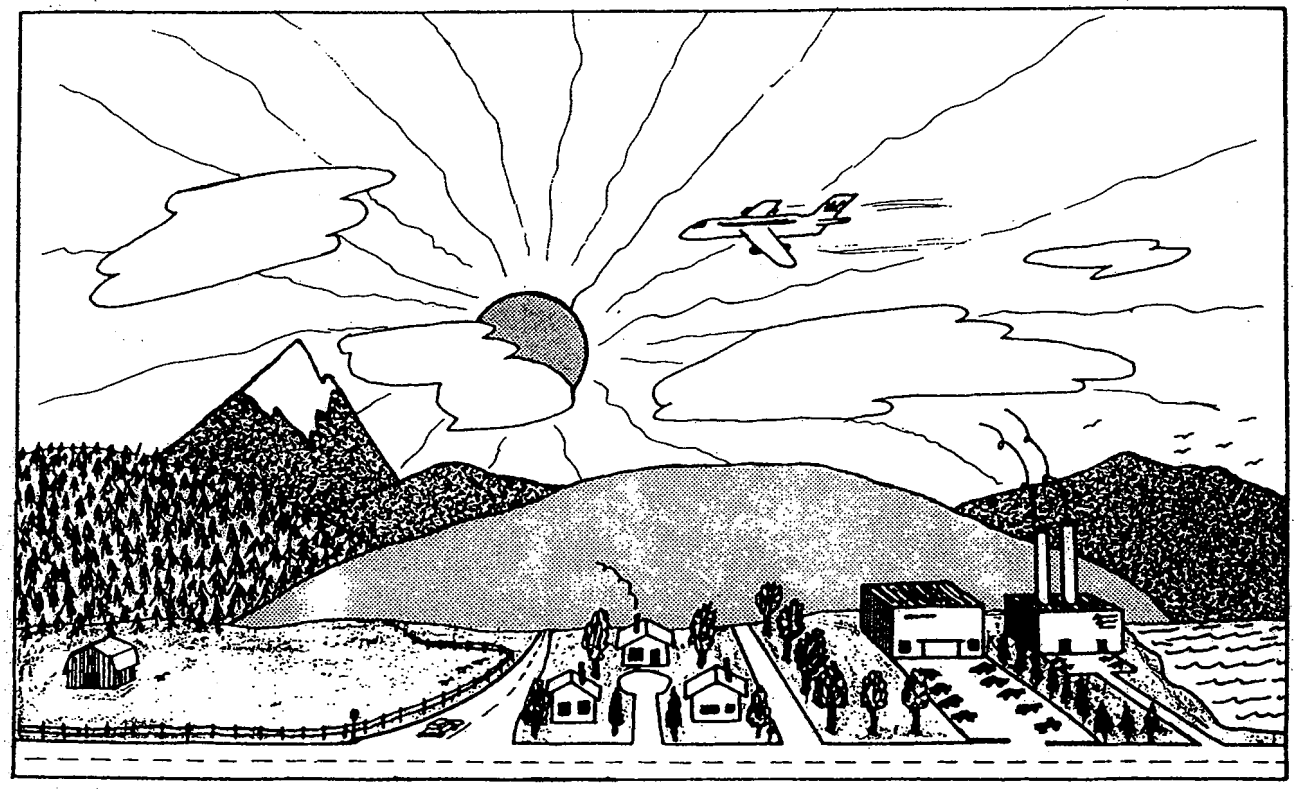
City of Klamath Falls

COMPREHENSIVE PLAN



Adopted April 20, 1981

—PLANNING DIVISION—

DEPARTMENT OF PUBLIC SERVICES
CITY OF KLAMATH FALLS
KLAMATH FALLS, OREGON

COMPREHENSIVE PLAN

Adopted April 20, 1981

KLAMATH COUNTY

DEPARTMENT OF PUBLIC WORKS
CITY OF KLAMATH FALLS
KLAMATH FALLS, OREGON

CITY OF KLAMATH FALLS COMPREHENSIVE PLAN

Produced by the
City of Klamath Falls
Citizen Involvement Program
and
Department of Public Services
Planning Division

with the assistance of the
Departments of Public Works, Public Safety, & Legal Services

* * *

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COOPERATING AGENCIES

Klamath Falls Public School Districts

Klamath County Departments of Planning and Public Works and County Museum

Klamath County Economic Development Association

Klamath County Special Service Districts
- Schools
- Enterprise Irrigation
- Klamath Irrigation
- Soil and Water Conservation

Klamath Housing Authority

State of Oregon
- Housing Division
- Department of Economic Development
- Emergency Services Division
- Department of Fish & Wildlife
- Department of Geology & Mineral Industries
- Employment Division
- Health Division
- Department of Land Conservation & Development
- Public Utilities Commissioner
- Department of Transportation
- Water Resources Department
- Oregon Institute of Technology

United States Government
- Soil Conservation Service
- Forest Service
- Extension Service
- Bonneville Power Administration
- Corps of Engineers
- Bureau of Reclamation
- Postal Service
- Department of Defense (Air Force)

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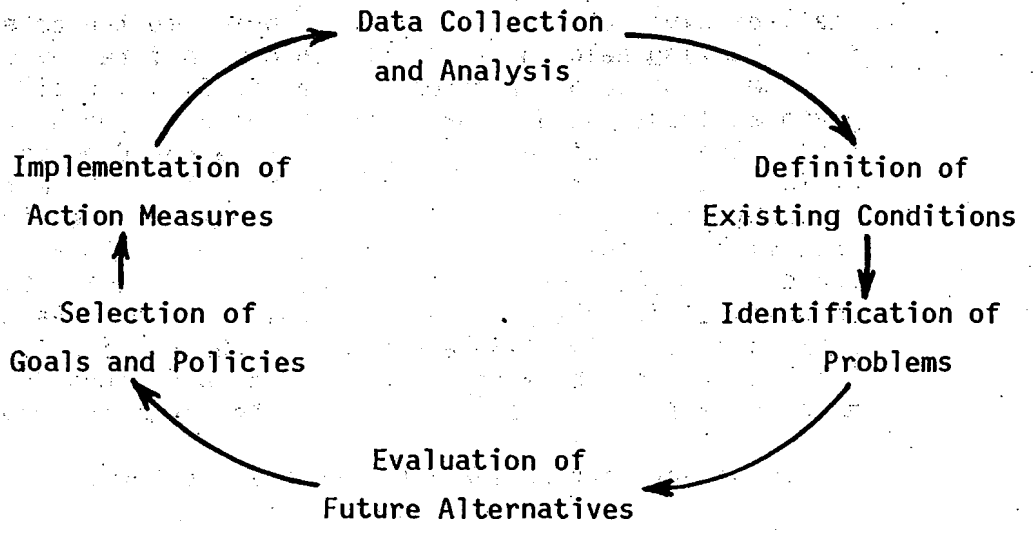
THE PLANNING PROCESS

Planning in the City of Klámath Falls is a continuous, on-going process composed of the following:



This continuous planning process is centered around the Comprehensive Plan, which is the City's overall policy guide for future growth and development. The Plan is designed as a framework for all decisions and actions relating to the community, and is intended to provide an adequate, factual base for such decisions and actions. The Plan includes: historical background and current factual information for each facet of the community; identification of current problems and future issues; ultimate policy choices; and specific implementation measures.

The historical background and current factual information are presented in order to identify current issues and problems. The current factual information includes "detailed assessments" which are adopted by reference for their statistical and analytical content only. The detailed assessments are not intended as policy statements; and in cases of inconsistencies the Comprehensive Plan will take precedence.

The current issues and problems provide a basis for evaluating probable future conditions. A range of policies are possible for resolving problems or addressing issues. From this range of possible policies, the final policies are adopted. Throughout the Plan maps are used to depict either current data or diagrammatic policy criteria. Information depicted on the maps is generalized and subject to detailed interpretation. The Plan text will take precedence over Plan maps when conflicts or inconsistencies are apparent.

Just as the planning process is dynamic and changing, so too is the Plan. Amendments will be considered by the Planning Commission and City Council in accordance with the City's Citizen Involvement and Agency Coordination Programs. Amendments will be considered in four manners:

1. Legislatively initiated major amendments, being those that have widespread significant impact beyond a site specific area. At least every third year following Plan adoption the Planning Commission, after conducting no less than two public hearings, may recommend such amendments to the City Council, who may amend the Plan as deemed appropriate after conducting no less than two public hearings. Notice of hearings before the Planning Commission shall be given at least thirty days prior to the date of the first hearing held and at least ten days before any subsequent hearing. Notice of hearings before the City Council shall be given at least ten days prior to the date of the hearing. Upon fixing the time of public hearing before the Commission of Hearings Officer, the Director shall cause notice of such hearing to be given by posting, publication, or broadcast as required by the provisions of this section. In case of public hearing before the Council, the City Recorder shall cause such notice to be given in accordance with the provisions of this section. Said notice shall set forth the time and place of the hearing, a summary of the nature and substance of the action to be considered at the hearing, and a brief description of the property involved.

   Notice of any hearing shall be given as follows:

   a. By publication once in a local newspaper of general circulation;

   b. By providing notice to all local electronic media;

   c. By posting in at least four public locations.

2. Legislatively initiated minor amendments, being those that do not have significant impact beyond a site specific area or are limited to maintaining current data. Each year following Plan adoption the Planning Commission, after conducting at least one public hearing, may recommend such amendments to the City Council, who may amend the Plan as deemed appropriate after conducting at least one public hearing. Any such minor amendment may also be included within a major amendment during any year such a major amendment is being made. Notice of any hearing held as a part of a minor amendment shall be given at least five days prior to the date the hearing is held. Upon fixing the time of public hearing before the Commission, the Director shall cause notice of such hearing to be given by posting, publication, or broadcast as required by the provisions of this section. In case of public hearing before the Council, the City Recorder shall cause such notice to be given in accordance with the provisions of this section. Said notice shall set forth the time and place of the hearing, a summary of the nature and substance of the action to be considered at the hearing, and a brief description of the property involved. Notice of any hearing shall be given as follows:

   a. By publication once in a local newspaper of general circulation;

b. By providing notice to all local electronic media;

c. By posting in at least four public places.

3. Quasi-judicially initiated amendments, being those initiated either by property owners, the Planning Commission or the City Council for purposes of amending the land-use designation of specific property. Such amendments may be initiated at any time and shall be considered first by the Planning Commission at no less than one public hearing.

Prior to making a recommendation on the proposed change, the Commission shall analyze the following criteria and incorporate such analysis in their decision.

a. The amendment is in conformance with the policies and procedures of the Comprehensive Plan.

b. Upon finding that the change is in compliance with the Comprehensive Plan, the amendment is also in compliance with the statewide planning goals under the Land Conservation and Development Commission.

After receiving a Planning Commission recommendation and conducting at least one public hearing on the record, the City Council may approve, modify, or deny the proposed amendment.

Upon fixing the time of public hearing before the Commission, the Director shall cause notice of such hearing to be given as required by the Provisions of this section. In case of public hearing before the Council, the City Recorder shall cause such notice to be given in accordance with the provisions of this section. Said notice shall set forth the time and place of the hearing, a summary of the nature and substance of the action to be considered at the hearing, and a brief description of the property involved.

Notice of any hearing shall be given not less than five days prior to the hearing and as follows:

a. By publication once in a local newspaper of general circulation not less than five days prior to the hearing:

b. By providing notice to all local electronic media not less than five days prior to hearing:

c. By first class mail to applicant and all property owners as shown on the ownership list filed with the application. Failure to give such notice shall not invalidate any of the proceedings involved.

d. By posting a notice on the premises involved in the amendment. Failure to give such notice shall not invalidate any of the proceedings involved.

Any request for an amendment of a land use designation may be acted upon concurrently with annexation and zone change proceedings. Such concurrent proceedings shall comply with amendment procedures of the Comprehensive Plan and the Community Development Ordinance.

4. Urban Growth Boundary amendments will be considered in accordance with the City-County Urban Area Management Agreement.

The preparation and revision of the Plan is dependent largely upon citizen involvement and agency coordination. Through its official Citizen Involvement and Agency Coordination Programs the City's policy will be to provide opportunities for citizens and affected government agencies to be involved in all phases of the planning process. Citizens are and will be assured of a policy commitment to: effect two-way communication with decision-makers; provide access to understandable technical information; acknowledge and apply appropriate feedback from decision-makers; and develop adequate financial support for operation of the Citizen Involvement Program. Affected government agencies are and will be assured of a policy commitment to providing: access to all City plans, programs, and ordinances affecting their work; all City work schedules on projects affecting their work; preliminary drafts of all plans, programs, and ordinances affecting their work; and prompt consideration of any suggestions or conflicts that arise during the course of coordination.

The Comprehensive Plan, all referenced appendices, and all implementation measures will be given the widest possible dissemination in the community in order to reinforce a planning process designed to serve all citizens and agencies as expediently and fairly as possible.

The Role of the Comprehensive Plan

The Comprehensive Plan is the vision of the community, a representation of what the future ought to be. It is comprehensive in the sense that it considers all the facets that are important to individuals and to the community as a whole. While the Plan document is divided among different issues, interrelationship of all aspects of the community are considered and an integrated holistic view is expressed in the policies. The natural resources made Klamath Falls an attractive place to live. The quality of the natural resources is threatened as population increases, land is developed, and commerce, industry, and transportation expands. The effect of and impact on community resources are most difficult to determine, yet are the central part of the planning process. The most significant component of community resources is population.

The community of Klamath Falls is analyzed from the perspective of Natural Resources, Community Resources, Public Facilities and Services, and Community Development, which are the organizational groups of this Plan.

In Natural Resources Group, the inventories reveal that there is considerable agricultural and forest land inside the City and of course in the surrounding area. Air quality is good, and the intent

of the Plan is to maintain that quality because it is an attractive part of liveability of the area. The quality of water in the major water bodies near the City is threatened with the deteriorating process of eutrophication. For an urbanized area Klamath Falls has a considerable amount of wildlife, which provide an amenity but sometimes cause problems. The scenery and scenic views in and around Klamath Falls are outstanding. Klamath Falls has had many structures of historic value; some of which have been lost. The intent of the plan is to preserve these significant natural and historic resources for future generations.

In the Community Resources Group, population is the most important aspect because population change generates impacts on all the other resources of the community. The City is basically assuming a policy of letting population growth occur naturally, neither encouraging or discouraging it. The location and density of development is directed in the Plan in a way which maximizes the efficiency and convenience of urban living while protecting surrounding natural resources.

The most important aspect of the economy is to maintain the existing level of diversification of employment type and encourage greater diversification. Klamath Falls currently imports much of its energy. To offset the high cost of this resource the City is pursuing a leadership role in the development of geothermal energy. The major issue for housing is providing an adequate amount of housing at prices and rents affordable by all households. Adequate land is allocated for the development of a variety of housing types and densities as well as for needed commercial and employment areas.

For the Public Facilities and Services Group, the most important issue is costs necessary to support the future population growth. Educational facilities have not generally been adequately planned which may lead to inadequate or underutilized facilities. Recreational facilities are financed by the City but used by many who are not City residents and do not pay for their use. Transportation facilities generally are adequate. The greatest need for transportation improvements is at the neighborhood level. Also in order to most efficiently use the existing transportation facilities, alternatives to travel by car are promoted in the Plan. Water and sewer systems are generally adequate but new facilities required by new development should share equitably in the cost of the facility. The City's drainage system is not adequate, but the City is attempting to resolve that problem. Solid waste disposal is a community issue appropriately being handled at the County level. Police and fire services are provided by professional personnel but the services have fiscal problems. The County has the appropriate lead role of providing public health services.

For Community Development, issues are analyzed in the land use and urbanization elements. The relationship of higher public service costs for lower density development is brought out. The land needs analysis indicates that there is more land available for development within the City than is actually needed.

DEFINITIONS

The definition of words and terms below is intended to explain the meaning of the words and terms in the context of the Plan. The definitions are not intended to have applicability outside of the Klamath Falls Comprehensive Plan context.

Accretion. The buildup of land along a beach or shore by the deposition of waterborne or airborne sand, sediment, or other material.

Adverse affect. Something that is unfavorable in its impact on another individual or on the land.

Agricultural lands. Land of predominantly Class I, II, III, IV, V, and VI soils as identified in the Soil Capability Classification System of the United States Soil Conservation Service, and other lands which are suitable for farm use taking into consideration soil fertility, suitability for grazing, climatic conditions, existing and future availability of water for farm irrigation purposes, existing land use patterns, technological and energy inputs required, or accepted farming practices. Lands in other classes which are necessary to permit farm practices to be undertaken on adjacent or nearby lands, shall be included as agricultural land in any event.

Agriculture. The use of land for natural resource purposes including timber production. In the Plan, it includes those areas outside the Urban Growth Boundary not anticipated to be needed for other than natural resource purposes.

Air quality. See Air Quality Map for classifications and definitions.

Alternate modes of transportation. See Alternate Modes of Transportation Map for classifications and definitions.

Archaeological resources. Those districts, sites, buildings, structures, and artifacts which possess material evidence of human life and culture of the prehistoric and historic past. See Historical resources.

Auto-oriented commercial. Those areas containing a broad range of commercial activity, which has developed in a haphazard fashion along major street rights-of-way, often referred to as "strip" commercial.

Avulsion. A tearing away or separation by the force of water. Land which is separated from uplands or adjacent properties by the action of a stream or river cutting through the land to form a new stream bed.

Bedrock. See Severe limitations.

Bikeway. A right-of-way for bicycle and pedestrian traffic.

Buffer area. An area which provides a separation between potentially conflicting land uses, particularly urban and rural uses. Such a buffer may be used for low density or public open space purposes.

Buildable lands. Urban and urbanizable land that is suitable, available, and necessary for present or future urban use.

Carrying capacity. Level of use which can be accommodated and continued without irreversible impairment of natural resources productivity, the ecosystem and the quality of air, land and water resources.

Citizen. Any person within the planning area.

Cluster. A grouping of development. Specifically, the locations of structures on a given site in one area leaving the remainder of the land in open space.

Commercial and industrial sites. See the Commercial and Industrial Sites Map for classifications and definitions.

Comprehensive Plan. The Klamath Falls Comprehensive Plan, which interrelates all functional and natural systems and activities relating to the use of lands, including but not limited to sewer and water systems, transportation systems, educational systems, recreational facilities, and natural resources and air and water quality management programs. "Comprehensive" means all-inclusive, both in terms of the geographic area covered and functional and natural activities and systems occurring in the area covered by the Plan.

Conserve. To manage in a manner which avoids wasteful or destructive uses and provides for future availability.

Density of use. The average number of a given use per unit of area. Generally applied to a residential development in terms of dwelling units per acre. The density is measured on the net land area after street and other public facility dedications are subtracted.

Develop. To bring about growth upon or availability of land ; to construct or alter a structure, to conduct a mining, dredging, filling, or similar operation; to make a material or physical change in the use or appearance of land; to divide land into parcels; or to create or terminate rights of access.

Diversity or difference. Diversity implies the mixture of land uses within a given area to encourage the development of heterogeneous residential areas.

Downtown. An area of the City of Klamath Falls that includes the commercial core area, central business district, and the downtown residential area. The downtown area includes commercial, industrial, residential and open space and recreation uses.

Drainage. See Severe limitations.

Drainage way. The bed and banks of a waterway used to discharge surface waters from a given area. It also includes adjacent areas necessary to preserve and maintain the drainage channel.

Ecosystem. The living and nonliving components of the environment which interact or function together, including plant and animal organisms, the physical environment, and the energy systems in which they exist. All the components of an ecosystem are interrelated.

Education sites. See Education Sites Map for classifications and definitions.

Energy. See Energy Map for classifications and definitions.

Fill. The placement by man of sand, sediment, concrete, or other material, usually in submerged lands or wetlands, to create new uplands or raise the elevation of land. Fill shall also include a property engineered sanitary landfill.

Floodplain. The area adjoining a stream, river or lake that is subject to regional flooding. A regional flood is a standard statistical calculation used by engineers to determine the probability of severe flooding. It represents the largest flood which has a 1 percent chance of occurring in any one year in an area as a result of periods of higher than normal rainfall or stream flows, high winds, rapid snowmelt, natural stream blockages, or combinations thereof. (Specific flood plains shall be defined with maps using the latest information from the federal government).

Forest lands. (1) lands composed of existing and potential timber stands which are suitable for commercial forest uses; (2) other timber stands needed for watershed protection, wildlife and fisheries habitat and recreation; (3) lands where extreme conditions of climate, soil and topography require the maintenance of vegetation cover irrespective of use; (4) other timber stands in urban and agricultural areas which provide urban buffers, windbreaks, wildlife and fisheries habitat, livestock habitat, scenic corridors and recreational use.

Forest Uses. (1) The production of trees and the processing of forest products; (2) open space, buffers from noise and visual separation of conflicting uses; (3) watershed protection and wildlife and fisheries habitat; (4) soil protection from wind and water; (5) maintenance of clean air and water; (6) outdoor recreational activities and related support services; and (7) grazing land for livestock.

General commercial. See Land use designations.

Geology. See Geology Map for classifications and definitions.

Goal. A statement of intention expressing community values and attitudes intended to provide a guide for action by the community.

Groundwater. See Groundwater Map for classifications and definitions.

Heavy industrial. See Land use designations.

High-density residential. See Land use designations.

Historical resources. Those districts, sites, buildings, structures, and artifacts which have a relationship to events or conditions of the human past. See Archaelogical resources, and historic resources map.

Housing condition. See Housing Condition Map for classifications and definitions.

Innovation. The introduction of something new. Generally, the use of a new design concept such as clustering to promote better land utilization and to establish a more diverse community. Also, it is a revision of the land development regulations of the City to encourage better land utilization.

Key facilities. Basic facilities that are primarily planned for by local government but which also may be provided by private enterprise and are essential to the support of more intensive development, including public schools, transportation, water supply, sewage and solid waste disposal.

LCDC. Land Conservation and Development Commission of the State of Oregon.

Land. The solid part of the surface of the earth and water, both surfaces and subsurface, and the air.

Land use designations.

a. Low-density residential. Principally single-family dwellings occurring up to a maximum of five units per net acre.

b. Medium-density residential. Combination of single-family dwellings and limited numbers of multi-family dwellings occurring up to a maximum of 14 units per net acre.

c. High-density residential. Combination of dwelling types emphasizing multi-family dwellings occurring up to a maximum of 35 units per net acre.

d. Neighborhood commercial. General commercial enterprises operating in a limited scale, compatible with surrounding neighborhood conditions, and intended to principally serve neighborhood residents.

e. General commercial. General commercial enterprises intended to serve residents throughout the community.

f. Light industrial. Light industrial enterprises, limited in scale, and conducted principally inside buildings.

g. Heavy industrial. Large industrial enterprises, unlimited in scale, and conducted both inside and outside buildings.

h. Public facility. Public or quasi-public structures generally used by government, non-profit organizations, or large numbers of persons.

i. Urbanizing. Areas where urban uses may occur, but only in accordance with appropriate environmental protections which are consistent with Plan policies.

Light industrial. See Land use designations.

Livability. Those aspects of the community perceived by residents which make Klamath Falls a "nice place to live". A precise definition of these factors differs with the purpose of the definition.

Low-density residential. See Land use designations.

Maintain. Support, keep and continue in an existing state or condition without decline.

Medium-density residential. See Land use designations.

Natural areas. Includes land and water that has substantially retained its natural character and which is an important habitat for plant, animal, or marine life. Such areas are not necessarily completely natural or undisturbed, but can be significant for the study of natural, historical, scientific, or paleontological features, or for the appreciation of natural features.

Natural hazard. A natural characteristic or combination of characteristics which are known to endanger the public health, safety or general welfare.

Natural resources. Air, land and water and the elements thereof which are valued for their existing and potential usefulness to man.

Neighborhood commercial. See Land use designations.

Open space. See Open Space Map for classification and definitions. Lands used that would, if preserved and continued in its present use:

a. Conserve and enhance natural or scenic resources;

b. Protect air or streams or water supply;

c. Promote conservation of soils, wetlands, or shorelines;

d. Conserve landscaped areas that reduce air pollution and enhance the value of abutting or neighboring property;

e. Enhance the value to the public of surrounding properties, parks, forests, wildlife preserves, natural reservations or sanctuaries or other open space;

f. Promote orderly urban development.

Parks. See Parks and Recreation Map for classification and definitions.

Permeability. See Severe limitations.

Person. A natural person, firm partnership, association, social or fraternal organization, corporation, trust, estate, receiver, syndicate, branch of government, or similar entities, any group or combination acting as a unit, or the successors or assigns of any of the aforesaid. Person shall also include the authorized agent of the aforesaid.

Planning area. The air, land and water resources within and adjacent to the jurisdiction of a governmental agency. For specific areas see Planning Area Map.

Policy. A decision-making guideline for actions to be taken in achieving goals. The policy is the official position of the City of Klamath Falls related to a given issue. Policies guide actions in recurring situations.

Pollution. The violation or threatened violation of applicable State or Federal environmental quality statutes, rules and standards.

Professional office. Facilities within which members of various professions may practice their vocation in a manner compatible with abutting properties.

Public. The citizens of a local, State or Federal level of government, or property owned by such a government and used for purposes which benefit the health, safety or general welfare of the community or otherwise service the needs of society.

Public facility. See Land use designations.

Public facilities and service. Projects, activities and facilities which the planning agency determines to be necessary for the public health, safety and welfare.

Recreation. For classification and definition see Recreation Map. Any experience voluntarily engaged in largely during leisure (discretionary time) from which the individual derives satisfaction.

a. Low intensity recreation. Does not require developed facilities and can be accommodated without change to the area or resource, e.g., boating, hunting, hiking, wildlife photography, and beach and shoreline activities can be low intensity recreation.

b. High intensity recreation. Uses specially built facilities, or occurs in such density or form that it requires or results in a modification of the area or resource. Campgrounds, golf courses, public beaches, and marinas are examples of high intesity recreation.

Residential area. A given area of the community in which the vastly predominate character is residential. Uses which support residential activity such as parks, churches, schools, fire stations, and utility substations may be permitted as conditional uses in all residential areas. These areas have not yet been identified as neighborhoods, although it is presumed that some of them will be designated as such during the planning process.

Rural land. Lands which are outside the Urban Growth Boundary and are: (1) non-urban agricultural, forest or open space lands or, (2) other lands suitable for sparse settlement, small farms or acreage homesites with no or few public services, and which are not suitable, necessary or intended for urban use.

Sanitary sewer system. See Sanitary Sewer System Map for classification and definitions.

Scenic resources. Any place that has scenic value or has a view of such a place.

Schools. A place of instruction operated by the planning area's official school district. It includes buildings and adjacent open spaces which form the school grounds.

Services. Those public facilities and utilities which are necessary for urbanization.

Severe limitations. The degree of limitation of the land caused by one or more natural characteristics. Those limitations considered severe include, but are not limited to:

a. Floodplain. See Floodplain.

b. Slopes. All lands having a slope greater than 20 percent.

c. Bedrock. Lands where the bedrock is within 20 inches of the surface.

d. Shrink-swell potential. Those lands where the Soil Conservation Service defines the potential as severe or very severe.

e. Watertable. Land where the seasonal high watertable is within ten inches of the surface.

f. Permeability. Land where the ability of the soil to absorb water is less than 0.2 inches per hour as defined by the Soil Conservation Service.

g. Drainage. Land where the drainage is classified as being poor or very poor by the Soil Conservation Service.

h. Weak foundation soil areas. Land where the potential for foundation problems is "high" anywhere in the soil profile (0 to 60 inches).

Shrink-swell potential. See Severe limitations.

Sidewalk. A pedestrian walkway.

Significant habitat areas. A land or water area where sustaining the natural resource characteristics is important or essential to the production and maintenance of aquatic life or wildlife populations.

Slopes. See Severe limitations.

Social consequences. The tangible and intangible effects upon people and their relationships with the community in which they live resulting from a particular action or decision.

Soil classes. Soil Classes I through VIII are as defined by the U.S. Soil Conservation Service. See Agricultural Lands and Soils Map.

Storm sewer system. See Storm Sewer System Map for classification and definitions.

Street system. See Street System Map and Alternative Mode Map for classifications and definitions.

Submerged lands. See Wetlands.

Unbuildable. Land which because of its natural character or location is unsuitable for urban development.

Underdeveloped. Land which is not developed to its highest economic potential. Included are lands zoned for apartments although used for single-family homes, or land zoned for commercial use used for residential purposes.

Urban. Those places which are developed to such a degree that urban services are needed. Generally this includes all lands within the corporate boundaries of a city and land adjacent to that boundary where significant development has taken place.

Urban fringe. That portion of the planning area outside of the existing city limits.

Urban Growth Boundary. A line that circumscribes the urban growth area.

Urban land. Those lands which normally have an incorporated city. Such areas may include lands adjacent to and outside the incorporated city and may also: (1) have concentrations of persons who generally reside and work in the area; (2) have supporting public facilities and services.

Urbanizable land. Urbanizable lands are those lands within the Urban Growth Boundary and which are identified and (1) determined to be necessary and suitable for future urban areas; (2) can be served by urban services and facilities; (3) are needed for the expansion of an urban area.

Urbanizing. See Land use designations.

Use. The purpose for which land or a structure is designed, arranged, or intended, or for which it is occupied or maintained.

Water system. See Water System Map for classifications and definitions.

Water table. See Severe limitations.

Weak foundation soil areas. See Severe limitations.

Wetlands. Land areas where excess water is the dominant factor determining the nature of soil development and the types of plant and animal communities living at the soil surface. Wetland soils retain sufficient moisture to support aquatic or semi-aquatic plant life. In fresh water wetlands are bounded at the lower extreme by a depth of six feet. The area below wetlands is submerged lands.

Wildlife, species and habitat. See Wildlife Map legend for types.

Land - History (1)

Geologists have had difficulty determining the exact age of formations in the Klamath Basin--there are limited fossils to use for dating, and repeated volcanic activities until recent time, geologically speaking, have completely covered earlier formations.

The Cascade Mountain Range, once a string of active volcanoes some 15 - 20 million years ago, are a main geologic feature of the area, whose eruptions once produced pumice and cinders, today's natural resources of the Basin. The Cascade Range became a wall between the Basin and the Pacific Ocean, shutting off sea moisture and thus keeping the eastern region arid. Also, during this time, fault blocks, caused by stresses from a fracture in the earth's crust, formed the hills and valleys to the east of Klamath Falls.

There is some history of past flooding in the area as evidenced by another natural resource, chalk beds, formed from small microscopic organisms, diatoms, whose remains, composed of silicon, were deposited and compacted, forming chalk beds. Numerous earthquakes, none causing serious damage, have been reported to have occurred in the Basin from 1873 to 1951.

The basic soil composition in the area consisting of sand, clay, gravel, diatomite and ash material, has been developing over the past 25,000 years. Pumice and other airborne volcanic materials have been blown into the Basin, with Mt. Mazama's eruption contributing a large amount. The weathering of these deposits and of the lava flows created the fertile soils that currently enhance the area.

The earliest surveys of the Klamath Basin reveal vegetation patterns similar to those of today. Several of the common Basin plants (as well as some insects) carry klamathensis as their taxonomical name, indicating that this particular species was first discovered in the Klamath area. Indians of the area used plants and trees for food, such as sap from pine trees, balsam root, service berries, sunflowers, tule weed, and camas.

Land - Current Conditions (1)

Klamath Falls is located at 42°14' North Latitude, 121°47' West Longitude and lies directly east of the Cascade Mountain range.

Two major land forms (physiographic provinces) meet in the Klamath Basin and are differentiated by land profile and climate:

(1) The Basin and Range Province extends from Southern Oregon into Mexico and is characterized by parallel down-faulted valleys separated by fault block mountains.

(2) The Sierra-Cascade Province, formed of the Sierra-Cascade Mountain chain, extends from Southern Canada to the Mojave Desert in California.

The entire Klamath Basin is a land of contrast between high mountains and flat valley floors. Mount McLoughlin at 9,495 feet is the highest peak of the western border formed by the Cascades; about 50 miles to the northeast is 8,364-foot Gearhart Mountain. The level of the valley floor ranges from 5,000 feet in elevation in the Sycan Marsh area to the 4,030-foot Tule Lake Sump in California. The lowest point in the Basin is the 2,750-foot elevation of the Klamath River Canyon, 25 miles southwest of Klamath Falls. The city proper lies between 4,100 and 4,600 feet above mean sea level.

Geologic fault lines through the urban area have been mapped and run generally northwest-southeast (see Geology map). The seismic risk is listed as moderate, having a Modified Mercalli Intensity Potential of VII and several quakes have occurred in the area (see Land - History).

Although the faults are susceptible to tremors and minor movement is frequent, quakes are not considered a threat to human activity in the area.

Two distinct types of soil formations are found in the urban area, sediments and volcanic (see Soil Inventory map). Throughout the flat, low-level land are the deposited aluvial materials--silt, sand, gravel, diatomite--and airborne materials from the local volcanic activity--ash and pumice. These fertile materials are valuable as farm lands. At higher elevations, thin, rocky soil has developed on Pliocene Volcanics; rocks are difficult to excavate and cause major problems for construction.

There are about two dozen different soil series types within the urban area. (See Soils map). The major portion of the City falls within the following series: Forney, Lorella, Dodes, Harriman-Lorella, and Henley-Laki. The Soils Inventory of Klamath County, provided by the U.S. Department of Agriculture Soil Conservation Service, describes these types specifically. A capability classification shows, generally, the suitability of soils for most field crops. The Klamath Falls area primarily falls within the VII class (soils having very severe limitations that make them unsuited to cultivation and restrict their use largely to pasture or range, woodland, or wildlife), with a fair amount of III (soils having severe limitations that reduce the choice

of plants, require special conservation practices, or both), and IV (soils having very severe limitations that reduce the choice of plants, require very careful management, or both). There are also some class VI and a small amount of II soils (soils having severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife; and soils having moderate limitations that reduce the choice of plants or that require moderate conservation practices, respectively).

Portions of the flat lowlands of the Basin lying close to extensive surface waters are considered as floodplains. These flood prone areas are dry in some seasons of the year but are inundated when heavy rain and melting snow cause the adjacent waterways to overflow. Flooding within the Klamath Basin occurs periodically--the major flood in the winter of 1964-65 inundated some 67,600 acres. Since then, the dam at Keno has been replaced and the new dam is designed to control the large flood flows.

The wide diversity of land formation, soil type and geographic hazard in the urban area result in the majority of land having at least one characteristic definable as a severe limitation for development (see Soils map). These limitations include slopes, floodplains, and soil characteristics which create such hazards as weak foundations, land slumping, etc.

Aggregate and mineral resources produced in the Klamath Basin include, in descending order of value, stone, sand and gravel, pumice and volcanic cinders, and clay. Their industrial production amounts to several million dollars each year.

Sand and gravel are vital raw materials for the construction industry, the main market for its consumption. Deposits of quality sand and gravel are scarce near Klamath Falls, and the current source of sand and gravel is two deposits formed as alluvial fans where streams entered an ancient lake.

However, these deposits have impurities--volcanic rocks, clay and ash--and these impurities limit their use. When sufficient quantities of satisfactory gravel aggregate are not available, the residual gravel and boulders are crushed, or massive rock deposits are quarried and crushed. One quarry about six miles from the city crushes and screens a jointed black glassy basalt to furnish large quantities of concrete and asphalt aggregate.

Many of the volcanic rocks have suitable physical properties for use as building stone. However, these generally lie in the eastern portion of the County and are difficult to transport. Clay suitable for bricks is quarried in Klamath Falls; but it is generally mixed with imported clays to give a better product.

Current sites of mineral resources found within the Klamath Falls area are shown on the Geology map, and are listed below:

Type of Mineral	Location	Life Expectancy of Site
Round river rock	Stukel Mountain	Extended
	Old Fort Road	App. 5 years
Quarry gravel	Shady Pine N. 97	Extended
	Stewart Lennox (Stiles)	App. 3-5 years
	Stewart Lennox (Holiday)	App. 5 years
	Merrill area (O'Connors)	Extended
	Stukel Mountain (County)	Extended
Black cinders	Cinder Dome near Keno (Kerns)	App. 20 years
Sand (acceptable for concrete)	Old Fort Road	Undetermined
Clay	Town Quarry (40 acres)	App. 20 years
	Wocus Quarry (70 acres)	App. 30 years
	KAGO Hill (400 acres)	Undeveloped

Other nonmetallic mineral resources found around Klamath Falls are diatomite and peat. Diatomite underlies much of the southern portion of the Basin and is presently being deposited in Klamath Lake, Agency Lake and the Klamath Marsh. Although some deposits contain filter-grade material, their high volcanic ash content and other impurities preclude a commercial use. Peat is the partial decomposition of plant material under or in a water-saturated environment, and occurs in areas that are, or have been, covered by shallow lakes and swamps. This material is mainly used as a soil conditioner, but it can be used as fuel.

Fossil wood and agates, a resource which interests "rockhounds", are found in parts of Klamath County, mainly the eastern area.

Vegetation

The current vegetation in the area of the City remains much the same as it was before the first buildings were erected in Linkville, although some of the common names have changed over the past century. Land undisturbed by man's works has plants such as spring-golds (biscuit root), sunflowers, filaree, sagebrushes, lupines, rabbitbrushes, tansey, grasses and other ephemeral and perennial species. Junipers, lodgepole pines, buckbrush, grease wood, mountain mahogany, service berry, bitter brush, Klamath plum, bitter and choke cherries grow on the hills and in the draws of the Klamath Falls area. The lakeshores river banks and marshes support bullrush, cattails, water hemlock, willows, sedges and grasses.

Land - Current Conditions (4)

On land where man has settled and then abandoned, many of the native shrubs and annual plants (weeds) are again appearing. In April and May, those who look are rewarded with a wide variety of colorful wildflowers, even in the craggy arid areas. Often these tiny blooms measure less than one quarter inch across and are hard to find, but even the pesky button weed, the bane of all gardeners, presents a pinkish lavender blossom to color the landscape.

Within the City limits lies a 1,600-acre tract of forest lands, annexed in the early 1970s.

A Timber Inventory for the Klamath Falls forest land was conducted recently (see Timber map). The eco/soil type acreages were mapped from a walk-through reconnaissance of the area and from aerial photos. The timber inventory volume is projected from a 2/10 of 1 percent cruise of the timbered area and is only a rough approximation.

A more intensive cruise should be made if timber management should be one of the land uses considered. The commercial forested areas are described by ecoclass/soil types as follows and are shown on the Timber map.

Mixed Conifer-Douglas Fir, Ponderosa Pine, White Fir/Woodcock #840

There are approximately 101 acres of mixed conifer ecoclass composed of Douglas fir, ponderosa pine and white fir tree species. A 76 acre tract is located south of the Lynnewood Subdivision on north slope aspect averaging 40 percent, and is stocked with pole and young saw-timber size trees with widely scattered mature overstory trees. The densely wooded and brushy slopes provide good wildlife habitat for deer, rabbits, quail hawks and eagles. This north slope would not be suitable for tractor logging because of the steepness and resultant soil disturbance that would occur. Much of the area is viewed from the Lynnewood Subdivision.

A 25 acre tract of the same ecoclass is located in the southwest corner of the property west of Highway #140 and Orindale Draw. Situated on a northeast aspect on slopes averaging 15 percent, this tract has been recently cutover (3-5 years) and is occupied by a residual stand of poles and young sawtimber size Douglas fir, ponderosa pine and white fir.

