REPORT

Columbia County

Rural Transportation System Plan

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with

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Executive Summary

This Transportation System Plan (TSP) for Columbia County provides the framework to guide development of the transportation system into the twenty-first century. It addresses the needs, funding resources, and implementation requirements to respond to future growth in population and employment. All modes of transportation are considered, including vehicular and freight movement, public transit, walking and bicycling, service for the transportation-disadvantaged, railroad, air, water and pipeline transportation. This plan provides for transportation development in the rural areas of Columbia County. In a separate process, TSP documents have been previously completed for most incorporated cities within the County.

The TSP for rural Columbia County reflects the input and direction of citizens, the business sector, and agency staff, representing a wide cross-section of the community. A Study Advisory Committee provided overall direction, and agency coordination extended throughout the process. The public outreach program included press releases, advertising of meetings, public notification, and two open houses to solicit input.

Adoption of the TSP by the Board of Commissioners makes it an element of the County's Comprehensive Plan, and subject to periodic review. A program of proposed transportation improvement projects has been developed for implementation over a 20-year planning horizon. To a large extent, future revenue levels will determine the pace of project implementation. Variation in the rate of land use development also contributes to uncertainty in project implementation. At each periodic review, the need to add, replace, defer, or eliminate projects can be revisited.

The focus of project improvements is on preservation and reconstruction of the primary County roads that serve connections among the cities and rural communities. Few County roads provide shoulder widths adequate for safety and the needs of pedestrians and bicyclists. In addition, deferred maintenance has allowed pavement and drainage systems to deteriorate. Reconstruction of several important County roads to meet current design standards is a key feature of the TSP.

Safety and intersection improvements are also assigned a high priority in the TSP. Locations with high accident rates were identified, remedies developed, and costs estimated. Selected intersection improvements will increase the efficiency of traffic flow, and improve conditions for trucks making turns.

On Highway 30, future growth will require passing and turning lanes at selected locations in the rural areas. Otherwise, few capacity constraints are projected to develop on County roads. A new route is proposed to serve the rural residential areas west of Highway 30 near St. Helens and Warren.

A pedestrian and bicycle plan is included to provide shoulders on primary County roads and in the vicinity of incorporated cities. These projects will provide for safe and convenient pedestrian and bicycle circulation and contribute to reduced dependence on the automobile. County participation in ride-share and van-pool programs is also suggested as a means of

encouraging travel by alternative modes. Fixed-route transit service has been discontinued due to low ridership. Dial-a-ride service is available to county residents, with most vans accessible to serve the transportation-disadvantaged.

The system of rail, air, and water transportation in the County represents a resource for future economic development. Planning for each mode is accomplished with the railroad operator, port authority, or public agency, in cooperation with the Oregon Department of Transportation (ODOT). The TSP addresses land use compatibility and protection of airport activities.

Funding for transportation improvements will represent a major challenge for the citizens of Columbia County. Nearly all the Road Department revenues are currently devoted to maintenance of the existing road network. A number of ideas were developed in the preparation of the TSP that deserve further consideration. These included establishment of System Development Charges that would impose fees on new development, and assessment of fees for timber hauling. Increases in State gas taxes also are anticipated over the 20-year planing horizon. At the present time, imposition of local gas taxes or vehicle registration fees are not contemplated.

The Planning effort also included a review of County transportation policies, and land use ordinances for consistency with the TSP. Recommendations for additional policy guidance and needs for implementing ordinances are discussed in the TSP. Implementation strategies include methods of conditioning developments to construct portions of projects, requirements for traffic impact studies and fees, and guidelines for design standards.

With adoption of the Transportation System Plan, Columbia County will be poised to meet the requirements of a growing population, and to invest prudently in its economic future.

CHAPTER 1

Introduction

This Transportation System Plan (TSP) for the rural areas of Columbia County is intended to guide future development of the County's transportation system. In accordance with statewide criteria applicable to TSP preparation, it addresses all modes of transportation. The TSP was developed with input from advisory committees and the public.

The TSP identifies existing transportation deficiencies, future needs associated with growth, costs of transportation improvements, and means of financing these improvements. It also addresses consistency with the County Comprehensive Plan and necessary implementing mechanisms for formal adoption.

Incorporated communities within Columbia County are in the process of completing individual TSPs, covering transportation needs within their Urban Growth Boundaries (UGB). The current planning effort was coordinated with those of the incorporated cities and with the Oregon Department of Transportation (ODOT).

1.1 Background

In 1974, Oregon adopted 19 Statewide Planning Goals to be implemented through local comprehensive planning. Goal 12, addressing transportation, is "to provide and encourage a safe, convenient, and economical transportation system." Oregon Revised Statute 197.712 requires all public jurisdictions to develop the following:

- A road plan for a network of arterial and collector streets
- A public transit plan
- A bicycle and pedestrian plan
- A plan for aviation, railroad, pipeline, and waterborne modes
- A transportation finance plan
- Policies and ordinances for implementing the plan

Administrative guidelines issues by the Land Conservation and Development Commission (LCDC) further define the specific requirements for a TSP. The Transportation Planning Rule codifies the processes and required studies for TSP development.

1.2 Study Process

The development of the Columbia County Transportation System Plan (TSP) began with a review of the relevant city, county, state, and federal policies, an assessment of the existing land use and transportation system, and an estimate of the current travel patterns throughout the County based on existing land use information. Transportation issues and community concerns were identified by the Management Team and Advisory Committee and were supplemented with the results of interviews conducted with key stakeholders in the community. In addition,

an inventory of the existing transportation system was conducted to develop an understanding of the physical, operational, traffic safety, and travel characteristics of all the major roadways and the existing bicycle and pedestrian systems in the study area, existing public transportation and rail, air, water transportation, and pipeline systems.

In January, a public open house was held to solicit input into the needs assessment and priorities for County transportation improvements. Concurrently, an analysis of future transportation improvement costs and financing mechanisms was conducted. Various packages of improvements were developed for evaluation by the advisory committee and agency coordination committee. These products were further refined at a second public open house in April 1997.

Following review of this draft document, the TSP will be presented to the County Commission for adoption. It will serve as the basis for the selection of individual improvement projects throughout the County.

1.3 Goals and Policies

The following discussion of transportation goals, objectives, and policies is excerpted from the current Comprehensive Plan:

Goal:

The creation of an efficient, safe, and diverse transportation system to serve the needs of Columbia County residents.

Objectives:

1. To utilize the various modes of transportation that are available in the County to provide services for the residents.
2. To encourage and promote an efficient and economical transportation system to serve the commercial and industrial establishments of the County.
3. To improve the existing transportation system.

Policies:

1. The County shall undertake the development of a detailed transportation plan that should contain the following minimum elements:
   A. The development of a road classification system.
   B. The development of road standards for all different types of roads over which the County has jurisdiction.
   C. The location of future arterial streets inside the urban growth boundaries.
   D. Review the status of all County roads.
   E. A review of all incorporated rights-of-way and a determination of whether or not the County should pursue the vacation of them.

F. A study of ways to maintain and upgrade the current County road system.

2. The dedication of adequate rights-of-way to meet the standards set in the Transportation Plan shall be required of any person seeking a Zone Change, Conditional Use Permit; Subdivision, or Partition. The developer of a subdivision in an urban growth area will be required to make appropriate improvements to any related street to meet the standards set in the Transportation Plan.

3. Appropriate off-site improvements to County roads shall be required whenever a development results in a major increase in traffic on an existing County road.

4. The County will work with the State Highway Department to limit the number of access points onto arterial roads. Direct access to U.S. Highway 30 will be limited as much as is practical in order to reduce the potential for congestion and conflicting traffic patterns which would disrupt the flow of traffic.

5. Industrial uses shall be encouraged to locate in such a manner that they may take advantage of the water and rail transportation systems which are available to the County.

6. The County will support reducing the number of rail crossings.

7. The County will work with the Port of St. Helens to encourage the establishment and use of dock facilities.

8. The two existing airports, in Scappoose and Vernonia, will be zoned with a landing field overlay zone that incorporates the height restrictions set by the Federal Aviation Administration. It will allow the development of airport related industrial uses.

9. Restriction of the location of new pipelines and high voltage transmission lines to within existing rights-of-way will be encouraged whenever possible.

10. The County will study proposals, when presented, to develop modes of transportation as an alternative to the automobile. If these proposals prove to be feasible, the County will work to implement them.

11. Columbia County will continue to support the efforts of COLCO Transportation to supply public transit to the citizens of the County.

12. Special attention will be given to the needs of the handicapped whenever the County considers a proposal for the provision of public transit.

Other elements of the County Comprehensive Plan address topics of land use, rural centers, energy conservation, recreation, and air, land, and water quality.

The County's policy framework generally addresses those elements required by the Transportation Planning Rule, in the context of the rural nature of the plan area. Recommendations for policy revisions and additional policies are included in Chapter 6.

1.4 Organization of This Report

A discussion of existing conditions, plans, and policies is provided in Chapter 2. In Chapter 3, future conditions and forecasted transportation needs are identified. Proposed projects for inclusion in the Transportation System Plan are identified in Chapter 4. Funding and financing considerations are addressed in Chapter 5, and implementing mechanisms are discussed in Chapter 6. Chapter 7 summarizes the findings of the TSP with respect to the requirements of the Transportation Planning Rule.

CHAPTER 2

Existing Conditions and Needs

2.1 Introduction

The development of the Columbia County Transportation System Plan (TSP) began with a review of the relevant city, County, state, and federal policies, an assessment of the existing land use and transportation system, and an estimate of the current travel patterns throughout the County determined by existing land use information. Transportation issues and community concerns were identified by the Management Team and Advisory Committee and were supplemented with the results of interviews conducted with key stakeholders in the community. In addition, an inventory of the existing transportation system was conducted to develop an understanding of the physical, operational, traffic safety, and travel characteristics of all of the major roadways and the existing bicycle and pedestrian systems in the study area, as well as the existing public transportation system, and rail, air, water, and pipeline systems.

This section of the report provides an overview of the local, regional, state, and federal policies that were reviewed as part of the TSP, a summary of the stakeholder interviews that were conducted at the onset of the project, an analysis of the existing transportation system conditions in the urban area, and an overview of the land use data that was collected concurrently with the system inventory.

Columbia County is situated approximately 30 miles to the northwest of Portland and is bounded by the Columbia River and the mountains of the Coast Range. U.S. Route 30 runs through most of the larger cities in Columbia County and provides the most direct access to Portland and to the Coast. Other important state highways and County arterials within Columbia County include OR 47, which runs through Vernonia, Scappoose-Vernonia Road, and Apiary Road. The study area is shown in Figure 2-1.

The following modes of transportation are provided within Columbia County and are addressed in the TSP:

- Automobile
- Bicycle
- Pedestrian
- Transit
- Rail
- Air
- Water
- Pipeline

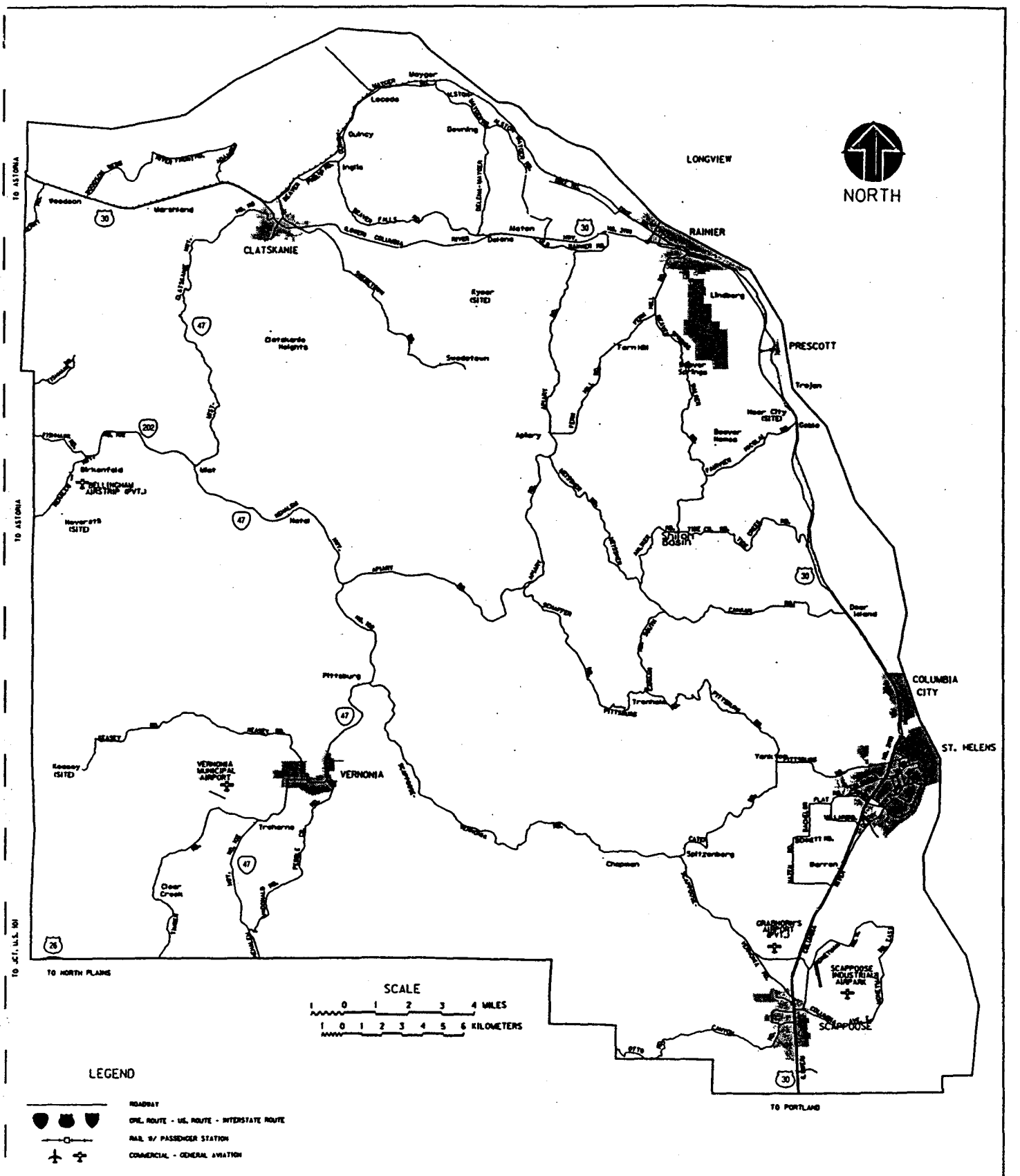

FIGURE 2-1. STUDY AREA

2.2 Plans and Policies Review

An extensive number of local, regional, and state plans and policies were reviewed at the onset of this study to ensure it would be supportive of and integrated with relevant policies, goals, and standards. The documents reviewed included:

2.2.1 State Plans

- Oregon Highway Plan (June 1991)
- Oregon Rail Freight Plan (1994)
- Oregon Bicycle and Pedestrian Plan (1995)
- Statewide Transportation Improvement Program (1996 - 1998)
- Access Oregon Highways Corridor Studies (February 1990)
- Portland-Astoria Interim U.S. Highway 30 Corridor Strategy (June 1995)
- Portland-Astoria Interim Corridor Plan, Update to Interim Corridor Strategy (September 1996)
- U.S. Highway 30 Multimodal Study, Lower Columbia River Corridor (May 1991)

2.2.2 County Plans

- Columbia County Comprehensive Plan (July 1984)
- Clatsop County Comprehensive Plan (May 1984)
- Multnomah County Comprehensive plan (November 1991)
- Washington County Transportation Plan (amended December 1994)

2.2.3 City Plans

- City of Scappoose Transportation System Plan, Draft (1996)
- City of St. Helens Comprehensive Plan (May 1991)
- City of St. Helens Transportation Plan (1996)
- City of Columbia City Comprehensive Plan (March 1975)
- Rainier Comprehensive Plan (August 1995)
- Rainier Draft Transportation Plan (1996)
- Clatskanie Comprehensive Plan
- Clatskanie Draft Transportation Plan (1996)

2.2.4 Other Plans

- Access Management Study: Bennet Road to McBride Creek (June 1995)

Although a detailed summary of all of the plans and policies that were reviewed is included in Appendix A, some of the important findings from these plans include:

Oregon Transportation Plan

- The need to improve intercity bus or commuter bus service along U.S. Highway 30.

Oregon Highway Plan

- The need to add lanes and shoulder width along most sections of U.S. Highway 30 from Clatskanie to Warren. There was no indication about the types or purposes of the added lanes.

Portland-Astoria Interim Corridor Plan for U.S. Highway 30

- It is not feasible to seriously consider commuter train service in the U.S. Highway 30 corridor during the next 20 years.
- Provide no major expansion in highway capacity from Columbia City to the west County line, except for passing lanes, turning lanes, and through lanes in congested urban areas.
- Investigate use of Scappoose Industrial Airpark to accommodate increased regional demand for general aviation.
- Provide minimum 5-foot shoulder bike lanes for the entire length of the corridor.
- Develop park-and-ride, park-and-pool lots.

Portland-Astoria Interim Corridor Plan, Update to Interim Corridor Strategy

- Reconstruct or construct a new Longview/Rainier river crossing.
- Construct more passing lanes and climbing lanes from Columbia City to Astoria.
- Preserve rural sections as rural, particularly in the Rural Columbia County segment, through access management.

2.3 Stakeholder Interviews

During the summer and fall of 1996, stakeholder interviews were conducted with various professional, civic, community, and business leaders throughout the Columbia County area. Approximately 35 stakeholders were identified to be interviewed and a total of 24 interviews were actually completed. Interviewees were asked a series of questions about transportation issues throughout Columbia County. The questions covered existing concerns and issues surrounding the County's transportation system, with specific questions regarding the corridor strategies for Highway 47 and 202.

Overall, the single most important issue identified during the stakeholder interviews was the need for improved safety on state and County roads. Many interviewees commented that they have noticed a substantial change in the amount of traffic in Columbia County over the years. There is also a considerable backlog of maintenance needs along the existing road system in the County. Several interviewees stressed the need to maintain existing roads as a top priority. The numerous narrow roads in the County also were mentioned by many interviewees as a safety

concern. Several of those interviewed also mentioned the conflicts between bicycles and automobiles on many roads. Finally, several interviewees mentioned the need for an alternative route to U.S. Highway 30 between Pittsburg Road in St. Helens and Scappoose-Vernonia Road.

2.4 Population, Employment, and Land Use

The estimated 1995 population of Columbia County was about 40,750 persons, with about 17,400 persons residing in the rural areas outside the various Urban Growth Boundaries. Total employment in the County in 1995 was about 9,650 jobs. From the household data, it would be inferred that there are about 24,000 employed residents in the County, using a figure of 1.5 employed residents per household. Thus, many residents must commute to jobs outside the County. Although there are no origin-destination surveys of County residents, observations of peak-hour travel data confirm this behavior. Most employed residents commute to jobs in Portland, Washington County, or Longview, Washington.

The 1990 census block data and 1995 Columbia County population estimates that were used as the basis for socioeconomic projections were obtained from Portland State University (PSU) Center for Population Research. PSU staff also calculated and provided control totals for the 2016 population and housing forecasts discussed in Chapter 3.. The population and employment figures were allocated to the various geographic regions of the County through the development of a transportation analysis zone structure.

The census block group boundaries and data were part of the information used to determine the rural and city study area transportation analysis zones (TAZs). In addition, each block group was further broken down into two or three zones according to the following criteria:

- Homogenous land use, current and future
- Conformance with major boundaries
- Major transportation corridors
- Physical boundaries that prevent continuous development
- Homogenous access of land use to transportation system (collector/arterial street system)

The TAZs developed for the study are shown in Figure 2-4. A total of 55 TAZs (centroids) were created within the Columbia County study area. These include 7 external zones, 9 urban (city) zones, and 39 rural County zones. All of the zones and external stations were assigned a number for the EMME/2 network. The external zones were numbered 1 through 7, the urban zones were numbered 8 through 15 and 36, and the County zones were numbered 16 through 55, excluding 36. Figure 2-3 illustrates the Columbia County study area TAZ system, including approximate boundaries and assigned zone numbers. Table 2-1 lists each TAZ number with the corresponding city or its road name for the external stations.

The population, housing, and employment data for existing conditions (1995) were compiled by TAZ as input for traffic modeling purposes. The 1995 population housing and employment estimates are shown in Appendix C.

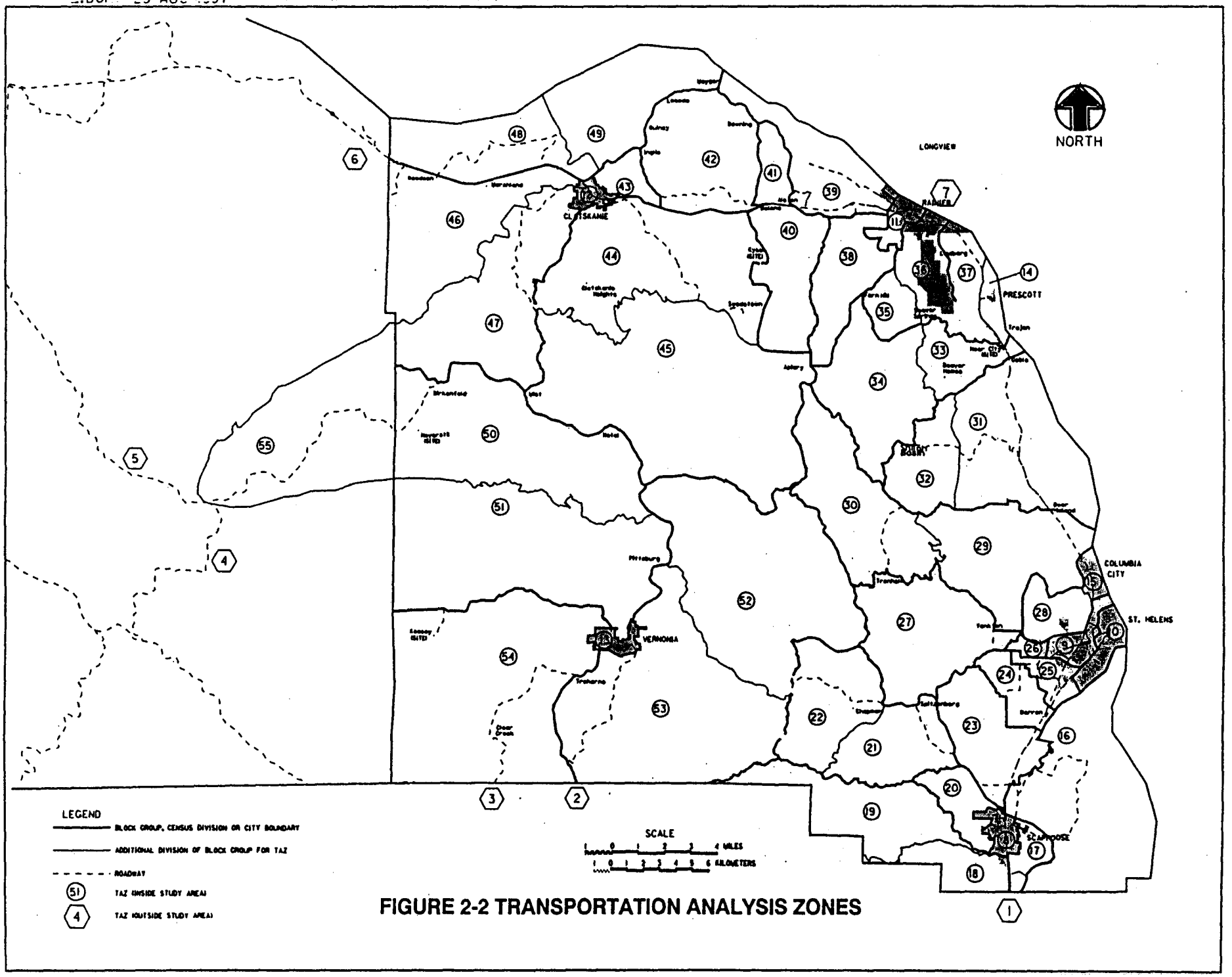

FIGURE 2-2 TRANSPORTATION ANALYSIS ZONES

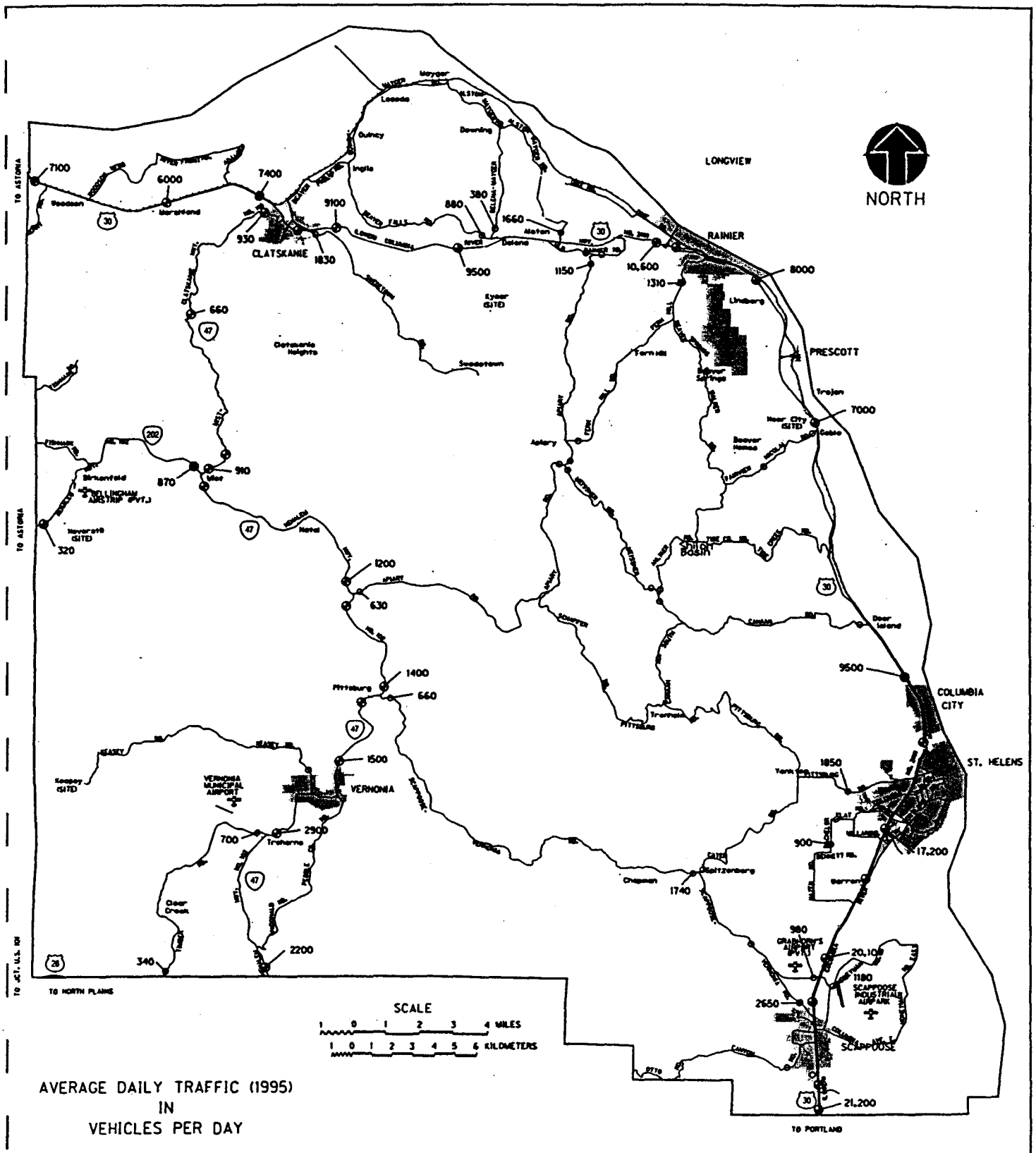

FIGURE 2-3. EXISTING TRAFFIC VOLUMES

TABLE 2-1
TAZ Zone Descriptions

External Stations		Columbia County Cities	
TAZ	Roadway	TAZ	City Name
1	US 30	8	Scappoose
2	OR 47	9	St. Helens (W. of US 30)
3	Timber Rd.	10	St. Helens (E. of US 30)
4	Fishhawk Falls Rd. (S. of Jewel Junction)	11	Rainier (W. of First St.)
5	OR 202 (W. of Jewel Junction)	12	Clatskanie
6	US 30	13	Vernonia
7	Lewis and Clark Bridge	14	Prescott City
		15	Columbia City
		36	Rainier (E. of First St.)

2.5 Transportation Inventory

- Highway Facilities
- Bicycle and Pedestrian Facilities
- Transit Service and Facilities
- Aviation Facilities
- Rail Facilities
- Waterborne Transportation
- Pipelines

2.5.1 Highway Facilities

Throughout the rural sections of the County, roadways are categorized according to their functional classifications. The classifications range from arterials that primarily accommodate through traffic, to collectors that handle both through traffic and access to abutting property, and local roads primarily used to access property. For the Transportation System Plan, all County and state roadways with a functional classification of major collector or higher were included in the analysis. The only exception was the roadway segment that leads to the entrance of Scappoose Industrial Airpark; this roadway segment is classified as a minor collector, but was included in the analysis so that the industrial and/or commercial development in the airpark area could be considered in the TSP.

The roadways that make up the County's principal highway system include three state owned and maintained highways, two rural County arterials, and over a dozen rural major collectors. Oregon Highways 47 and 202, and U.S. Highway 30 are the three main highways within the County. However, only the highway segments of state highways that fall outside of any incorporated city limits are studied as part of this TSP. Other U.S. Highway 30 segments within the urbanized areas are included in the TSP for those cities. Oregon Highway 202 from

Mist to the junction with Fishhawk Falls Highway, near Jewell, in Clatsop County was included in this study.

State Highways

U.S. Highway 30 is the backbone of the region's transportation system. From the Portland Metropolitan area it follows the Columbia River along the County's eastern and northern boundaries. The majority of the County's population lives along this corridor, giving it the highest traffic volume of any roadway in the County. Its vehicle volume ranges from a peak of 25,000 Average Daily Traffic (ADT) in Scappoose to 7,000 ADT at the Clatsop County line. It varies in width from five lanes at the Multnomah County line two lanes at the Clatsop County line. U.S. Highway 30 is classified by the Oregon Highway Plan as a roadway with statewide significance.

Oregon Highway 47 runs north-south through the western section of the County beginning in Clatskanie and continuing south through Mist, Vernonia, and into Washington County. Most of Oregon Highway 47 is a rural, two-lane highway with limited shoulders. The ADT varies between 900 and 2,200 for most sections, but averages 5,000 vehicles a day through Vernonia. The Oregon Highway Plan classifies this roadway as a route of district importance.

Oregon Highway 202 runs east-west between Astoria and Mist, where it joins Oregon Highway 47. The highway has a very low ADT and is principally a rural two-lane facility with limited shoulders in Clatsop and Columbia Counties. In eastern Clatsop County and western Columbia County the ADT is under 400 vehicles; this increases to about 900 ADT just before Mist. The Oregon Highway Plan classifies this roadway as a route of district importance.

Other Roadways

In addition to the state-maintained facilities, several arterial and major collector streets within the County serve as key access routes for automobile, pedestrian, and bicycle traffic. These facilities are owned and maintained by Columbia County in both rural and urban areas. As previously mentioned, roadways with a classification of major collector or higher were included in the study. Figure 2-2 illustrates the arterial and major collector streets throughout the County. In this figure, the state highways are also shown as arterials.

The County's Road Standards provide definitions of the functional classification of County roads. Arterial roadways connect major traffic generators, cities, recreation areas, and major segments of transportation networks. High capacity is achieved

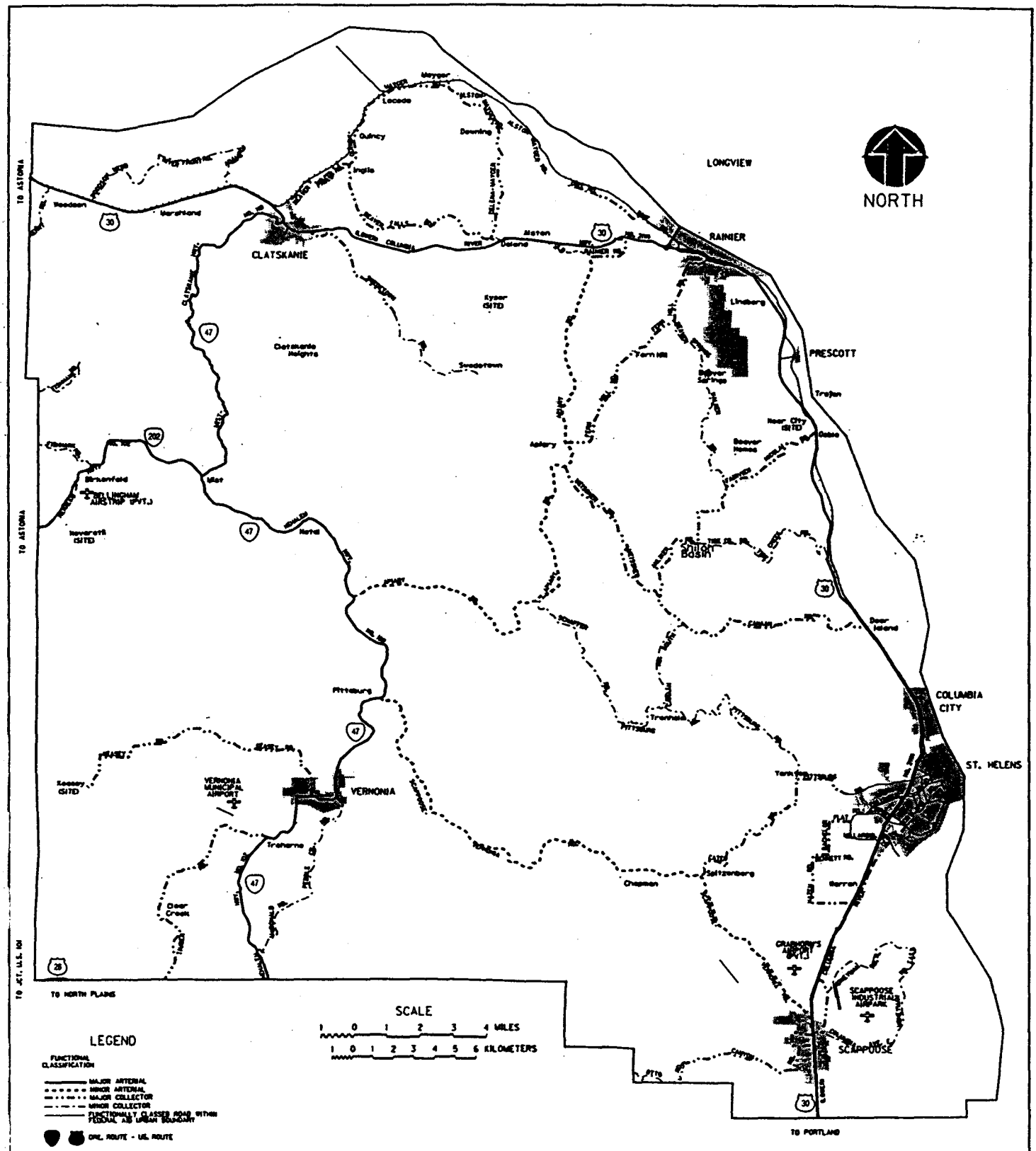

FIGURE 2-4. ARTERIAL/COLLECTOR ROAD NETWORK

through allowing higher speed, limited access, wider roadway, and movement preference at intersections with lesser standard roadways. Collector roadways collect and distribute traffic from local streets to arterial roads, state highways, or small population centers.

In rural Columbia County, the only two roadways classified as arterials are Scappoose-Vernonia Road and Apiary Road. Except for the minor collector Honeyman Road, near Scappoose Industrial Airport, and the three roads classified as state highways (U.S. Highway 30 and Oregon State Highways 47 and 202), all other roads investigated within the study area are rural major collectors.

Roadway Inventory Database

Roadway data including typical lane widths, shoulder widths, roadway surfaces, sidewalks, slides, general overall condition, and special features were collected during field trip 1996. Much of the width data was approximated while traveling along typical sections, and was not precisely measured at a particular point. Most of the information found in the special features and remarks columns was also noted during this field trip. This data has been reviewed by County staff to verify its accuracy. Much of the other information contained in the inventory database, such as right-of-way (ROW) width, segment length, and federal and state reference numbers, comes from various County documents and databases. The inventory database is provided in Appendix B.

