

**REPORT**  
OF THE  
**Oregon Klamath River Commission**  
ON  
**Water Resources and Requirements**  
OF THE  
**Upper Klamath Basin**

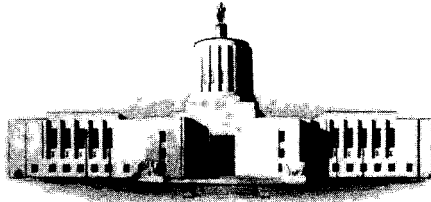


DECEMBER 1954



Link River, about one mile long, showing Lake Ewauna in foreground, upper Klamath Lake in background and a part of the city of Klamath Falls. The picture shows the dam at the outlet of Upper Klamath Lake and the power conduits of The California Oregon Power Company, Keno Canal on right bank, (left side of picture) and pipe line on left bank.

NELSON REED, CHAIRMAN  
JAMES KERNS, JR.  
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STATE OF OREGON  
OREGON KLAMATH RIVER COMMISSION  
216 FIRST NATIONAL BANK BUILDING  
KLAMATH FALLS, OREGON  
December 15, 1954

To  
The Honorable Paul L. Patterson  
Governor of Oregon

and

The Forty-eighth Legislative Assembly

As directed by ORS 542.480 (L.1953 c 431  
Sec. 9) this commission has prepared and transmits  
to you herewith its report on investigations of  
the water supplies of the Upper Klamath Basin in  
Oregon and the present and future needs of this  
state and its citizens for the waters of Klamath  
River and its tributaries.

Respectfully submitted,

OREGON KLAMATH RIVER COMMISSION

By Nelson Reed  
Nelson Reed, Chairman

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## INTRODUCTION

The Oregon Klamath River Commission was given the specific assignment of cooperating with the California Klamath River Commission in formulating and submitting to the legislative assemblies of both state for their approval an interstate compact relative to the distribution and use of the waters of the Klamath River. It was given authority to make the necessary surveys and investigations upon which to base such negotiations.

Because of the limited funds available, \$25,000 for a two-year period, it is obvious that little could be accomplished in the way of original surveys. However, it is particularly fortunate that the United States Bureau of Reclamation has been engaged in a study for a Comprehensive Report on the Development of Water and Related Resources of the Upper Klamath Basin, which report was issued as a preliminary draft as of June 15, 1954, and the Bureau has been fully cooperative in making its studies and basic data available to this commission. Also, the State Water Resources Board of California has been prosecuting a study of present and potential uses of waters of the Klamath River in both states and issued an Interim Report on Klamath River Basin Investigation dated March, 1954. Both these reports have been of inestimable value in preparation of the data to be presented herein.

This report has been prepared by Lewis A. Stanley, Engineer for the Oregon Klamath River Commission.

## THE PROBLEMS

An interstate compact to govern the equitable division of the waters of the Klamath River between the states of Oregon and California is unquestionably the logical means of avoiding litigation, promoting friendly relations and developing a comprehensive plan for the utilization of the waters of the Basin in the best interests of all of its people. Matters of present and potential controversy which may be finally resolved and settled by such compact include the following:

1. Determination of the portion of the total run-off of Klamath River and its interstate tributaries which may be consumptively used in Oregon.
2. Determination of the rights for storage in Upper Klamath Lake and other possible reservoir sites in Oregon and operation of reservoirs to benefit water users in both states.
3. Authority for diversions of water in one state for beneficial use in the other.
4. Nature and extent of the rights of the United States to waters of the Basin, particularly as such rights apply to interstate diversions.
5. Determination of the order of preference in uses of water for its several purposes, where the supply is inadequate to fulfill all demands.

## PROGRESS TO DATE

Much of the effort of the Commission has been directed toward a comprehensive study of the water resources of the Upper Klamath Basin, the nature and extent of existing water rights, present uses of water and their effect on the flow of the Klamath River and probable ultimate water requirements for all purposes when the basin is fully developed. Thorough analyses have been made of the report of the Bureau of Reclamation dated June 1954 presenting plans for ultimate development and the report of the State Water Resources Board of California estimating the ultimate water needs of the entire Klamath River Basin. These reports plus independent studies have given the commission a quite detailed and thorough knowledge of the water problems and a good background for negotiations leading to an interstate compact.

The commission has taken an active interest in the proposal by private interests for development of the power potential of the Klamath River below Keno, Oregon and the alternate proposal of the Bureau of Reclamation for development of a part of this resource by a diversion of Klamath River water through Butte Valley, California. The interests and actions of the commission have been to the end that the power development, when accomplished, will completely utilize the resource and will be under proper safeguards to protect the future water requirements for consumptive uses such as municipal and domestic, irrigation, recreation and industry. Members of the commission and its engineer have attended numerous meetings of local groups such as the Klamath Basin Water Users Protective Association, the Klamath County Land Use Committee, Soil Conserva-

tion districts, Chamber of Commerce, the Farm Bureau, Grange and civic organizations in order to learn at first hand the problems and desires of these groups who represent the people of the basin.

There have been two joint meetings of the Oregon and California Klamath River Commissions. Principal accomplishments of these meetings have been agreements on broad questions of policy concerning the priority in uses of water and the areas in Oregon and California to be considered as comprising the Upper Klamath Basin. Relations between the two commissions are very cordial and it appears that there are no insurmountable obstacles to an ultimate agreement which will be the basis for an interstate compact.



## DESCRIPTION OF THE KLAMATH RIVER BASIN

### Physical

The Klamath River Basin lies in south central Oregon and northwestern California, and includes the total drainage area of the Klamath River plus the closed basins of Lost River and Butte and Red Rock Valleys. The basin has a total area of about 1560 square miles of which 565 square miles, (36%) are in Oregon. That part in Oregon includes nearly all of Klamath County and portions of Lake, Josephine and Jackson counties. In California the basin occupies portions of Modoc, Siskiyou, Trinity, Humboldt and Del Norte Counties.

While Butte and Red Rock Valleys in California and Swan Lake Valley in Oregon have no surface outlets to Klamath River, all are included within and are properly considered as parts thereof.

### Stream System

The central figure of the water supply system in the basin in Oregon is Upper Klamath Lake, the largest lake in Oregon. It is about 23 miles long and 5 miles wide and is joined on the north by Agency Lake which is about 5 miles long and 3 miles wide. These two lakes, plus marsh areas adjoining them are utilized as a reservoir for seasonal storage of water for irrigation on the Klamath Project and for power development by The California Oregon Power Company. The lake is fed by Williamson River and its tributary, the Sprague, and by Wood River (entering Agency Lake) and many smaller streams and springs.

Inflow to the lake is partially controlled by a dam at the outlet of Link River, creating a storage reservoir with 483,000 acre-feet active capacity. Link River is about one mile long, discharging into Lake Ewauna at the City of Klamath Falls. Lake Ewauna forms the headwaters of the Klamath River. The Klamath flows some 16 miles through flat valley lands to Keno, Oregon and then enters a narrow, precipitous canyon which cuts its way through the Cascade and Coast Ranges and drops 4000 feet in its 236 miles to the Pacific Ocean. After leaving Lake Ewauna, the Klamath is joined by the Shasta, Scott, Salmon and Trinity Rivers and many smaller streams.

Lost River originates at Clear Lake in Modoc County, California, flows northwesterly into Oregon, thence westerly and finally southwesterly back to California and into Tule Lake. While not naturally tributary to Klamath River, its flood and surplus flows have been diverted to the Klamath through the Lost River Diversion Canal of the Bureau of Reclamation. Some of its waters also eventually reach the Klamath by pumping from Tule Lake Sump and from Lower Klamath Lake.

#### The Basin Tributary to Klamath River in Oregon.

For the purpose of this report, the Upper Klamath Basin is designated as that portion of the basin tributary to Klamath River above the Oregon-California state line. Portions of this upper basin are in California, but because of their inter-relation in water supply and water use, the areas in both states are inseparable in a study of this nature. Drainage from some areas in California flows northerly into Oregon and is used for irrigation in Oregon

and some arable lands in California must look for an irrigation water supply to the Klamath River with diversion of the water in Oregon.

The total area of the Upper Klamath Basin in Oregon and California, tributary to the Klamath River in Oregon, is about 7450 square miles. Of this total, 5135 are in Oregon. Oregon also has an area of about 345 square miles in the western portion of the basin tributary to the Klamath River in California.

## WATER SUPPLY

### Stream Flow.

Stream flow records have been obtained at important stations throughout the upper basin, many of the records practically continuous since 1904. Detailed records are presented as an appendix to this report. At this point will be presented a general summary, based upon these records, showing mean monthly and mean annual flows for those streams which are vital to the determinations to be made of the total water supply available and the allocations to be made for future uses in the upper basin.

The following table shows mean monthly and mean annual flows for selected streams, in thousands of acre-feet. Particular attention should be given the foot-notes as the mean values used are not all based on the total period of record. For stations such as the "A" Canal, Lost River Diversion Canal, and others, where expanding operations of the Klamath Project have made long-time averages of little value, the figures presented are for the last ten years during which such expansion has been minor.

TABLE I

Summary of Stream Flow at Selected Stations  
Monthly Mean and Annual Mean Flows

Thousands of Acre-feet

STREAM	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Water Year
Williamson R. below Klamath Marsh	2.7	4.6	5.7	4.4	5.7	14.3	17.4	9.1	3.7	2.0	1.7	1.8	73.2
Williamson R. above Sprague R.	20.1	20.0	20.8	20.6	20.3	28.3	30.4	24.2	19.4	18.6	18.7	18.6	260.0
Williamson R. below Sprague R.	36.5	38.6	43.9	44.5	49.7	76.2	99.0	83.3	50.2	34.3	32.6	32.4	621.2
Sycan R. near Beatty	0.6	1.0	1.2	1.2	2.9	13.5	21.5	20.6	7.0	1.1	0.6	0.5	71.6
Sprague R. near Beatty	4.2	4.5	8.8	9.0	10.1	17.0	27.7	24.1	12.1	5.3	4.7	4.4	131.9
Sprague R. near Chiloquin	17.2	18.6	22.0	23.3	26.9	46.4	68.9	61.3	33.1	17.2	15.1	14.6	364.6
Wood River near Fort Klamath	14.4	14.6	14.6	14.0	13.0	14.8	15.0	13.8	12.9	12.6	12.0	12.5	164.2
Net inflow to Upper Klamath Lake (1)	79.6	100.1	124.7	128.6	127.0	162.7	165.9	137.1	79.0	46.7	48.5	62.5	1262.4
Link River at Klamath Falls	77.5	77.7	89.5	97.0	93.0	113.0	131.5	122.1	95.5	80.6	72.5	71.8	1121.7
"A" Canal at Klamath Falls (2)	3.3						8.5	32.5	39.1	58.2	47.1	27.5	216.2
Lost River at Clear Lake Dam	2.2	3.7	6.1	9.2	17.0	33.1	26.6	6.4	2.4	0.8	0.6	1.2	109.3
Miller Creek at Gerber Dam	0.3	1.2	2.4	3.5	7.1	16.3	13.9	2.7	0.8	0.2	0.1	0.1	48.7
Lost River near Olene	7.6	7.5	9.4	14.4	20.4	29.4	26.0	10.2	8.0	7.1	7.4	7.8	155.1
Lost River Diversion Canal (2)	8.1	6.8	10.1	15.0	20.1	16.1	5.5	8.0	5.6	1.1	5.9	10.5	112.8
Klamath River to Lost River (4)				0.1		0.2	6.4	3.7	6.7	6.3	1.2		24.6
Diversion at Ady (2)	1.0	1.4	15.9	22.1	11.2	0.8	1.1	1.7	2.8	4.0	2.7	1.1	65.8
Pumpage at Ady (2)	4.6	4.0	3.1	5.4	8.7	11.6	8.4	8.8	5.0	3.8	4.3	4.6	72.4
Klamath R. at Keno (3)	81.4	82.3	92.0	103.6	102.8	125.0	133.2	120.3	89.4	74.7	70.9	74.4	1149.8
Klamath River nr Copco, Calif (5)	99.1	93.5	94.3	92.8	99.2	118.4	117.8	104.6	78.1	72.3	85.1	94.7	1150.0

(1) Computed as the measured outflow plus increase in storage or minus decrease in storage.

(2) 10-year period, 1944-1953.

(3) Keno and Spencer Bridge combined. Record 49 yrs

(4) Through Lost River Diversion Canal.

(5) Record for 30 years, 1923-24 thru 1952-53.

## WATER USE

The main supply of Klamath River water for irrigation of the lands of the Klamath Project is taken directly from Upper Klamath Lake through the "A" Canal. A part of the supply is diverted from Klamath River through the Lost River Diversion Canal and through Klamath Strait at Ady. There are numerous small diversions between Lake Ewauna and Keno for irrigation of project and non-project lands. Both the Lost River Diversion Canal and Klamath Strait are utilized to carry water both ways. When the flow of Lost River is greater than necessary to meet irrigation demands, the surplus is passed through the Diversion Canal to Klamath River and when there is a deficiency in Lost River, the flow is reversed and water is taken from Klamath River to Lost River. Similarly at Klamath Strait, surplus water in the lower Klamath Lake area is pumped to Klamath River and during periods of deficiency, water flows from the Klamath to this area.

### Lost River Diversion Canal.

Lost River Diversion Canal began carrying water in 1912 from Lost River near Olene to the Klamath just below Lake Ewauna. For the first twenty years of operation, ending in 1932, the canal carried an average of 75,000 acre-feet per year into the Klamath, varying between a low of 13,700 in 1930-31 and a high of 127,000 in 1913-14.

For the following 20 years, 1932-33 to 1951-52, the flow to the Klamath was larger, averaging 109,000 acre-feet per year, but during this period there was a seasonal diversion of Klamath River water to Lost River through this same canal, averaging 27,500 acre-feet per year. The records for some months show flows both ways

during the month. However, the net flow to Klamath River during the last 20 years has been 81,000 acre-feet per year, only slightly greater than for the 1912-32 period. It varied between a net of 4,100 acre-feet to Lost River in 1932-33 and a net of 236,400 acre-feet to the Klamath in 1942-43.

#### Upper Klamath Lake.

Most of the run-off from the Upper Klamath Basin flows through Upper Klamath Lake. The lake is operated as a reservoir and releases are controlled by a low dam across Link River at the outlet. The California Oregon Power Company operates the dam under a contract with the Secretary of the Interior, entered into in 1917. The contract provides that the power company may regulate the surface of the lake between elevations 4143.3 and 4137.0 subject to the condition that such regulation shall not interfere with diversions by the Bureau of Reclamation for the Klamath Project. Active storage capacity between the elevations above stated is 483,000 acre-feet.

Net inflow to the lake has been computed on an acre-feet-per-month basis, and is the measured outflow through Link River and the "A" Canal, plus increase in storage or minus decrease in storage. This method of computing automatically takes into account precipitation on the lake surface, evaporation, and irrigation consumptive use on lands bordering the lake and irrigated therefrom.

For the period of record, 1904 through 1953, the net inflow has averaged 1,262,000 acre-feet per year, varying between a low of 635,000 in 1930-31 and a high of 2,118,000 in 1906-07. During the last passed ten years, the average net inflow has been 1,301,000 acre-feet, varying between a low

of 924,000 in 1946-47 and a high of 2,034,000 in 1951-52.

While the inflow for the past ten years is slightly (39,000 acre-feet) above the average for the 49 years of record, this period has been chosen as representative of present uses and demands upon this water supply. For this same 10-year period the mean annual flow at Keno is practically identical with the mean annual flow for the 49 years of record, 1,165,000 acre-feet. During this 10-year period, the diversion and irrigation practices for lands below the lake have been fairly well stabilized and there has been little irrigation expansion.

#### Accretions Between Keno and Copco.

For the ten-year period 1943-44 through 1952-53, when average flow of the Klamath River at Keno was normal on the basis of 49 years of record, accretions between Keno and Copco averaged 193,000 acre-feet per year. Average monthly accretions ranged between 12,100 acre-feet in September and 23,100 in April. Two creeks enter the river in this reach, Spencer Creek about six miles below Keno and Shovel Creek just above Copco Lake. Discharge records are too meager for a determination of the run-off of either creek but an estimate of 20,000 acre-feet annually for each is within reason. On this basis, some 150,000 acre-feet per year from unidentified sources enters the river between Keno and Copco, and apparently most of that quantity comes from underground aquifers.



## Effect of Klamath Project.

The over-all effect of the Klamath Reclamation Project operations has not greatly reduced the annual flow of Klamath River at Keno. While some 305,000 acre-feet of water are diverted from Klamath River and Upper Klamath Lake for irrigation, a substantial portion gets back into the river. The Lost River Diversion Canal and water pumped from Tule Lake sump and Lower Klamath Lake serve to augment the flow at Keno with water which never reached the Klamath River under natural conditions. Evaporation and transpiration losses in Upper Klamath Lake are probably little different than they were before the lake surface was regulated by the Link River Dam.

Stream flow records showing the outflow from Upper Klamath Lake and the discharge at Keno or Spencer Bridge are available for the period 1904-05 to 1952-53. These records show that for the first five years of record, before any diversion in the "A" Canal of the Klamath Project, the annual flow at Keno averaged 95 percent of the annual flow of Link River. Reasons for the loss of water between the two stations are obvious. Some small amount was diverted for irrigation but the principal loss was through evaporation in Lower Klamath Lake. For this 5-year period, the loss averaged 80,000 acre-feet per year, ranging between a gain of 50,000 in 1904-05 and 1905-06, to a loss of 235,000 in 1906-07.

During the next 5-year period 1909-10 to 1913-14, when diversions through the "A" Canal were minor and no works had as yet been constructed to prevent overflow to Lower Klamath Lake or to pump from the lake, the loss between Upper Klamath Lake and Keno averaged 182,000 acre-feet, ranging between a gain of 167,000 acre-feet in 1913-14 and a loss of 514,000 in 1910-11. Expressed as a percentage, the flow at Keno for this 5-year period was 90 percent of the flow of Link River plus "A" Canal.

Turning now to the last ten years of record, the period 1943-44 through 1952-53, during which time there has been little increase in acreage supplied by the "A" Canal, the losses between Upper Klamath Lake and Keno have averaged 113,000 acre-feet per year, ranging between a gain of 159,000 in 1951-52 and a loss of 215,000 in 1946-47. For this period the flow at Keno was 91.0 percent of the flow of Link River plus "A" Canal.

Comparison of the first ten years of record with the last ten years is as follows:

	Ten Year Period 1904-05 through 1913-14	Ten Year Period 1943-44 through 1952-53
	<u>Acre-feet</u>	<u>Acre-feet</u>
Average Annual outflow from Upper Klamath Lake	1,725,000	1,278,000
Average annual flow at Keno	<u>1,594,000</u>	<u>1,165,000</u>
Average annual loss	131,000	113,000
Flow at Keno as percent of outflow of Upper Klamath Lake	92.5	91.0

As an over-all picture, for the 49 years of record, the average annual outflow from Upper Klamath Lake has been 1,255,000 acre-feet; the average annual flow at Keno or Spencer Bridge, 1,165,000 acre-feet; the average annual loss between the two stations, 90,000 acre-feet, and the flow at Keno or Spencer Bridge was 92.8 percent of the outflow from Upper Klamath Lake.

#### Depletion During Irrigation Season.

Records of flow of Link River plus "A" Canal, (total outflow from Upper Klamath Lake), compared with the records of Klamath River at Keno or Spencer Bridge during the irrigation season, April through September, show a marked effect of the diversions for the Klamath Project. For the 6-year period, 1905 through 1910, the flows during the irrigation season of each year at Keno were 94.5 percent of the outflow from Upper Klamath Lake.

During the following five years, 1910-11 through 1914-15, they were 89.7 percent and during the last ten years of record, 1943-44 through 1952-53, they were 73.3 percent.

Thus, while the total annual flows at Keno are only very slightly less than they would have been under conditions of no development, the flows during the irrigation season have been sharply depleted. Such depletion is partially replaced by Klamath Project operations during the non-irrigation season.

In addition to the measured diversions and return flows for the Klamath Reclamation Project, there are between Lake Ewauna and Keno a number of unmeasured pumping diversions for some 12,500 acres of land and also unidentifiable accretions as return flows and run-off of the tributary area. A considerable consumptive water use is due to evaporation and transpiration in Midland Marsh, an area of about 2,800 acres.

The following table shows average monthly and annual amounts in acre-feet taken from and returned to Upper Klamath Lake and Klamath River as a result of the Klamath Reclamation Project operations during the last ten years. These quantities must be understood as applying to years of approximately normal or average precipitation and run-off. For dry-cycle years, diversions for irrigation will be greater and return flows less. Conversely, for years of above average run-off, diversions will be less and return flows greater. Briefly, the table shows that for this period of ten years, the net draft on Klamath River water supply for the Klamath Project has averaged 119,000 acre-feet per year.

Table II.

Table II.

Summary of Monthly Mean and Annual Mean Flows from Upper Klamath Lake  
and Klamath River and Flows to Klamath River for Irriga-  
tion and Drainage on Klamath Reclamation Project.