Soil Conservation Service data assigns site indexes to this eco/soil type as follows: ponderosa pine 71, Douglas fir 77 and white fir 76. This is the most productive timber site of any of the ecoclasses on the tract. There is a standing timber inventory volume of 1,099,000 bd. ft. based on utilization standards of a 9 inch d.b.h. to a 6 inch top d.i.b.

Ponderosa pine-Juniper/Royst #850, Lobert #460, Lorella #820

About 249 acres of the ponderosa pine-Juniper ecoclass are found throughout this tract except on steep north slopes. This is considered to be commercial forest land, but is a low producing site. Soil conservation data rates the site index on ponderosa pine to be 70 on the Royst, 59 on the Lorella and 74 on the Lobert Soil Series. Regeneration would be quite difficult on these sites due to the high daytime soil temperatures and lack of summer precipitation.

The ponderosa pine stands on the west side of the tract have been logged within the last five years. A 104 acre area around Moore Park falls within the same ecoclass, but is situated mostly on Lorella Soil Series. This area is less productive than the timbered Royst or Lobert soil types. Because of its proximity to Moore Park and Lynnewood, this natural forested landscape has high visual values.

There is a standing inventory of 1,212,126 board feet on all pine-juniper ecoclasses based on utilization standards of a 9 inch d.b.h. to a 6 inch top. All of this type is on topography capable of being tractor logged.

Ponderosa pine-Juniper/Royst #850, Lorella #820, Woodcock #840

This ecoclass of approximately 260 acres was burned over in the 1973 Orindale Draw fire and is not presently stocked with commercial tree species. It is vegetated with introduced grass species, annual grasses and forbs, and with the exception of the west slope of Lakeshore Drive, is located on the north side of the property on gently rolling topography. This burn area would have to be site prepared, i.e., remove competing vegetation and expose mineral soil before it could be planted with trees.

Unproductive Forest - Juniper, Mahogany, Sagebrush, Rabbit Brush, Cheatgrass, Bunchgrass

The remainder of the tract, approximately 905 acres, is unproductive forest or grassland. It is used by wildlife and has some recreational use by motor bikers and hikers. It is valuable as water shed. This type is primarily on Lorella Soil Series.

Klamath Falls Forest Land Acreage & Volume Summary

Eco/Soil Type	Acres	Cu. Ft.	Site Class	Standing Vol. MMBF	Standing Vol. Cu. Ft. [1/]
Mixed Conifer-Douglas Fir, Ponderosa pine, White fir/ Woodcock #840	101	70	V	1,099	196,250
Ponderosa pine-Juniper/Lorella, #820 Royst #850, Lobert #460	249	20	VI	1,212	366,428
Ponderosa pine-Juniper/Royst #850 (burn) Lorella #820, Woodcock #840	260	40	VI	0	0
Unproductive Forest-Juniper, Mahogany, Ponderosa pine, Sagebrush, Rabbitbrush, Cheat-grass, bunchgrass & grassland	945	--	0	0	
TOTAL	1,555		2,311	562,678	

[1/] Conversion rate is 1 cubic foot equals 5.60 board feet. From Winema N.F. 1972 Timber Inventory Statistics.

Vegetation as a land feature is important because of its contributions to the quality of the community through control of erosion, sound absorption, reduction of air pollutants, modifications of temperature, humidity, evapotranspiration, and air flow. Its aesthetic qualities help to soften the impact of the urban environment on people.

The Urbanization Element found in the Community Development Group describes the future need for residential, commercial, industrial and recreational lands. Not all vacant land currently found in the City is suitable for accommodating this future growth because of the physical limitations and constraints present on the land itself. Existing vacant land, and the physical constraints to development are shown on the Topography map. These constraints are a synthesis of the most sensitive physical features described in the Land Element.

Land - Problems and Future Alternatives (1)

1. Earthquake hazards of relatively unknown potential may exist along identified fault lines, and may be amplified in adjacent alluvial soils.

2. Excessive (20%+) slopes present constraints to standard construction techniques.

3. High water tables (0-24 inches) present constraints to standard construction techniques.

4. Soils classed as poor for agricultural purposes also present severe engineering problems for urban use.

5. The excessive use of 4-wheel vehicle off-road activities creates erosion problems.

6. Areas located along Upper Klamath Lake, Link River, Lake Ewauna, and Klamath River represent floodplain hazards.

7. Erosion from construction areas denuded of vegetation is causing siltation of storm sewers and natural drainages.

8. The supply of land remains static while the need for more buildable lands will increase with increasing population.

9. Natural limitations, such as topography, soil character, etc., will increasingly conflict with market demands for new development.

10. Agricultural acreage is decreasing and should be strongly protected.

11. A shift in public demand to higher urban densities, coupled with improved mass transit systems, reduces land area needed in urban areas.

12. The cost of land may drop, thereby increasing land consumption through larger single-family units.

13. There exists a lack of proper sands for use in concrete construction.

14. Only two sources of round river rock are currently available for construction purposes.

15. Many undeveloped quarrying sites may be put to use as the need occurs.

DETAILED ASSESSMENT NOTE

ELEMENT: LAND

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENTS WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN:

U.S. SOIL CONSERVATION SERVICE
SOIL INVENTORY

OREGON DEPARTMENT OF GEOLOGY
RECONNAISSANCE OF KLAMATH COUNTY
MINERAL RESOURCES

COPIES OF THESE ASSESSMENTS MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Land - Goals (1)

1. To preserve and maintain agricultural lands.

2. To conserve forest lands for forest uses.

3. To maintain the quality of the air, water and land resources of the state.

4. To protect life and property from natural disasters and hazards.

5. To promote a healthy and visually attractive environment in harmony with the natural landscape.

Land - Policies (1)

1. The extraction of mineral or aggregate materials will be in a manner protective of surrounding property and will include screening, dust control, daylight operation, and nonresidential truck access.

2. All extraction sites will be planned for reuse upon depletion of the resource and such reuse should be consistent with the Comprehensive Plan.

3. Natural vegetation along streams, drainage ways, and other shorelines will be maintained and conserved.

4. No development will be allowed to block streams and drainage ways in any area except where necessary for proper drainage management or wildlife habitat enhancement.

5. No development will be allowed to increase the water level on adjacent property.

6. Federal Flood Insurance statutes and/or other applicable statutes and ordinances will be maintained and enforced.

7. Areas of dense standing trees and shrubbery will not be considered for extensive development; tree cutting should be minimized except where mandated for fire protection or wildlife enhancement.

8. Development practices will avoid grading plans that expose unprotected surfaces to water flows and possible erosion.

9. Extensive watering of landscape and use of subsurface drains will be avoided.

10. Areas denuded of vegetation will be rehabilitated through the use of erosion control techniques.

11. The City of Klamath Falls will comply with all applicable State and Federal standards regarding land quality.

12. Land form alterations proposed in areas with the following conditions will show that design and construction techniques eliminate public harm, public costs, and adverse effects to surrounding properties:

    A. Slopes exceeding 30 percent.

    B. Severe soil erosion potential.

    C. Land subject to slumping or sliding.

13. Land-related hazards such as erosion or soils exhibiting poor foundation potential will not necessitate denial of development applications, but higher development costs can be expected in

order to minimize hazards. Guidelines for site investigations and the qualifications of experts will be provided by the City. Construction will take place only in those areas where site investigations indicate that construction is feasible; construction will be in conformance with applicable site reports. Where necessary, the building officials may require an architect's or an engineer's approval on the building plans in addition to that of a geotechnical expert.

14. Land with "development constraints", indicated on the Development Constraints Map, shall be subject to special review. Land with development constraints include lands with steep slopes, subject to slide, poor drainage and with other natural characteristics that constrain development.

Land - Implementation Measures (1)

1. The City will provide for public education and involvement in understanding the limitations of the area.

2. Educational materials relevant to possible erosion control on the development site both during and after construction will be provided to the public by the City in concert with the Soil Conservation Service.

3. Guidelines will be developed for site investigations of lands that are questionable as to buildability because of slope, soil stability, and water table and similar restrictions.

4. Guidelines for proper forest lands management will be developed.

5. Guidelines establishing drainage and erosion criteria will be developed.

6. Floodplain and wetlands regulations will be developed to control improper or hazardous development.

7. Mineral and aggregates extraction ordinances will be developed.

For implementation also see City Code, Chapter 10, Community Development: Article 2, Land Development, and Article 5, Standards.

B. AIR ELEMENT

Air - History (1)

For many years, Klamath Falls' main industrial activity has been linked with lumber and lumber products. As a result, wood smoke and associated particulate from milling operations have in the past been a continual air pollution problem.

In recent years, however, economic factors, fires, and competition for available timber have caused a decrease in the number of mills in the area. Changes in the utilization of wood residues, and, more recently, implementation of state emission standards, have eliminated lumber-related polluting devices such as the wigwam burner and have required particulate control equipment on boiler plants. Annual timber products manufacturing is far greater than in the past, but air quality in the Basin is higher.

In conjunction with the Federal concern for ambient air quality, the State of Oregon established a monitoring site at the Klamath Falls Central Fire Station in 1970, which tabulates total suspended particulates on a yearly basis.

Air - Current Conditions (1)

Suspended particulates are analyzed at the Klamath Falls Central Fire Station by high volume samplers. The Department of Environmental Quality (DEQ) collects the filters for weighing and calculating the percentage composition of each class of impurities. Federal and State regulations specify that the Total Suspended Particulates (TSP) levels are not to exceed those levels enumerated in the history of this subelement.

However, in Klamath Falls, as in several other eastern areas, several times each year high winds will carry dust and soil. During a windy period, the filters will capture the dust and soil particulates and the percentage of impurities in this 24-hour period will exceed the standard. The weight of the mineral matter in the sample may reach 30 percent dust and soil and 5 percent fragments of diatomaceous earth.

Therefore, eastern Oregon may have as high a particulate count as New Jersey, as a result of the blown soil, but DEQ, recognizing the exceptional situation, has considered Klamath Falls to be in compliance with the standards.

Klamath Basin, because of its topography and climatology, can and has experienced major thermal inversions--in effect, a temperature "lid" above the Basin, which prevents the rising of air currents, trapping them at or near ground level. The air which is trapped holds the pollutants from combusion of simple wood fires, of trash burners, and of the fuel within an engine; these pollutants can include particulate matter, sulfur oxides, nitrous oxides, and carbon compounds. When a temperature inversion occurs, it prevents these materials from escaping and causes air pollution problems. This inversion occurs to some extent today, and an increase in population and automobile traffic will create more air pollution problems for the Klamath Basin.

The measurement of sulfur dioxide began in 1974 in the Klamath Basin. Sulfur dioxide in the air is not harmful at the lowest level that is normally detectable in laboratory tests. At much higher levels, sulfur dioxide mixed with particulates is a danger to health, a level at which it corrodes concrete and metal surfaces. The corrosion occurs because sulfur dioxide is soluble in water vapor and in solution becomes sulfuric acid.

Data generated by Wilsey and Ham show that estimated levels of carbon monoxide are potentially within violation range--between 6 and 7 mg/m^3, average, for eight-hour concentrations, an accurate measurement of the quality of air in our area. Four monitoring locations, shown on the Air Quality map, are downtown and resulted in an estimated eight-hour average CO concentrations of 6.3, 7.2, 3.6 and 6.6 mg/m^3 respectively. The other three sites are on South Sixth Street in the suburban area and these show estimated eight-hour average concentrations of 9.6, 8.3 and 7.6 mg/m^3.

Air - Current Conditions (2)

An emissions inventory for Klamath Falls and the urban area produced the concentrations of TSP and SO_2 described in the paragraph below. The inventory includes both mobile and stationary sources of pollutants. All stationary sources in the Klamath Basin have been tested and have at the time of testing demonstrated compliance with Oregon State Emission Standards.

Briefly, the amount of TSP (Total Suspended Particulates) in a given year for timber products operations was 1,646.1 tons; for transportation, 509.1 tons; for space heating, 66.4 tons; and for total miscellaneous combustion, 308.9 tons. Quantities of SO_2 (sulphur dioxide) for timber products for the same year were 836 tons; for transportation, 553.6 tons; for space heating, 343 tons; and for miscellaneous combustion, zero.

Noise

The Department of Environmental Quality has no noise monitoring sites in Klamath Falls, but several individual investigations have been made at commercial and industrial locations in the urban area. Sound is measured in decibles (dB), a unit for measuring the relative loudness of sounds.

A method used to describe the noise level is the amount of time noise exceeds a standard level. Thus, the symbol L_{10} indicates that the noise level for an area, given in decibels, is exceeded 10 percent of the time. For instance, a survey by Wilsey and Ham measured the noise level in Klamath Falls during the time of heaviest traffic as L_{10} = 77 dB. This indicates that the noise level was over 77 decibels 10 percent of the time, a figure which exceeds the criteria set by the Federal Highway Administration.

At peak hours, traffic noise along South Sixth Street was rated at L_{10} = 70 but the site was 400 feet away from the street. When the noise was measured 100 feet away, it exceeded the federal design limit. Highway 97 at a point just north of the Green Springs junction had a rating of L_{10} = 78 dB at the rush hour. The industrial area along the Green Springs Highway showed L_{10} = 50 dB. The noise at the junction of Joe Wright Road and Midland Highway was estimated at L_{10} = 59 dB. Kingsley Field recorded a low of 40 dB which soared to 140 dB when military jets took off.

Air - Problems and Future Alternatives (1)

16. Wind-entrained dust from vacant lands within the Urban Growth Boundary and from surrounding agricultural land exist.

17. Increasing auto emissions exist, especially in concentrated areas of downtown and along South Sixth Street resulting in worsening air quality.

18. Odor problems exist as a result of eutrophication and algae on Upper Klamath Lake.

19. Particulate matter emanating from wood burning stoves and fireplaces will increase as more households rely on wood as an energy alternative to increasingly costly petroleum products.

20. Development or similar encroachment into surrounding forest and agricultural lands will lower the filtering and air cleansing effects of these areas.

21. Open air burning of trash and rubbish contributes to air pollution.

22. New potentially air-polluting or noise-polluting industries may want to establish in the Klamath area.

23. Increased air inversions serve to concentrate air pollutants.

24. Noise levels may be excessive in certain areas of downtown and South Sixth Street and along railroad lines.

Air - Goals (1)

6. To maintain and improve the quality of the air resources.

7. To support and enforce regulations to properly manage the surrounding airshed.

8. To protect and promote the standards necessary to prevent exceeding the carrying capacity of the air resources.

Air - Policies (1)

15. Potential air pollution problems will be treated with the highest priority consideration and the National Ambient Air Standards will be met or exceeded.

16. All waste and process discharges from future development, when combined with such discharges from existing developments, will not violate or threaten to violate applicable air quality regulations.

17. Where large areas of pesticide application or hazardous pesticides are to be used, the City or public must be informed prior to use. All use will be in accordance with State and Federal regulations.

18. The City of Klamath Falls will comply with all applicable State and Federal standards regarding air quality.

19. Reduce harmful effect of noise wherever possible.

20. Manage land uses so as to minimize adverse noise effects, especially industrial situations.

21. Support State and Federal efforts to establish effective noise control measures, including uniform motor vehicle standards.

22. Encourage the use of solar and geothermal energy for space heating to reduce household reliance on petroleum products and woodburning stoves.

Air - Implementation Measures (1)

8. Cooperate with and support the Department of Environmental Quality in efforts to monitor and regulate air quality standards in the Klamath Basin.

9. Conduct public education supporting the need for non-polluting activities in the City area.

10. Eliminate open air burning of waste or refuse in the City, excepting vegetative material originating on site.

11. Develop disaster plan or program to ensure adequate response to sudden critical release of toxic or dangerous contaminants into the atmosphere.

12. Develop a fireplace inspection program to ensure efficient combustion and minimum smoke emission.

13. Support the construction of sidewalks and bikepaths to provide an alternative to the use of automobiles for transportation.

14. Provide public education to encourage the use of solar and geothermal energy for space heating.

15. Support carpooling efforts.

16. Seek funding for detailed monitoring program for pollutants and noise.

17. Identify and control excessive noise sources.

18. Continue to work toward removal of downtown truck traffic.

19. Site planning for noise-generating uses will include building placement and landscaping techniques to ensure minimum disruption.

For implementation also see City Code, Chapter 5, Public Protection: Nuisance; and Chapter 10, Community Development: Article 5, Standards.

C. WATER ELEMENT

Water - History (1)

There are five main bodies of water in the Klamath Basin region; Klamath Lake, Klamath River, Link River, Lake Ewauna, and Hot Springs, an area providing natural steam and mineral water for bathing and swimming. (See Water Bodies map)

Freshwater fossils in mountainous regions indicate that at one time Klamath Lake covered an extensive area. Until man's intrusion, a natural basalt dike held the water of Upper Klamath Lake in its bed, and the outflow of the lake tumbling over this barrier formed the original Klamath Falls.

Link River forms the outlet from Upper Klamath Lake, and in its course of less than two miles, carries the water to Lake Ewauna, (a widened area of the river itself) and drops about 60 feet. The river has provided energy for sawmills and electric power, and its flowing waters once served as a valuable fishing ground for Indians and settlers.

The Klamath River begins at Lake Ewauna, meanders across the valley floor, crosses into California, and empties into the Pacific. The Hot Springs, an integral part of the Klamath Basin, were valuable to Indians and settlers for bathing, cooking, warmth and healing purposes.

By means of man-made canals, the waters of Klamath Lake have been used for surface irrigation since 1878. Although annual precipitation is low in the Basin proper, heavy mountain snowpacks, the permeability of the soils, and excellent underground aquifer capabilities give Klamath County a good supply of groundwater for the Basin's residents, replacing earlier artesian wells as the major source of drinking water.

Water - Current Conditions (1)

Klamath County has a wealth of natural lakes and reservoirs: 114,840 surface acres of open water in the County. Twenty-four lakes exceed 200 surface acres.

Upper Klamath Lake

The dominant feature of the Klamath Basin is Upper Klamath Lake, a natural body of freshwater covering over a hundred square miles. The Williamson and Wood Rivers and numerous creeks and springs flow into the lake. The dam at the head of Link River controls the outflow, approximately half a million acre feet of water.

Upper Klamath Lake is eutrophic--rich in dissolved nutrients--and highly productive in phyto- and zooplankton. The algal blooms thrive from early spring to late fall on the nutrients in the Lake. The principal nutrients--phosphates, nitrogen, iron, calcium, aluminum, boron, manganese, silicon and sulfur--are supplied through the natural geologic structures. The towns and farms increased the contamination of the lake and accelerated the eutrophication process, but this recent contamination plays a minor part in the process.

Visible algal growth during the warmer months include five major species of nuisance blooms. Zooplankton is found in abundance, and the fauna found on the lake bottom range from minute nematodes to mussels and crayfish. Aquatic insects and aquatic insect larva are not extensive in the lake proper but are associated with rocky shorelines and marsh areas.

Klamath Lake has many uses for man's benefit: flood control, such recreation as swimming, boating, water skiing and fishing, and almost 500,000 acre feet of water for hydroelectric power and the irrigation of over 220,000 acres of farm land.

Link River

This waterway, approximately one mile long, has the unique distinction of being completely within the confines of a municipality, lying, in its entirety, inside the city limits of Klamath Falls.

The river has a mean flow of 1,062,520 acre feet per year (1920-1976 average) of water. According to a gage-water stage recorder located about midway down the canyon, the surface level of the river ranges from 51.50 feet minimum to 59.59 feet maximum level below the surface of the Lake.

A dam at the head of the river controls the level of Upper Klamath Lake, the flow of the river, and the flow of the diversion structure, the Keno Canal. Since 1908, the latter has carried water from the dam to the hydroelectric plant and back to the river channel. This power plant causes a large diurnal fluctuation in the flow. The water quality of the river is about the same as that of Klamath Lake.

Lake Ewauna

This lake, receiving the flow from Link River, is shallow, with a mean depth of about five feet (depending on the elevation of the dam downstream at Keno), broadening from the inflow of the river to approximately 3,000 feet in width, then tapering southward for about 9,000 feet; this lake forms the headwaters of the Klamath River.

Lake Ewauna receives water from two wastewater treatment plants which have effluents high in nitrates and phosphates. Water velocities are low, and, during the summer months, temperatures rise, dissolved oxygen levels fluctuate wildly on the diurnal cycle, and phytoplankton flourish. Nutrient levels, turbidity, alkalinity levels and pH are often undesirably high during these warm months. Coliform counts are considered too high for water contact recreation, but because of the Lake's proximity to town and accessibility, rowing or sculling, and fishing are popular.

Klamath River

The Klamath River forms the outlet for the Klamath Drainage Basin, leaving at the southwest corner and flowing across California to the ocean. At Keno a dam controls the flow and elevation of the upper part of the river. Between Klamath Falls and Keno four facilities intersect its route: the Klamath Straits Drain, the Diversion Channel, the North Canal and the Ady Canal. The two latter canals serve Klamath Drainage District lands in Oregon and Lower Klamath Refuge lands in Oregon and California. The Klamath Straits Drain carriers water from Lost River and Lower Klamath Lake areas to the River. The Diversion Channel serves two purposes: from mid-October to mid-April, it carries excess water from Lost River to the Klamath River; during the irrigation season it carries water from the Klamath to the Lost River irrigation system to replenish low flows.

The water recorder 1.7 miles northwest of Keno shows a surface elevation of 3,964 feet above mean sea level. The average discharge of the Klamath River over the past 54 years has been 1,230,000 acre feet per year.

Canals

The Bureau of Reclamation Project in the early part of the century, coupled with private activities in irrigation, have changed the Klamath Basin from arid semi-desert to fertile farm land.

The major source of irrigation water running through the City of Klamath Falls from Upper Klamath Lake is the "A" Canal. Drawing water from just above the Link River dam, the canal remains open for a short distance, then goes underground for over 3,000 feet before reappearing. Today, the City has grown and now the canal meanders through several miles of urban area.

In winter months this canal is dry, but it carries water from mid-April to mid-October and has a monthly average flow of 36,543 acre feet. The "A" Canal and its branches irrigate lands on the east side of the Klamath River and both sides of Lost River. Drainage is primarily into Lost River. Other canals and irrigation systems extend throughout the Basin; water districts were formed to manage these supplies, and Klamath Irrigation and Enterprise Irrigation serve the urban area.

Groundwater

Despite low averages of annual precipitation, Klamath County enjoys a supply of groundwater of good quality. (See Groundwater Movements map). Except for isolated instances, groundwater is the Basin's universal source of drinking water. The quality of the water serving the Klamath Falls area is generally excellent. Dissolved materials such as iron, silica, phosphates and nitrates affecting water quality are picked up as the groundwater moves through the cracks and fractures of the solid rock or through the spaces between rock particles. In a few areas, such as Keno and Henley, some problems with these have occurred, but the wells serving the major urban population require little or no treatment to ensure potability.

Well depths vary from artesian to several hundred feet, depending on the geology of the area. Flows also vary according to the lithologic units of the aquifer, with several thousand gallons per minute available from some aquifers. Four main aquifer units have been defined for this area: Sedimentary, volcanic center, lower basalt, and volcanic ash.

Generalized aquifer information shows the Basin floor, including Klamath Falls, to be primarily sedimentary aquifer, dotted with some volcanic center aquifers. Because of the poor waterbearing property of the sedimentary rocks, many wells tap permeable basalt or cindery rubble beneath them. However, lines of fracture in faulted areas may produce hot and cold springs, both prevalent in the area (see Energy).

The approximately 6.7 million acre feet of precipitation falling annually in the 5,700 square miles of the Klamath Basin each year is dispersed in several ways. Estimates are that 5.0 million acre feet is dispersed through evapotranspiration. Of the remaining 1.7 million acre feet, 1.2 million is surface water outflow. This leaves 447,000 acre feet in groundwater. Of this, 347,000 is for groundwater pumpage leaving only 100,000 acre feet for groundwater outflow.

Water - Problems and Future Alternatives (1)

25. Upper Klamath Lake, Link River, Lake Ewauna, and various major irrigation canals all serve to create flood hazard potentials in certain low-lying lands.

26. Drainage inflow to the older, inadequately designed capacity canals is greater than the capacity of such canals and thereby contributes to flood hazards.

27. The water storage capacity in Upper Klamath Lake is steadily diminishing while demand increases for water uses by industry, agriculture and recreation.

28. The true character and limits of the municipal groundwater source has never been properly investigated.

29. Natural hazard or catastrophe may contaminate potable water supply or wells, and create the need for new water sources.

30. Heavy agricultural use of groundwater for irrigation will continue.

31. The consolidation of potable water resources in the urban area will possibly occur.

32. There exist several points of potential pollution present in surrounding natural waters.

33. Possible non-point sources of water discharge in City area have not been identified.

34. The water quality of Upper Klamath Lake, Link River, Lake Ewauna, and Klamath River is creating problems in meeting water quality standards set out in Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C.A. 1251 et. seq. (1978) (P.L. 92:500).

35. Inefficient water use with individual wells, many with poor construction and low standards can lead to contamination of potable water supplies.

36. The quantity and quality of groundwater may change due to unrestrained drawdown on wells.

37. Federal or State water quality standards may change and thereby cause reduced discharges into natural waters.

38. Natural waters may be contaminated due to an accidental spillage of toxic material or other disaster.

39. The eutrophication of Upper Klamath Lake continues, but may be reduced by means of modifying recreational and other uses of the lake.

Water - Problems and Future Alternatives (2)

40. The eutrophication of Upper Klamath Lake may increase, resulting in less water available, fish kills, algae blooms, odor, and increased numbers of mosquitoes and midges.

41. Open canals create public safety hazard and contribute to mosquito and midge numbers.

42. Runoff from urban areas is causing pollution with oils, road salts and chemicals.

DETAILED ASSESSMENT NOTE

ELEMENT: WATER

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENTS WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY KLAMATH BASIN WATER QUALITY MANAGEMENT PLAN

OREGON WATER RESOURCES DIVISION KLAMATH BASIN REPORT

COPIES OF THESE ASSESSMENTS MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Water - Goals (1)

9. To maintain and improve the quality of the water resources of the community.

10. To protect life and property from water-related natural disasters and hazards.

Water - Policies (1)

23. Potential water pollution problems will be treated with the highest priority.

24. All waste and process discharges from future developments, when combined with such discharges from existing developments, will not violate or threaten to violate applicable water quality regulations.

25. Discharge standards relating to City-owned sewer facilities will be maintained.

26. The City of Klamath Falls will comply with State and Federal standards for water quality.

27. A disaster plan relating to major contaminations or spills of dangerous materials into natural waters will be maintained.

28. Conservation measures will be promoted to minimize water consumption.

29. Water-related hazards such as flooding will not necessitate disapproval of development, but higher development costs can be expected in order to minimize hazards.

30. Development in floodplains will be inversely proportional to the proximity to the floodplain channel, i.e., lowest density occurring on lands nearest the channel.

31. All lands designated as areas of floodplain will be urbanized only in accordance with an adopted floodplain management program.

32. The City will try to provide support to any efforts to clean up Upper Klamath Lake and Lake Ewauna, and reduce the eutrophication process.

Water - Implementation Measures (1)

20. The City will cooperate with and support efforts by the Department of Environmental Quality to monitor and regulate water quality standards in the Klamath Basin.

21. Public education programs supporting pollution abatement and describing the needs or concerns of the City relative to water quality standards will be conducted.

22. The City will continue to work with the appropriate Federal agencies efforts to monitor possible point source pollutants and identify non-point sources.

23. A disaster plan relating to major water pollution problems will be developed.

24. The City will continue participation in the Flood Insurance Program as administered by the Federal Insurance Administration.

25. Floodplain management regulations will be developed and included within the Community Development Ordinance. (These regulations will be based on tentative floodplain data and will be modified when more definitive data is available from the Federal Department of Housing and Urban Development. The more definitive data is scheduled for completion in July 1981.)

26. A survey of groundwater resources will be sought.

27. The development of new water storage capacity of Upper Klamath Lake Basin water will be encouraged.

28. The City will cooperate with and support the Oregon Division of State Lands in their regulatory efforts pertaining to Upper Klamath Lake and Lake Ewauna.

D. CLIMATE ELEMENT

Climate - History (1)

Records of weather data were begun under the U.S. Army Signal Corps in Linkville as early as January, 1884. Today, Pacific Power and Light continues these observations and records, and south of this site, the meteorological station at the local airport houses another measuring center. Data between the two spots generally coincides.

Temperature extremes are rare in the Klamath Falls Basin--temperatures, even when high during the day, drop sufficiently to provide cool nights throughout the summer months. Recorded temperatures show a summer high of 105°F and a winter low temperature of -25°F.

Maximum wind velocity on record is 57 knots (65.5 mph). Shortly after 1900, a concentrated force of moving air is reported to have created a water spout that moved inland near Odessa, destroying boats, cabins, and trees before moving back into the lake and dissipating. Ordinarily, however, winds are light, and no tornadoes have been recorded in or around the City.

The year 1948 witnessed the highest rainfall in Klamath Falls, with a total of 20.91 inches; the following year it dropped to 8.32 inches. Only in two other years, 1959 and 1976, were the annual totals less--7.31 and 7.93 inches respectively. Months without rain in the Basin area does not necessarily indicate a drought.

The most snow on record to fall over the course of one winter was 100 inches in 1955-56, and the most accumulated at any one time was 28 inches in January, 1950. The earliest measurable snow of the season was late September, 1971, and flakes have fallen at one time or another every month of the year.

Klamath is known, however, as the land of sunshine, with January the only month of the year when the sun shines less than one-third of the daylight hours.

Climate - Current Conditions (1)

Proximity to the Pacific Ocean moderates the Basin's climate somewhat from the extremes normal at this altitude. The air masses moving in from the west rise above the Cascades. This rise causes rain to fall on the western slopes, leaving little moisture for the Basin. This westerly air flow is the primary source of the weather in the Basin, although severe thunderstorms do occur locally during the summer months.

While wind speeds of 30 miles per hour or greater have been recorded every month of the year, the average wind speeds for Klamath Falls are relatively low. Only two months, December and January, have average wind speeds of over 7 miles per hour. Six months, May through October, have average wind speeds of less than 5 miles per hour. The yearly average wind speed for the area is 5.1 miles per hour.

Temperatures of the urban locality fall within a 130°F range, but the extremes are rare. Average temperatures cover a much narrower span, the average daily highs were slighly over 84°F and lows averaged 21°F during the year.

During periods of both high and low temperatures, the relative humidity is unusually low, making the climate comfortable. This low humidity, coupled with the warm summer temperatures, results in a high evaporation rate for the area, averaging as high as 10.5 inches of water evaporation in the month of July. Because of the rapid drying of surface soils, winds often carry a high particulate load of dust, sweeping across the open fields and lifting topsoil; fortunately, irrigation and summer showers offset this pattern.

Precipitation for the urban area is generally between 9.5 and 17 inches a year, with an average of 14.06 inches. Approximately 70 percent of this falls within the six months between October and March. Numerous years show one or more summer months with few or no traces of moisture falling.

Despite late frosts, dry summers and a growing season of only 90-120 days, the sunshine, good precipitation in watershed areas, and warm soils allow a wide variety of hardy crops to grow in the Basin, coupling climate to the economy of the area.

A final area of concern that will be considered is the effect that urbanization has on certain aspects of local climate conditions.

For instance, cloud cover is 5 to 10 percent more in the City than in the country area, summer fog is 30 percent more, general precipitation is 5 to 10 percent more, total radiation is 15 to 20 percent less, and annual mean temperature is 0.5° to 1°C more.

Climate - Problems and Future Alternatives (1)

43. Light average winds, coupled with local topography, will result in a potential for air stagnation and pollution problems.

44. Snow causes periodic inconveniences and hazards to motorists, as well as extra costs for removal, particularly in downtown areas.

45. Ice is a periodic hazard on streets, particularly those steeper streets in the City.

46. The general severity of winter conditions constitutes significant need for well-insulated and properly weatherized housing units to lower energy needs and reduce costs.

47. Winter conditions occasionally curtail most construction activities, with subsequent economic hardships.

48. Climatic conditions create major crop damage and adversely affect the economics of the agricultural base of the area.

Climate - Goals (1)

11. To conserve and develop community resources in consideration of climatic conditions.

12. To minimize potential adverse impacts of the weather to the health, safety, welfare and general convenience of the community.

Climate - Policies (1)

33. Future public capital improvements will be designed in consideration of climatic circumstances that may create hazards, inconveniences, or additional maintenance costs.

34. The City will try to improve the methods of snow and ice removal from City streets.

35. The City will support efforts for incentives to persons properly weatherizing houses and buildings to reduce energy needs.

36. Future streets and roads will be planned to provide the quickest snowmelt and the best snow removal possible to prevent traffic problems during and after storms.

Climate - Implementation Measures (1)

29. The City will coordinate with U.S. Weather Service to keep accurat records and new trends in the weather cycle.

30. Guidelines for both new construction and rehabilitation of older homes for efficient weatherization will be developed.

31. More budget consideration should be devoted to adequate snow and ice removal.

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E. WILDLIFE ELEMENT

Wildlife - History (1)

Wildlife has always been plentiful and varied in the Klamath Basin. In the prehistoric period, the camel, rhinoceros, three-toed horse, saber-toothed tiger, giant ground sloth, bison, and tapir enjoyed the semi-tropical climate of the Basin, as evidenced by skeletal remains found in gravel pits and lake bottoms.

When settlers first arrived, they found an abundance of fauna, mostly smaller mammals along Klamath Lake's eastern shore--chipmunks, badgers, ground squirrels, coyotes, and assorted deer and antelope; high in the deeper canyons lived elk, bear, lynx, wolves, foxes, cougar and wolverine. Other lake wildlife included beaver, otter, mink, woodchucks, raccoon and skunk, along with the still-present large variety of birds--ducks, geese, pelican, heron, crane, eagle, hawk, and owl, to name a few--who migrate to the lake seasonally from both north and south, and which are particularly identified with this part of Oregon.

Link River once attracted a large population of both harmless and poisonous snakes. The removal of vegetation, influx of human population, and extension of canal systems, however, dispersed them and decreased their number over the years.

Fish have been of great importance to the Klamath Basin. They were a main food staple for the Indians, and through archeological investigations, it has been deduced that as far back as 3,500 years ago they constituted the major diet of the local inhabitants.

Man's intrusion into the Basin has affected the wildlife, and, overall, has changed or destroyed habitats and reduced populations. Marsh habitat alone has been diminished by approximately 90 percent; the increase in human population and the consequent development of land for residential and commercial use has removed bird habitats and reduced the number of birds.

To help combat indiscriminate slaughter of game animals, the Oregon Legislature passed game laws for the State, and in 1909, the Fish and Game Commission made licenses mandatory for hunting and fishing in Oregon. A later step in conservation several years ago was the creation of an animal refuge by Pacific Power and Light along Link River; in addition, PP&L has allowed the land in this area to return to a natural state, and conservationists have built nesting boxes for birds and mammals.

Wildlife populations fluctuate naturally in accordance with food supplies. The extent is not known, but it appears that the mass death of fish in 1971 affected some of the bird populations for a short term. Such natural occurrences, coupled with man's contributions, markedly decreased the number of some species.

In contrast, some of the endangered groups are making a comeback. Swans, a bird rarely sighted in this area in many years, are now being found in greater numbers. Migrating bald eagles spend winters in the Basin each year; once seldom seen, nearly 500 eagles were sighted in a single day in 1977.

Wildlife - Current Conditions (1)

The Klamath Basin boasts a wide range of wildlife populations. (See Species and Habitat Area map). Over 50 species of mammals and more than 30 different reptiles have been identified in the County. Some of these living creatures found within the urban area are the mule deer, silver gray squirrel, beaver, muskrat, river otter, mink, coyote, red fox, raccoon, skunk, badger, weasel, rattlesnake, rubber boa, garter snake, bullfrog and northwestern toad.

For the County many of these animals have some economic significance. Furbearing animals yielded almost 27,000 pelts valued at over $137,300 in 1976. Game mammal harvest for that year was recorded at 5,171 with a recreational value in excess of $2,800,000.

No area in North America of similar size to the Basin receives heavier waterfowl use. Approximately 80 percent of the waterfowl in the Pacific Flyway pass through and spend some time resting and feeding during spring and fall migrations. Large numbers of other water birds and shore birds also use the streams, lakes, and reservoirs. In the fall, the largest number of birds appear just prior to the annual freeze, usually in November. During this period, more than five million waterfowl, which include over 50 percent of the flyway's goose population, venture through the Basin. Although most species of North American waterfowl are present, pintails and mallards comprise about 70 percent of the total.

In the spring, birds wintering in the south leave their warmer climes and descend on the Basin. These rest and feed here on their northward migration to nesting areas. Numerous species of waterfowl, especially ducks, nest in the Basin, the mallard and redhead being most common. Less common species are the cinnamon teal, ruddy duck, gadwall, and shoveler.

Because of the large numbers of birds, the Klamath Basin is a noted bird hunting area. In 1976 hunters accounted for almost 31,000 game birds--pheasants, quail, chukar, grouse, doves, and snipes, and 146,000 ducks and geese. The total recreational value of the harvest of game birds and waterfowl exceeded $1,800,000 in this year.

The Klamath County Wildlife Species Occurrance Inventory lists 237 different birds for the County. Other inventories include sightings made in the Link River Canyon, where 134 species were identified, and the recent annual bird count held in 1977 by the Klamath Basin Nature Society, which reported 186 bird species observed in the Basin. The Wildlife Inventory lists 115 species within the urban area, including the Nashville warbler, the Rufous-side towhee, and the Bohemian waxwing.

Because of the extensive waterways in the Basin, fish also constitute a large part of the wildlife of the area. There is an unusual distribution of fish; four species of trout, two of land-locked salmon, and nine of water game fish. Rainbow trout, the most common trout species, are found in most streams and many lakes and reservoirs. Brown trout inhabit the larger streams tributary to Klamath and Agency Lakes.

Brook trout live in the cooler headwaters or spring-fed streams and most high lakes. Of the trout, Dolly Vardens are the least common and are found in only a few streams. The Kokanee have been successfully introduced into Lake of the Woods, Fourmile and Miller Lakes.

Warm water game fish include black crappie, largemouth bass, yellow perch, bluegill, pumpkinseed, green sunfish, Sacramento perch, and brown bullhead. All are confined to the warm, lower elevation streams, lakes and reservoirs. Mullet or Lost River sucker are found in no other Oregon watershed, spending most of the year in Klamath and Agency Lakes, and entering the lower Williamson, Sprague, and Wood Rivers in the spring to spawn. White sturgeon have been reported in Klamath Lake, but are rare.

Non-game, or rough fish, are established throughout most of the Basin. Suckers, dace, and lamprey are found in coinciding or overlapping segments of the watershed. The lower Sprague and Williamson Rivers, Klamath River, Lost River, and Klamath and Agency Lakes probably contain the greatest concentrations of these species. Mosquito-fish, not considered detrimental to game fish, were introduced into the Lost River drainage for mosquito control. The aquaculture studies being done at OIT include the production of these surface feeding fish for possible use in vector control to supplement and/or replace pesticide treatments. However, mosquito-fish currently require a minimum water temperature of 40°F, so the feasibility of their use in much of the Basin is questionable.

The Fish and Wildlife survey reports 32 species of fish in Klamath County. Those that are found in Klamath Lake, Lake Ewauna and the "A" Canal--the waterways of the urban area--include those charted below.

