "reimbursement fee" and an "improvement fee" element built into its structure. The reimbursement fee places a value on the amount of capacity on an existing street that is utilized by new site development traffic. The improvement fee is an assessment for the added traffic impact associated with new development that triggers new roadway improvements. As a follow up to the Irrigon TSP study, it is recommended that the city undertake a study to consider the appropriateness of a transportation SDC structure that would further facilitate the development of a multi-modal charge where funds could be spent on pedestrian, bicycle, transit improvements, and street improvements.

OREGON TRANSPORTATION FUNDING HISTORY

Road-Related Funding

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. Through the fiscal year 1996, the matching ratio in Oregon for Interstate Funds was: Federal 92.22 percent and State 7.78 percent (Reference 7).

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 three Oregon 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. Nevertheless, fuel taxes are the largest single source of highway revenues at approximately \$390 million annually (Reference 7). Weight-miles taxes are the second largest source of revenue to the Highway Fund, at approximately \$215 million annually (Reference 7).

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. Under the 1997-1999 legislatively adopted Department of Transportation budget, a total of \$2,284 million revenue dollars was identified. Of the total available revenue, approximately \$317 million dollars was allocated to counties and \$185 million to cities (Reference 8).

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, and 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 (Reference 7). Oregon law permits local governments (counties) and governmental entities to impose local option vehicle registration fees. To date, no county has 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, 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 July 1991. The school portion of the measure was phased in over a five-year period beginning in July 1991.

In 1996, voters again approved a property tax limitation measure, Ballot Measure 47, which further affected the ability of cities and counties to pay for needed infrastructure through historic or traditional means. Ballot Measure 50 was then approved by Oregon voters in May of 1997 and, through implementing legislation, became law in July 1997. Ballot Measure 50 repealed Measure 47 and made efficiency changes to Measure 5. Measure 50 limits taxes on each property by rolling back the 1997-1998 assessed value of each property to 90 percent of its 1995-1996 value. Measure 50 also limits future growth on taxable value to three percent per year, with exceptions for new items such as new construction, remodeling, subdivisions, and rezoning. Permanent tax rates for Oregon's local taxing districts are also established in Measure 50 that replace the former tax base amounts of the district. Measure 50 allows voters to approve new short-term levies outside the permanent rate limit if approved by a double majority.

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. The State Legislature was unable to reach consensus on the means to collect and distribute the funds and the package failed.

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 discussing how it should raise revenue in support of transit. The State has used general funds, lottery 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. To date, the State has provided no operating funds for transit, other than the elderly and disabled program. The State role has been one of granting authority to local governments to raise locally generated operating revenue.

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 TRANSPORTATION FUNDING SOURCES

There is a variety of methods to generate revenue for transportation projects. Funding for transportation improvement projects are derived from three sources: federal, state, and local governments. Appendix F (Table F-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.

Appendix F (Table F-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. The general status of each funding source is summarized in Table F-3.

Funding Program

Based on the identified improvement needs, major expenditures for transportation improvements are anticipated throughout the 20-year planning horizon. These transportation needs exist at a time when funding options available to make improvements are constrained. The city can expect to make significant investments to improve transportation facilities for existing development and to improve collectors and arterials that serve the entire area. However, the burden for future expansion of the transportation network should be borne by the development community creating the additional demand and this is reflected in the project costs/responsibilities previously summarized in Table 8.

Based on the recommended roadway improvement projects identified in Table 8, at least \$65,000 of roadway improvements have been identified for completion within the next five years. Additional projects for which cost estimates could not be prepared are also anticipated. With the possible exception of the First Street/Highway 730 intersection improvement project, the City of Irrigon would bear most of the financial burden for near-term improvements.

In the five- to ten-year planning horizon, it is anticipated that the Fifth Avenue/Division Street realignment project could come to fruition. This project would primarily be the responsibility of the city and is estimated to cost approximately \$130,000. Additional pedestrian crossings of Highway 730 would also be desirable and could be implemented during this time horizon. The pedestrian enhancements would most likely be provided by ODOT, though with ODOT's current funding limitations the provision of such enhancements may not be possible.

In the long-term, it is expected that a traffic signal will be required along Highway 730. The estimated \$200,000 cost of this signal would likely be funded by ODOT, with potential financial assistance from the city. ODOT's funding limitations may also constrain funding for such a project.

As documented in this TSP, the construction of several north/south and east/west roadways is also anticipated within the 20-year planning horizon. Financing of these facilities, which is collectively estimated to cost \$5,175,000, would likely be the responsibility of private developers. It is assumed that these projects will be completed incrementally as development occurs, which may or may not fall within the 20-year planning horizon.

Pedestrian and bicycle improvement projects are expected to be implemented on a gradual basis as roadways are reconstructed, development activities occur, or alternative funding becomes available through grant projects or some other financing mechanism. Sidewalk improvement projects that would likely be completed in conjunction with reconstruction of ODOT facilities total \$133,600. The remaining \$1,885,000 in identified pedestrian and bicycle improvement projects are expected to be financed either by the city or developers as appropriate. Funding programs such as the Transportation Enhancement Program provide funds for enhancing pedestrian and bicycle facilities, landscaping, and other scenic beautification that may be a source of funding for adding sidewalks, multi-use paths, and bicycle facilities. Additional funding may be available through the creation of Local Improvement Districts or through grant projects.

State Funding

ODOT operates and maintains Highway 730 in the City of Irrigon. State and federal funds administered through ODOT will be the primary sources of funding for improvements to this facility. Further, most Federal funding is passed through ODOT to local jurisdictions. While improvement projects affecting ODOT facilities are documented in this TSP, the inclusion of such projects in the TSP does not obligate ODOT to finance them.

A good working relationship with ODOT Region 5 planning staff and the Region Manager will be important to ensure that major roadway improvement projects on state facilities within the city are included in ODOT's State Transportation Improvement Plan (STIP) when it is updated. The city and Morrow County should take an active role in jointly representing the transportation priorities of Irrigon to ODOT during its process of formally incorporating priorities into the STIP. For its part, the City of Irrigon Transportation System Plan will provide ODOT with highway-related transportation projects of importance to the city and should be used as a basis for discussion with ODOT.

Local funding participation in projects on state facilities may enable ODOT to accelerate the priority of an improvement identified in the STIP. While not normally a requirement of project funding, local participation does demonstrate a strong commitment to ODOT and the local funds may be used to leverage state funds.

Local Funding

The City of Irrigon should continue to pursue federal, state, and county transportation funds for transportation projects. Given the high level of annual expenditures needed for construction of the transportation projects identified, existing sources of transportation revenue are not expected to be adequate to meet the demand for new projects. To meet the additional funding needs, the city may wish to consider additional revenue-generating options such as systems development charges, local improvement districts, and street maintenance fees as discussed below. It should be noted that, even with increased funding, it may prove difficult to fund all of the projects identified in this TSP within the 20-year planning horizon. Accordingly, the city should review the identified improvement projects on a periodic basis to prioritize local transportation system funding such that it most appropriately reflects current and projected needs.

Transportation System Development Charge

The City of Irrigon does not currently have a transportation system development charge, which would be assessed to developers. This charge could be implemented by the city, with both a "reimbursement fee" and an "improvement fee" element built into its structure. The reimbursement fee places a value on the amount of capacity on an existing street that is utilized by new site development traffic. The improvement fee is an assessment for the added traffic impact associated with new development that triggers new roadway improvements. As a follow up to the Irrigon TSP, it is recommended that the city undertake a study to consider the appropriateness of a transportation SDC structure that would further facilitate the development of a multi-modal charge where funds could be spent on pedestrian, bicycle, transit improvements, and street improvements. The study should determine the feasibility of implementing SDC fees, particularly with respect to evaluating equitability with neighboring cities both in economic and political terms.

Local Improvement Districts

Local improvement districts could be formed to improve currently substandard and unimproved roads. These projects may or may not be fully completed within the 20-year planning horizon.

Street Maintenance Fee

The City of Irrigon could investigate local adoption of a street maintenance fee to raise revenues to be dedicated toward street rehabilitation projects. These revenues could also be used to supplement the current State Highway Fund (State gas tax and vehicle registration fees) revenues already used for on-going maintenance.

Additional Considerations

There are important limitations that should be considered with respect to additional funding options. For example, the dollar amount of SDCs that can be assessed must meet legal requirements for establishing SDCs. The success of any funding plan will be reliant on the approval of the community. Accordingly, the involvement of citizens of the community in developing and implementing a funding package is essential.