Records are for the last 10 years,  
1943-44 through 1952-53.

Thousands of Acre-feet.

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Water Year
"A" Canal	3.3						8.5	32.5	39.1	58.2	47.1	27.5	216.2
Lost River Diversion Can.													
To Klamath River	8.1	6.8	10.1	15.0	20.1	16.1	5.5	8.0	5.6	1.1	5.9	10.5	112.8
From Klamath River	0	0	0	0.2	0.1	0.3	10.5	1.1	4.7	5.2	0.4	0	22.5
Net to Klamath River	8.1	6.8	10.1	14.8	20.0	15.8	-5.0	6.9	0.9	-4.1	5.5	10.5	90.3
Klamath Strait													
To Klamath River	4.6	4.0	3.1	5.4	8.7	11.6	8.4	8.8	5.0	3.8	4.3	4.6	72.4
From Klamath River (1)	1.0	1.4	15.9	22.1	11.2	0.8	1.1	1.7	2.8	4.0	2.7	1.1	65.8
Net to Klamath River	3.6	2.6	-12.8	-16.7	-2.5	10.8	7.3	7.1	2.2	-0.2	1.6	3.5	6.6
Total Net Diversions	-8.4	-9.4	2.7	1.9	-17.5	-26.6	6.2	18.5	36.0	62.5	40.0	13.5	119.3

(1) Includes diversions to Midland Canal

## PLANS FOR DEVELOPMENT--WATER REQUIREMENTS

The Bureau of Reclamation, U. S. Department of Interior has made a detailed study, extending over several years, of the arable lands in the Upper Klamath Basin, and has prepared a plan for ultimate development of these lands. While some of the plans are highly speculative and subject to revision, it is necessary to envision some such plan for ultimate development in order to estimate the future water uses.

The plans adopted by the Bureau for its current report include storage reservoirs on the Sprague, Williamson and Lost Rivers, additional storage in Upper Klamath Lake, a change in water areas and land use in Klamath Marsh and Clear Lake, maintenance of marsh and open water areas for wild fowl, and irrigation of all the potential agricultural areas. While it is expected to be many years before all of the proposed developments can be accomplished, and the passage of time may dictate important changes in the ultimate plan, the estimates of the Bureau are believed to be the best figures available and are used herein as the estimates of the Oregon Klamath River Commission.

The following paragraphs will set forth in general terms the plans for development proposed by the Bureau and the estimated water requirements.

### AREAS ABOVE UPPER KLAMATH LAKE.

#### Wood River Valley.

Wood River Valley has an area of 89,000 acres of which 50,000 are irrigated and support a valuable livestock economy. The largest

potential development is at the southern end of the valley bordering Upper Klamath and Agency Lakes. Anticipated land use envisions controlled waterfowl marsh, pasture and grain. The planned construction work would consist of lake-facing dikes, diversion of the west side streams from Four Mile Creek south to Upper Klamath Lake, channel and bank improvement of Seven Mile Creek and Wood River, three main drainage pumping plants and distribution to drain and irrigate the area.

The Bureau estimates that full development of the Wood River Valley area will increase irrigated crop acreage from 50,000 to 74,300 and leave 9,300 acres of open water and marsh. Water requirements above present use will be 17,000 acre-feet per year.

Upper Klamath Lake Areas. These areas are grouped to include the lands bordering Upper Klamath Lake, 11,800 acres of which are now irrigated crop lands and 2,100 acres are open water and marsh. The plan of development is to create controlled marsh areas of Hanks Marsh, Shoalwater Bay and Pelican Bay. It is estimated that improvement of these areas will not require more water than that presently used in these areas.

Sycan Marsh. This marsh lies at an elevation of 5,000 feet at the head of the Sycan River in the northeasterly corner of the Basin. It has about 28,000 arable acres of which some 18,000 now receive irrigation by natural flooding. Of the remaining 10,000 acres, 7,000 are in marsh and water and 3,000 are dry-farmed and non-productive.

The proposed plan of development would include a dike across a portion of the marsh and a drain from the dike to the southern

end of the area, together with control structures and pumping plants to serve the entire area. The plan would not change the acreage of land irrigated or the area of marsh and water, but would improve the habitat for water fowl and improve the efficiency of irrigation. It would require 2,000 acre-feet more water than that now consumed in this area.

Sprague River Valley. There are about 75,000 acres of arable lands in the Sprague River Valley, of which 13,000 acres are now irrigated. The plan for development includes a dam and reservoir near Beatty which would create a water area of 11,600 acres and provide an irrigation water supply for 54,100 acres. The storage reservoir would have a capacity of 250,000 acre-feet. Water from the Sycan River would be diverted through a channel into the reservoir.

The Bureau estimates that the planned development would increase the consumptive use of water 110,000 acre-feet per year. This figure includes evaporation loss on the proposed Beatty reservoir.

Klamath Marsh. This great marsh of 85,000 acres lies in the northerly part of the Basin at an elevation of 4,500 feet. It is fed by the Williamson River and several smaller streams. Some 15,000 acres now sustain natural marsh growth and about 13,000 acres are irrigated by stream diversions.

Under the planned development 15,000 acres would be reserved for permanent improved marsh and open water and some 70,000 acres, (including the 13,000 acres now irrigated) would be cropped.

A plan of development by the Bureau of Indian Affairs would include a storage reservoir of 25,000 acre-feet capacity on the Williamson River above the marsh, an improved drainage system through the marsh, distribution pumping plants, conduits, dikes and control works.



The estimate of the Bureau of Reclamation is that with the proposed development, plus irrigation of 5,000 acres near Chiloquin, the water use will be increased by 17,000 acre-feet.

Minor Areas Above Upper Klamath Lake. The Bureau estimates there are about 14,000 acres in scattered locations in the basin above Upper Klamath Lake which will eventually be irrigated and will require 21,000 acre-feet of water annually.

Summary of Areas Above Upper Klamath Lake. On the basis of the foregoing, with ultimate development, the irrigated areas above the lake will be increased from a present 105,300 acres to 235,400 acres, and marsh and water areas will remain as of the present at 45,500 acres. The total additional depletion of flows into the lake is estimated 167,000 acre-feet per year.

#### UPPER KLAMATH LAKE SERVICE AREA.

Swan Lake and Yonna Valleys. Swan Lake Valley is a flat, closed basin on the east side of Modoc Ridge which borders the east side of Upper Klamath Lake. Yonna Valley lies east of Swan Lake Valley and drains south into Lost River. These valleys contain 37,500 arable acres of which 8,000 acres are now irrigated, mostly from wells. The plan of development is to pump water from Upper Klamath Lake through a 5.6 mile tunnel and with a lift of 106 feet to Swan Lake Valley. A system of main canals, laterals and drains would irrigate and drain some 24,000 acres, increasing the total irrigated area in the two valleys to 31,900 acres. The plan is estimated to require importation of 40,000 acre-feet annually from Upper Klamath Lake.

Butte Valley. This valley is a closed basin in the northeastern portion of Siskiyou County, California, containing about 59,000 arable acres of which 9,400 acres are now irrigated from wells and several small streams. The Bureau plan is to divert water from Klamath River

above Keno, pump it to Butte Valley through a head of 170 feet, and supply irrigation water for 23,000 acres. The estimated import water requirement is 43,000 acre-feet annually.

Oklahoma District. This area lies in northeastern Siskiyou County, California, and southwesterly from Lower Klamath Lake. The area contains 20,800 arable acres of which 7,700 are irrigated. The proposed plan would furnish Klamath River water to this area through the same canal as that used to supply Butte Valley. The plan would increase the irrigated area to 17,700 acres and would require 27,000 acre-feet annually from Klamath River.

Areas Contiguous to Klamath Project. The existing Klamath Project has 155,300 acres irrigated from Upper Klamath Lake and Klamath River. Plans have been made to expand the system to service an additional 15,000 acres contiguous to project lands. There are 23,000 acres of Federal lease lands in Lower Klamath and Tule Lake areas which require supplemental water. The plans of the Bureau include improving the remaining 5,000 acres of arable land in Tule and Lower Klamath Lakes and 4,000 acres of non-arable land in Miller and White Lakes for waterfowl habitat. The estimated depletion of the water supply from Klamath River for these areas is 30,000 acre-feet annually.

Summary, Upper Klamath Lake Service Area. The foregoing paragraphs indicate that in this area the land served and to be served by water from Upper Klamath Lake and Klamath River would be increased from 198,400 acres now irrigated to 295,000 acres, an increase of 97,000 acres. Marsh and water areas would be reduced by 1,000 acres in Swan Lake Valley. Total diversion requirements would be increased by 170,000 acre-feet per year.

## LOST RIVER SERVICE AREA

Clear Lake Development. Clear Lake Reservoir is in northwestern Modoc County, California, at an elevation of about 4530 feet. It was completed in 1910, primarily for use as an evaporation basin to dispose of flood run-off from Lost River drainage area, thus reducing Lost River flows into Tule Lake and permitting reclamation of lake bottom lands. Its capacity is over 500,000 acre-feet. Annual inflow to the reservoir averages about 109,000 acre-feet and annual releases average about 22,000 acre-feet.

The plan of development of the Lost River area by the Bureau of Reclamation is to construct boundary dam on the river and create a new reservoir of 100,000 acre-feet capacity which would be used for flood control and irrigation. The present Clear Lake would be largely drained and farmed in normal years, thus reducing evaporation losses and increasing the firm irrigation water yield. During years of extreme run-off, Clear Lake Reservoir would be utilized for flood control, to prevent excess flows from reaching Tule Lake. These measures, together with some raising of dikes in the Tule Lake area would remove the prospect of occasional flooding of lands now held by the government and permit homesteading of these lands. They would permit irrigation of 3,000 acres in Langell Valley and would provide supplemental water for another 3,000 acres which have an inadequate supply.

Existing Klamath Project. Lost River now supplies water for irrigation of 26,300 acres of the Klamath Project. With the proposed development this area would be increased to 30,000 acres.

Areas Contiguous to Klamath Project. With the planned development, the areas irrigated would be increased from 1,500 to 11,900 acres, most of the increase being in the bed of Clear Lake. The water and marsh area of Clear Lake, 18,000 acres, would be reduced to 4,700 acres.

Summary, Lost River Service Area. The proposed developments as described above would increase the area irrigated from Lost River supplies from 27,800 acres to 41,900 acres. The Bureau estimates that such developments would result in a firm irrigation supply to downstream areas 22,000 acre-feet greater than the present firm supply. It is indicated that flows to Klamath River through the Lost River Diversion Canal would be increased by about 14,000 acre-feet per year.

#### SUMMARY ALL AREAS ABOVE KENO.

It is estimated, on the basis of studies outlined above, that the present irrigated area above Keno is 331,500 acres and there are 97,600 acres of marsh and open water. With the planned developments, irrigated acreage would be increased 240,800 acres to a total of 572,300. Water and marsh areas would be reduced 14,800 acres to a total of 82,800. Depletion of the Klamath River at Keno as a result of the irrigation uses would be 268,000 acre-feet per year.

The following Table III, entitled Present and Ultimate Irrigation of Arable Lands, is abstracted from the table of the same title appearing in the Bureau's Upper Klamath River Basin Report.

Table III.

Table III.

PRESENT AND ULTIMATE IRRIGATION OF ARABLE LANDS  
In Each Valley of Upper Klamath River Basin

1/ Includes 7,900 acres irrigated by Klamath Project

Sub-Basin and/or Areas	Total Arable Ac.	Present			Anticipated Ultimate		
		Irrigated Ac.	Dry Farmed and Non-Productive Ac.	Marsh and Water Ac.	Irrigated Ac.	Dry Farmed and Non-Productive Ac.	Marsh and Water Ac.
<b>AREAS ABOVE UPPER KLAMATH LAKE</b>							
Sycan Marsh. . . . .	27,700	17,700	3,000	7,000	17,700	3,000	7,000
Sprague River Valley .	75,200	13,200	62,000	0	54,100	9,500	11,600
Klamath Marsh and Chiloquin Area. . . . .	89,600	12,600	62,000	15,000	63,500	11,100	15,000
Wood River Area. . . . .	89,200	50,000	17,800	21,400	74,300	5,600	9,300
Upper Klamath Lake Areas . . . . .	13,900	11,800 <sup>1/</sup>	0	2,100	11,800	0	2,100
Minor Areas above U.K.L.	14,500	0	14,500	0	14,000	500	0
Sub-total	310,100	105,300	159,300	45,500	235,400	29,700	45,000
<b>UPPER KLAMATH LAKE SERVICE AREA</b>							
Existing Klamath Pro- ject . . . . .	182,700	155,300	27,400	0	155,300	27,400	0
Areas Contiguous to Klamath Project. . . . .	78,500	18,000	27,400	33,100	40,300	5,100	33,100
Swan Lake & Yonna Valleys . . . . .	37,500	8,000	28,500	1,000	31,900	5,600	0
Oklahoma District . . . . .	20,800	7,700	13,100	0	17,700	3,100	0
Butte Valley. . . . .	58,600	9,400	49,200	0	49,800	8,800	0
Sub-total	378,100	198,400	145,600	34,100	295,000	50,000	33,100
<b>LOST RIVER SERVICE AREA</b>							
Existing Klamath Proj. Areas contiguous to Klamath Project. . . . .	35,300	26,300	9,000	0	30,000	5,300	0
Sub-total	60,100	27,800	14,300	18,000	41,900	13,500	4,700
<b>TOTAL ABOVE KENO</b>	<b>748,300</b>	<b>331,500</b>	<b>319,200</b>	<b>97,600</b>	<b>572,300</b>	<b>93,200</b>	<b>82,800</b>

## WATER RIGHTS

In studies leading to calculation of the ultimate water use in the Upper Klamath Basin and to the division of available water supplies between the states of Oregon and California, due recognition must be given to existing water rights in both states. One of the principles laid down by the United States Supreme Court governing equitable apportionment of interstate waters is that the existing economy should be preserved when possible.

Because of the apparent condition that uses of water along the main stem of the Klamath River in California are and will continue to be primarily for maintenance of the fishery and secondarily for development of hydro-electric power, it would seem that the only water rights in California necessary to be considered are those relating to these uses. Present or future diversions for irrigation and other consumptive uses will require comparatively small quantities of water which may be taken without seriously affecting the uses for the fishery and power development.

There have been no judicial determinations of the relative rights of appropriators along the main river in either state. Vested rights are known to exist by virtue of appropriations made and application of water to beneficial uses before either state had enacted its present water code. Prior to 1909 in Oregon and 1914 in California, appropriations were initiated by actual diversion and use and by posting and recording notices.

The doctrine of riparian rights to water has been abrogated in Oregon but is still recognized in a modified or limited sense in California. The doctrine has no apparent application to the present problem other than as may be claimed by the California Oregon Power Company in connection with its hydro-electric plants, Copco No. 1 and Copco No. 2, located on Klamath River just south of the state line.

Homesteading of lands in Klamath County began in 1866 and the earliest confirmed water rights date from 1870. Adjudication proceedings under the Oregon Water Code have confirmed the appropriations prior to 1909 on Lost River, the upper part of Sprague River, Wood River and several smaller streams, tributary of Upper Klamath Lake. State Engineer permits have been issued for irrigation and other uses from practically all of the streams of the Upper Basin.

#### ADJUDICATION PROCEEDINGS

The following paragraphs are brief statements of the adjudication proceedings heretofore completed in Klamath County:

##### Cherry Creek.

By decree of the Circuit Court for Klamath County dated Jan. 21, 1916, rights were confirmed for 1.13 second-feet for irrigation of 90 acres with priority of 1892 and an inchoate right for 430 acres. The inchoate right was completed and confirmed by decree dated Mar. 31, 1925 for 4.65 second-feet for irrigation of 372 acres with priority of 1908.

### Wood River and Tributaries.

This proceeding confirmed rights from Wood River, Crane Creek, Seven Mile Creek and Four Mile Creek for irrigation of 10,830 acres. Priorities range from 1883 to 1914. Original findings of the State Engineer were confirmed by decree dated Oct. 5, 1932 and supplemental findings by decree dated Jan. 10, 1949. The duty of water is one second-foot for each 50 acres up to and including July 20th and thereafter not to exceed one second-foot for each 80 acres, with a limitation of five acre-feet per acre during the irrigation season, April 1 to October 1 of each year.

### Anna Creek.

The circuit court decree was entered on Jan. 11, 1916 and confirms rights for irrigation of 6367 acres with priorities ranging between 1883 and 1908. Duty of water is three acre-feet per acre for all but 45 acres for which the duty is four acre-feet.

### Sprague River and Tributaries.

The adjudication proceeding covered the upper portion of the Sprague River basin, east of the Klamath Indian Reservation. The circuit court decree dated Feb. 5, 1930 confirms rights for irrigation of 11,808 acres with priorities ranging between 1874 and 1909. The duty of water fixed by the decree is three acre-feet per acre per year.

### Swan Lake.

The circuit court decree dated Dec. 11, 1950 confirms rights for irrigation of 1574 acres from various tributaries of Swan Lake with priorities between 1873 and 1917. Duty of water is fixed as three acre-feet per acre per year.



### Lost River and Tributaries.

There are two circuit court decrees, dated Feb. 23, 1923 and Sept. 12, <sup>1918</sup>1928 confirming rights for irrigation of 26,809 acres in addition to rights of the U. S. Bureau of Reclamation. These latter are confirmed by the decree of Sept. 12, <sup>1918</sup>1928 and include: Storage of 75,000 acre-feet in the Horsefly Reservoir; 1,000 second-feet for irrigation of 21,000 acres in Bonanza Sub-project; for waters of Lost River and tributaries stored in Clear Lake Reservoir, 162.5 second-feet for irrigation of 13,000 acres in the Modoc Unit in Oregon; for 25 second-feet from Lost River for irrigation of 2,000 acres in the Second Unit of the Klamath Project; for 25 second-feet from Lost River and from Tule Lake Reservoir for irrigation of 2,000 acres in the bed of Tule Lake in Oregon; for 162.5 second-feet from Lost River and Tule Lake Reservoir for irrigation of 13,000 acres in the Modoc Unit in California, with diversion in Oregon; and 187.5 second-feet from Lost River and Clear Lake Reservoir for irrigation of 15,000 acres in the bed of Tule Lake in California. Duty of water was fixed for certain lands at  $2\frac{1}{2}$  acre-feet per acre for the irrigation season and for other lands was fixed as one-eightieth second-foot per acre with no acre-foot limitation.

### STATE ENGINEER PERMITS.

Permits to appropriate water have been issued by the State Engineer of Oregon for irrigation, power and other uses, with priorities dating from 1910 to the present. These permits are for irrigation of a total of about 182,000 acres, including

25,000 acres from wells; for use of 1822 cubic feet per second for power development and 32 cubic feet per second for other miscellaneous uses.

#### Permits for Irrigation.

It is not possible to determine accurately the acreage actually irrigated under these State Engineer permits because many of them are for supplemental water rights for lands having an inadequate supply from some other source. Actually, the adjudicated rights and the permit rights must be considered together to get an over-all picture of the extent of water rights for irrigation. Also, it is necessary to consider that some 75,000 acres in the Rogue River Valley are covered by permits, taking water from the Klamath drainage. The only out-of-basin diversion which influences the flow of the Klamath River at the state line is from Four Mile Lake. Diversion from this source averages about 18,000 acre-feet per year.

#### Permits for Power.

Five permits have been issued for power developments. Three of these cover 812 second-feet from Klamath River at Keno with priorities of 1911, 1912 and 1913. One permit for 1,000 second-feet is from Link River and has priority of 1919. One permit for 10 second-feet is from Rock Creek, tributary of Upper Klamath Lake, with priority of 1923.

#### SUMMARY OF IRRIGATION WATER RIGHTS.

The following table summarizes the irrigation water rights, both adjudicated and under State Engineer Permits. It shows the

total acreage covered (except under rights of USBR) as 239,325 acres. After deducting acreage irrigated from wells; lands with supplemental water rights, and lands outside the Upper Klamath Basin, there remain 123,605 acres which are irrigated with surface water under state determined and administered water rights.



TABLE IV.