ADT data were found within various state and County documents, but many locations lacked necessary count data. Up-to-date, accurate counts were needed to determine the present operating conditions and level of service of the highways. Therefore, locations lacking traffic counts were identified and County staff collected count data at these locations. Traffic count data are shown in Figure 2-3.

2.5.2 Bicycle and Pedestrian Facilities

The 1995 Oregon Bicycle and Pedestrian Plan identifies state roadways that are part of the state's bicycle system. This plan identifies rural highways and County roads suitable for cycling if they have paved shoulders or relatively low traffic volumes. Existing bike lanes, shoulders, or sidewalks were noted during the field trips.

The plan identifies as suitable for cycling both U.S. Highway 30, a rural highway with shoulders of 4 feet or greater, and the northern portion of Oregon Highway 47, a rural highway with shoulders less than 4 feet but with an ADT of less than 1,000.

There are four bicycle paths that were not part of a state highway right-of-way (ROW). One is on Old Portland Road in Saint Helens, the other is in Columbia City. Another bicycle path was being considered for construction between Saint Helens and Columbia City. The Banks-Vernonia Linear Park parallels OR 47 from Vernonia to the south line of the County boundary, then continues on to Banks in Washington County. This parkway has a bicyclepedestrian path along the length of the park, mostly separated from the OR 47 ROW, with its own bridges over inaccessible terrain and waterways. The final 2-mile segment of this parkway was completed with the realignment project of OR 47 starting just south of the Vernonia city limits.

County residents have discussed acquisition of the gravel road ROW that parallels Scappoose-Vernonia Road for a bicycle route that would complete the link from U.S. Highway 30 and the Banks-Vernonia Linear Park. However, no documentation has been found to confirm any action on this proposed project. This road is owned by a logging company and is used on a limited basis as a haul road for log trucks. During the data collection field trip in May 1996, the road was being used as a detour for Scappoose-Vernonia Road because of a slide that occurred during the floods of February 1996.

Most inter-city bicycling is done recreationally between Portland and the north coast. Most bicyclists use U.S. Highway 30, although some use Highway 47. This route is less desirable because it is narrow and steep. Most of the cycling within the County is done by young riders, either for recreation or as transportation to and from school. Per the County Comprehensive Plan, in 1980 only 6.2 percent of those employed in Columbia County walked to work. However, because of the relatively long distances between cities, pedestrian travel is rarely a viable mode of transportation between urban areas and is primarily limited to short trips within urban areas.

2.5.3 Public Transportation Facilities

At present, the primary form of transit service within the County is Colco Transportation operated by Columbia County Transportation. Colco Transportation provides bus service on a dial-a-ride basis, primarily targeting individuals with medical needs, the handicapped, and the elderly. Twenty-three percent of their 26-plus passenger vans are equipped with wheelchair lifts. Colco does not have a set fare schedule, but rather operates on an ability-to-pay basis. The company also provides trips for medical services between Portland, Beaverton, and Hillsboro and Vernonia, St. Helens, and Scappoose. They presently use some state and federal funding, but have requested that a Transportation Service District be established to make them eligible for more funding. The greatest users of Colco are transportation disadvantaged people who have difficulty moving about within the auto-dominated transportation system. ODOT estimates that 39.2 percent of the County's population is transportation disadvantaged. Currently, Colco Transportation is the only organization working to meet the needs of the transportation disadvantaged.

Colco operated several buses on two fixed routes between July 1996 and August 1997. The service included scheduled stops in the incorporate cities along Highway 30, and connections to Tri-Met routes in Portland. Service was discontinued due to lack of ridership.

In addition, a private company provides inter-city service along the U.S. Highway 30 corridor. Pierce Pacific Lines operates a daily run from Astoria to Portland every morning, and from Portland to Astoria every evening. The route is fixed, but the driver will make unscheduled stops if passengers request them ahead of time. The portion of the route between Longview and Portland uses I-5, so that Clatskanie and Rainier are the only County areas served. The only other buses in the County are operated by the school districts to provide service to County students. The County's one taxi service serves the Saint Helens urban area exclusively.

2.5.4 Aviation Facilities

Because of the high cost of air travel, aviation is one of the smallest components of the County's transportation system. Of the County's two public airports, only the one in Scappoose is part of the National Plan of Integrated Airport Systems (NPIAS). This airport is classified as a Basic Utility Airport, which means it can handle 95 percent of all propeller aircraft under 12,500 pounds. The airport is scheduled to lengthen its runway from 4,000 to 5,100 feet and is expected to increase the number of aircraft and operations based at the field. The other public airport is in Vernonia and has only a grass landing strip. Funding is available to upgrade this airport, so it may eventually be reclassified and become eligible for inclusion in the NASP.

The 1996 ODOT data indicate that Scappoose Industrial Airpark is the fourth busiest non-towered airport in the state (out of 89 listed), with a estimated annual operations of 46,986 per year. Vernonia Airfield is ranked 56th, with a estimated 1,400 operations per year.

2.5.5 Rail Facilities

The rail system consists of a branch line owned by Willamette and Pacific that parallels the Columbia River. Traditionally, this was the primary mode of transporting goods through the County. However, the total track length has declined dramatically with the decline of the logging industry, which used to provide the majority of shipping for the railroad.

The Oregon Rail Plan describes the existing line through Columbia County as a low-density line. Fewer than one million gross ton-miles per mile of track per year moved over the line in 1989. Presently, this line carries four through train movements per day. As a Class 3 line, it has a maximum speed of 40 mph as it crosses the south County line and travels north to Clatskanie. It is then downgraded to a Class 2 line from Clatskanie to Astoria, which has a 25 mph speed limit. The line has been closed west of Wauna, in eastern Clatsop County, due to landslides that occurred in the flood of 1996.

The Oregon Rail Plan indicates a concern for long-term maintenance on this rail line running from Portland to the deep water port in Astoria. As the shipping industry pursues larger and deeper draft vessels, the Columbia River channel will need continued deepening. If the channel cannot be deepened, this line will become increasingly important to move freight between Portland and Astoria. Costs to rehabilitate this line were estimated in the Portland-Astoria Branch Line Study (1997). A total of $3 million would be required to upgrade the portion in Columbia County, and another $5 million to restore service to Astoria. A study to investigate railroad crossings of the Columbia River at Longview, Washington, concluded that only a lift bridge would be feasible for such a connection.

The future status of the line will depend on the findings of these studies. Presently, there is no rail passenger service within Columbia County. However, Amtrak does provide service at Kelso, Washington with eight daily trains, four in each direction along the Seattle to Portland corridor.

2.5.6 Waterborne Transportation Facilities

The Columbia River, one of the County's most valuable transportation resources, runs along the north and east boundaries of the County. There are numerous access points along its 60-plus mile route. The channel is maintained to a minimum depth of 40 feet to allow access for deep draft ocean vessels. Approximately 2 percent of the river's total tonnage originates in Columbia County. Most of this cargo consists of rafted or barged logs and barged sand and gravel. In 1990, the Port of St. Helens began shipping lumber by barge from its new export facility. The County has two tug companies and eleven dock facilities, with three berths in St. Helens having deep draft vessel capabilities.

It is predicted that marine vessel traffic to and from the Portland area will continue to grow at about two percent during the next 20 years if Columbia River dredging accommodates ship drafts that carry grain, wood products, and containers between the United States and the Pacific Rim countries. Export levels between Saint Helens and Astoria will depend upon trade in forest products such as logs, lumber, pulp, and paper. A total of ten development projects along the corridor require marine construction, totaling over $24.5 million. This would result in a overall transportation benefit of $5 million. Two of these ten projects are located in Columbia County.

2.5.7 Pipelines

There are two natural gas pipelines serving Columbia County, both owned and operated by Northwest Natural Gas. The first line crosses the Columbia River near Deer Island, where it branches into a north line to Astoria and a south line to Scappoose. This main line is presently 46 miles long, runs along the U.S. Highway 30 corridor, and has a capacity of 28 million cubic feet per day. This capacity limitation is set by the pump station at Deer Island. A new line was built to connect the gas fields near Mist with the main line near Clatskanie. This line has a capacity of 50 million cubic feet per day.

2.6 Existing Roadway Operations

2.6.1 Level of Service Analysis

Traffic level of service (LOS) is measured on a scale of LOS A to LOS F. LOS A indicates that drivers experience no delay or relatively low amounts of delay while traveling a roadway. LOS F means that drivers experience a great deal of delay while traveling a roadway.

Using the transportation forecasting model developed for Columbia County, a corridor level of service analysis was performed on the rural County roads that are classified as major collector or higher. Overall, the LOS analysis revealed that traffic operations on the major roadways in Columbia County are generally acceptable. All county collector roads currently operate at LOS C or better, with the exception of Wikstrom Road, which occasionally experiences LOS D during p.m. peak hours. For county arterial roads, Apiary Road and most of Scappoose-Vernonia Road operate at good levels of service during the day. The exception is the section of Scappoose-Vernonia Road between Scappoose and Cater Road, which operates at LOS D during the p.m. peak hour.

The state highways also operate at acceptable levels of service in the rural sections of Columbia County. Oregon Highways 47 and 202 generally operate at LOS B or better throughout the day. The LOS of U.S. 30 between Scappoose and Columbia City has been poor during p.m. peak hours. However, U.S. Highway 30 is presently under construction to a five-lane highway through St. Helens and Columbia City which will improve its traffic operations. Outside of the St. Helens area, most of the remaining sections of U.S. 30 generally operate at LOS C or LOS D during p.m. peak hours. For rural highways, LOS C is desirable, so some sections of U.S. 30 presently operate at undesirable levels. However, after the widening of U.S. 30 is complete, no rural section of U.S. 30 will operate at a poor level of service.

2.6.2 Traffic Safety

Accident data was provided by ODOT staff and included all accidents within the County during the past 3 years. From this data, the location and number of accidents along each roadway segment was determined. In addition, an accident rate was calculated for each roadway segment. The rate gives the number of accidents per million vehicle miles (AccidentsMVM) traveled along the segment. This value is a function of the length of the segment, the ADT along the segment, and the frequency of accidents along the segment. The rate of Accidents/MVM for the years 1993 through 1995 was calculated using the following formula:

RATE = [(Number of accidents in time frame)*1,000,000] / [(ADT*segment length)*(number of days in analysis period)]

AccidentsMVM is a standard measure of accident occurrence used by ODOT to evaluate roadway safety. The statewide averages for accident rates are 0.87 Accidents/MVM for rural non-freeway sections of highways, and is 3.69 Accidents/MVM for urban non-freeway sections of highways.

Table 2-2 summarizes all data used and the calculated results. The Accident Summary Table lists the number of injury and fatal accidents. All segments that are above state average for rural highways have been marked with an asterisk, and all segments with an abnormally high accident rate are highlighted and marked with an exclamation point.

These data were used to identify high accident locations or segments along the County's roadways. Further detailed study will be required to determine probable reasons for the high accident locations, and whether any geometric or traffic control improvements can be implemented to improve roadway safety.

Most County roadways have accident rates that are both above and below the state average. However, some roadways have rates that are considered abnormally high. Examples include Bennett Road and Bachelor Flat Road just outside of St. Helens. These two roads are part of the same corridor. Bennett Road has the highest rate, 5.80 Accidents/MVM, but has a relatively low ADT count of 500. This accident rate is deceiving, however, because the segment is very short (0.63 mile) but has had two accidents on it during the study period. Bachelor Flat Road has an accident rate of 4.73 Accidents/MVM. These two segments have similar geometry and maintenance problems. One probable factor contributing to these high accident rates is the narrowness of the roads with two sharp right angle curves very close together near the transition from one roadway to the next. The curve at the change in roadways may cause accidents on both roadway segments, creating high accident rates for both segments.

Accident rates along Cater, Anliker, Mayger and Dutch Canyon Roads range between 2.00 and 3.00 accidents/MVM, which is above the statewide average for rural state highways.The other roadways under study have accident rates varying from 0 to 2.00 accidentsMVM. However, some of these roadways have a high number of fatal accidents.

Canaan/Meissner Roads have very low accident rates, but have experienced two fatal accidents. This is abnormally high considering that most of the other segments have had no fatalities in the last three years, and no segments with above average accident rates have had more than a single fatal accident during this analysis period. These results, along with a similar comparison of injury accidents, would indicate that these few roadway segments may not have frequent accidents, but when accidents do occur, they are much more serious. However, these roadways will need further investigation to determine the possible causes of the high accident situations. Figure 2-5 indicates the roadways that have both above average accident rates and abnormally high accident rates. It also shows the approximate location of the fatal accidents during this study period

TABLE 2.2
ACCIDENT RATE PER ROADWAY SEGMENT

FAH Number	County Road Number	Roadway Segment Name	Beginning Point	Ending Point	Classification	Length (miles)	ADT	Total Accidents	Fatal Accidents	Injury Accidents	Acc./MVM
744	1143, 3069	Scappoose-Vernonia Rd.	Scappoose	Hwy. 47	Arterial	19.96	1744	21	0	8	0.55
133	102	State Hwy. 202 (47)	Vernonia, MP 62.78	County Boundary, MP 69.14	State Hwy.	6.32	2905	29	1	18	1.44
690	3074	Timber Road	County Boundary	Hwy. 47 / Trehame	Collector	7.49	699	2	0	2	0.35
756	3064	Keasey Road	Vernonia	Keasey	Collector	9.34	594	4	0	1	0.66
133	102	State Hwy. 202 (47)	Vernonia, MP 60.40	Aplary Rd., MP 53.19	State Hwy.	7.21	1400	15	1	7	1.36
133	102	State Hwy. 202 (47)	Aplary Rd., MP 53.19	Mist, MP 46.14	State Hwy.	7.05	1000	4	0	1	0.52
133	102	State Hwy. 202	Mist, MP 46.14	County Boundary, MP 39.13	State Hwy.	7.04	520	8	0	4	2.00
135	110	State Hwy. 47	Mist, MP 11.89	Clatskanie, MP 0.65	State Hwy.	11.24	822	11	0	5	1.09
1	2W	U.S. Hwy. 30	Clatskanie, MP 62.24	County Boundary, MP 69.95	State Hwy.	7.66	7213	19	3	9	0.31
1	2W	U.S. Hwy. 30	Clatskanie, MP 60.62	Rainier, MP 48.4	State Hwy.	12.22	9706	67	0	39	0.52
1	2W	U.S. Hwy. 30	Rainier, MP 45.88	Goble, MP 40.56	State Hwy.	5.32	8876	24	0	13	0.46
1	2W	U.S. Hwy. 30	Goble, MP 40.56	Columbia City, MP 32.00	State Hwy.	8.56	9460	28	0	9	0.32
1	2W	U.S. Hwy. 30	Columbia City, MP 30.46	St. Helens, MP 29.5	State Hwy.	0.9	14457	6	0	2	0.42
1	2W	U.S. Hwy. 30	St. Helens, MP 27.59	Scappoose, MP 21.30	State Hwy.	6.29	20995	61	3	34	0.42
1	2W	U.S. Hwy. 30	Scappoose, MP 19.35	County Boundary, MP 18.37	State Hwy.	1.05	23770	17	2	10	0.62
754	4190	Swedetown Rd	Clatskanie	Cedar Grove Rd.	Collector	4.64	1200	3	0	1	0.49
752	4147	Beaver Falls Rd.	Clatskanie	Delena	Collector	9.93	876	9	0	5	0.94
753	4134	Mayger Rd.	Beaver Falls Rd.	Delena-Mayger Rd.	Collector	6.66	480	8	0	4	2.21
753	4023	Delena-Mayger Rd.	Mayger Rd.	Delena	Collector	3.43	385	0	0	0	0.00
755	2005	Aplary Rd.	Old Rainier Rd.	Meissner Rd.	Arterial	7	966	10	0	4	1.35
755 spur	2097	Old Rainier Rd.	Alston	Aplary Rd.	Collector	0.89	897	0	0	0	0.00
755	2097	Rainier Rd.	Hwy. 30	Aplary Rd.	Arterial	1.61	1022	3	0	2	1.67
751	2120	Dike Rd.	Rainier	Amundson Rd.	Collector	2.16	660	1	0	0	0.75
749	2046	Fern Hill Rd.	Aplary Rd.	Rainier	Collector	7.23	1306	7	0	4	0.66
750	2045, 2092	Nicolai / Fairview Rd.	Goble	Anliker Rd.	Collector	6	1022	3	0	2	0.45
	2004	Anliker Rd.	Nicolai Rd.	Meissner Rd.	Collector	2.66	120	1	0	1	2.66
748	2085, 1029	Meissner / Canaan Rd.	Aplary Rd.	Deer Island	Collector	13.75	971	12	2	6	0.82
745	1128	Pittsburg Rd.	St. Helens	Cater Rd.	Collector	2.13	1850	4	0	1	0.93
745	1030	Cater Rd.	Pittsburg Rd.	Scappoose-Verrionia Rd.	Collector	4.56	765	9	0	6	2.36
741	1050	Dutch Canyon Rd.	Scappoose	Otto Miller Rd.	Collector	3.54	856	8	0	3	2.41
743	1160	West Ln.	Scappoose	Hwy. 30	Collector	1.73	1000	0	0	0	0.00
747		Old Hwy. 30	Hwy. 30	Scappoose (Port area)	Collector	3.65	2029	0	0	0	0.00
746	1015	Berg Rd.	Hwy. 30	Hazen Rd.	Collector	1.16	875	1	0	0	0.90
746	1075	Hazen Rd.	Berg Rd.	Bennett Rd.	Collector	1.86	370	1	0	0	1.33
746	1014	Bennett Rd.	Hazen Rd.	Bachelor Rd.	Collector	0.63	500	2	0	1	5.80
746	1012	Bachelor Flat Rd.	Bennett Rd.	St. Helens City Limits	Collector	2.15	898	10	0	6	4.73
	1076	Honeyman Rd.	West Ln.	Scappoose Industrial Airpark	Minor Collector	0.6	1177	0	0	0	0.00
749	3001, 2005	Aplary Rd.	Meissner Rd.	Hwy 47	Arterial	12.36	708	6	0	4	0.83
133	102	State Hwy 202 (47)	Vernonia MP 62.78	Timber Rd. MP 64.32	State Hwy	1.54	2905	9	0	7	1.84

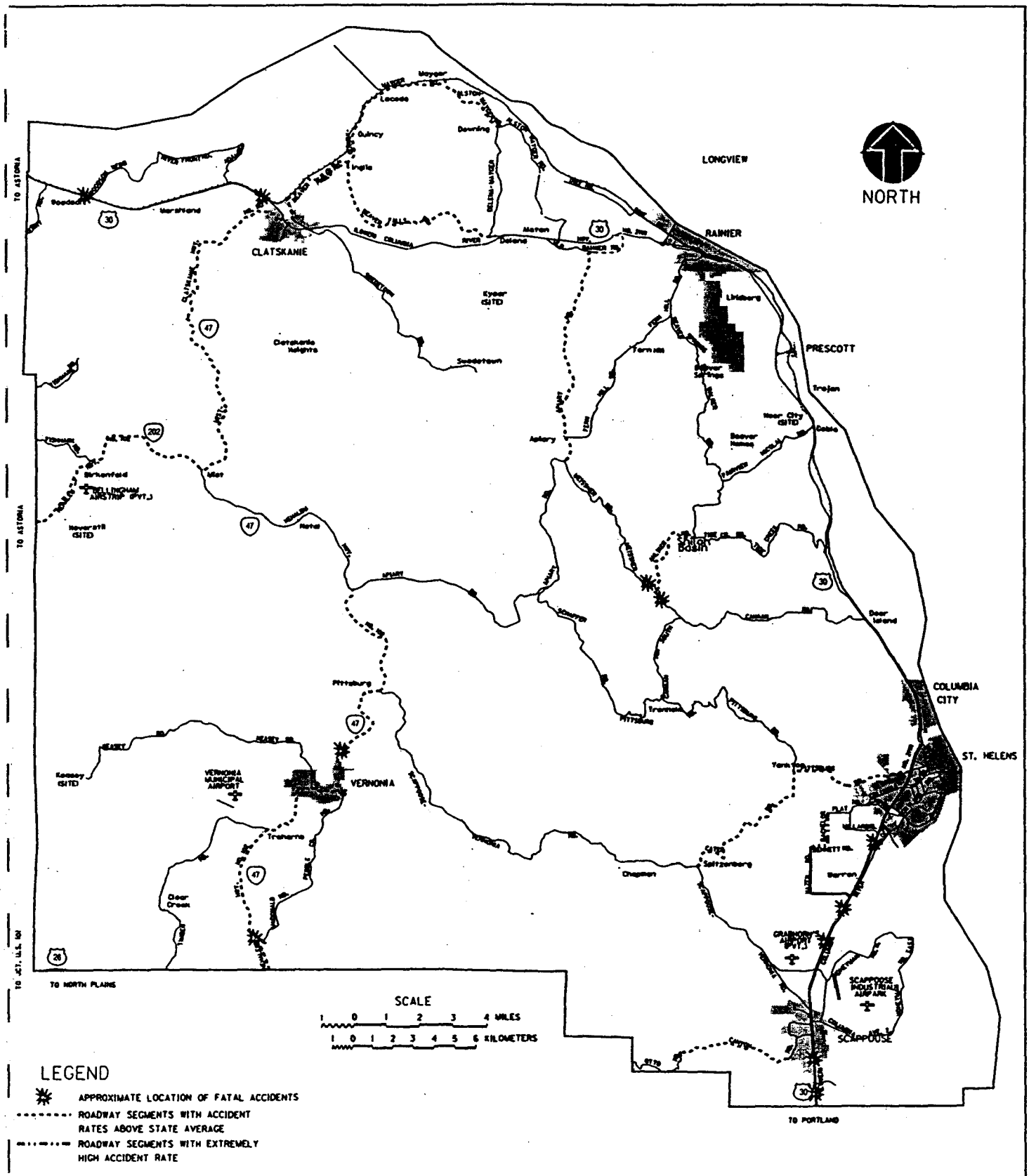

FIGURE 2-5. ACCIDENT HISTORY

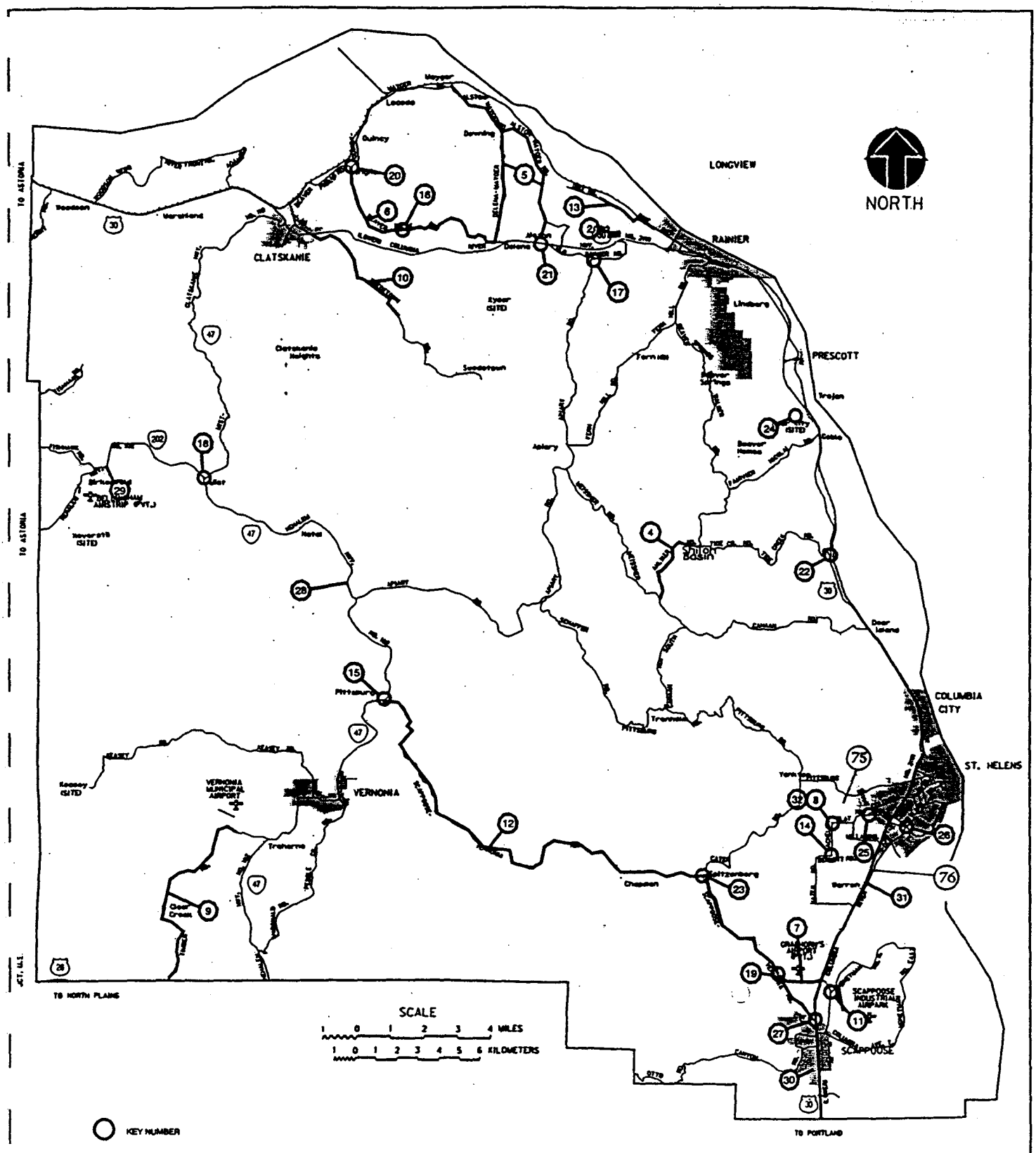

FIGURE 2-6. EXISTING NEEDS

2.6.3 Existing Needs of the Transportation System

From the inventory of the transportation system and the input received through the public involvement process, a list of existing needs has been developed. These needs reflect the existing population and employment projections. The needs analysis covers all modes of transportation, with projects ranging from roadway reconstruction to safety improvements to bicycle and pedestrian improvements.

Roadways

Level of Service Deficiencies. Most County maintained roadways operate at acceptable levels of service in the rural sections of the County. However, in certain segments of the state highway system, some congestion occurs because of high traffic volumes and poor access management. In particular, the rural sections of U.S. Highway 30 south of Deer Island have been identified as needing to reduce the total number of access points to allow the highway to function better.

Other level of service problems exist at some of the intersections of County roads with the State Highway system within the cities. These problem areas are beginning to be addressed within each city's transportation system plan. In addition, the Longview Bridge (Lewis and Clark) operates at unacceptable levels of service during the peak time periods.

Few County roads meet the arterial and collector design standards established for County facilities. Of all the County arterials and major collectors, only a portion of Apiary Road is constructed to the current design standards. Most County arterials and major collectors have evolved from earlier unpaved facilities with substandard design elements that still persist. While complete reconstruction of all major County roads cannot be contemplated in the current funding environment, specific road segments can be identified for consideration as improvement priorities.

A comprehensive listing of existing needs is provided in Figure 2-6 and Table 2-3. The projects respond to the safety and preservation needs of the County roadway system. Improved maintenance, and shoulder and intersection upgrades, make up the majority of needs that were identified in the technical analysis and public process. Many of these projects also would benefit pedestrian and bicycle use of County roads.

Improvement needs on the following county roads are related to safety concerns such as elevated accident rates, restricted intersection sight distance, or difficult physical layouts:

Table 2-3
Columbia County Rural TSP
Existing Needs

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	Roadways	Hwy. 30 (areas designated rural south of Deer Island)	Write access control into county plan, zoning and/or other implemenation ordinance.	Too many access points for highway (high speed/high volume) travel.
2	Roadways	Wonderly Road at Hwy. 30	Create park-and-ride in this area	Already an unofficial park-and-ride loc.
4	Roadways	Anliker Road (southern end of Nicolai at Meissner	Improve by paving gravel section.	Currendy a gravel road. Anliker completes the connection from Hwy. 30 to Cansan Road.
5	Roadways	Delena Mayger/Alston-Mayger	Improve and pave gravel section of Delena-Mayger to county standard for local road. Improve, widen and upgrade functional classification of Alston-Mayger to major collector. Add stop control on Mayger Fill Road at intersection with Alston-Mayger.	Delena-Mayger has low ADT for its functional classification of major collector.
6	Roadways	Beaver Falls Road (west from Delena to intersection with Quincy)	Up-grade and improve bridges between Delena and Quincy. Resurface roadway, replace roadway guard rail. Designate as secondary truck route to Port Westward.	High accident rate. May be related to narrow lanes and surface in very poor condition. Guard rail and bridge railing in very poor condition.
7	Roadways	Wiksstrom Road	Improve road and upgrade functional classification to minor collector status.	High ADT for condition and functional classification.
8	Roadways	Fairgrounds Access	Work with Fair staff to create sign age plan for Fair and County Public Works joint implementation. Improve preferred access routes. Investigate left turn lanes for livestock gates to relieve part of congestion problem.	Need for improved signs and access. (Caution and livestock gate signs.). Congestion during period when fairgrounds are in use.
9	Roadways	Timber Road	Re-pave surface with re-hab of shoulders and drainage.	"Fix Timber road past the Vernonia Golf Course to Washington County Line." "Timber Road is especially bad; narrow and hazardous"--(from stakeholders interviews)
10	Roadways	Swedetown Road	Improve surface and drainage including widening shoulders (or adding if they don't exist).	"Road is in very bad condition."
11	Roadways	Honeyman Road/ West Lane/ Forest Road	Improve turn radius at Honeyman and West Lane . Sign age for truck route on West Lane and Honeyman. Prohibit trucks on Columbia Ave.	Trucks from industrial/airport area use Columbia Ave. to access Hwy. 30 (through Scappoose) trucks should be directed to West Lane and Forest Road for access to Hwy. 30 and avoid city
12	Roadways	Scappoose-Vernonia Road	Improve and maintain road	Overall road condition is poor; many slide areas.
13	Roadways	Dike Road (outside of Rainier)	Improve road for industrial use	Roads need upgrading to support existing and planned industrial use.
14	Roadways	Berg/Hazen/Bennett/Bachelor Flat loop between Scappoose and St. Helens	Traffic control and sign age. At Bennett/Bachelor Flat intersection: place a stop sign on Bennett to promote Bennett left to Bachelor Flat as major movement.	High accident rate. (Bachelor Flat extremely high).
15	Roadways	Hwy. 47 at Scappoose-Vernonia Road.	Re-stripe and provide turn lanes for left turns from Hwy. 47 to Scappoose-Vernonia and from Scappoose-Vernonia to Hwy. 47.	Cluster of 4 accidents and high accident rate. Area on curve with a bridge on Hwy. 47
16	Roadways	Beaver Falls Road at Falls	Create widened area for off-road parking, install guard rails and fence at viewing area	People park cars at side of road to view falls. Pedestrian deaths
17	Roadways	Old Rainier and Apiary	Design and rebuild intersection, create left turn lane, Old Rainier to Apiary to re-orient traffic, making the west leg the minor approach.	Apiary comes into Old Rainier with a skewed configuration (lazy Y).
18	Roadways	Hwy. 47 and 202 (at Misc.)	Rebuild as a "T" intersection.	Through movement seems to be 47/202 from the south to Hwy. 202 north.
	Roadways	Bennett and Bachelor Flat	Stop sign on Bennett, promote the major movement of left turn to Bachelor Flat.	Major traffic flow has to make right left turn.

TSM Transportation System Management

TDM Transportation Demand Management

Table 2-5 (Continued)
Columbia County Rural TSP
Existing Needs

Key Number	Mode	Project Location	Project Description	Justification/Need for the Project
19	Roadways	Wikstrom at Scappoose/Vernonia	Re-stripe and add left-turn lane onto Wikstrom. Place signage on Scappoose Vernonia marking intersection as "To Hwy. 30 north to St. Helens".	Wikstrom is used as a cut-off road to St. Helens. Intersection is skewed at angle.
20	Roadways	Beaver Falls Road at Quincy (part of Mayger loop)	Redesign and reconstruction of intersection.	Currently signed as a dangerous intersection. Stop sign for those coming from south on Beaver Falls not readily apparent.
21	Roadways	Alston Mayger at Hwy. 30	Redesign and reconstruct intersection to allow better truck movement.	(U.S. 30 Corridor Study, March 1995) "Square up the intersection. Turning also could be longer to accommodate trucks trying to turn left on Alston Mayger Road."
22	Roadways	Tide Creek/Hwy. 30 Intersection	Improve sight distance looking north along Hwy. 30 by removing trees and brush.	"If you can't take the curve out of the Tide Creek intersection, at least run Tide Creek Road under the Bridge so that side traffic doesn't enter or leave the Highway on the curve".
23	Roadways	Cater Road/Scappoose-Vernonia Road intersection.	Improve intersection by re-striping and turn lanes on to Cater.	Intersection needs improvements
24	Roadways	Neer City and Neer City Cemetery (Rural Local roads; not a part of study)	Improve intersection for better sight distance.	Sight distance problem
25	Roadways	Gable and Bachelor Flat (in City TSP study area)	Rebuild intersection.	Non-conforming intersection
26	Roadways	Railroad Ave. at Old Portland Rd. (in City TSP study area)	Install flashing yellow warning signal for southbound Old Portland Rd. and northbound Gable Rd. traffic	Intersection where 4 streets and the railroad come together. Has been site of fatal accidents
27	Roadways	Scappoose-Vernonia Road at Hwy. 30 (in City TSP study area)	Improve intersection by straightening and eliminating duplicate roadways	Non-conforming intersection (skewed alignment), proximity to private timber and haul road adds confusion
28	Bicycle	Hwy. 47 from Mist to Vernonia	Bike route should be continuous, however, construction of improved shoulders for bike use is lower in County priorities than other needs identified.	Discontinuous Bike Route. Highway 47 from Clatskanie to Mist is a secondary bike route and Banks Vernonia linear park has a separated bike path.
29	Bicycle	Hwy. 202 at Mist (to Jewell)	Add shoulders for bike travel (Again, construction of shoulders for bikes is lower in County priorities that other needs identified.)	Area of higher ADT (over 1000 according to St. Bike and Pedestrian Plan.
30	Bicycle	Old Portland Road (from Hwy. 30 north to Scappoose.)	Continue to promote county section as bike route to connect to City designated route. Any County improvements to road should include shoulders for bikes and pedestrians.	Application not approved for bike route improvement.
31	Bicycle	Old Portland Road (from Berg Road north to St. Helens.)	Improve shoulders to connect to City bike route.	Should be designated as bike route to connect with City bike route.
32	Bicycle	Fairgrounds Bike Access	Improve shoulders in immediate vicinity of fairgrounds for better access.	Need to improve access to fairgrounds for bike and pedestrians.
33	Pedestrian	Pedestrians -- County Wide	Create plan by investigating areas (such as Mist, Birkenfeld and approaches to urban areas like 47 into Vernonia and out of Clatskanie), to define current conditions, define	In rural areas with a high degree of urbanization, need sidewalks/shoulders for pedestrian safety and bike use.
			standards, create needs list and prioritize.	
34	Other	All County Roads	Improve maintenance of road surfaces and drainage channels to preserve existing infrastructure.	Many roads in fair to poor condition. Need better maintenance and preservation.
35	Other	Various County Roads	County should set standards and inventory roads for meeting standards. Set priorities for meeting needs.	Roads need better signing for curves and such.
36	Other	County Wide	Bring all guard rail up to standards for functional designation of roadway.	Sub-standard guard rail, especially on Alston Mayger and Beaver Falls Road.
71		South County	TDM Program	Management of vehicle demand to avert future congestion
70		Various Locations	11 Non-NBIS bridges	Bridges in poor condition as identified by inspections.
75	Bicycle / Roadway	Sykes Rd from Columbia Ave to West Kappler	Widen road and include bicycle lane to Saulser	Improve bicycle and motor vehicle access to the Fairgrounds. High traffic volumes and improved safety.
76	Roadway	Hwy. 30 and Bennett Rd. Intersection	Traffic Signal	Allow for large trucks to access the Hwy from Old Portland Rd. Safer access for all motorists.

TSM Transportation System Management

TDM Transportation Demand Management

Bicycles

The narrow shoulders on some county roads restricts bicycling opportunities and suggests that improvements to widen shoulders or provide bike lanes be considered on several routes:

- Highway 202 between Mist and Jewell
- Old Portland Road from US 30 and Scappoose
- Old Portland Road from Berg Road to St. Helens
- Bachelor Flat and Gable Roads in the fairgrounds vicinity
- Old Highway 30 west of Rainier
- Sykes Road in the Fairground vicinity
- Beaver Falls Road (a shared roadway)

Pedestrians

Most rural sections of the County do not warrant sidewalks. However, along roadways just outside city limits and within the Urban Growth Boundary, where development is likely to occur, the need for wide shoulders and/or sidewalks has been identified to provide greater pedestrian safety and to encourage walking.