SUMMARY

Transportation funding resources available to the City of Irrigon and ODOT are limited. It is expected that, for the near future, those funding sources that are available will predominantly be applied to maintenance and preservation of the existing transportation system. As additional funding becomes available, the list of transportation improvement projects identified in this TSP should be used to select projects for implementation. In the interim, the City of Irrigon should consider developing alternative transportation funding sources such as System Development Charges, Local Improvement Districts, or Street Maintenance Fees as a mechanism by which to finance improvements to the city's transportation system.

Section 7

Policies and Land Use Ordinance
Modifications

Policies and Land Use Ordinance Modifications

This section is provided under separate cover in the document “City of Irrigon Implementing Ordinances for the Transportation System Plan.”

Section 8

Transportation Planning Rule Compliance

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 to prepare and adopt a Transportation System Plan (TSP) by 1997. 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 Irrigon TSP. The comparison demonstrates that the City of Irrigon TSP is in compliance with the provisions of the TPR.

DEVELOPMENT OF A TRANSPORTATION SYSTEM PLAN

TPR Recommendations/Requirements

City of Irrigon TSP Compliance

Public and Interagency Involvement

Establish Advisory Committees.

A Management Team and Technical Advisory Committee were established at the outset of the project. Membership on the Management Team included members of the City, County, and ODOT staff. Membership on the Technical Advisory Committee included representatives from all facets of the community.

- Develop informational material.
- Schedule informational meetings, review meetings and public hearings throughout the planning process. Involve the community.
- Coordinate Plan with other agencies.

Technical memoranda and status reports of work undertaken and completed by the advisory committee were published and made available to the public throughout the project. Informational posters were also prepared concerning the project and opportunities for participation at public workshops for use at community information centers.

Three Management Team/TAC meetings were held through the planning process. The meetings were advertised by distribution of meeting notices. All TAC meetings were advertised and open to the public as part of joint City Council/Planning Commission meetings.

Coordination with the City, ODOT, and Morrow County was accomplished by including agency representatives on the project mailing list, individual project briefings/meetings, and participation on the Management Team and the TAC.

Review Existing Plans, Policies, Standards, and Laws

- *Review and evaluate existing comprehensive plan.*
- *Land use analysis - existing land use/vacant lands inventory.*

The following plans were reviewed as part of the development of the TSP: *1991 Oregon Highway Plan*, (June, 1991); *1996 Oregon Bicycle Plan*; *City of Irrigon Comprehensive Plan*, (1991); *Draft Statewide Transportation Improvement Program* (2000-2003).

In developing the forecast of transportation needs, an analysis was conducted of current land use designations and land status within the project area to determine the capacity for growth, which would increase demand for transportation services. Population and employment forecasts were prepared for the year 2020 that reflect

- *Review existing ordinances - zoning, subdivision, engineering standards.*
- *Review existing significant transportation studies.*
- *Review existing capital improvements programs/public facilities plans.*
- Americans with Disabilities Act requirements.
- Review current Transportation System Plan and evaluate compliance with the 1999 Oregon Highway Plan

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*).
- Bicycle ways (type, location, width, condition, *ownership/jurisdiction*).
- Pedestrian ways (location, width, condition, *ownership/jurisdiction*).
- Public Transportation Services (transit ridership, volumes, route, frequency, stops, fleet, intercity bus, passenger rail, special transit services).
- Intermodal and private connections.
- Air transportation.

regional growth prospects and the City's economic role in the region. Estimates of needed housing, commercial, and employment lands were derived from these forecasts. An inventory of vacant buildable lands within the city was also conducted.

Existing City Subdivision Ordinances, Zoning Ordinances, and Comprehensive Plan engineering standards were reviewed for adequacy in the development of the City of Irrigon TSP.

Significant transportation studies reviewed as part of the City of Irrigon TSP include the above mentioned comprehensive plans and their associated transportation elements, the Morrow County TSP, and the City's Street, Sidewalk, Bikeway, and Handicap Access Study.

The City of Irrigon CIP, Morrow County CIP, and the State TIP were reviewed as part of City of Irrigon TSP development.

The ADA requirements were reviewed and acknowledged as part of the City of Irrigon TSP development.

Reviewed existing Transportation System Plan and updated document to reflect requirements, standards, and policies of the 1999 Oregon Highway Plan.

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.

As noted in Section 2: Existing Conditions, there are no existing bicycle ways within the City of Irrigon.

As noted in Section 2: Existing Conditions, there are no existing pedestrian ways within the City of Irrigon.

A summary of the existing public transportation services is presented in Section 2: Existing Conditions. Only Special Transit and Intercity Bus services exist within the City of Irrigon.

A summary of the existing intermodal and private carrier transportation services is presented in Section 2: Existing Conditions.

A summary of existing air transportation facilities is provided in Section 2: Existing Conditions. No air transportation facilities are provided in the City of Irrigon.

- Freight rail transportation.
- Water transportation.
- Pipeline transportation.
- *Environmental constraints.*
- Existing population and employment.

Determine Transportation Needs

- Forecast population and employment
- Determination of transportation capacity needs (cumulative analysis, *transportation gravity model*).
- Other roadway needs (safety, bridges, reconstruction, operation/maintenance).
- Freight transportation needs.
- Public transportation needs (special transportation needs, general public transit needs).
- Bikeway needs.
- Pedestrian needs.

Develop and Evaluate Alternatives

- Update community goals and objectives.
- Establish evaluation criteria.
- Develop and evaluate alternatives (no-build system, all build alternatives, transportation system management, transit

As noted in Section 2: Existing Conditions, there are no freight rail transportation services within the City of Irrigon.

A summary of water transportation services is provided in Section 2: Existing Conditions.

A summary of pipeline transportation services is provided in Section 2: Existing Conditions.

Development of the TSP did not include the identification of environmental constraints beyond those specifically documented in the TSP.

As outlined Section 1: Introduction, the 1997 City of Irrigon population is approximately 1,200 persons in the city, 1,444 within the Urban Growth Area. This information and employment data cited in Section 3: Future Conditions Analysis, is included in Future Conditions as the basis for the forecasts that were performed for this TSP.

Population and employment forecasts were prepared for the year 2020 that reflect regional growth prospects and City of Irrigon's economic role. This information is summarized in Section 3: Future Conditions.

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.

Non-capacity related transportation needs are identified and recommended for implementation in Section 5: Transportation System Plan.

Freight transportation needs are adequately met via motor carrier freight services.

Public transportation needs are presented in Section 5: Transportation System Plan.

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 Irrigon's street system. Plans for these facilities are shown in Figure 15 of Section 5: Transportation System Plan.

Goals were established as part of the TSP development (see Section 1: Introduction).

Evaluation criteria was established from the study goals and objectives and used to develop the Preferred Alternative presented in Section 5: Transportation System Plan.

Section 4: Alternatives Analysis includes a summary of the land use and transportation alternatives considered and analyzed for City of

alternative/feasibility, improvements/additions to roadway system, land use alternatives, combination alternatives).

- Select recommended alternative.

Produce a Transportation System Plan

- Transportation goals, objectives and policies.
- Streets plan element (functional street classification and design standards, proposed facility improvements, access management plan, truck plan, safety improvements).
- Public transportation element (transit route service, transit facilities, special transit services, intercity bus and passenger rail).
- Bikeway system element.
- Pedestrian system element.
- Airport element (land use compatibility, future improvements, accessibility/connections/conflicts with other modes).
- Freight rail element (terminals, safety).
- Water transportation element (terminals).

Produce a Transportation System Plan (Continued)

- *Transportation System Management element (TSM).*
- *Transportation Demand Management element (TDM).*

Irrigon's TSP. Land uses, roadway alternatives, transportation system management options, bike and pedestrian options were analyzed.

A recommended alternative for roadways, bikeways, and pedestrian facilities is contained in Section 5: Transportation System Plan.

Specific recommendations regarding transportation goals and policies are outlined in Section 7: Policies and Land Use Ordinance Modifications.

The streets plan element is outlined in Section 5: Transportation System Plan.

The public transportation element is outlined in Section 5: Transportation System Plan.

The bikeway plan is outlined in Section 5: Transportation System Plan, and shown in Figure 15.

The pedestrian plan is outlined in Section 5: Transportation System Plan, and shown in Figure 15.

The airport element is outlined in Section 5: Transportation System Plan.

There is no rail service available or anticipated to serve the City of Irrigon.