EXISTING WATER RIGHTS - IRRIGATION - UPPER KLAMATH BASIN IN OREGON - ACRES  
(Does not include water rights of USBR)

STREAM	Adjudi- cated	Permits	Total	Wells	Surface Water	Supple- mental Irrig.	Net Total	Outside Basin	Net Total in Basin
Anna Creek	6377	883	7260	0	7260	0	7260	0	7260
Cherry Creek	462	332	794	0	794	0	794	0	794
Wood River	10830	22048	32878	0	32878	4226	28652	0	28652
Wood River Misc	1/	462	462	0	462	0	462	0	462
Sprague River	11808	3048	14856	0	14856	751	14105	0	14105
Sprague River Misc	1/	9357	9357	3041	6316	3188	3128	0	3128
Swan Lake and Misc	1574	7687	9261	4843	4418	1515	2903	0	2/ 2903
Lost River	3/ 26809	210	27019	0	27019	0	27019	0	27019
Lost River Misc	1/	22998	22998	14340	8658	1869	6789	0	6789
Klamath River	0	11324	11324	0	11324	0	11324	0	11324
Klamath River Misc	0	56986	56986	474	56512	0	56512	55112	1400
Jenny Creek and Misc	0	1272	1272	0	1272	198	1074	4/ 1074	0
Keene Creek and Misc	0	20055	20055	0	20055	0	20055	5/ 20055	0
Sevenmile Cr. & Misc	6/	11143	11143	40	11103	711	10392	0	10392
Williamson River	0	6717	6717	0	6717	0	6717	0	6717
Williamson R. Misc	0	6805	6805	2209	4596	2074	2522	0	2522
Basin No. 14 Misc	0	138	138	0	138	0	138	0	138
Totals	57860	181465	239325	24947	214378	14532	199846	76241	123605

- Notes:
- 1/ Adjudicated rights included in main stream.
  - 2/ Inside Klamath Basin but not surface tributary to Klamath River or Lost River.
  - 3/ Does not include 66,000 acres described in decree for USBR.
  - 4/ Not tributary to Klamath River in Oregon.
  - 5/ 19871 acres in Rogue River Basin. Balance in Klamath Basin but not tributary to Klamath River in Oregon.
  - 6/ Adjudicated rights included with Wood River.

WATER RIGHTS OF THE UNITED STATES.

The water rights for the Klamath Reclamation Project exist by virtue of two Oregon Laws enacted in 1905. Section 2 of Chapter 228, General Laws of Oregon, 1905, reads as follows:

"Appropriation of water by the United States.-- Whenever the proper officers of the United States authorized by law to construct works for the utilization of water within this State shall file in the office of the State engineer a written notice that the United States intends to utilize certain specified waters, the waters described in such notice and unappropriated at the time of the filing thereof shall not be subject to further appropriation under the laws of this State, but shall be deemed to have been appropriated by the United States: Provided, That within a period of three years from the date of filing such notice the proper officer of the United States shall file final plans of the proposed works in the office of the State engineer for his information: And provided further, That within four years from the date of such notice the United States shall authorize the construction of such proposed work. No adverse claims to the use of the water required in connection with such plans shall be acquired under the laws of this State except as for such amount of said waters described in such notice as may be formally released in writing by an officer of the United States thereunto duly authorized, which release shall also be filed in the office of the State engineer. In case of failure of the United States to file such plans or authorized construction of such works within the respective periods herein provided, the waters specified in such notices, filed by the United States, shall become subject to appropriation by other parties. Notice of the withdrawal herein mentioned shall be published by the State engineer in a newspaper published and of general circulation in the stream system affected thereby, and a like notice upon the release of any lands so withdrawn, such notices to be published for a period not exceeding 30 days." (Repealed 1953).

Chapter 5, General Laws of Oregon, 1905 provides as follows:

"Section 1. That for the purpose of aiding in the operations of irrigation and reclamation, conducted by the Reclamation Service of the United States, established by the Act of Congress approved June 17, 1902 (32 Stat. 388), known as the reclamation act, the United States is hereby authorized to lower the water level of Upper Klamath Lake, situate in Klamath County, Oregon, and to lower the water level of, or to drain any or all of the following lakes: Lower or Little Klamath Lake, and the Tule or Rhett Lake, situate in Klamath County, Oregon, and Goose Lake situate in Lake County, Oregon; and to use any part or all of the beds of said lakes for the storage of water in connection with such operations.

"Section 2. That there be, and hereby is, ceded to the United States all the right, title, interest, or claim of this State to any land uncovered by the lowering of the water levels, or by the drainage of any or all of said lakes not already disposed of by the State; and the lands hereby ceded may be disposed of by the United States, free of any claim on the part of this State, in any manner that may be deemed advisable by its authorized agencies, in pursuance of the provisions of said reclamation act."

The United States Reclamation Service (now Bureau of Reclamation) made a filing under Chapter 228, Laws of 1905, and stated therein its intention to completely utilize all the waters of the Klamath Basin in Oregon, constituting the entire drainage basins of Klamath River and Lost River and

all of the lakes, streams and rivers supplying water thereto or receiving water therefrom, including the following and all their tributaries: Upper Klamath Lake, Lower Klamath Lake, Tule or Rhett Lake, Little Klamath Lake, Lake Ewauna, White Lake, Miller Lake, Swan Lake, Alkali Lake, Dry Lake, Sprague River, Sycan River, Williamson River, Crooked River, Wood River, Link River, Seven Mile Creek, Klamath River, Three Mile Creek, Cherry Creek, Rock Creek, Four Mile Creek and the slough or stream connecting Lower or Little Klamath Lake with Klamath River, Clear Creek, Spencer Creek, Lost River, Miller Creek, Prairie Creek, Barnes Valley Creek and Buck Creek.

It has been and still is the position of the Bureau of Reclamation that by virtue of such filing it acquired title to all these waters and no subsequent appropriations thereof should be permitted by the State of Oregon.

In 1930 the Attorney General of Oregon rendered an opinion in which he upheld the Bureau's position and directed the State Engineer against granting additional water rights in conflict with the Bureau's claim. However, in 1950, following some pertinent decisions in the United States Supreme Court, (*Nebraska v. Wyoming*, 295 US 40 and *Ickes v. Fox*, 300 US 82) the Attorney General rendered a wholly different opinion, holding that the rights of the Bureau are limited to the waters actually beneficially used on the project described in the 1905 filing with the Oregon State Engineer.

The lands included in the Klamath Project were not specifically described in the filing made under the 1905 law,



but it is possible to delineate the project limits pretty well by the proposed layout of canals. One logical conclusion would be that the project includes the lands now served by the project plus certain fringe areas which can be served from the existing system by gravity or by pumping from existing canals. It must be noted, however, that a mere determination of the area of the Klamath Project cannot completely define the extent of the water rights for this project because there is nothing said in the 1905 Oregon Law or the Bureau's filing under that law concerning the duty of water.

It appears that until such time as there is a judicial determination of the vested water rights from Upper Klamath Lake and Klamath River, the extent of the water rights of the United States must remain uncertain.

#### WATER RIGHTS OF KLAMATH INDIAN RESERVATION.

##### Treaty.

The Klamath Indian Reservation includes a large part of the drainage area of Upper Klamath Lake. The treaty with the Indians made in 1864 contained no reservation for them of water rights for irrigation but previous decisions of the United States Supreme Court in affairs of this nature leave room for doubt as to what the ultimate decision in this case would be. It may be argued that there is granted by the treaty an implied right to waters on the Reservation. On the other hand, there is logical support for the position that Oregon, which became a state before the treaty was entered into, then had control of the waters of the

non-navigable streams involved and the United States was without power to grant water rights to the Indians.

Chapter 732 - Public Law 587, U. S. Code.

The public law enacted by the 83rd Congress, 2nd Session, approved August 13, 1954, providing for termination of Federal supervision over the Klamath Tribe of Indians, contains the following provision:

"Sec. 14. (a) Nothing in this Act shall abrogate any water rights of the tribe and its members, and the laws of the State of Oregon with respect to the abandonment of water rights by non-use shall not apply to the tribe and its members until fifteen years after the date of the proclamation issued pursuant to Section 18 of this Act."

State Engineer Filings.

The United States Government Indian Irrigation Service in 1918 and 1919 filed a number of applications for permits to appropriate water with the State Engineer of Oregon. No permits were issued on these applications and as far as the records show they are still pending before the State Engineer.

Application No. 6299 is for permit to appropriate an undetermined amount of water from Williamson River, Deep Creek, Sand Creek, Big Spring Creek and Hog Creek to irrigate 73,636 acres in the Klamath Marsh.

Application No. 6474 is for permit to appropriate 160 cubic feet per second from Sprague River for irrigation of 12,803 acres in the Modoc Point area.

Application No. 6475 is for permit to appropriate 200 cubic feet per second from Sycan River, Long Creek, Coyote Creek and Chocktoot Creek for irrigation of 15,991 acres in Sycan Marsh and Sycan River area.

Application No. 6476 is for permit to appropriate an undetermined amount of water from Sycan River, 5-Mile Creek, Sprague River, North Fork Sprague River, Brown Creek and Whiskey Creek for irrigation of 30,935 acres in the Sprague and Sycan Valleys.

Application No. 6477 is for permit to appropriate 200 cubic feet per second from Fort Creek, Crooked Creek, Agency Spring and Wood River for irrigation of 11,227 acres in the Wood River area.

WATER RIGHTS OF THE CALIFORNIA OREGON POWER COMPANY.

The California Oregon Power Company holds water rights under State Engineer permits as follows:

- 55 Second-feet at Keno with priority of 1911
- 550 Second-feet at Keno with priority of 1912
- 207 Second-feet at Keno with priority of 1913
- 1000 Second-feet at Link River with priority of 1919.

In addition to the above, the company claims water rights for 205 second-feet from Link River for its west side plant with priority of 1891 and 150 second-feet from Link River for its east side plant with priority of 1904. In California, the company claims rights to waters of the Klamath River for its Copco Nos. 1 and 2 plants by virtue of notices filed by its predecessor, Siskiyou Light and Power Company in 1909 for a total of over 11,000 second-feet. The actual water capacity of the plants is in the neighborhood of 3,000 second-feet. In case of eventual controversy over these claimed rights, judicial determination of their validity and extent will be necessary.

## WATER REQUIREMENTS FOR FISH, WILDLIFE, AND RECREATION

The streams and lakes of the Upper Klamath Basin support a valuable fishery and habitat for waterfowl and are of great recreational and economic value to Klamath County and the State of Oregon. No specific quantities of water can be stated as necessary to maintain present resources. At present stream flows are adequate for the fish and the water supplies in lake and marsh areas are adequate for the waterfowl. Maintenance of these waterfowl areas in as good condition as the present or creation of better conditions for resting, nesting and feeding are of prime consideration in any plan for full development of the water resources.

The plans for creating improved marsh areas and feeding grounds as proposed in the comprehensive plan of the Bureau of Reclamation will not require water in addition to that already consumed in water and marsh areas. It may be stated with fair certainty that no further depletion of the water supply will occur as a result of these improvements. Likewise, it appears that the fish population will be adequately protected.

## WATER REQUIREMENTS FOR INDUSTRY

### Mining.

The mineral resources of the Upper Klamath Basin consist principally of non-metallics such as pumice and diatomaceous earth and sand, gravel and building stone. Low grade titanium ores are known to occur in Klamath County in the vicinity of Crater Lake. The only anticipated water requirement for consumptive use is negligible.

## Timber.

Very little water is required by the timber industry as it exists today. Minor quantities are consumed in wood processing and evaporation from log ponds. With the present operation being reduced toward and approaching a sustained yield status, little expansion in manufacturing of lumber is probable. However, there is and will continue to be expansion in the re-manufacturing of timber and better use of the heretofore undesirable species along with wood wastes.

The Upper Klamath Basin contains some 850,000 acres of lodgepole pine which is reported to be excellent for pulp and high grade paper. There would seem to be no doubt that this crop will be harvested and on a sustained yield basis will support a large pulp operation. The most advantageous site for a pulp mill would probably be in the vicinity of Upper Klamath Lake. Much depends upon the ultimate solution by the industry of the problem of recovery of chemicals from the processing water so that the waste can be returned to the streams without injury to fish life.

While such a pulp industry would require considerable amounts of water, on the order of two-tenths acre-foot per ton of pulp, the quantity of water actually consumed would be small.

## NEED FOR ADDITIONAL STORAGE

Mass curve studies of inflow into Upper Klamath Lake over the period of record since 1904, show clearly the need for additional storage capacity in order to make use of the available water supply for irrigation and power. Under present conditions, with active storage capacity of 483,000 acre-feet, the run-off is only partially controlled and water is spilled and wasted nearly every year.

The additional capacity needed is for power development as the present capacity in Upper Klamath Lake, if devoted to irrigation storage, is more than adequate for present and future irrigation requirements. The plan for power development and the shape of the electrical load curve to be supplied will dictate the pattern of water releases. On the basis of a fairly uniform release down the river throughout the year it appears that total storage capacity should be about 800,000 acre-feet, an increase of 320,000 over the present capacity. That capacity would permit hold-over from years of above normal inflow for the benefit of dry years expected to follow.

If additional storage capacity is provided by raising the Link River Dam and existing dikes, plus construction of new dikes to prevent overflow of valuable agricultural lands, evaporation losses will not be increased. Plans are under consideration, however, to obtain additional capacity by making reservoirs of Aspen, Long and Round Lakes, all being natural basins adjacent

to the Upper Klamath Lake. If these plans should be carried out, evaporation losses of some three feet of water per year on each acre of reservoir surface must be considered in estimating the ultimate depletion of the Klamath River water supply.

The plan of development of Lost River proposed in the Bureau of Reclamation report includes a new reservoir below Clear Lake. This development would reduce present evaporation losses on Clear Lake and increase the yield of Lost River by some 20,000 acre-feet per year. The additional water thus made available would be utilized for irrigation.

For full development of the Williamson and Sprague River valleys for irrigation, storage is indicated on the headwaters of these streams. The Irrigable Area Report of the Bureau of Indian Affairs dated December 1948 discusses a reservoir on the Williamson River above Klamath Marsh to store 25,000 acre-feet and one on the Sprague near Beatty to store 250,000 acre-feet. Both these reservoirs may eventually be constructed and their influence has been taken into consideration in the estimates of the total depletion of the basin's water supply.





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NW $\frac{1}{4}$  cor. Sec.20,T.36S.,R.13 E., **OREGON KLAMATH RIVER COMMISSION**  
 WM, 4 miles above Sycan River mouth.

Sheet 1 of 2

LOCATION \_\_\_\_\_

RECORD FROM USGS and Correlation  
 by USBR

Historical and estimated 1/

RUNOFF OF Sprague River near Beatty UNIT 1000 a.f. DRAINAGE AREA 513 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1913-14		11.60	9.41	21.10	14.80	38.60	40.30	26.40	14.00	9.16	7.75	7.56	(200.68)
1914-15	9.22	8.87	8.61	8.61	11.80	15.70	19.60	18.90	11.40	8.12	7.26	6.90	134.99
1915-16					10.60 <sub>p</sub>	28.10	35.90	32.50	16.70	11.10	9.84	8.51	(142.65)
1916-17	8.24	8.51				6.24 <sub>p</sub>	52.90	49.50	39.90	10.70	8.61	7.50	(185.86)
1917-18	8.48	8.92	10.90	9.96	9.16	21.00	24.60	13.80	6.43				(113.25)
1918-19								17.90 <sub>p</sub>	8.93	6.46	7.56	6.37	(29.32)
1919-20	6.76	7.86	8.42	8.48	8.17	8.30	11.10	16.70	6.90	4.92	5.49	4.64	97.74
1920-21						39.70	36.70	55.80	25.10	14.30	6.95	6.19	(187.74)
1921-22							32.30	46.50	17.00	6.21	3.46 <sub>p</sub>		(102.01)
1922-23							20.10	18.80	10.90	6.46	6.08		(62.34)
1923-24							5.29 <sub>p</sub>	5.57	3.66	4.21	4.56		(18.00)
1924-25							31.00	36.30	14.50	5.71	6.27	4.07	(97.85)
1925-26							11.90	6.70	3.71	4.30	4.13	4.98	(35.72)
1927-28	5.10	10.22	9.34	9.79	10.73	24.62	30.01	29.45	7.76	6.66	5.40	5.08	154.38
1928-29	5.19	5.70	6.37	6.96	9.31	12.54	11.06	14.54	11.47	4.73	4.74	4.70	99.37
1929-30	4.90	3.20	9.52	7.05	11.91	12.24	14.08	11.98	3.31	4.38	4.93	4.68	92.18
No. of yrs	4	5	4	4	4	6	11	12	13	12	11	9	
TOTAL	32.70	45.76	37.34	48.15	43.93	151.40	316.40	327.47	182.13	91.65	74.50	56.72	1408.15
MEAN	8.18	9.15	9.33	12.04	10.98	25.23	28.76	27.29	14.01	7.64	6.77	6.30	165.68
PER CENT	4.9	5.5	5.6	7.3	6.6	15.2	17.4	16.5	8.5	4.6	4.1	3.8	100.0

REMARKS 1/ Values below dashed line are estimated by method of least squares correlation

p= partial record.

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OREGON KLAMATH RIVER COMMISSION

LOCATION NW 1/4 cor. Sec. 20, T. 36 S., R. 13 E.  
WM, 4 miles above Sycan River mouth.

RECORD FROM USGS and correlation  
by USBR

Historical and estimated 1/  
RUNOFF OF Sprague River near Beatty UNIT 1000 a.f. DRAINAGE AREA 513 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1930-31	4.07	2.94	8.05	6.39	8.47	9.06	8.48	7.07	2.43	3.47	3.86	4.05	68.34
1931-32	2.85	1.52	7.71	5.92	8.31	20.40	16.10	28.00	10.16	4.40	3.82	3.72	112.91
1932-33	2.46	1.45	7.69	5.92	8.09	10.41	16.42	15.21	15.56	5.02	4.00	3.64	95.87
1933-34	2.16	2.88	8.06	9.28	8.87	9.57	10.40	6.41	2.02	3.76	3.14	2.89	69.44
1934-35	2.51	2.20	7.88	5.98	8.86	10.90	31.59	26.25	8.98	4.15	4.37	3.45	117.12
1935-36	3.32	1.82	7.91	9.37	11.06	18.71	32.31	31.78	10.62	4.43	5.21	3.62	140.16
1936-37	2.68	1.59	7.76	4.97	8.16	13.03	24.42	19.04	9.44	5.06	4.13	3.80	104.08
1937-38	3.75	4.71	11.41	10.34	9.63	25.53	80.59	63.64	19.91	6.05	5.28	4.76	246.20
1938-39	5.04	5.58	8.63	7.15	8.69	15.03	16.22	8.51	2.18	3.55	3.72	3.81	88.11
1939-40	3.52	1.87	8.43	13.35	12.36	29.27	48.12	21.88	5.02	4.39	4.11	4.21	156.53
1940-41	4.55	3.97	8.61	8.80	11.32	19.78	15.65	19.77	9.30	5.08	4.53	4.84	116.20
1941-42	4.09	5.58	11.29	12.52	14.05	16.39	35.97	28.31	22.14	6.39	4.90	4.79	166.42
1942-43	4.36	7.62	10.80	13.90	10.94	42.53	91.30	48.93	28.95	9.13	6.20	5.90	280.56
1943-44	5.98	6.78	8.70	7.85	9.55	12.12	11.01	11.86	14.49	7.61	5.74	4.86	106.55
1944-45	5.04	6.63	8.99	10.23	12.78	11.80	16.10	32.33	22.04	6.34	5.14	4.83	142.25
1945-46	5.37	7.35	9.77	16.25	9.67	23.70	41.61	38.73	10.68	5.87	5.10	4.71	178.81
1946-47	5.22	6.05	8.87	7.77	9.97	10.23	12.66	10.58	6.27	4.67	4.40	4.10	90.79
1947-48	5.06	4.43	8.21	11.25	9.12	9.54	21.03	30.32	32.18	7.28	5.39	5.42	149.23
1948-49	4.77	4.77	8.44	6.71	9.55	16.84	24.57	26.79	10.45	4.17	4.29	4.47	125.82
No. of Yrs	22	22	22	22	22	22	22	22	22	22	22	22	22
TOTAL	91.99	98.86	194.44	197.75	221.40	374.24	609.70	531.38	265.56	117.21	102.40	96.39	2901.32
MEAN	4.18	4.49	8.84	8.99	10.07	17.01	27.71	24.15	12.07	5.33	4.66	4.38	131.88
PER CENT	3.2	3.4	6.7	6.8	7.6	12.9	21.0	18.3	9.2	4.1	3.5	3.3	100.0
REMARKS	Total 1/ 82.16 89.66 177.79 179.79 202.73 347.86 564.10 474.27 222.93 105.76 92.72 86.50 2626.27												
Mean	1/ 4.11	4.48	8.89	8.99	10.14	17.39	28.20	23.71	11.15	5.29	4.64	4.32	131.31
Percent	1/ 3.1	3.4	6.8	6.9	7.7	13.2	21.5	18.1	8.5	4.0	3.5	3.3	100.0
	1/ 1927-28 through 1946-47.												