Klamath Lake	Lake Ewauna	"A" Canal
Rainbow Trout	Rainbow Trout	Largemouth Bass
Brown Trout	Largemouth Bass	White Crappie
Brook Trout	White Crappie	Pumpkinseed
Largemouth Bass	Pumpkinseed	Brown Bullhead
Yellow Perch	Brown Bullhead	Klamath Largescale Sucker
Brown Bullhead	Lost River Sucker	Blue Chub
Whie Sturgeon	Klamath Largescale Sucker	Tui Chub
Lost River Sucker	Blue Chub	
Klamath Largescale Sucker	Tui Chub	
Shortnose Sucker	Pacific Lamprey	
Blue Chub	Pit-Klamath Lamprey	
Tui Chub		
Klamath Sculpin		
Pacific Lamprey		
Pit-Klamath Lamprey		

Wildlife - Current Conditions (3)

As man expands his cities and their suburbs, he immediately affects the environment of all wildlife. The larger mammals and birds in particular feel man's encroachment, as they require a larger territory to conduct the functions of their life cycles. The proper management of the land recognizes the fragility of the wildlife and seeks to provide conditions which provide space for man and for wildlife. Such management permits man to enjoy nature and to use it as a natural recreation.

Wildlife - Problems and Future Alternatives (1)

49. Encroaching urbanization reduces food, water, and cover for wildlife, and increases harassment.

50. Outbreaks of animal zoonosis such as rabies or plague may occur, due to the large number of such rodents as skunks and other small mammals populating the urban fringe.

51. The eutrophication of Upper Klamath Lake may result in increased damage to aquatic life.

52. The loss of wetlands and development along the edges of the lakes and river is displacing the waterfowl population.

53. Excessive four-wheel vehicle off-road use harasses wildlife, detroys habitat, and causes excessive erosion.

54. The encroachment of development on forest lands and open spaces on outskirts of the City (particularly north and west) will decrease the population of wildlife in the area; creative landscaping, however, could provide wildlife habitat within the urban area.

55. The continued expansion of the urban area will affect any migration patterns of wildlife, waterfowl, and other birds.

D E T A I L E D A S S E S S M E N T N O T E

ELEMENT: WILDLIFE

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENT WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

OREGON DEPARTMENT OF FISH & WILDLIFE
KLAMATH COUNTY REPORT

COPIES OF THIS ASSESSMENT MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Wildlife - Goals (1)

13. To conserve open space and protect natural and scenic resources, specifically fish and wildlife areas and habitats.

Wildlife - Policies (1)

37. Wildlife will be protected from harassment wherever possible.

38. Development will not be considered for wildlife-sensitive areas such as Link River Canyon, surface water shorelines, and dense forest land.

39. Where development occurs adjacent to wildlife habitats, every possible design and construction technique will be used to mitigate adverse effects.

40. Support will be given to improving the water quality of Upper Klamath Lake to maintain wildlife populations.

41. Fish habitats will be protected against extraction of stream materials, filling, erosions, siltation, impondments, removal of shoreline vegetation, and deteriorating water quality.

42. Identifiable areas of prime wildlife habitat will be maintained unless conflicting uses are identified, and then economic, social, energy and environmental consequences will be weighed in determining protective measures.

43. Bald eagle nesting sites and habitats will be protected in consideration of the U.S. Fish and Wildlife Service's Bald Eagle Advisory Guidelines for Oregon and Washington.

44. Some wildlife, such as skunks and raccoons, ground squirrels and rodents, can cause significant nuisance and health hazards, and will therefore be eliminated from the urban area to the maximum extent practicable.

Wildlife - Implementation Measures (1)

32. Public education and involvement in the needs of wildlife preservation will be provided.

33. Efforts to enhance the Link River wildlife sanctuary will be supported.

34. The City will cooperate with the Oregon Department of Fish and Wildlife in monitoring wildlife concerns.

35. The City will support non-game habitat programs by planting desirable food or cover vegetation on City-owned, dedicated open spaces and vacant lands.

36. Special zones relating to wildlife should be developed and included in the Community Development Ordinance.

37. Continued use of mosquito fish as a non-polluting mosquito control method will be supported.

38. Dedication of storm drainage ways in their natural state will be provided to provide habitat for birds and other wildlife where it can be shown that this will not conflict with other community goals or the public health and welfare.

39. The City will promote consideration of wildlife values in the developing of landscaping plans.

40. An area within the urban environment will be set aside for the explicit use of off-road vehicles.

For implementation also see City Code, Chapter 5, Public Protection: Animal Control.

F. OPEN SPACES AND SCENIC AREAS ELEMENT

Open Spaces and Scenic Areas - History (1)

"On reaching the summit of a very low divide. . .we saw outspread before us Upper Klamath Lake. It was a fine sheet of water. . . bordered by timbered ridges with an occasional narrow belt of tule." So went the description of Klamath Lake by the surveying party which traversed the Klamath Basin in 1854. That particular scene has changed little over the century and a quarter that has since elapsed.

The scenic vistas and open spaces of Klamath Falls were greatly extolled by the land developers of the early 20th century. Brochures advertising the area used such descriptive narratives as: "There will long remain the scenic beauty of the Wilderness on the great outlying borders of this region. The view of the lakes skirted by mountain and pine, will rest and gladden the eye as long as time shall endure." "Snowcapped Shasta towering to the majestic height of 14,444 feet and Mount McLoughlin on the far horizon; a great forest region in sight,. . .a continuous panorama of unequaled scenery."

This concept of scenic and open spaces has been an integral part of all of American history. The Indian roamed the wide lands and pioneers could pick and choose their settlements in the vastness of the country, a country so broad that the belief in unlimited open, unsettled spaces dominated the philosophy and the policies of the 1800's. So wide is the continent that, even with a population explosion, in 1961 it was estimated that only 1.8 percent of the land in the United States was urbanized.

The citizens of Klamath Falls have lived with open spaces and scenic views throughout the history of the City. Efforts have been and are being made to increase, improve, and promote such areas, and to protect them from disruption.

Open Spaces and Scenic Areas - Current Conditions (1)

In Klamath Falls, the geography, geology and climate of the area produce a diversity in shapes and colors. Some of these were used intentionally, others unintentionally. The early philosophy of Klamath Falls seems to have been that of a throw-away town; when the trees were gone (lumber harvested), the town would be discarded. However, when its tenacity for survival became evident, some of the efforts in design showed foresight. The dividing strip on California Avenue exemplifies this effort in the form of a green belt--a feature using natural color and diversity to produce open space. The design of the Hot Springs area by the Klamath Development Company used natural appeal as a selling point (the green strip on Pacific Terrace may be one reason the area has retained its appeal and value). The KDC brochure touts the setting of shade trees throughout the tract--today they add both aesthetic and practical value to the area.

Another aspect of open space, vacant lots, adds controversy in that many individuals take these open spaces for granted, and are disturbed and sometimes aggravated when the owner exercises his right and builds on them. One alternative would have the City purchasing the land and preserving it as part of a natural scenic area and open space for the City. This alternative is not always acceptable, especially during a period of tax revolt and resistance to government intrusion in private affairs. Still, the desire for open spaces is deep-seated in the community--a desire that may be deceptive because the immediate proximity of wide open spaces obscures the need for open spaces in the day-to-day life of the City.

There are several natural scenic vantage points within the City, each offering spectacular views of the urban area, the Basin and the mountains. (See Open Spaces and Scenic Areas map). Easily seen from these vantage points are the Cascades to the west, Mount Shasta to the southwest, Stukel Mountain to the southeast, Hogback to the east, and, in between, the waters of Klamath Lake, Lake Ewauna, Link River and the broad flat lands of the Basin.

More immediate to the City are the 488 acres of parks which offer the citizens the opportunity for closely enjoying nature. A walk on the nature trail in Moore Park or along the Link River provides tranquility and space for wildlife within the City. Beyond the municipal bounds are some 121,200 acres of open scenic land of the five Federal wildlife refuges in the Klamath Basin.

Open spaces and scenic areas are available within the City now. However, open space as a necessary part of life--aesthetically, psychologically, or physically--is a luxury that can quickly diminish. The amount needed to retain the pattern or feeling of a small, friendly community requires thought, planning and initiative. Klamath Falls is too settled to take advantage of some of the new concepts which ensure open space. But it is also so well established that it can avoid the sprawl and monotony typical of other communities.

Open Spaces and Scenic Areas - Problems and Future Alternatives (1)

56. Open space is decreasing as it is encroached on by continuing development without proper evaluation prior to irreversible actions.

57. There has been a loss of scenic areas due to lack of proper controls and the absence of any official designation of scenic values within the community. With continued development, scenic qualities will decrease.

58. It is difficult to provide optimum public access to scenic and open space due to the private control of surrounding areas. As population increases, the common standard of one acre of public park per 100 people will necessitate increasing park area.

59. Open space can contribute to windborne dust and presence of unsightly weed growth.

60. Fire danger affects housing and buildings along vacant open lands and forest areas.

61. Many utilities are above ground and create part of the unsightly aspect of urban life.

62. Small parcels of unbuildable land resulting from urbanization can provide open spaces.

63. The use of new open area types of developments such as cluster housing, radial corridor plan, ring of cities plan, green belts, etc., may become applicable in Klamath Falls.

64. If not properly controlled, above-ground advertising signs may become unsightly.

65. Costs for acquiring and maintaining open space will increase.

Open Spaces and Scenic Areas - Goals (1)

14. To conserve open spaces and protect natural and scenic resources.

15. To provide access to vista points of particular scenic and asthetic value to the maximum number of citizens.

16. To maintain scenic waterways within the urban area.

Open Spaces and Scenic Areas - Policies (1)

45. The City will promote residential, commercial, and industrial development policies in consideration of scenic appearances.

46. The community will promote an appearance which is premised on beauty for citizens and visitors. The entire City should be a scenic area.

47. Harmonious relationships between natural topographic features, parks, homes, businesses, streets, and open spaces will be promoted.

48. Upper Klamath Lake, Link River, and Lake Ewauna will be areas of critical scenic concern, and all actions relating to these bodies will be made in consideration of protecting and enhancing their scenic values.

49. Efforts will be made to preserve the open spaces and scenic values of hilltops and other similar promontories, including public access to them.

50. Hillside residential development standards will ensure preservation of scenic views for the residents of such developments.

51. The City will continue and expand its street tree planting and maintenance program, particularly along street rights-of-way, park and parkways and other areas where buffers, separation and beautification are appropriate and desirable.

52. Tree removal will be discouraged wherever possible.

53. Low intensity public use of major drainageways for open space purposes will be encouraged.

54. For open space, scenic, and recreational purposes, the City will require dedication of shorelines in new developments.

55. Identify specific areas of open spaces and scenic areas which will be maintained, unless conflicting uses are identified, and then economic, social, energy and environmental consequences will be weighted in determining protective measures.

56. Outdoor advertising not specifically related to a use on site will be allowed only in dense commercial and industrial areas.

57. The City will encourage private enterprise and intergovernmental agreements to provide for open space, recreational lands, and facilities, and to preserve natural, scenic, and historical areas in appropriate proportions and in a manner consistent with the availability of resources.

Open Spaces and Scenic Areas - Policies (2)

58. High density residential areas will be required to have open spaces within major developments wherever possible.

59. Both public and private properties located along entrances to the City will be attractively landscaped.

Historic Areas - History (1)

Although George Nurse is credited with founding the original town of Linkville, later to become Klamath Falls, no streets nor structures in the City carry his name or honor that fact. In 1932 a marker bearing his name was placed on the southeast corner of the Link River bridge; it stands a short distance from the site of his original store and commemorates his contributions to the City.

The Klamath County Museum, founded in 1953, provides extensive displays and a research library. Several exhibits outside are available for viewing, including the old Van Brimmer cabin. The County recently purchased the Baldwin Hotel to prevent its destruction and to preserve it. It opened in 1978 as an annex to the museum.

Besides the Baldwin, two other old hotels are notable in Klamath Falls' history, the Linkville Hotel and the White Pelican. One of George Nurse's two original buildings served as a lodging-hall, and eventually became the Linkville Hotel. During early years the hotel served as a headquarters for the stage and steamer lines. It was torn down in the late 1920's. The White Pelican Hotel, considered the "most magnificent building ever erected in Klamath Falls", was built at the intersection of Main and Esplanade in 1910-11 by the Klamath Development Company. There were 93 sleeping rooms, and a natural hot water swimming pool in the basement. For 15 years the elegant restaurant and bar served travelers and the local residents the best of cuisine until totally destroyed by fire in 1926.

Two other establishments of extensive historical significance in Klamath Falls are the city halls and courthouses. Little information is available about the first city hall; it was apparently built before the turn of the century and served both as city hall and as a fire house. In 1911 voters approved the purchase of property in the Klamath Addition for a new City Hall/Fire Department. Since 1931 the building has been in use as the Klamath Falls City Hall.

The first official courthouse in Linkville was a small, wooden building in the 500 block on Main Street and was rented from John Friese during 1884-1886. In 1887, the County purchased land at the southwest corner of Fourth and Main, and in the next year a County-owned building was built (this building, listed on the historic inventory, now stands on Walnut Street and is used as an apartment house). The County, in 1919, authorized a third courthouse beside the still-in-use 1888 building. This third courthouse is in use still, with several additions and annexes.

One other place in the City traces its origin to early history--the Linkville Cemetery. The location of the first burial ground for the settlers is not certain. Various old manuscripts mention several locations, which may or may not all refer to the same site: the northwest corner of Third and Pine, by the old Presbyterian Church,

"where the Elks Temple [currently the County Courthouse Annex] now stands" and adjacent to the northeast corner of Nurse's tract. It is apparent that at least one cemetery lay along Pine Street near Second and Third Streets.

Historic Areas - Current Conditions (1)

Numerous Federal laws passed over the past three quarters of a century help preserve historic, archaeological and cultural resources. The first was the Antiquities Act of 1906, 16 U.S.C.A., Sec. 4 31 et. seq. (1974) establishing protection over any "historic or prehistoric ruin or monument, or any object of antiquity situated on government lands." Perhaps the most impact is in Public Law 89-665, the National Historic Preservation Act of 1966. Tax reform concerning historical properties is one of the most recent acts passed.

Oregon, as early as 1943, approved legislation concerning archaelogical and historical materials. Since then, more than 20 additional statutes have been enacted relating to historical measures.

Luther Cressman in his investigations, 1947-51, established that the Basin was occupied by man in an unbroken sequence for some 6,500 years. This occupation left extensive archaeological remains which are, as yet, inadequately examined and identified.

The Klamath Falls area has housed two distinct cultural groups in its history. The first, chronologically, was the Klamath Indians and their ancestors. The second group began with the settlers, composed of many nationalities, who developed into the present culture.

The environment of the Klamaths was primarily the lake or marsh. The shores of Upper Klamath Lake and the marshes along the Williamson and Sprague Rivers formed the heartland of the Klamath tribe. Lower Klamath Lake was territory of the Modoc Indians, with both groups camping on the Lost River for the early spring fishing. Klamath Falls lies in the territory of the southernmost of the five groups of the Klamath tribe.

The southern band of the Klamath had a number of villages down the lake shore north of the present urban area and several on the southwestern side of the lake. One site has been disturbed by modern construction; others are in a better state of preservation and are expected to have the potential of yielding important information about the locality's prehistoric time. Research indicates that the Klamath Falls vicinity as a whole (including particularly those areas adjacent to Upper Klamath Lake) is an area of high probability with regard to the density of prehistoric cultural resources.

Just as any major archaeological sites must have protections, the remnants of the first settlers and of the town need to be preserved. Many of the historic buildings in Klamath Falls have been destroyed over the years, either by fire or replacement with new edifices. Several original buildings from the turn of the century do still exist, such as the Goeller and Cantrell houses; also the shed built in 1912 for the steamer Wasp can be found overlooking the lake.

The National Register of Historic Sites lists only one item from Klamath Falls--the Baldwin Hotel which has recently been made an annex to the County Museum. The State of Oregon has compiled an inventory

of historic sites and buildings within the County. Those which are in the urban area are shown on the Historic Areas map and include: AOUW Hall--formerly Baldwin Hardware Company--25 Main Street, built in 1895; the Baldwin Hotel, 31 Main Street, constructed in 1904; John Stribling Ford, Inc., Main and Esplanade, built in 1929; Esquire Theater, 218 North Seventh, 1940; First National Bank, 601 Main Street, 1930; Methodist Church, North Tenth and High, 1907; Goeller house, 235 South Riverside, 1905; 100F Hall, Fifth and Main, 1910; Klamath County Courthouse #1, 415 Walnut Street, 1887-88; City Hall Administration, 500 Kl 1926, previously used as the City Library; Klamath County Courthouse Annex, 305 Main Street, 1915, originally the Elks Lodge; Klamath County Museum, Main and Spring Streets, 1935, previously used as an armory; Klamath Falls City Hall, 226 South Fifth, 1915; Klamath Falls U.S. Post Office, Seventh and Oak, 1930; Railway Express Warehouse, Oak Street, 1916; Southern Pacific Depot, 1630 Oak, 1916; S. P. Shops and Railyards, 1916-20; Tower Theater, 2607 South Sixth, 1941; Van Brimmer Cabin, Main and Spring Streets, 1864 (moved from original location to museum site); Willits Building, 430 Main, 1910, Moore House, 120 Riverside Drive, 1907.

Other significant structures not listed in the inventory include the Willard Hotel, the House of Seven Gables, the current Courthouse, the building complex on the east side of Main Street between Second and Third, the sanitarium located at the corner of Fifth and High, the Blackburn Hospital between Eldorado, Alameda and Esplanade Streets, a number of wood frame structures along Spring and Broad Streets (once serving as brothels), two inner-connected structures that are attached by easement to the west wall of the Baldwin Hotel, and Riverside School.

Significant general areas of interest include the Fremont Bridge vicinity, the area of the Reames Country Club, the vicinity of the Municipal Swimming Pool, the Hot Springs Addition, the sight of the Hot Spring Courthouse, Linkville Cemetery, and the Link River Canyon.

There are two official agencies working with the people of Klamath County to preserve historic information and items: the Klamath County Historical Society and the Klamath County Museum. There are also private organizations that have similar goals, such as the Favell Museum. The Klamath County Historical Society was established to preserve historical data. It publishes a periodical called "Klamath Echos" which provides a broad background of the development of this area. Another current project is to delineate with markers the old stage coach trails and stops in the county. They are also attempting to place marking plaques on many of the old buildings that still stand.

The Klamath County Museum is a separate department of the County and is staffed by professionals, trained in the areas of science, history, art, and museology. As of this date, the Klamath County Museum, on a statewide comparison, overall, is ranked third, although the recent

addition and jurisdiction of the Baldwin Museum Annex has moved the Klamath County Museum's responsibility area to a level that is second only to that of Douglas County Museum in Roseburg. Klamath County's museum system and operations achieved national accreditation by the American Association of Museums, AAM, by meeting the professional, technological and educational requirements for qualification.

Historic Areas - Problems and Future Alternatives (1)

66. A loss of historic sites prevails due to an absence of proper evaluation prior to irreversible actions.

67. An absence of local official designation or identification of historic sites or buildings exists.

68. Some historic units are still in private hands--with little control over what will happen to them.

69. A lack of local citizen concern for historic values of buildings and areas, particularly among the young, exists.

70. Many historic buildings are in need of proper restoration.

71. Vandalism of historic sites has occurred.

72. Historic sites may be increasingly encroached upon by continued development.

73. Historic preservation costs increase with surrounding development pressures.

74. Historic values may be lost through continued inattention or lack of preservation resources.

75. Disasters such as fire or flood may destroy large areas of historic sites.

D E T A I L E D A S S E S S M E N T N O T E

ELEMENT: HISTORIC AREAS

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING ASSESSMENTS WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

OREGON DEPARTMENT OF TRANSPORTATION
STATEWIDE HISTORIC SITE INVENTORY

KLAMATH COUNTY MUSEUM ARCHIVE RECORDS

COPIES OF THESE ASSESSMENTS MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Historic Areas - Goals (1)

17. To conserve historic areas, sites, structures, and objects; and cultural areas.

18. To foster a sense of historical awareness among residents of the community.

Historic Areas - Policies (1)

60. Incentives will be provided to owners of historic structures for restoration purposes.

61. The City will encourage identification and/or preservation of significant historic landmarks, archaeological, and architectural sites which meet established and applicable criteria.

62. Natural historic conditions will be maintained, unless conflicting uses are identified, and economic, social, energy and environmental consequences will be weighed in determining protective measures.

63. Citizen concern for specific historic areas significant to each neighborhood area will be supported.

Historic Areas - Implementation Measures (1)

51. The investigation and use of transferable development rights to protect historic sites will be promoted.

52. Public education and involvement will be promoted relative to the importance of our historic heritage.

53. The installation of markers and plaques on historic sites will be promoted.

54. The use of "Criteria Evaluation for Historic Sites & Buildings", published by National Trust for Historic Preservation, will be utilized.

55. The City will apply for grants to assist in the preservation and/or restoration of historic sites.

56. Nominations for state and federal historic site designations will be made.

57. Historic sites and areas that are important to the Klamath Falls area will be identified and described.

58. A determination of historic value will be made prior to the razing or remodeling of older structures.

59. Museum professionals will be involved in developing criteria for historic areas.

60. Tax incentives for private owners of historic sites or structures should be developed to enable restoration and/or maintenance of such sites or structures.

For implementation also see City Code, Chapter 10, Community Development: Article 3, Land Use.

H. POPULATION ELEMENT

Population - History (1)

Artifacts and traces of ancient people have been found buried under layers of volcanic ash and sediments in the Klamath Basin. Nightfire excavations date inhabitants as far back as 6,500 years ago, and carbon dating done at the University of Oregon traces some relics back since 14,000 and 35,000 years. The most recent Basin Indians seem to have no traditions of migrations, although they were nomadic within the territory, and present in the area for a very long period. These consisted of three major tribes, the Modocs, the Klamaths, and the Kumbatwash, or Rock Indians. By the mid-1880's, the tribes diminished, with some 800 members in the Modocs and about 1,200 in the Klamaths.

Until 1850 there were few white men in the Klamath area. In the 1860's, George Nurse began operating a store in the area to serve the fort and Indians on the reservation, thus establishing the town of Linkville. Immigrants were still moving westward during the 1870's and the Klamath Basin had a great deal to offer those seeking land. In 1890, the population was 364; 20 years later in 1910 it had soared to 2,758. Phenomenal growth also occurred in the first and third decades of this century, due to the development of an extensive irrigation network and the advent of modern transportation.

In 1930, almost 1,200 (7.4 percent) of the Caucasian residents of the city's 16,093 population were foreign born--33 percent from Scandinavia, 18 percent from Canada, 14 percent from the British Isles, and 8 percent from Germany. The country had a few Oriental residents, mostly Chinese, and by 1930, some 500 Mexicans and 100 Blacks had settled in the Basin.

The City of Klamath Falls has always been a hub of the Basin; however, it held little of the population in 1900, having only about 9 percent of the county's residents within its boundaries. By 1960, approximately one third of the people lived within the City limits and another one third of the county residents lived in the unincorporated suburban area.

The following table shows growth of population within the City since census records began.

City of Klamath Falls

Year	Population	Year	Population
1867	First original settlers	1930	16,093
1880	250 (approximately)	1940	16,497
1890	364	1950	15,875
1900	447	1960	16,949
1910	2,758	1970	15,775
1920	4,801	1977	17,285

Population - Current Conditions (1)

The last U.S. Census Bureau's Decennial Census of Population, taken in 1970, revealed total population for that year in Klamath County was 50,021, and the City of Klamath Falls was 15,775. For statistical purposes, this represents the most recent data. Later, census figures from Oregon State Health Division Vital Statistics compiled in 1976, were based on factors that have proven reliable in estimating population at a given time: births, deaths, school enrollment, income tax returns, voter registration, housing, and known migration.

Klamath County, as ofJuly 1, 1977, had a population of 56,500 for an average of 9.2 persons per square mile (6,151 square miles for Klamath County as stated in the Oregon Blue Book) and a city population of 17,285 for an average of 1,080 persons per square mile (15.78 square miles within the city limits as of 1979). The City's decrease in population per square mile from the 1970 figure is the result of the annexation of several hundred acres of unpopulated forest land since 1970.

Some of the responses from a survey taken in the spring of 1977 from households in the City of Klamath Falls indicate the following: 28 percent of the population lives alone, 69 percent live in a family setting; the largest percentage of people (33 percent) live in a two-person household; 29 percent are over 55, again the largest percentage, (with 22 percent under 13 years old); and 63 percent of the population is married.

Minorities and Ethnic Identification

Members of racial minority groups constitute approximately 5 percent of the total county population. However, minority families account for 12 percent of all families with incomes below the poverty level. The mean income of minority families is considerably lower than that for Caucasian families in the county as a whole. The American Indians are the most prevalent minority in Klamath County, comprising almost 3 percent of the total population.

Social Characteristics and Services

Within Klamath County 13 percent of the families are considered below poverty level; statewide levels run 9 percent, and for the City of Klamath Falls the figure is 11 percent. Physically handicapped persons make up about 8 percent of the population.

Several state and local agencies provide service to these people. Primarily the State Department of Human Resources works through the State Employment Division, Adult and Family Services Division, Children's Services Division and Vocational Rehabilitation to provide various forms of support for those in need, from education and therapy to money and food stamps. Also serving the needy and handicapped are the Senior Citizens Council, the Klamath Work Activity Center, the Organization of Forgotten Americans, two alcohol and drug abuse centers, the Salvation Army and the Gospel Mission. Adult and Family Services,

Children's Services Division, Vocational Rehabilitation and the Work Activity Center comprise a conglomerate resource center working in conjunction with the State Agencies in Volunteer Services, and provides a wide range of assistance to people in need.

Senior citizens, persons over 60 years of age, comprise more than 12 percent of the county population. Over two-thirds of these people reside in the urban area. This shows a 30 percent increase over the decade of 1960-70, as compared to 24.2 percent growth in that age bracket statewide. Estimated 1975 figures show a total county population of people 60 years of age and older at 7,750 with 1,350 having a poverty level income. Some 3.4 percent of the senior citizens of the county are considered as members of racial minorities.

Services to aid the elderly in Klamath County include several private recreation groups, the standard governmental agencies, several religious organizations, and a Klamath Basin Senior Citizens Council. This latter group is active in providing transportation for those needing it. Also available is a "Hot Meals" program and a sewing club for senior citizens of the Klamath Falls area through Volunteer Services.

Population Projections

Klamath County has made a series of population projections for the County, ranging from 70,470 to 77,787 to 88,910 for the year 2000. The highest projections would have the following pattern of increase.

Population Projection
Klamath County

Year	Population	Percent Increase
1960	47,475	
1970	50,021	5.4
1980	59,488	18.9
1985	65,978	10.9
1990	73,514	11.4
1995	81,325	10.6
2000	88,910	9.3

The population projection by the County is based on trends between 1960 and 1970. When census data for 1980 is available it may reveal different trends in birth rates, death rates, in- and out-migration that would alter the projection based on the 1960-70 decade.

Population projections for Klamath County, Klamath Falls, and the Klamath Falls urban area are provided in the following table. An analysis of future population, land needs, and housing needs, is found in the Urbanization Element. The City has incorporated the population projections provided by the County in the analysis of land needs for urban use.

Population - Problems and Future Alternatives (1)

76. The availability of services to low-income groups, especially elderly, are limited; population increases will generate increased costs and needs for handicapped people, senior citizens and low-income persons.

77. Well-educated youth are increasingly lost to metropolitan job markets.

78. Population is increasing at a faster rate than has been projected; a shift to high density/urban land use could serve to accommodate population increases.

79. The City's population growth rate has lagged behind the growth rate for the urban area and Klamath County as a whole. The City meanwhile provides a disproportionate share of social services and public facilities and amenities.

80. Population growth in the urban area has helped to inflate the costs of housing in the City, although City population has increased only slightly.

81. A sudden increase of available jobs could cause a rapid influx of people beyond projected levels of population.

82. If projected population increases do not occur, many areas of the City may suffer economic hardship; also, if the City's population remains static, inflationary service costs could lead to increased taxes.

83. Because of the City's small population, any change in the urban area's economic base could greatly alter the population.

D E T A I L E D A S S E S S M E N T N O T E

ELEMENT: POPULATION

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENT WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

U.S. BUREAU OF CENSUS 1970
KLAMATH FALLS CENSUS

COPIES OF THIS ASSESSMENT MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Population - Problems and Future Alternatives (2)

Population Projections

Population Area	1975	1980	1985	1990	1995	2000
KLAMATH COUNTY						
PSU Census	54,400	58,100	62,000	64,800	67,400	68,900
PNW Bell (1976)	54,300	58,700	62,600	65,200	(67,800)	(70,500)
BPA (1976)	53,600	56,000	57,900	59,200	59,900	(60,500)
DEQ (1976)	54,400			64,800		
Retail Mkt. Analys. (1975)	53,800	55,300	56,800	(58,500)	(60,250)	(62,100)
Employ. Div.				60,213		
K. County Parabolic Regression Method*		59,393	62,104	64,946	67,733	70,470
K. County Ratio Method*		55,474	59,867	64,966	71,181	77,787
K. County Cohort Survival Method*		59,488	65,978	73,514	81,325	88,910
State Water Res. Bd.		57,900				64,800
KLAMATH FALLS						
HGE	16,702	(17,620)	(18,589)	(19,611)	(20,689)	(21,826)
PSU Census	16,500	17,000	17,500	18,000	18,500	19,000
PNW Bell	(16,290)	(16,800)	(17,450)	(18,060)	(18,693)	(19,350)
BPA					(17,850)	(18,482)
RMA	(16,702)	(17,120)	17,548)	(17,986)	(18,436)	(18,896)
Employ. Div.					18,064	
URBAN AREA						
PSU Census	34,000	37,500	40,500	43,500	46,000	48,000
DEQ	35,715	(37,143)	(38,629)	40,170	(41,777)	(43,448)
State Water Res. Bd.		34,700				

*Klamath County Planning Department
(Projected from other given data)

For relationship of population to land needs, see Urbanization Element.

Population - Goals (1)

19. To provide for the enhancement of conditions affecting current residents, and to accommodate natural growth as effectively as possible.

Population - Policies (1)

64. The City will support State and Federal policies that enable cities under 50,000 to provide a satisfactory alternative to life in metropolitan urban areas; such policies should make possible the retention and expansion of population through the provision of economic opportunities, adequate public services, housing, education and cultural opportunities, transportation and health services.

65. Concepts of high density urban residence for cost efficiencies will be supported.

66. New or expanding industry will be encouraged to utilize the existing labor force rather than bringing new workers in from outside areas.

67. Job opportunities which would utilize the trained young people of the area will be sought and promoted.

Population - Implementation Measures (1)

61. The Klamath County Economic Development Association will be assisted in interviewing and attracting new industry to the area.

62. Yearly population changes or trends will be monitored and assessed for their impacts.

63. Budget resources necessary to provide adequate services and facilities to meet expected population changes will be maintained.

64. Advance planning for all land use needs of the community will continue to be provided.

I. ECONOMY ELEMENT

Economy - History (1)

Agriculture was the first economic activity in the Klamath Basin, with horses and cattle pastured in the area prior to the town's existence. By 1868, wool was exported from the Basin, and the Klamath riverbanks provided the infant town of Linkville with large quantities of fruit and other produce. Animal husbandry and agronomy still form a major part of Klamath's economy today.

The open lands of the Basin drew settlers from the start--outlying farm towns of Bonanza, Malin, and others have histories as old as that of Klamath Falls. Three major products were an important part of the agricultural growth of the area--grain, alfalfa, and potatoes.

Klamath County forests have also provided a valuable resource; their economic potentials were first tapped when a sawmill was built at Fort Klamath, probably in the spring of 1864. A census of 1880 shows five mills within the Linkville precinct, paying over $2,000 in wages per year, and having a product value of over $17,000. Over the years, many lumber companies and other concerns for the remanufacture of forest products have been established in the Basin and have contributed greatly to the economy.

A recent newcomer as a source of income is tourism. The natural recreational resources of Klamath County draw vacationers, and sportsmen have long been hunting and fishing in the area. Over a half a million people view Crater Lake annually, and it is estimated that tourist dollars have more than trebled in the past 10 years.

While agriculture, forest products and tourism have formed a triad base for the area's economy, trade, manufacturing and commerce have also been important. Since its inception, Klamath Falls has been the trade center for a large portion of southeastern Oregon and parts of northeastern California. As the population increased, commercial ventures kept pace. After World War II, Klamath County had an estimated 850 retail stores with an annual volume of $50 million; in the mid-1970's this amount has progressed, with the devaluation of the dollar, and the rising cost of living, to an annual volume of $140 million.

Besides lumber manufacturing, an 1880 census reveals several other industries in the area, including blacksmithing, wheelwrighting, watch and clock repair, saddlery and harness making. Manufacturing statistics for early years are not readily available, but between 1958 and 1972 the economic value of manufacturing in Klamath County rose from $29.2 million to $84 million, an increase of some 187 percent.

Other factors contributing to the economy of Klamath over the years include such service operations as real estate, transportation, medical services, and civil service.

Population - Implementation Measures (1)

61. The Klamath County Economic Development Association will be assisted in interviewing and attracting new industry to the area.

62. Yearly population changes or trends will be monitored and assessed for their impacts.

63. Budget resources necessary to provide adequate services and facilities to meet expected population changes will be maintained.

64. Advance planning for all land use needs of the community will continue to be provided.

Recessions have affected the Basin, although no statistics are readily available except recent ones. The early 1890's saw a period of depression brought about by a severe drought in 1889, a large fire in September of that year, and severe snows in the winter of 1889-90. A drought in the late 1920's killed crops and thus affected the economy adversely, and the Great Depression of the 1930's had its effect also, but not so severely in Klamath County as in other regions. Unemployment over the past few years has been a serious problem, and 1969 records show 11 percent of the families in the county below poverty level that year.

Economy - Current Conditions (1)

The three major elements of the Klamath economy are agriculture (40 percent), manufacturing, including lumber and wood products (40 percent), and diversified services, including tourism (20 percent).

Agriculture

Farms in Klamath County comprise 724,809 acres, of which about 244,170 acres are devoted to crops and pasture, including 198,091 acres under irrigation. The economic trade and marketing area nearby includes the entire Klamath Basin and sections of California; this area embraces over 410,000 acres of crop and pasture land, which yielded $87 million in gross farm income in 1975 and over $95 million in 1976. It concentrates on livestock and crops--potatoes, hay and grain. Gross farm income from crops for 1976 was $58,591,000; gross farm income for livestock was $36,703,300, making a total of $95,294,300 for that year.

Klamath County is the state's leading producer of feed grains, second in hay production but first in terms of values of sales. It is second in number of cattle sold but frequently first in the value of cattle sold. Klamath ranks fourth among Oregon counties for both potato production and value of sheep and lamb sales.

Manufacturing

Manufacturing in Klamath County centers upon the lumber and wood products industry. Commercial forests cover 2.6 of the 3.8 million acres in the county and contain some 20.8 billion board feet of lumber; 1 million of these acres of timber are privately owned. The annual harvest varies between 500 and 600 million board feet. The lumber and wood products industry employs approximately 90 percent of the total manufacturing labor force of from 4,810 to 4,360 workers (November 1976 figures). There are 53 firms engaged in activities ranging from logging and lumber to plywood and remanufacturing, and payrolls put over $50 million into the local economy annually.

While the lumber and wood products industry has generally performed as a stabilizing influence on the local economy, it is also a dynamic factor; when the market for forest products is good, the economy is strong. The plants now in existence are operating at near capacity. No major expansion projects are planned that would result in increased employment opportunities.

The remainder of the manufacturing done in Klamath County includes food products--dairy, meat, and soft drinks--and some 39 small firms produce a variety of products primarily for local consumption, ranging from metal working and concrete to printing, farm machinery and plastic products. The county ranks tenth among Oregon's 36 counties in the size of the manufacturing payroll.

Economy - Current Conditions (2)

Diversified Services

Tourism contributes strongly to the economy of Klamath County and is considered to be the number three industry. An Oregon State University survey estimated that about 2.73 percent of the county's total personal income comes from the tourist trade. Assuming that these percentages remain relatively constant, in 1975, Klamath County tourism produced $7,507,500. Futher, the Oregon State study determined that 20 percent of total tourist expenditures actually remained in the county in the form of wage and salary payments, with the remainder expended outside the county for purchase of goods, which together with locally produced goods and services, were sold to tourists. On this basis, tourists in 1975 spent $37,537,500 in Klamath County. In 1975, total wage and salary disbursement in Klamath County was $171,455,000 of which about 4.4 percent stemmed from tourist expenditures.

The Oregon Institute of Technology contributes significantly to the local economy with annual expenditures exceeding $11 million. The school is conducting research in thermal energy and has received contracts exceeding $800,000. School facilities such as the gym, auditorium and commons are available for community use, and the school provides trained technical labor for the local market.

Oregon's largest military installation, Kingsley Field, will be closed in 1980. Because of the money generated in the local economy by the facility, it is logical to assume that closure of the field will have an impact. However, a report from the Federal Department of Housing and Urban Development in August 1978 states the closure ". . .will have only a negligible impact on economic development in the region."

The Pentagon has had a study completed to formulate a program for economic adjustment resulting from closure of the Field. It is oriented primarily toward reuse of facilities and property on the Field for non-military purposes. The program is not oriented toward adjustments in the economy external to the Field.

(See "Economic Adjustment Program" August 1979 by SRI International for the Pentagon.)

Trade Area Population

Klamath Falls enjoys a "trade area population" of over 100,000 people, comprised of populations of Klamath and Lake Counties in Oregon and Modoc and Siskiyou Counties, and portions of Shasta County and Lassen County in Northern California. This involves populations from Weed, Mt. Shasta, and Susanville, California, as well as other smaller communities in Northern Califoria who come into Klamath Falls to do their trading.

The 19,700 households in the county in 1976 produced total Effective Buying Income (EBI) of $273,960,000. The 1976 Retail Sales (RS) for the area reached $181.5 million, up from $163.5 million in 1975 and

$93.5 million in 1970. This gives an average of $13,900 Effective Buying Income per household and Retil Sales averaging $9,200 per household on a countywide basis. The following table shows the county EBI and RS for 1976 compared with state, regional and national statistics.

	Average EBI/ Household	Average RS/ Household
Klamath County	$13,900	$9,200
State of Oregon	14,400	8,500
United States	15,900	8,940

The Labor Force

Between 1970 and 1975, the work force increased by 16 percent, while population rose about 9 percent. Two factors explain this anomaly: first, the constant rise in the number of women entering the work force; second, the entry of the baby boom of the 1950's and early 1960's into the labor force. The largest rise in employment since 1970 occurred in non-manufacturing industries. The sharp increases in services and government reflect a public demand for not only more services, but also for varied service. The increase in population and tourism created more jobs.

According to figures from the State of Oregon Employment Division (The Klamath County Economy: Status and Prospects, May 1977) there was a 9.1 percent unemployment rate for a work force of 23,170 (both sexes) in April 1977, 22,463 of which were Caucasian. The total rate of unemployment for a work force of 8,632 females was 11.2 percent.

The same study also showed that employment growth from 1970 to 1976, including employment in such areas as manufacturing, wholesale-retail trade, services, farm, transportation, government and real estate, revealed the following; in 1970, total employment was 19,240, and in 1976 it was 21,519.