Transit

Commuting patterns collected along U.S. Highway 30 show that many Columbia County residents work in the Portland Metropolitan area. While most of these trips are made by single occupant vehicles, commuting by bus or carpool has the potential to increase if adequate services and facilities are provided. Columbia County has no official park-and-ride lots; however, informal park-and-ride activity is observed along U.S. 30, south of Scappoose and west of Rainier. For this reason, designated park-and-ride lots are proposed along the U.S. 30 corridor. They better serve commuters by providing convenient locations for car pools and buses to pick up passengers. According to public input, the most desirable locations for park-and-ride lots are at Wonderly Road at US 30 and south of Scappoose near the county line.

Based upon the results of a Hwy 30 corridor transit feasibility study (dated November 1996), the development of a regional van pool program is more cost effective than commuter bus for current and projected demand in the Hwy 30 corridor. It also provides greater flexibility for commuters who travel to diverse destinations at differing times.

CHAPTER 3

Future Conditions and Alternative Scenarios

3.1 Introduction

This section discusses the projected 20-year land use patterns and population and employment projections in Columbia County used to estimate the County's future transportation demand. Traffic volume forecasts for the year 2016 are used to determine future traffic conditions on the existing roadway network in a no-build scenario. This analysis helps to determine roadway system requirements and is the starting point for the development of system improvement alternatives. These traffic projections for Columbia County and the surrounding area were developed using the travel demand forecasting model EMME/2, and were designed to remain consistent with the estimates each individual city has completed to date in their Transportation System Plans.

The examination of Columbia County's long-term future transportation needs incorporated extensive discussion with citizens and County staff, a review of the proposed roadway network within the County, results from the existing needs analysis, and future travel demand forecasts based on the EMME/2 travel demand model. This forecasted travel demand was used to develop roadway system alternatives to adequately serve the future needs of Columbia County while satisfying the study goals and objectives.

3.2 Future Population, Employment, and Land Use

The future conditions or 2016 population was forecast by calculating an average annual compounded growth rate for each city. This growth rate is an average of the 25-year growth rates between 1970 and 1995 and is based on census counts for the city and the PSU population estimates for 1995. These projected growth rates were then modified to incorporate adjustments based on information from the cities that indicated expected differences from the historical growth patterns. The results were used to project the growth in the cities and rural TAZs. For rural TAZs that are not adjacent or close to city areas, a smaller growth percentage was used.

By the year 2016, the County population is expected to be approximately 55,600 persons. The projected population for Columbia County in 2016 assumes the implementation of the Comprehensive Plan of each city and the County. The 48 percent increase in population over the 1990 U.S. Census population count of 37,567 represents an annual compounded growth rate of 1.5 percent for the 27-year period. This is comparable with the 1.3 percent growth rate experienced by Columbia County from 1970 through 1995.

Population in the rural areas will grow to 31,970 persons by 2016, an increase of 83 percent from the 1995 estimate of 17,400. This represents a growth rate of about 3.1 percent annually.

In January 1997, the Department of Administrative Services published "Long Term Population and Employment Forecasts for Oregon." In this publication, the state economist estimated the 2015 population in Columbia County to be about 7,600 fewer persons than was estimated in this study for 2016. These lower forecasts suggest the TSP would serve beyond the 2016 planning horizon, or that the TSP analysis addresses a greater population increase, or buildout scenario of development in the county.

In January 1997, the Department of Administrative Services published "Long Term Population and Employment Forecasts for Oregon." In this publication, the state economist estimated the 2015 population in Columbia County to be about 7,600 fewer persons (47,954) than was estimated in this study for 2016 (55,600). These lower forecasts suggest the TSP would serve beyond the 2016 planning horizon, or that the TSP analysis addresses a worst-case, or buildout scenario of development in the county. **In any event, population figures identified in this document are specific to the TSP and are not intended for use in other types of land use decisions. The county has not developed a coordinated population forecast as required by ORS 195.036. This responsibility will be addressed as part of the current periodic review (work task III)."**

Following agreement on the 2016 population projections for the rural and city TAZs, the 2016 projected housing and employment was calculated for these TAZs. Where close-in rural TAZs overlapped with the Urban Growth Boundaries (UGBs), an additional adjustment was made to the 2016 projections for the rural TAZs. These adjustments were made to accommodate expected city annexations of County areas within their UGBs.

The average household size throughout Columbia County is expected to remain stable over the next 20 years. There were approximately 2.6 persons per dwelling unit in 1990 in Columbia County. The County estimates that there will still be approximately 2.6 persons per dwelling unit in 2016.

Implementation of the County's and cities' Comprehensive Plans would result in an estimated increase in employment throughout the County 2016. The employment base is estimated to grow 62 percent over the 20-year period, from approximately 9,651 jobs in 1995 to 15,450 jobs by 2016. Employment was estimated on the basis of available industrial and commercial land by Portland State University as part of their Potential Development Impact Analysis (PDIA) study.

The estimated employment growth would increase Columbia County's jobs-to-housing ratio from 0.65 currently to 0.72 in 2016. Because most communities strive for a ratio of 1.0, this increase indicates that fewer people will be leaving the County for employment in the future as the County continues to increase the number of job opportunities. In 1990, over 42 percent of residents in Columbia County commuted outside of the County for jobs. This compares to the Oregon statewide average of 10 percent and the Portland Metropolitan average of 33 percent.

3.3 Future Transportation Demand

Future daily traffic volumes on the County's arterial and collector street system for the year 2016 were estimated to enable a quantitative comparison of the number of future roadway

system alternatives and to identify future transportation needs. Future traffic volume estimates involved both the development of a travel demand forecasting model and a comparison of the traffic forecasts, where available, prepared as part of the TSPs for the individual cities in Columbia County.

The traffic generated by future developments within Columbia County was assigned among the TAZs according to a computer-based gravity model. The projected number of daily productions and attractions for each TAZ was calculated from the traffic generation associated with the number of housing units and employment within each TAZ. This daily traffic was distributed and assigned to the roadway network based on the gravity model. The gravity model is based on the fundamental principle that the volume of travel between two places is directly related to the size of these places, and inversely related to the distances between the places.

The gravity model was used to project the number of trips between each TAZ. These trips were then distributed onto the transportation network through an iterative process. In each iteration, the travel times between two zones were applied to redistribute the daily trip productions and attractions between zones. This process continued until the differences between each iteration was significantly small.

Aside from the trips originating in or destined for areas within Columbia County, the number of external trips was also estimated in the future travel demand. Historical growth trends for U.S. Highway 30 traffic were used to estimate growth in external trips over the next 20 years. Analysis of historical growth indicates that an annual increase of 2.7 percent is reasonable. Therefore, traffic entering and exiting Columbia County is expected to continue to grow at about 2.7 percent annually over the next 20 years.

3.3.1 Future Traffic Assignment

Traffic volumes for the year 2016 are expected to increase on State highways and County roads. Estimates of future traffic volumes were obtained from the EMME/2 model stream from a no-build condition, that is, without new roads or road widening. In this scenario, daily traffic volumes on Highway 30 would increase to 41,000 vpd south of Scappoose, 33,000 vpd in Warren, and nearly 16,000 vpd at Deer Island. These represent increases of 93 percent, 64 percent, and 68 percent, respectively. Increases along other rural portions of Highway 30 include 80 percent south of Rainier, 68 percent between Rainier and Clatskanie, and 87 percent at the Clatsop County line.

Increases along Highway 47 range from 4,400 vpd at the Washington County line (100 percent growth) to 2,300 vpd near Mist (130 percent growth). Volumes in the year 2016 will increase to 1,300 vpd on Highway 202 west of Mist (50 percent growth) and to 630 vpd at the Clatsop County line (97 percent growth).

On County roads, 2016 volumes on Scappose-Vernonia Road will increase to over 6,000 vpd (230 percent growth) and on Apiary Road over 1,400 vpd (22 percent growth). Schematic diagrams showing future traffic forecasts for other roads are provided in Appendix F.

The forecasted traffic demands on Highways 47 and 202, and on County roads are within the capacities typically observed for two-lane roadways. Future volumes on Highway 30 north of

Columbia City would be approaching or exceeding the capacity of a two-lane road, and may require passing lanes or turning lanes in some areas.

3.3.2 Pedestrian and Bicycle Movement

Although pedestrian and bicycle activity is expected to remain light in the rural areas, improved facilities could lead to increases in usage both for commuter and recreational trips. Much of this activity will be focused in rural centers and in rural areas immediately adjacent to incorporated cities. Most other commute activity involves trip lengths too long for pedestrian and bicycle travel.

Recreational cycling also will be concentrated around the County's cities and rural centers. Bicycle touring can be expected along the State highways and, to a lesser extent, County roads. This activity tends to increase during the summer months, simultaneous with increased vehicular traffic flow.

3.3.3 Transit

The recent experience of Colco Transportation with fixed route bus service indicates a low level of transit demand in rural areas, and among the cities along Highway 30. Average daily ridership remained below 300 patrons during the 1-year service was offered. As population grows, transit demand could increase sufficiently to justify reinstatement of fixed-route service. The dial-a-ride van service has proven popular, and will serve rural transit demands effectively and economically throughout the planning horizon, including transportation services for the disadvantage.

For commute travel, rideshare and vanpool modes could prove best-suited for Portland and Washington County destinations. These modes are especially effective for commute trips of up to 50 miles. The effectiveness of these modes can be enhanced with the application of transportation demand management (TDM) measures, such as rideshare matching services and other support facilities, including park-and-ride lots. These measures seek to reduce travel demand by single-occupant vehicles. The effectiveness of these measures could be increased through cooperation with agencies in Portland and Washington County (through Tri-Met) and in Longview (through CUBS).

The county will provide leadership direction for setting up van pools and pursue grant funding for service to businesses, college campuses and other centralized locations.

3.4 Future Transportation Needs

Results from the travel forecasting model were used to estimate daily traffic volumes and traffic congestion conditions in 2016 for a no-build scenario—i.e., assuming no change in the current roadway system. The model results indicated daily traffic volumes on the County roadway system would increase 20 to 80 percent between 1995 and 2016.

3.4.1 Level of Service Constraints

Using the travel demand model, the volume-to-capacity ratio for each roadway segment was determined. Volume-to-capacity ratios consistent with the Highway Capacity Manual were used to identify highway sections projected to be at or over capacity in the future. This

corridor level of service analysis was performed on the rural County roads that are classified as a major collector or higher.

In general, the LOS analysis revealed that traffic operations on the major roadways in Columbia County will be generally acceptable, although considerably more congested than under the present conditions. All of the County collector roads are projected to continue to operate at LOS C or better, with the exception of Wikstrom Road which will experience LOS E during the p.m. peak hours. For the County arterials, Apiary Road and most of Scappoose-Vernonia Road are expected to operate at good levels of service during the day. The only exception is the section of Scappoose-Vernonia Road between Scappoose and Cater Road which will operate at LOS E during the p.m. peak hours. State Highways 47 and 202 will also operate at LOS C throughout the day. U.S. Highway 30 will experience LOS E and F in some sections north of Columbia City through Rainier and between Rainier and Clatskanie. The remainder of U.S. Highway 30 is expected to operate at LOS C and D throughout the day.

3.4.2 Roadway Needs

On the basis of the expected performance of the transportation system and the input received through the public involvement process, a list of future needs has been developed. These needs reflect future population and employment growth estimates, cover all modes of transportation, and range in projects from roadway reconstruction to safety improvements to bicycle and pedestrian improvements.

Level of Service Deficiencies

As discussed above, most County-maintained roadways are expected to continue to operate at acceptable levels of service in rural sections of the County. However, high traffic volume and poor access management create some congestion on segments of the state highway system. In particular, the rural sections of U.S. Highway 30 between Scappoose and the Multnomah County Line need a reduction in the total number of access points and the possible installation of a raised median to allow the highway to function better.

Safety/Capacity/Preservation Needs

The future needs include the addition of passing lanes on Highway 30 at several locations, and improvements of additional corridors to meet design standards. Few County arterials and major collectors provide shoulder widths of the specified standard. The addition of shoulders will enhance safety for vehicle, pedestrian, and bicycle travel. Improved intersections and connections are noted in several locations. These improvements are referred to as transportation system management (TSM) measures, because they increase the efficiency with which the road network is used. The TSM measures applicable in Columbia County include intersection rechannelization and reconstruction. There will be a continuing need for maintenance and preservation of the County arterial and major collector network. These future needs are summarized on Figure 3-1 and Table 3-1.

With respect to system expansion, a new arterial route has been suggested between Scappoose and St. Helens to serve the rural residential uses planned for the areas west of Highway 30. The corridor would extend from Pittsburg Road west of St. Helens to

Wikstrom Road north of Scappoose, using segments of existing roads, upgraded and connected with new segments. Factors cited in support of the new arterial route include diversion of local traffic away from Highway 30 and the need to serve travel associated with future development in west St. Helens and in the Warren area. The need for an arterial route in this area reflects the difficulties associated with upgrading Berg, Bennett, Hazen, and Bachelor Flat Roads to provide shoulders. The northern portions of the proposed route are recognized as needs in the St. Helens TSP. The route would focus access to Highway 30 at a single, controlled location and offer an alternative to Highway 30 for emergency vehicles. Analysis indicates that a westside arterial route could attract up to 2,400 vehicles per day (vpd) by the year 2016.

There are extensive future needs for upgrading County roads that will be annexed into the Urban Growth Boundaries (UGBs) of the cities. These needs are tabulated in the individual Transportation System Plans of each city. A sample list of these needs in the St. Helens and Scappoose areas includes portions of Pittsburg, Gable, Bachelor

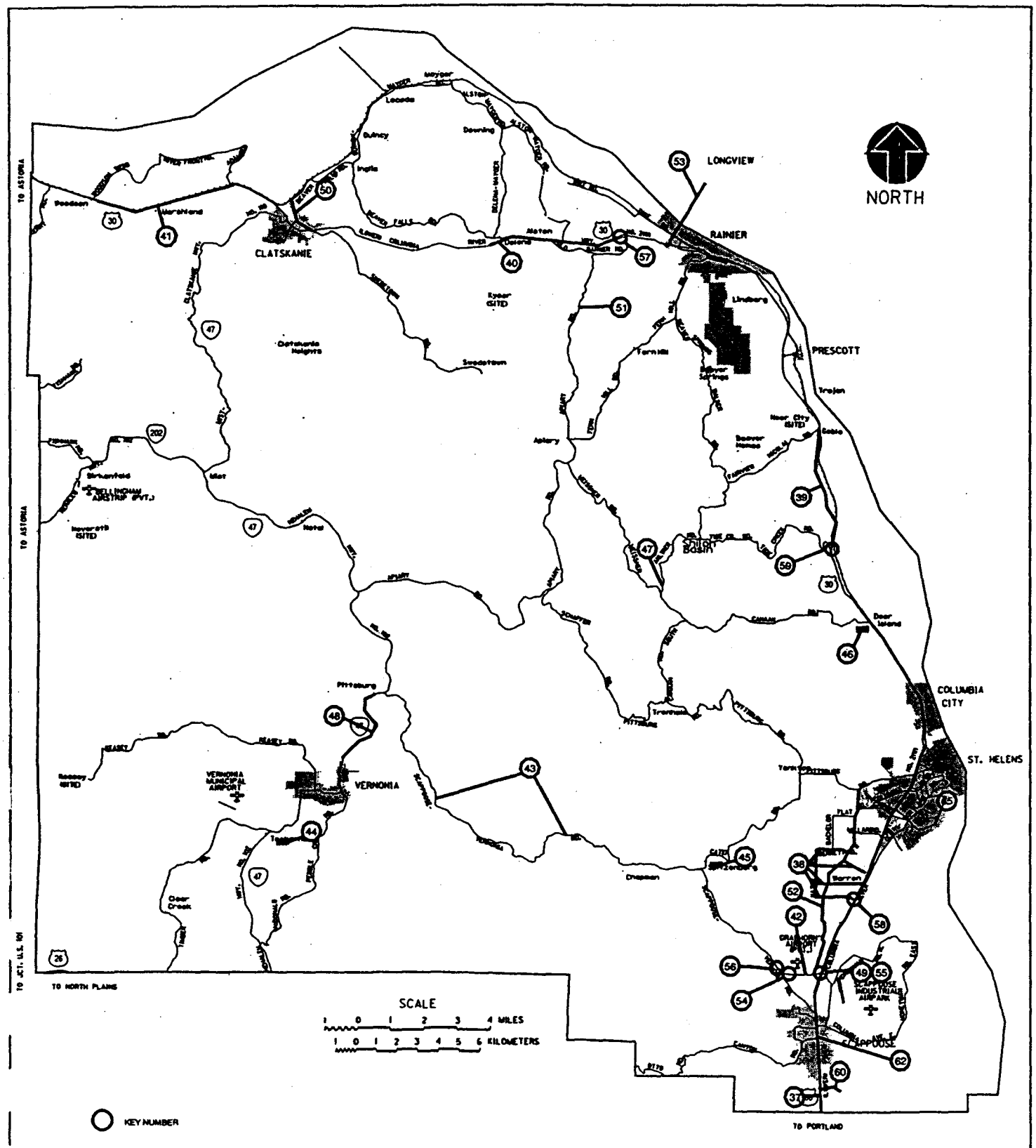

FIGURE 3-1. FUTURE NEEDS

Table 3-1
Columbia County Rural TSP
Future Needs

Key Number	Mode	Project Location	Project Description	Justification Need for the Project
37	Road Segments	Hwy. 30 - Multnomah County line to Scappoose.	Higher degree of access management, improved signal coordination or raised median to limit left turns	High Volume/Capacity ratio projected for this segment, estimate is 0.55-0.65-over capacity
38	Road Segments	Hwy. 30 - Between Scappoose and St. Helens	Improve local north/south rds to take local traffic off hwy.30; Berg, Hazen and Bennett Rds. If congestion warrants, limit access by creating frontage rd. parallel to Hwy.30 (linking Bennett, Church and Berg); use Church as the single access road to Hwy 30	High Volume/Capacity ratio projected for this segment, estimate is 0.45-0.55 - near/at capacity
39	Road Segments	Hwy. 30 - Columbia City to Rainier	Add passing lanes on Hwy. 30 vicinity of Goble	High Volume/Capacity ration projected for this segment, estimate for northbound is 0.25-0.45 - approaching capacity and for southbound is 0/45-0.55-near/at capacity
40	Road Segments	Hwy. 30 - Rainier to Clatskanie	Extend Passing lanes in both directions	
41	Road Segments	Hwy. 30 - Clatskanie to Clatsop County line	Add passing lanes in this section if area with minimum environmental impact can be found.	Future Volume/Capacity ration estimate is 0.045 - 0.55 Near/At capacity
42	Road Segments	Wikstrom Rd.	Improve road by widening, upgrade functional classification to major collector status	High Volume/Capacity ratio projected for this roadway, estimate is 0.55- 0.065 - Over capacity for eastbound segment from Dahlgren to Hwy. 30.
43	Road Segments	Scappoose Vernonia Road	Passing lanes, park-and-ride, TSM, car pooling or other TDM	
72	Road Segments	Various Locations	8 Non-NBIS bridges Rehabilitate deficient bridges	Bridges in poor condition as identified by inspections.
44	Park-and-ride	Hwy. 47 south of Vernonia	Locate park-and-ride in this area	Need for park-and-ride lot to intercept traffic to Washington Co.
45	Park-and-ride	Scappoose/Vernonia Road at Cater Rd.	Locate park-and-ride in this area	Need for park-and-ride lot to intercept traffic into Scappoose, St. Helens and Portland
46	Park-and-ride	Hwy. 30 (Deer Island)	Locate park-and-ride in this area	Need for park-and-ride lot to intercept traffic into St. Helens, Scappoose, and Portland
47	Physical Conditions	Anliker Road	Improve to County standards as major collector (current functional classification to complete collector connection.	Southern end of Nicolai at Meissner; (currently a gravel road, on existing needs list for improvement, i.e. paving). Anliker completes the connection form hwy. 30 to Canaan Road.
48	Physical Conditions	Highway 47 between Scappoose-Vernonia Road and Town of Vernonia	Create passing lanes or slow vehicle turnouts along this segment	Trucks create bottleneck for autos.
49	Physical Conditions	Honeyman Rd./West lane	Install signal at West Lane/Hwy. 30	Truck traffic diverted to Hwy. 30 via West Lane to avoid City may increase.
50	New Roads	Access to Port Westward (Hwy. 30 Corridor Study)	Coordinate with City of Clatskanie. hwy. 30 to 5th Street suggested as primary access route and Beaver Falls the secondary access route.	Further economic will need improved access to the Port Westward site
51	New Roads	Apiary Road	Extend Apiary road to Hwy. 30 (could provide this connection by using Heath)	Improve connection to Hwy. 30
52	New Roads	Westside Arterial Route	Provide a Westside arterial alternate route to Hwy. 30 by upgrading some existing roads and connecting these with new roads.	Removes local west side traffic from Hwy.30 and provides an alternative route in the event of accidents or other emergencies. Removes local traffic from Hwy 30 and provides alternative route.

TSM Transportation System Management

TDM Transportation Demand Management

Table 3-1 (Continued)
Columbia County Rural TSP
Future Needs

Key Number	Mode	Project Location	Project Description	Justification - Need for the Project
53	New Roads	New Columbia Bridge at Rainier	Continue to support efforts for new bridge by ODOT, WSDOT, and Ports	Existing Lewis and Clark Bridge well over capacity in both existing and future condition; it is also approaching structural obsolescence.
54	Intersections	Wikstrom Rd. and Dahlgren Rd intersection	Re-channelize and improve sight distances by changing grades, improve sight distance at Dahlgren/Wikstrom intersection (could involve lowering the roadway)	Limited sight distance, high V/C ratio
55	Intersections	Wikstrom Rd. and Hwy. 30	Re-align Wikstrom, West Lane, hwy. 30 intersection to remove offset	Off-set between Wikstrom and West Lane make through movement difficult
56	Intersections	Wikstrom Rd. at Scappoose-Vernonia	reconstruction of intersection to improve canalization and improvement of roadway from Scappoose-Vernonia to Hwy. 30	Skewed intersection results in difficult turn
57	Intersections	Larsen Rd. at Hwy. 30	Close median to prohibit left turns, implement in conjunction with the extension of Apiary Road to Hwy. 30	Closely spaced intersections at a crest, vertical curve along Hwy. 30
58	Intersections	Berg Road and Hwy. 30	Re-stripe intersection; add turning lanes, if needed, to/from Hwy. 30 at Berg Rd	Intersection may not be able to handle future traffic
59	Intersections	Tide Creek Hwy. 30 Intersection	Reconstruct intersection	"If you can't take the curve out of the Tide Creek intersection, at least run Tide Creek Road under the Bridge so that side traffic doesn't enter or leave the Highway on the curve".
60	Intersections	Johnson Landing Rd.(Rural local road; not a part of study) (south of Scappoose)	Improve and widen road	Needs to be improved and widened
	Future Plans Areas	Fullerton Road/Slaven Road Area	Apply for TGM Grant to prepare area-wide land-use/transportation plan.	Need an area-wide plan coordinated with land use for development to avoid haphazard development. Upgrade roads to collector status.
61	Bicycles	General	In rural areas around Cities coordinate the improvements of shoulders for bike use so that bike routes are continuous between City and County. Coordinate bicycle TSP projects.	
	Bicycles	Hwy. 30	Apply for grant money form ODOT to do study	Inventory and investigate feasibility of using portions of Hwy. 30 as scenic, recreational bike route.
74	Bicycles	Old Hwy. 30/Larson/Old Rainier Roads	Improve shoulders for bicycle lanes1 million	Connects Rainier area bike lanes with High School
	Pedestrians	General	In rural areas around Cities coordinate the improvements of shoulders for bike use so that pedestrian routes are continuous between City and County. Coordinate pedestrian TSP projects.	
62	Public Transportation/Transit	Hwy. 30 Corridor	Commuter rail could be developed on existing tracks to Portland. Could also be used as a tourist attraction to Astoria.	
63	Public Transportation/Transit	General	More bus links to Portland and Beaverton/Hillsboro	
64	Public Transportation/Transit	General	Need express Bus Service	
65	Public Transportation/Transit	Columbia River	Use river taxis	

SM Transportation System Management

DM Transportation Demand Management

Flat, Old Portland, West Lane, and Dutch Canyon Roads. The design features for improvements within the UGBs should be coordinated with standards for urban facilities for each city. Funding for these projects is likely to be a cooperative effort between the County and the annexing city.

Ongoing maintenance and preservation needs for County bridges also will extend into the future. It should be emphasized that maintenance and preservation of the minor collector and local road systems will exert demands on County resources.

3.4.3 Bicycles and Pedestrians

Projects to widen shoulders or add bike lanes will increase the attractiveness and safety of these modes. Bicycle and pedestrian improvements in the rural areas around the cities should be coordinated with the cities' improvements so that bike routes and pedestrian facilities are continuous between city and County areas, where appropriate.

Corridors suggested for bike routes include Old Portland, Pittsburg, Gable, Bachelor Flat, Sykes and Ross Roads in the Scappoose and St. Helens area. In the Rainier area, Old Highway 30 could provide a bicycle route west to the high school using Debast, Old Rainier, and Larson Roads for local connections. A shared bike route could also be developed along Beaver Falls Road if it is upgraded with wider shoulders.

3.4.4 Transit/Transportation Demand Management

Commuting patterns collected along U.S. Highway 30 indicate many Columbia County residents work in the Portland Metropolitan area. While most of these trips are made by single occupant vehicles, commuting by bus or carpool has the potential to increase if adequate facilities and support services are provided. For this reason, the most important priority of future transit and TDM needs is to establish formal park-and-ride lots along the U.S. 30 corridor, which would be served by new express bus service. Formal park-and-ride lots are more desirable to commuters because the lots can be monitored throughout the day and provide convenient locations for car pools and buses to pick up passengers. Based on public input, the express bus service is desirable not only to downtown Portland but also to major employment areas in Hillsboro and Beaverton (i.e., Intel and Tektronix). Future park-and-ride lots should be located as follows:

- Multnomah/Columbia County Line
- Highway 47 south of Vernonia
- Highway 30 near Wonderly Road

Long-term future transit needs could include the use of river taxis along the Columbia River linking RainierLongview, St. Helens, Scappoose, and Portland. In addition, a commuter rail service could be developed on the existing tracks to Portland. This service could also be used as a tourist attraction to Astoria on the weekends. However, present studies indicate that such service is at least 20 years away.

3.4.5 Alternatives Analysis

With the compilation of existing and future needs, alternative scenarios of improvement were developed for public and agency review. Many of the projects involve specific improvements to correct identified deficiencies, and, from a system viewpoint, are not amenable to alternative treatments. There is an extensive listing of such projects, many of which are the product of deferred maintenance and lack of funding resources for capital improvements. In the No-Build alternative, increasing deterioration of the County's transportation infrastructure could be anticipated, limiting mobility and safety, and compromising economic viability.

In this sense, the alternatives analysis for rural Columbia County projects evolved into a process of determining priorities among the identified needs. In this process, safety and maintenance projects were ranked as higher priority needs, for implementation in the short term. Actions to implement TSM and TDM measures, park-and-ride lots, and bike/pedestrian projects also were rated high priority by the citizens and agency committees.

Other projects for system expansion and preservation were rated a medium or low priority for implementation in the intermediate or long term, respectively. Given the continuing shortage of resources for public infrastructure, some projects may need to be deferred beyond the 20-year study horizon. Deferral of projects also would be appropriate if Countywide population growth does not achieve the forecasted levels.

Where new connections are proposed, analysis was conducted to estimate the impacts on future travel patterns. For the proposed north-south arterial route between St. Helens and Scappoose, located west of Highway 30, the travel forecasting model was used for this analysis. It revealed that the new arterial would attract 1,700 to 2,400 daily trips. The overall impact on Highway 30 would be slight, and decreases could be expected on the existing collector roads in this area.

CHAPTER 4

Transportation System Plan

This chapter describes the individual elements of the TSP for rural Columbia County. The TSP includes a framework plan for all modes of transportation. Projects associated with each modal element have been identified, cost estimates prepared, and priorities assigned. Standards for road design and access management are also addressed.

All elements of the plan are summarized on three maps showing projects for short-, intermediate-, and long-term implementation.

4.1 Road Plan

The road plan identifies arterial and collector roadway improvements that are required to serve the County's future needs over the next 20 years. As noted in the County standards, arterial roads serve travel among cities and major traffic generators, while collectors distribute traffic to local streets. Several revisions to the functional classification system are recommended, as shown on Figure 4-1. Wikstrom Road will be upgraded to major collector status, recognizing its role in connecting Highway 30 with the Scappoose-Vernonia Road. Sykes Road should also be designated as a collector. An extension of Apiary Road to Highway 30 will adopt the existing arterial designation of Apiary Road, and Old Rainier and Larson Roads will revert to minor collector designations. Alston-Mayger Road will be upgraded to minor collector status. As industrial development proceeds north of Scappoose, West Lane and Honeyman Road will be reclassified as major collector roadways. A westside arterial route between St. Helens and Scappoose will be assigned a minor arterial designation.

Design standards for County roads were reviewed and updated in 1996. Standards for rural arterial facilities include provisions for 12-foot travel lanes and 5-foot shoulders. On collector roadways, shoulders are reduced to 4 feet. New standards for local roads provide for 10-foot travel lanes and 3-foot shoulders. Some public concern was expressed over the reduction for local roads from the earlier 12-foot travel lanes. The reduced width complies with state and federal design guidance, and provides an adequate shoulder for bicycles and pedestrians. These cross-sections are presented in Appendix D. No changes are recommended in the County's road standards.

The proposed improvement plan for high-priority projects is shown on Figure 4-2, and the individual projects summarized as the short-term projects on Table 4-1. Many of these projects involve safety and preservation improvements, including those along Berg, Hazen, Bennett, Bachelor Flat, Sykes and Scappoose-Vernonia Roads, where shoulders will be widened, paving repaired or completed, and maintenance needs fulfilled.

The addition of passing lanes to Highway 30 between Rainier and Deer Island is included in the short term and will address peak-season congestion and enhanced bicycle treatment. With congestion also imminent on the Lewis and Clark Bridge, diversion of traffic to I-5 is likely to remain only a partial solution until a bridge replacement is obtained.

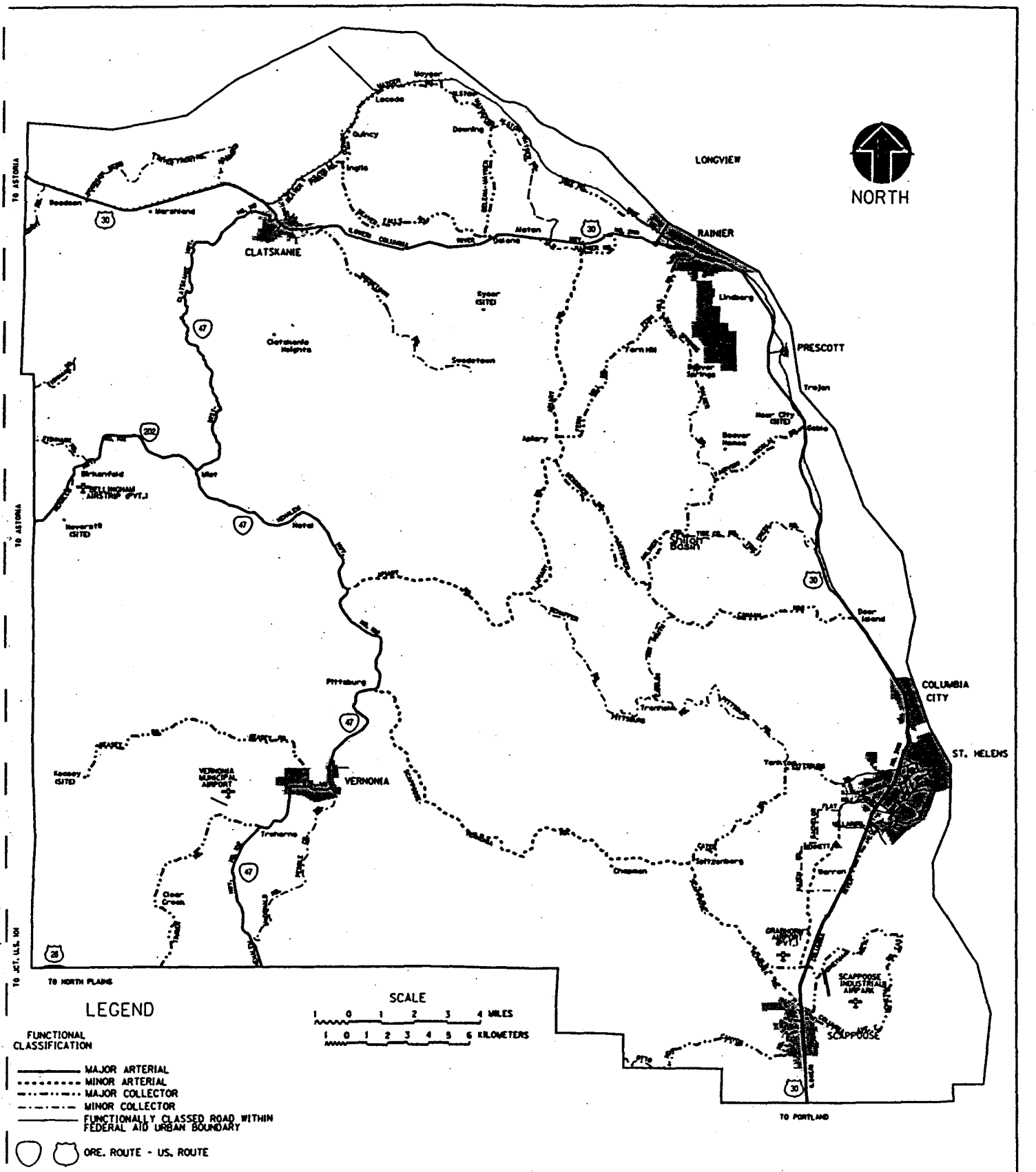

FIGURE 4-1. FUTURE FUNCTIONAL CLASSIFICATION

Table 4-1
Transportation System Improvement Project List
Columbia County

Key No.	Project Location	Project Description	Project Justification								Project Cost	Total Costs
			Safety	Preservation	TSM	TDM	Expansion	Bicycle	Pedestrian	Corridor Mgmt		
	SHORT TERM											
12	Scappoose-Vernonia Rd	Improve and maintain road (20Miles)		X				X	X		$3,927,000	
23	Cater Rd/Scappoose-Vernonia Rd Intersection	Intersection improvements			X						$229,000	
14	Berg/Honeyman/Bennett/Bachelor Flat	Improve Traffic Control and add shoulders	X					X	X		$2,539,000	
31	Old Portland Rd (from Berg Rd north to St. Helens)	Shoulder Improvements						X	X		$300,000	
32	Gable Rd US 30 to Fairgrounds		X					X			$350,000	
32 (part)	Westside Arterial Route	Engineering Study					X				$100,000	
66	Apiary/Fern Hill Rd	Sight Distance	X								$12,000	
30	Old Portland Road (from Hwy. 30 north to Scappoose)	Shoulder Improvements						X	X		$130,000	
2	Wendorfy Road at Hwy. 30	Park-and-Ride Lot			X	X					$169,000	
17	Old Rainier and Apiary	Intersection Revisions	X		X						$678,000	
67	Fern Hill / Fern Crest	Sight Distance	X								$12,000	
39,59,22	Hwy 30 - Deer Island to Prescott	Passing Lanes and Intersection Improvements at Tide Creek Rd	X		X			X	X		$3,337,000	
20	Beaver Falls Rd / Quincy	Intersection Revision	X								$263,000	
69	South County / Mult. Co.	Park-and-Ride Lot will be located in Old Hwy. R/W Mult. Co.				X					$330,000	
70	Various Locations	Non-NBIS bridges	X	X							$825,000	
71	T D M Program	South County				X					$40,000	
75	Sykes Rd (Columbia Ave to West Kappler)	Widen road / add bicycle lanes to Saulsver Rd	X					X			$350,000	
76	Bennett Rd - Hwy 30 Intersection	Traffic Signal	X		X					X	$500,000	
											Total Short Term	$14,191,000
	INTERMEDIATE TERM											
37	47 & 202 State Hwys.	Access Management								X	$20,000	
56	Wilstrom Road At Scappoose Vernonia	Intersection Improvements			X						$347,000	
51	Apiary Road / Old Rainier	Realignment				X		X			$1,922,000	
42,49,54, 55,56	Wilstrom Road At Scappoose-Vernonia Rd. to Hwy. 30	Improvements		X	X						$2,331,000	
8	Fairgrounds Access	Intersection Improvements		X							$765,000	
70	Various Locations	Non-NBIS bridges	X	X							$680,000	
											Intermediate Term	$5,985,000
	LONG TERM											
58	Berg Road and Hwy. 30	Intersection Improvements			X						$253,000	
68	Pittsburg Road / West Kapler	Realignment	X		X						$347,000	
6	Beaver Falls Road	Improve and Maintain		X				X			$14,443,000	
40	Hwy. 30 - Larson Road to Lost Creek	Passing Lanes	X		X			X			$2,300,000	
41	Hwy. 30 - Clatskanie to Clatsop County line	Passing Lanes	X		X			X			$2,300,000	
4	Another road (southern end of Nicolai at Meissner)	Pave and Improve		X							$2,719,000	
15	Hwy. 47 at Scappoose - Vernonia Road	Intersection Revisions		X				X	X		$229,000	
44	Hwy. 47 south of Vernonia	Park-and-Ride Lot				X					$169,000	
74	Old Hwy. 30/Larson/Old Rainier Roads	Bicycle Lane						X	X		$1,000,000	
											Total Long Term	$23,760,000
											Total Cost of all Projects	$43,936,000

Table 4-1 (continued)
Transportation System Improvement Project List
Columbia County

ADDITIONAL NEEDS IF FUNDING BECOMES AVAILABLE

Key No.	Project Location	Project Description	Project Justification								Project Cost	Total Costs
			Safety	Preservation	TSM	TDM	Expansion	Bicycle	Pedestrian	Corridor Mgmt		
5	Delena Mayger	Overlay		X							$1,894,000	
9	Timber Road	Rehabilitate		X				X			$3,623,000	
52	Westside Arterial Route	New Connections					X				$11,355,000	
30	Swedetown Road	Improve and Maintain		X				X			$2,642,000	
53	Columbia River Bridge	Replace					X				$140,000,000 *	
											Total Cost of Additional Projects	$159,514,000

* Columbia River Bridge not funded by Columbia County

Intersection safety and TSM improvements are proposed at numerous locations throughout the County where deficiencies have been noted. These include Apiary Road/Old Rainier Road, Cater Road/Scappoose-Vernonia Road, Beaver Falls Road/Quincy Road, and Gable Road/Bachelor Flat Road.

