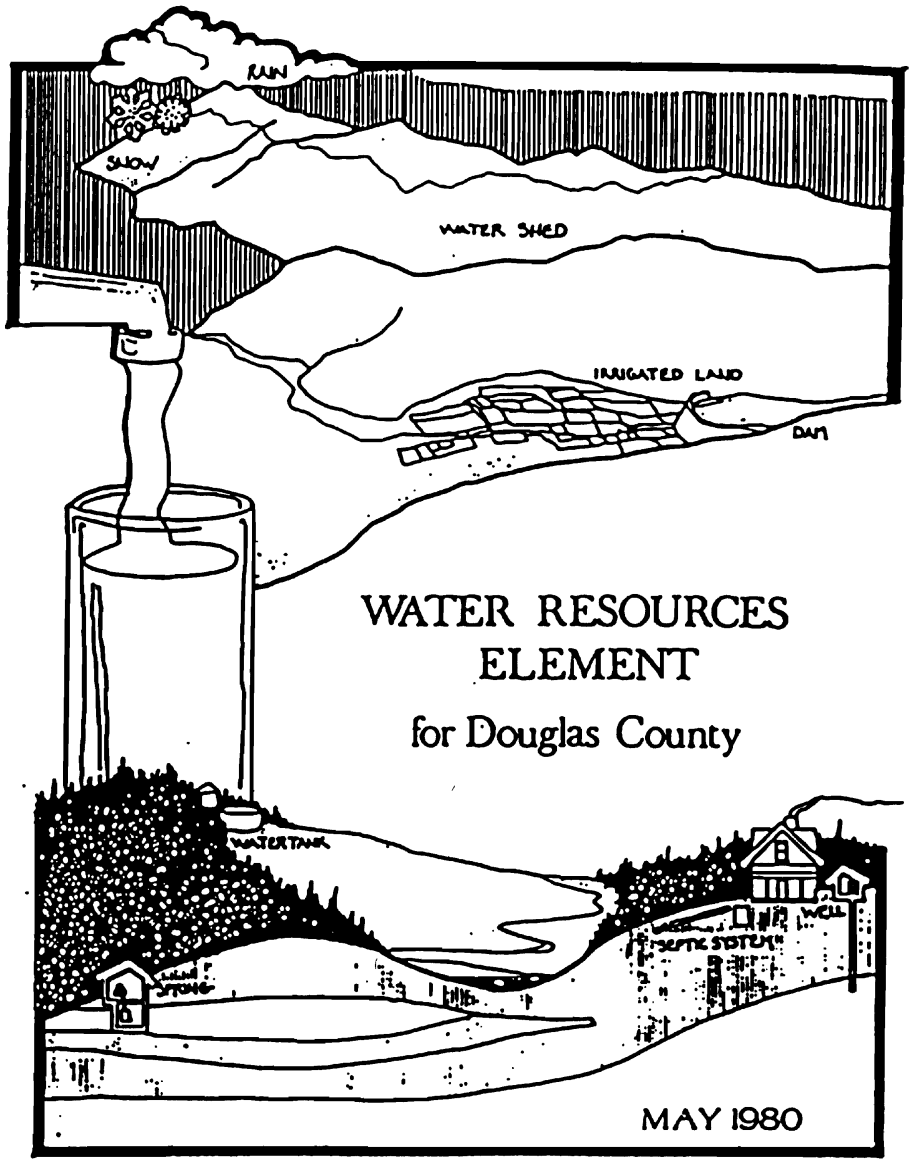


WATER RESOURCES ELEMENT

for Douglas County

LATEST REVISION:
JUNE 1989

WATER RESOURCES

INTRODUCTORY SUMMARY

THE PURPOSE OF THE WATER RESOURCES ELEMENT

Water resources are a vital part of the economy and lifestyle in Douglas County. The Water Resources Element assesses both surface and subsurface water sources in order to evaluate how an ample supply of high quality water can be obtained for present needs and future growth. This Element addresses, in part, Statewide Planning Goals 5 and 6.

WHAT DO GOALS 5 AND 6 REQUIRE?

Statewide Planning Goal 5 requires that natural resources be protected for future generations in addition to promoting healthy and visually attractive environments. This protection is extended to fish and wildlife areas and habitats as well as water areas, wetlands, watersheds, groundwater resources and scenic waterways.

Statewide Planning Goal 6 requires that water quality be maintained and improved by assuring that future development, in conjunction with existing development, does not violate state or federal water quality statutes, rules and standards.

RELATIONSHIP TO SUPPORTING DOCUMENT

The findings contained in this Element of the Comprehensive Plan have been derived from the "Douglas County Water Resources Management Program" which is the overall guiding document for the development, enhancement, and protection of water resources in Douglas County. That document should be consulted for specific details related to water resources management in Douglas County. The water resource findings and policies contained in this section of the Comprehensive Plan are designed to deal with land use issues related to the implementation, in part, of Statewide Planning Goals 5 and 6. (Revised 6/28/89)

WHAT IS INCLUDED IN THE WATER RESOURCES ELEMENT?

The Water Resources Element consists of: (Revised 6/28/89)

1. An introductory section describing important issues affecting the Umpqua River Basin.
2. A detailed description of the six major sub-basins with findings addressing surface water, groundwater, lakes, current and future water use, and alternatives to meet future demand.
3. Land and water use policies directed toward specific water resource issues and concerns.
4. Maps describing the various sub-basins as well as potential and existing water impoundment sites.

WATER RESOURCE ISSUES

SURFACE WATER QUANTITY

The Umpqua River Drainage Basin covers an area of approximately 4,560 square miles and the boundary of the basin is nearly coincidental with the boundary of Douglas County.

In general, future needs occurring along the North Umpqua, Mainstem Umpqua and Smith River may be met from unregulated streamflows. However, many of the Umpqua Basin streams are oversubscribed and are in need of augmented flows to satisfactorily meet the needs of all consumptive and nonconsumptive water uses. A number of municipalities and group water systems have unreliable water supplies through the summer irrigation season. Nearly every year water supplies are administered by the Umpqua Basin Watermaster. Deficiencies are greatest in the South Umpqua, Myrtle Creek, Sutherlin Creek, Calapooya Creek and Deer Creek sub-basins. (Revised 6/28/89)

Due to the geology and topography of Douglas County, high winter rainfall average in many areas of the County is frequently lost to surface flows, and summer flows are low as they depend on groundwater discharge which varies according to the basin geology. Because of the seasonal pattern of rainfall it was determined that storage is the most feasible method for meeting the major water demands forecast for the County.

Storage

Advantages of the storage alternative include the provision of reliable water supplies, the improvement of instream water quantity and quality and the potential use of impoundments for flood control, power generation and recreation. In fact, given the magnitude of the County's water needs, storage of water in impoundments is the most feasible means of satisfying the projected needs.

The major disadvantage of this alternative is the heavy capital investment and debt financing required for construction of dams. In some of the County's sub-basins, these costs may be more than local government or private developers are willing to pay. In such instances, unless outside funds are made available, the other alternatives, such as developing groundwater, conservation and/or limiting growth could be considered.

Possible dam and reservoir sites exist in most of the sub-basins in the County. Literally hundreds of possible sites have been analyzed over the years. The factors considered in these evaluations included service area, storage volume, hydrology, economics and environmental concerns. Based on these studies, the County has compiled a map of Potential Water Impoundment Sites, indicating those sites which the County finds are potentially the most suitable for water impoundment. (Revised 6/28/89)

The County's inventory and map of potential water impoundment sites does not include sites for individual or small group water impoundments of less than 1000 acre feet. Such sites are too numerous to inventory adequately. Impoundments with less than 1000 acre feet of storage can provide water for agriculture, recreation and fish rearing for an individual or small group. Impoundments of less than 1000 acre feet are also used by the timber industry for fire control and log storage.

The decision to limit detailed water impoundment planning to impoundments of 1000 acre feet or more is also supported by the County's inventory of lakes, ponds and reservoirs. This inventory indicates that almost all existing individual or group impoundments are less than 1000 acre feet in size. Furthermore, the identified uses of these impoundments are accessory and necessary to the uses permitted in resource zones, and therefore are also considered to be permitted uses within the resource zones.

As part of the County's ongoing planning process, the quality of alternative inventoried potential water impoundment sites will be evaluated by the Douglas County Water Resources Advisory Board. The Water Resources Advisory Board will also review and provide recommendations in response to proposals to construct a particular water impoundment. As a result of such evaluations, the alternative sites found to be less suitable, not needed or otherwise not feasible, will be removed from the Potential Water Impoundment Site Inventory and map. If additional potential sites are identified by the Advisory Board to meet anticipated needs, they will be added to the potential Water Impoundment Site Inventory and map. As alternative sites are chosen as necessary and most suitable for future development as water impoundments, they will be designated as public/semipublic on the Comprehensive Plan and placed in a water impoundment zone.

Potential Water Impoundment Site Mapping

In an effort to establish the boundaries of the potential water impoundment sites and identify the impact area, these sites have been mapped using a contour map at a 1" = 1 mile scale. The dam heights were derived from various studies and from the County Engineer. The sites have been mapped using the top of dam height plus 20 feet. The top of dam height would provide the maximum pool area and the additional 20 feet would provide control access around the reservoir. An additional area has been included to provide for the dam and associated uses. This additional area is equal in width to the dam and extending downstream one half mile and has been mapped as potential impoundment site to provide for staging area, power house, fish facilities, spillway and other associated uses. The boundaries of potential impoundment sites may be amended as specific studies are developed providing more detailed information. The accompanying maps are the best attempt with current knowledge. If questions arise regarding the exact location of a potential impoundment boundary, they shall be referred to the County Engineer for a determination.

Potential Conflicts

The statewide planning goals suggest that reservoir sites should be identified and protected against irreversible loss. Since all the identified potential impoundment sites are located entirely within designated resource areas, with the exception of the Elk Creek site (located south of Tiller), these resource designations and zones were analyzed to determine which uses would conflict with water impoundment sites and possibly make development of such resource difficult or impossible to realize. Because resource designations and zones allow a minimum of conflicting uses, they should be applied to potential impoundment sites as a primary designation until such time that a site is selected for construction or deleted from the inventory. After selection, the appropriate exceptions to the planning goals will be taken and a public/semipublic designation and water impoundment zone applied to the site limiting any conflicting use. (Revised (6/28/89)

In reviewing the various resource zones for conflicting uses, several were identified. Permitted uses which would cause conflicts with eventual water impoundment use included resource related single family dwellings, land divisions, churches, schools, and utility facilities. Several conditional uses were also identified as creating potential conflicts such as commercial activities in conjunction with agriculture, golf courses, feedlots, non resource related single family dwellings and solid waste disposal sites.

These conflicting uses can be categorized as having adverse economic, social or environmental consequences. Uses which require capital investment in a structure, or increase the density through division make the acquisition of the resource more difficult. The cost of improvements eventually becomes prohibitive and the number of owners makes negotiations more difficult. Owners are less likely to be favorable to acquisition once considerable time and capital has been invested in development improvements. There are the social costs of relocating families and perhaps disrupting a rural community. Rural housing in the vicinity may not be able to absorb those displaced who wish to remain within a certain community. Divisions eventually increase development as new owners often wish to build new houses and invest in other improvements. The increased density of ownership and capital investment will eventually destroy the value of the site for water impoundment use, as it becomes virtually impossible to acquire.

Most identified potential impoundment sites already have dwellings associated with a permitted use located on them, and some impoundment sites include undeveloped parcels for which a permit could be obtained to construct such a dwelling. To restrict dwellings on existing parcels could remove a parcel from a high level of management as the owner could not be near the resource activity. Since only a minimal number of parcels in identified potential water impoundment sites would qualify for additional dwellings, it is felt the adverse impact on the owner and resource use of land would be greater than on future use of the site for water impoundment. Therefore, the development of existing parcels in conjunction with resource use would not prohibit the site from being used for a water impoundment, although such use would be somewhat more costly. Divisions, however, would intensify development enough to have a significant impact on future acquisition for water impoundment.

Activities such as feedlots and solid waste disposal sites would have major negative environmental consequences on potential water impoundment sites which could disqualify them from future use as water impoundments because of adverse effects on water quality. There are numerous areas throughout the County which could support such activities without endangering the viability of the potential impoundment site. Because there are other alternatives which could provide such uses, these conditional uses should be restricted from potential impoundment sites.

Based on the analysis of the conflicting uses and the resource value of the identified potential impoundment site, it is apparent that both are important. Such uses should be balanced to allow some conflicting uses in a limited way that would still protect the resource site. Therefore, divisions and conditional uses which require substantial structures should be restricted from potential water impoundment sites. In addition, those activities having a major negative environmental impact should also be restricted. However, nonintensive activities not requiring major structures, and single family dwellings in conjunction with a permitted use should be permitted.

Water Impoundment Sites

Six major water impoundment sites have been developed in Douglas County to serve the County's water needs. In their chronological order of development they are Plat I Reservoir, Cooper Creek Reservoir, Ben Irving Reservoir, Win Walker Reservoir, Yoncalla Reservoir, and Galesville Reservoir

Plat I Reservoir was constructed in 1967 to provide, as its primary purpose, flood protection to the City of Sutherlin and to the agricultural lands above and below Sutherlin. Water is also stored for irrigation purposes and distributed to an estimated 349 acres of farmland. Recreation uses were later developed including water-skiing, boating, fishing, swimming, and hunting.

Cooper Creek Reservoir was constructed in 1970 for the primary purposes of flood protection to the City of Sutherlin, recreation, and municipal and industrial water supply.

Ben Irving Reservoir was constructed in 1980 for the primary purposes of irrigation, municipal use, and stream enhancement. Recreation is a secondary use. The production of power is a potential secondary use.

Win Walker Reservoir was constructed in 1982 on the west fork of Canyon Creek. Its primary purpose is to serve municipal needs of the City of Canyonville.

Yoncalla Reservoir was built in 1982 to serve the municipal water needs of Yoncalla. It is an earthen dike reservoir and is filled by pump from Adams Creek.

The Galesville water impoundment was built in 1985 to serve the water needs of south Douglas County. The Galesville site for a Cow Creek Sub-Basin Water Impoundment was approved by action of the Douglas County Board of Commissioners on July 23, 1982, after quasi-judicial hearing before the Douglas County Hearings Officer. The Findings of Fact and Decision for this action provide the compelling reasons to support taking exceptions from the provisions of Goal 3 (agricultural lands) and Goal 4 (forest lands) to justify the long-term removal of 920 acres of agricultural and/or forest land from direct farm and timber production (pages 17 through 182 of Findings of Fact and Decision Cow Creek Sub-Basin Water Impoundment, July 23, 1982). The impoundment at Galesville consists of a 42,225 acre foot reservoir, a 158 foot high concrete dam, a concrete lined spillway with a capacity of 40,940 cfs (and a discharge rating of 31,750 cfs at the Probable Maximum Flood (PMF) elevation of 1906.3), multiple-level outlet works, fish capture and release facilities and hydro-electric power generation facilities. Recreation facilities have also been constructed. The impoundment's primary purposes are providing water for irrigation, municipal and industrial use, and stream enhancement for fish. Flood control, hydro-electric power generation, and recreation are secondary purposes.

SURFACE WATER QUALITY

Major water quality problems occur in those streams that have low flows and pass through areas where man's activities are concentrated. In conjunction with seasonal low flow problems, stream quality is greatly degraded by high water temperatures which are common in the mainstream Umpqua River system and tributaries from June through October.

Coliform standards are occasionally exceeded during the dry weather period in the North Umpqua River, mainstem Umpqua River, South Umpqua River, Cow Creek, and Calapooya Creek. However, the MPN coliform standards are exceeded, on a year-round basis, in the South Umpqua River near Roseburg. The South Umpqua River is identified as a state "hot spot" area for several types of nonpoint pollution problems such as streambank erosion, sedimentation, excessive water withdrawal and elevated water temperatures.

Overall, the industrial waste sources in the Umpqua Basin are currently under satisfactory treatment and control.

GROUNDWATER

Groundwater quantity and quality varies greatly throughout Douglas County. Excessive hardness and iron levels are the most common quality problems.

Groundwater in Douglas County is the primary source for rural domestic use; however, groundwater supplies in interior Douglas County will not support urbanizing areas or large amounts of agricultural irrigation. Due to the rural nature of the County, groundwater will continue to be predominantly needed for the scattered rural domestic demand from wells.

There is an excellent potential for expanding water supplies in the coastal areas due to large amounts of groundwater in the sand dunes.

WATER RESOURCES FINDINGS (Revised 6/28/89)

GOAL REQUIREMENTS

1. Statewide Planning Goal 5 requires that plans must include the location, quality and quantity of the water resources and that conflicting uses for the resources be identified.