The water transportation element is outlined in Section 5: Transportation System Plan

TSM element not applicable per OAR 660-12-020(2)(f) and (g).

TDM element not applicable per OAR 660-12-020(2)(f) and (g).

Implementation of a Transportation System Plan

Plan Review and Coordination

- Consistent with ODOT and other applicable plans.

See Section 7: Policies and Land Use Ordinance Modifications

Adoption

- Is it adopted?

To follow.

Implementation

- Ordinances (facilities, services and improvements; land use or subdivision regulations).
- Transportation financing/capital improvements program.

Included in Section 7: Policies and Land Use Ordinance Modifications.

The transportation finance plan is summarized in Section 6: Transportation Funding Plan.

Section 9

References

References

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6. Oregon Department of Transportation. *1997 Oregon Public Transportation Plan*. April 1997.
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8. Oregon Department of Transportation. *Financial Services Website*, <http://www.odot.state.or.us/fspublic>. May 1999.

Appendix A

Plan and Policy Review

Appendix A – Plans and Policies Review

Existing plan policies and other actions will influence the analysis of land use and transportation issues and the alternatives to address these issues as well as other community objectives. This appendix provides a summary of the plans and policies reviewed as part of the development of the Transportation System Plan.

CITY OF IRRIGON COMPREHENSIVE PLAN

The Comprehensive Plan is part of a Technical Report first completed in 1978. The 1991 update was partially financed with a maintenance grant from the Department of Land Conservation and Development. The Technical Report provides background information, facts, and considerations that serve as a basis for the city's comprehensive plan map, policies, and objectives.

The Technical Report consists of eight chapters as follows:

- Chapter I: Summary and Conclusions
- Chapter II: Summary of Findings
- Chapter III: Citizen Involvement
- Chapter IV: Goals and Objectives
- Chapter V: Natural Environment (including: Climate, Geology, Topography, Soils, Natural Hazards, Fish and Wildlife, Air, Water and Land Quality, Energy Resources, and Unique Scientific and Cultural Resources)
- Chapter VI: Socio-Economic Environment (including: Resource Base and Economic History, Community Survey Description, Population, Income, Employment and Economic Development, City and County Financial Base, Housing, Community Services, Community Facilities, and Existing Land Use, Zoning & Growth Management)
- Chapter VII: Bibliography
- Chapter VIII: Appendices (including: Community Survey, Population Projection Description, Coordination Letter, County Review Process, City & County Plan Ordinances, and Urban Growth Area Management Agreement)

CHAPTER II

The key findings and goals included in Chapter II are summarized below.

- *Goal 11, Public Facilities and Services:* “plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.”
- *Goal 12, Transportation:* “provide and encourage a safe, convenient and economic transportation system.”

CHAPTER IV

The key policies and goals included in Chapter IV are summarized below.

- *Land Use Planning Goal:* Establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.

- *Land Use Planning Policies:* Identify lands suitable for development and areas where development should be restricted; and, determine the public facilities and services required to accommodate existing unmet public needs and expected economic and population growth.
- *Open Spaces, Scenic and Historical Areas, and Natural Resources Goal:* Conserve open space and protect natural and scenic resources.
- *Open Spaces, Scenic and Historical Areas, and Natural Resources Policies:* Examine any publicly owned lands including street rights-of-way for their potential open space use before their disposition.
- *Recreational Needs Goal:* Satisfy the recreational needs of the citizens of Irrigon and visitors.
- *Recreational Needs Policies:* Encourage tourist commercial uses such as motels, restaurants, gas stations, gift shops, and other noise and traffic generators to cluster in or adjacent to other commercial areas.
- *Economic Development Goal:* Diversify and improve the economy of Irrigon.
- *Economic Development Policies:* Minimize noise levels, heavy traffic volumes, and other undesirable effects of heavy commercial and industrial developments; and, cluster commercial uses intended to meet the business needs of area residents and highway travelers only in designated areas to prevent the undesirable effects of a strip commercial area.
- *Public Facilities and Services Goal:* To plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban development.
- *Public Facilities and Services Policies:* Develop, maintain, update, and expand police and fire services, streets, and sidewalks, water and sewer systems, and storm drains as necessary to provide adequate facilities and services to the community; require underground installation of utilities in all new developments and as major improvements are made to areas with above ground utilities.
- *Transportation Goal:* To provide and encourage a safe, convenient and economic transportation system.
- *Transportation Policies:* Minimize conflicts between through and local traffic on Highway 730 to reduce traffic hazards and expedite the flow of traffic; develop good transportation linkage (pedestrian, vehicular, bicycle, etc.) between residential areas and major activity centers.
- *Energy Conservation Goal:* Conserve energy and develop and use renewable energy resources.
- *Energy Conservation Policies:* Revise subdivision regulations to require that the orientation of street and buildings allow for utilization of solar energy and require landscaping to reduce summer cooling needs.
- *Urbanization Goal:* Provide for an orderly and efficient transition from rural to urban land use.
- *Urbanization Policies:* Encourage development to occur within a relatively compact urban area with controlled outward growth.

CHAPTER VI

Chapter VI, Socioeconomic Environment, contains a section on transportation and future needs. This section lists the following objectives:

- To provide an integrated transportation system that will link the city with regional production, distribution and marketing centers.

- To incorporate safety and efficiency factors in (the) transportation system design to allow people and goods to travel conveniently.
- To create a transportation system which is current, flexible, and coordinated with the comprehensive plan.
- Permit orderly and timely expansion of the transportation system in an economically feasible manner.
- To maintain and improve the transportation system to allow it to carry out its intended function.

IMPLEMENTING REGULATIONS

Zoning Ordinance

The Zoning Ordinance (Ordinance #64 as amended) implements the Comprehensive Plan by establishing specific standards for use of the land by zoning districts and other development standards. The ordinance contains regulation for off-street parking and loading (Article 9) and parking lot access, but does not contain development standards related to streets, use of streets or additional access standards.

Article 3, Use Zones, includes dimensional standards in R-1 (General Residential), R-2 (Limited Residential), and R-3 (Farm Residential) zones, requiring that the street frontage shall be a minimum of 50 feet except on a cul-de-sac where the minimum shall be 30 feet. Street frontages shall be a minimum of 25 feet in C (Central Commercial) zones and 100 feet in M (Light Industrial) zones.

Additional “Clear Vision Areas” (triangular areas) are required on corners of all properties at the intersection of two streets or a street and a railroad. In a residential zone, the minimum distance must be 30 feet except when including an alley, only 10 feet. In all other zones where yards are required, the minimum distance shall be 15 feet, or at intersections including an alley, 10 feet, except when the angle of intersection is less than 30 degrees, the distance shall be 25 feet.

Subdivision Ordinance

Ordinance #60 Section 2(b) requires a sketch plan prior to subdividing land. This sketch must include detail regarding the arrangement, location and width of streets, their relation to the topography of the land, and provision of other urban services to the site. Section 4(a) describes the necessary content of the final subdivision plat, including “formal irrevocable offers of dedication to the public of all streets, local government uses, utilities, parks and easements...”

Section 4.2 includes the following general requirements for streets: frontage on improved streets, grading and improvement plan, topography and arrangement, road names, road regulatory signs, and streetlights.

Design Standards

- General:* In order to provide for streets of suitable location, width and improvement, design standards are required per Table A-1 below.
- Road Surfacing and Improvement:* Surfacing shall be suitable for expected traffic and in harmony with similar improvements in the surrounding areas. Types of pavement shall be as determined by the City Engineer. All road pavement, shoulders, drainage improvements and structures, curbs, turnarounds, and sidewalks shall conform to all construction standards and specifications adopted by the City Council upon recommendation of the City Engineers, and shall be incorporated into the construction plans submitted by the developer for plat approval.
- Excess Right-of-Way:* May be required when necessary to provide adequate earth slopes. Such slopes shall not be in excess of three to one.

d. *Intersections*

1. Streets shall be laid out so as to intersect as nearly as possible at right angles. A proposed intersection of two new streets at an angle of less than 75 degrees shall not be acceptable. An oblique street should be curved approaching an intersection and should be approximately at right angles for at least one hundred (100) feet there from. Not more than two streets shall intersect at any one point.
2. Proposed new intersections along one side of an existing street shall, wherever practicable, coincide with any existing intersections on the opposite side of such street. Street jogs with centerline offsets of less than 150 feet shall not be permitted, except where the intersected street has separated dual drives without median breaks at either intersection. Where streets intersect major streets, their alignment shall be at least 800 feet apart.
3. Minimum curb radius at the intersection of two local streets shall be at least 20 feet; and minimum curb radius at an intersection involving a collector street shall be at least 25 feet. Alley intersections and abrupt changes in alignment within a block shall have the corners cut off in accordance with standard engineering practice to permit safe vehicular movement.
4. Intersections shall be designed with a flat grade wherever practical. In hilly or rolling areas, at the approach to an intersection, a leveling area shall be provided having not greater than a 2% rate at a distance of 60 feet, measured from the nearest right-of-way line of the intersecting street.
5. Where any street intersection will involve earth banks or existing vegetation inside any lot corner that could create a traffic hazard by limiting visibility, the developer shall cut such ground and/or vegetation (including trees) in connection with the grading of the public right-of-way to the extent necessary to provide an adequate sight distance.