Median family income for 1974 was approximately $11,000; this rose to $12,109 in 1975 and to $12,751 in 1976. Per capita personal income in Oregon, 1974-1975, is estimated to have risen 6.25 percent from $5,284 to $5,610. Wage and salary rates in manufacturing (primarily wood products) and agriculture tend to be roughly equivalent to statewide averages. Entry rates in the lumber and wood products industry currently average approximately $5.75 per hour (May 1977), while those in agriculture average $2.75 to $3.50. Price rates are not as important a factor in agricultural wages as they are in many other Oregon agricultural areas. Basin wages for clerical and service occupations are generally lower than in other Oregon metropolitan areas due to competition stemming from a labor surplus created by the growing number of women entering the labor force, and by youth and military personnel seeking part-time work. Summer employment for youth is limited, because the area's agriculture does not employ large numbers of seasonal labor.

Urban Area Economy

During the summer of 1977, the City of Klamath Falls surveyed some 2,200 county business firms. The Economy map shows existing and undeveloped commercial and industrial sites. Those in the urban area who replied ranked manufacturing the number one business of economic importance, general retail next important, followed by wholesale supply and financial services. Forty-seven and one half percent felt that their businesses depended to some extent on tourists. Within the urban area, over one third felt they would expand their operation sometime within the next decade, presenting the possibility of over 475 new jobs. Only 5.5 percent of the urban businesses responding to the survey felt they might reduce or curtail present activities. Well over half felt they could hire local people with necessary skills.

In early 1980, a new shopping complex was opened at South Sixth Street and Washburn Way. The center has 125,000 square feet of shopping area with approximately 600 parking spaces on 15 acres. Also the county is considering another shopping complex on South Sixth between Homedale and Madison. This center would have 190,000 square feet of shopping area with 950 parking spaces on approximately 17 acres. The urbanization element has a complete analysis of commercial land needs including retail shopping.

The City of Klamath Falls is the residential and employment center of the County. Currently, substantial land within the City is vacant and suitable for residential development. In fact, there is enough suitable vacant land inside the City to accommodate the urban area's expected growth. However, land within the City that is vacant and suitable for commercial and industrial development may not be sufficient if the City is to maintain its position as the employment and business center of the County. The Urbanization Element contains an assessment of the current availability of commercial and industrial lands, and the future need for commercial and industrial development within the City. The needs analysis indicates that some 122 acres of additional commercial lands will be needed in the City while 201 acres are provided in the plan. Similarly, 362 acres of industrial lands are needed, while 480 acres are provided. These needs are based on the limited population growth projected for the City. Considerably greater population levels can be accommodated by the City's vacant residential lands, which would generate the need for considerably more commercial and industrial lands within the City. The need for these types of land is to be met by designating appropriate lands inside and outside the City limits for commercial and industrial development. In short the urban area economy transcends the political boundary of the City and is regional in nature. The County Comprehensive Plan should desginate commercial and industrial lands to accommodate employment needs of future city and urban area residents. The Urbanization Element has a complete analysis of future residential land needs.

Because of the regional nature of employment, and land needed for future employment, Klamath County clearly has a significant responsibility to coordinate planning for future employment and commercial and industrial lands. The Urbanization Element has a complete analysis of lands needed for commercial and industrial employment.

City Fiscal Analysis

Local Government Economics

The purpose of this subsection is to analyze the City's past and current financial condition, and to review the future abilities of the City to obtain funds for the capital improvement program which will be adopted within the Comprehensive Plan, and interlaced with the operational programs that have been provided as a basic level of services to City occupants.

Historically, Klamath Falls has depended to a great extent on the property tax as the principal revenue source for financing its services. Within recent times this dependence has fallen off because of the generation of other revenue sources. In 1940 the City of Klamath Falls' dependence on property tax for general services was 57.9 percent. In 1977, the percentage of dependence on property tax was 28.7 percent, indicating a decrease of 29.2 percent of dependence on property tax in 37 years.

The approach of using property tax as a chief revenue source can be logically explained in that services historically provided by the City such as police, fire protection, and street services were directly related to real, tangible property improvements. In recent years, there has been a move away from such a great dependence on property tax because services required by City occupants have moved into such other areas as parks and recreation, sanitation, airport, and public restroom levies which do not directly correlate with real property values. Also, the City's moving away from a large dependence on property tax can be explained by the limited amount of property tax dollars available for distribution between other local governments, such as the County and school districts. The growth of education is financed largely by property tax and is crowding the City's taxing ability from the overall view of total property tax dollars available.

Financial Policies and Methods Regarding Capital Improvements

Historically, the City has provided for sewer, storm sewer, and water improvements by the issuance of general obligation bonds. The general obligation bonds traditionally have been retired with utility revenues and grants received from various special agencies rather than property tax. The dependence upon obtaining Federal grants to accomplish the goals outlined in the Comprehensive Plan will become more and more necessary in the future.

As of June 30, 1977, the City had no outstanding utility bonds because the early retirement of the 1968 sewer bond was accomplished through the obtaining of EPA grants paying for approximately 50 percent of the project. The City of Klamath Falls is in the envious position of having no net debt. The explanation of no City debt can be seen in the reluctance of past City Councils and Budget Committees to ask the citizens of Klamath Falls for funding outside of its general revenue sources.

Property Tax Trends - The Assessed Valuation

Property valuations for Klamath Falls adjusted to 100 percent of assessment remain relatively stable for the period of 1940 to 1960. From 1960 to 1970 the assessed valuation of the City rose dramatically from over $70 million to $112 million. During the period from 1970 to 1977, the property valuations continued rapid acceleration, increasing in a seven-year period by $74 million in comparison to the period from 1940 to 1969 where the assessed valuation increased by approximately $31 million.

Tax Rate and Tax Revenue

Revenues to City government from the property tax have changed substantially as indicated above.

In 1940 the City of Klamath Falls boasted a population of 16,497 people living in the City with 100 percent assessed valuation of $38,867,000. The tax rate adjusted for the County assessment ratio was $6.98/$1,000 assessed valuation. Since 1940 the City of Klamath Falls has grown substantially. Throughout that period of time, the tax rate has fluctuated a great extent, from a high of $9.94 in 1973 to the 1977 levy of $7.18 in comparison to $6.98 in 1940.

While the tax rate has fluctuated with the assessed valuation, the income from the property tax has dramatically changed. The City has increased revenue from property tax in the amount of $1,020,000 from the $271,099 collected in 1940 to the 1977 collection of $1,344,500.

Distribution of total tax levy collected per capita in City tax and the distribution of local property tax to various governmental units has dramatically changed since 1940. In 1940 there was somewhat of an even distribution between the City and County schools of the total property tax levy. That even distribution was approximately 30 percent. Since 1940 the City and County have had to come to rely on other sources of the property tax, while the school districts have increased their share of property tax allocation from 29 percent in 1940 to 56 percent in 1977. The school districts have come to rely heavily upon the property tax since it is their major revenue source other than Federal and State grants.

In summary, tax rate and property tax valuation are the two factors which determine local tax revenues. The valuation of property has

skyrocketed in recent years due to inflation, annexation of property and services rendered which directly relate to property value. There has been a relative reduction in the City tax rate over the period 1940 to 1977, but there has been an overall increase in revenues collected by the City. This is an indication of the spreading of the tax base between more users of the services provided by the City and substantiates to the theory that the spreading of the tax base provides a more economical and efficient use of Klamath Falls revenue sources.

Trends in Klamath Falls Revenue Sources

In the period 1940 through 1960, all revenue sources with the exception of County revenues were to the greatest extent stable. For the period 1960 to 1977, the areas of local tax revenues (which include not only property tax but franchise taxes, payments in lieu of taxes, business licenses and occupational taxes), local non-tax revenues and Federal revenues have increased dramatically. It should be pointed out, that the City has continued to increase its reliability on revenue from non-tax resources in the last 37 years. The accelerated increase of non-tax revenue sources in 1977 amounted to over $1,600,000 while local tax revenues amounted to $1,300,000. This is in comparison to 1940 where local non-tax revenues were $200,000 and local tax revenues were just under $300,000, again indicating a change of revenue sources available to the City.

The most dramatic increase from the period 1970 to 1977 can be seen in the City's dependence on Federal sources for the providing of continuing services in capital improvement projects. It is especially critical to look at the trend of increased revenue from the Federal source in light of future capital improvement projects and services to be rendered. In 1970 the City received from the Federal government $12,808. In 1977 the City received $572,844 in revenue. In 1978 the City will receive $3,998,236, with the main use going to capital improvement projects in the area of geothermal development, sewer development, street projects, and airport construction. The 1978 figure indicates a per capita amount returned to the City by the Federal government of $231.31, in relationship to the 1977 per capita amount which is $.81. The major trends regarding future revenue for future capital improvement are again non-tax revenue sources and sources from the Federal government.

Per Capita Amounts of City Revenue

The situation involving per capita amounts of City revenues is very unique to the City of Klamath Falls because of the status of the incorporated area, the City itself, and the status of the huge non-incorporated area, commonly referred to as South suburbs. The Klamath Falls urban area is basically an area of approximtely 35,000 people with urban services being financed by only 17,000 people. Compared to Oregon cities between 25,000 to 50,000 and 10,000 to 25,000 population the City of Klamath Falls derives more per capita revenue than cities in either category. Again, the basic reason is that the City of

Klamath Falls taxpayer in essence provides services through the use of City streets, City parks and recreation programs, City airport and City police to a large non-incorporated area approximately the same size in population.

The same comparison indicates that as population increases, the cost for providing municipal services decreases on a per capita basis, again proving the theory of more cost effective services with a larger population or tax base providing the service. The City of Klamath Falls has continually relied more heavily upon other outside sources of revenue such as Federal, State and inter-local governments for revenue than other Oregon cities its size and also cities larger than itself.

Evaluation of Present Local Government Economic Characteristics

The City's ability to raise revenue with the property tax is very limited. A major limiting factor is the overall increase in the last 25 years of the school districts' reliance on the property tax as a major revenue source. Historically, the school districts have gone to the voters yearly for an increase in property taxes over and above the 6 percent limitation. Because of the sharing of the total property tax levy, it becomes very difficult for other units of local government to proceed outside the 6 percent.

Revenues From Other Governments

As indicated above, the City of Klamath Falls came to rely more and more on revenues from other governments, especially the Federal government, in order to finance capital improvements. At this point, it can be reiterated by looking at the percentage increases, not only from 1970 to 1977, but the years from 1977 to 1978. In 1970 the City received only 16 percent of its general revenues from other governmental sources. In 1977, the total was up to 26 percent. The year 1978 will be seen as a departure from a heavy reliance upon other governmental revenues for capital improvement programs. In 1978 the City of Klamath Falls received approximately $3,988,236 in revenues from other governments for capital improvements.

Local Non-Tax Revenue

Klamath Falls is apparently ahead of other Oregon communities in obtaining general revenue from local nontax sources such as user charges, fees, fines, forfeitures, interest payments, special assessments and utility revenues. According to a League of Oregon Cities study done in 1975 for Fiscal Year 1973-74, the City of Klamath Falls on a per capita basis has generated $62.79 in local non-tax revenue versus cities of similar size generating $58.34 in local non-tax revenues.

As a future revenue source for capital improvement programs, this type of revenue is not seen as a major contributor, because local non-tax

revenue sources are in many instances generated for specific programs such as water and sewer services, and to a great extent will not generate sufficient revenue for an overall capital improvement program designated by the citizens of Klamath Falls.

General Obligation and Revenue Bonds

The legal debt limit for Klamath Falls as of June 30, 1978, was $5,550,000. The City has not in the past used general obligation revenue bonds as a method of financing capital improvements. The revenue or general obligation bond procedure would appear to be a viable method to raise revenue for capital improvements, limited mainly by the local taxpayer approval to increase his taxes or user fee.

Implications of Future Government Financing: Major Capital Improvements

Klamath Falls for the most part may not be able to finance the total planned public improvements, that is, by property taxes and local non-tax revenues, because of the attrition of the City's share of the property tax, current state limitations placed on local government in reliance on the property tax and possible future, and more conservative and strict limitations on the use of property tax. Other sources of financial assistance from State and Federal governments and to a extent from the County, must be sought and utilized if its citizens desire to maintain a livable community as the area's population expands.

Among the many general methods used in financing capital outlay items, the four considered here seem to be the most common and desirable:

1. Payments in Advance. This may be made possible through a capital improvement fund or a capital reserve fund initiated by the City which calls for creation of an amount of revenue to be set aside to assure participation in future debt or future requirements. As of July 1, 1978, the City had within its capital reserve appropriated and unappropriated funds in the amount of $925,835.

2. Pay as You Go Policy. This policy is generally considered the most desirable when the size of the capital outlay is relatively small, and when there are sufficient resources available to meet the expense without creating a burden on the City's general fund. This option appears to be less viable in the future because of the continuing escalation of capital outlay programs.

3. Borrowing. This may include the issuance of bonds or bond anticipating notes. Borrowing is the most commonly used method of financing capital outlay items in the State of Oregon, but has tended not to be used by the City of Klamath Falls. But, as more and more restrictions are placed on the general revenue sources of the City, borrowing may be a main source of revenue in which to initiate the capital improvement programs, again, if approved and desired by the City voters.

4. Subsidies or Grants-in-Aid. As has been indicated throughout this portion of the Plan, subsidies and grants-in-aid have become a major portion of revenue available to finance capital improvements. Subsidies and grants-in-aid may become in the future a more intensified action program as the City attempts to obtain the competitive funds available through the State and Federal governments for various improvement programs.

These four methods of financing are primarily used with the following objectives in line: the lowest possible cost; a stable tax rate; and a low debt in relation to resources. It is quite possible that Klamath Falls might and should utilize all four methods of financing capital programs as identified in the Comprehensive Plan.

Potential New General Revenue Sources

Even if the City is able to finance capital improvements with its limited revenue sources, the continuing and on-going maintenance and operation and up-keep of those projects represent a large fiscal hurdle for the community in the future. The sources listed below have been reviewed by the City administration and review potential new revenue sources for the City. Listed below are only a potential list of revenue sources which would have to receive approval of the City Council, and in some cases a Charter amendment approved by the voters of the City.

Income Tax. In 1939 the City of Philaldelphia passed an income tax which was applied to the earnings of all the residents regardless of whether their employment was in the City or not, and upon the salaries and wages of all non-residents who work within the City.

Utilizing previously obtained figures and some assumptions, it would appear that the adjusted gross income from within the City of Klamath Falls is somewhat in excess of $124,000,000 annually. Therefore, a tax of one half of 1 percent of that income derives an annual sum of $620,000 to the City. The State of Oregon is empowered to collect such taxes for local government and will do so on a formal request payment of an administrative charge. The advantages of a municipal income tax are:

1. Taxation of those who use City services, but who may not directly contribute financially otherwise to the service provided;

2. The great revenues it produces to the City;

3. High response to inflation and growth;

4. Low administrative costs; and

5. It is relatively simple, direct and non-regressive.

Retail Sales Tax. The first local sales taxes to be levied in the United States were in New York City in 1934 and New Orleans in 1936. In other states in which a local sales tax is levied, excepting Alaska, there is also a State sales tax. The Oregon legislature has authorized the Department of Revenue to enter into agreements with local governments to collect, enforce, administer and distribute the local sales tax. The sales tax is generally levied on most retail sales at a uniform rate, collected from the purchaser at the time of purchase, and identified as such when the purchase is made. Often, general sales tax excluded certain sales such as drugs, repair services, and local transportation.

Based on estimates generated from the 1977 Editors and Publishers Market Guide, retail sales in 1977 within the City of Klamath Falls were slightly over $126,000,000. Assuming certain exemptions from these sales and other possible exclusions or reductions, this would indicate a 1 percent sales tax and the City of Klamath Falls would yield $1,100,000 to $1,200,000 annually. The benefit of a sales tax is:

1. Primarily, it produces a substantial yield;

2. It truly catches the community service user such as tourists and others who did not otherwise provide any resource for the services utilized;

3. Payment being made in small increment does not develop emotional reaction of a once-a-year substantial payment such as a property tax or income tax;

4. Its flexibility in respect to community growth, increased sales and inflation;

5. The administrative costs of such tax are traditionally low, ranging from .8 percent to 2.5 percent.

A detriment of a general sales tax is the pioneering aspect and also the regressive feature of the tax and actual, psychological City Limits barrier in relationship to businesses outside the City. Finally, the retailers involved would heartily resist such a tax obligation, listing the administrative detail costs as a detriment along with the appearance of driving customers out of the City.

Utility Surtax. The utility user surtax is extensively used in the State of California and many other states. The tax rate imposed in California varies from 1 to 5 percent, the majority utilizing the 5 percent rate.

The benefits of a utility tax are substantial in that it is a stable tax and it follows the growth of the economy and inflation. Additionally, it is economical to administer, it is paid a bit at a time and receives less resistance, and would include rentors and lessees

heretofore exempt along with other property tax exemptions. It would also invoke a direct charge on institutional facilities within the City that have traditionally enjoyed exemption from tax payment, but at the same time have benefited from certain services.

The disadvantage of the utility tax is that it is regressive in nature; however, this can be mitigated. Finally, it is a pioneering tax effort in the State of Oregon that would most likely be bitterly contested by the utility companies, as well as tax paying citizens.

In Lieu of Taxes. In lieu of taxes is a relatively new concept that refers to payment by the Federal government, state, counties and other non-tax supporting institutions. Federal in lieu of taxes payment has been revenue sent to certain counties in the State of Oregon. In lieu of taxes is funding which the county would have otherwise received on land if it were not held in Federal ownership.

From the municipal financing standpoint, it would seem to be a direct correlation that services provided to such Federal and other governmental buildings as post offices, county courthouses, state office buildings, college campuses in the way of police and fire protection and parks and recreation programs, should be revenues transferred for use of such municipal services.

Real Estate Transfer Tax. The mechanics of the real estate transfer tax can be very complex, utilizing such features as exemption of the mortgage portion, and exemption of everything except property appreciation. However, most examples of the real estate transfer tax utilize the direct gross price approach excluding contracts and escrow agreements. In Oregon where the county records property transactions, any tax effort would have to be negotiated with the county. The potential yield of such a resource is variable, with the best information available indicating 1977 deeded real estate transactions within the City were over $34,800,000. A tax rate could raise up to roughly $120,000 annually on such transactions. The administrative costs of such tax procedures would be approximately 2 percent.

In summary, it should be reiterated that the above information is substantially superficial and all figures quoted should be taken as very rough approximations; also, that any establishment of the above revenue programs would be done through Council action with appropriate public hearings and the possibility of voter approval. It should also be noted that any move toward implementation of the above will meet opposition from one or more special interest groups in the eventual levy of the revenue source.

Summary of City Fiscal Analysis

The future financial situation of local government of the City of Klamath Falls is at a turning point. The turning point evolves around the successful implementation of capital improvement programs through borrowing and future use of grants from other governments.

Economy - Current Conditions (13)

As has been indicated throughout this portion of the Plan, the property tax can no longer be seen as a viable avenue for operational funding and will be extremely limited in funding any proposed capital improvements. Through the voter's box tax-paying citizens will determine the level of services which they will require and indicate the capital improvements they deem necessary for the community in light of the standards developed by consensus of the voting population.

Economy - Problems and Future Alternatives (1)

84. The lack of adequately serviced and suitable vacant land is a handicap to industrial expansion.

85. Most of the job market supply is by inmigration from other population areas.

86. Erratic zoning in the urban area inhibits economic growth.

87. Inflation is affecting land values and supply costs.

88. Roughly 90 percent of manufacturing employment is in lumber and wood products, creating need for diversification.

89. There is a surplus labor force, particularly of women and youths, and continued mechanization in such fields as agriculture will reduce the number of jobs.

90. The phase-out of Kingsley Field, which contributes about $10 million to the local economy, may have temporary adverse effects.

91. Urban sprawl has led to a rising property tax burden for City residents.

92. Tax reforms may change local taxation and cause a loss of jobs and services that are tax supported.

93. Rising energy costs create increased transportation, utility and other costs and will greatly restrict available industry and jobs.

94. There is limited conflict between industrial, agricultural and water uses of Upper Klamath Lake, Link River, Lake Ewauna and Klamath River.

95. Commercial and industrial development will have to expand to meet future growth needs, although there may be adverse effects on small local businesses if commercial chain stores continue to expand in the area.

96. Industrial use of geothermal water may accelerate rapidly.

97. Tourism and recreation continue their moderate growth as part of the area's economic base.

98. There is a possibility of one of the major industries having to shut down due to an economic or energy crisis.

DETAILED ASSESSMENT NOTE

ELEMENT: ECONOMY

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENTS WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

KLAMATH COUNTY OVERALL ECONOMIC DEVELOPMENT PLAN

OREGON EMPLOYMENT DIVISION ANNUAL COUNTY STATUS REPORT

COPIES OF THESE ASSESSMENTS MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Economy - Goals (1)

20. To diversify and improve the local economy.

Economy - Policies (1)

68. Tax reforms that would reduce dependence on property taxes will be supported.

69. Research to increase diversification within the lumber and agricultural industries will be supported.

70. Adequate public facilities and services for industrial and commercial areas will be ensured.

71. New, non-polluting industry that can use O.I.T. students during their education and O.I.T. graduates will be sought.

72. Klamath Falls' position as the retail center for south-central Oregon and northern Califoria will be strengthed wherever possible.

73. Existing and planned commercial and industrial areas will be protected from encroachment by incompatible land uses.

74. The comparative economic advantages of Klamath Falls as contrasted with other areas will be identified and promoted.

75. Appropriate improvements in local conditions will be made in order to attract private capital investment.

76. In developing City regulations, careful consideration will be given to resulting adverse economic impacts, and appropriate mitigating measures will be attempted.

77. Development which will assure the City of an adequate tax base will be encouraged and supported.

78. State and Federal financial assistance policies that recognize the special needs of small, rural communities with high unemployment and limited base economies will be supported.

79. Appropriate commercial and industrial reuse of Kingsley Field will be investigated and promoted.

80. Development will be controlled to provide maximum efficient use of public services and facilities. Also adequate public facilities, especially sewer and water, will be provided within the capabilities of the City to permit commercial and industrial development.

81. Public facilities and services will be consolidated wherever feasible.

82. Programs will be pursued to increase the quantity of water so that economic development is not constrained.

83. The City will coordinate with and encourage the County to designa sufficient land appropriately located for industrial development outside the City.

Economy - Implementation Measures (1)

65. The public will have access to education and involvement.

66. The City will support and cooperate with the Klamath County Economic Development Association, including the maintaining of a complete inventory of community resources and information for use in attracting non-polluting industries.

67. Review of the land use needs of the urban areas will continue.

68. Grant support of geothermal heating district will continue.

69. A broader tax base will be sought to help reduce the property tax base.

70. Public services and utilities will be provided at a minimum cost in face of continuing population demands.

For implementation also see City Code, Chapter 7, Business.

J. ENERGY ELEMENT

Energy - History (1)

Klamath Falls lies above what is called a Known Geothermal Resource Area (KGRA), a new title for a phenomenon known for centuries. A geothermal resource is essentially underground hot springs producing hot water.

Basin Indians used this energy long before any geothermal technology was developed. Later, the settlers took advantage of the readily available hot water produced by underground springs. By the turn of the century, those living near existing springs or hand-dug shallow hot water wells were using the energy for heat as well as for cooking and cleaning.

Klamath Falls is noted for using geothermal energy in unique ways. In addition to heating approximately 500 residences and commercial buildings, geothermal energy warms swimming pools and keeps ice off the pavement in City areas. A local creamery uses 181°F water from its well to pasteurize milk. In the past few years the Oregon Institute of Technology has experimented with geothermal waters for greenhouse heating and aquaculture.

Solar energy experimentation works well in the Klamath Basin, as sunshine and thermal energy in the area have always been used directly. Several types of solar energy collectors, many homemade, have been built, and the practice is rapidly expanding.

Link River has provided Klamath Falls with electrical power for over three quarters of a century. The Klamath Falls Light and Water Company was the first power plant in 1895. This was just the beginning of a series of plants that grew with the advent and expansion of electricity.

Wood, coal, oil and gas have all served as secondary fuel sources in the area, wood being the earliest source, coal first imported from Utah in 1913, and oil brought in shortly thereafter. As the economic levels rose after the war, more oil was used, as was electricity, to heat homes.

Geothermal

Along the fault block that forms the eastern edge of Klamath Falls, heat from the interior of the earth is close enough to the surface to be used by man. This is referred to as a "Known Geothermal Resource Area", and is shown on the Energy map.

It is believed that two main geothermal reservoirs exist: a lower region with temperatures above 250°F (121°C); and an upper level accepting heat in the form of steam and hot gases moving upward from the lower level via fault zones. Groundwater seepage into this upper reservoir tends to lower its temperature. The horizontal hot water flows appear to be in layers through the more porous materials from two to twenty feet in thickness, with impervious layers between.

Hundreds of warm wells scattered throughout the area have water temperatures that range from just above normal for the region (60°F, 15°C) to about 104°F (40°C). Most of the wells with temperatures greater than 140°F (60°C) are confined to the Klamath Falls urban area. Wells and springs with temperatures greater than about 150°F (65°C) are located not farther than about one mile (1.5 km) from the major fault zones. It is estimated that the amount of heat stored in the Klamath Falls geothermal system down to a depth of three kilometers is 1.2×10^{17} BTU's (an amount equal to the heat derived from burning 21.5 billion barrels of oil). This estimated heat content places the Klamath Falls system among the five largest known geothermal systems in the United States, excluding the Gulf Coast geopressured areas.

The amount of geothermal energy that is currently utilized in Klamath Falls is estimated as a total of $1,795 \times 10^{8}$ BTU/year for over 500 sites using more than 400 wells. The figure is an approximate average consumption of geothermal energy. The seven individual uses that comprise the total peak use may be eight to ten times greater at times.

From 1975-1978 29 new wells have been dug within the City, primarily for residential use. However, the cost of hot water well operation in Klamath Falls appears to be somewhat expensive for an individual homeowner. Initial investment of from $7,000 to $10,000 appears to be usual at the present time. Alternatives that could be considered are a minimum of four homes sharing a well, an entire block sharing a well, or an entire subdivision sharing a well. The greater the number of homes on one well, the larger and deeper the well will probably have to be and the greater the overhead cost for maintenance and administration will be. Four homes to a well appear to be near optimum for cost and efficiency when using down-hole heat exchangers.

The City is investigating the feasibility of using geothermal heat commercially, i.e., using a system to heat an entire district: domestic, commercial, or industrial. The direct use of geothermal heat for space and process heating has proven to be economical and reliable over the past 70 years. The potential for geothermal heat to produce

electricity at this time is unknown. Temperatures above 350°F are necessary for producing electricity and their presence in the Klamath Falls area has not been substantiated. An important part of this investigation is the report "Klamath Falls Geothermal District Heating: The Commercial District Design" by LLC Geothermal Cosultants.

The City is committed to pursuing a program to utilize the geothermal resources of the area. It has taken, and will continue in the future, its leadership role in the development of geothermal resources. The first stage of the program is to heat 14 buildings in the downtown area with geothermal heat. The second stage is to expand the use for residential heating.

Solar Energy

The harnessing of solar radiation to provide an alternative energy source for man is a relatively new technology. Here in the Klamath Basin, its utility is just beginning to be considered, although the energy source is certainly available. Records over the past few years show the largest amount of solar energy available in the month of July with 2,273 BTU's/square foot/day, and the smallest amount in December, with 461 BTU's.

The initial cost of solar heating is high, currently about $30 per square foot of collector area. Also, a solar heater requires a forced air system to circulate the heated air throughout the house. For those cloudy days, a backup system, either electrical, gas or oil, is needed.

Electrical Energy

A recent survey in the Klamath Falls urban area showed that 100 percent of those questioned used electricity to some extent in their homes or businesses.

These numbers are increasing daily; the number of new hookups in 1977 included 426 new homes, 70 multiple dwelling units, and 245 mobile homes in the area.

Power is generated locally by two power plants on Link River and one on Klamath River. The Link River East Side Plant has a capacity of three megawatts, while the West Side Plant produces 600 kilowatts. The John C. Boyle Powerhouse can generate 82 megawatts. Thus the total capacity of the area is 85.6 megawatts of power, dependent, of course, on available water supplies. (The Klamath River supports five projects with a total generation rating of 162.5 megawatts.) The electrical system is shown on the Energy map.

Peak demands for electricity in the area reach 130 MW on occasion so local supply is insufficient. Klamath Falls is connected with a 500,000-volt transmission tie from the Northwest Power Pool and this transmission tie will be further reinforced by major 500,000-volt lines from Malin to Idaho and Medford with construction now underway.

Conservation efforts are being expanded in an attempt to lower per capita usage; such things as storm windows, additional insulation and lower thermostats are being promoted. Even with such practices, the increase in population projected for this area will increase the total electrical requirements.

Fuels

Wood. Because of the rising costs of electricity, coal, oil, and natural gas, the use of wood as a fuel is increasing. In addition to up-to-date fireplaces with heat circulators, several varieties of modern and efficient woodburning stoves are being used.

Wood is readily available within a few miles of the urban area. Several enterprising individuals or groups also provide cut wood by the cord--prices begin at $40, depending on the type of wood and how it is cut. Some scrap wood is also available from local mills, but this supply is limited as the mills utilize most of their waste wood.

Coal. A recent survey showed coal to be the source of energy for less than 1 percent of the urban area.

Oil. Oil is still in use as a heating fuel, although it is less popular than it once was. There are several distributors in the area, so statistics on volumes used are difficult to obtain. It is estimated that 10 percent of the homes in the urban area use oil for heat.

Gas. Next to electricity, natural gas is the second most used form of energy in the Basin. It is available for cooking and heating as well as for industrial uses, and it is estimated that it provides about one third of the energy for the area. At the beginning of 1977, nearly 5,000 residences, over 660 commercial businesses, and a few industries used natural gas in the Klamath Falls area. (See Energy map).

98. Average wind speeds (5.1 mph) within the Klamath Falls urban area are not sufficient for electrical generation.

99. The incineration of solid wastes is not financially feasible within the scope of the existing County-managed program.

100. Klamath Falls will continue to be a net energy importer in the foreseeable future, particularly of high-cost electricity and natural gas.

101. The rising costs of available energy increase home and business expenses. By 1980, general energy costs will rise from 34 to 59 percent over 1975 levels.

102. The private versus public use of area's geothermal resource may be in conflict at times; also the proposed geothermal heating district could become infeasible due to a change in water supply or earthquake impact.

103. The high use of wood or fossil fuels contributes to air quality problems.

104. Less than one percent of the urban area energy is derived from the most abundant fossil fuel energy source in the United States--coal.

105. The national dependency on electrical energy will increase from a 1970 level of 25 percent of total energy consumption to 50 percent in the year 2000.

106. By 1980, there will exist a shortage of electricity, with no shortages of petroleum, natural gas or coal: at the same time, geothermal, solar, coal and other alternative energy sources will become economically more feasible.

107. Growing electrical demands will require additional transmission to Pacific Power and Light's existing 230 kilovolts substation.

108. Geothermal resources provide a potentially viable alternative source of energy.

D E T A I L E D A S S E S S M E N T N O T E

SUB-ELEMENT: ENERGY

THE CONTENT OF THIS SUB-ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENT WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

OREGON INSTITUTE OF TECHNOLOGY/

LAWRENCE LIVERMORE HOT WELL STUDY

U.S.G.S. CIRCULAR 790 - ASSESSMENT
OF GEOTHERMAL RESOURCES

LLC GEOTHERMAL CONSULTANTS/

KLAMATH FALLS GEOTHERMAL DISTRICT HEATING:

THE COMMERCIAL DISTRICT DESIGN, INTERIM REPORT

FEBRUARY 1979

COPIES OF THIS ASSESSMENT MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Energy - Goals (1)

21. To conserve energy and promote the utilization of alternative energy sources.

Energy - Policies (1)

84. Energy efficiency will be a principal criterion in evaluation of all transportation facilities--both public and private.

85. Energy-consuming vehicular trips will be discouraged and the development of mass transportation within the City promoted.

86. Pedestrian and bicycle use will be promoted as alternative modes of transportation.

87. Urban sprawl will be curtailed and in-filling of vacant land promoted to reduce energy costs.

88. Energy-efficient residential densities will be promoted relative to work sites and transportation planning.

89. In an effort to lessen the energy expenditures for service provision, the utilization of the maximum usable building area on each lot will be encouraged, thereby resulting in an energy-efficient building configuration with minimum street frontage.

90. Recreation-related energy consumption will be reduced in view of less energy-consuming recreation activities (in the urban area itself).

91. Moving or flashing outdoor advertising signs and other non-essential energy utilizing activities will be discouraged.

92. The prudent use of alternative energy devices (solar, geothermal et cetera) will be encouraged through provision of tax incentives.

93. The recycling of solid waste materials for both energy and reclamation purposes will be promoted.

94. Building access to solar rays will be protected to provide for lower heating costs.

95. The carrying capacity of the Known Geothermal Resource Area must be defined and then not exceeded.

96. Geothermal space heat will be available to the largest number of residences and businesses possible.

Energy - Implementation Measures (1)

71. All City construction projects will provide leadership in demonstrating energy conservation.

72. Public education relative to energy conservation and the attendant savings to the consumer will be promoted.

73. The use of heat pumps will be promoted in lieu of electrical resistance heating.

74. The City will apply for grants to develop special heating or other energy-saving measures.

75. A detailed carrying capacity analysis of the Known Geothermal Resource Area will be developed and the uses of the geothermal heating district will be promoted.

76. The city will continue to commit itself to the development of geothermal resources.

77. A recycling center for the area will be developed, including the provision of adequate funding where necessary.

78. The use of solar energy as an adjunct energy source will be encouraged through the protection of solar exposure, flexible setbacks and height requirements, and the promotion of a building code which allows for innovative design.

79. Projects such as centralized parking areas, downtown shopping malls, and public transportation will be promoted as a means of reducing short vehicular trips within the urban area.

For implementation also see City Code, Chapter 4, Public Utilities and Services: Geothermal Franchises; Chapter 10 Community Development: Article 5, Standards.

K. HOUSING ELEMENT

Housing - History (1)

George Nurse, principal "founder" of Klamath Falls, built the first permanent structure in the City, a wooden cabin made of sawed lumber rafted down the lake from the Fort Klamath mill. The mill's proximity and the easy transportation by water provided adequate access to building materials, and the addition of two more mills to the area improved the situation.

In early years, many residents lived in boarding houses, and by 1925, some 35 hotels existed in Klamath to house the plethora of construction, railroad and mill workers who had found work in the area.

The 1920's were a decade of rapid growth, and in 1924 Klamath County boasted the most new homes in the state. Census figures show total housing units for the county rising 13.4 percent from 1940-50, 13.9 percent from 1950-60, and only 8.1 percent between 1960 and 1970. In the year 1960 total construction valuations of the area amounted to $181,000; in 1977 they had grown to $2,584,764. According to a 1976 housing report, between 1970-73 the local real estate market underwent a boom as the population surge put increasing pressure on an already inadequate stock of family housing, much of it substandard.

Following a period of adjustment, a shortage again exists; it is not primarily quantity but quality that is in short supply, and the low median rent is indicative of the quality available, much of which are substandard single-family dwellings vacated by homeowners who have purchased better homes.

Housing starts over the years between 1960 and 1977 have risen sharply, and multiple housing has also risen extensively. This can be seen in the following table which enumerates construction within the City limits of Klamath Falls.

Klamath Falls
New Dwelling Units

Years	In Single-Family Structures	In Multiple-Family Structures
1960-1969	238	26
1970-1977	454	116
August 1977-July 1979	414	58

In 1950, 41.5 percent of the dwellings were rented units; in 1960 this had dropped to 37.5 percent and the trend continued with only 37 percent of the County's housing occupied by renters in 1970. Total housing units within the City have risen from 5,292 in 1940 to 6,307 in 1970,

a drop from the high of 6,803 in 1960. The ratio of rentals to owner-occupied was higher in the City than in the county, equaling 48 percent in 1940, 47.5 percent in 1950 and rising to 49 percent in 1970. Of all the owner-occupied households in the County, 10.4 percent were below poverty level in 1969, and over 19 percent of the renter households fell below the poverty level, giving an overall average of 14.1 percent.

Housing - Current Conditions (1)

Housing Trends and Characteristics

When compared to other cities or to the State as a whole, Klamath Falls can be characterized as having both a unique and a serious housing situation. The 1970 census data indicate that for Klamath Falls 43 percent of all housing units (6,307 total) were 30 years old or older, 8 percent of all housing units were overcrowded and 5.8 percent of all the units lacked some plumbing facilities. Nearly half of all occupied structures were rentals (49.5 percent), and 42 percent of these rental units were considered cost-excessive for the renter, i.e., more than 25 percent of their gross income went for rent. In this group, 89.3 percent had gross incomes of less than $5,000 per year. The vacancy rate for single units was 1.7 percent and that of multiple units was 7.7 percent, indicating a lack of available housing.

This lack of living quarters has led to an increase in construction, with 736 housing units being constructed between January 1970 and April 1978, or an 11.7 percent increase in the number of units. According to the Department of Housing and Urban Development, the overall occupancy rate was still at 99.08 percent by the end of 1976. At that time, there was an average rental range of from $130 to $240 per month.

Other detailed statistics on the housing in Klamath Falls show that, as of May 1978, there was 7,068 housing units within the City; 66.7 percent of them single housing units (4,716), 6.1 percent duplexes (430), 0.5 percent triplexes (36), 1.9 percent fourplexes (136), and 24.8 percent with five or more units (1,750). The overall conditions rating of these structures shows that 49.0 percent are not defective, 30.7 percent show slight defects, 16.9 percent have intermediate defects and 3.4 percent are critically defective. (See Structural Conditions map). Mobile homes are a housing type that often provide an affordable alternative to conventional housing. As an example, in 1979 the Shadow Hills development added 142 lots for mobile homes.

The City Planning Department conducted two surveys in 1977. Of the people responding, 62 percent owned their own housing, 36 percent were renters and 2 percent gave no response.

Twenty-three percent felt their housing would be classed as excellent, 56 percent as good, 17 percent as fair and 3 percent as poor. Sixty-six percent of the people said there were not adequate numbers of affordable housing units in the City. Addressing this concern, 58 percent felt that more single-family units should be constructed, and 20 percent felt more apartments should be constructed; 56 percent favored rehabilitation of old structures rather than new construction.

In 1979 new home construction and home sales have slowed as part of a nationwide trend. The slowdown is generally attributed to a slowdown of the entire economy, rising interest rates, and dampening of demand.

Housing - Current Conditions (2)

Probably most affected by the inadequate housing are the low-income families, the single head-of-household families and the senior citizens. The Klamath Housing Authority assisted 294 families under its programs. One hundred ninety-eight families are receiving assistance at the present time under the HUD Section 8 program. The major senior citizen program is the 80-unit Kingswood Apartments; however, these units are full to capacity and a waiting list for vacancies exists.