2. The goals require the County's policies on water resource management and its land use designations to be based on the inventory of water resources and identified issues. Uses and activities should not be planned or designated unless the County's inventory indicates that necessary water will be available for the use.

3. The goals also require that municipal watersheds within County jurisdiction must be designated and managed in coordination with the County.

4. The guidelines also suggest that "reservoir" sites should be identified and protected against irreversible loss.

5. Statewide Planning Goal 6 is directed towards maintaining water quality, and directs that discharges not be planned which will exceed the "carrying capacity" of the water resource. The goal also requires that discharges from future development, when combined with discharges from existing development, not threaten to violate or violate applicable federal or state environmental quality standards.

WATER QUANTITY

General

6. The Umpqua River Drainage Basin covers an area of approximately 4,560 square miles and the boundary of the basin nearly coincides with the boundary of Douglas County.

7. A portion of the Middle Coquille River's drainage is included in the County and the area is generally referred to as Camas Valley.

8. Topographically and geologically the Basin is composed of definable segments which contribute to the broad seasonal variation of the streams.

9. A high winter rainfall average in many areas of the County is frequently lost to surface flows, and summer flows are low as they depend on ground water discharge which varies according to the basin geology.

10. There is sufficient water supply on an annual yield basis to satisfy existing and future needs; however, there is a seasonal distribution problem with insufficient water supply in many streams during the summer and early fall.

11. The value of Douglas County's water resources is immeasurable. Rivers, lakes, farm ponds, marshes, streams and groundwater provide for domestic supply, recreation, wildlife habitat, drainage control and many aesthetic benefits.

12. Standards for the water quality of the Umpqua Basin may be found in Oregon Administrative Rules, Chapter 341, specifically OAR 341-41-282 through 285.

13. Oregon Department of Environmental Quality temperature standards for the Umpqua Basin, which allows no measurable temperature increase when water temperatures reach 58°F, are designed to protect a cold water fishery, such as for salmonid species. The desirable maximum temperature for salmonids is 18°C, about 65°F.

LOWER UMPQUA RIVER/COASTAL LAKES SUB-BASIN

AREA DESCRIPTION

14. The Lower Umpqua River/Coastal Lakes sub-basin extends from the mouth of the Umpqua River at Winchester Bay to the upstream extent of tidal influence at Scottsburg (River Mile 28), including the drainages of Smith River and Mill Creek, and, the drainage areas of the Coastal Lakes in Douglas County to the north and south of the Umpqua River.

SURFACE WATER

15. The State Water Resources Department has estimated the average annual discharge of the Umpqua River to be about 7.9 million acre feet, the largest flow into the Pacific Ocean of a stream wholly within Oregon.

16. About eighty-five percent of the annual discharge occurs between the months of November through April.

17. The Umpqua River below Scottsburg and the lower reaches of the Smith River below North Fork are subject to Pacific Ocean tidal influences.

18. The quality of water in the Mainstem Umpqua River can be categorized as adequate and generally meeting state standards.

19. The maximum upstream encroachment of salt water appears to be about river mile 24, at the point where mill creek discharges into the Umpqua River. During the late summer, water as low as river mile 16.5 has been noted as being too salty for domestic or most agricultural uses.

20. In tributary streams, water quality is generally good except for water temperature, which is elevated due to climatic conditions, a lack of riparian vegetation and small stream discharges during summer and early fall.

21. Elevated water temperature and sedimentation are moderate problems on the main river and severe problems on Mill Creek and Lake Creek.

LAKES

22. The primary use of the coastal lakes is for recreation, esthetics, and water supply for lake shore residences.

23. The waters of Clear Lake and Lake Edna have been set aside for the exclusive use of the City of Reedsport by the State Engineer's Order dated October 4, 1940.

24. Water in the lakes in western Douglas County is soft and contains small concentrations of dissolved solids.

25. Tahkenitch and Siltcoos Lakes are listed by ODEQ as having a eutrophication problem and rehabilitation activities may be eligible for funding assistance.

GROUNDWATER

26. Most, if not all, rural areas in this sub-basin have adequate supplies of groundwater for domestic use, including lawn and garden watering.

27. The quality of groundwater in this sub-basin is generally good, particularly in the dune sand aquifer. There are, however, some high levels of sulfur, hardness and iron in some wells, which are treatable.

CURRENT WATER USE

28. The average annual water use of the City of Reedsport is 598.4 million gallons per year, with the average per capita daily use of 269 gallons per person per day. This system serves Reedsport, Gardener, and Winchester Bay.

29. The community of Scottsburg obtains its water from individual wells, and has sufficient amount for domestic use.

Aquatic Life

30. The Umpqua River below Scottsburg is the passageway to the entire Umpqua Basin for anadromous species, although a relatively small portion of the total basin spawn in this sub-basin.

31. Nearly 50,000 person-days are spent in catching about 13,700 fish annually in the Umpqua and Smith River Drainage, according to ODFW estimates.

32. Anadromous species are passing through the sub-basin in all months of the year, and it is important that water quality conditions remain within limits tolerable to anadromous species during the entire year.

FUTURE WATER USE

33. The City of Reedsport has more than enough water rights to be able to meet the future needs of the water system past year 2030.

SUB-BASIN CONCERNS

34. Currently used sources of rural water supply are expected to remain adequate to meet future needs.

35. A potential has been recognized for pollution of Clear Lake resulting from an accidental spill of hazardous cargo which might be contained in vehicles traveling along US Highway 101, as it proceeds along the western shore of the lake.

36. Periodic flooding of the business district of Gardiner occurs frequently and could possibly be solved by increasing the elevation of Highway 101.

ELK CREEK/CALAPOOYA CREEK SUB-BASINS

AREA DESCRIPTION

37. The Elk Creek and Calapooya Creek sub-basins drain the northeastern portion of the Umpqua Basin. Elk Creek enters the Umpqua River at Elkton (River Mile 0) and runs eastward through Drain and on to its origin at about River Mile 47 above the community of Elkhead on the slopes of Ben More Mountain. Calapooya Creek enters the Umpqua River at the community of Umpqua (River Mile 0) and runs eastward, to the north of Oakland and on to its origin at River Mile 36 at the confluence of the North and South Forks above Hawthorne.

SURFACE WATER

Quantity

38. Stream flow data for both Elk Creek and Calapooya Creek show large variations in discharge from season to season, reflecting climatic and geologic conditions in the sub-basins.

39. Approximately 94 percent of the annual discharge measured at Elk Creek near Drain and about 91 percent of the annual discharge measured at Calapooya Creek near Oakland occurs in the six month period of November through April. Less than one percent of annual discharge occurs in each of the summer months of July, August and September, the period of peak needs for out-of-stream uses.

40. In many years both Elk Creek and Calapooya Creeks have been dry for part of the year.

Quality

41. Water quality conditions of the Elk and Calapooya Creek sub-basins limit the uses that can be made of those water resources. Water temperatures seasonally exceed the limits tolerable to anadromous fish. Nutrient levels become high during low-flow periods causing conditions that are critical for aquatic life, and the appearance of the streams become aesthetically unpleasant.

42. Mean monthly stream temperatures for Elk Creek at Drain during June through August are greater than the DEQ standard of 65°F.

43. Active waste discharge permits for the Elk Creek sub-basin have been issued to the following:

Source	Receiving Stream	Waste Type
Drain Sanitary Treatment Plant	Elk Creek	Sanitary
Ranch Motel	Yoncalla Creek	Sanitary
Rice Hill West	Yoncalla Creek	Sanitary
Yoncalla Sanitary Treatment Plant	Yoncalla Creek	Sanitary
Yoncalla Water Treatment Plant	Yoncalla Creek	Filter Backwash
Wooley Enterprises	Elk Creek	Log pond overflow
Wooley Enterprises, Plywood Mill	Pass Creek	Log pond overflow
Wooley Enterprises, Highway 38	Elk Creek	Log pond overflow
Wooley Enterprises, Smith River	Pass Creek	Log pond overflow

44. Nonpoint pollution problems in the Elk Creek sub-basin have a composite rating of severe from Drain to Elkton and moderate upstream from Drain.

45. Streambank erosion is rated as a moderate problem in Elk Creek, while sedimentation is a severe problem in Elk, Big Tom Folley, Brush, Pass and Yoncalla Creeks and in other minor tributaries.

46. The mean monthly water temperature for Calapooya Creek near Oakland annually exceeds the 65°F DEQ standard during June through September.

47. Active waste discharge permits in the Calapooya Creek sub-basin have been issued to the following:

Source	Receiving Stream	Waste Type
Oakland Sanitary Treatment Plant	Calapooya Creek	Sanitary
Oakland Water Treatment Plant	Calapooya Creek	Filter Backwash
Roseburg Lumber	Calapooya Creek	Log pond overflow

48. Nonpoint pollution problems in the Calapooya Creek sub-basin include severe high water temperatures, streambank erosion, below Bachelor Creek, and sedimentation.

FLOODING

49. Flood damage in the Elk Creek sub-basin is a frequent problem. Elk Creek has flooded portions of the City of Drain on numerous occasions. The channel capacity of Yoncalla Creek is such that flooding of riparian agricultural lands occurs frequently.

50. Flooding occurs frequently in the Calapooya Creek sub-basin, although most damage is limited to flooding of riparian agricultural lands.

LAKES

51. Sutherlin Log Pond (in the Calapooya Creek sub-basin) is a private log pond with a surface area of 130 acres and the owner normally allows fishing during non-working hours. There are no lakes available for public use in the Elk Creek sub-basin.

GROUND WATER

Quantity

52. A majority of the Elk Creek and Calapooya Creek sub-basins are underlaid by formations composed of Tertiary marine sedimentary rocks of low permeability. In general, permeabilities may be sufficient to supply wells for domestic use, but are too low for irrigated agriculture, large scale industrial or municipal use.

Quality

53. Mercury has been mined in the upper portions of both the Elk Creek and Calapooya Creek sub-basins. Water was sampled from wells in the areas and mercury content was found to be less than the standard of 0.005 mg/l.

CURRENT WATER USE

Municipal and Industrial

54. The City of Drain averages an annual water use of 168 MG drawn from Elk Creek (averaging a daily per capita use of 361 GPCD).

55. The City of Yoncalla averages an annual water use of 70 MG drawn from Adams Creek (a tributary of Elk Creek) and averages a daily per capita use of 214 GPCD. Flow measurements in Adams Creek, near the City's diversion, have shown values as low as 0.28 CFS (about 125 GPM) in recent years, and periods of no flow have been reported. The City pumps water from Adams Creek into a 100 acre foot reservoir. Adams Creek is not a reliable supply for the City.

56. Industrial water use from Elk Creek is limited to two rights for log ponds, totaling 1.02 CFS.

57. The City of Oakland averages an annual water use of 46 MG drawn from Calapooya Creek (averaging a daily per capita use of 149 GPCD).

58. The City of Sutherlin averages an annual water use of 311 MG drawn from Calapooya Creek, Cooper Creek (a tributary of Sutherlin Creek), the North Umpqua River, and from Cooper Creek Reservoir (averaging a daily per capita use of 149 GPCD).

Irrigation

59. Approximately 1,570 acres in the Elk Creek sub-basin are irrigated under water rights of record. About 1,490 acres are irrigated with rights having priority dates preceding the first establishment of minimum flows in 1974.

60. Approximately 2,450 acres are irrigated in the Calapooya Creek sub-basin. Of these, almost 1,330 are irrigated under rights predating the 1958 minimum flow.

61. Annual irrigation diversions are conservatively calculated at 2.5 acre feet per acre, the ceiling allowed under Oregon water law. Given basin climatic conditions, only alfalfa would require diversion of this amount, while other crops would require less.

Aquatic Life

62. Fall chinook spawn in the lower 10 miles of mainstem Elk Creek, with most spawning occurring from the mouth to about two miles upstream of Big Tom Folley Creek.

63. Approximately 95% of the coho spawning in Elk Creek do so in tributaries upstream of Big Tom Folley Creek.

64. About 92% of the winter steelhead spawning in Elk Creek do so in its tributaries. Big Tom Folley Creek, Brush Creek, Billy Creek and Yoncalla Creek provide habitat for the largest number of spawners.

65. In the Calapooya Creek sub-basin, about 85% of coho salmon spawn in tributaries, while 35% of winter steelhead spawn in Calapooya Creek itself. Hinkle Creek, Coon Creek and South Fork Calapooya Creek are host to the largest numbers of spawners. Other resident species include cutthroat and rainbow trout.

66. There are no natural barriers affecting fish passage in either Elk or Calapooya Creeks, but pool areas are sparse in both streams. A greater number of pools in Elk and Calapooya Creeks would improve the survival of fry and juvenile salmonids.

67. Low summer and fall stream flow, high water temperature and the lack of spawning and rearing habitat are the main factors affecting fish in Elk and Calapooya Creeks.

Recreation

68. There are no recreational sites with boat launching facilities in the Elk Creek or the Calapooya Creek sub-basins.

69. Water based recreation is limited to trout fishing, rafting and swimming.

Hydro-Power

70. There is no hydro-development on either Elk Creek or Calapooya Creek as of 1988.

FUTURE WATER USE

Municipal

71. Future needs of the city of Drain is estimated at a peak day diversion rate of about 1,588 GPM. While the amount is within the city's water rights, it is doubtful that the current supply from Bear Creek, including storage, will be adequate to meet projected needs. A total annual need of about 859 acre feet, from sources other than current supplies will be needed by the city in the future.

72. The current supply of water for the city of Yoncalla from Adams Creek is unreliable. The total annual need in relation to the City's projected population is 722 acre feet. This estimate is considered a demand on future storage in the Elk Creek sub-basin.

73. In the Calapooya Creek sub-basin, the projected needs of the city of Oakland are within the amounts authorized for diversion under current water rights. Since the rights are of such seniority (1909), the supply from Calapooya Creek is considered reliable, and will suffice for meeting the city's long term needs.

74. The city of Sutherlin's future water needs are estimated to be an additional annual total of 641 acre feet, over and above current supplies from Calapooya Creek, Cooper Creek and Cooper Creek Reservoir (excluding the 1,346 GPM the city could divert from the North Umpqua).

Industrial

75. Future industrial water use in the Elk Creek and Calapooya Creek sub-basins is expected to increase by 150 acre feet per year in each sub-basin to allow for sand and gravel production.

Rural Domestic

76. The annual estimated future need for rural domestic uses (based on 270 gallons per capita per day, and including lawn and garden irrigation) in the Elk Creek sub-basin is estimated to be about 1,164 acre feet and 1,154 acre feet in the Calapooya Creek Sub-Basin.

Irrigation

77. Douglas County and the US Bureau of Reclamation have been formulating a multipurpose water project in the upper Elk Creek sub-basin. The potential irrigable lands are situated in the Yoncalla and Scotts Valleys.

SUB-BASIN CONCERNS

78. Unregulated flows in Elk Creek and tributary streams frequently reach zero in the low-flow season.

79. Flooding frequently recurs in portions of the city of Drain and on agricultural lands along Yoncalla Creek.

80. During the low flow period water quality conditions are adverse to aquatic life, recreational use, and are aesthetically not pleasing.

81. Even with existing storage, Adams Creek is not a reliable supply for the City of Yoncalla.

82. Population increases expected at Yoncalla and the Rice Hill area cannot be adequately served with existing supplies, and storage will be necessary to meet these growth needs.

83. There is no opportunity for expanded irrigation development in the sub-basin without storage.

84. Without augmentation from stored water and instream or riparian enhancement, aquatic habitat will not support additional anadromous fish populations, nor will in-stream recreational opportunities be increased.

85. During the low flow season, water quality conditions in Calapooya Creek are adverse to aquatic life, in-stream recreation, and are aesthetically not pleasing.

86. The expected increase in population at Sutherlin will require that additional water supplies be made available to provide a reliable water supply. Alternatives include storage sites in the Calapooya Creek sub-basin, or development of a diversion from the North Umpqua River.

87. There is no opportunity for expanded irrigation development without storage.

88. Without augmentation from stored water and instream or riparian enhancement, aquatic habitat will not support additional anadromous fish populations, nor will opportunities for in-stream recreational uses be increased.

89. Water temperatures during low flow periods are intolerable to anadromous species in both the Elk and Calapooya Creek sub-basins.

90. Surface flooding occurs frequently in the City of Drain. The channel capacity of Yoncalla Creek is such that flooding of riparian agricultural lands occurs frequently.

ALTERNATIVES TO ADDRESS CONCERNS

Structural

91. Development of storage on both Elk Creek and Calapooya Creek is needed to meet current and future needs. For Elk Creek, storage should also include provision for reducing flood flows in the vicinity of Drain. Based on preliminary reviews, flood control capability in Calapooya Creek storage may not be economically justified.