**TABLE A-1
DESIGN STANDARDS FOR ROADS**

Classification	Right-of-Way	Turn Lanes	Travel Lanes	Bike Lanes	Sidewalks	On-Street Parking	Landscape Strip
Arterial	66 Feet	Yes with pedestrian refuges/median	12 Foot	6 Foot Both sides	10 Foot on South Side	No	No
Minor Collector	60 feet	No	10 foot	Shared Roadway	5 Foot on both sides	7 Foot on both sides	4 Foot swale (drainage)
Local Street	50 feet	No	10 Foot	Shared Roadway	5 Foot on both sides	7 Foot swale (parking, drainage)	No

Section 4.6 includes required improvements for sidewalks:

1. Sidewalks shall be included within the dedicated non-pavement right-of-way of all roads as given in Table A-1.
2. Concrete curbs are required for all roads where sidewalks are required by these regulations or where required in the discretion of the City Council.
3. Sidewalks shall be improved as required in Section 4.2.2b (road surfacing and improvements) of these regulations. A median strip of grassed or landscaped areas at least 4 feet wide shall separate all sidewalks from adjacent curbs.

4. Pedestrian accesses. The City Council may require, in order to facilitate pedestrian access from the roads to schools, parks, playgrounds, or other nearby roads, perpetual unobstructed easements at least 20 feet in width. Easements shall be indicated on the plan, plat or map.

Section 4.9, Preservation of Natural Features and Amenities, states that existing features that add value to the development or to the city as a whole, such as trees, watercourses, etc., shall be preserved in the design of the subdivision or partition.

Subsection 4.9.2 describes trees required to be planted by the subdivision developers. These shall be planted on the property within 5 feet of the right-of-way for the road or roads within and abutting the subdivision, or, at the discretion of the City Council, within the right-of-way for such roads. One tree shall be planted for every 40 feet of frontage along each road unless the City Council grants a waiver. This section also describes tree and trunk size and time that shall be used. Deciduous trees should be planted on east-west streets and evergreen trees on north-south streets. According to the City Manager of Irrigon, the street tree preservation ordinance still stands, but has not been consistently enforced. The tree easement and dedication part of the ordinance has never been enforced as far as he knows.

Subsection 4.9.3 states that the final plat or map shall reserve an easement authorizing the city to plant shade trees within five feet of the required right-of-way for the city.

Section 4.10, bicycle routes, includes a provision for requiring bicycle routes as follows: if appropriate to the extension of a system of bicycle routes, existing or planned, the City Council may require installation of separate bicycle lanes within streets and separate vehicle paths.

Section 4.11 pertains to nonresidential subdivisions for commercial or industrial use subdivisions, street rights-of-way and pavement shall be adequate to accommodate the type and volume of traffic anticipated. Special requirements may be imposed with respect to the street, curb, gutter, and sidewalk design and construction. Streets carrying nonresidential traffic, especially truck traffic, shall not normally be extended to the boundaries of adjacent existing or potential residential areas. Every effort should be made to protect residential areas from potential nuisances; e.g., extra depth in parcels, or placement of landscaped strips.

JOINT MANAGEMENT AGREEMENT BETWEEN CITY OF IRRIGON AND MORROW COUNTY

The 1998 Joint Management Agreement (JMA) addresses road jurisdiction and standards in Section 9, Road Jurisdiction and Standards, as follows:

- 9.1 The City and County agree to adopt a joint standard for non-arterial roads equivalent to the County's Rural Collector II standard developed for the County's Transportation System Plan (TSP). All future non-arterial roads within the UGB will be constructed and maintained to this standard unless housing densities warrant a higher standard. In such cases, roads will be constructed and maintained to the County's Rural Collector I standard, also adopted by both the City and the County. Estimates of average daily traffic, based on number of proposed housing units served by a given road, will be used to determine whether the Rural Collector I or II standard will be required. Road standards subject to this agreement are shown in Exhibit C and the County Road Classification Map as shown in Exhibit D.
- 9.2 If any future arterials are constructed within the urban growth area, the County and City will develop and adopt a joint arterial road standard for construction and maintenance.
- 9.3 Upon annexation, the City will assume jurisdiction of all county roads regardless of condition.
- 9.4 These provisions do not prevent the City or County from improving any road within the UGB to a higher standard, as needed or appropriate, subsequent or prior to annexation.

STRATEGIC PLAN

The 1998 Irrigon Community Assessment of strengths, weaknesses, opportunities and threats (SWOT) cites the lack of a Transportation Master Plan as an infrastructure weakness, as was "inadequate roads". The opportunity for "community involvement to draft the City Transportation Plan" was listed.

Under Community Goals and Attendant Strategies, the following goals, strategies and projects apply to the transportation and land use system:

Goal: Promote community improvement and business activity through improved infrastructure.

Strategy: Enhance and expand infrastructure and facilities that will promote safety, health and economic growth.

Project:

- ◆ Highway 730 pedestrian and bike crosswalks
- ◆ Lewis and Clark Trail Program

Goal: Promote and support improved public safety

Strategy: Financial support of local law enforcement

Project:

- ◆ Bike/walk path system

In the Strategic Plan Implementation Schedule, The Lewis and Clark Trail Program project is being led by the County Planning Department. An initial grant application has been submitted.

The Highway 730 Pedestrian and Bike Crosswalks is being led by the City of Irrigon, is underway and dependent upon results of the Community Development Program, (Phase II of which is the TSP), said to be completed by December 1998.

The bike/walk path system is being led by the City of Irrigon, initiated in March 1998 and is, again, dependent on the results of the Community Development Program.

The Community Development Program reference in the plan is described to include a Transportation System Plan (TSP) for the city and urban growth area including an inventory and assessment of existing transportation facilities as well as a plan for future transportation needs, an in-fill and redevelopment strategy and identification of a central downtown area.

Regarding the Highway 730 pedestrian and bike crosswalk project, the plan lists pedestrian efforts in the past as including an engineering study of traffic patterns by Anderson-Perry and Associates in 1992-93; siting of three dedicated crosswalks; rebuilding of the A.C. Houghton Grade School student bus loading zone; continually upgrading street signs in heavy traffic areas; and student busing across Highway 730.

Suggestions for improvements include:

- ◆ Construction of a crossing at Division Street and Highway 730,
- ◆ Improving Division Street by widening the traffic lanes,
- ◆ Building shoulders and developing a bike path on the west side, and
- ◆ Building curbs to define traffic lane width and build sidewalks along the north side of South Main Avenue (Highway 730) to connect to pedestrian paths parallel to the highway.

According to the strategic plan, these pedestrian paths are to be built in stages and eventually reach from NE 13th Street to NE 3rd Street with possible extension beyond N 1st Street. The first stage would be the

crossing at Division and South Main with a second possibility to install a safety island at selected crossings to provide pedestrians a refuge when crossing. This would entail a 7" high concrete island supplemented by a concrete median strip identifying turn lanes and including concrete sidewalks. These crossings would be connected with pedestrian and bike paths from the new Post Office to the Grade School. Caution lights or control lights are discouraged, as they have not proven to be effective in similar situations. The summary notes that Irrigon does not have the required traffic counts for either pedestrian or vehicular traffic to justify installation of traffic lights at this time.

Regarding the project summary for the bike/walking path system, the project is described to begin with a path running through the Irrigon Greenway, fronting A.C. Houghton Grade School and continuing to the new Irrigon Post Office. The path is described as being enhanced with tree plantings and other landscape projects. Anticipated results include relief for pedestrian and bike traffic on Highway 730 and North Main Street. The summary notes that pedestrian safety is a great concern, especially with the Irrigon schools located on both sides of Highway 730. Project cost is estimated to be \$10.54 per linear foot.