In the intermediate term, there is also heavy emphasis on preservation measures, with rehabilitation of Wikstrom Road, and routes surrounding the fairgrounds. Intersection improvements would be provided in the Fairgrounds area, Apiary at Old Rainier, and Highway 30Wikstrom Road, as shown on Figure 4-3.

Long-term improvements include extension of the passing lanes on Highway 30 between Clatskanie and Rainier, and also west of Clatskanie, with associated shoulder improvements for pedestrians and bicycles. Preservation actions would include Anliker and Beaver Falls Roads. These improvements are shown on Figure 4-4.

Replacement of the Lewis and Clark Bridge at Rainier is shown as a long-term project because of funding uncertainty.

Project priorities may shift or be revisited as different funding sources become available. At existing levels of revenue, the short-term program alone would absorb more than 20 years of the County's transportation funding capacity. Nearly all the transportation revenue resources of the County are now devoted to maintenance expenditures. A fair amount of flexibility is appropriate in pursuing individual projects, because of conditions or restrictions attached to certain funding sources. The TSP Project List is intended to provide a framework of project priorities.

The road plan supports movement of truck freight by providing for passing and truck climbing lanes along Highway 30 and intersection improvements to accommodate turning trucks. The passing and truck climbing lanes will stabilize travel times to the coast, and provide reliable freight schedules.

4.2 Transit Plan

The TSP anticipates an expanding role for transit to respond to mandates that manage corridor capacity through a TDM program. It is suggested this program be focused initially on south County commuters with local and metropolitan area destinations. The TDM program should consist of a coordinator to manage transit pass subsidies, rideshare matching services, marketing and public information services regarding COLCO options, telecommuting assistance, or other actions that emphasize reduced reliance on the automobile for commuting. These programs will be coordinated with Tri-Met. Ultimately, the TDM program should be expanded to Rainier and Clatskanie commuters, possibly oriented to Longview employment sites.

Development of park-and-ride lots at various locations in the County is proposed to support the formation of carpools and convenience of transit alternatives. In the short term, park-and-ride lots will be developed at Highway 30 west of Rainier and along Highway 30 near the Multnomah County line, possibly in cooperation with Multnomah County. Informal park-and-ride activity is now occurring at both locations. This latter facility anticipates the time when temporary spaces at the Fred Meyer lot may no longer be available.

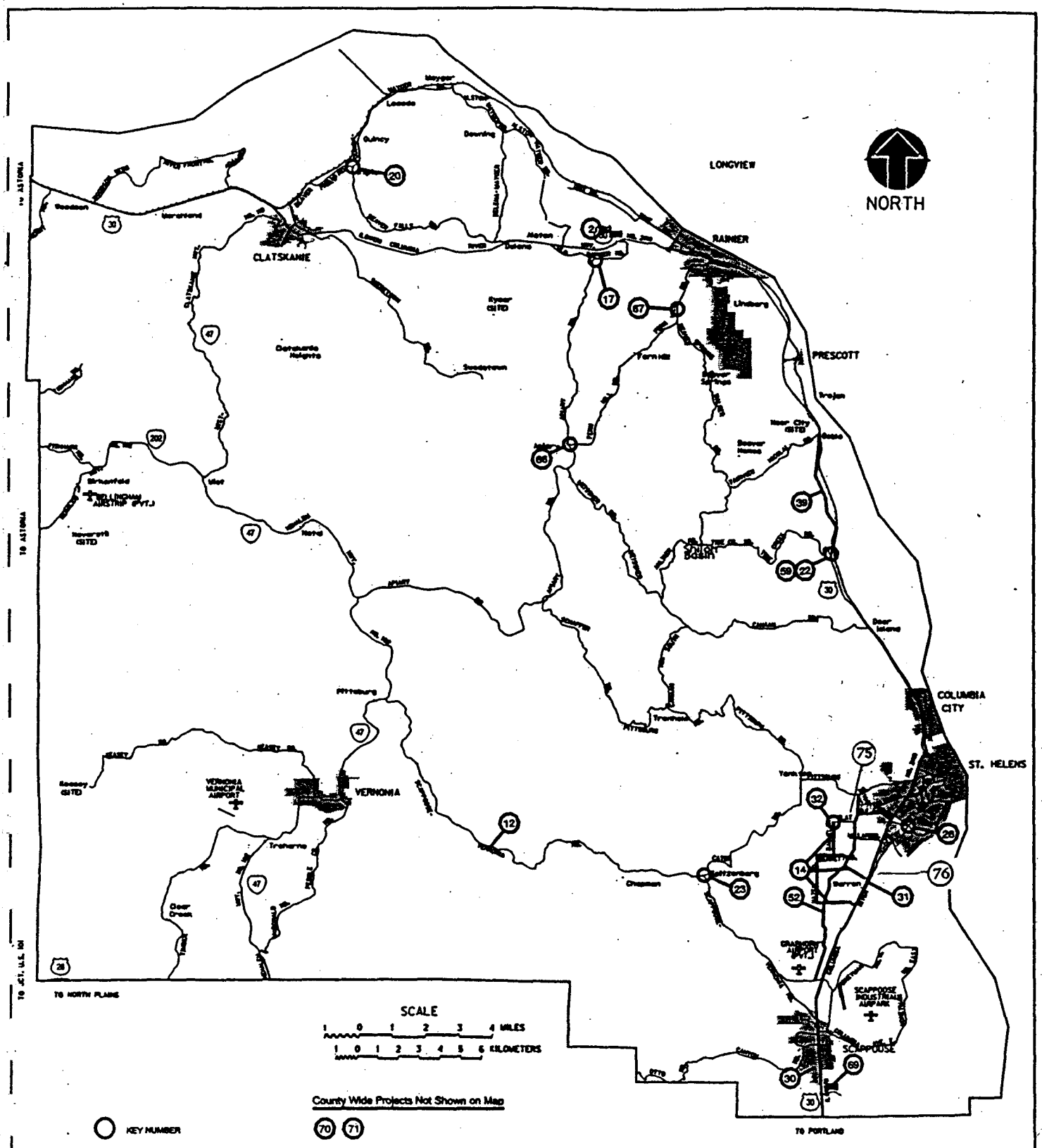

FIGURE 4-2. SHORT TERM PROJECTS

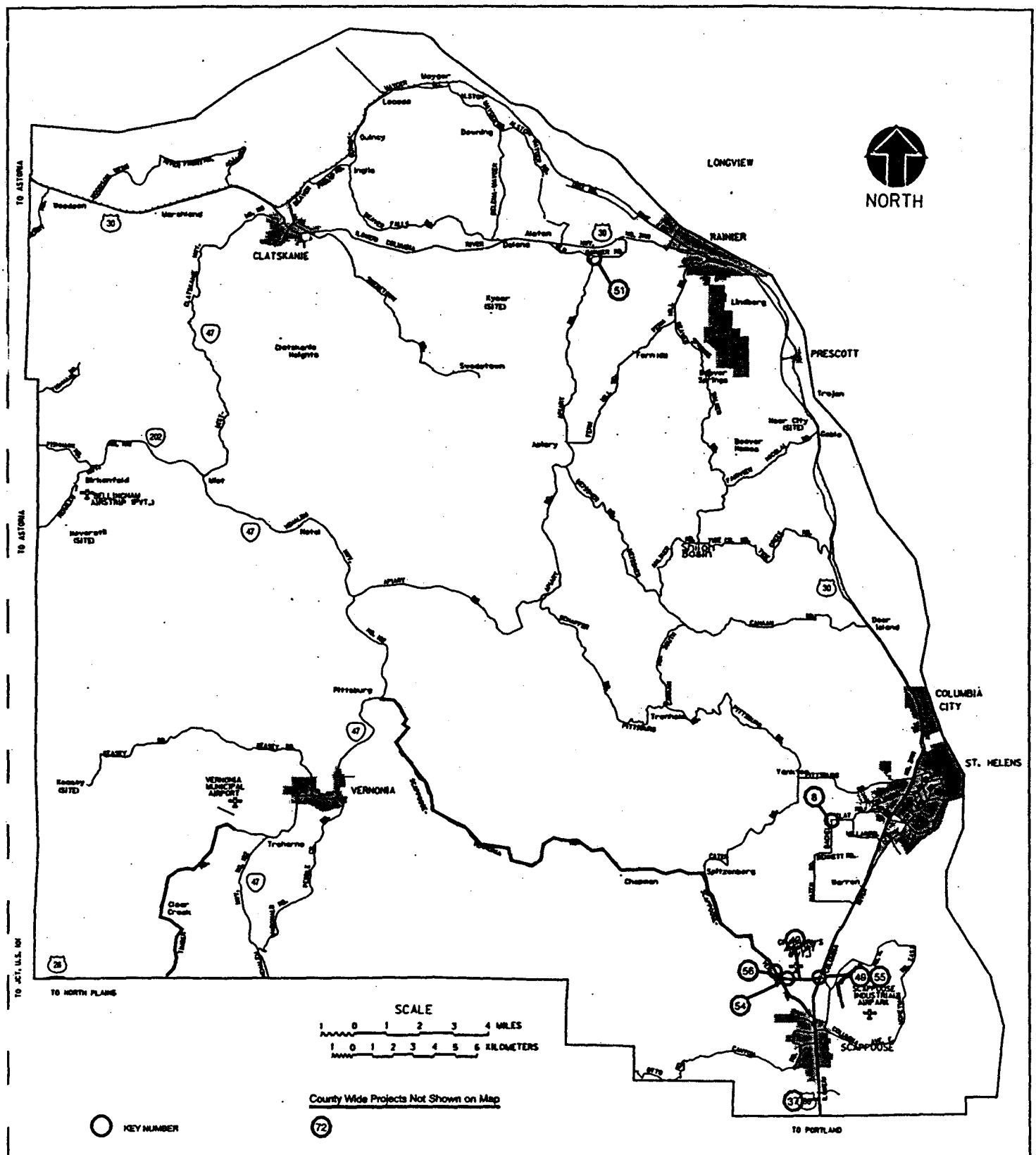

FIGURE 4-3. MEDIUM TERM PROJECTS

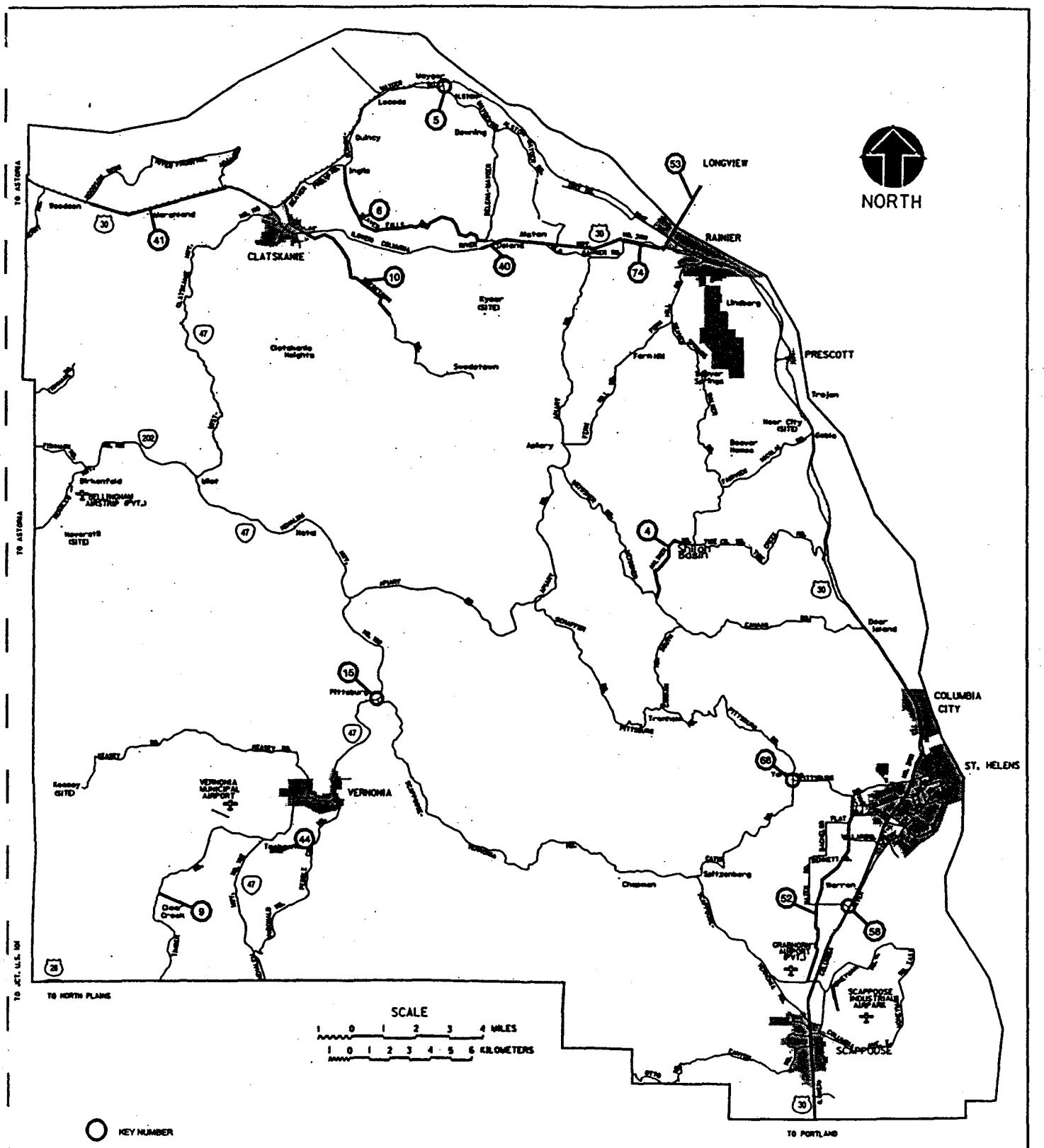

FIGURE 4-4. LONG TERM PROJECTS

In the long term, a park-and-ride lot south of Vernonia will serve commuters into Hillsboro and Beaverton.

Planning for expanded transit service is a routine function of COLCO Transportation. Given the rural nature of the service area, growth in patronage is likely to be a slow and gradual process. Periodic adjustments in service frequency and vehicle assignments can be accomplished in response to increases in patronage. COLCO has also budgeted for vehicle purchases and replacement in 1999 and 2001.

Restoration of fixed-route bus service must await additional funding and an improved ridership outlook. The Transit Feasibility Study for the U.S. 30 Corridor (1996) also considered added bus service between Rainier and Longview, but this service was determined infeasible with the present financial constraints. As County population grows and demand for transit services increases, the County will need to reconsider fixed-route bus service. Dial-a-ride services for the transportation-disadvantaged will be expanded through the efforts of COLCO Transportation.

4.3 Pedestrian and Bicycle Plan

The pedestrian and bicycle plan provides for improved facilities in the Highway 30 corridor and on selected County roads. These improvements include widening shoulders, consistent with the guidance of the 1995 Oregon Bicycle and Pedestrian Plan. The Highway 30 improvements support the Portland to Coast bicycle route designation, by providing connectivity of the route among the County and cities.

In the short term, shoulder improvements will be provided on Old Portland Road south of St. Helens, and on Old Portland Road south of Scappoose. These segments will connect to planned bike route projects in the St. Helens and Scappoose TSPs. Shoulder improvements on Scappoose-Vernonia Road and on Berg, Hazen, Bennett, Sykes, and Bachelor Flat Roads also will be accomplished in the short term. A bike route along Bachelor Flat Road would connect the fairgrounds area to St. Helens. Along Highway 30, conditions for bicycles will be improved with wider shoulders between Deer Island and Rainier, with the option of using the old highway frontage roads.

In the long term, shoulder improvements for bike routes would be provided on the old highway west of Rainier. It will connect between Rainier and the high school and park west of town. As passing lane segments are completed along Highway 30, bike routes will be improved with added shoulder width or use of adjacent old highway frontage roads. Reconstruction of Beaver Falls Road in the long term also would provide a suitable bicycle route, connecting to a planned bike route on 5th Street identified in the Clatskanie TSP. The proposed bicycle plan incorporating these improved facilities is shown in Figure 4-5.

Bicycle route designations will remain on Highway 47 between Mist and Clatskanie, and on Highway 202 between Mist and Jewell. Although shoulders are narrow on these routes, traffic volumes are projected to remain low, and reconstruction would involve high costs and adverse environmental impacts.

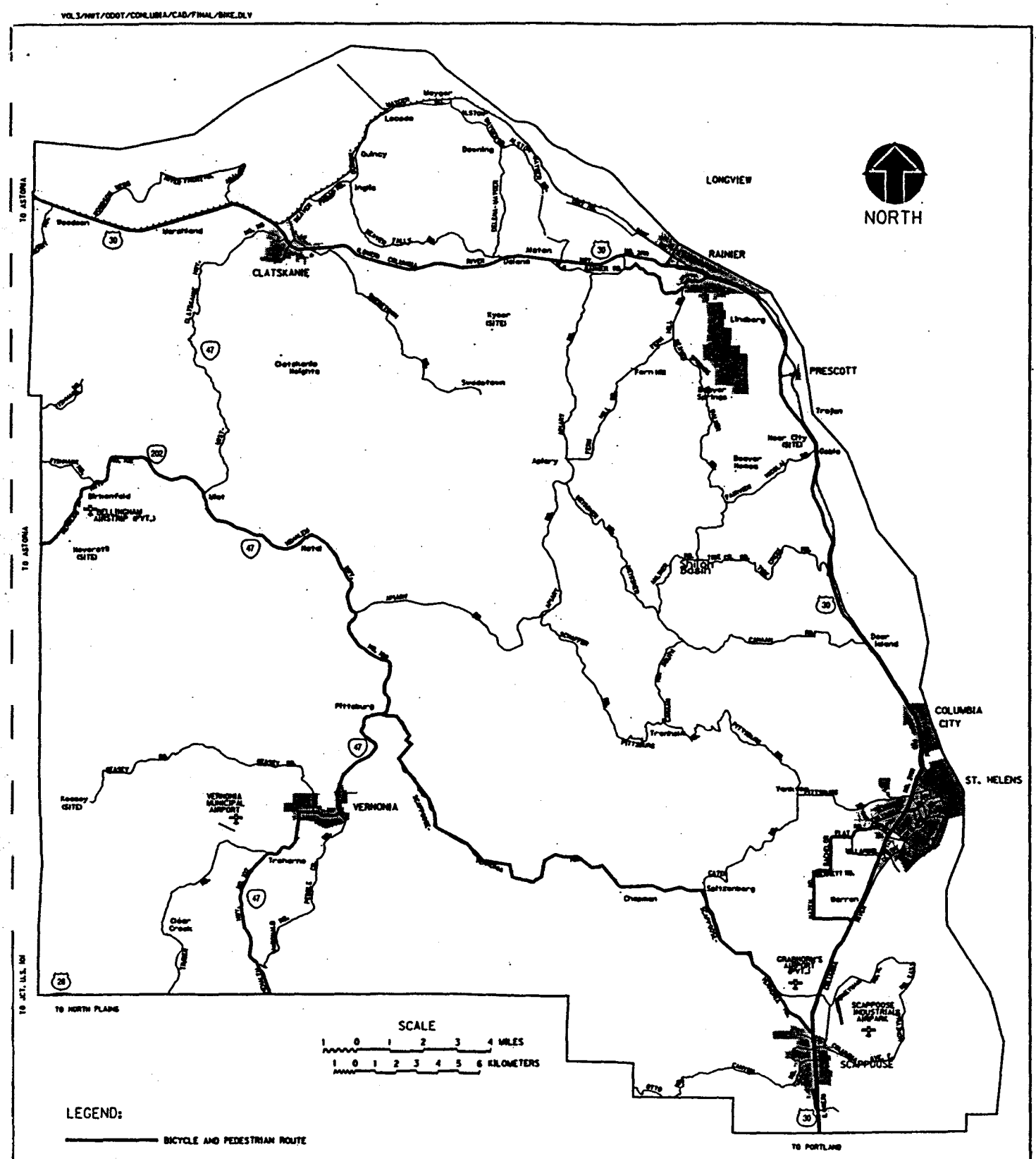

FIGURE 4-5. BICYCLE AND PEDESTRIAN PLAN

4.4 Air/Water/Rail/Pipeline Modes

Development planning for the Scappoose Industrial Airpark is conducted by the Port of St. Helens. An update of the Airport Master Plan was conducted in 1994. It recommends extension of the runway to 5,100 feet, addition of an onsite perimeter road, and expansion of airport boundaries. No schedule for implementation is provided. Implementation is linked to the availability of federal airport funding. A copy of the Airport Layout Plan, showing the existing and future approach slopes, is provided in Appendix E.

The Port of St. Helens is also responsible for marketing and development of port facilities in the County. A 1991 study investigated opportunities for port facilities and related industrial development. There are several active inquiries from firms desiring both water and rail access, but environmental constraints make it unlikely that a major port facility will be attracted to Columbia County.

Proposals to expand airport and port facilities will require the support of County decisionmakers.

Continuation of rail freight service in Columbia County is assured with the recent acquisition of trackage by Willamette and Pacific. ODOT will own the underlying right-of-way should the line be abandoned in the future. Existing operations to Deer Island and Wauna will continue. While rehabilitation of the line beyond Wauna is unlikely, the rail lines within Columbia County represent a benefit for potential industrial sites in Port Westward, Rainier, St. Helens, and Scappose. None of the at-grade railroad crossings in the County warrants grade separation at current levels of railroad activity. Implementation of passenger rail service to Astoria has been determined to be infeasible.

The County is adequately served by pipeline facilities. No needs for expansion have been identified.

4.5 Environmental Constraints

Projects that realign roads, widen shoulders, and improve intersections must consider the environmental impacts of these actions. Many of the projects listed in this chapter will create impacts on adjacent streams or wetland areas. Along Highway 30, wetland areas flank the highway between Deer Island and Rainier, and west of Clatskanie, and impacts can be expected. Cost estimates for these projects anticipate wetland mitigation. Reconstruction in these areas also offers the opportunity for remediation of earlier environmental damage. Similarly, minor alignment shifts may minimize or avoid wetland impacts.

Several streams crossing Highway 30 and other County roads serve as fish habitat for steelhead, coho, and chinook salmon, and cutthroat trout. Reconstruction of roads crossing these streams will be oriented to improving fish passage and water quality.

Important wildlife and botanical habitats also abut Highways 30, 47, 202, and the County road system. Inventories of sensitive environmental resources have been initiated for Highway 30, including a planning-level evaluation of widening opportunities on each side of the existing

roadbed. Detailed environmental analysis of alternatives will be conducted for each project in advance of construction.

Other projects included in the transportation plan will contribute to improved environmental quality. Projects that support increased transit patronage, such as park-and-ride lots and transportation demand management (TDM) programs, will reduce commute travel by automobile. These investments will reduce emissions of air pollutants and energy usage. Though these measures are not likely to produce a 15 percent reduction in vehicle-miles of travel (VMT), as mandated in the large urban areas, they will contribute to a reduced rate of VMT growth.

4.6 Public Involvement

Development of the Columbia County Rural TSP was accompanied by a program of citizen and agency involvement. Early notice of the TSP preparation was announced in September 1996. A Study Advisory Committee (SAC) was formed in December 1996, composed of agency and citizen representatives identified in Appendix G. An agency coordination group also was formed.

Interviews with citizen, agency, and business stakeholders were conducted in the fall of 1996. These interviews provided insight into issues and objectives to be considered in the planning process.

In January 1997, the SAC met to establish objectives for the study and consider the transportation needs assessment. Public input to the needs assessment was obtained at a January 16 open house at Deer Island, with about 35 persons attending. Citizens were notified through print advertising in local newspapers, flyers posted in communities, and a direct mailing to over 10,000 County taxpayers.

A second SAC meeting was held in March to evaluate priorities and review plan alternatives. These products were discussed at a second public open house on April 2, with fewer than 10 persons attending. This meeting was also extensively advertised, with over 2,000 flyers disseminated.

Issues related to the financial plan and implementing mechanisms were reviewed with the SAC in June.

The agency coordination group met twice during the course of the study to consider issues related to the planning and land development processes.

Additional public involvement is anticipated at a Planning Commission workshop in December 1997. Adoption by the Board of Commissioners would occur after December, public comments are considered, and satisfactory responses are incorporated into the plan.

4.7 Periodic Review and Plan Revisions

After adoption of the TSP, periodic review of the plan is needed, so that it will respond flexibility to changing conditions. In particular, changes in the rate of development or in the availability of project funding, would justify review of the TSP and, possibly, revisions to the plan. Any future revisions would be required to provide opportunities for public input and comment.

A report on the status of TSP revisions shall be presented to the County Board of Commissioners annually with formal recommended changes presented bi-annually. A TSP Advisory Committee will be established to assist in the development of the plan revisions.

Department of Land Conservation and Development has recommended that street standards for un-incorporated subdivisions and associated improvements on existing adjacent roads be reviewed for modification.

CHAPTER 5

Financing and Funding

The individual projects identified in the TSP are expected to be implemented over a time frame of 20 or more years, in accordance with the financial resources that are available for capital improvements. This chapter describes existing transportation financing mechanisms and evaluates potential funding sources for capital projects. In this discussion, funding will refer to the various revenue sources available for transportation investment, and financing will describe the mechanisms applied to implement the planned projects.

5.1 Background

Transportation improvements in Oregon are funded by a variety of federal, state, county and city sources, and projects are often financed using a combination of funding sources. Most transportation revenues are derived from the State Highway Fund, which is funded by motor vehicle fuel taxes, vehicle registration fees, and weight-mile taxes on trucks. These revenues are apportioned to State Highway programs (60 percent), counties (24 percent), and cities (16 percent), based on vehicle registrations and population. The gas tax currently stands at 24 cents per gallon, and vehicle registration fee at $15 annually.

Federal funding is administered through the Intermodal Surface Transportation Efficiency Act (ISTEA) with most revenues devoted to the interstate system National Highway System (NHS) projects and bridge rehabilitation. The ISTEA legislation also emphasizes connectedness among modes. ISTEA authorization expires in 1997, but it is likely to be replaced with similar programs at the federal level.

Transportation improvements also can be funded with private funds. Impacts associated with new development often are mitigated by making land developers responsible for road improvements. This process has been formalized in some Oregon jurisdictions through the imposition of system development charges which represent fees dedicated to transportation improvements needed for growth. Private funds also flow to transportation projects with toll facilities in which the investment is recovered by toll revenues over a period of years. This option is under consideration to finance the replacement of the Lewis and Clark Bridge between Rainier and Longview.

Project financing often requires funding from a combination of sources. Federal funding is frequently contingent on the availability of matching funds from state and local sources. In the absence of the matching contribution, the federal funds may be directed to a jurisdiction that can provide the match. This practice is becoming more common in the dispersal of state funds. Federal funding for transit, ports, and airports is subject to similar provisions. Development of a transportation financing strategy is necessary to take full advantage of all funding options. In this sense, priorities also must be flexible in response to the availability of potential funding sources.

Priorities for capital improvement projects also may change over time, in response to varying revenue levels or rates of development. Such changes can be accommodated through periodic review of the TSP and Comprehensive Plan. If revenue shortfalls occur, or the pace of development slows, a revised project listing or implementation schedule can be adopted. The formal process specified in the TPR includes a mandatory update of the TSP at each periodic review.

5.2 Existing Transportation Funding Profile

Columbia County currently devotes about $4 million annually to transportation investment. A summary of revenues and expenditures in recent years is presented in Table 5-1. Disbursements from the State Highway Fund account for about 66 percent of all transportation revenues. The County's road levy provides about 13 percent of revenue, and federal funds about 11 percent. Aggregate mining fees represent about 8 percent of transportation revenues.

The County's program of system development charges was discontinued in 1994 in a ballot measure. Timber revenues have virtually disappeared as a source of transportation revenue. Revenues from the Federal Emergency Management Administration and Federal Highway Administration to cover disaster repairs after the 1996 flood are not reflected in Table 5-1.

Nearly all the transportation funds of the County are expended on maintenance operations, with fewer than 10 percent allocated to capital improvements. Some of the capital expenditures also represent maintenance activities, so that actual capital funds available for improvement projects are probably less than $200,000 annually.

5.3 Future Funding Outlook

Few changes are projected in transportation revenues in the near term. Gas tax revenues are estimated to grow at 5 to 7 percent annually before the year 2000 but decline to less than 4 percent annually beyond 2005. Revenue growth will be affected by improvements in vehicle fuel economy and mandates to reduce vehicle-miles of travel statewide. The ODOT revenue projections assume that increases in the gas tax will average about 1 cent per gallon each year.

At the current revenue levels, it could be expected that expenditures by the County Road Department will consist primarily of maintenance activities. There are considerable unmet maintenance needs on local roads which will result in expanded maintenance expenditures as the infrastructure ages. All projects on Table 4-1 represent capital expenditures for which few revenues are currently available. They will need to be funded through new revenues.

Gas tax increases provide additional funding for both maintenance and capital improvements. In the 1996 legislative proposal to increase the gas tax and impose additional fees, Columbia County would have realized revenue increases of $235,000 annually in 1998, escalating to nearly $1.3 million annually by 2002. Of this increase, the amounts allocated for system modernization would range from $164,000 annually in 1998 to $550,000 annually in 2002. Although the gas tax proposals before the 1997 legislature failed to pass, it can be expected that similar measures will be considered by lawmakers in the future.

TABLE 5-1

Transportation-Related Revenues and Expenditures in Columbia County[1]

Revenue Expenditure Program	1996-1997	1997-1998	Typical Future Year
Operating Capital (carryover)	307,000	500,000	500,000
TOTAL REVENUES	3,349,000	3,379,000	3,440,000
Federal Funds	372,000	372,000	328,000
- U.S. Land Sales	2,000	2,000	3,000
- HBRR Reimbursement	200,000	200,000	150,000
- ODOT Fund Exchange	170,000	170,000	175,000
State Highway Fund	2,197,000	2,289,000	2,400,000
Fees and Assessments	799,000	886,000	880,000
- Aggregate Mining Fees	300,000	414,000	414,000
- Permits	17,000	17,000	17,000
- System Development Charges	0	0	0
- Timber Revenue	0	24,000	24,000
- Other Fees, Sales, & Reimbursements	20,000	25,000	25,000
- Road Levy	462,000	406,000	400,000
Transfers From General Fund	-29,000	-180,000	-180,000
Interest	10,000	10,000	12,000
Miscellaneous Income	0	0	0
TOTAL EXPENDITURES	3,934,000	3,930,000	4,031,000
Personal Services	1,400,000	1,400,000	1,500,000
Materials and Services	1,400,000	1,373,000	1,500,000
Capital Improvements	523,000	1,231,000	631,000
- Road Repairs	462,000	525,000	450,000
- S.D.C. Improvements	0	75,000[2]	0
- Equipment	61,000	181,000	181,000
Road Fund Contingency	407,000	376,000	400,000
Debt Service	102,000	0	0

[1] Figures may not balance due to uncertainties in carryover operating capital

[2] From previous SDC program

5.4 Potential Transportation Revenue Sources

Clearly, implementation of a capital program exceeding $40 million cannot be accomplished on a "pay as you go" basis within the existing revenue stream, even if periodic gas tax increases are approved. In addition, federal funding is not likely to increase, given the pressures to balance the federal budget. Over the 20-year planning period, existing resources could be expected to contribute about $4 million in revenue to the capital improvement program. A gas tax increase similar to the 1996 legislative proposal would produce about $10 million (modernization only) over the 20-year period. If three such measures were adopted over 20 years, consistent with the ODOT revenue projections, total revenues available for capital

expenditures would range between $20 and $30 million, leaving a potential shortfall of $10 to $20 million.

A number of funding programs are available to generate revenue for transportation investment. These various programs are described briefly below for their possible application in Columbia County.

5.4.1 System Development Charges (SDCs)

SDCs are fees imposed on new development to pay for transportation improvements necessitated as a result of the development. The fee is typically based on the number of vehicle trips generated by the development. Columbia County's earlier SDC program, now rescinded, based charges on countywide averages and generic cost estimates. With the completion of the rural TSP, project-specific costs and trip patterns are available.

Sample SDC fees were estimated at a planning level of detail to provide an example of their application. Growth impacts were examined in each of five SDC districts as shown on Figure 5-1, and allocated to projected future residential development. Costs eligible for funding under the SDC were factored by the contribution of new trips in each district as shown on Table 5-2. Credits for gas tax and property tax payments by these future households also were estimated at $350 and $300, respectively. These credits avoid potential double taxation of new development by taking these future payments into account. It was determined that SDC fees would range from $700 to $1,510 for each single-family dwelling unit based on 10 daily trips per household. With these adjustments, total revenue from the SDC fees would be approximately $8 million over the 20-year period, representing about 13 percent of future needs.

TABLE 5-2

Sample Rate Calculation for SDC Program

SDC District	New Daily Trips	Eligible Costs	Fraction Attributable to New Development	SDC Costs	Charge per Daily Trip
1	19,482	$7,365,400	57.4%	$4,227,600	$217
2	22,115	12,935,500	37.1	4,800,000	217
3	6,408	4,074,000	32.4	1,319,900	206
4	4,661	2,663,000	23.8	633,800	136
5	4,675	1,745,100	42.2	736,400	157

be generated for each 1 cent per gallon of tax imposed in the County. Thus, about $5.4 million in revenue would be produced over the 20-year period. Typically, this revenue would be shared by the cities, so the amount derived by the County could be less.

The local gas t Many jurisdictions in western Oregon have adopted SDC programs. They represent an equitable allocation of costs to new development, and revenues are linked to development activity. By implementing an SDC program, a fair-share portion of costs will be borne by those producing the added travel impacts. The Study Advisory Committee recommended that the County pursue the SDC program.

5.4.2 Local Gas Tax

Cities and counties are authorized to impose a local gas tax to fund transportation improvements. Multnomah County collects 3 cents per gallon and Washington County 1 cent per gallon in local gas taxes. In the TSP for Scappoose, it was estimated that $270,000 in annual revenue would ax is subject to voter approval and could be expected to meet with resistance. Adoption of a local gas tax also could reduce acceptance of statewide increases and vice versa. The Study Advisory Committee has rejected a County gas tax measure at the current time.