SE $\frac{1}{4}$  Sec. 8, T.35 S., R.12E. OREGON KLAMATH RIVER COMMISSION

Sheet 1 of 2

8 miles by stream above mouth of river

LOCATION and 11 miles north of Beatty

RECORD FROM USGS and correlation  
by USBR

RUNOFF OF (Historical and Estimated) Sycan River nr. Beatty UNIT 1,000 a.f. DRAINAGE AREA 527 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1911-12							3.16	30.70	17.10	3.71	0.82		(55.49)
1912-13	0.74	3.31	1.24	1.66	1.64	3.48	39.00	38.70	12.30				(102.07)
1913-14							19.30	21.80	8.98	4.81	3.13	2.01	(60.83)
1914-15	3.34	2.76	1.93	1.60	2.42	13.20	7.17			2.01	1.52	1.45	(37.40)
1915-16	1.54	2.31	2.55	1.96	3.78	35.10	40.70	27.50	9.04	3.95	2.17	1.49	132.09
1916-17						.21	34.90	37.50	23.80	3.43	1.68	1.38	(102.90)
1917-18	1.37	1.74	2.31	1.94	1.72	8.36	8.45	5.03	1.51	0.90	0.76	0.93	35.02
1918-19	0.92	0.84	0.83	0.77	1.03	2.12	37.50	16.00	2.03	1.06	0.85	0.76	64.71
1919-20	0.84	0.90	0.91	0.92	1.06	1.45	2.95	4.67	1.48	0.31	0.39	0.41	16.29
1920-21	0.46	1.74	1.23	1.84	2.29	42.90	35.10	38.90	12.10	1.46	0.66	0.57	139.25
1921-22	0.90	1.14	0.79	0.37	0.30	0.38	28.10	43.90	8.93	0.81	0.47	0.40	86.49
1922-23	0.74	1.02	0.43	0.59	0.23	8.85	15.80	9.47	3.50	1.24	0.42	0.30	42.71
1923-24	0.56	0.89	0.60	0.41	4.96	1.25	1.84	0.96	0.22	0.25	0.22	0.21	12.37
1924-25	0.25	0.73	0.38	0.89	14.40	14.70	29.10	30.70	13.10	1.03	0.53	0.70	106.51
1925-26	0.97	1.23	0.95	0.76	2.66	0.45	2.50	3.85	0.20	0.20	0.20	0.20	14.17
1926-27	0.23	1.08	3.93	2.14	6.36	41.33	46.13	45.82	15.15	2.26	0.69	0.54	165.86
1927-28	0.71	2.66	1.53	1.34	3.54	28.49	23.52	23.40	2.77	1.10	0.34	0.26	89.66
1928-29	0.49	0.99	0.78	0.90	0.86	5.65	3.28	9.54	5.11	0.20	0.20	0.20	28.20
1929-30	0.39	0.20	1.67	0.73	5.78	5.08	6.50	7.15	0.20	0.20	0.20	0.20	28.30
TOTAL													
MEAN													
PER CENT													

REMARKS 1911-12' to dashed line - Historical records. Dashed line to present - correlated with Sprague River near Chiloquin.

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Section 8, T.35 S., R. 12 E. OREGON KLAMATH RIVER COMMISSION

8 mi. by stream above mouth of river

LOCATION and 11 miles north of Beatty

RECORD FROM USCS and correlation  
by USBR

RUNOFF OF (Historical and Estimated 1/) Sycan River nr. Beatty UNIT 1,000 a.f. DRAINAGE AREA 527 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1930-31	0.20	0.20	0.54	0.59	0.20	0.20	0.52	2.58	0.20	0.20	0.20	0.20	5.83
1931-32	0.20	0.20	0.27	0.47	0.20	20.50	8.66	22.06	4.24	0.20	0.20	0.20	57.40
1932-33	0.20	0.20	0.25	0.47	0.20	1.61	9.00	10.16	7.83	0.20	0.20	0.20	30.52
1933-34	0.20	0.20	0.54	1.22	0.20	0.20	2.57	1.97	0.20	0.20	0.20	0.20	7.90
1934-35	0.20	0.20	0.40	0.50	0.20	2.55	25.21	20.43	8.07	0.20	0.20	0.20	58.36
1935-36	0.20	0.20	0.42	1.24	4.17	17.31	25.98	25.57	4.54	0.20	0.25	0.20	80.28
1936-37	0.20	0.20	0.30	0.27	0.20	6.57	17.54	13.72	3.76	0.20	0.20	0.20	43.36
1937-38	0.20	0.63	3.14	1.46	1.46	30.20	77.56	55.22	10.72	1.08	0.29	0.20	182.16
1938-39	0.43	0.95	0.98	0.75	0.20	10.35	8.78	3.92	0.20	0.20	0.20	0.20	27.16
1939-40	0.20	0.20	0.82	2.12	7.61	37.26	42.87	16.36	0.81	0.20	0.20	0.20	108.85
1940-41	0.27	0.35	0.96	1.12	4.66	19.34	8.17	14.40	3.66	0.20	0.20	0.20	53.53
1941-42	0.20	0.95	3.05	1.94	9.82	12.93	29.89	22.34	12.21	0.91	0.20	0.20	94.64
1942-43	0.20	1.70	2.67	2.24	3.95	62.32	89.01	41.53	16.74	2.62	0.73	0.78	224.49
1943-44	0.76	1.39	1.03	0.91	1.32	4.85	3.22	7.04	7.12	1.68	0.51	0.20	30.03
1944-45	0.43	1.33	1.26	1.44	7.43	4.25	8.65	26.08	12.14	0.88	0.22	0.20	64.31
1945-46	0.55	1.60	1.86	2.67	1.53	26.75	35.92	32.04	4.58	0.59	0.20	0.20	108.49
1946-47	0.50	1.12	1.17	0.89	2.11	1.28	4.98	5.85	1.65	0.20	0.20	0.20	20.15
1947-48	0.47	0.49	0.64	1.60	0.40	0.20	14.16	24.25	19.08	1.43	0.36	0.48	63.56
1948-49	0.37	0.61	0.82	0.62	1.21	14.17	17.97	20.97	4.50	0.20	0.20	0.20	61.84
No. of yrs.	35	35	35	35	35	36	38	37	37	37	37	36	
TOTAL	20.43	36.26	43.18	41.34	100.10	485.84	815.66	762.08	259.83	40.52	20.41	17.53	2643.18
MEAN	0.58	1.04	1.23	1.18	2.86	13.50	21.46	20.60	7.02	1.10	0.55	0.49	71.61
PER CENT	0.3	1.4	1.7	1.6	4.0	18.9	30.0	28.8	9.8	1.5	0.8	0.7	100.0

REMARKS 1/ Based on Sprague River near Chiloquin. Equation determined for each month by method of Least Squares correlation of concurrent data 1911-25.

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OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USGS

RUNOFF OF Sprague River at Chiloquin and Near Chiloquin UNIT 1000 Ac-ft DRAINAGE AREA 1580 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1911											28.2	25.7	53.9 *
1911-12	27.7	25.6	27.1	32.7	48.2	44.0	48.0	80.6	64.9	26.9	23.7	23.7	473.1
1912-13	24.5	25.9	29.2	26.8	23.1	37.3	130.0	97.2	51.5	32.3	28.3	23.3	529.4
1913-14	22.5	25.6	26.6	50.7	34.9	133.0	117.0	76.9	39.8	27.1	22.8	22.4	599.3
1914-15	24.1	24.2	25.5	25.2	28.6	43.5	48.7	40.4	23.8	15.4	15.6	16.1	331.1
1915-16	19.9	22.1	24.3	22.1	43.2	79.9	89.3	72.6	42.2	25.9	22.0	19.9	483.4
1916-17	21.5	22.0	24.6	24.0	22.2	30.7	116.0	123.0	78.6	24.0	20.4	19.1	526.1
1917-18	21.1	22.3	28.2	26.9	24.6	39.7	42.2	31.1	17.1	14.0	15.2	13.9	296.3
1918-19	18.1	20.3	21.8	27.1	21.9	28.7	82.1	59.0	20.5	16.0	15.5	17.9	348.9
1919-20											14.1	14.5	28.6 *
1920-21	18.0					89.2	76.2	87.9	51.8	19.9	15.4	15.3	373.7 *
1921-22	16.8	17.3	17.6	14.1	12.4	23.2	76.8	122.0	38.7	17.8	16.6	14.0	387.3
1922-23	17.3	17.4	18.6	20.5	45.9	31.7	48.8	35.0	23.1	18.1	15.6	13.2	275.2
1923-24	15.8	16.1	17.2	17.2	25.7	17.7	17.7	13.1	10.4	12.4	11.9	12.1	187.4
1924-25	14.8	16.1	14.4	20.9	49.6	37.3	67.8	70.7	38.6	16.5	15.7	13.9	376.3
1925-26	18.1	18.2	18.5	16.8	24.7	20.9	22.1	15.4	10.7	12.1	10.2	11.2	198.9
1926-27	14.4	17.7	42.6	31.5	36.4	85.5	117.0	121.0	54.3	20.8	16.8	14.5	572.5
1927-28	16.8	22.7	22.4	22.4	27.3	65.2	67.8	64.6	20.3	16.6	13.7	13.4	373.2
1928-29	15.7	17.3	16.5	15.9	18.9	29.1	23.8	29.7	26.7	12.2	11.9	12.6	230.3
1929-30	15.2	14.3	23.5	16.1	34.3	28.2	30.8	23.7	11.8	11.4	12.4	12.4	234.1
TOTAL													
MEAN													
PER CENT													

\* Partial water year.

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OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USGS

RUNOFF OF Sprague River Near Chiloquin UNIT 1000 Ac-ft DRAINAGE AREA 1580 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1950-51	18.0	24.4	57.5	28.9	66.5	62.3	120.2	90.9	29.8	14.1	12.8	14.4	539.8
1951-52	19.6	21.0	28.5	24.7	41.3	50.0	244.0	178.1	70.2	33.9	18.4	16.9	746.6
1952-53	19.8	20.6	21.5	69.6	59.1	52.3	81.1	133.6	100.3	33.6	18.5	20.3	630.3
Years	41	40	40	40	40	41	41	41	41	41	43	43	
TOTAL	692.5	739.7	908.9	975.2	1146.9	1941.1	3053.0	2729.8	1454.3	709.2	639.1	621.4	15624.1
MEAN	16.9	18.5	22.7	24.4	28.6	47.3	74.7	66.5	35.5	17.3	14.8	14.5	381.1
PER CENT	4.4	4.8	6.0	6.4	7.5	12.4	19.6	17.4	9.3	4.5	3.9	3.8	100.0
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION Three-quarters mile S.W. of Chiloquin

RECORD FROM USGS

RUNOFF OF Williamson River below Sprague (Sta. 8419) UNIT 1000 Ac-ft DRAINAGE AREA 3000 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1917-18	48.2	48.7	65.8	65.8	61.6	82.4	81.5	57.5	40.2	37.0	38.7	40.8	668.2
1918-19	45.1	47.7	49.9	53.4	51.6	60.5	154.0	97.8	144.3	38.2	37.6	38.3	718.4
1919-20	42.2	42.4	37.4	38.5	51.8	64.6	63.1	52.0	37.7	30.9	33.3	32.0	525.9
1920-21	34.6	44.3	48.5	54.7	56.1	167.0	126.0	127.0	80.9	41.5	34.7	33.8	849.1
1921-22	35.4	38.1	48.5	39.3	31.7	45.4	140.0	167.0	65.5	34.7	37.7	36.5	719.8
1922-23	39.2	39.9	42.3	49.3	43.5	71.3	106.6	65.8	46.5	37.8	35.2	33.3	610.7
1923-24	37.4	38.1	41.8	39.1	63.8	51.5	42.9	33.6	28.0	30.4	30.9	31.7	469.2
1924-25	34.2	40.6	41.4	46.1	109.0	79.3	96.4	97.2	66.0	38.9	38.5	35.8	723.4
1925-26	38.1	38.6	40.9	38.4	56.1	52.1	44.8	35.0	29.4	31.9	31.6	31.2	468.1
1926-27	36.6	41.2	70.7	58.6	62.2	135.0	154.0	159.0	79.1	43.3	37.2	36.7	913.6
1927-28	39.0	44.2	45.7	46.2	56.4	116.0	114.0	87.9	39.7	37.9	33.8	32.9	693.7
1928-29	38.1	38.9	38.6	38.1	40.9	62.1	53.4	51.5	46.4	32.0	31.6	31.7	503.3
1929-30	35.5	35.3	45.9	37.0	60.5	56.4	54.1	44.0	30.3	29.9	30.3	31.4	490.6
1930-31	34.8	35.9	37.0	35.7	32.5	41.1	35.4	29.0	27.3	28.6	29.0	30.2	396.5
1931-32	33.9	34.3	35.3	35.7	33.6	85.5	65.5	94.1	46.6	32.5	30.6	30.5	558.1
1932-33	33.3	34.6	34.5	34.4	30.4	45.4	65.5	54.5	56.2	33.3	29.9	29.8	481.8
1933-34	31.8	34.6	36.3	44.1	36.5	42.3	43.6	30.6	28.2	29.4	27.6	27.6	412.6
1934-35	33.0	35.0	36.1	34.7	36.8	48.5	104.8	81.2	40.8	29.7	29.6	27.9	538.1
TOTAL													
MEAN													
PER CENT													
REMARKS													

53

OREGON KLAMATH RIVER COMMISSION

LOCATION Three-quarters mile S.W. of Chiloquin

RECORD FROM USGS

RUNOFF OF Williamson River below Sprague (Sta. 8419) UNIT 1000 Ac-ft DRAINAGE AREA 3000 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1935-36	34.0	33.5	36.0	45.4	53.8	78.4	108.6	99.0	44.5	31.0	30.6	29.6	624.4
1936-37	33.4	33.4	34.1	32.2	32.0	50.7	81.4	64.0	43.0	31.2	28.7	27.8	491.9
1937-38	32.5	35.7	57.1	43.9	39.6	95.6	249.6	204.5	69.4	36.1	34.3	32.8	931.1
1938-39	37.2	38.8	41.0	39.4	36.2	62.2	62.3	35.0	27.7	29.6	29.3	30.2	468.9
1939-40	35.4	35.0	40.1	54.7	62.2	115.0	148.3	70.6	33.1	31.8	30.3	31.6	638.1
1940-41	35.2	36.0	40.2	41.7	51.8	82.2	61.6	66.6	41.8	33.3	32.4	32.9	555.7
1941-42	35.4	37.6	58.0	49.4	69.2	69.9	119.2	90.3	69.2	34.8	31.5	31.6	696.1
1942-43	34.7	40.4	54.9	57.3	50.8	169.3	302.9	178.9	101.1	46.1	37.5	37.0	1110.9
1943-44	39.0	41.1	42.1	40.6	41.4	60.1	57.0	47.2	54.9	38.1	33.9	32.2	527.6
1944-45	36.1	39.2	42.5	46.0	67.9	56.1	60.6	101.3	71.3	34.9	33.2	31.2	620.3
1945-46	35.4	39.5	45.7	61.6	42.7	109.0	145.9	121.9	46.2	35.2	32.7	33.6	749.4
1946-47	38.5	39.9	42.8	39.6	48.9	54.1	53.6	42.1	36.9	30.8	30.2	30.1	487.5
1947-48	35.2	35.8	37.1	48.9	39.2	49.8	75.5	93.7	88.9	35.3	31.3	31.6	602.3
1948-49	35.3	36.2	37.6	34.6	38.9	79.9	94.2	86.9	45.7	31.1	30.9	31.7	583.0
1949-50	35.8	37.7	37.6	41.7	48.4	92.6	104.4	96.0	60.0	32.5	30.5	31.1	648.3
1950-51	38.2	45.6	91.8	61.2	101.9	104.5	170.6	133.3	53.8	33.7	32.7	33.5	900.8
1951-52	40.8	41.8	58.1	52.7	67.7	85.1	326.6	244.1	111.5	64.3	44.4	40.4	1177.5
1952-53	43.3	46.8	48.5	109.2	134.5	118.7	144.7	189.7	158.2	67.7	44.8	45.1	1151.3
TOTAL	1325.8	1406.4	1641.8	1689.2	1942.1	2839.6	3912.6	3329.8	1990.3	1295.4	1197.0	1186.1	23756.2
MEAN	36.8	39.1	45.6	46.9	53.9	78.9	108.7	92.5	55.3	36.0	33.2	33.0	659.9
PER CENT	5.6	5.9	6.9	7.1	8.2	12.0	16.4	14.0	8.4	5.5	5.0	5.0	100.0

REMARKS

54

Lat. 42°42', Long. 121°59', in  
 Sec. 22, T. 33 S., R. 7½ E., OREGON KLAMATH RIVER COMMISSION  
 at Hwy. Bridge ¼ mile east

LOCATION of Fort Klamath

RECORD FROM USGS & Computed by  
USBR

Historical & Computed

RUNOFF OF Wood River near Fort Klamath, Oregon UNIT 1,000 a.f. DRAINAGE AREA Not measured SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1911-12	17.20	16.40											(33.60)
1912-13							20.70	19.00	18.70	20.50	19.20	17.30	(115.40)
1913-14	18.00	18.30	18.40	19.20	15.70	20.50	21.60	20.90	20.50	18.10	a17.20	a16.40	224.80
1914-15	a17.80	a18.40	18.40	18.40	17.90	20.80	19.20	17.20	15.30	16.30	15.70	16.80	212.20
1915-16	15.10	14.40	17.30	15.60	15.80	17.80	16.20	a14.40	a16.10	a20.00	18.00	a16.80	197.50
1916-17								17.70	15.10	16.80	16.00	13.80	(79.40)
1917-18							16.70	13.90	12.60	11.60	12.20	12.20	(79.20)
1918-19	14.60	13.80	12.70	13.20	13.00	14.40	17.40	13.20	13.20	14.00	13.90	14.30	167.70
1919-20	15.70	17.40	18.90	16.00				10.70	10.10	10.00	10.30	10.90	(120.00)
1920-21	13.50	14.80	14.20							19.10	18.10	16.40	(96.10)
1921-22	18.80	a21.80	18.60	15.80	15.40	17.30	18.20	18.00					(143.90)
1922-23	a19.10	a17.80	18.90	16.60	14.80	16.40	16.30	17.10	a15.20	14.10	11.60	a13.00	190.90
1923-24	a14.80	a13.70	a13.60	12.70	14.50	14.40	12.80	9.96	a 9.40	8.98	8.98	9.40	143.22
1924-25	11.80	12.40	12.20	12.90	13.90	13.10	13.10	a15.50	15.40	13.90	13.10	15.10	162.40
1925-26	16.00	15.60	a15.40	a13.80	a13.90	a14.10	13.60	10.40	8.45	7.50	7.81	8.93	145.49
1926-27	11.00	11.70	13.00	11.20	10.20	12.30	12.30	13.00	14.30	13.10	12.80	13.90	148.80
1927-28	15.00	17.10	16.20	16.70	14.60	17.60	15.70	15.90	15.10	13.30	11.70	13.20	182.10
1928-29	15.60	15.80	14.80	14.20	12.40	15.70	14.00	11.90	11.10	9.35	8.92	9.58	153.35
1929-30	12.70	12.10	13.80	11.50	12.20	11.80	9.76	9.65	7.68	7.75	7.87	8.57	125.38
TOTAL													
MEAN													
PER CENT													

REMARKS

a - Estimated.

Record from Oct. 1936 to 1950 was derived by correlating with the sum of two consecutive seasons of Upper Klamath Lake Inflows.