Non-structural

92. Given the limitations on availability of water resources, population growth may be curtailed without the advent of additional structural measures.

93. Aquatic habitat conditions in both the Elk Creek and Calapooya Creek sub-basins can be improved through projects providing increased bank protection and riparian vegetation.

UMPQUA RIVER/NORTH UMPQUA RIVER SUB-BASINS

AREA DESCRIPTION

94. The Umpqua River/North Umpqua River sub-basins cover portions of Douglas County from the Umpqua River at Scottsburg (RM 19) upstream to the confluence of the North and South Umpqua Rivers, at about river mile 112, and the entire drainage of the North Umpqua River, from its confluence with the South Umpqua upstream over 106 river miles to its origin at Maidu Lake on the crest of the Cascade Range.

SURFACE WATER

Quantity

95. The monthly stream-flow data show large variations in discharge, reflecting climatic and geologic conditions in the sub-basin.

96. About 85% of the annual discharge of the Umpqua River near Elkton occurs during the October through April period. For the North Umpqua at Winchester, about 78% occurs for the same period, while near Glide, about 75% is measured. In Sutherlin Creek, 96% of the annual discharge is measured during October through April.

97. There is no flow in Sutherlin Creek during August and September. The flow regime in Sutherlin Creek is typical of the lower elevation tributaries in the North Umpqua and Umpqua Rivers.

98. About one-half (49.6%) the annual discharge of the Umpqua River near Elkton is supplied by the North Umpqua, measured at Winchester.

99. In January, the contribution of the North and South Umpqua Rivers is nearly equal, while during August and September the contribution of the North Umpqua is over 80% of the flow in the Umpqua River near Elkton.

Quality

100. On the Umpqua River at Elkton the mean, or average, monthly water temperatures during June, July, August and September have exceeded the 65°F desirable maximum. During the 1980-1985 period used, maximum daily temperatures have also been greater than 65°F in May through October. The minimum daily temperature measured during the period also was over 65°F in August.

101. Average monthly temperatures for the North Umpqua River at Winchester exceeded the 65°F mark in July and August, and daily maxima of over 65°F have been recorded in June through September.

102. The average monthly temperature in the North Umpqua River just below Steamboat Creek over the 1981-1987 period reaches slightly over 58°F in July and August. The highest daily temperature recorded has been 64.5°F in June. All other readings have been lower.

103. In Canton Creek, the average temperature for July is 64.4°F and for August is 65°F. Maximum daily temperatures have reach 66°F in May, 67°F in September and have reached 72°F in June, July, and August. In Rock Creek, monthly average temperature in August is 65.1°F, while maximum daily values are 65°F in May, 68°F in September, and June, July and August daily maxima have reach 70°F.

104. On the North Umpqua, temperature measuring stations are located upstream of nearly all major diversions, and therefore represent "natural" conditions in the North Umpqua sub-basin. Such would indicate that water temperatures are marginal for anadromous fish in the Umpqua basin.

105. There are no point source discharges into the Umpqua River between Scottsburg and the confluence of the North and South Umpqua Rivers.

106. Water quality within the North Umpqua Basin can be characterized as being good with the basin demonstrating a minimal amount of point and nonpoint problems. The waters serve as a high quality source of municipal water for the Roseburg and Glide areas. It also serves as a nationally renowned steelhead and salmon fishery.

107. Summer flows in Little River are low and water withdrawal has been identified as a moderate problem. Water temperatures are considered to be moderately high.

108. Nonpoint source problems in the North Umpqua River are minor. Streambank erosion is rated as moderate in Rock Creek, Canton Creek, Steamboat Creek, Copeland Creek, and Sutherlin Creek.

109. Water withdrawal is a severe problem in Sutherlin Creek although there are two water impoundments within the drainage. In conjunction, elevated water temperature is a severe problem and algae growth is a moderate problem.

Flooding

110. Flood damage has occurred in the Umpqua River/North Umpqua River sub-basins in the last generation.

111. During the 1964 flood, the City of Elkton was evacuated, and damage was widespread throughout the Umpqua Basin. Preliminary flood damage estimates prepared by United States Corp of Engineers totaled $31,200,000, in 1964 dollars for the County as a whole.

112. Total damages from the January, 1974 flood in the Umpqua River sub-basin were $444,700, in 1974 dollars. High flows inundated 224 acres of prime agricultural lands in the Garden Valley area. USCE reported that the levee system in the City of Reedsport prevented damages of $1,208,000, again in 1974 dollars.

LAKES

Quantity

113. More than half the lakes with surface areas greater than ten acres occurring in the North Umpqua sub-basin are those that result from dams constructed for multiple purpose uses. Natural lakes are found on Federal lands within the Umpqua National forest.

114. There are no lakes available for public use in the Umpqua River sub-basin.

115. Although the Plat I and Cooper Creek Reservoirs are small in size they have had a significant impact on the Sutherlin area, both in the business and agricultural community. Construction of the reservoirs has almost completely eliminated the nearly annual flooding of the City of Sutherlin and surrounding agricultural lands.

116. The Plat I Reservoir has 2,050 acre feet of active storage, of which 880 acre feet is used for irrigation and 1,170 acre feet are used for flood control.

117. Cooper Creek Reservoir has 4,385 acre feet of active storage. Of that total approximately 3,400 acre feet are used for recreation, 500 acre feet provides additional water supply to the City of Sutherlin for municipal and industrial water use and 485 acre feet are for flood control.

118. There are a number of natural lakes on Federal lands within the sub-basin with surface areas less than ten acres that are used for public recreation purposes.

Quality

119. Water quality in the higher elevation lakes of the sub-basin is excellent.

120. In the past, Diamond Lake has experienced fertilization by septic and pit toilet drainage, but the wastes have since been diverted by sewer lines to treatment ponds outside the lake drainage basin.

121. Once identified, programs for reducing further nutrient enrichment of Diamond Lake should be designed and implemented.

122. Algal blooms occur in summer months in the lower elevation lakes. Cooper Creek and Plat I Reservoirs both have excessive aquatic weed growth which hampers recreation use.

GROUND WATER

Quantity

123. Fluvial deposits occur along the Umpqua River and major tributaries. Permeability and recharge are relatively high in these deposits.

124. The area of the basin north of the City of Roseburg and west of the mouth of Little River has been identified by the United States Geologic Survey as the Marine Sedimentary aquifer unit, comprised of Tertiary rocks. From Little River upstream to about the mouth of Clearwater River, Tertiary Volcanic Rocks of the Western Cascade Range define groundwater conditions. In both these aquifers, permeability and recharge are generally low, with well yields being less than 20 gpm.

125. Well yields may be adequate for supplying rural domestic needs to the uplands areas, including small garden irrigation, however, USGS reports cite an incidence of "dry holes" (22 out of 479), that should be noted in regulation of future development.

Quality

126. The quality of ground water resources in the sub-basin is generally acceptable for all uses. Some wells provide water with high hydrogen-sulfide content (rotten-egg odor), and with high iron bacteria (rust). While unpleasant, the levels of either constituent generally are not at harmful concentrations.

CURRENT WATER USE

Municipal and Rural Residential

127. Residents of Umpqua and Scottsburg obtain water from individual wells, while the majority of the population of Wells Creek are provided water from springs.

128. The City of Elkton obtains its water supply from the Umpqua River, under a water right dated 1971, senior to minimum flows established in 1974.

129. The lower ten miles of the North Umpqua River is the location of two diversions that provide water to a major portion of the population of Douglas County. Both diversions constitute "inter-basin transfers", in that water is diverted from one stream system, the North Umpqua, while return flows enter another stream system, the South Umpqua.

130. The major diversion for municipal/industrial use in the sub-basin is for the City of Roseburg and the community of Dixonville. In 1980, the estimated service area population was 24,731 persons, and the number of services was 8,316.

131. Umpqua Basin Water Association's (UBWA) service area comprises about 80 square miles and extends into the northern portions of Lookingglass Valley, along the South Umpqua River and areas on both banks of the North Umpqua River. UBWA believes it has the greatest length of pipeline per service of any delivery system in the state.

132. Communities upstream from Glide include Idleyld Park, using springs and individual wells as the water supply; Steamboat Springs, diverting water from the North Umpqua; Dry Creek, served by springs; and, Toketee Falls, obtaining water from the North Umpqua.

133. The City of Sutherlin obtains a major portion of its water supply from the Sutherlin Creek drainage. The City of Sutherlin also has water rights on Cooper Creek and the North Umpqua.

Irrigation

134. With the exception of Garden Valley, irrigation use along the Umpqua River and North Umpqua River is confined to narrow shoestring valley lands adjacent to the streambeds.

135. In the Sutherlin Creek reach, irrigation is served by releases from Cooper Creek and Plat I Reservoirs.

Fish Passage

136. Adult anadromous fish use the Umpqua River as a passageway enroute to upstream sub-basins for spawning, although some Coho and Winter Steelhead spawn in the Umpqua River.

137. About 41% of anadromous fish spawning in the Umpqua Basin do so in the North Umpqua exclusive of the ODFW hatchery on Rock Creek, a North Umpqua tributary.

138. Anadromous species are passing through the Umpqua sub-basin in all months of the year, therefore it is important that water quality conditions remain within limits tolerable to anadromous species during the entire year.

139. The only fish counting station in the Umpqua Basin is located at Winchester Dam. This facility is essential to management of the fishery resource in the North Umpqua sub-basin, and in operation of the Rock Creek Hatchery.

140. The Rock Creek Hatchery produces chinook, steelhead, and coho salmon along with rainbow, brook, and cutthroat trout for release into the North Umpqua River.

Recreation

141. The North Umpqua River is nationally renown for its recreational quality. The river is one of the few in Oregon designated for fly-fishing only. Rafting, canoeing, and drift-boating are "world-class" experiences on the North Umpqua River.

142. Recreation use of Cooper Creek and Plat I Reservoirs also is intensive. During 1980, an estimated 210,000 visits took place for boating, water skiing, reservoir fishing, and other water based recreation.

143. Total catch and recreation data for 1985 show the Umpqua Basin ranks first in Oregon, exclusive of Columbia Basin streams, with about 30% of the statewide catch of Summer Steelhead.

Hydro-Power

144. There is no hydro-power development on the Umpqua River above Scottsburg, nor on Sutherlin Creek.

145. On the North Umpqua, a small plant, less than 1,500 kW was built at the time of construction of Winchester Dam in the 1890's, but was taken out of service in the 1960's.

146. In 1983, a 1.5 mW capacity plant was installed in the north bank at the dam. Operation of the new plant has been curtailed since December, 1985, due to environmental issues.

147. Above river mile 68 on the North Umpqua River, Pacific Power and Light Company's Hydro Project #23 encompasses a number of hydraulic structures and eight hydro plants with a total installed capacity of 185 mW, the largest hydro complex in the Umpqua Basin.

FUTURE WATER USE

148. Based on the City of Elkton's current estimated peak daily use of 388 Gallons Per Capita Day (GPCD) and the average monthly distribution of 1980-1986 water use, the peak diversion requirement to meet future needs will be 128 Gallons Per Minute (GPM). The city has rights with a priority date of 1971, allowing diversion of up to 224 GPM, which appear adequate to meet future needs.

149. Nearly 39% of the 1980 population of Douglas County is served by water systems that divert supplies from the North Umpqua River.

150. The Umpqua Basin Water Association has water rights allowing a total maximum diversion of 4,084 GPM from the North Umpqua River near Brown's Bridge. Of that total 1,391 GPM has a priority date of 1966, 449 GPM was obtained in 1971 and 2,244 GPM has a priority date of 1978. Estimated future needs are based on 270 GPCD with a maximum diversion estimated at 2,327 GPM, (this is less than the total rights now held by the Association). However, the future need is greater than the Association's rights that are senior to 1974 minimum flows (1,840 GPM).

151. The City of Roseburg's water system serves the largest population of any water system in the County. The service area includes the area within the city limits, the urban growth boundary, the Dixonville Water Association, and the rural population in surrounding areas. Peak daily use is estimated to be 408 GPCD above the county wide average of 354 GPCD. Assuming no change in that value, with the future population the peak water need of the system will be 23,013 GPM.

The City diverts water under rights totaling 15,260 GPM. Of that total, 11,221 GPM predate the 1958 minimum flow. The Dixonville Water Association has a right to 1,346 GPM with a priority of 1977, and the city has a further right of 2,693 GPM with a priority date of 1979.

The future need exceeds the current allowable maximum diversion, and when needs are compared with the allowable, an additional 2,583 acre feet per year will be needed (assuming flow in the North Umpqua remains at levels above 1974 minimum flow requirements).

152. The Glide Water Association serves water to an estimated 689 persons. The peak daily need is 271 GPCD. The future population will require a peak diversion of 335 GPM. The Association has rights totaling 987 GPM, all of which predate the 1974 minimum flow. The future peak need is about one-third of the Association's rights, and no additional water sources are felt necessary to meet estimated future needs.

153. It appears that all lands considered irrigable on the North Umpqua are being irrigated under existing rights. Consequently, no expansion of irrigation is foreseen from the North Umpqua River.

SUB-BASIN CONCERNS

154. Unregulated water supplies in the Umpqua River may not be adequate to meet expanded future irrigation needs.

155. Unregulated discharge in the North Umpqua River may become inadequate as a reliable municipal and industrial surface water source for the increasing population.

156. Surface water supplies are inadequate to meet future irrigation needs in Sutherlin Creek.

157. Surface water supplies in Little River are inadequate to supply irrigation expansion.

158. Water temperatures have been shown to frequently exceed standards in the Umpqua River and in the North Umpqua below Idleyld Park.

159. Rock Creek temperature and turbidity conditions are a problem with regard to operation of the Rock Creek Hatchery.

160. During periods when flows in the North Umpqua River exceed the 2% probability, or 50 year recurrence, flood damage occurs in communities and residences.

161. In the North Umpqua, below Glide, there is increasing seasonal algae growth, as evidence of the increasing water temperatures in the low flow season.

162. Coliform bacteria counts in the North Umpqua River below Idleyld Park are increasing and may soon consistently exceed standards. Additionally, the lack of riparian cover downstream of this community exacerbates high water temperature conditions.

ALTERNATIVES TO ADDRESS CONCERNS

163. An impoundment on the mainstem North Umpqua, or on a tributary that is a major producer of anadromous fish, is an unacceptable alternative for meeting future municipal and industrial or limited irrigation needs, or for providing flood control in the North Umpqua sub-basin.

164. An acceptable impoundment site exists above Cavitt Falls on Cavitt Creek, a tributary of Little River, that would provide storage for meeting future municipal-industrial needs in the lower North Umpqua sub-basin. Very little, if any, flood control storage would be obtainable at this site.

165. Expansion of sewerage facilities, such as those installed at Glide, downstream along the North Umpqua River to serve more populated areas such as Whistlers Bend, would improve water quality conditions in the North Umpqua River.

166. Future needs for out-of-stream use in the Umpqua River sub-basin could be met from storage releases in the South Umpqua sub-basin.

167. The increase in potential flood damages may be minimized by regulation of land use.

168. Water quality conditions, with regard to turbidity and high temperatures in the North Umpqua, may be improved by continued protection and enhancement of the riparian canopy. Tree growth will provide bank stabilization and shade. Such a program also should be implemented on all tributary streams in the sub-basin.

169. Federal lands comprising the corridor along the North Umpqua River should continue to be managed for preservation of scenic and recreation values, which also will assist in maintenance of good water quality conditions downstream.

170. In all upper watershed areas, continued rigorous adherence to Forest Practices Act criteria will continue to minimize siltation of streams. Additionally, preservation of riparian vegetation in buffer zones along streams will continue to provide shade for maintenance of water temperatures.

SOUTH UMPQUA TRIBUTARIES/LOOKINGGLASS CREEK SUB-BASINS

AREA DESCRIPTION

171. The South Umpqua tributaries, including the Sub-Basins of Lookingglass and Olalla Creeks, Deer Creek, North and South Myrtle Creeks, Canyon Creek, Days Creek, Salt Creek, and Elk Creek drain 160 square miles of the central and southern portions of the Umpqua Basin.

SURFACE WATER

Quantity

172. The average annual flow of tributaries of the South Umpqua (not including Cow Creek) total 478,000 acre feet. Flow from Lookingglass Creek comprises 43% of the total output from the tributaries.

173. Wide seasonal variations in flow reflect climatic and geologic conditions in the sub-basins. Approximately 88 to 95 percent of the annual discharge of Deer Creek, Olalla Creek, North and South Myrtle Creeks, and Days Creek occur in the November through April period. About 97% of the annual discharge of Lookingglass Creek occurs during the same period.