5.4.3 Local Registration Fee

Counties can implement vehicle registration fees in addition to the state fee. The Scappoose TSP estimated that $165,000 in annual revenue would be derived for each $10 increase in registration fees within the County. This translates to about $3.3 million over 20 years, again to be shared with cities.

5.4.4 Fees and Exactions

Fees charged to aggregate mining operations are applied to county road costs. Similar fees could be applied to the timber industry, with the proceeds dedicated to modernization of County arterial roads.

Exactions generally consist of frontage improvements that are passed on to developers. Developers are responsible for constructing or improving roads adjacent to their project. These costs can be credited against SDC fees.

5.4.5 Local Improvement District (LID)

Through a local improvement district, property owners adjacent to a roadway can vote to be assessed a fee to finance road improvements. The LID method is used primarily for local and collector street improvements, and it can be combined with agency funding. A common provision in development agreements provides for a waiver of remonstrance by the applicant to formation of an LID. LID fees are paid through property tax bills.

5.4.6 Road Levy Increase

The amount of the existing road levy could be increased with the approval of voters. Such actions are limited by the provisions of statewide tax limitation measures. If approved, a 10 percent increase in the road levy would generate about $1 million over the 20-year period.

5.4.7 General Obligation Bonds

Bonds are sold by a municipal or county government to fund transportation improvements (or other types of improvements) and are repaid by property tax revenues. Voters must approve the bond sales, and bonds are subject to self-imposed debt guidelines that vary among jurisdictions. Bonding for transportation improvements also must compete with bonds used for other public purposes.

5.4.8 Federal Programs

Projects along the National Highway System are eligible for federal contributions, and bridge replacements are typically 80 percent funded by federal sources. Highway 30 is on the National Highway System, and is also designated a National Scenic Byway. Some passing lane and intersection improvement costs will be eligible for federal funding under these programs.

There are also numerous funding sources that are dedicated to economic development (Oregon Special Public Works Fund) or to mode-specific improvements (Oregon Bicycle and Pedestrian Program).

5.5 Funding Program

Capital improvements to the transportation infrastructure will need to be accomplished at a pace consistent with available revenues. The highest priority short-term projects can be implemented using a combination of existing resources and adoption of an SDC program. In the absence of an agreement on a statewide gas tax increase, local gas tax and various fee options should be explored.

Some projects may be deferred beyond the 20-year time frame, particularly if legislative or voter approval of new funding measures is not forthcoming. Projects that would reconstruct existing roads to current design standards could be delayed, as tabulated on Table 4-1. In lieu of major improvements, more frequent pavement overlays could be provided to extend the life of existing roads.

It should be noted that there are extensive improvement needs on county roads within cities and on roads that will be annexed into the cities in the future. Typically, cities insist that these roads be upgraded in advance of annexation. The City of Scappoose alone has estimated about $26 million in such needs. The City of St. Helens also has identified extensive needs for County road improvements in its TSP. Given the severe revenue shortfalls projected for all jurisdictions, a mechanism will be required to cooperate in the funding of these needs.

The Road Department should prepare a three year Transportation and Road Improvement Program prior to adoption of the budget each year. This would be reviewed and approval by the Board of County Commissioners and would identify projects that are to be funded during that time period. Additional projects should be listed and prioritized for funding for the following five years, but not necessarily scheduled for development because priorities will change with time. By developing a three year plan that is reviewed annually, the Road Department will be able to commit time and resources to preparing necessary plans obtaining permits, and coordinating with other agencies for completion of the scheduled projects. The review and approval of the three year Transportation and Road Improvement Program should not be included as a periodic review of the Transportation System Plan, but should be reviewed and approved as an entirely separate process.

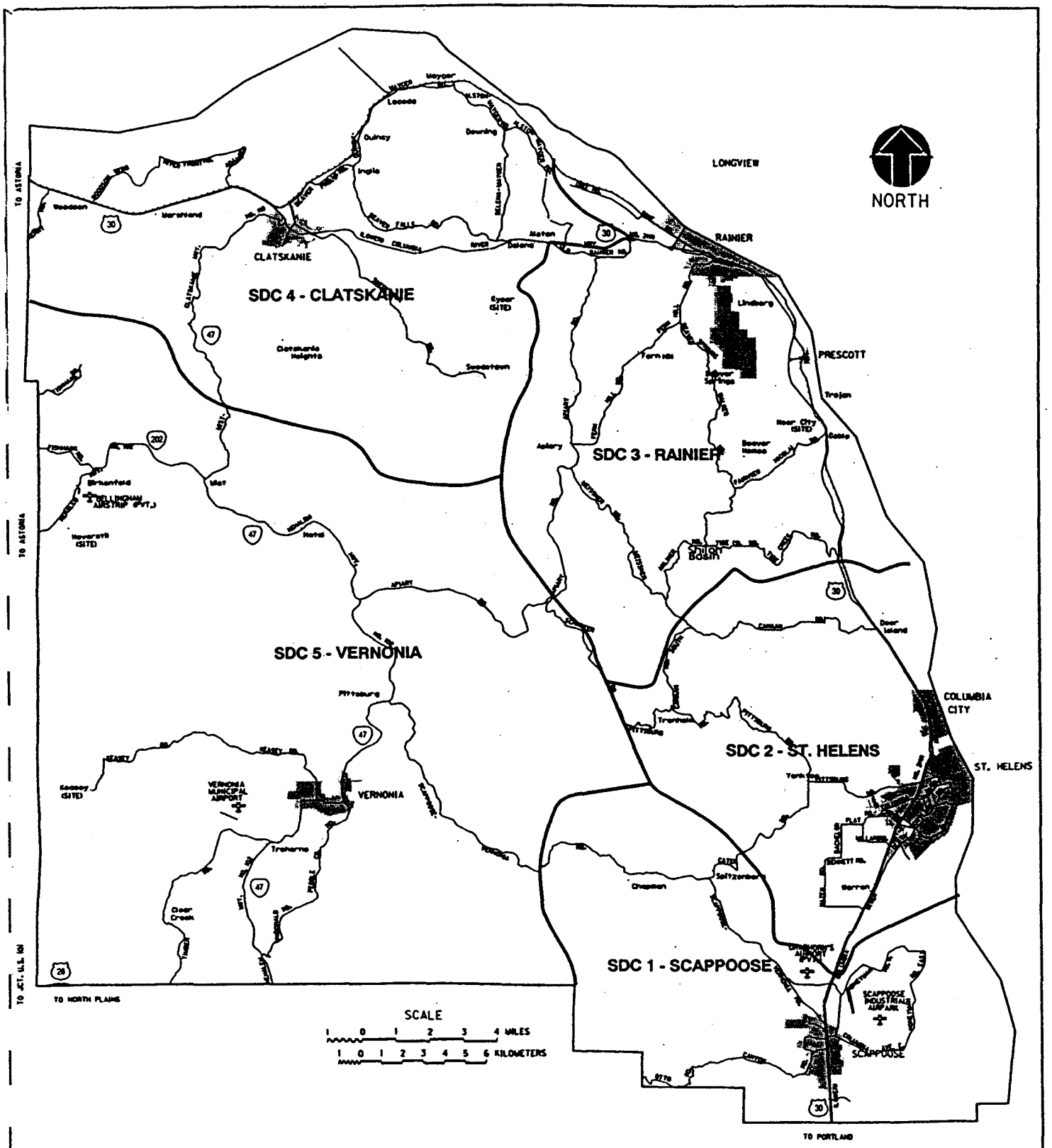

FIGURE 5-1. STUDY AREA WITH SYSTEM DEVELOPMENT CHARGE (SDC) DISTRICT BOUNDARIES

CHAPTER 6

Implementing Mechanisms

6.1 Introduction

Implementation of improved transportation facilities and services is accomplished within the framework of the County's transportation goals and policies, and the series of ordinances that control land use, zoning, road design and property subdivision. The Transportation Planning Rule requires that jurisdictions in the State of Oregon adopt an approved transportation plan and accompanying amendments to its land use regulations in order that the transportation plan be properly implemented.

This chapter outlines the proposed modifications to transportation policies and land use regulations needed to bring the County into compliance with the Transportation Planning Rule. The County's transportation policies are incorporated in the Columbia County Comprehensive Plan, and land use and design regulations are embodied in the Columbia County Road Standards (1996), Zoning Ordinance (1984), and its amendments through July, 1997, and the Subdivision and Partitioning Ordinance (1990).

Ordinance regulations are required to address the following implementation issues:

- Access control measures to protect the function of transportation corridors (Section 660-12-045(2))
- Process for coordinated development review and providing public notice to review agencies (Section 660-12-045(2)(d))
- Measures to protect airports from land use and navigation intrusions (Chapter 285, 1995)
- Land use regulations to provide for safe and convenient non-motorized movement (Section 660-12-045(3)), and to encourage travel by alternative modes.

For several of these topics, policies and guidelines are already in place, but will require additional ordinance language. In other cases, new ordinances may be required. The following sections address the specific requirements relating to implementation of the TSP.

6.2 Access Control and Corridor Preservation

Policy 4 in the Transportation Element of the Comprehensive Plan commits the County to work with the State to limit the number of access points onto arterial roads, including the state highways within the County. This policy should be revised to delete the reference to the State Highway Department, and correct it to read Oregon Department of Transportation. This policy also should incorporate a reference to ODOT's Access Management Manual and its periodic updates, which applies only to state highways.

Provisions for access management on County roads are discussed in Chapter III of the County Road Standards. These standards address driveway sight distance, grades, and distances from intersections. Updated in 1996, the road standards address a comprehensive range of conditions that are encountered in the rural areas, including driveway standards, fire service access, and private roads. The provisions of the County Road Standards are not consistent with the County Zoning Ordinance on these topics. During the course of the TSP preparation, several new elements were identified for incorporation in the Road Standards:

- Access points for parking or loading areas should be designed so that backing maneuvers from or onto public streets will not occur, with an exception for single-family residential uses on non-arterial roads.
- Access points for commercial or industrial uses should be placed directly opposite existing roads or driveways whenever possible, or incorporate an offset of at least 200 feet.
- The standards should provide for a desirable spacing between intersections and driveways of 150 feet on arterial roads, with the option to limit turning movements into or out of high-volume driveways to facilitate safe and efficient traffic flow.
- Use of frontage roads will be a consideration along State routes for providing access management consistent with state corridor plans and the State Transportation Plan.

The County standards address joint use of driveways where frontages are narrow as a means of controlling driveway spacing. Permit fees are charged for driveway connections. No other additional provisions are contemplated for the Design Standards.

6.3 Development Review and Responsibilities for Road Improvements

Columbia County's Department of Land Development Services operates the development review functions of the County. Public and agency notification are included in the County's process. Conditions of development are routinely imposed to minimize impacts and protect transportation corridors.

Typical development conditions require developers to provide "half-street" improvements to the road fronting the project. In most instances, these improvements can be accomplished within existing street rights-of-way. Dedication of additional right-of-way or new right-of-way can be required. Improvements also can be required beyond the immediate property frontage if significant off-site impacts are expected.

Proposals to relax the requirements for half-street improvements could prove deleterious to the development of a safe and efficient street system. The cost of such actions ultimately will be borne by the County in the future when unimproved roads must be upgraded to the full design standards. It should be noted that such costs are not anticipated in the proposed System Development Charge program, which includes developer participation for identified transportation system facilities. In the recommended plan, the SDC program would contribute to funding of Countywide transportation system improvements, and land developers would continue to be responsible for frontage improvements at the time of development.

In some cases, half-street improvements may be undesirable, because they conflict with future plans to rehabilitate pavements, adjust grades, or realign intersections. In these instances, it would be useful to provide developers an option for full street improvements along a portion of the frontage. These improvements could occur independently or simultaneously with County participation in the related project.

The County also may wish to consider implementing a process for traffic impact review and site access analysis. Guidelines would be established that trigger this process and define the study methodology. In many such ordinances, traffic impact analysis is required when a specified threshold of tripmaking is met, or when the number of trips at the nearest intersection exceeds a preselected level. Typical thresholds for such studies range from 10 to 50 new trips in the peak hour, corresponding to 100 to 500 daily trips for residential land uses. Selection of a threshold of 40 new trips would represent the approximate impact of 40 single-family dwelling units, or of a typical 5000 square-foot convenience store.

Above this threshold, the developer would be required to submit a site-specific traffic study, using assumptions established through coordination with County staff. ODOT staff would be involved if the project involves impacts on State highways. The analysis area for such a study should extend to the nearest collector or arterial road. Many analytic procedures used in traffic studies have been developed by the Institute of Transportation Engineers, including methods to estimate trip generation, trip distribution, and traffic assignment. The ITE guidance also covers assessment of captured or diverted traffic, an important effect for retail commercial development. For capacity analysis, the methods of the 1985 Highway Capacity Manual should be followed.

This process also could be adapted to strengthen the dedication requirements for local streets and discourage the use of private streets. Most smaller developments and subdivisions in the County do not involve traffic capacity issues, but frequently raise issues related to site access, safety, right-of-way dedication, and connectivity to adjacent roads. These issues are further aggravated when projects are developed in phases or in serial development, and the final configuration of the local road network is not defined. In these instances, a requirement to prepare a site access analysis would serve to identify safety improvements (including fire access), and to establish interim and future dedication agreements.

The traffic impact assessment process provides a vehicle to develop and assess measure to mitigate traffic capacity or safety impacts. Larger projects with significant traffic impacts could be analyzed in detail with respect to required mitigation measures, right-of-way dedication, and internal circulation. Smaller projects would continue to be permitted outright or subject to the subdivision regulations.

Another common provision in traffic impact ordinances is that the study be prepared under the supervision of a registered traffic engineer. It should also be noted that additional County staff time will be involved in the review and coordination of traffic impact studies.

A new ordinance will be required for enactment of an SDC program if it is approved. A district-based SDC program should eliminate the objections associated with the earlier experience. The SDC offers a mechanism that allows new development to contribute equitably to the infrastructure investment in the County.

6.4 Airport Protection

County policy 8 provides for zoning overlays in the vicinity of the two public airports. The layout plans specify the locations of imaginary surfaces, height restrictions, and adjacent land uses. No additional ordinance language is determined necessary.

6.5 Non-Motorized Circulation and Alternative Modes

Policies 11 and 12 of the County Comprehensive Plan address support for public transit and services for the transportation-disadvantaged. Policy 10 authorizes the County to participate in the development of alternative modes of transportation.

Adoption of the bicycle/pedestrian plan will provide for facilities that connect among the various cities, both for commuting and recreational purposes. The County's zoning ordinance should be revised to require bicycle parking for multifamily residential development of more than four units.

Increased participation by the County in TDM programs may best be accomplished through intergovernmental agreements with Tri-Met or other Portland/Hillsboro/Beaverton/ Multnomah County/Washington County agencies. Initially, these agreements would cover participation in carpool matching programs and vanpool services. If large employers are attracted to the County, TDM ordinances could be developed that would require employers to subsidize transit passes, form vanpools, or provide incentives for carpooling.

The County's housing policies support infill development in the rural residential zones and rural centers. Clustering of dwellings also is allowed through the use of Planned Unit Development Districts. These techniques may find limited general application in rural settings. Park-and-ride facilities, and carpool/vanpool programs represents an appropriate strategy for reduced reliance on the private automobile.

6.6 Summary of Implementing Actions

The Transportation System Plan embodies the physical plan of identified projects, together with a consistent set of policies and ordinances to guide transportation development in rural Columbia County. The review of policies and implementing ordinances identified needs for amendments and revisions in these areas. In some cases, changes can be implemented with adoption of the TSP, as with policy language or additional design standards. In other cases, such as an SDC program, implementation must await a program design and approval.

Recommendations for policy and ordinance revisions discussed in this chapter and summarized briefly below:

- Revise Policy 4 of the Comprehensive Plan to refer to Oregon Department of Transportation and its Access Management Manual, as applicable to State highways.
- Incorporate additional access control measures for County roads in the County Design Standards.
- Provide an option in the Subdivision Ordinance and Design Standards for full-street improvements along a portion of the parcel frontage.
- Develop guidelines for a traffic impact assessment process for large projects in rural areas, for incorporation in the Zoning Ordinance.
- Develop a program design and fee schedule for System Development charges applied to new development in rural County areas not subject to annexation by adjacent cities.
- Amend Policy 8 to address land use compatibility at smaller airports to be identified by ODOT in 1998.
- Revise Policy 10 of the Comprehensive Plan to address safe and convenient pedestrian and bicycle circulation.
- Revise the Zoning Ordinance to require bicycle parking for multifamily residential development of more than four units.
- Pursue intergovernmental agreements to initiate rideshare and vanpool services for commute markets.

CHAPTER 7

Findings of TSP Adequacy

The Transportation Planning Rule (TPR) provides the legal context for the various requirements and recommendations to be addressed in the preparation of a TSP. Outlined below is a checklist of TSP elements with a summary of the analyses and standards applied in the development of the Columbia County Rural TSP.

Development of a Transportation System Plan

TPR Elements	Columbia County TSP Compliance
Public and Agency Involvement	
Establish advisory committees.	A study advisory committee was established and met three times during the course of the study. It included representatives from cities, county staff, ODOT, and the general public.
Develop informational material.	Information concerning existing and future needs was disseminated during the public involvement program. Summaries of technical and financial analyses were made available to SAC and agency representatives.
Schedule informational meetings, review meetings, and public hearings throughout the planning process. Involve the community.	Two public open houses were scheduled during the study process. They were advertised in the press and bulletin boards. SAC meetings were advertised and open to the public.
Coordinate plan with other agencies	Two agency coordination meetings were held during development of the TSP, providing opportunities to exchange information among adjacent jurisdictions.
Review Existing Plans, Policies, Standards and Laws	
Review and evaluate existing comprehensive plan.	Statewide transportation and modal plans and City and County comprehensive plans are address in Chapters 1 and 2 and Appendix A.
Land use analysis—existing land use, vacant lands inventory.	Forecasts of population and employment were used in the development of travel forecasts.
Review existing ordinances—zoning, subdivision, and engineering standards.	Existing County zoning and subdivision ordinances and County design standards were reviewed.
Review existing significant transportation studies.	Transportation plans from cities within the County were reviewed together with studies for public transit and rail preservation.
Review existing capital improvements programs/public facilities plans.	STIP and city plans were reviewed.
Americans with Disabilities Act requirements.	TSP addresses services and needs for transportation—disadvantaged.

Development of a Transportation System Plan

TPR Elements	Columbia County TSP Compliance
Inventory Existing Transportation System	
Streets	The transportation inventory in Chapter 2 includes number of lanes, traffic volumes, traffic control devices, and functional class. Database in Appendix B addresses additional details.
Bicycle ways	Existing bicycle facilities are addressed Chapter 2.
Pedestrian ways	Existing pedestrian facilities are addressed in Chapter 2.
Public transportation services	Existing fixed-route and dial-a-ride services are discussed in Chapter 2.
Intermodal and private connections	None existing in rural Columbia County.
Air transportation	Two public airports discussed in Chapter 2.
Freight rail transportation	A summary of existing freight rail facilities is provided in Chapter 2.
Water transportation	A summary of existing water transportation services is provided in Chapter 2.
Pipeline transportation	A summary of pipeline transportation facilities is provided in Chapter 2.
Environmental constraints	Constraints to transportation system development are reviewed in Chapter 4.
Existing population and employment	Existing population, employment, and land use are addressed in Chapter 2.
Determine Transportation Needs	
Forecast population and employment	Cities and County cooperated in development of population and employment allocations, described in Chapter 3.
Determination of transportation capacity needs	Future travel demands were determined using Countywide model, and operational analyses prepared, as discussed in Chapter 3.
Other roadway needs	Existing and future needs related to substandard design, safety, and maintenance are summarized in Chapter 2 (Table 2-3) and Chapter 3 (Table 3-1).
Freight transportation needs	Projects proposed in the TSP and listed on Table 4-1 will provide for adequate freight movement through provisions for passing lanes, upgrading of arterial and collector system, and shoulder improvements for safety.
Public transportation needs	TSP acknowledges ongoing expansions of van and bus fleets and expansion of dial-a-ride and fixed-route services and demand justifies.
Bikeway needs	The addition of shoulders is proposed for many rural arterials and collectors in the TSP to serve cycling needs. Many will connect directly to bike routes within cities.

Development of a Transportation System Plan

TPR Elements	Columbia County TSP Compliance
Pedestrian needs	Most County roads lack adequate shoulders. In the Draft TSP, many roads will be upgraded to provide shoulders, particularly adjacent to urban areas.
Develop and Evaluate Alternatives	
Update community goals and objectives	The County Comprehensive Plan notes that population growth will be focused in the cities. In the rural areas, lower densities are to be maintained.
Develop evaluation criteria	Alternatives were evaluated with respect to safety, mobility, needs of non-motorized modes, and supportiveness to transit.
Develop and evaluate alternatives	Build and no-build alternatives were developed to examine the impact of a westside arterial route in the Warren area. Analysis of alternatives included establishment of priorities among numerous candidate projects.
Select recommended alternative	The selected alternative includes development of a westside arterial route, and upgrading of many County roads to current design standards. Facilities to serve biking and walking are included, and other projects are intended to support expanded transit use.
Produce a Transportation System Plan	
Transportation goals, objectives, and policies	Recommended revisions to policy statements are discussed in Chapter 6.
Street plan element	The County road plan is outlined in Chapter 4, and recommended functional classification plan is shown on Figure 4-1.
Public transportation element	A transit plan, incorporating park-and-ride lots and a TDM element, is outlined in Chapter 4.
Bikeway system element	The bikeway plan for rural areas is outlined in Chapter 4 and shown on Figure 4-5.
Pedestrian system element	The pedestrian plan for rural areas is outlined in Chapter 4 and shown on Figure 4-5.
Airport element	The airport element is presented in Chapter 4.
Freight rail element	The freight rail element is discussed in Chapter 4.
Water transportation element	The water transportation element is discussed in Chapter 4.
Implementation of the Transportation System Plan	
Consistent with ODOT and other applicable plans	TSP currently under review by ODOT, DLCD, and local agencies.
Schedule for adoption	A final TSP will be adopted following a public hearing before the Planning Commission, by ordinance of the Board of Commissioners.
Ordinance revisions	Proposed revisions to Comprehensive Plan policies, design standards, and subdivision ordinance are discussed in Chapter 6.

Development of a Transportation System Plan

TPR Elements	Columbia County TSP Compliance
Transportation financing/capital improvements program	The transportation finance plan is summarized in Chapter 5 of the TSP.

APPENDIX A

Summary of Plans and Policies

Background Information Summaries

Introduction:

One of the first tasks in the development of the Columbia County Transportation System Plan (TSP), was to collect, review, and evaluate existing documentation that would assist in the development of the TSP. This report summarizes the documents reviewed for the development of this background information, and describes any relevant information pertaining directly to Rural Columbia County. The documents are organized into the following categories: State Documents, County Documents, and City Documents.

It is important to note that the documents summarized in this Technical Memo have been prepared over a time frame that stretches from 1975 (City of Columbia City Comprehensive Plan) to 1996 (City of Scappoose Draft Transportation System Plan). Because of the varying publication dates, some parts of newer plans may be in conflict with statements or portions of the older documents. Where these conflicts have been identified, they will be called out in the text of this memo.

State Documents:

Oregon Transportation Plan (September 1992)

The Oregon Transportation Plan (OTP) is a policy document developed by the Oregon Department of Transportation (ODOT) in response to the federal and state mandates calling for systematic planning for the future of Oregon's transportation system. It serves as a take-off point for all general, corridor-specific, and local transportation policy and system planning projects in Oregon.

The OTP defined four goals:

- System characteristics including balance, efficiency, accessibility, environmental responsibility, connectivity among places and modes, safety and financial stability.
- Livability. To develop a multimodal transportation plan that provides access to the entire state, supports acknowledged comprehensive land use plans, is sensitive to regional differences, and supports livability in urban areas.
- Economic development through expansion and diversity.
- Implementation through flexible and stable financing, good management practices, and cooperation with public and private sector organizations and interests.

The OTP Steering Committee selected one of several alternatives considered in the OTP, as the Preferred Plan for adoption: The Livability Approach. This alternative includes many general goals for the entire state transportation system and several elements specific to Columbia County:

- Commuter Transit Service between Portland and St. Helens, with service through Scappoose, by the year 2012.

- Improved intercity bus or commuter bus service along U.S. Highway 30.
- Columbia River Channel Improvements from Astoria to Portland, providing increased freight movement through intermodal facilities, including The Port of St. Helens.

Oregon Highway Plan (June 1991)

The Oregon Highway Plan (OHP) represents one modal element of the overall transportation planning effort. As a modal plan, the OHP will feed into the OTP by carrying Oregon Transportation Commission directions and policies relating to highways. Goals for modernization, preservation, maintenance, operations and safety were developed for state highways. This primary document called for the development of corridor plans such as the Portland-Astoria (U.S. Highway 30) corridor plan.

The OHP includes a Level of Importance Policy. This policy classifies the state highway system into four levels of importance (LOI): Interstate, Statewide, Regional, and District. The policy provides overall direction for managing the system and provides a basis for developing funding strategies for improvements. Each LOI is described in terms of its primary and secondary functions, key characteristics, and objectives for managing the operations of that class of highway. U.S. Highway 30 is classified as having "Statewide" Level of Importance. Thus, the management objective is to provide for safe and efficient high-speed continuous-flow operation in rural areas with a minimum Level of Service "C", and high to moderate-speed operations with limited interruptions of flow in urban and urbanizing areas with a minimum Level of Service "D". State Routes 47 and 202 are both classified as having "District" Level of Importance. This identifies the management objectives as providing safe and efficient moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and with a minimum Level of Service "D", and moderate to low-speed operations with moderate to high levels of interruptions to flow in urban and urbanizing areas with a minimum Level of Service "E".

The OHP also contains an Access Management Policy. The policy provides a framework for making access decisions which will be consistent with the function and operation levels of service identified in the Level of Importance policy. Interchange control and spacing, at-grade intersection control and spacing, traffic signal spacing, and median control guidelines are provided for six highway categories. The categories span from a freeway with full access control to a partially controlled roadway with signals at one-quarter mile spacing. Three of the categories cover roadways with a "Statewide" or "District" Level of Importance in a rural setting. Access management guidelines applicable to Columbia County are shown in the table located on the next page.

Within the OHP are descriptions of three planning alternatives in order to provide funding for the recommended highway improvements. Of the three alternatives, the second, "Plan 2", is the recommended alternative. This plan includes a 2 cents per year gas tax increase and a equivalent weight distance fee, plus a 5 dollar increase every five years in vehicle registration fees. This plan allows for the increase in revenues required to meet many of the minimum goals set by Access Oregon Highways and the Oregon State Highway Department.

A discussion of the Truck Load Restriction Policy is also given within the OHP. This policy states that the goal is to have 96 percent of the state highway system capable of

withstanding continuous heavy loads by 2010. Most of the 4 percent that will not be capable of withstanding truck loads typically do not carry significant heavy truck traffic. A small portion of this 4 percent falls within Columbia County. The portion that does fall within Columbia County is along Oregon Highway 47 from Mist to Clatskanie.

Access Management Guidelines Applicable to Columbia County

Category	Applicable Highways within Study Area	Access Treatment	Urban/ Rural	LOI	Public Road Intersection Type	Public Road Intersection Spacing	Private Drive Intersection Type	Private Drive Intersection Spacing	Signal Spacing	Median Control
1	None	Full Control (Freeway)	Both	Interstate/ Statewide	Interchange	2-8 Mi.	None	NA	None	Full
2	None	Full Control (Expressway)	Both	Statewide	At grade/ Interchange	1/2-5 Mi.	None	NA	Urban/ Rural Dependent	Full
3	Hwy. 30	Limited Control (Expressway)	Urban	Statewide	At grade/ Interchange	1/2-1 Mi.	Rt. Turns	800'	1/2-1 Mi.	Partial
3	Hwy. 30	Limited Control (Expressway)	Rural	Statewide	At grade/ Interchange	1-3 Mi.	Rt. Turns	1200'	None	Partial
4	Hwy. 30	Limited Control	Urban	Statewide	At grade/ Interchange	1/4 Mi.	Lt./Rt. Turns	500'	1/2 Mi.	Partial/ None
4	Hwy. 30	Limited Control	Rural	Statewide	At grade/ Interchange	1 Mi.	Lt./Rt. Turns	1200'	None	Partial/ None
5	Hwy. 47 Hwy. 202	Partial Control	Urban	District	At grade	1/4 Mi.	Lt./Rt. Turns	300'	1/4 Mi.	None
5	Hwy. 47 Hwy. 202	Partial Control	Rural	District	At grade	1/2 Mi.	Lt./Rt. Turns	500'	1/2 Mi.	None
6	Hwy. 47 Hwy. 202	Partial Control	Urban	District	At grade	500'	Lt./Rt. Turns	150'	1/4 Mi.	None
6	Hwy. 47 Hwy. 202	Partial Control	Rural	District	At grade	1/4 Mi.	Lt./Rt. Turns	300'	1/2 Mi.	None

Source: Oregon Highway Plan, 1991; CH2M HILL, 1996.

Finally, the OHP provides a detail listing of modernization needs on the state highway system. This listing is sorted by Oregon State Highway Division (OSHD) region, LOI, route, and milepost. These roadway sections reflect locations where a need occurs and a highway fix has been proposed. For Columbia County there are two sections listed:

- The addition of lanes along most sections of U.S. Hwy. 30 from Clatskanie to Warren.1
- To add width and improve geometry to Oregon Hwy. 47 starting at Clatskanie and heading south for eleven miles.

[1] This "modernization need" identified in the Oregon Highway Plan(June, 1991) is in conflict with the one of the key themes of the "Portland - Astoria Corridor (U.S. Highway 30) Interim Corridor Strategy," (February, 1996), i.e., "No additional expansion in highway capacity from Portland to Columbia City, except for transportation system management (TSM) improvements such as turning lanes and signal improvement."

Some of the improvement projects within the plan are under way or already completed.

Oregon Rail Freight Plan (1994)

The Oregon Rail Plan describes the existing rail system in Oregon, and analyzes possible rehabilitation improvements to the system. This plan is used to help qualify improvement projects for federal funding. There is a line that runs through Columbia County originating in Portland and traveling to Astoria that is owned by Burlington Northern. However, this line is presently a low density line, with less than one million gross ton-miles per mile of track per year being moved over the line in 1989. Due to its low density and usage, there are no improvement projects proposed for this line.[2]

The Oregon Rail Plan does state that there is a concern for long term maintenance on this line running from Portland to the deep water port in Astoria. As the shipping industry pursues larger and deeper draft vessels, the Columbia River channel will need continued deepening. However, if the channel cannot be deepened, this line will become increasingly important to move freight between Portland and Astoria. At this time a detailed estimate of costs to purchase and rehabilitate the line has not been performed.

Oregon Bicycle and Pedestrian Plan (1995)

The Oregon Bicycle Plan is a statewide plan that provides direction and guidance to all bikeway programs in Oregon. Goals of the plan include:

- To provide safe, accessible and convenient bicycling and walking facilities.
- To support and encourage increased levels of bicycling and walking.

These goals will be implemented through the following three actions:

- Provide bikeway and walkway systems that are integrated with other transportation systems
- Create a safe, convenient, and attractive bicycling and walking environment
- Encourage and promote bicycle and pedestrian safety education programs

In these rural areas of the county, the primary issue will be the provision of minimum 6 foot wide shoulders. At this point in time the major highway in rural Columbia County, U.S. Highway 30, has been identified as a rural highway with shoulders of 4 feet or greater. The northern portion of Oregon Highway 47 has been identified as a rural highway with shoulders less than 4 feet, but with ADT of less than 1000. Due to these characteristics, both of these highways have been classified as suitable for cycling. However, other rural statewide and non-statewide highways with possible bicycle or pedestrian activity need to be identified and their conditions examined for possible bicycle and pedestrian issues.

Statewide Transportation Improvement Program, 1996-1998

The Statewide Transportation Improvement Program (STIP) supports the OTP through scheduling and funding for high priority highway, transit, and bikeway capital

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[2] At the current time (1996), the Pacific Western rail company is investigating the potential for "short haul" rail freight along the Portland - Astoria corridor. This may be the future potential for rail service in this corridor as the Burlington Northern has stated their intention to phase out service.

improvement projects (including transit vehicle acquisition). Within Metropolitan Planning Organization (MPO) areas, it also identifies regionally significant local projects.

The STIP includes five categories of project approval: "Construction, Final Plans, Right of Way, Env-Document, and Reconnaissance." The categories are described as follows:

- Construction projects are those that have been approved for financing by the Oregon Transportation Commission for development and construction in the federal fiscal year indicated.
- Projects in the Final Plans category are identified as projects that have been approved for development, in the fiscal year indicated, to a level which includes the completion of plans, specifications and estimates. These projects are not yet approved for construction.
- Right-of -Way projects have been cleared to begin purchasing right of way.
- Env-Document projects have been approved for financing up to a level for completion of environmental documents.
- Reconnaissance category projects are approved for studies to determine the feasibility of a proposed improvement, or for the determination of needed improvements within a study area that would yield more than one project.

Projects approved for construction for the 1996 Federal Fiscal year include:

- Lewis & Clark Bridge / U.S. Highway 30 (Milepost 48.9). Replace deck and sidewalk with pre-cast concrete panels.
- Walker Slough Bridge, Amundson Road. Replace bridge structure.
- Anderson Park - Vernonia, Banks-Vernonia State Park. Pave 8' wide trail, construct 12' wide pedestrian/bike bridge across Rock Creek.
- South Fork Scappoose Bridge, Dutch Canyon Road. Replace bridge structure.
- Beaver Creek Bridge, Kukkola Road. Replace bridge structure.
- Clatskanie River Bridge, Swedetown Road. Replace bridge structure.
- Banks-Vernonia State Park. Grade and Pave 8' wide path at various locations for bikes and pedestrians.

Projects approved for construction in the 1997 Federal Fiscal years include:

- Goble Creek Bridge, Beaver Homes Road. Replace bridge structure.
- North Fork Scappoose Creek Bridge, Blehm Road. Replace bridge structure.
- South Fork Scappoose Creek Bridge, Otto Miller Road. Replace bridge structure.
- Milton Creek Bike/Pedestrian Bridges. Construct a bridge for bicycle and pedestrian traffic.

Projects approved for construction in the 1998 Federal Fiscal year include:

- Beaver Creek Bridge, Old Highway 30. Replace bridge structure.

Projects approved for Final Plans in the Federal Fiscal Year 2000 include:

- Swedetown - Lost Creek, U.S. Highway 30 (Milepost 56.3 to 60.7). Reconstruct highway.

There were no Columbia County STIP projects in the Right of Way, Env-Document, or Reconnaissance categories.

All of the projects approved for construction in the STIP will be listed as a part of the approved system for the purpose of future traffic projections in the TSP.

Access Oregon Highways Corridor Studies (February 1990)

In March 1988, the Oregon Transportation Commission (OTC) adopted the Access Oregon Highways (AOH) Program, which focuses funds from a recently enacted gas tax revenue on 15 of the state's important highway corridors. Highway 30 is designated as part of the Access Oregon Highways (AOH) System by the OTC. The system was approved in 1988 after an extensive public review process. The goal of the AOH system is to provide for economic growth of Oregon by moving through-traffic safely and efficiently (55 mph), between geographic and major economic areas within Oregon, between Oregon and adjacent states, and to and through major metropolitan areas. The Oregon State Highway Division identified improvement needs and cost estimates on the AOH corridors to ensure that the entire State's corridor needs were being addressed, that program goals were being met, and that a standard level of service is being maintained. The corridor has been divided into study segments as it passes through Columbia County. Segments 2 - 7 are within the county. Each segment was analyzed separately for level of service, pavement condition, pavement width, and passing opportunities, with a list of recommended improvements for each segment. Some of the recommended Highway 30 improvements within Columbia County have already been completed. They are:

<u>Highway 30 Improvements Completed</u>

Segment 2 (Columbia County line to Warren)
- Completion of five-lane widening from County Line to Warren.
- Add shoulder width from Scappoose Road to Laurel Street.
- Continued pavement preservation throughout segment.

Segment 3 (Warren to Columbia City)
- Widen right-of-way and roadway to five-lanes with 6 foot shoulders from Warren to Columbia City.
- Replace rail on McNulty Creek Bridge.
- Replace rail on Milton Creek Bridge.