Information regarding housing is analyzed in the "Housing and Urban Development Situation Report; Klamath County, Oregon; August 1978" by the U.S. Department of Housing and Urban Development, Portland Area Office. According to that report,

> Realtors indicate that the average price for single-family homes ranges between $42,000 and $45,000 with few homes of sound construction for sale at less than $30,000. The minimum buildable price for a new three-bedroom home has been estimated at between $45,000 and $48,000. The average price for a new three-bedroom home of the quality which most buyers appear to desire is approximately $52,000. This upward trend in the moderately priced home market is making acquisition of such homes more difficult for middle-income families.
>
> Most financing is Oregon State Department of Veterans Affairs and conventional. Recent increases in mortgage rates to more than 10 percent may result in some softening in the single-family housing market. Lenders indicate that mortgage money for home loans is available but that many home buyers, particularly first-time home buyers, are having difficulty qualifying for new loans.
>
> Net rents range from $265 to $340 for existing two-bedroom apartments with an average rent of $285. The majority of the rental units are clustered in and around the Klamath Falls area.
>
> There exists an acute shortage of rental units in the price range required by low- and moderate-income families and individuals. This situation does not appear to be changing significantly, as many of the apartments currently under construction are slated to come on the market at rents greater than $250.

The report goes on to summarize the availability of assisted housing as of 1978 in Klamath County sponsored under various federal programs. The Klamath County Housing Authority administers 330 Section 8 units for family and elderly. There are 72 units of Section 515 and 6 units of Section 502 Farmers Home Loan Programs. The number of households eligible for Section 8 assisted housing far exceeds the number of units available. A total of 536 elderly households are eligible, of

which 402 are one person and 134 are two person. A total of 910 family (or non-elderly) households are eligible, of which 300 are two person, 375 are three or four person, 124 are five person, and 111 are six or more person households. Eligibility is determined through an analysis of households income. The number of households eligible exceeds the number of assisted units made available through the programs described above.

In addition to assisted housing programs, mobile homes are a means of providing low cost housing. According to the Manufactured Housing Institute ("Quick Facts", June 1978, Arlington, Virginia), the average sales price of mobile homes in the United States in 1978 was $18,027 and in 1970 was $6,110. These figures are probably comparable to the average prices in Klamath Falls. Price for a "pad" in a mobile home park can be as low as $3,000, while the price of a lot in a mobile home subdivision can be as much as $15,000. Even with a high land price the total cost ($32,027) is substantially lower than the average for "stick built" housing, $42,000 for existing and $52,000 for a new house.

Housing Needs

A comparison of housing costs with family income reveals a significant need for affordable housing is unmet. Incomes for Klamath County for 1979 are as follows:

Decile	Gross Annual Family Income ($)	25 percent of Gross Monthly Income ($)
Lowest decile	5,100	106
2nd decile	8,856	167
3rd decile	10,439	217
4th decile	12,604	262
Median	14,500	302
6th decile	16,566	345
7th decile	19,862	413
8th decile	23,258	484
9th decile	31,551	657

A decile represents 10 percent of a population. Median means half of the population has a greater income and half has a lower income.

Source: U.S. Department of Housing and Urban Development.

A generally accepted rule of thumb is that a household should not have to pay more than 25 percent of its gross income on housing. Another rule of thumb is that monthly mortgage payments are 1 percent of the total house value. Using that rule, a $43,500 house in simple terms

has a monthly payment of $435. With interest rates rising above 10 percent, this rule obviously underestimates monthly payments. Referring back to the income data and housing costs, only 30 percent of the families (those with 25 percent of monthly income over $413) can afford a new average priced single-family house. Approximately one half of the households can afford to purchase the cheapest older homes on the market.

The costs for single family houses are considerably higher than the costs for multi family housing. As indicated above, in 1978 for Klamath Falls average monthly housing payment is about $435 compared to average monthly rent of $285.

The figures for Klamath Falls are confirmed by a study analyzing housing costs in relation to density as shown below.

Typical Relationship of Housing Cost and Density

Dwelling Type & Pattern	Dwelling Units Per Acre	Initial Cost Per Dwelling Unit
Single Family Conventional	3.0	$41,678
Single Family Clustered	5.0	$39,460
Townhouse Clustered	10.0	$21,734
Walkup Apartment	15.0	$15,787
High-Rise Apartment	30.0	$17,936

Source: Costs of Sprawl by Real Estate Research Corporation for the Council on Environmental Quality. Washington, DC, 1974, Tables 2 and 88.

The ratios of cost between the single family and the multi family types in the Cost of Sprawl study approximate the ratio for Klamath Falls ($435 for single family and $285 for apartment). Therefore, the Cost of Sprawl study roughly represents the differences in housing cost by density for Klamath Falls. A precise relationship between income, housing cost, density and dwelling type is not possible but an approximate relationship is represented in the following table.

Housing - Current Conditions (5)

Decile (10% of Population	Monthly Budget for Housing	Monthly Housing Cost S.F.	Monthly Housing Cost M.F.	Dwelling Units Per Acre	Percent of Units Needed by Density
lowest	$106				
2nd	$167				
			$204	15	25
3rd	$217				
			$285	10	25
5th	$302				
6th	$345				
7th	$413				
		$435		5	50
8th	$484				
highest	$657				

SF - Single Family
MF - Multi Family

The above table combines information from two previous tables to estimate the proportion of dwelling units needed by density category. The monthly budget for housing for each 10 percent of the population by income category indicates 25 percent of gross monthly income. The average cost of single family housing is $435 per month and the average for multi family is $285. These costs correspond roughly to density of 5 and 10 dwelling units per acre respectively. If $285 corresponds to 10 units per acre and $21,734 from the previous table, then the monthly rent that corresponds to $15,787 and 15 units per acre is $204 ($15,787 divided by 21,734 x 285). Rent of $204 and a density of 15 units per acre is between $167 and $217 monthly budget for housing, which in turn is between the 2nd and 3rd decile. This means that between 20 and 30 percent of the households need dwelling units at 15 units per acre. Similarly another 25 percent need dwelling units at 10 units per acre and the remaining 50 percent can afford housing at 5 units per acre.

These densities correspond approximately to the densities permitted in the Comprehensive Plan of Klamath Falls. The same densities should be incorporated into the County plan as population and income factors are for the County as a whole. Drawing from the conclusions of the preceding, 25 percent of the new dwelling units should be at High Density which permits 17 units per acre, 25 percent should be at Medium Density which permits 12 units per acre and the remaining 50 percent should be at Low Density. The Medium Density Plan designation anticipated a mix of multi family dwellings and single family dwellings. Rounding to

the nearest 5 percent, 10 percent is assumed for multi family and 15 percent for single family in the Medium Density designation. All 25 percent in the High Density designation is multi family. The sum of the percentages of multi family dwellings, 10 and 25, is 35 percent of the new dwelling units are needed in multi family units and 65 percent is needed in single family units. This is summarized as follows.

Dwelling units needed by Plan density and type.

Plan Designation	Density Permitted	Percent of New Dwelling Units	
		Single Family	Multi Family
High Density	35		25
Medium Density	14	15	10
Low Density	5	50	—
Total		65	35

These percentages are applied to the anticipated population increase in the Land Needs Analysis in the Urbanization Element. The analysis that leads to these percentages is composed of numerous variables which may change through time. Also, permitting land to be developed at various densities does not assure that construction will occur at those densities, or at the relative housing costs used in the analysis. Developers could decide to construct expensive high density multi family dwellings beyond the income limits of the lower income groups. However, designation of land for higher density, multi family dwellings creates the opportunity for lower cost housing that lower income households can afford. Also mobile home subdivisions are permitted in the Low Density areas and the corresponding Single Family Residential Zone, which provides another opportunity for the housing needs for low and moderate income households to be met. Also mobile home parks are permitted in the Medium and High Density areas. Though there are substantial qualifications to the percentage elements of dwelling units that should be accommodated by plan designations, the estimates represent a reasonable approximation of the housing needs for Klamath Falls. The nature of the relationship among income, housing cost and density make it impossible to estimate how much land is needed at various densities.

Multi-family housing generally is less costly and of course does not require down payments which lower income households have difficulty paying. Generally, multi-family units cost less to construct and have lower cost for public services per unit than single-family units.

Housing - Current Conditions (7)

Housing needs, population increase, land, and buildable land is analyzed in the Land Needs Analysis section of the Urbanization Element.

Housing is a function of population. Changes in population and housing occur on a geographic basis that does not respect the political boundary of the City. Housing needs must be considered on a regional basis which requires coordination with and commitment from the County. Currently, the City contains a majority of the urban area's older housing and multi-family projects, which creates public facility and service costs that are a regional concern.

Housing - Problems and Future Alternatives (1)

Existing Conditions

109. In 1970 over 42 percent of all renter households in Klamath Falls were paying more than 25 percent of their gross incomes for rent, and about 90 percent of such households had gross incomes of less than $5,000 per year.

110. Approximately 14 percent of the year-round housing in Klamath Falls is substandard.

111. The available housing stock within the City is generally older than that of the suburban area.

112. There exists a lack of incentive to rehabilitate and maintain or utilize older buildings.

113. House maintenance costs are increasing.

114. The housing needs of the low-income and the elderly are currently greater than existing supplies of such required units, and will increase.

115. Large multiple housing units are either in poor condition or not available to low- or middle-income persons.

116. There is an acute shortage of apartments or other multi-family dwelling units which provide for the proper use of space relative to privacy and outdoor living areas.

117. There exists an increasing number of absentee landlords.

Future Trends

118. Sources of local building materials are limited.

119. Rising property taxes reduce the number of qualified home-purchasers and raise the costs of housing.

120. Current zoning and development ordinances add substantially to basic housing costs.

121. A substantial portion of the City's residents cannot afford to buy new housing.

122. To meet the projected needs of the population, residential development of various types, built at various densities, will be required.

123. The planning process has failed to provide sufficient multiple dwelling development potential.

124. Densities will increase and serve to save costs relative to energy consumption, travel, public facilities, and services, etc.

Housing - Problems and Future Alternatives (2)

125. Developers prefer large open tracts of land for new housing, thereby passing over scattered, individual vacant lots which already contain full services.

126. The reliance on mobile-home units as a means of meeting housing demands will increase.

127. Federal and State housing programs frequently alter proposed housing production due to changes in funding or emphasis.

128. Housing needs inside the City are a function of urban area housing demand. A coordinated program to meet housing needs is required, involving the City, County and Housing Authority.

DETAILED ASESSMENT NOTE

SUB-ELEMENT: HOUSING

THE CONTENT OF THIS SUB-ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENT WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

U.S. BUREAU OF CENSUS 1970 KLAMATH FALLS CENSUS

COPIES OF THIS ASSESSMENT MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Housing - Goals (1)

22. To provide for the housing needs of the citizens of Klamath Falls.

Housing - Policies (1)

General

97. The interrelationship of transportation, job sites, shopping sites, recreation, open space and scenery, education, and similar activities will be emphasized to provide maximum and efficient use of public facilities and service.

98. Housing projects will serve a variety of ages, incomes, occupations, and interests while maintaining individuality in design and aesthetic concern. Housing types for single adults and childless couples will be supported.

99. A maximum priority will be given to maintaining and rehabilitating, where possible, existing housing units.

100. The development of smaller, isolated vacant lands already available within the City limits will be encouraged.

101. The continued residential use of existing high-quality residences will be encouraged within the downtown area.

102. The City will encourage the use of innovative site development techniques and the mix of dwelling types in all undeveloped residential areas.

103. Mobile home parks, as alternative housing choices, will be promoted, while minimizing the impacts on adjacent properties through appropriate site location and design criteria.

Housing Assistance

104. The construction of multi-family, low-income housing throughout the City will be supported.

105. Excessive concentrations of low-income housing will be avoided.

106. Special emphasis will be given to the monitoring of the needs of the low-income population.

107. Programs and incentives will be developed to provide for better management and maintenance practices relative to rental housing.

108. Housing for the elderly, including low maintenance smaller units, will be promoted.

109. The City will continue to identify critically substandard housing and seek appropriate removal actions, but only when occupants, if any, can be assured of substitute accommodations.

110. The City will identify housing needs within the community to assist Oregon Institute of Technology and the housing industry in coordinating provision of adequate student housing.

Housing - Policies (2)

Density

111. Increased densities will be promoted to reduce energy consumption, facility and service costs, and urban sprawl.

112. The City will preserve and encourage a mix of household and densities use.

Costs

113. The City will encourage the use of high-density residential development compatible with the area in which it is located to provide for student housing close to the Oregon Institute of Technology campus.

114. The City will review and carefully consider the immediate and long-term effects of fees, charges, regulations and standards on dwelling costs.

115. Efforts to remove tax assessment penalties from home improvement, particularly regular maintenance activities, will be supported.

116. State legislation that allows private developers to provide housing at low prices will be supported.

Housing - Implementation Measures (1)

80. The City will provide avenues for public education and involvement.

81. Zoning will permit maximum flexibility of type and density (condominiums, row houses, et cetera).

82. The City will support and cooperate with Klamath Housing Authority, Home Builders Association, and the Board of Realtors, to provide a balance of housing offerings and choices.

83. A buildable lands inventory and housing condition tally will be maintained to show actual areas of needs and developments.

84. The City will apply for grants to provide low income housing for senior citizens and other needy people.

For implementation also see City Code, Chapter 5, Public Protection: Nuisances; Chapter 8, Building; and Chapter 10, Community Development: Article 3, Land Use.

L. EDUCATION ELEMENT

Education - History (1)

In the early days of Linkville, state regulations required that classes must be held for three months before a school district could be formed. Very early records of the first district formed in 1871 no longer exist, but around 1876 a 12 x 16 foot one-room board building was built to serve as the first school.

Although a school superintendent was elected in 1882, the public school system was not completely satisfactory to all of the populace and over the years, several small private schools flourished. In 1903, Klamath County High School was officially begun and a principal was hired. However, construction of the school building was not completed until 1906, and for the intervening years classes met in the town hall.

The Mills School, originally built in 1911, was replaced in 1919 by the present building. Parents of the Mills district established the first Parent-Teachers Association in the City in 1924.

Educational levels are not available from early records but the 1950 statistics show that the average number of years the County's adult population--over 25 years of age--had attended school was 11.7 years; in 1960 it had risen to 11.8 years and 48.4 percent had completed high school.

The Oregon Technical Institute (OTI) began as a recuperational center during World War II. In 1947, it opened its doors to Oregon veterans with classes in auto mechanics, auto body and fender repair, and commercial cooking. In 1951, two-year technical programs were offered, and in 1958, associated degrees. In 1960 OTI came under the jurisdiction of the State Board of Higher Education, indicative of its status as a full-fledged college. In 1964, O.T.I. moved from its original location on Old Fort Road to its present location at the north edge of the City limits. In 1967 credit for four-year programs expanded the school's function. In 1973, O.T.I. became Oregon Institute of Technology.

In addition to an official City library approved in 1924, a free public library was established in 1926. In its first five years of operation, circulation rose almost 600 percent, from 13,000 to over 78,000 books per year. The two libraries, City and County, were consolidated in 1969 into a single operation currently housed in the County Library Building.

Education - Current Conditions (1)

Public Schools

The urban area of Klamath Falls is served by three school districts. Klamath Falls Elementary School District #1 administers grades kindergarten through eighth within the City; it is coupled with Klamath Union High School District #2 which handles grades nine through twelve. Both districts are managed by one administration. Outside of the City is the County School District which serves the remainder of the urban area as well as the rest of the County.

There are ten schools in the City's two districts, seven grade schools, one junior high, one mid-high, and one high school. Data concerning them are shown below. School locations and sites are shown on the Education map.

School	Grades Served	Classroom Capacity	Current Enrollment	Percentage of Capacity	Acres of School Site
Conger	K-6	260	222	85	4.80
Fairview	K-6	365	299	82	1.60
Mills	K-6	460	356	77	3.53
O'Neill	1-4	200	165	83	19.00
Pelican	K-6	250	205	82	5.20
Riverside	1-6	200	166	83	2.40
Roosevelt	K-6	360	346	96	4.02
Ponderosa Junior High	7-8	600	501	84	23.00
Mazama Mid-High	9-12	1,225	1,180	96	49.50
Klamath Union High School	9-12	1,200	881	73	15.00

O'Neill School, although providing regular classes for only grades one through four, is the facility for special education classes. These special classes are not reflected above. Ponderosa is the only junior high school in the City system. Kindergarteners in the Riverside area are enrolled in the Conger kindergarten class; those in the O'Neill district attend Mills.

In 1979 Mazama changed from a mid-high, grades 9-10, to a high school, grades 9-12, and Klamath Union High School had grades expanded from 11-12 to 9-12. The conversion to full grades 9-12 for these two schools involved changing of the district boundaries.

There are ten County schools in the Klamath Falls urban area, seven elementary and two junior high schools, and one high school. Data conerning them are shown below.

Education - Current Conditions (2)

School	Grades Served	Classroom Capacity	Current Enrollment	Percentage of Capacity	Acres of School Site
Altamont	1-6	350	337	96	20*
Fairhaven	1-8	275	277	101	11
Ferguson	1-6	525	512	98	14
Henley Elementary	1-6	300	287	96	**
Peterson	1-6	500	548	110	8
Shasta	1-6	550	523	95	11
Stearns	1-6	400	403	101	14
Brixner Junior High	7-8	600	458	76	22
Henley Junior High	7-8	450	488	108	**
Henley High	9-12	800	720	90	**

* Two pieces
** Three sites total 47 acres.

Our cultural pattern of increasing mobility is reflected in the transfer statistics of the local schools. During the 1976-77 school year, the 10 City schools showed totals of 919 transfers in and 844 transfers out; this is approximately 40 percent of the total student body either leaving, coming, or switching schools locally. A survey done at one school, Mills, showed that of the 90 children entering the first grade in 1970, only three were still attending Mills in 1976, which is a withdrawal rate of 96 percent over six years. The class entering in 1971 showed a withdrawal rate of 87 percent over five years.

The total budget for the two City school districts for 1978-79 exceeded $7.25 million. Approximately 40 percent of this goes for teaching salaries, the remainder covers a wide variety of costs ranging from administration to transportation. The measure for school funding received an unfavorable vote in the election in the Fall of 1979.

For those who did not complete high school as scheduled, Klamath Union offers high school courses for credit, designed specifically for adults who wish to earn sufficient credits to meet graduation requirements.

Also the General Education Development, or G.E.D., examination is available for acquiring a certificate issued by the State Board of Education.

By 1970, the median number of school years completed by persons 25 years of age or older in Klamath County was 12.3 years. This was an

increase of six months in education over the previous decade. Of these adults, 59.7 percent are high school graduates and 9 percent are college graduates.

In the Urbanization Element of this Plan a population increase of 20,000 by the year 2000 in the Klamath Falls urban area is assumed. A population increase of this magnitude will obviously require substantially more school facilities to accommodate the increase in population. In 1977, approximately 19 percent of the population in the City of Klamath Falls was between the ages of 6 and 18, or school age. By the year 2000, approximately 3,800 additional children or 19 percent of 20,000 will require school facilities in the Klamath Falls urban area.

Private Schools

There are four private schools in Klamath Falls, all with religious affiliation. Sacred Heart Academy provides both primary and secondary education for approximately 300 elementary and 150 high school students.

The Seventh Day Adventist School teaches grades one through eight and normally has from 30 to 35 students. The Assembly of God School, grades two through twelve, has about 60 students. Klamath Christian Academy teaches grades kindergarten through twelve and has about 107 students.

Eight State and/or Federally licensed day care centers, with a combined capacity of 268 children, are located in the urban area. Five private kindergartens operate within greater Klamath Falls.

Oregon Institute of Technology (O.I.T.)

Oregon Tech is the coeducational polytechnic college of Oregon State System of Higher Education. The O.I.T. campus covers 158 acres in north Klamath Falls and includes nine major and 11 minor buildings. Oregon Tech has a large computer center which provides services for the instructional, administrative, and research needs of the college.

Other Education

In addition to O.I.T., the Division of Continuing Education offers a range of courses, and Klamath Union High School offers several adult education classes. Private education facilities include a beauty college, an art school, and several dance studios.

Library Facilities

The Klamath County Library, serving both City and County residents, has a volume of 131,000 books, seven daily newspapers, and over 250 current periodical subscriptions, as well as a variety of reference collections. The Library operates with 23 full-time staff and others on part-time and volunteer basis. The main library will show an approximate monthly circulation of 20,000 items plus the extensive services provided to the outlying county areas.

Education - Problems and Future Alternatives (1)

129. A few older elementary schools are nearing capacity, possibly requiring redrawing of attendance boundaries to accommodate new subdivisions, or construction of larger facilities, or even new schools.

130. Significant population increases in the Klamath Falls urban area would result in a corresponding increase in school facilities.

131. Truancy rates continue to detract from the community's overall educational character.

132. The costs of maintaining both County and City school systems, with their duplication of personnel and services, continue to burden taxpayers, and will continue to increase.

133. There is lack of a maximum, year-round use of school facilities.

134. There is a limited number of outdoor physical education facilities, such as tennis courts, playing fields, et cetera.

135. Both future and existing schools will help define residential areas, with school grounds increasing in importance as neighborhood focal points.

136. Changing enrollment levels at Oregon Institute of Technology could affect the local economy.

Education - Goals (1)

23. To plan and develop a timely, orderly, and efficient arrangement of educational facilities and services.

24. To promote as much educational choice as possible.

25. To promote educational opportunities to allow alternative career choices.

117. Land use and transportation decisions will be made in support of school conditions, on a neighborhood basis; the general location of new schools shall be determined by the school district in cooperation with the City in a manner which contributes to the identity of residential areas.

118. School sites will be credited with substantial park and recreation values, and also as general neighborhood activity and meeting sites; the costs of schools and parks should be minimized by joint location, acquisition and use of sites for both schools and parks.

119. Maximum education opportunity at minimum cost to the taxpayers will be supported.

120. The City will work together with O.I.T. to assure compatibility between land uses on private and public lands and within the main campus.

121. School locations shall be served by streets which assure a balance between safety and ease of access.

122. The City will support and cooperate with the school districts to promote the best use of school facilities, including summer periods.

123. Both schools and properties adjacent to schools shall be developed in a manner which minimizes the negative impact on each other.

Education - Implementation Measures (1)

85. The City will encourage public education and involvement.

86. The City will cooperate with City School Districts #1 and #2, Oregon Tech, and the County School District.

87. Application for grants will be made to help renovate school buildings and other areas.

88. Support for the efficient use of the school tax dollar will be continued.

M. RECREATION ELEMENT

Recreation - History (1)

The first recorded park site in Klamath Falls was four blocks of the central City area bounded by Klamath Avenue and Oak Street, and First and Third Streets. Acquired in 1912, it was sold in 1920 to eventually become a mill site.

The Park Board Commission voted in by Klamath Falls citizens in 1911 followed guidelines set for park commissions by the State Legislature in 1889. The Commission's responsibilities included obtaining, equipping and maintaining City parks for the citizens' convenience and enjoyment.

The 18 parks now in existence within the City range from .21 acres of Michigan Neighborhood Park to the 435 acres of Moore Park, the City's largest and best equipped facility, boasting picnic facilities, playgrounds, a small zoo, tennis courts and an archery range. One area of the park, developed by the Klamath Falls Jaycees in the 1960's, is a day camp, and another contains a scenic drive and nature trail. A marina, providing public boat launch at the southern end of Klamath Lake, was another large addition to the park in this decade.

The renowned Houston Opera House was built at Second and Main Streets in 1897. It was multi-purpose, serving as a dance pavillion and community hall, a sports arena for boxing and basketball, and had a vaudeville stage. Late in 1900, the first motion pictures in the community were shown, but in the 1920's a fire destroyed the building, and with the advent of films, a series of movie houses replaced this catchall center of early entertainment.

Another organization in the City instrumental in providing recreation programs was the Young Men's Christians Association (YMCA), which received its first charter for Klamath County in 1948. The "Y" gradually grew from a very small building on Pine Street to a new, updated facility built on South Alameda Street in 1970.

Recreation - Current Conditions (1)

Klamath Falls supports a well-established parks and recreation program, within 18 facilities in the City, 14 neighborhood parks and four special use parks.

Generally, the City's parks and recreation programs are busy. Attendance levels indicate that a large portion of the urban area population is consistently using Moore Park, the swimming pool, most recreation programs, and even some neighborhood parks (primarily Veterans Memorial and Kit Carson). During the three months of the year when the Klamath Falls Municipal Swimming Pool is open, a variety of recreation classes, public swim sessions, and special events are held there. The majority of users (60 percent) are from the Klamath Falls suburbs, 30 percent of the users are from the City and only 2 percent are from outlying areas.

Moore Park, the City's premier facility, attracts a diverse group of visitors, representing all ages, origins, and recreational interests. Because of its location, it is reached almost exclusively by auto, and has become a popular gathering spot for young "cruisers" who now constitute its largest user group. The most frequent visitors to the park are City and suburban residents (48 percent and 43 percent respectively), traveling an average of from one to five and from five to ten miles to reach the park. As the City's only regional facility, it receives a large number of visitors from outside the urban area (9 percent). The park's proximity to Highways 97 and 140 contributes to tourist rest stops and picnic uses, and for outlying residents it serves as a regional focal point for recreation, especially lake-oriented activities. Activity participation rates break down as follows (1977 data): picnic, 18 percent; spectators, 17 percent; tennis, 13 percent; field activities, 13 percent; cruising, 8 percent; boating, 6 percent; zoo, 6 percent; wading pool, 4 percent; nature trail, 2 percent; cultural activities, 2 percent; day camp, 1 percent; and archery, 1 percent.

Park Name Location	Year Founded	Acreage	Playground Equipment	Picnic Facilities	Restrooms	Basketball	Wading Pool	Tennis	Baseball
Conger Delta & Siskiyou	1947	10.6	X	X	X				X
Eldorado Heights* Eldorado & Esplanade	1948	0.4							
Esplanade* Esplanade & Pacific Terrace		0.6							
Fairview Worden & Fairview	1950	3.3	X		X				
Henderson Henderson & Wendling	1944	0.6	X						
Kit Carson-Kiwanis Manzanita to Portland	1949	9.1	X	X	X			X	X
Krause-Kiwanis Hanks & Bismark	1961	2.8	X	X					
Mills-Kiwanis** Reclamation & Mitchell	1940	2.4			X		X		X
Oregon* Oregon & U.S. 97		0.6							
Recreation & Mills Little League*** Darrow & Richmond	1939	5.3			X				X
Stukel Stukel & Home	1922	0.7	X			X			
Veterans Memorial**** Klamath/Center/ Main	1944	3.3		X	X				
Michigan* Michigan & Esplanade	1924	0.2							
Richmond McKinley & Third	1926	0.6	X						
Kiger Stadium Crest Street	1957	8.0	Baseball stadium with bleachers = 4,000 + augmented 1,000						
Municipal Swimming*** Pool Main Street	1953	2.4	Geothermal, 275,000 gallon pool; bleachers, dressing facilities, wading pool,						
Maple Riverside & Main	1946	1.0	The Moore House (art gallery)						
Moore Park	1926	435.0	Picnic, playground, tennis, wading, scenic drive, marina, day camp, archery, nature trail, sledding, ice rink						

*No facilities **Craft building, horseshoes ***Concession building
****Steam locomotive on display.

Statistics on the use of Kiger Stadium and Maple Park (the art gallery) are not currently available.

The recreation programs begun in 1938 fluctuate with the public interest. To a large extent the City acts as a "clearinghouse", coordinating the capabilities of private instructors with public needs, rather than maintaining a full-time public recreation staff. The City relies on other organizations as well as its own park system to provide physical facilities for the programs. One primary resource is the public schools, and numerous activities are held both indoors and outside on the school grounds.

It can be assumed that the largest majority of participants were children, and, to a lesser extent, young adults. Although this is a City-sponsored program, 50 percent of the participants were from the suburbs of Klamath Falls and only 40 percent were from within the City limits. The remaining 10 percent were from outlying areas.

Winter recreation programs in 1977 included Saturday open gyms at six City schools (Roosevelt, Conger, Mills, Fairview, Pelican and Riverside), swimming at the Klamath Union High School pool, two basketball leagues, volleyball, a Special Olympics recreation program, and adult open gym facilities for such recreation as basketball and tennis one weekday at the junior high school. The 1977 summer programs consisted of some 22 different activities with a total participation of 2,717.

Many of the recreational programs include special sessions and activities for the handicapped youth and adults of the Klamath Falls urban area.

The City is not the only entity in the recreation business in Klamath Falls. Oregon Institute of Technology offers a wide range of physical education programs on a college credit basis. The County schools, like the City schools, open their facilities to public use under certain special guidelines. Another major element in the urban area is the Wiard Park District, serving the south suburbs.

Private recreational facilities are also available. The Yacht Club, Klamath Basin Boaters, Reames Golf and Country Club, the Elks Club, Lake Ewauna Rowing Club, the Racquet Club, two gun clubs, private tennis courts, two bowling alleys, and numerous indoor table game amusements offer recreation for the local citizenry.

One other well-known recreational facility is the YMCA. Its present programs vary from Yoga to soccer, women's weight lifting to modern dance. It also offers classes in various subjects such as interior design and finance seminars. Structured youth leagues in basketball and soccer have also been formed. During the summer the Y provides day camp programs and skills classes that range from sports to art. The aquatics department is one of the best in the County, offering lessons for all ages ranging from infants to adults, and lap swims, open recreational swims, and a handicap swim for those mentally or physically disadvantaged.

Recreation - Current Conditions (4)

The trend today toward more leisure time combined with a growing need to conserve resources will increase the requirements for quality recreational opportunities. The citizens' concern for these matters can be seen in recent Planning Department surveys taken in the Klamath Falls area which show the following public opinions concerning City parks and recreation.

Over half feel the community has adequate park and recreation facilities. Two thirds feel these parks and recreation facilities are conveniently located to their neighborhood. Over 40 percent indicated the City should consider capital investment in an ice skating rink, a large auditorium for special events, and bicycle trails. Somewhat lower percentages indicated they would support the facilities with taxes.

About half feel the City should put its parks revenues into both supporting and improving existing present facilities and programs and adding new programs and making new capital investment in recreational facilities.

The land needed by future population for recreation is a major component of land needed for public facilities. This is calculated in the Land Needs Analysis of the Urbanization Element.

Recreation - Problems and Future Alternatives (1)

137. The municipal swimming pool is nearing its effective capacity due to use by residents from throughout the urban area.

138. The tennis courts are nearing their effective capacity.

139. The lack of multiple use recreational facilities (such as a civic center) prevents the efficiency and economy of mixing user groups, such as the young and elderly. Also, the citizens' preference for certain types of recreation activities may change, leaving some facilities unused and others overtaxed.

140. There is a lack of equipment at many neighborhood parks.

141. Many park facilities are in need of extensive rehabilitation and maintenance, which will increase with population growth.

142. Park acquisition and maintenance costs will increase with inflation and greater demand on facilities.

143. Certain neighborhood parks, due to lack of facilities or location, do not receive sufficient use to justify maintenance costs.

144. The costs of City facilities are not supported by non-City users.

145. The use of parks for nonrecreational activities (drugs, drinking, cruising) inhibit intended use.

146. Certain areas of the City do not have access to park areas within reasonable walking distance.

147. Most urban types of recreation involve costs (e.g., transportation) which limit the choices available to some citizens.

148. Klamath Lake and Lake Ewauna may continue their eutrophication and become unsuitable for recreational use.

149. Park needs will increase with population growth.

150. There may be an increased use of school property and other City open spaces for recreational uses.

151. Due to ironic circumstances, private or semi-private recreational programs may cut back their services (YMCA, Yacht Club, et cetera), increasing recreational demands on public facilities.

D E T A I L E D A S S E S S M E N T N O T E

ELEMENT: RECREATION

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENTS WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

CITY OF KLAMATH FALLS INVESTIGATION OF

TODAY'S PARK AND RECREATION CONDITIONS (1977)

CITY OF KLAMATH FALLS WINTER RECREATION EVALUATION (1978)

OREGON DEPARTMENT OF TRANSPORTATION

STATEWIDE COMPREHENSIVE OUTDOOR RECREATION PLAN

COPIES OF THESE ASSESSMENTS MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT.

Recreation - Goals (1)

26. To provide as much choice as possible in recreational alternatives to satisfy the needs of the citizens of the City and its visitors.

27. To provide timely, orderly, and efficient arrangements of recreational facilities and services.

28. Protect and promote approved trails for non-motorized recreational use in the urban area.

Recreation - Policies (1)

124. A wide range of recreational opportunities will be provided for the urban citizens of all ages including the handicapped and elderly.

125. School grounds will be credited as substantial park sites in planning and developing new City parks.

126. Parks will be classified as follows:

Neighborhood - Up to five acres, located on minor or collector street, no highly structured facilities;

Community - Over five acres, located on collector or arterial street, containing structured or specialized facilities.

127. The City will continue to seek, acquire, and develop park property on the shorelines of Upper Klamath Lake and Lake Ewauna. Waterfront park facilities should be developed to maximize their water orientation.

128. A system of trails for pedestrian and non-motorized use will be established to lead out of the City into surrounding open spaces and scenic areas.

129. Support for tourist facilities and accommodations will continue.

130. Future recreation programs will prefer non-motorized activities over motorized activities so as to conserve energy.

131. The City will continue to improve park and recreation facilities with public or private funding.

132. Utilization of the handicapped for park maintenance will be continued.

133. The Park Board will review the park needs annually to determine what people want and what resources are available.

134. A cooperative cost sharing program will be developed with the County to achieve a more equitable financing system among urban area users.

135. The community will create and maintain a diversified system of recreation lands and facilities that meets the recreation needs of all people, conserves energy, and enhances the environmental quality of the community.

136. Use of motorized vehicles within City limits on other than designated public or private streets will be discouraged.

137. Efforts will be made to preserve the recreational and water qualities of Klamath Lake and Lake Ewauna.

Recreation - Implementation Measures (1)

89. Public education and involvement will be supported.

90. A detailed capital improvement program will be developed.

91. All tax foreclosure land will be reviewed for potential park or recreational use.

92. The City will apply for grants to support recreation and park activities; the City will also establish a recreation/open space fund, which would accumulate revenues over time to apply as matching funds for grants.

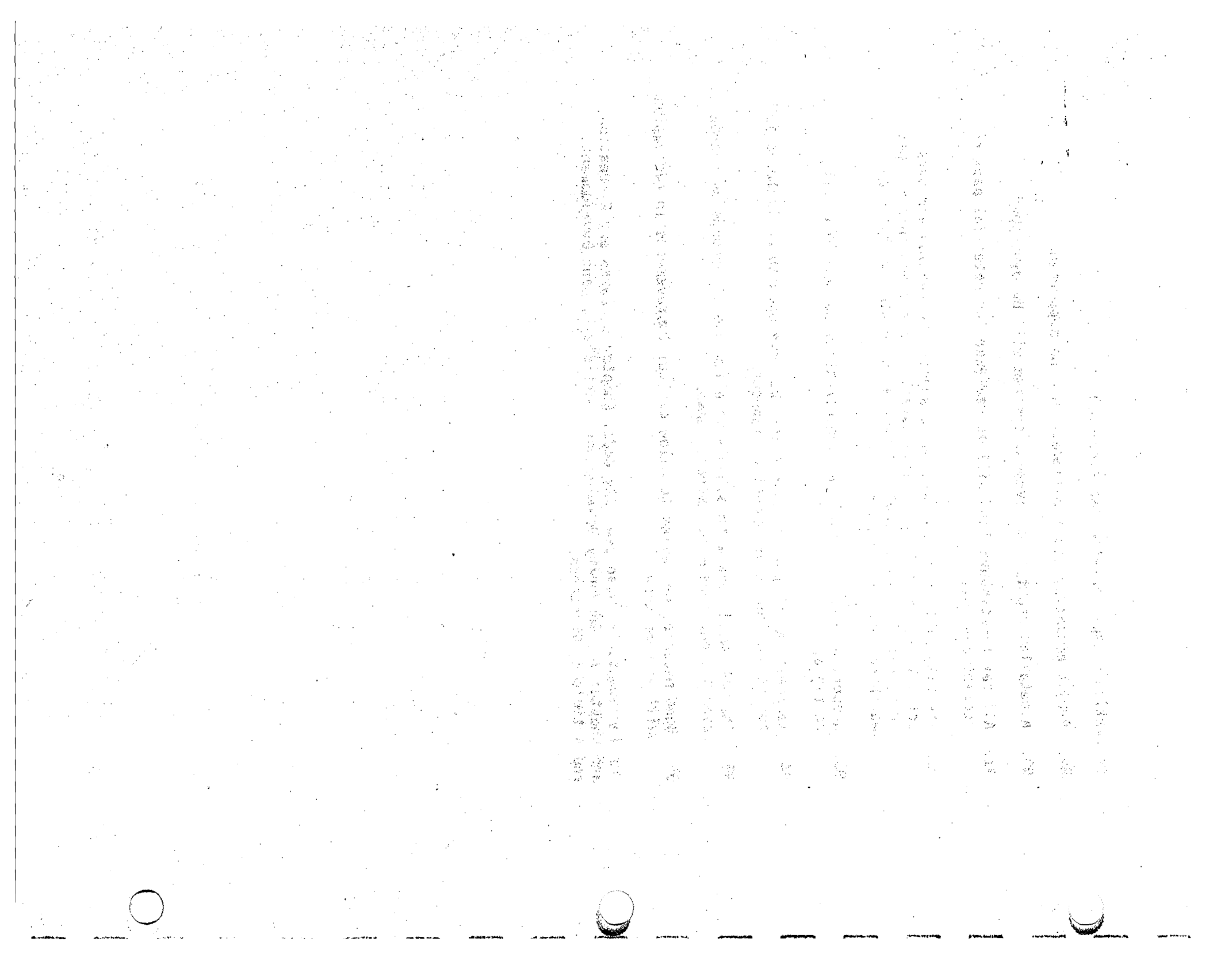
93. Support of such recreational organizations as the YMCA will continue.

94. Recreational or park measures will be developed to be included in zoning and land development ordinances.

95. The City will work with schools to allow use of grounds as recreational areas during non-school times.

96. Bond measures or levies to allow capital improvements in recreation will be considered.

For implementation also see City Code, Chapter 9, Parks and Recreation; and Chapter 10, Community Development: Article 2, Land Development and Article 5, Standards.



N. TRANSPORTATION ELEMENT

Transportation - History (1)

Waterways, railroads, streets, highways, and air travel all have provided varying types of transportation in the Klamath Falls area over the decades.

Travel by water was a vital means of transportation for the Indians in early times, when tribes plied the lakes and rivers with canoes and large rafts made from bundles of tule weeds lashed together. The first commercial water transport was George Nurse's ferry across Link River in the 1860's; later, a wooden bridge replaced the route. Steamboats traveled the lakes and portions of the rivers for many years carrying passengers, freight, and towing logs to the mills. The advent of railroad lines in 1909, and the coming of the automobile, caused the demise of an extensive water transportation system.

In 1905 the Klamath Navigation Company set up connections so that a traveler could go from Klamath Falls to San Francisco via boat, stage-coach, and train, all in a single day.

Original streets in Linkville were platted in the grid system, disregarding topography. Consequently, ice and snow in winter make some of the steep City streets impassible. Since the town's beginning, Main Street has formed a principal thoroughfare, running eastward from Link River. In 1869 sidewalks were contructed along this thoroughfare, and in 1904 the City obtained its first rock crusher and street making operation, and set out to improve the quality of the downtown byways. Two years later the first automobile made an appearance, and it was only a few months before an ordinance had been passed limiting its speed on streets to five miles per hour.