51

Lat.  $42^{\circ}42'$ , Long.  $121^{\circ}59'$ , in  
 Sec. 22, T. 33 S., R.  $7\frac{1}{2}$  E. **OREGON KLAMATH RIVER COMMISSION**  
 at Hwy. Bridge  $\frac{1}{4}$  mile east  
 of Fort Klamath

LOCATION \_\_\_\_\_

RECORD FROM USGS & Computed by USBR

Historical & Computed  
 RUNOFF OF Wood River near Fort Klamath, Oregon UNIT 1,000 a.f. DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1930-31	10.70	10.60	10.50	9.96	9.28	11.30	9.52	6.89	6.01	5.72	5.35	6.55	102.38
1931-32	8.06	8.51	8.79	9.10	8.34	12.40	9.70	11.00	9.58	8.48	7.32	8.39	109.67
1932-33	10.50	11.40	10.50	10.50	9.16	10.90	13.70	10.90	13.40	11.30	8.67	11.70	132.63
1933-34	13.23	12.77	13.42	13.91	11.07	13.34	12.07	10.10	8.66	7.56	7.02	8.17	131.32
1934-35	10.19	11.21	11.16	10.29	9.78	10.83	13.00	10.56	9.77	9.52	9.15	10.45	125.91
1935-36	12.11	11.27	11.34	13.08	11.24	12.98	13.99	14.85	13.88	10.06	10.06	12.19	147.05
1936-37	12.29	12.43	12.43	11.87	11.03	12.57	12.71	11.73	11.03	10.75	10.19	10.61	139.64
1937-38	14.71	14.88	14.88	14.21	13.21	15.05	15.21	14.04	13.21	12.87	12.20	12.70	167.17
1938-39	14.98	15.15	15.15	14.47	13.45	15.32	15.49	14.30	13.45	13.11	12.43	12.94	170.24
1939-40	13.13	13.28	13.28	12.68	11.79	13.43	13.58	12.53	11.79	11.49	10.89	11.34	149.21
1940-41	13.32	13.47	13.47	12.87	11.96	13.62	13.78	12.72	11.96	11.66	11.05	11.51	151.39
1941-42	13.50	13.65	13.65	13.04	12.12	13.80	13.95	12.88	12.12	11.81	11.20	11.65	153.37
1942-43	17.19	17.38	17.38	16.60	15.43	17.58	17.77	16.41	15.43	15.04	14.26	14.85	195.32
1943-44	16.76	16.95	16.95	16.19	15.05	17.14	17.33	16.00	15.05	14.67	13.91	14.48	190.48
1944-45	13.98	14.14	14.14	13.51	12.55	14.30	14.46	13.35	12.55	12.24	11.60	12.08	158.90
1945-46	15.67	15.85	15.85	15.14	14.07	16.03	16.21	14.96	14.07	13.71	13.00	13.53	178.09
1946-47	15.18	15.35	15.35	14.66	13.63	15.53	15.70	14.49	13.63	13.28	12.59	13.11	172.50
1947-48	13.57	13.73	13.73	13.11	12.18	13.88	14.04	12.95	12.18	11.87	11.26	11.72	154.22
1948-49	14.27	14.43	14.43	13.79	12.81	14.60	14.76	13.62	12.81	12.49	11.84	12.33	162.18
1949-50	15.10	15.27	15.27	14.59	13.56	15.44	15.62	14.42	13.56	13.21	12.53	13.04	171.61
TOTAL													
MEAN													
PER CENT													
REMARKS													

56

Lat. 42°42', Long. 121°59' in  
 Sec. 22, T. 33 S., R. 7½ E.,  
 at Hwy. Bridge ¼ mile east

OREGON KLAMATH RIVER COMMISSION

LOCATION of Fort Klamath

RECORD FROM USGS & Computed by USBR

Historical & Computed

RUNOFF OF Wood River near Fort Klamath, Oregon

UNIT 1,000 a.f. DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1950-51	17.67	17.87	17.87	17.07	15.87	18.08	18.28	16.87	15.87	15.46	14.66	15.26	200.83
No. of Yrs.	37	37	36	35	34	34	36	38	37	38	38	38	
TOTAL	532.81	541.09	525.94	488.44	441.88	504.32	538.43	523.98	478.24	480.68	454.56	475.18	5985.55
MEAN	14.40	14.62	14.61	13.96	13.00	14.83	14.96	13.79	12.93	12.65	11.96	12.50	164.21
PER CENT	8.8	8.9	8.9	8.5	7.9	9.0	9.1	8.4	7.9	7.7	7.3	7.6	100.0
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM Computed by Copco from USGS & USBR Records

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 RUNOFF OF NET INFLOW - UPPER KLAMATH LAKE UNIT 1000 Ac-ft DRAINAGE AREA - - - - SQ. MILES

58

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1904-05	106.3	123.7	168.9	172.6	169.7	189.8	124.6	107.8 <sup>E</sup>	107.8 <sup>E</sup>	107.9	198.1	53.5	1630.7
1905-06	91.5	94.2	125.1	141.0 <sup>E</sup>	119.0 <sup>E</sup>	155.8	345.7	188.2	162.6	89.1	53.5	70.8	1636.5
1906-07	90.0	111.8	140.9	235.4	165.1	366.6	303.2	268.6	178.0	109.4	31.4	118.2	2118.6
1907-08	112.3	130.8	142.5	172.6	140.2	193.8	148.8	177.4	74.2	62.0	46.3	98.7	1499.6
1908-09	75.4	126.2	125.5	208.7	239.0	226.4	164.9	184.7	108.5	49.2	109.3	19.4	1637.2
1909-10	106.8	105.6	310.0	153.9	144.3	347.6	224.8	188.7	50.1	60.9	59.3	93.9	1845.9
1910-11	102.0	169.8	197.7	171.4	126.9	263.0	243.7	323.2	168.6	124.0	36.2	48.7	2025.2
1911-12	101.1	122.2	125.4	146.2	183.2	187.6	142.6	177.9	146.3	84.2	104.9	124.2	1645.8
1912-13	40.8	104.0 <sup>E</sup>	95.0 <sup>E</sup>	153.0 <sup>E</sup>	118.0 <sup>E</sup>	200.0 <sup>E</sup>	300.3	180.6	140.4	104.5	88.6	79.7	1604.9
1913-14	84.4	139.2	127.5	204.0	157.1	267.2	266.8	209.9	105.2	72.3	59.4	77.4	1770.4
1914-15	89.0	140.0	108.9	131.6	114.5	180.0	187.6	124.0	44.5	57.9	65.4	57.5	1300.9
1915-16	79.2	110.7	137.9	126.0	141.9	250.4	175.4	126.3	91.9	79.9	63.5	70.0	1453.1
1916-17	57.5	89.6	101.0	104.0	110.1	129.8	225.0	254.7	107.3	19.2	73.2	66.0	1337.4
1917-18	81.0	64.3	145.4	160.7	106.0	171.1	113.5	67.4	39.4	48.8	53.3	71.0	1121.9
1918-19	79.2	90.8	139.2	102.6	134.8	158.6	208.7	91.0	39.9	35.8	42.4	74.7	1197.7
1919-20	73.0	102.8	136.4	120.5	100.3	120.4	102.8	58.8	58.0	36.3	34.7	59.6	1003.6
TOTAL													
MEAN													
PER CENT													

REMARKS E - Estimated

\* - Net inflow to Upper Klamath Lake is computed as the measured outflow through Link River and the "A" Canal for each month plus increase in storage, or minus decrease in storage, for that month. This computation automatically adjusts for precipitation and evaporation.

OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM Computed by Copco from  
USGS & USBR Records

~~BRANCH OF~~ NET INFLOW - UPPER KLAMATH LAKE UNIT 1000 Ac-ft DRAINAGE AREA - - - - SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1920-21	77.0	120.6	149.0	174.2	193.1	274.5	157.7	203.2	115.9	42.4	27.5	75.7	1610.8
1921-22	60.6	80.0	159.0	109.8	94.7	118.5	235.4	216.9	92.0	28.3	45.1	54.0	1294.3
1922-23	79.7	98.0	110.5	126.4	94.6	117.7	178.0	117.7	41.6	56.7	23.5	55.0	1099.4
1923-24	99.9	72.6	100.1	104.2	140.6	97.8	86.2	23.5	25.8	27.7	41.7	50.9	871.0
1924-25	52.1	127.3	101.9	121.4	206.9	116.7	137.5	133.5	93.0	36.5	37.5	76.5	1240.8
1925-26	81.2	85.5	102.3	85.8	112.7	79.4	72.8	44.3	11.9	30.4	34.9	46.2	787.4
1926-27	77.8	96.8	155.2	115.8	149.8	192.1	186.1	179.1	94.8	44.1	40.9	64.8	1397.3
1927-28	88.6	102.4	112.1	109.0	117.8	191.6	160.8	105.4	47.3	35.9	43.1	61.8	1175.8
1928-29	81.0	95.1	91.1	91.9	80.3	109.0	97.8	51.6	54.2	16.9	39.9	45.3	854.1
1929-30	70.7	72.0	125.6	93.3	126.5	96.1	52.6	56.1	15.2	26.2	34.6	50.0	810.9
1930-31	64.5	81.6	76.2	83.4	70.6	81.3	48.3	28.0	19.5	21.8	17.4	42.2	634.8
1931-32	62.0	71.0	79.4	78.2	67.1	141.4	83.9	98.2	44.2	17.8	16.3	37.8	792.3
1932-33	59.7	73.3	78.3	90.2	69.7	85.2	97.5	74.4	66.3	17.0	17.4	41.1	770.1
1933-34	66.3	70.4	85.4	113.7	63.0	80.0	55.7	36.3	25.3	16.9	27.0	37.0	677.0
1934-35	68.6	93.0	86.3	82.8	70.4	88.1	164.0	79.7	40.0	30.4	29.0	42.2	874.5
1935-36	67.5	76.2	80.0	136.4	106.1	111.3	145.0	126.0	57.6	19.6	27.6	54.5	1007.8
1936-37	59.7	75.8	83.3	87.4	78.9	107.0	120.7	70.0	74.5	23.7	16.9	53.9	851.8
1937-38	76.4	98.3	122.8	106.4	125.4	159.7	290.9	247.8	79.2	43.3	35.4	56.2	1471.8
1938-39	73.3	91.6	95.6	91.7	91.8	120.2	95.4	60.2	28.3	32.4	36.4	56.7	873.6
1939-40	70.9	69.8	116.3	109.3	138.4	173.7	184.7	78.1	32.7	31.2	35.3	69.1	1109.5
TOTAL													
MEAN													
PER CENT													
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM Computed by Copco from  
USGS & USBR Records

~~RUNOFF OF~~ NET INFLOW - UPPER KLAMATH LAKE UNIT 1000 Ac-ft DRAINAGE AREA - - - - SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1940-41	72.6	84.4	102.0	100.4	109.8	108.6	87.7	90.1	51.9	34.6	48.9	59.6	950.6
1941-42	73.1	87.3	141.9	108.2	122.0	108.4	138.1	134.3	75.4	26.1	27.2	51.6	1093.6
1942-43	70.0	124.6	164.3	157.0	126.9	264.3	343.0	216.3	130.1	51.4	54.0	63.3	1765.2
1943-44	94.2	99.5	97.3	105.8	107.6	118.7	96.0	66.5	78.6	35.9	47.6	59.1	1006.8
1944-45	77.3	96.9	95.4	104.5	137.4	97.7	81.5	145.0	54.4	36.5	40.3	58.6	1025.5
1945-46	80.7	104.9	139.6	127.0	102.0	197.6	177.0	139.8	63.5	49.6	40.2	66.6	1288.5
1946-47	88.7	107.4	102.5	100.1	103.9	94.8	74.5	53.2	60.1	33.8	43.0	61.6	923.6
1947-48	85.4	82.9	85.2	114.5	102.9	102.2	109.6	108.8	112.1	37.3	37.0	56.7	1034.6
1948-49	75.1	95.2	124.2	89.3	110.6	155.5	115.1	136.3	44.1	21.5	29.7	50.0	1046.6
1949-50	79.7	91.9	92.2	132.0	122.7	170.2	131.7	105.9	71.9	23.6	39.1	51.7	1112.6
1950-51	98.0	127.3	213.4	160.4	193.2	184.9	222.4	181.4	65.7	39.8	38.2	63.5	1588.2
1951-52	100.1	118.5	167.4	132.6	171.7	192.1	433.8	316.6	169.3	85.6	62.5	83.4	2033.6
1952-53	96.8	109.3	146.3	258.2	242.9	199.6	189.4	262.5	209.9	76.4	72.3	83.3	1946.9
49 years 1904-05 to 1952-53, inc.													
TOTAL													
MEAN	79.6	100.1	124.7	128.6	127.0	162.7	165.9	137.1	79.0	46.7	48.5	62.5	1262.4
PER CENT	6.3	8.0	9.9	10.2	10.0	12.9	13.1	10.9	6.3	3.7	3.8	4.9	100.0
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USBR

RUNOFF OF "A" Canal at Klamath Falls UNIT 1000 Ac-Ft DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1911								7.5	11.3	12.1	10.1	4.7	45.7
1912								7.0	10.0	13.7	8.7	2.4	41.8
1913								8.1	12.4	6.2	6.8	2.2	35.7
1914								10.6	10.1	14.6	8.1	2.3	45.7
1915	0.1						1.4	6.5	18.2	12.0	9.2	3.0	50.4
1916							0.1	9.5	15.1	6.6	10.0	3.0	44.3
1917								0.4	15.9	14.8	10.5	2.1	43.7
1918							1.6	19.4	21.4	17.5	14.7	4.1	78.7
1919							0.2	22.6	26.8	23.2	21.0	4.9	98.7
1920							0.7	21.6	28.6	19.9	26.7	4.0	101.5
1921								10.5	28.7	24.0	25.1	4.8	93.1
1922							0.3	8.5	34.2	29.8	27.5	8.8	109.1
1923								29.0	30.0	22.6	31.2	7.0	119.8
1924							6.5	38.6	34.2	32.2	24.4	12.1	148.0
1925							1.0	25.8	30.3	34.0	22.9	5.0	119.0
1926							9.9	40.2	38.1	37.0	27.0	8.0	160.2
1927							0.5	13.3	31.2	40.0	25.1	7.4	117.5
1928							0.4	25.8	36.9	36.2	28.3	10.4	138.0
1929							0.3	36.7	31.1	38.9	32.8	15.3	155.1
1930							2.9	29.8	46.1	41.1	31.2	10.5	161.6
TOTAL													
MEAN													
PER CENT													
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USBR

RUNOFF OF "A" Canal at Klamath Falls UNIT 1000 Ac-Ft DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1931							18.6	52.4	43.7	50.6	41.5	12.3	219.1
1932							0.4	31.4	35.7	47.5	37.0	22.3	174.3
1933							6.2	16.0	47.3	45.6	39.8	20.6	175.5
1934	0.8						23.2	34.4	36.0	47.1	40.2	20.9	202.6
1935								25.4	47.5	42.5	40.3	23.2	178.9
1936	0.3						0.5	30.8	33.7	52.3	40.3	19.4	177.3
1937	0.2						2.0	33.3	25.2	53.4	44.0	22.8	180.9
1938	1.2						0.5	27.2	44.7	51.0	39.7	25.3	189.6
1939	1.0						25.4	36.2	46.3	50.6	45.6	20.3	225.4
1940							0.2	36.4	50.2	51.6	39.9	14.3	192.6
1941							20.4	30.7	35.2	48.2	32.3	16.2	183.0
1942	0.1						14.6	20.9	43.3	51.2	44.5	22.7	197.3
1943	4.9						0.3	25.2	36.1	55.3	49.5	23.9	195.2
1944	3.7						9.3	32.4	27.4	59.0	53.9	26.7	212.4
1945	4.3						3.7	23.5	27.7	57.4	52.6	26.3	195.5
1946	4.9						6.3	36.0	45.7	59.6	50.0	25.5	228.0
1947	5.5						15.4	49.0	21.9	59.5	42.2	25.2	218.7
1948							1.6	16.3	32.0	55.4	40.0	21.9	167.2
1949							6.1	34.1	49.2	54.8	42.8	29.2	216.2
1950							5.3	39.5	47.6	60.0	46.6	24.2	223.2
TOTAL													
MEAN													
PER CENT													
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USBR

RUNOFF OF "A" Canal at Klamath Falls UNIT 1000 Ac-Ft DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1951	1.1						24.0	31.6	53.4	60.4	43.8	34.2	253.5
1952	7.5						4.0	40.9	42.0	54.4	49.8	33.2	231.8
1953	5.9						9.5	22.0	38.9	61.7	49.6	28.7	216.3
<hr/>													
<u>For 20-year period, 1934 through 1953</u>													
Total	41.4						172.3	625.8	788.9	1085.4	887.6	484.1	4085.6
Mean	2.1						8.6	31.3	39.4	54.3	44.4	24.2	204.3
Percent	1.0						4.2	15.3	19.3	26.5	21.8	11.8	100
<hr/>													
<u>For 10-year period, 1944 through 1953</u>													
Total	32.9						85.2	325.3	390.8	582.2	471.3	275.1	2162.8
Mean	3.3						8.5	32.5	39.1	58.2	47.1	27.5	216.2
Percent	1.5						3.9	15.0	18.0	27.0	21.8	12.8	100
<hr/>													
TOTAL													
MEAN													
PER CENT													
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USGS \_\_\_\_\_

RUNOFF OF Link River at Klamath Falls (Includes Keno Canal) UNIT 1000 Ac-ft DRAINAGE AREA 3810 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1940-41	89.5	57.2	56.4	46.9	16.2	32.6	46.3	47.1	52.6	85.4	90.1	84.1	704.4
1941-42	90.2	80.5	38.9	34.9	52.8	67.9	93.1	117.1	77.5	79.2	100.0	92.2	924.4
1942-43	96.7	56.3	42.0	73.3	180.3	226.6	250.3	173.9	110.4	65.8	101.9	117.2	1494.7
1943-44	97.0	100.9	94.5	87.9	56.2	54.3	64.3	57.3	48.7	86.2	104.7	83.8	935.8
1944-45	76.0	86.7	97.2	79.1	22.5	40.8	54.0	32.6	35.4	91.2	108.4	103.8	827.7
1945-46	76.9	46.1	48.0	41.8	90.3	206.8	115.2	58.3	58.0	74.9	90.6	89.0	995.9
1946-47	99.6	101.9	96.5	76.3	23.6	11.1	35.3	29.8	24.6	66.8	79.4	83.2	728.1
1947-48	86.0	73.7	62.1	59.1	71.8	27.3	14.4	39.6	100.6	80.1	77.7	76.5	768.9
1948-49	86.6	83.7	124.2	112.5	70.1	32.5	30.6	70.0	53.3	53.7	53.0	65.7	835.9
1949-50	106.9	118.8	128.7	82.7	27.2	35.2	73.6	59.2	48.3	55.8	64.7	52.6	853.7
1950-51	68.9	109.5	181.6	120.3	155.8	165.7	141.2	168.8	97.7	76.6	46.1	54.8	1387.0
1951-52	42.8	62.8	89.1	159.5	141.1	173.5	262.4	228.4	119.9	80.2	77.1	91.4	1528.2
1952-53	129.1	117.3	128.0	105.8	230.7	178.6	148.8	214.3	186.4	115.0	92.2	111.2	1757.4
<u>20 Year Period 1933-34 through 1952-53</u>													
Total	1627.6	1470.0	1459.6	1390.3	1457.4	1707.2	2122.8	1934.4	1481.8	1509.2	1618.4	1621.3	19400.0
Mean	81.4	73.5	73.0	69.5	72.9	85.3	106.1	96.7	74.1	75.5	80.9	81.1	970.0
Percent	8.4	7.6	7.5	7.2	7.5	8.8	10.9	10.0	7.6	7.8	8.3	8.1	100.0
<u>49 Year Period 1904-05 through 1952-53</u>													
TOTAL	3796.2	3807.6	4386.8	4754.7	4556.8	5536.7	6447.4	5983.5	4682.0	3947.7	3553.9	3502.4	54955.0
MEAN	77.5	77.7	89.5	97.0	93.0	113.0	131.5	122.1	95.5	80.6	72.5	71.8	1121.7
PER CENT	6.9	6.9	8.0	8.6	8.3	10.1	11.7	10.9	8.5	7.2	6.5	6.4	100.0
REMARKS													

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Sec. 8, T. 47 N., R. 8 E., OREGON KLAMATH RIVER COMMISSION

Mt. D. B&M

LOCATION 20 miles E. of Tulelake, Calif.

RECORD FROM USBR, USGS

Recorded and Computed

(Clear Lake)

RUNOFF OF Lost River at Clear Lake Dam(Total flow into/            UNIT 1000 ac.ft DRAINAGE AREA 550 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1904-05	1.11	0.92	1.12	7.38	12.05	13.77	7.56	0.90	1.29	0.43	0.37	0.42	47.32
1905-06	0.62	0.77	0.98	1.45	5.89	49.00	68.40	10.90	5.90	0.58	0.49	0.62	145.60
1906-07	0.74	0.98	7.81	16.40	63.30	83.60	63.70	11.70	3.27	0.80	0.73	0.57	253.60
1907-08	1.03	1.32	5.20	12.60	3.28	10.90	2.61	1.78	0.54	0.37	0.36	0.39	40.38
1908-09	0.74	0.54	0.53	22.80	18.60	26.90	23.60	4.24	0.70	1.48	0.92	0.98	102.03
1909-10	3.90	3.28	5.12	17.30	16.60	50.20	2.00	2.30	0.82	0.78	0.24	1.06	103.60
1910-11	2.45	8.88	34.50	8.00	7.10	97.80	40.70	5.90	0.55	0.12	0.15	0.98	207.13
1911-12	3.12	9.35	0.40	8.80	18.50	7.90	16.60	14.90	5.24	0.48	3.42	1.96	90.67
1912-13	2.16	1.53	2.28	6.52	.11	18.10	49.70	7.80	4.68	5.86	1.39	0.28	100.41
1913-14	0.92	4.59	4.78	40.80	28.00	81.00	20.10	3.21	3.85	0.16	0.07	1.47	188.95
1914-15	0.78	4.27	6.44	3.13	5.50	41.40	8.38	4.45	0.24	1.33	0.31	0.56	76.79
1915-16	4.27	1.51	1.05	5.17	38.30	57.50	9.75	1.86	1.65	3.22	0.31	0.18	124.77
1916-17	0.50	5.47	4.59	4.56	5.49	9.39	136.00	29.10	0.41	1.03	2.36	1.99	200.89
1917-18	0.74	2.71	4.12	2.82	2.37	20.40	8.90	0.49	0.48	0.73	0.46	3.72	47.94
1918-19	0.15	5.50	1.33	1.33	16.40	31.50	63.50	0.90	1.20	0.48	0.25	1.66	124.20
1919-20	3.65	3.06	1.52	1.38	1.50	10.02	14.70	0.85	1.66	1.05	1.41	0.70	41.50
TOTAL													
MEAN													
PER CENT													

REMARKS October 1904 to May 1909 - Runoff at Clear Lake Dam, record from USGS.  
 June 1909 to December 1919 - Computed inflow  $\frac{1}{2}$  to Clear Lake Reservoir - taken from Reservoir study by E. C. Koppen, Oct. 1920  
 January 1920 to Sept. 1951 - Computed inflow  $\frac{1}{2}$  to Clear Lake Reservoir - taken from Klamath Project records  
1/ Gross inflow.