Appendix B

Description of Level-of-Service Methods and
Criteria

Appendix B – Description of Level-of-Service Methods and Criteria

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 B1 – 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 stop 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 stop delay is 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 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

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

Table B2 – 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

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 B3 – Level of Service Criteria 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 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 queue.
C	<ul style="list-style-type: none"> Many times there is more than one vehicle in queue. Most drivers feel restricted, but not objectionably so.
D	<ul style="list-style-type: none"> Often there is more than one vehicle in 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 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 B4 – Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Total Delay per Vehicle (Seconds)
A	< 5.0
B	5.1 to 10.0
C	10.1 to 20.0
D	20.1 to 30.0
E	30.1 to 45.0
F	> 45.0

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 C

Employment and Population Forecast Methodology

Appendix C – Employment and Population Forecast Methodology

320 WOODLARK BUILDING
813 SW ALDER STREET
PORTLAND, OREGON 97205-3111
503/225-0192 •• FAX 503/225-0224

COGAN
OWENS
COGAN

PLANNING,
COMMUNICATIONS,
GOVERNMENTAL AND
COMMUNITY RELATIONS,
ENVIRONMENTAL STUDIES

MEMORANDUM

DATE: February 3, 1999
TO: Julie Kuhn
FROM: Matt Hastie *MH*
RE: Morrow County Population and Employment Projections

We have completed projections to be incorporated in Technical Memorandum #3 for the Morrow County TSP project. This memo outlines the methodology and assumptions used to develop projections for the cities of Boardman, Heppner, Ione, Irrigon and Lexington. For Boardman and Irrigon, we have estimated future population for the City and urban growth area (area between the existing city limits and urban growth boundary (UGB)). For the other cities, we have provided projections for the city limits only. All employment projections are for the cities only.

METHODOLOGY

Population

The Oregon Office of Economic Analysis (OEA) has developed population and employment forecasts through the year 2040 for each county in Oregon. These are recognized as the official projections to be used by state agencies and local jurisdictions for planning purposes. Counties are responsible for allocating population to their cities and unincorporated areas. For the purposes of buildable lands and other planning studies, local jurisdictions may modify the OEA projections if agreed to by the appropriate coordinating state agency. In 1997, Morrow County, in coordination with the Oregon Department of Land Conservation and Development (DLCD) and the cities of Boardman and Irrigon, agreed to a modified set of 1997 population estimates and future projections. These projections assumed a higher rate of growth than forecast by the OEA through the year 2002 and incorporate the OEA growth rates from 2002 through 2020. The higher growth rates are based on substantial recent/ ongoing population and employment growth in the region. In addition, growth rates for specific cities are assumed to fluctuate from the county average in the near term.

We used these 1997 estimates and modified growth rates in our projections. In addition, we estimated the number of people within the urban growth areas of Boardman and Irrigon (based on the number of dwelling units and the average number

of people per dwelling unit in Morrow County) to estimate and project the population within the UGB for these two cities.

Employment

Current estimates of employment for individual cities are not available through the County, state or any of the individual jurisdictions involved in this project. As noted above, the state has developed county-wide employment projections for non-agricultural employment which can be used to estimate future growth rates for the county. In estimating current and future employment, we assumed the following:

- Between 1990 and 1997, employment growth rates mirrored those for population growth with these exceptions:
 - The rate of employment growth was slightly lower than population growth in Boardman, where employment growth was high but population growth was likely higher, due to significant employment growth in Umatilla County (i.e., some new Boardman residents in the workforce work in Umatilla County).
 - The rate in Irrigon was significantly lower than the rate of population growth, given Irrigon's "bedroom community" characteristics and the high rate of population growth there.
- Between 1997 and 2002, we also estimate a somewhat higher rate of employment growth than the original OEA projections, following the same logic used to develop population estimates, as well as the assumptions stated above.
- For 2002 - 2020, as with the population estimates, we assumed the employment growth rates projected by the OEA.

The attached tables show the projections.

POPULATION PROJECTIONS

County/City	1997	2000	2002 % change	2005 % change	2010 % change	2015 % change	2020 % change					
OEА Morrow	9,895	9,828	11,179	2.5%	10,723	1.8%	11,594	1.6%	12,463	1.5%	13,322	1.3%
Adjusted Morrow	9,895	11,131	12,039	4.0%	12,701	1.8%	13,750	1.6%	14,812	1.5%	15,801	1.3%
Boardman City and	2700	3,126	3,446	5.0%	3,635	1.8%	3,936	1.6%	4,240	1.5%	4,523	1.3%
City and UGA	3062	3,545	3,908	5.0%	4,123	1.8%	4,463	1.6%	4,808	1.5%	5,129	1.3%
Happner City and	1480	1,502	1,517	0.5%	1,601	1.8%	1,733	1.6%	1,867	1.5%	1,992	1.3%
City and UGA	-	-	-	0.5%	-	1.8%	-	1.6%	-	1.5%	-	1.3%
Iona City and	310	319	326	1.0%	344	1.8%	372	1.6%	401	1.5%	428	1.3%
City and UGA	-	-	-	1.0%	-	1.8%	-	1.6%	-	1.5%	-	1.3%
Irrigon City and	1200	1,470	1,683	7.0%	1,776	1.8%	1,922	1.6%	2,071	1.5%	2,209	1.3%
City and UGA	1444	1,769	2,025	7.0%	2,137	1.8%	2,313	1.6%	2,492	1.5%	2,658	1.3%
Lexington City and	290	294	297	0.5%	325	1.8%	352	1.6%	379	1.5%	404	1.3%
City and UGA	-	-	-	0.5%	-	1.8%	-	1.6%	-	1.5%	-	1.3%