Vehicular traffic has increased steadily over the years. When Oregon began registering automobiles in 1905 there were only 218 cars in the entire state. By 1940 Klamath County had 15,353 passenger vehicles registered; this increased to 18,389 in 1950, 25,335 in 1960, and 32,573 in 1970. By 1920 the City recognized that the automobile was here to stay and passed extensive regulations concerning vehicular traffic on the City streets.

In November 1928, the citizens of Klamath Falls approved the sale of $50,000 worth of bonds to build an airport. In its early days, the airport had only gravel runways, one fixed-base operator, and no airline service.

As the depression after World War I eased, two small private air services were opened, one in 1937 and another in 1940. At the start of World War II. The airport consisted of the Klamath Falls Naval Air Station, a training command base used to prepare Navy fighter pilots for combat duty. After the war, the airport once again became civilian and the growth of passenger service began to parallel the growth of the entire airport operation up to the present time.

Transportation - History (2)

Municipal public transportation began with a City trolley line in 1906 which served the public until 1911. Several intracity bus services have been available over the years, with the first City franchise granted in 1925; none, however, have proven successful. The most recent try at bus service was in the early 1970's when KART (Klamath Area Rapid Transit) ran school buses when not in school use, to provide intracity transportation. The project consumed its limited funding quickly, and since then, no transit service has been available.

Transportation - Current Conditions (1)

Roadways

Klamath County is served by only one U.S. Highway (97) running north and south through the City of Klamath Falls. In addition, the County has seven State highways (ORE 39, 58, 66, 62, 140, 138 and 232). Four of these (140, 66, 62, and 39) are direct connectors to Klamath Falls and the remaining three are interconnectors between other major highway routes. The County also maintains, as of April 1978, 797 miles of roadway of which 633.5 miles are paved, 123.5 miles are unpaved, and 40 miles are unimproved road.

The City of Klamath Falls reported that its road mileage (as of December 31, 1978), consisted of 10.36 miles of graded and drained (Type C) roads and 67.6 miles of paved roads.

Over these roads travel the 62,315 vehicles registered in the County (2.7 percent of the state total).

In August of 1977, the firm of Wilsey and Ham conducted a comprehensive traffic survey of the Klamath Falls urban area to gather data for its Environmental Impact Statement for the South Side Bypass. The traffic survey showed that in 24 hours 7,464 light vehicles passed the intersection of Main Street and U.S. Highway 97 westbound, and 10,766 light vehicles traveled over the South Sixth Street Viaduct eastbound. The survey showed an average of 217 trucks per day traveling to the Klamath Falls area and a like number beginning their trip in Klamath Falls and traveling to other destinations (see Table 7, pp. 4-14, Wilsey and Ham). According to the report, 85 percent of the westbound traffic (trips beginning and ending outside of the City limits) and 89 percent of the eastbound trips stopped in Klamath Falls for the following purposes.

Purpose	Main Street and U.S. Highway 97 (Westbound)	South Sixth Street Viaduct (Eastbound)
Food	33%	28%
Fuel	18	12
Shopping	10	6
Work	10	15
Personal business	13	21
Other	16	18
Total	100	100

The survey also determined that approximately 15 percent of the recorded trips involved an origin and destination outside the City limits, 33 percent of the trips were from inside to outside the City limits, and 52 percent of the trips were within the City limits only.

Where the numbers of vehicles using the facilities exceed the designed capacity, the City of Klamath Falls has two critical areas of traffic. The first is between East Main Street and Shasta Way on South Sixth Street where the rated Vehicles Per Day (VPD) capacity is 23,500 and the existing volume is approximately 25,500 VPD. The second area is also on South Sixth Street but between Washburn Way and Altamont Drive where the VPD capacity is listed as 22,000 and the existing volume is 22,400 VPD. The Street System map shows street classifications, volumes and capacities.

A citizen survey conducted by the City Planning Department in the summer of 1977 indicates community attitudes about transportation. About half indicated the City street system allows safe and convenient travel while the other half indicated it did not. About two thirds indicated mass transit alternatives such as buses are needed, while about one quarter did not. About three quarters saw a need for bike-paths, while 18 percent did not. Of those households with members walking often, 51 percent felt safe from traffic hazard, while 43 percent did not.

The June 30, 1978, Klamath County Economic Development Association overall economic development plan lists the following areas of concern in the transportation element:

1. Road improvements particularly repair of Highway 140, both east- and westbound, and U.S. 97 in various areas going north.

2. Feasibility studies for establishment of a free trade zone and industrial complex and/or the formation of an airport or a port district.

3. Development of a transportation system for elderly and handicapped persons.

4. The need for construction of a bypass system for South Sixth Street.

Municipal Transportation

The municipal transportation within the City consists of a private taxi fleet of 6 vehicles.

There are two volunteer groups also functioning within the City. Volunteer Services provides transportation to the disadvantaged or handicapped on an on-call basis. There are 17 volunteer drivers serving some 200 people per month and driving between 12,000 and 20,000 miles per month.

The Senior Citizens Council, the other volunteer group, uses its six vans to transport the elderly.

Bicycle Pathways

The Klamath Falls urban area currently has three bicycle pathways totaling five miles in length. (See Alternative Modes map). Owens Bikeway from Portland Street to the O.I.T. campus is 1.7 miles of a Class I bikepath. There are two Class II bikepaths; one 2.0 miles long on South Sixth Street from Patterson Street to the Merrill-Lakeview junction (Highways 140 and 39); the second is 1.3 miles along Shasta Way from the Alameda bypass to Madison Avenue.

In addition, the City of Klamath Falls, in conjunction with Klamath County, has used its 1 percent of highway funds received to construct the "A" Canal bikeway. This 2.2-mile bikeway runs along the "A" Canal and streets with light traffic to link the business centers and provide a path for touring.

The emphasis on bikeways as another form of transportation in Klamath Falls is based on the following premises:

a. Bicycle popularity for both recreation and commuting purposes has increased;

b. The size of Klamath Falls and its terrain make it convenient to ride a bicycle for transportation or for recreation;

c. A recognized need in Klamath Falls is a well-designed, interconnecting network of bikepaths. Energy shortages may make it imperative to develop such a system.

Air Service

The air service to the Klamath Falls area is essentially a feeder service provided by Hughes Airwest and Air Oregon. The fact that people in the Basin are flying more is verified by numbers of people who board Hughes Airwest at Klamath Falls. The one-month total (2,477) for May 1978, showed an increase of 23 percent over the total for May 1977, (2,012).

In addition to the commercial air service, there are two fixed-base operations at the airport; Klamath Aircraft, Inc. and Southern Oregon Aviation, Inc. The combined services cover sales, rentals and maintenance of aircraft, air taxi, ambulance and charter flights, and flight instructions.

Air Force operations at Kingsley Air Base are being phased out. Its reuse is being planned for by the Air National Guard.

Railroads

The Klamath Falls urban area is a rail center for Amtrak, Burlington Northern Railway and Southern Pacific Railway. There is also the old Oregon, California and Eastern Railroad which Weyerhaeuser purchased in 1975.

Amtrak reported the latest available figures of 10,603 passengers using Amtrak in 1976 on its two trains daily. The most heavily used long-distance train is the "Coast Starlight" which in the first 10 months of 1977 had carried a total of 329,780 passengers, an increase of 5 percent over the comparable period in 1976.

Burlington Northern operates a switching yard at its line intersection with Southern Pacific lines off Laverne Avenue. An average of six Burlington Northern trains per day, three trains eastbound (north) and three westbound (south) pass through the area. Burlington Northern handles some 10,000 to 12,000 carloads at its Klamath Falls facility in addition to intransit storage and through freight trains.

Southern Pacific Railway has two main lines through the area. The line from the southwest carries an average of 15 trains per day while the Modoc line from the southeast carries five trains per day.

Bus Service

National and statewide commercial buses now provide one of the major intercity public transportation means in the region. These carriers will continue to play an important part in the public transportation system of the area.

Intercity bus service is provided by both Greyhound and Trailways as interstate carriers and the Red Ball Stagelines which is restricted to communities in Klamath and Lake Counties and selected areas of Eastern Oregon. All bus service is handled through a single terminal located on Klamath Avenue.

The Greyhound Bus Lines' last available figures are for 1976. They show a passenger count of 189,000 persons per year with a total ticket sales of $331,000. In addition, Greyhound shipped approximately 15,953 packages out of town and received 39,395 packages during 1976. The figures are exclusive of charter services.

Truck Freight

Because of the presence of U.S. Highway 97 as a major north-south truck route and Oregon Highways 140 and 39 serving as major connectors to the east and west, Klamath Falls is a large motor freight center today. About six terminals in the Klamath Falls area service 20 or more truck lines.

Transportation - Problems and Future Alternatives (1)

Roadways

149. Through truck and vehicular traffic in the central business district continues to cause congestion, hazards, and noise for other motorists and pedestrians, and costly delays for truckers.

150. South Sixth Street has reached its effectiveness capacity, causing significant motorist inconveniences and hazards.

151. The East Side Bypass, from South Sixth Street to Washburn Way, is threatened by stop-and-go signals and strip commercial development.

152. Eldorado Boulevard (Daggett to Esplanade) is carrying large amounts of through traffic in a residential neighborhood with subsequent hazards and nuisances.

153. There is poor traffic flow in the vicinity of the Oregon Institute of Technology campus and Merle West Medical Center.

154. Uncontrolled access restricts the capacity of a street, increases accidents, pollution, and congestion.

155. Poor freight truck routes create traffic flow problems.

156. There is a problem of controlling speeding on many residential streets.

157. Many major streets in the Original, First, and Section Additions are in poor repair, having been built in the 1910's-1920's, without proper maintenance since.

158. High costs of maintenance, together with significant suburban use of City streets, severely limit City maintenance capabilities.

159. California Street (Nevada to Wocus) is the only collector serving the Buena Vista neighborhood, with subsequent hazards and nuisances.

160. Major transportation routes through the city are not visually attractive.

Alternative Modes

161. Because of the urban area's sprawl, its relatively low density of residential uses, and dispersed job sites, the feasibility of cost-effective mass transit in the near future is limited.

162. Current Amtrak, airline and bus schedules are inconvenient for many potential passengers. For this and other reasons, citizens will resist efforts to switch from autos to alternate modes of transportation although the automobile will continue to be the least cost-efficient or energy efficient mode.

163. The loss of major transportation carriers, i.e., airlines, Amtrak, bus service, would adversely affect the local economy.

164. Continued maintenance and improvement of the airport is handicapped by its major dependence on City budgetary resources, rather than Countywide resources.

165. Shortages of railroad cars affect both the economy and transportation.

166. Air, rail and bus links to other communities will become increasingly critical, economically and socially.

167. Bikeway construction is severely limited by small budgetary resources and high construction costs.

168. Many sidewalks in the older parts of town are in poor repair, or completely lacking, creating pedestrian hazards.

169. Pedestrian and bicycle pressures will mount despite remaining auto preference.

170. The lack of special facilities, such as wheelchair ramps and inclined building entrances, impedes the movement of handicapped people in the downtown area; there is also a lack of parking areas for the handicapped citizens.

171. There is a lack of special transportation modes for the handicapped, elderly and/or low-income people.

172. A major concern of the community regarding the transportation system is the need to maintain and improve the livability of residential areas in the face of increasing population and transportation requirements; there is a need to weigh the costs and benefits between improved transportation access for the community as a whole and maintaining livability of established residential areas which have developed along major streets.

Transportation Planning

173. On-street parking generally adds to congestion, decreases safety and detracts from livability of residential areas.

174. Highway routing will alter land use pressures in adjacent areas.

175. Continuing urban encroachment around the Municipal Airport will cause restricted aviation operations if allowed to go unchecked, thus limiting the airport's expansion and squelching such projects as the construction of an air freight terminal needed due to increases in air freight movements.

Transportation - Problems and Future Alternatives (3)

176. Transportation planning for the City can be impeded because the difficulty of coordinating transportation and land use decisions for areas external to the City.

177. Transportation is a major consumer of increasingly scarce energy resources; maintenance costs of streets and highways will increase.

D E T A I L E D A S S E S S M E N T N O T E

ELEMENT: TRANSPORTATION

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENTS WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

CITY OF KLAMATH FALLS MUNICIPAL AIRPORT MASTER PLAN

CITY-COUNTY BIKEWAY CONCEPT PLAN

KLAMATH COUNTY SOUTWSIDE BYPASS

ENVIRONMENTAL IMPACT STATEMENT

COPIES OF THESE ASSESSMENTS MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Transportation - Goals (1)

29. To develop and maintain a safe, convenient, and economic transportation system.

30. To provide a timely, orderly, and efficient arrangement of transportation facilities and services.

31. To provide as much choice as possible in transportation modes and costs.

Transportation - Policies (1)

Roadways

138. State improvements on intercity highway links between Klamath Falls and other communities will be promoted.

139. Streets will be categorized as follows:

Minor - direct access to abutting properties such as houses or other low generators;

Collector - carries local traffic within a neighborhood;

Arterial - carries both local neighborhood and through traffic; should have limited access points.

140. New direct access to arterials will be granted only after consideration is given to the land use and traffic patterns in the area of development, not just at the specific site. Frontage roads and access collection points will be encouraged.

141. Wherever possible through traffic in residential neighborhoods will be restricted or minimized;through traffic will be dispersed in commercial and industrial areas when possible.

142. All City street rights-of-way will be consistent in the use of traffic controls, signing, and signals.

143. Street disruption from utility excavations will be minimized and coordinated among all utilities in the area.

144. Transportation improvements will, wherever possible, utilize existing rights-of-way rather than acquiring new ones.

145. Future rights-of-way will be located and acquired and protected as expediently as possible.

Bike and Walkways

146. Pedestrians will be given top priority in high density residential and commercial areas.

147. Sidewalk construction and maintenance will be appropriate to the needs of pedestrian circulation, especially in school commuting situations.

148. The City will develop a bikeway/pedestrian system within budgetary limits and where appropriate to connect residential neighborhoods, schools, parks, and commercial areas.

149. Bikeways will be conveniently located, be adequately constructed, have minimal stops and obstructions.

Transportation - Policies (2)

150. Safe sight distances for pedestrians, bicyclists, and motorists at all intersections of sidewalks, paths, driveways, streets, and railroads will be assured.

Parking

151. Adequate off-street parking will be provided wherever possible to avoid street congestion and hazards.

152. On-street parking, especially on residential streets or other streets where inappropriate, will be limited.

153. The area between the curb and sidewalk in residential areas shall not be used for parking unless there are no safe alternatives.

154. On-street parking will be managed where it conflicts with bikeways.

155. Multiple-level parking facilities near major traffic generators will be encouraged where feasible.

Alternative Modes

156. Any reduction in air, train, or bus schedules will be resisted, and appropriate increases in service will be supported whenever possible.

157. The City will investigate and support programs that are transportation alternatives to the automobile, such as buses, dial-a-ride, and car pooling.

158. Particular attention will be given to the needs of the transportation-disadvantaged, such as low-income, elderly and handicapped citizens.

Transportation Planning

159. Population densities, land use patterns, and peak hour travel patterns will be used as principal criteria in evaluating future development plans.

160. Development plans will reflect reasonable needs of motorists but not subvert other needs to the demands of the automobile.

161. The transportation system will be designed to recognize and respect the characteristics of natural environmental features.

162. Arterials will bound, not divide, neighborhoods or commercial or industrial areas, to ensure safety, efficiency, and neighborhood stability.

163. Medium- and high-density residential developments within the urban area will be proximate to adequate arterials.

Transportation - Policies (3)

164. The City will make land use decisions that minimize distances to goods and services.

165. The downtown transportation system will be oriented primarily toward the provision of access and parking for area employment centers and commercial activity, as well as provide for the transportation needs of the residents of the area.

166. The movement of freight, as an essential component of the local economy, will be a principal element of transportation planning, and as such the terminals and channels of freight movement should be planned with maximum efficiency in mind.

167. The Municipal Airport will be protected from the encroachment of incompatible land uses.

168. In planning for the transportation system special consideration shall be given to providing energy-efficient transportation alternatives.

169. A disaster plan for a major accident in any transportation mode will be maintained.

170. The City will coordinate its transportation and land use planning and implementation measures with the County.

Transportation - Implementation Measures (1)

97. Public education and involvement, especially of drivers, pedestrians, and bike riders will be supported.

98. The City will support and cooperate with the Oregon Department of Transportation to allow for proper planning and siting of highways.

99. The City will support and cooperate with County Public Works and Roads Advisory Board.

100. The City-County Bicycle Committee will receive support and cooperation to continue developing and maintaining bikeways.

101. Car-pooling will be supported.

102. If transportation alternatives, such as bus service, are feasible, the City in coordination with the County will pursue a program to implement such alternatives.

103. Any available State or Federal funds that could be used to implement transportation policies will be monitored.

104. A detailed capital improvement program will be developed.

105. A vehicle count program to monitor traffic levels will be established.

106. The City will coordinate with bus, train, and air companies, and request sufficient notice of schedule changes to allow public comment and input.

107. Siting requirements for freight-related transportation will be developed to facilitate adequate movement of bus, truck, rail, and air freight within the urban area.

108. Access control techniques should be used to coordinate traffic and land use patterns, and to help minimize the negative impacts of growth. Area-wide needs should supersede site-specific needs.

109. To minimize interruption of traffic flow, and to promote safety, the number of access points to arterials should be kept to a minimum; the cluster development of commercial and industrial activities will be encouraged; and adequate setbacks from public arterials should be required for commercial and industrial uses.

110. Undeveloped lands within the Urban Growth Boundary and near arterials will be designated to receive special consideration for the use of various access control techniques. These lands have the greatest need and potential for access control.

For implementation also see City Code, Chapter 3, Public Improvements; Chapter 6, Traffic and Parking; and Chapter 10, Community Development: Article 2, Land Development and Article 5, Standards.

O. WATER SERVICE ELEMENT

Water Service - History (1)

The water supply for the town of Linkville was primarily from cisterns catching rain water, and from the numerous springs around the area. In addition, some of the hot water wells also were used as drinking water sources, the hot water being retained in a holding tank until it was cool. These numerous small springs, the cisterns, and a few hand-dug wells provided sufficient amounts of water for the town for several years.

In April 1895, the City granted a franchise to H. V. Gates to construct and operate a water system in conjunction with an electric service he was also providing. The deep springs near Conger Avenue were to be the major source for the system; in 1896, the first reservoir, located at Fifth and Grant Streets, was completed.

In 1911, the California Oregon Power Company (COPCO) purchased the Klamath Falls Light and Water Company. Over the next few years, the new owners replaced some of the smaller rock reservoirs with steel ones and drilled three wells to supplement the springs. With the addition of new pumps in 1920, the company could provide a 1,300-gallon-per-minute flow and served over a thousand customers.

The expansion of the railroads and the resulting growth of the lumber industry in the Basin in the mid-1920's boosted the population of Klamath Falls. To help meet the increased water needs, COPCO constructed an 800,000-gallon reservoir adjacent to the existing facility at North Sixth and Grant Streets, and two more wells were drilled.

The City continued to spread and a 400,000-gallon reservoir was constructed in 1930 and the old original reservoir was abandoned. By 1931, the water was needed further eastward, so COPCO built a 400,000-gallon steel tank up on the hills. During the decade of the 1940's, the COPCO system had an annual growth of customers of 33 percent; the number of feet of distribution mains during this time increased on the average of 2.1 percent per year. Oregon Water Corporation purchased the COPCO system in 1950, and expanded and operated the water system until 1978. The City of Klamath Falls now owns and operates the facilities.

Most of the wells are adjacent to the original Conger Springs area. One is located at the north end of Link River on Nevada Street, and one south of town on Kelly Road. Not all of the wells are in use at one time. Average consumption is 4.2 million gallons per day in winter, with peaks having reached 13 million gallons per day in hot summer weather.

According to material gleaned from an annual report to the Oregon Public Utilities Commission, the average annual increase of water consumption in the area has been 2.4 percent. Residential service

grew from a count of 8,469 in 1970 to 9,918 in 1976, commercial and industrial grew from 996 to 1,071 in the same time span, private fire protection from 46 to 59, public fire protection diminished from 4 to 3 in seven years, and public authority services jumped from 34 to 65.

Water Service - Current Conditions (1)

The Water Division of the Public Works Department of the City of Klamath Falls serves approximately 11,200 customers. Over one half of these customers reside outside the City. The average increase in customers since 1970 has been 2.4 percent annually while consumption has remained relatively constant at about 2,600,000 cubic feet per year. Residential consumers account for about 65 percent of annual consumption, commercial and industrial consumers 26 and 7 percent respectively. About 2 percent of the total is consumed by public authorities.

Water is obtained from wells in and around the City. (See Water Service map). There are currently five wells producing for the system: the Fremont Well, Conger Wells Number 8, 9, and 10, and Henley. The Pinegrove well is presently inactive. There are 12 boosters and five pumping stations to aid flow and 12 storage reservoirs having a combined capacity of over 6.5 million gallons (mg).

The pipe carrying the water throughout the system ranges in size from three quarters inch to 20 inches in diameter. The greatest portion (46 percent) is cast iron with asbestos cement and galvanized iron forming 24 percent and 23 percent of the materials respectively. O.D. steel (5 percent), ductile iron (1 percent), copper (less than 1 percent), and PVC plastic (less than 1 percent) make up the remainder of the more than 177,200 miles of line that provides water to the people of Klamath Falls.

In general, the total value of the land, equipment and supplies of the Water Department is over $7 million. Historically, the operation of the utility has been stable with revenues increasing at the rate of 7.1 percent since 1970. During the same period all operation expenses increased at a 7.8 percent rate, necessitating a rate increase in April of 1977.

Statistics on the amount of water used by subscribers vary, but it has been estimated that the average per household is 900 cubic feet per month with uses of from 1,200 to 1,500 cubic feet not uncommon. The water from the wells is relatively pure and requires no treatment prior to use, except chlorination.

There are several small districts serving the fringes of the urban area. These include Moyina Heights which serves a section of the south suburbs, as does the Skyline Water District; the Owens Water Company serves the Stewart Lennox area. All water for these systems is obtained from wells.

The water system needs have been analyzed in the report by STRAMM Engineers, Inc., titled "Water Distribution System Analysys" and dated September, 1978. The report points out that three of the proposed developments in Klamath Falls are quite substantial and would exceed population projections used in 1978. Per capita consumption has varied from 170 gallons per day to 200. The report uses a population projection of 55,000 for the year 2003 for the Klamath Falls Urban

Area. Based on that population projection, the water system was modeled for both existing and future flow conditions. A maximum daily demand of 24.6 million gallons per day (mgd) and a peak hour of 46.4 mgd were used for analysis of future conditions. A demand of this magnitude is expected sometime around the year 2003, if the consumption and population projections are reasonably accurate. Approximately 30 percent (5,100 gpm) of the maximum daily demand was assumed to occur in areas outside the existing system, with the remaining 70 percent (12,000 gpm) of the flow occurring within the existing service area.

Water Service - Problems and Future Alternatives (1)

178. Some areas have low pressure, which may hinder adequate fire protection.

179. Some areas do not have sufficient pipeline capacity for distribution needs.

180. Deterioration of older lines will accelerate and replacement costs will increase.

181. Maintenance costs will continue to rise.

182. Costs will continue to rise for extending services to new developments.

183. The majority of the distribution system is geographically skewed away from the primary source wells, requiring costly transmission and storage compensations.

184. Some higher elevation buildable lands cannot be served without creating new, higher pressure zones.

185. There are problems of poor fire hydrant proximity and sufficient fire flow in some portions of the urban area.

186. Ineffective utilization of existing lots will continue to force capital improvement costs upward.

187. The several small districts on the fringes of the urban area are not the most efficient service providers and tend to hasten development prior to the time a full range of urban services are available.

D E T A I L E D A S S E S S M E N T N O T E

ELEMENT: WATER SERVICE

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENT WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

CITY OF KLAMATH FALLS WATER

DISTRIBUTION SYSTEM ANALYSIS (STRAMM)

COPIES OF THIS ASSESSMENT MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Water Service - Goals (1)

32. To provide a timely, orderly, and efficient arrangement of water facilities and services.

Water Service - Policies (1)

171. The City will continue to develop well sources, storage capacities, and distribution capabilities to ensure the availability of adequate water supply and pressure in the system's service area.

172. Adequate water service, either existing or immediately attainable, will be a precondition to any development project.

173. All water system extension will be within the Urban Growth Boundary.

174. The City will maintain a water rate structure capable of maintaining and improving the water system.

175. All water users should make equitable contributions to the improvement of the water system and pay all costs associated with the extension of the water system service to them.

176. Water lines in proposed developments will be adequately sized to meet future needs at the projected usage or density, including fire flow requirements.

177. The high standard of water service within the community will be maintained.

178. In the event of a water shortage or a lack of funding, the City water service will set policy establishing the following user priorities for water service: (1) existing users within the City; (2) new users within City limits; (3) users within the County at the time of purchase of Oregon Water Corporation; (4) new users within Urban Growth Boundary; (5) all other.

179. Extension of water service in any case will be based upon the priorities outlined in the above policy No. 178, ability to serve, return on City investment, and required fire service as expressed by the Public Works Director.

180. The City will serve as the preferred provider of water service within the Urban Growth Boundary. In line with this, the City will not extend service to development outside the Urban Growth Boundary.

181. Water Service will be provided in terms of the following priorities:

    a. Existing City residents at time of purchase.

    b. Existing customers outside of City at time of purchase.

    c. Any new development inside City.

d. Platted lots outside City which were platted prior to April 2, 1979.

e. New development outside City.

182. Water Service will be provided outside the City only when an excess in supply exists.

183. Water will be provided to property outside the City which was platted prior to April 2, 1979 provided there is no more than one living unit per platted lot. All new subdivisions, partitions or developments outside the City will be required to annex or to execute an agreement to consent to annex.

Water Service - Implementation Measures (1)

111. Public education and involvement will be supported.

112. A detailed capital improvement program will be developed.

113. The City will apply for Federal or State funds for upgrading of the water system.

114. Development standards should be prepared for new areas with water system requirements.

115. A water rate will be established which charges the same amount for additional units over base rate rather than a decreasing scale, and rates of large users will be reviewed to ensure they are equitable in relation to small users.

116. All plans for water system improvements and water line extensions will be submitted to appropriate regulatory agencies for review and approval prior to construction.

117. The City will have a leadership role to coordinate with adjoining private water systems to develop proper planning and engineering of areas within the UGB.

118. The City shall implement a water rate structure that sets charges according to cost of providing service for different areas. Areas with system deficiencies requiring extensive maintenance and areas on the urban fringe requiring new facilities would be charged more than areas with existing systems not in need of extensive repair.

For implementation measures, also see City Code, Chapter 4, Public Utilities and Services: Water; Chapter 10, Community Development: Article 2, Land Development and Article 5, Standards.

P. SEWER SERVICE ELEMENT

Sewer Service - History (1)

As the population of Linkville and later Klamath Falls grew, homes became more numerous and the demand for sewage disposal greater. Open land dwindled and individual septic tanks were no longer practical or safe.

On April 21, 1919, the residents of the City voted a bond issue for the construction of a sewer system. The sale of $45,000 worth of bonds was authorized by the Council in May, and on June 22 an engineer was hired to begin the initial phases necessary for the construction of a sewer district. In 1920 a contract was entered into by the City with a construction firm to begin the actual work. The initial area to be serviced was the downtown neighborhood. A septic tank was constructed to serve as a treatment site before outflow into Lake Ewauna, 260 feet away. This initial unit was energized by gravity flow only.

It became apparent during the 1920's that the septic tank system was inadequate. An investigation of existing conditions and a feasibility study for a treatment plant were begun in 1925. Voters approved bonding of a new plant in 1928 and $300,000 worth of bonds were put on sale. This first treatment facility was constructed by the City in 1929, across Lake Ewauna near the railroad bridge, and it was only the second mechanical plant designed and built in Oregon. In 1943 the U.S. government built a "Clarigester" type treatment plant (a combination clarifier and digester process) at the end of Owens Street in the Mills Addition to handle the government housing, now known as the Shasta View Apartments. This plant was eventually sold to the City. In 1945, the U.S. Navy constructed a treatment plant at Kingsley Field, but it was never operated. It was given to the City after the war and when Kingsley Field Air Force Base was activated in the mid-1950's, it was upgraded and put into to use.

The two City plants continued operations until 1958. At that time a trickling filter plant was constructed at the west end of Spring Street to replace the older facilities. It had a capacity of primary treatment for six million gallons per day, but the secondary treatment, the trickling filter, could only handle 2.4 million gallons per day. In 1970, the Spring Street sewage treatment facility was modified from the trickling filter operation to the conventional activated sludge process. New aeration basins, a secondary clarifier, sludge thickener, and a blower and centrifuge building were constructed. This modification increased the plant capacity to 6.0 million gallons per day average daily flow.

In 1960 restrictions were placed on hot water discharges into the system, curtailing such discharges considerably. In 1968, because of the necessity for upgrading the existing plant and lines, a monthly sewer fee for all users was initiated.

Sewer Service - Current Conditions (1)

The Spring Street Sewage Treatment Facility utilizes a conventional activated sludge process and has the capacity of 6.0 million gallons per day (mgd) average daily flow.

Presently, the system serves nearly 5,000 hook-ups. (See Sewer Service map). The average daily flow on a yearly basis is approximately 3.05 mgd (11,540 cubic meters per day) which is about half of the design capacity of the activated sludge treatment plant. During periods of heavy rainfall or snow melt, the flow received increases because of the infiltration problems in the system.

The sewage flows entering the treatment plant are primarily domestic in nature, originating in the residential and commercial areas. Industrial discharges that do occur are generally low in toxicity because of low flow and/or weak composition. The local major industries are primarily lumber, and the mills generally have their own treatment facilities. The agricultural industries within the City are mainly dairy products, and although the organic load is high, at the present time the capacity of the plant is not hindered.

Currently the Spring Street Sewage Treatment Plant is producing effluent far superior to the degree of treatment required by the Waste Discharge Permit. This facility continuously attains BOD (Biochemical Oxygen Demand) and SS (Suspended Solids) reduction to less than 10 mg/1 and normally to 2-5 mg/1; the inflow of BOD and SS to the system averages some 11,000 pounds each per day. Because of the topography of the City, several sewage lift stations are in use within the system.

In addition to the Spring Street Plant, the City also has a treatment plant at Kingsley Field which handles approximately .24 mgd. It serves the air base, the Falcon Heights military housing area, and the Gatewood area of the City. This treatment plant is an activated sludge type that uses compressed air for aeration and anaerobic digesters for sludge disposal. The plant effluent meets the Waste Discharge Permit standards before it is discharged into Lost River.

The southeastern portion of the urban area outside the City limits is serviced by the South Suburban Sanitary District. This district uses a lagoon system consisting of four oxidation ponds. The entire South Suburban Sanitary District collection system drains by gravity flow into the pump stations at the treatment facility. Flow rates average 2.01 mgd during the dry season and 2.67 mgd during the wet season; the average peak is 3.63 million gallons per day.

Planning for sanitary facilities requires consideration from a regional perspective. According to the "Klamath Basin Waste Water Facilities Plan Draft" of June 1977, contaminated groundwater in the Klamath Basin, caused by failing septic tanks in unincorporated areas, is causing severe health hazards. In addition, the two major sewage agencies are expected to have difficulty meeting future demands. The treatment plant capacity at the City's Spring Street facility is inadequate; and South Suburban Sanitary District's stabilization

lagoons will not meet secondary treatment standards. Cost-effective alternatives have been identified which intertie the two treatment systems, solving plant capacity and treatment standard problems. The draft plan also identifies alternatives to serve several areas on the periphery of the City that are urbanized or partially urbanized. These areas include Eastside, Pelican City, Wocus, Greensprings and Riverside, and Weyerhauser Road sanitary areas. The City has participated with adjoining jurisdictions in the regional "208" planning process, (Clean Water Act of 1977, Pub. L. 95-217, 91 Stat. 1566).

As development throughout the urban area continues, it is clear that a regionally coordinated plan for sanitary sewer service will be necessary in order to most effectively utilize existing systems, and provide new services in a logical manner.

Sewer Service - Problems and Future Alternatives (1)

188. A few isolated properties are not able to receive sewer service.

189. Inflow of storm drainage waters, and infiltration of groundwater constitutes an occasional over-burden on the treatment plant.

190. Areas with excessive slope (greater than 30 degrees) create problems in establishing proper sewer lines.

191. Certain problems exist in current sewer line sizes and layout due to age of system and technological changes, i.e., deterioration of older lines.

192. The Environmental Protection Agency has required that no toxic industrial materials can be flushed into the municipal sewer system after 1982. Also, requirement for tertiary treatment in 1980 may be enforced by the U.S. Government.

193. Treatment quality standards will increase, as will standards for quality of discharge.

194. Maintenance costs will increase.

195. New industries may create treatment problems or require special treatment procedures for sewage.

196. New technology may change the process of sewage treatment, altering cost figures.

197. Other substandard antiquated facilities that exist within the Urban Growth Boundary such as failed septic fields, settling ponds, and holding lagoons, may become a problem that the City would have to deal with.

198. Coordination with sewage districts and other areas outside the City necessitates planning for future sewage treatment facilities.

D E T A I L E D A S S E S S M E N T N O T E

ELEMENT: SEWER SERVICE

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENT WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

KLAMATH BASIN REGIONAL WASTEWATER

FACILITIES PLAN (HGE ENGINEERS)

COPIES OF THIS ASSESSMENT MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Sewer Service - Goals (1)

33. To provide timely, orderly, and efficient arrangement of sewer facilities and services.

Sewer Service - Policies (1)

185. The City will endeavor to provide all residents within the City adequate sanitary sewer service.

186. Adequate sewer service, either existing or immediately attainable, will be a precondition to a development project.

187. All users will make equitable contributions to improvement or replacement of the sewage treatment system.

188. All users will be required to meet Federal discharge standards.

189. In order to meet urban needs, separation of sanitary and storm sewer effluents will be completed and maintained.

190. The expansion of the sewer system will be a major factor in managing urbanization.

191. The City will, in the planning for sewage treatment facilities, take into consideration regional needs and coordinate with special districts and other unincorporated areas requiring treatment of sewerage through the "208" planning process (Clean Water Act of 1977, Pub. L. 95-217, 91 Stat. 1566).

Sewer Service - Implementation Measures (1)

119. Steps will be taken to eliminate storm drainage water from sanitary sewer lines.

120. Public education and involvement on sewer system needs will be supported.

121. A detailed capital improvement program will be developed.

122. The City will apply for Federal or State funds to improve and maintain the sewer system.

123. Plans for all sewer improvements will be submitted to appropriate regulatory agencies for review and approval.

124. Plans and alternatives to deal with major plant failures will be developed.

125. Plans and alternatives to meet the Federal Water Pollution Control Act Amendment of 1972, 33. U.S.C.A. 1251 et. seg. (1978) tertiary sewage treatment requirement will be developed.

126. The City will implement an ongoing maintenance program to provide maximum life to the existing sewer system.

For implementation measures also see City Code, Chapter 4, Public Utilities and Services: Sewer; and Chapter 10, Community Development: Article 2, Land Development and Article 5, Standards.

Q. STORM DRAINAGE ELEMENT

Storm Drainage - History (1)

In most instances when rain strikes open ground, a fair portion of the moisture is absorbed into the soil and there is minimum runoff. Urbanization, in the form of construction and paving, effectively seals the ground surface and water cannot penetrate the soil. It then becomes a problem that must be dealt with. In an urban area, the answer is proper storm drainage.

As the municipal sewer service developed, beginning in 1909, storm drain systems were also installed. These lines extend to the Spring Street Sewage Treatment Plant and, bypassing treatment, empty into Lake Ewauna. The major portion of the downtown area is serviced this way. In those areas, such as the north end of town, where drainage is away from the downtown area, runoff goes directly into the upper lake. The old Ankeny Canal served to carry surface water away for many years, and in those areas lying above the "A" Canal, some runoff flows into that canal.

Problems have arisen over the years in that storm drains have been connected to sewer lines. In this case, storm runoff contributes to the flow level of the sewer line, often times adding sand and debris to the sewer system and having a detrimental effect on treatment facilities.

Generally, the more drastic runoff problems occur in the summer when severe thunderstorms drop large amounts of rain on a localized area in a short time. Streets resemble rivers and such low places as the railroad underpass become completely flooded. Although not a frequent occurrence, this has happened several times over the years, resulting in localized flooding and over-loading of both the storm drainage and the sewer systems.

Winter storms generally produce precipitation in less volume over a longer period of time, and runoff at current levels can be handled. Normally the excess water caused by heavy rain and/or rapid snowmelt is drained away via the various drainage ditches. The level of Upper Klamath Lake is controlled by the dam at the head of Link River, and that of Lake Ewauna by the Keno dam. However, in December of 1964, serious problems arose when over two inches of rain fell in one 24-hour period and precipitation for that month totaled almost nine inches. The upper lake rosé .3 to .4 feet per day and the river could not handle the runoff, causing extensive flooding in lower areas of the Basin. The Keno dam has since been replaced and the Klamath River dredged giving better control of Lake Ewauna water levels and providing more control of heavy storm drainage on a basin level.

Over the past few years, land use planning has improved and as a part of this, more extensive and better designed storm drainage is being provided.

Storm Drainage - Current Conditions (1)

Storm drainage in the City relates to the physical situation involving the amount of runoff occurring during a storm and the way to handle it.

This physical problem in the City is that generally the drainage water will originate in the Hogback Mountains and Plum Hills area to the east and north of the City. The drainage water is carried in a southerly direction by small, seasonal channels and creeks which flow into the existing drainage and canal systems. Where the land has not been developed, a fair portion of the precipitation seeps into the ground and runoff is minimal. However, where building has occurred, it has reduced the amount of open ground and a portion of any storm accumulation becomes runoff.

On the westerly side of the City, there is storm drainage into Link River and Lake Ewauna. The inflow into the natural water systems of the lakes and rivers is then controlled by flood control dams and diversions located along the waterways. On the easterly side of the City, the storm drainage does not flow into natural waterways, but into the man-made canal system. (See Storm Drainage map).

The first immediate problem of storm drainage in the City is the dramatic effect of rainfall on the diurnal sewage flow pattern in the City sewer lines. The Klamath Basin Regional Wastewater Facilities Plan shows that rainfall greatly increases the sewage flow during storms. When there is excessive short-time rainfall, or when heavy storms occur during peak sewage flows, the inflow to the City sewage treatment plant approaches plant capacity.

The second immediate storm drainage problem involves the inflow of runoff water into the "A" Canal which was designed for a nominal capacity of 1,100 cubic feet per second (cfs) of controlled water flow. The Klamath Irrigation District tries to maintain a headgate flow of 1,025 cfs whenever possible. However, because of storm drainage inflow, irrigation demands, or other requirements, this rate may be exceeded from time to time. The highest flow recorded in the "A" Canal was on June 24, 1961, when it reached 1,180 cfs. The flows have ranged from 800 to 1,100 cfs when heavy irrigation demands have occurred; the system was not designed to carry additional, unplanned flows of storm drainage waters.

Storm Drainage - Problems and Future Alternatives (1)

199. A majority of the City does not have proper drainage facilities, using surface drainage instead.

200. Surface drainage results in general water quality degradation as a result of erosion and pollution by petroleum and lead particles in streets and parking lots.

201. Storm drains in some areas empty into the municipal sewer system, creating discharge problems for the sewage treatment plant.

202. Federal and/or State agencies are beginning to enforce water quality regulations which could affect land development in the area.