174. All tributary streams of the South Umpqua River discharge less than one percent of the annual total in each of the three summer months, July, August and September.

175. During many summers there is no flow in either Deer Creek or Days Creek.

Quality

Lookingglass Creek Sub-Basin

176. No point source discharges are located within the Lookingglass sub-basin.

177. Operation of Berry Creek Dam will reduce water temperatures by release of colder water during the summer months. These flows should also provide minor augmentation of stream flows in the South Umpqua River.

178. Streambank erosion along Lookingglass Creek is most severe in the upper reaches.

South Umpqua Tributaries

179. Industrial point sources from log ponds owned by Champion Building Products, Nordic Veneer, Inc. and Roseburg Lumber overflow into Deer Creek.

180. During the low flow season high water temperature in Deer Creek is a severe problem downstream from Dixonville and a moderate problem in the upper reaches.

181. Streambank erosion along Deer Creek occurs from the confluence of the South Fork downstream and to a lesser degree on other upstream reaches.

182. Sedimentation severely affects aquatic habitat downstream from Dixonville.

183. A point source discharge in the North and South Myrtle Creek Sub-basin is the Myrtle Creek Sewage Treatment Plant (serving Tri-City and Myrtle Creek).

184. During the low flow season, water temperatures in North and South Myrtle Creeks exceed state standards.

185. Streambank erosion is rated as a severe problem in the lower reaches of both North and South Myrtle Creeks and moderate in the upper reaches.

186. Sedimentation is severe in the lower reaches and moderate in both upper reaches of North and South Myrtle Creeks.

Flooding

187. Flooding of riparian agricultural lands occurs frequently in all tributary streams of the South Umpqua River eroding streambanks and contributing to siltation problems.

188. Since 1950, major flooding has occurred six times on South Umpqua tributaries.

189. Flooding of some residences is a recurring problem along Deer Creek.

LAKES

Quantity

190. Ben Irving Reservoir on Berry Creek has a surface area of 250 acres at full pool.

191. The Winn Walker Reservoir on Canyon Creek is owned by the City of Canyonville and stores 300 acre feet for the City's municipal water supply.

192. The Ben Irving Reservoir and the Winn Walker Reservoir are the only "lakes" in the South Umpqua Tributaries/Lookingglass Creek Sub-basins.

Quality

193. There is a moderate turbidity problem in Ben Irving Reservoir. Under increasingly more stringent watershed management processes, the condition is expected to gradually improve. The turbidity of the stored water is not severe enough to affect benefits obtained by release of colder water in larger volumes than would otherwise be present in Olalla and Lookingglass Creeks.

194. The quality of water stored in Canyonville's reservoir is acceptable for diversion by the City.

GROUND WATER

Quantity

195. The majority of these portions of the Umpqua Basin is underlain by formations composed of Tertiary marine sedimentary rocks of low permeability. In general, permeabilities may be sufficient to supply wells for domestic use, but are too low for irrigated agriculture, large scale industrial or municipal use.

196. There are isolated wells in the Lookingglass and Flournoy valleys that provide sufficient yields for irrigation purposes.

Quality

197. Approximately half of the wells sampled in the South Umpqua tributary sub-basins exceeded one or more representative standards for manganese and iron.

CURRENT WATER USE

Municipal and Industrial

198. Winston-Dillard Water District and Roberts Creek Water District each purchase portions of their water supplies from Berry Creek storage. There are small industrial rights as well.

199. The City of Canyonville diverts its water supply from Canyon Creek. Average water use over the 1980-1986 period, as reported by the City, was about 86 million gallons per year. The City of Canyonville owns water rights on Canyon Creek with priority dates of 1912, 1927, 1944 and 1947.

200. Industrial water rights of pre 1958, 1958-1974, and post 1974 for Lookingglass Creek sub-basin, and the other South Umpqua tributaries total 3.46, .70, and .03 cubic feet per second respectively.

Irrigation

201. Water rights for irrigation from tributaries in the South Umpqua Basin are as follows:

Stream	Acreage
Lookingglass Creek	1,356
Deer Creek	78
North Myrtle Creek	730
South Myrtle Creek	986
Day's Creek	168
TOTAL	3,318

Aquatic Life

202. A count of Coho and Winter Steelhead spawning in tributaries of the South Umpqua Basin total 600 and 988 respectively.

203. Coho spawning in the tributaries of the South Umpqua Basin occurs late November through late January. Winter steelhead spawn in these streams from late January through May.

Recreation

204. The only water-based recreation facility in this portion of Douglas County is at Ben Irving Reservoir. The Douglas County Parks Department has installed picnic tables and a boat ramp at the County Park on the reservoir.

FUTURE WATER USE

205. The City of Canyonville's existing water rights will meet future needs except for the May through September period when water will have to be drawn from Winn Walker Reservoir to meet projected needs. The capacity of the reservoir appears adequate to meet these needs.

Rural Domestic

206. The projected total annual water need for rural domestic use (peak daily need of 270 gallons per capita per day to allow for needs such as lawn and garden irrigation, etc.) in the South Umpqua sub-basins is about 1,400 acre feet.

207. Due to the dispersed nature of the rural population in the South Umpqua Tributary Sub-basins, it is expected that future water supply will come from sources of the type currently used, i.e. springs or wells.

208. The total projected acreage for irrigable lands in the South Umpqua Tributaries Sub-basins is 11,708 acres. The projected quantity of irrigation water needed is 9,590 acre feet.

SUB-BASIN CONCERNS

209. In all of the South Umpqua tributaries, stream-flows during July through October are inadequate to meet existing needs. Without augmentation from storage, potential irrigation needs will not be met.

210. In all of the South Umpqua tributaries, water quality conditions are above state temperature standards during the low-flow season.

211. Inadequate flows, elevated water temperatures, and sedimentation of spawning gravels adversely affect aquatic habitat in all South Umpqua tributary sub-basins.

ALTERNATIVES TO ADDRESS CONCERNS

Structural

212. Small storage facilities located in upper watershed areas of Deer, North and South Myrtle and Days Creeks appear capable of providing stored water to meet future needs for irrigation and rural domestic. Stored water also could become available for release for stream-flow augmentation.

Non-structural

213. Continued completion of riparian vegetation improvement projects through Douglas County's Salmon and Steelhead Habitat Improvement Program (SHIP) and similar programs by other agencies will alleviate erosion and sedimentation problems in the sub-basins.

214. Road construction and maintenance standards should be developed and implemented to satisfy the needs for: improvement of riparian vegetation, locating and constructing culverts to allow fish passage into tributary streams, and minimizing erosion of cut and fill slopes.

SOUTH UMPQUA/COW CREEK SUB-BASINS

AREA DESCRIPTION

215. The South Umpqua River/Cow Creek Sub-basins drain over 955 square miles in the southern half of the Umpqua Basin. The South Umpqua River from its confluence with the North Umpqua (River Mile 0) stretches over 103 river miles to its origin at the confluence of Black Rock and Castle Rock Forks. This sub-basin excludes all tributaries of the South Umpqua except Cow Creek. The entire drainage of Cow Creek beginning at its confluence with the South Umpqua (South Umpqua River Mile 47) near Riddle stretches 81 river miles to its origin on the crest of the Rogue River Range between Panther Peak and Railroad Gap.

SURFACE WATER

Quantity

216. Flows have been modified on Cow Creek and on the South Umpqua below its confluence with Cow Creek since the Galesville Dam became operative. Prior to construction of the dam average monthly flows reflected wide seasonal variations.

Quality

217. On an average basis, water temperatures exceed 18°C from June through August at Canyonville, and from mid-May through September at Conn-Ford Bridge. The upper tolerance for anadromous species is 18 degrees Centigrade (65 degrees Fahrenheit). Warm water fish species can tolerate water temperatures up to 32°C (86 to 90°F) depending upon dissolved oxygen levels.

218. Bacterial contamination of the South Umpqua is of concern because of health risks to humans when the water is used. Point and non-point sources of bacterial contamination include runoff from pasture lands, runoff from urbanized areas, and discharges by waste treatment plants.

219. Mean fecal coliform values do not vary significantly from upper to lower reaches of the South Umpqua, although occasional samples have shown high counts at Melrose.

220. Waste discharge permits on the South Umpqua River and Cow Creek have been issued to the following:

Source	Receiving Stream	Waste Type
Joseph Barnes Placer Mine	Coarse Gold Creek	None
Tiller Ranger Station	South Umpqua	None
William Smith Placer Mine	Coffee Creek	None
Milo Academy	South Umpqua	None
City of Canyonville	South Umpqua	Sanitary
Winston/Green Sanitary District	South Umpqua	Filter Backwash
Winston/Green Sanitary District	South Umpqua	Sanitary
Roberts Creek Water District	South Umpqua	Filter Backwash
Roseburg Forest Products, Dillard	South Umpqua	Log pond overflow
Fiberboard Corp.	South Umpqua	Log pond overflow
Roseburg Lumber Co. #3, Green	South Umpqua	Log pond overflow
Sun Studs	South Umpqua	Log pond overflow
Roseburg Urban Sanitary Authority	South Umpqua	Sanitary
State Highway Division	Cow Creek	Sanitary
Roseburg Forest Products	Cow Creek	Log pond overflow
Glendale Sewage Treatment Plant	Cow Creek	Sanitary
Herbert Lumber Co.	Cow Creek	Log pond overflow
Superior Lumber Co.	Cow Creek	Log pond overflow
Gregory Forest Products	Cow Creek	Log pond overflow
Riddle Sewage Treatment Plant	Cow Creek	Sanitary
Riddle Water Treatment Plant	Cow Creek	Filter Backwash

221. Average monthly stream temperatures exceed state standards during July and August in Cow Creek near Azalea, reaching 68.5°F in July and 67.25°F in August, and during June, July, and August in Cow Creek near Riddle where average monthly water temperature has been recorded at 75.4°F.

222. The DEQ Statewide Assessment of Nonpoint Sources identifies streambank erosion as moderate in Cow Creek tributaries except for those entering Cow Creek between River Miles 34 to 57 where erosion problems are rated severe.

223. Sedimentation is a problem throughout Cow Creek and in the lower reaches of West Fork, Middle Creek and Windy Creek.

Flooding

224. Flooding has occurred frequently in the Cow Creek and South Umpqua sub-basins.

225. During the December 1964 flood, 400 persons were evacuated from their homes in Roseburg, and damage was widespread throughout the Umpqua Basin.

LAKES

Quantity

226. In the South Umpqua sub-basin, lakes with surface areas greater than five acres are:

Lake	Area (Acres)	(Acre feet)
Fish Lake	96	6,100
Buckeye Lake	11	210
Skookum Pond	16	80
Dollar Fish Pond	16	70
Triangle Lake	5	25

227. The Cow Creek sub-basin has one reservoir (Galesville), but no natural lakes over five acres in surface area.

Quality

228. Water quality of lakes in the South Umpqua sub-basin is acceptable, although late summer algae blooms at the lower elevation sites hamper some recreational uses.

229. The quality of water in Galesville Reservoir has been excellent for recreational purposes since project completion and is not expected to deteriorate.

GROUND WATER

Quantity

230. Fluvial deposits occur along the South Umpqua River and major tributaries such as Cow Creek in its lower reaches. Permeability and recharge are relatively high in these aquifers. The water table is generally within 25 feet of the land surface, and well yields are generally less than 200 gallons per minute (gpm). Where shallow wells are located in close proximity to stream channels, ground water/surface water interference is a possibility. Along Cow Creek, such interference could result in diversion of water released from Galesville for other purposes.

231. Downstream from the mouth of Lookingglass Creek has been identified by USGS as the Marine Sedimentary aquifer unit, comprised of Tertiary rocks. Well yields in this area are generally less than 20 gpm.

232. Well yields upstream from the mouth of Lookingglass Creek to the mouth of Jackson Creek are typically less than ten gpm.

233. Wells in the South Umpqua drainage area above Jackson Creek generally yield less than 20 gpm.

Quality

234. The quality of ground water resources in the South Umpqua sub-basins is generally acceptable for all uses. Shallow wells in the Fluvial deposits, those 25 feet deep or less, may be susceptible to contamination from surface sources, and must be carefully monitored.

CURRENT WATER USE

Municipal and Industrial

235. The municipal water supply for Glendale is diverted from Cow Creek.

236. The City of Riddle, the South Umpqua Water Association, and Lawson Acres, serving rural residential areas between Riddle and Canyonville, divert water from Cow Creek.

237. The USFS headquarters at Tiller and the Milo Academy each treat water diverted from the South Umpqua.

238. The Tri-City Water District, the City of Myrtle Creek, the Winston-Dillard Water District, Roberts Creek Water District, and the Clarks Branch Water District possess rights to draw water from the South Umpqua River.

239. Water rights for commercial/industrial purposes exist along both Cow Creek and the South Umpqua River. The majority of these water rights are for the forest products industry.

Irrigation

240. Water rights on the mainstem Cow Creek permit diversion of water to irrigate over 2,900 acres. Nearly 2,100 acres are irrigated under rights acquired prior to 1958, the year of establishment of the initial minimum flows by the State of Oregon.

241. From mainstem South Umpqua, nearly 9,240 acres have irrigation water rights. Almost 4,700 acres are irrigated under rights acquired prior to 1958.

Aquatic Life

242. In 1976, the abundance of anadromous species in the South Umpqua and Cow Creek were estimated as follows:

Species	South Umpqua and Tributaries	Cow Creek
Spring Chinook	500	0
Fall Chinook	404	54
Coho	1,854	565
Winter Steelhead	3,723	1,548
TOTAL	6,481	2,167

243. Small-mouth bass were illegally introduced to the South Umpqua Basin about 20 years ago and have become an established species.

244. Fall chinook now are estimated to number between 3,000 and 4,000 fish with about 50% in the South Umpqua between Roseburg and Days Creek. The remainder are in the Cow Creek sub-basin. These increases are thought to be due to recovery of habitat conditions from siltation and to increased number of fish returning from the ocean.

245. Spring chinook averaged about 220 fish during the last 3 years. They are primarily in the upper South Umpqua above Tiller.

246. Winter steelhead were averaging about 4,000 fish of which about 40% were of hatchery origin. About 70,000 smolts are released annually into the South Umpqua. The adults use the area of the South Umpqua above Tiller and do not use the lower South Umpqua except for passage.

247. Anadromous species are passing through the South Umpqua/Cow Creek sub-basins in all months of the year.

Recreation

248. Publicly owned recreational sites along the South Umpqua River and Cow Creek are located at the Douglas County Fair Grounds, Stanton Park at Canyonville, Three C Rock on the upper Cow Creek, and Chief Miwaleta Park at Galesville Dam.

249. Seasonal low flow and water quality conditions preclude intense use of the South Umpqua for drift boating, rafting and swimming. During the low-flow season, the South Umpqua below Cow Creek becomes a series of narrow channels bounded on each side by rock outcrops. The channels connect pools of slow moving water predominantly algae covered. The lower South Umpqua River periodically has been closed to swimming due to poor water quality conditions.

Hydro-Power

250. There is no hydro development on the South Umpqua River.

251. In the Cow Creek sub-basin the only hydro development is located at Douglas County's Galesville Project. A 1.8 mW plant is located at the base of Galesville Dam. Hydro production is a secondary purpose at the project. Releases for primary project purposes, such as irrigation, municipal/industrial or fish life uses, are routed through the plant when reservoir water surface elevations and release quantities are adequate to generate energy.

Galesville Project

252. Douglas County's Galesville Project, a 167 foot high roller-compacted concrete dam, was completed in 1986. The reservoir behind the dam has 40,425 acre feet of active storage for irrigation, municipal and industrial and anadromous fish uses. The storage space also will be used to regulate floods to the extent possible, and recreation facilities are provided for.

253. Galesville Reservoir will supply up to 4,450 acre feet annually for municipal supplies and 2,400 acre feet for industrial purposes. Of these amounts, 500 acre feet is being held in reserve for future use in the Cow Creek sub-basin above the mouth of West Fork Cow Creek, as Galesville is the only site from which future supplies may be obtained for that portion of the county.

254. Space has been provided in Galesville Reservoir for irrigation diversions totaling 14,950 acre feet annually.

255. About 4,000 acre feet of reservoir space has been provided for aquatic habitat enhancement in Cow Creek.

FUTURE WATER USE

Municipal

Roberts Creek Water District

256. Roberts Creek Water District serves an estimated 1980 population of 6,065 persons and estimated peak day use is 254 gallons per capita per day (GPCD).

257. Roberts Creek Water District has a total of 2,096 GPM in water rights. A 1973 right has been curtailed by the Watermaster at various times during the months of July, August and/or September. Consequently, the 1973 right amounting to 1,795 GPM is considered unreliable in July, August and September. These rights appear adequate for meeting future needs in all other months.