Segment 4 (Columbia City to Rainier)
- Alignment reconstruction of 3.9 miles of roadway at various locations throughout the segment.
- Pavement preservation of 8.2 miles of roadway at various locations throughout the segment.
- Construct left turn lanes at Tide Creek Road and Nicolai Road.
- Replace or add guardrail at various locations throughout segment.
- Construct rock/slope stabilization at Moorage Road and Neer Road.

- Replace rails and decks of Tide Creek Bridge and Gable Creek Bridge.
- Construct two, one mile long passing lanes in each direction within segment.

Segment 5 (Rainier to Wonderly Road)
- Add shoulder width and reconstruct roadway at various locations within segment.
- Perform pavement preservation two short roadway segments (0.2 miles).
- Extend northbound acceleration lane onto Longview Bridge.

Segment 6 (Wonderly Road to Clatskanie)
- Widen roadway to four-lanes from Wonderly Road to Lost Creek.
- Pavement preservation at various locations throughout the segment.
- Add left turn lanes at Alston Road and Lindberg Road.
- Replace guardrails at various locations throughout the segment.
- Replace decks and widen Lost Creek Bridge.

Segment 7 (Clatskanie to Columbia County line)
- Widen roadway to four-lanes from Clatskanie to the Clatskanie River.
- Pavement preservation at various locations throughout the segment.
- Add left turn lanes at Midland Road and Woodson Road.
- Replace guardrails at various locations throughout the segment.
- Construct rock/slope stabilization at various locations throughout segment.
- Replace bridge deck and rails on bridge over Swedetown County Road.
- Construct passing lanes between Palm Hill Road and Woodson Road.

Costs for each of these projects is presented in the report, in 1989 dollars. There is also a table for each segment identifying project type, location (by mileposts), cost, and total length of the project.

Portland-Astoria Interim Corridor Plan (U.S. Highway 30) (June 1995)

A Corridor Plan provides a framework for long-term planning and development of all modes within specific transportation corridors. This particular plan follows that particular approach by searching for the best mix of transportation options available along U.S. Highway 30 from Portland to Astoria. This highway is one of five corridors that will have a corridor plan undertaken. This study is needed to four main reasons:

- To respond to planning requirements
- To resolve major planning issues prior to the initiation of project programming and development
- To preserve transportation rights-of-way
- To protect transportation investments

After identifying and discussing the existing facilities and their condition for highway, rail, air, waterway, transit, bicycles, and pipeline systems, a study was undertaken that predicted these systems future condition. For the highway system, a traffic projection for the year 2016 was determined and resulting conditions were evaluated for volumes, travel times, congestion, safety and operating costs. These conditions were evaluated for four possible cases:

- Case 1 - No improvements.
- Case 2 - Eliminate all geometric deficiencies.
- Case 3 - Eliminate all capacity deficiencies.
- Case 4 - A combination of Cases 1 and 2.

Using these four cases with the projected traffic scenarios, it was determined that the average volumes along the U.S. Highway 30 corridor would nearly double by 2016. Without improvements, travel times for trucks and cars are expected to increase by 13% and 8%, respectively. With improvements, however, travel times for both cars and trucks would be 10% lower than the unimproved conditions. This would mean the route would be congested throughout half the length, and 19% of the corridor would be highly congested. With the improvements, moderate congestion would be reduced to 21% and high congestion would be reduced to 17% of the corridor. Safety would remain similar to existing conditions, but with the improvements the accident rate was predicted to drop from 0.75 to 0.69 accidents per million vehicle miles.

Other modes that were analyzed for future growth, and the following results were determined:

- Sufficient capacity presently exists for rail traffic up until the year 2010, so long as Burlington Northern maintains the railway and site access improvements are made for efficient delivery of raw products and finished materials.
- It is not feasible to seriously consider commuter train service in the corridor during the next twenty years.
- The recent implementation of passenger air service to Astoria exceeds the existing OTP goals. Additional service will depend on demand.[3]
- It is expected that marine vessel traffic will continue to increase at about two percent per year for the next 20 years, provided the Columbia River continues to be dredged to accommodate the present generation ocean going vessels used to carry grain, wood, and containers. However, an Environmental Impact Statement is presently being conducted to study the ramifications of deepening the channel.
- The OTP calls for expanded transit service along the corridor, including transit services to St. Helens and at least two daily round trip intercity bus trips between Astoria and Portland. Future issues for additional service and increased transit centers will affect future conditions.
- Little is known about bicycle travel patterns for both the present and future throughout the corridor. However, U.S. Highway 30 does posses sufficient shoulder width to allow the corridor to be considered a sufficient cycling corridor.
- The existing gas line capacity is sufficient for the demand in the future. New gas line extensions may be needed to reach new service areas.
- No data was available for pedestrian travel or intermodal links.

[3] Passenger air service was discontinued in 1996.

Issues, opportunities, and constraints are discussed for each mode analyzed. From this investigation a list of preliminary strategies was created for each mode. The preliminary strategies that pertain to the corridor in Rural Columbia County are:

- Provide no additional expansion in highway capacity from the south County Line to Columbia City, except for TSM improvements.
- Provide no major expansion in highway capacity from Columbia City to the west County line, except for passing lanes, turning lanes, and through lanes in congested urban areas.
- Investigate use of Scappoose Industrial Airpark to accommodate increased regional demand for general aviation.
- Provide minimum five-foot shoulder bike lanes for the entire length of the corridor.
- Provide connections to local bike routes.
- Develop Old Highway 30 alignments into bike routes.
- Investigate contracted private transit services.
- Encourage vanpooling to large employment centers.
- Develop Park and Ride, Park and Pool lots.
- Coordinate marketing between Port of St. Helens and Burlington Northern.
- Upgrade railroad crossings in conjunction with other roadway improvements.
- Make infrastructure improvements to improve investment climate for rail users.
- Encourage development of rail/truck intermodal facility at Rainier.
- Develop consortium of shippers.
- Construct truck climbing lanes in western Columbia County where needed.
- Improve access to industrial sites.
- Improve access to port properties.
- Support Columbia River channel deepening project.
- Coordinate the installation of fiber optics with highway improvements.
- Promote telecommunication technology as a means of reducing VMT.

Portland-Astoria Interim Corridor Plan (U.S. Highway 30), Update to Chapter 7, Interim Corridor Strategy (February 1996)

A corridor strategy provides long-term (i.e. 20 years) programs of operation, preservation, and enhancement of transportation facilities within a particular corridor. Corridor Strategies are to establish realistic performance objectives for transportation in the corridor and to make major transportation tradeoff decisions. These strategies help ODOT and

jurisdictions within the corridor plan for their transportation systems in a manner consistent with the Oregon Transportation Plan and other plans and policies. This particular Corridor Strategy describes these objectives and goals for U.S. Highway 30 from Portland to Astoria.

This corridor is a major route connecting Portland to the northern Oregon and southern Washington coasts, as well as the cities along the lower Columbia River. It is an important recreational, commuter, and commercial traffic corridor, and is one of the most multimodal corridors in the state. The function of the corridor varies in different segments. In Multnomah County, U.S. 30 handles a high amount of commuter and commercial traffic as it provides access to downtown Portland and the interstate highway system from the rural regions of both Multnomah and Columbia County. It also provides access to and from the Port of Portland and the Port of Saint Helens in Columbia County.

Various themes were reflected within the Strategy. These themes were used to help define a list of objectives that fit within the Oregon Transportation Plan (OTP). These objectives are to provide:

- Transportation Balance
- Regional Connectivity
- Minimal Highway Congestion
- Satisfactory Roadway Conditions
- Adequate Safety
- Minimal Environmental and Energy Impacts
- Minimal Social and Land Use Impacts
- Regional and State Economic Development and Diversity

Under each objective various transportation categories are listed with the goals or policies listed pertaining to the category. The goals and policies that pertain to Rural Columbia County are listed below for their respective objectives and transportation category:

- Transportation Balance
  1) Autos
     a) Provide no additional expansion in highway capacity from Portland to Columbia City, except for transportation system management improvements such as turn lanes.
     b) Provide no major expansion in highway capacity from Columbia City to Astoria, except for passing lanes, turning lanes, and through lanes in congested urban areas.
     c) Emphasize transportation demand management techniques, especially the promotion of alternative modes, pricing mechanisms, and land use patterns which encourage alternatives to single occupant vehicles.
  2) Air Service
     a) Investigate use of the Scappoose Industrial Airpark to accommodate increased regional demands.

3) Bicycles
   a) Provide bicycle lanes in urban areas and provide at least five-foot shoulders to accommodate bicycle use along the corridor.
   b) Provide connections to local bicycles and hiking systems where feasible.
   c) Provide bicycle crossings across Highway 30 where appropriate and feasible.
   d) Improve bicycle access to the Longview Bridge.
   e) Develop remaining sections of the Old Portland Highway 30 alignment into bicycle routes, where feasible.
4) Pedestrians
   a) Provide six-foot sidewalks on both sides of the highway and convenient and safe pedestrian crossing.
5) Urban Transit/Inter-city Transit
   a) Investigate contracted transit services to serve commuters from Saint Helens to Portland.
   b) Investigate expansion of Kelso-Longview transit service into Saint Helens and Rainier.
   c) Ensure ongoing inner-city bus service to cities along the corridor.
   d) Encourage vanpooling to large employment centers.
   e) Develop "Park and Ride" and "Park and Pool" lots.
   f) Manage the rail line to preserve future opportunities for rail service. Identify the conditions that would warrant future investigation to the feasibility of passenger rail service.
6) Rail Service
   a) Upgrade railroad crossings in conjunction with other roadway improvements.
   b) Make infrastructure improvements to enhance the investment climate for rail users.
   c) Develop inter-modal facilities.
   d) Develop excursion/tourism uses of the railroad.
7) Truck Freight
   a) Minimize additional long-haul truck use of Highway 30 by promoting increased bulk freight movement by rail and water.
   b) Promote use of I-5 as truck route.
   c) Construct truck climbing lanes in western Columbia County.
   d) Improve truck access to industrial sites, including turn and deceleration lanes where appropriate.
8) Water
   a) Support the deepening of the Lower Columbia River to accommodate deep draft ships.
   b) Improve access to port properties to take advantage of significant expansion opportunities.
   c) Investigate commercial ferry service between St. Helens and Portland.
9) Pipelines
   a) Utilize pipeline right-of-way as bicycle and pedestrian pathways and wildlife corridors.
10) Telecommunications
   a) Promote telecommunication technologies and programs that reduce vehicle miles traveled.
   b) Coordinate the installation of fiber optics with highway improvements.

- Regional Connectivity
  1) Interconnected, Cooperative Transportation Roles Among Corridor Communities
     a) Encourage use of I-5 as an alternate route to avoid congestion in the segment from Columbia City to Portland.
     b) Reconstruct or construct a new Longview/Rainier river crossing.
     c) Investigate the feasibility of connecting Burlington Northern lines in Longview.
  2) Connections Between Places: Appropriate Travel Times
     a) Strive to maintain existing travel times for both autos and freight through high levels of facility management.
     b) Construct more passing lanes and climbing lanes from Columbia City to Astoria.
     c) Provide a better network of local streets in developed rural areas.
- Minimal Highway Congestion
  1) Facility Management
     a) Adopt the highest applicable access management categories for both local arterial roadways and U.S. 30, consistent with existing or planned adjacent land uses.
     b) Develop consistent access management plans between urban areas.
     c) Establish consistent policy on raised medians in congested areas.
     d) Utilize LOS levels established in the OTP as goals, recognizing that they may not be achievable in all segments.
  2) Congestion in Rural Areas
     a) Preserve rural sections as rural, particularly in the Rural Columbia County segment, through access management.
     b) Provide passing and truck climbing lanes in key location from Columbia City to Astoria.
- Satisfactory Roadway Conditions
  1) Roadway Geometry
     a) Target realignment and widening projects to sections with above average accidents rates and to sections with high congestion rates where there is favorable cost/benefit ratio.
     b) In the short term, target pavement of sub-standard shoulders to "easy fix"/low cost areas.
     c) Widen bridges at Gnat Creek and Goble Creek,
  2) Roadway Conditions
     a) Maintain roadway surface conditions at 90% fair/better by year 2010.
     b) Address drainage problems where they affect the function and condition of the roadway.
- Adequate Safety
  1) Roadway Safety
     a) Target resources to reduce accident potential in the top 10% of accident locations within the corridor.
     b) Improve lighting at key locations along the corridor and maintain delineation to be highly visible.
     c) Install rural railroad track crossing protection where needed to meet safety standards.
     d) Provide adequate turn lanes near congested railroad crossings to prevent highway backups.
     e) Widen shoulders at the base of Rainier Hill to provide adequate truck chain up area.

f) Investigate the need for additional safety rest facilities and emergency telephones.
g) Expand speed limit enforcement between Portland and Scappoose.
h) Review and modify if needed, the current hazardous materials response program.
i) re-open weigh stations and install weigh in motion detectors near Longview-Rainier Bridge.

- Minimal Environmental and Energy Impacts
  1) Scenic Resources
     a) Improve directional signing for existing attractions, including Old Highway 30.
     b) Identify and construct additional roadside scenic viewpoint pull outs.
     c) Utilize vegetation management measures to create and protect scenic vistas.
     d) Remove scenic intrusions such as billboards.
     e) Pursue federal designation as a Scenic Byway.
  2) Natural Resources
     a) Avoid transportation system improvements in the most sensitive natural areas, like Prescott Beach and Trojan Park.
     b) Institute measures to reduce vehicle-miles-traveled and congestion.
     c) Design roadway improvements to minimize surface runoff pollutants.
     d) Minimize impacts from the transportation system on wildlife migration routes.
- Minimal Social and Land Use Impacts
  1) Protection of Community Resources
     a) Design transportation system improvements to preserve the livability of the communities within the corridor.
     b) Preserve those sections of Old Highway 30 with historic value.
  2) Foreseeable Development Actions Affecting the Function of the Corridor
     a) Encourage transportation-efficient land use patterns that reduce vehicle miles traveled and promote a live/work balance.
     b) Plan for continued growth by constructing alternative local transportation routes.
     c) Utilize access management to limit the impacts of new development on highway congestion.
     d) Take advantage of the multimodal capabilities/capacities of the corridor to promote development that is not solely auto/truck dependent.
     e) Work with regional and local agencies to identify appropriate "green corridors";
- Regional and State Economic Development and Diversity
  1) Economic Development
     a) Grant high priority to projects that enhance development of existing industrial and commercial sites.
     b) Enhance access to existing industrial sites, such as Tongue Point and Cottonwood Island.
  2) Recreation Opportunities
     a) Promote a stronger I-5/U.S. 30 connection to encourage tourism.
     b) Improve access to recreational sites, including river access and expanding the recreational services offered.
     c) Improve recreation/tourist-oriented directional signing.
     d) Investigate sites for visitor information center, like at Longview Bridge and Trojan.
     e) Expand the Columbia River Heritage Canoe Trail from Portland to Astoria.
     f) Develop additional educational opportunities along the Lower Columbia River for interpretation and field studies connected to the Lewis & Clark Expedition.

U.S. Highway 30 Multimodal Study, Lower Columbia River Corridor (May 1991)

This report is part of the overall Corridor Plan process recommended by the Access Oregon Highways (AOH) Corridor Studies. Highway 30 has been classified by this AOH study as one of the most important highway corridors for the economic growth of Oregon. In previous years Columbia County has relied on wood products for its economic base. However, with declining activity in this industry, new economic development sources are being developed in the area. These projects will rely even more on the transportation facilities within the County. Also, more emphasis is being placed on making investments in transportation facilities to generate benefits to economic development.

There are major factors that influence the economic development of the county in both positive and negative ways. Some of the positive factors listed by the study include:

- Existing barge, rail, and highway transportation from Columbia County to interior Oregon, Washington, and Idaho.
- Deep-water ports with access to the Pacific Rim.
- Land available to industrial, maritime, recreation, and tourism development.
- A high-quality labor force.
- Nearby timber resources.
- Limited traffic congestion.
- Low-cost energy resources.
- Growth in specialized or unique cargo for both exports and imports.

Some of the negative benefits include:

- A limited population to generate revenues and provide markets for products.
- Wetlands, endangered species, water quality, and land use regulations impacting land development, dredging, and industrial site locations.
- Underdeveloped rail, highway, air, and deep-draft navigation channel and port facilities.
- Competition from ports in the Puget Sound and California.
- Reduced auto imports.
- Global competition for manufactured jobs.
- Increased environmental regulations.

This study reviewed the existing and future economic development projects that could affect the usage of the transportation system. Some of the development projects most likely to occur between 1991-2010 within Columbia County include:

- Wind Surfing Facility, Jones Beach and Prescott Beach

- Pulp Mill, Port Westward
- Wood Products Mill, Rainier
- Tug and Barge Repair, Rainier
- Metals Fabrication Plant, Columbia City and McNulty Creek
- Armstrong Supplier, McNulty Creek
- Bayport Marina, Saint Helens

These economic development projects were analyzed to determine the affect on the county in the areas of employment and transportation. The transportation aspects of the study include detailed review of the affects on U.S. Highway 30, local access roads, railroad, and marine facilities. From this, needed areas of transportation investment were determined and discussed.

It was found that U.S. Highway 30 traffic would increase by about 30,000 vehicles per day in the Saint Helens and Scappoose areas. The traffic volumes were driven by the baseline traffic increases, meaning that the development-generated traffic in 2010 would be a small proportion of the total traffic on Highway 30. Therefore, the level of service analyses performed in the report are not sensitive to when or whether the expected economic development projects are completed. Due to the expected increases in traffic along Highway 30, it is expected that over 70 miles of additional travel lanes[4] will be required from Scappoose to Astoria to accommodate the expected traffic at the same level of service as today. That is almost 50 miles more that ODOT's current Needs List.

In addition to improvements to U.S. Highway 30, improvements to local access roads serving different development locations along the Highway 30 corridor were identified. It was found that over $25 million (1990 dollars) in improvements is needed for these facilities. A list of these access roads and the recommended improvements is given in Appendix B of the Technical Report section of this document.

It was found that rail traffic in the corridor will be closely tied to industrial activity in the area. If the business enterprises presented are developed, total rail traffic will likely grow to meet the need of those industrial clients. The study found that there is sufficient capacity to accommodate expected growth in rail traffic through the year 2010, so long as Burlington Northern maintains the railway and site access improvements are made for efficient delivery of raw and finished materials.

It was found, however, that passenger/commuter rail service to the area is not feasible in the next 20 years for a variety of reasons. The primary reasons focused on population densities being too low in the area both presently and in the future, and the improvement and operating costs being too high.

[4] This increase in capacity identified in the "U.S. Highway 30 Multimodal Study, Lower Columbia River Corridor" (May, 1991) is in conflict with the one of the key themes of the "Portland - Astoria Corridor (U.S. Highway 30) Interim Corridor Strategy," (February, 1996), i.e., "No additional expansion in highway capacity from Portland to Columbia City, except for transportation system management (TSM) improvements such as turning lanes and signal improvement."

Marine vessel traffic to and from the Portland area will continue to grow at about two percent during the next 20 years if Columbia River dredging accommodates ship drafts that carry grain, wood products, and containers between the United States and the Pacific Rim countries. Export levels between Saint Helens and Astoria will depend upon trade in forest products like logs, lumber, pulp, and paper. A total of ten development projects along the corridor require marine construction, totaling over $24.5 million. However, this would result in a overall transportation benefit of $5 million. Two of these ten projects are located in Columbia County.

County Documents:

Columbia County Comprehensive Plan (July 1984)

This plan presents the conclusions about development and conservation of the County's resources, public facilities and services until the year 2000. The plan is intended as an all-inclusive plan for Columbia County. All-inclusive, or comprehensive, means the plan covers topics such as:

- The preservation or conservation of water, air, and land.
- Constraints or abilities to provide necessary services to both the private and public sectors.
- The locations of activities and uses of water and land involving agriculture, forestry, residential, and industrial.
- The utilities, services, and facilities needed to support current and planned uses and activities.
- Considerations in special needs in the area of housing, energy, recreation, and scenic areas.

The Plan has four primary goals:

1) To prevent of minimize conflicts between incompatible land use activities.
2) To provide a source of information describing the condition and characteristics of the County.
3) To provide an objective basis for public and private land use decisions.
4) To provide a better understanding of specified actions, programs and regulations which may affect the public.

The Plan then addressed various topics or issues within the county, including, but not conclusive; housing, agriculture, forest lands, rural centers, economy, recreation needs, public facilities and services, and transportation. For each of these topics, sub-topics are determined and discussed separately. For the topic of interest, transportation, twelve sub-topics are discussed. They are: waterborne, aviation, pipelines, railroads, bus, transportation disadvantaged, bicycles and pedestrians, automobiles and trucks, the existing road system, the county road system, access to major roads, and unconstructed county roads. A short summary describing each sub-topic is given below.

Waterborne:
This is one of the County's most valuable transportation resources. The Columbia River main channel runs along the north and west boundaries, giving the County access at numerous points along the 60 mile route. This channel is maintained to a minimum depth of 40 feet to provide access for deep draft ocean vessels. However, this resource is being

under utilized, with only 2% of the total tonnage traveling down the river originating from Columbia County. In 1977 over 42 million tons of cargo traveled on the Columbia River, with only 212 thousand tons coming from the County. From that, the largest amount of cargo comes from rafted logs, which was 183 thousand tons. The County has two tug companies and eleven dock facilities, with 3 berths having deep draft vessel capabilities.

Aviation:
Due to the costs of utilizing Aviation as a general form of transportation, it is one of the smallest components of the County's transportation system. There are two public airports within the County, but only the one in Scappoose is part of the National Aviation System Plan (NASP). This airport is classified as a Basic Utility Airport, which means it can handle 95% of all propeller aircraft under 12,500 pounds. The airport is scheduled to have the runway lengthened from 4,000 feet to 6,000 feet, and is expected to have an increased number of aircraft and operations based at the field. The other public airport is in Vernonia and possesses only a grass landing strip. There is funding available to upgrade this airport so it may be reclassified and be eligible for inclusion in the NASP.

Pipelines:
There are two natural gas pipelines serving Columbia County, both owned and operated by Northwest Natural Gas. The first line crosses the Columbia River near Deer Island, where it branches into a north line to Astoria and a south line to Scappoose. This main line is presently 46 miles long, and has a capacity of 28 million cubic feet per day. This capacity limitation, however, is set by the pump station at Deer Island. A newer line has been built that connects the gas fields near Mist with the main line near Clatskanie. This line has a capacity of 50 million cubic feet per day.

Railroads:
The rail system consists of a mainline owned by Burlington Northern that parallels the Columbia River. Traditionally this was the primary mode of transporting goods through the County, but the total track length has declined dramatically since the extinction of logging railroads that used to serve the area.

Bus:
Presently there are three companies serving Columbia County with bus service. However, each company provides a different type of service. Greyhound provides scheduled intercity bus service as it travels down U.S. Highway 30 to Astoria. Jensen Transportation, of Saint Helens, provides charter bus service to the area.

Colco Transportation is a non-profit corporation operated by Columbia County Council of Senior Citizens that provides bus service to any resident of the County. They utilize passenger vans which are equipped with wheelchair lifts, and focus their service to individuals with medical needs, the handicapped, and the elderly. They do not have a set fare schedule, but rather operate on an ability to pay basis. Their total ridership was listed as over 59,000 in 1978. They presently use some state and federal funding to provide the present level of service, but have requested that a Transportation Service District be established to make them eligible for more funding.

The only other buses in the County are operated by the school districts to provide service to students within the County.

Transportation Disadvantaged:
The greatest users of the above described bus system are the transportation disadvantaged. These people are, for a variety of reasons, the people who have difficulty moving about under the current transportation, which is strongly orientated towards the automobile. ODOT estimates that 39.2% of the County's population are transportation disadvantaged. Currently, Colco Transportation is the only organization working to meet the needs of the transportation disadvantaged.

Taxi Cabs:
There is only one taxi service in the County, which only serves the Saint Helens area.

Bicycle and Pedestrian Transportation:
At the time of this report, there were two bike paths constructed within the County, and one was being discussed to be constructed between Saint Helens and Columbia City. One of the paths that exists is located on Old Portland Road in Saint Helens, while the other one is in Columbia City.

Most of the intercity bicycling is done by recreation cyclists going between Portland and the coast. U.S. Highway 30 is the main route used by these bicyclist, although some use Highway 47. This route, however, is less desirable due to its narrowness and steep alignment. Most of the cycling in the County is done by young riders for either pleasure of to and from school.

In 1980, 6.2% of those employed in Columbia County walked to work. However, because of the relatively long distances between cities, it is unlikely that walking will become a major element in the overall transportation system.

Automobile and Truck Transportation:
The County is heavily dependent on the automobile for the movement of people and goods. This is primarily due to the population not being concentrated in one area, and that the dispersion of the population has increased as more people become dependent on the automobile. This leads to the conclusion that the automobile will remain as the primary form of transportation within the County, despite the increasing costs.

The County is currently served by three trucking lines which handle freight on a regular basis. Also, U.S. highway 30 is a major truck route. The traffic on Highway 30 is expected to grow by more than 5% annually, which means that it should have been carrying 75% to 90% of its capacity in 1995. ODOT is attempting to design new roadways to allow for a level of service C operating capacity.

It has been recognized that funds to build new highways are becoming harder to obtain. Therefore, a new approach to the development of the road system in the County must be undertaken. These new approaches should be aimed at preserving the existing road capacity rather than building new roads to increase the capacity.

Existing Road System:
The existing roadway system is divided into two parts: County roads and State highways, which consists of three major routes through the county for automobile and truck traffic. These three highways serve the greatest percentage of the population and carry the highest volume. ODOT has designated Highway 30, which goes thorough most incorporated cities, as a principal arterial. A portion of this highway between Warren and Saint Helens was

only two lanes when this report was written. The plan recommends that this stretch of roadway be widened to four lanes since it was the most heavily traveled piece of roadway within the County.

The other two State highways within the County, U.S. Highway 47 and Oregon 202, are narrow two-lane roads winding along the Nehalem River and over some of the low ridges of the coast range. These two roads are the most important through roads in the western portion of the County.

County Road System:
County roads act as feeders to the State Highway system. The County road system includes a wide range of roads, with 325 paved roads and 215 gravel roads. A major problem facing the County is the maintenance of the County roads. It is a constant struggle to find funds to maintain and repair the roadway system. The county is reluctant to accept any new roads due to the cost to maintain them. The Comprehensive Plan recommends that a detailed transportation plan be conducted to address the problems of the road system, in addition to other transportation problems. That is what this Transportation Systems Plan will address.

Another major issue is that many County roads fall within the urban growth boundaries of the cities, but the cities are unwilling to take the responsibility of maintaining them until the County improves them. These roads are receiving traffic beyond their rural design capacity due to the development along them within the urban growth boundary.

Access to Major Roads:
It has been identified that U.S. Highway 30 will have problems with congestion if the number of access points is allowed to increase. These additional traffic conflicts that will occur at additional access points could nullify the benefits of road widening and improvements. The plan recommends the use of shared driveways or frontage roads to help reduce this problem.

Unconstructed County Roads:
One other issue is the numerous right-of-ways that the County owns, but have not built a roadway on or the roadway is no longer in use. In many cases, people are unaware of these right-of-ways passing through their property, and buildings have been built in the right-of-way. The County needs to conduct a detailed inventory to these right-of-ways to determine how to vacate many of them.

After the discussion of the various sub-topics, a list of goals, objectives, and policies that the plan developed were reviewed for applicability to the TSP planning process. The basic goal the plan brought forward in the area of transportation was given as: "The creation of an efficient, safe, and diverse transportation system to serve the needs of Columbia County residents." From this goal, 12 policies were developed as implementation tools to help meet the County's goal. Below is an outline of the policies outlined in the Comprehensive Plan.

1) The County shall undertake the development of a detailed transportation plan that should contain the following minimum elements:
    A. The development of a road classification system.
    B. The development of road standards for all different types of roads over which the County has jurisdiction.
    C. The location of future arterial streets inside the urban growth boundary.

D. Review the status of all county roads.
E. Review of all incorporated rights-of-way and a determination of whether or not the County should pursue the vacation of them.
F. A study of ways to maintain and upgrade the current county road system.

2) The dedication of adequate rights-of-way to meet the standards set in the Transportation Plan shall be required of any person seeking a Zone Change, Conditional Use Permit, Subdivision, or Partition. The developer of a subdivision in an urban growth area will be required to make appropriate improvements to any related street to meet the standards set in the Transportation Plan.
3) Appropriate off-site improvements to county roads shall be required whenever a development results in a major increase in traffic on an existing county road.
4) The County will work with the State Highway Department to limit the number of access points onto arterial roads. Direct access to U.S. Highway 30 will be limited as much as is practical in order to reduce the potential for congestion and conflicting traffic patterns which would disrupt the flow of traffic.
5) Industrial uses shall be encouraged to locate in such a manner that they may take advantage of the water and rail transportation systems which are available to the County.
6) The County will support reducing the number of rail crossings.
7) The County will work with the Port of Saint Helens to encourage the establishment and use of dock facilities.
8) The two existing airports will be zoned with a landing field overlay zone that incorporates the height restrictions set by the Federal Aviation Administration. It will allow the development of airport related industrial uses.
9) Restriction of the location of new pipelines and high voltage transmission lines to within existing right-of-ways will be encouraged whenever possible.
10) The County will study proposals, when presented, to develop modes of transportation as an alternative to the automobile. If these proposals prove to be feasible, the County will work to implement them.
11) Columbia County will continue to support the efforts of Cloco Transportation to supply public transit to the citizens of the County.
12) Special attention will be given to the needs of the handicapped whenever the County considers a proposal for the provision of public transit.

Clatsop County Comprehensive Plan (May 1984)

This document contains a list of Transportation Policies to serve as guidelines and standards for the development of new transportation projects and for a maintenance program for existing facilities in Clatsop County. Lists of roads which the county would like to improve and which the county would like to see the State improve are included in the document. No project specific plans are identified.

Multnomah County Comprehensive Framework Plan (November 1991)

The northernmost boundary of Multnomah County is shared with the southernmost boundary of Columbia County just south of the city of Scappoose. The principle transportation link is Highway 30. Multnomah Channel provides a waterway link between the two counties.

This framework plan, with its component individual community plans and all future county plans and plan revisions, is designed to be consistent with the statewide planning goals adopted by the Land Conservation and Development Commission.

The document contains policies developed to serve as a framework for guiding county actions for the following categories:

Administrative Policies
Citizen Involvement/Intergovernmental Coordination
Urban-Rural Growth Management
Natural Environment
Community Development/Design Development
Land Use Location
Physical Support Systems
Parks and Recreation System

The following policies are in the Physical Support Systems section:

33a Transportation System
33b The Marine Transportation
33c Bicycle/Pedestrian System
34 Trafficways
35 Public Transportation
36 Transportation Development Requirements

There were no direct references to coordination or interconnectivity to Columbia County transportation systems found in the Comprehensive Framework Plan.

Washington County Transportation Plan (amended December 1994)

This document identifies existing transportation facilities and current and future transportation needs. It then develops proposals for satisfying those needs, including potential funding sources. The Plan addresses the following transportation elements: streets and highways, mass transit, demand management, bicycle and pedestrian facilities, air and rail facilities, and financing. The Plan establishes policies under each of these categories to provide guidance for the development of transportation projects and for the maintenance of existing facilities. Specific project plans are not a part of the document. The Transportation Plan identifies the following roads linking Washington and Columbia Counties:

Vernonia Road
Highway 47
Highway 26
Pebble Creek Road
Hoffman Road
Rim Road
Smoke Ranch Road

Washington County has identified Vernonia Road and Highway 47 as designated truck routes. There were no other direct references to Columbia County transportation systems found in the Washington County Transportation Plan.

City Documents:

City of Scappoose Transportation System Plan, Draft (January 1996)

This plan is written as a guide for the City of Scappoose to fulfill its goals and objectives of improving the mobility of the city into the 21st century. The report begins by stating its goal of: "Develop an urban area transportation system which enhances the livability of the city and accommodates growth and development through careful planning and management of existing and future transportation facilities." Then include goal statements and objectives that fit under the general goal are described in greater detail.

The plan then describes the current conditions of the transportation system. The report outlined the classifications and layout of the streets, locations of sidewalks and bike paths within the system, and existing traffic counts. A level of service analysis was performed for many of the roadways, with a detailed description of the results. Also, some analysis was done to determine typical trip lengths, percent of through traffic, modal splits, and current safety conditions.

Next, a forecast travel demand analysis was performed using a TMODEL2 computer modeling program. From this analysis a future transportation system demand was estimated for the year 2015. Typical traffic counts were predicted for the estimate year, and level of service analyzes were performed for a no build scenario.

A list of recommended improvement projects were then identified to improve the level of service and capacity problems. Some of these recommended projects included roadway improvements, design specification revisions, roadway classification revisions, access management techniques and guidelines, transportation demand management plan guidelines, and other transportation system improvements. For these projects a description of the project and location is given. The costs associated with these improvements and resulting operational characteristics are also covered.

The improvement projects discussed that may affect the transportation system outside the incorporated area of Scappoose are outlined below.

Short Term Projects:

- *Realign Scappoose-Vernonia Highway at its Intersection with Highway 30:* Presently, the eastbound and westbound approaches of the Scappoose-Vernonia Highway are not aligned opposite each other, and one is stop controlled while the other is signal controlled. This project entails realigning the approaches of the Scappoose-Vernonia Highway and the private logging road so they meet at the same location on Highway 30. The new approaches would include 36 foot wide pavement with 12 foot lanes, 6 foot bike lanes, and continuous curb, gutter, and sidewalks.

- *Enforce Speed Limits along Highway 30:* Vehicle accident records along U.S. Highway 30 indicate that the stretch through Scappoose accounts for a large proportion of accidents along the corridor. The records also indicate that main cause of these accidents is excessive speed. It is recommended that the 35 mph speed limit be given more strict enforcement. This will help reduce the conflicts between through traffic and local

access traffic, and thereby create conditions that could lead to lower accident rates along the highway.

Long Term Projects:

- *Upgrade Scappoose-Vernonia Highway:* The existing highway within Scappoose Urban Growth Boundary is 30 fee wide on a 60 foot right-of-way. The highway is proposed to be re-classified as a Secondary Arterial. The proposed improvements include widening the roadway to 36 feet with two 12 foot lanes. The new cross section would include continuous curb, gutter, and sidewalks on both sides of the roadway.
- *Implement a Transportation Demand Management Plan:* This plan would reduce or spread the peak travel demand periods the help reduce congestion. This plan includes strategies including alternate work schedules, telecommunication, ridesharing, and upgrading pedestrian and bicycles facilities.
- *Public Transportation Plan:* ODOT has indicated that a private party has shown interest in re-instituting inter-city transit service. It is likely that this service could be re-instituted within the next one to two years. There also may be an increasing need for Colco Transportation to expand their on-demand transportation service.

City of St. Helens Comprehensive Plan (May 1991)

The Transportation section of the City of St. Helens Comprehensive Plan establishes four road types, each carrying their own standards for access control, paving, right-of-way widths, etc.. Design features and standards are contained in the City's Ordinance on Road Standards. A summary of City Transportation policies is listed below.

- Work toward attaining left turn lanes and traffic lights on Highway 30

- Control traffic hazards along road margins through building setbacks, access control, and zone changes

- limit signs and sign lighting

- Plan and develop street routes to alleviate Highway 30 traffic load and accommodate local traffic: including investigating the feasibility of the following projects:

  -utilizing West Street as a major route to uptown and downtown St. Helens

  -completing Milton Way to Gable Road

  -connecting Kavanaugh Street with Matzen Street

  -introducing signs to direct traffic destined for downtown to utilize Gable, Old Portland, and Deer Island roads.

  -widening the south end of Little Street

Regulate development so that the following proposed transportation projects are not prohibited

  -the extension of St. Helens Street

-the connection of Milton Way and Gable Road

-future arterial connecting Achilles Road and Pittsburg Road

Investigate installing a traffic light at 6th and 12th. and Columbia Blvd.

The City of St. Helens in conjunction with ODOT is currently working on a Transportation System Plan for the City and area within their urban growth boundary (UGB). This document, when completed, will refine the transportation policies and plans for the City.

City of Columbia City Comprehensive Plan (March 1975)

The Columbia City Comprehensive Plan contains a discussion of the existing transportation system. Specific transportation goals or objectives have not been developed. However, the City of Columbia City in conjunction with ODOT is currently working on a Transportation System Plan for the City and area within their urban growth boundary (UGB). This document, when completed, will define the transportation policies and plans for the City.

Rainier Comprehensive Plan (August 1995)

The City intends to develop a Transportation System Plan to address multimodal transportation needs within the City. Several objectives are stated as transportation policies in the Comprehensive Plan.