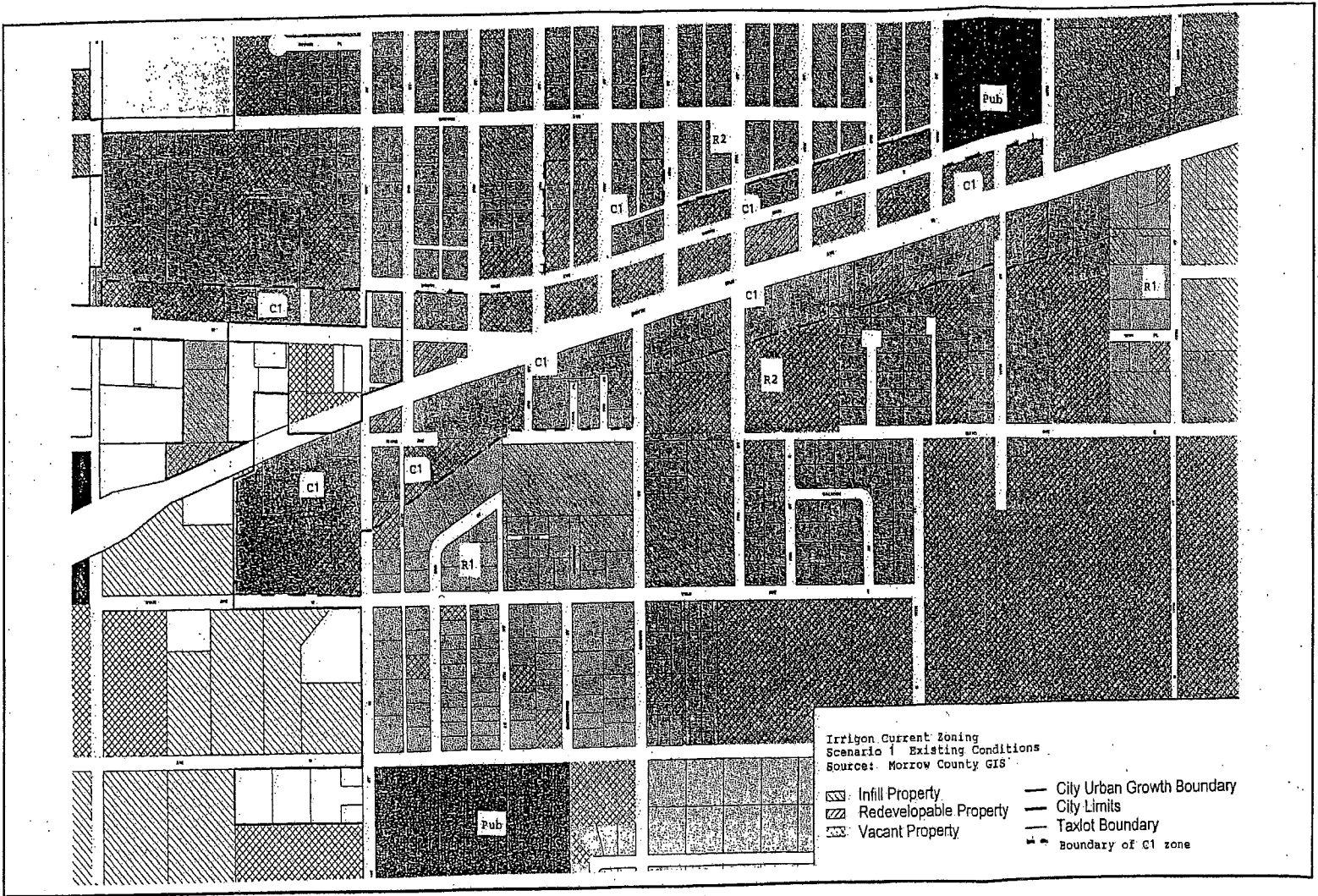
EMPLOYMENT PROJECTIONS

County/City	1990	1997	2000 % change	2002 % change	2005 % change	2010 % change	2015 % change	2020 % change						
OEА Morrow Co. Proj.	2232	2,924	3,283	3.9%	3,449	2.5%	3,613	1.9%	3,890	1.5%	4,097	1.0%	4,290	0.9%
Boardman	641	1,029	1,261	7.0%	1,444	7.0%	1,528	1.9%	1,646	1.5%	1,730	1.0%	1,809	0.9%
Happner	580	601	610	0.7%	616	0.5%	652	1.9%	702	1.5%	738	1.0%	772	0.9%
Iona	121	125	127	0.6%	128	0.5%	136	1.9%	146	1.5%	154	1.0%	161	0.9%
Irrigon	236	290	317	3.0%	336	3.0%	356	1.9%	384	1.5%	403	1.0%	422	0.9%
Lexington	108	110	110	0.2%	111	0.2%	117	1.9%	126	1.5%	133	1.0%	139	0.9%

Appendix D

Preferred Land Use Alternative Graphical
Renderings

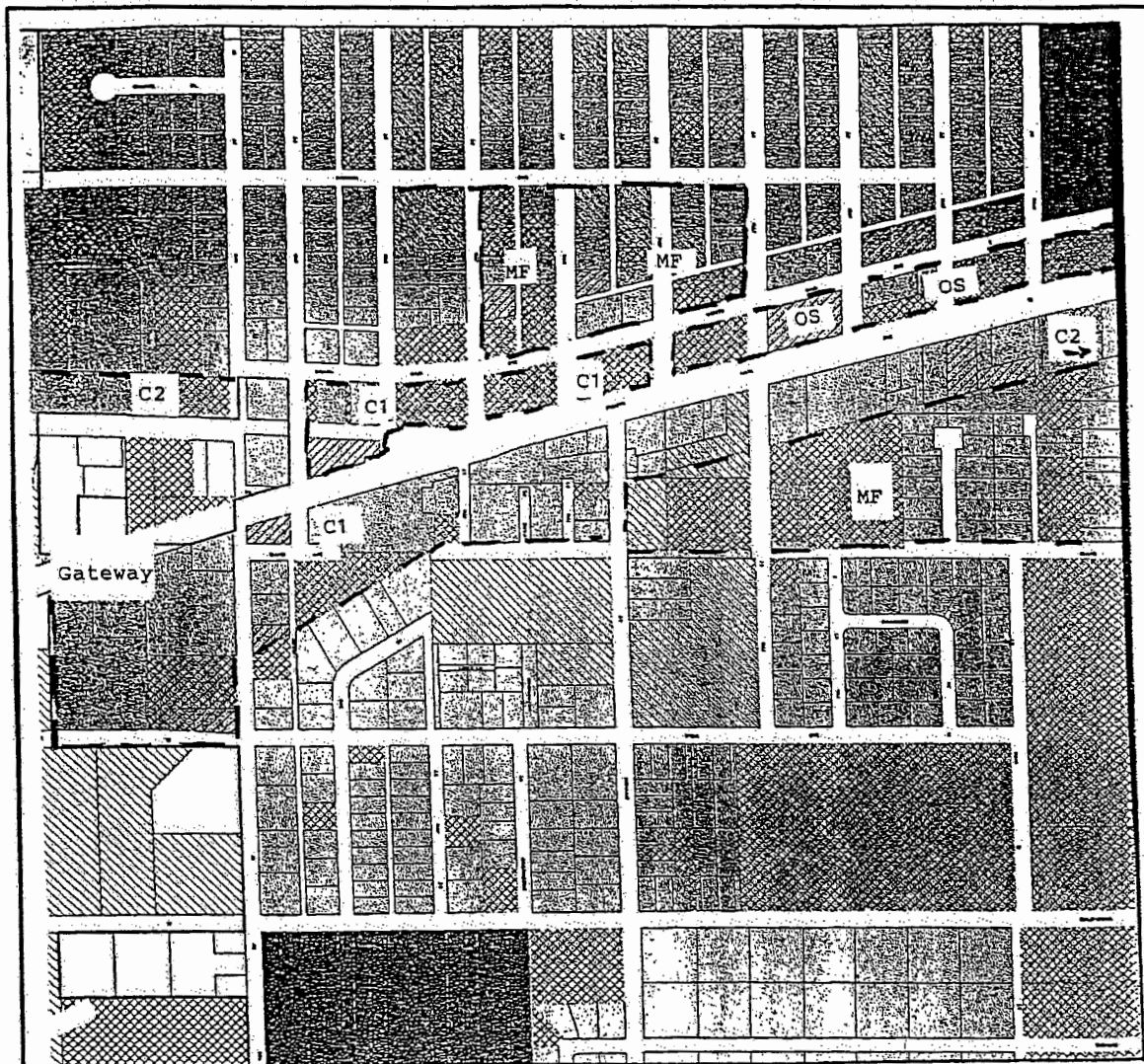
Appendix D – Preferred Land Use Alternative Graphical Renderings









IRRIGON CURRENT ZONING
SCENARIO 1 EXISTING CONDITIONS

CITY OF IRRIGON, OREGON TRANSPORTATION SYSTEM PLAN JUNE 1999	FIGURE D-1	
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2899\CWGS\IRRIGON\TSP\2899D1.DWG



Irrigon
 Scenario 3 Mixed Use Commercial Downtown Zone and Main
 Street with North South Connections
 Source: Base map/ Morrow County GIS (See also figure D-4)

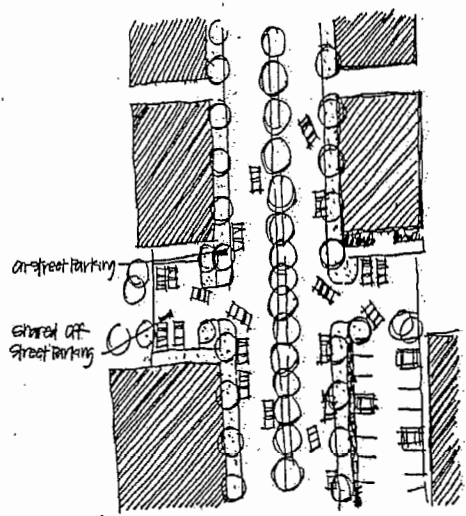
- | | |
|--|--|
|  Infill Property |  City Urban Growth Boundary |
|  Redevelopable Property |  City Limits |
|  Vacant Property |  Taxlot Boundary |