258. Roberts Creek Water District purchases 500 acre feet per year from Berry Creek (Ben Irving Reservoir). Water from Berry Creek is an adequate interim supply, but it should not be considered in evaluation of long-term future needs for the District. A supply of 794 acre feet annually will need to be obtained in the future.

Winston/Dillard Water District

259. The 1980 population for the Winston/Dillard Water District is estimated to be 3,882 persons, and peak per capita use is 385 GPCD. The District's water rights total 1,867 GPM, all of which predate the 1974 minimum flow. One right, for 898 GPM, has a priority of 1969, junior to the 1958 minimum flow. This right is considered unreliable during the month of August due to flow conditions in the South Umpqua River.

260. Winston/Dillard Water District's water rights appear to constitute an adequate future supply in the months of October through April. During the remainder of the year, future demands will exceed allowable diversions from the South Umpqua, and future deficiencies will total 530 acre feet per year.

261. Winston/Dillard Water District has an agreement with the Lookingglass-Olalla Water Control District for purchase of up to 500 acre feet of water stored in Berry Creek. This supply is an interim measure only.

Clarks Branch Water Association

262. The Clarks Branch Water Association has an allocated 1980 population of 204 persons. Peak use is estimated to be 102 GPCD, the relatively small value considered to be limited by supply conditions.

263. The Clarks Branch Water Association has a right to divert 90 GPM, with a priority date of 1978. This water right is considered unreliable during the months of July through October. The future deficiency will total 31 acre feet per year.

City of Myrtle Creek

264. The City of Myrtle Creek provides water service to an allocated 1980 population of 3,799 persons and peak daily use is estimated at 308 GPCD.

265. The City of Myrtle Creek has a water right allowing diversion of 1,346 GPM, with a priority of 1947. The amount is adequate to meet future demands, except in the peak month of August, during which a future deficiency of 39 acre feet will occur.

Tri City Water District

266. The Tri City Water District serves a 1980 allocated population of 2,975 persons. The peak rate is 308 GPCD.

267. The Tri City Water District has water rights with priority dates of 1952, 1956, 1973 and 1979. Due to the flow regime in the South Umpqua River, the 1979 right (191 GPM) is considered unreliable during July through October, and the 1973 right (1,346 GPM) is unreliable during August and September. In total, the rights appear to be an adequate supply except for the months of August and September. The total annual deficit is 292 acre feet.

City of Riddle

268. In the Cow Creek sub-basin the City of Riddle provides water service to an allocated 1980 population of 1,351 persons. Estimated peak use is 559 GPCD.

269. The City of Riddle has water rights totaling 2,096 GPM, with priority dates of 1947, 1970 and 1980. Due to the flow regime in lower Cow Creek, the 1980 right (1,346 GPM) is considered unreliable during the months of July through October and the 1970 right is unreliable during August because of the 1958 minimum flow. Under these assumptions, the rights are an adequate supply except for the months of July and August and the future deficiency totals 140 acre feet per year.

City of Glendale

270. The City of Glendale diverts water from Mill and Section Creeks, small tributaries of Cow Creek, and from Cow Creek proper. The City also has developed a two acre-foot reservoir on Section Creek. In total, the city's rights amount to about 1,087 GPM, but due to the flow regimes in Mill and Section Creeks, available flows only amount to about 45 GPM, and the Cow Creek diversion is junior to state minimum flows. Thus, during the July through September period, the supply amounts to 45 GPM plus the two acre-feet of storage.

271. The 1980 population for the City of Glendale is estimated to be 760 persons and the average people per water service number is about 2.6. The peak usage is estimated to be 312 GPCD. Glendale's future deficit could be 113 acre feet annually, after adjusting for the two acre feet of storage. Given the County policy of retaining 500 acre-feet of storage in Galesville to meet municipal and industrial needs in this portion of the Cow Creek sub-basin, an adequate supply may be acquired by the city to meet its future needs.

Industrial

272. The majority of industrial water use in the basin, is for lumber and wood products processing mills, including ponds.

273. An estimated annual requirement of 300 acre feet may be needed for each of the two projected 15 Mw capacity co-generation plants that may be located on the South Umpqua. About 200 acre feet per year for each of the two proposed co-generating plants, or a total of 400 acre feet, would need to come from stored water for use in the South Umpqua sub-basin.

Flow Augmentation for Water Quality

274. In response to a mandate from the Oregon Department of Environmental Quality, the Roseburg Urban Sanitary Authority (RUSA) has entered into a long-term contract with Douglas County to purchase up to 3,500 acre feet of water stored in the Galesville Project annually for release to augment flows in the lower South Umpqua River to improve assimilation of sewer plant effluent.

275. Poor quality conditions in the South Umpqua River from Cow Creek to its confluence with the North Umpqua River indicate that quality problems exist in the entire reach.

276. The projected increases in population noted in the Comprehensive Plan implies that added sewage treatment capacity will be required at all plants from Canyonville-Riddle downstream.

277. It is considered very probable that DEQ will require augmentation of flows in the South Umpqua, below Cow Creek, as a condition of permitting the increased treatment capacity to accommodate the increased populations.

SUB-BASIN CONCERNS

278. Future population growth will create a need for 4,000 acre feet, over and above that now available from Galesville Reservoir.

279. There are potential future water needs for irrigation of 4,770 acre feet over and above Galesville reservoir capabilities in the sub-basins.

280. Water quality conditions are unacceptable in the South Umpqua River during periods of the year. It has been estimated that 600 cfs additional flow in the South Umpqua during the low flow months would be adequate to: (1 minimize the needs for tertiary treatment, 2) decrease coliform bacteria counts to levels acceptable for swimming; and, 3) provide flows for boating/rafting.

281. Flooding will continue to recur in the South Umpqua sub-basins, even with Galesville Reservoir in operation.

282. Primary factors limiting salmonid production in the South Umpqua sub-basin generally can be classed as a lack of gravel and high summer water temperatures in the mainstem South Umpqua and tributaries.

283. In the lower portions of both the Cow Creek and South Umpqua sub-basins, unregulated development on riparian lands has adversely affected water quality, particularly water temperatures.

ALTERNATIVES TO ADDRESS CONCERNS

Structural

284. The County should continue formulation studies of both the Honeysuckle site on West Fork Cow Creek and the Golden Gulch site on Elk Creek near Tiller. Such studies should include provision for coordinated water quality improvement programs for the South Umpqua.

Non-structural

285. Continue land use regulation of riparian habitat should be strengthened, particularly with regard to the South Umpqua and Cow Creek sub-basins.

286. The County should actively promote reestablishment of riparian habitat lost to previous unregulated land use development, including freeway construction, and flooding.

Enhancement Programs

287. Numerous stream enhancement projects are underway one tributary streams in the South Umpqua sub-basin. These programs are sponsored either solely or in cooperation with the Salmon Steelhead Enhancement Program of the ODFW, the Salmon Steelhead Improvement Program of Douglas County, the U.S. Forest Service, the Bureau of Land Management, or private groups.

288. The hatchery supplementation programs of the Oregon Department of Fish and Wildlife provide for production and release of chinook, steelhead, coho, rainbow trout, brook trout, and cutthroat trout in the river and its tributaries as well as the system of lakes in the Umpqua Basin.

AREA DESCRIPTION

289. Camas Valley is a rural area of roughly 5,000 acres in the southwestern part of Douglas County. The sub-basin is on the western slopes of the Coast Range, outside the Umpqua River drainage, and includes the origin of the Middle Fork Coquille River. Surrounded by steep, forested mountains of the coastal range which rise to an elevation of 2,500 feet, the valley has a pastoral setting. The valley itself has an elevation of about 1,100 feet.

SURFACE WATER

Quantity

290. Current demands for water in Camas Valley are not large. However, periodic shortages of surface water are experienced during the months of July through October which particularly impacts irrigation use and fish life.

Quality

291. No point sources of discharge are identified within the sub-basin.

292. Generalized nonpoint source problems occurring at a low frequency in the Camas Valley sub-basin include: 1) a moderate amount of water withdrawal below the confluence with Twelvemile Creek; 2) severely elevated water temperature downstream from the confluence with Twelvemile Creek and moderately elevated temperatures in Twelvemile Creek and upper Middle Fork; and, 3) streambank erosion in the Middle Fork upstream from Twelvemile Creek.

293. Sedimentation is rated as a severe problem in Twelvemile Creek and moderate in the upper reach of the Middle Fork.

LAKES

294. The Camas Valley sub-basin has no natural lakes or reservoirs open to public recreation.

GROUND WATER

Quantity

295. The Camas Valley sub-basin is located in the Coast Range which consists largely of marine sediments of low permeability and water holding capacity. The transmissibility necessary for the movement of water is very low in the tight marine material. Even when saturated these sedimentary formations contribute little recharge to stream flows after the rains have stopped. Many small streams dry up completely in the absence of surface runoff because there is little or no recharge from ground and land storage.

296. Wells are the primary water source for the rural population of the Camas Valley sub-basin. The average well in Camas Valley has a median depth of 85 feet and discharges a median flow of 5 GPM.

297. The underlying aquifer is moderately productive. Additional wells could be drilled and a small group-domestic system could be established.

298. The area north and northeast of the community of Camas Valley appears to have the most productive wells.

Quality

299. The quality of the well water in Camas Valley is generally good. Minor problems affecting well water quality include: Concentrations of dissolved solids; bacteriological contamination from septic tank or feed lot infiltration; and, hydrogen sulfide concentrations.

CURRENT WATER USE

Municipal and Industrial

300. There is no municipal water system in Camas Valley, nor is there a water district or water association. All houses, farms and ranches have individual wells to meet their domestic needs.

301. There is only one industrial plant in Camas Valley and it has a minimal water requirement. Since the plant owner has already constructed an 800 acre foot reservoir, more than adequate water supply appears available for any possible future expansion.

Irrigation

302. Approximately 370 acres are irrigated under existing water rights in Camas Valley. Due to the lack of water right seniority, 60% of these lands normally do not receive enough water to meet their full seasonal needs.

FUTURE WATER USE

Municipal

303. It is anticipated that wells will continue to meet the domestic water needs and there will be no demand on surface streams and reservoirs.

Rural Domestic

304. Wells of moderate yield and acceptable quality could be drilled almost any place in the valley to provide sufficient water for future use, provided that the wells are properly located, protected, and of adequate depth. No storage should be needed to satisfy domestic requirements.

STRUCTURAL STORAGE ALTERNATIVES

305. Increased irrigation needs would most likely necessitate additional water storage. It is possible that identified irrigation needs could be met by local efforts rather than a County-sponsored project.

306. Potential storage sites include the existing 800 acre-feet reservoir located in the vicinity of Lake Creek, which could be enlarged, and a site upstream of that which could hold several hundred acre feet.

WATER RESOURCES POLICIES

GOAL: Make continuing and substantial progress toward improving the quality and quantity of our water resources.

OBJECTIVE A: To ensure all standards and regulations applicable to waters of Douglas County are enforced and coordinated.

POLICIES:

1. Douglas County shall coordinate with DEQ on specific actions which require permits such as NPDES (National Pollution Discharge Elimination System) and WPCF (Water Pollution Control Facility) permits.

2. New point sources of water pollution shall, during the planning process, obtain appropriate certification from the DEQ to ensure compliance with current discharge standards.

3. Encourage DEQ to expand their monitoring program and increase sample areas to determine critical areas. Impacts from domestic sewage outfalls should be assessed to identify any possible hazards.

OBJECTIVE B: To provide quality water for public water supplies, propagation of wildlife, fish and aquatic life and for domestic, agricultural, industrial, municipal and other beneficial uses.

POLICIES:

1. Residential, commercial and industrial development should be designed and located where it will have the least impact on water quality.

2. Promote watershed management practices which protect and enhance water quality and quantity.

3. Water resources used as municipal water supplies shall be protected from activities which would result in state and federal standards being violated.

4. Water resources used as municipal water supplies shall be protected by encouraging the strict enforcement by the State Department of Forestry of the State Forest Practices Act applicable to Class I streams and promoting agricultural practices which have the least harmful effect on water quality by encouraging agriculturists to work closely with the Soil Conservation Service to determine best management practices.

5. Encourage all sewage treatment facilities to maintain or be upgraded to meet water quality requirements.

6. When municipalities have identified particular needs and methods for protecting their watersheds, the County shall consider including such measures within the mutually adopted urban growth management agreement. (Revised 11/25/87)

7. Small watersheds which are water sources for municipalities shall be identified and protected in the cooperative urban growth boundary management agreement if the City and County determine that special protective measures are needed for the watershed.

OBJECTIVE C: To minimize negative impacts to fish and wildlife species.

POLICIES:

1. Encourage maintenance of adequate minimum flow standards to ensure a productive fish habitat and protect aquatic life.

2. Carry out cooperative water quality planning through such agencies as Water Resources, SCS, Fish and Wildlife, Department of Forestry, BLM, Forest Service, DEQ and USGS.

3. Encourage the retention of riparian vegetation wherever possible.

OBJECTIVE D: To ensure an adequate quantity of water for beneficial uses within the County.

POLICIES:

1. Maintain a network of hydrologic data gathering stations to include water flow, water quality, precipitation, and snow pack.

2. Evaluation of demand for water shall include, but not be limited to, the following potential beneficial uses in no particular order: domestic, municipal, agriculture, streamflow augmentation, industrial, commercial, livestock, hydro-electric, mining, recreation.

3. Cooperate and coordinate with Federal, State and local agencies in assuring maximum beneficial use of all waters within the County.

4. The County shall maintain a map of potential public water impoundment sites. The map shall be subject to occasional review and can be amended at the biannual plan amendment schedule. The Water Resources Advisory Board may recommend additions to or deletions from the potential public water impoundment sites based on the following criteria: (Revised 11/25/87)

   a. service area

   b. volume

   c. economics

   d. hydrology

   e. environmental concerns

5. In evaluating the quality of alternative public water impoundment sites, the following criteria shall be considered:

   a. conformance with the policies of this plan;

   b. ability to meet needs and projected demands for water considering:

      (1) the hydraulic capability of the site, considering that a reservoir should be sized to optimize the yield of the watershed;

(2) the reliability of the water supply to the site considering that the overall water impoundment program should be designed to provide a 95% reliable supply for projected domestic, municipal and industrial and commercial demands, and an 80% reliable supply for all other projected demands; and

(3) streams and reaches through which releases would be available for diversions, giving particular consideration to meeting the needs of identified "problem areas" identified by the Douglas County Water Resources Advisory Board.

c. economic consequences and benefits of using the site for a water impoundment, including but not limited to:

(1) facility costs such as construction, reservoir maintenance, road and utility relocation, land acquisition, fish passage facilities, etc.;

(2) impacts on agriculture or forest production.

d. environmental costs and benefits including but not limited to:

(1) impacts on stream flows and instream uses; and

(2) impacts on water quality.

e. social consequences;

f. energy consequences.

6. If, during the evaluation of alternative potential water impoundment sites, a particular site is identified as having major problems such as containing a federally listed endangered species, major geologic fault, major environmental impact which cannot be mitigated or is unacceptable to appropriate agencies, or having characteristics such that the costs of constructing an impoundment site to optimize the yield of the watershed would exceed the resources of potential developers, it may be removed from further consideration.

OBJECTIVE E: Provide management practices to minimize erosion and hazards in order to improve water quality for instream and out-of-stream uses.

POLICIES:

1. Existing riparian vegetation along streams and river banks should be maintained whenever feasible to provide fisheries and wildlife habitat, minimize erosion and scouring, retard water velocities and suppress water temperatures. Regarding forest management activities on forest land, the riparian vegetation shall be protected as required by the Oregon Forest Practices Act.

2. Encourage the use of nonstructural methods of bank stabilization in agriculture or forest areas experiencing accelerated soil loss.

3. Encourage agriculturists to cooperate with SCS in developing management plans.

4. Residential, commercial or industrial development in unstable headwater areas will be kept at a minimum.

OBJECTIVE F: To evaluate and analyze land uses which conflict with the water resources of the County.

POLICY:

In those cases in which the proposed land uses would conflict with water resources, water quality or water quantity, as identified in this plan, the County shall weigh the value of the water resource against the economic, social, energy and environmental consequences of the proposed use. The County shall also develop programs to achieve protection of water resources in undertaking such a review.

OBJECTIVE G: To utilize the water resources of Douglas County in an efficient manner.

POLICIES:

1. Encourage individual water conservation practices to hold water demands to a minimum.

2. Encourage the efficient use of municipal water by minimizing in system water losses and support use of pricing structures which promote conservation.

3. Encourage industries to recycle processed water.

4. Encourage irrigation practices which minimize water losses and support pricing policies for irrigation water which promotes conservation.