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Sec. 8, T. 47 N., R. 8E., OREGON KLAMATH RIVER COMMISSION

Mt. D. E&M

LOCATION 20 miles E. of Tulelake, Calif.

RECORD FROM USBR, USGS

Recorded and computed

Clear Lake)

RUNOFF OF Lost River at Clear Lake Dam (Total flow into/ UNIT 1000 a.f. DRAINAGE AREA 550 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1920-21	1.65	7.04	10.42	41.17	44.72	57.11	17.07	3.22	1.76	0.25	0.25	0.34	185.00
1921-22	0.34	2.07	2.50	4.44	5.58	19.71	87.48	19.02	1.98	1.90	0.63	0.50	146.15
1922-23	0.50	0.50	2.36	7.29	6.77	15.78	17.57	1.89	2.23	2.26	0.19	3.55	60.89
1923-24	3.23	0.74	1.21	4.99	14.00	3.83	5.21	0.08	0.75	0.04	0.63	1.20	35.91
1924-25	3.64	6.52	8.12	9.21	28.28	6.56	5.78	5.83	3.99	0.67	0.75	2.63	81.98
1925-26	2.32	5.66	5.40	4.50	11.78	7.01	2.93	1.90	0.20	0.40	0.69	2.82	45.61
1926-27	6.09	13.24	6.94	10.87	25.92	38.82	38.01	8.18	1.58	0.12	0	1.08	150.85
1927-28	1.85	9.93	6.26	14.42	21.27	51.86	20.44	0.29	0.46	0.33	0.30	0.72	128.13
1928-29	1.21	3.84	1.85	5.39	6.60	10.37	13.70	0	3.04	0	0	0.03	46.03
1929-30	4.09	4.18	6.56	5.55	32.07	19.56	4.04	2.19	0.70	0	0.23	2.51	81.68
1930-31	4.10	3.40	2.69	1.11	1.07	5.06	2.36	0.83	0.82	0	0	0.57	22.01
1931-32	1.25	0.98	2.06	1.28	1.73	84.82	9.02	4.17	0.92	0.63	0.48	0.30	107.64
1932-33	0.47	0.50	0.43	2.20	2.20	13.53	17.22	5.73	0.92	0.40	0.22	0.60	44.42
1933-34	1.96	0.44	2.31	3.24	3.97	1.51	.92	1.61	1.61	0.19	0.15	0.47	18.38
1934-35	1.12	3.49	3.12	1.67	8.90	12.33	65.00	4.08	0.15	0.70	0.18	0.19	100.93
1935-36	0.36	0.54	1.88	7.53	30.64	39.82	27.09	4.38	2.49	0.33	0.44	0.54	116.04
1936-37	0.32	0.40	1.62	2.53	3.33	39.56	27.84	1.96	1.76	0.31	0.14	0.43	80.20
1937-38	1.31	6.90	44.06	6.92	16.31	102.52	100.83	10.69	2.69	1.45	0.25	0.69	294.62
1938-39	2.56	2.83	1.34	3.04	2.38	25.75	3.78	1.96	1.19	2.07	0.15	1.96	49.01
1939-40	2.93	1.38	9.80	23.06	60.22	41.78	19.45	3.32	0.60	0.50	0.70	3.12	166.86
TOTAL													
MEAN													
PER CENT													
REMARKS													

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Sec. 8, T. 47 N., R. 8 E.,  
Mt. D. B&M

OREGON KLAMATH RIVER COMMISSION

LOCATION 20 miles E. of Tulelake, Calif.

RECORD FROM USBR, USGS

Recorded and computed Clear Lake)  
RUNOFF OF Lost River at Clear Lake Dam (Total flow into/ UNIT 1000 a.f. DRAINAGE AREA 550 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1940-41	3.21	2.92	6.29	8.83	41.46	19.93	7.62	5.03	3.34	0.65	3.39	1.73	104.40
1941-42	3.03	3.28	27.09	40.30	35.06	30.01	21.91	17.25	2.72	0.25	0.30	0.53	181.73
1942-43	1.14	4.64	8.76	9.16	18.01	114.68	36.69	17.79	4.83	0.51	0.49	0.48	217.18
1943-44	4.32	2.51	2.16	3.31	3.65	7.98	16.01	3.67	8.19	1.24	0.18	1.32	54.54
1944-45	1.93	7.92	5.05	7.48	55.01	10.18	20.00	18.98	11.80	0.52	0.24	0.34	139.45
1945-46	4.04	8.87	9.69	19.96	5.78	44.17	26.57	3.50	1.39	1.48	0.34	0.62	126.41
1946-47	2.28	4.18	5.34	2.95	11.02	20.99	5.81	2.93	5.56	0.30	0.48	0.79	62.63
1947-48	3.20	2.99	3.19	8.39	3.74	10.11	32.61	25.08	7.45	0.34	0.31	4.45	101.86
1948-49	3.15	2.38	4.92	2.76	4.76	38.37	22.22	8.34	2.29	0.31	0.47	1.09	91.06
1949-50	2.00	2.31	1.76	4.75	21.35	31.38	23.08	5.22	3.31	0.40	0.59	1.28	97.43
1950-51	5.24	2.61	11.08	4.83	26.27	19.74	18.06	10.37	0.44	0.63	1.76	1.15	102.18
1951-52	3.59	1.82	7.87	6.43	13.49	71.83	127.04	14.25	8.10	3.83	0.65	3.11	262.01
1952-53	0.49	1.04	7.37	58.56	18.93	17.36	17.90	28.19	15.40	0.87	1.97	1.35	169.43
<b>LAST TEN YEARS</b>		<b>1943-44 through 1952-53</b>											
Total	30.24	36.63	58.43	119.42	164.00	272.11	309.30	120.53	63.93	9.92	6.99	15.50	1207.00
Mean	3.02	3.66	5.84	11.94	16.40	27.21	30.93	12.05	6.39	0.99	0.70	1.55	120.70
Percent	2.5	3.0	4.8	9.9	13.6	22.6	25.6	10.0	5.3	0.8	0.6	1.3	100.0
<b>LAST 49 YEARS</b>		<b>1904-05 through 1952-53</b>											
TOTAL	105.80	176.73	303.27	498.56	829.26	1643.40	1397.46	343.21	137.14	42.78	30.79	60.03	5568.43
MEAN	2.16	3.61	6.19	10.18	16.92	33.52	28.52	7.00	2.80	0.87	0.63	1.22	113.04
PER CENT	1.9	3.2	5.4	8.9	14.9	29.4	25.1	6.2	2.5	0.8	0.6	1.1	100.0

REMARKS

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OREGON KLAMATH RIVER COMMISSION

LOCATION Sec. 12, T. 39 S., R. 13 E., W.B.&M.  
14 Mi. E. of Bonanza, Oregon  
 Recorded and computed 1/

RECORD FROM USGS & USBR

RUNOFF OF Miller Creek at Gerber Dam UNIT 1000 a.f. DRAINAGE AREA 220 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1904-05	.15	.22	.38	11.01	7.66	9.41	4.22	.40	.18	0	0	0	33.63
1905-06	0	0	0	.47	.64	27.40	46.40	3.49	2.81	.02	0	0	81.23
1906-07	0	.04	4.19	1.49	56.60	33.40	26.70	2.40	1.58	.01	0	0	126.41
1907-08	.05	.18	4.42	5.87	.58	7.56	1.04	.86	.02	0	0	0	20.58
1908-09	0	.03	.03	10.19	10.92	19.40	12.31	.81	.46	.11	.16	.07	54.49
1909-10	.12	11.41	1.20	4.64	3.72	35.29	1.65	.33	.20	.12	.12	.13	58.93
1910-11	.23	2.04	11.25	.08	.02	27.87	25.67	2.54	.34	.10	.04	.10	70.28
1911-12	.32	.51	.86	5.41	13.86	3.78	5.92	7.02	.24	.24	.19	.27	38.62
1912-13	.25	.38	.26	.25	.23	1.91	38.39	.73	.09	.46	.08	.11	43.14
1913-14	.26	.59	.23	10.11	3.72	40.99	10.11	.22	.14	.02	0	.05	66.44
1914-15	.05	.10	.10	.05	1.17	17.85	2.20	.43	.04	.01	0	.01	22.01
1915-16	0	0	.53	.15	11.65	17.12	1.52	.08	0	0	0	0	31.05
1916-17	0	0	0	0	.18	1.08	53.79	16.22	.21	0	0	0	71.48
1917-18	0	0	.48	3.20	1.98	19.56	3.22	.07	0	0	0	0	28.51
1918-19	0	0	0	.32	1.48	15.81	29.50	.24	0	0	0	0	47.35
1919-20	.15	.59	.95	1.17	.89	7.92	6.89	.95	.28	0	0	0	19.79
TOTAL													
MEAN													
PER CENT		1904											

REMARKS 1/ October to December 1910 record at Gerber Dam direct.  
 January 1911 to September 1921 record as 81.5% of Miller Creek at Lorella.  
 October 1921 to December 1924 by direct relationship with ClearLake inflow.  
 January 1925 to September 1951 record of inflow to Gerber Reservoir, which is the natural flow of Miller Creek at Gerber Dam.

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OREGON KLAMATH RIVER COMMISSION

LOCATION Sec. 12, T. 39 S., R. 13 E., WB&M  
14 Mi. E. of Bonanza, Oregon  
 Recorded and computed 1/

RECORD FROM USGS & USER

RUNOFF OF Miller Creek at Gerber Dam UNIT 1,000 a.f. DRAINAGE AREA 220 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1920-21	0	2.84	4.58	35.50	22.40	36.11	5.80	.33	.76	.07	.12	.04	108.55
1921-22	.16	.72	.89	1.39	2.44	8.81	31.79	11.03	.86	.53	.31	.06	58.99
1922-23	.23	.17	.84	2.28	2.96	7.05	8.87	1.09	.97	.63	.09	.46	25.64
1923-24	1.47	.26	.43	1.56	4.20	.52	.64	.05	.33	.01	.31	.15	9.93
1924-25	1.66	2.27	2.89	3.25	17.99	3.39	5.08	1.76	1.15	0	.39	.26	40.09
1925-26	.33	.31	1.00	.24	5.87	1.62	.43	.32	.25	.01	.01	.01	10.40
1926-27	.03	7.62	6.28	6.49	12.05	26.82	22.10	4.75	.72	.03	.06	.31	87.26
1927-28	.72	6.29	1.57	1.38	10.59	22.86	11.28	.67	.27	.02	.02	.08	55.75
1928-29	.14	.50	.44	.37	.29	8.79	4.60	.40	.79	0	0	0	16.32
1929-30	.19	.04	2.03	.61	11.94	5.02	.88	.69	.45	.33	.89	.62	23.69
1930-31	.74	.38	.24	.62	.70	2.86	.16	.08	.18	0	0	.02	5.98
1931-32	.10	.06	.03	.06	.07	34.77	5.03	1.83	.96	.41	0	0	43.32
1932-33	.08	.20	.31	.48	.17	4.03	12.64	5.73	1.20	.54	.18	.08	25.64
1933-34	.38	.01	.73	3.65	3.29	1.65	.73	.62	.50	.16	.33	.12	12.17
1934-35	.17	1.20	2.62	.53	4.09	12.13	31.00	2.24	.51	.32	0	.04	54.85
1935-36	.22	.17	.45	2.43	8.38	27.78	19.88	1.72	.47	.01	.30	.11	61.92
1936-37	0	0	.46	.47	1.03	12.72	28.52	1.26	1.56	.07	.03	.08	46.20
1937-38	.86	2.88	13.11	1.63	2.43	18.38	68.42	6.72	.84	.12	0	.04	115.43
1938-39	.29	.86	.88	.46	.66	18.61	1.31	.44	.10	.25	.05	.24	24.15
1939-40	.25	.14	4.48	9.61	23.57	22.44	7.90	1.13	.08	0	.06	.39	70.05
TOTAL	2/ 6.88	23.12	57.71	45.27	119.74	336.91	264.47	57.43	21.67	4.98	2.90	2.97	944.05
MEAN	2/ .34	1.16	2.89	2.26	5.98	16.85	13.22	2.87	1.08	.25	.15	.15	47.20
PER CENT	2/ .7	2.5	6.1	4.8	12.7	35.7	28.0	6.1	2.3	.5	.3	.3	100.0

REMARKS 2/ 1927-28 through 1946-47

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OREGON KLAMATH RIVER COMMISSION

LOCATION Sec. 12, T. 39 S., R. 13 E., W.B.&W.  
14 Mi. E. of Bohanza, Oregon  
 Recorded and Computed 1/

RECORD FROM USGS & USBR

RUNOFF OF Miller Creek at Gerber Dam UNIT 1,000 a.f. DRAINAGE AREA 220 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1940-41	.50	.44	1.89	1.24	15.05	15.56	2.58	1.51	.41	.04	.32	.27	39.81
1941-42	.32	.63	8.03	8.19	5.87	16.21	9.48	9.52	1.68	.08	.04	.14	60.19
1942-43	.09	4.54	4.67	3.86	3.63	60.68	23.47	8.82	3.02	.60	.11	.07	114.06
1943-44	.38	.38	.28	.51	.70	9.18	4.39	.66	3.19	1.09	.01	.23	21.00
1944-45	.22	1.12	2.70	4.67	18.12	8.15	12.06	11.44	3.47	.06	0	.04	62.05
1945-46	.88	2.39	10.41	3.51	1.29	29.00	17.24	1.64	.89	.75	.39	.23	69.62
1946-47	.35	.89	2.38	.99	7.87	6.09	2.40	.31	1.10	.13	.17	.17	22.85
1947-48	.52	.56	.53	7.04	2.62	6.13	12.82	5.81	2.09	.32	.34	.56	39.34
1948-49	.30	.60	.94	.32	.82	20.51	16.81	2.26	.82	.07	.07	.14	43.66
1949-50	.21	.20	.26	4.04	11.29	15.69	10.95	1.84	1.03	.05	.48	.46	46.50
1950-51	.64	1.59	12.01	1.30	17.64	15.42	5.77	5.19	.32	.31	.32	.36	60.87
No. of Yrs	47	47	47	47	47	47	47	47	47	47	47	47	47
TOTAL	14.01	56.35	113.24	163.09	335.32	765.33	655.06	128.65	37.56	8.10	5.99	6.52	2289.22
MEAN	0.30	1.20	2.41	3.47	7.13	16.28	13.94	2.74	0.80	0.17	0.13	0.14	48.71
PER CENT	0.6	2.5	5.0	7.1	14.6	33.5	28.6	5.6	1.6	0.3	0.3	0.3	100.0
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION Near Olene

RECORD FROM USBR

RUNOFF OF Diversion from Klamath River to Lost River UNIT 1000 A-F DRAINAGE AREA ----- SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1930-31							4.9	0.1		3.1			8.1
1931-32								2.9	6.9	9.9	1.7		21.4
1932-33							11.5	2.7	18.8	9.2	1.7		43.9
1933-34							12.0	14.8	6.6	10.6	2.8		46.8
1934-35		0.2						8.4	17.7	7.8	4.2		38.2
1935-36								7.8	6.4	8.1	1.5		23.8
1936-37							0.4	15.2	8.2	14.5	4.6	0	42.9
1937-38								2.4	12.4	8.8	2.1	0	25.7
1938-39							15.9	8.1	10.6	11.2	3.8	0	49.6
1939-40								9.4	11.8	7.3	1.7	0	30.2
1940-41							0.6	4.3	4.2	8.5	0.2	0	17.8
1941-42							1.3	0	6.3	6.2	0.2	0	14.0
1942-43								0.3	4.6	0.7	1.3	0	6.9
1943-44					0.3	1.1	10.2	3.3	1.2	7.1	1.7	0	24.9
1944-45							5.7	2.6	0.7	2.6	1.0	0	12.7
1945-46							5.5	1.0	0.9	0.3	0	0	7.6
1946-47				1.2	0.8	0.4	21.8	0.8	0.2	5.9	0	0	31.1
1947-48						1.8	10.6	0.5	1.3	5.9	0	0	20.1
1948-49						0.1	9.7	1.3	11.1	6.8			28.9
1949-50			0.3	0.5	0	0	13.8	0.8	9.2	3.6			28.2
TOTAL													
MEAN													
PER CENT													
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION Near Olene

RECORD FROM USBR

RUNOFF OF Diversion from Klamath River to Lost River UNIT 1000 A-F DRAINAGE AREA ----- SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1950-51							18.6	0.5	13.6	6.1			38.8
1951-52							4.4	0	5.2	8.4	0.9	0	18.9
1952-53							4.3	0	3.7	5.5	0.4		14.0
TOTAL		0.2	0.3	1.7	1.1	3.4	146.3	84.2	154.7	145.1	28.1	0	565.1
MEAN		0	0	.1	0	.2	6.4	3.7	6.7	6.3	1.2	0	24.6
PER CENT		0	0	0.4	0	0.8	26.0	15.1	27.2	25.6	4.9	0	100.0
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION Near Olene

RECORD FROM computed

RUNOFF OF Klamath River  
Net Flow of Lost River Diversion Canal to/ UNIT 1000 A-F DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1930-31		3.7	5.3	3.0			- 4.9	- 0.1		- 3.1		1.7	5.6
1931-32	5.7	5.1	4.0	5.1	6.4	28.4	1.3	- 2.9	- 6.9	- 9.9	- 1.4	4.5	40.3
1932-33	5.9	5.4	5.1	5.3	4.9	9.7	-11.3	- 2.7	-18.8	- 9.2	- 1.7	3.3	- 4.1
1933-34	6.0	6.2	6.3	6.3	6.0	3.9	-12.0	-14.8	- 6.6	-10.6	- 2.8	3.1	- 9.0
1934-35	5.8	5.2	5.8	5.6	10.1	10.2	20.9	- 6.4	-17.7	- 7.8	- 4.2	3.0	30.5
1935-36	5.5	5.0	5.6	16.5	21.6	21.8	18.9	- 7.1	- 5.8	- 8.1	- 1.5	7.1	79.5
1936-37	6.6	6.0	6.0	5.6	5.3	21.1	10.5	-15.2	- 5.8	-14.5	- 3.8	7.8	29.6
1937-38	9.9	7.9	25.2	16.7	26.6	61.5	61.0	18.3	-12.4	- 7.4	1.9	8.3	217.5
1938-39	9.0	7.0	7.5	6.8	6.2	11.2	-14.7	- 7.6	-10.1	-10.5	- 3.2	6.9	8.5
1939-40	8.7	6.7	9.2	20.3	21.0	29.3	32.8	- 8.4	-11.8	- 7.3	- 0.8	7.6	107.3
1940-41	8.2	7.0	7.3	10.1	28.3	20.1	2.1	- 4.3	- 3.1	- 7.5	5.4	11.0	84.6
1941-42	8.2	7.2	13.2	26.0	33.2	14.3	1.7	6.5	- 3.8	- 6.2	- 0.1	11.5	111.7
1942-43	7.5	8.3	12.5	28.4	45.6	60.2	37.2	22.5	0	- 0.3	1.6	12.9	236.4
1943-44	11.0	8.0	8.3	8.2	7.8	0.2	-10.2	- 3.2	2.7	- 7.1	- 1.3	12.3	36.7
1944-45	10.2	9.1	10.7	10.5	30.4	10.8	- 2.6	7.8	8.5	- 2.6	2.7	11.6	107.1
1945-46	8.5	9.5	19.9	43.3	41.7	30.5	- 2.2	- 0.3	1.2	4.1	9.6	17.7	183.5
1946-47	10.4	8.7	9.3	0.4	3.6	2.5	-21.8	0.4	13.0	- 5.9	6.8	9.5	36.9
1947-48	7.9	7.8	5.6	3.4	0	- 1.7	- 9.7	4.0	1.9	- 5.9	7.0	12.2	32.5
1948-49	8.6	6.7	7.5	9.2	13.2	24.4	- 9.7	10.0	- 8.7	- 6.8	0	0	54.4
1949-50	0	0	- 0.3	9.5	16.8	13.7	-13.8	2.9	- 9.2	- 3.6	0	0	16.0
TOTAL													
MEAN													
PER CENT													
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION Near Olene

RECORD FROM computed

RUNOFF OF Net Flow of Lost River Diversion Canal to/ Klamath River UNIT 1000 A-F DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1950-51	0	1.1	18.0	11.9	22.8	15.7	-16.9	9.2	-13.6	-4.3	11.6	7.9	63.4
1951-52	12.8	8.6	12.7	9.8	36.0	46.2	39.2	14.5	4.1	-4.4	9.6	14.8	203.9
1952-53	11.3	8.7	9.3	42.4	27.3	15.8	-2.0	24.3	8.7	-5.2	8.4	18.8	167.8
<u>For period, 1930-31 through 1952-53</u>													
Total	167.7	148.9	214.9	304.3	414.8	449.8	93.8	47.4	-94.2	-144.1	43.8	193.5	1840.6
Mean	7.2	6.5	9.3	13.2	18.0	19.6	4.1	2.1	-4.1	-6.3	1.9	8.4	79.9
Percent													
<u>For last 10 years, 1943-44 through 1952-53</u>													
TOTAL	80.7	68.2	101.0	148.6	199.6	158.1	-49.7	69.6	8.6	-41.7	54.4	104.8	902.2
MEAN	8.1	6.8	10.1	14.9	20.0	15.8	-5.0	7.0	0.9	-4.2	5.4	10.5	90.2
PER CENT													
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION N $\frac{1}{2}$  Sec. 23, T. 40 S., R. 8 E. W. M.