203. Currently when the "A" Canal is at maximum irrigation flow, and this is combined with additional storm drainage inflow, a flood hazard could result.

204. Development of land on the sloping portions of the City increases storm drainage runoff when compared to flatter portions of the City.

205. Implementation of the Federal Water Pollution Control Act Amendment of 1972, 33. U.S.C.A. 1251 et. seg. (1978), Section 208, on non-point source runoff will increase water quality maintenance difficulty.

206. Open drain areas such as 1-C Drain, 1-C-7 Drain, and many others are breeding habitats for mosquitoes and other nuisance insects.

207. Geothermal runoff and discharge may create thermal pollution of Klamath Lake and Lake Ewauna.

208. Creation of a geothermal heating district could provide a means of controlling geothermal discharge.

209. Storm runoff in sewer lines causes a temporary overload of the sewer system.

210. Delays in developing storm drainage plans due to jurisdictional disputes between agencies may affect the rate of development in certain areas of the City.

211. Inadequate protection of drainage ways with construction immediately adjacent to these drainage areas has resulted in property damage to adjacent lands, promoted siltation, destroyed natural vegetation, precluded recreational use, and decreased open space.

212. The uncontrolled filling in of watercourses and other areas along drainage ways destroys open space and recreation potential and reduces water storage capacity.

Storm Drainage - Problems and Future Alternatives (2)

213. Major drainageways could be valuable as recreation linkages for bikepaths, hiking and jogging trails in the urban area.

214. Maintenance costs continue to increase.

215. Costs to develop a separate storm drain system are high.

216. Federal and State quality standards for both point and non-point source discharges may be higher.

217. Other Federal or State agencies may establish a development moratorium.

Storm Drainage - Goals (1)

34. To provide a timely, orderly, and efficient arrangement of storm drainage facilities.

35. To protect life and property from drainage-related hazards and damages.

Storm Drainage - Policies (1)

192. Storm water flows within and to natural drainage courses will not, through development, exceed natural capacities within the City.

193. Steps will be taken during construction to ensure that storm water flows are not exposed to cuts, grading areas, and trenches in such a way as to allow adverse direct flow into natural drainage courses.

194. Wherever possible road crossings of major natural drainage courses will be minimized.

195. New developments will limit storm runoff rate outside project boundaries by appropriate measures; where applicable new developments shall intertie new drainage facilities with existing adjacent facilities.

196. Adequate drainage facilities, either existing or immediately attainable, will be a precondition to any development project.

197. The extent of continuous, impervious paved surfaces will be minimized, and large parking or paved areas will be subdivided with functional planting strips with exposed soil or proper drains.

198. The maintenance of drains such as 1-C, 1-C-7, et cetera, to reduce hazards will be supported.

199. Vector control to reduce insect problems in drain areas will be supported.

200. In order to meet urban needs, separation of sanitary and storm sewer collection systems will be completed and maintained.

201. Drainage ways will be dedicated for the purpose of storm water collection when property develops. Where adequate dedications exist, utilization of bankside areas may provide a recreation resource.

202. Use of fill matter in permanent and/or dedicated drainage ways will be regulated.

203. Building in floodplains or major drainage ways will be prohibited except in accordance with adopted regulations.

204. Drainage ways will be kept in an undeveloped state preserving or developing tree lines and vegetation wherever possible.

Storm Drainage - Implementation Measures (1)

127. Public education and involvement in developing proper storm drainage system will be supported.

128. A detailed capital improvement program will be developed.

129. The City will apply for grants to help develop a proper storm drainage system to serve the urban area.

130. Storm drainage requirements for new land developments will be established.

131. Funds will be budgeted to correct current drainage problems along streets and roads and within present storm drain system.

132. Regulations to set storm drain standards for roads and streets either crossing or affecting a natural storm drain area will be developed.

133. Proper techniques for handling special runoff problems such as thermal pollution from geothermal activity will be developed.

For implementation also see City Code, Chapter 4, Public Utilities and Services: Drainage; and Chapter 10, Community Development: Article 2, Land Development and Article 5, Standards.

R. SOLID WASTE ELEMENT

Solid Waste - History (1)

Solid waste, which includes garbage, refuse and rubbish, but also includes industrial, demolition and wastes from every area of endeavor, is produced in direct proportion to an area's population.

It can be disposed of by several methods which include landfilling, composting and incineration. The most desirable method of handling this waste includes resource recovery or recycling.

The early townspeople wasted as little as possible and disposed of what garbage there was in many of the aforementioned ways. As the town grew, particular areas became popular dumping grounds for refuse, and these, in turn, became problem areas. Fires would start and smolder for long periods of time, light trash was blown over a wide area, and rodents and vermin proliferated. Exactly where all these local dumps were located is not known; however, one in close proximity to town was supposedly near where the new Elks Lodge now sits, above the west shore of the lake. Another popular place to conveniently throw rubbish was the open Ankeny Canal, posing both a health and an aesthetic problem.

In 1911, the City purchased two parcels of ground to be specifically used for solid waste disposal, and eventually dumping was prohibited in any other locations. One site was on the west hill, above Lake Ewauna; the other location was east of town off the Old Fort Road.

The City created an office of City Scavenger in February 1919, and this office was the beginning of the Refuse Collection Bureau for Klamath Falls. In 1926, the municipal collection gave way to franchise to private concerns. That same year the City also purchased additional land near the west side dump to provide more space. These west side areas are no longer used and all collection from the City currently goes to the Old Fort Road site for disposal. This latter site was sold to the County in 1977 as part of a County program to manage solid waste.

Solid Waste - Current Conditions (1)

The County is responsible for 13 solid waste disposal sites, including the Old Fort Road site serving the urban area. Currently, sanitary landfill is practiced as much as possible at these locations. (See the Disposal Sites map).

There are three classes of solid waste: municipal, industrial and agricultural. In the Klamath Falls area, agricultural wastes are either recycled as fertilizers or treated as a special situation, i.e. pesticide containers, and pose little problem to the local landfill operation. The major industrial waste for this area is sawdust, for which industry has found several uses, and it no longer poses a problem. Therefore, most of the solid waste in the urban area is municipal--garbage, refuse, rubbish, and scraps.

Each person in the urban area of Klamath Falls generates about 4.0 pounds of solid wastes per day. This gives a total daily generation in excess of 180,000 pounds and a yearly generation currently estimated at close to 33,000 tons.

The Old Fort Road site east of town covers approximately 80 acres. Solid waste is spread in thin layers, compacted to the smallest practical volume, and covered with soil for sanitary landfill. There has been some problem of soil depletion; the original 40-acre site lacked sufficient covering materials. However, the recent land increase, doubling the area, solved this shortage. Allowing for population expansion, this increased acreage should provide adequate space for waste disposal until about the year 2000.

Even though the site is fenced, wind-blown trash and dust present problems in the immediate area and along the access road there is unsightly litter. Other problems of sanitary landfill include control of the surface runoff and subsurface leaching; and the movement and dispersion of the gases generated in decomposition.

One private company collects the solid waste from the urban area and transports it to the disposal site. Public use of this landfill, as well as several outlying pick-up sites, is encouraged.

While many items can be recycled or burned, the rubber tire has defied attempts at disposal. If covered, it works its way to the surface; if burned, it pollutes the air. Consequently, tires are unacceptable as landfill. Instead, they are stored at a special site--an old gravel pit (Harpold). Eventually, if shredding or some other type of disposal becomes feasible, they will be removed from the quarry.

In a recent survey, 82 percent of those surveyed endorsed recycling programs. However, Klamath Falls, because of its remoteness from most industrial sources, does not have any extensive recycling programs at this time. The beverage container return is the most well known and widely practiced program in this area. The high costs of transportation restrict other recycling projects but there are two notable ones.

Solid Waste - Current Conditions (2)

Each spring, for the past several years, Klamath County has franchised a private firm to haul away junk auto bodies. Also, some local firms buy various scrap metals for the purpose of recycling.

Paper and paper products constitute the largest percentage by weight of all solid wastes. Although there is no comprehensive paper recycling program in the area, local businesses save approximately 60 tons a month of corrugated cardboard which is collected and then pressed into bales by a hydraulic compressor-baler. The relatively small volume of paper products discarded, and the long shipping distances to market, make paper recycling a marginal business for private enterprise.

Solid Waste - Problems and Future Alternatives (1)

218. Distance to existing landfill can be long, especially for low-income and elderly citizens.

219. Wind-entrained debris from landfill has adverse effects on surrounding lands.

220. There is lack of an extensive recycling program and recycling may only partially cover operation costs.

221. There is a limited amount of appropriate land for landfill needs.

222. Landfills will suffer from land-related development pressures.

223. Landfills may not continue to be feasible from a cost or legal standpoint, and new solid waste disposal methods will be required.

224. There is the possibility of contamination of surface and groundwaters due to runoff from and leaching through the landfill.

225. Unauthorized fires occur that are difficult to extinguish and may burn unnoticed for periods of time after they are thought to be out.

226. Operation costs will increase.

227. There is a litter problem along major arterials leading to the landfill.

228. There is little or no control on disposal of toxic or other potentially hazardous materials.

229. Open air burning of trash is still occurring.

DETAILED ASSESSMENT NOTE

ELEMENT: SOLID WASTE

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENT WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

KLAMATH COUNTY COMPREHENSIVE SOLID WASTE PLAN

COPIES OF THIS ASSESSMENT MAY BE AVAILABLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Solid Waste - Goals (1)

36. To provide a timely, orderly, and efficient arrangement of solid waste disposal facilities and services.

Solid Waste - Policies (1)

205. Recycling of materials will be promoted to help offset costs involved in maintaining a facility.

206. Compatibility between landfill sites and surrounding properties will be ensured.

207. All waste and process discharges from future development, when combined with such discharges from existing developments, will not violate or threaten to violate applicable solid waste disposal regulations.

208. The City will continue to explore methods of solid waste disposal that will provide a maximum recycling of materials at a minimal energy cost.

209. The City will enforce and monitor current open trash burning ordinances and restrictions.

Solid Waste - Implementation Measures (1)

134. Public education and involvement in the need for good solid waste disposal management and recycling will be supported.

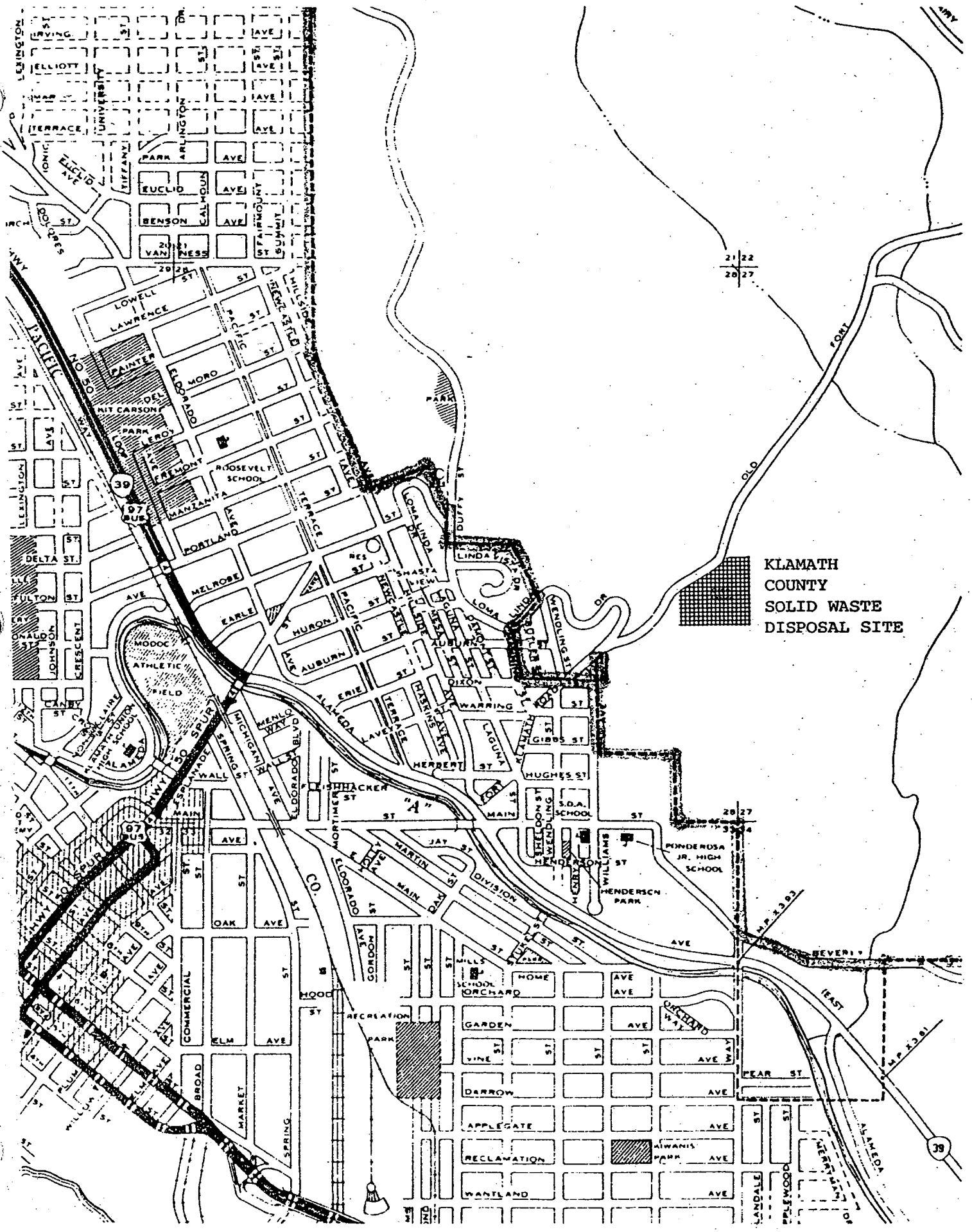
135. The City will support and coordinate with the County solid waste program. The County has a lead agency role for solid waste management (according to the Governor's Executive Order 78-16).

136. The City will apply for Federal and State funding to promote the recycling of materials and develop alternate methods of solid waste disposal.

137. The City will review, modify, and develop ordinances to prevent improper solid waste disposal, including littering, open burning of trash, et cetera.

138. An ongoing monitoring program of surface and groundwaters around sanitary landfill will be supported to detect possible contamination from leaching.

For implementation also see City Code, Chapter 5, Public Protection: Nuisances.


KLAMATH
COUNTY
SOLID WASTE
DISPOSAL SITE
PACIFIC HWY NO 50
39
97 BUS
OLD FORT
EUCLID AVE
BENSON
VAN NESS
LOWELL
LAWRENCE
PACIFIC ST
PAINTER PARK
DEL NIT CARSON PARK
ELDORADO
MORO
LEROY
FREMONT
ROOSEVELT SCHOOL
MANZANITA
PORTLAND
MELROSE
DELTA ST
FULTON ST
DONALDSON
JOHNSON
CRESCENT
CANBY ST
MODOC ATHLETIC FIELD
ALAMEDA HIGH SCHOOL
SPRING ST
WALL
MAIN
OAK AVE
ELM AVE
COMMERCIAL
BROAD
MARKET
SPRING
PLUM
WILLOW
MICHIGAN AVE
MENLO WAY
ELDORADO BLVD
ALAMEDA
ERIE
AUBURN
HURON
EARLE
PACIFIC
SHASTA VIEW
LOMA LINDA DR
LAGUNA VISTA DR
LAGUNA
MESA
DIXON
WARRING
GIBBS ST
HERBERT
HUGHES ST
FISHHACKER "A"
MORTIMER
JAY ST
MARTIN
DIVISION
MAIN
PARK
GORDON AVE
HOOD ST
RECREATION PARK
MILLS SCHOOL
HOME
ORCHARD
GARDEN
VINE
DARROW
APPLEGATE
RECLAMATION
WANTLAND
KIWANIS PARK
HENDERSON
WILLIAMS
HENDERSON PARK
PONDEROSA JR. HIGH SCHOOL
S.D.A. SCHOOL
WENDLING
HENRY
ORCHARD HAY
PEAR ST
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BEVERLY
M.P. 3.93
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ALAMEDA
MERRY MAY
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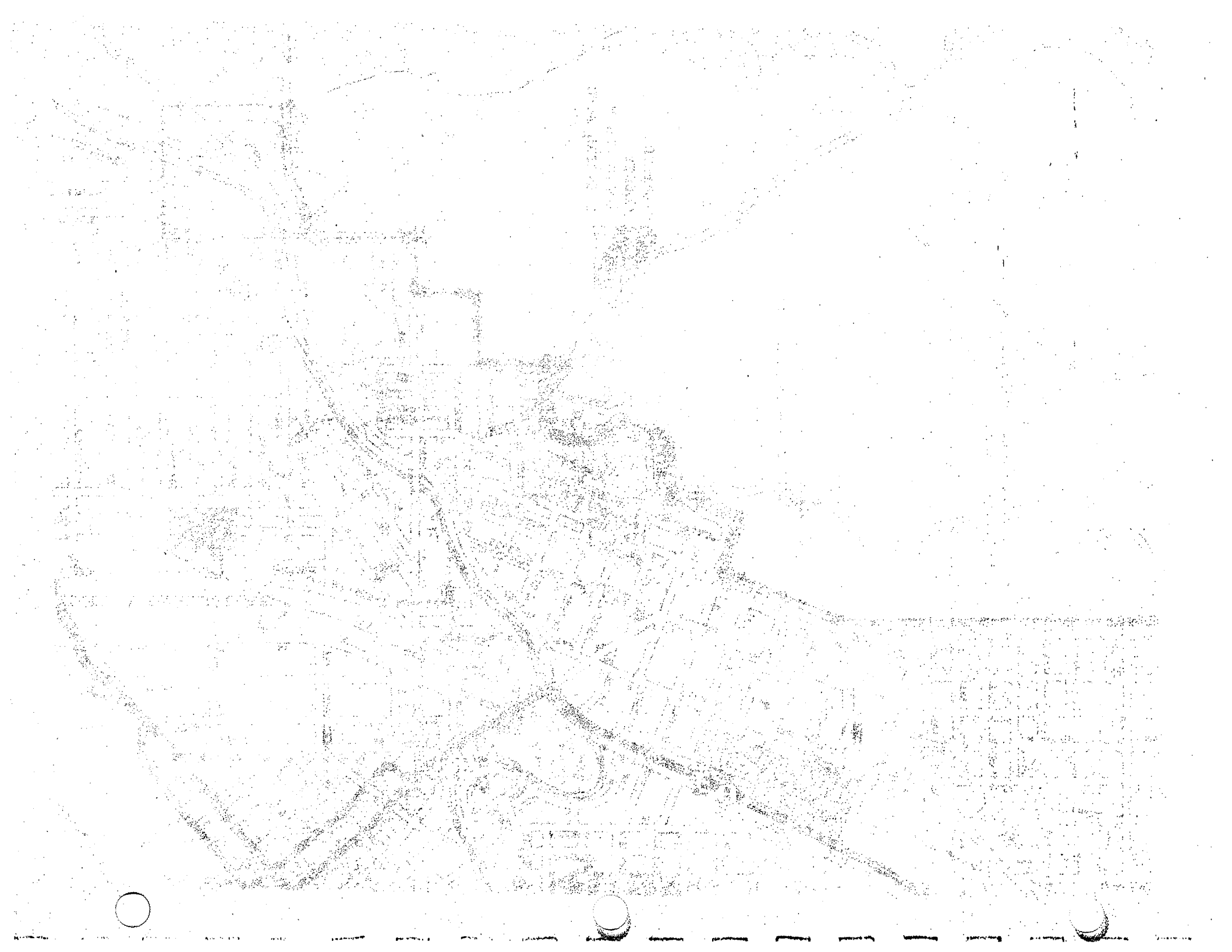

S. SAFETY AND HEALTH ELEMENT

Safety and Health - History (1)

The earliest local law enforcement officer in the Klamath area was the county sheriff, hired when Linkville became a county seat in the early 1870's. In the 1880's, two jails were built successively adjacent to the County courthouse, and in 1889 when Linkville was setting up its local government, a town marshall was included in the hierarchy to ensure that ordinances passed by the new officials were enforced.

In 1908 a police force was established, and as the automobile made its impact on the community, traffic supervision became one of the force's major responsibilities.

By the early 1940's, the force had approximately 30 men, mostly patrolmen; the police station was part of City Hall, with the jail in the basement. In 1931, the State Police opened a station in Klamath Falls.

Fire protection in the days of Linkville and early Klamath Falls consisted primarily of a volunteer fire department. Fires in 1889 and 1892 devastated the young town, thus regulations were passed to reduce hazards. The fire department volunteer status continued out of City Hall until 1916, when a paid fire department was created, along with new facilities to house the men.

In 1931, the Central Fire Station was completed at the corner of Wall and Broad Streets, reputed to be the only one of its kind in the country heated by geothermal water. In the 1960's, two substations were created to assist the main station.

Health protection for Klamath Falls citizens has been ensured over the years via several City ordinances. Some strict sanitation laws were passed in 1898, and in 1901 it became illegal for anyone with a communicable disease to enter the City. In 1921, the City Board of Health was formed, consisting of the mayor, police chief and a city health officer. Several other organizations dealing with health and safety have been formed over the years. The Red Cross began a local chapter in 1917, and in 1921 the Klamath County Public Health Association was started and became instrumental in making public health nursing part of the County Services, and assisting the City schools to obtain a full-time school nurse. The Klamath County Health Department was established in 1936, and in 1977 the City hired a health and safety officer to handle nuisance abatement.

Medical service began in the Klamath Falls area with a male nurse from the Civil War, S.S. Sumner, followed by the first dentist, doctor and druggist around 1890. For several years around 1900, no hospital served the City. A small, 10-bed hospital was opened in 1919 on Fourth Street, and operated for about a year.

Safety and Health - History (2)

In 1911 A. J. Lyle began building a medical facility on Eldorado and Esplanade Streets, later to be known as the Blackburn Hospital.

Klamath Falls was overendowed with medical facilities in the 1920's--competition was keen during this period and medical insurance had not yet become common; large organizations, such as the mills or the railroad, would contract with a doctor or a group of doctors to provide medical care for the employees and staff.

The population of the Klamath Falls Basin grew and the existing hopsital became insufficient; in 1964 the Presbyterian Intercommunity Hospital opened to provide the latest advancements in medical treatment to the entire area.

Law Enforcement

The Klamath Falls urban area is served by three law enforcement agencies. Within the City proper is the City Police Department; county-wide is the Sheriff's Department; and Klamath County forms a portion of District Five of the Oregon State Police.

The Klamath Falls City Police Department has a staff of 18 patrol officers, three patrol sergeants, one identification sergeant, one juvenile sergeant, two detective sergeants, three administrators, three clerks and five dispatchers, supplemented by a cadet corps of youth which help handle non-enforcement activities. Continued education and upgrading of skills is an ongoing program and a total of 4,256 man-hours were spent by members of the police force in various types of training during 1977.

In addition to enforcement activities, the Klamath Falls Police Department also promotes prevention of crime. The major effort of the prevention program has been to reduce burglary, which has been the City's greatest crime problem. The campaign provided the public with information that would help them to become less vulnerable.

When reported offenses of 1976 are compared to those of 1977, burglary decreased from 432 to 301-a decrease of 30.3 percent, larceny reports also decreased from 980 in 1976 to 941 in 1977, a decline of 4 percent; robbery reports increased from 13 to 21, an increase of 61 percent; rape from 9 to 10, an increase of 10 percent. However, by using 27 indications (traffic citations not included) it can be seen that the reports of all offenses decreased from 4,882 to 4,115--a drop of 15 percent. The total number of arrests did not change significantly--2,343 in 1976 as compared with 2,340 in 1977. A rise is noted in the number of juveniles charged: 371 in 1966 and 463 in 1977 showing an increase of 24.7 percent. In a table of miscellaenous reports investigated by the police for 1977, 906 traffic accidents, 552 vandalism cases, 262 sick or injured persons, and 268 impounded and abandoned vehicles were reported, a sampling of four out of 21 categories reported that year.

The Sheriff's Department has jurisdiction within the boundaries of the County. It is staffed by one sheriff, one chief deputy, one captain and 13 deputies as patrol personnel; four deputies and two clerks in the Civil Division, 11 officers and three supporting staff in the Corrections Division (jail); and 7 office staff, which includes an administrative secretary, and 6 records clerks/dispatchers, one serving as chief.

The Oregon State Police District Five has a patrol station in Klamath Falls. It is staffed by 39 patrol officers, four clerks and five administrators, including the station commander who carries the rank of lieutenant.

Fire Department

The Klamath Falls Fire Department consists of a Central Station and two substations. The fire chief, fire marshall, and a clerk are at Central Station. All stations are manned 24-hours a day by three 24-hour shifts; the total personnel for each shift includes a battalion chief, two captains, four drivers and up to four hosemen. The Department has five fire engines, one aerial platform truck, a pumper-tanker truck, and numerous pieces of specialized equipment.

During 1977 fires endangered property values at approximately $6.5 million, but only $453,616 worth of property was lost. The alarms received during 1977 totaled 465 with 231 by Central Station, 88 by Substation #1 and 146 by Substation #2. Of the 465 alarms, 54 were for dwellings, 15 for other structure, 100 for trash and grass, and the remainder for a variety of other reasons.

To aid in fire prevention, the Department inspected some 975 structures, from storage units through residences, commercial and industrial facilities to public and private institutions; also public and private alarm systems have been expanded.

A major accomplishment during 1977 was the change in insurance rating from Class 5 to Class 4 within the City. It took several years of work to reach this goal and the change went into effect on March 14th following an evaluation by the Oregon Insurance Services.

Klamath County Department of Health Services

The Department of Health Services consists of Public Health, Environmental Health, Mental Health, and Medical Examiner Divisions. Public Health provides a wide variety of services: communicable disease control, venereal disease control, tuberculosis control, the Home Health Agency (intermittent skilled nursing care for homebound patients at the orders of private physicians), and various clinics and laboratories. Nursing consultation is available in homes, at the Department and at schools and clinics.

The principal task of the Environmental Health Program is to inspect restaurants, vending and mobile units, commissaries; examination of public water supplies, schools, nursing homes, foster homes, motels, hotels, mobile home parks, parks and camps, swimming pools, day care centers; and investigate nuisance complaints.

The Mental Health Center provides services to all City and County residents. Its goal is to help individuals learn and experience techniques to deal more effectively with such problems as stress, family trials, or marital disharmony.

Hospital Facilities

Merle West Medical Center located at the North end of the City, has an extensive service area which includes portions of northern California. The hospitals nearest to Klamath Falls are in Bend (140 miles North), Lakeview (100 miles East), Redding, California (140 miles South), and Medford (75 miles across the Cascades to the West).

The present capacity of the hospital is 203 beds.

The medical staff of Merle West Medical Center consists of over 60 doctors and a dental staff of 23 who have an affiliation with the hospital.

Three nursing homes are located in the urban area. The Klamath County Nursing Home is adjacent to the hospital and has a 120-bed capacity. Two private facilities, Ponderosa and Washburn Manor, have space for 92 and 114 patients respectively. These facilities generally are nearly or completely filled.

Other health-related resources in addition to those already mentioned include an ambulance service, a dispensary at Oregon Institute of Technology (O.I.T.), three medical laboratories, seven optometrists and one optician, four chiropractors and eight pharmacies. There is a laboratory for biological and chemical water testing. In addition, there is a four-year nursing program at O.I.T.

Emergency Services

Klamath County has an Emergency Services Operations Center which is headquartered in the Courthouse. Its prime directive is to coordinate all planning for disasters. Its original formation was as a Civil Defense unit to handle nuclear disasters; it now has as a secondary mission the handling of any natural disaster. Evacuation procedures and fall-out shelter locations are kept up-to-date and communication via several methods is kept at readiness.

There is a local chapter of the American Red Cross, and emergency services on a smaller scale, such as food, clothing and/or shelter for an individual or family, are available through several agencies. These include but are not limited to, Volunteer Services (Department of Human Resources), the Salvation Army, and the Gospel Mission.

Search and rescue service is primarily a function of the Sheriff's Department. However, several agencies and groups are available in case of emergency: the Klamath County Mounted Sheriff's Posse; State of Oregon Department of Forestry; U.S. Department of Forestry; several private scuba divers; two four-wheel-drive organizations; one mountain climbing group; two snowmobile clubs; two citizens band radio groups; Klamath Air Search and Rescue; Klamath Basin Motorcycle Association; Klamath Civil Air Patrol; and Klamath Basin Amateur Radio Association.

Safety and Health - Problems and Future Alternatives (1)

230. There will be a greater demand for public health services at continually rising costs.

231. Fire and police service, operation and training costs will increase. There will be an increased demand for these services.

232. Crime will probably increase in proportion to population increase, especially in high density areas.

233. Fire and crime insurance costs will increase.

234. As the number of aged increase, so will demands for proper care.

235. Speeding on neighborhood collector streets is the most common traffic safety hazard reported by residents.

236. A large number of wild animals (skunks, rodents, small mammals) create a potential health problem.

237. Older parts of town with narrow or poorly maintained streets create a traffic hazard and potential problem.

238. Low water pressure and/or a lack of fire hydrants create fire fighting problems.

239. Certain noxious weeds present in the City can cause serious illness if taken internally and should be eliminated wherever possible.

240. Klamath County and the City of Klamath Falls will identify and work to correct health and safety hazards within the planning area.

241. City and County governments may work together for a new, consolidated jail.

Safety and Health - Goals (1)

37. To provide a timely, orderly, and efficient arrangement of public safety and health facilities and services.

Safety and Health - Policies (1)

210. The City will continue to resist increases in crime rates through appropriate improvements in police services.

211. The City will make every effort to maintain or improve its Class 4 fire rating with appropriate improvements in fire services.

212. New developments will be closely evaluated in terms of fire and police response times, and physical design criteria that enhance delivery of police and fire services.

213. The City will continue to monitor general conditions of public health, and to immediately react to any serious health hazard threat.

214. Reduced crime potential will be promoted through design and location of buildings on the principles of defensible space.

215. Adequate water pressure for required fire flow will be maintained through the water system.

216. Emergency vehicle access, including ambulance, fire, police, and disaster services, will be a principal criterion in evaluating overall street plans.

217. The City will support and coordinate with County Health Department, Merle West, County Emergency Services, and local ambulance companies to ensure adequate and effective emergency medical capabilities.

218. The City will support and assist the County Vector Control group in maintaining adequate control of nuisance insects.

219. The City will promote cleanliness on properties, including weed control and refuse disposal.

Safety and Health - Implementation Measures (1)

139. Public education and involvement in the needs for adequate public health and safety planning will be supported.

140. Police and fire review of all development proposals will be provided for adequate response times, and road or plan layout on other public safety needs.

141. A detailed capital improvement program for police and fire protection will be developed.

142. The City will apply for Federal or State funds to improve the public safety units of the community.

143. The City will coordinate fire and police service with surrounding State and County services.

144. The City will coordinate and support public health services with the State and County.

145. The City will conduct an agressive nuisance abatement program, including weed control and refuse disposal.

For implementation also see City Code, Chapter 5, Public Protection: Offenses and Nuisances; Chapter 6, Traffic and Parking; and Chapter 8, Building.

Communications - History (1)

Postal Facilities

The first step the new town of Linkville took in establishing communications with the rest of the world was to establish a post office. This was sometime in 1871 or 1872, with George Nurse as the Post Master and the post office in the Nurse Hotel.

The frequency and reliability of delivery improved when, in the spring of 1872, the government granted a mail route into the area and a contract for carrying mail was let. The route was from Ashland to Lake City, California, via Linkville. The post office grew along with the town, providing, at first, weekly mail service to Ashland in 1874 and daily service by the end of 1882.

In 1903 the Klamath Falls Post Office was elevated from a third class to a second class facility. Parcel Post service began in 1913, and the first City delivery of mail began October 10, 1916. Rural service to suburban areas was established on a tri-weekly basis February 1, 1918, and expanded to a six-day-a-week service in May 1920. During that year, the post office was moved to new quarters on Main and Tenth Streets. Rural Route 2 was established in 1928, and Rural Route 3 was set up in 1937.

In 1931, the post office moved into the structure on Seventh Street, where it has remained, sharing the upper stories of the building with several agencies. Its second class rating was upgraded to first class in 1935. The first air mail letter was posted in 1938, but regular air mail did not begin until 1946.

Telephone and Telegraph

In 1881 a more rapid form of communication connected the Basin to the other side of the mountains, when Western Union telegraph lines joined Ashland with Fort Klamath via Linkville. The first local telegraph office was situated in the Linkville Hotel.

Another general device for communication, the telephone, made its debut in Klamath in 1901, when three instruments were installed to connect Baldwin's store and house with the electric power house. Within the following year, telephone lines ran from Ashland to Klamath Falls and the City had its telephone system.

Newspapers

To keep the Basin's residents abreast of what was happening locally and around the world, the Linkville Star printed its first issue in 1884. Other newspapers were born over the years, including the Klamath Republican (1896), the Evening Herald (1906), and the Morning Express (1907).

As can be seen, numerous newspapers were born, consolidated, changed hands, renamed and closed over the years. In 1920 there were two dailies, the Herald and the Record. The Klamath News began publication in 1923; after 1927, it was printed in the same building as the Herald and they eventually consolidated in 1942 into the single Herald and News.

Radio and Television

By the mid-1920's radio broadcasts from the local station began providing news and entertainment for the people of the Klamath Basin. The first station was KFJI which began broadcasting in 1923 and was later to become KAGO. This was followed in 1948 by KFLW (now KFLS) and by KLAD in 1955. The first television was brought to the City by cable in the mid-1950's, and Klamath's own television station, KOTI, began transmitting from a location on the old Oregon Institute of Technology campus in 1957.

Communications - Current Conditions (1)

Postal Service

The Klamath Falls Post Office has served this area for over one hundred years. It ranks as a first class post office and serves as the sectional center for 16 associate post offices. Contract stations also serve the urban area to make the postal service available to more urban citizens; one major substation is on the Oregon Institute of Technology campus.

The Klamath Falls Post Office has 29 carrier routes: 21 urban, six rural and two box deliveries. These routes serve some 18,397 families and businesses which send and receive approximately 150,000 pieces of mail daily. On the average, 3.5 million pieces go through the post office each month, except in December when the amount about doubles.

Telephone Service

Telephone service in Klamath Falls is provided by Pacific Northwest Bell Telephone Company. It offers a wide range of long distance and local services for home and business. In 1977 there were over 15,300 residential and more than 2,000 business telephone hook-ups in the area, and expansion continues as the area grows.

Upgrading of the area's telephone system was completed in December, 1979, when a new Electronic Switching System (ESS) will go into use. This ESS provides Klamath Falls with the latest advancements in telephone technology and services, including Centrex and such features as call forwarding and three-way calling. Pacific Northwest Bell attempts, through accurate and continuing forecasting of future needs, to provide the Basin with more than the normal requirements of prompt and adequate telephone service.

Newspapers

The Herald and News is a regional publication serving the four-county area of Siskiyou, Modoc, Lake and Klamath Counties. Published six days a week, Sunday through Friday, in 1977 it had a daily circulation exceeding 18,000 and a Sunday dissemination of over 19,000. The Herald and News is continually increasing both its circulation and size: paid subscriptions have increased about 5 percent a year over the past three years, and the physical volume of the paper is averaging from 75 to 100 pages more per month than a year ago.

Radio

Three commercial radio stations, offering five broadcasts (three AM and two FM) serve Klamath Falls. Three are members of the Emergency Broadcasting System and their statistics are as follows.

KAGO has both AM and FM frequency; a power output of 5,000 watts; is received over an area of 150 mile radius; and has secondary power generation capacity. KFLS has AM frequency only, and does not have

secondary power generation capacity. KLAD has both AM and FM frequency; is received over an area of 75 mile radius; and does not have secondary power generation capacity.

Two of the stations, KAGO and KLAD have protection against radiation and KAGO facilities include a bomb shelter.

There is also one small educational station associated with Oregon Institute of Technology. KTEC is an FM station operating at a frequency of 88.1, with a very limited reception range.

Television

Klamath Falls has one local television station, KOTI. The station is a member of the Emergency Broadcasting System. Its frequency is Channel 2, with a power output of 13,000 watts. The reception area is 40 miles with translators at Alturas, Lakeview, and Chiloquin.

Communications - Problems and Future Alternatives (1)

242. Cost for some communications services restricts availability to low-income people; however, communication companies are planning to develop specific programs to address this problem.

243. Expansion in the communications fields will be needed within ten years to accommodate population increases.

244. Cable television will become a major private and personal communication system for the citizen.

Communications - Goals (1)

38. To provide a timely, orderly, and efficient arrangement of communication facilities and services.

Communications - Policies (1)

220. The City will monitor all planning and decision-making processes in consideration of communication impacts, and continually strive toward an effective communications system for the community.

221. Community land use planning will be coordinated with communication agencies to assure the availability of services when needed.

Communications - Implementation Measures (1)

146. The City will support and cooperate with public utilities and private enterprises engaged in communications.

Land Use - History (1)

The town of Linkville was originally platted by City founder George Nurse. The township comprised 40 blocks, stretching east and west from the river to Ninth Street. The town spread across the river in two or three years, and West Linkville was platted and recorded in 1880.

With the advent of the great irrigation project of 1905-06, agriculture became a primary land use in the Basin, and with the new influx of people, the town, now named Klamath Falls, began to grow rapidly. Buena Vista, a section along the east side of the river and lower edge of the lake was added; in 1910, several other residential sections were included--the Lakeview, Nichols, and Hillside Addition.

Klamath Falls expanded considerably during the 1920's when railroad development reached its peak. Little thought had been given to land use planning, as industry, businesses and residences popped up everywhere. This blending caused conflict between use, high cost for development and bad traffic flows.

One conflict was the gridiron street pattern common at the time, which worked fairly well for commercial areas but proved detrimental to residential sections because it encouraged traffic rather than discouraged it; also, the right angle pattern ignored the local topography.

The first zoning ordinance passed in Klamath Falls in 1930 set restrictions on land use within the City limits. As the urban area continued to spread, several small developments formed individual suburban subcommunities, such a Pelican City, Altamont, Wocus, and Stewart-Lennox. Such developments as Sunset Village, Gatewood, and Ferndale have transformed previous farmlands to residential areas.

In 1967 a joint City-County Planning Office was set up to establish local planning control. This joint office was eventually dissolved and the City and County each developed individual land use planning programs.

Land Use - Current Conditions (1)

A land use breakdown in 1970 for the Klamath Basin shows 70 percent in forest lands, 17 percent rangelands, 8 percent croplands, and 5 percent in other land uses. Fifty-five percent of Klamath County lands are publically owned (Federal or State). The large percentage of forest lands in the Basin accounts for lumber and wood products being a major economic force in the area. Commercial forests consist of 2.6 million acres (68 percent of forest lands) and contain approximately 20.8 million board of feet of lumber.

In 1979, the boundary of the City of Klamath Falls enclosed an area (not including lakes or major rights-of-way) of approximately 16 square miles (10,110 acres) with a population of 17,285 or a density of 1,080 people per square mile. This density has decreased from a 1970 density of about 2,500 persons per square mile due largely to the annexation of over 4,000 acres of unpopulated land since 1970. The land consumption rate in acres per person in the U.S. rose from 0.2 acres in 1950 to 0.4 acres per person in 1970. This is lower than the land consumption figure of 0.58 acres per person seen in Klamath Falls.