POLICY IMPLEMENTATION:

1. Statements of compatibility on specific actions will be submitted to DEQ when required.

2. Consider in land development and road construction, actions which minimize the degradation of water quality.

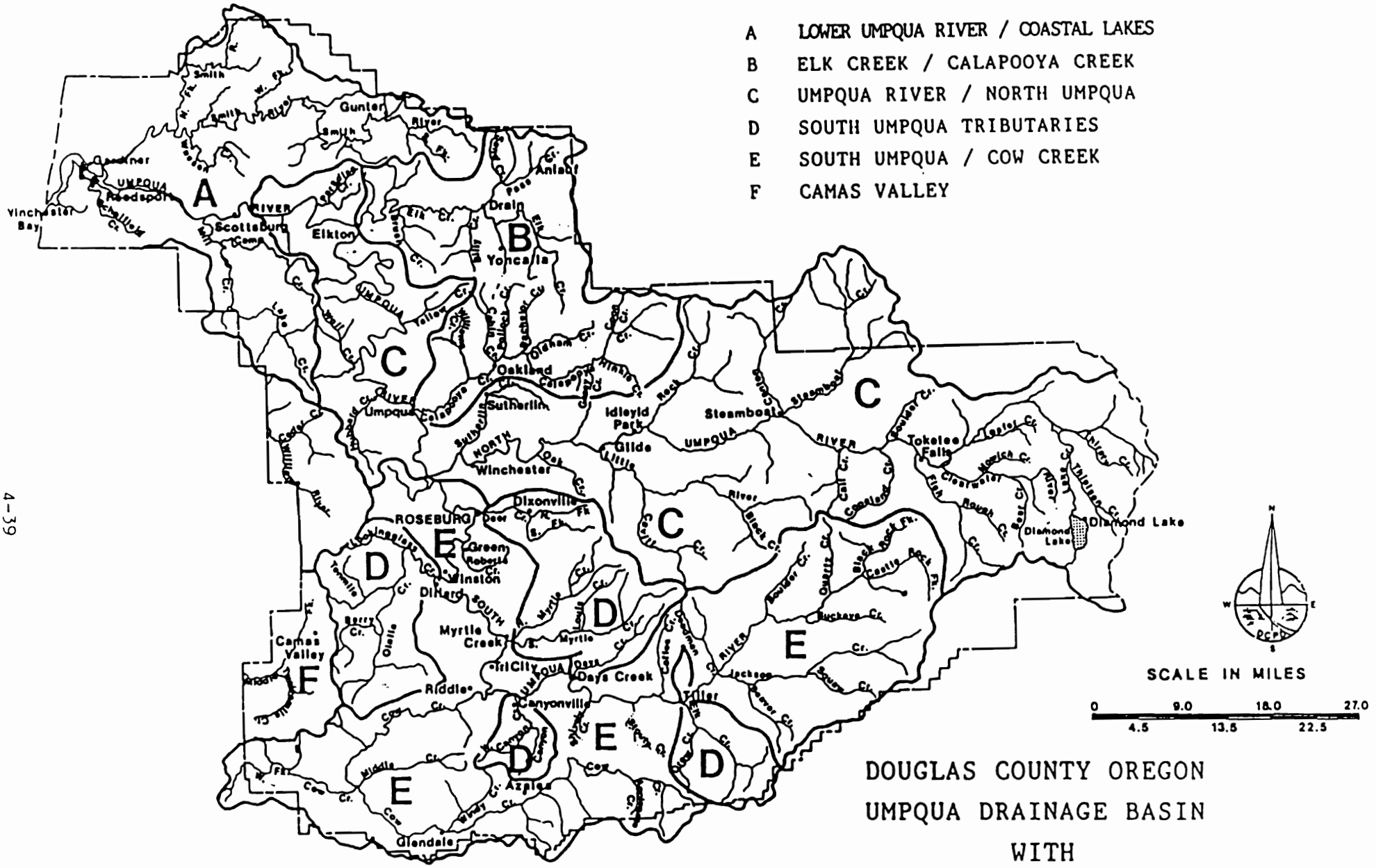
3. Maintain Land Use and Development Ordinance standards which require that an adequate potable year round water supply be identified prior to final approval of subdivisions and partitionings.

4. Subdivision and partitioning of designated resource shall be prohibited in identified public water impoundment sites.

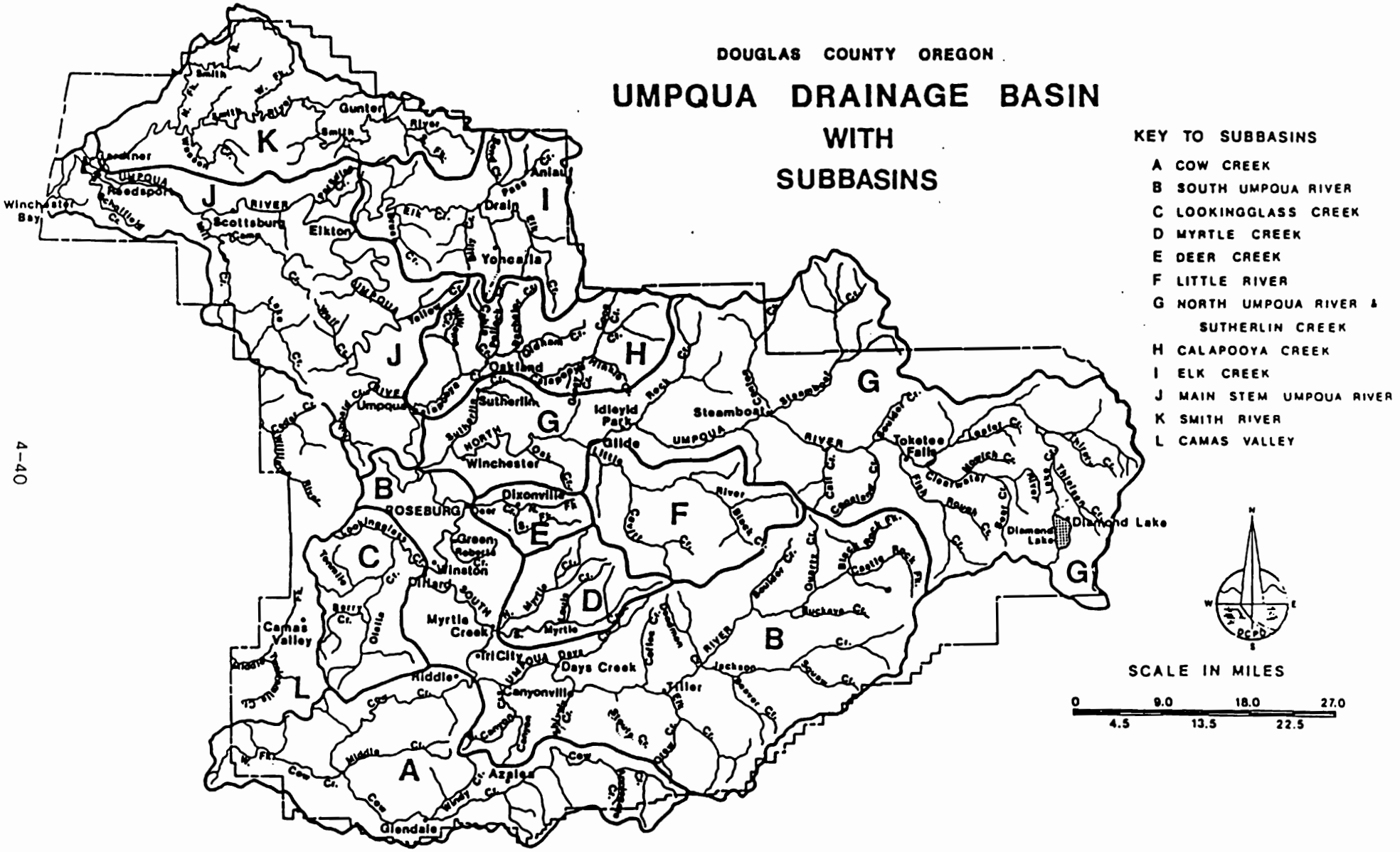
5. Upon final determination, pursuant to Policies 5 and 6 of Objective D, that the specified potential water impoundment site is the best alternative site for meeting the relevant water needs of the County, and justification of an exception from Statewide Planning Goals, if required, the plan designation of the selected site shall be changed to Public/Semi Public and the site shall be zoned Water Impoundment (WI).

6. Current water impoundments over 1,000 acre feet shall be designated Public/Semipublic and zoned Water Impoundment.

7. Develop a water impoundment overlay zone to prevent uses that conflict with potential water impoundment sites.



DOUGLAS COUNTY OREGON
UMPQUA DRAINAGE BASIN
WITH
SUBBASINS KEYED TO
COMPREHENSIVE PLAN FINDINGS
JUNE 1989


DOUGLAS COUNTY OREGON
UMPQUA DRAINAGE BASIN
WITH
SUBBASINS
KEY TO SUBBASINS
A COW CREEK
B SOUTH UMPQUA RIVER
C LOOKINGGLASS CREEK
D MYRTLE CREEK
E DEER CREEK
F LITTLE RIVER
G NORTH UMPQUA RIVER & SUTHERLIN CREEK
H CALAPOOYA CREEK
I ELK CREEK
J MAIN STEM UMPQUA RIVER
K SMITH RIVER
L CAMAS VALLEY
SCALE IN MILES
0 9.0 18.0 27.0
4.5 13.5 22.5
PREPARED BY DOUGLAS COUNTY PLANNING DEPARTMENT
DECEMBER 1987

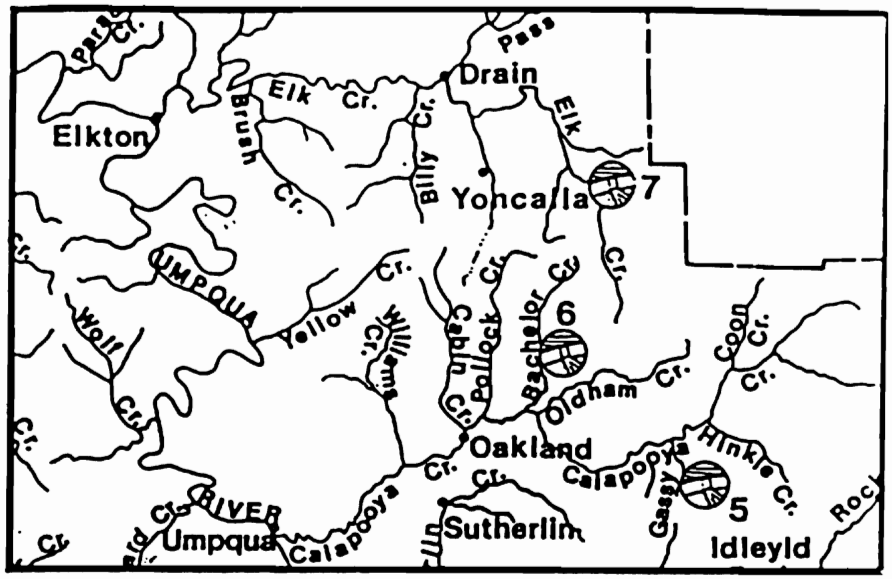
DOUGLAS COUNTY, OREGON

POTENTIAL WATER IMPOUNDMENT SITES

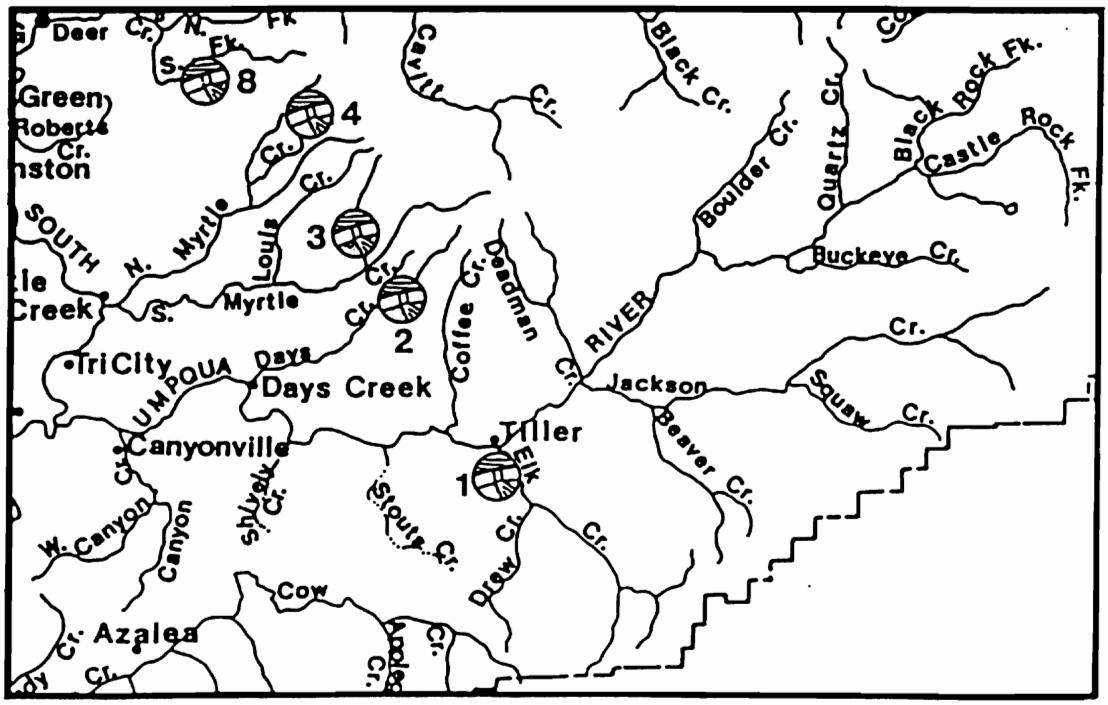
APPROXIMATE LOCATION OF POTENTIAL IMPOUNDMENT

INDEX TO SITES

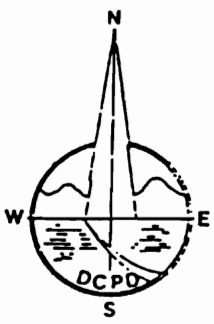
1 LOWER ELK CREEK
2 MAY CREEK
3 WEAVER CREEK
4 NORTH MYRTLE CREEK
5 GASSY CREEK
6 BACHELOR CREEK
7 MILLTOWN HILL
8 SOUTH FORK DEER CREEK



NORTH-CENTRAL DOUGLAS COUNTY



SOUTH-CENTRAL DOUGLAS COUNTY



SCALE IN MILES

0 9.0 18.0 27.0
4.5 13.5 22.5

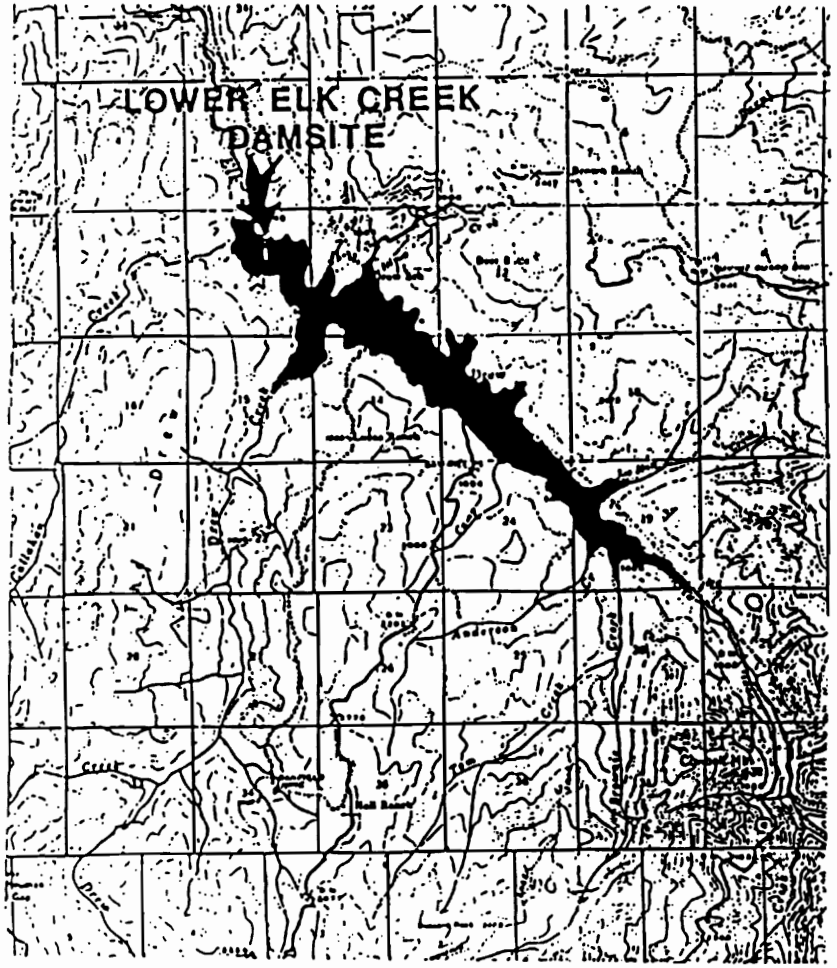
PREPARED BY DOUGLAS COUNTY PLANNING DEPARTMENT
JUNE 1969

POTENTIAL WATER IMPOUNDMENT DATA (Revised 6/28/89)