**IRRIGON SCENARIO 3
 MIXED USE COMMERCIAL DOWNTOWN
 ZONE AND MAIN STREET**

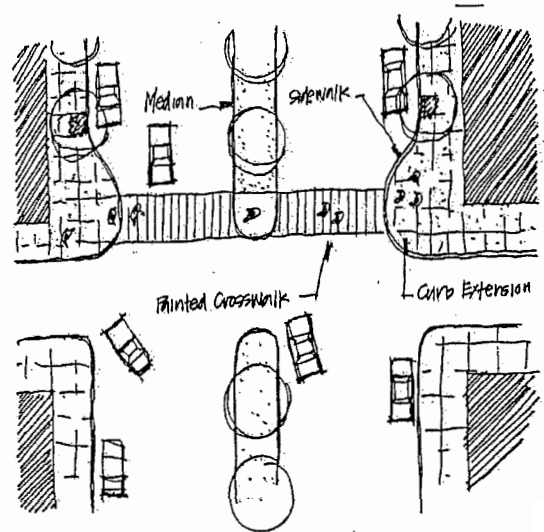
CITY OF IRRIGON, OREGON
 TRANSPORTATION SYSTEM PLAN
 JUNE 1999

FIGURE
D-3 

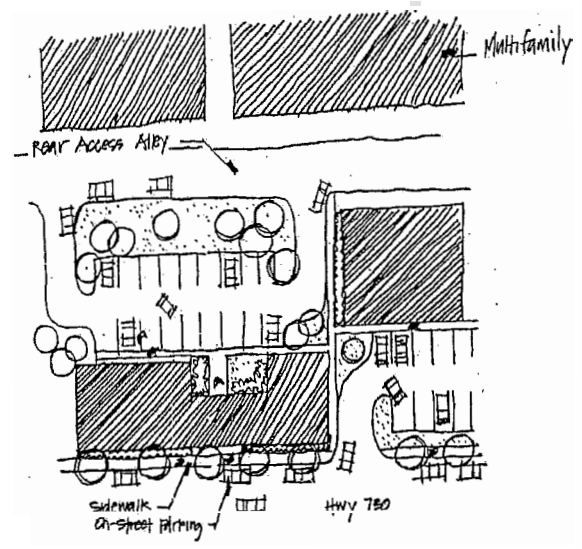
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Hwy 780 Parking Possibilities



Typical Pedestrian Crossing



Typical Rear Access Layout

IRRIGON PLAN DETAILS RENDERING

CITY OF IRRIGON, OREGON
TRANSPORTATION SYSTEM PLAN
JUNE 1999

FIGURE
D-5



2099_DWG5\IRRIGON\TSM\7899PLAN.DWG

Appendix E

Main Street Mitigation Design

Appendix E – Main Street Mitigation Design

CITY OF
IRRIGON, OREGON

STREET, SIDEWALK, BIKEWAY, AND
HANDICAP ACCESS STUDY

1993



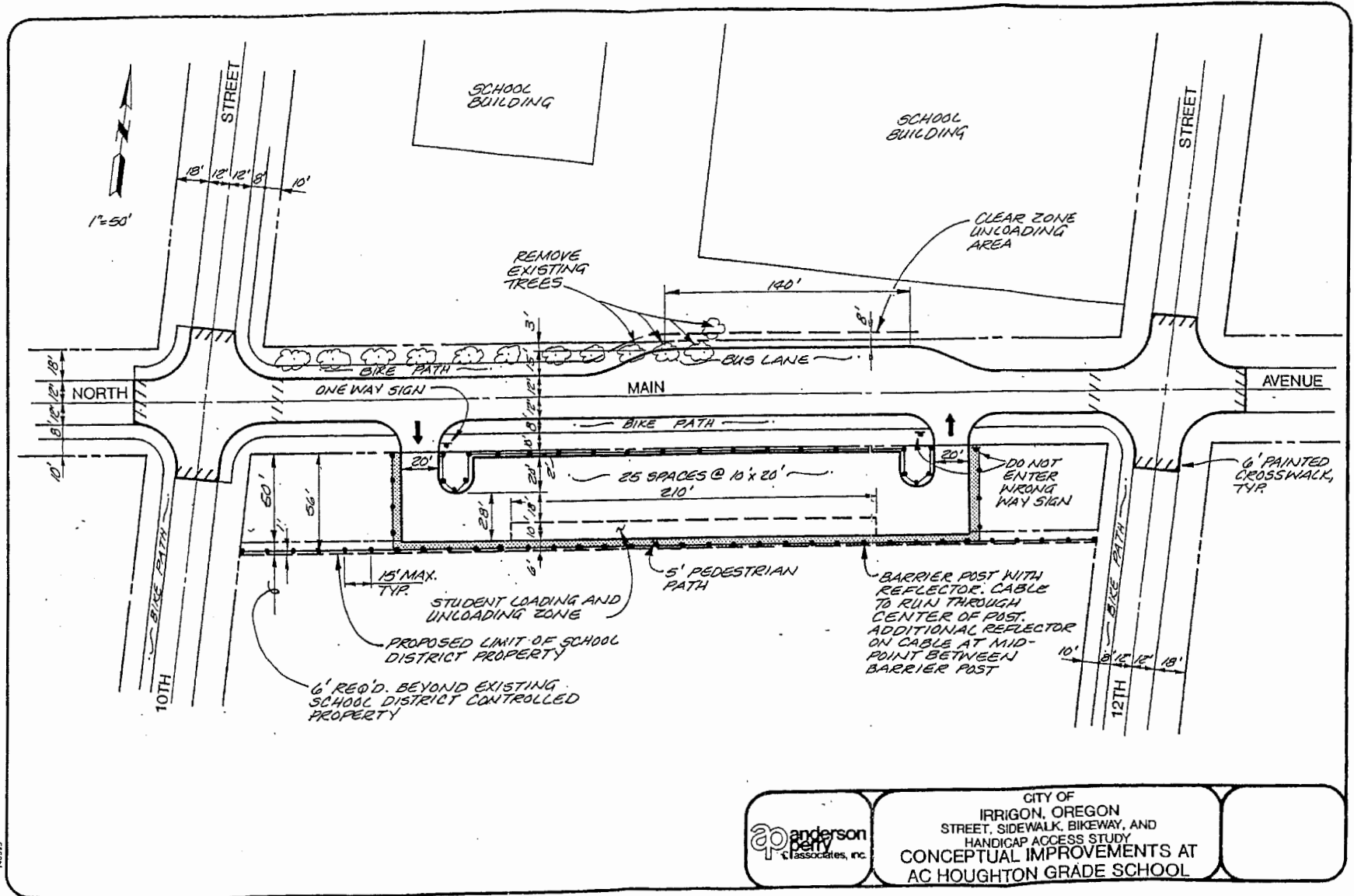
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Consulting Engineers

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Walla Walla, Washington
Lewiston, Idaho

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Appendix F

Supplemental Funding Information

Appendix F – Supplemental Funding Information

TABLE F-1 – SUMMARY OF ROAD RELATED TRANSPORTATION FUNDING PROGRAMS: FEDERAL SOURCES

Program Name	Description
Community Development Block Grants (CDBG)	Community Development Block Grants are administered by the Department of Housing and Urban Development and potentially be used for transportation improvements in eligible areas.

TABLE F-2 – SUMMARY OF ROAD RELATED TRANSPORTATION FUNDING PROGRAMS: STATE SOURCES

Program Name	Description
State Highway Fund	<p>The State Highway Fund composed of gas taxes, vehicle registration fees, and weight-mile taxes assessed on freight carrier. In 1994, the state gas tax was \$0.24 per gallons. Vehicle registration fees were \$15 annually. Revenues are divided as follows: 15.57 percent to cities, 24.38 percent to counties, and 60.05 percent to ODOT. The city share of the State Highway Fund is allocated based on population.</p> <p>ORS 366.514 requires at least on percent of the State Highway Fund received by ODOT, counties, and cities be expended for the development of footpaths and bikeways. ODOT administers the bicycle funds, handles bikeway planning, design, engineering and construction, and provides technical assistance and advice to local governments concerning bikeways.</p>
Special Public Works Fund (SPWF)	The State of Oregon allocates a portion of revenues from the state lottery for economic development. The Oregon Economic Development Department provides grants and loans through the SPWF program to construct, improve, and repair infrastructure to support local economic development and create new jobs. The SPWF provides a maximum grant of \$500,000 for projects that will help create a minimum of 50 jobs.
Transportation Access Charges	<p>The most familiar form of a transportation access charge is a bridge or highway toll. Transportation access charges are most appropriate for high-speed, limited access corridors; service in high-demand corridors; and bypass facilities to avoid congested areas.</p> <p>Congestion pricing, where drivers are charged electronically for the trips they make based on location and time of day, is the most efficient policy for dealing with urban congestion. It not only generates revenue for maintenance and improvements; but also decreases congestion and the need for capital improvements by increasing the cost of trips during peak periods.</p> <p>ORS allow DODOT to construct toll bridges to connect state highways and improve safety and capacity. ORS also allow private development of toll bridges. Recent actions by the Oregon Legislature provide authority for developing toll roads. State authority for congestion pricing does not exist; new legislation would be required.</p>
Immediate Opportunity Fund (IOF)	Financed at a level of \$5 million per year to a maximum of \$40 million through FY96. The fund is to support specific economic developments in Oregon through the construction and improvement of roads and is restricted for use in situations that require a quick response and commitment of funds. It is anticipated that the maximum amount available for single project is \$500,000 or 10 percent of annual program level. This fund may be used only when other sources of financial support are unavailable or insufficient and are not a replacement or substitute for other funding sources.
Oregon Transportation Infrastructure Bank (OTIB)	As a pilot program for the USDOT, the Oregon Transportation Commission has made \$10 million available from projects that will not be contracted in FY 1996. The OTIB will make loans for transportation projects and will offer a variety of credit enhancements. Initial loans must be for improvements on federal aid highway, repayments go into an account that will be made available for any mode. Ability to repay will be a key factor in all loans.
Traffic Control Projects	<p>The State maintains a policy of sharing installation, maintenance, and operational costs for traffic signals and luminaries units at intersections between State highway and city and county streets, which are included on the statewide priority; and are eligible to participate in the cost sharing policy.</p> <p>ODOT establishes a statewide priority list for traffic signal installations on the State Highway System. The priority system is based on warrants outlined in the Manual for Uniform Traffic Control Devices. Local agencies are responsible for coordinating the Statewide signal priority list with local road requirements.</p>