Policies:

1. The City will coordinate with the Oregon Department of Transportation (ODOT) on the Highway Corridor Study. In particular, the City will advocate consideration of the following local issues as part of the larger corridor study:
    a. Need for improved pedestrian access along and across U.S. 30 in Rainier
    b. Improved local traffic flow between the residential and commercial areas of Rainier.
    c. Congestion and safety problems near the south end of the Longview Bridge
2. The City will seek to have adequate pedestrian and/or bicycle paths included in the design of any major improvement to U.S. 30 through Rainier.
3. The City shall require consideration of the function, capacity, and level of service of U.S. 30 as a criteria for approval of development and plan amendment proposals.
4. The City will adopt road standards to govern the improvement of public and private streets.
5. The road standards will include provisions for reduced road widths in areas of steep slope to minimize cutting, filling, and erosion.
6. All subdivisions, planned developments, and developments allowed as conditional uses shall be accompanied by a traffic impact statement describing the potential on-site and off-site impacts of the proposed development, including the need for off-site road improvement and signals.
7. The City will review and recommend any needed changes in the on-street parking or traffic patterns of the existing commercial core.

8. The City will support the efforts of Columbia County to meet the needs of the transportation disadvantaged of Rainier.

9. The City will encourage the improvement and use of a multi-modal transportation system including highway, rail, water, public transportation, and pedestrian and bicycle facilities. Rainier's varied transportation facilities can be leveraged to attract new developments to the community.

10. The City will revise the Zoning and Land Division Ordinance to address the Transportation Planning Rule, with specific emphasis on improved street connectivity and pedestrian oriented development.

The City of Rainier in conjunction with ODOT is currently working on a Transportation System Plan for the City and area within their urban growth boundary (UGB). This document, when completed, will refine the transportation policies and plans for the City.

Clatskanie Comprehensive Plan

The Clatskanie Comprehensive Plan features a Transportation section which describes the existing conditions of transportation facilities in Clatskanie and identifies policies to achieve the transportation goals of the city. There were no specific project plans or schedules are included in the document. However, the City of Clatskanie in conjunction with ODOT is currently working on a Transportation System Plan for the City and area within their urban growth boundary (UGB). This document, when completed, will refine and prioritize the transportation policies and plans for the City.

Other Documents

Access Management Study: Bennett Road to McBride Creek (June 1995)

This study is a cooperative effort with public transportation and including the Oregon Department of Transportation (ODOT), the City of St. Helens, the City of Columbia City, and Columbia County. The purpose of this study is to provide access management strategies and an access management plan for the future, to use for processing applications during and after the Columbia City north city limits to Warren construction project on US Highway 30. The strategies and plan were developed to satisfy the requirements of and be compatible with the Oregon Transportation Planning Rule, the Portland-Astoria (US Highway 30) Corridor Study, other ODOT plans and rules, the intergovernmental Access Management Agreement between the agencies involved in future transportation systems plan studies, and local plans and ordinances. The study proposes the following actions:

A. Traffic signals when warranted are recommended at the following locations:

   -South Vernonia Road (MP 28.23)
   -Pittsburg Road (MP 29.10)
   -Millard Road (MP 26.96)

B. Minimum driveway spacing of 150 feet for all right-in/right-out access points and for full access points from single-unit residential developments

3. Minimum driveway spacing of 300 feet is recommended for commercial, industrial, and multiple-unit residential developments. Joint access to the highway should be considered whenever possible.

4. Standard driveway widths for single-unit residential developments should be 20 feet with a minimum of 16 feet and a maximum of 24 feet. Multi-family residential, commercial, and industrial developments should have 36 foot standard widths with 40 foot maximum widths.

5. The plan recommends limiting the number of driveways per property frontage to a single drive, unless the frontage exceeds 1/4 mile. Access from neighborhood commercial developments located on the corner of a public street intersection is recommended to be restricted to the cross street only.

6. Frontage roads are recommended for long-term solutions on the west side of U.S. Highway 30 between Pittsburg Road and Achilles Road.

7. The completion of the Columbia Street/St. Helens Street couplet by extending St. Helens Street to Shore Drive is recommended for diversion of local service traffic away from the highway.

APPENDIX B

Roadway Inventory Database

Appendix B(Continued)
Columbia County Rural TSP
Existing Needs

Key Number	Mode	Project Location	Project Description	Justification - Need for the Project
19	Roadways	Wilkstrom at Scappoose/Vernonia	Re-stripe and add left-turn lane onto Wilkstrom. Place signage on Scappoose Vernonia marking intersection as "To Hwy. 30 north to St. Helens".	Wilkstrom is used as a cut-off road to St. Helens. Intersection is skewed at angle.
20	Roadways	Beaver Falls Road at Quincy (part of Mayger loop)	Redesign and reconstruction of intersection.	Currently signed as a dangerous intersection. Stop sign for those coming from south on Beaver Falls not readily apparent.
21	Roadways	Alston Mayger at Hwy. 30	Redesign and reconstruct intersection to allow better truck movement.	(U.S. 30 Corridor Study, March 1995) "Square up the intersection. Turning also could be longer to accommodate trucks trying to turn left on Alston Mayger Road."
22	Roadways	Tide Creek/Hwy. 30 Intersection	Improve sight distance looking north along Hwy. 30 by removing trees and brush.	"If you can't take the curve out of the Tide Creek intersection, at least run Tide Creek Road under the Bridge so that side traffic doesn't enter or leave the Highway on the curve".
23	Roadways	Cater Road/Scappoose-Vernonia Road intersection.	Improve intersection by re-striping and turn lanes on to Cater.	Intersection needs improvements
24	Roadways	Neer City and Neer City Cemetery (Rural Local roads; not a part of study)	Improve intersection for better sight distance.	Sight distance problem
25	Roadways	Gable and Bachelor Flat (in City TSP study area)	Rebuild intersection.	Non-conforming intersection
26	Roadways	Railroad Ave. at Old Portland Rd. (in City TSP study area)	Install flashing yellow warning signal for southbound Old Portland Rd. and northbound Gable Rd. traffic	Intersection where 4 streets and the railroad come together. Has been site of fatal accidents
27	Roadways	Scappoose-Vernonia Road at Hwy. 30 (in City TSP study area)	Improve intersection by straightening and eliminating duplicate roadways	Non-conforming intersection (skewed alignment), proximity to private timber and haul road adds confusion
28	Bicycle	Hwy. 47 from Mist to Vernonia	Bike route should be continuous, however, construction of improved shoulders for bike use is lower in County priorities than other needs identified.	Discontinuous Bike Route. Highway 47 from Clatskanie to Mist is a secondary bike route and Banks Vernonia linear park has a separated bike path.
29	Bicycle	Hwy. 202 at Mist (to Jewell)	Add shoulders for bike travel (Again, construction of shoulders for bikes is lower in County priorities that other needs identified.)	Area of higher ADT (over 1000 according to St. Bike and Pedestrian Plan.
30	Bicycle	Old Portland Road (from Hwy. 30 north to Scappoose.)	Continue to promote county section as bike route to connect to City designated route. Any County improvements to road should include shoulders for bikes and pedestrians.	Application not approved for bike route improvement.
31	Bicycle	Old Portland Road (from Berg Road north to St. Helens.)	Improve shoulders to connect to City bike route.	Should be designated as bike route to connect with City bike route.
32	Bicycle	Fairgrounds Bike Access	Improve shoulders in immediate vicinity of fairgrounds for better access.	Need to improve access to fairgrounds for bike and pedestrians.
33	Pedestrian	Pedestrians -- County Wide	Create plan by investigating areas (such as Mist, Birkenfeld and approaches to urban areas like 47 into Vernonia and out of Clatskanie), to define current conditions, define	In rural areas with a high degree of urbanization, need sidewalks/shoulders for pedestrian safety and bike use.
34	Other	All County Roads	Improve maintenance of road surfaces and drainage channels to preserve existing infrastructure.	Many roads in fair to poor condition. Need better maintenance and preservation.
35	Other	Various County Roads	County should set standards and inventory roads for meeting standards. Set priorities for meeting needs.	Roads need better signing for curves and such.
36	Other	County Wide	Bring all guard rail up to standards for functional designation of roadway.	Sub-standard guard rail, especially on Alston Mayger and Beaver Falls Road.
71		South County	TDM Program	Management of vehicle demand to avert future congestion
70		Various Locations	11 Non-NBIS bridges	Bridges in poor condition as identified by inspections.
75	Bicycle / Roadway	Sykes Rd from Columbia Ave to West Kappler	Widen road and include bicycle lane to Saulser	Improve bicycle and motor vehicle access to the Fairgrounds. High traffic volumes and improved safety.
76	Roadway	Hwy. 30 and Bennett Rd. Intersection	Traffic Signal	Allow for large trucks to access the Hwy from Old Portland Rd. Safer access for all motorists.

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Appendix B
Columbia County Rural TSP
Existing Needs

Key Number	Mode	Project Location	Project Description	Justification/Need for the Project
1	Roadways	Hwy. 30 (areas designated rural south of Deer Island)	Write access control into county plan, zoning and/or other implementation ordinance.	Too many access points for highway (high speed/high volume) travel.
2	Roadways	Wonderly Road at Hwy. 30	Create park-and-ride in this area	Already an unofficial park-and-ride lot.
4	Roadways	Anliker Road (southern end of Nicolai at Meissner	Improve by paving gravel section.	Currently a gravel road. Anliker completes the connection from Hwy. 30 to Canaan Road.
5	Roadways	Delena Mayger/Alston-Mayger	Improve and pave gravel section of Delena-Mayger to county standard for local road. Improve, widen and upgrade functional classification of Alston-Mayger to major collector. Add stop control on Mayger Fill Road at intersection with Alston-Mayger.	Delena-Mayger has low ADT for its functional classification of major collector.
6	Roadways	Beaver Falls Road (west from Delena to intersection with Quincy)	Up-grade and improve bridges between Delena and Quincy. Resurface roadway, replace roadway guard rail. Designate as secondary truck route to Port Westward.	High accident rate. May be related to narrow lanes and surface in very poor condition. Guard rail and bridge railing in very poor condition.
7	Roadways	Wikstrom Road	Improve road and upgrade functional classification to minor collector status.	High ADT for condition and functional classification.
8	Roadways	Fairgrounds Access	Work with Fair staff to create sign age plan for Fair and County Public Works joint implementation. Improve preferred access routes. Investigate left turn lanes for livestock gates to relieve part of congestion problem.	Need for improved signs and access. (Caution and livestock gate signs.). Congestion during period when fairgrounds are in use.
9	Roadways	Timber Road	Re-pave surface with re-hab of shoulders and drainage.	"Fix Timber road past the Vernonia Golf Course to Washington County Line." "Timber Road is especially bad; narrow and hazardous"--(from stakeholders interviews)
10	Roadways	Swederown Road	Improve surface and drainage including widening shoulders (or adding if they don't exist).	"Road is in very bad condition."
11	Roadways	Honeyman Road/ West Lane/ Forest Road	Improve turn radius at Honeyman and West Lane . Sign age for truck route on West Lane and Honeyman. Prohibit trucks on Columbia Ave.	Trucks from industrial/airport area use Columbia Ave. to access Hwy. 30 (through Scappoose) trucks should be directed to West Lane and Forest Road for access to Hwy. 30 and avoid city
12	Roadways	Scappoose-Vernonia Road	Improve and maintain road	Overall road condition is poor; many slide areas.
13	Roadways	Dike Road (outside of Rainier)	Improve road for industrial use	Roads need upgrading to support existing and planned industrial use.
14	Roadways	Berg/Hazen/Bennett/Bachelor Flat loop between Scappoose and St. Helens	Traffic control and sign age. At Bennett/Bachelor Flat intersection: place a stop sign on Bennett to promote Bennett left to Bachelor Flat as major movement.	High accident rate. (Bachelor Flat extremely high).
15	Roadways	Hwy. 47 at Scappoose-Vernonia Road.	Re-stripe and provide turn lanes for left turns from Hwy. 47 to Scappoose-Vernonia and from Scappoose-Vernonia to Hwy. 47.	Cluster of 4 accidents and high accident rate. Area on curve with a bridge on Hwy. 47
16	Roadways	Beaver Falls Road at Falls	Create widened area for off-road parking, install guard rails and fence at viewing area	People park cars at side of road to view falls. Pedestrian deaths
17	Roadways	Old Rainier and Apiary	Design and rebuild intersection, create left turn lane, Old Rainier to Apiary to re-orient traffic, making the west leg the minor approach.	Apiary comes into Old Rainier with a skewed configuration (lazy Y).
18	Roadways	Hwy. 47 and 202 (at Mist.)	Rebuild as a "T" intersection.	Through movement seems to be 47/202 from the south to Hwy. 202 north.
	Roadways	Bennett and Bachelor Flat	Stop sign on Bennett, promote the major movement of left turn to Bachelor Flat.	Major traffic flow has to make tight left turn.

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Appendix B
Columbia County Rural TSP
Future Needs

Key Number	Mode	Project Location	Project Description	Justification--Need for the Project
53	New Roads	New Columbia Bridge at Rainier	Continue to support efforts for new bridge by ODOT, WSDOT, and Ports	Existing Lewis and Clark Bridge well over capacity in both existing and future condition; it is also approaching structural obsolescence.
54	Intersections	Wikstrom Rd. and Dahlgren Rd intersection	Re-channelize and improve sight distances by changing grades, improve sight distance at Dahlgren/Wikstrom intersection (could involve lowering the roadway)	Limited sight distance, high V/C ratio
55	Intersections	Wikstrom Rd. and Hwy. 30	Re-align Wikstrom, West Lane, hwy. 30 intersection to remove offset	Off-set between Wikstrom and West Lane make through movement difficult
56	Intersections	Wikstrom Rd. at Scappoose-Vernonia	reconstruction of intersection to improve canalization and improvement of roadway from Scappoose-Vernonia to Hwy. 30	Skewed intersection results in difficult turn
57	Intersections	Larsen Rd. at Hwy. 30	Close median to prohibit left turns, implement in conjunction with the extension of Apiary Road to Hwy. 30	Closely spaced intersections at a crest, vertical curve along Hwy. 30
58	Intersections	Berg Road and Hwy. 30	Re-stripe intersection; add turning lanes, if needed, to/from Hwy. 30 at Berg Rd	Intersection may not be able to handle future traffic
59	Intersections	Tide Creek Hwy. 30 Intersection	Reconstruct intersection	"If you can't take the curve out of the Tide Creek intersection, at least run Tide Creek Road under the Bridge so that side traffic doesn't enter or leave the Highway on the curve".
60	Intersections	Johnson Landing Rd.(Rural local road; not a part of study) (south of Scappoose)	Improve and widen road	Needs to be improved and widened
	Future Plans Areas	Fullerton Road/Slaven Road Area	Apply for TGM Grant to prepare area-wide land-use/transportation plan.	Need an area-wide plan coordinated with land use for development to avoid haphazard development. Upgrade roads to collector status.
61	Bicycles	General	In rural areas around Cities coordinate the improvements of shoulders for bike use so that bike routes are continuous between City and County. Coordinate bicycle TSP projects.	
	Bicydes	Hwy. 30	Apply for grant money form ODOT to do study	Inventory and investigate feasibility of using portions of Hwy. 30 as scenic, recreational bike route.
74	Bicydes	Old Hwy. 30/Larson/Old Rainier Roads	Improve shoulders for bicycle lanes1 million	Connects Rainier area bike lanes with High School
	Pedestrians	General	In rural areas around Cities coordinate the improvements of shoulders for bike use so that pedestrian routes are continuous between City and County. Coordinate pedestrian TSP projects.	
62	Public Transportation/Transit	Hwy. 30 Corridor	Commuter rail could be developed on existing tracks to Portland. Could also be used as a tourist attraction to Astoria.	
63	Public Transportation/Transit	General	More bus links to Portland and Beaverton/Hillsboro	
64	Public Transportation/Transit	General	Need express Bus Service	
65	Public Transportation/Transit	Columbia River	Use river taxis	

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Appendix B
Columbia County Rural TSP
Future Needs

Key Number	Mode	Project Location	Project Description	Justification - Need for the Project
37	Road Segments	Hwy. 30 - Multnomah County line to Scappoose.	Higher degree of access management, improved signal coordination or raised median to limit left turns	High Volume/Capacity ratio projected for this segment, estimate is 0.55-0.65-over capacity
38	Road Segments	Hwy. 30 - Between Scappoose and St. Helens	Improve local north/south rds to take local traffic off hwy.30; Berg, Hazen and Bennett Rds. If congestion warrants, limit access by creating frontage rd. parallel to Hwy.30 (linking Bennett, Church and Berg); use Church as the single access road to Hwy 30	High Volume/Capacity ratio projected for this segment, estimate is 0.45-0.55 - near/at capacity
39	Road Segments	Hwy. 30 - Columbia City to Rainier	Add passing lanes on Hwy. 30 vicinity of Goble	High Volume/Capacity ration projected for this segment, estimate for northbound is 0.25-0.45 - approaching capacity and for southbound is 0/45-0.55-near/at capacity
40	Road Segments	Hwy. 30 - Rainier to Clatskanie	Extend Passing lanes in both directions	
41	Road Segments	Hwy. 30 - Clatskanie to Clatsop County line	Add passing lanes in this section if area with minimum environmental impact can be found.	Future Volume/Capacity ration estimate is 0.045 - 0.55 Near/At capacity
42	Road Segments	Wikstrom Rd.	Improve road by widening, upgrade functional classification to major collector status	High Volume/Capacity ratio projected for this roadway, estimate is 0.55- 0.065 - Over capacity for eastbound segment from Dahlgren to Hwy. 30.
43	Road Segments	Scappoose Vernonia Road	Passing lanes, park-and-ride, TSM, car pooling or other TDM	
72	Road Segments	Various Locations	8 Non-NBIS bridges Rehabilitate deficient bridges	Bridges in poor condition as identified by inspections.
44	Park-and-ride	Hwy. 47 south of Vernonia	Locate park-and-ride in this area	Need for park-and-ride lot to intercept traffic to Washington Co.
45	Park-and-ride	Scappoose/Vernonia Road at Cater Rd.	Locate park-and-ride in this area	Need for park-and-ride lot to intercept traffic into Scappoose, St. Helens and Portland
46	Park-and-ride	Hwy. 30 (Deer Island)	Locate park-and-ride in this area	Need for park-and-ride lot to intercept traffic into St. Helens, Scappoose, and Portland
47	Physical Conditions	Anliker Road	Improve to County standards as major collector (current functional classification to complete collector connection.	Southern end of Nicolai at Meissner; (currently a gravel road, on existing needs list for improvement, i.e. paving). Anliker completes the connection form hwy. 30 to Canaan Road.
48	Physical Conditions	Highway 47 between Scappoose-Vernonia Road and Town of Vernonia	Create passing lanes or slow vehicle turnouts along this segment	Trucks create bottleneck for autos.
49	Physical Conditions	Honeyman Rd./West lane	Install signal at West Lane/Hwy. 30	Truck traffic diverted to Hwy. 30 via West Lane to avoid City may increase.
50	New Roads	Access to Port Westward (Hwy. 30 Corridor Study)	Coordinate with City of Clatskanie. hwy. 30 to 5th Street suggested as primary access route and Beaver Falls the secondary access route.	Further economic will need improved access to the Port Westward site
51	New Roads	Apiary Road	Extend Apiary road to Hwy. 30 (could provide this connection by using Heath)	Improve connection to Hwy. 30
52	New Roads	Westside Arterial Route	Provide a Westside arterial alternate route to Hwy. 30 by upgrading some existing roads and connecting these with new roads.	Removes local west side traffic from Hwy.30 and provides an alternative route in the event of accidents or other emergencies. Removes local traffic from Hwy 30 and provides alternative route.

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APPENDIX C

Land Use Summary

TABLE C-1
1995 Columbia County Land Use

	Raw Data						
	Employment			Households			
TAZ	Total	Retail	Other	Total	Single-family	Multi-family	Population Total
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	743	200	543	1311	1027	284	3529
9	1261	290	971	1603	1159	444	3925
10	1100	209	891	1703	1393	310	3709
11	158	31	127	292	244	48	819
12	456	73	383	665	531	134	1629
13	304	51	253	695	646	49	1808
14	13	1	12	33	33	0	63
15	247	48	199	360	348	12	1003
16	118	27	91	324	319	5	725
17	112	17	95	175	156	19	457
18	128	16	112	216	201	15	550
19	46	6	40	100	100	0	313
20	155	10	145	211	211	0	545
21	111	9	102	105	105	0	300
22	149	15	134	150	150	0	414
23	420	84	336	583	575	8	1550
24	199	20	179	342	342	0	942
25	171	21	150	333	327	6	947
26	203	51	152	350	340	10	806
27	248	65	183	290	290	0	845
28	166	30	136	173	164	9	439
29	136	19	117	200	200	0	600
30	95	9	86	140	119	21	319
31	184	11	173	280	280	0	700

TABLE C-1
1995 Columbia County Land Use

	Raw Data						
	Employment			Households			
TAZ	Total	Retail	Other	Total	Single-family	Multi-family	Population Total
32	95	7	88	138	138	0	423
33	145	14	131	190	190	0	460
34	86	7	79	125	125	0	400
35	180	50	130	265	249	16	457
36	183	43	140	292	276	16	855
37	136	19	117	310	264	46	791
38	78	19	59	330	330	0	954
39	109	9	100	311	300	11	824
40	219	24	195	267	267	0	710
41	106	12	94	134	134	0	355
42	255	84	171	341	341	0	953
43	77	12	65	145	145	0	388
44	178	37	141	212	212	0	567
45	129	20	109	140	140	0	500
46	47	6	41	55	55	0	150
47	63	6	57	72	72	0	153
48	74	3	71	87	87	0	251
49	106	3	103	150	150	0	300
50	52	5	47	100	100	0	282
51	97	12	85	142	142	0	300
52	15	2	13	43	43	0	111
53	38	5	33	85	85	0	250
54	135	19	116	165	163	2	427
55	125	20	105	1343	1323	20	2953
Total	9651	1751	7900	16076	14591	1485	40751

TABLE C-2
2016 Columbia County Land Use

Raw Data							
	Employment			Households			
TAZ	Total	Retail	Other	Total	Single-Family	Multi-Family	Population Total
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	1486	400	1086	2645	2076	569	7058
9	1615	341	1274	1850	1452	398	4476
10	1754	371	1383	2250	1837	413	5444
11	236	51	185	412	343	69	1167
12	650	104	546	938	748	190	2321
13	1092	90	1002	1232	1145	87	3208
14	22	2	20	56	56	0	106
15	420	82	338	608	588	20	1705
16	60	14	46	161	158	3	363
17	199	30	169	314	280	34	813
18	227	28	199	389	362	27	979
19	94	12	82	206	206	0	638
20	316	20	296	428	428	0	1112
21	798	16	782	184	184	0	534
22	266	27	239	263	263	0	737
23	748	150	598	1036	1022	14	2759
24	308	31	277	556	556	0	1450
25	264	31	233	544	531	13	1333
26	365	93	272	657	638	19	1530
27	300	78	222	329	329	0	955
28	253	46	207	261	247	14	667
29	235	33	202	346	346	0	1037
30	97	9	88	143	121	22	327
31	265	16	249	404	404	0	1009

TABLE C-2
2016 Columbia County Land Use

Raw Data							
	Employment			Households			
TAZ	Total	Retail	Other	Total	Single-Family	Multi-Family	Population Total
32	107	8	99	154	154	0	476
33	209	20	189	276	276	0	662
34	97	8	89	141	141	0	450
35	203	56	147	305	287	18	516
36	249	54	195	415	392	23	1218
37	196	27	169	446	380	66	1140
38	112	27	85	474	474	0	1375
39	129	11	118	364	351	13	974
40	225	25	200	270	270	0	728
41	120	14	106	154	154	0	401
42	288	95	193	384	384	0	1076
43	111	17	94	207	207	0	559
44	210	43	167	248	248	0	670
45	133	21	112	143	143	0	513
46	68	9	59	80	80	0	216
47	91	9	82	105	105	0	220
48	88	4	84	102	102	0	297
49	126	4	122	178	178	0	355
50	59	6	53	114	114	0	319
51	147	18	129	217	217	0	456
52	16	2	14	45	45	0	117
53	58	8	50	131	131	0	380
54	205	29	176	253	250	3	649
55	133	21	112	1463	1442	21	3174
Total	15450	2611	12839	22881	20845	2036	58669

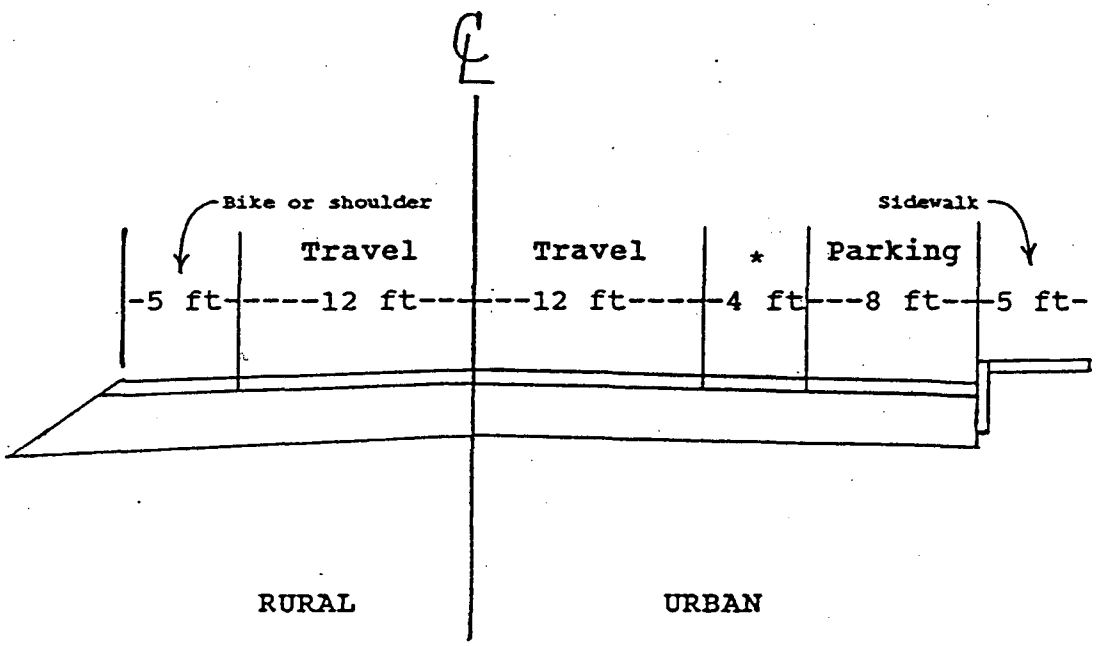
APPENDIX D

Road Design Standards

DRAWING I

ARTERIAL ROAD

TYPICAL CROSS SECTION



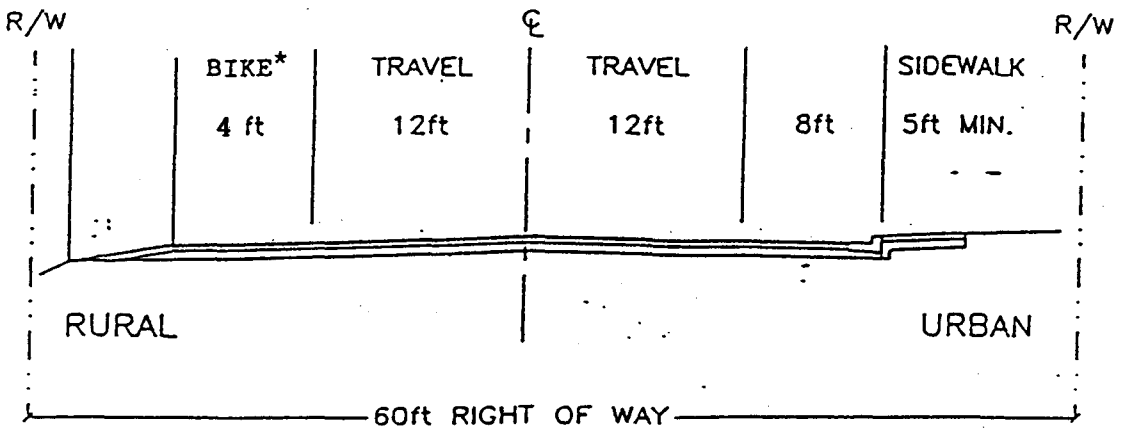
Superelevation = 6% max Superelevation = 4% max

Right-of-Way = 80 ft minimum
Design Speed = 45 mph
Profile Grade = 8% maximum
Fill slope = 2 : 1
Cut Slope = 1½ : 1
A.C. Depth = 4 inches

* Bike Lane if Designated

DRAWING II

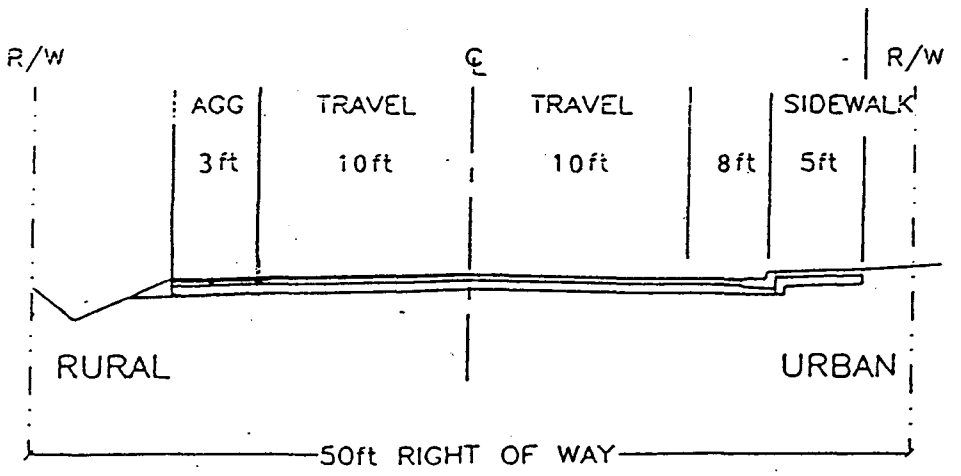
COLLECTOR ROAD



DESIGN SPEED 35 MPH

MAXIMUM GRADE = 10 %
MAXIMUM SUPERELEVATION = 6%
* AGGREGATE IF BIKE LANE NOT DESIGNATED

LOCAL ROAD



DESIGN SPEED 25 MPH

MAXIMUM GRADE = 12%
MAXIMUM SUPERELEVATION = 4%

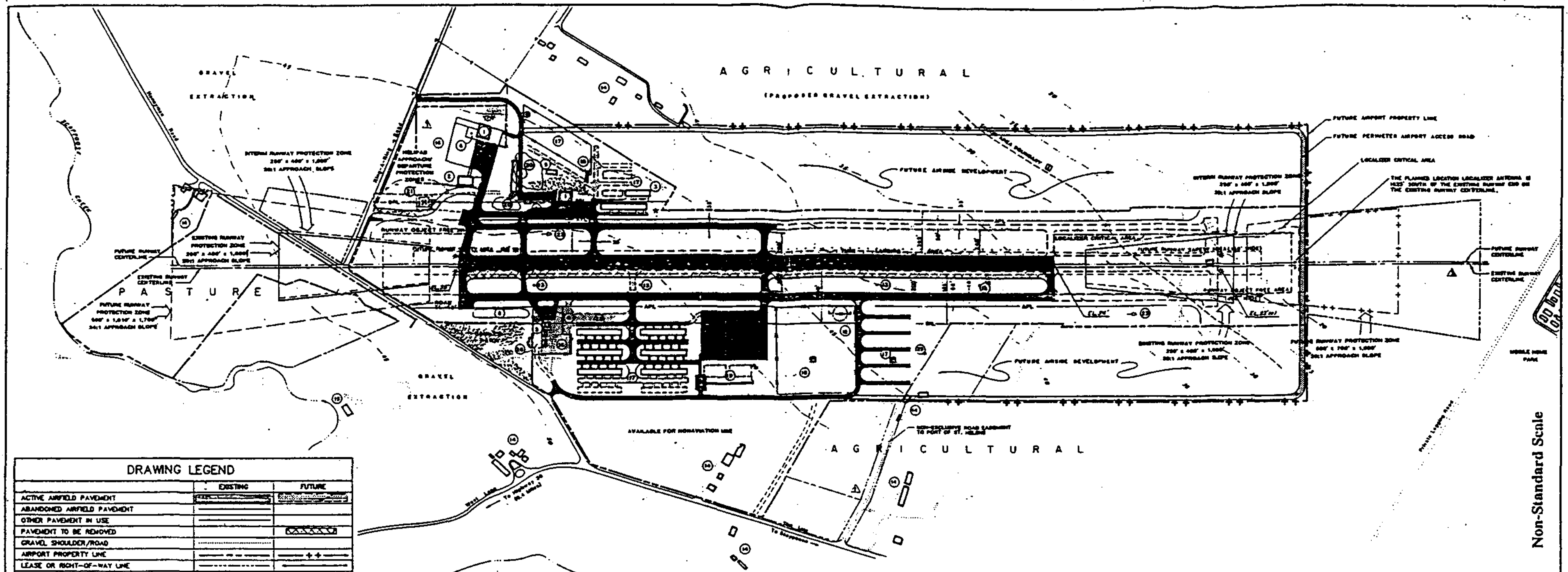
COLUMBIA COUNTY

COLLECTOR ROAD
LOCAL ROAD
ROAD STANDARDS

DATE	SHEET NO.
JAN. 1996	1-2

APPENDIX E

Scappoose Industrial Airpark Airport Layout Plan



Non-Standard Scale

DRAWING LEGEND

	EXISTING	FUTURE
ACTIVE AIRFIELD PAVEMENT		
ABANDONED AIRFIELD PAVEMENT		
OTHER PAVEMENT IN USE		
PAVEMENT TO BE REMOVED		
GRAVEL SHOULDER/ROAD		
AIRPORT PROPERTY LINE		
LEASE OR RIGHT-OF-WAY LINE		
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE	BRL	
AIRCRAFT PARKING LIMIT	APL	
BUILDINGS		
BUILDINGS TO BE REMOVED		
VEHICLE GATE		●
TOPOGRAPHIC CONTOURS	XXX	
WATER COURSE		
POWER LINE	P P	
WOODED AREA		
RUNWAY END IDENTIFIER LIGHTS		
WIND CONE		
ROTATING BEACON	★	
AIRPORT REFERENCE POINT		⊗

NOTES

[A] Existing coordinate data from National Ocean Service Obstruction Chart for Scappoose Industrial Airpark (March 1987). Future coordinates calculated from existing data, but not verified by field survey.

[B] Currently no distinction is made between based and transient tiedowns.

[C] Aircraft parking capacity of long-term development areas not included in totals.

[D] Source: FAA Airport Master Record (Form 5010).

[E] Clear slope measured on Part 77 approach surface. Road clearance will not require a threshold displacement if approach minimums are 1.0 mile or greater.

[F] No wind data is available. Wind is noted as generally following runway alignment. Northerly and southerly winds occur with approximately equal frequency.

[G] Currently used for helicopter parking.

[H] Airport perimeter to be fenced.

[I] Protected from 100-year flood by levee; subject to possible failure or overtopping during large floods (source: FEMA map).