RECORD FROM USBR

RUNOFF OF Diversions from Klamath River at Ady

UNIT 1000 A.F.

DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1927-28	0	0	0	0	0	0	0	1.89	.80	0.73	0.04	0	3.46
1928-29	0	0	0	0	0	0	0	1.82	1.12	0.97	0.17	1.50	5.58
1929-30	0.66	0.45	0	0	0	0	0	1.00	1.46	0.97	0.46	0.26	5.26
1930-31	0.50	0.08	0	0	0	1.35	2.39	2.27	2.11	2.52	1.39	0.87	13.46
1931-32	1.63	0.37	0	0	0	0	0	1.03	0.76	1.32	0.94	0.58	6.63
1932-33	0.84	0.06	1.95	0.15	0	0	1.04	1.99	2.17	0.42	0.52	0.14	9.28
1933-34	0.15	0.24	0.25	0.25	0.17	0.21	3.04	4.04	4.06	1.05	0.83	0.52	14.81
1934-35	0.52	0.45	0.25	0.20	0	0.12	0	2.10	3.03	1.60	1.18	0.46	9.91
1935-36	0.43	0.42	0.20	0.47	0.13	0	0.03	2.95	2.08	1.78	0.78	0.09	9.36
1936-37	0	0.37	0.71	0.74	0.67	0.30	0.38	3.22	2.33	2.29	0.87	0.63	12.51
1937-38	0.46	0.23	1.50	0.50	0	0	0	0.43	3.20	3.09	0.63	0.83	10.87
1938-39	0.85	0	0	0	0	0.90	3.04	3.01	3.48	2.03	1.21	0.69	15.21
1939-40	0.63	0.38	0.99	0.06	0	0.45	0.65	1.93	3.97	0.26	1.04	0.91	11.27
1940-41	0.76	0.82	0.44	1.40	1.99	2.84	1.49	1.27	0.79	0	0	0	11.80
1941-42	0.36	0	0	1.23	6.76	6.43	1.85	1.24	0.85	0.84	0.24	0.40	20.20
1942-43	2.58	0.94	0.06	1.09	6.09	1.14	0.82	0.64	1.93	1.65	0.49	0.22	17.65
1943-44	0.59	0.67	1.03	20.37	10.06	0.14	1.05	1.65	1.02	0.49	0.37	0.81	38.25
1944-45	1.30	0.10	11.13	17.54	6.48	0	0.10	0.45	0.03	0.74	0.14	0.14	38.15
TOTAL													
MEAN													
PER CENT													
REMARKS													

Includes "Diversions to Midland Canal from Klamath River".

OREGON KLAMATH RIVER COMMISSION

LOCATION N.  $\frac{1}{2}$  Sec. 23, T. 40 S., R. 8 E., W. M.

RECORD FROM USBR

RUNOFF OF Diversion from Klamath River at Ady UNIT 1000 A.F. DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1945-46	0.71	0.43	6.25	8.59	22.01	0.81	0.04	0.86	0.64	3.07	3.19	0.63	47.23
1946-47	2.56	6.43	16.67	13.54	16.75	0	0.59	1.08	0.36	1.88	3.14	0.83	63.83
1947-48	0.86	0	11.30	21.98	18.08	1.59	0.71	1.64	1.85	2.78	1.88	1.02	63.69
1948-49	0.58	0.73	23.10	27.54	10.09	1.93	0.60	1.81	4.37	3.37	3.51	2.38	80.01
1949-50	0.65	3.70	26.73	31.74	14.01	0.17	1.39	4.68	4.20	3.93	2.34	1.26	94.80
1950-51	0	0.16	26.16	33.37	4.29	1.28	2.46	1.39	7.40	9.79	4.66	1.50	92.46
1951-52	1.12	1.18	16.94	20.97	7.28	1.81	1.35	2.59	4.10	5.40	3.20	1.34	67.28
1952-53	1.51	0.52	19.59	25.45	2.96	0.67	2.40	1.16	3.92	8.22	4.85	0.75	71.99
<u>For 10-year period, 1943-44 through 1952-53</u>													
Total	9.88	13.92	158.90	221.09	112.01	8.40	10.69	17.31	27.89	39.67	27.28	10.66	657.70
Mean	.98	1.39	15.90	22.11	11.20	.84	1.07	1.73	2.79	3.97	2.72	1.07	65.77
Percent	1.5	2.1	24.2	33.6	17.0	1.3	1.6	2.6	4.3	6.0	4.2	1.6	100.0
No. of yrs	26	26	26	26	26	26	26	26	26	26	26	26	26
TOTAL	20.25	18.73	165.22	227.18	127.82	22.14	25.42	48.14	62.03	61.19	38.07	18.76	834.97
MEAN	.78	.72	6.35	8.74	4.92	.85	.98	1.85	2.39	2.35	1.46	.72	32.11
PER CENT	2.4	2.2	19.8	27.2	15.3	2.7	3.1	5.8	7.4	7.3	4.6	2.2	100.0

REMARKS Includes "Diversions to Midland Canal from Klamath River".

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OREGON KLAMATH RIVER COMMISSION

LOCATION N $\frac{1}{2}$  Sec. 23, T. 40 S., R. 8 E., W.M.

RECORD FROM USBR

~~XXXXXX~~ Historical Discharge of Pumping Plant "F" 1/ UNIT 1,000 A.F. DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1942-43	(Ady Pumping Plant July 1943 thru August 1946)												(1.54)
1943-44	2.11	3.46	2.83	0	0.51	3.71	3.20	2.63	2.10	3.46	1.69	1.43	27.13
1944-45	1.57	2.52	0.61	0	1.69	4.34	3.77	3.35	2.49	1.29	0.43	0.67	22.73
1945-46	1.36	3.60	1.56	0	0	6.83	6.25	2.51	5.93	5.15	6.59	4.00	43.78
1946-47	4.83	3.83	3.73	3.77	7.46	9.58	6.88	5.13	6.00	2.46	4.01	1.35	59.03
1947-48	0.33	2.40	3.84	2.20	8.51	11.94	11.82	8.11	7.55	8.89	6.50	5.48	77.57
1948-49	3.17	2.17	0.12	5.56	9.66	12.11	11.93	10.03	7.86	3.50	4.91	2.07	73.09
1949-50	5.60	5.35	5.45	6.07	12.46	17.72	8.12	11.52	3.45	2.67	2.26	14.17	94.84
1950-51	11.90	11.21	4.24	12.73	13.48	15.10	6.33	14.26	0.66	1.06	2.03	4.45	97.45
1951-52	10.21	4.66	4.19	8.34	16.69	18.08	16.44	13.16	4.18	9.02	7.15	5.17	117.29
1952-53	5.12	0.87	4.46	15.08	16.26	17.03	9.37	17.35	10.15	0.99	7.19	7.00	110.87
No. of Yrs	10	10	10	10	10	10	10	10	10	10	10	10	
TOTAL	46.20	40.07	31.03	53.75	86.72	116.44	84.11	88.05	50.37	38.49	42.76	45.79	723.78
MEAN	4.6	4.0	3.1	5.4	8.7	11.6	8.4	8.8	5.0	3.8	4.3	4.6	72.4
PER CENT													

82

REMARKS 1/ Referred to in water supply papers as "Pumpage at Ady". Total drainage flow from Lower Klamath Lake area to Klamath River via Klamath Straits Drain.

OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USGS \_\_\_\_\_

RUNOFF OF Klamath River at Keno UNIT 1000 Ac-ft DRAINAGE AREA 3920 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1904-05	109.0	120.0	138.0	167.0	172.0	188.0	184.0	165.0	129.0	88.5	65.2	63.1	1588.8
1905-06	73.8	85.7	104.0	126.0	121.0	146.0	192.0	242.0	221.0	169.0	103.0	76.2	1659.7
1906-07	79.3	94.0	117.0	125.0	177.0	250.0	293.0	285.0	214.0	149.0	94.1	78.0	1955.4
1907-08	83.0	91.6	112.0	151.0	154.0	168.0	155.0	141.0	111.0	79.3	56.9	47.7	1350.5
1908-09	65.8	84.5	97.8	127.0	158.0	200.0	187.0	170.0	145.0	91.6	62.7	56.1	1445.5
1909-10	63.3	89.3	149.0	168.0	160.0	229.0	245.0	199.0	122.0	79.9	55.9	52.2	1612.6
1910-11	65.8	78.6	130.0	150.0	133.0	144.0	173.0	212.0	175.0	121.0	74.4	58.7	1515.5
1911-12	68.2	79.1	95.3	116.0	124.0	164.0	155.0	151.0	136.0	111.0	78.7	73.2	1351.5
1912-13	76.9	89.3	110.0	125.0	116.0	133.0	181.0	201.0	158.0	136.0	108.0	79.1	1513.3
TOTAL	685.1	812.1	1053.1	1255.0	1315.0	1622.0	1765.0	1766.0	1411.0	1025.3	698.9	584.3	13992.8
MEAN	76.1	90.2	117.0	139.5	146.1	180.2	196.1	196.2	156.8	113.9	77.7	64.9	1554.8
PER CENT	4.9	5.8	7.5	9.0	9.4	11.6	12.0	12.6	10.1	7.3	5.0	4.2	100
REMARKS													

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OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USGS

RUNOFF OF Klamath River at Keno UNIT 1000 Ac-ft DRAINAGE AREA 3920 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1930-31	84.8	73.2	79.3	64.0	18.0	14.1	9.9	6.7	5.8	7.0	12.4	19.9	395.1
1931-32	44.9	58.8	33.7	34.3	64.4	30.3	16.8	32.6	44.9	34.0	55.0	55.8	513.5
1932-33	46.7	46.7	61.5	34.4	61.6	44.9	33.3	48.1	12.8	18.0	35.5	71.4	514.9
1933-34	66.0	44.0	35.7	80.6	42.3	28.3	29.2	21.6	33.7	53.8	50.4	61.7	547.3
1934-35	59.0	17.3	24.1	33.3	23.4	63.7	168.7	50.2	29.0	43.3	65.1	73.2	650.3
1935-36	75.1	76.3	63.2	40.7	61.8	113.6	112.1	82.8	49.5	50.4	77.1	81.9	884.5
1936-37	106.1	104.9	66.2	80.0	51.2	31.3	18.8	23.1	26.3	36.8	62.7	78.6	686.0
1937-38	78.7	53.5	54.2	61.6	172.7	225.3	295.8	269.1	74.4	56.7	72.4	77.7	1491.7
1938-39	79.1	60.2	50.9	61.2	50.0	76.4	75.0	43.5	48.9	55.7	63.4	79.8	744.1
1939-40	67.5	67.2	58.2	56.7	42.1	103.5	212.6	66.8	64.9	78.0	80.1	88.9	986.5
1940-41	101.5	65.6	66.4	59.1	46.8	50.8	46.6	40.9	43.2	72.1	92.1	97.1	782.2
1941-42	99.6	90.5	56.9	64.6	87.7	78.4	93.6	124.6	67.5	69.8	99.2	106.0	1038.4
1942-43	102.0	66.1	59.5	109.9	227.7	298.0	292.6	197.0	106.1	57.6	38.3	131.7	1746.5
1943-44	111.3	115.6	107.3	75.4	55.6	59.8	57.7	53.4	52.3	77.9	98.6	74.2	959.1
1944-45	85.1	100.7	102.6	71.2	50.5	57.4	56.6	42.7	43.4	79.9	107.3	112.9	910.3
1945-46	83.9	61.7	65.0	77.7	110.3	247.3	115.1	55.8	60.9	73.3	96.9	106.5	1154.4
1946-47	109.8	107.5	91.1	67.8	21.3	24.8	16.6	29.1	41.6	52.2	79.1	91.0	731.9
1947-48	91.5	84.0	61.0	41.3	61.2	37.1	18.6	51.5	111.9	77.9	90.2	97.4	823.6
1948-49	102.1	96.3	117.0	105.5	88.2	73.2	33.6	89.4	41.6	40.0	50.2	65.3	902.4
1949-50	115.3	124.9	118.6	77.6	48.6	71.5	72.1	69.5	37.5	43.6	58.7	64.2	902.1
TOTAL													
MEAN													
PER CENT													
REMARKS													

ft



OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USGS

RUNOFF OF Klamath River at Keno UNIT 1000 Ac-ft DRAINAGE AREA 3920 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1950-51	84.6	123.9	183.3	119.1	193.2	201.6	117.7	187.2	65.8	55.3	49.1	62.7	1443.5
1951-52	83.1	92.5	107.6	166.2	201.3	251.6	330.2	250.9	128.4	92.7	96.7	117.7	1918.9
1952-53	137.7	123.0	118.1	140.7	266.2	210.4	148.9	239.1	193.4	92.7	100.1	130.4	1900.7
<u>For last 20 years of record, 1933-34 through 1952-53</u>													
Total	1839.0	1675.7	1606.9	1589.8	1902.1	2304.0	2312.1	1988.2	1320.3	1259.7	1587.7	1818.9	21204.4
Mean	91.9	83.8	80.3	79.5	95.1	115.2	115.6	99.4	66.0	63.0	79.4	91.0	1060.2
Percent	8.7	7.9	7.6	7.5	9.0	10.8	10.9	9.4	6.2	5.9	7.5	8.6	100.0
<u>For last 10 years of record, 1943-44 through 1952-53</u>													
Total	1004.6	1030.1	1071.6	942.5	1096.4	1234.7	967.1	1068.6	776.8	685.5	826.9	942.3	11646.9
Mean	100.5	103.0	107.2	94.2	109.6	123.5	96.7	106.9	77.7	68.6	82.7	94.2	1164.7
Percent	8.6	8.8	9.2	8.1	9.4	10.6	8.3	9.2	6.7	5.9	7.1	8.1	100.0
<u>For total period of record, combining records at Keno and Spencer Bridge 49 years, 1904-05 through 1952-53</u>													
TOTAL	4045.0	4075.2	4537.7	5108.7	5195.9	6212.7	6544.7	6008.6	4480.5	3676.6	3503.5	3702.0	57091.1
MEAN	82.6	83.2	92.6	104.3	106.0	126.8	133.6	122.6	91.4	75.0	71.5	75.5	1165.1
PER CENT	7.1	7.1	8.0	9.0	9.1	10.9	11.5	10.5	7.8	6.4	6.1	6.5	100.0

REMARKS

The flow at Keno plus that of Spencer Creek is practically the same as the flow at Spencer Bridge.

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OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USGS

RUNOFF OF Klamath River at Spencer Bridge UNIT 1000 Ac-ft DRAINAGE AREA 4045 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1913-14	89.8	102.0	120.0	178.0	180.0	241.0	283.0	271.0	201.0	138.0	76.9	66.0	1946.7
1914-15	92.2	107.0	122.0	127.0	115.0	151.0	177.0	159.0	118.0	80.6	55.0	53.4	1357.2
1915-16	64.0	84.5	123.0	130.0	132.0	184.0	205.0	175.0	130.0	103.0	73.2	64.3	1468.0
1916-17	69.5	78.0	105.0	122.0	109.0	130.0	164.0	255.0	182.0	119.0	71.3	60.1	1464.9
1917-18	73.2	88.1	114.0	141.0	136.0	157.0	156.0	101.0	57.2	35.7	34.2	51.1	1144.5
1918-19	74.4	86.9	102.0	107.0	122.0	156.0	192.0	70.1	81.5	76.2	53.3	52.8	1174.2
1919-20	62.1	72.0	91.0	103.0	101.0	81.8	71.4	73.2	69.0	58.7	51.2	49.7	884.1
1920-21	57.4	73.2	106.0	208.0	206.0	248.0	244.0	203.0	149.0	68.9	41.6	53.9	1659.0
1921-22	67.6	74.4	124.0	164.0	122.0	132.0	193.0	221.0	122.0	70.7	67.0	56.8	1414.5
1922-23	70.1	70.8	107.0	224.0	139.0	68.9	82.7	84.2	73.8	76.2	81.2	73.8	1151.7
1923-24	77.5	72.6	71.3	120.0	89.2	97.2	72.0	50.2	28.8	51.9	57.3	80.3	868.3
1924-25	99.6	95.8	97.2	81.2	75.5	108.0	72.0	110.0	119.0	83.0	91.0	92.2	1124.5
1925-26	91.6	79.1	103.0	81.2	66.6	69.5	67.8	42.0	60.7	57.1	58.5	63.1	840.2
1926-27	68.9	63.1	76.9	88.5	65.5	136.0	179.0	176.0	124.0	111.0	106.0	101.0	1295.9
1927-28	105.0	95.2	103.0	76.2	62.7	140.0	174.0	94.1	69.0	99.6	101.0	107.0	1226.8
1928-29	114.0	96.4	89.2	92.2	78.9	43.0	29.8	26.9	33.5	64.6	73.2	60.7	802.4
1929-30	67.6	69.6	48.6	87.9	35.4	46.0	44.9	55.3	67.2	38.4	22.1	65.5	648.5
1930-31	84.8	72.6	78.7	62.7	17.9	15.5	10.7	7.6	5.6	6.3	12.4	19.2	394.0
TOTAL	1429.3	1481.3	1781.9	2193.9	1853.7	2204.9	2118.3	2174.6	1691.3	1338.9	1126.4	1170.9	20865.4
MEAN	79.41	82.29	98.99	121.88	102.98	122.49	134.35	120.81	93.96	74.39	62.58	65.0	1159.2
PER CENT	6.9	7.1	8.5	10.5	8.9	10.6	11.6	10.4	8.1	6.4	5.4	5.6	100
REMARKS													

96

OREGON KLAMATH RIVER COMMISSION

LOCATION \_\_\_\_\_

RECORD FROM USGS (Computed)

~~XXXXX~~ Accretions between Keno and Copco, 1943-44--1952-53 UNIT 1000 ac-ft DRAINAGE AREA \_\_\_\_\_ SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1943-44	15.5	15.6	16.5	13.4	15.8	21.1	17.9	17.4	14.7	10.8	13.4	11.3	183.4
44-45	12.3	10.4	10.6	11.0	17.3	14.6	13.7	20.3	14.8	10.6	13.0	12.8	161.4
1945-46	19.3	16.1	21.2	19.1	7.8	1.2	17.1	22.0	15.2	12.9	12.9	9.2	174.0
46-47	10.3	9.1	12.5	12.3	14.5	14.9	17.1	15.2	12.3	14.2	6.8	6.6	145.8
47-48	10.6	7.6	11.9	20.0	9.0	17.0	22.7	20.2	12.7	11.2	7.3	7.9	158.1
48-49	8.2	13.8	11.6	7.6	13.5	19.8	25.8	17.3	15.5	11.5	13.5	13.1	171.2
49-50	6.9	8.1	4.7	11.9	17.0	22.2	18.2	18.9	16.9	10.3	13.2	9.3	157.6
1950-51	14.1	14.3	28.6	17.4	14.9	16.0	17.8	16.2	14.7	12.8	15.3	10.5	192.6
51-52	14.4	15.4	22.1	17.7	23.5	26.5	50.8	40.8	28.4	21.5	19.6	18.6	299.3
52-53	21.3	17.4	20.2	31.3	21.9	26.3	30.2	29.7	34.2	15.8	16.5	22.1	286.9
TOTAL	132.9	127.8	159.9	161.6	155.2	179.6	231.3	218.0	179.4	131.6	131.5	121.4	1930.3
MEAN	13.3	12.8	16.0	16.2	15.5	18.0	23.1	21.8	17.9	13.2	13.1	12.1	193.0
PER CENT	6.9	6.6	8.3	8.4	8.0	9.3	12.0	11.3	9.3	6.8	6.8	6.3	100.0
REMARKS													

87

OREGON KLAMATH RIVER COMMISSION

LOCATION NW 1/4 Sec. 31, T. 48N., R. 4W., MDM  
1/4 mile above mouth of Fall Creek

RECORD FROM USGS

Historical and computed Creek/1  
 RUNOFF OF Klamath River near Copco, Calif. or above Fall UNIT 1000 a.f. DRAINAGE AREA 4,300 SQ. MILES

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Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1923-24	90.40	85.10	86.10	124.00	101.00	114.00	91.60	66.40	44.70	52.00	65.80	82.10	1,003.20
1924-25	102.00	105.00	101.00	89.80	91.10	117.00	87.50	118.00	118.00	93.50	93.50	97.00	1,213.40
1925-26	100.00	87.50	113.00	88.50	83.30	79.90	77.40	51.00	70.20	67.60	67.00	70.80	956.20
1926-27	81.80	85.10	102.00	97.80	92.80	147.00	185.00	173.00	132.00	113.00	117.00	110.00	1,436.50
1927-28	109.00	106.00	102.00	93.50	76.50	140.00	176.00	111.00	83.90	105.00	111.00	109.00	1,322.90
1928-29	119.95	101.85	100.25	97.26	88.45	67.23	39.05	33.58	44.71	76.15	82.91	63.06	914.45
1929-30	79.26	77.08	65.52	94.91	51.57	58.52	61.81	68.18	79.70	42.67	31.23	73.13	783.58
1930-31	95.26	83.14	88.34	74.20	28.22	28.49	21.91	18.51	17.19	18.04	23.16	31.03	527.49
1931-32	54.95	71.14	45.30	53.49	68.87	66.37	37.43	46.13	60.06	51.74	67.07	68.46	691.01
1932-33	57.45	61.68	75.52	47.57	73.23	69.94	49.05	66.77	31.87	30.29	49.45	86.37	699.19
1933-34	73.45	59.80	49.11	99.07	55.83	43.05	42.51	35.28	46.37	59.35	62.63	71.67	698.12
1934-35	71.05	32.75	39.28	50.98	40.11	79.49	171.88	71.78	45.20	56.58	78.87	84.78	822.75
1935-36	88.98	87.10	77.23	65.69	82.71	129.55	131.19	97.58	67.70	67.81	89.87	98.11	1,083.52
1936-37	116.66	113.34	85.69	87.39	64.65	55.15	46.46	42.36	45.53	51.21	74.23	89.97	872.64
1937-38	89.47	71.14	75.52	78.78	182.57	255.20	337.02	295.66	92.95	71.66	86.55	90.18	1,726.70
1938-39	89.55	75.38	70.20	74.43	65.47	96.92	89.79	63.05	64.62	64.69	75.74	89.61	919.45
1939-40	79.37	82.45	74.95	74.15	69.77	132.28	228.19	81.80	76.59	87.34	90.10	95.91	1,172.90
TOTAL													
MEAN													
PER CENT													

REMARKS:

1/ Above dashed line - historical runoff measured at gaging station.  
 Below dashed line - runoff computed from flow of Klamath River below Fall Creek minus flow of Fall Creek. Gaging station "Klamath River near Copco" moved to "Klamath River below Fall Creek" July - Aug. 1928.