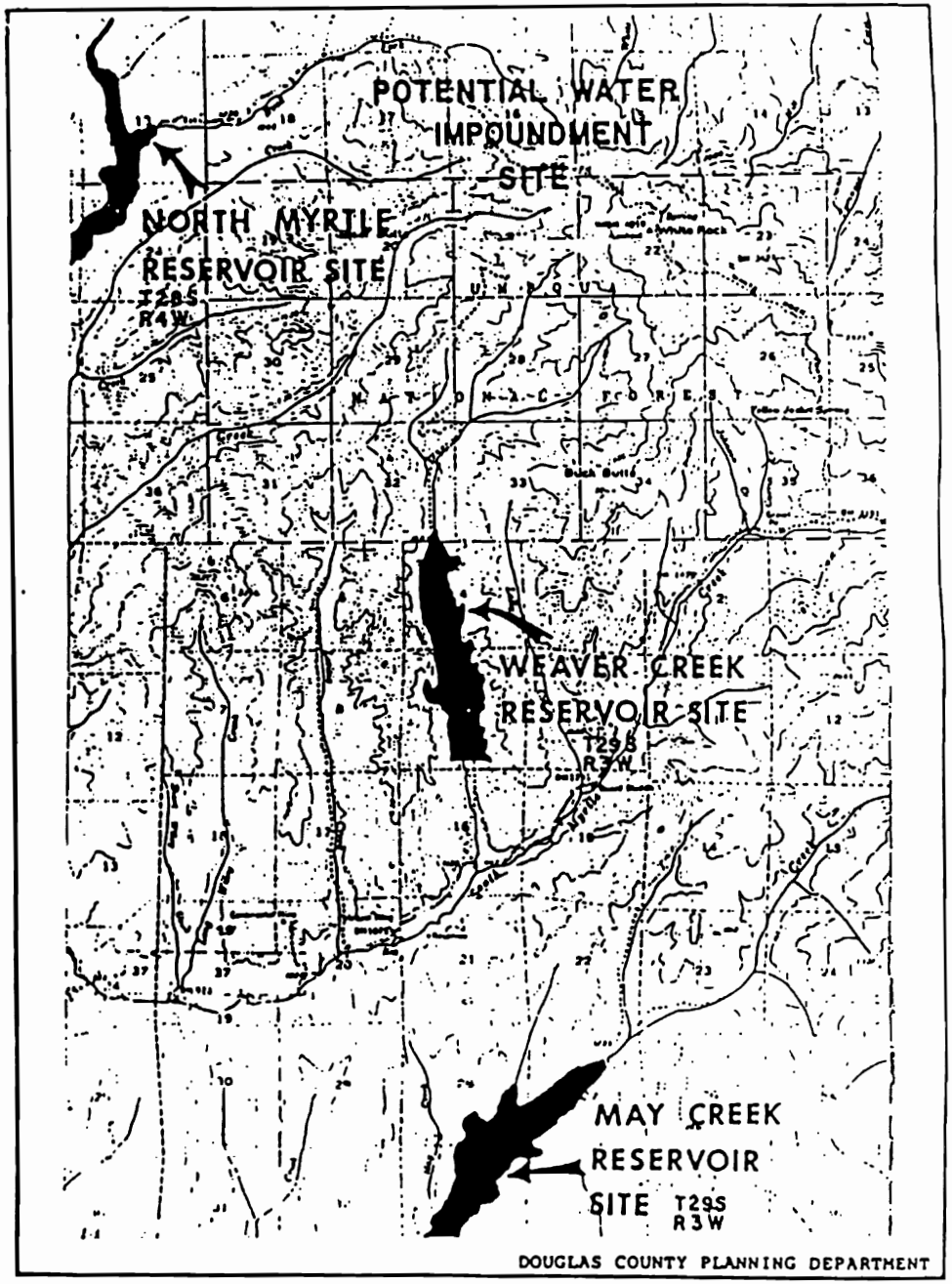
SITE NUMBER	SITE NAME	STORAGE AT NORMAL POOL, AF	NORMAL POOL ELEV. FT.	SURFACE AREA AT NORMAL POOL, AC
1	Lower Elk Cr.	36,000	1450	554
2	May Cr.	16,000	1218	248
3	Weaver Cr.	5,700	1454	92
4	North Myrtle	10,000	1180	170
5	Gassy Cr.	9,200	928	194
6	Bachelor Cr.	9,600	614	288
7	Milltown Hill	25,000	775	681
8	S. Fork Deer Cr.	10,000	930	175