[J] Deviations from FAA standards:

- Future hold lines and runway-to-taxiway separation on west side will be 15 feet less than respective 200' and 240' standards for a B-II runway.
- Road penetrates future 34:1 approach surface for Runway 15.
- Runway object free area (ROFA) on north end limited to 375' by Honeyman Rd. Arc

AIRPORT DATA

		EXISTING	FUTURE
AIRPORT SERVICE LEVEL (NPIAS)		General Aviation	Same
AIRPORT REFERENCE POINT [A]	Latitude	45° 46' 22" N	45° 46' 16" N
	Longitude	122° 51' 40" W	122° 51' 38" W
AIRPORT ELEVATION (Feet above MSL)		55'	Same
MEAN MAX. TEMP (Hottest month)		82° F	Same
TERMINAL NAVIGATIONAL AIDS		Battle Ground VOR	Same
AIRPORT ACREAGE	Fee Title	185	Same
	Avigation Easement	32	33
BASED AIRCRAFT SPACES	Tiedown Apron	45	70± [C]
	Hangar Spaces	50	120± [C]
	Turf Area Parking	35	30±
TRANSIENT AIRCRAFT SPACES		[B]	15± [C]

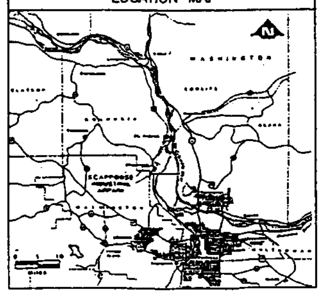
RUNWAY DATA

			RUNWAY 15-33	
			EXISTING	FUTURE
RUNWAY CLASSIFICATION			General Utility I	General Utility II
AIRPORT REFERENCE CODE			B-II	Same
PHYSICAL LENGTH AND WIDTH			3,999' x 150'	5,100' x 100'
EFFECTIVE GRADIENT			0.55%	0.63%
PAVEMENT STRENGTH (1000#) S/D/DT			30/50/90 [D]	Same
APPROACH TYPE	15		Visual	Nonprecision
	33		Visual	Same
APPROACH SLOPE: REQUIRED/CLEAR	15		20:1/21:1	34:1/21:1 [E]
	33		20:1/50+:1	20:1/50+:1
APPROACH AND LANDING AIDS	15		VASI (2 Box)	VASI/Localizer
	33		VASI (2 Box)	Same
RUNWAY END COORDINATES [A]	15	Latitude	45° 46' 41" N	Same
		Longitude	122° 51' 46" W	Same
	33	Latitude	45° 46' 02" N	45° 45' 52" N
		Longitude	122° 51' 34" W	122° 51' 31" W
RUNWAY LIGHTING			Medium Intensity	Same
TAXIWAY LIGHTING			None	Reflectors
RUNWAY MARKING			Numbers Only	Nonprecision

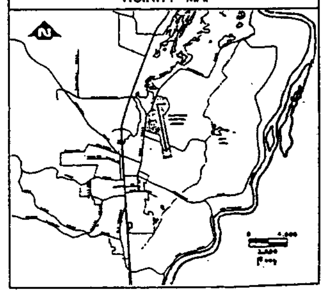
BUILDING & FACILITY LEGEND

1	FBO Hangar/Office
2	Other FBO Building
3	T-Hangar Buildings
4	Shed Hangars (To Be Removed)
5	Other Hangar Buildings (Removed April 1990)
6	Fuel Island
7	Paved Aircraft Apron
8	Turf Aircraft Parking Area
9	Residence/Garage
10	Mobile Home (To Be Removed)
11	Auto Parking
12	Wind Cone/Segmented Circle
13	Visual Approach Slope Indicator
14	Farm Buildings & Residences
15	Industrial Buildings
16	Helicopter FBO Area - Private Property
17	T-Hangar Building/Area
18	FBO & Corp./Exec. Hangar Area (Future)
19	Air Related Industrial Development
20	Turf Aircraft Parking Area (Future)
21	Helipad (Future)
22	Paved Aircraft Apron (Future)
23	Supplemental Wind Cone (Future)
24	Localizer Antenna (Future)
25	Automated Surface Observing System
26	Automobile Parking (Future)

LOCATION MAP



VICINITY MAP



SUBMITTED BY:

Port Of St. Helens

APPROVED

Date

FAA Approval Space

NO.	REVISION	SPONSOR	DATE
3	Revised per ALP UPDATE REPORT - DECEMBER 1994	PORT OF ST. HELENS	12/94
2	Revised "AS-CONSTRUCTED" - AIP 3-41-0056-05(07)	PORT OF ST HELENS	8/93
1	Property Transfer (2/8/91)		4/91

SCAPPOOSE INDUSTRIAL AIRPARK

SCAPPOOSE, OREGON

AIRPORT LAYOUT PLAN

HODGES & SHUTT
AVIATION PLANNING SERVICES

AIRPORT CONSULTANTS & ENGINEERS
Santa Rosa, California

DESIGNED BY: KAB	APPROVED BY:		DATE: April 1990
DRAWN BY: RL/MA	CHECKED BY:	SCALE: 1" = 300'	SHEET: 1 OF 1

APPENDIX F

Travel Demand Forecasts

AUTO VOLUMES

emme/2

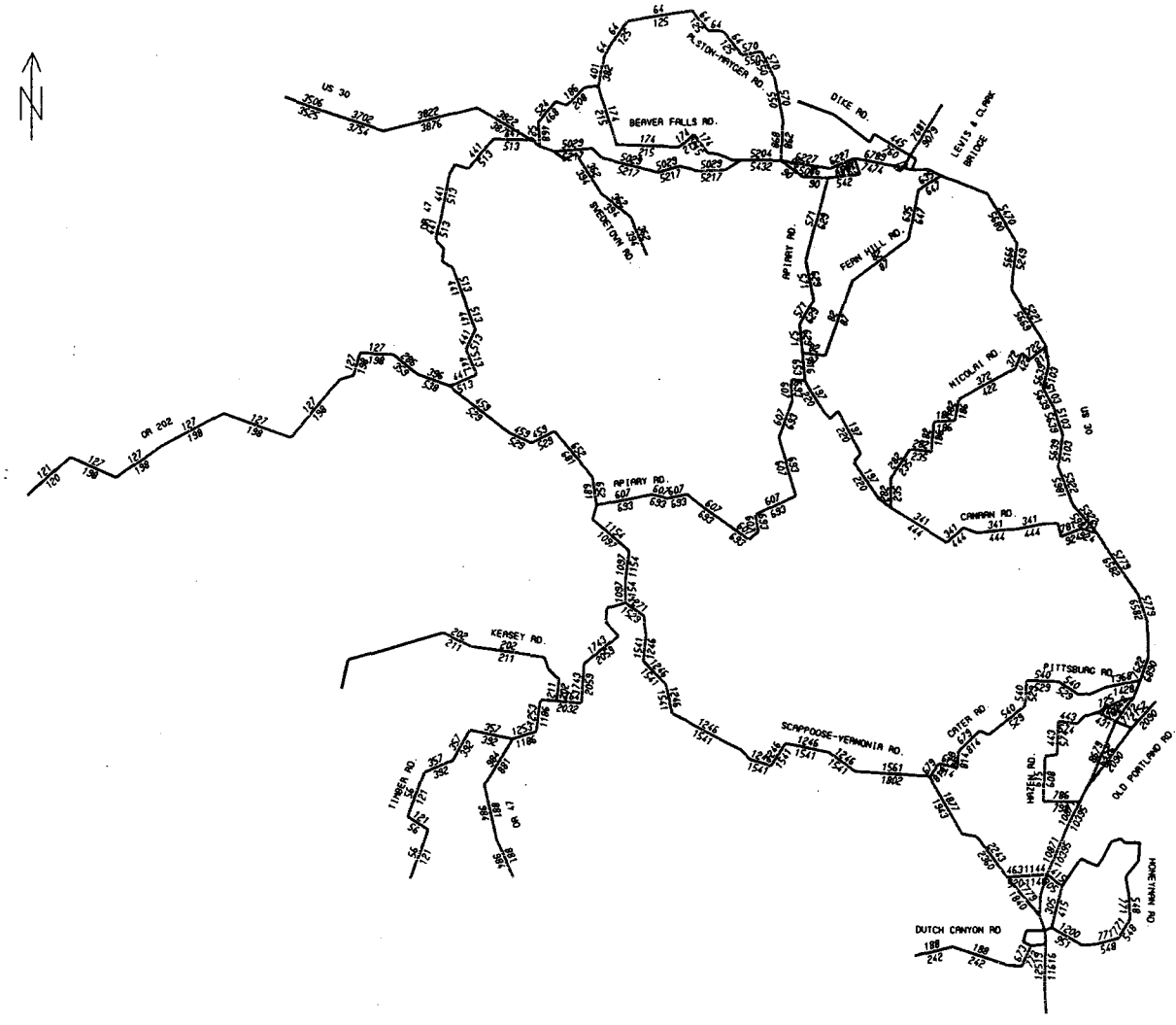


Figure 1
1995 Existing Traffic Volumes

LINKS:
type=4.10

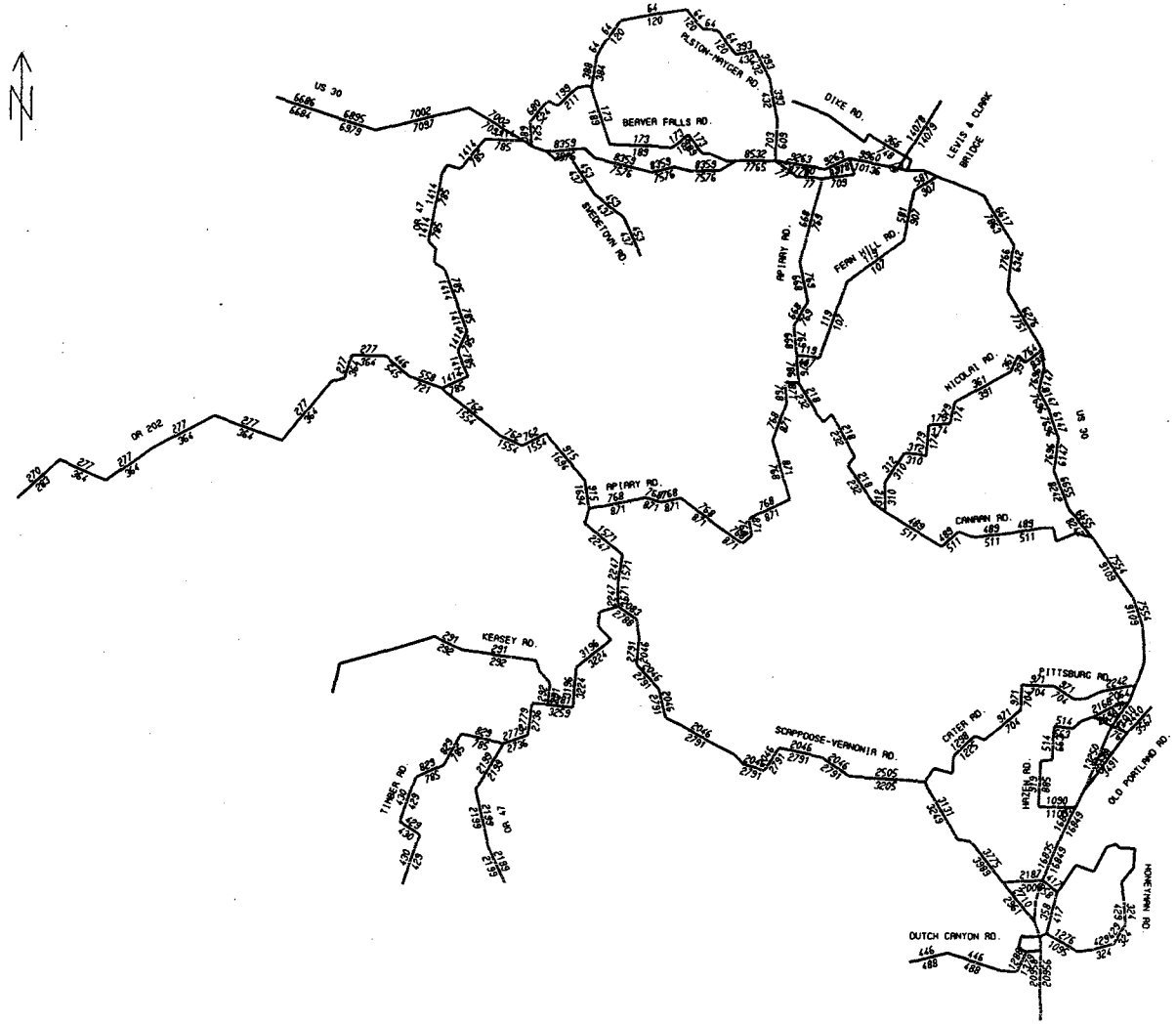
WINDOW
-240.8/ 25 96
840 63/ 837 04

EMME/2 PROJECT: Columbia County TSP
SCENARIO 2: 1995 Existing Conditions after US 30 construction

97-10-07 15 40
MODULE: 6.12
KAINC. . dec

AUTO VOLUMES

emme/2



LINKS:
type=4.10

Figure 2
2016 No-Build Traffic Volumes

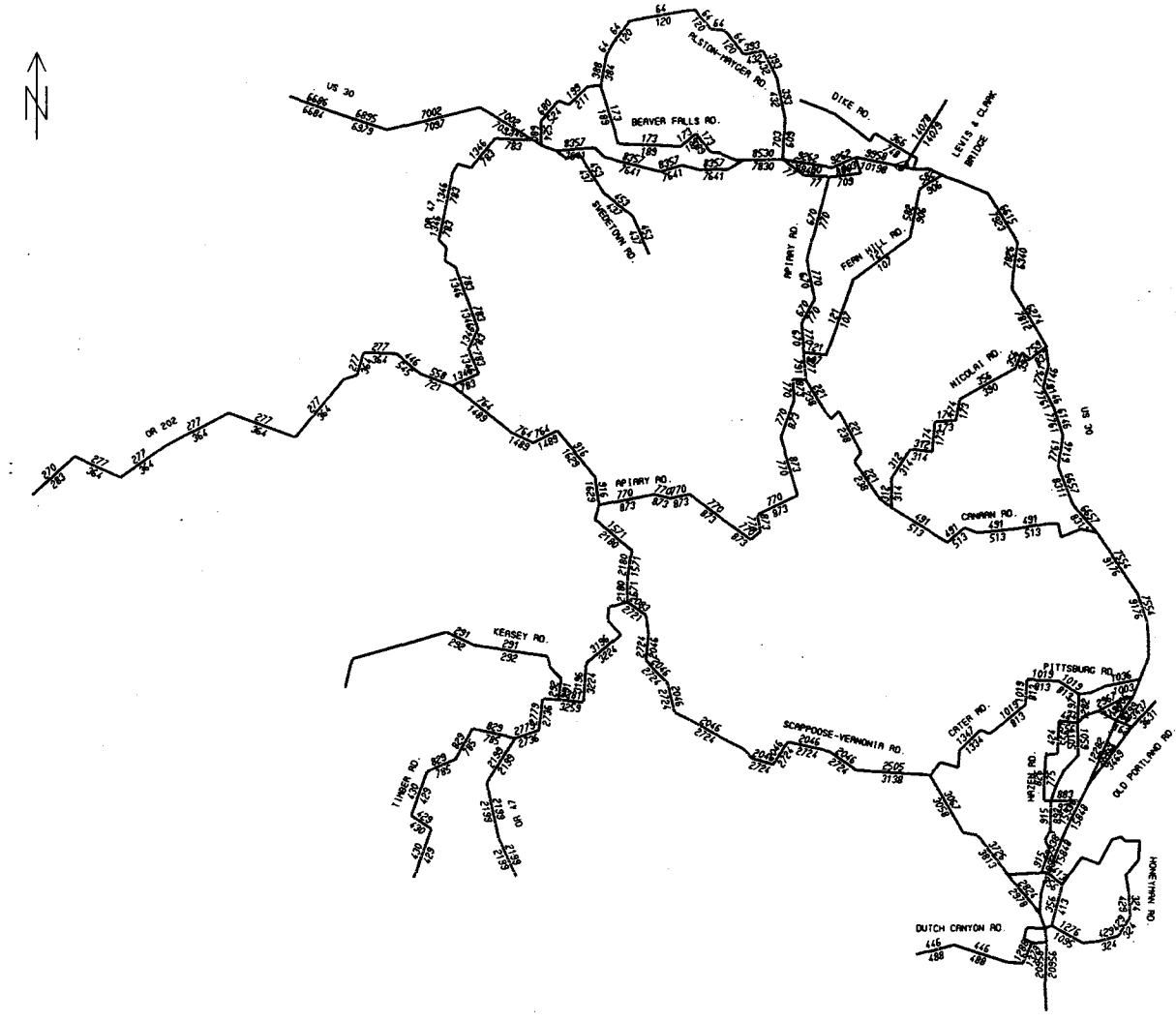
WINDOW
-240.8/ 25.96
840.63/ 837.04

EMME/2 PROJECT: Columbia County TSP
SCENARIO 10: 2016 No-Build Columbia County

97-10-07 15:41
MODULE: 6.12
KAINC.....dec

AUTO VOLUMES

emme/2



LINKS:
type=4.10

Figure 3
2016 Build Traffic Volumes (with Westside Arterial)

WINDOW:
-240.8/ 25.96
840.63/ 837.04

EMME/2 PROJECT: Columbia County TSP
SCENARIO 20: 2016 Columbia County with Westside Arterial

97-10-07 15:45
MODULE: 6.12
KAINC.....dec

APPENDIX G

Study Advisory Committee

COLUMBIA COUNTY TSP
Advisory Committee

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   City of Clatskanie
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   Clatskanie, OR 97016
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   Dept. of Public Works
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   Scappoose, OR 97056
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   St. Helens, OR 97051
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    Phone (503) 397-2990

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    Phone: (503) 397-0805

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Jack Peterson
Tony Hyde
Columbia County Courthouse
St. Helens, Or 97051

21. **Dave Hill, Director**
Don Wallin, Transportation Planner
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Columbia County Courthouse
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27. **David Clark, Transp. Planner**
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28. **Katy Tobie, Senior Community Affairs Coordinator**
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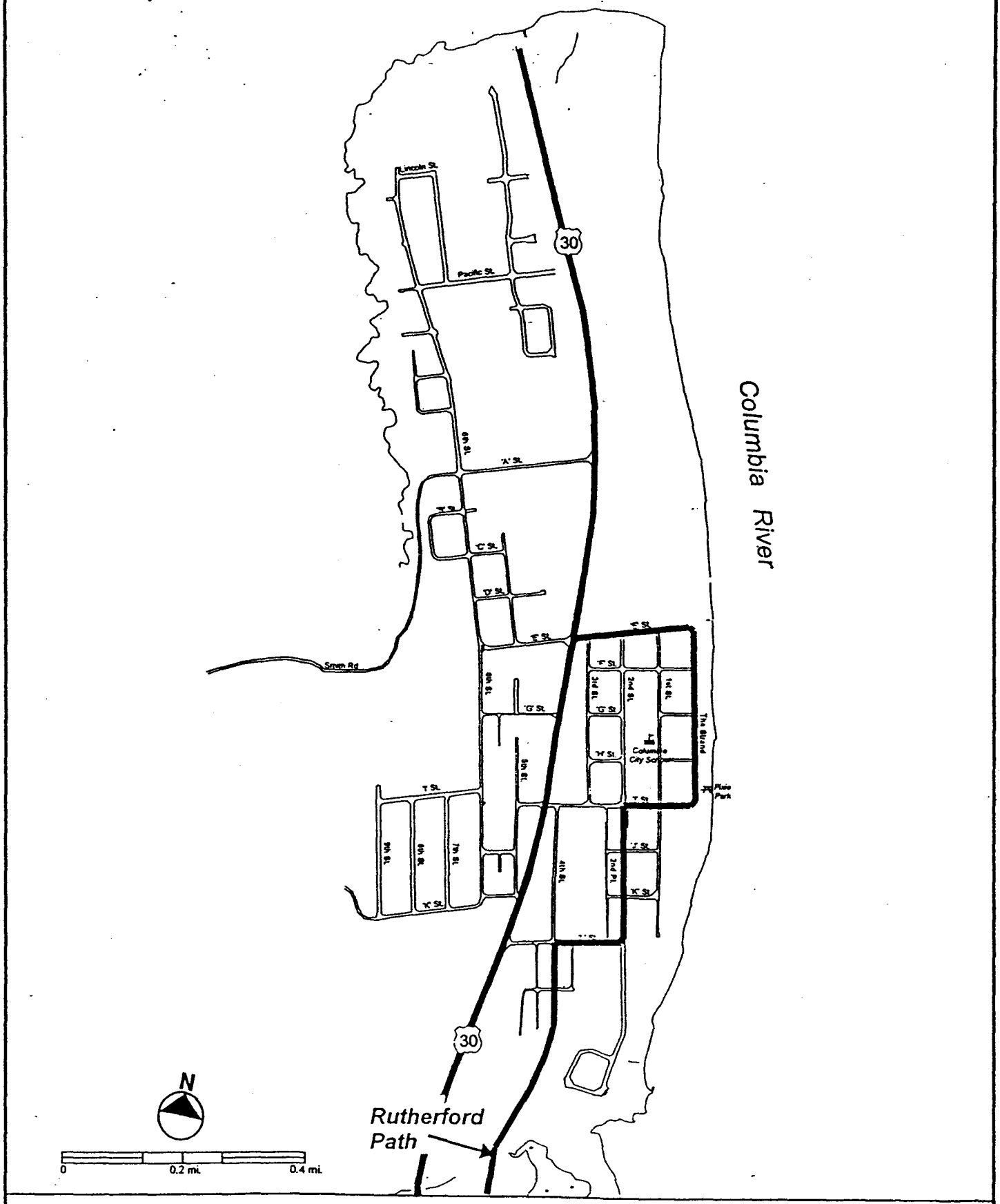
Phone: (503) 731-8281

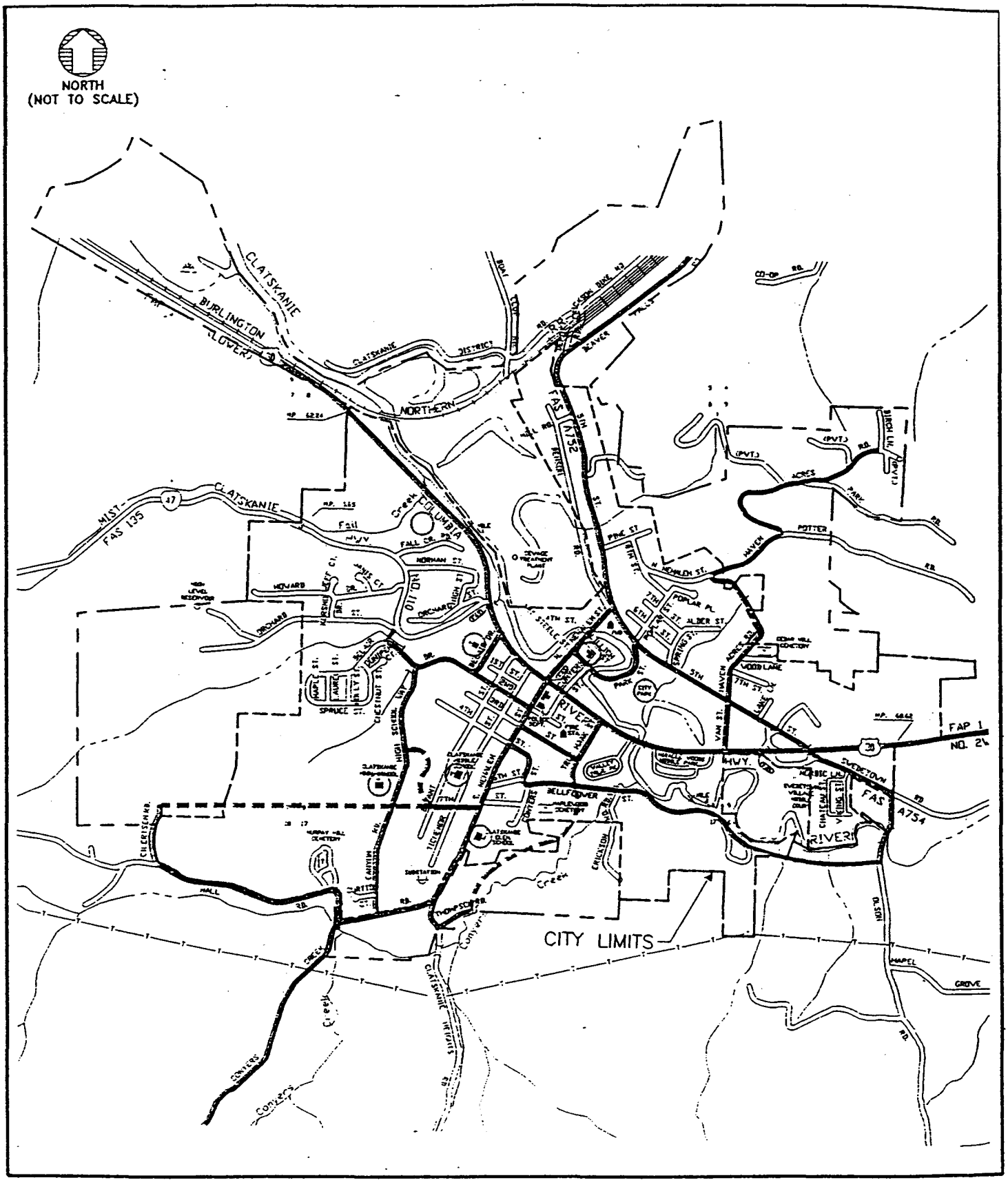
APPENDIX H

City Bicycle Plans



Columbia City Transportation System Plan

Figure 4.6
Existing Bicycle Routes and Paths



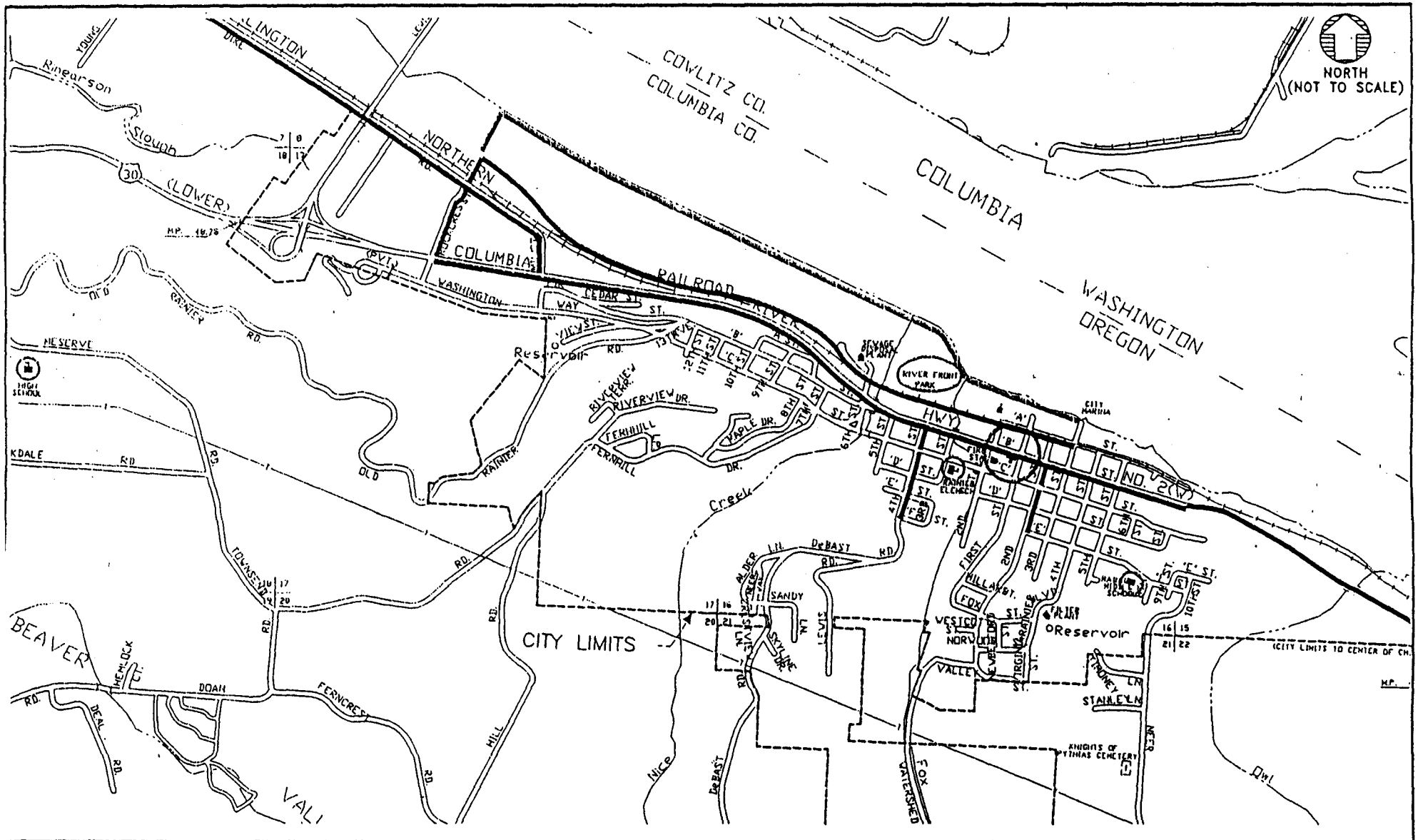
LEGEND

- TRIP GENERATOR
- BIKE LANES
- BIKE TRAILS
- SIGNED BIKE ROUTE
- CITY LIMITS
- UGB

PROPOSED BICYCLE PLAN

TRANSPORTATION SYSTEM STUDY
CLATSKANIE, OREGON
OCTOBER 1996

FIGURE 8



LEGEND

- COMBINED BICYCLE/PED TRAIL
- BICYCLE LANE NETWORK
- TRIP GENERATOR

PROPOSED BICYCLE PLAN

TRANSPORTATION SYSTEM STUDY
RAINIER, OREGON
AUGUST 1996

FIGURE 7

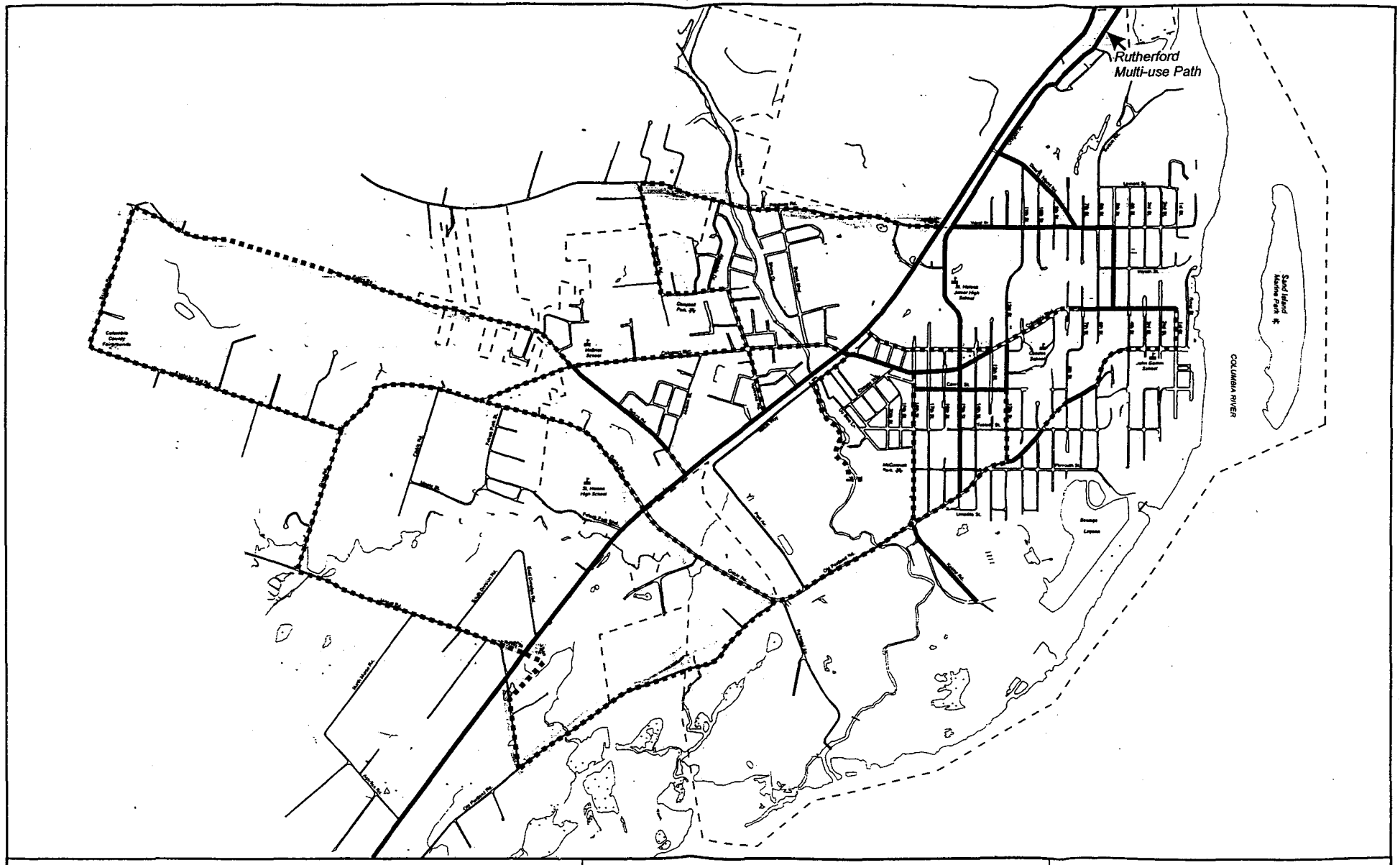


Figure 6.2
BICYCLE IMPROVEMENTS
(Part of TDM Alternative)

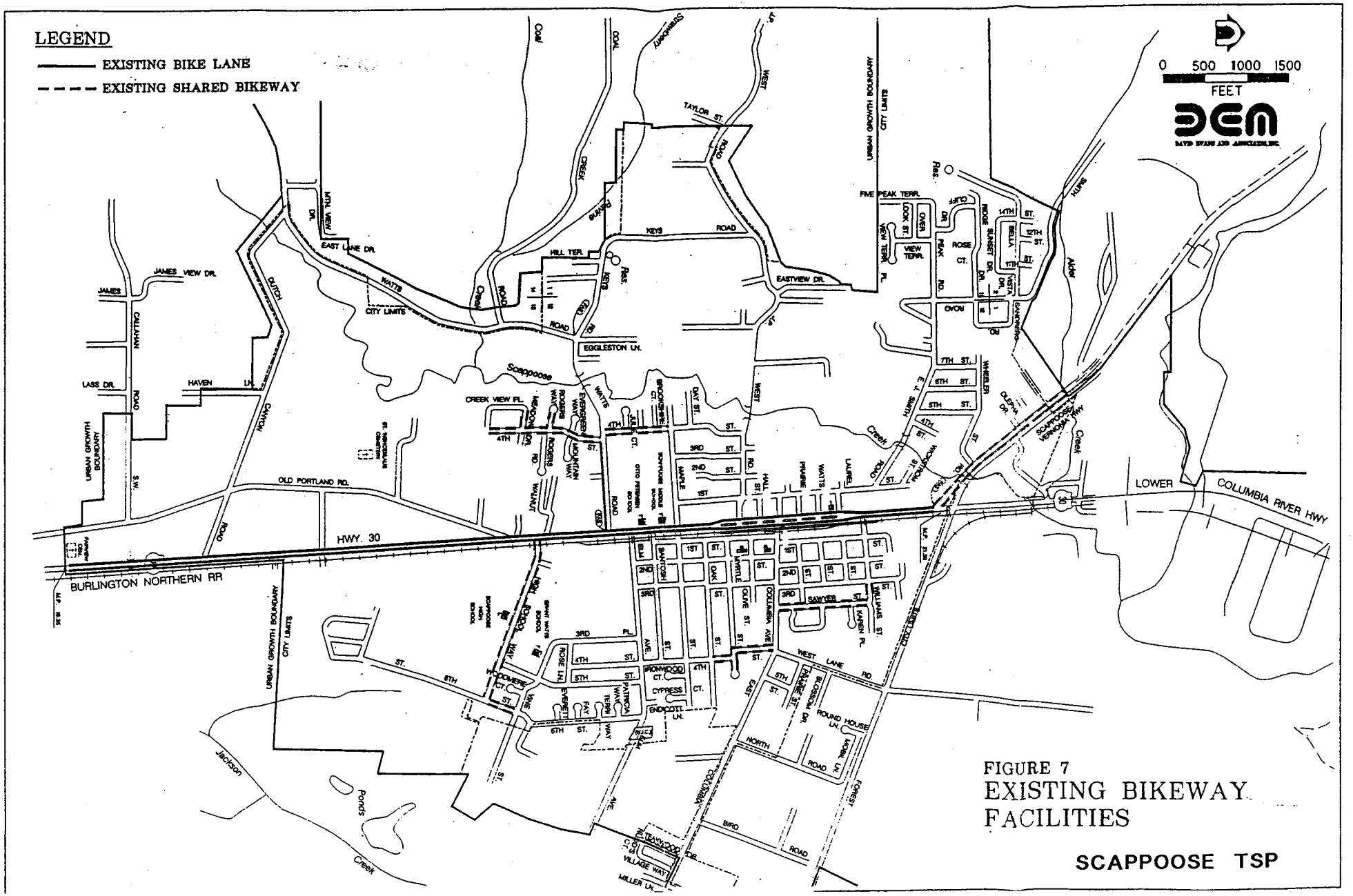


FIGURE 7
EXISTING BIKEWAY FACILITIES

SCAPPOOSE TSP