OREGON KLAMATH RIVER COMMISSION

LOCATION NW<sup>1</sup> Sec. 31, T. 48N., R. 4W., MDM  
1/4 mile above mouth of Fall Creek

RECORD FROM USGS

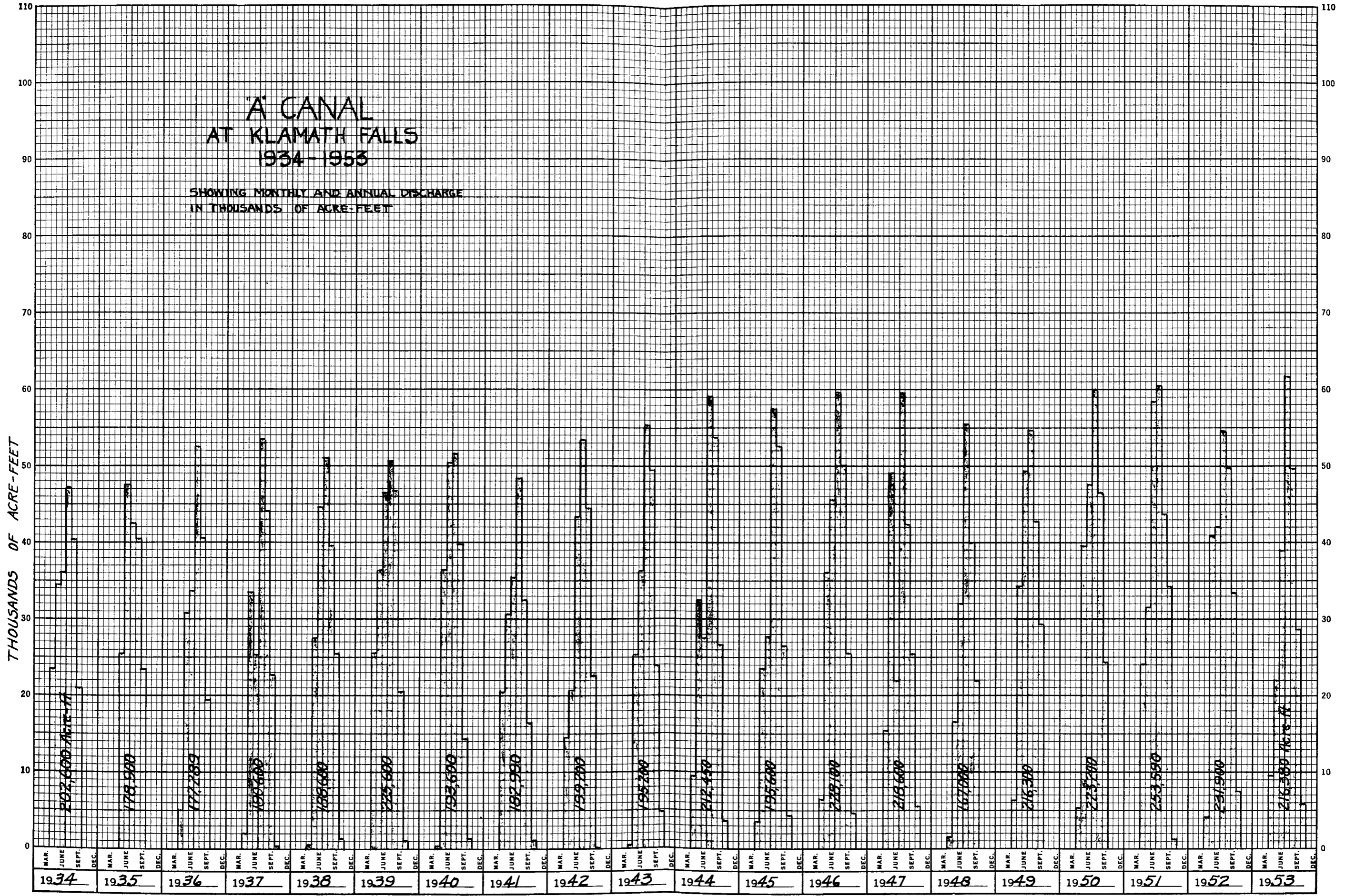
Historical & Computed Creek 1/  
 RUNOFF OF Klamath River near Copco, Calif. or above Fall/ UNIT 1000 a.f. DRAINAGE AREA 4,300 SQ. MILES

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
1940-41	114.38	80.16	81.50	76.00	67.13	67.68	64.49	62.55	57.41	87.77	104.36	103.56	966.99
1941-42	111.61	99.27	82.28	80.22	106.65	94.93	110.39	136.40	84.65	81.87	109.86	117.59	1,215.72
1942-43	111.17	82.46	84.10	130.49	234.37	295.06	287.58	213.33	123.76	75.00	113.65	143.88	1,894.85
1943-44	126.82	131.24	123.81	88.82	71.36	80.92	75.59	70.84	67.04	88.71	111.95	105.49	1,142.59
1944-45	97.37	111.13	113.21	82.18	67.76	71.95	70.30	62.96	58.22	90.47	120.32	125.69	1,071.56
1945-46	103.20	77.78	86.19	96.84	118.08	248.53	132.23	77.84	76.10	86.25	109.77	115.67	1,328.48
1946-47	120.10	116.65	103.65	80.12	35.79	39.71	33.71	44.33	53.93	66.37	85.94	97.63	877.93
1947-48	102.11	91.62	72.87	61.28	70.17	54.06	41.35	71.65	124.65	89.09	97.54	105.34	981.73
1948-49	110.31	110.09	128.59	113.12	101.73	92.98	59.38	106.65	57.07	51.52	63.70	78.41	1,073.55
1949-50	122.22	133.03	123.35	89.51	65.59	93.66	90.33	88.45	54.43	53.86	71.88	73.45	1,059.76
1950-51	98.66	138.24	211.90	136.47	208.07	217.64	135.46	203.37	80.55	68.15	64.45	73.21	1,636.17
1951-52	97.48	107.85	129.68	183.89	224.78	278.06	381.00	291.74	156.77	114.22	116.29	136.30	2,218.06
1952-53	159.02	140.44	138.27	171.97	288.14	236.67	179.14	268.78	227.58	108.54	116.59	152.49	2,187.63
No. of yrs.	30	30	30	30	30	30	30	30	30	30	30	30	30
Total	2973.1	2805.5	2830.4	2782.4	2975.8	3551.9	3534.7	3139.0	2343.4	2170.5	2552.4	2839.9	34,499.0
Mean	99.1	93.5	94.3	92.7	99.2	118.4	117.8	104.6	78.1	72.3	85.2	94.7	1,149.9
Per Cent	8.6	8.1	8.2	8.1	8.6	10.3	10.3	9.1	6.8	6.3	7.4	8.2	100.0
TOTAL													
MEAN													
PER CENT													
REMARKS													

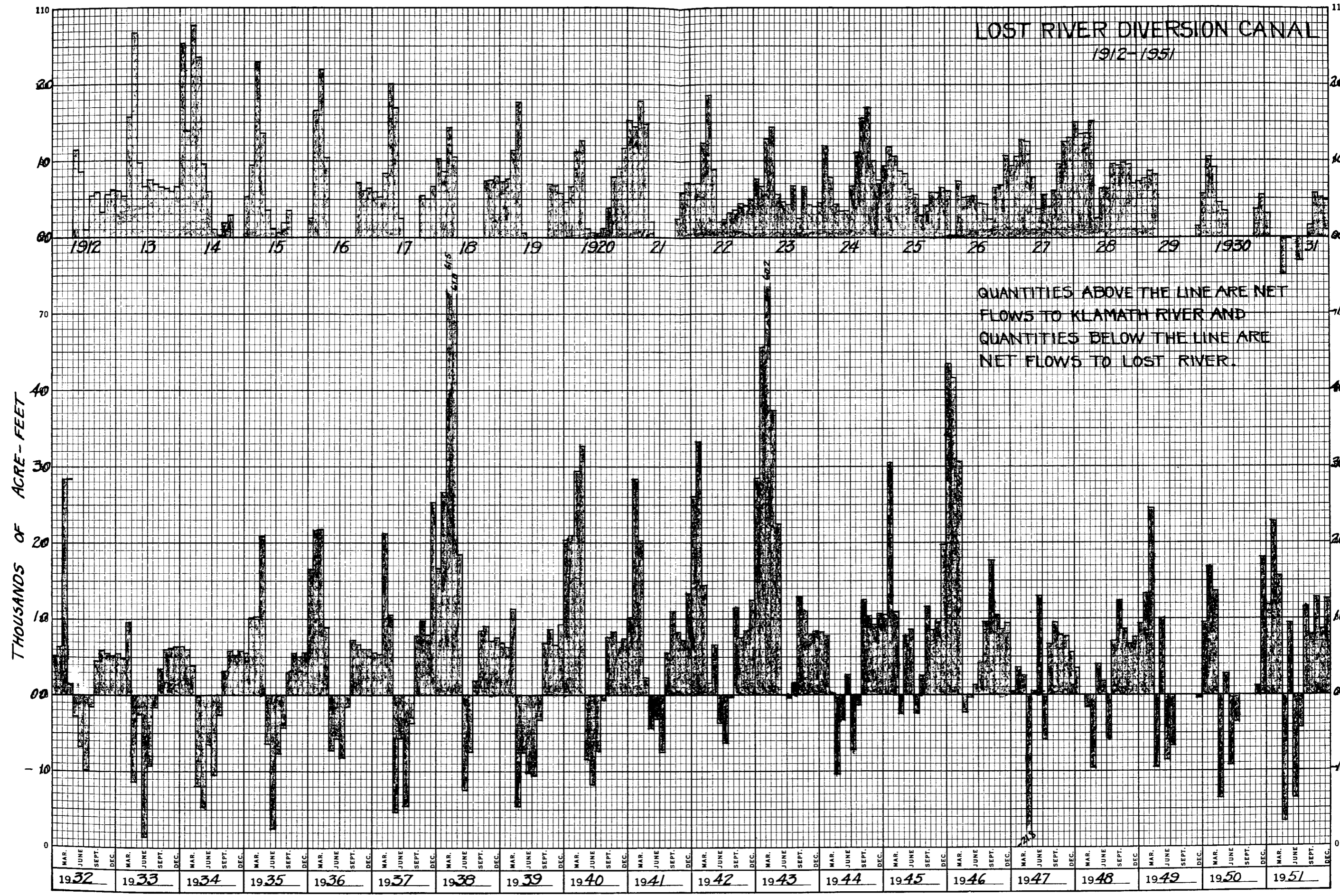
69

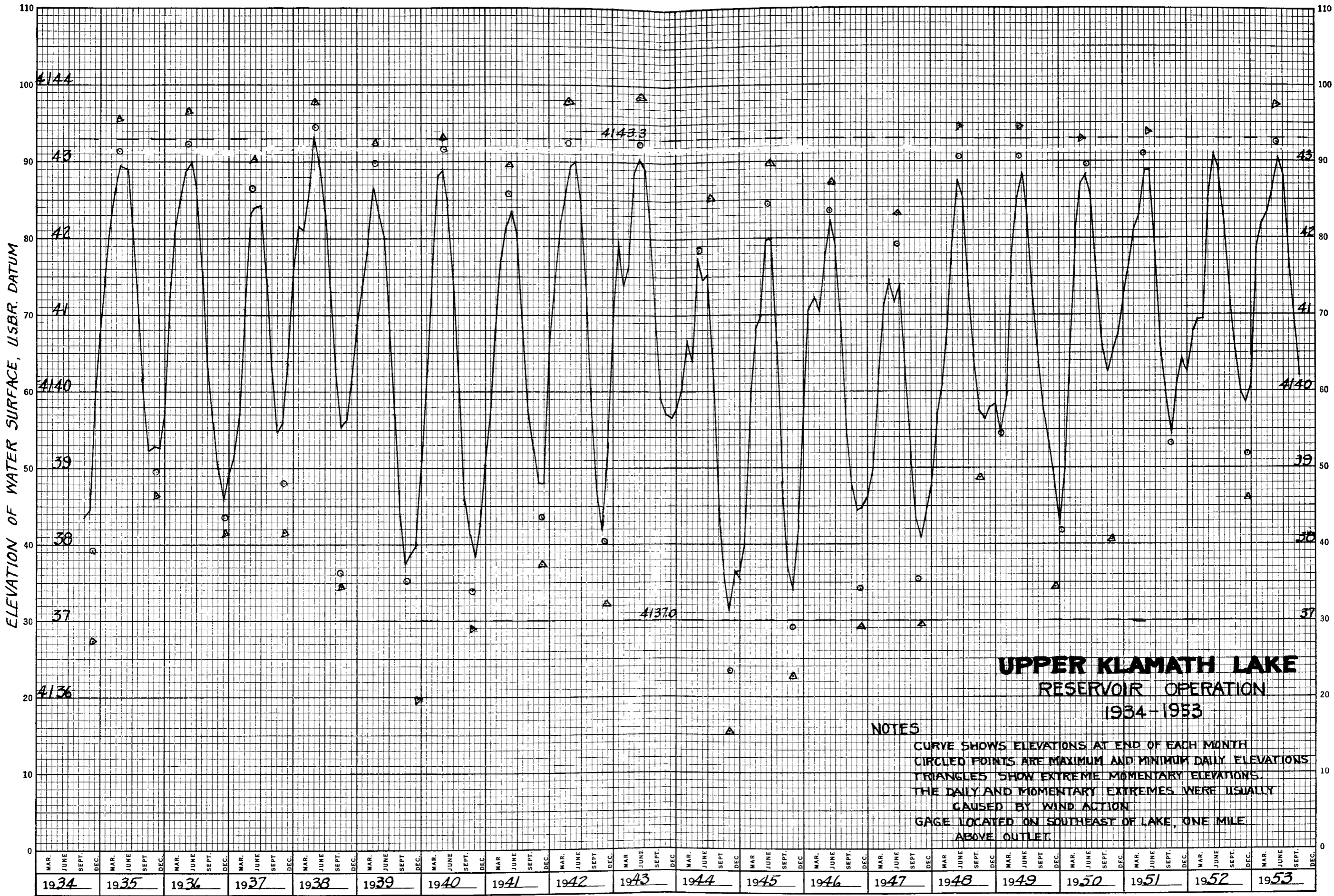
# A CANAL AT KLAMATH FALLS 1934-1953

SHOWING MONTHLY AND ANNUAL DISCHARGE  
IN THOUSANDS OF ACRE-FEET



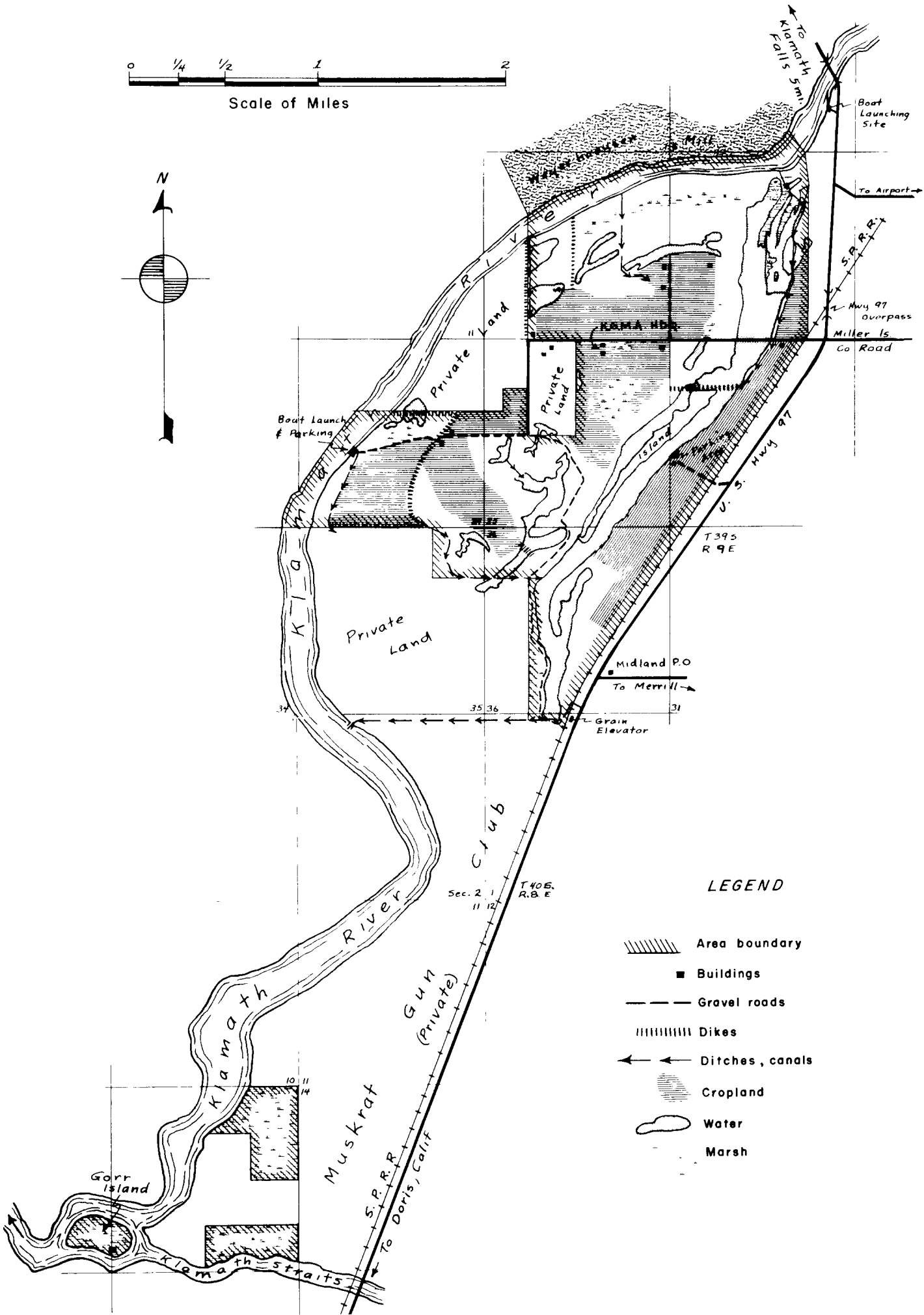
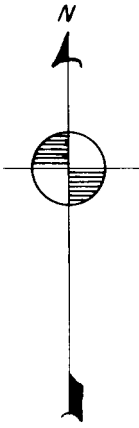
# LOST RIVER DIVERSION CANAL 1912-1951







# KLAMATH GAME MANAGEMENT AREA



## LEGEND

- Area boundary
- Buildings
- Gravel roads
- Dikes
- Ditches, canals
- Cropland
- Water
- Marsh