TABLE F-3 – SUMMARY OF ROAD RELATED TRANSPORTATION PROGRAMS: LOCAL SOURCES

Program Name	Description
Special Assessments – Local Improvement	Special assessments are charges levied on property owners for neighborhood public facilities and services, with each property assessed a portion of total project cost. They are commonly used for such public works

Districts	projects as street paving, drainage, parking facilities, and sewer lines. The justification for such levies is that many of these public works activities provide services to or directly enhance the value of nearby land, thereby providing direct and/or financial benefit to its owners. Local Improvement Districts (LIDs) are legal entities established by the City to levy special assessments designed to fund improvements that have local benefits. Through a local improvement district, streets or other transportation improvements are constructed and a fee is assessed to adjacent property owners.
Systems Development Charges (SDC)	Systems Development Charges are fees paid by land developers intended to reflect the increased capital costs incurred by a municipality or utility because of a development. Development charges are calculated to include the costs of impacts on adjacent areas or services, such as increased school enrollment, parks and recreation use, or traffic congestion. Numerous Oregon cities and counties presently use SDCs to fund transportation capacity improvements. SDCs are authorized and limited by ORS 223.297 – 223.314.
Local Gas Tax	A local gas tax is assessed at the pump and added to existing state and federal taxes. Tillamook, The Dalles, and Woodburn are examples of Oregon cities that have a local gas tax. Multnomah and Washington counties also have gas taxes.
Local Parking Fees	Parking fees are a common means of generating revenue for public parking maintenance and development. Most cities have some public parking and many charge nominal fees for use of public parking. Cities also generate revenues from parking citations. These fees are generally used for parking related maintenance and improvements.
Street Utility Fee	Most city residents pay water and sewer utility fees. Street user fees apply the same concept to city streets. A fee would be assessed to all businesses and households in the city for use of streets based on the amount of use typically generated by a particular use. For example, a single-family residence might, generate 10 vehicle trips per day on average compared to 130 trips per 1,000 square feet of floor area for retail uses. Therefore, the retail use would be assessed a higher fee based on higher use. Street services fees differ from water and sewer fees because usage cannot be easily monitored. Street user fees are typically used to pay for maintenance more than for capital projects.
Vehicle Registration Fees	Counties may implement local vehicle registration fee, operating similar to the state vehicle registration fee, a portion of which would be allocated to the Town.
Property Taxes	Local property taxes could be used to fund transportation, although this is limited by Ballot Measures 5 and 47.
Revenue Bonds	Revenue Bonds are bonds whose debt service is financed by user charges, such as services charges, tolls, admissions fees, and rents. If revenues from user charges are not sufficient to meet the debt service payments, the issuer generally is not legally obligated to levy taxes to avoid default, unless they are also based by the full faith and credit of the insuring governmental unit. In that case, they are called indirect general obligation bonds. Revenue bonds could be secured by a local gas tax, street utility fee, or other stable transportation revenue stream.

TABLE F-4 – CURRENT REVENUE SOURCES FOR CITIES

Facility	Revenue Source	Importance (not 100%) (Millions of 1995 Dollars)	3 Year Trend	Dedication	Rate
Streets, Bridges, Sidewalks, Bike Lanes	Oregon Highway Trust Fund	51% of total road or \$89	Growing at approximately 1.75% per year	Constitutionally limited to funding activities that benefit autos and trucks	24¢/gal. For gas; \$30biennium registration fee.
	General Fund Transfers	9% or \$15	Varies but assume growth @ 3%/year, but not used by all cities	May be used for any purpose	Varies widely
	Special Property Tax Levies	5% or \$7	Increasing and only used by 18 cities	May be used for purpose described in election	Varies widely
	Improvement District Assessments	7% or \$12.5	Varies but increases when local development increases	May be used for construction of adjacent streets and sidewalks	Varies with construction cost and local ordinances
	Systems Development Charges and Traffic Impact Fees	4% or \$7	Varies but increases when local development increases, only used by about 2 dozen cities	May be used for construction of new streets	Varies with construction cost and local ordinances. Rates are generally higher in the Metro area

	Utility Franchise Fee	3% or \$4	Flows roughly with population and inflation	Is a general revenue used by some cities for streets	Statutory limit of 5% of utility gross receipts
	Interest Earning	4% or \$6	Varies with current interest rates	Have same Constitutional limits as Highway Fund	Used as general street revenue
	Local Gas Tax	0.44% or \$0.7	Unchanged	Have same Constitutional limits as Highway Fund	Used by Tillamook, The Dalles, and Woodburn
	Private Contributions	3% or \$4.3	Varies widely	Usually contributions are related to specific development street impacts	Negotiated individually
	Miscellaneous – Permit fees, fines, parking, Motel Tax, others	8% or \$14.5	Gradual Growth	General revenues use for streets	Varies widely by City
	Federal – FHWA and HUD	3% or \$5.6	Relatively Stable	Used mainly for new construction with some rehabilitation	Based on federal allocation to Oregon
	Miscellaneous State Revenues – Mainly Lottery funds	2% or \$3	Varies, no trend	Used mainly for economic development capital improvements	Specific grants to individual cities each year
Off Street Bike Paths	Miscellaneous general funds and ISTEA	Unknown	Varies from year to year	ISTEA and General funds used for construction, General Funds used for maintenance and repair	Varies from year to year

TABLE F-5 – CURRENT REVENUE SOURCES IN OREGON

Transit Service Type/Function	Funding Source	Status
Urban Public Transportation – Portland and Eugene – Operating and Capital	<ol style="list-style-type: none"> Local Payroll Tax – operating Federal Grants – Capital Federal Grants – Operating Fares and Advertising 	<ol style="list-style-type: none"> Major Source – \$100 million/year and growing – Sensitive to economic conditions Major Source – \$10 million/year – stable Minor Source – \$5 Million/year – declining Minor Source – Growing with ridership
Urban Public Transportation – Salem, Corvallis, Medford, Kalamath Falls	<ol style="list-style-type: none"> Property Tax – Typically a taxbase or stand alone levy within \$10 cap for local government services Federal Grants – Capital Federal Grants – Operating Fares and Advertising 	<ol style="list-style-type: none"> Major Source – Growing slowly Major Source – \$2 Million/year – Stable Minor Source – \$2 Million/year – Declining Minor Source – Growing with ridership
Small City and Rural – Astoria, Union County, etc. – Operating and Capital	<ol style="list-style-type: none"> Local Payroll Tax – Typically within city or county operating levy Federal Grants – Capital Federal Grants – Operating Fares and Advertising 	<ol style="list-style-type: none"> Major Source – Stable Major Source – Declining Minor Source – Declining Minor Source – Stable
Mobility for Seniors and People with Disabilities – Operating and Capital	<ol style="list-style-type: none"> Special Transportation Fund - 2¢ State cigarette tax for operating and capital Social Service Agency grants and contracts for operating Local Property Tax – typically within city or county operating levy Federal Grants – Capital and Operating Fares, donations, and advertising 	<ol style="list-style-type: none"> Major Source – \$5 million/year – Declining Major Source – Declining Minor Source – Stable Major Source – Declining Minor Source – Stable
Inter-city Bus – Operating and Capital	<ol style="list-style-type: none"> Major Interstate Routes: Fares Branch and Feeder Routes: Private capital and fares 	<ol style="list-style-type: none"> Sole Source – Declining Private