POTENTIAL WATER IMPOUNDMENT SITE

T.31S, R2W



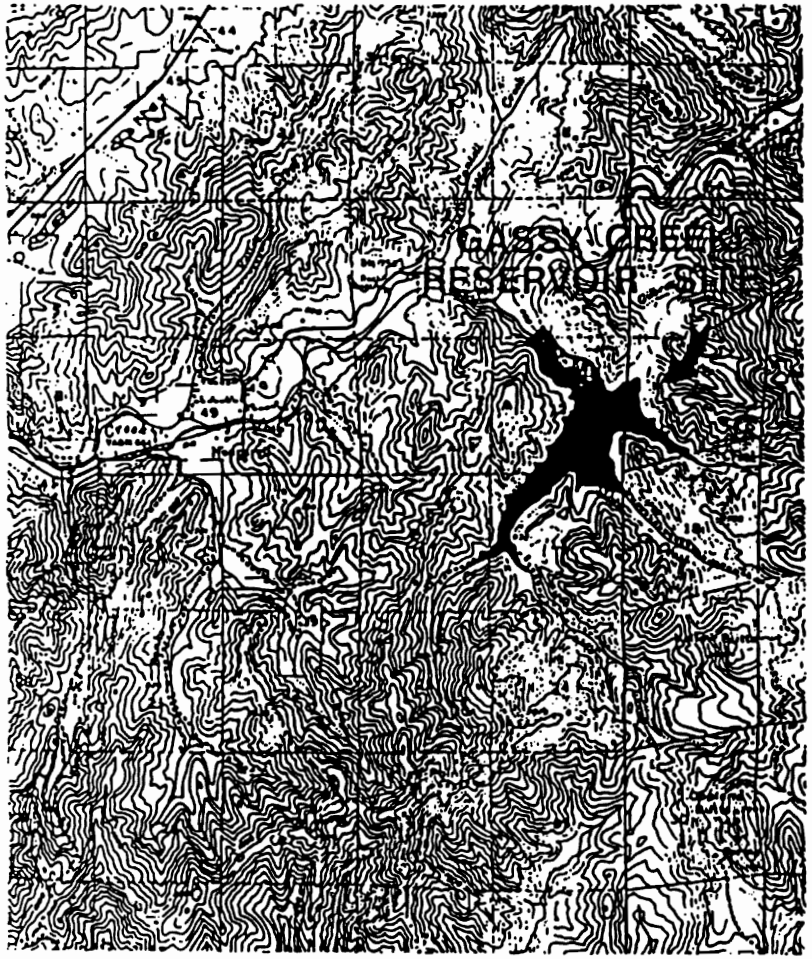
DOUGLAS COUNTY PLANNING DEPARTMENT



DOUGLAS COUNTY PLANNING DEPARTMENT

POTENTIAL WATER IMPOUNDMENT SITE

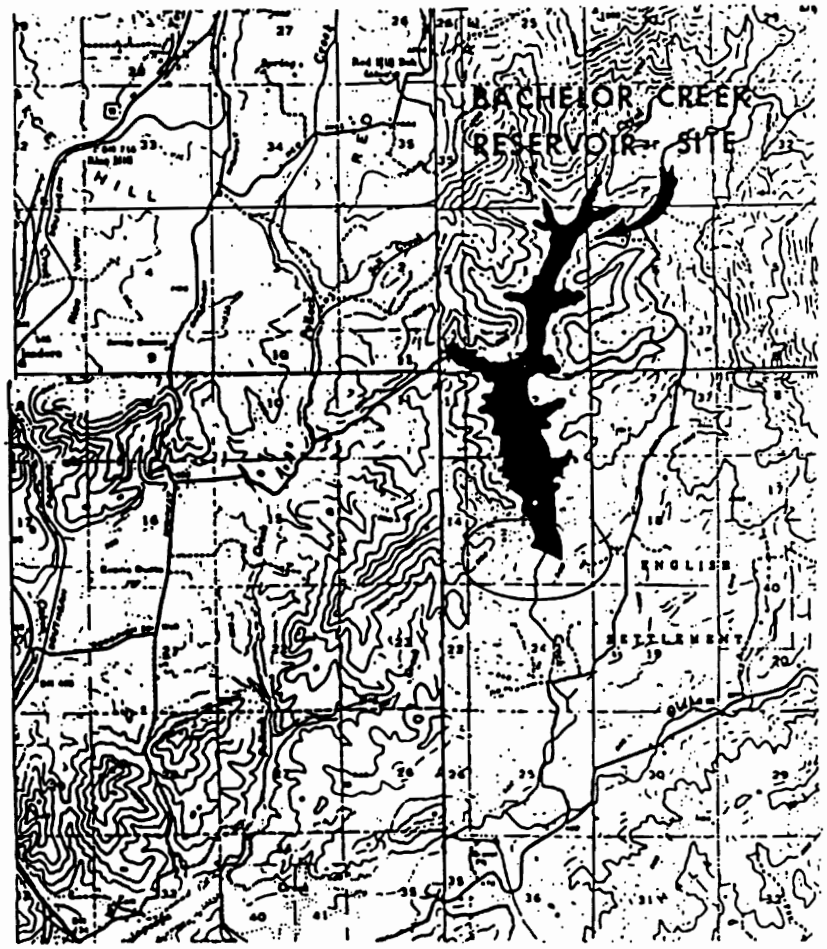
T 25 S, R 4 W



DOUGLAS COUNTY PLANNING DEPARTMENT

POTENTIAL WATER IMPOUNDMENT SITE

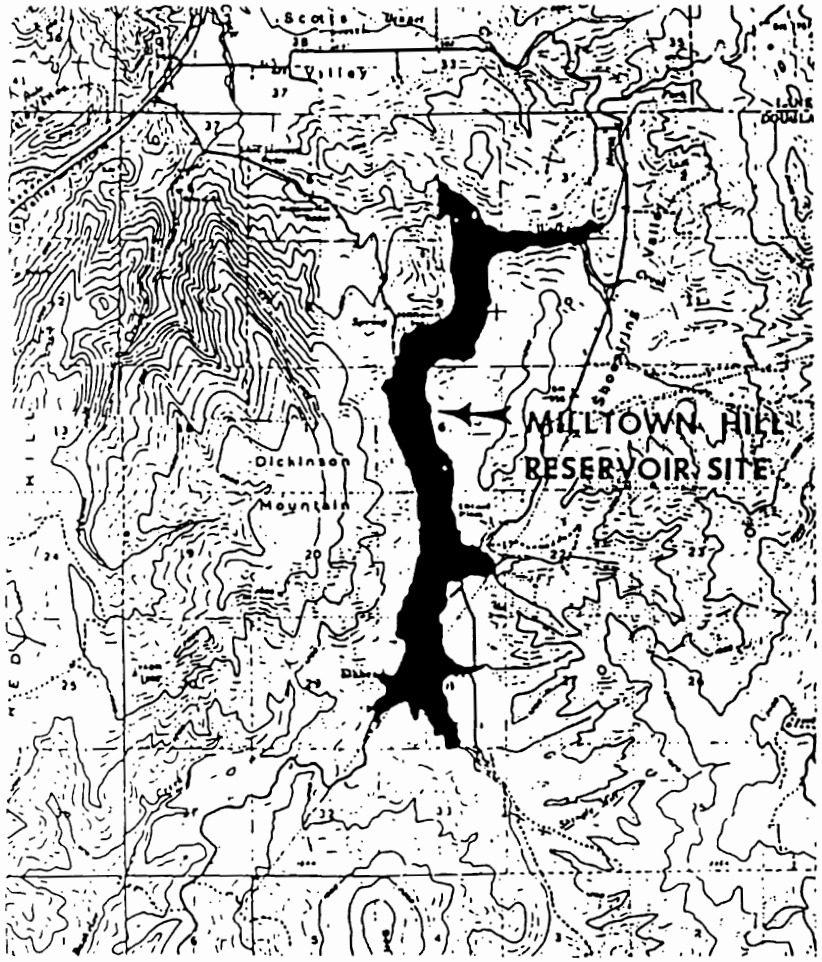
T.24S.R4W 13
5 KRA 2/20/08



DOUGLAS COUNTY PLANNING DEPARTMENT

POTENTIAL WATER IMPOUNDMENT SITE

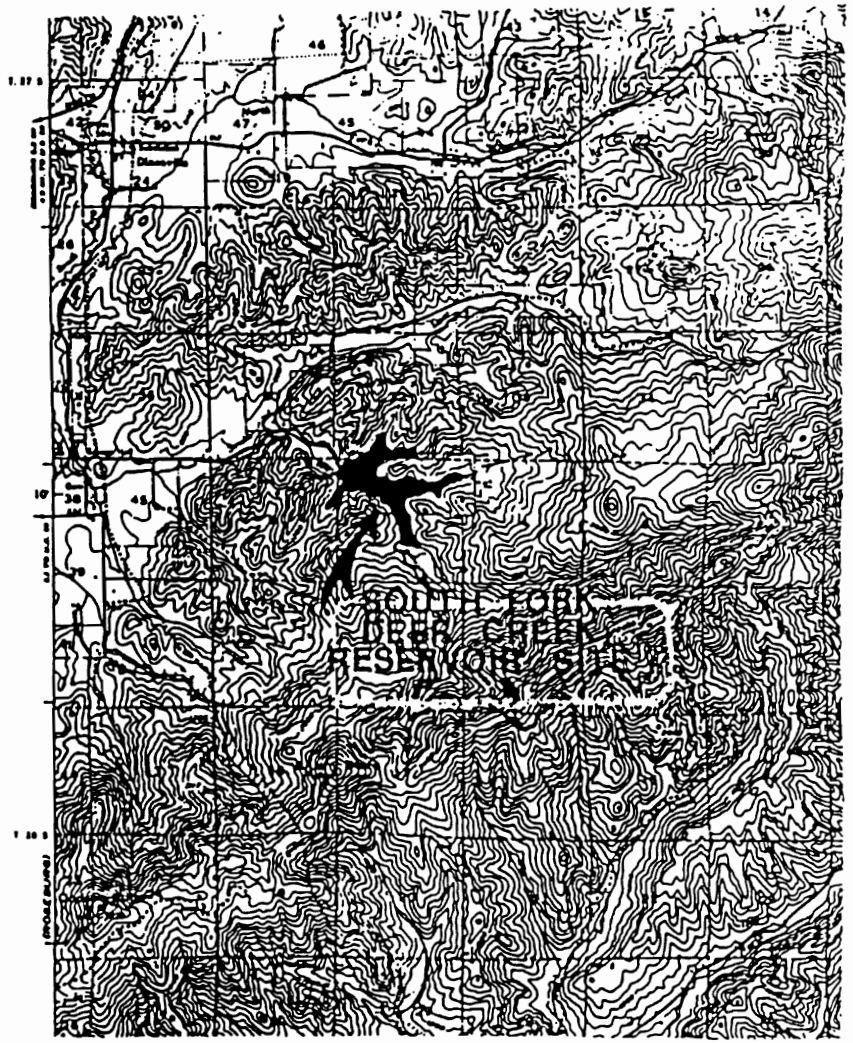
T.23S, R4W



DOUGLAS COUNTY PLANNING DEPARTMENT

POTENTIAL WATER IMPOUNDMENT SITE

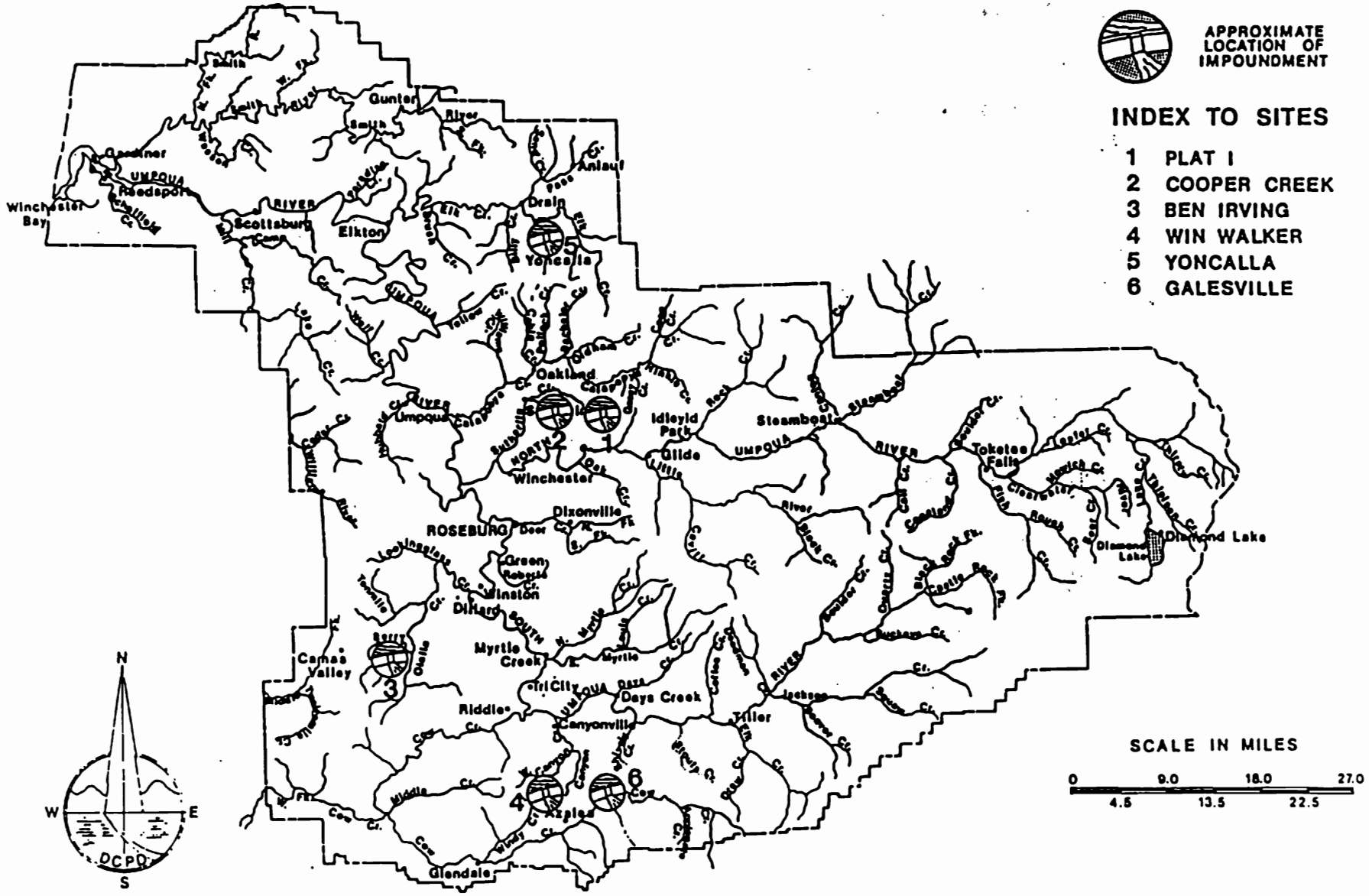
T27S, R4W W.M.
T28S, R4W W.M. — sec 5



DOUGLAS COUNTY PLANNING DEPARTMENT

DOUGLAS COUNTY, OREGON

EXISTING WATER IMPOUNDMENTS



PREPARED BY DOUGLAS COUNTY PLANNING DEPARTMENT
DECEMBER 1987

WATER IMPOUNDMENT DATA

SITE	SITE NAME	STORAGE AT NORMAL POOL, AF	EMBANK-MENT CU. YD.	SURFACE AREA AT NORMAL POOL, AC.	HEIGHT OF DAM IN FT.	DAM TYPE
1	Plat 1	2,050	130,000	247	30.5	Earthfill
2	Cooper Creek	4,385	250,220	156	95.5	Earthfill
3	Ben Irving	11,250	995,300	250	130.0	Earthfill
4	Win Walker	300	4,900	17	60.0	Concrete
5	Yoncalla	100	57,200	6	20.0	Earthen Dam
6	Galesville	42,225	1,488,000	640	167.0	Concrete

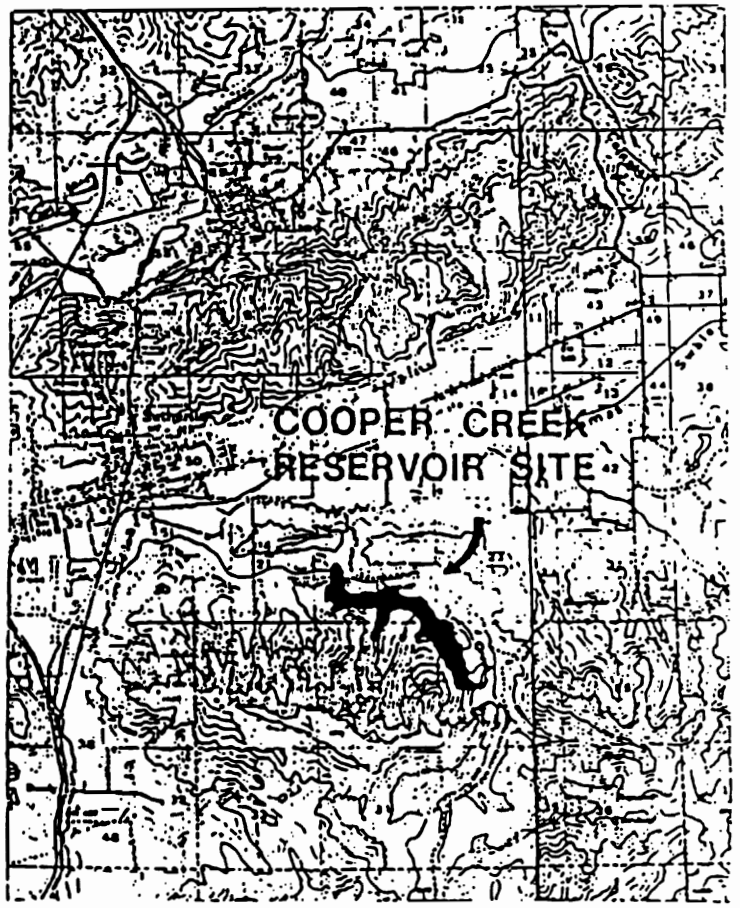
WATER IMPOUNDMENT SITE

T25S,R5W

DOUGLAS COUNTY PLANNING DEPARTMENT

WATER IMPOUNDMENT SITE

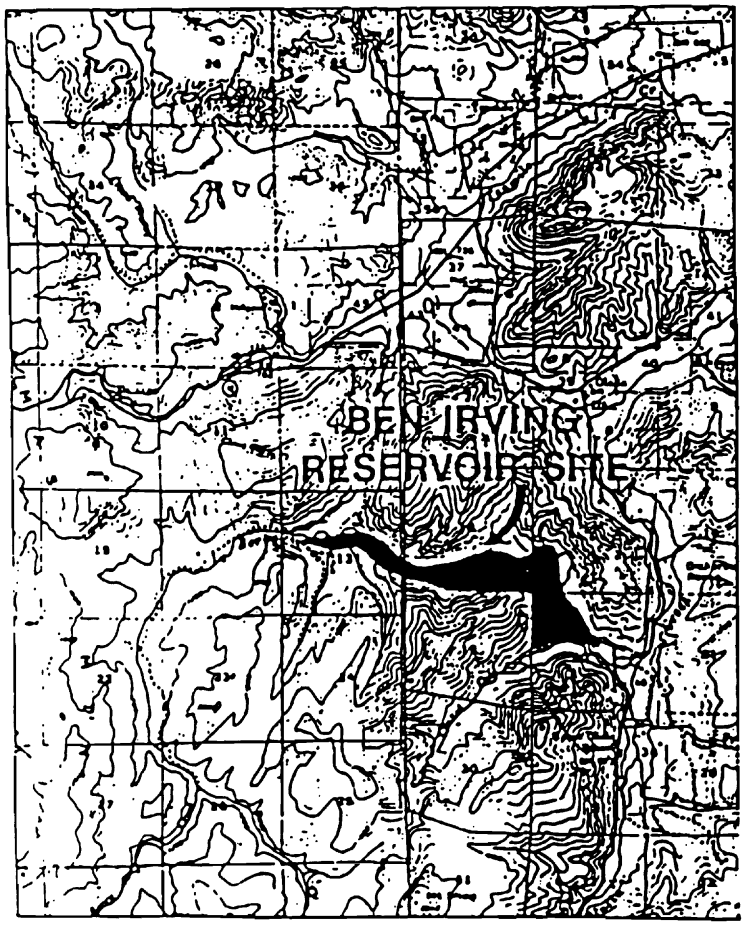
T25S,R5W



DOUGLAS COUNTY PLANNING DEPARTMENT

WATER IMPOUNDMENT SITE

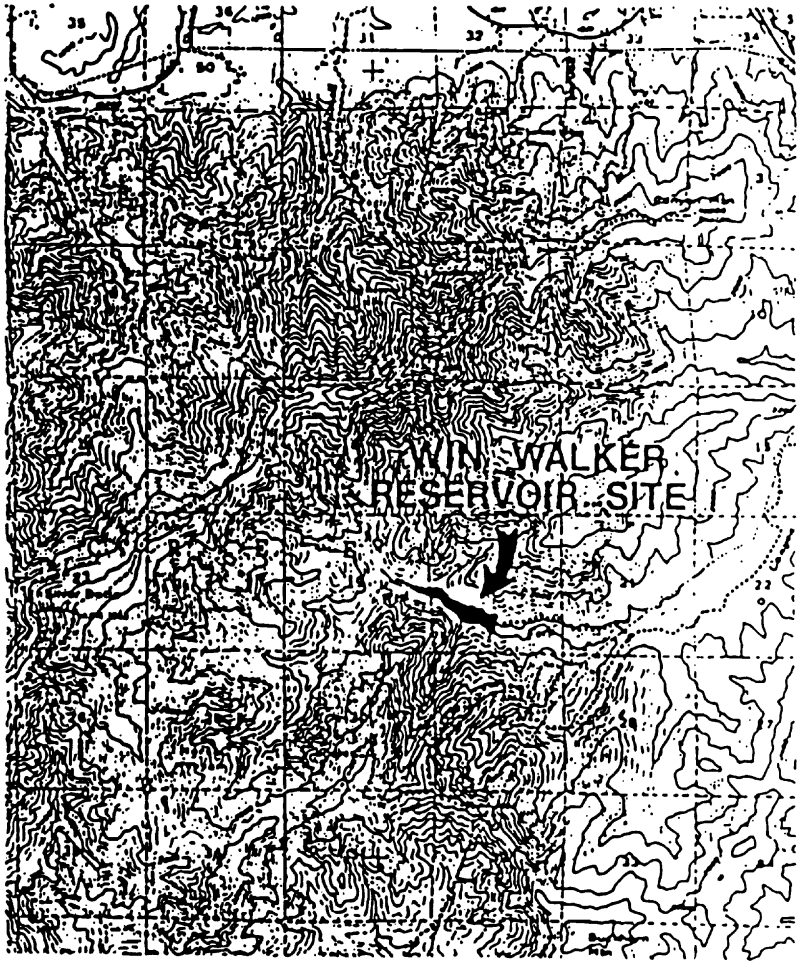
T29S, R7 and 8W



DOUGLAS COUNTY PLANNING DEPARTMENT

WATER IMPOUNDMENT SITE

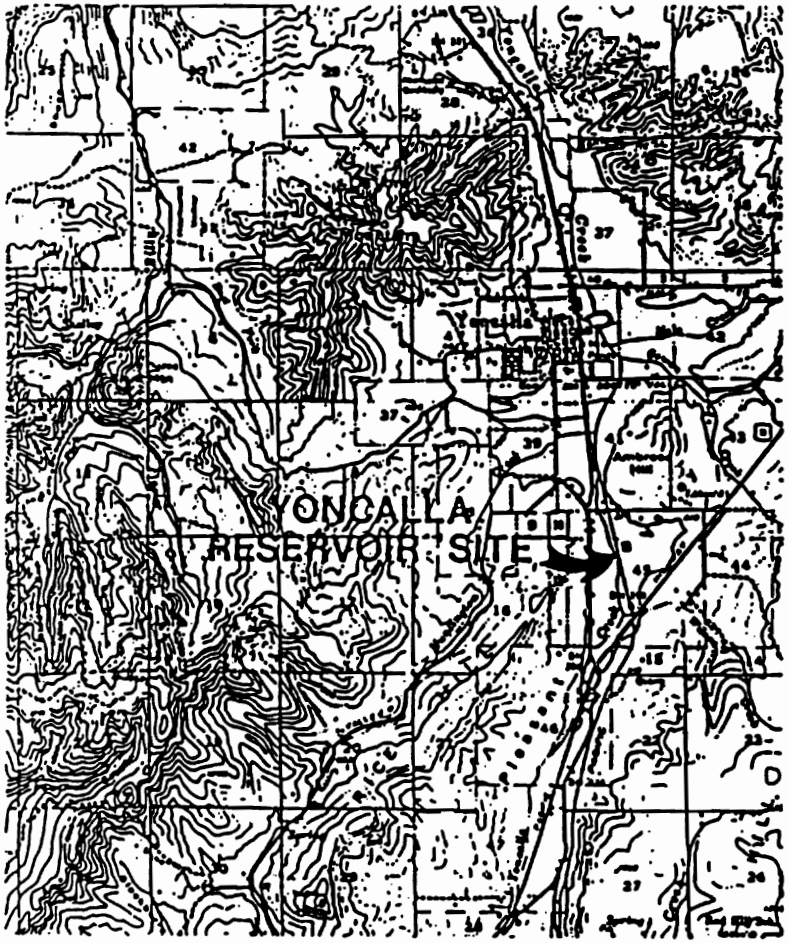
T 31S, R 5W



DOUGLAS COUNTY PLANNING DEPARTMENT

WATER IMPOUNDMENT SITE

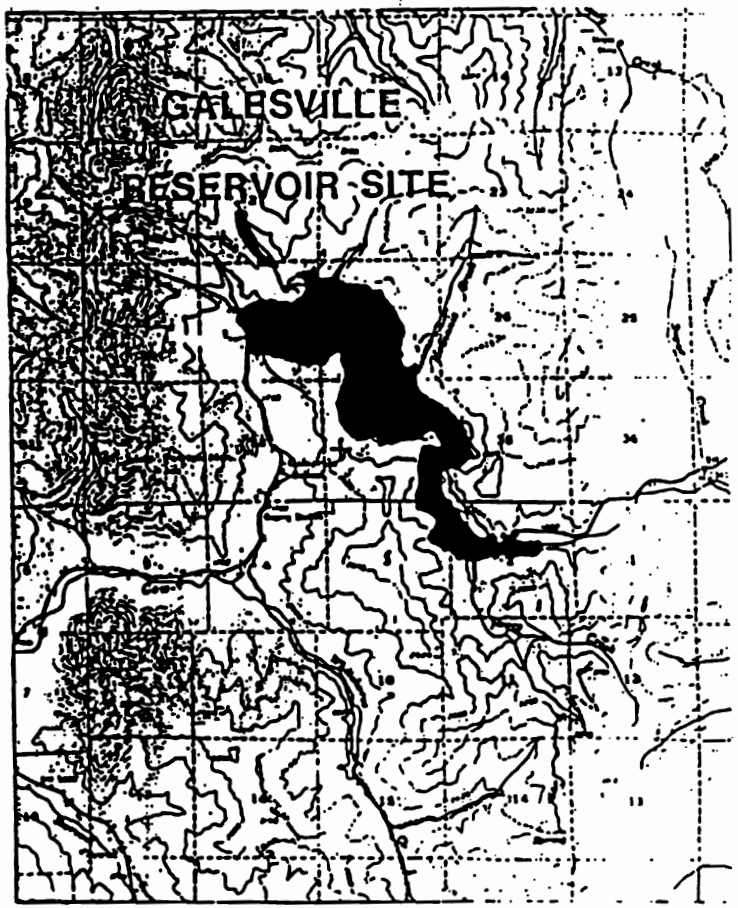
T23S, R5W



DOUGLAS COUNTY PLANNING DEPARTMENT

WATER IMPOUNDMENT SITE

T31and32S,R4W



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