The updated land use inventory as of October 1979 illustrates in more detail these statistics. The land use plan is shown on the Land Use map.

Land Use Inventory - Developed Land (Oct. 1979)

Use	Acre
Low-density residential	1,102
High-density residential	89
Commercial	260
Industrial	211
Public	2,286
Vacant	5,862
Other	300
Total	10,110

(Land occupied by roads, railroads and rivers is not included).

Since January 1, 1979, four areas have been annexed to the City. These are referred to as Basin View, Geary, Peterson and Suetter. These areas are included in the above acreage totals.

Analysis of current and future land needs in relation to population, housing, and the economy is found in the Urbanization Element.

Land Use - Problems and Future Alternatives (1)

245. Lot patterns and sizes within a large portion of the City have been established by previous development.

246. Greater pressure for centralized commercial and job sites may develop in response to energy and transportation conservation efforts.

247. Continuing the trend of low density development may increase air pollution to the extent auto trips are increased.

248. Low density developments are less cost-effective, have higher energy use, and increase the cost for public services on a per capita basis.

249. Many vacant blocks are being held for investment or retirement income which means long-term vacancy.

250. Vacant, buildable residential parcels are not being developed because the present owners are unable to provide public facilities and services.

251. There is a lack of available commercial and industrial land in the City, if the City is to continue to be the commercial and employment center of the region.

252. Public preference is for single-family housing over multi-family housing.

253. The lack of planning for commercial, industrial, and residential development has led to conflicting land use.

254. A lack of public amenities, such as parks and open space, has occurred in some new developments.

255. Strip commercial activity has been allowed, and causes undesirable visual, air quality, noise and traffic problems.

256. Future development areas with existing City boundaries are scattered.

257. Greater diversity and variety of land uses will be encouraged.

258. Overall, there may be greater restrictions in private use of lands.

DETAILED ASSESSMENT NOTE

ELEMENT: LAND USE

THE CONTENT OF THIS ELEMENT IS SUPPLEMENTED BY THE FOLLOWING DETAILED ASSESSMENT WHICH WILL BE ADOPTED BY REFERENCE WITH THE COMPREHENSIVE PLAN.

CITY OF KLAMATH FALLS MONTHLY LAND USE

INVENTORY REPORT

COPIES OF THIS ASSESSMENT MAY BE AVAILBLE FROM THE ORIGINATING AGENCY OR CAN BE INSPECTED AT THE CITY PLANNING DEPARTMENT OFFICES.

Land Use - Goals (1)

39. To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and action.

40. To preserve and maintain agricultural lands.

41. To conserve forest lands for forest uses.

42. To control urban sprawl and to encourage the extension of public facilities and services into otherwise developable lands within the City.

General

222. Land development will be in a systematic manner which contribute to the efficient use of public facilities, quality of the project, and livability of the community as a whole.

223. Standards for urbanization will encourage flexibility and innovation in development, permitting mixtures of land uses and intensities which contribute to the quality of the community.

224. Public facility capacity and expansion scheduling will be a key factor in land use planning.

225. The appropriate reuse of land which is underdeveloped or where structures are deteriorating will be encouraged.

226. Where conflicting land uses abut, the more intensive land use, or the site being developed, shall be subject to special site development standards designed to enhance the livability and reduce the negative impact on less intensive use.

227. All decisions on proposed land uses within the Urban Growth Boundary will be consistent with the Comprehensive Plan.

Residential

228. Within the urban area, land use policies will attempt to provide a broad range of residential needs by mixing unit types and encouraging innovative development techniques.

229. Residential densities will be based on:

Low - up to five units per net acre;

Medium - up to 14 units per net acre;

High - up to and including 35 units per net acre.

230. The density of residential land uses will be based upon the net land area of the site in conformance with the foregoing density ranges.

231. Residential densities adjacent to major arterials will be increased.

232. Commercial development in residential areas will serve the needs of the respective residential areas and shall meet special site development standards which minimize the negative impact on abutting properties.

233. Core area residential densities will be as high as practical for energy and transportation advantages.

234. Maintenance and improvement of established residential areas will be promoted.

Commercial and Industrial

235. More intensive land uses proposed for established residential areas will be subject to special site development standards which minimize the negative impact on abutting properties.

236. The location of commercial areas on the Comprehensive Plan land use map is intended to be general in nature, and specific designations for commercial areas will be determined by the Community Development ordinance.

237. The central business districts will receive top priority consideration for commercial land uses, with appropriate neighborhood commercial centers supplementing, not detracting from the central business district or conflicting with surrounding residential areas.

238. Strip commercialism will be avoided, due to its adverse effects on traffic, energy, safety, and convenience.

239. Lands designated for industrial use shall be preserved for that use and protected from incompatible uses.

Natural Areas

240. Industrial sites will be designated in consideration of prevailing wind patterns and subsequent potential for wind-entrained particulate or odor problems.

241. Land uses which have undesirable impacts on natural resources will be buffered from such resources whenever possible.

242. Areas within identified floodplains will be limited to agriculture, forestry, parks, recreation, open space, and limited storage uses, unless adequate safeguards are provided to protect life and property involved in other uses.

243. The preservation of significant natural features and open areas will be a major emphasis in land use planning.

Land Use - Implementation Measures (1)

147. Public education and involvement in understanding and revising the goals and guidelines of the Comprehensive Plan will be undertaken periodically.

148. The land use inventory will be continued and the land needs of the area will be reviewed.

149. Site/design review procedures will be provided within the Community Development ordinance.

150. The use of newer, more cost- and energy-efficient building and site designs, such as commom wall construction, cluster development, cooperative condominiums, mobile home parks, and planned unit developments, will be encouraged.

151. The City will cooperate with the County and State to continue to review and update the Comprehensive Plan.

For implementation also see City Code, Chapter 10, Community Development: Article 3, Land Uses.

DESCRIPTION OF LAND-USE DESIGNATIONS

Low-density residential. Principally single-family dwellings occurring up to a maximum of five units per net acre.

Medium-density residential. Combination of single-family dwellings and limited numbers of multi-family dwellings occurring up to a maximum of 14 units per net acre.

High-density residential. Combination of dwelling types emphasizing multi-family dwellings occurring up to a maximum of 35 units per net acre.

Neighborhood commercial. General commercial enterprises operating in a limited scale, compatible with surrounding neighborhood conditions, and intended to principally serve neighborhood residents.

General commercial. General commercial enterprises intended to serve residents throughout the community.

Light industrial. Light industrial enterprises, limited in scale, and conducted principally inside buildings.

Heavy industrial. Large industrial enterprises, unlimited in scale, and conducted both inside and outside buildings.

Public facility. Public or quasi-public facilities generally used by government, non-profit organizations, or large numbers of persons.

Urbanizing. Areas where residential, commercial, or industrial uses may occur, but only in accordance with appropriate environmental protections which are consistent with Plan policies.

Land use designations are generalized allocations to be implemented site specifically by Community Development Ordinance zoning. The Comprehensive Plan text will take precedence over the Plan land use map when conflicts or inconsistencies are apparent.

V. URBANIZATION ELEMENT

Urbanization - History (1)

Klamath Falls spread in several directions over the years--first upward along the shoreline where water transportation was available. Road were impractical since they were mud in winter and dust in the summer. With the advent of technical progress automobiles appeared, roads were paved and the railroad entered the town. The railroad, located in the southeastern portion of the town, became a center for industry; the eastern hills became the locale for residences, and Main Street linked the old with the new.

A rapidly expanding economy with the lumber and agriculture booms in the 1920's increased the population and taxed City facilities to the limit. There was little planning and as the City expanded, the new areas were a hodgepodge of residential, commercial and industrial districts. Streets that were originally neighborhood avenues became major arteries carrying heavy traffic, thus disturbing the remaining residents.

In the 1920's, the City's population tripled from 5,000 to over 16,000. Since that time it has remained relatively static, ranging between 15,000 and 19,000 in the central urban area.

Replatted suburban development, created with little thought for unified services and linked together by a haphazard network of roadways, has created what today is best described as "urban sprawl." Klamath Falls, although not a large metropolis by any means, is a prime example of this fragmentation. It has become a city of contrasts: a western farm town, serving as the economic, industrial and cultural hub of a many-thousand square mile area. Klamath Falls is a small city with big city problems.

Urbanization - Current Conditions (1)

The City of Klamath Falls today has many problems as well as advantages which can be directly attributed to its past history of growth and development. The City consists of a spidery sprawl of land encompassing some 16 square miles and containing a population of 17,285, a population once again increasing after a decade of decrease. Within this urbanized area are also found areas of forest and agricultural land, and some 488 acres of recreational land. The City contains the shoreline of Lake Ewauna, the southern part of Upper Klamath Lake, and the Link River canyon.

Klamath Falls is also an urban center, serving as a major commercial and employment hub for portions of southern Oregon and northern California. Yet the City still retains much of its small town flavor.

Land Needs Analysis

Population

One of the most important features in formulating a comprehensive plan is determining what the future population will be. First, a projection of population using the most reasonable technique must be made for a large area. Then a determination as a matter of policy must be made as to how and where land will be developed to accommodate the needs of the increased population for housing, jobs, recreation, and transportation. That is, population increase must be translated into land acreage needs.

Klamath County, as part of the County comprehensive planning process, has projected population. For the year 2000 a population of 88,910 has been projected for all of Klamath County including incorporated areas. (See population data from the County Plan in the Population Element of the Klamath Falls Plan). A portion of that population will reside and work in the City of Klamath Falls, and a portion will reside in areas surrounding the current boundaries of the City. Determining the land use needs both inside and outside the City constitutes a major point of coordination between the City and the County.

In recent years about 62 percent of the County population has resided in the 'Klamath Falls Urban Area.' This includes the City of Klamath Falls and urbanized, unincorporated areas close to Klamath Falls. The following statistics show growth trends in all areas.

Population Growth

	Klamath County	Klamath Falls Urban Area	Urban as % of County	Klamath Falls
1960	47,500	27,800	58	17,000
1965	48,000	30,000	62	17,500
1970	50,000	32,000	64	17,000
1975	54,400	34,000	62	16,500

Source: Center for Population Research and Census, Portland State University.

These figures illustrate that Klamath Falls and the surrounding urban area is the dominant urban center of the County. It is the most significant source of employment, has the most significant housing stock, and has major public facilities compared to the rest of the County. Based on these historical trends it is reasonable to assume that two thirds of the future increase in County population will reside in the Klamath Falls urban area.

Using the high population projection of 88,910 for Klamath County, the population increase for the County from 1980 to the year 2000 is 29,422. Therefore, two thirds of the increase, or approximately 20,000 people will locate within the Klamath Falls urban area. An increase of 20,000 people is used as a basis for analysis of land needs in the following sections.

Market Factor

Throughout this analysis, land needs are calculated on a basis of land needed for population increase and on a projection of past land use trends. To the figures generated from this analysis is added an additional amount of land so that the market for land is not unduly constrained. A factor of 25 percent is added for each type of land use. Use of this factor is based on research documented in "Urban Growth Boundary Findings", revised November 1978, by the Metropolitan Service District (MSD), Portland, Oregon.

The MSD document analyzes the best available research done to date on the effect of constraining the availability of land on land cost. This research relates to Minneapolis-St. Paul, Minnesota, Salem, Oregon, and a review of vacant land in 58 cities in the United States. The conclusion of this research is equally applicable to any urban land market. This is because the system of private ownership, private purchase and selling, and some degree of public control of land use

through zoning and very limited use of condemnation powers are essentially the same throughout the country. Once the basic demand for land has been established, it is reasonable to assume that an additional percentage of land should be added so land prices are not unduly affected by a limited amount of land. This responds in part to providing for an adequate land base for housing that is affordable by all households in the Klamath Falls urban area.

Residential Land

Overall Housing Needs

Currently, in the City of Klamath Falls there are 4,902 single-family units and 2,380 units in multi-family structures according to the July 1979, "Monthly Land Use and Housing Status Report." This represents a 67/33 percent single-family to multi-family split. Between 1970 and 1977, 454 single-family and 116 multi-family units were built in Klamath Falls for a 80/20 percent split. The land use inventory indicates there are 1,191 acres developed with residential uses (1,102 acres in low density and 89 acres in high density) with a total of 7,282 total dwelling units. The City wide gross density for developed residential land is 6.1 dwelling units per acre.

In the housing element the percent of new housing units needed by plan density and type are analyzed. The conclusions of that analysis are as follows:

Plan Designation	Density Permitted	Percent of New Dwelling Units	
		Single Family	Multi Family
High Density	17		25 (75)
Medium Density	12	15 (25)	10 (25)
Low Density	6	50 (75)	—
Total		65 (100)	35 (100)

This percent distribution is used to calculate the land needed within the Klamath Falls urban area for each of the three residential categories. In order to achieve this percent distribution, it is assumed approximately 72 percent of the population increase of 20,000 or 14,443 will live in single-family dwellings; and

28 percent, or 5,557, will live in multi-family dwellings. It is assumed the average persons per dwelling unit in Klamath Falls for 1978 will continue to the year 2000. The average persons per single-family dwelling is 2.8 and per multi-family dwelling is 2.0. Thus the number of single-family dwelling units needed is 5,158 (or 14,443 population in single-family dwelling divided by 2.8 persons per single-family dwelling).

Similarly, the number of multi-family units needed is 2,778 (or 5,557 population in multi-family dwellings divided by 2.0 persons per single-family dwelling). The ratio of single-family to multi-family dwellings is then 65 to 35 percent which is determined to be appropriate to meet future housing needs as analyzed in the Housing Element and summarized above.

The following calculations of land needed for residential uses are structured on:

a. The Plan categories and corresponding zoning.

b. Land needed for roads in single-family areas.

c. A market factor of 25 percent.

Low Density - Single-Family

Three fourths of the needed single-family houses will be accommodated on 7,000 square foot lots in areas designated Low Density Residential in the Comprehensive Plan. This will require 621 net acres. A gross area of 776 acres will include 20 percent for roads. An additional 25 percent is needed for a market factor which results in a total of 970 acres needed for single-family residential on 7,000 square foot lots. This estimate is for the entire urban area.

Medium Density - Single-Family

One fourth of the single-family houses needed will be accommodated on 5,000 square foot lots in areas designated Medium Density Residential in the Comprehensive Plan. This will require 148 net acres. A gross area of 185 acres will include 20 percent for roads. An additional 25 percent is needed for a market factor which results in a total of 231 acres needed for single-family residential 5,000 square foot lots. This estimate is for the entire urban area.

Medium Density - Multi-Family

One fourth of the multi-family dwellings needed will be developed at an average lot area of 2,000 square feet per dwelling unit in areas designated Medium Density Residential in the Comprehensive Plan. In multi-family areas streets generally are not dedicated,

thus none is accounted for in the needs assessment. An additional 25 percent is needed for a market factor which results in a total of 40 acres allocated for multi-family residential with an average lot area of 2,000 square feet per dwelling in Medium Density Residential areas. This estimate is for the entire urban area.

High Density - Multi-Family

Three fourths of the multi-family dwellings needed will be developed at an average lot area of 1,800 square feet per dwelling unit in areas designated High Density Residential in the Comprehensive Plan. The Plan allows for 35 dwelling units per acre and the corresponding Apartment Residential zone allows for an average lot area of 1,000 square feet per dwelling unit. Experience with the construction of most multi-family developments shows that the maximum density is 24 units per acre or 1,800 square feet of lot area per dwelling unit. This occurs because multi-family apartments over two stories become significantly more expensive. Constrained to two stories generally by cost, combined with parking and lot coverage requirements, multi-family developments have generally been limited to 24 units per net acre--even where the land use regulations permit a substantially higher density. Consequently, 24 units per net acre, or 1,800 square feet of lot area per dwelling is used in calculating land needs for areas designated High Density Residential. Based on 1,800 square feet of lot area per dwelling unit, 2,083 multi-family units will require 86 acres. An additional 25 percent is needed for a market factor which results in a total of 107 acres needed for multi-family units in High Density Residential areas. This estimate is for the entire urban area.

Commercial Land

The need for commercial land is generated by land needed for retail space and for office space.

Land for Retail Shopping

Standards for determining retail shopping land needs are as follows:

Retail Shopping - Standards

1.	Major function	Sale of convenience goods and personal services	Some functions of the Neighborhood Center plus sale of shopping goods (wearing apparel, appliances, etc.)
2.	Leading tenants	Super market and drug store	Variety store and small department store
3.	Location	Intersection of collector streets a/c secondary roads	Intersections of major roads and/or expressways
4.	Radius of service area	1/2 mile	2 miles
5.	Min. population to support center	4,000	35,000
6.	Site area (gross land area)	4-8 acres	10-30 acres
7.	Desirable maximum size of center as percentage of total area served	1.25% (1 acre/1,000 pop.)	1.00% (0.75 acres/1,000 pop.)
8.	Ranges of Gross Floor Area	30,000-75,000 sq. ft.	100,000-250,000 sq. ft.
9.	Number of stores and shops	5-20	15-40
10.	Parking requirements	Parking ratio: 4 to 1 (Parking area is four times gross floor area of building; 400 sq. ft. per parking space) 200-600 spaces	1,000-3,000 spaces

Source: George Nez. Standards for New Urban Development--The Denver Background, as Reprinted in Urban Land, Vol. 20, No. 5 Urban Land Institute, 1200 18th Street, NW, Washington, DC.

With a population increase in the Klamath Falls urban area of 20,000, five New Neighborhood Centers will be needed at 4,000 population per center. If the maximum standard of eight acres per center is used, a total of 40 acres will be needed for Neighborhood Centers. One "Community Center" will be needed for the population increase of 20,000 in the Klamath Falls urban area. If the maximum standard is used, an additional 30 acres will be needed. Thus a total of 70 acres will be needed for retail shopping needs.

Land for Commercial Offices

Commercial office space is in addition to the retail needs. Currently, approximately 40 percent of County's population is in the work force. The urban area's labor force increase in the year 2000 then can be expected to be 8,000. Of that 8,000 approximately 35 percent or 2,800 will require new office space (see section on industrial land need). Assuming an average gross office space of 150 square feet per worker a total of 420,000 square feet of new office space will be needed. Assuming, one story office building that takes one third of a site area, 29 acres will be needed for new offices.

Commercial Land Summary

The following acreage will be needed for commercial land according to the land use designations of the Comprehensive Plan, 50 acres will be needed for Neighborhood Commercial and 74 acres for General Commercial.

	Acres	Plus Market Factor 25%
Neighborhood Commercial	40	50
Community Center	30	38
Office	29	36
Total		124

Industrial Land

The need for industrial land is based on the future industrial employment and acres needed per employee. The distribution of workers by employment category for 1976 is shown in the following table.

Klamath County Employment - 1976

Type	Total Employees	Estimated KF Urban Employees	Percent of Urban Total
Manufacturing - Wood Products	4,360	3,270	21.5
Manufacturing - Food Products	120	90	0.6
Manufacturing - Other	330	248	1.6
Wholesale Trade*	1,420	1,065	7.0
Retail Trade*	2,700	2,025	13.4
Services	2,850	2,138	14.1
Farm	1,250	-0-	
Transportation, Communications Utilities	1,480	1,110	7.3
Contract Construction	630	472	3.1
Government	4,319	3,239	21.3
Finance, Insurance, Real Estate	690	518	3.4
Other	1,370	1,028	6.7
Total Employment	21,519	15,209	100.0

Source: For total employees, State of Oregon Employment Division, "The Klamath County Economy: Status and Prospects," May 1977 for total employees column.

*The source lists wholesale and retail trade combined. It was assumed that one third is in wholesale trade and two thirds in retail, based on Portland area data.

For the purpose of this analysis three quarters of the urban type (non-farm) employees are assumed to work in the Klamath Falls urban area. Previously in the population section, it is indicated about two thirds of the County's population resides in the Klamath Falls urban area. It is assumed an additional 8 percent live outside the Klamath Falls urban area but work within it.

Previously it was determined that there will be 8,000 additional workers in the Klamath Falls urban area by the year 2000. The percent distribution for 1976 by employment type is assumed to remain consistent, resulting in 13.4 percent of the new workers being employed in retail trade. Thirty-five percent will be office type workers. These figures assume that all the employees in finance, insurance, real estate and services, and half of the other three categories are officer workers. Percent distribution of new workers by employment type are shown below.

The remaining employment is distributed between the Light and Heavy Industrial categories. Half of wood products is in Light and half in Heavy Industrial. All of food, manufacturing, and other is assumed to be Heavy Industrial. Wholesale trade is assumed half Light and half Heavy Industrial. Half of transportation, communications and utilities are assumed to be Heavy Industrial. All of contract construction is assumed to be Heavy Industrial. One quarter of government is Light and one quarter is Heavy industrial as with other.

The 8,000 new employees by the year 2000 are distributed among the Light and Heavy Industrial categories according to the percent distribution discussed above. The Industrial Acres Needed table summarizes this data. Employees per acre are derived and adjusted from the document "Urban Growth Boundary Findings" revised November 1978 by Metropolitan Service District, Table 5. It is preferable to use employees per acre by industry category for Klamath Falls. However, this data is not readily available. For this reason, the ratios documented for another urban area are used. The difference is probably not significant. This is in part substantiated by the relationship of population and existing industrial uses in Klamath Falls. Current population is approximately 17,000 and the Land Use Inventory indicates 211 acres are currently in industrial use. The ratio is 12.4 acres of industrial land for each 1,000 persons. This ratio for Klamath Falls is probably somewhat lower than the ratio for the entire Klamath Falls urban area because many of the industrial uses in the unincorporated urban area are somewhat more land extensive than inside the City. If the ratio were 15 acres per 1,000, and the population increase of 20,000 is applied, then 300 acres would be needed. This approximates the land need calculated in the table below. Before the market factor is applied, Light Industrial acres totaled 63, and Heavy Industrial 226, for a total of 289 acres, or only 11 acres less than 300 calculated by the other method. The acres needed are derived by dividing new employees by employees per acre. With the 25 percent market factor the total needed for Light Industrial is 79 acres and for Heavy Industrial 283 acres.

Employment in Retail, Office and Industrial Categories
Percent Distribution

	Percent of Urban Total*	Retail	Office	Industrial Light	Industrial Heavy
Manufacturing - Wood Products	21.5			10.7	10.8
Manufacturing - Food	.6				.6
Manufacturing - Other	1.6				1.6
Wholesale	7.0			3.5	3.5
Retail Trade	13.3	13.4			
Services	14.0		14.0		
Transportation, Communications, Utilities	7.3		3.7		3.7
Contract Construction	3.1				3.1
Government	21.2		10.6	5.3	5.3
Finance, Insurance, Real Estate	3.4		3.4		
Other	6.7		3.4	1.6	1.7
Total	100.0	13.4	35.1	21.1	30.3

*From previous table

Industrial Acres Needed by Year 2000

	New Employees Industrial		Employees Per Acre		Acres Needed	
	Light	Heavy	Light	Heavy	Light	Heavy
Manufacturing - Wood Products	860	860	30	18	29	48
Manufacturing - Food		48		17		3
Manufacturing - Other		128		13		10
Wholesale Trade	280	280	15	5	19	56
Transportation, Communications, Utilities		296		48		6
Contract Construction		248		36		7
Government	424	424	48	5	9	85
Other	132	132	24	12	6	11
					63	226
	Market Factor				x1.25	x1.25
	Total with Market Factor				79	283

Land for Public Facilities

The inventory of existing land uses indicates 2,286 acres in public use. A significant part of that acreage is in uses that are very unlikely to be needed or duplicated in the future. They are as follows:

	Acres
Lake Ewauna	188
Kingsley Field	1,104
Moore Park and Adjacent Land	448
Total	1,740

Of the total 2,286 acres only 546 are in uses that are likely to be needed in the future. The acreage in all other existing developed private land uses is as follows:

	Acres
Low Density Residential	1,102
High Density Residential	89
Commercial	260
Industrial	211
Total Private	1,662

The public adjusted acres is 33 percent of the total private (or 546 divided by 1,662). In previous sections the analysis of private lands indicates the following acreages are needed:

Plan Category	Acres Needed
Low Density	970
Medium Density	271
High Density	107
Commercial Neighborhood	50
Commercial General	74
Light Industrial	79
Heavy Industrial	283
Total	1,834

The land needed for public use is 605 acres (or 33 percent of 1,834 acres). A market factor of 25 percent is applied, resulting in a total of 756 acres needed for public uses.

Allocation of Vacant Land By Comprehensive Plan Category

Summary

The City of Klamath Falls land use inventory tabulations show that there are 4,248 acres of developed land and 5,862 acres of vacant land within the City. Those 5,862 vacant acres are allocated by comprehensive plan category as shown in the land use table below. The relationship of the vacant lands to future population and new dwelling units is discussed in the following section.

New Dwellings and Population Increase

If all the vacant land with plan designations for residential use within the City were built out, a population increase of 30,172 could be accommodated. That population is calculated below based on the number of single-family and multi-family dwelling units resulting from the development of vacant lands and the average persons per household for Klamath Falls for 1978.

Area	Single-Family		Multi-Family		
Geary	1,212		165		
Teasdale	1,365		271		
Basin View	1,600		800		
Remainder of City	2,971		3,843		
Total Dwellings	7,148		5,079		
Persons per Dwelling Unit*	x2.8		x2.0		
Persons	20,014	+	10,158	=	Total 30,172

*Source: Center for Population Research and Census. Portland State University.

Much of the vacant land in the City is in three areas recently annexed and referred to as Geary, Teasdale, and Basin View. Each of these three areas have specific development proposals. The development proposals for these three areas which correspond to the Comprehensive Plan map land use designations are used for determining the number of dwelling units and population generated.

Land Use - City of Klamath Falls
(In Acres)
October 1979

Plan Category	Developed Land	Allocated Vacant Land	Limited Development*
Low Density Residential	1,102	2,425	73
Medium Density Residential	--	271	30
High Density Residential	89	211	10
Neighborhood Commercial	260	136	
General Commercial		65	
Light Industry	211	149	
Heavy Industry		331	
Public Facility Including Schools	2,286	678	
Other	300	--	
Urbanizing	--	1,595	1595
Total	4,248	5,862	

*See section on Buildable Lands Inventory.

Vacant Residential Land
Comprehensive Designation

Area	Low Density	Medium Density	High Density	Sensitive Development
City Total	2,425	271	211	1,595
Geary	-277	-90	-72	-104
Teasdale				-935
Basin View	-1,483		-70	
Remainder of City	665	181	69	556

Note: Geary and Basin View developments also have land designated for non-residential use which is not subtracted out above.

Residential Land Use Allocation

The following is a calculation of dwelling units for vacant acreage remaining after the three "major developments" have been subtracted out.

	Low Density	Medium Density	High Density
Gross Vacant Acres	665	181	69
25% for Roads and Utilities	-166	-45	Not Applicable
Net Acres	499	136	
Comp. Plan Density	x5	x14	x35
Total Dwelling Units	2,495	1,904	2,415

	Total			
Single-family	2,971	2,495	476	
Multi-family	3,843		1,428	2,415
Total	6,814			
Assumed single-family to multi-family ratio for purposes of analysis.		100/0	25/75	0/100

Major Development Proposals

Three major development proposals associated with recent annexations have specified the densities and number of dwelling units. These densities and dwelling units of the development proposals have been used for calculating the dwelling units and population. For each of these three areas, the acreages have been subtracted from the total vacant acreage as indicated on the chart Major Development Proposals. These three areas are separated from a substantial portion of the vacant land in Klamath Falls. The number of dwelling units in the development proposals are consistent with and correspond to the Comprehensive Plan designations.

Buildable Lands Inventory

Land that is vacant and allows residential development is considered suitable for development with the following exceptions. The Buildable Residential Land Map illustrates this information. The acreages allocated are discussed under the land use allocation. Land that have limitations to development have policies regarding review of development proposals which limit construction but do not completely preclude development. These policies are in the Land Element. The land is buildable but only in a limited way, depending on how policies are applied. The lands have land use designations that permit development but the policies of the Land Element are an "overlay" control. Exceptions where there are limitations to development are as follows:

a. All areas designated "Urbanizing" on the Comprehensive Plan Map are suitable for development but may have special constraints due to the natural characteristics of the land (slope, drainage, soils, etc.) These are explained in the section on Allocation of the Urbanization Element.

b. A 73 acre area around Mountain View Boulevard is vacant and is designated Low Density Residential, but has steep slopes.

c. An area around Riverside Street, west of the north end of Lake Ewauna has vacant land that will be difficult to develop. There are about 10 acres designated High Density and 30 acres designated Medium Density.

d. An area in the Basin View Development has steep slopes and is designated Public Facilities. It probably will be kept in its natural state.

Areas b, c and d are shown on the Development Constraints Map. Other areas indicated on that map are designated "Urbanizing" on the Plan Map or are developed. All of the other vacant lands are available for development if necessary public services can be provided. See the Buildable Residential Lands Map for location of buildable residential land. It should be noted that residential plan categories correspond directly to zones of the Community Development Ordinance.

Comparison of Land Needed and Land Allocated

Generally the required acreage for the urban area documented in the Land Needs Analysis is less than the vacant land allocated for the City on the Comprehensive Plan map. A comparison by Plan Category is shown below. This characteristic is explained by the great amount of vacant land inside the City boundaries, which provides a land supply exceeding the total needs of the entire urban area. The dwelling units and population that result from allocation in the Comprehensive Plan are about 50 percent greater than the amount determined from the needs analysis. A numeric comparison between population and dwelling units which can be accommodated within the City, versus the total urban area needs is shown below.

All of the land allocated in the Klamath Falls Comprehensive Plan is within the City limits. Because the City is a provider of urban services, the land allocated is considered available for urban level development over the long term, exceeding 20 years. Land will be developed as public facilities can be extended and environmental protection policies can be met. Nearly all of the future land needs for the Klamath Falls urban area can be accommodated within the City of Klamath Falls.

Comparison of Land Need and Land Allocated in the Comprehensive Plan - In Acres

Comprehensive Plan Land Use Category	Land Needs Analysis	Vacant acres Allocated in the Comprehensive Plan	Limited Development
Low Density Residential	970	2,425*	73
Urbanizing	--	1,595*	1595
Medium Density Residential	271	271	30
Single-Family 231			
Multi-Family 40			
High Density Residential	107	211**	10
Commercial			
Neighborhood	50	136	
General	74	65	
Light Industrial	79	149	
Heavy Industrial	283	331	
Public Facilities	756	678	
Total	2,590	5,862	

*See discussion under Buildable Land Inventory for explanation of limited development.

Comparison of Dwelling Units and Population in Needs Analysis With That Allocated in the Comprehensive Plan

	Allocation in Comprehensive Plan
Dwelling Units	
Single-Family	7,148
Multi-Family	5,079
Population in	
Single-Family	20,014
Multi-Family	10,158
Total Population	30,172

Land Need Analysis

- Assumes County population projection of 88,910 for year 2000.
- County population increase would be 29,422.
- 2/3's is assumed to locate in Klamath Falls urban area for an increase of 20,000 people.

Population in	
Single-Family Dwellings	14,443
Multi-Family Dwellings	5,557
Total Population	20,000
Dwelling Units	
Single-Family	5,158
Multi-Family	2,778

Coordination with the County

The work completed in this element represents the City's analysis of lands needed for urbanization and the City's concept of where the Urban Growth Boundary should be located. The final boundary shall be mutually agreed upon by the City and the County. A proposed Urban Growth Boundary is shown on the Urbanization map.

Urbanization - Problems and Future Alternatives (1)

258. Current farming and agricultural operations are extremely susceptible to development pressures for conversion to residential and other urban uses; therefore, restrictions on the use of agricultural lands for urbanization may be increased.

259. Farming operations may be incompatible with residential or other urban uses (noise, odor, machinery, crop damage, trespass).

260. Urban sprawl and leap-frogged development has created considerable conflict between rural and urban land uses and inreased facility and service costs. To relieve the pressure, several "satellite" small towns might be developed on the periphery of the larger urban area as the population increases in these unincorporated areas.

261. Most citizens prefer a low-density, low population growth pattern, but do not want the taxes necessary to support the services for this type of development.

262. The population in unincorporated areas surrounding the City cause a burden on services supported and provided by the City.

263. Less urbanization encroachment onto agricultural lands will occur in areas lying south and east of the City.

264. There is sufficient vacant buildable land within the City limits to accommodate all the residential, commercial, industrial and public lands needed for the entire Klamath Falls urban area.

Urbanization - Goals (1)

43. To provide an orderly, timely, and efficient transition from rural to urban land uses.

Urbanization - Policies (1)

244. In-filling of developable lands will be encouraged to minimize sprawl and take advantage of existing facilities and services.

245. Conflicts between urban and rural uses will be minimized by proper land use planning and restrictions.

246. The creation of urbanization controls, in particular the Urban Growth Boundary, is based on: the carrying capacities of natural resources, projected population growth, economic expansion, location and capacities of public facilities and services, existing land use patterns, projected land use needs, and estimated social, economic, and energy factors, in coordination with the County.

247. Since the land needs analysis indicates demand for less acreage than that allocated according to the Comprehensive Plan, it is a matter of policy whether the additional land is to be available for the designated uses over the long-term.

248. The existing imbalance of predominate southern and eastern urbanization, with its adverse effects on facilities and services, transportation, and energy consumption, will be corrected by promotion of urbanization to the north and west, thereby establishing geographically a "balanced" urban form.

249. The expansion of public facilities and services will only occur within the Urban Growth Boundary and in accordance with the Comprehensive Plan.

250. The City will coordinate land uses inside and outside the Urban Growth Boundary with the County.

251. The lands designated as exclusive farm use within the Urban Growth Boundary which abut urban and urbanizable lands will not be subject to redesignation for urban purposes until a public need for urbanization has occurred sufficient to justify redesignation. The value of farm and forest lands as open space will be a consideration in any redesignation.

252. Conversion of urbanizable land to urban uses will be based on consideration of:

- Orderly, economic provisions for public facilities and services;
- Availability of sufficient land for the various uses to enhance choices in the market place;
- Development of urban areas before conversion of urbanizable areas.

Urbanization - Policies (2)

253. Future urban development will be contained within the geographical limits of the Urban Growth Boundary. Klamath County and Klamath Falls will jointly develop and adopt specific land use policies related to the urbanization of land within the urban area.

Urbanization - Implementation Measures (1)

152. Public education and involvement in the use and effect of the Urban Growth Boundary will be supported.

153. Coordination of comprehensive planning with State and County officials will be promoted.

154. The use of innovative methods of multiple use developments which allow a higher density population around core commercial and service areas will be encouraged.

For implementation also see City Code, Chapter 10, Community Development: Article 4, Boundary Changes.

Livability - History (1)

From the approximately 285 people here in 1883, the population of the urban area has grown to over 35,000 today, making Klamath Falls the fifth largest urban area in the state.

Yet the City retains its small town flavor. Wildlife nibble at City gardens, and laws have been set up to prohibit horses on sidewalks or herds of cattle on Main Street.

The projection for 1980 is a City population of 17,000; however, the July 1, 1977, Bureau of Census data show a City population already exceeding the 1980 projection by 285 people (17,285 population). If this growth rate is sustained, the City will reach 19,000 by 1980.

Since 1970, the rate of population increase in the entire state has been twice as great as the national average, two-thirds of this growth being a result of in-migration.

Population trends from 1900 to 1970 moved from rural to urban; people left farms to enjoy the greater employment opportunities, higher wages and cultural advantages of city life. Since 1970 non-metropolitan counties have been growing at a faster rate than metropolitan counties, indicating a reversal of the trend toward urbanization. Slightly over 40 percent of the growth in Oregon's incorporated areas during the eight-year span of 1970-77 was in cities with populations between 5,000 and 25,000.

Many factors are influencing this turnaround in the direction of migration patterns. Sociological trends, economic changes (less gap between family incomes in urban versus rural areas), improved transportation, increased industry and manufacturing in rural areas, and retirement to non-populated areas all contribute to the reversal trend.

Problems and Potentials

The City of Klamath Falls is a prime example of this quality of livability that people are seeking. The area offers education from nursery school through a four-year college, recreation ranging from skiing and winter sports to fishing, hunting, hiking, and extensive water-related activities. Culturally there are local symphonies and theater groups; larger groups tour through the area, and the Oregon Shakespearean Festival and the Britt Music Festival are only a one and one-half hour drive away. Also, within short distances are such scenic splendors as Crater Lake and the Lava Beds National Monument, as well as the High Cascades to the west and the desert to the east.

Services are generally most adequate. Water is plentiful and potable without extensive treatment; collection services for sewer and solid waste can serve an expanding population. Retail trade is expanding to keep pace with the area's growth.

The energy potential for the Basin is great. Solar energy is waiting to be used and the geothermal possibilities are just beginning to be developed. Although Klamath Falls is geographically isolated, its communication media keep citizens informed of the rest of the world, and the airlines, railroads, and highways provide easy access out of the Basin. The health and safety of the populace is most adequately served by the various organizations and institutions situated here.

Housing and transportation are two problem areas: low-income housing is scarce and local mass transportation is nonexistent. The economy at present has a limited diversity, but that is changing as industries other than wood products are locating in the area. However, many of the people in-migrating to the Klamath Basin are doing so because of the clean air, adequate sunshine (265 days per year), open spaces, and excellent facilities and services rather than any specific job opportunities. Primarily they come for a better place to live; employment opportunities take second priority.

The people of Klamath Falls have always had a conservationist outlook. The area has many natural resources and efforts have been made not to disrupt them. Currently feasibility studies are being done on the best way to retard the eutrophication process taking place in Upper Klamath Lake. City ordinances from as far back as the 1920's have helped to "clean up" the air and many other environmentally directed actions are being practiced. This Comprehensive Plan is one of those actions. Proper land use and adequate provision of facilities are helping to make Klamath Falls one of the best places in Oregon to live.

Livability - Problems and Future Alternatives (1)

265. There is no detailed inventory of livability indices and no concentrated effort to monitor and protect those that are endangered.

266. There is a possible need for a community civic center which would function as a focus for urban life and citizen needs.

267. Each neighborhood area has its own concept of its livability, and each of these must be reconciled for the benefit of all.

268. More emphasis may be placed on intangible qualities of community life, such as privacy, beauty, and aesthetics.

269. Detailed efforts to weigh environmental and economic consequences of growth and development will be considered.

270. Change in economic standard of living will alter concerns for livability.

Livability - Goals (1)

44. To protect and enhance the quality of the environment so Klamath Falls retains its appeal as a good place to live.

45. To act as a leader in metropolitan affairs, recognizing the differences between problems suitable for City action alone and those requiring cooperative intergovernmental action.

46. To provide long-term community stability.

Livability - Policies (1)

254. Allow growth to occur as naturally as possible without undue restrictions, or conversely, aggressive promotion.

255. Support outlying satellite communities (Midland, Keno, Merrill) in their efforts to retain identity and autonomy.

256. Facilities and services will be expanded to supply new public or private development without adversely affecting existing residents or businesses.

257. To establish a development process which evaluates and locates development projects in terms of their scale and related community impacts and weighs the costs of development versus returns in livability.

258. Various criteria will be used to evaluate livability including: privacy, attractiveness, aesthetic contribution, and neighborhood character.

259. Public and private actions will result in a net benefit for existing City residents and will contribute to the improvement of the local economy.

Livability - Implementation Measures (1)

155. Public education and involvement in identifying and protecting the area's livability will be supported.

156. New alternatives for the urban area which will balance costs, economic gains and private needs against citizens' livability will be reviewed and developed.

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